WESTHIDE SOLAR

Landscape and Ecological Management Plan (LEMP)

for

Ersun (Westhide SPV) Ltd

June 2022

THE Landmark PRACTICE

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**D denotes a Draft version*

The information which we have prepared and provided is true and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

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1.0 INTRODUCTION

1.1 The Landmark Practice (TLP) is an award winning multi-disciplinary consultancy offering bespoke and integrated services in ecology, environmental planning, landscape architecture and architectural graphics. We are an independent and respected consultancy, working on a large range of development projects for our clients throughout the UK. Full details of the Practice can be found at http://www.thelandmarkpractice.com.

1.2 This Landscape and Ecological Management Plan (LEMP), hereafter referred to as 'the Plan', has been prepared by The Landmark Practice (TLP) on behalf of Ersun (Westhide SPV) Ltd. This Plan sets out the design, future management measures, and monitoring provisions in relation to landscape and biodiversity, for a solar PV development on land at Westhide, Herefordshire.

Site Location and Description

1.3 The application site, which measures approximately 62 hectares, is located 9 km north-east from Hereford (approximate central grid reference SO 577 443, **Figure 1** refers). The Local Planning Authority (LPA) is Herefordshire County Council (HCC).

1.4 The habitats which comprise the site were for the most part typical of Herefordshire, comprising arable farmland. The site itself comprises a network of eight fields, which are all arable with an extensive network of mature hedgerows with trees, with drainage ditches at their bases.

1.5 The hedgerows which bound and bisect the site are a mixture of species-poor and species-rich in terms of species composition. Hedgerows are also for the most part intact, with few gaps and are of good quality in terms of size, structure and connectivity, with some including a scattering of mature trees.

Ownership and Responsibilities

1.6 Implementation of this Plan will be the responsibility of Ersun (Westhide SPV) Ltd, any future owner, or their authorised agents. The management scheme detailed within this Plan is to form the basis of the provision, management, inspection, maintenance, and replacement as necessary for at least the lifetime of the development, and in line with the Biodiversity Net Gain (BNG) assessment (TLP, December 2021). This LEMP will be a 'live' document, with reviewed iterations on a five-yearly basis for the lifetime of the development. This initial iteration covers the construction period and the first five years of operation. Upon completion of this initial period, the success of the management regime will be assessed and reviewed, with management prescriptions revised for the next Plan iteration, if necessary.

The Development

1.7 The proposed development will comprise a ground-mounted solar PV (photovoltaic) development. The solar park will be set out as solar arrays, with sufficient space between the arrays to avoid one array of PV modules overshadowing the next.

1.8 It is expected that the PV modules will be mounted on metal frames on posts piled at up to a depth of up to 3 m (dependant on ground conditions) using percussion piling into the ground causing minimal impact on the ground surface and will be fully removable on decommissioning. The highest point of the modules will be circa 3 m above ground.

1.9 The solar park will also encompass central inverters and a Distribution Network Operator (DNO) substation.

1.10 The solar park will be protected with a security fence of circa 2.5 m. The security fencing will not be dug into the ground but will be flush to the ground. The fencing will have small mammal and badger gates installed. The site will not be artificially lit.

1.11 A new access route is proposed for construction traffic only, to reduce the use of the road between Withington and Westhide during that period. The track leads from an existing agricultural facility to the north-west, and runs across three fields to join an existing access point on the north of the site.

1.12 All existing boundary hedgerows and associated features will be retained. The external security fence will be offset internally from the perimeter hedgerows by at least 5 m. Once the solar park is established, the system will require minimal on-going maintenance. Experience has shown that PV modules are cleaned to a considerable degree by rainfall but will also be manually cleaned several times a year. Activity at the solar park will be limited to periodic repair and/or maintenance. Grassland will be managed over the likely 30-year life of the installation by a sensitive ecological management plan.

1.13 The proposed Masterplan is provided at **Appendix A**.

2.0 SITE BACKGROUND AND CONTEXT

Background

2.1 An Ecological Appraisal was prepared to inform the proposed planning application. The Appraisal was supported by Phase 1 habitat surveys which were carried out in October 2020, June 2021 and November 2021.

2.2 The Ecological Appraisal was informed by a suite of Phase 2 surveys undertaken over the course of the 2021 survey season. Phase 2 Surveys were as follows:

- Badger monitoring surveys;
- Bat activity and static surveys;
- Breeding bird survey;
- Wintering bird scoping surveys; and
- Great Crested Newt surveys inc. eDNA & Population Size Class Assessment.

2.3 The findings of these surveys are presented and evaluated in the Ecological Appraisal Report (TLP, December 2021).

2.4 A Biodiversity Net Gain assessment was also undertaken (TLP, December 2021) which established that the proposed development would achieve a gain of 223.49 habitat (area) units, equating to 134.39% net gain, and a gain of 22.40 hedgerow (linear) units, representing a 61.95% net gain.

2.5 This score is only achievable if enhanced and created habitats meet their target condition in the timeframe stated within the Metric 3.0 spreadsheet. This LEMP draws on both reports and CIEEM good practice principles (CIEEM, 2019).

Current Site Conditions

2.6 The principal habitats within and around the application site, together with their dominant/characteristic plant species, were identified during the Phase 1 habitat surveys. The distribution of different habitat types within the site is mapped in **Figure 2**.

2.7 The site comprises eight arable fields, hedgerows, ponds and areas of broadleaved woodland.

2.8 Habitats recorded within the footprint of the site were:

- Semi-natural broad-leaved woodland;
- Plantation broadleaved woodland;
- Dense/Continuous Scrub;
- Scattered Scrub;
- Scattered Broadleaved trees;
- Poor semi-improved grassland;
- Tall ruderal;
- Standing water;
- Arable land;
- Intact species-rich hedge;
- Running water;
- Intact species-poor hedge;
- Defunct species-poor hedge;
- Species-rich hedge with trees;
- Species-poor hedge and trees;
- Dry ditch;
- Buildings; and
- Bare ground.

Protected and Notable Species

2.9 The site was assessed as providing potential habitat for a range of protected and notable species as highlighted above in Paragraph 2.2.

2.10 Bat activity across the site was moderate, with ten different species of bats being present. The majority of passes were pipistrelle species, with a much smaller number of passes made by Annex II species lesser horseshoe and barbastelle.

2.11 An assemblage of bird species typical of the arable landscape was identified during the breeding bird surveys and the site was identified to provide opportunities to a number of species of conservation concern including skylark, linnet, dunnock, song thrush and yellowhammer.

2.12 A small population of great crested newts (GCN) was identified in Ponds 1, 2 and 4, with a cumulative peak count of 10 GCN, in Pond 4, to provide a combined population size class of 'Small' with less than 10 individuals noted.

Changes to Ecological Features

2.13 The consented scheme will result in the loss of the majority of the site to development (arable land). Areas known to support populations of GCN, foraging and commuting bats, badgers and breeding birds will be affected by development proposals.

2.14 The mitigation scheme has been designed to avoid the majority of potential ecological impacts by confining development to the interior of the fields which comprise the site, thereby avoiding impact on the higher quality (in ecology terms) boundary features, including the hedgerows, ditches and waterbodies. The agricultural fields are of the least ecological value. The boundary habitats namely hedgerows, ponds and areas of woodland represent the highest quality habitat. These features will be protected by the creation of a buffer between the panels and development of at least 5 m.

2.15 The majority of the site will be seeded with species rich grassland (c.48 ha) and areas of wild bird seed mix grassland (0.5 ha) are proposed along the western boundary of Field C and the north-west boundary of Field F.

2.16 New sections of hedgerows are proposed, totalling 0.34 km of native species rich hedgerows with trees, and 0.9 km of native species rich hedgerow.

2.17 Planting up of existing boundary hedgerows and the planting of new screening hedgerows will be implemented via a comprehensive landscape planting scheme. This includes:

- All existing hedgerows retained (with the exception of four small breaks to facilitate a permissive path) and gaps infilled, with site access utilising existing field gates and existing breaks;
- Hedgerows relaxed to achieve 3 m height and enhanced with additional tree planting to assist in screening the development, especially along the southern and eastern boundaries;
- Existing whip tree planting on the north, east and south boundaries of Field D to be retained and enhanced with additional native tree and hedgerow planting to strengthen connections of on-site features and recreate historic field boundaries; and,
- Proposed native hedgerow along the southern boundary of Fields G and H to assist in screening of the development and recreate historic field boundaries.

3.0 SITE ANALYSIS AND CONSERVATION OBJECTIVES

Site Analysis

3.1 The strengths and weaknesses of the site in terms of ecology and landscape, along with opportunities and external influences, are set out in **Table 1** below:

Table 1: Site Strengths and Weaknesses

Site Strengths	Site Weaknesses	Opportunities	External Influences
Connectivity across the wider landscape via existing network of hedgerows. Actual/potential occurrence of protected/notable species. Existing hedgerow network provides screening against visual impacts. Location on privately owned land brings protection against unauthorised access and damaging activities.	Limited diversity of existing habitats. The majority of the site support limited species diversity due to current intensive agricultural practices. Instances of structurally poor, gappy hedgerows. Physical constraints imposed by presence of PV panels.	Increase diversity and improve structure of boundary hedgerows etc. Convert arable areas to grassland (to be sensitively managed for ecological enhancements). Creation of ecological buffer zones (rough grassland) between boundary habitats and security fence. Create foraging habitat for declining farmland birds. Establish sensitive management regime for habitats and features to ensure longevity and benefit to wildlife.	Locally native planting should be optimised to fit with existing landscape character. Provision of permissive paths.

Site Strengths	Site Weaknesses	Opportunities	External Influences
		Mitigation approach enables the protection and linkage of existing ponds and associated vegetation which will improve and enhance the local Green Infrastructure network.	

Site Management Objectives and Rationale

3.2 The main ecological management objectives of this plan, and the rationale behind them, are described below. Mitigation, compensation, enhancement and monitoring measures have been included in accordance with details included within the Ecological Appraisal Report (TLP, December 2021) and Biodiversity Net Gain assessment (TLP, December 2021).

Objective 1

3.3 *'Ensure no significant impacts on biodiversity arise during construction and operation of the solar park'.*

Rationale

3.4 Without mitigation, the development of the solar park has the potential to impact on protected species and/or retained habitats. Mitigation recommendations have been previously made in the Ecological Appraisal Report (TLP, December 2021) and are reproduced below.

Objective 2

3.5 '*Maintain, plant and enhance through appropriate management, the retained, created and enhanced habitats within the site, in accordance with the Biodiversity Net Gain assessment'.*

Rationale

3.6 The habitats which comprise the site provide opportunities for a range of wildlife species. Ecological connectivity is an important factor in helping wildlife to adapt to development and climate change pressures by providing dispersal corridors throughout the landscape.

3.7 The site hedgerows are likely to support a range of protected/notable species as well as functioning as wildlife corridors through the site. The wildlife buffers (created between the site security fencing and hedges) will enhance these features whilst providing protection to the site hedgerows. With appropriate management, the wildlife buffers will significantly enhance the foraging, sheltering and, potentially, nesting opportunities for a range of protected/notable species.

3.8 As the application site will, until construction activities begin, have been utilised for agricultural (primarily arable crop) production, and therefore the establishment of permanent grassland may be difficult. This is the result of high soil fertility through the past application of artificial fertilisers. Nonetheless it should be an aim to establish and manage to develop a herb-rich, species diverse sward.

3.9 The Biodiversity Net Gain Assessment proposes a range of enhanced and created habitats utilising the UK Habitat Classification (UKHab), as illustrated and specified within the Masterplan in **Appendix A**.

