

Landscape and Ecological Management Plan

**Tophams Solar Farm, Bygrave,
Hertfordshire**

December 2025

Ecology | Green Space | Community | GIS

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Report Produced for **PACE pathfinder clean energy**

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Issue: **V1**

Date: **January 2026**

Project: **ETH25-564**



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SUMMARY

- The site is located at Tophams Solar Farm, Land West of Ashwell Road Bygrave, Hertfordshire, SG7 5EB (Central Grid Reference TL262370) and is subject to plans for the development of a solar farm.
- The solar farm and associated infrastructure and fencing will be created on land leased for a minimum pre-agreed 40-year term. Within the redline boundary, including beneath the solar farm, the grassland will be managed to create an enhanced grassland sward which will be sold as BNG units from a habitat bank once registered. This habitat bank will be managed using the Habitat Management and Monitoring Plan (HMMP) created for the project.
- This Landscape and Ecology Management Plan (LEMP) has been produced by Ethos Environmental Planning to discharge Condition 11 of the granted Full planning permission (Planning Reference 22/00650/FUL).
- Habitat management actions for the site are set out in order to achieve the objectives of the LEMP. Ecological management constraints to management actions are also detailed. These are also included within the associated HMMP.
- Details of ecological provisions to be installed as part of the development are included. These are also included within the associated HMMP.
- A five-year work schedule capable of being rolled out over a 30-year period is set out, in line with Biodiversity Net Gain requirements.
- A monitoring plan is set out, including methods and a timetable for monitoring, within the HMMP and is not included within this report.
- Information on potential risks to habitats remedial measures and responsibilities for implementing the LEMP have been provided.

1 INTRODUCTION

1.1.1 Ethos Environmental Planning (Ethos) have produced this Landscape and Ecology Management Plan (LEMP) for Tophams Solar Farm, Land West of Ashwell Road Bygrave, Hertfordshire, SG7 5EB (Central Grid Reference TL262370), hereafter referred to as 'the site' and shown in Figure 1.

1.1.2 This LEMP has been produced to discharge Condition 11 of the granted Full planning permission (Planning Reference 22/00650/FUL), which is as follows:

11) Notwithstanding the submitted Landscape and Ecological Management Plan (LEMP) and the Mitigation Plan, no development shall take place until a revised LEMP has been submitted to and approved in writing by the local planning authority. The revised LEMP shall take into account the revisions and proposals set out in the revised Preliminary Ecological Appraisal dated December 2023 and should include the original management details together with clarification of the following -

- i. Bat box locations and fixing arrangements;*
 - ii. Measures to protect skylark plots from users of proposed new permissive footpath;*
 - iii. Badger gates details;*
 - iv. The use of a chalk grassland wildflower mix;*
 - v. Site management for grazed and wildflower areas;*
 - vi. The replacement of failed, dead or dying landscaping or biodiversity improvements.*
- The development shall thereafter be carried out in complete accordance with the approved LEMP.*

Reason: To enhance biodiversity including any species and their habitats and in accordance with the NPPF and Policies NE4, NE12 and SP12 in the Local Plan. A pre-commencement condition is required because the investigation works must be undertaken before construction commences.

1.1.3 This LEMP has therefore been produced to allow the discharge of Condition 11 and should be read in accordance with the Landscape Proposals (Drawing number: 02, Briarwood Landscape Architecture, August 2025), Mitigation and Enhancement Plan (UKF092_10 Revision: V10, PACE pathfinder clean energy, September 2025), and Habitat Management and Monitoring Plan (Ethos, 2025).

1.2 LEMP Objectives

1.2.1 Objectives of the LEMP are as follows:

- To protect and enhance biodiversity and landscape elements of the site, for the first five years following completion of development, capable of being rolled out over a 30-year period.
- To provide prescriptions for ongoing management to meet the stated objectives and shown as applicable on plans and drawings for individual areas.
- To fulfil the legal requirements in relation to the protection and enhancement of the ecological features of the site.

- Providing a list of persons responsible for undertaking specific duties.

1.3 Site Location and Description

- 1.3.1 The site is located at Tophams Solar Farm at the Land West of Ashwell Road in Bygrave, Hertfordshire, and is dominated by cropland, with small areas of artificial unvegetated, unsealed surface, Other Neutral Grassland, bramble scrub, mature individual trees, ditch, and hedgerows. The total site area is 60 hectares and is shown in Figure 1.

