Unit 6, The Wincombe Centre,
Wincombe Business Park, Shaftesbury,
SP7 9QJ

Email: info@darwin-ecology.co.uk
www.darwin-ecology.co.uk

Landscape and Ecological Management Plan

Solar Project
Land at Petersfinger Farm
Petersfinger
Salisbury
Wiltshire

June 2023

Darwin Ecology Ltd
Registered Office: 8 Layton Lane, Shaftesbury, Dorset SP7 8EY
Company No. 07654823

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QUALITY CONTROL		
The information which we have prepared and provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct.		
Prepared by	Katie Crawford BSc MRes- Ecologist Jessie Forster BSc (Hons) - Consultant Ecologist	March 2023 April 2023
Checked by	Olatz Gartzia BSc MSc ACIEEM - Principal Ecologist	April 2023
Amended by	Jessie Forster BSc (Hons) - Consultant Ecologist	June 2023 July 2023
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The views and opinions contained within the document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to works.

1. EXECUTIVE SUMMARY

1.1. This Landscape and Ecological Management Plan (LEMP) has been prepared for the management of the land within the ownership of Petersfinger Farm, Salisbury, SP5 3EU to be managed by Wiltshire Wildlife Trust, including the site of the proposed solar farm.

1.2. The proposals are for the installation of solar panels within the application site with associated access track, cabin and storage buildings. The site is shown on Magic Maps as floodplain mosaic habitat (CFGM) which is a BAP priority habitat. During the National Vegetation Classification (NVC) survey in May and June 2021, the northern part of the site was assessed not to meet the criteria for floodplain mosaic but to more closely match MG6 - *Lolium perenne* grassland (semi-improved grassland), likely due to heavy grazing. The southern half of the site was assessed to be CFGM.

1.3. The proposals will result in the loss of a small amount of semi-improved grassland habitat within the development boundary. In addition, there will be a temporary disturbance to the remaining semi-improved grassland, and to the section of CFGM at the southern end of the proposed development site during installation of the solar array. The existing tree lines and hedgerows at the boundaries of the site are not anticipated to be impacted by the proposals.

1.4. This management plan refers to the land within the current ownership boundary of Phillip Proctor Estates which will be gifted to the Wiltshire Wildlife Trust as biodiversity offsetting linked to both the solar application and to an application for a residential development to the north of the site.

1.5. This plan details the habitats to be enhanced as part of the scheme and provides details on how each habitat will be managed in perpetuity to achieve an overall biodiversity net gain. It has been informed by the Ecological Impact Assessment report, Biodiversity Net Gain report and site plans.

1.6. The aims are to provide details regarding the specific creation and management prescriptions to be implemented to ensure long-term enhancement of the grassland and that negative impacts on ecologically valuable habitat (both within the site and the adjacent designated sites) are avoided. It also outlines which of the relevant stakeholders is responsible for each action and provides recommendations regarding timing of work.

2. INTRODUCTION

2.1. This Landscape and Ecological Management Plan (LEMP) has been prepared for the management of the land within the ownership of Petersfinger Farm, Salisbury, SP5 3EU to be acquired by Wiltshire Wildlife Trust (WWT), including the site of the proposed solar farm which is proposed to be leased from the WWT to Wiltshire Wildlife Community Energy (WWCE).

2.2. This plan details the habitats to be created as part of the scheme and provide details on how each habitat will be managed in perpetuity to achieve an overall biodiversity net gain and to enhance the habitats to be managed by the WWT. It has been informed by the Darwin Ecology Ltd. Ecological Impact Assessment report, dated November 2022 and the Darwin Ecology Ltd. Biodiversity NET Gain (BNG) Report, dated May 2023.

2.3. This plan is based on the proposals and landscape plan as shown in **Appendix 1**.

2.4. Land within the blue line boundary (**Figure 1**), currently within the ownership of Phillip Proctor Estates, will be gifted to WWT and will be managed by the Trust. This will have the combined purpose of securing appropriate management of the current County Wildlife Site and to provide biodiversity offsetting linked to both the solar application and an application for a residential development to the north of the site.