Objective 3

3.10 '*Ensure that mitigation and enhancement planting is subject to appropriate monitoring and aftercare.'*

Rationale

3.11 It is important that the site is maintained appropriately in order to effectively avoid/mitigate the impacts of development upon ecological receptors and meet the target habitat and conditions set out in the BNG assessment in the specified timeframe. It is also important that the proposed new hedgerow and tree planting is maintained in order to effectively function as mitigation against visual impacts.

3.12 Tree aftercare should adhere to the principles detailed in BS8545:2014 (Trees: From Nursery to Independence in the Landscape). The arable land within the solar park will be converted to grassland and likely managed through mowing/hay cuts to enhance floral diversity. This approach will result in nutrient stripping which will improve the diversity of the sward over the lifetime of the solar park.

Objective 4

3.13 'Provide targeted ecological enhancements for specific species.'

Rationale

3.14 Implementation of this Plan will result in biodiversity gains across the habitats found within the site, in line with the BNG findings. Targeted prescriptions will also be included to encourage populations of individual target species based upon the initial recommendations of the Ecological Appraisal Report (TLP, December 2021).

Objective 5

3.15 '*Implement a programme of ongoing ecological monitoring to ensure the successful implementation of this Management Plan, achieve specified Biodiversity Net Gain, and to inform future revisions/amendments to the Plan.'*

Rationale

3.16 The successful implementation of a Management Plan requires ongoing ecological monitoring to inform delivery of objectives and to allow revisions to be made to the management prescriptions. Monitoring and subsequent adaptive management (if required) is vital in ensuring Biodiversity Net Gain targets are met.

4.0 MANAGEMENT METHODOLOGY

Background

4.1 In conjunction with the 'Site Conservation Objectives' the Plan should provide detailed management prescriptions to outline the management methodology in order to achieve the stated objectives and BNG outcomes.

4.2 The five objectives outlined, above, incorporate aspects of both landscape and ecology and, as such, include some areas of overlap. General site management prescriptions are

outlined below (described according to separate phases of development) as are more detailed prescriptions required to achieve the stated conservation objectives. The ecological and landscape enhancements are illustrated in **Appendix A**.

4.3 Management prescriptions are detailed below and then summarised in **Table 3** at the end of this section.

General Management Prescriptions

Construction

4.4 Throughout site construction, all avoidance and mitigation measures will be implemented in-line with a Construction Environment Management Plan (CEMP). The CEMP will incorporate ecological recommendations and ensure compliance with species specific mitigation and specify if works are to be carried out under ecological supervision via an Ecological Clerk of Works (ECoW) (where appropriate). Should any ecological issues or queries arise during construction, they will be relayed to a suitably qualified ecologist for their professional advice.

4.5 The construction phase will be co-ordinated by the principal contractor and Ersun (Westhide SPV) Ltd.

Operation

4.6 The operational phase typically involves the management, maintenance and monitoring of the development, and will be co-ordinated by Ersun (Westhide SPV) Ltd, and/or future owner, or approved agent. This will include upkeep of secure boundaries and maintenance tracks.

Decommissioning

4.7 At the end of the operational life of the solar farm, the panels, electrical infrastructure, panels, frames, piles, security fence and cameras will be removed and taken off site. The DNO substation may be retained as grid infrastructure. Dismantling should ideally take place when the ground is dry, but during the winter to avoid potential impacts to GCN which are unlikely to be hibernating within the fields. Removal will result in minor disturbance to the ground which will be made good by backfilling with subsoil and topsoil. Any stone or concrete bases will be removed. Disturbed areas should be sown with an agricultural seed mix appropriate to the proposed after-use of the site.

4.8 Once decommissioning is complete the management of the land will become the responsibility of the landowner.

Detailed Management Prescriptions

Objective 1

4.9 '*Ensure no significant impacts on biodiversity arise during construction and operation of the solar park'.*

4.10 Prescription O1-1: The site is currently used for agricultural activities (arable), which is due to cease prior to the commencement of site construction activities. The habitats within the proposed development footprint provide limited opportunities for wildlife. Nevertheless, following cessation of agricultural activities, vegetation within the fields in the developable area should be maintained at ground level via mechanical mowing to

prevent ecological succession/ colonisation by protected/notable species. This prescription is valid for the duration of the construction period.

4.11 Prescription O1-2: Prior to the commencement of construction, protective fencing must be installed to protect sensitive features including hedgerows and hedgerow trees, the proposed wildlife buffer zones and adjacent habitats. This protective fencing must be maintained throughout the construction period or until installation of the permanent site security fencing.

4.12 Prescription O1-3: Any trenches created within the site during the construction phase must not be left open overnight, or if unavoidable, they will be fitted with a rough sawn plank to provide a means of escape for any badger or other large mammal that may fall in. In addition, provision has been made to ensure continued access to the application site by foraging mammals. The security fencing will not be dug into the ground but will be flush to the ground, allowing badgers and other species capacity to make their way inside the site. The fencing will have small mammal and badger gates installed.

4.13 Prescription O1-4: Any storage of any materials (soil, spoil, waste, equipment etc.) or site construction activities is prohibited within the wildlife buffer zones throughout the construction period. Any spoil material (soil etc.) should be checked for evidence of badger activity (i.e., excavations) prior to use. Such features represent high quality sett building sites and can be quickly exploited by local badger populations.

4.14 Prescription O1-5: To minimise disturbance to breeding birds, any vegetation clearance should be undertaken outside the breeding bird season (usually March to August inclusive, but seasonally variable). If works are proposed within the breeding bird season, a pre-commencement check for active nests must be undertaken by a qualified ecologist. Any active nests should remain undisturbed until it is confirmed that the young birds have fledged, and the nest is no longer in use. The buffer zone along important features will minimise disturbance effects upon nesting birds.

4.15 Prescription O1-6: As a general measure aimed at protecting species through the course of works, a suitably qualified ecologist should be appointed at the commencement of site works. On commencement, the Landscape Contractor appointed by Ersun (Westhide SPV) Ltd to undertake the habitat creation/landscape works should be briefed by the ecologist on protected species interests (a toolbox talk). It is the ecologist's responsibility to notify all employees involved in any enabling works, to ensure that the identification and protection of species relevant to the site is fully understood.

4.16 Prescription O1-7: Some of the works will need to be undertaken by, or under supervision of, a GCN licensed Ecological Clerk of Works (ECoW) to adhere to best practice and wildlife legislation relating to Great Crested Newts (GCN).

4.17 Prescription O1-8: The use of artificial lighting is not proposed during the construction or operation of the solar park. Should artificial lighting be required, however, during the construction period it should be limited to the essential minimum throughout the site. Any lighting that is used should avoid pointing upwards, with the spread of light being kept near to or below the horizontal. To minimise effects on light sensitive species, artificial lighting should` be directional to the task for which it is required and angled away from all boundary features. Furthermore, light spill should be minimised through the use of accessories such as louvres, reflectors, hoods, covers, baffles and shields. If necessary, it is also possible to reduce light spill by painting part of the luminaire protector. If required,

lighting with a low UV component3 or LED lamps with a low to negligible UV content (towards the warmer end of the light spectrum) should be used as UV light attracts insects, thus depleting foraging resources in adjacent habitats as well as making bats that use lit areas vulnerable to predation.

4.18 Prescription O1-9: Adherence to an Arboriculture Method Statement and Tree Protection Plan throughout the construction process, to prevent damage to boundary features and retained trees.

4.19 Prescription O1-10: All construction activity and the development footprint (i.e., to the security fence) will be buffered by a minimum distance of 5 m from the hedgerows and further if trees are present (in line with Root Protection Areas). This is required in order to safeguard the health of the hedgerows/trees, avoid over-shading of panels and to provide sufficient distance to safeguard any features of ecological or conservation value along the field boundaries. If small sections of hedgerows require removal, these should be overseen by an ECoW, in line with a Method Statement/Precautionary Method of Works. This should include a fingertip search for evidence of dormouse, which would also include a visual search for nests and opened nuts prior to commencement of works.

4.20 Prescription O1-11: Reptiles, should they be present, are likely to be mainly using boundary habitats (hedgerows, ditches, rough grassland margins etc). These features will be retained and protected during the construction and operational phases of development and enhanced through landscape planting (i.e., creation of buffer zones). Due to the relatively low impact of solar park installation and provided that suitable boundary habitats can be retained, it is considered that incorporation of sensitive working methods/timings etc. will be sufficient to ensure that reptiles are not harmed during the construction phase.

4.21 Prescription O1-12: Works in proximity to GCN ponds to be undertaken in line with a Non-Licenced Method Statement for GCN (to be agreed with Herefordshire County Council). This would detail the following:

- Time and Duration of Works (i.e., to be undertaken during winter months when GCN are inactive);
- Pre-construction creation of wildlife buffers/exclusion zones around important retained features (i.e., hedgerows and existing ponds);
- Habitat Manipulation - maintain onsite habitats in sub-optimal condition by continuing to utilise them for arable crops etc. to discourage amphibians from the proposed development area. The above creation of buffers/exclusion zones will encourage any individuals present to concentrate in these areas;
- Hand Search/Destructive Searches – should any potential refuges require removal, then works must be done during the active season for amphibians (mid-March - Mid October, weather dependant). The hand search must be carried out by the licenced ecologist and the destructive search by careful use of an excavator under supervision;
- All works must be restricted to the designated development area and the impact of works on adjacent habitats avoided by the clear demarcation of the works area;
- Access must be via the existing track and over agreed routes only with no exceptions;
- Trenches and other excavations should be backfilled before nightfall. If this is not possible, ramps must be left to allow all wildlife to easily exit;

- All debris, rubble etc. collected during site clearance must be placed directly into skips or removed from the site immediately to avoid it becoming used as refugia; and
- All new building materials must be stored on pallets or in bags to prevent them becoming used by terrestrial amphibians.

Objective 2

4.22 '*Maintain, plant and enhance through appropriate management, the retained, created and enhanced habitats within the site, in accordance with the Biodiversity Net Gain assessment'.*

4.23 Prescription O2-1: Newly planted hedgerows (once established) and retained hedgerows, are to be cut on a 3-yearly rotation between 1st January and 28th February. This will promote increased blossom availability for invertebrates and allow fruits and berries to ripen, providing a vital source of food for wintering birds. By cutting rotationally, this will ensure that there is always suitable habitat available for wildlife. The hedges should be pruned to a minimum of 3 m height with high basal density to provide maximum protection for wildlife. Retaining uncut margins around the bases of hedgerows allows more flowers to bloom, more structure to develop and therefore more insects to thrive close to the hedge.

4.24 Prescription O2-2: Where already present, allow saplings to grow into hedgerow trees at random intervals (between 20 and 50 m). All tree stakes and protective tubing should be removed once planting is established (i.e., has achieved a height of 8 m) or at the end of year 5.

4.25 Prescription O2-3: All newly planted trees will be pruned to promote healthy growth and natural shape, and any dead, dying or diseased wood and suckers will be removed. Overhanging branches will be pruned to ensure that growth is prevented from encroaching onto buffers and grassland, and from causing shading of solar panels. Pruning will be undertaken annually or as appropriate to each species and in accordance with best practice, between October and February inclusive to avoid the main bird breeding season. All arisings should be gathered and piled into compost heaps where they can remain undisturbed, or be removed for composting. All management works shall be carried out by experienced operatives holding relevant horticultural qualifications, training certificates, or under the direct supervision on site of such a person.

