



Ecological Protection and Mitigation Plan

Land to the North West of
Boorley Green (RM3)

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Client:

Miller Homes

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Report	Ecological Protection and Mitigation Plan
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1.0 INTRODUCTION

1.1 Brief

In 2013 an ecological assessment of the site and surrounding area was undertaken by Terence O'Rourke. This information allowed the application to be submitted to Eastleigh Borough Council and go on to achieve outline permission through appeal. Ecosupport Ltd were then commissioned by Miller Homes Ltd and Gleeson Development's Ltd to conduct an updating walkover of the site and subsequent Phase II surveys to support the Reserved Matters application.

This report has been produced to discharge condition 2 of the reserved matters permission RM/19/86658. This report provides detail on the incorporation of features suitable for use by breeding birds (including Swifts and House Sparrows) and bats, further information on the assessment of the trees on site for bat roosts, a reptile translocation, mitigation management and monitoring plan and timetable of Ecological Protect and Mitigation.

1.2 Aim

The aim of this report is to provide further information into Mitigation, Compensation and Enhancements proposed within Phase 3 of development. It will ensure ecological features within the redline boundary are adequately protected prior to and during development and that once completed, the operational phase will increase opportunities for wildlife.

1.3 Ecological Baseline

1.3.1 Habitats

The following habitats were present during the most recent walkover in May 2021:

Improved Grassland- The dominant habitat on-site was still improved grassland. The grassland appeared to be less intensively managed with a longer sward height and a slightly increased species diversity (Ribwort Plantain (*Plantago lanceolata*) and Dandelion (*Taraxacum officinale*) were also noted this time), however the sward remained dominated by Perennial Ryegrass (*Lolium perenne*) and Clover (*Trifolium* spp) which is indicative of improved grassland.

Hedgerow- The hedgerows were found to be unchanged from the previous survey with all hedgerows undergoing the same level of management. H1 was heavily managed and appeared to be recently flailed creating a gappy appearance. H2 and H3 have remained as an unmanaged native hedgerow and unmanaged mixed hedgerow respectively.

Scrub- Linear Bramble-dominated scrub still runs through the eastern third reserved matters area. This still covers the same extent and indicating continual management.

Scattered Trees- The hedgerows and scrub supported scattered standard trees of mixed species and maturity. All trees identified within the ecological assessment report were still present.

Arable Land- Some of the arable land dominating the second reserved matters area extends into the third reserved matters area. Unlike the previous walkover, the habitat was not supporting arable crops at the time of the survey and was found to be succeeding into grassland. Common early colonisers such as Dandelion, Scentless Mayweed (*Tripleurospermum inodorum*), Common Mouse Ear (*Cerastium fontanum*), Creeping Thistle (*Cirsium arvense*) and Red Dead Nettle (*Lamium purpureum*).

1.3.2 Badgers

A single mammal burrow was identified within the railway habitat along the southern border of the site.

An in-depth inspection of the burrow could not be completed due to the burrow being within the railway boundary, however, fresh digging was seen indicating the burrow is likely in use.

After the completion of 28 days of monitoring using trail cameras, the burrow was discovered to be unused.

1.3.3 Bat Activity

A total of four survey visits were undertaken; one dusk survey per season, with the July survey comprising a dusk/dawn survey. Two transect routes were utilized to ensure all habitat features on site were captured (**Figure 1**). During each survey a pre-determined transect route was walked. The methodology incorporated stations at which surveyors stood stationary to record activity. These were designed to sample the full range of habitats present on site and associated with the site boundaries. The direction travelled was alternated each survey to allow different areas to be surveyed at different times.

Surveys were undertaken by experienced ecologist of Ecosupport Ltd. Bat Box Duet, Bat Scanner and frequency division (Anabat SD1/2) bat detectors were used to determine the species of bats recorded.

Dusk surveys began at sunset and continued for approximately two hours after sunset, and the pre-dawn survey began two hours before sunrise and continued until sunrise. The surveyor walked at a constant speed, recording bat passes and associated details such as species, time and direction of flight wherever possible.

Table 1. Dates, timings and conditions of Phase II Bat Activity Transects.

Date	Time of Sunset/Sunrise	Start/End Time	Weather Conditions
26/04/17	20:19	20:19/22:19	90% cloud, 9°C Beaufort 0, no rain.
26/07/17	21:00	21:00/23:00	30% cloud, 18°C Beaufort 0, no rain.
27/07/17	05:24	03:54/05:34	75% cloud, 14°C Beaufort 0, no rain.
05/10/17	19:02	19:02/21:02	80% cloud, 13°C Beaufort 0-1.

