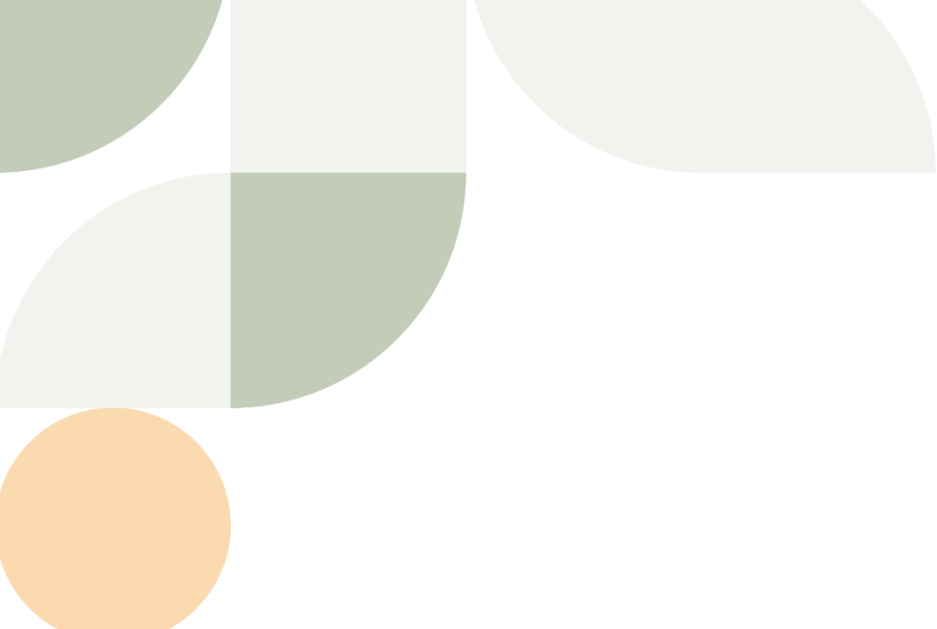




Lime Down

Solar Park

Outline Landscape and Ecological Management Plan (Clean)

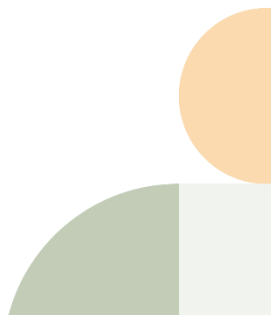
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Revision **34**

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Schedule of Changes

Revision	Section Reference	Description of Changes	Reason for Revision
2	1.3.122 and 1.3.135	Confirmation of permission required for herbicide application near watercourses.	Updated in response to EA comment (EA-074) on submissions at Deadline 2 of Examination.
3	1.3.34	Additional detail added on management of hedgerows around Fields A11, A12 and B12	Updated in response to ExA Question EB2.7 part 2)
	1.3.93, 1.3.97, 1.3.104, 1.3.109, and 1.4.4	Additional detailing relating to grassland establishment and monitoring within the array (beneath and between panels).	Updated in response to feedback received from Wiltshire Council hydrology team at Deadline 4.
	1.3.126	Additional detail added on the management approach in the event the presence of beavers are identified at the Scheme in the future	Updated in response to feedback received from Wiltshire Council at Deadline 4
	Table 7	Amendments to the fields proposed for ground nesting bird mitigation	Error corrected
<u>4</u>	<u>1.3.67 to 1.3.69</u>	<u>Additional detail added regarding compensatory planting of higher value trees that are felled during operation.</u>	<u>Updated in response to feedback received during a meeting between the Applicant and Wiltshire Council Arboricultural Officers on 13.08.2026</u>
	<u>Table 7</u>	<u>Corrections to the habitat types proposed in fields given to ground nesting bird mitigation</u>	<u>Errors corrected as a result of Applicant due diligence and following feedback from Stop Lime Down at Deadline 5</u>
	<u>Table 7</u>	<u>Updates to the total figure of ground-nesting bird mitigation area to be given to wildflower meadow.</u>	<u>Updated to reflect design changes following removal of panels from the south of Field A1</u>

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Outline Landscape and Ecological Management Plan

1.1 Introduction

- 1.1.1 This Outline Landscape and Ecological Management Plan (Outline LEMP) sets out a framework for the planting, management and monitoring of landscaping and ecological mitigation and enhancement habitats for the proposed Lime Down Solar Project (hereafter referred to as “the Scheme”). This Outline LEMP concerns works which will be required during both the construction and operational phases of the Scheme.
- 1.1.2 This OLEMP is to be read in conjunction with the following documents:
- **ES Volume 2, Figure 3-4: Landscape and Ecology Mitigation Plan [EN010168/APP/6.2]** – these display the locations and specifications of all habitats to be planted and managed; and
 - **Outline Ecological Protection and Mitigation Strategy (OEPMS) [EN010168/APP/7.19]** – this document sets out how valuable ecological features will be protected (e.g. through fencing or avoidance measures), and adverse impacts mitigated for (e.g. through seasonal timing of works or supervision by an Ecological Clerk of Works (ECow)), during the construction phase.
- 1.1.3 This document is supported by the following figures, provided at the end of this document:
- **Figure 1: Natural England Habitat Network Mapping (Lowland Meadow) – Solar PV Sites**
 - **Figure 2: Natural England Habitat Network Mapping (Lowland Calcareous Grassland) – Solar PV Sites**
 - **Figure 3: Natural England Habitat Network Mapping (Ancient Semi-Natural Woodland) – Solar PV Sites**
 - **Figure 4: Natural England Habitat Network Mapping (Rivers) – Solar PV Sites**
 - **Figure 5: Buglife’s ‘B-Line’ – Solar PV Sites.**
- 1.1.4 The purpose of this Outline LEMP is to set out planting, management and monitoring prescriptions to be followed by, or on behalf of, the undertaker. It sets out a general management strategy for the Scheme which will be applied in specific areas as the design process progresses. While as much detail has been included in this Outline LEMP as practicable to accompany the Development Consent Order (DCO) application, it is anticipated that it shall be revised and finalised following the DCO examination process and receipt of consent. In some cases, in this report,

several options are set out in order to leave some flexibility in specification, but all achieve the same ecological goals.

- 1.1.5 A detailed version of the LEMP (final LEMP) will be produced prior to the commencement of construction and will be secured through the DCO. The final LEMP must be substantially in accordance with this Outline LEMP and will be approved by the relevant planning authority pursuant to the relevant requirement in the **Draft DCO [EN010168/APP/3.1]** for the Scheme.
- 1.1.6 This document focuses on the Solar PV Sites at Lime Down A-E, as shown in **ES Volume 2, Figure 2-1: Elements of the Site [EN010168/APP/6.2]**. Within the Cable Route Corridor (CRC), existing habitats will be restored following trenching works, and thereafter control of the land given back to the landowners. As such, it is not appropriate to include management of habitats within the CRC within this LEMP.

Approach to Construction and Maintenance Access Gaps at Hedgerows

- 1.1.7 Wherever feasible, the Scheme utilises existing access points to facilitate internal access within the Solar PV Sites, including access between fields, substations, the BESS Area and Interconnecting Cables and also the Cable Route Corridor. In certain locations where existing access points do not exist, some minor hedgerow works (pruning and/or removal) are necessary. In other locations, existing gaps may need to be widened slightly or works carried out to hedgerows adjacent to private tracks or the public highway. These minor hedgerow works (pruning and/or removal, widening of existing gaps, and works to hedgerows adjacent to private tracks and the public highway) are required for the passage of vehicles during the construction, maintenance and operational phases or for any apparatus used in connection with the Scheme, and creation of suitable visibility splays associated with vehicle access. In addition, minor hedgerow works may be required to facilitate the proposed hedgerow enhancement works.
- 1.1.8 Further details on the methodology to be followed during the hedgerow works as well as the reinstatement/replanting of temporarily affected hedgerows is contained within Section 6.3 of the **Outline Ecological Protection and Mitigation Strategy (OEPMS) [EN010168/APP/7.19]**.
- 1.1.9 The extent of these minor hedgerow works (pruning and/or removal) and widenings of existing gaps will be confirmed post DCO consent. No hedgerow works (pruning and/or removal) can take place until a detailed LEMP has been approved by the relevant planning authority, as secured by the relevant requirement within Schedule 2 to the **Draft DCO [EN010168/APP/3.1]**. All minor hedgerow works (pruning and/or removal)

will be carried out in accordance with the final, approved version(s) of the LEMP.

Key Personnel

- 1.1.10 The final LEMP will set out the roles and responsibilities of those involved in creating, managing and monitoring the prescriptions within this document. A suitably qualified person will be appointed to oversee the coordination of implementing the LEMP, including sourcing seed/plants, which will need to be considered at an early stage given the quantities required for a Scheme of this scale.

1.2 Aims

- 1.2.1 The overarching aim of this Outline LEMP is to set out prescriptions for habitat creation and management in order to provide ecological enhancements, strengthen the green infrastructure within the local area, and to provide landscape and visual mitigation through screening of the Scheme, where necessary.
- 1.2.2 This document considers the habitats and species recorded within the Solar PV Sites, as well as those identified within the surrounding area during the desk study (**ES Volume 3, Appendix 9-1: Ecological Baseline Report [EN010168/APP/6.3]** refers), in order to maximise the biodiversity benefits of habitats on site for local wildlife. An overview of how habitats may be managed to provide targeted mitigation for protected species likely to be impacted by the Scheme, such as ground-nesting birds, is provided within this document.
- 1.2.3 Local conservation priorities have been considered within this document and will be used to steer the design and refinement of detailed habitat enhancements. Reference has been made to the draft Local Nature Recovery Strategy (LNRS) for Wiltshire and Swindon (Ref 1), Wiltshire Biodiversity Action Plan (BAP) (Ref 2), as well as policies within the Wiltshire Core Strategy (Ref 3). Wiltshire Green and Blue Infrastructure (GBI) Strategy (Ref 4) has also been closely considered alongside national habitat networks (Ref 5), as described below. The presence of designated sites for nature conservation has also been considered, along with opportunities to enhance or extend these features.
- 1.2.4 High level preliminary consultation with relevant bodies relating to ecological enhancement has been undertaken, principally Natural England and Butterfly Conservation. Further consultation with additional stakeholders, including Wiltshire Council, Natural England, and the Environment Agency, is ongoing prior to submission of the DCO application and preparation of the detailed LEMP. Input from the local

community, received via public consultations undertaken as part of the DCO process, has also been considered.

National Legislation, Policy and Guidance

- 1.2.5 The following documents have been consulted in the preparation of this Outline LEMP, with key policies and objectives considered:
- Wiltshire Core Strategy (adopted January 2025);
 - Wiltshire's Natural Environment Plan 2022-2030: A Green & Blue Infrastructure Strategy for Wiltshire;
 - Local Nature Recovery Strategy for Wiltshire and Swindon Public Consultation Draft March 2025;
 - Natural England Habitat Network Mapping (Ref 5);
 - Wiltshire Landscape Biodiversity Areas (Ref 6);
 - Buglife's 'B-Lines' Initiative (Ref 7); and
 - Bristol Avon Catchment Plan (Ref 8).
- 1.2.6 Core Policy 50 of the Wiltshire Core Strategy seeks to deliver biodiversity gains and ensure the value, connectivity and functionality of ecological features is maintained in the long-term. Core Policy 52 also highlights that development should seek to enhance and improve linkages across Wiltshire's natural landscape, in line with the Wiltshire GBI Strategy. Wiltshire's Strategic GBI Network identifies strategic sites and corridors across the county, including biodiversity sites, priority habitat and woodland.
- 1.2.7 The Draft Wiltshire Local Nature Recovery Strategy (LNRS) was published in May 2025, which was late in the design stage of the Scheme. Nevertheless, the following priorities listed in the Draft LNRS are considered to be relevant to the Scheme, and the Scheme as designed will broadly contribute to these priorities:

Mapped Habitat-based Priorities

- Chalk and Limestone Grassland;
- Neutral Grassland;
- Woodland;
- Open Mixed Habitats;
- Rivers, Streams and Wetlands; and
- Strategic Connectivity Areas.

Non-mapped Habitat-based Priorities

- Nature Friendly Farming;
- Ponds; and
- Hedgerows.

Species-based Priorities

- Bats;
- Farmland Birds;
- Lapwing; and
- Arable Plants.

- 1.2.8 Natural England's Habitat Network Mapping has also been closely considered within this Outline LEMP for those priority habitats pertinent to the Solar PV Sites. The mapping identifies areas in which habitat restoration, enhancement and creation would be most beneficial in expanding existing habitats, increasing connectivity between fragmented habitats, and improve the biodiversity value of associated habitats.
- 1.2.9 Priorities and opportunities set out within Wiltshire's Landscape Biodiversity Areas, Buglife's 'B-Lines' Initiative, and Bristol Avon Catchment Plan have been considered.
- 1.2.10 Where any further biodiversity policy and supplementary documents are identified, locally relevant objectives will also be taken into account, to the extent practicable, within the final LEMP document.

