Fairy Hill Proposed Solar Farm:

Landscape and Ecological Management Plan

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For: BWCE

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Produced by:

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1 INTRODUCTION

1.1 Engain has been instructed by Bath and West Community Energy (BWCE) ('hereafter referred to as the 'client') to prepare a Landscape and Ecological Management Plan (LEMP) for the land at Fairy Hill, Compton Dando, Bristol (hereafter referred to as the 'site').

Site Location

1.2 The site is located on the outskirts of Compton Dando, north of the village. Compton Dando is positioned south of Bristol and Bath, being 7 miles from the former and 8 miles from the latter. The OS grid reference for the centre of the site is ST647651.

1.3 Immediately east of the site is the River Chew and its associated riparian trees and woodland. Chewton Road runs adjacent to the western border, and fields in agricultural use border the site to the north and south.

Content of the LEMP

1.4 This LEMP has been written in accordance with BS 42020:2013 Section 11.11. The following points have been addressed within this report:

a) Description and evaluation of features to be managed;
b) Ecological trends and constraints on site that might influence management
c) Aims and objectives of management;
d) Appropriate management options for achieving aims and objectives;
e) Prescriptions for management actions;
f) Preparation of a work schedule (including an annual work plan capable of being rolled forward over a thirty-year period)
g) Details of the body or organisation personnel responsible for implementation of the plan;
h) Ongoing monitoring and remedial measures; and
i) Funding resources and mechanisms to ensure sustainable long-term delivery of the proposed management.

1.5 The LEMP will be referred to and enacted by all relevant contractors. It will be the responsibility of the Developer (The Client) and Principal Contractor to ensure compliance during the programme of works.

1.6 Furthermore, this LEMP fulfils the requirements to support the Biodiversity Net Gain Assessment (BNGA) prepared to support the planning application (ref: eg211118_BNGA_REV01) setting out the project implementation and construction plan and the management and monitoring plan.

2 ECOLOGICAL FEATURES TO BE MANAGED

Development Proposal

2.1 The proposal comprises the provision of a 2ha solar farm to generate approximately 2.1MW of renewable energy, including the construction, operation, and management of solar photovoltaic panels, a transformer substation, a switchroom, perimeter security fencing, an access track, on site cabling, offsite cabling, a DNO cabin, a satellite mast, and CCTV cameras (the 'Development', Appendix 1).

Habitats

2.2 The proposed habitats comprise:

- A community orchard;
- Pollinator strips around the edge of the site;
- Species-rich meadow grassland; and
- Habitat log piles.

2.3 Furthermore, a large ancient oak tree is to be retained and managed.

Species

2.4 The main species that will use the site are:

- Amphibians;
- Bats;
- Birds;
- Terrestrial invertebrates; and
- Reptiles.

3 TRENDS AND CONSTRAINTS

3.1 This section is written in consideration of the trends and constraints which may affect how the site is managed in the future.

Trends

3.2 The following are ecological trends which require consideration when implementing landscape and ecological management of the site:

- **Climate change** should be considered when selecting landscaping species which should remain viable into the future. For example, due consideration should be given to plant species which are tolerant of drought / flooding. Management schedules should also be mindful of water availability during drought, and how landscape features should be managed under such circumstances.

- **Spread of pests and diseases** should be considered in the sourcing of any plant stock bought into the site. Stock of British provenance is preferable, as well as those varieties which are known to be resistant to disease, for example Dutch elm disease. The management of established landscaping should consider the spread of disease such as ash die back. Future maintenance of the site should being aware of, for example, the origin of mulch taken on site and the dispersal of any arisings produced from maintenance work.

- **Increasing urbanisation of the site and surroundings** should be considered by ensuing that planting takes into consideration the ecological landscape and wider nature networks to ensure connectivity and allow the dispersal of species without causing island effects or dead ends.

- **Seasonal and long-term population trends of the wildlife that use the site** can be supported through the sensitive timings of works. For example delaying the trimming of hedges or trees so that food sources such as berries and nuts remain available for longer. Maintaining, and replacing when necessary, the mitigation designed for species longevity within the site will also support long term wildlife suitability within the site.

Constraints

3.3 The following highlights ecological constraints which required consideration when implementing landscape and ecological management of the site:

- **Presence of protected and notable species**, as described in paragraph 2.5 are known to inhabit the site, and measures have been designed to ensure their presence during and post construction. These species should be considered during any future site maintenance. For example hedge and tree works being avoided during the breeding bird season, and sensitive management of green spaces should consider reptiles.