K4 Keppel, Daedalus Park, Daedalus Drive, Lee on the Solent, PO13 9FX

1.3.4 Roosting Bats

One Elder (*Sambucus nigra*) and three mature Hawthorns (*Crataegus monogyna*) along the central unmanaged grassland strip (**TN1**) are to be removed. An assessment of these was made to determine the likelihood of supporting roosting bats was particular attention paid to those to be removed. This involved using close-focus Avian Trekker binoculars and a high-powered torch to inspect the tree from the ground looking for features indicative of bat roosts. The survey was carried out in accordance with *Bat Surveys for Professional Ecologists; Good Practice Guidelines* 3rd edition published by the Bat Conservation Trust (Collins, 2016). This survey was completed by Tristanna Boxall BSc (Hons) of Ecosupport Ltd in July 2019 and subsequently by Lyndsey McBean BSc (Hons) PG Cert ACIEEM in May 2022.

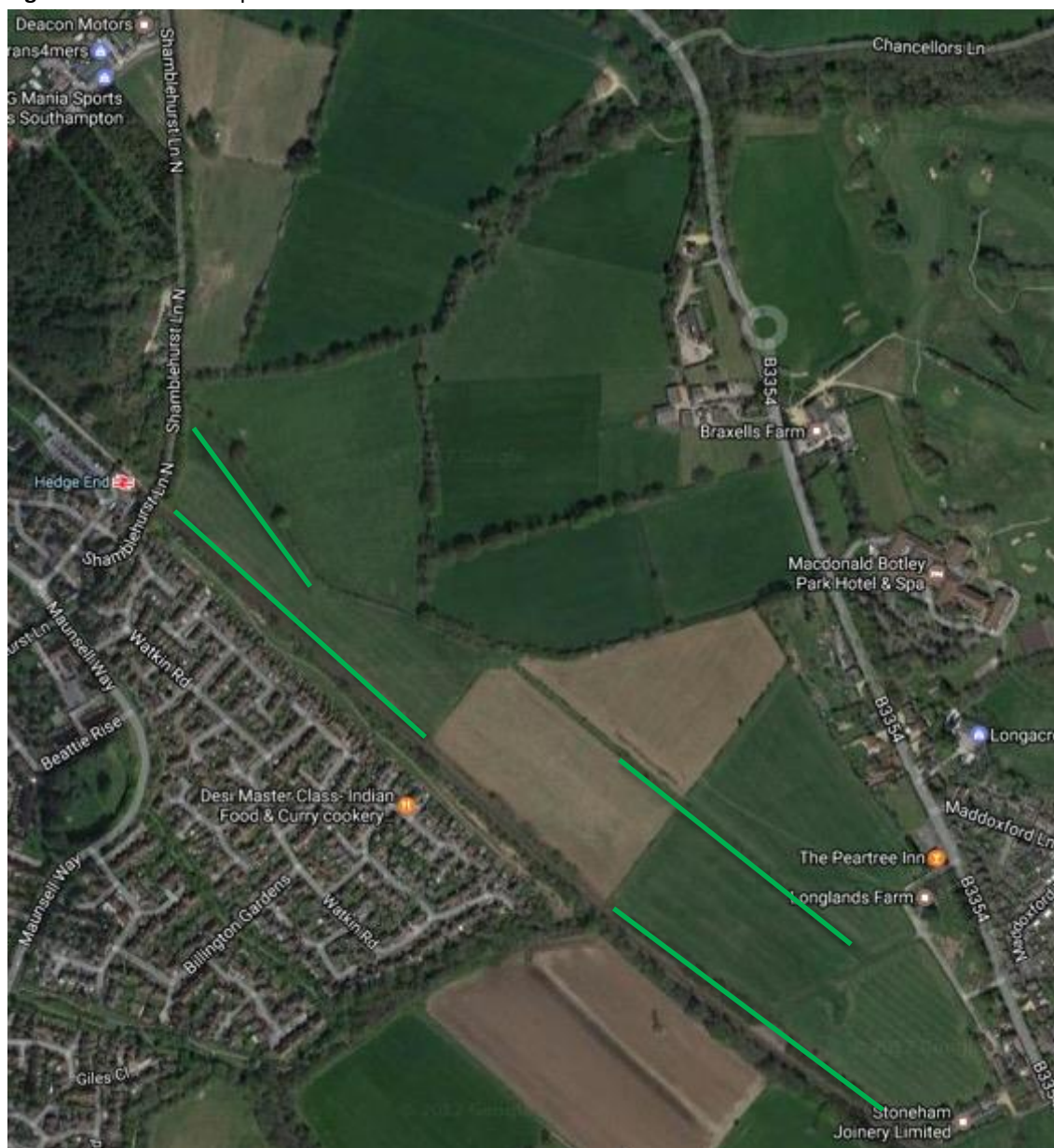
No features considered suitable to support roosting bats were identified on the Elder and three mature Hawthorns (**TN1**).

