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Environmental Statement Appendix 7.9: Outline Landscape and Ecological Management Plan

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Outline Landscape and Ecological Management Plan (oLEMP)

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Basis of Report

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Ground Nesting Bird Mitigation and Compensation Area

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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 Unit¹, 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 2019² 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 |
|---------------------------|-----------------|
| <i>Acer campestre</i> | Field Maple |
| <i>Corylus avellana</i> | Hazel |
| <i>Crataegus monogyna</i> | Hawthorn |
| <i>Ilex aquifolium</i> | Holly |
| <i>Rhamnus frangula</i> | Alder Buckthorn |
| <i>Rosa canina</i> | Dog Rose |
| <i>Sorbus aucuparia</i> | 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

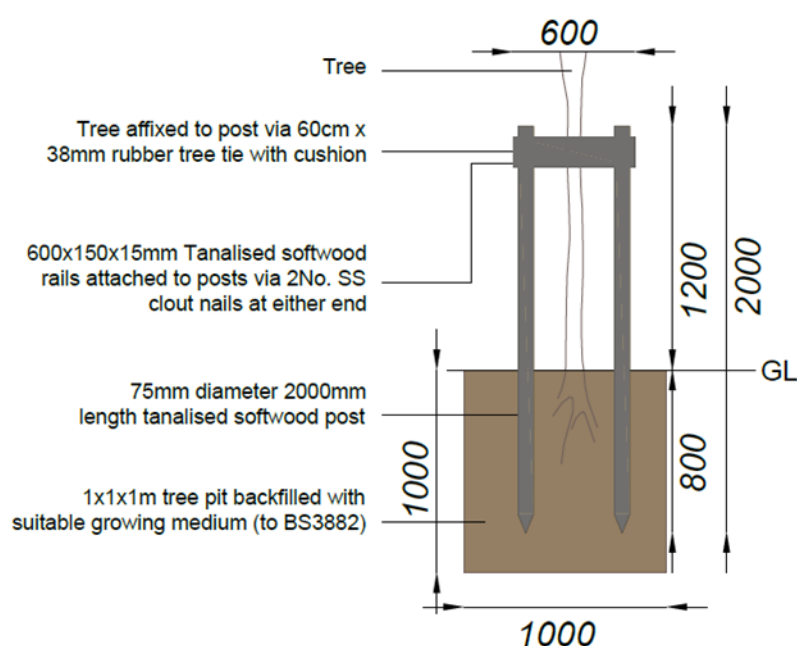
| Species | Common Name |
|-------------------------|--------------|
| <i>Acer campestre</i> | Field Maple |
| <i>Alnus glutinosa</i> | Common Alder |
| <i>Quercus petraea</i> | Sessile Oak |
| <i>Quercus robur</i> | Common Oak |
| <i>Sorbus aucuparia</i> | Rowan |
| <i>Tilia x europaea</i> | Common Lime |



Table 3-4: Proposed Canopy Trees

| Species | Common Name |
|---|--------------|
| <i>Alnus glutinosa</i> | Common Alder |
| <i>Populus nigra subsp. Betulifolia</i> | Black Poplar |
| <i>Quercus petraea</i> | Sessile Oak |
| <i>Quercus robur</i> | Common Oak |
| <i>Salix cinerea</i> | Grey Willow |
| <i>Salix caprea</i> | Goat Willow |
| <i>Salix fragilis</i> | Crack Willow |
| <i>Tilia x europaea</i> | 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 |
|---------------------------|---------------------|
| <i>Acer campestre</i> | Field Maple |
| <i>Alnus glutinosa</i> | Common Alder |
| <i>Betula pendula</i> | Common Silver Birch |
| <i>Corylus avellana</i> | Common Hazel |
| <i>Crataegus monogyna</i> | Common Hawthorn |
| <i>Ilex aquifolium</i> | Common Holly |
| <i>Quercus petraea</i> | Sessile Oak |
| <i>Quercus robur</i> | Common Oak |
| <i>Sorbus aucuparia</i> | Rowan |
| <i>Tilia cordata</i> | Small-leaved Lime |
| <i>Tilia x europaea</i> | 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 |
|---------------------------|-----------------|
| <i>Alnus glutinosa</i> | Common Alder |
| <i>Corylus avellana</i> | Common Hazel |
| <i>Crataegus monogyna</i> | Common Hawthorn |
| <i>Rhamnus frangula</i> | Alder Buckthorn |
| <i>Ribes spicatum</i> | Downy Currant |
| <i>Rosa canina</i> | Dog Rose |
| <i>Salix cinerea</i> | 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 | <i>Festuca pratensis</i> | Meadow fescue |
| 35 | <i>Festuca rubra</i> | Creeping red fescue |
| 25 | <i>Phleum pratense</i> | Timothy |
| 8 | <i>Poa pratensis</i> | Smooth stalked meadow grass |