4 AIMS AND OBJECTIVES OF MANAGEMENT

Aims of Management

4.1 The aim of managing this site is to provide enhancements for wildlife and to mitigate potential adverse impacts on landscape and visual amenity.

4.2 In terms or wildlife, the aim is tom maintain a site of botanically rich habitats that are home to a wide variety of wildlife, and which can be enjoyed by the public.

4.3 In terms of landscape, the aim is to assimilate the development by maximising the benefits of the natural resources and setting of the site, combined with enhancements that aim to create an appearance in context with the surrounding landscape and improve the mitigation of winter impacts.

4.4 The management prescribed in this plan should lead to the establishment of ecologically robust habitats that need decreasing levels of management and intervention as time goes on, and which are integrated into the surrounding ecological landscape.

4.5 This plan sets specific objectives and parameters for each of the habitats and identifies how they will be achieved in **Section 5** and **Table 5-1**.

5 MANAGEMENT ACTIONS

Capital Works

5.1 Capital Works to establish the ecological features include the creation of habitats and the installation of artificial features such as nest/roost boxes.

5.2 Soft landscaping will be implemented in accordance with the planting plan (Appendix 2).

5.3 In total 3 bat boxes, 3 bird boxes and 1 reptile refugia will be installed within the site.

5.4 The artificial habitats and their siting requirements are recommended as follows:

- 3 x bat box, to be mounted on a tree(s) on a southerly or western aspect, 2-7 m high and away from artificial lighting.
- 3x bird box, 32mm hole. Mounted on tree(s), east facing.
- 1x reptile hibernacula, tucked away from public disturbance. The refugia should be constructed as per of the 'Great Crested Newt Conservation Handbook (Figure 8)'[1].

Annual Works

General Requirements

5.5 All landscape maintenance work is to be carried out to a high and consistent standard and undertaken by an experienced Contractor.

5.6 The Contractor shall:

- Avoid disturbing any breeding birds whilst they are nesting;
- Prevent damage to and protect features of the development as necessary;

[1] Langton, T.E.S., Beckett, C.L., Foster, J. P. (2001), *Great Crested Newt Conservation Handbook*, Froglife, Halesworth.

5.7 The use of any pesticides (insecticides, fungicides and slug pellets) is discouraged, and herbicides should be avoided as far as practicable. Any herbicides used shall be non-residual contact pesticides and chemical applications shall only be undertaken in suitable weather conditions as described by the manufacturers.

Table 5-1: Annual Management Plan (capable rolling over a 30 year period).

Management Component	Objective	Action	Month/Season	Year				
				1	2	3	4	5
Newly Created Hedgerow Hedgerows	Maintain and enhance the hedgerow margins to increase the provision of wildlife habitat. Provide opportunities for nesting birds and hibernating reptiles. Retain species which provide seed, pollen and nectar which are of value to wildlife. Ensure cultural techniques are employed which use a variety of mulches and organic fertilisers and which minimise the use of chemicals and peat wherever possible.	Allow growth to achieve desired size of at least 2m high and 1.5m wide.	When required	✓	✓	✓	✓	✓
		Application of bark mulch at a depth of 50 mm.	When required	✓	✓	✓	✓	✓
		If using manure, use a light dressing of well-rotted manure.	When required	✓	✓	✓	✓	✓
		Regular Irrigation in periods of drought if required.	All year round	✓	✓	✓	✓	✓
		Hedgerows should be rotationally cut – with one third of the total hedgerow cut each year.	Between September and February	✓	✓	✓	✓	✓
Existing Hedgerows	Manage to their natural height and current condition to retain landscape screening effects and ecological interest.	Cut back no more than once every three years, if required, to prevent too much spread into the field.	Between September and February	✓	✓	✓	✓	✓
Orchard/New Trees	Provision of wildlife habitat; and	Provision of stakes and biodegradable guards left on for 5 – 7 years	N/A	✓	✓	✓	✓	✓

