



Surrey Wildlife Trust
Ecology Services

Landscape Ecology and Management Plan and Biodiversity Compensation and Enhancement Strategy

**Havelock Farm,
Wakehurst Place,
Ardingly, West Sussex,
RH17 6TN**

**The Foundation and Friends of
the Royal Botanic Gardens, Kew**

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Constructionline
Gold Member



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Validity of report (CIEEM, 2019)	In most cases, this report will be valid for 12 months. Where habitat management has not been altered and new features have not formed, it is possible the report remains valid for between 12 and 18 months, however it is advised an updated site visit is undertaken to confirm this. Where more than 18 months have elapsed an ecologist should review the information to confirm whether the information in this report can be relied upon. Reports more than three years old are unlikely to remain valid.		

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Project overview

- 1.1.1 This Landscape and Ecology Management Plan (LEMP) has been prepared to discharge condition 14 of planning application number DM/22/1774.
- 1.1.2 Biodiversity Compensation and Enhancement Strategy (BCES) has been prepared to discharge condition 13 of planning application number DM/22/1774.

Aims of the LEMP and BCES report	These are the following aims of the LEMP: • Describe and evaluate the features to be managed and created including those to compensate for losses identified in the biodiversity net gain assessment. • Aims and objectives of the management measures identified. • Appropriate management options to achieve aims and objectives. • Prescriptions for management actions. • Preparation of a work schedule for securing biodiversity enhancements in perpetuity. • Ongoing monitoring and remedial measures. These are the following aims of the BCES: • Purpose and conservation objectives for the proposed compensation measures. • Purpose and conservation objectives for the proposed enhancement measures. • Detailed designs to achieve stated objectives. • Locations of proposed enhancement measures by appropriate maps and plans. • Persons responsible for implementing the compensation and enhancement measures. • Details of initial aftercare and long-term maintenance (where relevant).
Project description	To demolish the existing agricultural buildings (with those of heritage value to be retained), formerly known as Havelock Farm, and the development of a new conservation and research nursery consisting of four glasshouses of varying size, polytunnels, shade structures, stand out area, mechanical plant building, and associated hard and soft landscape works. This report is based on the proposed landscaping plans (drawing number 11939-LD-PLN-001 P02, dated 27th September 2022, supplemented by revised sketch 11939/01, and 6730-LLB-XX-E1-DR-L-0001-S4-P07 Landscape Masterplan 29th January 2025.
Planning status	Full planning consent
Condition 13 and 14	Condition 13 states:

	<i>'Prior to the commencement of any development above ground/slab level, a Landscape and Ecological Management Plan (LEMP) shall have been submitted to and approved in writing by the local planning authority. The content of the LEMP shall include the following:</i> <i>a) Description and evaluation of features to be managed.</i> <i>b) Ecological trends and constraints on site that might influence management.</i> <i>c) Aims and objectives of management. DECISION NOTICE Page 6.</i> <i>d) Appropriate management options for achieving aims and objectives.</i> <i>e) Prescriptions for management actions.</i> <i>f) Preparation of a work schedule (including an annual work plan capable of being rolled forward over a five-year period).</i> <i>g) Details of the body or organisation responsible for implementation of the plan. h) Ongoing monitoring and remedial measures.</i> <i>'The LEMP shall also include details of the legal and funding mechanism(s) by which the long-term implementation of the plan will be secured by the developer with the management body(ies) responsible for its delivery. The plan shall also set out (where the results from monitoring show that conservation aims and objectives of the LEMP are not being met) how contingencies and/or remedial action will be identified, agreed and implemented so that the development still delivers the fully functioning biodiversity objectives of the originally approved scheme. The approved plan will be implemented in accordance with the approved details.'</i> Condition 14 states: <i>'Prior to the commencement of any development above ground/slab level a Biodiversity Compensation and Enhancement Strategy shall have been submitted to and approved in writing by the local planning authority. The content of the Biodiversity Compensation and Enhancement Strategy shall include the following:</i> <i>a) Purpose and conservation objectives for the proposed compensation measures,</i> <i>b) purpose and conservation objectives for the proposed enhancement measures,</i> <i>c) detailed designs to achieve stated objectives,</i> <i>d) locations of proposed enhancement measures by appropriate maps and plans,</i> <i>e) persons responsible for implementing the compensation and enhancement measures</i> <i>f) details of initial aftercare and long-term maintenance (where relevant).'</i>
Local planning authority	Mid Sussex District Council

Ecological background	The following ecological surveys were undertaken: • Preliminary Ecological Appraisal (Delta-Simons, 2021). • Great Crested newt survey including a great crested newt (GNC) Habitat Suitability Index, eDNA survey and GNC presence/absence survey (Delta-Simons, 2022). • Hazel dormouse survey (Delta-Simons, 2022). • Bat roost presence/ absence and characterisation surveys of the buildings (Delta-Simons, 2022). • Biodiversity Net Gain (BNG) Assessment (SWT Ecology Services, 2023). • An updated BNG assessment (SWT Ecology Services, 2025A.)
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Baseline

Sites likely to be impacted by the proposed development and which need to be considered for the LEMP

Statutory designated sites discussed in the Ecological Impact Assessment (EclA)	• The site falls within the Impact Risk Zones (IRZ) of Wakehurst and Chiddingly Woods and Philpots & Hook Quarries Site of Special Scientific Interest (SSSI). • The site falls within two SSSI Impact Risk Zones (IRZ) that require the Local Planning Authority (LPA) to consult with Natural England and assess planning application for likely impact on SSSI/SAC Special Area of Conservation (SAC) / Special Protection Area (SPA) and Ramsar sites. EclA (Delta Simons) states that as the proposed development is non-residential, and due to the distance of the Site from the nearest designated site, it is considered highly unlikely that the works will have any significant effect on designated sites. As such, designated sites were not considered further within this report. • Given the nature and location of the development adjacent to Wakehurst and Chiddingly SSSI, the LPA may consult with Natural England.
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Habitats of ecological consideration identified in the desk study likely to be impacted by the proposed development and which need to be considered for the LEMP

Ancient woodland scoped into the EclA	• None
Veteran trees scoped into the EclA	• None
Habitat of Principal Importance (HPI) scoped into the EclA	• On-site lowland mixed deciduous woodland HPI
Waterbodies within 250m/500m of the survey area	• On-site pond
Watercourses within 250/500m of the survey area	• None

Habitats

Habitat and code	Compartment number	Baseline condition	Post-development habitat prescriptions			
			Retained	Enhanced	Lost	Target condition
Modified grassland g4	1.1-1.5	Moderate	☒	☒	☐	Good
Lowland mixed deciduous woodland wlf	2.1	Good	☒	☐	☐	Not applicable
Bramble scrub h3h	3.1-3.3	Not applicable	☐	☐	☒	Not applicable
Developed land; sealed surface ulb	4.1-4.3	Not applicable	☒	☐	☒	Not applicable
Ruderal vegetation uld -17	5.1-5.5	Not applicable	☐	☐	☒	Not applicable
Introduced scrub uld-1160	5.6 - 5.8	Not applicable	☐	☐	☒	Not applicable
Pond rl	6.1	Good	☒	☐	☐	Not applicable

Species

Species group	Species	Summary of survey results	
Invertebrate		Not assessed in previous ecological surveys.	
Amphibian	Including GCN	Desk study results returned records of GCN. Great Crested Newt likely is absent however other amphibians may be present.	
Reptiles		No specific surveys were undertaken.	

Species group	Species	Summary of survey results
		Habitat present.
Birds		Over 1000 records of birds were returned from within the search area. Those of potential relevance to the Site include house sparrow (Red List of BoCC), woodlark (WCA Schedule 1), duncock (Amber List of BoCC), firecrest (WCA Schedule 1) and song thrush (Red List of BoCC).
		Bird species recorded at the time of the survey were woodpigeon, moorhen, magpie and pheasant. No birds listed on Schedule 1 of the WCA (1981) as amended or those listed on the Red List of BoCC were recorded. It should be noted that this is not a comprehensive inventory of the bird species which may be present at the survey area. No specific surveys were undertaken.
Mammals	Badger	No records of badgers were provided within the data search. No specific surveys were undertaken
	Bats	Desk study results returned records of common pipistrelle, soprano pipistrelle and Myotis sp. The site supports suitable habitat for foraging commuting bats, notable around the woodland, the waterbodies and the dense scrub. One building with low roosting bat suitability (B1), two buildings with moderate roosting suitability (B2 and B3) and three buildings with negligible roosting suitability (B4-B6). One occasional or transitional roost (brown long-eared) in B2.
	Hazel dormouse	Records of hazel dormouse were returned within the data search. No hazel dormice were recorded during the nest – tube survey. However, anecdotal evidence provided by staff on-site (including from a holder of a hazel dormouse licence) reports having encountered dormice nearby when gardening.
	Otter	Species recorded as likely absent.