Strategic Biodiversity Opportunities and Habitat Network Mapping

- 1.2.11 Key opportunities for the Solar PV Sites are shown in **ES Volume 2, Figure 3-4: Landscape and Ecology Mitigation Plan [EN010168/APP/6.2]**, with the Order Limits overlaid, and are described below.
- 1.2.12 Habitat creation prescriptions for opportunity areas within the Solar PV Sites will be prepared with the contribution to the objectives of relevant policies and initiatives in mind.

Solar PV Sites (Lime Down A-E)

- 1.2.13 Full details of the ecological baseline at Lime Down A-E, including a description of habitats and protected and notable species recorded, are provided in **ES Volume 3, Appendix 9-1: Ecological Baseline Report [EN010168/APP/6.3]**.

- 1.2.14 Lime Down A-E, and the surrounding area, are identified in multiple local and national objectives which represents numerous opportunities for constructive biodiversity enhancements on a landscape scale.
- 1.2.15 Several areas within the Solar PV Sites are identified within the draft Wiltshire LNRS Habitat Opportunity Areas. Designated sites and habitats located immediately adjacent the Sites, including Ancient Woodland and lowland meadow, are identified as areas to ‘maintain and enhance’ existing habitat. Land within the Solar PV Sites has been identified as strategic areas for the creation of more habitat, for the following mapped habitat-based priorities:
- Neutral Grassland;
 - Woodland;
 - Open Mixed Habitats; and
 - Rivers, Streams and Wetlands.
- 1.2.16 Land at the Solar PV Sites has also been identified within Species Opportunity Areas for stone curlew, lapwing, and arable plant assemblage.
- 1.2.17 Strategic GBI mapping in relation to Lime Down A-E reflects the priority habitats and designated sites identified in the desk study (**ES Volume 3, Appendix 9-1: Ecological Baseline Report [EN010168/APP/6.3]** refers). Several Strategic GBI sites are located adjacent to the Scheme Boundary, comprising ancient woodland and lowland meadow, and the Bristol Avon Strategic GBI Corridor crosses the Solar PV Sites in multiple places.
- 1.2.18 The Solar PV Sites are identified in Natural England Habitat Network Mapping for the following habitats: lowland meadow, lowland calcareous grassland, ancient semi-natural woodland and rivers.
- 1.2.19 Areas of the Solar PV Sites lie within a ‘B-Line’, as identified by Buglife, and represent opportunities to provide wildflower-rich habitats and contribute to increased grassland habitat connectivity within the landscape to the benefit of pollinators.
- 1.2.20 Lime Down A-E are located within Landscape Biodiversity Area 04 – Cotswold Limestone Lowlands, as set out within the Framework for Landscape-scale Conservation. Priorities and opportunities for conservation identified as locally appropriate to this area include:
- Woodland (namely ancient woodland and bats);
 - Limestone Grassland (namely limestone grassland, butterflies, arable plants and farmland birds);

- Neutral Grassland (namely unimproved neutral meadows); and
- Rivers.

1.2.21 Watercourses within the Solar PV Sites form part of the Bristol Avon River Catchment and fall within the Partnership Project Area for Sherston Avon, presenting an opportunity to contribute to the catchment-based approach to watercourse enhancement.

1.2.22 Site-specific opportunities are identified as follows:

- **Lime Down A** – Much of Lime Down A falls within Natural England Network Enhancement and Expansion Zones for lowland meadow habitat, and the Bristol Avon GBI Strategic Corridor runs through the northern section of Lime Down A. The north-eastern boundary of Lime Down A is identified within the draft Wiltshire LNRS as an area to create more Open Mixed Habitats, and much of Lime Down A is identified as a Species Opportunity Area for stone curlew and lapwing. The entirety of Lime Down A also lies within a pollinator ‘B-Line’, as identified by Buglife, and within Natural England Fragmentation Action and Network Enhancement Zones for lowland calcareous grassland.
- **Lime Down B** – The eastern boundary of Lime Down B lies within the Natural England Network Enhancement Zone for rivers, the Bristol Avon GBI Strategic Corridor, and the eastern field also falls within a pollinator ‘B-Line’.
- **Lime Down C** – The north-western portion of Lime Down C lies within a pollinator ‘B-Line’, and much of Lime Down C is identified within Natural England Network Enhancement and Expansion Zones for lowland meadow and lowland calcareous grassland habitats. Land at Lime Down C between Surrendell Wood and Lord’s Wood Ancient Woodlands are identified within the draft Wiltshire LNRS as Habitat Opportunity Areas to create more woodland habitat, and the majority of Lime Down C is identified as a Species Opportunity Area for stone curlew and lapwing. The Bristol Avon GBI Strategic Corridor also runs along the eastern boundary of Lime Down C.
- **Lime Down D** – Gauze Brook, which runs through Lime Down D, is identified as Primary Habitat by Natural England, and the surrounding area within Lime Down D lies within Network Enhancement Zone 2 for rivers and the draft Wiltshire LNRS Habitat Opportunity Area for rivers, streams and wetlands measures. South-eastern fields of Lime Down D also fall within Network Expansion Zones for lowland meadow and lowland calcareous grassland, with a small area in the centre identified within the Habitat Opportunity Area for open mixed habitat in the draft Wiltshire LNRS. Bradfield Wood Ancient Woodland forms part of the northern boundary of Lime Down D, and the adjacent land within Lime

Down D is identified as being within Network Enhancement Zone 2 for the habitat and draft Wiltshire LNRS Habitat Opportunity Area to create more woodland. The Bristol Avon GBI Strategic Corridor runs through the western half of Lime Down D. Much of Lime Down D is identified as Species Opportunity Areas for arable plant assemblage.

- **Lime Down E** – Harries Ground, Rodbourne Site of Special Scientific Interest (SSSI) and two Local Wildlife Sites (LWS) designated for lowland meadow habitat lie adjacent to the Scheme Boundary at Lime Down E, with further areas of Primary Habitat located in close proximity to Lime Down E. As a result, much of Lime Down E lies within Network Enhancement Zones 1 and 2 and the Network Expansion Zone, and within the draft Wiltshire LNRS Habitat Opportunity Area for the creation of more neutral grassland habitat. Bincombe Wood and Seagry Wood Ancient Woodlands are located adjacent to Lime Down E, and the surrounding land within Lime Down E is within Network Enhancement Zone 1, as well as draft Wiltshire LNRS Habitat Opportunity Areas for open mixed habitat and woodland. Fields in the centre of Lime Down E also lie within the Network Expansion Zone for lowland calcareous grassland. The south-eastern portion of Lime Down E falls within the Bristol Avon GBI Strategic Corridor.

1.3 Creation and Management Prescriptions by Habitat Type

- 1.3.1 This section sets out the various principles and prescriptions for habitat creation and management which will drive the requirements for both landscape and ecological mitigation and enhancement which have been identified in the **ES Volume 1, Chapter 9: Ecology and Biodiversity [EN010168/APP/6.1]**.
- 1.3.2 The mitigation and enhancement measures are illustrated within **ES Volume 2, Figure 3-4: Landscape and Ecology Mitigation Plan [EN010168/APP/6.2]** as referenced throughout this document. Planting types and habitat enhancements listed in this section could apply to multiple different typologies set out within the key of the Landscape and Ecology Mitigation Plans, therefore, the relevant mitigation typologies from the Landscape and Ecology Mitigation Plans to which each management prescription applies are listed at the beginning of each subheading.
- 1.3.3 This section should be read in conjunction with Annexe A – Outline Management Prescription Timetable, which sets out the timetable for management prescriptions, along with any seasonal restrictions on management measures, which will be adopted for the duration of the Scheme.

General Planting Implementation and Management Prescriptions

General Implementation Prescriptions

- 1.3.4 Planting will be undertaken in the planting season between October and March during construction, or within the first available year/season post construction. Planting will be carried out during appropriate climatic conditions.
- 1.3.5 Where existing ground vegetation is retained or has re-established during the construction phase, the following clearance works shall be undertaken prior to planting works:
- All grass and perennial vegetation shall be cleared from site, including epicormic and below ground growth;
 - All rubbish, debris and stones over 25 mm diameter shall be cleared; and
 - All arisings shall be removed from site.
- 1.3.6 The handling of plants on site must be in accordance with National Plant Specification 'Handling and Establishing Landscape Plants' (Ref 9).
- 1.3.7 All plants and planting operations are to comply with the requirements and recommendations of all current relevant British Standard specification, including but not limited to:
- BS 8545. Trees: From Nursery to Independence in the Landscape;
 - BS 3936-1:1992. Nursery stock. Specification for trees and shrubs;
 - BS 4428:1989. Code of practice for general landscape operations (excluding hard surfaces) (AMD 6784);
 - BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations; and
 - BS 3998:2010: Tree Work – Recommendations.
- 1.3.8 Topsoil within planting pits shall be cultivated to a minimum depth of 400 mm where tree, hedgerow, and/or woodland planting is proposed, to ensure sufficient room to accommodate new planting and to provide appropriate growing conditions for new planting.
- 1.3.9 Topsoil in areas to be seeded with wildflower and grass seed mixes shall be cultivated using minimum tilling or direct drilling of seed straight into stubble of the previous arable crop. This retains some surface protection offered by the stubble and reduces the number of cultivator passes across the soil surface.

- 1.3.10 No cultivation shall take place in wet or waterlogged conditions or within the root protection areas of existing trees, as defined by BS5837:2012, on land not previously subject to arable crop production. Where drilling is required within the root protection areas of existing trees located within land not currently subject to arable production, this shall include surface scarification only and of no more than 50 mm depth to ensure roots are not damaged.
- 1.3.11 No topsoil will be imported or exported from site and no grading of the topsoil shall be undertaken.
- 1.3.12 In the interest of biodiversity protection, the use of herbicides shall be kept to a minimum in the preparation or management of the planted or seeded areas.
- 1.3.13 All trees and shrubs are to be planted with the appropriate biodegradable tree or shrub guards, which will be removed subject to satisfactory establishment and growth within five years post construction, or as required to ensure establishment.
- 1.3.14 All tree and hedgerow specimens will be native and of UK provenance. Trees will be locally sourced and of local provenance where practicable. The "Local Seed Zone Provenance" (i.e., the region within which the Solar PV Sites lies) is Region 404 (Ref 10).

General Management Prescriptions

- 1.3.15 Any plants and trees which are found to be dying, damaged or diseased following planting will be replaced with the same species and specification for Years 1-5 of the Scheme, as per the timetable in Annexe A. Thereafter, replacement planting will be required for any significant failures (i.e., extensive areas of plant or tree mortality leading to gaps, or mortality of a significant proportion of the overall number of plants or trees within a habitat feature), identified through monitoring, and the specification for replacement planting will be appropriate to the conditions on site, acknowledging the potential for conditions to change over the 60-year lifetime of the Scheme.
- 1.3.16 Any maintenance works such as cutting of trees or flailing (unless imperative for reasons of health and safety), will take place during September to February, which is outside of the main bird nesting season (March to August), for the duration of the Scheme. These works shall also be carried out when the ground is dry enough to allow machinery access.
- 1.3.17 All shelters, guards, rabbit spirals and stakes will be checked annually and secured or replaced where necessary. Shelters will be removed from all plants and will be disposed of off-site (subject to satisfactory establishment and growth) by Year 5 post planting.

- 1.3.18 Autumn sowing is preferable, with the seed sown as soon as practicable subsequent to construction of the array, to avoid a flush of unwanted species such as annual plants and injurious and invasive weeds (this is also dependent on careful preparation of the land prior to seeding, as set out above). Following this, weeds and invasive non-native species will be controlled by hand pulling, if not too excessive, or treated using a spot herbicide treatment if more widespread.

Native Hedgerows and Hedgerow Trees

- 1.3.19 **ES Volume 2, Figure 3-4: Landscape and Ecology Mitigation Plan [EN010168/APP/6.2]** key references:
- Existing Hedge to be Reinforced/ Gapped Up With Native Tree Planting;
 - Proposed Native Hedgerow; and
 - Proposed Linear Tree Planting.
- 1.3.20 Hedgerows and Hedgerow Trees are a Habitat of Principal Importance under the Natural Environment and Rural Communities (NERC) Act 2006 (Ref 11). Ancient Trees and Ancient and Species Rich Hedgerows are listed as priority habitats within the Wiltshire BAP. Ancient and Veteran Trees are also recognised as irreplaceable habitats. Hedgerows are identified as Non-Mapped Habitat-Based Priorities in the draft Wiltshire LNRS.
- 1.3.21 An extensive network of over 350 native hedgerows is present across the Solar PV Sites, many of which contain frequent mature standard trees. The majority of hedgerows across the Solar PV Sites are species-rich in composition and are generally mature, intact and in good condition.
- 1.3.22 The Scheme offers significant opportunities for tree and hedgerow planting, as well as enhancement of existing hedgerows, in line with local conservation priorities, national targets and to mitigate impacts to hedgerow habitat arising from the Scheme. Strengthening the local hedgerow network will significantly enhance the area for a wide range of wildlife, including but not limited to bat species, birds and invertebrates, as well as contributing to local green infrastructure.
- 1.3.23 All tree and hedgerow specimens will be native and of UK provenance. Trees will be locally sourced and of local provenance where practicable; as defined in **Paragraph 1.3.14**.

