Biodiversity Enhancement Strategy

Self-Build Project

Sleepy Warren
Maydwell Avenue
Slinfold
West Sussex
RH13 0RE

Plot Owners	Maria and Peter Cox
Project	Biodiversity Enhancement Strategy for New Build
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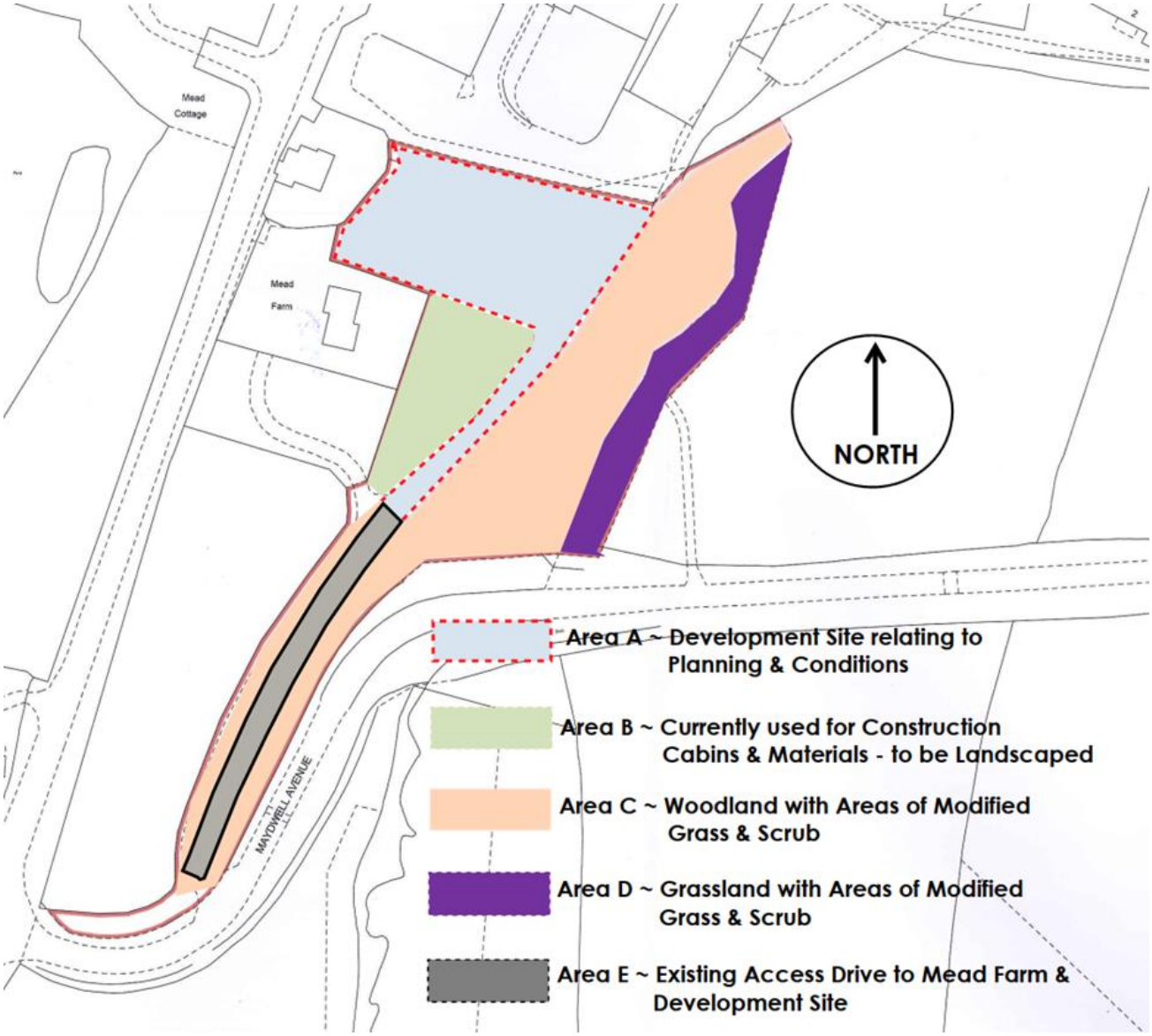
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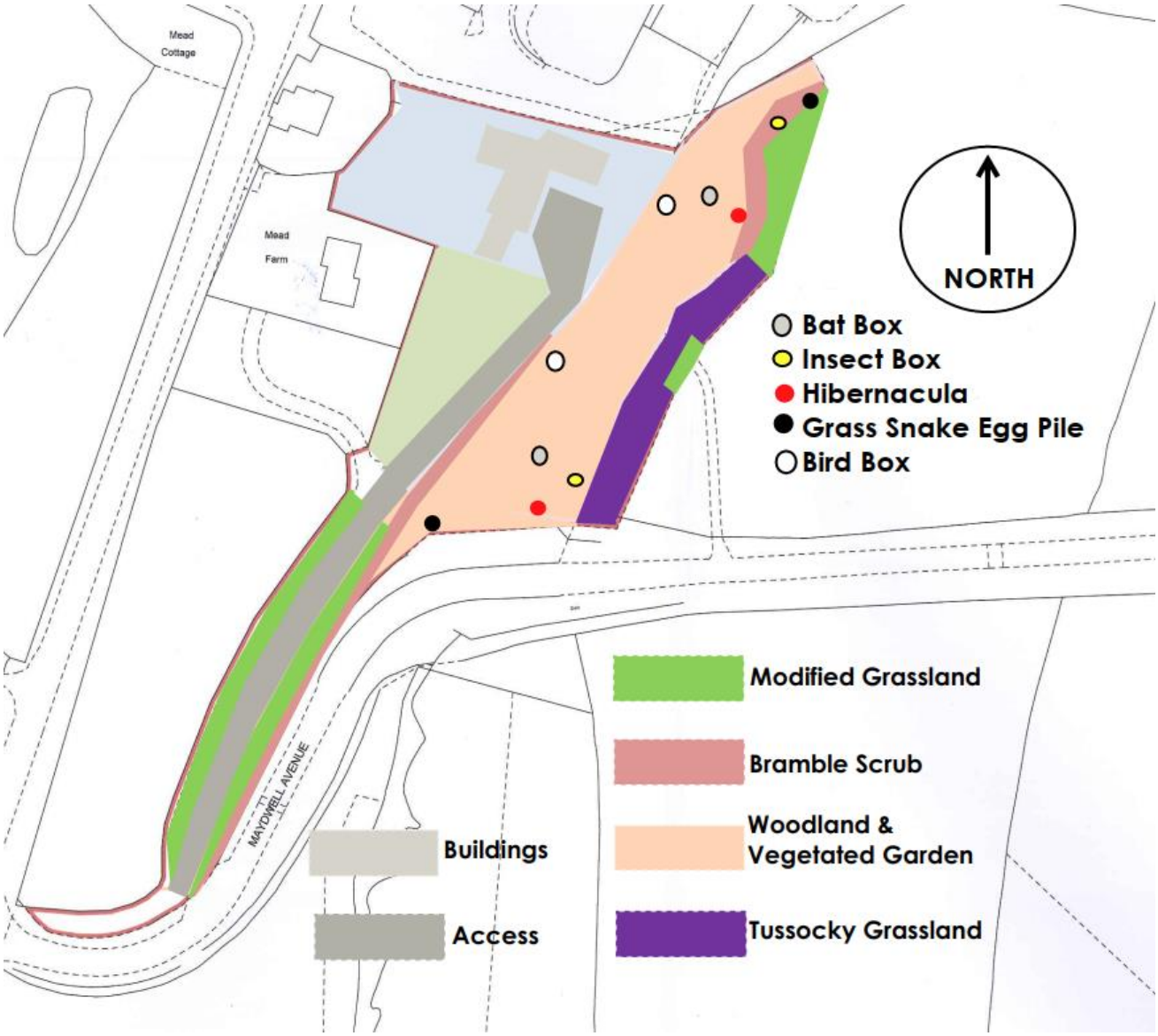
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A Defined Site Areas



B Proposed Site Layout



1. Introduction

1.1 Development Location

1.1.1 Maria and Peter Cox are developing (Grid ref: TQ 10947 30915) land at Mead Farm, Stane Street, Slinfold, now referred to as Sleepy Warren, Maydwell Avenue, Slinfold, RH13 0RE. The above address is hereafter referred to as the 'site' and Maria and Peter Cox as the 'applicants'.

