HELIOS RENEWABLE ENERGY PROJECT

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Environmental Statement Appendix 7.9: Outline Landscape and Ecological Management Plan

October 2025

Outline Landscape and Ecological Management Plan (oLEMP)

Helios Renewable Energy Project

Enso Energy

Prepared by:

SLR Consulting Limited

2nd Floor, Hermes House, Holsworth Park, Oxon Business Park, Shrewsbury, SY3 5HJ
SLR Project No.: 404.012006.00001

Avian Ecology
Walnut Tree Farm, Northwich Road, Lower Stretton, WA4 4PG

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1.0 Introduction and Context

1.1 Overview

This Outline Landscape and Ecological Management Plan (oLEMP) is to be read in conjunction with Figures 7.19-7.22 'Landscape Strategy' and Figure 7.23 'Illustrative Landscape Masterplan', that show the nature and extent of the proposed landscape measures within the Site, as well as planting schedule and outline maintenance strategy. This document has been prepared by SLR Consulting Ltd with ecology related inputs, including biodiversity net gain (BNG), from Avian Ecology Ltd.

1.2 Design Rationale

The proposed landscape strategy aims to sensitively integrate the Proposed Development within the local landscape and reduce its potential visual effects by restoring and enhancing the existing boundaries within and around the Site. This is illustrated by Figures 7.19-7.23, which show the Site and its immediate context, how the proposed planting would strengthen landscape pattern and improve connectivity across the Site, and with the wider network of hedgerows and woodland. The proposed landscape strategy would add value to the Site both through the restoration and enhancement of the landscape pattern and also ecological value. Planting and habitat creation would include:

- A Site wide hedgerow improvement strategy leading to the reinforcement of c 8km of existing hedgerows with native species and the creation of c. 12km of new hedgerows;
- c. 52 ha of tussocky native grassland created around field margins, including 5m buffer zones either side of hedgerows and ditches for habitat creation;
- c. 288 ha of new grassland to replace intensively managed arable farmland. Where possible these areas would be managed through conservation grazing;
- a green corridor of native woodland planting along the northern boundary of the Site;
- c. 13 ha of new broadleaved woodland planting with woodland buffer zones for habitat enhancements;
- over 2 ha of native scrub planting along field boundaries or to form transitional habitats on the edges of woodland;
- the creation of over 16 ha of wet meadow grassland areas adjacent to ditches and watercourses;
- the creation of c. 0.7 ha of wetland habitats in the form of ponds and scrapes; and
- the creation of Biodiversity Improvement Areas across the Site as well as the provision of artificial bird nest boxes, bat roost boxes, hedgehog boxes, insect hotels/boxes and hibernacula.

The types of planting proposed are influenced by baseline studies and analysis of local policy and published landscape character assessments, as well as fieldwork undertaken as part of the Landscape and Visual Impact Assessment (LVIA) (refer to ES Chapter 7 Landscape and Views). The planting strategy has also been informed by ecological assessments (refer to ES Chapter 8 Biodiversity; Appendix 8.1: Baseline Habitats and Desk Study Report). The proposed planting has been altered in response to consultation comments received from North Yorkshire Council (NYC). Specifically this has resulted in increases in the amount of woodland and scrub planting in order to strengthen the proposed landscape framework. The oLEMP is expected to evolve over time, with a key stage being

the provision of a detailed LEMP in response to a Development Consent Order (DCO) Requirement.

In summary, the Site is currently characterised by a dominance of extensive large scale open arable fields defined by a network of field boundaries which comprise, ditches, fragmented hedgerows and occasional tree belts, with a sporadic network of lanes and farm tracks following some field boundaries.

Within published Landscape Character Assessments, the Site is located within the Humberhead Levels National Character Area (NCA 39) and at a local level within the Farmed Lowland and Valley Landscapes Primary Landscape Unit[1], almost entirely within the Levels Farmland Landscape Character Type (LCT 23) but with a small area of the southern part of the Site lying within River Floodplain (LCT 24). Within the Selby Landscape Character Assessment 2019[2] the Site is located within Landscape Character Area (LCA) 7: 'Aire Valley', LCA 13 'Haddlesey Farmland', and LCA 15 Camblesforth Farmland. Included in the aforementioned published Landscape Character Assessments are a series of Landscape Management Considerations which are of relevance to the Landscape Strategy for the Site, and its future management, summarised as follows:

- Ensure new development is sensitively located to allow for green infrastructure, a contribution to biodiversity and maintaining long views;
- Diversify habitats in arable areas by creating a grassland habitat network, field margins, waterside buffers, etc. This will further help to diversify habitats for insects and birds;
- Protect and improve public enjoyment of the landscape by retaining and improving the existing network of public rights of way;
- Restore and enhance wetland habitats, including the introduction of emergent species;
- Create new woodlands to complement the existing woodland pattern and provide valuable habitats for wildlife and local corridors for biodiversity;
- Enhance existing hedgerows and reinstate where possible to maintain landscape structure; and
- New development should be sited to take advantage of existing screening and in order to retain more open, long views.

The creation of Biodiversity Improvement Areas across the Site as well as the provision of artificial wildlife features has been informed by a suite of ecological baseline surveys, which have identified the presence or potential presence of breeding birds, non-breeding birds, bats, small mammals, amphibians, reptiles and Invertebrates within the Site.

1.3 Aim of the oLEMP

The aim of this oLEMP is to set out a framework within which a detailed LEMP can be subsequently produced by way of a DCO Requirement. The oLEMP establishes the overarching principles for the promotion of a sensitive management approach that protects, manages and enhances the Site for the benefit of habitats, landscape character and visual amenity in the long-term, and which protects/safeguards it during construction/installation

[1] Chris Blandford Associates (May 2011), *North Yorkshire and York Landscape Characterisation Project,* Available at: https://www.northyorks.gov.uk/environment-and-neighbourhoods/conservation/describing-and-understanding-our-landscape Accessed September 2023

[2] LUC on behalf of Selby District Council (November 2019), Selby Landscape Character Assessment, Available at: https://www.selby.gov.uk/sites/default/files/Selby%20LCA%20Report%20Combined.pdf Accessed September 2023

works. The LEMP will build upon this framework and provide full details required in order to secure the aims of the oLEMP.

The remainder of this oLEMP sets out how the Landscape Strategy for the Site translates into the establishment as well as management prescriptions/operations for the various vegetation/habitat types and features of the Site.

This oLEMP also provides an overview as to how habitats specified within the Biodiversity Impact Assessment will achieve their targeted habitat type and conditions within the anticipated timeframe (as specified in Table 3.1). The oLEMP outlines appropriate monitoring criteria and suggests remedial/contingency measures to be implemented in the event that these targets are not achieved. Habitat condition assessment sheets for the relevant habitats are provided in Annex B.

2.0 Implementation

2.1 General Operations

2.1.1 Protection of Existing Vegetation

Areas of existing vegetation to be retained on Site would be protected throughout the proposed construction and planting works in accordance with an Arboricultural Impact Assessment (AIA) and Tree Protection Plans.

2.1.2 Protection of Existing Ecological Features and Habitats During Construction

Prior to the removal of dense undergrowth and/or debris piles, areas will first be searched for vulnerable wildlife by an appropriately qualified ecologist. Should any vulnerable wildlife be found, the project ecologist will advise of the appropriate actions.

Any temporary external lighting will be designed to minimise the risk of light spill outside the area it is desired to illuminate; and particular care will be taken to minimise light spill on woodland and hedgerows or other linear features that can be used by bats for commuting and foraging. This can be achieved using baffles and directional lighting coupled with low-level lighting columns.

All trenches and excavations will be closed overnight to prevent badgers and other wildlife from becoming trapped. Where it is not feasible to close excavations overnight, they will be excavated with at least one sloping end or provided with a sturdy plank to provide a means of escape.

To avoid contamination of retained habitats, particularly boundary features, best practice guidelines will be followed to ensure there remains negligible potential for degradation of retained habitats. It is envisaged that this will involve providing spill kits to machine operators and agreed safe storage of all materials away from areas of boundary habitat to be retained.

Further details are provided in the Outline Construction Environmental Management Plan (oCEMP) for the Site, with further information to be provided in a future detailed Construction Environmental Management Plan (CEMP).

2.1.3 Ground Preparation and Vegetation Removal

All proposed planting/seeding areas shall be cleared of all unwanted rubbish, and any debris and unwanted vegetation/weeds removed prior to planting. The location of any existing services within the Site will also be established before clearance works and planting begins.

Vegetation requiring removal (either for development or habitat enhancement reasons), should ideally be cleared outside the bird nesting season (which runs from March to August, inclusive). Where this is not possible, a suitably experienced ecologist will be appointed to undertake a nesting bird survey to identify the presence of any bird nests being built or in use (including those of ground nesting birds e.g. skylark).

A suitable non-residual herbicide may be used to clear existing weeds or unwanted vegetation in proposed planting areas where this cannot be achieved by cultivation alone. Herbicides are not to be applied within 10m of any watercourse or waterbody unless approved by the Environment Agency.

2.1.4 Soil Resource

The substrate will be inspected and assessed for its suitability for landscaping prior to the commencement of implementation works.

It is not intended to import any topsoil to Site, nor to apply any compost or soil conditioners owing to the existing nature of the farmland. However, all soil handling operations will follow the guidelines set out in *BS:3882: Specification for topsoil and requirements for use* to make the best use of the available soil resource and minimise compaction and comply with requirements of the Soil Management Plan.

Where planting is required above existing underground structures, e.g. foundations etc. (exact location to be confirmed by contractor before work commences) and proposed services e.g. cables in ducting, the minimum required soil depth will be 750mm for shrub planting and 1000mm within 2m of tree planting and 500mm for grass and ground cover plants. These profiles allow for a minimum of 300mm of topsoil.

Stones larger than 50mm as well as other debris will be removed. All soil will be graded to smooth flowing contours to achieve the specified finished levels.

All areas of tree and shrub planting will be assessed for compaction prior to planting and if necessary or practical, de-compaction will be carried out to a depth of 300mm, with soils loosened, aerated and broken up, when ground conditions are reasonably dry.

2.1.5 Watering

The need for watering will be assessed prior to the commencement of works. If considered necessary, the full depth of soil will be watered during planting operations and all areas thoroughly watered immediately after operations, without damaging or displacing plants or seeds. It is anticipated that new planting may require watering, in exceptionally dry periods in the first three years.

3.0 Landscape Proposals

3.1 Biodiversity Net Gain Objectives

While the Proposed development is not subject to statutory BNG requirements, the Proposed Development has committed to achieving measurable BNG in accordance with national and local planning policy.

The Landscape Proposals and subsequent management will ensure the Proposed Development meets the BNG objectives (i.e., achieving the stated habitat type and condition), as summarised in Table 3-1 overleaf. Table 3-1 will serve as a guide to the future management and monitoring of created habitats, outlines timescales in which the objectives will be achieved, and offers a direct comparison between the habitats shown on Figures 7.19-7.22 ‘Landscape Strategy’ and Figure 7.23 ‘Illustrative Landscape Masterplan’ and the habitat types utilised for the Biodiversity Metric for the Proposed Development.

Habitat Types and condition within table 3-1 are in accordance with the Biodiversity Metric for the Proposed Development. Target condition, and the associated targeted criteria, are measured accordance with the relevant condition assessment sheets for the particular habitat, as provided in Annex B. Time to target condition is pre-set within the Biodiversity Metric and is the timeframe in which it is expected the habitat type and condition would be achieved.

Table 3-1: Summary of Biodiversity Net Gain Objectives

Landscape Habitat Type	BNG Habitat Type	Condition Sheet	Target Condition	Targeted Criteria	Time to Target Condition (Years)
Native Woodland planting	Other woodland; broadleaved	Woodland	Poor	N/A – poor condition targeted	5
Scrub planting	Mixed scrub	Scrub	Moderate	A, C, D	5
Grazing Pastures	Modified grassland	Grassland (Low distinctiveness)	Moderate	A, B, C,F,G	4
Tussock Grass Margins	Other neutral grassland	Grassland (Medium and High distinctiveness)	Moderate	A, B, C, D E	5
Wildflower Grassland					
Wet Meadow Grassland					
Pond edge mixture				A, B, D, E	
Pond	Ponds (Non-priority)	Ponds	Moderate	A, C, D, E, F, G, H, I	3
Individual Tree Planting	Rural tree	Individual Trees	Moderate	A, B, D, F	27
Hedgerow planting	Species-rich native hedgerow	Hedgerow	Moderate	All criteria targeted	5

3.2 Hedgerow Planting (Proposed Hedgerows and Existing Reinforced Hedgerows)

Sections of new hedgerow, together with the restoration and enhancement of existing hedgerows, would be established using a mix of native species and in combination with the tree planting would form a network of habitat linkages / wildlife corridors across the Site. The chosen species mix is shown in Table 3-2 below; this combination of species would create a hedgerow of seasonal interest and high wildlife value with dog rose providing an excellent source of food for birds, hazel providing food for insects and small mammals and field maple creating autumn colour. It is also proposed to include holly within the hedgerow mix, with this providing an evergreen element and visual screening throughout the year. To achieve species rich status, a minimum of five different species will be planted per 30m length.

The objective will be to create and maintain hedgerows that are approximately 3m high and at least 1.5m wide to help reduce the visibility of the Proposed Development.

Hedgerows will be planted in November – March, avoiding frosty conditions
To plant the hedgerows a 0.5m wide x 0.3m deep weed-free trench (or larger if necessary, in order to take the full spread of the roots) will be prepared. The sides and bottom of the trench will be forked over and 'ripped' to facilitate proper drainage, prior to back-filling. The trench will be excavated on the same day as planting and backfilled with an appropriate excavated topsoil/ compost mix as required. Compost will only be used if necessary. Should compost be deemed necessary, it will be Compost Association certified, or obtained from a supplier conforming to this specification. Hedgerows are to be cultivated by hand only in proximity to existing trees/hedgerows.