Hedgerow Planting

- 1.3.24 Proposed new hedgerows will provide additional linking habitat and reinforce the existing green network. Gaps in existing hedgerows will be

‘gapped up’ (infilled) wherever practicable with new hedgerow and hedgerow tree planting.

- 1.3.25 All new hedgerows and infill planting will comprise of a double staggered row of plants 400 mm apart within each row; overall, six plants per linear metre. Species will be mixed throughout the hedge line in random groups of three/five/seven. A 500 mm wide trench will be excavated to take plants and topsoil cultivated to 450 mm depth prior to application of fertiliser. All species will be planted as bare root whips.
- 1.3.26 Locally appropriate species will be used, based on those already found within the local area. The planting of blackthorn *Prunus spinosa* will provide habitat for rare species such as brown hairstreak butterfly *Thecla betulae*, and barberry *Berberis vulgaris* planting will provide food plants for the endangered barberry carpet moth *Pareulype berberata*, identified as priority species within the Wiltshire BAP and targeted for local conservation action. Appropriate management of hedgerows will be key for species such as these, as well as a range of other species including nesting and foraging birds.
- 1.3.27 A list of locally appropriate species is provided below in **Table 1** (those which have been identified within the hedgerows at the Solar PV Sites).

Table 1: Hedgerow Species for Planting Within the Scheme

Scientific Name	Common Name	Size (cm)	Form
<i>Berberis vulgaris</i>	Barberry	40-60	Transplant (Bare Root)
<i>Prunus spinosa</i>	Blackthorn	40-60	Transplant (Bare Root)
<i>Cornus sanguinea</i>	Dogwood	40-60	Transplant (Bare Root)
<i>Rosa canina</i>	Dog rose	40-60	Transplant (Bare Root)
<i>Sambucus nigra</i>	Elder	40-60	Transplant (Bare Root)
<i>Acer campestre</i>	Field maple	40-60	Transplant (Bare Root)
<i>Crataegus monogyna</i>	Hawthorn	40-60	Transplant (Bare Root)
<i>Corylus avellana</i>	Hazel	40-60	Transplant (Bare Root)
<i>Ligustrum vulgare</i>	Wild privet	40-60	Transplant (Bare Root)
<i>Ulmus glabra</i>	Wych elm	40-60	Transplant (Bare Root)

- 1.3.28 The planting of new hedgerows parallel to existing ones will strengthen the existing wildlife corridor and contribute to the green infrastructure policies in the local area. These strengthened field boundary features will

provide important commuting and foraging resources for bats, birds and invertebrates.

Hedgerow Management

- 1.3.29 Whilst most hedgerows are currently in ‘moderate’ or ‘good’ condition when considering the Biodiversity Net Gain (BNG) Condition Assessment criteria, as defined in the **Biodiversity Net Gain Assessment Report** and **Statutory Biodiversity Metric Calculation [EN010168/APP/7.8 and EN010168/APP/7.9]**, issues relating to poor management of hedgerows were frequently observed. These included over-management, lack of management, damage due to narrow field margins or drift of herbicides/pesticides. This Outline LEMP sets out appropriate management practices for hedgerows within the Scheme, with a focus on optimising this habitat for local wildlife.
- 1.3.30 Newly planted hedgerows shall be regularly watered in their first summer and weeds shall be controlled through the use of bark mulch. A 75 mm layer of bark mulch 0.5 m either side of the hedge will be spread along the length of the hedge immediately after planting to suppress weeds and retain soil moisture.
- 1.3.31 Newly planted hedgerows shall be trimmed in at least the first two years to encourage bushy growth, allowing the hedge to become taller and wider at each cut.
- 1.3.32 Hedgerows will be enhanced through less regular mechanical cutting, for example, every two-three years, and on rotation (either by rotating hedgerows or cutting each side of the hedgerow on rotation). This will benefit species such as brown hairstreak, which lay their eggs on the bark of young growth (two-three years) on mature blackthorn specimens.
- 1.3.33 Cutting shall take place outside the bird nesting season, and ideally in January/February where the ground is dry enough to allow machinery access. This will ensure that food sources for birds, such as nuts and berries, remain in the hedgerows over the winter months. This may be focussed on hedgerows adjacent to roads and tracks where a tractor will be able to access in wet conditions without damaging the ground.
- 1.3.34 The shrubby element of hedgerows (excluding select hedgerow trees) will be maintained to an optimum height of 4–5 m tall. However, in order to retain an element of open views from the Cotswold National Landscape (CNL), the shrubby element of hedgerows bordering the CNL at the north of C1 and west/southwest boundaries of C1, C6, C8, C9 and C10 will be managed at a minimum height of 1.5 m. In addition, the shrub layer of retained hedgerows at all boundaries of Fields A11 and A12, as well as new hedgerows at the northern and eastern boundaries of B12, will also be managed at a existing heights or at 1.5 m (whichever is greater) to

preserve open habitats in these fields, which will be managed for ground nesting birds (Table 7 refers).

- 1.3.35 Where existing hedgerows comprise shrubby element with no or few trees, selected existing stock will be allowed to grow to a prominent height above the shrub layer. An average of one tree per 20 metres of hedgerow will be targeted, in order to increase prevalence of hedgerow trees within the existing hedgerow network.

Hedgerow Tree Planting

- 1.3.36 All newly planted hedgerows will include Select Standard trees randomly spaced between 5–9 m centres. On occasions where visual receptors are likely to see visual effects in close proximity, denser tree planting of between 2–3 m centres may be adopted to provide more instant screening effects. Where this occurs, species will be appropriately mixed to ensure large species trees are intermittently mixed with smaller species trees to ensure suitable growing conditions in perpetuity.
- 1.3.37 All hedgerow trees will be planted as Select Standard trees between 1.75–3.5 m tall. Select Standard trees will be planted in pits 800 mm wide x 700 mm deep or dimensions of the root ball, whichever is greater.
- 1.3.38 All trees shall be planted with a 75 mm depth of bark mulch, 0.5 m in diameter around each tree or shrub to suppress weeds and retain soil moisture.
- 1.3.39 Any trees planted in or alongside hedgerows as part of the proposed hedgerows enhancements, are to be planted with a 1.5 m tall white tipped marker post. This will allow locations of newly planted trees to be noticeable to operators of flails during maintenance periods.
- 1.3.40 Planting will focus on long-lived trees in order to replace the frequent ash *Fraxinus excelsior* trees noted to be present within the hedgerow network, the majority of which can be expected to be lost in the next five years due to ash dieback. It may be desirable to plant trees not identified in the local area which are ecologically similar to ash or are resistant to both disease and climate change impacts.
- 1.3.41 The tree species selected will reflect the species identified within the Solar PV Sites to ensure they are locally appropriate.
- 1.3.42 Tree planting locations will require an appropriate offset from solar panels to ensure shading will not occur once the tree has matured, or leaf fall become a problem on the panel structures. Lower growing species to be planted adjacent to the proposed solar array to avoid overshadowing.
- 1.3.43 A list of locally appropriate and resistant trees is given in **Table 2** below.

Table 2: Hedgerow Tree Species for Planting Within the Scheme

Scientific Name	Common Name	Size (m)	Form
<i>Acer campestre</i>	Field maple	2.5–3	Light Standard (Bare Root/Rootball)
<i>Crataegus monogyna</i>	Hawthorn	1.75–2	Feathered Tree (Bare Root/Rootball)
<i>Malus sylvestris</i>	Crab Apple	2.5–3	Light Standard (Bare Root/Rootball)
<i>Prunus padus</i>	Bird Cherry	2.5–3	Light Standard (Bare Root/Rootball)
<i>Quercus robur</i>	Oak (pedunculate)	2.5–3	Light Standard (Bare Root/Rootball)

Hedgerow Tree Management

- 1.3.44 An inspection and formative prune will be carried out annually in accordance with good arboricultural practice to BS 3998:2010. A clear stem of up to 2 m will be maintained for all hedgerow trees in order to be distinguishable.
- 1.3.45 All trees and shrubs will be regularly watered in the first summer and thereafter as required to ensure successful establishment. Bark mulch is to be maintained at a depth of 75 mm and form a diameter of at least 0.5 m around each tree or shrub as required to suppress weeds and retain soil moisture.

Woodland Copses and Shelterbelts

- 1.3.46 **ES Volume 2, Figure 3-4: Landscape and Ecology Mitigation Plan [EN010168/APP/6.2]** key references:
- Proposed Native Woodland Belt; and
 - Proposed Native Woodland Block.
- 1.3.47 Tree planting will largely target planting within the hedgerow network, but planting of copses and shelterbelts may also been incorporated into the proposals. Small copses and shelter belts can provide ‘stepping stones’ between larger areas of woodland, reflecting the strategic biodiversity opportunities for the Solar PV Sites set out within **Paragraph 1.2.11**. Extensive woodland and shelterbelt planting at Lime Down C, D, and E in particular will contribute to the existing network of woodland habitat in these areas, as well as providing substantial screening of the Solar PV Sites.
- 1.3.48 Shelter belts are typically c.5 m wide or more and comprise mixed native tree planting. Species to be included are shown in **Table 3**.

- 1.3.49 The tree species selected will reflect the species identified within the Solar PV Sites to ensure they are locally appropriate. Tree planting locations will require an appropriate offset from solar panels to ensure shading will not occur once the tree has matured, or to ensure leaf fall does not become a problem on the panel structures. Lower growing species to be planted adjacent to the proposed solar array to avoid overshadowing, details of which will be provided in Detailed Landscape Proposal plans which will be prepared prior to implementation of the Scheme. Detailed Landscape Proposals plans will include detailed planting specification and schedule as well as locations of all proposed planting.

Woodland and Shelterbelt Planting

- 1.3.50 Trees within woodland copses and shelterbelts will be planted at 1 m centres. Plant species will be planted as a mix of sizes from 60-90 cm Transplants, 125–150 cm Whips, and 200–250 cm Feathered Trees. Tree species will be planted in groups of one, three, five and seven (of the same species) to reinforce a natural layout of species within the landscape.
- 1.3.51 Trees will be planted appropriately depending on size. Trees will be planted as Whips, Transplants and Feathered specimens in pits approximately 300 mm wide x 400 mm deep, or the dimensions of the root ball, whichever is greater.
- 1.3.52 All trees shall be planted with a 75 mm depth of bark mulch, 0.5 m in diameter around each tree or shrub to suppress weeds and retain soil moisture.
- 1.3.53 Planting will focus on long-lived trees in order to replace the frequent ash trees noted to be present within the hedgerow network, the majority of which can be expected to be lost in the next five years due to ash dieback. It may be desirable to plant trees not identified in the local area which are ecologically similar to ash or are resistant to both disease and climate change impacts.
- 1.3.54 A list of locally appropriate and resistant trees is provided in **Table 3** below.

Table 3: Woodland Tree Species for Planting Within the Scheme

Scientific Name	Common Name	Size (m)	Form
<i>Acer campestre</i>	Field maple	2–2.5	Feathered (Bare Root)
<i>Cornus sanguinea</i>	Dogwood	0.6–0.8	Transplant (Bare Root)
<i>Corylus avellana</i>	Hazel	0.6–0.8	Transplant (Bare Root)

Scientific Name	Common Name	Size (m)	Form
<i>Crataegus monogyna</i>	Hawthorn	1.25–1.5	Whip (Bare Root/Rootball)
<i>Ligustrum vulgare</i>	Privet (wild)	0.6–0.8	Transplant (Bare Root)
<i>Malus sylvestris</i>	Crab Apple	1.25–1.5	Whip (Bare Root/Rootball)
<i>Prunus padus</i>	Bird Cherry	1.25–1.5	Whip (Bare Root/Rootball)
<i>Populus nigra</i>	Black poplar	2–2.5	Feathered (Bare Root)
<i>Quercus robur</i>	Oak (pedunculate)	2–2.5	Feathered (Bare Root)
<i>Rosa canina</i>	Dog rose	0.6–0.8	Transplant (Bare Root)
<i>Tilia cordata</i>	Small-leaved lime	1.25–1.5	Feathered (Bare Root)
<i>Ulmus glabra</i>	Wych elm	1.25–1.5	Feathered (Bare Root)

Woodland and Shelterbelt Management

- 1.3.55 All trees and shrubs will be regularly watered in the first summer and as required thereafter to ensure successful establishment. Bark mulch will be maintained at a depth of 75 mm, and 0.5 m in diameter around each tree or shrub as required to suppress weeds and retain soil moisture.
- 1.3.56 Hand pulling of persistent weeds will be undertaken or treated using a spot herbicide where weeds are more widespread.