Species group	Species	Summary of survey results
	Water vole	Species recorded as likely absent.
	Western European Hedgehog	Habitat present.
	Other mammals	Habitat present.
Higher and lower plants	Rare/notable species	Habitat present.
All species	Invasive, non-native species	Wall cotoneaster.

Summary of biodiversity net gain assessment

Total unit change ¹	Habitat units	0.91
	Hedgerow units	2.76
	Watercourse units	0.53
Total net % change ¹	Habitat units	16.59%
	Hedgerow units	N/A
	Watercourse units	NA
Trading rules satisfied?	Yes	
Irreplaceable habitats present?	No, HPI Lowland mixed deciduous woodland present	

¹ Includes all onsite, offsite habitat retention, creation and enhancement.

Summary of biodiversity enhancement measures for species

Feature type	Species suitability	Where to place	Number of features required
2F Schwegler or equivalent	Soprano pipistrelle Common pipistrelle Natterer's Whiskered Brandt's	Placed on mature trees above 4 m high on a mixture of cardinal directions. The locations of bat boxes will not indirectly or directly impacted by the works.	5
Vivara Pro Barcelona WoodStone Open Nest Box	Wrens, robins, spotted flycatchers, pied and grey wagtails, song thrushes and blackbirds	Between 1.5 to 3 m high and near growth, such as ivy, to provide cover	2
Bug hotel	Invertebrates	It will be installed in one of the other neutral grassland area.	1
Total			8



2 Introduction

2.1 Background

- 2.1.1 SWT Ecology Services was commissioned on by Royal Botanic Gardens to produce a combined report including Landscape and Ecology Management Plan (LEMP) and the Biodiversity Compensation and Enhancement Strategy (BCES) for Havelock Farm, Royal Botanic Gardens Kew, Wakehurst, Ardingly, Haywards Heath, Sussex RH17 6TN. Royal Botanic Gardens, Kew is proposing to demolish the existing agricultural buildings (with those of heritage value to be retained), formerly known as Havelock Farm, and to develop of a new conservation and research nursery consisting of four glasshouses of varying size, polytunnels, shade structures, standout area, mechanical plant building, and associated hard and soft landscape works.

2.2 Survey area

- 2.2.1 The assessed area, presented in Figure 1, comprises the development boundary. It is approximately 1.5ha, located at Havelock Farm, Wakehurst Place, Selsfield Road, Ardingly, Haywards Heath, West Sussex, RH17 6TN (OS Grid Reference TQ 33813 31539), and is bounded by an internal road within the Royal Botanic Gardens Wakehurst to the north, a hedgerow to the east, woodland to the south, and a fence-line to the west. The survey area is located in Mid Sussex District.

2.3 Ecological background

- 2.3.1 Previous ecological surveys of the site have been undertaken in 2021 and 2022 by Delta-Simons (Delta-Simons, 2021) and (Delta-Simons, 2022).
- 2.3.2 Following an Ecological Impact Assessment, as undertaken in 2022 by Delta-Simons (DeltaSimons, 2022), and submitted under planning application reference DM/22/1774, a BNG assessment was required to inform the planning application being submitted for this development. Biodiversity Net Gain Assessment report was prepared by Surrey Wildlife Trust 31/03/2023 and updated 21/03/2025 (SWT Ecology Services, 2025A).
- 2.3.3 As the proposed development plan has changed, the updated BNG assessment for this development was prepared and identified that a net gain for biodiversity can be achieved (16.59%, see updated Statutory Biodiversity Metric for more detail) (SWT Ecology Services, 2025A).
- 2.3.4 This BCES is based on the updated BNG assessment and other recommendations/mitigation strategies detailed in the reports provided by Delta-Simmons.
- 2.3.5 The production of an appropriately detailed LEMP has been requested as part of this assessment process for these proposals to ensure there will be no adverse impacts upon the habitats present. The LEMP will ensure the long-term management of the retained and created habitats within the site boundary.
- 2.3.6 The LEMP details the important landscape and habitat features and management principles of the site and has been prepared following best practice, where available.

- 2.3.7 The LEMP also details the management principles for the pre-construction, construction and operational phase of the development as well as the future management of the site.
- 2.3.8 A separate Construction Environment Management Plan (CEMP: Biodiversity) has also been produced by SWT Ecology Services in response to condition 12 of the planning application DM/22/1774. The aim of the CEMP (Biodiversity) is to provide details of measures to protect the ecological receptors on site. The CEMP (Biodiversity) details the approach that will be implemented by contractors throughout the construction phase to ensure the ecological receptors identified are adequately protected and impacts are minimised and the management techniques outlined within this BEMP have taken into account those outlined in the CEMP: Biodiversity SWT Ecology Services, 2025C.

3 Biodiversity net gain

3.1 BNG introduction

- 3.1.1 Biodiversity net gain (BNG) is calculated using a metric devised by DEFRA and considers the existing site conditions, management measures proposed (in line with the management plan prepared) and the ease with which the ecological targets can be met. Whilst this does provide a metric for assessing the net gain of a specific project, other biodiversity factors should also be considered, including species composition, habitat function and structure, and human factors.

3.2 Baseline biodiversity units

- 3.2.1 Calculating baseline biodiversity units requires information on a habitat's area, distinctiveness, condition, and strategic significance.
- 3.2.2 The habitat areas and condition assessment were made using the information available within the Ecological Impact Assessment report (Delta-Simons, 2022). Each Phase 1 habitat type was assigned to its equivalent habitat under the UK habitat classification and a precautionary condition assessment was allocated for each habitat based on the habitat description and species present, on a precautionary basis.
- 3.2.3 Distinctiveness refers to the relative scarcity of the habitat and its importance for nature conservation. The distinctiveness categories are pre-determined by the Statutory Biodiversity Metric (DEFRA, 2024).
- 3.2.4 Strategic significance is assessed against information in the local plan or policies for that habitat and its location. This is considered separately for each habitat type.
- 3.2.5 As part of the BNG (SWT Ecology Services, 2025A) the above information was input into the updated to the Statutory Biodiversity Metric 20/03/2025.

3.3 Biodiversity unit calculations – post-development

- 3.3.1 Assessing the biodiversity units of a proposed development requires an assessment of retained habitats and those that will be enhanced and created. Factors including spatial, temporal and delivery risk are also considered.
- 3.3.2 In order to achieve 10 % biodiversity net gain for the development, it is proposed to protect the existing woodland and the pond on the site, to create other neutral

grassland and native species hedgerows, and to undertake native species tree and shrub planting.

- 3.3.3 Based on the landscaping proposal plans provided by the client, the expected area, type and condition of the habitats post-development was determined and input into the Statutory Biodiversity Metric (DEFRA, 2024), accessed in March 2025, on 10/03/2025.

3.4 Calculating intended biodiversity net gain/loss

- 3.4.1 By comparing the baseline biodiversity units for each habitat with the expected biodiversity units for each habitat post-development, the intended biodiversity net gain or loss for each habitat as a result of the development was determined (see Table 1 below). All technical evidence regarding this calculation is presented in the updated BNG report (SWT Ecology Services, 2023A).
- 3.4.2 This predicted Biodiversity Net Gain is dependent on achieving the intended habitats and conditions as laid out in Table 2. The management laid out in section 4 of this report should be followed in order to maximise the chances of meeting the intended outcomes.
- 3.4.3 Once the project is delivered, the habitat assessments will need to be repeated to ascertain whether a biodiversity net gain has been met.

Table 1: Summary of biodiversity net gain assessment

Headline results		
Onsite baseline	Habitat units	5.50
	Hedgerow units	0.00
	Watercourse units	0.00
Onsite post intervention	Habitat units	6.42
	Hedgerow units	2.76
	Watercourse units	0.53
Total unit change	Habitat units	0.91
	Hedgerow units	2.76
	Watercourse units	0.53
Total % change	Habitat units	16.59%
	Hedgerow units	N/A (no baseline)
	Watercourse units	
Trading rule satisfied?		Yes
Irreplaceable habitats?		No

4 Legislative framework

- 4.1.1 All management activities need to comply with relevant UK legislation, as detailed in Appendix 1.

5 Landscape Environment Management Plan

5.1 LEMP objectives

5.1.1 The objectives of this LEMP are detailed below;

- Description and evaluation of features to be managed and created.
- Aims and objectives of management.
- Appropriate management options to achieve aims and objectives.
- Prescriptions for management actions.
- Preparation of a work schedule for securing biodiversity enhancements in perpetuity.
- Ongoing monitoring and remedial measures.

5.1.2 Each of the ecological features on the site is described in Section 5.

5.1.3 The aims and objectives for each of the features is given in Section 5 along with the ecological trends and constraints which could influence the management of the feature and meeting the objective.

5.1.4 Following this, management of the feature is discussed along with prescriptions for management actions summarised for each habitat type in section 8.2 (BCES).