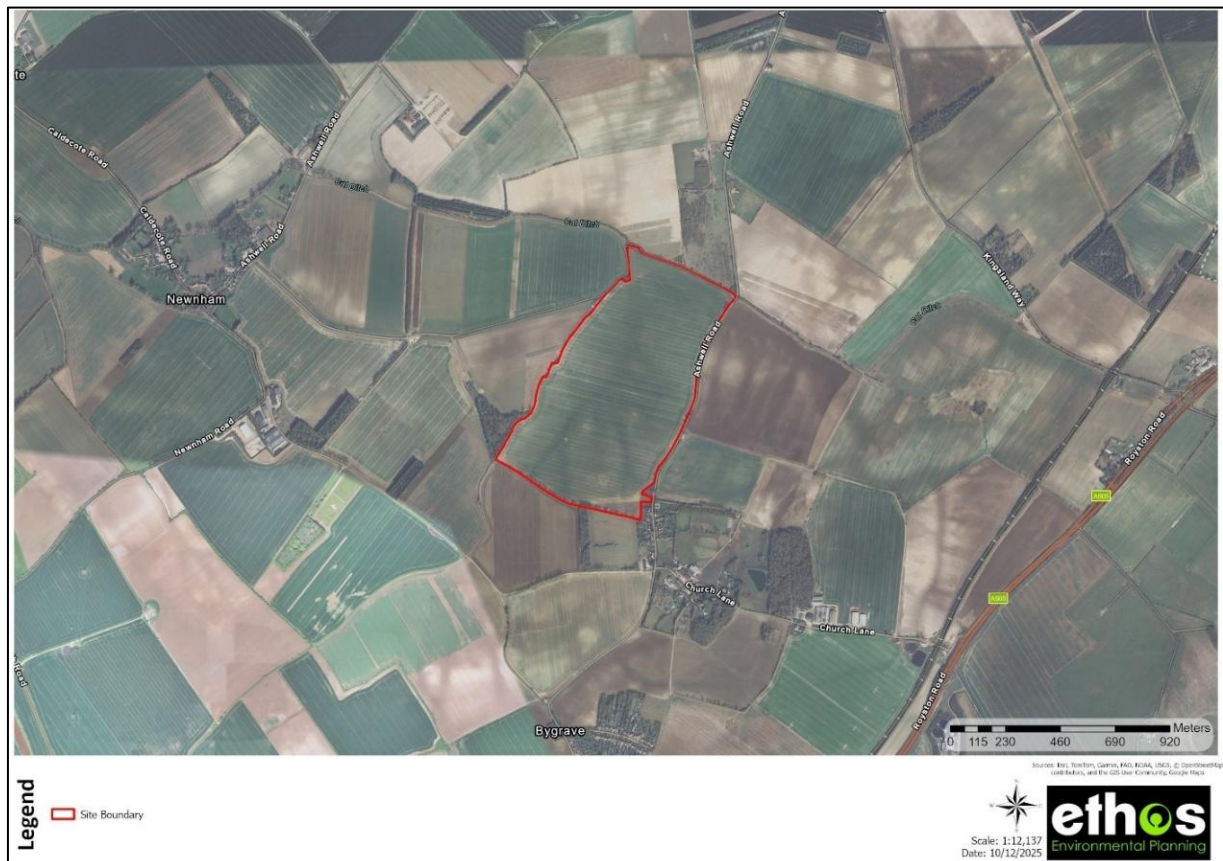


Figure 1 Site location

1.4 Development Proposals

- 1.4.1 The development proposals comprise the construction of a ground mounted solar photovoltaic (PV) farm including battery energy storage; continued agricultural use, ancillary infrastructure, security fencing, landscaping provision, ecological enhancements and associated works, as shown in Figure 2. The layout of the development has been developed to minimise impacts on the important ecological features on site, and enhance the site for a range of protected species as follows:

- Retention of the existing vegetation, trees and hedgerows, along the site boundaries. This includes The Cat Drain watercourse which will be physically unaffected by the proposed solar farm and the existing public right of way which will also be retained on its definitive alignment.

- Creation of large areas of higher distinctiveness other neutral grassland habitats with the inclusion of chalk loving species in keeping with the local grassland types
- Enhancement of medium distinctiveness scrub habitats
- Creation of woodland copses which increases the amount and function of arboreal habitats onsite
- Creation of native hedgerows to increase linear habitat commuting and foraging resources
- Creation of skylark plots and implementation of multiple protective methods to ensure this mitigation is not disturbed by the proposed new permissive footpath; and
- Provision of bat boxes and badger gates to support protected species



Figure 2 Mitigation and Enhancements Plan (Drawing number UKF092_10_Rev_V10. PACE, September 2024)

2 BASELINE ECOLOGICAL CONDITIONS

2.1.1 This LEMP has drawn on information in the 'Preliminary Ecological Appraisal Land west of Ashwell Road, Bygrave' (phlorum, 2023), 'Arboricultural Methods Statement Tophams Solar Farm, Bygrave' (Briarwood Landscape Architecture, 2025), 'Tophams Solar Farm, Hertfordshire Baseline Biodiversity Net Gain Strategy' (Western Ecology, 2025) and Habitat Management and Monitoring Plan (Ethos, 2025).

2.2 A summary of relevant key issues from these reports are summarised below:

- The site comprises a large arable field, a small patch of bramble scrub, several hedgerows – both species rich and species poor – small strips of other neutral grassland around the boundary of the site as well as an artificial unvegetated, unsealed track and two individual trees (Figure 3). The majority of hedgerows will be retained as part of the development, with one length being enhanced to improve ecological value.