Scattered Trees with Native Shrub Planting

- 1.3.57 **ES Volume 2, Figure 3-4: Landscape and Ecology Mitigation Plan [EN010168/APP/6.2]** key references:
- Proposed Riparian Corridor.
- 1.3.58 Scattered trees with native shrub planting will contribute to the mosaic of habitats proposed within the Solar PV Sites, specifically along watercourses, with the intention that this habitat will develop into woodland in the long-term. As above, selected tree and shrub species will be locally appropriate and will be positioned to avoid adverse shading impacts on panels.
- 1.3.59 Shrub planting will be planted at 1 m centres to form a dense lower canopy. Scattered trees will be planted at 5–11 m centres. All tree and native shrub species will be planted in groups of one, three, five and seven (of the same species) to reinforce a natural layout of species within the landscape.

- 1.3.60 Plant species will be a planted as a mix of sizes from 60-90 cm Transplants, 125–150 cm Whips, and 200–250 cm Feathered trees.
- 1.3.61 Trees will be planted appropriately depending on size. Trees will be planted as Whips, Transplants and Feathered specimens in pits approximately 300 mm wide x 400 mm deep, or the dimensions of the root ball, whichever is greater.
- 1.3.62 All trees shall be planted with a 75 mm depth of bark mulch, 0.5 m in diameter around each tree or shrub to suppress weeds and retain soil moisture.
- 1.3.63 A list of locally appropriate species is given below in **Table 4** (those which have been identified within the Solar PV Sites).

Table 4: Tree Species for Planting Withing the Scheme

Scientific Name	Common Name	Size (m)	Form
Scattered Trees			
<i>Acer campestre</i>	Field maple	2–2.5	Feathered (Bare Root)
<i>Populus nigra</i>	Black poplar	2–2.5	Feathered (Bare Root)
<i>Quercus robur</i>	Oak (pedunculate)	2–2.5	Feathered (Bare Root)
<i>Tilia cordata</i>	Small-leaved lime	1.25–1.5	Feathered (Bare Root)
<i>Ulmus glabra</i>	Wych elm	1.25–1.5	Feathered (Bare Root)
Understorey Shrub/Trees			
<i>Berberis vulgaris</i>	Barberry	0.4–0.6	Transplant (Bare Root)
<i>Prunus spinosa</i>	Blackthorn	0.4–0.6	Transplant (Bare Root)
<i>Cornus sanguinea</i>	Dogwood	0.4–0.6	Transplant (Bare Root)
<i>Rosa canina</i>	Dog rose	0.4–0.6	Transplant (Bare Root)
<i>Sambucus nigra</i>	Elder	0.4–0.6	Transplant (Bare Root)
<i>Acer campestre</i>	Field maple	0.4–0.6	Transplant (Bare Root)
<i>Crataegus monogyna</i>	Hawthorn	0.4–0.6	Transplant (Bare Root)
<i>Corylus avellana</i>	Hazel	0.4–0.6	Transplant (Bare Root)
<i>Ligustrum vulgare</i>	Wild privet	0.4–0.6	Transplant (Bare Root)

Scattered Trees with Native Shrub Management

- 1.3.64 Due to the naturalised appearance of the shrub and scattered trees, this planting typology will require little maintenance once established.
- 1.3.65 All trees and shrubs will be regularly watered in the first summer and as required thereafter to ensure successful establishment. Bark mulch will be maintained at a depth of 75 mm, 0.5 m in diameter around each tree or shrub as required to suppress weeds and retain soil moisture.
- 1.3.66 Hand pulling of persistent weeds will be undertaken if they are not too excessive, or they will be treated using a spot herbicide treatment if more widespread.

Existing Trees

- 1.3.67 No retained trees are anticipated to require removal or routine management during the operation and maintenance phase of the Scheme. However, tree management works, including pruning, modification or felling, may be undertaken where reasonably necessary to address disease, poor structural condition, safety considerations or operational requirements.
- 1.3.68 Where a retained tree identified within the **Arboricultural Impact Assessment [APP-206]** as a BS 5837:2012 Category A or Category B tree, or as a veteran or ancient tree, is felled or removed during operation of the Scheme, replacement planting will be undertaken where reasonably practicable and appropriate having regard to the reason for removal, the location of the tree and relevant arboricultural and ecological considerations
- 1.3.69 Replacement planting will comprise an appropriate native species of a size and specification suitable for the location and will normally be undertaken during the first appropriate planting season following removal. Replacement planting will be located at or in reasonable proximity to the location of the removed tree where practicable, or elsewhere within the relevant Solar PV Site where this would provide greater landscape, ecological or arboricultural benefit. Replacement trees will be subject to appropriate establishment and maintenance measures in accordance with the detailed LEMP.

Buffer Areas

- 1.3.67 1.3.70 Buffer areas will be incorporated into the design of the Scheme to ensure an appropriately sized offset free from development between the various valued habitats typically located at field boundaries (hedgerows, watercourses and woodland etc.). Buffer zones will be located between the retained field boundary habitats and the perimeter security fence in

the case of the 'outermost' fields, and between field boundary habitats and the panels in other fields.

[4.3.68](#)[1.3.71](#) The criteria on which proposed buffers will be applied are as follows in **Table 5** below.

Table 5: Proposed Buffer Size Criteria

Buffer Size (m)	Criteria Where Buffer Applied
8	Ditches or watercourses of any kind
10	At least one of: • Watercourses where signs of otter or abundant evidence of water vole recorded • Outlying or annexe badger setts • Retained ponds where great crested newts (GCN) are absent • Individual trees and groups of trees (unless RPA dictates otherwise)
15	At least one of: • All hedgerows and lines of trees • Minor watercourses (depending on ecological value) • Woodland (including ancient woodland) • Designated sites
30	At least one of: • Main or subsidiary badger setts • Major watercourses
50	Retained ponds where GCN are present (or assumed present)
Case-by-case	Bat roosts Schedule 1 bird nests (e.g. barn owl <i>Tyto alba</i> , hobby <i>Falco subbuteo</i> etc.) Trees

[4.3.69](#)[1.3.72](#) **Table 5** shows that the proposed ecological buffer areas, when applied across the entire Scheme, will comprise a large amount of land outside the footprint of the solar array which can be ecologically enhanced. Providing a range of habitats within these areas will create a mosaic within the landscape and provide green corridors across the Solar PV Sites to facilitate commuting species. Habitats proposed within the buffer areas include grasslands of varying structural and species composition, as well as successional scrub.

[4.3.70](#)[1.3.73](#) Tussocky and flower-rich grassland buffers represent locally appropriate habitat types, as arable field margins and grassland fields were noted across the Solar PV Sites at baseline and are in keeping with the character of the local landscape.

[4.3.741.3.74](#) Widening of existing arable field margins and the creation of additional, larger ecological buffer zones will have the beneficial effect of enhancing neighbouring features, such as hedgerows, ditches and woodland edges. This in turn will contribute to the connectivity of habitats within the Scheme and within the neighbouring landscape, a key tenet of the National Planning Policy Framework and local planning policy.

Successional Scrub

[4.3.721.3.75](#) **ES Volume 2, Figure 3-4: Landscape and Ecology Mitigation Plan [EN010168/APP/6.2]** key references:

- Proposed Low Density Scrub.

[4.3.731.3.76](#) Several field margins across the Solar PV Sites will be allowed to develop into scrub, including some larger areas at Lime Down C. Scrub is a valuable habitat as it provides shelter and food for invertebrates, birds and mammals. It can be a particularly valuable habitat to develop on woodland edges, as it provides an important transitional zone between the wooded area and grassland.

[4.3.741.3.77](#) Where practicable, scrub establishment will take the form of “rewilding”, with locally sourced tree seeds and berries being scattered within the areas to be established and allowing the habitat to grow without any specific planting. This will ensure local gene stock is used and the species which thrive will be those most suitable to the specific conditions in that area. Whip planting will be undertaken where this approach is not successful.

[4.3.751.3.78](#) A list of locally appropriate species suitable for the supplementary approach highlighted above is given below in **Table 6**.

Table 6: Shrub Species for Planting Within the Scheme

Scientific Name	Common Name
<i>Berberis vulgaris</i>	Barberry
<i>Prunus spinosa</i>	Blackthorn
<i>Cornus sanguinea</i>	Dogwood
<i>Sambucus nigra</i>	Elder
<i>Acer campestre</i>	Field maple
<i>Crataegus monogyna</i>	Hawthorn
<i>Corylus avellana</i>	Hazel
<i>Rosa canina</i>	Dog rose

Scientific Name	Common Name
<i>Ligustrum vulgare</i>	Wild privet

[1.3.76](#)[1.3.79](#) The scrub areas will require some management in the form of cutting, likely through cutting of small areas each year to encourage regeneration and structural diversity of the habitat. The management plan will aim to ensure the scrub areas are cut on rotation, with each area cut approximately every five to seven years. This will create a mosaic within the scrub areas, with some cut and some mature patches which creates valuable habitat for wildlife. The frequency of cuts will be prescribed in the Management Prescription timetable to be provided in the detailed LEMP document.

Permanent Grassland Habitat

[1.3.77](#)[1.3.80](#) **ES Volume 2, Figure 3-4: Landscape and Ecology Mitigation Plan [EN010168/APP/6.2]** key references:

- Proposed Grassland Creation (Beneath Panels);
- Proposed Diverse Wildflower Meadow;
- Proposed Tussock Grassland Margins;
- Damp Grassland; and
- Existing Vegetation To Be Retained and Enhanced.

[1.3.78](#)[1.3.81](#) Lowland meadows are a Habitat of Principal Importance and calcareous and unimproved neutral grasslands are listed as priorities within the Wiltshire BAP.

[1.3.79](#)[1.3.82](#) Diversification of grassland management between different areas of the Solar PV Sites, including between buffer areas and different areas within the array, maximises the available niches for invertebrates to lay eggs, overwinter and feed and in turn drive opportunities for diversification up the food chain.

[1.3.80](#)[1.3.83](#) It has been shown that diverse grassland can be created within a solar array, where managed appropriately (Ref 12). This can have a significant benefit to biodiversity but can also benefit surrounding agricultural land through offering an increase in pollinator species. Other benefits in terms of ecosystem services include an increase in water quality as a result of the cessation of fertilisation and herbicide spraying as well as an increase in soil health as a result of the cessation of ploughing.

4.3.84 Conservation management of grassland will be applied throughout all grassland habitats within the Scheme (i.e., no management during the flowering season), and differing seed mixes and creation prescriptions have been specified between different habitat types, the locations of which will be provided within the detailed LEMP.

4.3.85 It has been assumed within this report that any grassland creation on previously arable land will require seeding, given that the land has been under agricultural production for many years. However, Plantlife suggest that natural regeneration is preferable in order to maintain a local genestock and distinctiveness (Ref 13). There may be opportunities to use a local donor site to provide green hay. For example, Chalkenhams LWS, Brickyard Scrub LWS, and Harries Ground Rodbourne SSSI are located immediately adjacent the Scheme Boundary and are designated for species-rich neutral grassland habitats. Fifteen further LWS designated for grassland habitats were identified within 2 km of the Solar PV Sites during the desk study. Opportunities for green hay donor sites will be explored prior to the preparation of the detailed LEMP.

4.3.86 Where the above is not practicable, wildflower and grass seed will be required. Given the size of the Scheme, it is likely that a large proportion of seed will need to be purchased from outside the local area. Whilst this is acceptable, it is important that seed is sourced as locally as practicable and as a minimum will be native to the UK and UK sourced.

4.3.87 The following principles will be used when considering seeding:

- If there is evidence that the land was previously grassland (as opposed to arable cropland) or there is a diverse grassland habitat nearby, soil inversion and natural regeneration will be considered in the first instance which will be specified in detailed landscape proposal plans;
- Where practicable, local donor sites will be used to source seed;
- Where seed requires purchase from a supplier, the source will be as local as practicable (e.g., Habitat Aid gives details of their donor sites); and
- Seed will be native to the UK and the supplier will have adopted the Flora Locale code of practice (Ref 14) (unless otherwise specified in the LEMP).

4.3.88 It will be important to gain an understanding of soil conditions prior to any seeding being carried out – this will include an assessment of soil type and pH, as well as nutrient levels which may affect the species that will establish. Consequently, the information in this Outline LEMP may be subject to revision following completion of such investigations, which will

further tailor and refine the appropriate seed mixes and habitat establishment techniques to be adopted.

Beneath Panel Habitat

[4.3.86](#)[1.3.89](#) **ES Volume 2, Figure 3-4: Landscape and Ecology Mitigation Plan [EN010168/APP/6.2]** key references:

- Proposed Grassland Creation (Beneath Panels); and
- Existing Vegetation To Be Retained and Enhanced.

[4.3.87](#)[1.3.90](#) The Solar PV Sites are generally arable in character, with cropped fields comprising the majority of habitat area, although Lime Down B and E also contain fields of pasture grassland. Arable fields within the Solar PV Sites are typically intensively farmed monocultures; whilst the exact management practices are not known, it is likely that these fields receive periodic fertiliser and pesticide treatments with soils ploughed on a regular basis.