5.2 Limitations

5.2.1 This report is based on the proposed landscaping plans (drawing number 11939-LD-PLN-001 P02, dated 27th September 2022, supplemented by revised sketch 11939/01, and latest drawing 6730-LLB-XX-E2-DR-001P07 S4 dated 29th January 2025).

5.2.2 Any changes to the proposed development will need to be reflected in this LEMP to ensure all ecological features are adequately protected.

5.3 Description of existing and proposed ecological features

5.3.1 A full description of the ecological features (within the development boundary line) and recommendations prior to development is provided in the updated BNG report (SWT Ecology Services, 2025A).

5.3.2 The existing ecological features are summarised below for context for this LEMP.

Designated sites

5.3.3 Two internationally important designated sites including Special Area of Conservation (SAC) Ashdown Forest and Special Protection Area (SPA) Ashdown Forest are located within 6km of the survey area. In addition, there are three locally and nationally important sites located within 2000m of the survey area, the closest of which is Wakehurst and Chiddingly Woods Site of Special Scientific Interest (SSSI).

5.3.4 The site falls within the Impact Risk Zones (IRZ) of Wakehurst and Chiddingly Woods and Philpots & Hook Quarries.

Habitat

5.3.5 The following habitats were recorded in the BNG (SWT Ecology Services, 2023A).

- Modified grassland
- Lowland Mixed Deciduous Woodland
- Dense scrub

- Developed land; sealed surface
- Ruderal vegetation and introduced shrub
- Standing open water or canals (pond)
- Buildings

5.3.6 The landscape plans include the creation or retention of the following habitats:

- Creation of 'other neutral grassland' to good condition.
- Retention of 'lowland mixed deciduous woodland' and pond maintained at good condition.
- Planting of 'native species rich hedgerows' at good condition.
- Retention of existing trees and planting of 'bosques' (new trees and shrubs) at good condition.

5.4 Responsibilities

5.4.1 Table 3 presents the roles and responsibilities for delivering the LEMP. The biodiversity net gain will be secured by Royal Botanic Gardens, Kew and they will also manage the site.

Table 2: Roles and responsibilities

Role	Responsibilities
Management Responsibilities	• Initially it will be the responsibility of Royal Botanic Gardens, Kew to ensure the management plan is being implemented in line with this plan. • It will be the responsibility of Mid Sussex District Council to ensure their obligations in relation to biodiversity net gain enforcement are met.
Ecologist	• Provide technical guidance in relation to the delivery of this plan. • Carry out monitoring visits of the key features outlined in this report in line with best practice guidance. Provide reports after inspection visits to provide advice on management, to keep in line with the biodiversity net gain assessments detailed above.

5.5 Monitoring and reporting

5.5.1 The monitoring and reporting regime are embedded within the Section 8. Target conditions are detailed as part of the BNG assessment.

5.6 Features

5.6.1 The features of this LEMP are detailed below, along with proposed management measures.

Feature 1 – Other neutral grassland (wildflower meadow)

Objective

- Establish and maintain other neutral grassland habitat, whilst increasing the biodiversity all grassland compartments grassland on the site. Although other neutral grassland is the target, it is likely that with good management it could become lowland meadow within the BNG timings of 30 years.

Threats to habitat and associated species

- 5.6.2 Neutral grassland requires active management in order to retain its conservation interest. Without management, tall vigorous grasses will dominate, and dead plant matter will accumulate. This will suppress the less vigorous species and the botanical diversity of the grassland will decrease. Eventually without management natural succession will cause grassland to become scrub and finally woodland.
- 5.6.3 Invasive non-native species can cause problems in grassland habitats as can invasive native species such as thistles, docks, common nettle, field bindweed and bracken.
- 5.6.4 The hotter, drier summers and wetter winters with more extreme events predicted as a result of climate change is likely to alter the composition of grassland habitats. For example drier conditions will favour stress tolerant (e.g. deep-rooted) and ruderal species due to the increased gaps/bare ground in swards (Natural England and RSPB, 2019). The longer growing season may mean that more than one cut a year will be required to suppress the grasses (Plantlife, 2019). This will be dependent on seasonal weather conditions.

Management measures and rationale

- 5.6.5 Table 4 presents targets and KPIs and Table 5 presents the management measures, supported by the rationale detailed in the sections below.
- 5.6.6 Proposed management measures will include the initial planting of a carefully selected species mix of native-only plants. In addition, rotational mowing of different sections of grass will be implemented throughout the year, and fencing will be erected in order to ensure that the neutral grassland is protected from foot traffic erosion. These measures are designed to encourage a structurally and species diverse habitat that enhances the neutral grassland to 'good' condition, according to BNG guidelines.
- 5.6.7 In time and with management the other neutral grassland could become lowland meadow.

Targets and KPIs

5.6.8 The targets and KPIs are detailed in Table 4.

Table 3: Feature 1 targets and KPIs

Target type	Target number	Target	KPI
Habitat condition criterion	1	The grassland is a good representation of the habitat type it has been identified as, based on its UKHab description - the appearance and composition of the vegetation closely matches the characteristics of the specific grassland habitat type. Indicator species listed by UKHab for the specific grassland habitat type are consistently present. In accordance with this, ten or more vascular plant species per m ² will be present, including forbs that are characteristic of the habitat type.	During planting, native seed mixes will be used that represent the appropriate species mix for neutral grasslands. Native species mixes will exclude palatable grasses such as rye-grasses and white clover, non-native invasives, and scrub species including bracken and bramble.
Habitat condition criterion	2	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.	Different sections (preferably thirds) of the neutral grassland will be mown at different times of year.
Habitat condition criterion	3	Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens.	Organise planting so uncovered areas after planting will be minimised. In addition, to prevent disturbance and erosion by human activity, fencing shall be erected.
Habitat condition criterion	4	Cover of bracken <i>Pteridium aquilinum</i> is less than 20% and cover of scrub (including bramble <i>Rubus fruticosus</i> agg.) is less than 5%.	Bracken and cover of scrub should be controlled.
Habitat condition criterion	5	If any invasive non-native plant species ³ (as listed on Schedule 9 of WCA4) are present, this criterion is automatically failed. Combined cover of species indicative ² of sub-optimal condition and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management	If non-native invasives are present in planting area prior to habitat creation, these species should be removed and disposed in accordance with Natural England guidelines.

² Species considered undesirable for this habitat type include: Creeping thistle *Cirsium arvense*, spear thistle *Cirsium vulgare*, curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius*, common nettle *Urtica dioica*, creeping buttercup *Ranunculus repens*, greater plantain *Plantago major*, white clover *Trifolium repens*, cow parsley *Anthriscus sylvestris*.

Target type	Target number	Target	KPI
		activities) accounts for less than 5% of total area.	Cover of species indicative ³ of sub-optimal condition should be controlled.

5.6.9 Table 5 presents a summary of the management measures.

Table 4: Feature 1 – Other neutral grassland - management measures

Map reference	Action	Timing
g3c	Planting of native, species rich seed with appropriate grass and forbs assemblage for other neutral grassland types.	During initial planting period
g3c	Ensure cover of planted area is equal to or greater than 95% of the total habitat creation area. In addition, to prevent disturbance and erosion by human activity, fencing shall be erected.	During initial planting period
g3c	Mow the neutral grassland in thirds (or in two halves) throughout the year to ensure varied sward length.	Bi or tri-annually

Feature 2 – Lowland mixed deciduous woodland

Objective

- Retain woodland on the site at their current extent or greater and increase their biodiversity value.

Threats to habitat and associated species

- 5.6.10 Left unmanaged, woodland tends to deteriorate in terms of biodiversity value. This is generally due to a loss of open space due to a closure of the tree canopy. This can lead to a loss of ground flora and associated species such as butterflies as well as a lack of tree regeneration.
- 5.6.11 Grazing animals such as roe deer and grey squirrel can cause significant browsing damage to trees.
- 5.6.12 Tree diseases such as ash dieback will likely cause the loss of the majority of ash trees over the coming years.
- 5.6.13 Dumping of waste vegetation within woodland areas can cause nutrient enrichment and the spread of non-native species through seeds and/or rhizomes.
- 5.6.14 Over tidying of standing and fallen deadwood can remove the habitat for a number of protected and notable species that rely on this habitat, in particular fungi and invertebrates.

³ Species considered undesirable for this habitat type include: Creeping thistle *Cirsium arvense*, spear thistle *Cirsium vulgare*, curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius*, common nettle *Urtica dioica*, creeping buttercup *Ranunculus repens*, greater plantain *Plantago major*, white clover *Trifolium repens*, cow parsley *Anthriscus sylvestris*.

5.6.15 The effects of climate change over the next decade are likely to have significant impacts on the woodland habitat. The greatest threat to woodlands from climate change is likely to be an increase in the frequency and severity of summer drought. The impacts of both insect pests and diseases are likely to increase with climate change. Deer and grey squirrel are likely to benefit from climate change thus becoming a greater threat. In addition, the risk of wind-throw may increase if the UK experiences more storms (Natural England and RSPB, 2019).