4.26 Prescription O2-4: Create new hedgerows and bolster existing hedgerows in areas identified in the Landscape and Visual Impact Assessment (LVIA (TLP, December 2021)) and as illustrated on the Masterplan.

4.27 An appropriate mix of hedgerow species (based on those already present) should be used. Hedgerow planting will include the following species and proportions:

- *Ligustrum vulgare* (Native privet) – 35%;
- *Crataegus monogyna* (Hawthorn) – 30%;
- *Prunus spinosa* (Blackthorn) – 20%;
- *Ilex aquifolium* (Holly) – 10%; and
- *Rosa canina* (Dog rose) – 5%.

4.28 An appropriate mix of tree species (based on those already present) should be used as indicated on the Masterplan. Tree planting will include the following species:

- *Acer campestre* (Common maple);
- *Alnus glutinosa* (Common alder);
- *Betula pendula* (Silver birch);
- *Betula pubescens* (Downy birch);
- *Carpinus betulus* (Common hornbeam);
- *Malus sylvestris* (Crab apple);
- *Prunus avium* (Wild cherry);
- *Quercus robur* (Common oak);
- *Salix alba* (White willow);
- *Salix caprea (*Goat willow);
- *Sorbus aria* (Whitebeam); and
- *Sorbus aucuparia* (Rowan).

4.29 The following general measures should also be adopted:

- Plants grown from indigenous, preferably local, seeds or root stocks should be used;
- All planting should take place between November and March (inclusive);
- All plants are to be planted in accordance with British Standard 3936:1992, Nursery Stock. A Mycorrhizal inoculant to replace naturally occurring fungi in soil is to be applied to roots of bare plants before planting and backfilling to stimulate plant growth and accelerate root development. Prior to planting, ground must be made well-broken and free draining;
- New hedgerows are to be planted as a double row of whips, staggered in a zig zag pattern so gaps are filled, with approximately 500 mm between rows;
- All tree whips and transplants are to be fitted with 600 mm spiral guards (or equivalent), supported with an appropriate pointed stake. All plants are to be protected with Tubex Easiwraps (or equivalent) supported with a cane. Protection methods must not impede natural movement of trees or restrict growth; and
- Any dead wood cut vegetation etc. will be piled in appropriate places within the wildlife buffer area to provide enhancements for wildlife (including reptiles, amphibians, small mammals and invertebrates).

4.30 Prescription O2-5: Create new species rich grassland within existing arable field areas as indicated on the Masterplan. Areas within the security fencing should be seeded with suitable grassland mix (i.e., EM2 Standard General Purpose Meadow Mixture (or acceptable equivalent). A more species rich grassland mix will be seeded outside of the security fence (i.e., EM1 Hedgerow Mixture or acceptable equivalent). The seeding specifications should follow the seed suppliers' guidance but is likely to require preparation of the seed bed to reduce weed growth before sowing occurs and sown at a recommended rate. Yellow rattle (*Rhinanthus minor*) can be included where not already, as it can parasitise grass species and supress growth and can over time allow greater diversification of the sward. Additional seeding or spreading of green hay should be considered if natural colonisation does not occur.

4.31 Prescription O2-6: Wild bird seed mix, such as Kings Crops WM1 Wild Bird Seed Mix, will be sown into sections of the buffers between the security fencing and the field boundaries on the north of the site between late March and end of April. To meet the requirements of the HRA this mix will exclude kale which is treated with Seed-Life™ and Synergy treatment which contain a wide range of nutrients including nitrogen and potassium. The mix will also be supplemented with nitrogen fixers such as white or red clover, lucerne or

common vetch. A fine and firm seedbed should be prepared, and the seed sown at a depth of 15-25 mm.

4.32 Prescription O2-7: Hedge-laying or coppicing should be considered where this would benefit the structure and long-term functioning of the hedgerow.

4.33 Prescription O2- 8: Management of the three ponds that hold water within the site to maintain and enhance their value for biodiversity, and in particular, great crested newt. Encroaching scrub to be cut by hand from the edges of the ponds, with cut material stacked as 'habitat piles'. All larger semi-mature and mature trees to be left intact. When necessary, management will include the removal of silt/leaf litter/ vegetation from the waterbodies by mechanical dredging. Management prescriptions to be applied during the winter period at year 1 and then every 5 years as required (to be confirmed by great crested newt Habitat Suitability Assessments (HSI), Objective O5-3 refers.

Objective 3

'*Ensure that mitigation and enhancement planting is subject to appropriate monitoring and aftercare.'*

4.34 Prescription O3-1: All habitat creation and management works shall be carried out by experienced operatives holding relevant horticultural qualifications, training certificates, or under the direct supervision on site of such a person.

4.35 Prescription O3-2: All landscape 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 and/or nuisance to the site and its surroundings.

4.36 Prescription O3-3: The new grassland areas within the site are likely to require several cuts in its first year to assist in establishment and control annual weeds. However, this should be informed by on the ground conditions as more or less management may be required. Mow to a height of 50-60 mm, arisings should be gathered and piled into compost heaps in areas they will be undisturbed, or should be removed. Avoid cutting in spring and early summer to enable yellow rattle to flower.

4.37 Prescription O3-4: The grassland sward within the security compounds will be managed by mowing.

4.38 Prescription O3-5: Grassland should be cut once a year in late summer/early autumn (mid-August to September) to approximately 50 mm. Arisings should be left for 1 – 7 days (to allow seed to drop) and then gathered and piled into compost heaps in areas they will be undisturbed or should be removed. Grassland managed by cutting alone can be very uniform, so it is advisable to leave 10% - 15% uncut each year, within a different area each year, to vary the sward height and allow seed to set seed. This will provide continued cover for invertebrates and also small mammals to benefit barn owl and other wildlife.

4.39 Prescription O3-6: The grassland within the wildlife buffer zone area (between security fencing and boundary features) is to be cut once on rotation every three years in late summer (mid-August to September) to a height of 150 mm and arisings will be removed. Only ½ the width of the buffer to be cut on any one year. This will provide continued cover for invertebrates and also small mammals to benefit barn owl and other wildlife.

4.40 Prescription O3-7: Wild bird seed mix should be sown between late March and the end of April. This mix includes crops that can be replaced annually or every two years. At the end of the final winter of the crop, the cover should be destroyed in late March-April and the wild bird seed mix re-sown. If two-year crops which include biennial species are used, sowing half of the buffers in one year and half in another with seed in alternate years will ensure that a greater variety of seeds are available every winter.

4.41 Prescription O3-8: Water all new planting during prolonged dry spells to prevent plant failures (during first 2 years following planting).

4.42 Prescription O3-9: Check stakes and ties and adjust if needed in summer and winter. Remove stakes when no longer required (i.e., after 3 years). Prune dead, damaged or dying branches.

4.43 Prescription O3-10: Each autumn following practical completion, the new planting scheme will be inspected, and dead or dying plants recorded and replaced in the next winter planting season, until 100% canopy is achieved and/or hedgerow gaps are filled.

4.44 Prescription O3-11: No use of herbicides and artificial fertilisers, hand pulling of weed species should be used if possible. Herbicides should only be applied to spot-treat or weed-wipe for the control of injurious weeds or initially to control undesirable species.

4.45 Prescription O3-12: Access through gates and to important infrastructure (e.g., inverters) will be maintained through regular mowing and/or the trimming of hedgerows. Hedgerow trimming will be undertaken outside of the bird breeding season.

4.46 Prescription O3-13: The rewilding areas will mainly be left un-manage to allow re-colonisation by locally occurring species. Low key management will be undertaken every 2 years to avoid complete bramble cover and to manage undesirable species. Management will be via mechanical cutting and hand pulling.

Objective 4

'Provide targeted ecological enhancements for specific species.'

4.47 Prescription O4-1 Sowing of wild bird seed mix in parts of the buffer areas/wildlife corridors will ensure food provision for species which may be displaced due to loss of arable farmland. A mix including a cereal and an oil-rich crop will benefit the widest range of species.

4.48 Areas of seeding should be as follows[1]:

- Seeded areas are indicated on the Masterplan (**Appendix A** refers) in two blocks alongside the northern woodland; 0.5 ha of seeding is proposed;
- The seedbed should be prepared, and the crop drilled as for a commercial arable crop;
- The ideal time to establish a mix is in April or May. If spring sowing is not possible, then crops can be established in the autumn, but then only provide seed food in alternate years (for annual mixes) or in two out of three years (for biennial mixes);
- To avoid inclusion of nutrients (such as nitrogen and potassium) that are typically included in seed mixes to promote establishment, a purpose made mix should be used

[1] Wild bird seed mixtures – RSPB. https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/farming/advice/managing-habitats/wild-bird-seed-mixture/

to include nitrogen fixers such as white or red clover, lucerne or common vetch. In terms of composition, it is recommended that a cereal component is included which is important for yellowhammer and corn bunting; it is also taken by gamebirds and sparrow. An oil-rich crop (e.g., linseed or quinoa) is important for finches. Crops such as mustard, forage rape and millet can also be included;

- At the end of its final winter, destroy the cover in late March or early April and re-establish the mix as soon as possible;
- Sowing a cereal mix and broadcasting the other crops before rolling should achieve good establishment;
- There may be a need to relocate plots if disease levels (e.g., of brassica club root) prevent establishment;
- As with all crops, wild bird cover is susceptible to competition from weeds and attack by pests and diseases during establishment. Insects and weed seeds are important components of the diet of farmland birds, so the use of insecticides and herbicides should be avoided.

4.49 Crops can be replaced annually or every two years - biennial mixes including a biennial crop provide better cover for gamebirds, whereas annual, cereal-based mixtures provide continuous food for buntings.

4.50 A mix of crop types will provide the maximum benefits. If biennial crops are used, establishing blocks in alternate years will ensure there will be a mix of seeds available every winter.

4.51 Prescription O4-2: Five artificial hibernacula (hibernation sites) will be constructed (according to English Nature, 2001) with minimum dimensions of 2 m length x 1 m width x 1 m height, locations indicated on the Masterplan. Exact locations and methods for construction will be guided by the ECoW. The hibernacula will be constructed by excavating 300-500 m of soil, filling with logs/rocks/rubble with loose soil used to cap the hibernacula before seeding with species-rich grassland seed mix.

4.52 Prescription O4-3: A total of 10 bat and 10 bird boxes will be erected / installed by a suitably qualified ecologist, at a minimum of 3-5 m height above ground level upon suitable retained mature trees. Indicative locations are illustrated in the Masterplan. A combination of Schwegler 1FD and Large Multi Chamber WoodStone Bat Box should be installed for bats, and combination of Schwegler 1B (26 mm and 32 mm entrance holes) and 2GR bird boxes of 'woodcrete' construction installed for birds. These designs provide permanent roosting and nesting solutions for a range of species and require no maintenance.

Objective 5

4.53 'Implement a programme of ongoing ecological monitoring to ensure the successful implementation of this Management Plan, achieve specified Biodiversity Net Gain, and to inform future revisions/amendments to the Plan.'

4.54 To ensure that the proposed development will result in valuable long-term benefits to wildlife and to measure the success in implementation of the proposed ecological enhancements as set out within the BNG Assessment, it is crucial that the site is monitored to build a detailed evidence base of key indicators, and that the results of all monitoring activity are used to inform revisions to this Plan. This Plan will be a 'live' document, with

reviewed iterations on a five-yearly basis for the lifetime of the development. This initial iteration covers the construction period and the first five years of operation. Upon completion of this initial period, the success of the management regime will be assessed and reviewed, with management prescriptions revised for the next Plan iteration.

4.55 Key monitoring indicators will include:

Biodiversity Net Gain Monitoring, with reference to the Westhide 3.0 Metric BNG calculations.