Management Component	Objective	Action	Month/Season	Year				
				1	2	3	4	5
	Ensure well-balanced crowns and natural shape.	Stakes should be checked and any broken or damaged stakes during this time would be removed (as above) and replaced with ties re-fixed	Every 6 months (for 1 – 2 years if the tree has grown well)	✓	✓			
		Formative pruning to ensure vigorous growth and removal of damaged or diseased branches. It should be undertaken according to BS 5837:2010	When required (avoid nesting bird season)	✓	✓	✓	✓	✓
		In the orchard, where trees are felled, lopped, pollarded or coppiced, a proportion of the dead wood should be left on site	When required	✓	✓	✓	✓	✓
		Regular Irrigation in periods of drought if required.	All year round	✓	✓	✓	✓	✓
Retained ancient oak tree	Promote the continued development of the mature tree. Protect the root protection zone from compaction	Retain the tree and ensure it is protected from damage including soil compaction or damage within or adjacent to the root protection zone	N/A	✓	✓	✓	✓	✓
		A safety survey by a suitably qualified arboriculturalist.	After high winds / on a risk-assessed basis.	✓		✓		✓

Management Component	Objective	Action	Month/Season	Year				
				1	2	3	4	5
		Retain dead wood on the tree and / or on the ground unless it poses an unacceptable risk to health and safety	When required	✓	✓	✓	✓	✓
Species Rich Grassland (Wildflower grassland)	The creation of a species diverse species rich grassland via a suitable mowing regime within the perimeter fence, under and around the panels.	In the first year: Mow in the first year of establishment to a height of around 100mm, removing cuttings. Avoid cutting between April and July.	Project commencement	✓				
		From second year: Cut meadow twice annually and remove arisings, or graze with appropriate stocking density of sheep. In periods of drought, reduce the frequency of mowing or adjust sheep stocking timing / density accordingly.	March / April and– August/Sept		✓	✓	✓	✓
Pollinator Strips	To create habitat with high value for pollinating invertebrates.	Widen and enhance existing field margins by sowing with seeds of plants with high value for pollinators.	Project commencement	✓				
		In the first year: Mow in the first year of establishment to a height of around 100mm, removing cuttings. Avoid cutting between April and July.	Project commencement	✓				

Management Component	Objective	Action	Month/Season	Year				
				1	2	3	4	5
		Disturb half of the field margin annually to stimulate late flowering, alternating sides each year.	September/October		✓	✓	✓	✓
Bird box	To enhance the potential of the site for breeding birds by providing suitable nesting opportunities.	Bird boxes can be cleared out annually after the nesting season has finished. This is best carried out in October to avoid the breeding period and to avoid disturbing birds wintering within the boxes	October					
		Boxes should be checked annually and any damaged boxes should be repaired or changed as necessary and be replaced in their original positions.	When required					
Bat box	To enhance the potential of the site for roosting bats by providing suitable roosting opportunities.	No maintenance is required for these bat boxes, however, check annually replace if they become damaged.	When required	✓	✓	✓	✓	✓
Reptile hibernacula	To enhance the potential of the site for reptile and terrestrial invertebrates by providing suitable refuge opportunities within suitable areas.	No maintenance is required for the hibernacula, however, check annually and additional material (e.g. brash / leaf litter) can be added to the top of the pile.	When required	✓	✓	✓	✓	✓

NB: The management and maintenance of the site should be reviewed at the end of year 5 and reissued with relevant requirements for fear 6+.

6 ROLES AND REPOSNSIBILIES

6.1 BWCE will ensure that the appropriate resources are in place for the implementation of this management plan.

6.2 During the construction period, the **Client** is responsible for ensuring that capital works are delivered, and that any maintenance is provided until such time as areas of the site are completed. They will appoint such organisations as are required including a **Principal Contractor**.

6.3 Once completed, the land outside of the security fence will be managed by the landowner, and the land within the security fence will be managed in partnership with the operator.

6.4 During all phases of the development, from construction to occupation, the responsible party will appoint a **Suitably Qualified Ecologist (SQE)** to act as **Biodiversity Champion** to assist them in the implementation and monitoring of the plan.

6.5 Performance during construction and after handover will be monitored to adhere to the format as outlined in this management plan **Table 5-1 (Annual Works).** These tables provide the management actions that are required by key individuals responsible for managing the site at each stage of development.

6.6 The **Biodiversity Champion** will carry out annual site visits whilst construction works are on-going and conduct a post-construction, pre-occupation compliance check as identified in Section 7, Monitoring and Review. All works identified in Capital Works will be checked for compliance by the site **Biodiversity Champion** and will be signed off on completion.

6.7 The **Biodiversity Champion** will document all records of monitoring that occur during the construction works period. The records will be stored securely and made available for review as necessary. These will be maintained to provide a resource for the client and if necessary, to regulatory and statutory authorities to inspect conformity and compliance.

6.8 To ensure consistent and acceptable environmental performance during implementation of the management plan, **The Client** will ensure that all staff

and sub-contractors are aware of good practice protocols through their **Principal Contractor** and the chosen **Biodiversity Champion**. Relevant information on ecological management will be passed to the work force in briefings or by other suitable means.