2.5. The solar site will be leased to WWCE which has close links to the WWT, and the habitats within the application site will be managed by the Trust. The BNG report referenced above details the part of the land proposed as offsetting for the solar site. It is anticipated that the rest of the land to be gifted to WWT will provide biodiversity offsetting for the residential development.

2.6. This document presents a strategy for habitat compensation and biodiversity enhancement works. Long-term management strategies for enhanced habitats within the site are also provided, to ensure that the ecological value of the site is maintained in perpetuity.

Site Overview

2.7. The site is located to the east of Salisbury and immediately south of the A36. There is a sewage treatment works bordering the site to the west and on a wider scale Salisbury extends north-west of the site and elsewhere the site is surrounded largely by rural fields.

2.8. The site comprises a variety of habitats including grassland, scrub, ditches, and lines of trees and hedgerows (see **Figure 1**).

2.9. The wider landscape comprises agricultural fields with associated hedgerows, and the urban area of Salisbury to the north west. The site sits within the Avon Valley and borders the River Avon SAC and River Avon System SSSI. The site also includes the edge of a newly extended County Wildlife Site (see **Figures 2 and 3**).



Figure 1: Application site location and wider ownership considered within this report (Google Maps 2023)



Figure 2: Site location within the wider landscape (copyright Google Maps 2023)

3. AIMS AND OBJECTIVES

3.1. This report aims to detail the habitats to be retained, enhanced and created as part of the scheme and provide details on how each habitat will be managed in perpetuity to achieve an overall biodiversity net gain.

3.2. It has been informed by the Ecological Impact Assessment (EcIA) carried out by Darwin Ecology, dated November 2022, and by the Biodiversity Net Gain (BNG) Assessment (Darwin Ecology, 2023).

3.3. The primary objectives are as follows:

- To provide details of each habitat to be retained, enhanced or created;
- To provide details of five years of aftercare, 25 years of management and 30 years of monitoring of post-development habitats;
- To provide a timescale for the delivery of habitat creation and enhancement;
- To provide a monitoring strategy which will assess the condition of all habitats created and detail any and all necessary management or replacement/ remediation measures required to deliver the agreed upon values, as well as suggesting appropriate contingency measures should monitoring identify that changes are required to ensure the habitat(s) are in the appropriate condition to deliver the required biodiversity values.

3.4. The compensation, enhancement and management proposals relate to three main themes:

- Methods of habitat enhancement including aftercare to ensure proper establishment of habitats to appropriate target conditions; and
- Long-term management of all post-development habitats to maximise biodiversity and ensure a biodiversity net gain in perpetuity including monitoring strategy.

3.5. Wiltshire Wildlife Community Energy and Cognatum Estates will accept the responsibility and obligation for the implementation of the mitigation measures that relate to their respective parts of the development (as shown in **Figure 3**) and will contract the WWT on an annual basis to undertake works associated with the management plan both during and post construction. The responsibility and obligation for the implementation of the management of the rest of the land within the current ownership boundary to be managed by the WWT (see **Figure 3**) will fall to Phillip Proctor Estates Ltd in relation to the residential development to the north of the site. Should any parcels of land under this management plan be sold, the new owner will need to take on the management plan as an obligation.

4. SUMMARY OF BASELINE HABITATS

4.1. Below is a summary of the habitats recorded on site during the botanical walkover surveys undertaken by Ecologist Becca Oswin and Mariko Whyte, on the 5th May 2021 and from the National Vegetation Classification (NVC) surveys were carried out by Ulex Ecology in May and June 2021 using the National Vegetation Classification methods.

Habitats

Semi-Improved Grassland

4.2. The northern section of the solar farm application site (see **Figure 3**) is comprised of an area of semi-improved mesotrophic grassland, with most of the interest found in the damper ditches that bisect the area. NVC surveys of the condition of the grassland on site has confirmed that this area does not currently match the definition for Priority Habitat CFGM due to the high intensity of grazing. The proposed access track also crosses a section of grassland which had recently been re-seeded with a wildflower mix, but is considered to be semi-improved grassland.