1.2 Development Background

Development proposals

1.2.1 The approved Planning includes the redevelopment of an existing builder's yard and erection of one detached dwelling and a detached carport garage. This also includes the extension of an existing access road and associated landscaping within the development boundary including landscape design to comply with pre-occupation Condition 10.

1.2.2 The landscape design will encompass elements of this Biodiversity Enhancement Strategy and will be submitted once completed separate to this document.

Planning status

1.2.3 The planning application (planning ref: DC/22/0370) for the development was submitted to Horsham District Council in February 2022 with planning permission granted for a development January 2024.

1.2.4 Planning permission was granted subject to conditions of planning that included reasons of biodiversity. Planning pre-commencement Condition 7 is relevant to this report and states:

'No development above ground floor slab level of any part of the development hereby permitted shall take place until a Biodiversity Enhancement Strategy for Protected and Priority species shall be

submitted to and approved in writing by the local planning authority. The content of the Biodiversity Enhancement Strategy shall include the following:

a) Purpose and conservation objectives for the proposed enhancement measures.

b) Detailed designs to achieve stated objectives.

c) Locations of proposed enhancement measures by appropriate maps and plans.

d) Persons responsible for implementing the enhancement measures.

e) Details of initial aftercare and long–term maintenance (where relevant). The works shall be implemented in accordance with the approved details prior to occupation and shall be retained in that manner thereafter.

Reason: To enhance protected and Priority species & habitats and allow the Local Planning Authority to discharge its duties under s40 of the NERC Act 2006 (Priority habitats & species).

1.3 Ecology Background

1.3.1 The original supporting ecology documents for the development include the following:

- Extended phase 1 habitat survey (AEWC, 2021)
- Hazel Dormouse Report (AEWC, 2023a)
- Reptile Survey Report (AEWC, 2023b)
- Updated site walkover and GCN Survey (AEWC, 2023c)
- Great crested newt and reptile mitigation strategy (AEWC, 2023d)

1.3.2 The presence of both great crested newts (GCN) and reptiles (slow worm and grass snake) were confirmed within the development boundary.

1.3.3 The site has been registered under the HDC GCN District Level License as administered by NatureSpace, who have reviewed the GCN and Reptile Mitigation Strategy (AEWC, 2023d) and have superseded their recommendations by the conditions of the NatureSpace DLL.

1.4 Brief and Objectives

1.4.1 Arun Ecology Ltd were commissioned by the applicants to provide Ecological services relating to implementing the requirements detailed in the GCN District Level License as administered by NatureSpace, in addition to providing professional support with this 'Biodiversity Enhancement Strategy' requested by HDC. The key objective of this document is to:

- Identify the opportunities offered by the development to deliver ecological enhancements.
- Outline the design of the ecological enhancement and how they will be delivered as part of the development.
- Provide a strategy and monitoring plan to outline how ecological enhancements will be successfully implemented and retained as part of the development.
- Provide details on the location of the ecological enhancement.

2. Ecological Enhancement Strategy

2.1 Background

General Approach

2.1.1 The purpose of this section is to present the ecological enhancement opportunities proposals then where relevant adopted into the final landscape design for the development area and within the wider land ownership of the applicants at the site (see Defined Site Areas above).

2.1.2 The ecological enhancements outlined in this section are separated into the following sections:

- Area A – Which aligns with the development site dotted redline boundary.
- Area B – Is a small area of land which abuts the main development site and the neighbouring property Mead Farm. For the purposes of this strategy, Area B will be considered in the same context as Area A.
- Area C – Which forms an area of retained woodland habitat within the site ownership of the applicants and the access road.
- Area D – An offset area within the site ownership of the applicants for the purpose of GCN and reptile populations translocated from Area's A & B to allow for construction together with temporary construction cabins and materials storage.