For existing hedgerows, an allowance of hedgerow plants has been specified based on the general conditions identified across the Site. However, the contractor shall be responsible for distributing plants in a manner that best supports the overall aim of reinforcing existing hedgerows. Bare root transplants and container-grown shrubs would be planted at 0.5m centres on the back of the existing hedgerows or within gaps larger than 0.5m.

Planting stock would be sourced from local provenance wherever possible and typically introduced as bare rooted 1+1 transplants that are 60 – 80 cm or 80-100cm tall. Holly would comprise container grown stock. All newly planted hedgerows would be individually protected by 0.6m high x 50mm diameter (or greater to suit the girth of the shrub/tree) high translucent plastic spiral guards supported by a single stout cane or, in the case of the bushier and larger stock, a 0.6m high x 150-180mm diameter (or greater to suit the girth of the shrub) shrub shelter and softwood timber stake driven into the ground to a minimum 300mm depth. Where considered necessary, stock proof fencing may be erected in grazed areas to protect establishing planting.

All planting beds will be mulched/1m diameter around all trees, with matured coniferous bark, with an even particle size between 5-35mm, to 75mm minimum depth over weed-free soil after completion of planting and watering operations.

Table 3-2: Proposed Native Hedgerow Planting Mix

Species	Common Name
Acer campestre	Field Maple
Corylus avellana	Hazel
Crataegus monogyna	Hawthorn
Ilex aquifolium	Holly
Rhamnus frangula	Alder Buckthorn
Rosa canina	Dog Rose
Sorbus aucuparia	Rowan

3.3 Individual Tree Planting (Hedgerow and Canopy Trees)

Hedgerow and Canopy trees would also form part of the proposed landscape strategy with the purpose of reinforcing and reinstating locally characteristic landscape features as well as screening the Proposed Development. The details of the proposed species are provided in Tables 3-3 and 3-4 below.

Hedgerow trees would be introduced as Standards of 250-300cm height, 175-200cm clear stem, whilst Canopy Trees would be introduced as Feathered Trees of 175–200cm height.

Individual trees will be pit planted with a slightly raised bottom to the pits and scarified sides, with a pit size to allow 300mm in any direction from the rootball by 450mm depth or as necessary to accommodate their root systems. All pits will be excavated on the same day of planting and backfilled as necessary with any compost (as per hedgerow specification). Hand digging will be undertaken in close proximity to existing trees so as not to sever any roots larger than 2.5cm in diameter. Large trees shall be planted at least 2m away from proposed security fencing to ensure branches do not extend over fencing.

All trees will be protected with a 1.2m x 20cm diameter Mesh Tree Guard with a 1.35m x 32mm stake. Trees will be supported by long timber stakes with a cross member and rubber ties. Figure 3-1 over the page provides an indicative tree pit detail including means of support.

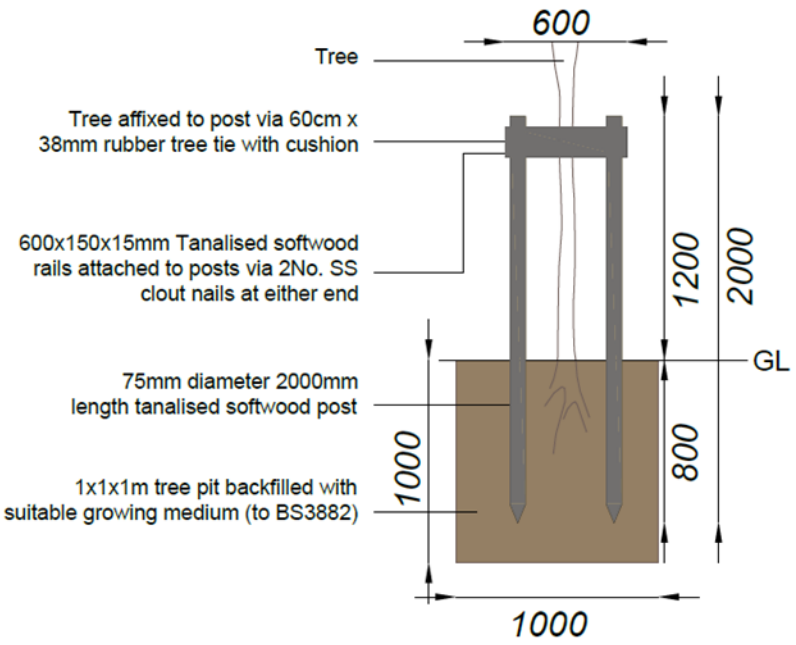
Table 3-3: Proposed Hedgerow Trees

Species	Common Name
Acer campestre	Field Maple
Alnus glutinosa	Common Alder
Quercus petraea	Sessile Oak
Quercus robur	Common Oak
Sorbus aucuparia	Rowan
Tilia x europaea	Common Lime

Table 3-4: Proposed Canopy Trees

Species	Common Name
Alnus glutinosa	Common Alder
Populus nigra subsp. Betulifolia	Black Poplar
Quercus petraea	Sessile Oak
Quercus robur	Common Oak
Salix cinerea	Grey Willow
Salix caprea	Goat Willow
Salix fragilis	Crack Willow
Tilia x europaea	Common Lime

Figure 3-1: Indicative Tree pit detail including means of support



3.4 Native Woodland Planting (Proposed Woodland and Reinforcement planting)

Native Woodland Planting, comprising of tree and shrub planting, is proposed around the boundaries of the Site, notably to the north, to reinforce the existing vegetation, to help reduce the visibility of the proposed development, and establish new green corridors and habitats.

Proposed native woodland planting is composed of a mix of locally characteristic trees and shrubs from a broad palette, to provide greater diversity and therefore better capacity to adapt to changing climatic conditions, as well as providing both understorey and canopy planting. The species selection has been informed by tree survey information and specialist ecologist input. Woodland planting is proposed to screen and contain the Proposed Development and to fulfil the guidance principles set out in published landscape character guidance (e.g.: *"Encourage planting of shelterbelts and small woodlands to create more naturalistic features in the environment, and provide important habitats for wildlife"* - LCA 7: Aire Valley and LCA 13: Haddlesey Farmland)

The details of the proposed species are provided in Table 3-5 below (N.B. Planting specification in accordance with hedgerow and tree planting).

Table 3-5: Proposed Native Woodland Planting Mix (transplant and feathered) – plant in single species groups of 3-5 plants

Species	Common Name
Acer campestre	Field Maple
Alnus glutinosa	Common Alder
Betula pendula	Common Silver Birch
Corylus avellana	Common Hazel
Crataegus monogyna	Common Hawthorn
Ilex aquifolium	Common Holly
Quercus petraea	Sessile Oak
Quercus robur	Common Oak
Sorbus aucuparia	Rowan
Tilia cordata	Small-leaved Lime
Tilia x europaea	Common Lime

3.5 Scrub Planting

Scrub planting is proposed in order to provide new biodiverse habitats and varied landscape structure. The species mix will provide food sources for wildlife including invertebrates, birds, dormouse, bats and badger.

Mixed scrub will be planted to ensure that no single species consists more than 70% of the mix.

The details of the proposed species are provided in Table 3-6 below (N.B. Planting specification in accordance with hedgerow and tree planting).

Table 3-6: Proposed Native Scrub Planting Mix– plant in single species groups of 3-5 plants

Species	Common Name
Alnus glutinosa	Common Alder
Corylus avellana	Common Hazel
Crataegus monogyna	Common Hawthorn
Rhamnus frangula	Alder Buckthorn
Ribes spicatum	Downy Currant
Rosa canina	Dog Rose
Salix cinerea	Grey Willow

3.6 Grassland

The proposed development comprises several grassland types to suit the underlying conditions, but also enhance biodiversity where possible.

Fresh seed for each grassland type should be purchased for each growing season as applicable (e.g. depending on the phasing of the planting or need for reseeding) and should be blue label certified seed varieties complying with EC regulations for purity and germination. Seed should be of local provenance where possible.

For areas of newly created grassland, ground preparation is essential to success, so the aim is to control weeds and produce a good quality seed bed before sowing. To prepare areas of newly created grassland, works to the seed bed must first remove undesirable species using repeated cultivation or a herbicide.

Grassland is to be established soon after harvesting arable fields to prevent establishment of weeds where possible, but this will be dependent on the weather, harvest cycles etc. prior to the granting of Development Consent.

The required mix should be sown in the spring or early autumn (dependent on construction programme) onto bare ground after harrowing/raking the surface and should not be sown on compacted ground. Bulking up the seed with an inert carrier such as sand can make distribution easier. The seed must be surface sown and can be applied by machine or broadcast by hand.

Preparing a seed bed on clay can be difficult, being prone to compaction and poor drainage. Well-timed preparation and sowings are therefore important to successful establishment. As clay is unworkable when very wet or very dry, autumn sowings may not be possible. It is sometimes better to dig or plough the soil in the autumn, allow winter frosts to break down the clods, and prepare a seedbed in the spring using a harrow or rake to produce a medium tilth. To get an even distribution, divide the seed into two or more parts and sow in overlapping sections.

After sowing, the surface should be lightly harrowed or raked to settle the seed in. Care must be taken not to bury the seed at depth. To give good soil/seed contact the ground may be firmed with a roller. The newly seeded areas should be fenced off until the grass is well established. In the event of poor establishment in year 1, then reseeding may be required following further investigation.

3.6.1 Existing Arable land within proposed perimeter fence – Proposed Grazing pastures

Existing Arable Fields will be cultivated following the harvesting of any crops, to a depth of 300mm in dry conditions, with existing topsoil firmed and levelled to a medium, even tilth.

A general grazing mix; such as Emorsgate grazing mixture EG27 or Boston Seeds BS MeadowMax – old fashioned 5+ years ley mixture, or similar approved, would then be sown at a rate of 14kg/acre (refer to Table 3-7 below, and available from: https://www.bostonseeds.com).

The grassland would be sown in areas where it is necessary to keep the grassland shorter e.g. around the solar panels, and thus these areas would be grazed/mown on a more regular basis than other meadow areas, if required.

Table 3-7: Indicative Grazing Pastures Mix (Boston Seed Mix – BS MeadowMax)

%	Latin name	Common name
24	*Festuca pratensis*	Meadow fescue
35	*Festuca rubra*	Creeping red fescue
25	*Phleum pratense*	Timothy
8	*Poa pratensis*	Smooth stalked meadow grass

%	Latin name	Common name
3	*Poa trivialis*	Rough stalked meadow grass
4	*Festuca ovina*	Sheep's' fescue
1	*Alopecurus pratensis*	Meadow foxtail

3.6.2 Proposed Tussock Grassland Margins

Areas outside the proposed perimeter fence are to be established with Emorsgate Tussock Mixture EM10, or similar approved, at a rate of 4g/sqm (refer to Table 3-8 below) and allowed to grow to a tall sward.

Table 3-8: Indicative Tussock Grassland Mix - Emorsgate Seeds Mix EM10

%	Latin name	Common name
Wildflowers		
0.8	*Achillea millefolium*	Yarrow
0.6	*Agrimonia eupatoria*	Agrimony
0.1	*Arctium minus*	Lesser Burdock
1.0	*Centaurea nigra*	Common Knapweed
1.6	*Centaurea scabiosa*	Greater Knapweed
1.2	*Chaerophyllum temulum*	Rough Chervil
0.1	*Cirsium eriophorum*	Woolly Thistle
0.6	*Daucus carota*	Wild Carrot
1.6	*Dipsacus fullonum*	Wild Teasel
0.4	*Filipendula ulmaria*	Meadowsweet
1.2	*Galium album*	Hedge Bedstraw
0.8	*Knautia arvensis*	Field Scabious
0.4	*Lathyrus pratensis*	Meadow Vetchling
0.4	*Lotus corniculatus*	Birdsfoot Trefoil
1.6	*Malva moschata*	Musk Mallow
1.6	*Poterium sanguisorba*	Salad Burnet
1.8	*Plantago lanceolata*	Ribwort Plantain
0.8	*Ranunculus acris*	Meadow Buttercup
1.2	*Rhinanthus minor Rattle*	Yellow Rattle
2.0	*Silene dioica*	Red Campion
0.2	*Vicia Cracca*	Tufted Vetch
20		
Grasses		
36.0	*Cynosurus cristatus*	Crested Dogstail
16.0	*Schedonorus arundinaceus (Festuca arundinacea)*	Tall Fescue (w)
4.0	*Deschampsia cespitosa*	Tufted Hair-grass (w)

%	Latin name	Common name
8.0	*Dactylis glomerata*	Cocksfoot
8.0	*Festuca rubra*	Red Fescue
8.0	*Schedonorus pratensis*	Meadow Fescue
80		

3.6.3 Proposed Wildflower Grassland

In the eastern part of the Site, a newly created native wildflower meadow is proposed. The meadow will support a mix of flowers and grasses including knapweed, ox-eye daisy, bird's-foot trefoil and other pollinator-friendly wildflowers that are frequently visited by bees, butterflies and hoverflies. The dried seed heads of the wildflowers will also provide an important seed resource for birds during the winter months.

A General Purpose Meadow mix; such as Emorsgate EM1 or similar approved, would be sown at a rate of 4g/sqm (refer to Table 3-9 over the page and available from: https://wildseed.co.uk/mixtures).

Note: If an autumn (September) seeding during Year 1 is not appropriate (i.e. due to unfavourable ground conditions) and instead a spring seeding is required, then Yellow Rattle will instead be sown separately during autumn/winter due to its requirement to experience periods of colder weather prior to germination.