Damp Meadow (CFGM)

4.3. The southern portion of the application site is categorised as damp meadow characteristic of floodplain grazing mosaic priority habitat (CFGM), with a broad mix of species associated with neutral soils with impeded drainage. This habitat is also present throughout the wider ownership boundary of land associated with Petersfinger Farm (see **Figure 3**). Despite initially showing good potential, the sheep grazing within these fields was recorded to be detrimental to the species diversity and the condition of the meadows during the second surveys, meaning fewer forbs than expected were recorded. Fields which had sheep in at a much lower density were less severely impacted, meaning forbs were still recored there during the second surveys. Common meadow-rue (*Thalictrum flavum*) was recorded throughout these fields.

Damp Ditches

4.4. Several ditches occurred at the southern end of the site, and these were typically dominated by reed Canary-grass (*Phalaris arundinacea*) with abundant and ruderal vegetation often dense stands of common reed (*Phragmites australis*) and bulrush (*Scirpoides holoschoenus*) giving way to stands of common nettle in the drier edges.

5. HABITAT MANAGEMENT OBJECTIVES

Aims

5.1. The main aim of the management prescriptions for the grassland within the floodplain mosaic is to improve the quality of the habitat and encourage a range of forbs associated with this grassland type. Management prescriptions for the linear habitats on site aim to improve the quality of existing hedgerow and tree lines through infill planting, and to establish a section of new hedgerow on site. These aims will be achieved via careful management of these areas as outlined below. In addition, mitigation measures have been provided to minimise impacts to the habitats on site during the construction phase of the solar site proposals.

Installation of connection cable

5.2. The route of the connection cable to be installed between the solar farm and the water treatment plant within the application boundary appears to run through hedgerow and other habitats outside of the ownership boundary which are not part of the ecological impact assessment.

5.3. As this part of the works has not been assessed it must be done under method statement to minimise disturbance or impact to the habitats present along the route, as detailed below:

- The exact line of the cable will be assessed and agreed by a suitably qualified ecologist on site prior to commencement of works, and ground works will be subject to ecological supervision to ensure the method statement is followed.
- No removal of hedgerow or severing of roots will be undertaken unless this has been specifically impact assessed by the ecologist to minimise impacts. Any impacts to hedgerows or trees will be fully compensated by replacement planting as specified by the ecologist in the first available planting season.
- Impacts to significant hedgerow trees as deemed by the ecologist on site will be avoided.
- A suitable buffer will be left between the hedgerow and the route of the cable to avoid damage to the roots in line with BS5837:12. If trees are present along the route of the cable, the root protection zones will be protected in line with BS5837:12.
- Any hedgerow crossings will be assessed by the ecologist on site to ensure impacts to the hedgerow are avoided. A ‘no dig’ installation method will be used to mitigate impacts to habitats present.

- Where a trench must be dug, turf must be carefully removed prior to digging, so that the turf can be laid back over, when the cable is installed.
- Re-seeding will **not** be permitted to prevent introducing species into the communities present.
- Works must take place in the summer months, following a period of dry weather to prevent disturbance to the soil structure. In addition, works must take place during the summer to ensure the hibernation season for reptiles and amphibians and small mammals is avoided.
- A badger scoping assessment will take place prior to commencement of works, if badger setts are present, a buffer of 20 m will be established to avoid impacts to the sett.

5.4. If for any reason this method statement cannot be adhered to, a full impact assessment and mitigation plan must be prepared by a suitably qualified ecologist prior to commencement of works.

Management of grassland

Construction Phase

5.5. Installation of the solar panels must be done while retaining the existing grassland within the site. It is anticipated that there will be a temporary impact on the grassland within the development footprint during the construction phase, however, the grassland is expected to return to a similar condition post-construction provided the mitigation measures detailed below are followed.

5.6. To create an access track and small facilities buildings, approximately **0.12 ha** of sealed surface will be created, resulting in the permanent loss of this small amount of semi-improved grassland habitat.

5.7. The grassland within the application boundary (see **Figure 3**) must be retained in the current condition as far as possible when the solar array is installed. In order to achieve this, mitigation measures will be followed, as outlined below:

- Works must be carried out between May - September in recent dry weather conditions to prevent excessive damage to the grassland during installation of the solar array. If works outside of these timings cannot be avoided, a suitably qualified ecologist must be consulted to ensure the ground is in a suitable condition for works to be carried out.
- During works, no significantly deep excavations that could alter the hydrology of the wet meadow will be carried out.