Management measures and rationale

5.6.16 Table 6 presents targets and KPIs and Table 7 presents the management measures, supported by the rationale detailed in the sections below.

5.6.17 In a natural or near natural state a woodland should contain a full range of structures in balance. This includes:

- A canopy layer of mature trees.
- An understorey of immature and low growing trees.
- A shrub layer of low growing shrub species and scrub.
- A field and ground layer of herbaceous plants, ferns, grasses and bryophytes.
- Deadwood habitat in each woodland layer and on the woodland floor.

5.6.18 To retain woodland at good condition some thinning of trees to create temporary areas of open space and improve woodland structure may be required. This will allow the remaining trees to develop more healthy crowns and increase the number of veteran/mature trees. As well as increasing the diversity of woodland ground flora, increasing the light in these areas will make conditions more suitable for woodland butterflies such as speckled wood as well as encouraging the production of good quantities of seeds, berries and nuts on which the site's small mammals such as wood mouse and bank vole can forage.

5.6.19 In order to maximise the biodiversity of a woodland and prevent a decline in biodiversity as discussed above, it is important to create a diverse structure of the woodland. This will include a canopy of mature trees, a shrub layer and a proportion of open space. Trees should be of a range of ages and species. Establishment of trees in the old age class should be undertaken. This will have to occur naturally over time, but some thinning work around old trees would give space for greater growth and may encourage veteran feature such as rot sites, decaying branches, hollowing of the trunk and holes and water pockets within the trunk.

5.6.20 Decaying standing woodland and lying decaying wood are vital for the health and longevity of woodland habitat. This valuable decaying wood habitat come in many forms from dead twigs to large decaying trunks. Some of the woody material left over from habitat management tasks can provide valuable decaying wood habitat and be placed along the edges of rides and glades as refuge and provide a food source and basking opportunities for many species, especially on south facing edges. Proposed decaying wood habitat pile locations are not specifically specified as they will be dependent upon where the arboricultural work takes place. Decaying wood should be left in situ where health and safety allows.

5.6.21 Bat and bird boxes will be erected in woodland areas, see blue squares on Figure 1, in order to enhance woodland habitat roosting features.

5.6.22 Bat boxes will be positioned so that they are sheltered from the wind and unshaded for most of the day. Most bat species will use higher positioned boxes (approximately 4 m high). This will help protect the bats from vandalism and potential predators (Bat Conservation Trust). It is important to locate access points where they are unobstructed by vegetation. Further information will be provided on site by the ecologist.

5.6.23 Bird boxes should face between north and north-east away from the direct sunlight and from wind and wet weather conditions. The boxes should be placed between two and four metres high. The boxes should be tilted forwards slightly so that any rain should hit the roof and more likely to drain clear of the nest box. These will be cleaned out annually in the autumn/winter (September-February). The boxes will not be disturbed between March and August when birds may be using them to nest in. All contents will be removed and the box cleaned with boiling water or a mild disinfectant. Further information will be provided on site by the ecologist.

Targets and KPIs

5.6.24 The targets and KPIs are detailed in Table 6.

Table 5: Feature 2 targets and KPIs

Target type	Target number	Target	KPI
BNG	1	Three age classes present.	Age distribution of trees
BNG	2	No invasive plant species in woodland habitats.	Invasive plant species
BNG	3	All three classes present in woodland; trees 4-7cm dbh, saplings and seedlings or advanced coppice regrowth.	Woodland regeneration
BNG	4	Tree mortality less than 10%, no pests or diseases and no crown dieback.	Tree health
BNG	5	Recognisable NVC plant community present	Vegetation and ground flora
BNG	6	One veteran tree per hectare. This will be achieved over time.	Veteran trees
BNG	7	50% of all survey plots within the woodland parcel have standing deadwood, large dead branches/stems and stumps	Extent of deadwood habitat

5.6.25 Table 7 presents a summary of the management measures.

Table 6: Feature 2 - Lowland mixed deciduous woodland - management measures

Map reference	Action	Timing
w1f	Light woodland thinning management to increase light levels and encourage shrub and ground layered vegetation, standing decaying wood creation.	Winter, as required
w1f	Create log/habitat piles following habitat management works.	As wood is created from woodland management work.
w1f	Encourage understorey, shrub and field layers.	As required.
w1f	Install five bat boxes within woodland/treeline habitat.	Year 1
w1f	Install two bird boxes within woodland habitat.	Year 1

Feature 3 – Native species rich hedgerow

Objective

- To create a native species rich hedgerow

Threats to habitat and associated species

5.6.26 The main threat to a hedgerow habitat is its loss of structure through inappropriate management. If left unmanaged, hedgerow can become tall and leggy, with a sparser structure. Where individual trees die, the hedgerow can become gappy. As a result, it loses its functionality as a commuting corridor for many animals.

5.6.27 Hedgerow support many species for roosting and breeding, such as small mammals and breeding birds, as well as many invertebrates. Some invertebrates will use the shelter of hedgerows as a secluded place to pupate with less risk to predators. As such, these species are all at risk during any hedgerow cutting works, particularly if the hedgerow is managed through flailing, as the mechanism for removing vegetation using this process can kill invertebrates.

5.6.28 Hedgerows are relatively resilient to climate change. The main impact likely to affect hedgerow would be a shift in seasonal temperatures and rainfall which may affect the timing of bud burst and the success of fruit production due to a misalignment with pollinator emergence. They may also be impacted by flooding or drying out depending on the species present and their tolerances (e.g. species more suitable for drier conditions may have an increased risk of mortality if flood events increase).

Management measures and rationale

5.6.29 Management measures include strimming, seeding of field layer with native perennials, and removal of non-native invasive species prior to habitat creation. The following management regime is recommended in order to produce a structurally complex species rich hedgerow comprising native species. These measures are in accordance with advice from the Woodland Trust and Natural England.

Targets and KPIs

5.6.30 The targets and KPIs are detailed in Table 8.

Table 7: Feature 3 targets and KPIs

Target type	Target number	Target	KPI
Habitat condition criterion	1	Woody vegetation width will average >1.5m across the length of the hedgerow	Plant trees with sufficient spacing so along hedgerow woody vegetation will exceed 1.5m in width
Habitat condition criterion	2	Gap between the ground and the base of the canopy will be >0.5m for >90% of the length of the hedgerow	Careful strimming in years three and five will bring this hedgerow to this target. Strimming hedgerows every other year is in line with Woodland Trust guidance on hedge
Habitat condition criterion	3	Gaps in the hedgerow will make up <10% of total length; and no canopy gaps >5 m"	
Habitat condition criterion	4	The hedgerow will have >1 m width of undisturbed ground as measured from the outer edge of the hedgerow, with perennial herbaceous vegetation for >90% of length.	Seed native perennial species during initial planting period in the field layer
Habitat condition criterion	5	Over 90% of the hedgerow and undisturbed ground is free of invasive non-native plant species (including those listed on Schedule 9 of WCA3) and recently introduced species.	Invasive species will be removed from planting area prior to planting period

5.6.31 Table 9 presents a summary of the management measures.

Table 8: Feature 3 – Native species rich hedgerow - management measures

Map reference	Action	Timing
New hedge line	Tree/shrub species planted with sufficient spacing so along hedgerow woody vegetation will exceed 1.5m in width	During initial planting period
	Seed native perennial species during initial planting period in the field layer	During initial planting period
	Removal of any non-native invasive species	During initial planting period
	Careful strimming in years three and five will bring this hedgerow to this target.	Once on year three and year five

Feature 4 – Individual trees

Objective

- Existing trees already present on site, should be protected; These trees will not be removed during the development.
- To plant new native species trees.

Management measures and rationale

5.6.32 Trees on site should be protected during the construction phase through the use of root protection fencing in accordance with British Standard, BS 5837 2012: Trees in Relation to Construction recommendations (BSI, 2012). Within this protection zone there will be no storage of materials or heavy machinery use, this area may require demarcating with haras fencing or similar. This will prevent compaction of the earth around the roots, which could starve them of oxygen.

5.6.33 Trees will be planted in the first year and protected using tree stakes and guards. In autumn for the first five years any failed trees should be replaced on a like for like basis.

5.6.34 Trees should be pruned as required in January and February to promote healthy growth. Condition of trees for the predicted change in ecological value scores to be reached the trees will need to reach moderate condition. It should take 27 years to reach this condition.

Targets

5.6.35 To reach moderate condition it has been assumed that the trees will meet the following criteria:

- Trees of native species.

Condition of Trees

5.6.36 For the predicted change in ecological value scores to be reached the trees will need to reach a mixture of poor and moderate condition. It should take 27 years to reach moderate condition and 10 years to reach poor condition.

5.6.37 To reach moderate condition it has been assumed that the trees will meet the following criteria:

- Trees of native species
- The tree is mature for that species
- There is little or no adverse impact on tree health by anthropogenic activities such as vandalism or herbicide use. There is no current regular pruning regime, so the trees retain more than 75% of expected canopy for their age range and height.
- More than 20% of the tree canopy is over vegetation rather than an artificial surface

Feature 5 - Scrub

Objective

- To plant a new native species scrub.