7 MONITORING AND REVIEW

7.1 The SQE will conduct a pre-commencement inspection for protected species immediately prior to the onset of construction works to ensure the ecological features previously recorded has not changed.

7.2 Whilst construction works are on-going, the SQE will undertake site visits if required and confirm that advised measures have been taken to protect biodiversity at the site. A letter report will be prepared suitable for submission to the council to demonstrate compliance.

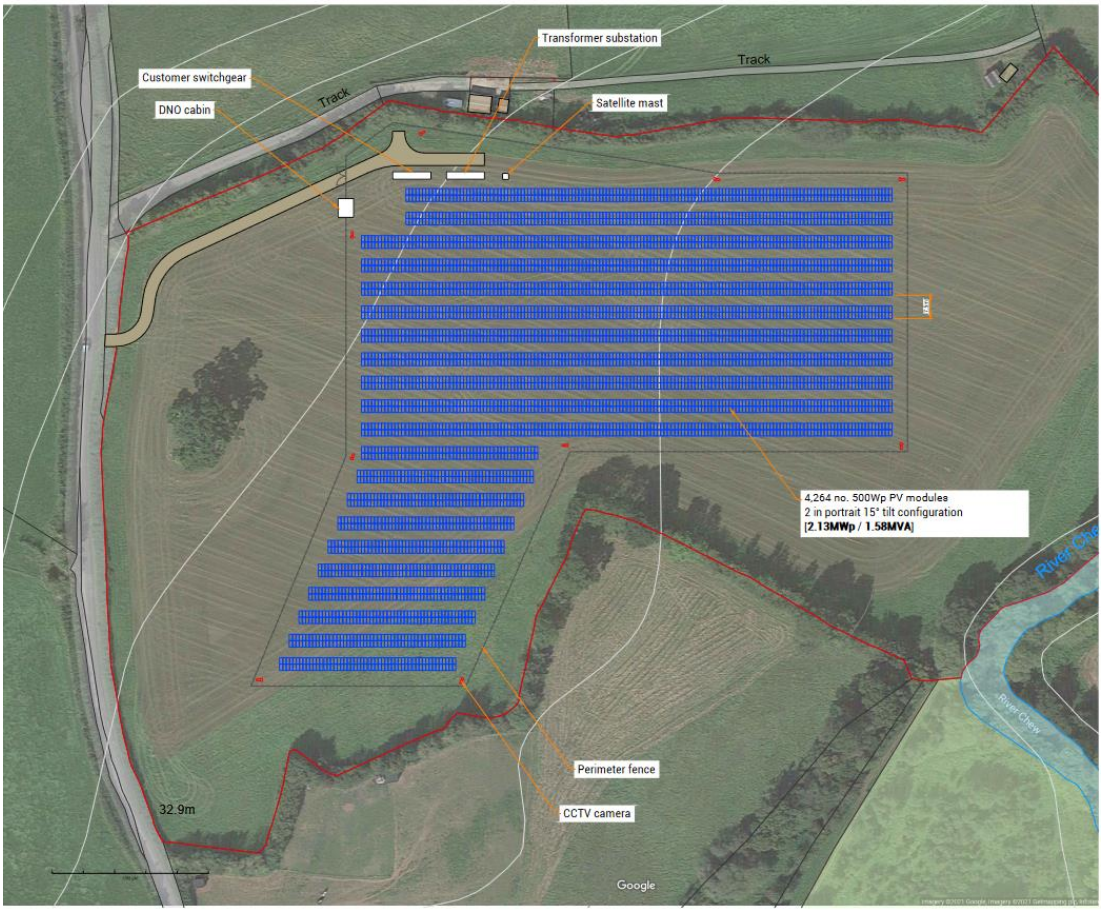
7.3 The site will be monitored annually for the first five years, and the frequency of monitoring thereafter shall be reviewed against the site's condition. Compliance with each aspect of the capital and annual works (**Table 5-1**) and within the timescales identified will be assessed during this visit. This will include ensuring that biodiversity enhancement features, including bird and bat boxes have been correctly implemented at the site.

7.4 The monitoring will be carried out in June or early July of each year, during the peak growing season.

7.5 The SQE will produce a compliance report, confirming and demonstrating implementation of this management plan, which will be submitted by the ecologist to the Local Planning Authority.

APPENDICES

Appendix 1 Proposed Development



Appendix 2 – Landscape Plan