1.3.5 Reptiles

Areas of grassland, limited to the periphery of the site, were considered favourable reptile habitat. Slow Worms (*Anguis fragilis*), Lizards (*Zootoca vivipara*) and a juvenile Grass Snake (*Natrix natrix*) were all recorded on site however reptiles were restricted to certain areas. **Figure 2** illustrates the location of reptiles within Phase 1. **Table 2** below contains the data from the survey.

Table 2. Reptile Survey Results.

Date	Time	Weather	Reptiles
02/05/2017	13:00	14°C cloudy (90%) with sunny spells.	-
10/05/2017	12:30	15°C 50% cloud	1 FSW
12/05/2017	14:00	15°C Cloudy (100%) with sunny spells.	1 FSW 1 MSW
16/05/2017	11:00	17°C 100% cloud	1 FSW 1 MSW 1 JGS
22/05/2017	09:30	18°C 50% cloud	2 MSW 1 FSW
24/05/2017	13:45	22°C 100% cloud	1 MSW 1L
31/05/2017	10:00	18°C 100% cloud	2 MSW 1FSW

Figure 2. Location of reptiles on site.

1.3.6 Breeding Birds

Twelve species of breeding bird were confirmed breeding within the site. The majority of the breeding bird community is composed of common and widespread species such as Blackbird (*Turdus merula*), Robin (*Erithacus rubecula*), Blue Tit (*Parus caeruleus*) and Chaffinch (*Fringilla coelebs*). All other species recorded were considered to be non-breeding but using the site for feeding, roosting or commuting across the site.

1.3.7 Water Vole and Otter

Within 1km of the site there are confirmed records of both Water Vole and Otter however no evidence of Water Vole was identified during the surveys. A number of footprints, considered likely to belong to an Otter were identified in the western most extent of Ford Lake. A trail camera was deployed in April 2017 and a single recording of an Otter was confirmed on Phase 1 of the development (**Fig 3**), however a buffer is being maintained at this location.

Figure 3. Location of trail camera with 1 commuting Otter observed (red circle).



1.3.8 Dormouse Survey

Previous correspondence with the council's Ecologist highlighted concerns about Dormice in the area. Despite the habitat being considered to be high quality for the species, no Dormice or evidence of Dormice was recorded during the surveys.

Please note, during on-going construction works associated with Phase 2, a Dormouse hibernation nest was discovered. All future works will be completed under a Natural England EPSL. Please see section 2.7 for the Dormouse Mitigation Strategy.

1.3.9 Desk Based Search

There are no designated sites of nature conservation interest within the site. The site lies within 5.6km of designated sites associated with the Solent.

The Solent Maritime SAC and Solent and Southampton SPA, SSSI and Ramsar site lies approximately 2km south of the site. This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:

- A046a Dark-bellied brent goose (Non-breeding) (*Branta bernicla bernicla*)
- A052 Eurasian teal (Non-breeding) (*Anas crecca*)
- Ringed plover (Non-breeding) (*Charadrius hiaticula*)
- Black-tailed godwit (Non-breeding) (*Limosa limosa islandica*)
- Mediterranean gull (Breeding) (*Larus melanocephalus*)
- Sandwich tern (Breeding) (*Sterna sandvicensis*)
- Roseate tern (Breeding) (*Sterna dougallii*)
- Common tern (Breeding) (*Sterna hirundo*)

- Little tern (Breeding) (*Sterna albifrons*)

The area qualifies under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl.