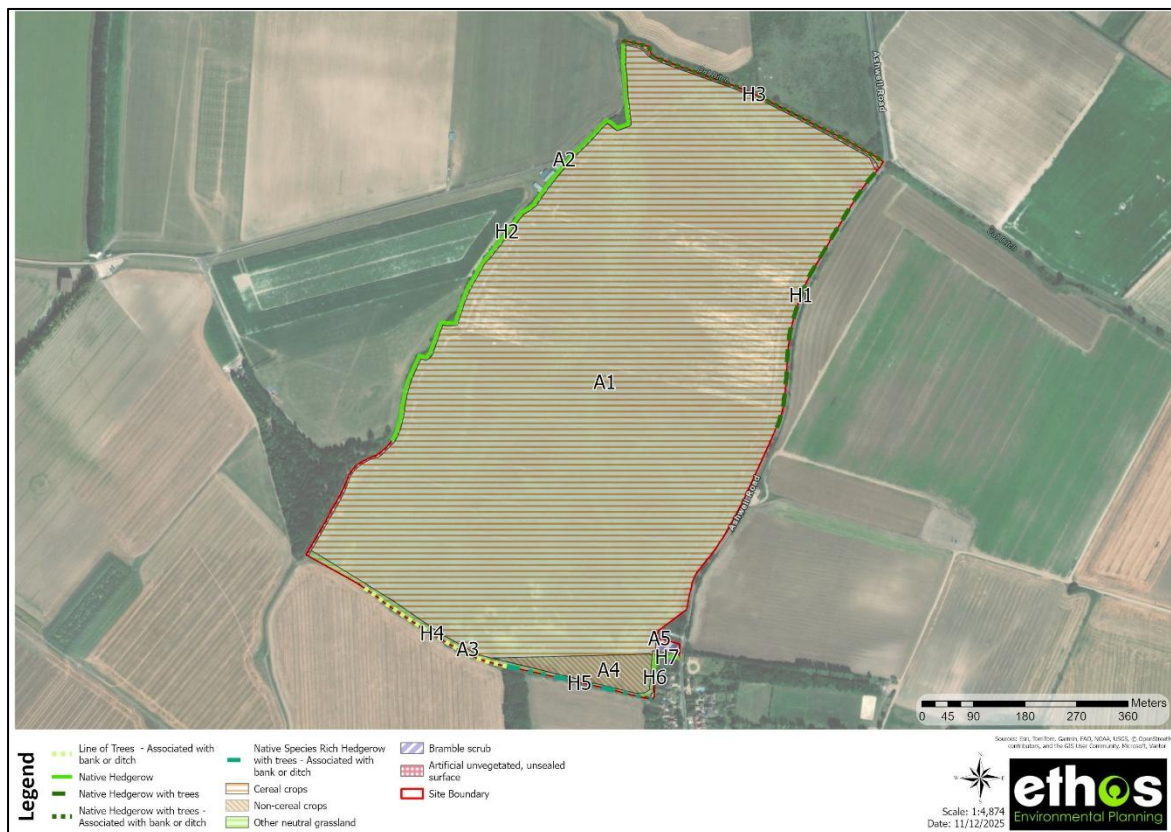


Figure 3 Baseline Habitats Plan following UKHab assessment (Ethos, 2025).

3 HABITAT MANAGEMENT AIMS, OBJECTIVES AND CONSTRAINTS

3.1 Aims and Objectives of the Management

3.1.1 The aim of management is to provide a range of ecologically valuable habitats in improved condition that also provide aesthetic value in keeping with the local environment and enhance the site for a variety of protected species.

3.1.2 Objectives for the management of habitats are as follows:

- To create large areas of grassland across the site which will support a range of invertebrates, birds, and badgers.
- Protect and enhance the existing hedgerow network on site to improve habitat connectivity across the local landscape, providing screening for the development, and benefit a variety of protected and notable species.
- Protect the existing mature trees and enhance the coverage of wooded habitats on site.

3.2 Management Constraints

3.2.1 Management cannot be undertaken that would result in offences under protective legislation. As such, management would ensure conformity with the Wildlife and Countryside Act (WCA) 1981 (as amended), the Conservation of Habitats and Species Regulations 2017 (as amended) and the Natural Environment and Rural Communities (NERC) Act 2006.

3.2.2 The following provides a list of the key faunal groups that have been identified as present or potentially present on site through ecological surveys undertaken to date, along with consideration for how management prescriptions for the habitats at the site should take account of the presence of these species:

- Birds – Maintain suitable foraging and nesting habitat for birds, namely the existing hedgerows, scrub, and mature trees on site as well as the created grassland, hedgerows, and wooded areas. Management of habitats with potential to support nesting birds must be timed to avoid the bird nesting season (March-August inclusive).
- Bats – Suitable foraging and commuting habitat is being retained, predominately along the boundaries of the site. Tree management will be undertaken sensitively to avoid impacting potential bat roosting habitat, such as cracks and crevices on retained trees.
- Reptiles – Works to scrub and hedgerow bases will be timed to avoid the reptile hibernation season and therefore avoid impacts on hibernating reptiles. Grassland cuts will ensure areas of tussocky grassland (such as margins) will be retained, to ensure habitat for reptiles is present at all times.

- Badger – No badger sets were found onsite, and no works will occur within 30m of any badger sett. Badger gates must be installed every 30m along the deer fence to allow for this protected species to continue commuting across the site

4 APPROPRIATE MANAGEMENT OPTIONS FOR ACHIEVING OBJECTIVES

- 4.1.1 The following section contains information relating to habitat management on site, in order to achieve the management objectives.

4.2 Other Neutral Grassland

- 4.2.1 Areas of other neutral grassland will be created across the entirety of the site within the current arable land.