2.1.3 The ecological enhancement strategy will include methods for habitat retention, habitat enhancement and habitat creation. There will be a particular focus on enhancing the site for protected species known to be using the site including reptiles and achieving wider benefits for species that are reasonably likely to already use the site once the Ecological Enhancement and Habitat Management Plan has been implemented.

2.1.4 It is important to note that no GCN have been found on site in 3 years or during the recent translocation process just completed by Arun Ecology. However, the applicants note that the site is within a red zone for GCN and therefore a license was granted accordingly.

2.2 Ecological Enhancements within Area A & B

2.2.1 The development site originally amounted to just Area A, but the applicants have since owned Area's B, C & D, amounting to some 2.8 acres in total. Other than Area B, the applicants reasoning was the predominantly woodland in Areas C & D would enable a suitable receptor area for reptile translocation and ecological enhancements. This would then enable the applicants to retain Area B along with the development site Area A, for a traditional mixed amenity use. As

mentioned above, a detailed landscaping design which will focus mainly on Areas A & B, will be submitted in due course to comply with pre-occupation condition 10.

2.2.2 Area's A & B have been totally deconstructed post translocation under the terms of the NatureSpace DLL, with all ground vegetation removed ready for construction. Area B will provide space for temporary construction cabins, storage, materials, parking and turning facilities as submitted and agreed with Planning.

Planting of a Native Hedgerow, to be considered by the landscape designer

2.2.3 A native hedgerow is to be considered within the development boundary at the entrance of the site, or as a suitable subdivision between different areas and recommended to be native species for example the following:

- Hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), buckthorn (*Rhamnus cathartica*), privet (*Ligustrum vulgare*), beech (*Fagus sylvatica*), hazel (*Corylus avellana*) and dog rose;
- Guelder rose, field maple (*Acer campestre*), European spindle, crab apple (*Malus sylvestris*), holly (*llex aquifolium*) and yew (*Taxus baccata*); and
- Climbers, such as honeysuckle and native clematis (i.e. *Clematis vitalba*).

Planting of a Native Tree Species

2.2.4 The planting of native broadleaved trees will be considered into the development boundary. Native trees provide a wide range of ecosystem services and will provide foraging opportunities for invertebrates, birds and mammal species.

2.2.5 Native tree planting could include a combination of field maple (*Acer campestre*), rowan (*Sorbus aucuparia)* and small leaved lime (*Tilia cordata*) trees.

2.2.6 All native trees will be planted where practicable following these general principles:

- Trees will be planted between November and March and spaced at least 5m apart from other newly planted or existing trees.

- Trees will be planted in small areas of clear ground with the surrounding grass cut short to reduce competition for water.

2.2.7 The development will include provisions for hedgehogs in order to maintain connectivity between the site and neighbouring deciduous woodland and gardens that could provide habitat of value to hedgehog. To achieve this, two small holes (approximately 13 cm x 13 cm) will be created in any permanent fencing on the site (with exception of the fencing that borders a major road on the western boundary). The creation of small holes for hedgehogs is proposed using specifically designed gravel boards or fence panels. Alternatively, a bracket such as the Eco Hedgehog Hole Fence Plate can be used to measure and cut a hole of a suitable size for hedgehog. Existing neighbouring fencing will not be disturbed and propose the landscape design supports hedgehog gaps.

2.3 Ecological Enhancements within Area C

Artificial Habitat Boxes for Wildlife

2.3.1 Area C is mainly natural woodland and therefore native habitat for bird and other wildlife. However, Artificial wildlife habitat in the form of nesting bird boxes would not harm this area and locations will be selected once the area is surveyed in more detail, so as to achieve the best enhancement.

2.3.2 Schwegler type Bat Boxes with built–in wooden rear panels will be installed on the boundary of deciduous woodland within the site. The boxes will be installed at a height of approximately 5m in a location with a clear drop zone for emerging bats.

Vegetated Garden

2.3.3 A vegetated garden is proposed as part of the boundary landscaping where Areas C abuts Area's A. To enhance the vegetated garden for biodiversity an area of flowering lawn mixture and the introduction of native shrubs is proposed.