The Solent and Southampton estuaries are also designated as a Ramsar site qualifying under criteria 1, 2, 5 and 6:

Criterion 1 - A wetland of international importance. The site is one of the few major sheltered channels between a substantial island and mainland in European waters, exhibiting an unusual strong double tidal flow and has long periods of slack water at high and low tide. It includes many wetland habitats characteristic of the biogeographic region: saline lagoons, saltmarshes, estuaries, intertidal flats, shallow coastal waters, grazing marshes, reedbeds, coastal woodland and rocky boulder reefs.

Criterion 2 – The site supports an important assemblage of rare plants and invertebrates. At least 33 British Red Data Book invertebrates and at least eight British Red Data Book plants are represented on site.

Criterion 5 – Assemblages of international importance – 51,343 waterfowl (5 year peak mean 1998/99-2002/2003).

Criterion 6 – Species/populations occurring at levels of international importance:

- Dark-bellied brent goose 3.0% of the GB population (5 year peak mean 1998/9-2002/3)
- Ringed plover 1.2% of population (5 year peak mean 1998/9-2002/3)
- Eurasian teal 1.3% of population (5 year peak mean 1998/9-2002/3)
- Black-tailed godwit 3.5% of population (5 year peak mean 1998/9-2002/3).

The Solent Maritime SAC lies 2km south of the application site. The following Annex 1 habitats and Annex II species are the primary reason for the selection of this site:

- Sandbanks which are slightly covered by sea water all the time
- Estuaries
- Mudflats and sandflats not covered by seawater at low tide; Intertidal mudflats and sandflats
- Coastal lagoons
- Annual vegetation of drift lines Perennial vegetation of stony banks; Coastal shingle vegetation outside the reach of waves
- Salicornia and other annuals colonising mud and sand; Glasswort and other annuals colonising mud and sand
- Spartina swards (*Spartinion maritima*); Cord-grass swards
- Atlantic salt meadows (*Glauco -Puccinellietalia maritima*)
- Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes"); Shifting dunes with marram

- *Vertigo moulinsiana*; Desmoulin's whorl snail

The River Itchen SAC, SSSI lies 3.5km north west of the application site. The following Annex 1 habitats and Annex II species are the primary reason for the selection of this site:

- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche – Batrachion* vegetation; Rivers with floating vegetation often dominated by water-crowfoot
- *Coenagrion mercuriale*; Southern damselfly
- *Austropotamobius pallipes*; White-clawed (or Atlantic stream) crayfish
- *Lampetra planeri*; Brook lamprey
- *Salmo salar*; Atlantic salmon
- *Cottus gobio*; Bullhead
- *Lutra lutra*; Otter

2.0 MITIGATION STRATEGY

2.1 Aims of the Mitigation Strategy

This mitigation strategy details the measures that will be implemented in order to ensure that the proposed development fully complies with legislation and planning policy. The two primary aims of the mitigation strategy are:

- 1) To prevent the killing or injury of protected species as a result of works
- 2) To ensure local conservation status of the species is maintained at a favourable level.

2.2 Reptile Mitigation

2.2.1 Guidance

This reptile mitigation strategy seeks to adhere to best practice wherever possible in order to ensure the best possible outcome for the conservation status of reptiles within the local area. Broad guidance is provided by '*Reptiles: guidelines for developers*' (English Nature, 2004) with greater technical guidance provided by the Highways Agency (2005). The level of effort required during capture operations is governed by the Herpetofauna Groups of Britain and Ireland (HGBI) guidelines (1998).

2.2.2 Receptor Site

Wherever possible, reptiles should be retained on site, or released immediately adjacent to the site. *In-situ* relocation schemes, where reptiles are retained in suitable areas of a development site or released into immediately adjacent habitat are preferable (English Nature, 2004). This will be the case for this development as a section of the site will be retained for the reptiles. The approximate location is demonstrated in **Figure 4** however this is more clearly illustrated in the landscape plans for the site.

Figure 4. Reptiles will be translocated into the buffer that runs parallel to the railway.

