PELHAM SPRING SOLAR FARM

ENVIRONMENTAL STATEMENT

TECHNICAL APPENDICES

APPENDIX 6.12 – LANDSCAPE AND ECOLOGICAL MANAGEMENT PLAN

On behalf of Low Carbon Solar Park 6 Limited

Date: February 2023

Pelham Spring Solar Farm
Landscape & Ecological Management Plan

Low Carbon Ltd.
05.12.2022 | P20-1300-13B

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NOTE: THIS DOCUMENT IS DESIGNED TO BE VIEWED AS A3 DOUBLE SIDED

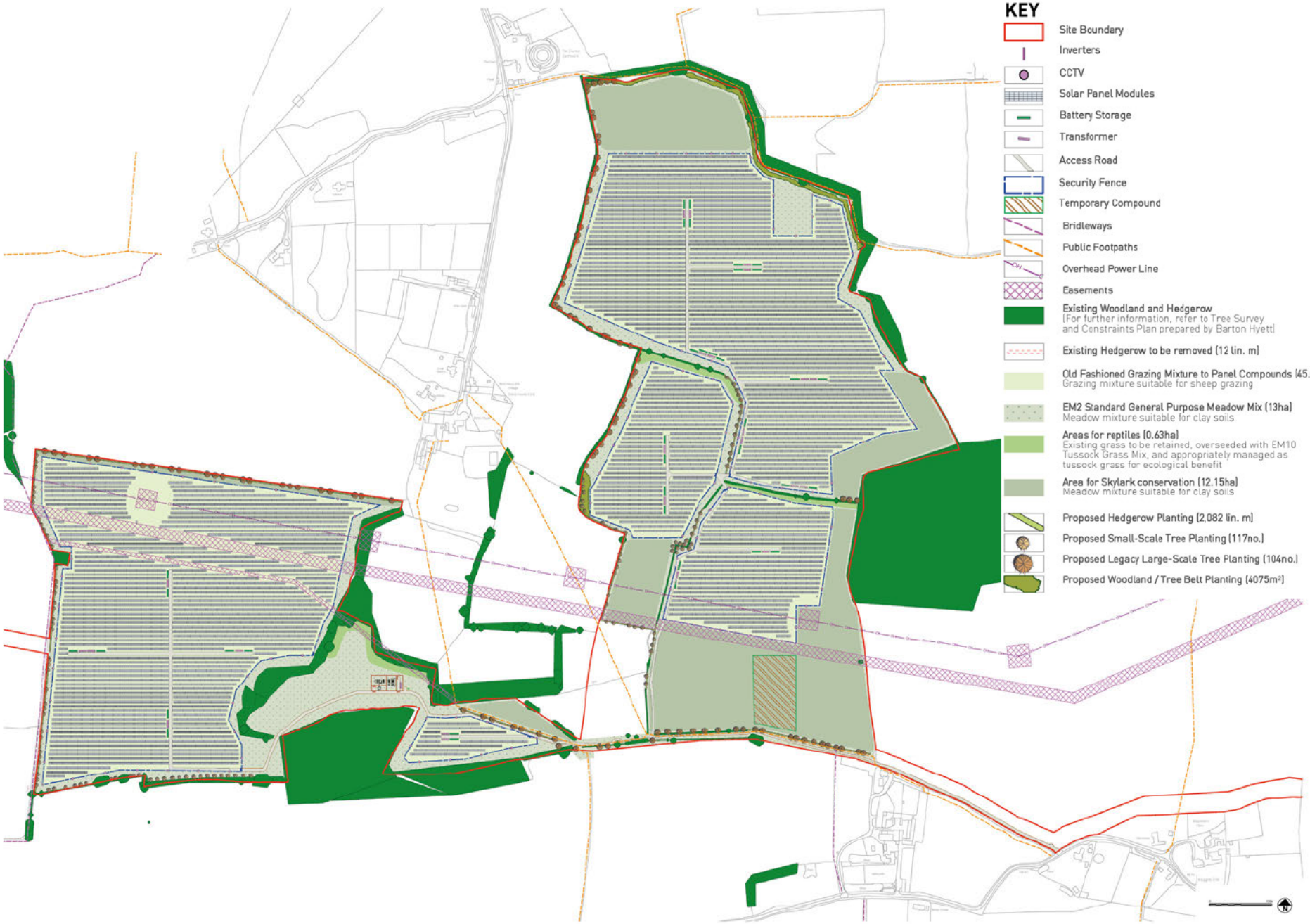


FIGURE 1: SITE MASTERPLAN

1 Introduction

1.1 The objective of this Landscape and Ecological Management Plan (LEMP) is to set out the management and maintenance procedure for the solar park development at Pelham Spring.

1.2 This LEMP is designed for the operational phase of the development and will commence from the handover date from the landscape contractor to the management company.

1.3 This document is supported by the Landscape Strategy drawing no. P20-1300-06.

Landscape and Ecological Management Plan

1.4 The purpose of this Landscape and Ecological Management Plan (LEMP) is:

- To ensure that clear objectives for this new solar park at Pelham Spring are agreed and laid down.
- To set clear standards for the performance of landscape maintenance work prior to the handover to the landscape maintenance contractor.
- To develop work programmes and schedules for landscape maintenance staff for the first year after completion and thereafter for a period of 40 years.
- To preserve and enhance the site biodiversity.
- To help in the allocation of financial resources for landscape maintenance.
- To help monitor success and progress against management targets.

Planning

1.5 This Landscape and Ecological Management Plan has been prepared to aid the planning application for this new development at Pelham Spring.

Management Aims

1.6 The main aims for the site landscape management and maintenance are:

- To assimilate the solar park into the local landscape, thereby minimising any effects on local landscape character, landscape elements and visual receptors;
- To manage operational activities associated with the solar park so as to protect existing retained trees and hedgerows and prevent short term damage and longer term adverse impacts;
- To manage existing trees so as to minimise and unacceptable risks that they may present for operational staff associated with the solar park; and
- To maintain new and existing trees, hedgerows and grassland in order to maximise their landscape and ecological benefits.
- To provide new nesting, roosting and sheltering opportunities for a range of wildlife.

Review

1.7 This document should be seen as an operational guide for maintaining the landscape and ecological proposals for the lifetime of the solar park and is subject to change and improvement as the different landscape features mature and develop.

1.8 We recommend that this management plan is reviewed with the input of an ecologist, as required, to ensure the management aims are still necessary and relevant for the duration/life span of the solar park.