4.56 The success of the implementation of the measures in the Biodiversity Net Gain Assessment can only be fully evaluated once the habitat with the longest time to target condition has achieved this (ideally within the timeframe specified). This is 20 years for *proposed native species hedgerows with trees*. However, many habitats are easier to create and have a far shorter time to target condition timeframe. These habitats therefore should be evaluated in line with their respective timeframe and maintained at that value (or higher) to ensure the BNG score within the assessment represents the minimum baseline score of the development. The following data should therefore be collected during monitoring surveys post construction in year 5, 10, and every five years thereafter for the lifetime of the park, or for 30 years, whichever comes first:

- Condition assessments (as per the BNG 3.0 condition assessments criteria, **Appendix C** refers) of retained habitats (**Appendix D** refers) on site to ensure no decline in condition;
- Condition assessments of enhanced habitats (**Appendix E** refers) on site to monitor progress towards or attainment of target condition (or better) in the time to target condition stated and maintenance at that condition (or better) for the lifetime of the park; and
- Condition assessments of created habitats (**Appendix F** refers) to monitor their progress in achieving the stated condition (or better), in the time to target condition stated and maintained at that condition or better thereafter for the lifetime of the park.

4.57 The results of each monitoring visit will enable management procedures to be recommended where necessary to ensure the BNG score is met.

4.58 While there is some overlap with BNG and its condition assessments, the following will also be assessed independently of BNG criteria:

- General Health, structure and diversity of hedgerows (existing and new);
- Structure and diversity of grass sward within retained and enhanced habitats (wildlife buffer etc);
- Success of bat boxes; and
- Condition of enhancement features – hibernacula, bat/bird boxes.

4.59 Monitoring prescriptions are outlined below:

4.60 <u>Prescription O5-1:</u> Post construction monitoring checks to be undertaken in Years 1, 3 and 5 to ensure the mitigation measures are operational. This will include monitoring of usage and condition of enhancement/mitigation features (bat boxes, bird boxes and reptile hibernacula), condition of and repair/replacement where necessary during the autumn.

Monitor establishment of grassland in wildlife buffers and wildlife corridors and take remedial action where required (remedial action includes control of weed/ruderal species, or scrub encroachment). Manage as necessary to ensure structure and diversity; this could include overseeding, plug planting etc.

4.61 Prescription O5-2: Monitoring surveys of bat and bird boxes should be undertaken in Year 3 and 5 following completion of construction of the solar park.

4.62 Prescription O5-3: GCN HSI - The ponds should be subject to regular Habitat Suitability Index (HSI) assessments, every 5 years. In addition one traditional GCN survey will be undertaken every 5 years to assess the current population of GCN within the site. The findings of these surveys will inform ongoing management activities at the ponds on-site (prescription O2-8 refers).

4.63 Prescription O5-4: Provide reports following the initial monitoring checks and surveys in Years 1, 3 and 5 to the site owner/operator summarising actions undertaken as part of this plan and setting out any recommendations arising from monitoring.

4.64 Prescription O5-5: Monitoring surveys every 5 years following completion of construction of the solar park to assess that the scheme is proceeding in line with the BNG specifications (BNG compliance survey).

4.65 Prescription O5-6: Provide accompanying monitoring reports following each compliance survey, discussing the findings of the surveys. This report should include specific recommendations on remedial management actions to achieve the BNG specifications and should include fixed-point photography. These reports should also incorporate any relevant measures from this LEMP and amend where required.

Table 3: Summary and timing of management prescriptions

Management Objective	Management Prescription	Management Prescription Detail	Seasonal Requirement	Frequency	Years									
					Y1	Y2	Y3	Y4	Y5	Y10	Y15	Y20	Y25	Y30
Objective 1 'Ensure no significant impacts on biodiversity arise during construction and operation of the solar park'.	O1-1	Following cessation of agricultural activities, the vegetation within the developable area should be maintained at ground level to prevent ecological succession/colonisation by protected/notable species.	N/A	Duration of Construction	✓									
	O1-2	Installation of protective fencing adjacent to sensitive retained features i.e., hedgerows, trees, ponds etc. prior to commencement of construction.	N/A	Duration of Construction	✓									
	O1-3	Trenches will not be left open overnight, or they will be fitted with a rough sawn plank to provide a means of escape. Security fencing will not be dug into the ground to provide continued access and site permeability. Small mammal and badger gates will be installed.	N/A	Duration of Construction	✓									
	O1-4	Storage of any materials (soil, spoil, waste, equipment etc.) or site activities is prohibited within the wildlife buffer zones throughout the construction period. Any spoil material (soil etc.) should be checked prior to use.	N/A	Duration of Construction	✓									

Management Objective	Management Prescription	Management Prescription Detail	Seasonal Requirement	Frequency	Years									
					Y1	Y2	Y3	Y4	Y5	Y10	Y15	Y20	Y25	Y30
	O1-5	Vegetation clearance should be undertaken outside the breeding bird season (which runs March to August inclusive). If works are proposed within the breeding bird season, a pre-commencement check for active nests will need to be undertaken by a qualified ecologist. Any active nests should remain undisturbed until it is confirmed that the young birds have fledged, and the nest is no longer in use.	Avoid March to August (inclusive)	Duration of Construction	✓									
	O1-6	Toolbox Talk.	N/A	Start of Construction	✓									
	O1-7	Sensitive works to be undertaken by, or in the presence of a supervising ECoW.	N/A	Duration of Construction	✓									
	O1-8	Should artificial lighting be required during the construction period it should be limited to the essential minimum throughout the application site.	N/A	Duration of Construction	✓									
	O1-9	Adherence to an Arboriculture Method Statement and Tree Protection Plan.	N/A	Duration of Construction	✓									

Management Objective	Management Prescription	Management Prescription Detail	Seasonal Requirement	Frequency	Years									
					Y1	Y2	Y3	Y4	Y5	Y10	Y15	Y20	Y25	Y30
	O1-10	All construction activity and the development footprint (i.e., to the security fence) will be buffered by a minimum distance of 5 m from the hedgerows and further if trees are present in accordance with identified RPZs. If small sections of hedgerows require removal, these should be overseen by an ECoW, in line with a Method Statement/Precautionary Method of Works.	N/A	Duration of Construction	✓									
	O1-11	Construction works to be undertaken between March and October (seasonally variable) to avoid impacts on reptiles.	March-October	Duration of Construction	✓									
	O1-12	Works in proximity to GCN ponds to be undertaken in line with a Non-Licenced Method Statement for GCN.	March-October	Duration of Construction	✓									
<u>Objective 2</u> 'Maintain, plant and enhance through appropriate management, the retained, created and enhanced habitats within the site, in accordance with the Biodiversity Net Gain assessment'.	O2-1	Hedgerows are to be cut once every three calendar years on a rotational basis. Where possible, adjacent lengths of hedgerow should be cut in different years and small sections of shrubs left untrimmed, no more than one third of the hedgerow should be cut in any one year.	1st January and 28th February	Annually on rotation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	O2-2	Where already present, allow saplings, to grow into hedgerow trees at random intervals (between 20 and 50 m).	N/A	N/A	-	-	-	-	-	-	-	-	-	-
	O2-3	All newly planted trees will be pruned to promote healthy growth and natural shape,	October - February	As required	✓	✓	✓	✓	✓					

Management Objective	Management Prescription	Management Prescription Detail	Seasonal Requirement	Frequency	Years									
					Y1	Y2	Y3	Y4	Y5	Y10	Y15	Y20	Y25	Y30
		and any dead, dying or diseased wood and suckers will be removed.												
	O2-4	Create new hedgerows and bolster existing hedgerows in areas identified in the Landscape and Visual Impact Assessment (LVIA) (TLP, 2020).	Refer to detailed prescription	Duration of Construction	✓									
	O2-5	Create new species rich grassland within existing arable field areas as indicated on the Masterplan. Areas within the security fencing should be seeded with suitable grassland mix (i.e., EM2 Standard General Purpose Meadow Mixture (or acceptable equivalent). A more species rich grassland mix will be seeded outside of the security fence (i.e., EM1 Hedgerow Mixture or acceptable equivalent).	Spring/ Autumn	Duration of Construction	✓									
	O2-6	Wild bird seed mix sown into sections of the buffers between the security fencing and the field boundaries on the north of the site. A fine and firm seedbed should be prepared, and the seed sown at a depth of 15-25 mm.	Late March - end of April.	Duration of Construction	✓									
	O2-7	Hedge-laying or coppicing should be considered where this would benefit the structure and long-term functioning of the hedgerow.	N/A	N/A	-	-	-	-	-	-	-	-	-	-
	O2-8	Management of the three ponds that hold water within the site. Encroaching scrub to be cut by hand from the edges of the ponds, with cut material stacked as 'habitat piles'. All larger semi-mature and mature trees to be left intact. When necessary, management will include the	Winter	Every 5 Years post construction (as required)	✓				✓	✓	✓	✓	✓	✓

Management Objective	Management Prescription	Management Prescription Detail	Seasonal Requirement	Frequency	Years									
					Y1	Y2	Y3	Y4	Y5	Y10	Y15	Y20	Y25	Y30
		removal of silt/leaf litter/ vegetation from the waterbodies by mechanical dredging.												
Objective 3 'Ensure that mitigation and enhancement planting is subject to appropriate monitoring and aftercare.'	O3-1	All habitat creation and management works shall be carried out by experienced operatives holding relevant horticultural qualifications, training certificates, or under the direct supervision on site of such a person.	N/A	N/A	-	-	-	-				-		
	O3-2	All landscape 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 and/or nuisance to the site and its surroundings.	N/A	N/A	-	-	-	-	-	-	-	-	-	-
	O3-3	Mow new grassland regularly as required to assist establishment and control weeds. Mow to 50-60 mm, arisings to be composted or removed.	Avoid spring/early summer	As required	✓									
	O3-4	Manage areas within security fences by hay cuts once grassland is established.	Refer to detailed prescription	As required	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	O3-5	Cut grassland once a year mid-August to September to approx. 50 mm. Leave a 10-15% area uncut each year.	Mid-August to September	Annually	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	O3-6	The grassland within the ecological buffer zone area is to be cut once on rotation every three years in late summer to a height of 150 mm and arisings removed. Only ½ the width of the buffer to be cut on any one year.	Mid-August to September	Annually as required on rotation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Management Objective	Management Prescription	Management Prescription Detail	Seasonal Requirement	Frequency	Years									
					Y1	Y2	Y3	Y4	Y5	Y10	Y15	Y20	Y25	Y30
	O3-7	Wild bird seed mix to be sown between late March and the end of April. At the end of the final winter of the crop, the cover should be destroyed in late March-April and the wild bird seed mix re-sown.	Late March and the end of April	As required subject to specific requirements of sown mix	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	O3-8	Water all new planting during prolonged dry spells to prevent plant failures (during first 2 years following planting).	As required	As required	✓	✓								
	O3-9	Check stakes and ties and adjust if needed in summer and winter. Remove stakes when no longer required (i.e., after 3 years). Prune dead, damaged or dying branches.	Summer & Winter	Years 1-3	✓	✓	✓							
	O3-10	Each autumn following practical completion, the new planting scheme will be inspected, and dead or dying plants recorded and replaced in the next winter planting season, until 100 % canopy is achieved and/or hedgerow gaps are filled.	Autumn	As required until 100% canopy achieved	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	O3-11	No use of herbicides and artificial fertilisers, hand pulling of weed species should be used if possible Herbicides should only be applied to spot-treat or weed-wipe for the control of invasive species.	As required	As required	✓	✓	✓	✓	✓					
	O3-12	Access through gates and to important infrastructure (e.g., inverters) will be maintained through regular mowing and/or the trimming of hedgerows. Hedgerow trimming	September-February	Annually	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Management Objective	Management Prescription	Management Prescription Detail	Seasonal Requirement	Frequency	Years									
					Y1	Y2	Y3	Y4	Y5	Y10	Y15	Y20	Y25	Y30
		will be undertaken outside of the bird breeding season.												
	O3-13	The rewilding areas will mainly be left un-manage to allow re-colonisation by locally occurring species. Low key management will be undertaken every 2 years to avoid complete bramble cover and to manage undesirable species. Management will be via mechanical cutting and hand pulling.	Mid-August to September	Every 2 years		✓		✓		✓	✓	✓	✓	✓
Objective 4 'Provide targeted ecological enhancements for specific species.'	O4-1	Provision of wild bird seed mix in parts of the buffer areas/wildlife corridors to ensure food provision for species which may be displaced due to loss of arable farmland.	Refer to detailed prescriptions	As required	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	O4-2	Five artificial hibernacula (hibernation sites) will be constructed.	N/A	Year 1	✓									
	O4-3	A total of 10 bat and 10 bird boxes will be erected / installed.	N/A	Year 1	✓									
Objective 5 'Implement a programme of ongoing ecological monitoring to ensure the successful implementation of this Management	O5-1	Post construction monitoring checks to be undertaken in Years 1, 3 and 5 to ensure the mitigation measures are operational.	Autumn	Years 1, 3 & 5	✓		✓		✓					
	O5-2	Monitoring surveys of bat and bird boxes to be undertaken.	Autumn	Year 3 & 5			✓		✓					
	O5-3	GCN HSI surveys and one traditional survey will be undertaken.	Spring	Every 5 Years post construction					✓	✓	✓	✓	✓	✓