[4.3.88](#)[1.3.91](#) The arable fields across the Solar PV Sites are therefore generally botanically poor and contain little ecological interest, save for their value to a relatively small number of ground-nesting bird species and arable specialists including hunting raptors (several of which are notable species of conservation concern), and brown hare *Lepus europaeus*. A number of notable arable plants were also recorded within the arable habitats on site, including shepherd's needle *Scandix pecten-veneris* and narrow-fruited cornsalad *Valerianella dentata*, both of which are listed as priority species within the Wiltshire BAP and identified within the Wiltshire Rare Plant Register (Ref 15). Grassland fields were also typically low in species diversity.

[4.3.89](#)[1.3.92](#) Considerable opportunities for the enhancement of arable fields' ecological value, whilst being compatible with a solar array and usable by hunting raptors and mammals such as brown hare, are possible. Reversion from intensive agriculture to low (or no) input (fertiliser and soil improvers) grassland alone will be expected to provide a net gain in plant and invertebrate species diversity over time.

[4.3.90](#)[1.3.93](#) Habitat areas within the security fencing, including directly beneath the panels will be targeted for grassland creation of varying diversity, although it is recognised that grassland directly beneath the panels will be limited in diversity as a result of shading impacts.

[4.3.91](#)[1.3.94](#) A number of existing grasslands will be enhanced following the management measures set up in this section.

Grassland Creation and Early Establishment

~~4.3.92~~4.3.95 Diverse grassland can take time to develop on previously arable land which has been fertilised and ploughed. However, with an appropriate seed mix selected and correct habitat management implemented, wildflower meadows have been created on many solar farms in the UK (Ref 16). The preparation of the fields before reversion to grassland will be key and must aim to minimise the impact of competition between desirable, sown species and unsown agricultural weeds and cereals (Ref 17).

~~4.3.93~~4.3.96 It is recognised that poor vegetation establishment can reduce infiltration capacity on affected soils and lead to increases in runoff if left unmanaged. Measures to deal with flood risk and drainage are set out within **ES Volume 3, Appendices 11-1 to 11-9: Flood Risk Assessment and Outline Drainage Strategies [EN010168/APP/6.3]** updated at Deadline 5 of Examination.

~~4.3.94~~4.3.97 Prior to finalisation of the detailed LEMP, soil investigations will be essential to ensure appropriateness of seed mix/establishment techniques and promote a high likelihood of success. The seed mixes will be selected to reflect the soil type, pH and nutrient levels in order to ensure that they establish successfully. A mix such as Habitat Aid's Solar Farm Wildflower Meadow Seed Mix (Ref 18) would be appropriate as it contains a diversity of native wildflowers and non-vigorous grasses.

~~4.3.95~~4.3.98 Autumn sowing is preferable, with the seed sown as soon as practicable subsequent to construction of the array to avoid a flush of unwanted species such as annual plants and injurious weeds (as well as careful preparation of the land prior to seeding, as set out above).

~~4.3.96~~4.3.99 Management during the first year is critical, with more regular cutting taking place to tackle annual or agricultural plants and injurious weeds. Herbicide application may be necessary should there be an abundance of injurious weeds.

~~4.3.97~~4.3.100 An inspection will be undertaken in early August in the first year following seeding of grassland at the relevant Solar PV Sites. The inspection will be undertaken by the operating company. Should the proportion of bare ground be greater than 20%, sowing with an appropriate grassland seed mix should be undertaken or repeated in these areas, depending on the initial methodology for grassland creation. Reseeding in August is likely to be particularly appropriate where the months of May, June and July have been very dry.

Grassland Management

~~4.3.98~~4.3.101 After Year 1, management will be in the form of a "haycut" between late July and September and/or grazing by sheep (aftermath grazing). The fields will be "shut up", with no grazing or cutting between

April and late July to allow the flowering species to grow, flower and set seed.

Cutting

~~1.3.99~~ 1.3.102 Management by cutting will entail a late season “haycut” between August and September. No cutting will take place between April and July, to allow the flowering species to grow, flower and set seed.

~~1.3.100~~ 1.3.103 Where practicable, cutting will be carried out using a cut-and-collect system to minimise nutrient build up in the soil which stifles species diversity. It will be necessary to balance the requirement for a late cut to allow plants to flower and set seed and ensuring that the cut is not taken so late that too much dead material is present, rendering the baled material unsuitable for agricultural applications. Careful monitoring and selection of seed mixes will be required in order to achieve both a diverse grassland and a use for the arisings collected. Alternatively, there may be an opportunity to use the cuttings within local composting sites such as anaerobic digesters or open-air windrows. Grazing post-cutting is also possible (aftermath grazing).

~~1.3.101~~ 1.3.104 An alternative to use of arisings for feedstock or composting is to use hay collected from the established meadow as a source of seed for other sites in the vicinity. However, this would be more appropriate where the meadow has been established using local seed, which will be defined in the finalised version of this LEMP as a requirement under the DCO.

~~1.3.102~~ 1.3.105 Cutting or mowing can be carried out relatively quickly and cost-effectively, particularly with single axis tracker panels (although the type of panel to be implemented in the Scheme is not currently confirmed), which can be moved so that they are vertical to allow machinery to access between panel rows.

~~1.3.103~~ 1.3.106 Where grassland becomes too long and shading of panels is a problem, a “shade cut” may be taken along the leading edge of the panels (i.e., a strip no more than 1 m wide) in order to reduce the sward height during the late summer months (as shown in **Plate 1** below). However, careful selection of an appropriate seed mix may reduce the necessity of this type of management.

~~1.3.104~~ 1.3.107 Monitoring visits, as set out in Section 1.4, will identify any areas of bare ground exceeding 20% cover, which will be re-seeded as required.



Plate 1: Site where a “Shade Cut” has been employed during the growing season to prevent shading of panels but allow flowering meadows elsewhere.

Grazing

~~4.3.105~~1.3.108 Low intensity grazing throughout the year may be employed, with a low enough stocking density to ensure a varied sward establishes, however, this type of management will need to be carefully monitored as it can lead to a lower number of flowering species given sheep will preferentially graze flowers. However, a diverse grassland can still develop under this management, which will benefit birds and invertebrates.

~~4.3.106~~1.3.109 Pulse grazing with sheep at higher densities for shorter periods of time may be practicable as an alternative management strategy. Under this method, sheep will graze discrete parts of the Sites, i.e., individual fields or portions of fields (electric fencing can be used to delineate areas) and then moved onto different areas once the sward reaches an appropriate height.

~~4.3.107~~1.3.110 Grazing too often or too densely carries the risk of depleting botanical diversity through the raising of nutrient levels, favouring of fewer vigorous species, and inhibition of flowering and seed-setting. Ideal grazing regimes will include the limiting of number of animals per hectare/acre to ‘conservation grazing’ or Higher-Level Stewardship (agri-environment scheme) rates. Where practicable, sheep shall be removed for at least eight weeks between April and August to allow for plants to flower and set seed.

~~4.3.108~~1.3.111 The above management prescriptions will apply to all areas of the Sites where panel arrays are proposed.

~~4.3.109~~1.3.112 Monitoring visits, as set out in Section 1.4, will identify any areas of bare ground exceeding 20% cover, which will be re-seeded as required.

Flower-rich Grassland

~~4.3.110~~4.3.113 **ES Volume 2, Figure 3-4: Landscape and Ecology Mitigation Plan [EN010168/APP/6.2]** key references:

- Proposed Diverse Wildflower Meadow; and
- Existing Vegetation To Be Retained and Enhanced.

~~4.3.111~~4.3.114 Within areas under this treatment, a floristically rich habitat will be created (see **Plate 2**) which will have a benefit for pollinating insects (Ref 19), therefore boosting invertebrate numbers which are currently in decline and providing ecosystem services for the adjacent arable land. This will also benefit species such as farmland birds, amphibians and reptiles.

~~4.3.112~~4.3.115 In order to create this habitat, a more flower rich seed mix will be utilised, such as Habitat Aid's Standard Pollen and Nectar Mix (Ref 20) which includes a carefully selected range of nectar rich flowers to allow for a long flowering season.

~~4.3.113~~4.3.116 At Lime Down E, devil's bit scabious *Succisa pratensis* will be included within the flower rich seed mix. Devil's bit scabious is the larval foodplant of the marsh fritillary butterfly, for which Harries Ground, Rodbourne SSSI is designated; this site lies immediately adjacent the Scheme Boundary at Lime Down E. Inclusion of devil's bit scabious within the seed mix will increase the availability of suitable food plants for the species in the species-rich grassland network surrounding the SSSI.

~~4.3.114~~4.3.117 This habitat will be cut once on an annual basis, in September to avoid impacts on nesting birds, with arisings removed.



Plate 2: Wide, Herb-rich Flowering Field Margin

Tussock Grassland Margins

[4.3.115](#)[1.3.118](#) **ES Volume 2, Figure 3-4: Landscape and Ecology Mitigation Plan [EN010168/APP/6.2] key references:**

- Proposed Tussock Grassland Margins; and
- Existing Vegetation To Be Retained and Enhanced.

[4.3.116](#)[1.3.119](#) Low intensity managed grassland can provide valuable tussocky habitat (see **Plate 3**) for a range of birds, providing a food source both during breeding and wintering, as well as nesting habitat for species such as corn bunting *Emberiza calandra*, grey partridge *Perdix perdix*, reed bunting *Emberiza schoeniclus* and yellowhammer *Emberiza citrinella*.

[4.3.117](#)[1.3.120](#) The tussocks also provide breeding and wintering habitat for a range of invertebrates and optimal habitat for amphibians, reptiles and small mammals (which in turn provided increased hunting opportunities for species such as barn owl).

[4.3.118](#)[1.3.121](#) Tussocky field margins created on arable land will be seeded with an appropriate tussock forming seed mix such as Habitat Aid's Tussock Mix (Ref 21) or similar. Where grassland margins already exist,

management can be altered in order to encourage a tussocky sward to form.

~~4.3.119~~4.3.122 Once established, the tussocky grassland shall be cut (ideally) or grazed on a rotational basis once every three years in September, to allow plants to flower and set seed and also avoid impacts on nesting birds using the hedgerows and margins.



Plate 3: Tussocky Field Margin

Damp Grassland

- 1.1.1 Damp grassland will be created within the Solar PV Sites, associated with existing floodplains areas and watercourses such as Gauze Brook at Lime Down D. The use of existing floodplain meadow sites in proximity to the Scheme as donor sites for green hay collection will be explored further before purchasing seed from elsewhere. In addition, soil measurements in terms of nutrient levels and pH will also require assessment prior to seeding to ensure that the site is suitable.
- 1.1.2 Where green hay from local donor sites cannot be sourced, a suitable seed mix from a reputable supplier will be used, such as Habitat Aid's Wet Wildflower Mix (Ref 22).
- 1.1.3 In terms of management, the habitat will be subject to a hay cut as per the other wildflower areas, with the cut being taken in September to avoid

ground nesting birds. Arisings will be collected and may be used as a source for seed once the meadow is established.

Wetland Habitats

Rivers, Streams and Ditches

~~4.3.120~~1.3.123 **ES Volume 2, Figure 3-4: Landscape and Ecology Mitigation Plan [EN010168/APP/6.2]** key references:

- Existing Watercourse; and
- Proposed Riparian Corridor.

~~4.3.121~~1.3.124 Rivers are a Habitat of Principal Importance, and rivers, streams and their associated habitats are identified within the Wiltshire BAP.

~~4.3.122~~1.3.125 Generally, the quality of ditches across the Solar PV Sites is poor, due to agricultural impacts such as runoff; the cessation of intensive agricultural land use in proximity to these watercourses will likely lead to better water quality over the duration of the Scheme. In addition, wide buffers of at least 8 m will enhance the ditch and river habitats for associated protected and notable species, including water vole, otter, birds and invertebrates.

~~4.3.123~~1.3.126 Habitats adjacent watercourses will be managed to enhance the structural and species diversity of marginal vegetation. This may be achieved through a combination of seeding, rotational cutting and targeted scrub removal where encroachment is detrimental to ditch condition.

~~4.3.124~~1.3.127 Ditch management will be carefully considered, with works being undertaken on a rotational basis so that undisturbed areas remain annually. Ditch management can be carried out every two to five years, with cutting being undertaken in autumn/winter and only one side of the bank cut each time.

~~4.3.125~~1.3.128 Planting of trees may also be undertaken adjacent to ditches and rivers, with sufficient distance from the ditch to prevent damage and on the northern side where practicable to prevent shading.

~~4.3.126~~1.3.129 The use of herbicides to control weeds within aquatic habitats or riparian banksides will ordinarily be avoided, with non-chemical management options (such as hand-pulling) favoured instead. However, consideration will be given to targeted use of herbicides to control plant species that may pose a threat to conservation interests, including invasive non-native species (INNS), where non-chemical methods are ineffective. Any herbicide application in or near watercourses will use products approved for aquatic use and must be in receipt of the correct

permission from Environment Agency ('Agreement to use herbicides in or near water') prior to application.