Targets

- 5.6.38 For the predicted change in ecological value scores to be reached all areas of species-rich mixed shrub planting will need to reach good condition. It should take 10 years for both retained/enhanced and newly created shrub areas to reach this condition.
- 5.6.39 To reach good condition it has been assumed that the species-rich mixed shrub planting will meet the following criteria:
- Criteria 1: Habitat is representative of UKHab description. There are at least five woody species, with no one species comprising more than 75% of the cover.
 - Criteria 2: There is a good age range – all of the following are present: seedlings, young shrubs and mature shrubs.
 - Criteria 3: There is an absence of invasive non-native species (as listed on Schedule 9 of WCA, 1981) and species indicative of sub-optimal condition¹ make up less than 5% of ground cover.
 - Criteria 4: The scrub has a well-developed edge with scattered scrub and tall grassland and/or herbs present between the scrub and adjacent habitat.
 - Criteria 5: There are clearings, glades or rides present within the scrub, providing sheltered edges.

6 Biodiversity Compensation and Enhancement Strategy

6.1 BCES aims

- 6.1.1 As stated above, this BCES is in accordance with the updated BNG assessment (SWT Ecology Services, 2025A) and other recommendations/mitigation strategies detailed in the reports provided by (Delta-Simons, 2021) (Delta-Simons, 2022) and is also based on proposed landscaping plans (drawing number 11939-LD-PLN-001 P02, dated 27th September 2022, supplemented by revised sketch 11939/01 and latest drawing 6730-LLB-XX-E2-DR-001P07 S4 dated 29th January 2025).
- 6.1.2 This BCES is also in accordance with the CEMP: Biodiversity (SWT Ecology Services, 2023C).
- 6.1.3 The aim of the BCES is to:
- State the specification of habitat and ecological features which will be installed onsite.
 - Outline appropriate management of ecological features at the site for a minimum of 30 years post-construction.
- 6.1.4 More specifically, the scope of work includes:
- Plan of the areas to be maintained, enhanced and/or created (corresponding with the plan to be included within the CEMP: Biodiversity (SWT Ecology Services, 2023C) and updated BNG assessment (SWT Ecology Services, 2025A) as well as detailed landscape and development design plans provided by the client.
 - Schedule of actions to create or enhance and maintain each habitat at the required quality for a period of 30 years; this would include a schedule of monitoring during the period, which identifies when key indicators of habitat maturity should be achieved. The schedule will also detail actions to be undertaken in case signs of failing are identified during the monitoring process.

- The schedules must include details of technique(s) to be used, equipment to be used, roles and relevant expertise of personnel and organisations involved and timing of actions including submission of monitoring report to the local planning authority.
- Measures to be adopted on site to enhance opportunities for wildlife, including provision of nest/roost boxes and habitat piles and connectivity for reptiles.
- Sympathetic lighting scheme, supported by a lux levels drawing which indicates that lighting levels at features identified as being used by bats (e.g. hedgerows, tree lines, etc.) are appropriate for continued foraging and commuting use. This would take into account guidance from the Bat Conservation Trust's Guidance Note 08/18 Bats and artificial lighting in the UK as well as other published documentation in relation to lighting and biodiversity.

6.2 Limitations

- 6.2.1 The BEMP considers the unique features of the site, the local area and the proposed development and is based on currently available information. If before, or during implementation of this plan, the development proposal is altered substantially, or significant new ecological information comes to light then the plan will need to be revised accordingly by the project ecologist.
- 6.2.2 It is also highlighted that it is difficult to be sure at this stage as to what long-term management would actually be required in practice therefore the operations proposed within this report will be reviewed over time and updated as appropriate as part of an iterative process with the monitoring. Any changes in management would be included within the monitoring report that is to be submitted to the local planning authority during the 30 year monitoring process.

7 Construction phase

7.1 Habitat creation and enhancement

- 7.1.1 The documents referred to above, specifically the updated BNG assessment, have been used to assess the baseline habitats within the site, and recommended enhancement/management of these retained habitats and any newly created habitat that this BEMP applies to, see Figure 1. This updated BNG assessment has also been used to determine when key indicators of habitat maturity should be achieved. The habitats to be retained, created and enhanced that are discussed within this BEMP are:
- Creation of other areas of other neutral grassland (wildflower meadows)
 - Creation of new native hedgerows
 - Creation of new native species shrub
 - Planting of new trees and enhancement of existing trees
- 7.1.2 Long-term management details of the enhanced and newly created habitats have been provided in Section 5. The management within section 5 details how target condition will be met through management, as well as the predicted timeframes, as per the BNG calculations.

Other neutral grassland (wildflower meadows)

- 7.1.3 The retained modified grassland will be enhanced to create other neutral grassland (wildflower meadows) at good condition (see Section 5).

- 7.1.4 Additional, new areas of other neutral grassland will also be created around the development, with the aim to be of good condition.
- 7.1.5 The creation of these other neutral grassland (wildflower meadows) areas of good condition will be achieved through appropriate management and plug planting of individual plants species, and where required, an appropriate seed mix to increase number of herbaceous species per m² (see section 5.2 for details). The other neutral grassland (wildflower meadows) seed to be planted using for example Germinal Amenity WFG2 Flowering Meadow, (other seed providers include Emorsgate). Individual plug planted could be used to supplement the seed and should be similar to those present in the species assemblage of the seed mixes, recommendations include common knapweed, wild carrot, yarrow, Lady's bedstraw, rough hawkbit, oxeye daisy and salad burnet.

Hedgerows

- 7.1.6 New native species rich hedgerows will be created along the western and eastern boundary, and at north to the pond located within the site.
- 7.1.7 The aim will be, where possible, to ensure at least six woody species are present in each of newly created hedgerows to ensure they are species-rich. In addition, honeysuckle will be planted within the hedgerows, where possible, to thicken vegetation and provide good nesting material and food resources for wildlife. The woody species will be planted as whips and will include the species in Table 10, all of which are available from for example Naturescape (<https://www.naturescape.co.uk/>). This table also details the approximate distribution of each species within the hedgerow that should be aimed for.
- 7.1.8 Planting of bare root plants (suggested size of 40-60 cm) will be undertaken during the spring period with at least 30 cm between each specimen. Protection of newly planted hedgerows and trees is essential to promote growth and survival rates. As such, tree guards will be installed around each newly planted tree for protection against potential grazing deer. Hedgerows will not be planted in waterlogged or frozen soil and will receive regular water when the earth is dry. Mulch will be spread around the base of newly planted hedgerows to protect the roots, reduce evaporation (water loss) and suppress weeds. Alongside this, corrective pruning may be required, and any weeds will be removed to prevent competition. Any planting that fails will be replaced during the next suitable planting period for that species.

Table 9: Example species composition for hedgerows

Species	Scientific name	Approximate composition
Bird cherry	<i>Prunus padus</i>	10%
Blackthorn	<i>Prunus spinosa</i>	10%
Dog rose	<i>Rosa canina</i>	5%
Dogwood	<i>Cornus sanguinea</i>	10%
Elder	<i>Sambucus nigra</i>	10%
Field maple	<i>Acer campestre</i>	10%
Guelder-rose	<i>Viburnum opulus</i>	10%

Species	Scientific name	Approximate composition
Hawthorn	<i>Crataegus monogyna</i>	25%
Hazel	<i>Corylus avellana</i>	10%

Species-rich shrub planting

7.1.9 Around the development, new areas of species-rich mixed shrub planting of good condition will be created. The species selected will be native and of ideally of local provenance as detailed below.

- Hazel
- Hawthorn
- Holly
- Blackthorn
- Rowan
- Wild cherry
- Field rose
- Guelder-rose

Rural trees

7.1.10 The new tree planting around the development will include native species that are local to the area that have a known benefit to wildlife. Below is a list of species which will be planted, as detailed in the design and access statement (Grimshaw Architects LLP, 2022) and in the proposed landscaping plans (drawing number 11939-LD-PLN-001 P02, dated 27th September 2022, supplemented by revised sketch 11939/01 and latest drawing 6730-LLB-XX-E2-DR-001P07 S4 dated 29th January 2025).

7.1.11 Management of these trees is detailed in Section 5, however will also take into account management techniques required to ensure trees remain appropriate to meet the requirements of new a new conservation and research.

- Pedunculate oak
- Hornbeam
- Alder
- Field maple

Modified grassland

7.1.12 An area of modified grassland will be created on the edge of the lowland mixed deciduous woodland. This can act as a woodland edge and allow access to the retained pond. This area of grassland can be seeded with for example Germinal Amenity A19 All Purpose Landscaping Grass Seed which will be trample resistant.