| % | Latin name | Common name |
|---|-----------------------------|----------------------------|
| 3 | <i>Poa trivialis</i> | Rough stalked meadow grass |
| 4 | <i>Festuca ovina</i> | Sheep's' fescue |
| 1 | <i>Alopecurus pratensis</i> | 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 | <i>Achillea millefolium</i> | Yarrow |
| 0.6 | <i>Agrimonia eupatoria</i> | Agrimony |
| 0.1 | <i>Arctium minus</i> | Lesser Burdock |
| 1.0 | <i>Centaurea nigra</i> | Common Knapweed |
| 1.6 | <i>Centaurea scabiosa</i> | Greater Knapweed |
| 1.2 | <i>Chaerophyllum temulum</i> | Rough Chervil |
| 0.1 | <i>Cirsium eriophorum</i> | Woolly Thistle |
| 0.6 | <i>Daucus carota</i> | Wild Carrot |
| 1.6 | <i>Dipsacus fullonum</i> | Wild Teasel |
| 0.4 | <i>Filipendula ulmaria</i> | Meadowsweet |
| 1.2 | <i>Galium album</i> | Hedge Bedstraw |
| 0.8 | <i>Knautia arvensis</i> | Field Scabious |
| 0.4 | <i>Lathyrus pratensis</i> | Meadow Vetchling |
| 0.4 | <i>Lotus corniculatus</i> | Birdsfoot Trefoil |
| 1.6 | <i>Malva moschata</i> | Musk Mallow |
| 1.6 | <i>Poterium sanguisorba</i> | Salad Burnet |
| 1.8 | <i>Plantago lanceolata</i> | Ribwort Plantain |
| 0.8 | <i>Ranunculus acris</i> | Meadow Buttercup |
| 1.2 | <i>Rhinanthus minor Rattle</i> | Yellow Rattle |
| 2.0 | <i>Silene dioica</i> | Red Campion |
| 0.2 | <i>Vicia Cracca</i> | Tufted Vetch |
| 20 | | |
| Grasses | | |
| 36.0 | <i>Cynosurus cristatus</i> | Crested Dogstail |
| 16.0 | <i>Schedonorus arundinaceus</i> (<i>Festuca arundinacea</i>) | Tall Fescue (w) |
| 4.0 | <i>Deschampsia cespitosa</i> | Tufted Hair-grass (w) |