Table 3-9: Indicative General-Purpose Meadow Mix – Emorsgate Seeds Mix EM1

%	Latin name	Common name
1.5	*Achillea millefolium*	Yarrow
10	*Agrostis capillaris*	Common bent
2	*Anthoxanthum odoratum*	Sweet vernal-grass
1	*Betonica officinalis*	Betony
5	*Briza media*	Quaking grass
3.5	*Centaurea nigra*	Common knapweed
2.1	*Cruciata laevipes*	Crosswort
37	*Cynosurus cristatus*	Crested dog's-tail
2	*Daucus carota*	Wild carrot
24	*Festuca rubra*	Red fescue
1	*Filipendula ulmaria*	Meadowsweet
2.6	*Galium verum*	Lady's bedstraw
0.1	*Leontodon hispidus*	Rough hawkbit
3.5	*Leucanthemum vulgare*	Oxeye daisy
SUPPLEMENT	*Lotus corniculatus*	Bird's foot trefoil
0.6	*Malva moschata*	Musk mallow
0.5	*Medicago lupulina*	Black medick
0.2	*Plantago lanceolata*	Ribwort plantain
2	*Poa pratensis*	Smooth-stalked meadow-grass

%	Latin name	Common name
0.1	*Ranunculus acris*	Meadow buttercup
0.1	*Rhinanthus minor*	Yellow rattle
0.1	*Rumex acetosa*	Common sorrel
0.2	*Silaum silaus*	Pepper saxifrage
0.1	*Silene vulgaris*	Bladder campion
SUPPLEMENT	*Trifolium pratense*	Red clover

3.7 Habitat Scrapes and existing wetland areas

The Site currently includes a series of drainage ditches defining field boundaries which will be managed through limited interventions where necessary – comprising management of boundary vegetation to reduce or prevent overshading, removal of excess aquatic vegetation, litter, pollution sources and invasive species as required, and informed by the results of ecological monitoring.

3.7.1 Proposed Wet Meadow Grassland (EM8)

Those areas of existing grassland adjacent to existing watercourses and other wet features are to be retained. However, areas outside the perimeter fence, adjacent to wetland features, as well as the proposed scrapes, will be seeded with Emorsgate EM8 Meadow Mixture for wetlands or similar approved, at a rate of 4g/sqm (refer to Table 3-10). EM8 contains species suitable for seasonally wet soils and is based on the vegetation of traditional floodplain and water meadows.

Table 3-10: Indicative Meadow Mixture for Wetlands – Emorsgate Seeds Mix EM8

%	Latin name	Common name
Wildflowers		
0.2	*Achillea millefolium*	Yarrow
2	*Centaurea nigra*	Common Knapweed
2	*Filipendula ulmaria*	Meadowsweet
1.5	*Galium verum*	Lady's Bedstraw
0.5	*Geum rivale*	Water Avens
0.2	*Iris pseudacorus*	Yellow Iris
1.5	*Leucanthemum vulgare*	Oxeye Daisy - (Moon Daisy)
1	*Lotus corniculatus*	Birdsfoot Trefoil
0.04	*Lotus pedunculatus*	Greater Birdsfoot Trefoil
1	*Plantago lanceolata*	Ribwort Plantain
0.4	*Primula veris*	Cowslip
2	*Prunella vulgaris*	Selfheal
0.5	*Pulicaria dysenterica*	Common Fleabane
0.46	*Ranunculus acris*	Meadow Buttercup
1	*Rhinanthus minor*	Yellow Rattle
1	*Rumex acetosa*	Common Sorrel

%	Latin name	Common name
1.5	*Sanguisorba officinalis*	Great Burnet
1	*Silaum silaus*	Pepper Saxifrage
1	*Taraxacum officinale*	Dandelion
0.2	*Thalictrum flavum*	Common Meadow-rue
1	*Vicia cracca*	Tufted Vetch
20		
Grasses		
10	*Agrostis capillaris*	Common Bent
3	*Alopecurus pratensis*	Meadow Foxtail (w)
3	*Anthoxanthum odoratum*	Sweet Vernal-grass (w)
3	*Briza media*	Quaking Grass (w)
24	*Cynosurus cristatus*	Crested Dogstail
2	*Deschampsia cespitosa*	Tufted Hair-grass (w)
32	*Festuca rubra*	Red Fescue
3	*Hordeum secalinum*	Meadow Barley (w)
80		

3.8 Habitat Ponds

3.8.1 Proposed Pond Edge Mixture (EP1)

The proposed habitat ponds will include a 2m species-rich wet grassland margin of Emorsgate EP1 (Pond Edge Mixture) or similar approved at a rate of 4g/sqm (refer to Table 3-11 below) as well as appropriate native marginal planting which will provide refuge for amphibians and reptiles, as well as providing pollinator interest. A similar species mix could also be used to enhance the existing pond within the Site.

Bats will be attracted to these features, feeding off the invertebrate prey (flies and moths) that emerges on mild evenings. Areas of deeper water would be planted with aquatic species (both fully submerged and floating plants) (refer to Table 3-12 over the page) to provide additional shelter, habitat and foraging opportunities where possible.

Table 3-111: Indicative Pond Edge Mixture - Emorsgate Seeds EP1

%	Latin name	Common name
Wildflowers		
2.0	*Carex divulsa ssp divulsa*	Grey Sedge
0.4	*Carex pendula*	Pendulous Sedge
2.0	*Centurea nigra*	Common Knapweed
2.0	*Cruciata laevipes*	Crosswort
0.4	*Dipsacus fullonum*	Wild teasel
2.0	*Filipendula ulmaria*	Meadowsweet
0.5	*Galium album*	Hedge Bedstraw

%	Latin name	Common name
1.0	*Geranium pyreniacum*	Hedge Crane's -bill
0.3	*Geum rivale*	Water Avens
2.6	*Iris pseudacorus*	Yellow Iris
0.4	*Lycopus europaeus*	Gypsywort
0.2	*Oenanthe pimpinelloides*	Corky-fruited Water-dropwort
0.1	*Prunella vulgaris*	Selfheal
0.5	*Rhinanthus minor*	Yellow Rattle
2.6	*Silene dioica*	Red Campion
3.0	*Silene flos-cuculi*	Ragged Robin
20		
Grasses		
2.0	*Agrostis capillaris*	Common Bent (w)
2.0	*Anthoxanthum odoratum*	Sweet Vernal-grass
4.0	*Briza media*	Quaking Grass (w)
48.0	*Cynosurus cristatus*	Crested Dogstail
2.0	*Deschampsia cespitosa*	Tufted Hair-grass (W)
22.0	*Festuca rubra*	Red Fescue
80		

3.8.2 Proposed Aquatic/ Marginal Planting

The newly created ponds are envisaged as small ponds for general biodiversity, invertebrates, common amphibians (i.e. frogs) and grass snake. Ponds may not hold water all year round and will including undulating wetland areas around them.

Within habitat ponds a series of shallow slopes and level areas would be formed to allow subtle variation in water level and assist the development of a diverse range of habitat types. Subtle gradients and an aquatic bench would be created for the establishment of marginal habitats. Areas of deeper water would also be used as a design tool to control the spread of marginal plants; for instance, *Iris pseudacorus* (Yellow flag iris) can only tolerate a depth of up to 20cm and as such would not survive in the basin's maximum depth of 1m.

All marginal planting and the fully submerged aquatic plants (water violet) would be grown and notch planted in Spring. Water crowfoot (floating aquatic plant) would be weighted to the bottom of the basin in bunches for it to naturally root, whereas frogbit (floating aquatic plant) would be carefully positioned on the surface of the water with the roots facing downwards. All planting would be supervised on Site to ensure the correct ecological conditions are met. Plants would be planted at the depths and density shown below in Table 3-12.

Table 3-12: Indicative Aquatic/Marginal Planting Mix

Latin name	Common name	Density	Planting type and Instructions	Pot Size
Angelica sylvestris	Wild angelica	5/m2	Marginal Plant. Plant at around water level	Plug plant

Latin name	Common name	Density	Planting type and Instructions	Pot Size
Filipendula ulmaria	Meadowsweet	5/m2	Marginal Plant. Plant at around water level	Plug plant
Geum rivale	Water avens	5/m2	Marginal Plant. Plant at a water depth of between 0-8cm.	Plug plant
Hottonia palustris	Water violet	5/m2	Fully submerged aquatic plant. Plant on the bottom of the attenuation basin.	Plug plant
Hydrocharis morsus-ranae	Frogbit	1/m2	Floating, aquatic plant. Position on the water surface with the roots pointing downwards.	Bareroot
Iris pseudacorus	Yellow flag iris	5/m2	Marginal Plant. Plant at a water depth of around 20cm.	Plug plant
Lythrum salicaria	Purple Loosestrife	5/m2	Marginal Plant. Plant at a water depth of around 20cm.	Plug plant
Mentha aquatica	Water mint	5/m2	Marginal Plant. Plant no deeper than 30cm below water.	Plug plant
Myosotis scorpioides	Water forget-me-not	5/m2	Marginal Plant. Plant at a water depth of between 0-10cm.	Plug plant
Ranunculus aquatilis	Water crowfoot	1/m2	Floating, aquatic plant. Plant on the bottom of the attenuation basin.	Plug plant
Ranunculus lingua	Greater Spearwort	5/m2	Marginal Plant. Plant at a water depth of between 15-25cm.	Plug plant

3.9 Skylark Plots

The following measures for the creation and management of skylark plots are in accordance with Countryside Stewardship management practices as set out in AB4: Skylark Plots[3].

Mitigation for the loss of suitable nesting habitat for skylarks will be provided through the provision of ‘skylark plots’ within land identified as the ‘Ground Nesting Bird Mitigation and Compensation Area’ in Annex A.

Twenty-five skylark territories were recorded within the Development Area and this is therefore used as the basis for mitigation calculations. Poor breeding productivity is typical for this species in modern farmed landscapes where unfavourable (winter sown) crops are planted, as these grow quickly in spring and largely preclude successful breeding attempts. Winter sown crops are also established to preclude skylarks from breeding multiple times in a single breeding season for the same reason; in more naturalistic (grassland type) habitats, skylarks will breed up to four times per season and therefore produce higher numbers of young. Skylarks do not generally nest in the skylark plots, but instead use them for foraging. In a conventional winter cereal field, skylarks can forage easily in April but, by June, more than half of the foraging has to take place outside the field. If adjacent fields also contain

[3] https://www.gov.uk/countryside-stewardship-grants/skylark-plots-ab4 [Accessed 27/04/2024].

winter crops, skylarks will struggle to find sufficient food. However, in fields with two skylark plots per hectare, they continue to forage easily within the field throughout the season. Skylark plots therefore provide skylarks with suitable access to nesting habitats in winter cereal crops throughout their breeding season. Meadow grassland within the Site will provide improved foraging habitats for nesting skylarks in the wider area and therefore, overall, the skylark plots and meadow area is considered likely to be beneficial for the species' local population.

Two skylark plots will be provided for each territory lost, therefore a total of 50 plots will be created within the Ground Nesting Bird Mitigation and Compensation Area each year. Each skylark plot will be a minimum of 16m^2 in size and at least 3m wide. The plots will be sensibly spread around the Ground Nesting Bird Mitigation and Compensation Area, at a maximum density of two plots per ha. Plots will not be connected to tramlines and will be sited at least 50m away from any boundary features.

Table 3-13.summarises the indicative number of skylark plots (based on x2 plots per ha) which can be accommodated in each suitable field located within the Order Limits (field numbers are shown in annex A). Further demonstrating that the Order Limits is able to accommodate at least 50 skylark plots. Due to their size, fields 8 and 12a are unsuitable for the creation of skylark plots and omitted form the table.

Sufficient Ground Nesting Bird Mitigation and Compensation Area exists within the Order Limits to provide adequate territories and this provision can be secured through the requirements of the Order. The Applicant controls additional land within which further territories may also be used, including as enhancement as part of a ground nesting bird mitigation and compensation scheme. Measures will be implemented annually for the operational life of the Proposed Development (40 years).

Table 3-13: The available number of skylark plots per field located within the order Limits.

Field Number	Total Area (ha)	Area minus precautionary 50m buffer (ha)	Indicative number of skylark plots (x2 plots per ha)
2a	6.67	3.48	6
7a	5.01	1.86	3
11	5.93	2.00	3
17	19.63	9.63	19
19a	17.46	9.56	19
	Total	**26.53**	**50**

Skylark plots are created by:

- Turning off the drill during sowing to leave an unsown plot; or,
- Sowing the crop as normal and spraying with herbicide to create the plot by 31st December.

There is no need to keep the plots weed-free but spot-treating with herbicide in April will help skylarks to access their nesting sites; the use of farm sprayer is preferred to hand knapsack to minimise time spent and human interaction. Mechanical weeding of crops containing skylark plots will destroy any nests present and is therefore not permitted. No ongoing

management is necessary, plots can receive the same spray and fertiliser applications as the rest of the field. Should there be any significant fresh growth of any of ryegrass, brome, blackgrass, thistle or ragwort then the farm can spray to control these. This will ensure the land is maintained to a high standard for the farm in subsequent crops. Other innocuous weeds will be left to provide cover. The land can also be sprayed pre-harvest should this be required to aid efficient harvesting.

3.10 Non-breeding Lapwing Habitat

Two fields within the Development Area will be managed for use by foraging non-breeding lapwing annually for the lifetime of the Proposed Development.

The fields are 19.63 ha and 17.46 ha (total area 37.09 ha), and are marked as fields 17 and 19 in within land identified as the 'Ground Nesting Bird Mitigation and Compensation Area' in Annex A.

Both fields are outside the development footprint, aside from the underground cable route, and there is no development of adjacent fields as part of the Proposed Development (hence neither will be subject to any enclosure effect). Field locations are shown on Figure 1.

Management for non-breeding lapwings will comprise the following measures:

- Crops to be maintained below 8-10 cm during the non-breeding season (approximately October to March), such as wheat/barley during autumn/spring passage or fallow/newly tilled fields.
- Avoidance of deep ploughing.
- The addition of manure, subject to a reasonable agricultural cycle.
- The incorporation of a ley crop within the management rotation.
- The inclusion of permanent grass margins to the fields.