Management Objective	Management Prescription	Management Prescription Detail	Seasonal Requirement	Frequency	Years									
					Y1	Y2	Y3	Y4	Y5	Y10	Y15	Y20	Y25	Y30
Plan, achieve specified Biodiversity Net Gain, and to inform future revisions/amendments to the Plan.'	O5-4	Provide reports following the initial monitoring checks and surveys in Years 1, 3 and 5 to the site owner/operator summarising actions undertaken as part of this plan and setting out any recommendations arising from monitoring.	N/A	Year 5	✓		✓		✓					
	O5-5	Monitoring surveys every 5 years following completion of construction of the solar park to assess that the scheme is proceeding in line with the BNG specifications (BNG compliance surveys).	Spring/ Summer	Every 5 Years post construction					✓	✓	✓	✓	✓	✓
	O5-6	Provide accompanying monitoring reports following each compliance survey, discussing the findings of the surveys and recommendations to achieve BNG specifications.	N/A	Every 5 years post construction					✓	✓	✓	✓	✓	✓

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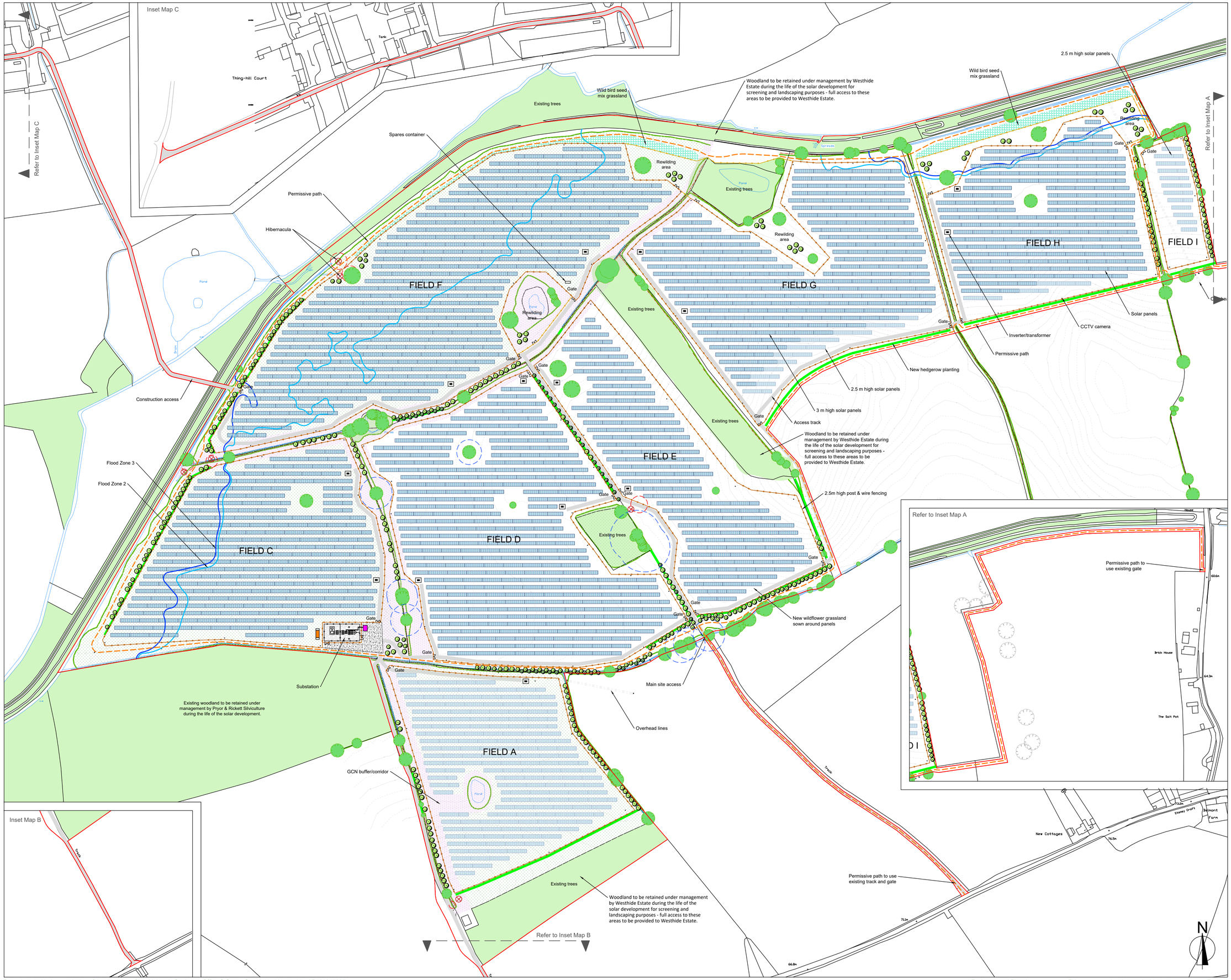
APPENDIX A: MASTERPLAN

S:\PROJECTS\3350 - 3399\3352 - Westhide Solar\3 GRAPHICS\CAD\PLOT FILES



GENERAL NOTES:

1. ALL DIMENSIONS AND LEVELS SHALL BE CHECKED ON SITE PRIOR TO CONSTRUCTION WORK COMMENCING.
2. ALL LANDSCAPE DRAWINGS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEER'S AND ARCHITECT'S DRAWINGS AND SPECIFICATIONS.
3. ALL DRAWINGS TO BE READ IN CONJUNCTION WITH THE LANDSCAPE SPECIFICATION.
4. ANY DISCREPANCY CONCERNING THE DRAWINGS SHOULD BE REFERRED TO THE CA IMMEDIATELY.
5. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
6. ALL LEVELS IN METRES.
7. DO NOT SCALE OFF THIS DRAWING.
8. EXISTING SERVICE ALIGNMENTS SHALL BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO CONSTRUCTION WORK COMMENCING.

Site boundary

Existing

- Existing woodland
- Existing tree (surveyed)
- Existing hedgerow (surveyed) all to be retained and enhanced to 3m high winter cut height
- Existing overhead utility/electricity lines (surveyed)
- Existing water course / pond
- Existing tree planting retained and enhanced
- Buffer zone for ancient and veteran trees
- Flood zone 2
- Flood zone 3

Proposed

- Proposed tree planting *(Indicative - refer to Landscape Mitigation and Enhancement Plans)*
- Poor quality trees to be removed (please refer to arb survey, drwg # 210409-WSS-SP-AM)
- New species-rich hedgerow planting
- Proposed species-rich grassland
- Proposed wild bird seed mix grassland (0.5 ha total)
- Great Crested Newt (GCN) ecological buffer
- Hibernacula
- 2.5 m high post and wire fencing to have mammal gates for mammal access
- 2.4 m high palisade fencing *(around DNO customer substation)*
- 1.2 m high timber post and rail fencing *(to rewilding areas)*
- Access track
- CCTV camera
- Inverter transformer unit
- DNO switch housing
- Customer substation
- Substation hardstanding
- Proposed solar panels 2.5 m high
- Proposed solar panels 3 m high
- Permissive path

DRAWING NOTES:

Fields A, G, H and I to have 2.5 m high solar panels and 3m high for the others.

During the design development process Field B was removed from the proposals and, therefore, it is not shown or referred to on the Masterplan.

Rev:	Date:	Description:	Drawn	Ch'd
A	21/09/2021	Ecology and landscape additions as per comments	GS	JH
B	04/10/2021	Site access and permitted path amended as per comments	GS	JH
C	01/11/2021	Contours added	GS	JH
D	16/11/2021	Substation relocated and redline boundary updated. Minor amendments as per comments	JH	AS
E	18/11/2021	Redline boundary update	JH	AS
F	23/11/2021	Redline boundary update	JH	AS
G	14/06/2022	Updates as per local authority comments	JH	AS
H	20/06/2022	Minor amendments as per comments	JH	AS
I	22/06/2022	Amendments to GCN corridor	JH	AS

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CLIENT
ERSUN (WESTHIDE SPV) LTD

PROJECT
WESTHIDE SOLAR

TITLE
MASTERPLAN

Status:	Drawn:	Checked:
PLANNING	GS	JH
Scale:	Date:	Approved:
1:2,000@A1	20.07.21	GM

Drawing Number: 3352_L_GA_0_01 Rev: I

Environmental Planning EIA Landscape Architecture Ecology

APPENDIX B: RSPB GUIDANCE: FARMING FOR WILDLIFE - WILD BIRD SEED MIXTURES

for birds
for people
for ever

THE GAME CONSERVANCY TRUST

FARMING FOR WILDLIFE

Wild bird seed mixtures

ELS OELS HLS SA

Peter Thompson (GCT)

These crops can provide the best seed source for birds on the farm.

Wild bird seed mixtures provide vital food for seed-eating birds throughout winter. They are particularly important in areas where traditional food sources, such as weedy stubble and cereals fed to outdoor stock, are no longer available. The seed mixtures can be funded by Entry Level Stewardship (ELS), Organic Entry Level Stewardship (OELS) and Higher Level Stewardship (HLS). Entry Level Stewardship includes an option to create them on set-aside, or they can be located on set-aside outside of any scheme. Different rules apply to the various options, and you should check the latest Defra literature or seek advice to ensure your management meets the relevant requirements.

BENEFITS FOR WILDLIFE

Seed-bearing crops provide food for birds throughout the winter

The use of a mix of seed crops will lead to the creation of an attractive feeding habitat for a wide range of seed-eating birds. A two-year crop may also provide seed in spring of the second year and this may help birds to attain breeding condition.

Crops managed without broad-spectrum herbicides and with low nitrogen inputs can conserve rare arable plant populations

The weed flora within wild bird seed mixtures may contain rare arable plants that can be conserved if use of herbicides and fertilisers is carefully considered.