| % | Latin name | Common name |
|-----|------------------------------|---------------|
| 8.0 | <i>Dactylis glomerata</i> | Cocksfoot |
| 8.0 | <i>Festuca rubra</i> | Red Fescue |
| 8.0 | <i>Schedonorus pratensis</i> | 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 | <i>Achillea millefolium</i> | Yarrow |
| 10 | <i>Agrostis capillaris</i> | Common bent |
| 2 | <i>Anthoxanthum odoratum</i> | Sweet vernal-grass |
| 1 | <i>Betonica officinalis</i> | Betony |
| 5 | <i>Briza media</i> | Quaking grass |
| 3.5 | <i>Centaurea nigra</i> | Common knapweed |
| 2.1 | <i>Cruciata laevipes</i> | Crosswort |
| 37 | <i>Cynosurus cristatus</i> | Crested dog's-tail |
| 2 | <i>Daucus carota</i> | Wild carrot |
| 24 | <i>Festuca rubra</i> | Red fescue |
| 1 | <i>Filipendula ulmaria</i> | Meadowsweet |
| 2.6 | <i>Galium verum</i> | Lady's bedstraw |
| 0.1 | <i>Leontodon hispidus</i> | Rough hawkbit |
| 3.5 | <i>Leucanthemum vulgare</i> | Oxeye daisy |
| SUPPLEMENT | <i>Lotus corniculatus</i> | Bird's foot trefoil |
| 0.6 | <i>Malva moschata</i> | Musk mallow |
| 0.5 | <i>Medicago lupulina</i> | Black medick |
| 0.2 | <i>Plantago lanceolata</i> | Ribwort plantain |
| 2 | <i>Poa pratensis</i> | Smooth-stalked meadow-grass |



| % | Latin name | Common name |
|------------|---------------------------|------------------|
| 0.1 | <i>Ranunculus acris</i> | Meadow buttercup |
| 0.1 | <i>Rhinanthus minor</i> | Yellow rattle |
| 0.1 | <i>Rumex acetosa</i> | Common sorrel |
| 0.2 | <i>Silaum silaus</i> | Pepper saxifrage |
| 0.1 | <i>Silene vulgaris</i> | Bladder campion |
| SUPPLEMENT | <i>Trifolium pratense</i> | 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 | <i>Achillea millefolium</i> | Yarrow |
| 2 | <i>Centaurea nigra</i> | Common Knapweed |
| 2 | <i>Filipendula ulmaria</i> | Meadowsweet |
| 1.5 | <i>Galium verum</i> | Lady's Bedstraw |
| 0.5 | <i>Geum rivale</i> | Water Avens |
| 0.2 | <i>Iris pseudacorus</i> | Yellow Iris |
| 1.5 | <i>Leucanthemum vulgare</i> | Oxeye Daisy - (Moon Daisy) |
| 1 | <i>Lotus corniculatus</i> | Birdsfoot Trefoil |
| 0.04 | <i>Lotus pedunculatus</i> | Greater Birdsfoot Trefoil |
| 1 | <i>Plantago lanceolata</i> | Ribwort Plantain |
| 0.4 | <i>Primula veris</i> | Cowslip |
| 2 | <i>Prunella vulgaris</i> | Selfheal |
| 0.5 | <i>Pulicaria dysenterica</i> | Common Fleabane |
| 0.46 | <i>Ranunculus acris</i> | Meadow Buttercup |
| 1 | <i>Rhinanthus minor</i> | Yellow Rattle |
| 1 | <i>Rumex acetosa</i> | Common Sorrel |



| % | Latin name | Common name |
|----------------|--------------------------------|------------------------|
| 1.5 | <i>Sanguisorba officinalis</i> | Great Burnet |
| 1 | <i>Silene silaus</i> | Pepper Saxifrage |
| 1 | <i>Taraxacum officinale</i> | Dandelion |
| 0.2 | <i>Thalictrum flavum</i> | Common Meadow-rue |
| 1 | <i>Vicia cracca</i> | Tufted Vetch |
| 20 | | |
| Grasses | | |
| 10 | <i>Agrostis capillaris</i> | Common Bent |
| 3 | <i>Alopecurus pratensis</i> | Meadow Foxtail (w) |
| 3 | <i>Anthoxanthum odoratum</i> | Sweet Vernal-grass (w) |
| 3 | <i>Briza media</i> | Quaking Grass (w) |
| 24 | <i>Cynosurus cristatus</i> | Crested Dogstail |
| 2 | <i>Deschampsia cespitosa</i> | Tufted Hair-grass (w) |
| 32 | <i>Festuca rubra</i> | Red Fescue |
| 3 | <i>Hordeum secalinum</i> | 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 | <i>Carex divulsa ssp divulsa</i> | Grey Sedge |
| 0.4 | <i>Carex pendula</i> | Pendulous Sedge |
| 2.0 | <i>Centurea nigra</i> | Common Knapweed |
| 2.0 | <i>Cruciata laevipes</i> | Crosswort |
| 0.4 | <i>Dipsacus fullonum</i> | Wild teasel |
| 2.0 | <i>Filipendula ulmaria</i> | Meadowsweet |
| 0.5 | <i>Galium album</i> | Hedge Bedstraw |