1.9 Low Carbon Ltd are to be responsible for the implementation of this LEMP during the operational phase of the Site and shall ensure that the party responsible for management of the Site is enacting the measures detailed in this LEMP.

2 Site Description

Landscape Proposals

2.1 The application site consists of a number of fields separated and enclosed by established tree belts and hedgerows with hedgerow trees. The site is divided into distinct eastern and western parcels, with 2 fields between.

2.2 The majority of vegetation on site shall be retained and reinforced with additional hedge plants and/or hedgerow trees as necessary to improve quality and species diversity. Additional hedgerows with hedgerow trees are also proposed to the northern boundary of the western parcel and beside the PRoW running through the centre of the site. Hedgerows of native species of local provenance (to match existing hedgerow) shall strengthen local landscape character by reinforcing of field patterns, provide visual screening of development, and increase ecological connectivity. 2 short sections of hedgerow are to be removed to accommodate access tracks.

2.3 A 5m wide woodland belt is proposed to the north-eastern boundary of the eastern parcel to reinforce the existing tree belt (outside of the site) and provide screening of development from the PRoW running along this boundary. A small cluster of woodland planting along the western boundary of the eastern parcel and a small copse to the centre look to further strengthen the typical local landscape character of field patters and vegetation cover.

2.4 As well as smaller-scale hedgerow trees, a number of large-scale legacy trees (such as Oaks) are planted along hedgerows to replicate and enhance the tree structures within the local landscape.

2.5 It has been desirable to maintain proposed tree and shrub species consistent with the landscape character, however, enhancing and reinforcing the ecology and biodiversity of the site has also been at the forefront of the design intent. Proposing species consistent with the character of area but also valuable for wildlife and habitat, provides huge ecological benefits and biodiversity gains.

2.6 It should be noted that the design proposals and production of this LEMP has been prepared in close collaboration with Clarkson & Woods Ecological Consultants. This document should also be read in conjunction with the Construction Environmental Management Plan (Ecology) produced by Clarkson & Woods.

2.7 Within the fenced solar enclosures, Solar Park Long Term Grazing Mixture is specified, which is suitable for sheep grazing or mechanical maintenance. The seed mix chosen will reflect the soil conditions of the Site and species present in the local area and should be locally sourced if possible. A company such as Habitat Aid should be appointed to complete soil tests and source an appropriate seed mix for the ground conditions.

2.8 External to the fenced enclosure, a standard general purpose meadow mixture is proposed, which seeks to enhance biodiversity and ecological corridors around the site to the base of the boundary hedgerow planting.

2.9 Additionally, at the south-facing base of a number of hedgerows existing grass is proposed to be retained and managed as tussock grass as suitable habitat for reptiles.

2.10 Large open expanses of proposed meadow mixture suitable for clay soils is also proposed to provide suitable areas for Skylark mitigation.

2.11 Summary of landscape proposals:

- 12 linear metres of existing hedgerow to be removed
- 45.05ha of proposed Old Fashioned Grazing Mixture to panel compounds
- 13ha of proposed Standard General Purpose Meadow Mix
- 0.63ha of proposed Areas for Reptiles
- 12.15ha of proposed Areas for Skylark Conservation
- 2082 linear metres of proposed native hedgerow
- 117no. proposed Small-scale Native Tree Planting
- 104no. proposed Legacy Large-scale Tree Planting
- 4075m^2 of proposed Woodland / Tree Belt Planting

3 Environmental Considerations

3.1 This section details the environmental considerations that need to be examined to enable a thorough landscaping management strategy for the site.

Horticultural Peat

3.2 Horticultural peat is not to be used as mulch on any beds or as a soil conditioner. Wherever possible plants grown without peat will be preferred to those grown using peat.

Recycled Materials

3.3 Where appropriate, use should be made of materials made from recycled components e.g. wood chip mulch.

Pesticides/Herbicides

3.4 A minimal intervention and organic approach will be used in terms of weed control. In areas of transplant tree, ornamental shrub and herbaceous planting, this is to be achieved by using mulch mats and hand weeding. Weed killer and other chemicals will be used as little as possible on site. Spot removal of weeds will be carried out by hand removal as necessary.

Water Management

3.5 Where necessary, maintenance staff are to water plants at appropriate times of the day to ensure minimum water evaporation. If appropriate and available, recycled water should be used e.g. from rainwater harvesting.

4 General Maintenance Requirements

General Maintenance

4.1 It is recommended that all new planting on site is subject to on going management to maximise the value of these habitats to wildlife. Minimal use of pesticides and ensuring vegetation pruning works take place outside of the bird nesting season will aid this approach.

4.2 Maintenance operations are to be carried out in accordance with BS 4428: Code of Practice for General Landscape Operations. Maintenance of soft landscaping (other than amenity turf) to be in accordance with BS 7370-4: Grounds Maintenance. Recommendations for Maintenance of Soft Landscape.

Trees and Associated Works

4.3 No pruning works to trees or hedgerows are to be undertaken during the general bird nesting season of 1st March to 31st August inclusive. Works within this time period will be carried out subsequent to receiving advice from the ecologist as roosting bats/nesting birds/dormice may be present. A survey may be required to ensure the work is legally compliant.

4.4 All tree surgery work is to be carried out to BS 3998:2010 Tree Work– Recommendations, and should be undertaken by a suitably qualified operative. Where a tree poses a health and safety hazard, advice will be sought from an arboriculturist.

New Planting

4.5 Planting of new trees should have regard to Section 10 of BS 8545:2014 Trees: from nursery to independence in the landscape. All plants to conform to BS 3936 and be in accordance with the National Plant Specification.

4.6 All new tree planting shall be checked at each maintenance visit for damage, security, firmness, fixing and support. Any trees that fail to thrive in the first year shall be replaced with the same species and variety at the size specified on the original landscape planting plans.

4.7 Trees should be checked in September and marked with paint, or noted on a plan, as necessary. Replacements will be planted during the following planting season. If a particular species fails to establish successfully then an alternative, comparable species should be considered as replacement, in agreement with the landscape consultant. Replacement planting of container plants to be undertaken as required, root-ball/bare root planting to be undertaken November to March.

4.8 Amenity bark mulch shall be topped up annually to a depth of 50mm to ensure maximum coverage as specified and areas of bare soil is prevented. To avoid accidentally damaging plants, herbicides will not be used to control weeds once foliage covers 75% of the ground surface.

4.9 An 800mm diameter circle of bark mulch to a depth of 50mm will be retained around individual trees in grass in order to suppress grass and weed growth and minimise the risk of mower/strimmer damage.