Flowering plants attract nectar-feeding insects

Any flowering crops or weeds will encourage nectar-feeding insects. Many of these insects will then lay eggs nearby and thus increase the numbers of insect larvae available to birds as food. Hoverflies are especially attracted to the flowering plant strips and will lay eggs wherever there is an abundance of aphids for their larvae to feed on, thus helping to reduce numbers of these pests in nearby crops.

Cereal-based mixes provide good brood-rearing cover for grey partridges

A cereal-based mix established in spring or autumn will create an open, invertebrate-rich crop that is an ideal foraging environment for grey partridge chicks.

GUIDELINES OVERLEAF

HOW CAN I CREATE AND MANAGE WILD BIRD SEED MIXTURES?

PREPARATION AND MANAGEMENT

- Wild bird seed mixtures are generally established in spring. Where spring sowing is not possible then autumn sowing of an annual mix on a two-year rotation provides seed in the second winter only, in which case, adjacent strips will need to be created in alternate years to provide seed every winter.
- Use a mix of at least three small-seed bearing crops. Good crops for different species are listed in Table 1. Maize and sorghum are not useful components, and do not qualify as small-seed bearing crops in mixtures for ELS. The crops can be drilled in separate rows unless you are using set-aside. This may be useful in terms of allowing a rotation to avoid the build up of soil-borne diseases.
- Create blocks of up to 0.5 ha in size. Aim for between two and five blocks per 100 ha to provide plenty of seed food around the farm.
- March to May is the best period for spring establishment. Cereals do better in earlier crops, but later sowing is better for quinoa, which is prone to late frosts.
- The seedbed should be prepared and the crop drilled as for a commercial arable crop. Recommended seed rates are given in Table 2.

Table 2. Suggested seed rates for crops. If part of a mixture then divide the figure by the number of crops in the mix

Crop	Seed rate kg / ha
Kale	5
Cereal	125
Quinoa	10
Linseed	60
Rape	7.5

- Sowing a cereal mix and broadcasting the other crops before rolling should achieve good establishment.
- Crops vary in their need for nitrogen fertiliser. In general, kale is the most demanding crop and should receive 70-100 kg N/ha. There is an application limit of 30 kg N/ha on set-aside.
- Pesticide use is restricted to the use of contact non-residual herbicides prior to sowing, spot treatment or weed-wipe of pernicious or alien species, and seed-treatments to control seedling pests and diseases.

Table 1. Preferred crop types of declining seed-eating birds (from the Game Conservancy Trust)

Species	Seed preference (in order)	Preferred structure and location
Grey partridge	Cereals, kale, rape, weeds	Thick canopy such as kale in open locations
Skylark	Linseed, millet, kale, cereals	Open canopy such as sparse cereal away from boundary features
Tree sparrow	Wide range, especially kale, cereals, quinoa, rape, millet and weeds	Next to thick hedge, small woodland or scattered trees
Linnet	Kale, linseed, mustard and rape	Next to hedge or area of scrub
Yellowhammer	Cereals and millet	Next to hedge
Reed bunting	Very wide range of small seeds eg kale, millet, quinoa, rape and weeds	Next to hedge, close to ditch
Corn bunting	Quinoa and cereals	Away from boundary features other than grass strips

- Plots of annual crops should be re-established every spring. Mixtures including kale should be re-established every other spring. Plots may be relocated within the same field to prevent the build-up of diseases such as brassica clubroot.
- Wild bird seed mixtures may be particularly useful for seed-eating birds on livestock farms with little or no arable farmland. Plots will need to be protected from grazing by locating them in corners of ungrazed silage fields or existing arable fields, or fenced off from grazing stock on pastures.

A BROOD-REARING COVER FOR GREY PARTRIDGES

- You should aim to create a 6 m wide strip (or 10 m if using set-aside and not next to a hedge or watercourse) alongside a tussocky grass margin where partridges are likely to nest.
- The seed rate should be low to create an open habitat that gives birds access to the ground and low-growing weeds (eg a mix of 25 kg cereal and 2.5 kg mix of mustard and rape per hectare).
- Establish in spring or autumn each year.
- This can be carried out under the wild bird cover option on set-aside.

You can get further information on this and other ways of managing your farm for wildlife from:

Agricultural Adviser, The RSPB, UK Headquarters, The Lodge, Sandy, Bedfordshire SG19 2DL.
Tel: 01767 680551
www.rspb.org.uk/farming

Farming and Wildlife Advisory Group, NAC, Stoneleigh, Kenilworth, Warwickshire
CV8 2RX. Tel: 024 7669 6699
www.fwag.org.uk

The Game Conservancy Trust, Fordingbridge, Hampshire SP6 1EF. Tel: 01425 652381
www.gct.org.uk

RSPB regd charity no 207076 223-0119-05-06

KEY POINTS

Wild bird seed mixtures may be particularly important on livestock farms where other seed sources are not available.

Aim for two to five blocks per 100 ha. Each block should be up to 0.5 ha in size.

Check the latest set-aside rules or scheme guidelines to ensure your management meets the relevant requirements.

A mix including a cereal and an oil-rich crop (eg kale, linseed or quinoa) will benefit the widest range of species.

The Defra ELS, OELS and HLS schemes can fund this type of management. For full details, refer to the scheme handbooks.

This habitat can be created on set-aside and still score points in the ELS scheme.

ELS = Entry Level Stewardship
OELS = Organic Entry Level Stewardship
HLS = Higher Level Stewardship
SA = Set-aside

APPENDIX C: BNG CONDITION ASSESSMENTS

Condition Sheet: GRASSLAND Habitat Type (low distinctiveness)	
UKHab Habitat Type(s)	
Grassland - Modified grassland	
Habitat Description	
See UKHab	
Condition Assessment Criteria	
1	There must be 6-8 species per m^2. Note - if a grassland has 9 or more species per m^2 it should be classified as a moderate distinctiveness grassland habitat type. **NB - this criterion is non-negotiable for achieving good condition.**
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.
3	Some scattered scrub (including bramble) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of shrubs with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.
4	Physical damage evident in less than 5% of total grassland area, such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities.
5	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.
6	Cover of bracken less than 20%.
7	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and undesirable species [1] make up less than 5% of ground cover.

Condition Assessment Result	Condition Assessment Score
Passes 6 or 7 of 7 criteria including non-negotiable criterion 7	Good (3)
Passes 4 or 5 of 7 criteria; OR Passes 6 of 7 criteria excluding non-negotiable criterion 7	Moderate (2)
Passes 0, 1, 2 or 3 of 7 criteria	Poor (1)

Notes

Footnote 1 - Species considered undesirable for this habitat type include: Creeping thistle *Cirsium arvense* , spear thistle *Cirsium vulgare* , curled dock *Rumex crispus* , broad-leaved dock *Rumex obtusifolius* , common nettle *Urtica dioica* , greater plantain Plantago major, white clover *Trifolium repens* , cow parsley *Anthriscus sylvestris* .

Condition Sheet: GRASSLAND Habitat Type (medium, high & very high distinctiveness)	
UKHab Habitat Type(s)	
Grassland - Lowland calcareous grassland **Grassland - Lowland dry acid grassland** **Grassland - Lowland meadows** **Grassland - Other lowland acid grassland** **Grassland - Other neutral grassland** **Grassland - Tall herb communities*** **Grassland - Upland acid grassland** **Grassland - Upland calcareous grassland** **Grassland - Upland hay meadows** **Sparsely vegetated land - Calaminarian grassland**	
Habitat Description	
See UKHab * Note Tall herb habitat that does not meet the definition of Annex 1 habitat 'Tall herb communities (H6430)' should be recorded as "Other neutral grassland"	
Condition Assessment Criteria	
1	The appearance and composition of the vegetation closely matches characteristics of the specific grassland habitat type (see UKHab definition). Wildflowers, sedges and indicator species for the specific grassland habitat type are very clearly and easily visible throughout the sward.
2	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.
3	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.
4	Cover of bracken less than 20% and cover of scrub (including bramble) less than 5%.
5	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981). Combined cover of undesirable species[1] and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area.

Condition Assessment Result	Condition Assessment Score
Passes 5 of 5 criteria	Good (3)
Passes 3 or 4 of 5 criteria	Moderate (2)
Passes 0, 1 or 2 of 5 criteria	Poor (1)

Notes

Footnote 1 - Species considered undesirable for this habitat type include: Creeping thistle *Cirsium arvense* , spear thistle *Cirsium vulgare* , curled dock *Rumex crispus* , broad-leaved dock *Rumex obtusifolius* , common nettle *Urtica dioica* , creeping buttercup *Ranunculus repens* , greater plantain *Plantago major* , white clover *Trifolium repens* , cow parsley *Anthriscus sylvestris.*

Part 1b - Condition assessment of hedgerows

UKHab Habitat Type
Native hedgerow
Native hedgerow - associated with bank or ditch
Native hedgerow with trees
Native hedgerow with trees - associated with bank or ditch
Native species rich hedgerow
Native species rich hedgerow - associated with bank or ditch
Native species rich hedgerow with trees
Native species rich hedgerow with trees - associated with bank or ditch

Habitat Description

See Chapter 8 of User Guide

Condition Assessment Criteria

A series of ten attributes, representing key physical characteristics, are used for this assessment. The attributes, and the minimum criteria for achieving a favourable condition in each, are defined. The attributes use similar favourable condition criteria to the Hedgerow Survey Handbook and the handbook is the recommended source of reference for assessing individual hedgerow attributes.

Hedgerow favourable condition attributes			
Attributes and functional groupings (A, B, C, D & E)		**Criteria (the minimum requirements for 'favourable condition'**	**Description**
Core groups - applicable to all hedgerow types			
A1.	Height	>1.5 m average along length	The average height of woody growth estimated from base of stem to the top of shoots, excluding any bank beneath the hedgerow, any gaps or isolated trees. Newly laid or coppiced hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice). A newly planted hedgerow does not pass this criterion (unless it is > 1.5 m height).
A2.	Width	>1.5 m average along length	The average width of woody growth estimated at the widest point of the canopy, excluding gaps and isolated trees. Outgrowths (e.g. blackthorn suckers) are only included in the width estimate when they >0.5 m in height. Laid, coppiced, cut and newly planted hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice[4]).
B1.	Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length (unless 'line of trees')	This is the vertical gappiness of the woody component of the hedgerow, and its distance from the ground to the lowest leafy growth. Certain exceptions to this criterion are acceptable (see page 65 of the Hedgerow Survey Handbook).
B2.	Gap - hedge canopy continuity	? Gaps make up <10% of total length and ? No canopy gaps >5 m	This is the horizontal gappiness of the woody component of the hedgerow. Gaps are complete breaks in the woody canopy (no matter how small). Access points and gates contribute to the overall gappiness, but are not subject to the >5 m criterion (as this is the typical size of a gate).
C1.	Undisturbed ground and perennial vegetation	>1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length: ? measured from outer edge of hedgerow, and ? is present on one side of the hedge (at least)	This is the horizontal gappiness of the woody component of the hedgerow. Gaps are complete breaks in the woody canopy (no matter how small). Access points and gates contribute to the overall gappiness, but are not subject to the >5 m criterion (as this is the typical size of a gate).
C2.	Undesirable perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground	The indicator species used are nettles (Urtica spp.), cleavers (Galium aparine) and docks (Rumex spp.). Their presence, either singly or together, should not exceed the 20% cover threshold.
D1.	Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species	Neophytes are plants that have naturalised in the UK since AD 1500. For information on neophytes see the JNCC website and for information on invasive non-native species see the GB Non-Native Secretariat website.
D2.	Current damage	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities	This criterion addresses damaging activities that may have led to or lead to deterioration in other attributes. This could include evidence of pollution, piles of manure or rubble, or inappropriate management practices (e.g. excessive hedge cutting).
Additional group - applicable to hedgerows with trees only			
E1.	Tree age	At least one mature tree per 30m stretch of hedgerow. A mature tree is one that is at least 2/3 expected fully mature height for the species.	This criterion addresses if there are sufficient mature trees (within the scope of planning timescales) which are of higher value to biodiversity.
E2.	Tree health	At least 95% of hedgerow trees are in a healthy condition (excluding veteran features valuable for wildlife). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.	This criterion identifies if the trees are subject to damage which compromises the survival and health of the individual specimens.