- 4.2.2 A species rich neutral grassland seed mix with some calcareous species will be sown across the previous arable field; EG1 and EM34 seed mixes by Emorsgate will be used. This mixture has been devised to create a landscape indicative of other neutral grassland with calcareous species as requested by the council. The seed mix should be sown at beginning of April during calm weather.

- 4.2.3 This grassland type can form a good habitat for insects, small mammals, birds, amphibians and reptiles, providing nesting sites during spring, food during summer and autumn, and shelter during winter. However, will be managed in poor condition due to the presence of grazing sheep.

- 4.2.4 First year management:

- Avoid mowing created areas of grassland until August in the first year despite flushes of annual weeds. This will enable seeds to establish themselves.
- Keep the young meadow cut short after the first cut until the end of March the following year.
- Avoid cutting the grassland in the spring and early summer if it was sown in autumn, as the species present within the grassland mixture should be allowed to flower prior to being cut back; and
- Carefully dig out or spot treat any residual perennial weeds such as docks.

- 4.2.5 Parcels which are suitable for grazing sheep will be managed as follows using a flock which is already integrated into the wider farm operation:

- Sheep numbers and timing will be flexible and responsive to site conditions.
- Grazing compartments will be defined using existing and newly planted hedgerows, 2 m deer fencing, and gated field access.
- Sheep will be excluded from all fields between March and August inclusive to protect nesting birds.

- Grazing will typically occur between late September and February at a recommended stocking density of 5–10 sheep per hectare, with adjustments made by the land manager to achieve target sward structure.
- Higher stocking densities may be used for shorter durations outside the bird nesting period if required.

Livestock Welfare and Biosecurity

- No supplementary feeding will occur within the site.
- Preventative dewormers will not be used.
- If worming is required, this will be undertaken off-site, and animals will not return for at least 48 hours.
- Water troughs will be provided where necessary.
- Stock condition will be monitored regularly by the landowner and during ecological monitoring visits.
- Any signs of poor health will be addressed through appropriate remedial measures.

4.2.6 Parcels which are not suitable for grazing sheep will be managed as follows using a traditional hay meadow cutting method:

- Grass will be cut twice annually:
 - Early spring (February–March) to a height of 25–50 mm
 - Late summer/autumn (August–October) following flowering and seed set
- Cutting will only take place during dry weather.
- All arising will be removed off site to assist in nutrient reduction or reused to create ecological features on site.

4.3 Enhanced Grassland with Skylark Plots

4.3.1 A proposed permissive pathway will be created through the 'areas reserved for biodiversity enhancement' (A9) according to landscape proposals BLA 441-02 (Briarwood, 2025).

4.3.2 This will be sown with the same mix as the rest of the other neutral grassland, although, it will be managed in moderate condition. The grassland will be created and managed as follows:

- Plot Size: Each plot should be at least 16 m² (e.g. 4m x 4m).
- Location: Place plots where they can be undisturbed and provide safe landing and foraging areas for skylarks - away from field boundaries, hedgerows, and telegraph poles, avoiding shaded or predator-prone areas (e.g. near woods or tree lines). Plots should be 80-100m away from each other and at least 50m away from the field boundaries and permissive path.

- Avoid mowing or heavy grazing during nesting season - April and August inclusive.
- Use rotational grazing or shut up fields during nesting season.
- Delay hay/silage cutting until late May and ensure subsequent cuts are spaced at least 7 weeks apart.
- Maintain insect-rich habitats by leaving some areas uncut/ungrazed and avoiding pesticide use.

4.4 Existing Tree Planting

4.4.1 Existing trees will be retained in the site; these existing trees will be managed as follows:

- Health and safety work to trees will be undertaken between September and February (outside of the breeding bird season) or during the breeding season following a breeding bird check by an ECoW if required.
- Management of trees will be undertaken sensitively in relation to existing cracks and crevices present, to retain suitable roost habitat for bats and other species.

4.5 Scrub Planting

4.5.1 Scrub planting will be undertaken in the existing bramble scrub patch located in the east of the site in order to enhance the existing habitat to mixed scrub. Suitable species include hazel, hawthorn, blackthorn, and field maple. With this species mix, habitat will be provided for a variety of species, including dormouse. Table 1 highlights the recommended species abundance for this patch of scrub.

Table 1. Enhanced bramble scrub species list.

Common Name	Latin Name	Abundance (%)
Bramble	<i>Rubus fruticosus agg.</i>	30
Hazel	<i>Corylus avellana</i>	25
Hawthorn	<i>Crataegus monogyna</i>	25
Blackthorn	<i>Prunus spinosa</i>	15
Field maple	<i>Acer campestre</i>	5

4.5.2 Planting of whips should be taken place during dormant tree season (November to March) using bare root whips of native species. Whips should be spaced 1.5 to 2.5 m in a random or clustered layout when planted to allow for growth, natural spread, and mimic natural scrub formation.

4.5.3 Use the following technique when planting the whips:

- Dig a hole slightly larger than the root system with hand tools.
- Place the whip upright and backfill the hole with soil ensuring the soil is firm around the whip.
- Use mulch mats or woodchips to suppress regrowth of brambles.

- Replace any failed whips with another whip of the same species to ensure the 25% threshold of mixed species is obtained.