- Ground protection boards must be used during installation for areas where heavy machinery or vehicles will travel, and areas where materials are stored.

- Where trenches must be dug, turf must first be removed in a sensitive manor to be replaced when the solar array is installed.

- No seed will be imported to site, any disturbed ground which cannot have the turf replaced must be allowed to re-grow naturally from the species assemblage present on site.

- Weekly monitoring visits by a suitably qualified ecologist must take place throughout the construction works to ensure these mitigation measures are followed.

5.8. If for any reason these mitigation measures cannot be adhered to, a suitably qualified ecologist must be consulted to agree a suitable method of works.

Post Construction Habitat Development

5.9. The land within the solar site and within the surrounding ownership boundary will be managed post-development by the Wiltshire Wildlife Trust (WWT) (see **Figure 3**), with the aim of improving the condition of the floodplain grazing mosaic. The following management measures will be regularly monitored and reviewed by the WWT to ensure the condition of the grassland is improved as specified in the BNG Assessment.

5.10. At present it appears that sheep-grazing is having a detrimental impact on the water meadows, as was clearly evidenced by the decrease in diversity of the fields where they had been moved to between the May and June surveys, and by the very low underlying diversity in areas that are regularly grazed. Although sheep grazing can be beneficial it appears in this case the density and timing of the graze is not beneficial to the conservation value of the land. As such, sheep numbers must either be significantly reduced, or this management must be phased out altogether, in order to allow a more diverse flora to develop.

5.11. The relevant criterion for the grassland management within the BNG condition assessments which will aim to be achieved are outlined below:

- The appearance and composition of the vegetation closely matches characteristics of the specific wetland type, with indicator species clearly visible;
- Cover of scrub and scattered trees is less than 10%;
- Cover of bare ground is less than 5%, and;

- Absence of invasive, non-native species, species indicative of sub-optimal condition make up less than 5%.

5.12. As part of the BNG requirements, the area between the proposed security fencing and the existing boundary of the development site (see **Figure 3**) will be kept un-grazed during the summer, and managed carefully to develop a diverse species composition and sward. The aim will be to achieve a consistent good condition floodplain mosaic in this area by meeting the criterion above (along with criterion relating to water conditions on site detailed later in this report).

5.13. In addition, to achieve a biodiversity net gain, further enhancement is required, which will be achieved with the remainder to the field to the south of the solar application site, within the ownership boundary (see **Figure 3**). The application site and additional fields outside of the solar array boundary within the site ownership will be managed by the WWT with the aim of improving the condition of the CFGM habitat throughout. A sheep grazing regime has been proposed, but with significantly lower densities than are currently present, to enable the condition of the grassland to improve.

5.14. Approximately 45 ewes with lambs are proposed to be grazed throughout the site. It is anticipated that this will be a low enough stocking density to allow areas of the grassland to recover from the currently heavily grazed condition. To aid this process, a rotational grazing regime is recommended, with the aim of keeping at least three areas in good condition at all times, with one area likely to remain in moderate condition when the sheep are in that section. It is recommended that the solar site is grazed in the summer to reduce the grazing pressure on the remaining fields managed by the WWT during this period to allow greater species diversity to develop in these areas. The fields outside of the solar site should be grazed during the late summer or winter, or alternatively a late summer hay cut will be carried out, with arisings removed.

5.15. In addition, ongoing weed control will be carried out if necessary to ensure the recovering grassland is free from broad leaved, injurious and invasive weeds. Injurious weeds are those listed in the Weeds Act 1959 and the Wildlife and Countryside Act 1981 (as amended) and include the following: spear thistle, creeping or field thistle, curled dock, broadleaved dock and common hogweed.

Monitoring requirements

5.16. Annual monitoring must take place from year one post-development onwards, with condition assessments made by a suitably qualified ecologist, to ensure the habitat areas are meeting the conditions required to achieve biodiversity net gain at the site.