| % | Latin name | Common name |
|----------------|--------------------------------|------------------------------|
| 1.0 | <i>Geranium pyreniacum</i> | Hedge Crane's -bill |
| 0.3 | <i>Geum rivale</i> | Water Avens |
| 2.6 | <i>Iris pseudacorus</i> | Yellow Iris |
| 0.4 | <i>Lycopus europaeus</i> | Gypsywort |
| 0.2 | <i>Oenanthe pimpinelloides</i> | Corky-fruited Water-dropwort |
| 0.1 | <i>Prunella vulgaris</i> | Selfheal |
| 0.5 | <i>Rhinanthus minor</i> | Yellow Rattle |
| 2.6 | <i>Silene dioica</i> | Red Campion |
| 3.0 | <i>Silene flos-cuculi</i> | Ragged Robin |
| 20 | | |
| Grasses | | |
| 2.0 | <i>Agrostis capillaris</i> | Common Bent (w) |
| 2.0 | <i>Anthoxanthum odoratum</i> | Sweet Vernal-grass |
| 4.0 | <i>Briza media</i> | Quaking Grass (w) |
| 48.0 | <i>Cynosurus cristatus</i> | Crested Dogstail |
| 2.0 | <i>Deschampsia cespitosa</i> | Tufted Hair-grass (W) |
| 22.0 | <i>Festuca rubra</i> | 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 |
|----------------------------|---------------|---------|---|------------|
| <i>Angelica sylvestris</i> | Wild angelica | 5/m2 | Marginal Plant. Plant at around water level | Plug plant |



| Latin name | Common name | Density | Planting type and Instructions | Pot Size |
|---------------------------------|---------------------|---------|---|------------|
| <i>Filipendula ulmaria</i> | Meadowsweet | 5/m2 | Marginal Plant. Plant at around water level | Plug plant |
| <i>Geum rivale</i> | Water avens | 5/m2 | Marginal Plant. Plant at a water depth of between 0-8cm. | Plug plant |
| <i>Hottonia palustris</i> | Water violet | 5/m2 | Fully submerged aquatic plant. Plant on the bottom of the attenuation basin. | Plug plant |
| <i>Hydrocharis morsus-ranae</i> | Frogbit | 1/m2 | Floating, aquatic plant. Position on the water surface with the roots pointing downwards. | Bareroot |
| <i>Iris pseudacorus</i> | Yellow flag iris | 5/m2 | Marginal Plant. Plant at a water depth of around 20cm. | Plug plant |
| <i>Lythrum salicaria</i> | Purple Loosestrife | 5/m2 | Marginal Plant. Plant at a water depth of around 20cm. | Plug plant |
| <i>Mentha aquatica</i> | Water mint | 5/m2 | Marginal Plant. Plant no deeper than 30cm below water. | Plug plant |
| <i>Myosotis scorpioides</i> | Water forget-me-not | 5/m2 | Marginal Plant. Plant at a water depth of between 0-10cm. | Plug plant |
| <i>Ranunculus aquatilis</i> | Water crowfoot | 1/m2 | Floating, aquatic plant. Plant on the bottom of the attenuation basin. | Plug plant |
| <i>Ranunculus lingua</i> | 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 Plots³.

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 16m² 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 from 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 mature 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. Whilst 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 overshadowing 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 m² 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 m² 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 m² 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 m² 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 m² 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/brush 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/manufacture'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 from 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 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



Annex B

Biodiversity Net Gain Condition Assessment Sheets



Making Sustainability Happen