4.10 Care should be taken not to over-water planting. Until well established all trees are to be watered during the growing season. Following any dry periods of 7-10 days, soil moisture content should be assessed and watering undertaken as necessary. Each tree is to receive 40 litres of water or as required to ensure all tree planted areas are brought up to field capacity at each visit. If trees are showing signs of drought stress the watering regime should be reviewed and increased as required. Care should be taken to ensure applied water is absorbed into the root-zone and does not run off the surface.

Litter and Arisings

4.11 Litter and debris shall be cleared by hand and removed from the site on a monthly basis, and prior to amenity grassed mowing operations. All arisings from landscape works will be either used to create compost heaps within the wildlife buffers outside the security fence or removed from site and disposed of at a registered facility. Recycling or composting of arisings should be a priority.

5 Maintenance Specification

5.1 Retained Native Tree & Shrub Hedgerow Boundaries

Management Aim

- To maintain the existing areas of tree and hedgerow planting to maximise biodiversity and habitat value;
- To ensure the on going health and longevity; and
- To maintain high quality visual appearance.

Management Objectives

- To maintain existing trees to ensure a maximum healthy development;
- To maintain the visual amenity and good diversity of species of the retained tree and shrub hedgerow boundaries;
- To ensure a healthy, dense, bushy, tree and shrub understorey with good species mix and no gaps;
- To maintain appropriate forms of trees for future growth;
- To ensure trees do not present a hazard to site users.
- To ensure access links are kept clear from boundary vegetation growth;
- To take care in construction and maintenance operations near boundary planting;
- To enhance ecological value;
- To manage boundaries at appropriate times to avoid impacts to nesting birds and to ensure the provision of winter foraging resources.

To avoid disturbing nesting birds, maintenance to the tree and shrub boundaries should take place between September and February i.e. outside the bird nesting season. Works outside of this time period should be subject to checks by an ecologist to ensure there are no nesting birds present.

All trees are to be subject to an annual basic walk-by visual inspection to identify any obvious hazard/defects (fungal brackets, splits/cracks in branches/stems etc.) that may require remedial works/further arboricultural assessment. Only trees identified with defects/hazards are to be recorded and further assessment is to be made by a qualified and competent person. A detailed condition survey/ risk assessment is to be carried out by a qualified arboriculturist at least every 3-5 years (or as advised by the arboriculturist). Any necessary remedial works are to be carried out by a suitably competent and qualified contractor/arborist in accordance with BS 3998:2010. A competent ecologist will need to inspect trees prior to any remedial work to check for roosting bats and nesting dormice.

Where the existing vegetation abuts footpath links and access roads, the portion of vegetation adjacent the links shall be cut-back annually to maintain free access.

All arisings should be removed from site, unless suitable to retain on site, e.g. for ecological benefits such as creating hibernacula for herpetofauna and loggeries for invertebrates.

5.2 New Tree Planting

Management Aim

- To successfully establish new tree planting;
- To maintain tree planting ensuring a treescape rich in seasonal interest and future longevity; and
- To present and maintain high quality visual appearance of new tree planting.

Management Objectives

- To maintain newly planted trees to ensure good survival rate and development;
- To minimise competition from grass and weeds in the immediate vicinity of newly planted trees;
- To maintain the health and visual amenity of the new trees;
- To maintain appropriate forms of trees for future growth; and
- To ensure trees do not present a hazard to site users.

Tree stakes and ties will be regularly checked during the establishment period and adjusted as necessary to ensure that the developing trees are not damaged.

There will be a minimal pruning policy for trees as pruning wounds can provide a source of infection. Formative pruning of new trees will only be carried out to remove dead and diseased wood and to create a well balanced tree with a single leader. Clear stems of 1.8 metres will be maintained by rubbing off any shoots and when the trees reach 5 to 6 metres high lower branches will be removed to give a canopy height of approximately 2.4 metres.

In the event of tree death, the reason for growth failure shall be investigated and addressed before replanting a replacement. If death is due to the planting conditions, these shall be ameliorated. If death is due to pests or disease and likely to be present in the future, a resistant species of an alternative similar tree shall be selected.

Where trees have become moribund due to compaction or lack of nutrients, soil aeration techniques and the use of inoculants shall be considered.

Trees will establish successful anchor roots, increase stem girth and form a better stem taper if allowed to move in the wind, whilst remaining secured at ground level. Therefore, low staking (75mm dia x 1.8m length) will be used ensuring 600mm is visible above ground level.

Tree stakes will be securely fixed to new tree planting using proprietary rubber ties with spacers to prevent chaffing and damage to the tree.

Any necessary remedial works will be carried out as soon as possible. All tree work should be carried out in accordance with BS 3998:2010 (or any subsequent updates). All arisings will be either used to create compost heaps within the wildlife buffers outside the security fence or removed from site and disposed of at a registered facility.

5.3 Reinforcement & New Native Hedgerow Planting

Management Aim

- To successfully reinforce and establish areas of native hedgerow tree and shrub planting to the site boundaries;
- To present and maintain a high quality visual appearance of the native tree and shrubs within the buffer edge planting, that provides both opportunities for wildlife foraging and habitat, as well as seasonal interest and colour.

Management Objectives

- To maintain newly planted native shrubs to ensure successful establishment and longevity;
- To minimise competition from grass and weeds;
- To keep planted areas tidy and free from litter and;
- To manage boundaries at appropriate times to avoid impacts to nesting birds and to ensure the provision of winter foraging resources.

New planting will be checked regularly throughout the growing season for pests and diseases and treated as necessary. Plant losses should be monitored and recorded. If a particular plant becomes subject to a fatal pest or disease it shall be replaced by an alternative resistant plant with a similar form and habit.

The native shrubs used to supplement the existing boundaries will be maintained to match the existing heights of the boundaries. This will be achieved by an appropriate cutting regime.

Within the native hedgerows to the boundaries, if new shrub specimens are identified as future standard trees they will be allowed to mature. In the long-term trees within the buffer, could potentially be managed as pollards adding structural diversity.

Newly planted stock within the hedgerow gaps will be protected from animal damage by the use of individual tree guards.

All new native planted areas will be maintained by weeding, pest & disease control and adjustment /removal of ties/stakes.

FIGURE 2: NATIVE HEDGEROW

5.4 Grassland Areas

Management Aim

- To increase the biodiversity value of the grassland and prevent the sward from obscuring the panels.