The lapwing habitat within the mitigation areas will be created sufficiently in advance of infrastructure work to ensure habitat is available prior to the beginning of the construction phase.

3.11 Additional Measures and Features

All hard surfaces and landscape features including timber benches, signage, bins etc. will be constructed in accordance with the appropriate British Standards and Supplier guidance and will be detailed following the granting of Development Consent. This will also include interpretation boards across the Site. These would be located on Public Rights of Way and would highlight the landscape and ecological improvements made as part of the Landscape Strategy.

Any lighting for the purposes of security would be sensitively sited following a detailed lighting assessment to ensure site safety whilst reducing impact on local wildlife.

In order to provide immediate opportunities for faunal species in addition to those to come forward as part of the extensive habitat proposals, a number of faunal specific measures are to be incorporated into the scheme.

The perimeter fencing will incorporate suitably sized gaps at its base at suitable locations around the Site to allow the free movement of wildlife, including badger and small mammals, thereby maintaining and strengthening habitat connectivity and dispersal opportunities across and through the solar farm.

A variety of artificial nesting features (generally boxes but using a variety of designs attractive to different species) will be added within existing habitats, such as on mature trees, within the hedgerow network and across woodland areas; ensuring that bird species have a

wide variety of increased long-term nesting opportunities throughout the Site. Precise locations will be subject to confirmation during the installation depending on the box and condition of trees. To include:

- At least two barn owl nest boxes installed on suitable matures tree away from main roads surrounding the Site;
- At least two tawny owl nest boxes positioned in woodland belts/mature hedgerow trees located within the Site;
- At least two kestrel boxes positioned within mature hedgerow trees within the Site, in close proximity to areas of grassland to be created; and,
- At least 60 small open-fronted and hole-fronted nest boxes of various design, positioned within existing hedgerow habitats within the Site.

Additional bat roost provision will be made through the inclusion of a minimum of 60 bat roost boxes on suitable mature and semi-mature trees along the Site field boundaries and within the woodland within the Site. Precise locations will be subject to confirmation during the installation depending on the box and condition of trees. Boxes will be erected in suitable habitats, at an appropriate height (ideally above 4m in height) and with clear flight paths to utilise the Site field boundary features. Bat boxes should ideally be sited in open sunny positions facing different directions to provide a variety of micro-habitats. To include:

- At least 30 multi chamber bat boxes suitable for a range of bat species, mating roosts and spring and autumn roosts;
- At least 20 single chamber bat boxes; and,
- At least 10 hibernation bat boxes.

Additional hedgehog habitat provision will be made through the inclusion of 30 hedgehog boxes within and bordering the Site. Precise locations will be subject to confirmation during the installation but will be focussed within sheltered and undisturbed locations within woodland and along boundary features such as hedgerows. The entrance should be placed out of the weather, ideally facing east to south.

Additional habitat provisions for invertebrates will be made through the inclusion of 30 insect hotels/boxes erected within and bordering the Site. Precise locations will be subject to confirmation during the installation depending on the box/hotel and condition of trees (if required). Boxes should be erected at sheltered undisturbed locations and be angled so that they face away from the prevailing wind. A selection of boxes/hotels will be suitable for a variety of insect species.

A minimum of 15 hibernacula will be created within areas of species-rich meadow, adjacent to either a hedgerow or woodland; each will measure approximately 2m x 2m x 1m in height. The hibernacula will be constructed from logs and / or clean bricks/rubble sourced locally as far as possible, or with ‘clean’ materials brought in from elsewhere where this is not possible and topped with soil and earth. The hibernacula will provide shelter and over-wintering refuge for amphibians, reptiles, small mammals and invertebrates.

4.0 Landscape maintenance/aftercare

4.1 Management Responsibilities

This oLEMP provides an initial overview of potential management activities for the first 5 years of vegetation establishment following implementation of the landscape scheme on Site. It is intended that a detailed LEMP would be produced at a later date following the granting of Development Consent to reflect the ongoing changes to management as planting establishes and will consider this up to the point of decommissioning of the proposed development.

All areas of the Landscape Strategy will be closely monitored throughout a 5-year aftercare period from the completion of any implementation works by a suitably competent professional, so that the most appropriate management regime can be defined on an area-by-area basis. Whist these measures focus on the initial establishment and aftercare of the planting, the landscape and ecological features within the Site will be managed and maintained throughout the operational life of the Proposed Development. This would be addressed in a LEMP prepared in response to a Development Consent Order Requirement.

4.2 Annual Management Prescriptions

All vegetation will be managed, with the aims of improving habitat value and amenity. All areas of proposed and existing planting should take account of the below General Management Considerations (4.2.1). In addition to these tasks many of the proposed vegetation types/ habitats, as well as existing, will require more specific management operations to ensure their longer-term establishment, as discussed in Section 4.3.

4.2.1 General Management Considerations – Establishment

A visual inspection of all planting would be carried out on an annual basis to check for good strong foliage and growth. Where this is not obvious, soil samples may be taken to assess nutrient levels and determine specific fertiliser applications. Maintenance works shall be carried out in accordance with the following indicative programme.

December – March	No Visit
April – Mid June	1 Visit
Mid June – August	1 Visit
September – November	1 Visit

The number of visits each season would vary according to the stage of management and maintenance.

Years 1 and 2	3 Visits
Year 3	2 Visits
Years 4 and 5	1 Visit

On each visit the requirement for the following would be assessed:

- In all planted / seeded areas, weed control, including ring weeding and/or hand pulling of seedlings, e.g. within spiral guards/tubes and monitoring for invasive non-native species should be carried out 2-3 times per year during the growing season. The frequency of visits will be decided on Site to keep the individual planting areas free of weeds. It remains the responsibility of the Contractor to adopt suitable methods for weed control based on legislation, training and accreditation. If deemed necessary herbicide would be applied to a 1m diameter around the base of each tree, using a

controlled droplet applicator, or similar, to minimise spray drift. Application of weedkiller shall be carried out using an Arbor-guard to protect planting from spray damage. N.B. No herbicide to be applied within 10m of any watercourse without first seeking prior consent of the Environment Agency. All works to be undertaken by a competent professional with the appropriate qualifications and certifications. It may also be necessary to cut back the areas between plants to 100mm above ground level, in order to keep the planted areas clear of weeds and long grass;

- A mulch or membrane may also be used to control weed growth. Top up mulch as required. Mulched areas around proposed trees and shrubs shall be maintained for the first 5 years to a minimum depth of 10cm.
- Under the provisions of the Weeds Act 1959, it is the responsibility of all occupiers of land - whether used for agriculture or not, to control injurious weeds, so that they do not spread. Noxious and/or non-native invasive species will be controlled, removed and disposed of in accordance with best practice and the appropriate guidelines, e.g. for Japanese Knotweed.
- Under Schedule 9 of The Wildlife & Countryside Act 1981 it is an offence to plant or otherwise cause to grow in the wild species listed within Schedule 9; this includes allowing the species to grow/spread, spreading the species or transferring polluted ground material from one area to another. Any waste containing these species can only be removed from Site under appropriate waste management documentation (under the Environmental Protection Act 1990).
- An assessment of watering need should be carried out during dry periods, with particular note paid to planting areas that could be more susceptible to dry conditions, e.g. new tree and shrub planting within the first 3 years of establishment where possible.
- Replacement planting should be carried out between November and March inclusive, avoiding the winter frosts. Replacement seeding should be carried out in spring or autumn. The Contractor shall remove any dead, dying, or diseased plants, which are evident during any maintenance visit. The Operations Manager shall be informed of the location, number and species of all material that has been removed. All replacement planting shall be with like species unless otherwise agreed with the Operations Manager. Plant failures shall be monitored, and alternative species may be agreed should any single species be subject to repeated or significant failures.
- All shelters, stakes and ties for new trees should be checked and replaced/adjusted/removed as required in spring /autumn. In year five, all tree / hedgerow planting would be checked for establishment, all guards/shelters, stakes, canes and ties that are no longer required would be removed and the general shape and requirements for formative pruning and singling out of leaders would be assessed.
- All tree planting is to be managed in the interests of health and good practice biosecurity to prevent the risk of spreading pests and disease, in line with Government advice and the UK Forestry Standard.
- All management operations requiring vegetation removal, including pruning, should have regard to the bird nesting season (running from March to late August inclusive) and any potential disturbance to bird habitats should be avoided during this time and/or ecological supervision provided.
- Pruning may take place at certain times, as required, to remove dead or dying and diseased wood to promote healthy growth and natural shape. All pruning should be carried out in accordance with good horticultural practices. All tree works are to be carried out by an approved member of the Arboricultural Association. Cuttings from pruning would be utilised in habitat piles if appropriate or off-cuts would be

chipped/shred and spread around the base of each plant provided that ground flora and associated habitats are not disturbed. Any surplus or unwanted cuttings would be removed off Site.

- Monitoring of grassland should be undertaken during the initial establishment period in order to ensure target results are achieved. Any observations noted should be taken into account in order to update prescribed longer-term management operations as appropriate, including any requirement for recultivation and seeding.
- The Operations Manager shall ensure that all of the Site is kept free of litter and other debris through a regular programme of monitoring, collection and disposal, coinciding with visits to maintain grassed areas and planting. All litter and debris shall be removed off Site to an authorised waste management facility; and.
- Inspect and maintain fencing in good order, especially ensuring that straining wires are kept at the correct tension, posts are firmly held in the ground and all staples and fittings are securely in place.

4.3 Specific Management Prescriptions

The following additional considerations are provided for specific planting areas/habitats and features (existing to be retained and proposed) for 0-5 years, to be reviewed and updated as planting matures.

4.3.1 Maintenance of Proposed Trees and Woodland

Key Maintenance objectives for woodland are as follows:

- Meets the UKHab definition of Other Broadleaved Woodland
- Greater than 80% of species are broadleaved;
- Natural regeneration occurs;
- At least three native tree or shrub species are present; and,
- Woodland is developing a complex structure including ground flora, understory, shrub and canopy species.

Key Maintenance objectives for individual trees are as follows:

- Tree remains in good health; and,
- Vegetation is present underneath at least 20% of the tree canopy.

Any trees to be retained as part of the Landscape Strategy will be protected in accordance with the appropriate arboricultural method statement. A qualified arboriculturalist would be employed to undertake an annual inspection of the health of all trees and advise on any remedial and corrective measures in accordance with British Standards.

In relation to proposed woodland areas, mulch should be topped up in these areas during years 1-3 to minimise competition from weeds and grasses. It may also be necessary to carry out selective thinning and coppicing of approximately 30% of plants in Year 5, leaving deadwood and brush piles in situ

4.3.2 Maintenance of Hedgerows

Key Maintenance objectives for hedgerows are as follows:

- Achieves UKHab definition of Native Species Rich Hedgerow;
- Maintain a minimum of five woody species per 30m length;
- Maintain a bushy growth of at least 1.5m height and width;
- Avoid vertical (‘leggy’) and gaps along the length of the hedgerow; and,
- Maintain species diverse margins of at least 1m.

Existing hedgerows would be cut prior to installation of any new native planting, including hedgerow trees. It may also be necessary to carry out hedgerow laying if existing hedgerows have become gappy at their bases prior to installation of new planting, however this should be done on rotation.

Ground flora (including that as part of EM10 seeding) will be allowed to develop beneath the hedgerows/unmown margins of c. 2m to enhance their function as a wildlife corridor. These areas of grassland will be strimmed once every three years on rotation and arising removed (1/3 of vegetation strimmed at any one time).

In addition to annual tasks in relation to weed control, fertiliser application and watering, the proposed hedgerows will also be cut once established so that they retain a healthy form. Hedgerows should be trimmed one side per year, alternating on a 2- or 3-year rotation in February, aiming to maintain a minimum height of 3m to promote bushy growth while providing continued habitat and foraging opportunities for wildlife. N.B. If hedgerow management is required between 1st March and 31st August this will be preceded by a survey by an ecologist to check for nesting birds (N.B. yellowhammer nests well into late August). Hedgerow trees shall be protected during trimming and allowed to develop to full maturity.

4.3.3 Maintenance of Scrub

Key Maintenance objectives for scrub are as follows:

- Achieves UKHab definition of Mixed Scrub;
- Ensure no single species consists greater than 70% of the habitat;
- Promote natural regrowth; and
- Ensure complementary edge habitat is present.

In addition to annual tasks in relation to weed control, fertiliser application and watering, it may also be necessary within the first 5 years to undertake clearance of vigorous species such as bramble whilst scrub areas are developing, as well as formative pruning to allow shrubs to mature. It will also be necessary to manage the wildflower grassland surrounding the shrub blocks to contribute to natural ecotones and habitat diversity.

All scrub planting is to be thinned on a rotational cycle to promote new growth. The height of planting is to be reduced where necessary to prevent overshading of panels.

4.3.4 Maintenance of Grasslands

Existing strips of Grassland within the proposed perimeter fence will be retained and protected as far as possible from construction activities. Where any damage does occur as result of construction operations, damage shall be remediated through cultivation and overseeding in accordance with the specification for grassland creation.

As shown on Landscape Strategy Figures 7.8-7.11 a palette of different grasslands has been selected for across the Site. Where appropriate, in the first one to two years after seeding, all proposed grassland areas will be cut regularly to a height of c. 50mm up to a maximum of 3 annual cuts (in Spring) to control weed growth, until no longer required to prevent undesirable weed growth. Arisings will be removed to prevent nutrient enrichment. A further cut and collect, in Late August/September may take place, once wildflowers have set seed.

Invasive or exotic species should be removed annually in autumn or winter. Ideally, weeds will be removed by hand pulling and weed wiping/spot spraying should not be necessary. Use of pesticides will be avoided; however, spot treatment may be applied by a competent professional in accordance with all relevant legislation and guidance, where pernicious or invasive weeds occur.