~~4.3.127~~1.3.130 Beavers are increasing in abundance in England and expanding their range and it is feasible that they could inhabit suitable watercourses within the Solar PV Sites in the future. In these circumstances, the general principle for management will be to allow beavers to occupy and use the Solar PV Sites without intervention. However, should evidence of beaver presence be confirmed and beaver activity be identified as causing, or being likely to cause, adverse effects on the safe operation or functionality of the Scheme, appropriate management measures will be developed and implemented. Any such measures will be proportionate to the nature and extent of the issue, informed by site-specific circumstances, and undertaken in consultation with relevant stakeholders where required and in accordance with the relevant legal and licensing requirements.

Ponds

~~4.3.128~~1.3.131 **ES Volume 2, Figure 3-4: Landscape and Ecology Mitigation Plan [EN010168/APP/6.2]** key references:

- Proposed Indicative Locations for Ponds; and
- Proposed Locations for Reintroduction of Historic Ponds.

~~4.3.129~~1.3.132 Ponds are a Habitat of Principal Importance and standing open water is listed as a priority habitat in the Wiltshire BAP.

~~4.3.130~~1.3.133 Ponds are of significant ecological value, and any creation of such features will strengthen the existing network of ponds and wetland habitat within and surrounding the Solar PV Sites. Ponds could be created within field margin buffer zones (see **Plate 4**) and have a role to play in flood risk alleviation and water attenuation. These could take the form of linear ponds such as deepened swales, where this type of drainage is required for the development.

~~4.3.131~~1.3.134 Creation of wetland habitats such as ponds will benefit a range of species that have been recorded within the Solar PV Sites, including birds of conservation concern such as cuckoo *Cuculus canorus*, grey wagtail *Motacilla cinerea*, lapwing *Vanellus vanellus*, mallard *Anas platyrhynchos*, reed bunting, sedge warbler *Acrocephalus schoenobaenus*, moorhen *Gallinula chloropus*, snipe *Gallinago gallinago* and teal *Anas crecca*. Ponds will also provide habitat for a range of amphibian species, and a foraging resource for bats and mammals.

~~4.3.132~~1.3.135 Ponds created will be sited within areas outside the footprint of the arrays.



Plate 4: Pond Creation in Margin of Solar Farm

~~4.3.133~~4.3.136 The ponds will allow for the widest variety of habitats possible, providing shallower pools of water, as well as a larger, deeper area of at least 1.5 m (so creating a complex of ponds), as recommended by the Million Ponds Project (Ref 23).

~~4.3.134~~4.3.137 Principles for pond construction are as follows:

- No planting will be introduced so as to allow species which use early successional stages of ponds to establish;
- At every location where a pond to be created is shown on the Landscaping Plans, this will comprise one deep pond and three shallower ponds as show in **Plate 5** below; and
- Pond slopes will be shallow: less than 1:5 (12°), and preferably 1:20 (3°).

~~4.3.135~~4.3.138 Spoil will be used to create south facing bunds and spread on adjacent land, then seeded with a suitable native diverse mix (such as the mixes set out in previous sections).

~~4.3.136~~4.3.139 Where grazing is utilised in fields that contain either existing or newly created ponds, measures will be implemented to prevent impacts associated with livestock poaching the banks of the waterbodies. These

measures may include additional shrub planting around the pond's edge, or the installation of stock-proof fencing around the pond.

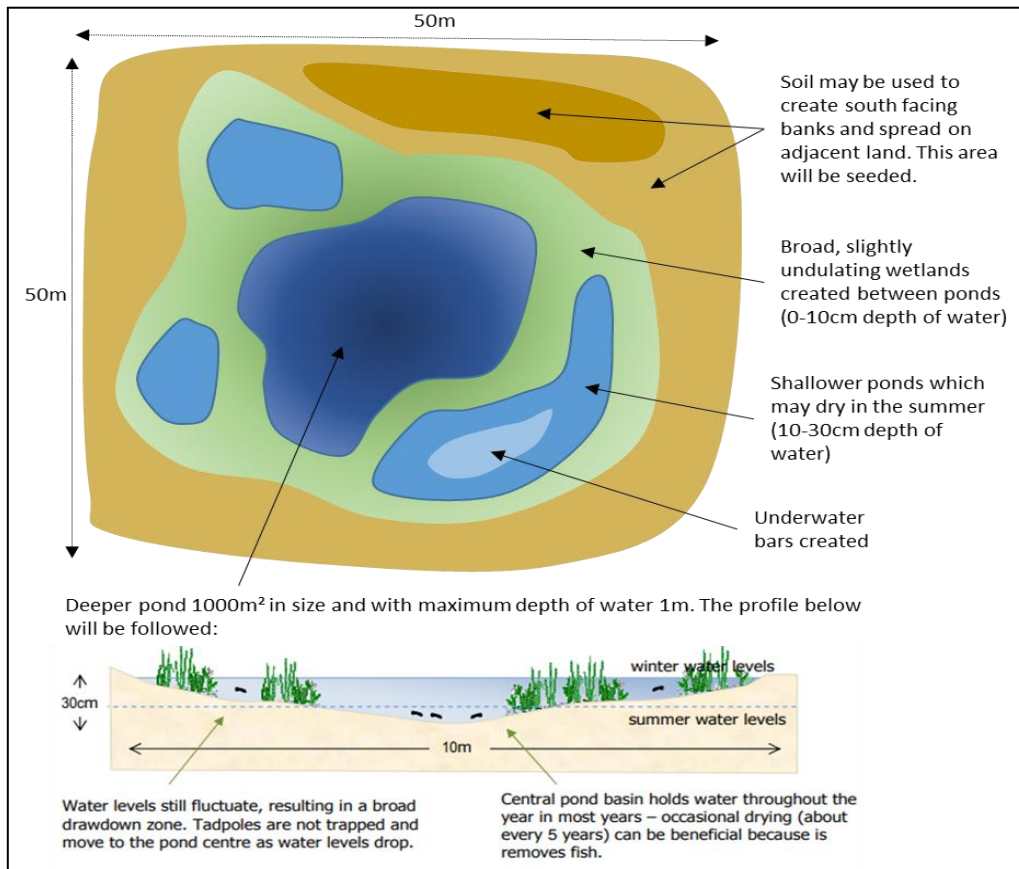


Plate 5: Suitable Pond Design

4.3.1371.3.140 The design of the pond ensures suitability for great crested newts, but also for other amphibians, such as palmate newt, which is also a priority species in the Wiltshire BAP. The areas of marshy wetland will create a mosaic of habitats and will increase the diversity of the area as a variety of plants will be able to establish. This will also attract a greater diversity of invertebrates.

4.3.1381.3.141 The ponds will be checked during monitoring visits to ensure they are establishing without any problems.

4.3.1391.3.142 Some management will be required, depending on the establishment of scrub, trees and prolific species such as bulrush (although the variety of pond depths will ensure that some open water will be available). An ecologist will advise on the correct timing of any management required subsequent to the monitoring visits. Anticipated management will be as follows:

- Every five years: a cut of vegetation surrounding the ponds to prevent tree growth and shading. This will be carried out in the winter months

using hand-tools. Some patches of scrub can be left to develop on the northern side of the pond. Arisings will be left in a pile close to the pond area (but over 20m from open water to prevent nutrients entering the pond system).

- Every ten years: Some hand pulling, or mechanical dredging may be required if there is a build-up of vegetation within the ponds. This will only be carried out where there is a risk of all open water being covered and will be carried out under the direction of an ecologist as great crested newts may be present.

[4.3.140](#)[1.3.143](#) The use of herbicides to control weeds within aquatic habitats or banksides will ordinarily be avoided, with non-chemical management options (such as hand-pulling) favoured instead. However, consideration will be given to targeted use of herbicides to control plant species that may pose a threat to conservation interests, including invasive non-native species (INNS), where non-chemical methods are ineffective. Any herbicide application in or near waterbodies will use products approved for aquatic use and must be in receipt of the correct permission from Environment Agency ('Agreement to use herbicides in or near water') prior to application.

Species Mitigation and Enhancement Features

Ground-Nesting Bird Mitigation Habitat

[4.3.141](#)[1.3.144](#) **ES Volume 2, Figure 3-4: Landscape and Ecology Mitigation Plan [EN010168/APP/6.2]** key references:

- Proposed Ground Nesting Bird Mitigation – Set Aside; and
- Proposed Diverse Wildflower Meadow.

[4.3.142](#)[1.3.145](#) It is anticipated that provision of an appropriate quantum of suitable habitat will be required to mitigate for impacts on protected and notable bird species recorded within the Solar PV Sites, namely skylark *Alauda arvensis*, a ground-nesting farmland specialist typical of open arable fields.

[4.3.143](#)[1.3.146](#) Habitat creation and enhancement measures that may comprise mitigation for this species are set out below.

[4.3.144](#)[1.3.147](#) On-site mitigation for ground-nesting bird species, such as skylark, will likely comprise the provision of areas of set-aside habitat and creation of meadow grassland.

[4.3.145](#)[1.3.148](#) The area of mitigation habitat required, and further habitat prescriptions will be set out within the detailed LEMP document. Currently,

nine fields are proposed for the provision of ground-nesting bird mitigation habitat, shown in **Table 7** below.

Table 7: Proposed Ground-Nesting Bird Mitigation Habitat

Habitat Key Reference	Field Numbers	Total Area (ha)
Proposed Ground-Nesting Bird Mitigation – Set Aside <u>Diverse Wildflower Meadow</u>	B4 A1, B12, C1, and C6	54 59.7
Proposed Diverse Wildflower Meadow <u>Ground Nesting Bird Mitigation – Set Aside</u>	A11, A12, C10, and C24	63.2

Permanent Set-Aside Habitat

4.3.1461.3.149 Areas of permanent set-aside habitat will be created within the Solar PV Sites, to provide foraging and nesting habitat for ground-nesting bird species. These areas will be cultivated every 2-5 years and left to establish naturally, with arable weeds and early colonising species. Targeted management to remove encroaching scrub or undesirable species will be implemented as required.

4.3.1471.3.150 As set out in the **ES Volume 1, Chapter 9: Ecology and Biodiversity [EN010168/APP/6.1]**, skylark will likely be displaced from the footprint of the arrays and so it is the intention to mitigate for this as far as practicable by replacing the existing moderately-suitable arable habitat (which supports skylark nesting at a low to moderate density) with optimal habitat enabling a greater number of territories to occupy a smaller space. The aim will be to create a short weedy sward which is suitable both for foraging and nesting.

4.3.1481.3.151 During management years, the fields will be lightly disced in February - March to a depth of no more than 7 cm. A cut will then be taken at the same time, to remove any encroaching scrub and other vegetation. Timings avoid the bird nesting season.

4.3.1491.3.152 Monitoring will focus on these habitats in order to check for the spread of undesirable plants, which may proliferate on clay and nutrient rich soils. Remedial action will need to be taken should the spreads of these species be identified.

4.3.1501.3.153 Fallow and set-aside land subject to cultivation will also create suitable conditions for rare/notable arable plant species to persist, including the number of priority species identified within the Solar PV Sites.

Meadow Grassland

~~4.3.151~~4.3.154 Creation of diverse meadow grassland is proposed across the Solar PV Sites which will also be of benefit to ground-nesting bird species. Managing grassland to achieve structural and species diversity will improve the suitability of this habitat for foraging and nesting birds. Management in these areas will take place outside of the nesting bird season, so as to avoid potential impacts to nesting skylark, and other species.

Habitat Boxes and Wildlife Enhancement Features

~~4.3.152~~4.3.155 Habitat boxes can be a useful tool for monitoring and can provide nesting/roosting opportunities where there is a lack of natural features within the landscape. For this outline LEMP, exact locations and plans for bat and bird boxes have not been produced. It is anticipated that a finalised location and specification plan will be produced as part of the final LEMP.

Bird Boxes

~~4.3.153~~4.3.156 Bird boxes that mimic cavities can be installed on the Solar PV Sites where there is a lack of mature trees which may naturally provide these features. Boxes can be installed according to the species which have been identified during the breeding bird surveys and their distribution. Nuthatch *Sitta europaea* and starling *Sturnus vulgaris* are cavity-nesting species of conservation concern which may benefit from bird boxes.

~~4.3.154~~4.3.157 Barn owl boxes are known to be particularly successful on solar sites (Ref 24), especially when placed close to areas of rough grassland where there will be an abundance of small mammals. Where no mature trees are present, barn owl boxes can be post mounted (although trees are preferable). Barn owl is identified as a priority species within the Wiltshire BAP.

~~4.3.155~~4.3.158 Additional raptor species recorded within the Solar PV Sites which may benefit from boxes or other enhancements include kestrel *Falco tinnunculus* and tawny owl *Strix aluco*. Consultation with relevant stakeholders and local wildlife groups would help shape any targeted measures for raptors that are known to be present within the Solar PV Sites and wider area.

~~4.3.156~~4.3.159 All bird boxes will be installed out of direct sunlight, facing away from prevailing wind (northerly, easterly or south-easterly preferably). Boxes shall also be placed clear of vegetation and away from ivy growth. All boxes will be placed at least 3 m off the ground, or as otherwise specified.