Management Objectives

- To ensure grassland areas successfully establish;
- To increase biodiversity and grass species;
- To manage grassland, controlling weeds and opportunistic or invasive species;
- To manage the grassland sensitively to establish a rich sward and ensure that wildflowers can set seed;
- To manage grassland areas outside the arrays to establish a rough tussocky sward.

Initial Management

Grassland management will be carried out in accordance with the seed suppliers technical advice during the establishment phase.

Standard General Purpose Meadow and Tussock Seed Mix

During the first year of establishment, these grass mixes will require cutting at regular intervals to a height of 40-60mm. Topping and mowing regularly to enhance the establishment and flowering for the following years. These mixes are largely of perennial species and as such, slow to germinate and grow and will not usually flower in the first growing season.

Solar Park Long Term Grazing Mixture

During the first year of establishment, regular cutting is to take place to ensure the sward never exceeds a height that obstructs the panels. If these areas are to be grazed within the first year, allow 10-12 weeks for initial establishment then sheep are able to graze for a week. Allow a period of grazing in late summer then again before winter, weather conditions allowing.

Long-term Management - Grazing (around solar array)

The area will be managed through low intensity pulse growing using sheep, which could be supplemented by mowing via an optional hay cut in August with subsequent aftermath grazing to further reduce fertility. This approach is presented in Table 1 below:

Table 1: Management of Grassland within Array via Grazing regime

January - February	Light grazing on any new growth
Early March	Remove grazing; this allows forbs to grow and allows a good habitat for ground nesting birds to develop.
End of August	An optional hay cut may be taken. Cut hay once the wildflowers have seeded from August onwards. The arisings can be collected as a hay crop, mechanically raked and piled up or removed. Arisings must be removed with one or more of these methods to avoid harmful effects of grass mulch on plant species diversity.
September to end of December	Main grazing period with light grazing down to a short sward height; a mosaic of plant heights helps encourage insects.

The intended outcome of a conservation grazing scheme will be to have a sward of the following height structure at the beginning of March:

- 75% at a height of approximately 5cm
- 25% at a height of approximately 25cm

A stocking density of between 0.5 – 1 Livestock units (LSUs) per hectare is recommended between late September and February. This is a typical stocking density for conservation grazing. However, the stocking density and timing of grazing will be at the discretion of the land manager, in order to achieve the desired sward structure given above. More animals could be used for shorter grazing periods.

Grazing is only to be undertaken by sheep. Cattle grazing will not be possible due to the damage this livestock may cause to the solar panel equipment.

Should the sward height become a problem, with plants starting to shade the lower levels of the panels, a strip of no more than 1m wide can be cut at the base of the panel to shorten the sward height in this area. This cutting can occur at any time and arisings will be either used to create compost heaps within the wildlife buffers outside the security fence or removed from site and disposed of at a registered facility.

For more information on stocking levels, see guidance from the Lowland Grassland Management Handbook produced by Natural England.

Long-term Management - Mechanical (Outside Solar Array)

The pasture grazing of new grassland within the arrays will create a sward of a particular character. Mechanical cutting of the grassland established outside of the security fence will create a different sward structure to the pasture, potentially supporting some different plants and invertebrates.

When mechanical cutting is used, one or possibly two cuts will be taken per year comprising an early cut in February (if necessary) to manage regrowth, and a second later in the season between August and September (each cut reducing sward to approximately 150mm). No cutting will take place throughout the summer to allow the seeds of the later flowering species to fall prior to the cut.

Cutting should adopt a systematic method, ie working outwards to towards the boundary features, allowing fauna such as invertebrates, birds and small mammals to temporarily and safely vacate the area.

Exact dates will be dependant upon weather conditions. A phased (rotational) cutting regime is recommended, ie the entire area should not be cut at the same time, in order to allow for more structured grassland.

Cuttings should remain for 3-5 days allowing seeds to disperse. Arisings must then be removed to promote the development of a species-rich sward. These will be either used to create compost heaps within the wildlife buffers outside the security fence or removed from the site and disposed of at a registered facility.

Grassed areas along hedgerow bases can be cut less frequently once established, with a single main cut (reducing to 150mm) in late August/September, subject to weather conditions.

5.5 Area for Skylark conservation

The loss of arable habitat, which were noted to support a diversity of bird species, to facilitate the construction of solar panels will result in the loss of habitat suitable for nesting and foraging skylark and yellow wagtail, as well as cover / foraging habitat for yellowhammer. It is anticipated that without mitigation approximately 11 breeding skylark territories would be lost. Fields 1, 2, 4 and 8 will remain outside of the construction area, and designated and managed as skylark mitigation areas, as shown in the Landscape Strategy prepared for the scheme and Appendix A. These areas will revert from intensive arable to non-rotational set-aside or meadow for the greatest capacity to absorb displaced territories. These areas will be managed for the lifespan of the array to provide conditions suitable for nesting and foraging. It is expected that approximately five skylarks territories will be accommodated within the skylark mitigation area, providing it is appropriately managed.

These areas will be reverted to uncultivated fallow land to achieve a sward height of 20-50cm, dominated by grasses, arable weeds and ruderal species during summer months, suitable for ground nesting birds. The area will not be seeded and will be ploughed and cultivated every 2-3 years in the autumn or winter to provide sufficient cover for nesting birds, whilst still allowing the birds to monitor for predators. Should the sward become taller than 50cm during March to August, a strip will be cut through the area the width of a tractor or quad mounted mower (approx. 3m) to approximately 5cm above ground level. Arisings will be left in situ to provide some thatch structure for nesting. Mowing will be carried out slowly to allow animal to escape as the grass is being cut. If there is an abundance of annual or perennial weeds within the fields, these areas may be treated, as directed above. Where there is a significant pernicious weed burden, spot-spraying with a broad spectrum non-residual herbicide may only be undertaken once annual plants have set seed, typically in September.

The remaining six breeding territories will be compensated for through provision of two 'bird foraging plots' per lost territories (therefore 12 plots) created in arable fields in the local area. Plots will comprise between 5x5m squares and 10x10m squares of unsown land introduced at a rate of at least 2 per hectare into fields by temporarily halting seed drill during sowing. This has the effect of increasing invertebrate food item abundance, improving breeding success, number of young reared and densities of territories able to be supported. These plots will be either provided by the solar farm landowner or via a payment scheme arranged with a broker (such as Whirledge and Nott who operate in Essex: https://www.whirledgeandnott.co.uk/habitat-bank). Any off-site mitigation would need to be secured via Section 106 agreement. Two of these plots will be provided within the red line boundary in the south of Field 2, area which is to remain as agricultural.