5.17. If annual monitoring finds the grassland is not able to be managed in sufficiently good condition by sheep grazing, an alternative strategy must be adopted to ensure biodiversity net gain is achieved at the site. It would likely be possible to achieve good condition throughout all the grassland areas to be managed by the WWT with a management plan as outlined below.

5.18. This management plan should undergo a full review after five years of monitoring and management, to be amended as necessary to provide an effective management plan for conditions and habitats established at the site, and ensure BNG is still being achieved.

Alternative management

5.19. If the reduced sheep grazing regime does not produce the required conditions, alternative management which would likely achieve good condition across the habitat areas would involve a combination of a late summer hay cut, potentially combined with cattle grazing at the end of the summer, running into the winter should water levels allow for this. If cattle grazing is not possible, the grassland can be managed with manual cutting alone.

5.20. Cutting must be carried out at a range of different sward heights throughout the site to produce the most diverse habitat conditions across the site.

5.21. Consideration should also be given to winter grazing, with livestock tolerant of wet conditions, possibly to include water buffalo.

5.22. If any areas do not develop a diverse sward due to the prevalence of nutrient-loving species, these will be subjected to a a heavier hay cut, twice a year, with the arisings removed to remove nutrients from the site and encourage a more diverse sward to form.

Management of ditches and water levels

5.23. Management of ditches on site is integral to water management across the site, and both need to be maintained in such a way as to allow the CFGM habitat to achieve good condition. However, ditches also have their own intrinsic wildlife value which must be considered. Although desirable to be maintained to achieve a good condition for the ditches

themselves, clearance must not occur in such a frequent cycle that too much water is drained from the wet grassland, as water is an important feature for of the grassland community on site.

5.24. In order for the CFGM habitat to achieve good condition, the water table should be on or near the surface of the grassland throughout the year. In addition, ditches should be maintained in good condition. A balance should be kept to achieve these conditions, with the aim to clear out a small proportion of ditches on site on a rotational basis as required to maintain these conditions. This should be monitored and managed by the party responsible for management of the site. Criterion for achieving good conditions, as detailed in the BNG condition assessments are outlined below:

- Good water quality, with clear water and no obvious signs of pollution;
- A range of emergent, submerged and floating leaved plants should be present (as a guide, more than 10 species should be present in a 20 m ditch length);
- Less than 10% cover if filamentous algae and/or duckweed;
- Fringe of marginal vegetation along more than 75% of the ditch;
- Physical damage along less than 5% of the ditch
- Sufficient water levels maintained (as a guide a minimum summer depth of 50 cm for minor ditches)
- Less than 10% heavily shaded, and;
- Absence of non-native plant and animal species.

5.25. Management practices for maintenance of the ditches on site to achieve the conditions above are outlined below, however these should be regularly reviewed by the WWT who will be managing the site:

- Reed cutting may be required as ditches become overgrown. If vegetation cutting is required, this must take place in late summer (September) after breeding bird season has ended.
- Ditches that have filled to an extent that a sufficient water level is not maintained should be dug out in late summer, after bird nesting season.
- Management should occur on a 5 year cycle, with no more than a third of the ditches on site to undergo management in any one year.
- Annual monitoring during the summer months will be required to assess water levels and vegetation growth.

Management of water quality on site

5.26. For the CFGM habitats on site to achieve good condition, water supplies must be maintained to be of good quality, with clear water indicating no obvious signs of pollution. The following recommendations have been with the aim of achieving this:

- No manure will be stored on site to prevent run-off polluting the water on site.
- Any cesspit or septic tank outlets from surrounding properties will be checked by the site management team to ensure any water coming into site is of sufficiently treated quality.
- A major risk in the area is the water treatment plant directly to the west of the site. The site manager should check the locations of the outlets, and ensure these are kept well maintained to prevent storm overflow entering the site when in flood.

Management of hedgerow

Construction Phase

5.27. The boundary hedgerows and tree lines will be retained as part of the proposals. Heras or similar fencing should be installed at least four metres from hedgerow features to provide protection throughout the construction works.