2.3.4 It is proposed to use a Flowering Lawn Mixture. Seed sowing will take place in spring or autumn. Once the seed is sown it may be appropriate to firm in the seed with a roll or by treading to ensure good soil/seed contact.

2.3.5 Native shrub planting could include species such as dog rose, guelder rose (*Viburnum opulus*), European spindle (*Euonymus europaeus),* honeysuckle (*Lonicera periclymenum*), dogwood (*Cornus sanguinea)*, wild privet *(Ligustrum vulgar*e) and dog rose (*Rosa canina*)

Retained Modified Grassland

2.3.6 An area of modified grassland along the edge of the driveway is communally managed will be retained. No specific enhancement intervention measures are recommended for this area.

Hibernacula/Refugia and Deadwood

2.3.7 To provide potential hibernacula and refugia for GCN and deadwood habitat for invertebrates, hibernacula refugia are proposed within the retained lowland mixed deciduous woodland.

Reptile Refugia/Hibernacula

2.3.8 Reptile refugia/hibernacula, small refugia and grass snake piles will be created. The design of the hibernacula/refugia will broadly be adapted from that outlined in the GCN Conservation Handbook (Langton, T.E.S., Beckett, C.L., and Foster, J.P., 2001), taking into consideration site conditions.

2.3.9 The hibernacula/refugia will be formed by scraping the topsoil away and creating a trench of up to approximately 25 cm, this depth has

been selected to avoid potential water logging on the thick clay soil located at the site.

2.3.10 A mixture of rubble, recycled wood (felled ash trees within the site), tree roots and loose soil will be placed in the trench and covered in soil, allowing rubble and wood to poke through in places in order to create environmental heterogeneity and crevices and voids. In some areas soil will be compacted and elsewhere it will be left loose. The hibernacula will then be finished with a covering of turf and supplementary seeding.

2.4 Ecological Enhancements within Area D

Signage

2.4.1 A sign that identifies the location of the reptile mitigation areas will be installed on the site boundary fencing to ensure that habitat within the reptile mitigation area is correctly managed and not inadvertently removed.

Existing Modified Grassland Enhancement

2.4.2 There are two areas of modified grassland currently located within the proposed reptile mitigation receptor site. Due to the schedule of the development and the need to create grassland habitat with suitable structure for reptiles (as a receptor site) it is not possible to create new habitat, as such the structure of the grassland should be enhanced for the benefit of biodiversity to achieve a grass dominated coarse/tussocky structure. The enhancement of the grassland will be achieved by avoiding cutting and long–term maintenance of scrub encroachment.

2.4.3 Shorter areas such as a small walkway can be incorporated into the grassland to create structural diversity with disturbance creating areas of bare ground for the benefit of invertebrates.

Enhancement Creation of Tussocky Grassland

2.4.4 A newly created area of tussocky grassland is proposed along the eastern boundary of the woodland. The aim of this habitat creation is to connect two areas of modified grassland and create a corridor of grassland habitat with structure of benefit to GCN, reptiles, small mammals and invertebrates.

2.4.5 To enable the tussocky grassland creation, an area of blackthorn and bramble scrub and low–lying bramble scrub is proposed for removal to be replaced by an area of newly created tussocky grassland. The blackthorn and bramble scrub and its roots will be removed by machine where appropriate.

2.4.6 Once the blackthorn root system has been removed the soil will then be lightly tilled taking into consideration the proximity of this area to the root protection area of mature trees within the lowland mixed deciduous woodland prior to sowing of the area with the commercial seed mix Emorsgate EM10 – Tussock Grass Mixture with wildflower. This mixture can be sown up to 10–15 gfm^2. The seed mixture is comprised of 80% grasses and 20% wildflowers and contains a total of 26 species.

3. Works Schedule

3.1.1 A schedule of works for installation of ecological enhancement within all areas is outlined below in Table 1.

Table 1 – Schedule of works for ecological enhancements as part of the development.