5.7 Ecology & Habitat

Management Aim

- To extend and consolidate the hedgerow network for wildlife;
- To maintain and enhance potential commuting routes for badgers, bats, reptiles, otters, water voles, dormice and amphibians;
- To enhance foraging opportunities along hedgerows for bats and other wildlife;
- To maintain and enhance potential foraging areas in open habitats for badgers, bats, reptiles, amphibians, birds and invertebrates;
- To maintain and increase potential bat, dormice and bird roost/ nest sites; and
- To maintain and increase potential sheltering sites for reptiles and amphibians.

Management Objectives

- To establish and maintain a substantial ecological buffer zone along the site boundary;
- To establish and maintain new species-rich hedgerows;
- To infill/plant up gaps in existing hedgerows;
- To strengthen the existing hedgerow corridors via new hedgerow creation and in-fill planting;
- To establish and maintain wide species-rich grassland buffers between hedgerows and solar panels;
- To ensure ecological corridors are maintained to increase foraging and commuting potential;
- To maximise the biodiversity value of proposed and existing habitats for reptiles and mammals;
- To ensure that both existing and newly created habitats are managed appropriately to provide long-term biodiversity benefits for wildlife;
- To introduce new potential roost/ nest/ shelter sites for protected species; and
- To monitor the success of the management plan by undertaking monitoring of habitats and species.

Habitats

The landscape proposals entail the retention of existing hedgerows and valuable trees, alongside extensive new tree planting; new hedgerows and infill hedgerow planting; and botanically diverse grasslands. These proposals offer enhanced and additional habitats for a variety of wildlife including badgers, bats, reptiles, amphibians, birds, invertebrates and small mammals such as dormice. As such, management and maintenance operations are required to ensure the longevity and diversity of these habitats, to further enhance and benefit this variety of wildlife. Management and maintenance is identified in Section 6 of this LEMP.

Additional Enhancements

In addition to the landscape enhancement measures proposed, a total of 10 bat boxes, 20 bird boxes, 20 dormouse boxes within Battle's Wood are to be installed on suitably mature trees where they are not a risk of interference with routine management. The bird boxes will not be disturbed between March and August inclusive, when birds may be nesting. Bat boxes must not be internally inspected unless by an appropriately licensed ecologist.

Three wildlife hibernacula / log stacks or brash piles will be created within boundary habitat to provide shelter and an over-wintering refuge for widespread reptiles, amphibians and invertebrates. These features will be sited on a free-draining, south-facing location, with logs and branches piled on the ground to create a heap ideally 2-8m long by 1-1.5m high. These features can be loosely back-filled with stones and soil to create insulation.

The ecologist will sign off installation of these features during a monitoring visit. All features will be inspected from ground-level between October and February by the management company to confirm their continued presence and good condition. Missing or damaged features will be replaced like-for-like throughout the operational phase of the array.

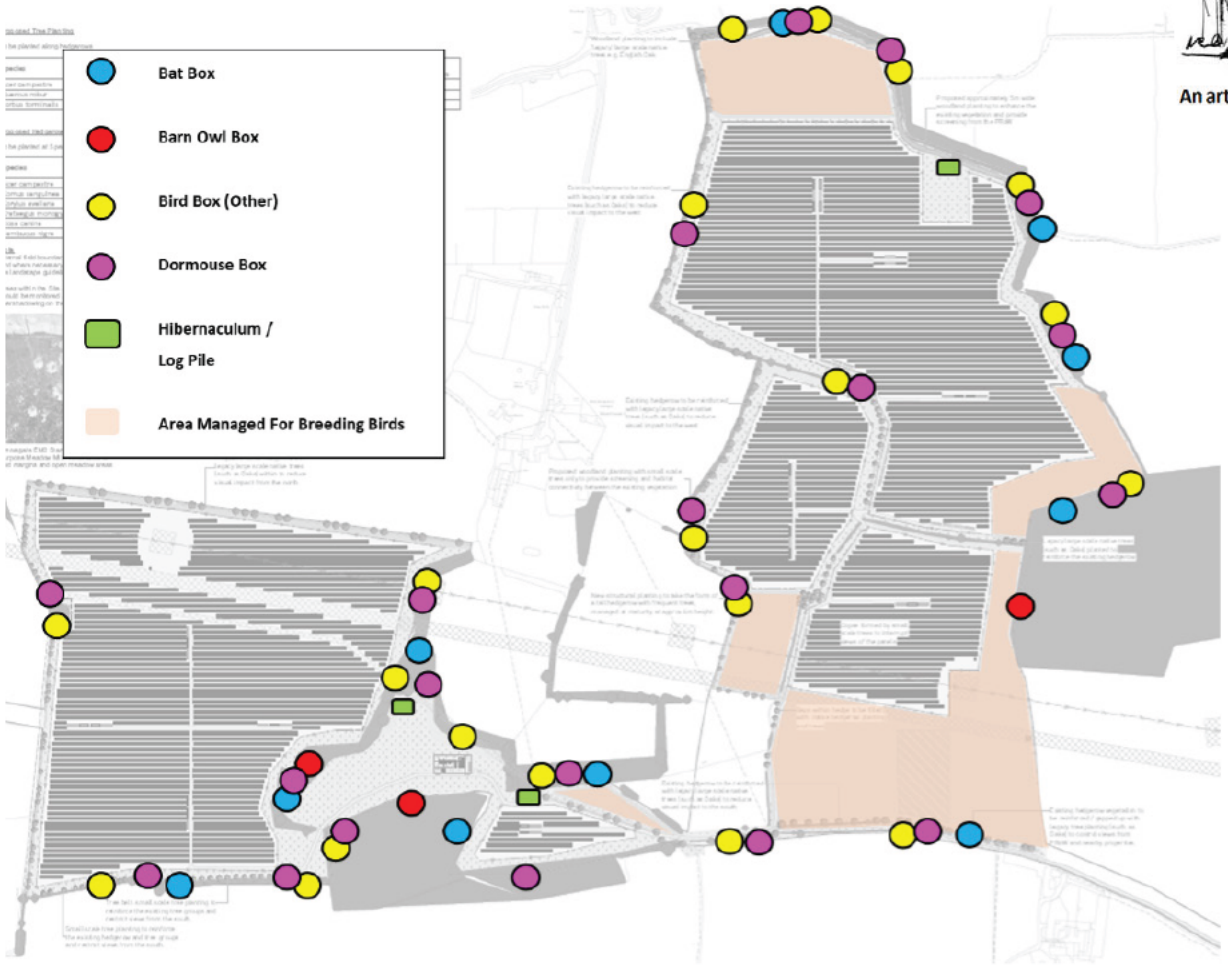
Monitoring will include a check of these features for signs of use and to ensure their continued suitability for the focal species. Should any boxes needed to be moved for any reason, an experienced ecologist must first be contacted.'