Grasslands would be monitored to assess the success of establishment. Areas will be re-sown following implementation of any other remedial works, as necessary. It is expected that following establishment, species diversity will naturally increase with time. Thereafter grasslands will be cut in accordance with the prescriptions detailed below.

Existing arable land within proposed perimeter fence seeded with BS MeadowMax (or similar) & any existing grasslands.

Key Maintenance objectives for grazing grassland are as follows:

- Achieves UKHab definition of Modified Grassland;
- Ensure at least six species per m^2 on average;
- Varied sward height is present; and,
- There is an absence of bare ground.

Existing grassland and reseeded arable land within the perimeter fence will be subject to grazing during Spring and Summer months to prevent shading of the panels and security features. Conservation/low intensity grazing is to be encouraged in the interests of biodiversity. Sheep will be removed from the pastures/rotated during wetter periods to prevent poaching of the ground.

Where grazing is not possible or practical, mowing/strimming of grassland will be undertaken on a more regular basis to a height of c. 40-60mm as advised, with extra care being taken to check for the presence of ground nesting birds. Ecological advice should be sought if required.

Proposed Meadow Grassland Areas – General Purpose Meadow (EM1) (or similar)

Key Maintenance objectives for grazing grassland are as follows:

- Achieves UKHab definition of Other Neutral Grassland;
- Ensure at least nine species per m^2 on average;
- Varied sward height is present;
- There is an absence of bare ground; and,
- Species indicative of nutrient enrichment are not present.

Following management during establishment, if low intensity grazing is not possible, meadow grasslands should be cut once a year in late August to September (after flowering). These cuts should be completed once the sward has reached a height in excess of 150mm and cutting should be completed to a height of approximately 50 - 75mm.

Small patches of bare ground will also be permitted within drier areas. Whilst of negligible botanical interest, this habitat type provides important opportunities for solitary invertebrates.

To aid the retention of significant areas of longer vegetation, it is suggested that pockets of grassland (20%) may remain uncut in each year. These uncut areas will primarily be in the form of edge habitat adjacent to tree and hedge lines as well as native shrub blocks. Within these areas grasses will be subject to only irregular cuts, with cutting undertaken on a 2-to-3-year rotation such that scrub succession is kept in check and to provide further opportunities for faunal species. Arisings from the above management (excluding invasive/undesirable species) will be retained on Site for a period of 5 days to allow seed to set, following which material will be removed.

By undertaking the above prescribed cuts, the need for additional management to meadow grassland habitats in the form of weed removal or scrub clearance will be largely alleviated. Should additional management be required this should be in the form of either manual or mechanical vegetation removal. Where this is not possible Glyphosate based herbicides may be applied to vegetation of concern, only where necessary.

Proposed Tussock Grassland (EM10) (or similar)

Key Maintenance objectives for tussock grassland are as follows:

- Achieves UKHab definition of Other Neutral Grassland;
- Ensure at least nine species per m^2 on average;
- Varied sward height is present;
- There is an absence of bare ground; and,
- Species indicative of nutrient enrichment are not present.

All areas of proposed Tussock grassland (including along hedgerow margins and adjacent to PRoW) will be strimmed/mown on rotation, 1/3 every year to a height of 200mm (40-60mm throughout the first growing season).

4.3.5 Maintenance of Wetland areas (Ponds and Scrapes)

Regular monitoring and maintenance will be required to remove litter and debris especially after any storm event. The ponds and scrapes will also be monitored regularly to determine if any repairs or reinstatement is required to embankments etc. The new and existing ponds will also be monitored to ensure they are holding water, with remedial works to improve water retention if necessary. Siltation will be monitored annually, and excessive deposits removed as necessary. Periodic maintenance may also be required such as re-seeding if there is poor vegetation growth or erosion.

Proposed Wetland Grassland (EM8) (or similar)

Key Maintenance objectives for wet grassland are as follows:

- Achieves UKHab definition of Other Neutral Grassland;
- Ensure at least nine species per m^2 on average;
- Varied sward height is present;
- There is an absence of bare ground; and,
- Species indicative of nutrient enrichment are not present.

To enhance habitat value, the Wetland Grassland areas are to be managed once established to provide a variation in structure.

The grassland areas in the scrapes/pond edges will be cut as appropriate for the specific meadow mix allowing long grass/wildflowers to develop. Where access is required then mowing/strimming will take place on a more regular basis, to a height of c. 50mm, as required. Elsewhere once established, wet grassland should be managed as a long sward through the summer, allowing it to flower and seed, before being cut back in Late August/September to c. 100mm.

Proposed Aquatic/Marginal Planting & EP1 (or similar)

Key Maintenance objectives for marginal grassland planting are as follows:

- Achieves UKHab definition of Other Neutral Grassland or Pond (as appropriate);
- Ensure at least nine species per m^2 on average;
- Varied sward height is present; and,
- Species indicative of nutrient enrichment are not present.

Any work should aim to minimise disturbance to the sediments at the bottom of a pond because this may release nutrients into the water which could cause algal blooms and disrupt the ecological balance of the system.

It is acknowledged that management operations within the ponds and their margins can disturb plant and animal communities and thus it is proposed that any necessary works would be carried out on a rotational basis so that as broad a range of successional stages as

possible are evident on the Site. Rotational management options potentially include thinning of alternate areas on a rotational basis in order to leave other areas undisturbed. When thinning aquatic vegetation, planting should remain in a range of depths to provide a variety of habitats for different species. It is envisaged that works are carried out on a two year cycle, but this would be assessed so that factors such as vegetation growth rates, function as a drainage feature and presence of any other management operations can be taken into account. Prior to undertaking all works, a suitably qualified ecologist would be consulted.

Autumn is the best time of the year for carrying out maintenance. During winter some animal species will be hibernating in and around the pond and maintenance during the spring and early summer will disturb the breeding seasons of many amphibian species. Plants should therefore be cut down by hand in autumn and arisings removed. Discarded plants should be left adjacent to the pond for 24 hours to allow aquatic wildlife to crawl back into the pond. Use of pesticides and fertilisers will be avoided. Herbicides should not be used unless prior agreement has been obtained from the Environment Agency.

To avoid excessive trampling of existing habitat, the movement channels for maintenance should be confined to a minimum number of routes.

4.3.6 Maintenance of Additional Landscape Features/Ecological Features

Where possible, proposed bat, bird, hedgehog and insect boxes, and hibernacula, to be installed will be designed so no additional long-term management is required. However, annual condition checks of wildlife boxes/hibernacula will be undertaken by an ecologist and damaged boxes will be replaced as necessary from Year 1. Monitoring may typically involve two visits a year; once in the summer (June or July) and once in the autumn (September or October, during which the bird boxes shall be inspected and cleaned).

Created habitat piles/hibernacula should be monitored and replaced every five years, if required, as original woody material rots down. The size/shape of each wood/brash pile should not exceed 2m x 1.5m x 0.6m high, and piles should be tidy and secure.

All hard surfaces, furniture and landscape features will be maintained in accordance with the supplier/manufacturer's specifications. However, the following general maintenance operations may be undertaken:

- Footpaths will be subject to a Public Rights of Way Management Plan, vegetation will also be managed along such routes to allow for safe passage where appropriate;
- Footpaths kept free of litter, weeds, grass cuttings, and general debris; and
- Any furniture and signage inspected monthly to ensure there is no vandalism or missing features, and no health and safety issues. Missing or broken items will be replaced. Any necessary repairs are to be carried out in accordance with UK safety standards.

5.0 Ecological Monitoring and Contingency Measures

5.1 Responsibilities

This oLEMP provides an overview of potential management and monitoring activities to achieve the BNG objectives (i.e., achieve target habitat type and conditions)

It is intended that a detailed LEMP would be produced following the granting of Development Consent to provide more information on vegetation planting and establishment. It is also expected that this would comprise a live document, with a relevant review process to reflect the ongoing changes to management as planting establishes and will consider this up to the point of decommissioning of the proposed development.

5.2 Biodiversity Net Gain

5.2.1 Monitoring

While not subject to statutory BNG requirements, the Proposed Development has made a commitment to achieving BNG, and as such the development of the biodiversity interest of the Site will be monitored over time by a suitably experienced ecologist. A walkover survey will be undertaken on years 1, 3 and 5 and then every five years throughout the operational phase of the solar farm.

This will involve an inspection of the created and retained habitats to ensure that they are being managed in a manner suitable for the enhancement of wildlife interest. The results of these monitoring surveys will be used to inform future changes in management.

Monitoring will include a habitat survey and condition assessment based on the Statutory Biodiversity Metric Condition Assessment Guide to ensure created habitats are achieving the stated habitat type and condition. Following completion of monitoring a report will be compiled and distributed to relevant stakeholders, including any proposed remedial measures.

5.2.2 Contingencies

If the monitoring outlined above identifies that a habitat is not meeting the target condition, or is not meeting the description for the proposed habitat type the following contingency measures will be considered. The below is intended only as a guideline to possible measures that could be taken for common causes of failure, with any remedial actions to be decided upon only after consultation with a suitably qualified and experienced ecologist and/or landscape architect.

5.2.2.1 Grasslands

Absence of herbs/ high cover of bare ground.

If the herb layer is not establishing, or there are large areas of bare ground it may be appropriate to re-seed the area. This should be done using a suitable mix and following the methodology outline in the habitat creation section above. It may be necessary to lightly scarify and/ or create patches of bare ground prior to seeding.

Area is over-managed.

Should the area become over managed, as will be indicated by a uniform and short grass sward, it may be appropriate to reduce the mowing regime or stocking density.

Grasses are over-dominant within Neutral grassland.

Should grasses become over-dominant the management intensity may need to be increased. This could be achieved either through the introduction of an early spring (February) cut or an additional late summer/ autumn cut.

Alternatively, it may be appropriate to introduce yellow rattle (*Rhinanthus minor*) to the grassland area. This plant parasitises grasses, reducing their competitive ability.

Nutrient levels too high.

If nutrient levels are too high, resulting in lack of species diversity and indicated by the dominance of a small number of competitive species (e.g. nettles, spear thistle, white clover, coarse grasses), efforts should be made to reduce the nutrient levels in the soils. A cut and collect regime is likely to achieve this over time.

Cut and collect involves waiting for plants to reach a substantial height before mowing and then removing all arisings form the Site. Any nutrients taken in by the plants during growth will therefore be removed from the site. This method may take a number of years to be effective.

Absence of bare ground.

Many herb species require patches of bare soil to germinate. If areas of bare ground are not naturally occurring it may be appropriate to periodically manually disturb the soil. This should be in in no more than 5% of the total area.

5.2.2.2 Woodland

Dominance of coniferous species

Selective felling of coniferous species will be undertaken to ensure the habitat consists greater than 80% broadleaved species.

Excessive shading

Selective thinning will be undertaken to increase light levels reaching the woodland floor. It may be appropriate to create glades or rides through the woodland, provided this does not affect visual screening.

Planted species failing.

In the event where a species planted within the woodland does not take to the soils, it will be assessed for whether it is not suitable for the woodland, or whether management requires alteration e.g. added mulch, increased watering or additional weeding around the base of the plant.

If it is assumed that the plants are managed correctly and they are still not adapting to the woodland, an alternative species will be planted in its place.

No NVC communities are forming on the woodland floor.

Even if the ground within the woodlands receives increased light and temperature from thinning the woodland canopy, the establishment of a recognisable NVC community may be stunted through the lack of potential species within the seed bank in the woodlands.

The use of a suitable seed mix could be used to establish a native woodland flowerbed.

5.2.2.3 Scrub

Single species becoming over dominant.

Where a single species is becoming over dominant, defined as comprising over 75% of the scrub mix, selective thinning of the dominant species will be undertaken to reduce this and provide opportunities for establishment by other species. It may be necessary to supplement this with additional planting to encourage a more diverse species mix.

Single Age class dominant/ absence of self-establishment.

Where a single age class is dominant and there is little evidence of scrub species self-establishing it may be necessary to undertake thinning to provide further openings for establishing young plants.

5.2.2.4 Hedgerows

Not achieving species rich status

Where hedgerows are not achieving species rich status, defined as four or greater species on average per 30m stretch, infill planting with additional native woody species will be undertaken to increase the species richness.

High planting failure rate/ gaps

Small gaps should fill in naturally as neighbouring hedgerow shrub species grow, however where there is a high failure rate shrub species should be replanted or alternative species used. It may be appropriate to consider alternative planting methods, such as traditional hedgerow laying.