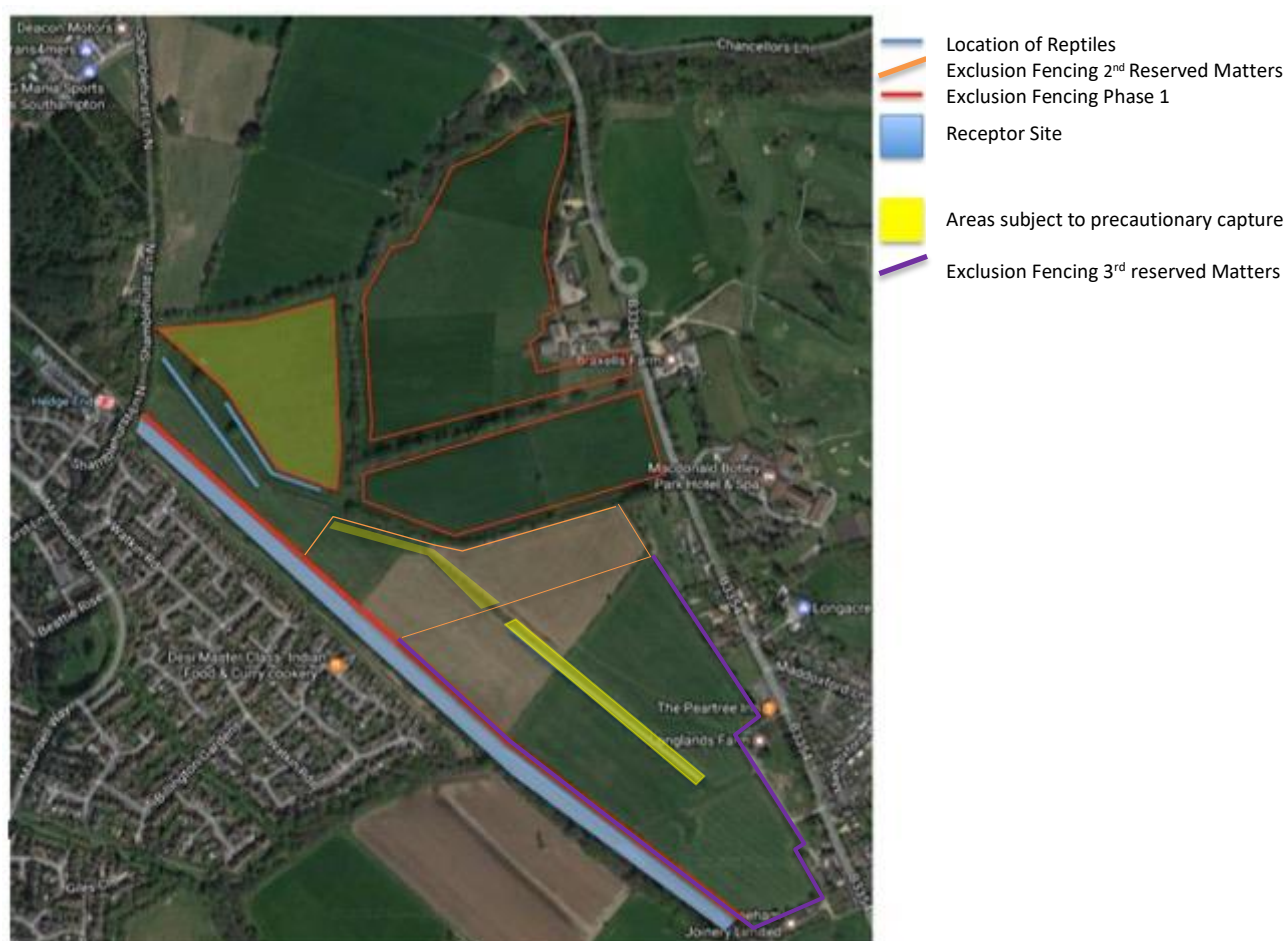


The habitat along the railway already provides high quality reptile habitat (i.e. tussocky grassland, with varied sward height) but it will be enhanced via the introduction of four artificial hibernacula and three log piles. This will provide shelter and hibernation opportunities as well as providing a significant habitat resource for invertebrates (a food resource for reptiles). The design of the hibernacula will follow best practice guidelines (HART, 2009), comprising a mixture of rubble and organic materials with a turf cover.

2.2.3 Reptile Exclusion Fencing

Reptile exclusion fencing will be first installed around the perimeter of the receptor area (**Figure 1**). This will allow the area to further establish in terms of sward structure. Exclusion fencing will be installed around the periphery of the site (**Figure 5**). This will provide a division between the retained buffers and the 'working' areas i.e. those areas where humans and machinery will disturb the ground. This means if there is a lapse in the management, and these areas become suitable for reptiles, they will not be able to make their way on to site. In addition, further fencing will be erected within the center of the site. This will separate the areas containing reptiles from those without reptiles. The fencing will remain in place until all works are completed. The construction team and site manager will be briefed to monitor the reptile fences daily and to report any breaches so that they can be repaired as soon as possible.