Bat Boxes

~~4.3.157~~4.3.160 As with bird boxes, bat boxes can be particularly useful where natural cavities are limited. The installation of boxes suitable for crevice-dwelling bat species, such as common pipistrelle *Pipistrellus pipistrellus*, may act as an enhancement and could also provide an important monitoring tool. Monitoring of bat species on site may be particularly beneficial, given that some notable bat species have been recorded in the area, including greater horseshoe *Rhinolophus ferrumequinum*, lesser horseshoe *Rhinolophus hipposideros* and barbastelle *Barbastella barbastellus*.

~~4.3.158~~4.3.161 Boxes could be installed in a variety of places including hedgerow trees, woodland or post mounted. Double panel bat boxes may be more desirable in some cases, as these prevent birds from nesting within the boxes. Bat boxes will be placed in sunny locations without obscuring vegetation and away from ivy growth. Boxes will be placed approximately 3 m from the ground and preferably on south facing mature tree trunks.

Other Wildlife Enhancement Features

~~4.3.159~~4.3.162 Log piles and hibernacula, comprising buried logs and rubble, will be created, particularly close to ponds and tussocky or scrub mosaic grassland. These habitat features provide shelter and hibernation opportunities for species such as reptiles, amphibians and invertebrates.

~~4.3.160~~4.3.163 The creation of these features will ideally utilise wood and stone generated during construction. Additional log or brash piles may also be created throughout the lifetime of the Scheme, using materials resulting from habitat management, e.g. hedgerow or tree cutting.

~~4.3.161~~4.3.164 Habitats such as woodland, scrub and hedgerows within the Solar PV Sites are considered to be suitable for dormice, with local records returned during the desk study, and their presence has been assumed in the absence of surveys. Dormouse boxes could be installed at appropriate locations within the Solar PV Sites to provide nesting opportunities and to act as a useful tool for monitoring of the species.

~~4.3.162~~4.3.165 Bee banks could be created as an enhancement for bees and other invertebrates. Bee banks would be created in line with Buglife guidance (Ref 25) and would comprise south-facing bare earth bunds which can be colonised by nesting solitary bees. The bunds would then be capped with low nutrient material, such as sand or sub-soil to suppress weeds and provide a substrate for bees to burrow into. Bare ground is also important for butterflies and beetles; these species in turn serve as food to other species.

1.4 Ecological Monitoring

- 1.4.1 An outline ecological monitoring strategy is set out below, however, further details for essential regular monitoring of the developing habitats will be set out within the more detailed and final iterations of the LEMP, based on a standardised approach (Ref 26). This monitoring will be carried out more regularly during the first five years of operation, when habitats are in the early stages of developing. This regular monitoring will identify issues early on so that remediation measures or changes in management can be applied.
- 1.4.2 Habitat specific monitoring will be required as part of BNG delivery and progress reporting, and is included as a UKHabitat Classification (UKHab) survey along with Condition Assessments of the habitats recorded.
- 1.4.3 The monitoring strategy will include:
- **UKHab Survey** – a habitat survey as well as Condition Assessments of the establishing habitats will be undertaken to ensure the habitats are developing as desired, and in line with BNG commitments;
 - **Botanical Quadrats** – fixed point quadrats will be recorded at selected locations. The distribution of quadrats will be designed to ensure each habitat is sampled, with the number of quadrats to be based on the size of the area and estimated species diversity of the proposed habitat. This will help to track establishment and identify any problems should the habitat not be forming as required. Where these quadrats are undertaken within panelled fields, locations will ensure that all habitats are sampled, including directly beneath and between the strings of panels, as well as within the field edges, outside of the array;
 - **Soil Survey** – a measurement of soil properties. Basic measurements may include pH, soil type, soil organic matter, bulk density, soil moisture, infiltration capacity, and texture. Additional measurements may include soil carbon, nitrogen, phosphorous, potassium and magnesium. There may also be opportunities to monitor other indicators such as fungal:bacterial ratio or fungal DNA. A soil survey is also recommended prior to seeding to provide baseline information; and
 - **Bird Surveys** – monitoring of the bird populations across the Solar PV Sites, both within the array and potential mitigation areas, will be undertaken and compared to baseline bird survey data collected for the Scheme.
- 1.4.4 Details of the frequency and timing of proposed monitoring at the Solar PV Sites will be provided in the detailed LEMP. However, an indicative

schedule comprises of UKHab Survey and Botanical quadrats undertaken in Years 1, 2, 3 and 5 post-construction, and then every five years for the lifetime of the Scheme. Higher frequency of visits immediately post-construction will ensure that the establishment of habitats is monitored, and any remedial measures implemented accordingly. Soil sampling and breeding bird surveys, and any additional species-specific surveys (see below), are likely to be undertaken less frequently to monitor changes in the longer time, with visits anticipated to be undertaken every 5 years.

1.4.5 Additional survey elements that may be included within the monitoring strategy include:

- **Bat Surveys** – monitoring of bat activity across the Solar PV Sites could be undertaken and compared to baseline bat survey data collected for the Scheme. Monitoring shall seek to replicate baseline survey methods (i.e. consistent static bat detector locations);
- **Great Crested Newt Survey** – environmental DNA (eDNA) surveys of existing and newly created ponds within the Scheme will be a simple way to assess whether the GCN range has expanded from the baseline extent; and
- **Additional Monitoring** – given the extensive baseline survey information, the range of habitats to be created and the size of the Scheme, there may be opportunities to link up with academic research either through supplying the collected baseline data to an academic body to analyse or through establishment of research plots within the Scheme. There may also be opportunities to link up with non-governmental organisations (NGOs) such as the British Trust for Ornithology (BTO), People's Trust for Endangered Species (PTES), or Bumblebee Trust (who have been involved in monitoring bumblebees on solar sites).

1.5 References

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- Ref 12 H. Montag, G Parker & T. Clarkson. (2016). The Effects of Solar Farms on Local Biodiversity; A Comparative Study. Clarkson and Woods and Wychwood Biodiversity.
- Ref 13 Plantlife – The Good Meadow Guide. Available at: [The-Good-meadow-guide-Plantlife.pdf](#) [Accessed 28 August 2025]
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Annex A Outline Management Prescription Timetable

Operation Management Prescription	Frequency per Annum	Season	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6 onwards
Hedgerow								
Maintain weed free planting area through herbicide spot treatment and topping up bark mulch	Twice yearly	April - August						
Mechanical cut	2-3 years on rotation	October - February						Ongoing
Replace all failures (all dead plants)	Check annually	Next available planting season						
Replace any significant failures (large extents or high proportions of dead plants)	Check annually	Next available planting season						Ongoing
Hedgerow Trees								
Maintain weed free planting area through herbicide spot treatment and topping up bark mulch	Twice yearly	April - August						
Inspection and formative prune carried out annually in accordance with good arboricultural practice to BS 3998:2010. A clear stem will be maintained for all hedgerow trees in order to be distinguishable	Annually	October - February						
Replace all failures (all dead plants)	Check annually	Next available planting season						
Replace any significant failures (large extents or high proportions of dead plants)	Check annually	Next available planting season						Ongoing
Woodland Copse & Shelter Belts								

Operation Management Prescription	Frequency per Annum	Season	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6 onwards
Maintain weed free planting area through herbicide spot treatment and topping up bark mulch	Twice yearly	April - August						
Thinning / coppicing	Every 5 years, after Year 10 once planting has established	October - February						From Year 10
Replace all failures (all dead plants)	Check annually	Next available planting season						
Replace any significant failures (large extents or high proportions of dead plants)	Check annually	Next available planting season						Ongoing
Scattered Trees & Shrub Planting								
Maintain weed free planting area through herbicide spot treatment and topping up bark mulch	Twice yearly	April - August						
Mechanical cut on a rotational basis after Year 15, once scrub has established	Mechanically cut rotational areas once every 10 years	October - February						Ongoing
Replace all failures (all dead plants)	Check annually	Next available planting season						
Replace any significant failures (large extents or high proportions of dead plants)	Check annually	Next available planting season						Ongoing
Ditches								
Cutting of bankside vegetation	Mechanically cut one bank on rotation, every 2-5 years	August - September						Ongoing

Operation Management Prescription	Frequency per Annum	Season	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6 onwards
Scrub removal from channel (as needed)	Where required	October - February						
Tussock Grassland Margins								
Spot herbicide application	Where required	April - August						Ongoing
Hay cut / graze	On a rotational basis; once every 3 years	September						Ongoing
Scrub Management								
Mechanical cut on a rotation basis after Year 15, once scrub has established	Mechanically cut rotational areas once every 10 years	October - February						Ongoing
Mechanical cut along internal edges to keep fence line clear	Annually	October - February						Ongoing
Spot herbicide application	Where required	April - August						Ongoing
Diverse Meadow Creation and Management								
Year 1 only - regular cutting after seeding	3 times, spread across the year	March - September						
Option 1 - Hay Cut (including all grassland skylark mitigation areas)	Annually after Year 1	August - September						Ongoing
Option 2 - Grazing at a low stocking density (excluding skylark mitigation areas)	Annually after Year 1	Year-round, subject to winter ground conditions; ideally with sheep removed for 8 weeks in summer						Ongoing

Operation Management Prescription	Frequency per Annum	Season	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6 onwards
Option 3 – Pulse grazing at a higher stocking density (excluding skylark mitigation areas)	Annually after Year 1	Year-round, subject to winter ground conditions; ideally with sheep removed for 8 weeks in summer						
Spot herbicide application	Where required	April - August						Ongoing
Ponds								
Marginal vegetation thinning	Every 5 years	November - February						Ongoing
Emergent vegetation removal/ dredging	Every 10 years	November - February						Ongoing
Set-Aside Habitat								
Lightly disced to a depth of no more than 7 cm	Every 2-5 years	February - March						Ongoing
Mechanical cut of vegetation	Every 2-5 years	February - March						Ongoing
Bird & Bat Boxes								
Install boxes	Year 1	Any time, Jan-Dec						
Inspect condition and clean out boxes (excluding bat and barn owl boxes)	Annually after Year 1	October - February						Ongoing
Log Piles & Hibernacula								
Install features	Year 1	Any time, Jan-Dec						
Inspect condition and repair as needed	Annually after Year 1	August - September						Ongoing

Figure 1: Natural England Habitat Network Mapping (Lowland Meadow) – Solar PV Sites

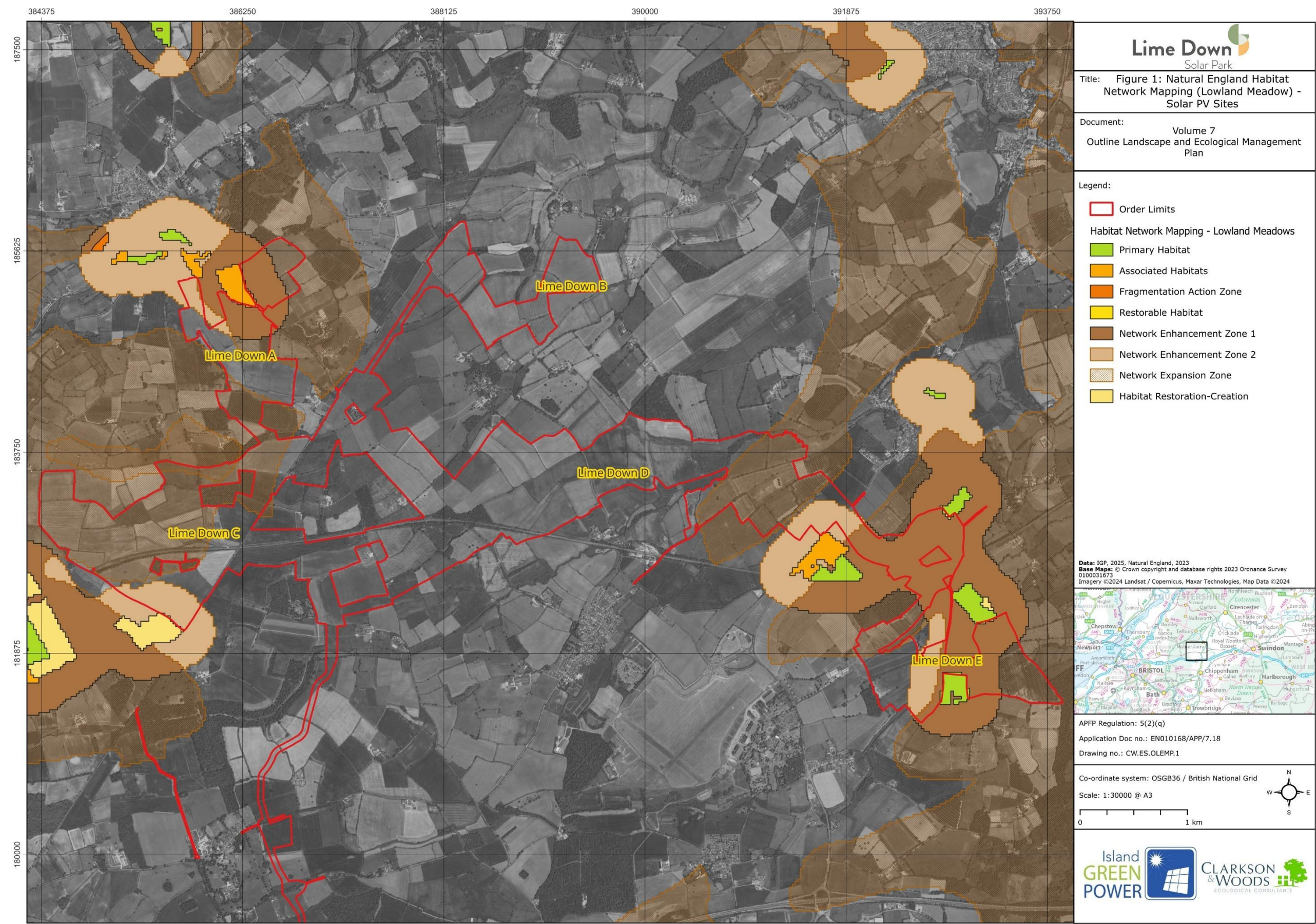


Figure 2: Natural England Habitat Network Mapping (Lowland Calcareous Grassland) – Solar PV Sites