Each attribute is assigned to one of five functional groups (A – E), as indicated in Table TS1-2 and the condition of a hedgerow is assessed according to the num

The hedgerow condition assessment generates a weighting (score) ranging from 1-3, which is used within the biodiversity metric 3.0. The scores for each are s

TABLE TS1-3: Hedgerow condition assessment and weighting

Condition categories for hedgerows without trees		
Category	**Maximum number of attributes that can fail to meet 'favourable condition' criteria in Table TS1-2**	**Weighting (score)**
Good	No more than 2 failures in total; AND No more than 1 in any functional group.	3
Moderate	No more than 4 failures in total; AND Does not fail both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & C2 = Moderate condition).	2
Poor	Fails a total of more than 4 attributes; OR Fails both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).	1
Condition categories for hedgerows with trees		
Category	**Maximum number of attributes that can fail to meet 'favourable condition' criteria in Table TS1-2**	**Weighting (score)**
Good	No more than 2 failures in total; AND No more than 1 failure in any functional group.	3
Moderate	No more than 5 failures in total; AND Does not fail both attributes in more than one functional group (e.g. fails attributes A1, A2, B1, C2 & E1 = Moderate condition).	2
Poor	Fails a total of more than 5 attributes; OR Fails both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).	1

Condition Sheet: POND Habitat Type	
UKHab Habitat Type(s)	
Lakes - Ponds (priority habitat) **Lakes - Ponds (non-priority habitat)** **Lakes - Temporary lakes, ponds and pools** [Use this condition sheet for Temporary ponds and pools, use Lake condition sheet for Temporary lakes] **Lakes - Ornamental lake or pond** [Use this condition sheet for Ornamental ponds, use Lake condition sheet for Ornamental lakes]	
Habitat Description	
See UKHab other than for non-priority ponds, which are those which do not meet either the definition of (i) priority habitat ponds or (ii) ornamental ponds	
Condition Assessment Criteria	
CORE CRITERIA - applicable to all ponds (woodland[1] and non-woodland):	
1	The pond is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution. Turbidity is acceptable if the pond is grazed by livestock.
2	There is semi-natural habitat (i.e. moderate distinctiveness or above) for at least 10 m from the pond edge.
3	Less than 10% of the pond is covered with duckweed or filamentous algae.
4	The pond is not artificially connected to other waterbodies, either via streams, ditches or artificial pipework.
5	Pond water levels should be able to fluctuate naturally throughout the year. No obvious dams, pumps or pipework.
6	There is an absence of non-native plant and animal species[2].
7	The pond is not artificially stocked with fish. If the pond naturally contains fish, it is a native fish assemblage at low densities.
ADDITIONAL CRITERIA - only applicable to non-woodland ponds:	
8	In non-woodland ponds, plants, be they emergent, submerged or floating (excluding duckweeds)[3], should cover at least 50% of the pond area that is less than 3 m deep.
9	The surface of non-woodland ponds is no more than 50% shaded by woody bankside species.

Condition Assessment Result	Condition Assessment Score
If 8 criteria assessed (woodland ponds):	
Passes 7 of 7 criteria	Good (3)
Passes 5 or 6 of 7 criteria	Moderate (2)
Passes 0, 1, 2, 3 or 4 of 7 criteria	Poor (1)
If 10 criteria assessed (non-woodland ponds):	
Passes 9 of 9 criteria	Good (3)
Passes 6, 7 or 8 of 9	Moderate (2)
Passes 0, 1, 2, 3, 4 or 5 of 9 criteria	Poor (1)

Footnote 1 - A woodland pond will be surrounded on all sides by woodland habitat.

Footnote 2 - Any species included on the Water Framework Directive UKTAG GB High Impact Species List should be absent.

• Frequently occurring non-native plant species include water fern *Azolla spp.,* Australian swamp stonecrop *Crassula helmsii* , parrot's feather *Myriophyllum aquaticum* , floating pennywort *Hydrocotyle ranunculoides* and Japanese knotweed *Fallopia japonica,* giant hogweed *Heracleum mantegazzianum* (on the bank).

• Frequently occurring non-native animals include signal crayfish *Pacifastacus leniusculus* , zebra mussels *Dreissena polymorpha* , killer shrimp *Dikerogammarus villosus* , demon shrimp *Dikerogammarus haemobaphes,* carp *Cyprinus carpio* .

Footnote 3 - If the pond is seasonal (i.e. dries out in most summers) then emergent species alone are likely to be found.

Condition Sheet: URBAN TREES (INCLUDING STREET TREES) Habitat Type

UKHab Habitat Type(s)

Urban - Urban tree

Habitat Description

Covers the following topographical formations most commonly found in urban areas[1]:

Individual Trees: Young trees over 75mm in diameter measured at 1.5m from ground level and individual semi-mature and mature trees of significant stature and size that dominant their surroundings whose canopies are not touching but that are in close proximity to other trees.

Perimeter Blocks: Groups or stands of trees within and around boundaries of land, former field boundary trees incorporated into developments, individual trees in gardens whose canopies overlap continuously

Linear Blocks: Lines of trees along streets, highways, railways and canals whose canopies may or may not overlap continuously

Condition Assessment Criteria

1	More than 70% of trees are native species.
2	Tree canopy is predominantly continuous with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide.
3	More than 50% of trees are mature[2] or veteran[3].
4	There is little or no evidence of an adverse impact on tree health by anthropogenic activities such as vandalism or herbicide use. There is no current regular pruning regime so the trees retain >75% of expected canopy for their age range and height.
5	Management regime has encouraged micro habitat sites for birds, mammals and insects e.g. presence of deadwood, cavities or loose bark etc.
6	Trees are immediately adjacent to other vegetation, and tree canopies are oversailing vegetation beneath.

FC	Condition Assessment Score
Passes 5 or 6 of 6 criteria	Good (3)
Passes 3 or 4 of 6 criteria	Moderate (2)
Passes 0, 1 or 2 of 6 criteria	Poor (1)

Notes

Footnote 1 - This covers all trees in artificial urban habitats such as private gardens, private land, institutional land and land used for transport functions; roads, streets, canals, rail, footpaths etc. Trees in urban areas can under the right conditions provide a large range of habitat opportunities, supporting lichens, invertebrates and birds. Tree planting in urban areas has for over two hundred years also introduced non-native species into towns and cities. In the context of biodiversity native species are the preferred option. However, non-native tree species can contribute positively to biodiversity richness particularly in relation to providing a seasonal food source for nectar feeders and other invertebrates as well as supporting vertebrates that feed on species that are hosted by non-native trees. Examples are early and late flowering species of *Prunus* and aphids on varieties of *Acer* providing food for species higher up the food chain. The species of trees (native or non-native) together with the intensity and type of management they are subject to will determine the biodiversity value of the trees in question. Trees in urban areas provide opportunistic sites for biodiversity to colonise and re-colonise, increasing connectivity and contributing to biodiversity critical mass between already established patches or sites. This is especially so where transport corridors are populated with mixed native species

Footnote 2 - A mature tree in this context is one that is at least 2/3 expected fully mature height for the species.

Footnote 3 - All ancient trees are veteran trees, but not all veteran trees are ancient. A veteran tree may not be very old, but it has decay features, such as branch death and hollowing. These features contribute to its biodiversity, cultural and heritage value. Veteran trees can be classified if they have four out of the five following features:

1. Rot sites associated with wounds which are decaying >400cm2;
2. Holes and water pockets in the trunk and mature crown >5 cm diameter;
3. Dead branches or stems >15 cm diameter;
4. Any hollowing in the trunk or major limbs;
5. Fruit bodies of fungi known to cause wood decay.

Condition Sheet: WOODLAND Habitat Type

UKHab Habitat Type(s)

Woodland and forest - Lowland beech and yew woodland
Woodland and forest - Lowland mixed deciduous woodland
Woodland and forest - Native pine woodlands
Woodland and forest - Other coniferous woodland
Woodland and forest - Other Scot's pine woodland
Woodland and forest - Other woodland; broadleaved
Woodland and forest - Other woodland; mixed
Woodland and forest - Upland birchwoods
Woodland and forest - Upland mixed ashwoods
Woodland and forest - Upland oakwood
Woodland and forest - Wet woodland

Habitat Description

See UKHab

This condition sheet is based on the England Woodland Biodiversity Group (EWBG) Woodland Condition Survey Method, available here : https://woodlandwildlifetoolkit.sylva.org.uk/assess

Condition Assessment Criteria

	Indicator	Good (3 points)	Moderate (2 points)	Poor (1 point)	Score per indicator
1	**Age distribution of trees**[1]	Three age classes present	Two age classes present	One age class present	
2	**Wild, domestic and feral herbivore damage**	No significant browsing damage evident in woodland[2]	Evidence of significant browsing pressure is present in 40% or less of whole woodland	Evidence of significant browsing pressure is present in 40% or more of whole woodland	
3	**Invasive plant species**[3]	No invasive species present in woodland	Rhododendron or laurel not present, other invasive species < 10% cover	Rhododendron or laurel present, or other invasive species > 10% cover	
4	**Number of native tree species**	Five or more native tree or shrub species found across woodland parcel	Three to four native tree or shrub species found across woodland parcel	None to two native tree or shrub species across woodland parcel	
5	**Cover of native tree and shrub species**	> 80% of canopy trees and >80% of understory shrubs are native	50-80% of canopy trees and 50-80% of understory shrubs are native	< 50% of canopy trees and <50% of understory shrubs are native	
6	**Open space within woodland**[4]	10 – 20% of woodland has areas of temporary open space, unless woodland is <10ha in which case lower threshold of 10% does not apply	21- 40% of woodland has areas of temporary open space	More than 40% of woodland has areas of temporary open space	
7	**Woodland regeneration**[5]	All three classes present in woodland; trees 4-7cm dbh, saplings and seedlings or advanced coppice regrowth	One or two classes only present in woodland	No classes or coppice regrowth present in woodland	
8	**Tree health**	Tree mortality less than 10%, no pests or diseases and no crown dieback	11% to 25% mortality and/or crown dieback or low risk pest or disease present	Greater than 25% tree mortality and or any high risk pest or disease present	
9	**Vegetation and ground flora**	Ancient woodland flora indicators present	Recognisable NVC plant community present	No recognisable NVC community	
10	**Woodland vertical structure**[6]	Three or more storeys across all survey plots or a complex woodland	Two storeys across all survey plots	One or less storey across all survey plots	
11	**Veteran trees**[7]	Two or more veteran trees per hectare	One veteran tree per hectare	No veteran trees present in woodland	
12	**Amount of deadwood**	50% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	Between 25% and 50% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	Less than 25% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	
13	**Woodland disturbance**[8]	No nutrient enrichment or damaged ground evident	Less than 1 hectare in total of nutrient enrichment across woodland area and/or less than 20% of woodland area has damaged ground	More than 1 hectare of nutrient enrichment and/or more than 20% of woodland area has damaged ground	
				Total score (out of a possible 39)	

Condition Assessment Result	Condition Assessment Score
Total score >32 (33 to 39)	Good (3)
Total score 26 to 32	Moderate (2)
Total score <26 (13 to 25)	Poor (1)

Notes

Footnote 1 - See EWBG method INDICATOR 1 for more information. If tree species is not a birch, cherry or Sorbus: 0 – 20 years (Young); 21 - 150 years (Intermediate); and >150 years (Old). A recognisable age class should be a consistent recognisable layer across the woodland or stand being assessed. Presence of a few saplings would not indicate that the woodland has an 'age class' of young trees.