5.28. Where there are trees within the hedgerow, and along tree line boundaries, the root protection zones of the trees will be protected in line with BS5837:12. Heras fencing (or similar) will be installed during the works to provide a buffer around the root protection zone. This will prevent any encroachment and disturbance by machinery within the root protection areas. The fence will remain until the completion of all construction works.

Post construction habitat development

5.29. New native hedgerow planting will be established in a double staggered row along the southern and eastern boundaries of the site, retaining existing vegetation. New hedgerow plants will be planted with a mixture of native species suitable for the conditions on site.

5.30. A species list is detailed in **Table 1** below, however, species used may be amended subject to ground conditions and should be informed by what is currently growing well in the area. The guiding principle will be to be to establish a diverse native hedgerow of no less than seven species of fruiting and flowering plants.

5.31. Bare root stock will be planted. Planting will be undertaken between November and the end of March, avoiding hard frosts.

5.32. New planting will be done at a density of five plants per linear metre, with plants arranged in an off-set in a double row.

5.33. All new bare root planting will be planted in mulch, staked and protected with appropriate biodegradable guards. Any damaged guards or ties will be replaced where necessary.

5.34. Each year in March all trees and shrub planting will be checked and weeding around the base carried out.

5.35. During years 1 and 2, watering of the new trees and shrubs will be carried out where necessary and during prolonged dry periods during the summer months.

5.36. The new planting will not be trimmed at the top until the hedgerow has reached its desired height which will be at 1.5 m in height.

Table 1: Hedgerow planting mix

Common name	Latin name
Hazel	*Corylus avellana*
Hawthorn	*Crataegus monogyna*
Holly	*Ilex aquifolium*
Elder	*Sambucus nigra*
Blackthorn	*Prunus spinosa*
Dog rose	*Rosa canina*
Guelder rose	*Viburnum opulus*
Field rose	*Rosa arvensis*
Field Maple	*Acer campestre*
Goat Willow	*Salix caprea*

5.37. Infill planting with native species will be carried out to improve the structure and diversity of the hedgerow and tree lines to the west and the north. These enhancements will provide improved wildlife corridors and landscape structure.

5.38. Undisturbed rough grass margins of 1.5 m - 2 m will be established on each side of these hedgerows wherever possible.

Monitoring and ongoing habitat management

5.39. Trees and shrubs will be checked annually when they are in full leaf to ensure they are thriving. Defects requiring remedial works will be recorded.

5.40. If the trees and shrubs show signs of poor growth or reduced vigour, remediation works will be carried out and if this does not resolve the problem the tree will be replaced with a more suitable tree.

5.41. At the end of year 5 the support canes and guards will be removed. At this point the establishment of any gaps in the hedge will be planted in accordance with the original planting specification. These plants will be subject to a further 2 year defects liability period.

5.42. To ensure their long term existence, and to maintain their various functions, all hedges to be planted will be taken through a cycle of management referred to as the Hedgerow Management cycle (HMC - See **Table 2**). Each cycle either starts with new planting or rejuvenation of existing shrubs and trees through laying or coppicing. After this the rate of growth and structure of the hedge can be regulated by trimming with occasional shaping. Trimming and cutting is an effective and efficient way to keep hedges thick and dense, but no hedge can be locked at one stage in the management cycle.

5.43. Following establishment periods, trimming will take place on a 3 year cycle, including maintenance of edge scrub to graded margins down to field layers to a height of 20 cm. As part of the trimming regime, suitable trees at approx every 20 m should be identified and protected from cutting to replace future emergent tree stock.

5.44. Trimming will be carried out in January/February in order to avoid the breeding bird season and after all plants have fruited etc. If trimming is required during the nesting bird season (March-August, inclusive) then a suitably qualified ecologist will attend site to check for any nesting birds.

Table 2: The ten point Hedge Management Cycle (HMC)

Point	Present conditions of the hedge	Management action
1	Cut short with many gaps and spares stems, the bases of the shrubs gnarled or rotting. Bank often badly eroded	Coppice, restore and replant gaps. Grub out undesirable species.
2	Cut short and thin, with hard knuckle at trim line and shrubs have mop-headed growth form. Not yet gappy or moribund but stems still too far apart to be allowed to grow up for laying	Coppice and replant any gaps. Restore bank if necessary.
3	Coppice and replant any gaps. Restore bank if necessary.	Allow the hedge to grow up for between 8 and 20 years so that it can be laid, coppiced or reshaped. Hedge may be trimmed as it grows up, but raise cutting height each time.