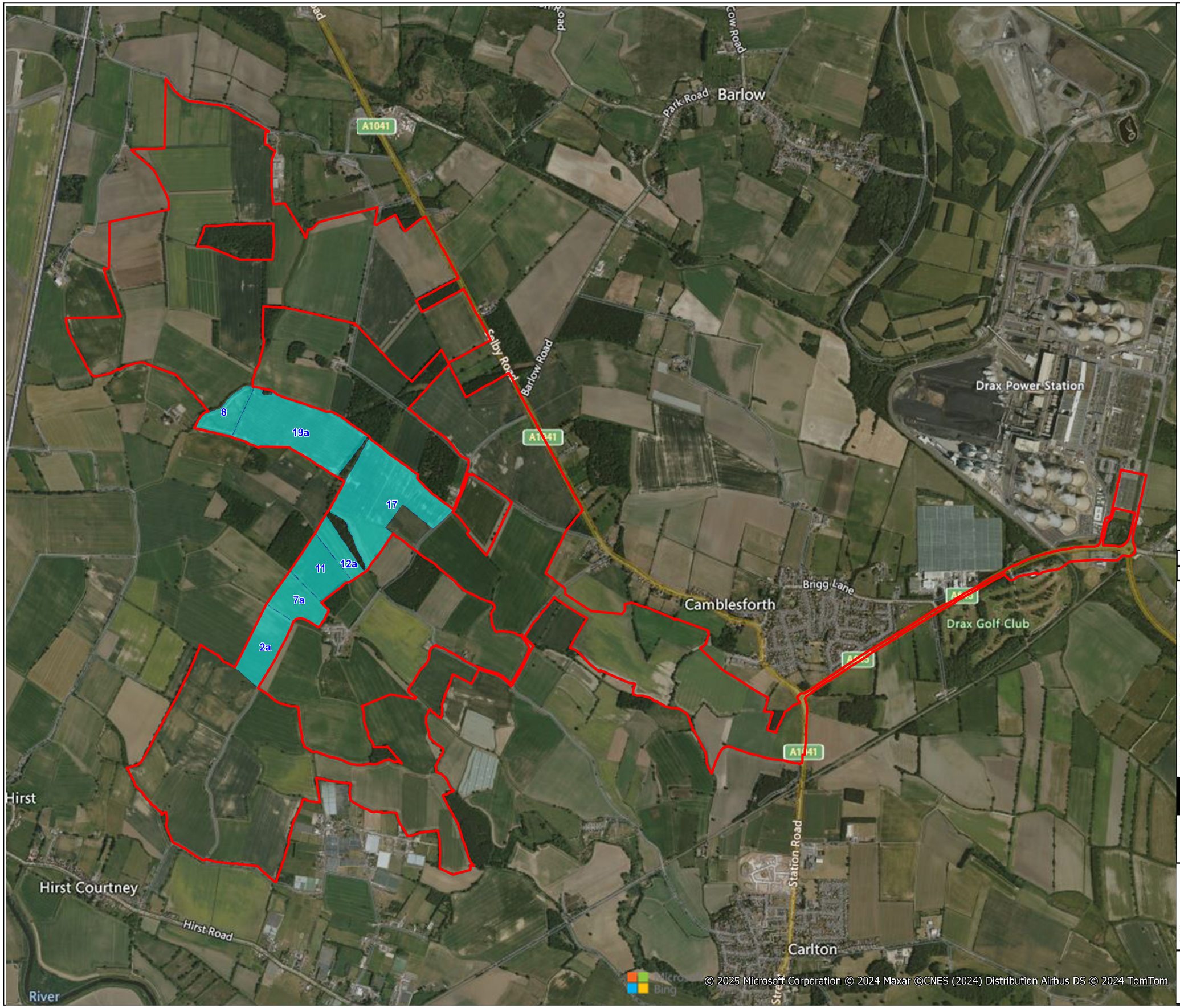
5.3 Ground nesting Bird Mitigation Areas

5.3.1 Monitoring

To check the implementation of the management prescriptions and monitor whether these have provided suitable ground nesting bird habitat, monitoring surveys will be undertaken by a suitably qualified ecologist in years 5 and 10 following implementation of the scheme.

This will comprise a single visit each monitoring year during the peak breeding season (April to June) with a walkover of the mitigation areas to record that suitable habitat has been established in line with Countryside Stewardship management practices as set out in AB4: Skylark Plots and IN140 Neutral Grassland for Lapwing. The management strategy will be reviewed following each monitoring visit, and any required actions will be notified to the landowner / farmer.

Annex A Ground Nesting Bird Mitigation and Compensation Area



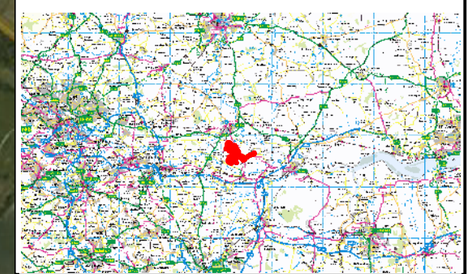
Legend

- Order Limits
- Ground Nesting Bird Mitigation and Compensation Area

Rev	Date	Description	De	App
00	13/01/2025		HD	HD

This map contains data from the following sources:
Ordnance Survey (2024)

Co-ordinate System : British National Grid
Projection: Traverse Mercator
Datum: OSGB 1936
Units: Metres



HELIOS

GROUND NESTING BIRD MITIGATION AND COMPENSATION AREA

avian ecology

Avian Ecology, Suite 3c Walnut Tree Farm, Northwich Road, Lower Stretton
WA4 4PG
Tel: 0843 506 5116
www.avianecology.co.uk

0 — 750
metres

N W E S

Field 8: not suitable

Field 19a: 19 skylark plots

Field 17: 19 skylark plots

Field 12a: not suitable

Field 11: 3 skylark plots

Field 7a: 3 skylark plots

Field 2a: 6 skylark plots

Legend

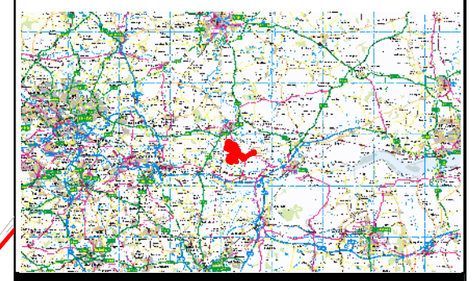
- Order Limits
- Ground Nesting Bird Mitigation and Compensation Area

Land Avaliable for Skylark Plots

- Suitable
- Not Suitable

Rev	Date	Description	De	App
00	13/01/2025		HD	HD

Co-ordinate System : British National Grid
Projection: Traverse Mercator
Datum: OSGB 1936
Units: Metres



HELIOS

GROUND NESTING BIRD MITIGATION AND COMPENSATION AREA

avian ecology

Avian Ecology, Suite 3c Walnut Tree Farm, Northwich Road, Lower Stretton
WA4 4PG
Tel: 0843 506 5116
www.avianecology.co.uk

0 300
metres

N W E S

Field 8: not suitable

Field 19a: 19 skylark plots

Field 17: 19 skylark plots

Field 12a: not suitable

Field 11: 3 skylark plots

Field 7a: 3 skylark plots

Field 2a: 6 skylark plots

Legend

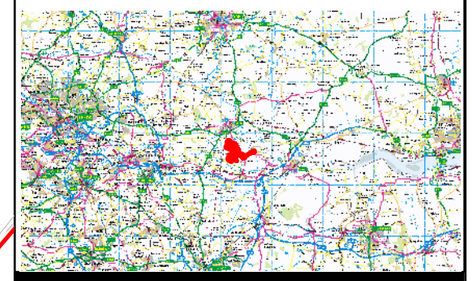
- Order Limits
- Ground Nesting Bird Mitigation and Compensation Area

Land Avaliable for Skylark Plots

- Suitable
- Not Suitable
- 50m Field Buffer

Rev	Date	Description	De	App
00	13/01/2025		HD	HD

Co-ordinate System : British National Grid
Projection: Traverse Mercator
Datum: OSGB 1936
Units: Metres



HELIOS

GROUND NESTING BIRD MITIGATION AND COMPENSATION AREA

avian ecology

Avian Ecology, Suite 3c Walnut Tree Farm, Northwich Road, Lower Stretton
WA4 4PG
Tel: 0843 506 5116
www.avianecology.co.uk

0 300

metres

N W E S

Annex B Biodiversity Net Gain Condition Assessment Sheets

Condition Sheet: DITCH Habitat Type

Habitat Type

Watercourses - Ditches

Habitat Description

See the Statutory Biodiversity Metric User Guide.

On-site or off-site, site name and location		**Survey date and Surveyor name**	
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	

	Condition Assessment Criteria	Criterion passed (Yes or No)	Notes (such as justification)
A	The ditch is of good water quality, with clear water (low turbidity) indicating no obvious signs of pollution.		
B	A range of emergent, submerged and floating-leaved plants are present. As a guide >10 species of emergent, floating or submerged plants present in a 20 m ditch length.		
C	There is less than 10% cover of filamentous algae and or duckweed *Lemna* spp. (these are signs of eutrophication).		
D	A fringe of aquatic marginal vegetation is present along more than 75% of the ditch.		
E	Physical damage is evident along less than 5% of the ditch, with examples of damage including: excessive poaching, damage from machinery use or storage, or any other damaging management activities.		
F	Sufficient water levels are maintained - as a guide a minimum summer depth of approximately 50 cm in minor ditches and 1 m in main drains.		
G	Less than 10% of the ditch is heavily shaded.		
H	There is an absence of non-native plant and animal species[1].		
	Number of criteria passed		

Condition Assessment Result (out of 8 criteria)	Condition Assessment Score	Score Achieved ×/✓
Passes 8 criteria	Good (3)	
Passes 6 or 7 criteria	Moderate (2)	
Passes 5 or fewer criteria	Poor (1)	

Suggested enhancement interventions to improve condition score

Footnotes

Footnote 1 – This includes any species listed on the Water Framework Directive UKTAG GB High Impact Species List: Water Framework Directive (WFD) UKTAG (2021) *Classification of aquatic alien species according to their level of impact* [online]. Available from:
UKTAG classification of alien species working paper v8.pdf (wfduk.org)

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

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

Condition Sheet: GRASSLAND Habitat Type (low distinctiveness)

UK Habitat Classification (UKHab) Habitat Type

Grassland - Modified grassland

On-site or off-site, site name and location		**Survey date and Surveyor name**	
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	

Habitat Description

ukhab – UK Habitat Classification

	Condition Assessment Criteria	Criterion passed (Yes or No)	Notes (such as justification)
A	There are 6-8 vascular plant species per m^2 present, including at least 2 forbs (these may include those listed in Footnote 1). **Note - this criterion is essential for achieving Moderate or Good condition.** Where the vascular plant species present are characteristic of medium, high or very high distinctiveness grassland, or there are 9 or more of these characteristic species per m^2 (excluding those listed in Footnote 1), please review the full UKHab description to assess whether the grassland should instead be classified as a higher distinctiveness grassland. Where a grassland is classed as medium, high, or very high distinctiveness, please use the relevant condition sheet.		
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for vertebrates and invertebrates to live and breed.		
C	Any scrub present accounts for less than 20% of the total grassland area. (Some scattered scrub such as bramble *Rubus fruticosus* agg. may be present). Note - patches of scrub with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.		
D	Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use or storage, erosion caused by high levels of access, or any other damaging management activities.		
E	Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens)[2].		
F	Cover of bracken *Pteridium aquilinum* is less than 20%.		
G	There is an absence of invasive non-native plant species[3] (as listed on Schedule 9 of WCA[4]).		
	Essential criterion achieved (Yes or No)		
	Number of criteria passed		

Condition Assessment Result (out of 7 criteria)	Condition Assessment Score	Score Achieved ×/✓
Passes 6 or 7 criteria including passing essential criterion A	Good (3)	
Passes 4 or 5 criteria including passing essential criterion A	Moderate (2)	
Passes 3 or fewer criteria; OR Passes 4 - 6 criteria (excluding criterion A)	Poor (1)	

Suggested enhancement interventions to improve condition score

Footnotes

Footnote 1 – 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* and cow parsley *Anthriscus sylvestris* .

Footnote 2 – For example, this could include small, scattered areas of bare ground allowing establishment of new species, or localised patches where not exceeding 10% cover.

Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, using professional judgement.

Footnote 4 – Wildlife and Countryside Act 1981 (as amended).

Condition Sheet: GRASSLAND Habitat Type (medium, high and very high distinctiveness)

UK Habitat Classification (UKHab) Habitat Types

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 (H6430) [Not to be confused with the Tall forbs secondary code – see UKHab guidance for details.]
Grassland - Upland acid grassland
Grassland - Upland calcareous grassland
Grassland - Upland hay meadows
Sparsely vegetated land - Calaminarian grassland

On-site or off-site, site name and location		**Survey date and Surveyor name**	
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	

Habitat Description

ukhab – UK Habitat Classification

	Condition Assessment Criteria	Criterion passed (Yes or No)	Notes (such as justification)
A	The parcel represents a good example of its habitat type, with a consistently high proportion of characteristic indicator species present relevant to the specific habitat type (and relative to Footnote 3 suboptimal species which may be listed in the UKHab description).[1] **Note - this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.**		
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.		
C	Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens[2].		
D	Cover of bracken *Pteridium aquilinum* is less than 20% and cover of scrub (including bramble *Rubus fruticosus* agg.) is less than 5%.		
E	Combined cover of species indicative of suboptimal condition[3] 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. If any invasive non-native plant species[4] (as listed on Schedule 9 of WCA[5]) are present, this criterion is automatically failed.		
	Additional Criterion - must be assessed for all non-acid grassland types		
F	There are 10 or more vascular plant species per m^2 present, including forbs that are characteristic of the habitat type (species referenced in Footnote 3 and 5 cannot contribute towards this count). **Note - this criterion is essential for achieving Good condition for non-acid grassland types only.**		
	Essential criterion for Good condition achieved (for non-acid grassland) (Yes or No)		
	Number of criteria passed		

Condition Assessment Result	Condition Assessment Score	Score Achieved x/✓
Acid grassland types (Result out of 5 criteria)		
Passes 5 criteria	Good (3)	
Passes 3 or 4 criteria	Moderate (2)	
Passes 2 or fewer criteria	Poor (1)	
Non-acid grassland types (Result out of 6 criteria)		
Passes 5 or 6 criteria, including essential criterion A and additional criterion F.	Good (3)	
Passes 3 - 5 criteria, including essential criterion A.	Moderate (2)	
Passes 2 or fewer criteria; OR Passes 3 or 4 criteria excluding criterion A and F.	Poor (1)	

Suggested enhancement interventions to improve condition score

Notes

Footnote 1 - Professional judgement should be used alongside the UKHab description.

Footnote 2 – For example, this could include small, scattered areas of bare ground allowing for plant colonisation, or localised patches not exceeding 5% cover.

Footnote 3 - Species indicative of suboptimal condition 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* and cow parsley *Anthriscus sylvestris* . There may be additional relevant species local to the region and or site.

Footnote 4 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, by applying professional judgement.

Footnote 5 – Wildlife and Countryside Act 1981 (as amended).