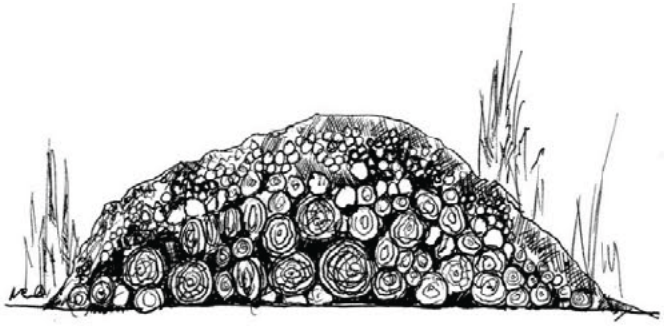
Precise types of boxes/hibernacula and their locations will be determined by the ecologist, but indicative locations are provided on plan below.

Ecological Enhancement Features			
No.	**Box Type**	**Photo**	**Description**
6	Schwegler 1B Bird Box (32mm entrance)		To be placed at least 2m above the ground in a quiet and sheltered area of site on mature trees. Ensure the boxes are covered from the rain by facing the entrance down slightly in order to prevent rain seeping in and so encourage use and increase the longevity of the box. Ensure there is clear access to the box entrance at all times. Best placed on a north or easterly aspect.
6	Schwegler 1B Bird Box (26mm entrance)		To be placed at least 2m above the ground in a quiet and sheltered area of site on mature trees. Ensure the boxes are covered from the rain by facing the entrance down slightly in order to prevent rain seeping in and so encourage use and increase the longevity of the box. Ensure there is clear access to the box entrance at all times. Best placed on a north or easterly aspect.
5	Schwegler 3S Starling Nest Box		To be placed at least 2m above the ground in a quiet and sheltered area of site on mature trees. Ensure the boxes are covered from the rain by facing the entrance down slightly in order to prevent rain seeping in and so encourage use and increase the longevity of the box. Ensure there is clear access to the box entrance at all times. Best placed on a north or easterly aspect.
3	Barn Owl Box		Barn Owl Trust nest boxes, to be installed on a mature tree on the edge of woodland. At least 3m off the ground and with the entrance easy to see, so no overhanging branches or climbers. Choose an isolated tree if possible, in hedgerow or woodland edge.
8	Schwegler 2F with double front panel		Nail onto the main trunk of mature trees 4 to 5m high, on south, south west or south eastern aspects, ideally in a sunny location. Suitable for smaller species of bats and the internal panels dissuade birds from nesting within this box. NB where this box is not availble, a suitable alternative will be installed (as approved by the ecologist).
2	Schwegler 1FS large colony bat box		This box provides bats with a very large internal space allowing high numbers of bats to congregate together, suitable for both summer and winter quarters. Supplied with a galvanised hanger, mounting block and aluminium nail, to be hung as the 2F bat boxes. NB where this box is not availble, a suitable alternative will be installed (as approved by the ecologist).
20	Schwegler Common Dormouse Box 2KS		To be installed in hedgerows, onto trees with a diameter of approximately 20-30cm. The distance between the rearmost barrier and the tree trunk should be max 2-2.5cm. Boxes will be placed 1.5 to 3m from ground level.

Monitoring

Monitoring arrangements will be put in place to ensure that the ecological aims and objectives of the landscape proposals are implemented fully and that they are successful. Where a change in the management of landscape / ecological features is required this will be discussed with the estate management company to agree revisions to the plan.





An artificial brash pile created from arisings from woodland management work.

FIGURE 3: EXAMPLE OF ESSEX REPTILIAN WILDLIFE

FIGURE 4: EMORSGATE EM2 STANDARD GENERAL PURPOSE MEADOW

6 Schedule of Management and Maintenance

6.1 Establishment years 0-5

The schedules below sets out how the maintenance tasks for the management aims and objectives will be achieved for the establishment period of years 0-5 inclusive of the contract maintenance period that begins following practical completion.

Following final completion of the contractual works, the contractor will hand over the long term maintenance and ecological management to the clients appointed management company. The operations identified below will form the general requirements of the client appointed management company to ensure the continued successful establishment of the landscape scheme.

Establishment Years 0-5			
Ref	**Management Categories**	**Timing**	**Maintenance Task and Method**
6.1.1	All planting areas	Every Visit	• Ensure continued healthy growth of all planted stock - water as required to ensure that the planting continues to establish successfully. • Investigate any failed plant growth and take remedial action as necessary.
		Monthly	• Removal of rubbish and debris - clear litter and fly-tipped rubbish by hand and remove from site. Remove rubbish and debris from grass areas before mowing. • Inspect for vandalism - visual inspection of all landscaping for vandalism, report to owner. On instruction, replace any landscaping damaged by vandalism.
		Annually	• Monitor and record any plant losses and report to owner - on instruction, remove dead plants and replace as per original approved specification, unless otherwise agreed to plant alternative species. Maintain to ensure survival. Re-planting to be undertaken in the next following planting season. • Control vigorous plant species that are out competing less vigorous species. • Check all landscaped areas for invasive species e.g. self seeded sycamore, brambles, ground ivy and nettles. Reduce/clear by hand and remove from site.

Establishment Years 0-5			
Ref	**Management Categories**	**Timing**	**Maintenance Task and Method**
6.1.2	Trees - retained and newly planted	Monthly	• Ensure trees are stable - visually inspect trees to check for signs of bark damage and general tree damage. • Check that stakes, ties and guards are not too loose, too tight or broken. • Replace or upgrade guards/shelters as necessary. • Monitor transplants to ensure healthy development - visual inspection of plants, if not stable/upright rectify by replanting in an upright position and re-firm, if plant remains unstable remove by hand and replace. Undertake for the first two years. • Visual inspection for fungal activity (for trees this is to be performed by a qualified arboriculturist) - remove diseased wood or treat as appropriate. Keep use of pesticides to a minimum. Inspection to be undertaken March to October when trees are still in leaf.
		Annually	• Remove dead, damaged or dying branches as appropriate. • Formative pruning of new trees to be in accordance with BS 3998 (2010).
		Biennial (or as recommended)	• Check tree safety - identify hazards and carry out necessary maintenance works. A visual tree assessment is to be undertaken by a qualified arboriculturist of all new and existing tree planting, with instrumental back up where necessary. Any resulting tree works are to be carried out to BS 3998:2010. Keep records up to date.
		3 to 5 years after planting	• Confirm root growth is well established and remove shelters, stakes, guards and ties from trees/transplants - to avoid damage cut shelters away then remove stakes. • Detailed condition survey for new trees - to be undertaken by a qualified arboriculturist at least once every 5 years, any recommendations to assist with establishment must be undertaken as soon as possible.