4.5.4 The scrub will be managed as follows:

- Works will be undertaken between September and February (outside of the breeding bird season) or during the breeding season following a breeding bird check by an ECoW if required.
- Allow sheep to graze along the scrub boundary to maintain scalloped edges and keep species of suboptimal conditions below 5% cover. Sheep could potentially maintain the rides and glades created as well.
- Sheep grazing also enables a well-developed edge to be formed with tall grasses and forbs.
- The interface between scrub and surrounding vegetation communities is an important ecological feature that can be enhanced by developing sinuous or scalloped edges. This diversifies local microclimates and increases the extent of edge foliage available to invertebrates.
- To prevent new scrub encroachment, all cutting operations will require follow up treatment to prevent re-growth from stumps.
- Climbing plants like ivy, honeysuckle and wild clematis can provide good links between the shrub and canopy layer as well as providing additional habitat and autumn food for birds and invertebrates. Generally, ivy should not be removed from trees unless it has developed to the point where it shades the understorey. Bramble is a very useful plant that provides food and shelter for many species over a long period. It can develop as part of the felling cycle, growing when light reaches the woodland floor and becoming shaded out as the canopy grows.
- Leave some cut timber in the wood to rot down individually or use logs to create habitat piles. If possible, bury the lower layers.
- Standing dead wood is very important for invertebrates, birds and bats. Retain some dead or damaged trees (as long as they are not unsafe) especially those with cracks and holes, in which bats roost.

4.6 Woodland Planting

- 4.6.1 Parcels of woodland copse will be created and managed in a moderate condition; this is to increase opportunities for biodiversity by adding different habitat types. These areas will be fenced to reduce the levels of disturbance and pressures faced by browsing species. Guards and fencing will be installed at the time of planting and inspected regularly to ensure continued effectiveness.
- 4.6.2 Woodland planting will take place during the dormant tree season using native bare-root whips following the best practice set out in BS 4428:1989, with notch planting undertaken at approximately 2 m centres to allow roots to hang freely and ensure the root collar is level with the ground surface. The composition of species can be seen in table 2.

- 4.6.3 Planting will follow a loose grid pattern, with spacing adjusted to promote structural diversity:
- 2 to 3 m spacing between individual trees and shrubs;
 - Irregular unplanted or thinned areas (approximately 1 in every 5–7 trees) retained or created to form glades;
 - Future selective thinning and coppicing used to maintain open space and encourage natural regeneration.
- 4.6.4 Mulching with woodchip (approximately 1 m diameter around each tree) will be applied at planting and topped up annually in spring to suppress weeds, retain soil moisture, and support establishment on former arable land.
- 4.6.5 Any planting failures will be replaced on a like-for-like basis during the following dormant season. Where repeated failures occur due to disease or other constraints, appropriate alternative native species will be used, subject to agreement with the project ecologist.

Table 2. Created woodland copse species list.

Common Name	Scientific Name	Abundance / %
Pedunculate oak	<i>Quercus robur</i>	20%
Hornbeam	<i>Carpinus betulus</i>	20%
Hazel	<i>Corylus avellana</i>	20%
Silver birch	<i>Betula pendula</i>	15%
Rowan (mountain ash)	<i>Sorbus aucuparia</i>	10%
Field maple	<i>Acer campestre</i>	10%
Willd cherry	<i>Prunus avium</i>	5%

Early Management

- 4.6.6 During the establishment phase, weed control around young trees will be maintained to reduce competition. Mulching is expected to minimise weed growth; however, manual removal or, where unavoidable, targeted pesticide use may be employed. Spraying will be avoided where possible. Weed control will continue until canopy closure, anticipated at approximately Year 5.
- 4.6.7 Trees and shrubs will be watered during the growing season until fully established. Following dry periods exceeding seven days, soil moisture will be assessed and watering undertaken where required. Each tree will receive a minimum of 40 litres per watering event, increased where signs of drought stress are observed. Failed trees will be replaced during the dormant season for the first five years following planting.

- 4.6.8 Tree guards and spirals will be removed between Years 5 and 7, once trees are established and no longer at risk from browsing.

Long-Term Woodland Management

- 4.6.9 Formative pruning will be undertaken during winters in Years 3–5 to remove double leaders and crossing branches, promoting strong and healthy tree form. From Year 10 onwards, light thinning will be carried out in winter to prevent overcrowding, maintain a varied woodland structure, and allow light penetration to the woodland floor.
- 4.6.10 Coppicing of suitable species such as hazel and hawthorn will be undertaken on a 7–10-year rotation following establishment. This traditional management will maintain structural diversity, encourage regrowth, and enhance habitat value for a range of woodland species.

Deadwood and Habitat Features

- 4.6.11 Deadwood will be retained within the woodland wherever possible, with the exception of failed whips removed during the first five years. Standing and fallen deadwood provides an important resource for invertebrates, fungi, birds, and small mammals. Where deadwood must be removed from other parts of the site for access or safety reasons, it will be relocated into the woodland to form habitat piles.