Task		**Proposed Timings**		
Proposed action	**Undertaker**	**Development Phase**	**Optimal timing timings**	**Likely Implementation**
Hedgerow planting	Specialist contractor	Post construction landscaping	November - March	Early 2025
Native tree planting	Specialist contractor	Post construction landscaping	November - March	Early 2025
Installation of bird boxes	Applicants or appointed contractor	Construction Phase	Prior to nesting bird season (March - September)	Early 2025
Vegetated garden	Applicants or appointed contractor	Post construction landscaping	Autumn or Spring	Early 2025
Small hibernacula creation	Specialist contractor	Enabling works	April – November	Autumn - September 2024

Bat box installation	Specialist contractor/ Applicant	Construction phase	Any time of year	September 2024
Signage	Applicant	Pre−construction phase	Any time of year	Prior to start of construction works
Blackthorn/ bramble scrub clearance	Specialist contractor/ Applicants	Enabling works	September – October	September − 2024
Grass snake egg laying pile	Specialist contractor	Enabling works	Mid−March − April	Spring 2025
Modified grassland enhancement	Not required	Post development	Not required	January 2024 (already established)
Tussocky grassland creation	Specialist contractor	Construction phase	Autumn or Spring	September 2024
Installation of insect box	Specialist contractor/ Applicants	Construction phase	Any time of year	Autumn 2024 or Spring 2025

4. Habitat Management and Monitoring Plan

4.1.1 The on−going habitat management and monitoring requirements for the proposed habitat creation in Areas A, B, C and D is outlined below.

Table 2 – Habitat management and monitoring plan for proposed ecological enhancements.

Habitat	Management tasks	Timing			Responsibility
		Frequency	Timing	Duration	
Vegetated garden	• The grass and wildflower within this mix are perennial and are unlikely to flower in the first year. There will be an annual flush of weeds which should be managed with regular mowing. • Throughout the first year of establishment, regular mowing every 7−10 days should take place through the growing season with any residual weeds removed. The established grassland should be kept to 40−60 mm, removing cuttings if dense. This will gradually achieve a good sward structure. • Once established, it should be mown regularly as a lawn but not too short (25−40 mm). To permit flowering, mowing can be relaxed around the edges of the vegetated garden area from late June. The lawn can be cut again in late autumn. Suspending mowing earlier in the year will allow other flowering plants to establish along the borders. • Mowing may be suspended earlier in the year to allow cowslips to flower. Heavy quantities of cuttings should be collected and removed from site and recycled on grass snake egg laying piles.	Regular intervention	All year round with intervals in cutting between June and late August.	Indefinitely	Applicants or appointed contractor

Native hedgerow	• The newly planted shrubs should be watered where practicable is proposed twice weekly between April– October in year 1 to ensure successful establishment. Watering will need to be sufficient to wet the entire root ball of the hedgerow. Local factors and recent weather should be taken into consideration when watering to prevent water logging. • Ground adjacent to the hedgerow length should be managed to remove any 'weeds' in order to reduce competition and increase sunlight. This should be undertaken by hand. Weed control measures will continue until the establishment of the plants has been successful. • The health of the newly planted hedgerow should be checked with any dead, dying or diseased plants removed and replaced on a like−for−like basis. Furthermore, the soil at the location of planting should be checked for compaction with loosening where required. • The newly planted hedge will be trimmed in the first two years to encourage bushy growth, allowing the hedge to become taller and wider at each cut. Incremental cutting of the hedgerow should take place once the hedgerow has been established.	Regular intervention	All year round with intervals in cutting between June and late August.	Indefinitely	Appointed contractor The applicants (once hedgerow established)
Bird boxes	• The mounted bird boxes are designed to be self− maintained as such cleaning will not be required. • The externally mounted bat boxes proposed are very durable but should be checked at least annually and on an ad hoc basis to ensure they are sufficiently mounted and are not damaged. Any damaged boxes should be replaced like−for−like.	Annually	October – March	Indefinitely	Applicants