Footnote 2 - See EWBG method INDICATOR 2 for more information. Browsing pressure is considered to be significant where >20% of vegetation visible within each survey plot shows damage from any type of browsing pressure listed.

Footnote 3 - See EWBG method INDICATOR 3 for more information. Check for presence of the following invasive non-native species: American skunk cabbage *Lysichiton americanus;* Himalayan balsam *Impatiens glandulifera;* Japanese knotweed *Fallopia japonica;* Cherry Laurel *Prunus lauroceraus;* Shallon *Gaultheria shallon;* Snowberry *Symphoricarpos albus;* Variegated yellow archangel *Lamiastrum galeobdolon subsp. argentatum;* and Rhododendron *Rhododendron ponticum.*

Footnote 4 - See EWBG method INDICATOR 6 for more information. Open space within woodland in this context is temporary open space in which trees can be expected to regenerate (e.g. glades, rides, footpaths, areas of clear-fell). This differs from permanent open space where tree regeneration is not possible or desirable (e.g. tarmac, buildings, rivers). Area is at least 10m wide with less than 20% covered by shrubs or trees.

Footnote 5 - See EWBG method INDICATOR 8 for more information. This indicator measures regeneration potential of the woodland by considering three classes: seedlings; saplings; and young trees of 4-7 cm DBH. All three classes would fall in the 'young' category of the 'age distribution of trees' indicator, the regeneration indicator is gathers additional information by considering regeneration potential i.e. if seedlings, saplings and young trees are all present that means natural regeneration processes are happening.

Footnote 6 - This indicator is looking at structural diversity and is useful to understand in conjunction with the age of trees in a woodland. Vertical structure is defined as the number of canopy storeys present. Possible storey values are: 1) Upper; 2) Complex: recorded when the stand is composed of multiple tree heights that cannot easily be stratified into broad height bands (such as upper, middle or lower); 3) Middle; 4) Lower; and 5) Shrub layer.

Footnote 7- See EWBG method INDICATOR 12 for more information. All ancient trees are veteran trees, but not all veteran trees are ancient. A veteran tree may not be very old, but it has decay features, such as branch death and hollowing. These features contribute to its biodiversity, cultural and heritage value. Veteran trees can be classified if they have four out of the five following features:

1. Rot sites associated with wounds which are decaying >400 cm^2;
2. Holes and water pockets in the trunk and mature crown >5 cm diameter;
3. Dead branches or stems >15 cm diameter;
4. Any hollowing in the trunk or major limbs;
5. Fruit bodies of fungi known to cause wood decay.

Footnote 8 - See EWBG method INDICATOR 15 for more information. Examples of disturbance are: significant nutrient enrichment; soil compaction from trampling, machinery or animal poaching; litter.

APPENDIX D: RETAINED HABITATS

4.66 The following tables provide the information required to carry out post construction monitoring of the Biodiversity Net Gain Assessment specifications. Zero value habitats (built areas) have not been included.

Table D.1: Retained Area Habitats (Figure 3 refers)

Label	Habitat	Condition Assessment Sheet	Condition	Notes
WL1	Other woodland; broadleaved	Woodland	Moderate	Woodland
WL2	Other woodland; broadleaved	Woodland	Poor	
WL3	Lowland mixed deciduous woodland	Woodland	Good	
WL4	Lowland mixed deciduous woodland	Woodland	Moderate	
WL5	Other woodland; broadleaved	Woodland	Moderate	
WL6	Other woodland; broadleaved	Woodland	Moderate	
WL7	Lowland mixed deciduous woodland	Woodland	Moderate	
P4	Ponds (Priority Habitat)	Lakes	Good	Pond 4
T20	Urban Tree	Urban Trees	Moderate	Scattered trees
T27	Urban Tree	Urban Trees	Moderate	
T28	Urban Tree	Urban Trees	Moderate	
T31	Urban Tree	Urban Trees	Moderate	
T38	Urban Tree	Urban Trees	Moderate	
T40	Urban Tree	Urban Trees	Moderate	
T41	Urban Tree	Urban Trees	Moderate	
T43	Urban Tree	Urban Trees	Moderate	
T44	Urban Tree	Urban Trees	Moderate	
T45	Urban Tree	Urban Trees	Moderate	
T57	Urban Tree	Urban Trees	Moderate	
T58	Urban Tree	Urban Trees	Moderate	
T59	Urban Tree	Urban Trees	Moderate	
A.GM.N	Modified grassland	Grassland Low	Moderate	Grassland field margins
A.GM.E	Modified grassland	Grassland Low	Moderate	
A.GM.W	Modified grassland	Grassland Low	Moderate	
C.GM.N	Modified grassland	Grassland Low	Low	

C.GM.E	Modified grassland	Grassland Low	Moderate	
C.GM.S	Modified grassland	Grassland Low	Low	
C.GM.W	Modified grassland	Grassland Low	Low	
D.GM.N	Modified grassland	Grassland Low	Low	
D.GM.E	Modified grassland	Grassland Low	Low	
D.GM.S	Modified grassland	Grassland Low	Low	
D.GM.W	Modified grassland	Grassland Low	Moderate	
E.GM.N	Modified grassland	Grassland Low	Low	
E.GM.E	Modified grassland	Grassland Low	Low	
E.GM.S	Modified grassland	Grassland Low	Low	
E.GM.W	Modified grassland	Grassland Low	Moderate	
F.GM.N.1	Modified grassland	Grassland Low	Low	Grassland field margins (path)
F.GM.N.2	Modified grassland	Grassland Low	Moderate	Grassland field margins
F.GM.S	Modified grassland	Grassland Low	Moderate	
G.GM.N	Modified grassland	Grassland Low	Low	
G.GM.E	Modified grassland	Grassland Low	Low	
G.GM.W	Modified grassland	Grassland Low	Low	
H.GM.N	Modified grassland	Grassland Low	Moderate	
H.GM.E	Modified grassland	Grassland Low	Low	
H.GM.W	Modified grassland	Grassland Low	Low	
I.GM.N	Modified grassland	Grassland Low	Low	
I.GM.E	Modified grassland	Grassland Low	Moderate	
I.GM.S	Modified grassland	Grassland Low	Moderate	
I.GM.W	Modified grassland	Grassland Low	Low	

Table D.2: Retained Hedgerow Habitats (Figure 4 refers)

Label	Habitat	Condition Assessment Sheet	Condition	Notes
H3	Native Species Rich Hedgerow	Hedgerow	Good	Entire length retained
H6	Native Hedgerow with trees	Hedgerow	Good	Entire length retained
H10	Native Hedgerow	Hedgerow	Good	Entire length retained
H11	Native Species Rich Hedgerow	Hedgerow	Good	Entire length retained
H14.R	Native Species Rich Hedgerow	Hedgerow	Good	0.16 km retained, 0.6 km enhanced

H16.R	Native Hedgerow	Hedgerow	Good	0.09 km retained, 0.21 km enhanced
H17	Native Hedgerow - Associated with bank or ditch	Hedgerow	Good	Entire length retained
H18.R	Native Hedgerow - Associated with bank or ditch	Hedgerow	Good	0.12 km retained, 0.06 enhanced

APPENDIX E: ENHANCED HABITATS

Table E.1: Enhanced Area Habitats (Figure 5 refers)

Label	Proposed Habitat	Condition Assessment Sheet	Enhanced Condition	Time to Target Condition
P1	Ponds (Priority Habitat)	Lakes	Good	4
P2	Ponds (Priority Habitat)	Lakes	Good	4

Table E.2: Enhanced Hedgerow Habitats (Figure 5 refers)

Label	Proposed Habitat	Condition Assessment Sheet	Enhanced Condition	Time to Target Condition (years)
H1	Native Species Rich Hedgerow with trees	Hedgerow	Good	10
H2	Native Hedgerow	Hedgerow	Good	2
H4	Native Hedgerow - Associated with bank or ditch	Hedgerow	Good	2
H5	Native Species Rich Hedgerow with trees	Hedgerow	Good	10
H7	Native Species Rich Hedgerow with trees	Hedgerow	Good	10
H8	Native Species Rich Hedgerow with trees	Hedgerow	Good	10
H9	Native Species Rich Hedgerow with trees - Associated with bank or ditch	Hedgerow	Good	4
H12	Native Species Rich Hedgerow with trees	Hedgerow	Good	10
H13	Native Species Rich Hedgerow with trees	Hedgerow	Good	10
H14.E	Native Species Rich Hedgerow with trees	Hedgerow	Good	10
H15	Native Species Rich Hedgerow with trees - Associated with bank or ditch	Hedgerow	Good	10
H16.E	Native Species Rich Hedgerow with trees	Hedgerow	Good	10
H18.E	Native Species Rich Hedgerow with trees - Associated with bank or ditch	Hedgerow	Good	10
H19a	Native Species Rich Hedgerow with trees - Associated with bank or ditch	Hedgerow	Good	10

H19b	Native Species Rich Hedgerow with trees - Associated with bank or ditch	Hedgerow	Good	4

APPENDIX F: CREATED HABITATS

Table F.1: Area Habitat Creation (Figure 6 refers)

Label	Proposed Habitat	Condition Assessment Sheet	Target Condition	Time to Target Condition (years)
WBS.1	Wild bird seed mix	N/A Arable	N/A	1
WBS.2	Wild bird seed mix	N/A Arable	N/A	1
A.ONG	Other neutral grassland	Grassland Med High & V. High	Moderate	5
C.ONG	Other neutral grassland	Grassland Med High & V. High	Moderate	5
D.ONG	Other neutral grassland	Grassland Med High & V. High	Moderate	5
E.ONG	Other neutral grassland	Grassland Med High & V. High	Moderate	5
F.ONG	Other neutral grassland	Grassland Med High & V. High	Moderate	5
G.ONG	Other neutral grassland	Grassland Med High & V. High	Moderate	5
H.ONG	Other neutral grassland	Grassland Med High & V. High	Moderate	5
I.ONG	Other neutral grassland	Grassland Med High & V. High	Moderate	5
PFP	Modified grassland (permissive footpath)	Grassland Low	Low	1

Table F.2: Hedgerow Creation (Figure 6 refers)

Label	Proposed Habitat	Condition Assessment Sheet	Target Condition	Time to Target Condition (years)
CH1	Native Species Rich Hedgerow	Hedgerows	Good	12
CH2	Native Species Rich Hedgerow with trees	Hedgerows	Good	20
CH3	Native Species Rich Hedgerow with trees	Hedgerows	Good	20
CH4	Native Species Rich Hedgerow with trees	Hedgerows	Good	20
CH5	Native Species Rich Hedgerow	Hedgerows	Good	12
CH6	Native Species Rich Hedgerow	Hedgerows	Good	12
CH7	Native Species Rich Hedgerow	Hedgerows	Good	12

CH8	Native Species Rich Hedgerow	Hedgerows	Good	12

FIGURES