Table 2: The ten point Hedge Management Cycle (HMC)		
4	Recently-laid, coppiced or planted.	In first years trim often to create dense growth, initially low down, raising cutting height a few inches each year until Point 5 reached.
5	Dense with frequent healthy stems, at 1 - 3m high (above bank).	Trim every two, three or four years, raising trimming height a few inches every few cuts to prevent development of dense knuckle and mopheaded growth until Point 6 reached. Alternatively, if the hedge is trimmed every year, raise the cutting height each time.
6	Dense, with frequent healthy stems, over 3m high.	Allow to grow up ready for laying, or re-shape with circular saw to Point 5.
7	Frequent healthy stems more than 4m high of right thickness to lay (typically 8 - 15cm diameter).	Lay (or coppice), or re-shape with circular saw to point 5.
8	Tall hedge with spreading canopy, typically 6 - 7m high and some stems too large for laying (typically more than 15cm in diameter).	Coppice, or reshape with circular saw to point 5, planting up gaps and restoring bank as necessary.
9	Tall, often gappy, hedge, typically over 7m high with many ash, oak or beech stems, with sparse shrub layer and the bank at risk of collapse. Most stems too large for laying.	Coppice and plant up gaps, restoring bank as necessary.
10	Mature line of trees, usually oak, beech or ash.	Retain as line of trees for as long as possible. When the trees die or have to be felled, restore the bank and replant the hedge, in whole or in part as appropriate.

Protected Species

5.45. Additional mitigation measures will be required for protected species on site during the construction phase and post development. Refer to the Ecological Impact Assessment (Darwin Ecology, 2022) for details.



Application boundary - solar site

Semi-improved mesotrophic grassland to be retained in current condition

Area of CFGM beneath solar array, to be retained in current condition

Grassland within application boundary to be enhanced.

Ownership boundary

Area of CFGM to be enhanced under responsibility of WWCECE

CFGM to be managed by WWT as biodiversity offsetting in relation to the residential development to the north

Hardstanding

New native hedgerow

Line of trees

Existing hedgerow to be enhanced

SSSI / SAC

CWS

Ditches to be managed by WWT

DARWIN ECOLOGY
integrating nature conservation

Info@darwin-ecology.co.uk
www.darwin-ecology.co.uk

Project: Petersfinger Solar Project

Figure 3: Post development habitats

Date: June 2023

6. ADDITIONAL ENHANCEMENTS

Soil scrapes

6.1. It is recommended that soil scrapes of 3 m x 4 m are created throughout the CFGM habitat to provide additional areas of shallow standing water to enhance the habitat.

Bat / bird boxes

6.2. Bat and bird boxes are recommended, as detailed within the EcIA report (Darwin Ecology , 2022). These will require annual monitoring and maintenance by a licensed ecologist (as detailed in Table 3 below).

Habitat piles

6.3. In addition, hibernacula/brash or log piles can be be created around the edges of the retained grassland areas. These are beneficial to keep any arisings from habitat management located in discrete piles, and offer valuable habitats for a wide range of saprophytic (deadwood-eating) invertebrates that will in turn provide food for a wide range of predatory species of insect, birds, mammals, amphibians and reptiles. These structured features also provide shelter and refuge opportunities for animals such as reptiles and have excellent wildlife value.

6.4. Habitat piles can be created using large piles of native deadwood, logs and brash stacked on the surface of the ground. Habitat piles should be located in a variety of both part-shaded and sunny positions, within long grass adjacent to areas of scrub habitat.

7. MONITORING AND OUTCOMES

7.1. In order to ensure that the habitats created and enhanced within the site are maintained to maximise their value for wildlife, all habitats will be monitored annually by a suitably qualified ecologist.

7.2. The results of the monitoring will be used to inform changes to this management plan (including giving year work programs). The detailed management set out in this document will be altered if required following monitoring and in agreement with the Wildlife Trust's site management team.