7.2 Creation of ecological enhancement features

7.2.1 To enhance the biodiversity within the development, a number of ecological features will be included within the landscape scheme. These include:

- Bat boxes
- Bird boxes
- Invertebrate habitat- bug hotel
- Hedgehog friendly fencing

7.2.2 The specification and proposed location of the features is detailed below and in Figure 1.

Bat boxes

7.2.3 The development proposals associated with planning application DM/22/1774 will result in the permanent loss of one occasional or transitional roost for a single brown long-eared bat. The project will be registered under the Bat Earned Recognition (BER) scheme before works can proceed. The roost compensation and enhancement measures will be provided in the development (SWT Ecology Services, 2023B). This roost compensation and enhancement is in accordance with the type and status of the roost present and will maintain the favourable conservation status of roost.

7.2.4 The roost is not to be lost from the site, in case of disturbance a tree mounted bat box will be installed close to the roost and five more boxes in appropriate trees around the site, as discussed with the ecologist on site.

- For the one brown-long eared occasional or transitional roost, one 2F Schwegler or equivalent bat box.

7.2.5 The enhancement features detailed below have been designed to complement the roost compensation and enhancement measures that will be provided in accordance with the mitigation strategy associated with the BER scheme. The locations of these enhancement features are also shown on Figure 1 and appendix 2.

Table 10: Biodiversity enhancement features for roosting bats

Feature type	Species suitability	Where to place	Number of features required
1WI Schwegler or equivalent	Soprano pipistrelle Common pipistrelle Natterer's Whiskered Brandt's Brown long-eared		5
Total			5

7.2.6 The bat boxes will be sited 3-4 m high to avoid predation by cats and disturbance from people. The boxes will also be positioned as to be high enough to avoid direct illumination, placed out of the way of strong wind and positioned where they can get sun for part of the day.

Sympathetic lighting strategy – bats and other wildlife

7.2.7 The impacts of any increase in lighting on the retained or newly created habitats and ecological features on wildlife will be mitigated for through a sensitive lighting design.

7.2.8 Lighting for the proposed development will be designed as per best practice guidance (BCT and Intitute of Lighting Professionals, 2018) to minimise adverse impacts to bats in the surrounding area. This design will be demonstrated on a separate lux level drawing which indicates that lighting levels at features identified as being used by bats (e.g. hedgerows, tree lines, etc.) are appropriate for continued foraging and commuting

use. This drawing is not included within this BEMP and will be produced in response to condition 11 of the planning decision.

7.2.9 Broadly however, the lighting design will have the following specifications:

- All luminaires should lack UV elements when manufactured. Metal halide, fluorescent sources should not be used.
- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (ideally < 2700 K) to reduce blue spectrum
- Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012).
- Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill.
- Column heights should be carefully considered to minimise light spill.
- Only luminaires with an upward light ratio of 0% and with good optical control should be used – See ILP Guidance for the Reduction of Obtrusive Light.
- Luminaires should always be mounted on the horizontal, i.e. no upward tilt

7.2.10 Light spillage to the retained boundary features around the western area of the development, and on the woodland, mixed shrub planting and retained hedgerow in the north-east of the development, will be further minimised by using hooded and low-level lighting. Consideration should be given to using motion-sensor lighting on short time-frames to minimise the impact of lighting on bats.

Bird boxes

7.2.11 Bird boxes are an established technique for increasing the value of landscapes to hole-nesting bird species and may help contribute to any Local Biodiversity Action Plan (LBAP) targets.

7.2.12 To enhance the site's value to nesting birds, eight bird boxes will be placed on trees around the development. The locations of the bird boxes are shown on Figure 1 and detailed in Table 12 below. These features are available at <https://www.nhbs.com/>.

7.2.13 Boxes should be placed a minimum of 1.5 m (with the exception of starling and house sparrow boxes which need to be installed at least 3 m high) above ground to reduce predation risks and should be in areas with low levels of foot traffic. The boxes should be placed somewhere sheltered and warm; the RSPB recommend that bird boxes are positioned between north and eastern aspects, which avoids strong sunlight and wettest winds (see Figure 1 and appendix 2).

Table 11: Bird boxes

Species	Number of boxes	Box/habitat feature type and location
Wrens, robins, spotted flycatchers, pied and grey wagtails, song thrushes and blackbirds	2	Vivara Pro Barcelona WoodStone Open Nest Box. Install on mature trees and in woodland, tree line and mixed shrub planting.

Invertebrate, reptile and amphibian habitat

7.2.14 To enhance the site for invertebrates, a bug hotel will be created using materials cut from existing vegetation within the development. The habitat/log piles will be installed within the grassland (see Figure 1).

Hedgehog friendly fencing

7.2.15 To ensure connectivity across the site is not lost, any solid board fencing will have holes cut at the base to allow for movement of hedgehogs. The holes will be a minimum of 13 cm high and wide and should be placed as a minimum one every 20 m, examples are shown in appendix 2.

8 Operational phase

8.1 Introduction

8.1.1 Details of the long-term management required as well as timings for management activities are provided below and in Section 5.6 (LEMP) for each habitat / ecological feature. These are to be implemented over a minimum of 30 years, however the operations proposed within this report will be reviewed over time and updated as appropriate as part of an iterative process with the monitoring. A schedule of proposed timings for management of each habitat, as well as monitoring periods, is provided in Section 8.

8.2 Habitat management

Other neutral grassland (wildflower meadows)

8.2.1 The other neutral grassland (wildflower meadows) areas will be cut towards the end of the summer the year immediately after the sowing (assuming the grassland is sown in mid-September to Autumn the year before). However, prior to undertaking the first cut, the grassland establishment will be assessed to determine whether it would be suitable to cut the grass. The first cut will be completed in August / September and the cut will be to a height of 300 mm only.

8.2.2 The establishment of the grassland will be monitored for competitive weeds, which will be spot sprayed where necessary or hand pulled. Competitive weeds include but are not limited to:

- Broad-leaved dock
- Common nettle
- Common ragwort
- Cow parsley
- Creeping buttercup
- Creeping thistle
- Curled dock
- Greater plantain
- Spear thistle
- White clover

8.2.3 This will be undertaken every two months or as required during the main growing period April to September for two years post sowing.

- 8.2.4 Once the other neutral grassland (wildflower meadows) is established it should be cut on a yearly with some sections left and cut on a three yearly basis, normally around the edges. This will be to achieve a range of sward heights, which will help to control any coarse grasses and other undesirable species which might be growing in the sward and could out compete other plants. In addition, it creates a grassland habitat with a diverse structure that is beneficial to invertebrates and other wildlife.
- 8.2.5 The management measures, targets and KPI are detailed in Section 5.6 (LEMP). The management is detailed further in Section 8 of this report however will broadly be as the schedules outlined in Table 13 and 14.

Table 12: Management and timings for establishment of other neutral grassland

Item	Timing
Sowing appropriate meadow seed mix, supplemented with plug planting if desired.	Between mid-September and to Autumn, and only when nightly temperatures exceed 5°C.
First year management (year immediately after sowing).	The first cut will be completed in August / September and the cut will be to a height of 300 mm only.
Monitoring for competitive weeds and bird damage	Every two months or as required during the main growing period for the first two years.

Table 13: Post establishment yearly management of other neutral grassland

Year	G1	G2	G3
2	Cut in March/April and August/September/October (two cuts)	Cut in March/April and August/September/October (two cuts)	Cut in March/April and August/September/October (two cuts)
3	Cut only in August/September (one cut)	Cut only in August/September (one cut)	Cut only in August/September (one cut)
4	Cut only in August/September (one cut)	Cut only in August/September (one cut)	Cut only in August/September/October (one cut)

- 8.2.6 Following year 4, this cutting regime should be continued. These cuts should be undertaken using a hand strimmer or mower. When the cut is done it will be left for a 3-5 days, to dry out and allow the seeds to drop, before being collected. The grassland will require no watering or fertilising and any weeds which begin to appear should be handpicked. If the grasses begin to takeover, then a combination of a hard spring cut, seeding more yellow-rattle and raking areas to form bare patches should rectify this.
- 8.2.7 Any litter that has blown into the areas will be removed as and when required.

Lowland mixed deciduous woodland

- 8.2.8 The management of woodland will be required to retain it at good condition.
- 8.2.9 The management measures, targets and KPI are detailed in Section 5.6 (LEMP).
- 8.2.10 Any management of the shrub and canopy layer will be undertaken outside the breeding bird period. Information boards to explain the management and purpose of the woodland could be deployed.
- 8.2.11 Table 15 shows timings for any management of woodland.

Table 14: Management for timings for woodland

Item	Timing
Planting of shrubs to improve woodland structure	September and October
Sowing of woodland seed mix	Between mid-September and to Autumn, and only when nightly temperatures exceed 5°C
Removal of non-native species within the woodland	September and October
Rotational coppicing of appropriate species on a ten-year rotation	September and October
Pruning and thinning of trees	As required in January and February

Hedgerows

New hedgerows

8.2.12 For newly created hedgerows the whips will be planted in the first year and protected using tree stakes and guards, it is recommended that these guards are 20cm tall and biodegradable. In autumn for the first five years any failed whips should be replaced on a like for like basis.