Monitoring and Adaptive Management

- 4.6.12 The woodland will be monitored regularly to assess establishment success, tree health, browsing impacts, and overall habitat condition. Monitoring results will inform adaptive management, including replacement planting, adjustments to thinning or coppicing regimes, and protection measures, ensuring the woodland achieves its long-term ecological objectives

4.7 Hedgerows

- 4.7.1 Two species-rich hedgerows will be created on site (H8 and H9) and one hedgerow with trees (H1) will be enhanced to a species rich hedgerow with trees. These will provide additional structurally diverse linear habitats that contribute to ecological connectivity, foraging resources, and shelter for a wide range of species.

Creation Approach

- 4.7.2 The creation of the H8 and H9 will include the planning of whips in a staggered line at 2-foot intervals ensuing rapid establishment and canopy continuity. Protective fencing will be installed 2 m from either side of the newly planted hedgerows to prevent grazing damage and help the hedgerow widen naturally. Existing vegetation along the linear features will be removed to reduce soil fertility, supporting the establishment of species-rich hedgerows and reducing the cover of nutrient-enriched perennial vegetation. Whips will also be formatively pruned to create a bushy structure along the length which will improve woody basal growth. Table 3 highlights the composition of hedgerow species and their abundance

Table 3. Created hedgerow species list.

Common Name	Scientific Name	Abundance / %
Hawthorn	<i>Crataegus monogyna</i>	40
Hazel	<i>Corylus avellana</i>	20
Field maple	<i>Acer campestre</i>	10
Dog Rose	<i>Rosa canina</i>	10
Wayfaring tree	<i>Viburnum lantana</i>	10
Blackthorn	<i>Prunus spinosa</i>	5
Holly	<i>Ilex aquifolium</i>	5

- 4.7.3 To increase the species diversity of H1, additional native whips will be planted along the length of the hedgerow in the first year which will also reduce the gaps within the hedgerow.
- 4.7.4 Any failed whips will be replaced with a like for like species.

Management Approach

- 4.7.5 The management of the created hedgerows will be as follows:
- The hedgerows will grow to a minimum average height of 1.5 m and managed to reach approximately 3 m in height to maximise value to biodiversity.
 - Rotational cutting regime will be implemented to ensure that the hedgerows are not cut below 3 m in height and avoid annual cutting.
 - Infill planting using native species will be undertaken if any gaps start to arise in the hedgerow.
 - Monitoring of the hedgerow will identify failures, invasive species, or structural issues which will trigger an adaptive management and remedial actions where required to maintain the health of the hedgerow and provide ecological value.
- 4.7.6 Management of all native hedgerows will be as follows:
- The hedgerows will be maintained with high basal density. This will be achieved by allowing bramble and other scrub species to grow at the base of the hedgerows. 'Neat' hedgerows will be avoided. This will provide foraging and nesting habitat for birds, hedgehog and invertebrates.

- Hedgerows will be cut on rotation once every three years on alternate sides (left/top/right) to ensure high fruit production.
- If the weather conditions allow, the hedgerow will be cut between January and February to avoid impacts on wildlife and to ensure high fruit production. This will benefit species which rely on a consistent food source throughout the autumn months, such as dormice and birds.

4.7.7 If the hedgerow contains trees these additional management approaches will be applied:

- Monitoring the trees to check the condition and health as per the statutory metric condition assessment criteria.
- Leave standing dead trees where safe and possible to provide different ecological niches.

5 ECOLOGICAL PROVISIONS

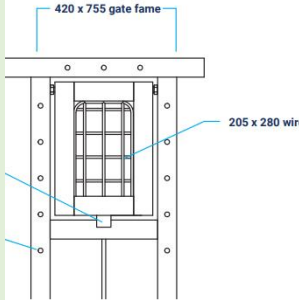
- 5.1 As part of the development, various provisions will be installed on site to enhance the site for birds, bats, badgers, reptiles and other protected species. Enhancing the site for invertebrates will in turn support the species which feed on them, such as hedgehog, bats, birds and badger.
- 5.2 This section of the LEMP therefore covers the locations of ecological provisions. The proposed locations of provisions are shown below in Figure 4, and the provisions are described in Table 4. If the provision suggested is unavailable, a Suitably Experienced Ecologist will suggest alternatives.



Figure 4 Ecological provisions

Table 4 Ecological provisions

Provision	Description and Location	Photograph
3x 2F Schwegler Bat Boxes	- Unit dimensions: 33 x 16 x 16cm (L X W x H) - Weight: 4kg - Material: Woodcrete Provides a more spacious roost space for bats which prefer cavity boxes e.g., Brown Long-eared, Daubenton's, Natterer's. Suitable for the warmer months and less likely to be used over the winter. Boxes must be installed between 3-6m high in a sunny and sheltered position. Situated on a tree and ideally opening into nearby vegetation to aid foraging opportunities and safety. Suggested to be installed along the bordering Bygrave plantation in the southeast of site. A group of 3 to 5 boxes facing in different directions will provide a variety of micro-habitats.	 2F Schwegler Bat Box