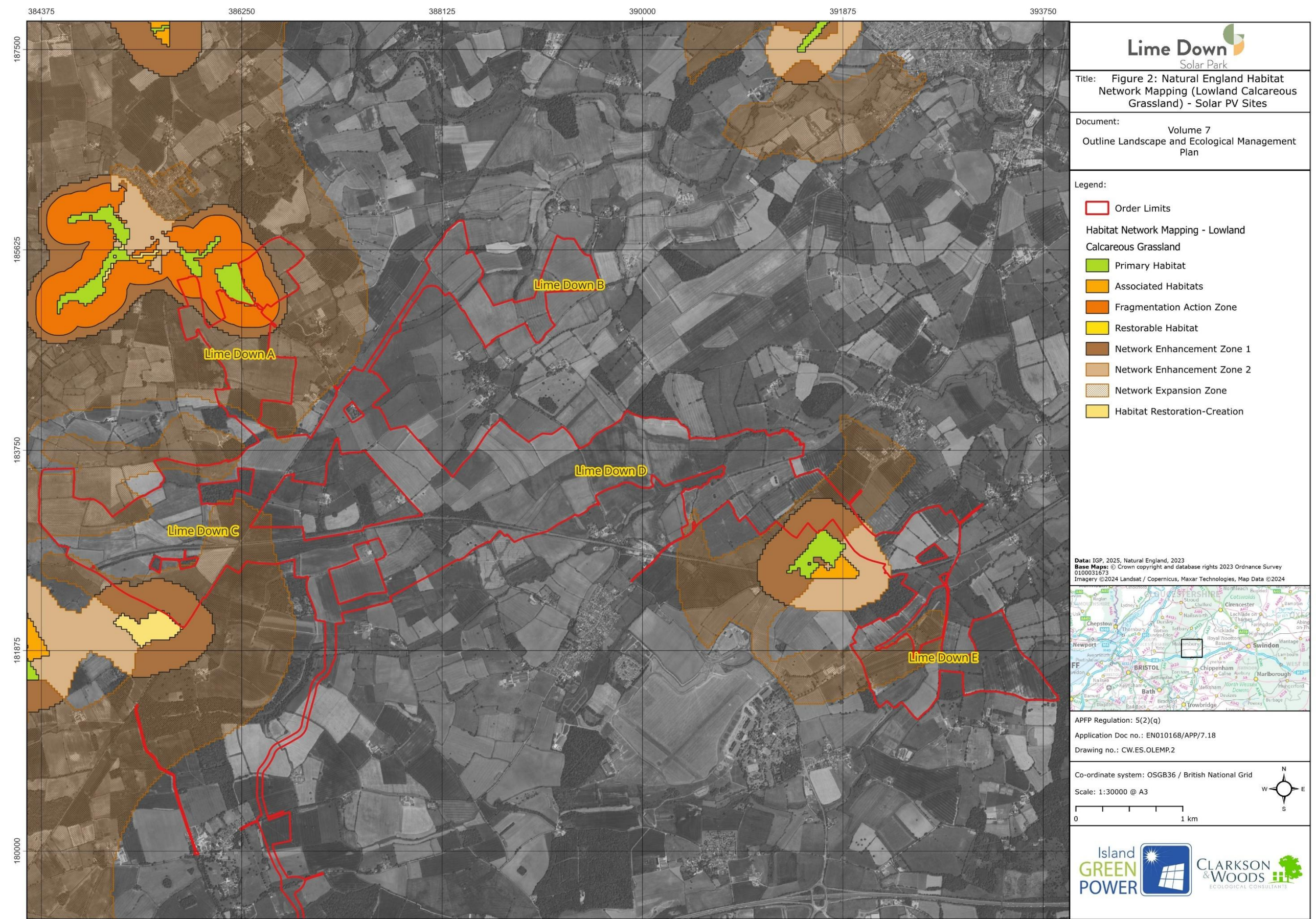


Figure 3: Natural England Habitat Network Mapping (Ancient Semi-Natural Woodland) – Solar PV Sites

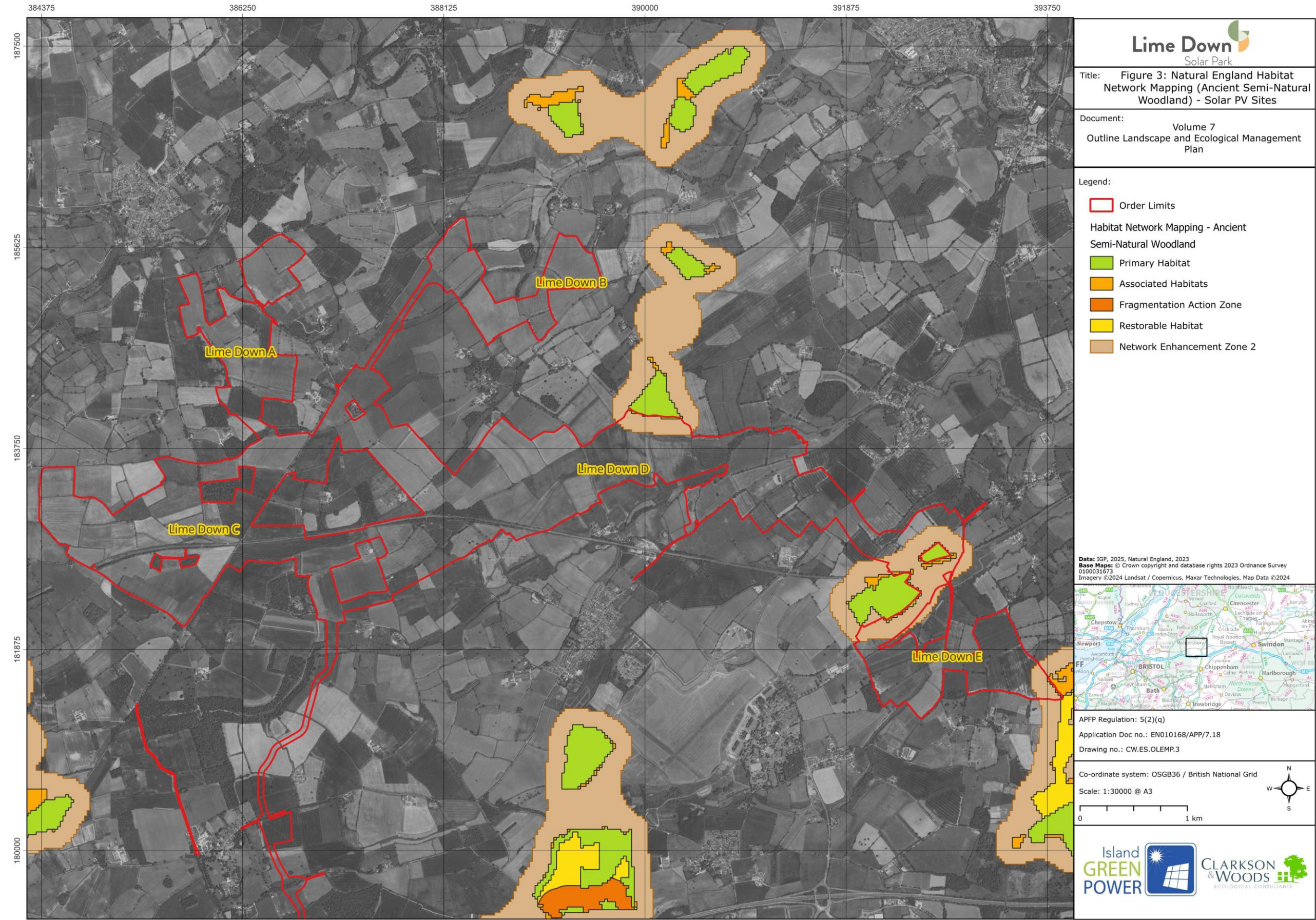


Figure 4: Natural England Habitat Network Mapping (Rivers) – Solar PV Sites

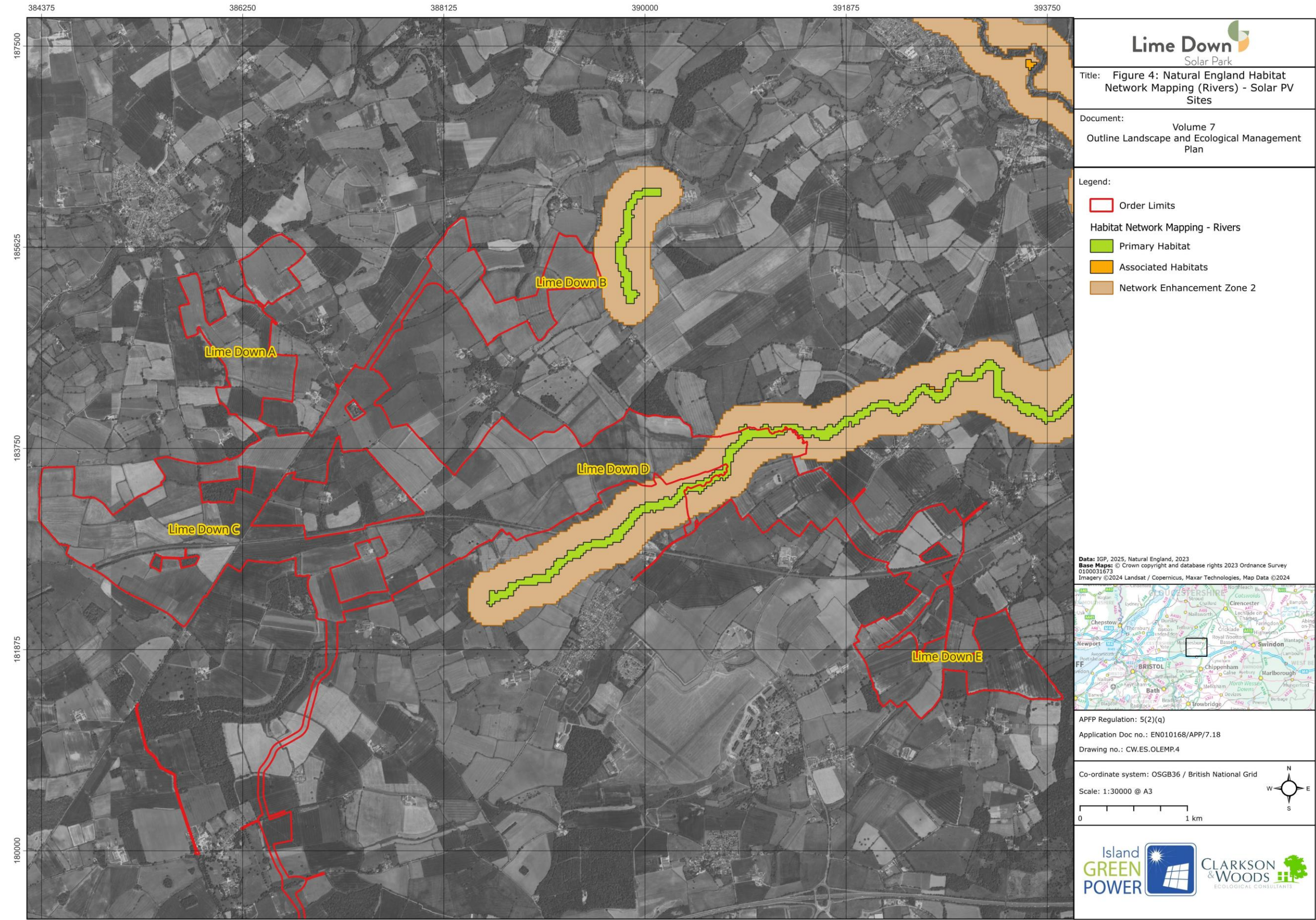


Figure 5: Buglife's 'B-Line' – Solar PV Sites