8.2.13 In the first spring, cut shrubs back to 45 – 60 cm above the ground to encourage bushy growth. Following this, it should be trimmed back every three years to allow the whips to set strong roots and thick stems. After ten years the hedge should be laid, this will encourage the hedge to thicken at the base, it will make it a good visual barrier and create breeding bird and small mammal habitat. This management does not apply to the hedgerows that exist within the site and are to be retained.

Management of new hedgerows and retained and enhanced hedgerows

8.2.14 In autumn for the first five years any failed whips within the retained and enhanced hedgerows should be replaced on a like for like basis.

8.2.15 Once the new hedge has been laid, and the retained hedgerows enhanced through species-rich planting, each hedge should be grouped in three areas (H1, H2 and H3, to be decided by the on-site grounds maintenance team) and managed on a three-year cycle (see Table 16). This would mean two years of no cutting and the third year cutting back the hedge to leave only 10 cm of new growth behind. It is important to cut the hedge only every three years as the plants will only flower and fruit in the second year after a cut. It is important that some of the new growth is left every time the hedge is cut as this prevents a cut line forming.

Table 15: Management and timings for hedgerows

Item	Timing
Planting of new whips	Autumn
Replacement of failed whips	For the first five years in autumn.

Hedgerow management first 10 years (new hedgerows only)	the first spring, cut shrubs of any new hedgerows created back to 45 – 60 cm above the ground to encourage bush growth. Following this, it should be trimmed back every three years.
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Mixed species-rich shrubs

8.2.16 For the newly created area of mixed, species-rich shrub planting, the aim of the management will be to achieve scalloped margins to create a range of ecotones and openings. The management of this habitat type should be undertaken during September and October, every one to two years. This timing will avoid the bird breeding season (March - August) and reptile/amphibian hibernation period (November – February).

8.2.17 See Table 17 for management details.

Table 16: Management and timings for mixed species-rich shrubs

Item	Timing
Removal of invasive non-native species	During construction (outside nesting bird season)
Planting of shrubs	As required in Autumn
Removal of litter	Biannually (twice a year)
Pruning of shrubs and management of scalloped edge	As required in January and February (at minimum every once two years)

8.3 Management of ecological enhancement features

Bat boxes

8.3.1 The bat boxes do not require cleaning out, however a maintenance check should be done every two years from the ground to check they are still securely in place. As bats are legally protected, if an internal check of the box is required, then a suitably qualified and licenced bat ecologist will be required to undertake this.

8.3.2 Monitoring of the boxes that have been installed as roost replacement and compensation will be in accordance with the bat mitigation licence. Table 18 shows timescale and management for bat boxes which will be installed as enhancement features.

Table 17: Timescales and management for bat boxes installed for enhancement

Item	Timing
Installation of bat bricks	During construction of development
Maintenance check from the ground only (should boxes need to be repaired or moved after installation, this must be done by a licenced bat ecologist)	Every two years

Bird boxes

8.3.3 Although not essential, it would be beneficial to clean out the bird boxes during the winter months (October to February) as this will remove any parasites from the previous year. The details for timescale and management for bird boxes are provided in Table 19 below.

Table 18: Timescales and management for bird boxes

Item	Timing
Installation of bird boxes	During construction of development
Maintenance check	Once every two years during winter months – October to February. This can be done in combination with bat box maintenance. To clean out the box, old nesting material and failed nests (including eggs) should be removed, and the box cleaned using boiling water to kill off parasites. Once the box is completely dry the lid can be replaced. Insecticides or flea powder will not be used (RSPB, 2021).

Invertebrate habitat

8.3.4 The invertebrate habitat- bug hotel, will require minimal work, only requiring replenishing with brash a once a year when trees and bushes are cut back.

8.3.5 Details of management activities are provided in Table 20 below.

Table 19: Management and timings for invertebrate habitat

Item	Timing
Bug hotel	During construction of development

Monitoring and feedback

8.3.6 The habitats will need to be monitored by a suitably qualified ecologist on years 2, 5, 10, 20 and 30. This will ensure that the management is producing the desired outcome onsite. A monitoring report will be produced and submitted to the local planning authority; this will give an indication of the current condition of the habitats, and will recommend any adjustments which might be required.

9 Useful contacts

9.1.1 Table 21 provides useful contacts for obtaining ecological advice.

Table 20: Useful project contacts

Organisation	Contact details	Address
Surrey Wildlife Trust Ecology Services	Isobel Girvan: Isobel.Girvan@surreywt.org.uk	Surrey Wildlife Trust, School Lane, Pirbright, Surrey GU24 0JN

10 References

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Appendix 1: Legislation and planning policy

Legislation

Conservation of Habitats and Species Regulations 2017 (as amended)

Provides for the protection of Natura 2000 sites (SACs, SPAs and Ramsar sites), European Protected Species and habitats. Species listed under Schedule 2 are protected from:

- Deliberate capture, injury or killing.
- Deliberate disturbance [...], such that it impairs their ability to breed, reproduce or rear their young, hibernate or migrate or significantly affect their local distribution or abundance.
- Deliberate taking or destroy effect.
- Damage or destroying a breeding site or resting place.
- Keeping, transporting, selling or exchanging any live, dead or part.

Species listed under Schedule 2 include, but are not limited to:

- Great crested newt
- Natterjack toad
- Otter
- Smooth snake
- Sand lizard
- All bat species
- Hazel dormouse

The LPA will be aware of its legal duty under Regulation 9(3) of Conservation of Habitats and Species Regulations 2017, as amended, which states that “*a competent authority in exercising any of its functions, must have regard to the requirements of the Directives so far as they may be affected by the exercise of those function*”.

Also, under Regulation 55 (9b) of the above regulations, the LPA must apply the following three tests when deciding whether to grant planning permission where a Protected Species (bats) may be harmed, in line with of the Conservation of Habitats and Species Regulations 2017, as amended.

- The activity must be for imperative reasons of overriding public interest or for public health and safety;
- There must be no satisfactory alternative;
- Favourable conservation status of the species must be maintained.

Natural England has stated that they would expect these three tests to be adequately considered by the LPA before planning permission is granted. Natural England will require evidence from the applicant that the LPA has considered the three tests and how they were met, before a mitigation licence can be issued. Where a mitigation licence is required to avoid breach of legislation, development cannot proceed even where a valid planning permission is granted.

Wildlife and Countryside Act 1981 (as amended)

Key piece of legislation consolidating existing wildlife legislation to incorporate the requirements of the Bern Convention and Birds Directive. It includes additional protection measures for species listed under the Conservation of Habitats and Species Regulations 2017 (as amended) and includes a list of species protected under the Act. It also provides for the designation and protection of Sites of Special Scientific Interest (SSSI).

Development which would adversely affect a SSSI is not acceptable except only in special cases, where the importance of a development outweighs the impact on the SSSI when planning conditions or obligations would be used to mitigate the impact. Developments likely to impact on a SSSI will likely require an Environmental Impact Assessment (EIA).

The Impact Risk Zones dataset is a GIS tool which details zones around each SSSI according to the particular sensitivities of the features for which it is notified and specifies the types of development that have the potential to have adverse impacts. Natural England uses the Impact Risk Zones to make an initial assessment of the likely risk of impacts on SSSIs and to quickly determine which consultations are unlikely to pose risks and which require more detailed consideration. Local Planning Authorities (LPAs) have a duty to consult Natural England before granting planning permission on any development that is in or likely to affect a SSSI.

Further information on specific legislation relating to species protected under the Wildlife and Countryside Act 1981 (as amended) is detailed below, under Protection of Protected Species and Habitats.

Environment Act (2021)

The Environment Act (2021) makes a provision for biodiversity net gain to be a condition of planning permission in England. Planning applications will need to demonstrate a 10% biodiversity net gain can be met. A biodiversity net gain plan must be submitted and must include:

- (a) information about the steps taken or to be taken to minimise the adverse effect of the development on the biodiversity of the onsite habitat and any other habitat
- (b) the pre-development biodiversity value of the onsite habitat,
- (c) the post-development biodiversity value of the onsite habitat,
- (d) any registered offsite biodiversity gain allocated to the development and the biodiversity value of that gain in relation to the development,
- (e) any biodiversity credits purchased for the development,

Countryside and Right of Way Act 2000

Amends and strengthens the Wildlife and Countryside Act 1981 (as amended). It also details habitats and species for which conservation measures should be promoted.

Natural Environment and Rural Communities Act 2006

Section 40 of the Act places a duty on local planning authorities to conserve and enhance biodiversity in England whilst carrying out their normal functions. Section 41 comprises a list of Habitats of Principal Importance (HPIs) and Species of Principal Importance (SPIs) which should be considered.