7.3. Detailed work programs will be set up annually by the Wildlife Trust's site management team which will be co-ordinated with any other parties responsible for managing the site.

7.4. While general monitoring will be undertaken annually to inform the forthcoming year's work programs a more detailed habitat assessment of the habitats will also be undertaken between April and September from at least Year 2 and Year 5 of the work programs, by an suitably qualified ecologist. This will be in the form of a single monitoring visit per year. Results should be reported back to feed into the five-year management plan review to enable assessment of the management prescriptions against the defined objectives for each habitat.

7.5. See **Table 3** below for 5 year management and monitoring recommendations.

Table 3: 5 Year monitoring and management

Description of works	**Years Active with Priority**					
	1	**2**	**3**	**4**	**5**	**Post 5 yrs**
Grassland						
Graze grassland beneath solar array during the summer months as required to maintain site as appropriate. Allow rough grass to develop at margins and varied sward length to develop where possible.	Y	Y	Y	Y	Y	Y
Keep grassland outside of the solar site security fencing un-grazed in the summer to allow species diversity and varied sward length to develop.	Y	Y	Y	Y	Y	Y
Weed and scrub control to be carried out as necessary	Y	Y	Y	Y	Y	Y
Sheep grazed fields to be managed on rotation to allow at least 3 fields to achieve good condition at all times	Y	Y	Y	Y	Y	Y
Ditches						

Leave mostly uncut, cut or dig out selected areas as required on a 5 year cycle in late summer in dry conditions, with no more than 1/3 of ditches to undergo management in any one year.	Y	-	-	-	-	Y
Tree Planting						
Plant young tree species	Y	-	-	-	-	-
Watering of new tree planting	Y	Y	-	-	-	-
Treat weed growth around immediate vicinity of tree	Y	Y	Y	Y	Y	-
Replace dead or dying specimens on a like for like basis.	-	Y	Y	Y	Y	Y
Hedgerows						
Plant new hedgerows, and infill existing	Y	-	-	-	-	-
Watering of new hedgerow planting	Y	Y	-	-	-	-
Replace dead or dying species on a like for like basis	-	Y	Y	Y	Y	Y
Cut on a 3 year cycle, on rotation, leaving at least 2/3 of the hedgerows untrimmed. Cut in late winter to avoid the bird breeding season, but not during severe frost.	-	Y	Y	Y	Y	Y
Water quality						
Ensure no manure is kept on site	Y	Y	Y	Y	Y	Y
Check locations of outlets from surrounding properties to ensure any water coming onto site is treated to sufficient quality	Y	-	-	-	-	Y
Check location of outlet from water treatment plant and ensure it is maintained correctly	Y	-	-	-	-	Y
Monitoring						
Monitor grassland annually to ensure all areas are meeting required condition	Y	Y	Y	Y	Y	Y
Monitor ditches annually to ensure they are maintained in good condition	Y	Y	Y	Y	Y	Y
Carry out a more detailed habitat assessment of the habitats between April and September from at least Year 2 and Year 5 of the work programs to feed back to the management plan	-	Y	-	-	Y	Y
Bird and Bat Boxes						
Installation of bat and bird boxes, and habitat piles	Y	-	-	-	-	
Monitor, clean and replace boxes if in poor condition (NB: Licensed bat worker required to take down any bat boxes that need replacing). Top up habitat piles with any arisings from site as required.	-	Y	Y	Y	Y	Y

8. REFERENCES

Biodiversity Metric 4.0 - Technical Annex 1 - Condition Assessment Sheets and Methodology, XLSX, 382.6 KB https://publications.naturalengland.org.uk/publication/6049804846366720

Darwin Ecology (2022) *Ecological Impact Assessment Report Solar Project Petersfinger*

Darwin Ecology (2023) *Biodiversity Net Gain Assessment Petersfinger Solar Project.*

Hedgelink: The Hedgerow Management Cycle [online] chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.hedgelink.org.uk/cms/cms_content/files/78_hedgelink_a5_12pp_leaflet_7.pdf [May 2023]

Ulex Ecology (2021) *Phase II botanical surveys of meadows at Petersfinger, Salisbury.*