Condition sheet: HEDGEROW Habitat Types

Habitat Type

Native hedgerow
Native hedgerow - associated with bank or ditch
Native hedgerow with trees
Native hedgerow with trees - associated with bank or ditch
Species-rich native hedgerow
Species-rich native hedgerow - associated with bank or ditch
Species-rich native hedgerow with trees
Species-rich native hedgerow with trees - associated with bank or ditch

Habitat Description

ukhab – UK Habitat Classification

On-site or off-site, site name and location		**Survey date and Surveyor name**	
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	

Condition Assessment Details

A series of ten attributes, representing key physical characteristics are used for this assessment. Each attribute is assigned to one of five functional groups (A – E) and the condition of a hedgerow is assessed according to the number of attributes from these functional groups which pass or fail the 'favourable condition' criteria.

This assessment is based on the Hedgerow Survey Handbook[1] and Favourable Conservation Status document[2]. For further clarification please refer to the Hedgerow Survey Handbook.

Best practice would be to record the species, age, spacing and other key information about all trees present along a hedgerow within the 'Habitat Description' box, as well as other key features of the hedgerow.

Hedgerow favourable condition attributes

Attributes and functional groupings (A, B, C, D and E)		Criteria - the minimum requirements for 'favourable condition'	Criteria description	Criterion passed (Yes or No)	Notes (such as justification)
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 the 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 (such as blackthorn *Prunus spinosa* suckers) are only included in the width estimate when they are >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).		
B1.	Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length	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 hedgerow (at least).	This is the level of disturbance (excluding wildlife disturbance) at the base of the hedgerow. Undisturbed ground is present for at least 90% of the hedgerow length, greater than 1 m in width and must be present along at least one side of the hedgerow. This criterion recognises the value of the hedgerow base as a boundary habitat with the capacity to support a wide range of species. Cultivation, heavily trodden footpaths, poached ground etc. can limit available habitat niches.		
C2.	Nutrient-enriched 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, does not exceed the 20% cover threshold.		

D1.	Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native plant species (including those listed on Schedule 9 of WCA[3]) and recently introduced species.	Recently introduced species refer to plants that have naturalised in the UK since AD 1500 (neophytes). Archaeophytes count as natives. For information on archaeophytes and neophytes see the JNCC website[4], as well as the BSBI website[5] where the 'Online Atlas of the British and Irish Flora'[6] contains an up-to-date list of the status of species. For information on invasive non-native species see the GB Non-Native Secretariat website[7].		
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 (for example, excessive hedgerow cutting).		
Additional group - applicable to hedgerows with trees only					
E1.	Tree class	There is more than one age-class (or morphology) of tree present (for example: young, mature, veteran and or ancient[8]), and there is on average at least one mature, ancient or veteran tree present per 20 - 50m of hedgerow.	This criterion addresses if there are a range of age-classes or morphologies which allow for replacement of trees and provide opportunities for different species.		
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.		

The hedgerow condition assessment generates a weighting (score) ranging from 1 - 3, which is used within the Statutory Biodiversity Metric. The scores for each are set out in the tables below.

Condition categories for hedgerows without trees		
Category	**Category Requirements**	**Metric Score**
Good	No more than 2 failures in total; **AND** No more than 1 failure 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 (for example, fails attributes A1, A2, B1 and C2 = Moderate condition).	2
Poor	Fails a total of more than 4 attributes; **OR** Fails both attributes in more than one functional group (for example, fails attributes A1, A2, B1 and B2 = Poor condition).	1
	Score achieved:	

Condition categories for hedgerows with trees		
Category	**Category Requirements**	**Metric 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 (for example, fails attributes A1, A2, B1, C2 and E1 = Moderate condition).	2
Poor	Fails a total of more than 5 attributes; **OR** Fails both attributes in more than one functional group (for example, fails attributes A1, A2, B1 and B2 = Poor condition).	1
	Score achieved:	

Suggested enhancement interventions to improve condition score

Footnotes

Footnote 1 – DEFRA (2007) *Hedgerow Survey Handbook. A standard procedure for local surveys in the UK.* [online] Available on:
layout (hedgelink.org.uk)

Footnote 2 – STALEY, J.T. ET AL. (2020) *Definition of Favourable Conservation Status for Hedgerows.* [online] Available on:
Definition of Favourable Conservation Status for Hedgerows - RP2943 (naturalengland.org.uk)

Footnote 3 – Wildlife and Countryside Act 1981 (as amended).

Footnote 4 – CHEFFINGS, C. M. et al. (2005) *The Vascular Plant Red Data List for Great Britain.* Species Status 7: 1-116. [online] Available on:
The Vascular Plant Red Data List for Great Britain (Species Status No. 7) | JNCC Resource Hub

Footnote 5 – BOTANICAL SOCIETY OF BRITAIN AND IRELAND (BSBI). *Definitions: wild, native or alien?* [online] Available on:
Definitions: wild, native or alien? – Botanical Society of Britain & Ireland (bsbi.org)

Footnote 6 – BSBI and Biological Records Centre (BRC) (2022) *Online Atlas of the British and Irish Flora.* [online] Available on:
Acknowledgements | Online Atlas of the British and Irish Flora (brc.ac.uk)

Footnote 7 – GB NON-NATIVE SPECIES SECRETARIAT (GBNNSS) (2022) Available on:
Home » NNSS (nonnativespecies.org)

Footnote 8 – See gov.uk standing advice on ancient and veteran trees. Available from:
Keepers of time: ancient and native woodland and trees policy in England (publishing.service.gov.uk)
and
Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk)

Condition Sheet: INDIVIDUAL TREES Habitat Type

Habitat Types

Individual trees – Urban trees
Individual trees – Rural trees
Complete a condition sheet for each tree or block of trees.

Please see the separate Line of trees condition sheet for a line of rural trees. You should only use the Line of trees condition assessment and record that habitat type in rural locations.

Habitat Description

Individual trees (description applied to the urban or rural environment):
Young trees over 7.5 cm in diameter at breast height whose canopies are not touching.

Urban Perimeter / Linear Blocks and Groups (description applied to the urban environment only):
Groups or stands of trees (size requirement as defined above) within and around the perimeter of urban land. This includes those along urban streets, highways, railways and canals, and also former field boundary trees incorporated into developments. Canopies should predominantly overlap continuously. Groups of urban trees that don't match the descriptions for woodland may be assessed within this category.

On-site or off-site, site name and location		**Survey date and Surveyor name**	
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	

	Condition Assessment Criteria	**Criterion passed (Yes or No)**	**Notes (such as justification)**
A	The tree is a native species (or at least 70% within the block are native species).		
B	The tree canopy is predominantly continuous, with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide (individual trees automatically pass this criterion).		
C	The tree is mature (or more than 50% within the block are mature)[1].		
D	There is little or no evidence of an adverse impact on tree health by human activities (such as vandalism, herbicide or detrimental agricultural activity). And there is no current regular pruning regime, so the trees retain >75% of expected canopy for their age range and height.		
E	Natural ecological niches for vertebrates and invertebrates are present, such as presence of deadwood, cavities, ivy or loose bark.		
F	More than 20% of the tree canopy area is oversailing vegetation beneath.		
	Number of criteria passed		

Condition Assessment Result (out of 6 criteria)	**Condition Assessment Score**	**Score Achieved ×/✓**
Passes 5 or 6 criteria	Good (3)	
Passes 3 or 4 criteria	Moderate (2)	
Passes 2 or fewer criteria	Poor (1)	
Note that 'Fairly Good and Fairly Poor' condition categories are not available for this broad habitat type.		

Suggested enhancement interventions to improve condition score[2]

Footnotes

Footnote 1 - See gov.uk standing advice on ancient and veteran trees. Available from:
Keepers of time: ancient and native woodland and trees policy in England (publishing.service.gov.uk)
and:
Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk)

Footnote 2 - Enhancement of this habitat type is only possible by improving the habitat so that it meets all Criteria B, D and F. It is not possible or appropriate to enhance individual tree/s through meeting just one or two of those Criteria, nor by meeting Criteria A, C or E.

Condition Sheet: LINE OF TREES Habitat Type

Habitat Types

Line of trees
Line of trees – associated with bank or ditch
Ecologically valuable line of trees
Ecologically valuable line of trees – associated with bank or ditch

Please see the separate Individual trees condition sheet for linear blocks and groups of trees in an urban setting. You should only use this Line of trees condition assessment and record this habitat type in rural locations.

Habitat Description

See the Statutory Biodiversity Metric User Guide.
This assessment is based on the Hedgerow Survey Handbook[1]. For further clarifications please refer to the Handbook.
Where ancient and veteran trees are present within the line of trees, see Footnote 2 for standing advice.

On-site or off-site, site name and location		**Survey date and Surveyor name**	
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	

	Condition Assessment Criteria	**Criterion passed (Yes or No)**	**Notes (such as justification)**
A	At least 70% of trees are native species.		
B	Tree canopy is predominantly continuous with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide.		
C	One or more trees has veteran features and or natural ecological niches for vertebrates and invertebrates, such as presence of standing and attached deadwood, cavities, ivy or loose bark.		
D	There is an undisturbed naturally-vegetated strip of at least 6 m on both sides to protect the line of trees from farming and other human activities (excluding grazing). Where veteran trees are present, root protection areas should follow standing advice[2].		
E	At least 95% of the trees are in a healthy condition (deadwood or veteran features valuable for wildlife are excluded from this). 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.		
		Number of criteria passed	

Condition Assessment Result (out of 5 criteria)	**Condition Assessment Score**	**Score Achieved ×/✓**
Passes 5 criteria	Good (3)	
Passes 3 or 4 criteria	Moderate (2)	
Passes 2 or fewer criteria	Poor (1)	

Suggested enhancement interventions to improve condition score

Footnotes

Footnote 1 – DEFRA (2007) *Hedgerow Survey Handbook: A standard procedure for local surveys in the UK.* 2nd ed [online]. Defra, London. PB1195. Available from: Hedgerow Survey Handbook (publishing.service.gov.uk).

Footnote 2 – Where ancient and veteran trees are present, see gov.uk standing advice on ancient and veteran trees. Available from:
Keepers of time: ancient and native woodland and trees policy in England (publishing.service.gov.uk)
and:
Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk)

Condition Sheet: POND Habitat Type

Habitat Type

Lakes - Ponds (priority habitat)
Lakes - Ponds (non-priority habitat)
Lakes - Temporary lakes ponds and pools (H3170) [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

ukhab – UK Habitat Classification			
On-site or off-site, site name and location		**Survey date and Surveyor name**	
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	

	Condition Assessment Criteria	**Criterion passed (Yes or No)**	**Notes (such as justification)**
Core Criteria - applicable to all ponds (woodland[1] and non-woodland):			
A	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.		
B	There is semi-natural habitat (moderate distinctiveness or above) completely surrounding the pond, for at least 10 m from the pond edge for its entire perimeter.		
C	Less than 10% of the water surface is covered with duckweed *Lemna* spp. or filamentous algae.		
D	The pond is not artificially connected to other waterbodies, such as agricultural ditches or artificial pipework.		
E	Pond water levels can fluctuate naturally throughout the year. No obvious artificial dams[2], pumps or pipework.		
F	There is an absence of listed non-native plant and animal species[3].		
G	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 - must be assessed for all non-woodland ponds:			
H	Emergent, submerged or floating plants (excluding duckweed)[4] cover at least 50% of the pond area which is less than 3 m deep.		
I	The pond surface is no more than 50% shaded by adjacent trees and scrub.		
	Number of criteria passed		

Condition Assessment Result	**Condition Assessment Score**	**Score Achieved ×/✓**
Results for woodland ponds which require assessment of 7 core criteria		
Passes 7 criteria	Good (3)	
Passes 5 or 6 criteria	Moderate (2)	
Passes 4 or fewer criteria	Poor (1)	
Results for non-woodland ponds which require assessment of 9 criteria		
Passes 9 criteria	Good (3)	
Passes 6 to 8 criteria	Moderate (2)	
Passes 5 or fewer criteria	Poor (1)	

Suggested enhancement interventions to improve condition score

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

Footnote 2 – This excludes natural dams such as those created by Eurasian beaver *Castor fiber*.

Footnote 3 - Any species included on the Water Framework Directive (WFD) UKTAG GB High Impact Species List should be absent: WFD UKTAG (2021) *Classification of aquatic alien species according to their level of impact* [online]. Available from:
UKTAG classification of alien species working paper v8.pdf (wfduk.org)

• Frequently occurring non-native plant species include water fern *Azolla filiculoides*, Australian swamp stonecrop *Crassula helmsii*, parrot's feather *Myriophyllum aquaticum*, floating pennywort *Hydrocotyle ranunculoides* and Japanese knotweed *Reynoutria 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 4 - If the pond is seasonal (as in, it dries out in most summers) then emergent species alone are likely to be found.

Condition Sheet: SCRUB Habitat Type

Habitat Types

Heathland and shrub - Blackthorn scrub
Heathland and shrub - Gorse scrub
Heathland and shrub - Hawthorn scrub
Heathland and shrub - Hazel scrub
Heathland and shrub - Mixed scrub
Heathland and shrub - Dunes with sea buckthorn (H2160)
Heathland and shrub - Willow scrub

Habitat Description

For Dunes with sea buckthorn see:	Dunes with sea-buckthorn (Dunes with Hippophae rhamnoides) - Special Areas of Conservation (jncc.gov.uk)		
For other scrub types see:	ukhab – UK Habitat Classification		
On-site or off-site, site name and location		**Survey date and Surveyor name**	
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	

	Condition Assessment Criteria	Criterion passed (Yes or No)	Notes (such as justification)
A	The parcel represents a good example of its habitat type - the appearance and composition of the vegetation closely matches its UKHab description (where in its natural range).[1] - At least 80% of scrub is native, - There are at least three native woody species[2], - No single species comprises more than 75% of the cover (except hazel *Corylus avellana*, common juniper *Juniperus communis*, sea buckthorn *Hippophae rhamnoides* (only in its restricted native range), or box *Buxus sempervirens*, which can be up to 100% cover).		
B	Seedlings, saplings, young shrubs and mature (or ancient or veteran[3]) shrubs are all present.		
C	There is an absence of invasive non-native plant species[4] (as listed on Schedule 9 of WCA[5]) and species indicative of suboptimal condition[6] make up less than 5% of ground cover.		
D	The scrub has a well-developed edge with scattered scrub and tall grassland and or forbs present between the scrub and adjacent habitat.		
E	There are clearings, glades or rides present within the scrub, providing sheltered edges.		
	Number of criteria passed		

Condition Assessment Result (out of 5 criteria)	Condition Assessment Score	Score Achieved ×/✓
Passes 5 criteria	Good (3)	
Passes 3 or 4 criteria	Moderate (2)	
Passes 2 or fewer criteria	Poor (1)	

Suggested enhancement interventions to improve condition score

Footnotes

Footnote 1 – Professional judgement should be used alongside the UKHab description.