Establishment Years 0-5			
Ref	**Management Categories**	**Timing**	**Maintenance Task and Method**
6.1.3	Hedgerow Planting - Retained and newly planted	Monthly	• Check hedgerows for additional/new gaps, record and infill during late October to March. Plant replacement tall whips, of a species mix to match the hedgerow or to increase native diversity, in a suitably prepared soil bed. Ensure successful establishment and protect from trampling/use as a shortcut using temporary fence/guards. • Keep hedgerow planting free from weeds - visually inspect bark mulch areas around planting and top up to 75mm depth, if required. Remove any weeds by hand, hoe or fork. Take care not to disturb shrub roots and excessive treading of bed surface. Do not use strimmers or herbicides in these areas - March to October.
		Annually	• Prune retained hedgerows to ensure a good shape and healthy growth and control future growth. Management to be undertaken in January/February. Face up and top off no more than 1 year in 3 (leaving at least 2/3rds of hedges untrimmed each year), to ensure thick nesting cover is available annually for birds and also to boost the berry crop that often develops on second year growth. Established hedgerows will be cut between late September and February using a tractor mounted flail or by using tractor mounted circular saws to reshape and manage more mature overgrown hedges. • Internal field hedgerows shall be cut to a maximum of 3m high and site boundary hedgerows will be retained and maintained at a minimum height of 5m to ensure views into the site are filtered. • Identify suitable growth in retained hedgerows to develop into frequent standard trees, maintain as per tree maintenance and management. • Re-plant in an upright position and re-firm plants that suffer from wind-rock - January/ February.
		3-5 Years after planting	• Confirm root growth is well established and remove shelters, stakes, guards and ties from hedgerow transplants - to avoid damage cut shelters away then remove stakes.

Establishment Years 0-5			
Ref	**Management Categories**	**Timing**	**Maintenance Task and Method**
6.1.4	Grassland	Seeding	**Within Array (Grazing mix):** • Following completion of construction, a basic grazing grass mix will be sown within the existing arable fields within the Site perimeter fencing. The seed mix chosen will reflect the soil conditions of the Site and species present in the local area and should be locally sourced if possible (a company such as Habitat Aid should be appointed to complete soil tests and source an appropriate seed mix for the ground conditions). Prior to sowing, the seed mix will be agreed with the LPA once the landscape contractor has been appointed. The seed mix will contain a minimum of 14 grass and/or herbaceous species. A mixture such as Habitat Aid Grazing Meadow Seed Mix (or equivalent) is likely to be suitable for this Site. • Prior to seeding, the ground will be harrowed and rolled, using a tine harrow to avoid damaging underground wiring. However, if there are any areas which have suffered high soil compaction, for instance due to heavy machinery being deployed, additional remedial works may be required to ensure the soil structure is suitable for subsequent sowing. If such a requirement arises, caution should be exercised to ensure newly installed underground services are not damaged during such operations. • Seeding will take place in spring (late March to May) or late summer/ autumn (August or September) and be broadcast by machine (including fertiliser spreader, slug pellet applicator, grass seed box) and rolled where possible. • If there is an abundance of annual or perennial weeds within areas to be seeded then consideration may be given to the treatment of these areas with a glyphosate non-residual herbicide prior to the preparation of the ground (harrow and rolling) and subsequent seeding. No chemical fertilisers will be used as this encourages the growth of vigorous grasses and weeds, restricting meadow flowers.

Establishment Years 0-5			
Ref	**Management Categories**	**Timing**	**Maintenance Task and Method**
6.1.4 cont.	Grassland cont.	Seeding cont.	**Outside Array (Wildflower and Tussock Seed Mix):** • Grassland seed mixes will be sown within the existing arable fields which lie outside of the security fencing. The seed mixes chosen will reflect the soil conditions of the Site and species present in the local area and should be locally sourced if possible. A company such as Habitat Aid should be appointed to complete soil tests and source an appropriate seed mix for the ground conditions. • Two types of seed mix will be selected based on the areas to be sown (refer to Landscaping Scheme) as described here: 1. Species-rich grass and wildflower mix will be sown within undeveloped strips of land between the security fencing and nearby field boundaries (i.e. woodland and hedgerows). This seed mix will contain a minimum of 20 grass and/or herbaceous species. A mixture such as Clay Soil Wildflower Meadow Seed Mix is likely to be appropriate for this Site. 2. Species-rich mixture with good tussock forming capability will be sown in within discrete areas within the Site. This seed mix will contain a minimum of 20 species, with tussock forming grasses and flower which can flourish amongst tall vegetation. A mixture such as Tussock Seed Mix is likely to be appropriate for this purpose. • Prior to sowing, the seed mix will be agreed with the LPA once the landscape contractor has been appointed. • Prior to seeding, the ground will be harrowed and rolled. Seeding will take place in spring (late March to May) or late summer/ autumn (August or September) in the first available period, and be broadcast by machine (including fertiliser spreader, slug pellet applicator, grass seed box) and rolled where possible. • If there is an abundance of annual or perennial weeds within areas to be seeded then consideration may be given to treatment of these areas with glyphosate non-residual herbicide prior to preparation of the ground (harrow and rolling) and subsequent seeding.
			General: • No chemical fertilisers will be used as this encourages the growth of vigorous grasses and weeds, restricting meadow flowers. • Any areas of bare ground created during the construction stage within existing grassland areas (for instance the existing grassy field margins) will be reseeded as soon as possible post construction to ensure injurious or ruderal weeds do not establish. A diverse wildflower-only seed mix will be used in order to increase the diversity of the grassland in these areas. Yellow rattle Rhinanthus minor seed can also be sown within the seed mixture to reduce the vigour of competitive grasses and increase the diversity of the sward