Section 41 details 56 HPIs, of which the following could be present in south-east England: Lowland calcareous grassland, Lowland dry acid grassland, Lowland meadows, Lowland

Heathland, Open Mosaic Habitats on Previously Developed Land, Lowland fens, Lowland raised bog, Reedbeds, Lowland beech and yew woodland, Lowland mixed deciduous woodland and Wet woodland.

Impacts to HPI are of material planning consideration.

The LPA will need to have particular regard to any relevant local nature recovery strategies, and any relevant species conservation strategy or protected site strategy prepared by Natural England.

Hedgerows Regulations 1997

Under the Hedgerows Regulations 1997 it is against the law to remove or destroy certain hedgerows without permission from the LPA, which are also the enforcement body for offences created by the Regulations. LPA permission is normally required before removing hedges that are at least 20 m in length, more than 30 years old and contain certain plant species. The authority will assess the importance of the hedgerow using criteria set out in the regulations. The regulations **do not** apply to hedgerows within the curtilage of, or marking a boundary of the curtilage of, a dwelling house.

Hedgerow is a HPI.

Wild Mammals (Protection) Act 1996

Under this act wild mammals are protected from the intentional unnecessary suffering by crushing and asphyxiation.

Protection of protected species and habitats

Amphibians

Natterjack toad, pool frog and great crested newt are protected under the Conservation of Habitats and Species Regulations 2017 (as amended). They are also afforded additional protection under the Wildlife and Countryside Act 1981 (as amended).

Natterjack toad, common toad, great crested newt and northern pool frog are also SPIs.

Reptiles

Smooth snake and sand lizard are protected under the Conservation of Habitats and Species Regulations 2017 (as amended). They are afforded additional protection under the Wildlife and Countryside Act 1981 (as amended).

Adder, grass snake, common lizard and slow-worm are all protected from killing and injury under the Wildlife and Countryside Act 1981 (as amended). All UK reptile species are SPIs.

Birds

All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended). This includes damage and destruction of their nests whilst in use, or construction. Species listed under Schedule 1 of the Act, such as barn owl, are afforded protection from disturbance during the nesting season.

The following 50 bird species are SPIs: lesser redpoll, aquatic warbler, marsh warbler, skylark, white-fronted goose, tree pipit, scaup, bittern, dark-bellied brent goose, stone-curlew, nightjar, hen harrier, northern harrier, hawfinch, corncrake, cuckoo, Bewick's swan, lesser spotted woodpecker, corn bunting, ciril bunting, yellowhammer, reed bunting, red grouse, herring gull, black-tailed godwit, linnet, twite, Savi's warbler, grasshopper warbler, woodlark, common

scoter, yellow wagtail, spotted flycatcher, curlew, house sparrow, tree sparrow, grey partridge, wood warbler, willow tit, marsh tit, dunnoek, Balearic shearwater, bullfinch, roseate tern, turtle dove, starling, black grouse, song thrush, ring ouzel and lapwing.

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Bats

All bat species are protected under the Conservation of Habitats and Species Regulations 2017 (as amended), as detailed above. Bats are further protected under the Wildlife and Countryside Act 1981 (as amended), making it an offence to:

- Deliberately or recklessly damage or destroy any structure or place which bat(s) use for shelter or protection.
- Disturb bat(s) while occupying a structure or place which it uses for shelter or protection.
- Obstruct access to any structure or place which they use for shelter or protection.

Furthermore, seven bat species are SPIs, covered under Section 41 of the NERC Act 2006. These include western barbastelle, Bechstein's, noctule, soprano pipistrelle, brown long-eared, lesser horseshoe and greater horseshoe.

Beaver

Beaver is provided under Conservation of habitats and Species Regulations 20217 (as amended). Beaver is also afforded additional protection under the Wildlife and Countryside Act 1981, as amended.

Hazel dormouse

Hazel dormouse is protected under the Conservation of Habitats and Species Regulations 2017 (as amended). It is afforded additional protection under the Wildlife and Countryside Act 1981 (as amended), including obstruction to a place of shelter or rest.

Hazel dormouse is also a SPI.

Otter

Otter is protected under the Conservation of Habitats and Species Regulations 2017 (as amended) and is afforded additional protection under the Wildlife and Countryside Act 1981 (as amended). Otter is also a SPI.

Water vole

Water vole is fully protected from capture, killing or injury; damage, destruction or blocking access to a place of shelter; disturbance whilst in a place of shelter or possessing, selling any part of a water vole, dead or alive under the Wildlife and Countryside Act 1981 (as amended).

Water vole is also a SPI.

Other mammals

West European hedgehog, brown hare, mountain hare, pine marten, harvest mouse, polecat and red squirrel are all SPIs.

The following mammals are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended): wildcat, brown hare (Schedule 5A), mountain hare (Schedule 5A), pine marten and red squirrel.

Invertebrates

Fifty-six terrestrial and freshwater invertebrate species are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). These include Reddish buff, Norfolk hawker, Purple emperor, High brown fritillary, Northern brown argus, White-clawed crayfish, Pearl-bordered fritillary, DeFolin's lagoon snail, Chequered skipper, Fairy shrimp, Rainbow leaf beetle, New Forest cicada, Southern damselfly, Large heath, Small blue, Wartbiter, Fen raft spider, Ivell's sea anemone, Mountain ringlet, Ladybird spider, Marsh fritillary, Spangled diving beetle, Mole cricket, Field cricket, Duke of Burgundy, Silver-spotted skipper, Medicinal leech, Lesser silver water beetle, Moccas beetle, Wood white, Violet click beetle, Large copper, Freshwater pearl mussel, heath fritillary, Glanville fritillary, Glutinous snail, Starlet sea anemone, Large tortoiseshell, Brackish hydroid, Swallowtail, Bembridge beetle, Barberry carpet, Silver-studded blue, Adonis blue, Chalk hill blue, Fiery clearwing, Sandbowl snail, Black hairstreak, White-letter hairstreak, Black-veined moth, Sussex emerald, Brown hairstreak, Northern hatchet-shell, Lulworth skipper, Tadpole shrimp, New Forest burnet.

A total of 398 invertebrates are Species of Principal Importance. These include: beetles (including stag beetle), butterflies (high brown fritillary, large heath, small blue, white-letter hairstreak, brown hairstreak, damselflies (southern damselfly), moths (marsh moth), ants, bees etc. Impacts to SPI must be considered by the LPA when assessing planning applications.

Non-native invasive plant species

Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) is a list of non-native plant species for which Section 14 of the Act applies. It is an offence to plant, or otherwise cause to grow in the wild species listed under Schedule 9 of the act. These include, but are not limited to:

- Himalayan balsam
- Cotoneaster sp.
- Japanese knotweed
- Giant hogweed

Appendix 2 Ecological enhancement specifications

Enhancement	Example
Bat boxes	Improved Cavity Bat Box  A dark brown, house-shaped bat box with a gabled roof, mounted on a vertical wooden plank. It features a QR code and a yellow label on its side.
	Eco Crevice Bat Box  A dark blue, rectangular bat box with a flat roof and a small entrance at the bottom, mounted on a vertical wooden plank. It features a green label on its side.

	Habitat Bat Triple Access Chambered Bat Box 
Bird boxes	Vivara Pro WoodStone Single Chamber House Sparrow Nest Box 

Vivara Pro Seville WoodStone Nest Box



Vivara Pro WeedStone Starling Nest Box



2H Schwegler Robin Box



Robin and Wren FSC Nest Box



Hedgehog friendly
fencing



Appendix 3: Timing of works to reduce impacts on protected species

This calendar presents the optimal season for undertaking works to minimise impact to protected species, or species of conservation concern. It should be used as guidance only and is based on current industry best-practice. Your ecologist will provide you with an indication of specific mitigation measures which are necessary to satisfy legal and planning requirements for your project. Mitigation for species including Schedule 1 bird species, badger, bats, hazel dormouse, otter, water vole and great crested newt can only be done once a mitigation licence has been issued by Natural England. This will also detail the timing of works to minimise impacts to these. For mitigation licences all activities must be undertaken under supervision of a suitably qualified and/or licensed ecologist and where mitigation licenses are in place, these may only be undertaken by the named ecologist or an accredited agent.

Species/species group	January	February	March	April	May	June	July	August	September	October	November	December
Birds	Can be undertaken under the supervision of an ecologist											
Badger	As Jan - Jun											
Bat	Day, hibernation or night roost; low impact roosts											
	Maternity roost											
Hazel dormouse	Above ground clearance											
Otter	Stump and root clearance and translocation											
Water vole	All vegetation											
Great crested newt	As Jan - March											
Reptiles	Avoidance measures											
	Trapping and exclusion											
	Translocation, hand search and destructive search											
	Pond management											
	Capture and translocation, precautionary method of working for small areas of vegetation clearance											
	Above ground clearance											
	Optimal time to minimise impacts											
	Sub-optimal time to minimise impacts											
	Works impacting species should not occur											