Footnote 2 – Native woody species as defined and listed in the Hedgerow Survey Handbook: DEFRA (2007) *Hedgerow Survey Handbook: A standard procedure for local surveys in the UK.* 2nd ed. [online]. Defra, London. PB1195. Available from: Hedgerow Survey Handbook (publishing.service.gov.uk).

Footnote 3 – See gov.uk standing advice on ancient and veteran species. Available from:

Keepers of time: ancient and native woodland and trees policy in England (publishing.service.gov.uk) and

Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk)

Footnote 4 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, using professional judgement.

Footnote 5 – Wildlife and Countryside Act 1981 (as amended).

Footnote 6 – Species indicative of suboptimal condition for this habitat type may include: non-native conifers, tree-of-heaven *Alianthus altissima*, holm oak *Quercus ilex*, European turkey oak *Quercus cerris*, cherry laurel *Prunus laurocerasus*, snowberry *Symphoricarpos* spp., shallon *Gaultheria shallon*, American skunk cabbage *Lysichiton americanus*, buddleia *Buddleja* spp., cotoneaster *Cotoneaster* spp., Spanish bluebell *Hyacinthoides hispanica* and hybrid bluebells *Hyacinthoides x massartiana*. There may be additional relevant species local to the region and or site.

Condition Sheet: WOODLAND Habitat Type

UK Habitat Classification (UKHab) Habitat Types

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

ukhab – UK Habitat Classification

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

IMPORTANT: This biodiversity metric woodland condition assessment must be used to assess woodland being input into the biodiversity metric. The outputs of this condition assessment are not equivalent to, nor are they comparable with the scores from the EWBG condition assessment, because the EWBG assessment has been adapted for the biodiversity metric, including the removal of EWBG Indicator 7 (Proportion of favourable land cover around woodland) and Indicator 14 (Size of woodland), and minor changes to other indicators.

On-site or off-site, site name and location		**Survey date and Surveyor name**	
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	

Condition Assessment Criteria

	Indicator	Good (3 points)	Moderate (2 points)	Poor (1 point)	Score per indicator	Notes (such as justification)
A	**Age distribution of trees**	Three age-classes[1] present.	Two age-classes[1] present.	One age-class[1] present.		
B	**Wild, domestic and feral herbivore damage**	No significant browsing damage evident in woodland[2].	Evidence of significant browsing pressure is present in less than 40% of whole woodland[2].	Evidence of significant browsing pressure is present in 40% or more of whole woodland[2].		
C	**Invasive plant species**	No invasive species[3] present in woodland.	Rhododendron *Rhododendron ponticum* or cherry laurel *Prunus laurocerasus* not present, and other invasive species[3] <10% cover.	Rhododendron or cherry laurel present, or other invasive species[3] ≥10% cover.		
D	**Number of native tree species**	Five or more native tree or shrub species[4] found across woodland parcel.	Three to four native tree or shrub species[4] found across woodland parcel.	Two or less native tree or shrub species[4] across woodland parcel.		
E	**Cover of native tree and shrub species**	>80% of canopy trees and >80% of understory shrubs are native[5].	50 - 80% of canopy trees and 50 - 80% of understory shrubs are native[5].	<50% of canopy trees and <50% of understory shrubs are native[5].		
F	**Open space within woodland**	10 - 20% of woodland has areas of temporary open space[6]. Unless woodland is <10ha, in which case 0 - 20% temporary open space is permitted[7].	21 - 40% of woodland has areas of temporary open space[6].	<10% or >40% of woodland has areas of temporary open space[6]. But if woodland <10ha has <10% temporary open space, please see Good category[7].		
G	**Woodland regeneration**	All three classes present in woodland[8]; trees 4 - 7 cm Diameter at Breast Height (DBH), saplings and seedlings or advanced coppice regrowth.	One or two classes only present in woodland[8].	No classes or coppice regrowth present in woodland[8].		
H	**Tree health**	Tree mortality 10% or less, no pests or diseases and no crown dieback[9].	11% to 25% tree mortality and or crown dieback or low-risk pest or disease present[9].	Greater than 25% tree mortality and or any high-risk pest or disease present[9].		
I	**Vegetation and ground flora**	Recognisable NVC plant community[10] at ground layer present, strongly characterised by ancient woodland flora specialists.	Recognisable woodland NVC plant community[10] at ground layer present.	No recognisable woodland NVC plant community[10] at ground layer present.		
J	**Woodland vertical structure**	Three or more storeys across all survey plots, or a complex woodland[11].	Two storeys across all survey plots[11].	One or less storey across all survey plots[11].		
K	**Veteran trees**	Two or more veteran trees[12] per hectare.	One veteran tree[12] per hectare.	No veteran trees[12] present in woodland.		

L	**Amount of deadwood**	50% of all survey plots within the woodland parcel have deadwood, such as standing and fallen deadwood, large dead branches and or stems, branch stubs and stumps, or an abundance of small cavities[13].	Between 25% and 50% of all survey plots within the woodland parcel have deadwood, such as standing and fallen deadwood, large dead branches and or stems, stubs and stumps, or an abundance of small cavities[13].	Less than 25% of all survey plots within the woodland parcel have deadwood, such as standing and fallen deadwood, large dead branches and or stems, stubs and stumps, or an abundance of small cavities[13].		
M	**Woodland disturbance**	No nutrient enrichment or damaged ground evident[14].	Less than 1 hectare in total of nutrient enrichment across woodland area, and or less than 20% of woodland area has damaged ground[14].	1 hectare or more of nutrient enrichment, and or 20% or more of woodland area has damaged ground[14].		
				Total Score (out of a possible 39)		

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

Suggested enhancement interventions to improve condition score

Footnotes

Footnotes below refer to the EWBG woodland condition assessment details: EWBG (No date). *Assessing your Woodland's Condition* [online]. Available from:

Woodland Wildlife Toolkit (sylva.org.uk)

The woodland condition assessment survey methodology is outlined in the EWBG toolkit. However the criteria on this sheet are those specific to the Statutory Biodiversity Metric and must be used when assessing woodland condition.

Footnote 1 - See EWBG method INDICATOR 1 for more information. If tree species is not a birch *Betula* sp., cherry *Prunus* sp. or *Sorbus* sp.: 0 – 20 years (Young); 21 - 150 years (Intermediate); and >150 years (Old). For birch, cherry or *Sorbus* species; 0 - 20 years = Young; 21 - 60 years =Intermediate; >60 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. Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly.

Check for the presence of all plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), particularly the following invasive non-native species: American skunk cabbage *Lysichiton americanus*; Himalayan balsam *Impatiens glandulifera*; Japanese knotweed *Reynoutria japonica*; cherry laurel *Prunus laurocerasus*; shallon *Gaultheria shallon*; snowberry *Symphoricarpos albus*; variegated yellow archangel *Lamiastrum galeobdolon subsp. argentatum*; rhododendron *Rhododendron ponticum*; and tree-of-heaven *Alianthus altissima*.

Footnote 4 - See EWBG method INDICATOR 4 and Table 2 for more information. The number of different native tree or shrub species including young trees and shrubs. A list of commonly found native tree and shrub species is provided in Table 2. Not all species listed are native to all parts of the UK. Note a list of commonly found non-native tree species are also included and should be recorded if present.

Footnote 5 - See EWBG method INDICATOR 5 and for more information. The abundance of native tree species in upper (>5 m) and understorey (up to 5 m) layers including young trees and shrubs.

Footnote 6 - 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 (for example, glades, rides, footpaths, areas of clear-fell). This differs from permanent open space where tree regeneration is not possible or desirable (for example, tarmac, buildings, rivers). Area is at least 10 m wide with less than 20% covered by shrubs or trees.

Footnote 7 – Given the increased ratio of edge habitat to woodland where the woodland is <10ha.

Footnote 8 - 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, but the regeneration indicator gathers additional information by considering regeneration potential - if seedlings, saplings and young trees are all present that means natural regeneration processes are happening.

Footnote 9 - See EWBG method INDICATOR 9 for more information and Table 3 for a list of diseases and pests and their risk level.

Footnote 10 - See EWBG method INDICATOR 10 directing to NVC key for more information. The 'UKHab to NVC translation table' in the UK Habitat Classification resources may also be useful to assess this.

Footnote 11 – This criterion looks 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. There might be no storeys where the woodland has been felled. See EWBG INDICATOR 11 for more information.

Footnote 12 - See EWBG method INDICATOR 12 for more information. See gov.uk standing advice on ancient and veteran trees. Available from:

Keepers of time: ancient and native woodland and trees policy in England (publishing.service.gov.uk)

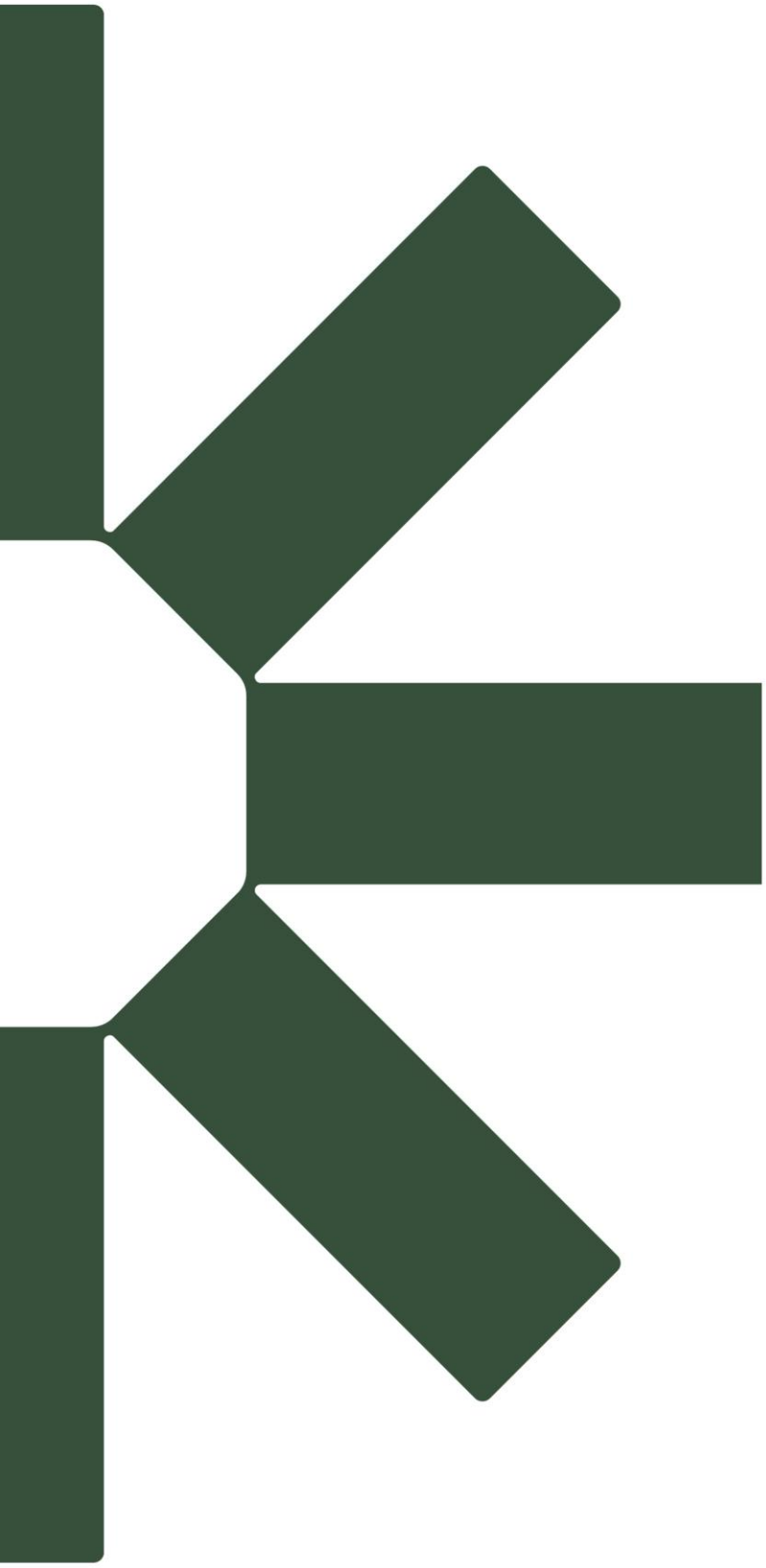
and:

Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk)

EWBG INDICATOR 12 is the relevant indicator.

Footnote 13 – See EWBG method INDICATOR 13 for more information. This includes logs, large dead branches on the forest floor and stumps (<1 m tall) >20 cm diameter at narrowest point and >50 cm long. Also includes standing dead trees (>1 m tall) and also deadwood on standing live trees. Diameter is measured at the narrowest point on the stem. Minimum diameter of 20 cm.

Footnote 14 - See EWBG method INDICATOR 15 for more information. Examples of disturbance are: significant nutrient enrichment; soil compaction from trampling, machinery, animal poaching or litter.



Making Sustainability Happen