Establishment Years 0-5			
Ref	**Management Categories**	**Timing**	**Maintenance Task and Method**
6.1.4 cont.	Grassland cont.	Cutting Regime	• Always refer to the seed supplier's technical advice during the establishment phase and for long term management advice. • Generally, cut all meadow grass mix areas at regular intervals during year 1 after seeding to promote a diverse species-rich sward. • During year 1, the grazing seed mix areas around the solar panels can be very lightly grazed after 12 weeks of initial establishment for a single week only, then again in late summer and again before winter (subject to weather conditions). • Year 2 onwards, the Solar Park Long Term Grazing Mixture will be grazed from late September through to early March to allow time for flowers to set seed and reduce disturbance to ground nesting birds (subject to weather conditions). • Year 2 onwards. Standard General Purpose Meadow Mix and Tussock Seed Mixture shall be managed to help develop a rich grassland with a varied structure. After flowering take a summer 'hay cut' (with a scythe, petrol strimmer, or tractor mower) to 100mm in late August/September. This is to be repeated in Spring (late February) if needed. • Allow 'hay' to remain on-site for 3-5 days following the cut to allow seeds to disperse, and then to be removed to promote a species-rich sward.
		Monthly	• Keep grassland free from weeds - remove weeds and encroaching scrub by hand, hoe or fork, or mowing, as appropriate to prevent weeds from obstructing / damaging the solar panels. Undertake monthly from March to October, or as required. • Scrub removal to be undertaken outside of the bird nesting season.
		Annually	• Keep grassland areas in good condition - check and report to client on damaged areas. On instruction repair damaged/failed areas and re-sow seed. Undertake aeration and thatch removal if required April or September. • Maintain sward in optimum condition whilst enhancing biodiversity - allow low intensity grazing over a phased (rotational cutting regime, ensuring the entire area is not cut at the same time). Visual inspection to ensure stocking density is correct. Advise owner to reduce or increase if necessary. Only allow sheep to graze late September through to early March (subject to weather conditions).

6.2 Monitoring and Review

The below table sets out how the ecologists monitoring method statement, to be carried out in Years 1, 2, 3, 5 and then every 5 years for the lifetime of the array, unless specified. A visit is to be undertaken in June / July by an experienced ecologist (with the exception of the breeding bird surveys – see below). The following will be recorded:

Ecological Monitoring Method Statement		
Title	**Description**	**Timing**
Standard site/ survey data	• Date • Weather (temp, wind, rain, cloud) • Height of panels (ground to leading edge); distance between panels • Time at start/end of survey (i.e. time spent on site)	Every visit
Standard Botanical Quadrats	2x2m quadrats at fixed locations with % cover of each plant species recorded using National Vegetation Classification criteria, as well as height of sward and % bare ground and dead thatch. • 5 quadrats recorded directly beneath panels • 5 quadrats recorded in the open, between the strings of panels • 5 quadrats recorded in "enhanced" area – selected as the most diverse habitat within the field margin (outside security fencing) • 5 quadrats recorded within the ancient woodland (Battle's Wood LWS) area to monitor development of ground flora The monitoring will focus on species diversity and will monitor how diversity increases over the years. It will also help in the monitoring of injurious weeds.	Every visit
Habitat Assessment	The hedgerows, grassland and other habitats within the site will be assessed against prescriptions set out within this LEMP. Advice will be given in terms of remedial measures to management, if required.	Every visit
Soil Survey	Agricultural soil sampling to measure P, K, Mg, pH, Organic Matter (OM) and possibly Potentially Mineralized Nitrogen (PMN).	Every 5 years
Breeding Birds	Breeding bird surveys will be carried out to monitor the use of the Site by breeding birds and, in particular, the area managed for ground nesting birds. The surveys will comprise 3 visits, between April and August.	Every 5 years
Wildpower Scorecard	Completion of this scorecard , which is a useful way to categorise sites depending on their focus on biodiversity and also track overall change on a site or identify areas where positive changes can be made to management or habitat provision.	Every 2 years hen updated every 5-6 years
Ad-hoc Sightings	Observations of species are recorded during the time spent on site; this may include sightings of hare, birds by song or sight, patches of wildflowers, badger latrines, owl pellets as well as invertebrates (a tally should be kept for butterflies and bumblebees). This will include a check of habitat boxes, where safe to do so (i.e. safe use of ladders with appropriate equipment and number of people).	Every visit

The below table sets out how the monitoring and review processes:

Monitoring and Review			
Ref	Management Categories	Timing	Maintenance Task and Method
6.2.1	Landscape Management	As necessary	• Monitor comments/suggestions from users - feedback comments to client and respond as instructed and incorporate into LEMP as required.
6.2.2	LEMP Review	As necessary	• Suitably experienced ecologist to undertake a review of habitat / landscape establishment and quality, to inspect and sign-off the completion of the various enhancement measures. A report to be prepared for the client and LPA with recommendations for active management as required and incorporate into LEMP as required.

6.3 Long Term Management

Long Term (6-40 Years)

As the planted stock grows, annual reviews will continue to take place beyond the initial 5 year period up until 40 years. During this period, the operations highlighted within 0-5 year period will continue to be necessary, however, their precise timing will become dependent on a programme of monitoring to ensure the appropriate maintenance operations are carried out at the appropriate time.

Annual reviews should continue to take place to check the structure and health of all trees to ensure they are maintained without posing a hazard. Annual reviews of

trees and hedgerows should be carried out to identify any necessary remedial works and any works should be undertaken as necessary by a suitably qualified operative.

The cutting/grazing regime should continue as identified within 6.1.4. It may be necessary to over-seed the grazing mixture after year 5 to renew the quality of the rye grass and reduce invasive species which are lower quality. This also ensures the sward remains nutritious and beneficial as a livestock grazing ley.

7 Restoration and Decommissioning

The solar array will be decommissioned at the end of lifespan of development panels and returned to agricultural land. It is not known what the ecological value of the site will be at this point, but if the LEMP is followed it seems likely that the habitat within the area will be considerably more ecologically diverse than at present and protected species may be present within the area.

Pre-decommissioning ecological surveys will be required in line with guidance, legislation and planning policy available at the point of decommissioning, to ascertain the nature of ecological impacts and what, if any, mitigation measures will be required. This is likely to comprise an extended UK Habitat survey followed by species specific surveys (for example, great crested newt surveys, bird surveys, badger survey etc.). A full mitigation plan will be prepared and submitted to the LPA prior to decommissioning.

Commitment to decommissioning and restoration will also be made a planning condition as required by the LPA Ecologist.

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