7x Small Bat Crevise Boxes	• 40 cm (h) x 4cm (w) x 5cm (d) • Weight 2.5kg A long, thin box designed for fitting to smaller willow/birch or younger trees. Able to support small numbers of pipistrelles throughout the year; To be installed on a newly planted trees on site or retained small trees. Attach through the top loop and there are two box nail holes.	 <i>Small Bat Crevise Box</i>
115 x badger gates (sourced from mcveigh parker or appropriate alternative)	Badger Gates designed to allow badgers to pass freely through fences without causing damage. Badger gates must be installed every 30m along the deer fence. Badgers often use set routes within their territory, if a stock or deer fence is put up across a badger run, they will either dig under the fence or attempt to break through. The use of badger gates will allow the badgers to roam freely across site and protect the safety and security of livestock and solar farm. <u>Features -</u> Hot dip galvanised steel construction. Features a strong pre-drilled angle frame of 420 x 755mm with an Opening approx. 225 x 270mm). The fully meshed door gives visible access which encourages the Badgers to push through. Manufactured from 40 x 40 x 4mm RSA Hot dip galvanised to BS 1461. Installed at 30m intervals along the deer fencing. Instal within deer fencing by fixing strong pre-drilled angle frame and 8mm solid round bar ground anchor into the ground with hammer. Attach wiring through 13 x 10mm holes at 76mm ctrs to fix to deer fence. Must be set to two-way opening mechanism and lock removed in order to allow constant dual access on/off site.	 
3 x log piles	Log piles are simple, natural structures made from dead wood—logs, branches, twigs, and bark—arranged in a pile to create shelter and habitat for a wide range of wildlife. They mimic the natural decay process found in forests and are especially valuable to a wide range of biodiversity, especially invertebrates and those which feed on invertebrates. Source logs of various sizes of native species. Sourced locally if possible. Place log pie in a shaded spot as far from path as possible. Lay the largest logs at the base to create a stable foundation. Stack smaller logs, branches, and leaf litter loosely to allow gaps and air pockets. Leave and do not disturb. Decay is part of this habitat.	

Hibernacula	Underground chambers for amphibians and reptiles: Made from a mixture of wood, tree roots, rubble, compost and mulch. Filling a hole roughly 50cm deep and as wide as possible (up to 1.5m wide). Covered in turfs of suitable vegetation on top (ideally from the site location). Mix up materials in a natural way, avoid being too tidy to create nooks and crannies and places where material will come through any cover. Ideally located close to some shrubs on a vegetated headland of a site to provide winter and summer refuge cover if disturbed. Plus, the option to move into the sun or shade at any time. Alternatively, can provide this crucial cover and shade by planting/seeding grass or wildflowers or relocating suitable scrub on the north side of the hibernacula. Will need maintenance.	
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6 WORK SCHEDULE

6.1 This section sets out the work schedule for management of habitats for the first five years, as detailed in Table 5.

Table 5 Work schedule for managing habitats on site

Habitat	Management Tasks	Timing
Other neutral grassland planting	- Main summer hay cut in combination with autumn mowing. - Leave seed to shed for 1-7 days then remove arisings and compost.	Annually from July onwards
Existing planting	Existing trees: Management of trees undertaken to retained cracks and crevices present where possible. Where deadwood is removed, retained on site as log piles where possible.	Between September and February to avoid impacts on nesting birds.
Scrub planting	- Managed on rotation (suggested 8-year cycle) to ensure a variety of age classes of scrub are present. - Managed to prevent scrub encroachment into adjacent habitats however, management will be undertaken to allow a scalloped edge habitat to develop. Spot treat scrub to prevent regrowth where encroachment is occurring. - Retain climbing plants and dead wood where possible.	Between September and February to avoid impacts on nesting birds. However, no clearance of ground habitats between November and March to avoid impacts on hibernating species such as dormouse, GCN and reptiles.
Woodland planting	- Weed control around young trees. - Watering of trees and shrubs after 7 days of prolonged dry weather.	Between April and October when required.
Hedgerow management	- Frequently trimmed for first five years, then rotational management to allow high fruit production. - If required, hedgerows will be allowed to grow up for rejuvenation before laying or coppicing to repeat the cycle.	No management to hedgerow bases (e.g. grubbing out of roots or clearing around the ground level) between November and February. Management of remainder of hedgerow to be undertaken between September and February to avoid impacts on breeding birds.

7 ROLES AND RESPONSIBILITIES

- 7.1 The Client will be responsible for establishing the habitats and protected species provision detailed within this LEMP, as detailed in the previous sections. Following habitat creation, the site will then be managed by a dedicated management company established by the Client, who will be responsible for implementing the annual work plan.
- 7.2 All work will be carried out by experienced and qualified operatives holding the necessary training certificates to undertake the prescribed works. All works shall be carried out in accordance with good horticultural practice, using materials, plant and machinery appropriate to the task, undertaken in such a manner that avoids damage to the site and its surroundings. Any plant material that dies as a result of contractor's neglect will be replaced at their cost.
- 7.3 The Client will be responsible for monitoring the site, appointing appropriate professionals (ecology, arboriculture) and producing the five-year monitoring report. Updates to the LEMP following the first five years of monitoring will be the responsibility of the Client.

8 MONITORING AND REMEDIAL MEASURES

- 8.1 The key aim of monitoring is to assess the success of the management prescriptions against the management objectives. The Management Company will take responsibility for monitoring and will liaise with the Client to report on the successes and any changes proposed to management, this will comprise a 5-year review of management to be provided as a monitoring report and updates made to the LEMP if required.
- 8.2 If the results of post-creation monitoring highlighted the need for management changes, the LEMP would be amended accordingly. A formal review of the LEMP would take place after five years following the completion of GI creation. The revised LEMP would contain management prescriptions for a further five to ten years. Monitoring will be undertaken for at least 30 years in line with BNG requirements.
- 8.3 This section sets out how monitoring will be implemented. Table 6 sets out the monitoring plan, with Table 7 containing details of potential risks to habitats and proposed remedial measures. The monitoring and remedial measures will ensure that habitats can meet their target conditions.