Native trees	• The health of the new trees should be checked at least annually by applicants and should include checks for foliage appearance, leaf size, leaf canopy density extension growth and girth development. • To ensure successful establishment of trees, twice weekly watering is proposed where practicable. Watering must be sufficient to wet the entire root ball of the tree. Application of water should be determined by recent weather events. • Within the first two years, any trees found to be leaning will be replanted. • Any side shoots or epidermic growth will be pruned to maintain a clear stem between June – October. • Areas around the tree will be kept free of grass, weeds and debris in roughly a 0.5 m ring around the tree. Strimmer guards should be used or where possible weeds removed by hand. • Any new tree which within a two−year period following planting that dies, fails to thrive, becomes severely diseased and damaged will be replaced with a new tree of similar species and size.	Annually	Visit 1: June Visit 2: October	Two years	Appointed contractor/ Applicants
Bat boxes	• The bat box specifications proposed are self−cleaning and therefore do not require cleaning. • The proposed bat boxes are very durable but should be checked from ground level at least annually to ensure they are still sufficiently mounted and are not damaged. • It may be appropriate to internally inspect the bat box periodically to ensure it remains suitable for bats, for example if a wasp nest is suspected to be present in the box.	Annually	April	Indefinitely	Applicants

Hedgehog gaps	• Once established hedgehog gaps should be checked on an ad hoc basis or at least annually to ensure they have not become blocked and as such unsuitable for use by hedgehog.	Annually	Any time of year	Indefinitely	Applicants
Small hibernacula	• The proposed small hibernacula made from woody debris should be inspected at least annually for two years to assess its condition and inform any remedial action. • Small hibernacula may require additional woody debris and turf to help establish and should be replaced like−for like should any be inadvertently removed.	Annually	April – September	Two Years	Appointed Contractor
Solitary insect boxes	• The solitary insect box proposed are designed to be self−maintained as such cleaning will not be required and should be avoided as this could impact solitary insects future use of the boxes. • The solitary bee boxes proposed are very durable but should be checked at least annually and on an ad hoc basis to ensure they are sufficiently mounted and are not damaged. • If colonisation of solitary insects fails after two summer seasons any external boxes should be moved and placed in an alternative sunny location within the site, ensuring they are sufficiently mounted. • It would not be proportionate to move an integrated box if this option is taken up by the applicant. An appropriate action would be to mount an additional externally mounted box within the site should colonisation of the integrated boxes fail to take place.	Annually	Any time of year	Indefinitely	Applicants

Tussocky Grassland	• Once sown, any weed growth from the soil seed bank will be initially left which may initially aid soil the conditions beneath and provide shelter to the sown seedlings. Weeds will then be removed in late summer through mowing and will be removed to ensure slower growing grasses are not smothered by weeds. • The grassland will then be kept short by mowing through the first winter until the end of March of the following year (grass will be cut to 50 mm once it reaches 100−150 mm) and the grass cuttings removed. • Any residual perennial weeds such as docks will be dug out once the grassland has been cut short. • Once established tussocky grassland needs little to no management intervention and should be left to establish into a suitable habitat for reptiles. • Bramble and scrub management should be undertaken every other year to prevent encroachment of the grassland and retain the maximum area of grassland available.	Biannual until established Scrub management every other year	October – March	Indefinitely	Appointed contractor
Grass snake egg laying pile	• The condition and structure of the grass snake egg laying piles should be assessed for its on−going suitability to support grass snake. • Additionally, materials such as grass cuttings should be recycled as part of management within the site which may be required to upkeep the structure as material decomposes within the grass pile.	Annually	March − April	Indefinatly	Applicants

Modified grassland	• The modified grassland should be left initially for a minimum of two years so that the structure becomes more coarse/ tussocky over time. • Bramble and scrub management should be undertaken biannually to prevent encroachment on the modified grassland and retain the maximum area of grassland available. • Manipulation of the modified grassland is recommended from year two onwards to create areas of mixed height for the benefit of reptiles and invertebrates. This could take the form of a small walkway or cutting small openings with all cuttings removed. This should be completed on a rotational basis across the existing modified grassland. • Any cuttings can be recycled into grass snake egg laying piles within the site for the benefit of grass snake. • Any habitat manipulation should be completed in a two−stage cut taking into consideration the known presence of reptiles and GCN within the site.	Every other year	October − March	Indefinitely	Appointed contractor/ Applicants