Table 1 Monitoring plan, methods and targets

Item/Ref	Monitoring methods	Habitat targets	Monitoring interval and timing
Other neutral grassland – under solar panels and in parcels for skylark plots.	Quadrat survey – Three 1m x 1m quadrats per habitat parcel. To record aspect, slope, average ground cover, sward variation, species, and their percentage cover. Condition Assessment Survey in line with Statutory BNG metric. Static photo points for each habitat parcel.	Achieving Moderate condition within skylark plot: • Good example of habitat type • Varying sward height • Cover of bare ground • No bracken or scrub encroachment Achieving Poor condition within solar panel plot: • No bracken or scrub encroachment	Years 1 post-development, then every five years for the 30-year BNG period. To be undertaken during the main flowering period (June-July), prior to the summer cut.
Native hedgerows – existing and proposed	An assessment of 30-metre sections for numbers of woody species present as well as assessing the hedgerow against additional criteria including numbers of woodland indicator species. Condition Assessment Survey in line with Statutory BNG metric.	Achieving Good condition with: • Hedgerow managed to over 1.5 height and width. • No gaps to be found within hedgerow length. • Presence of undisturbed vegetated margin >1m width. • No invasive species present or damage from human activities.	Years 1 post-development, then every five years for the 30-year BNG period. To be undertaken during the main botanical season (May – August)

	Static photo point.	Achieving Good condition for hedgerows with trees: • Ensure trees are healthy.	
Mixed scrub planting	Quadrat survey – 5m x 5m quadrats per habitat parcel. To record species and their percentage cover, age range of scrub, value of edge habitats. Condition Assessment Survey in line with Statutory BNG metric. Static photo points for each habitat parcel.	Achieving Moderate condition with: • Native species present, with one species not accounting for over 80% coverage. • No invasive species present. • A good age range of scrub present (seedlings, saplings, young and mature specimens). • A well-developed edge with adjacent meadow grassland habitats.	Years 1 post-development, then every five years for the 30-year BNG period. To be undertaken during the main botanical season (May – August)
Woodland planting	Quadrat survey – 10m x 10m quadrats per habitat parcel. To record native species, age, percentage cover, and invasive species presence.	Achieving Moderate condition by targeting good condition in the following criteria: • Herbivore damage. • Invasive species. • Number of native species. • Cover of native species.	Years 1 post-development, then every five years for the 30-year BNG period. To be undertaken during the main botanical season (May – August)

	Condition Assessment Survey in line with Statutory BNG metric. Static photo points for each habitat parcel.	• Tree health. • Woodland disturbance.	
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Table 2 Risk to habitat establishment, triggers and remedial measures

Habitat Type	Risk Factor	Trigger for Action	Remedial Measure
Woodland	Newly planted trees failing to establish	Any dead trees post planting within first year. 10% of targeted number of newly planted trees found to be dead during years 1-10.	Select trees of local stock and higher resilience to climate change Plant a larger number of trees initially as contingency against some losses in the early years. Undertake a second round of planting, replacing failed specimens on a like-for-like basis.
Woodland	Damage to trees	>10% trees are damaged.	Assess design of tree guards. Fix tree guards. Adjust ties. Add barbed wire to tree guards to prevent livestock rubbing. Prune low hanging branches to prohibit browsing.
Grassland	Failure to deliver areas of species rich grassland	Monitoring will inform if species rich other neutral grassland is delivered within this scheme.	Use mineral lick to concentrate grazing pressure.

		Although the entirety of the grassland is not expected to reach the >10 species per m2 some areas are expected to obtain this amount. The grassland must meet the UKHab definition for other neutral grassland in order to be compliant. Therefore, the trigger to further actions is <60% of monitoring survey plots to fail on species richness 10 species per m2 within 10 years of initiation of project.	Introduction of seed either through green hay or through feeding livestock with a seed mix to allow seed to be dispersed within animal droppings. Assessing stocking rates. Nutrient stripping through repeated removal of vegetation.
Grassland	Grassland becoming poached or large areas of bare ground are present	If greater than 20% of grassland is poached.	Reduce livestock density. Consider alternative species (cattle instead of sheep). Change timing of grazing. Increase grazing duration with lower density of stock. Assess requirement for natural regeneration and rest fields if needed. Use of mineral licks to concentrate areas of grazing away from areas of bare ground.
Grassland along ProW	Public access	Increase in disturbance, damage, and/or bare ground levels above condition sheet threshold.	Additional signage. Temporary fencing. Reseeding if necessary.

Hedgerow	Newly planted trees failing to establish	10% of targeted number of newly planted trees found to be dead during years 1-10.	Plant a larger number of trees initially as contingency against some losses in the early years. Undertake a second round of planting, replacing failed specimens on a like-for-like basis.
Any habitat type	Invasive species	Presence of schedule 9 species	Treat and remove. Fence off problem area.

9 REFERENCES

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