Figure 5. Location of Reptile Exclusion Fencing.



2.2.4 Site Set Up

As reptiles are limited in their distribution, artificial refugia will only be distributed throughout the areas containing reptiles (**Figure 3**). The refugia used will be a mixture of bitumen roofing felt and corrugated metal. The density will be increased to facilitate the capturing process and in an attempt to reduce the number of capture days required.

2.2.5 Capture

2.2.5.1 Timing

The optimum period for capture of reptiles is April to June and September, however it is possible to capture reptiles outside of this period providing weather conditions are suitable (i.e. between 10°C and 20°C with little or no wind or rain). By ensuring that all reptiles are translocated by the end of September, it will allow sufficient time for reptiles to find suitable hibernation sites within the receptor site.

2.2.5.2 Catching

Ecologists with experience in reptile capture will carry out the trapping of reptiles during the active reptile season on days where reptiles were likely to be found.

Reptiles will be captured by hand from beneath the artificial refugia and placed into a suitable container. All captured reptiles will be released into the receptor area on the same day they are captured.

2.2.5.3 Capture Effort

In line with the accepted 2014 report the reptile mats will be checked for a minimum of 20 visits. These visits will continue until there have been five consecutive visits clear of capture. The capture effort will not be deemed completed until five consecutive negative days are recorded.

2.2.6 Destructive Search

Once five negative capture visits have been achieved, and prior to development works getting under way, the areas shaded in blue in Figure 3 will be subject to a destructive search. An ecologist will be present when the top soil and vegetation is stripped. This will involve a digger stripping the vegetation and topsoil using a toothed bucket. The ecologist will catch any reptiles and/or small mammals during this time and move them out of harm's way.

2.2.7 Management

The buffer along the railway is made up of two components; newly created Wildflower Grassland to be created through sowing wildflower seed, and Tough/Tussocky Grassland which is already present and established on site. The reptiles will be translocated within the Tussocky Grassland as this is already established and suitable.

The resulting management of this area is detailed within Chapter 12 of the Landscape Strategy put together by ACD. It states "tussocky grassland requires minimal maintenance. To control scrub and Bramble development, tussocky areas are to be cut every 2-3 years between October and February. In the interest of wildlife this cutting is best done on a rotational basis

so that no more than a third of the area is cut in any one year leaving the remainder as an undisturbed refuge” (**Table 2** and **Figure 6** below).

It is considered this is in line with the Management specified within the Reptile Mitigation Strategy: “The long-term aims of the habitat management of the receptor site are to provide a continued diverse habitat in terms of both species and structure. Scrub habitat (particularly bramble) will be allowed to develop, but should not exceed 15% coverage of the site in order to create a structurally diverse habitat with ‘ecotones’ (i.e scrub/grassland interface) with suitable basking and foraging areas for reptiles. This will be achieved by an selective strimming of up to 50% of the grassland, avoiding any scrub (unless scrub cover exceeds 15%)”.

This will be managed by a private management company.

Table 1. Management of tussocky grassland (reptile receptor) over five years.

Year	Management
Year 1	Cut first third of tussocky grassland (October – February)
Year 2	Cut second third of tussocky grassland (October – February)
Year 3	Cut third third of tussocky grassland (October – February)
Year 4	Cut first third of tussocky grassland (October – February)
Year 5	Cut second third of tussocky grassland (October – February)

Figure 6. Example of split of tussocky grassland.



2.2.8 Monitoring

Once all Phases of development are complete a monitoring survey of the receptor site should take place. This will involve distributing refugia throughout the receptor site / railway buffer and undertaking a survey to record species present and population size. This should take place within the active season (April – September). Works will be undertaken by a suitably experienced and qualified ecologist. Monitoring surveys will be carried out in years 1, 3 and 5 with results submitted to the LPA and HBIC. If it is considered works are required to increase the suitability of the site, this information will be communicated to the management company.

2.2.9 Funding and Safeguard

Habitat monitoring and subsequent management at the receptor site must be undertaken as required to maintain its suitability to support reptiles. The management and on-going monitoring of the receptor site will be funded by Miller Homes and Gleeson Developments for a period of no less than five years following the completion of the development. The responsibility will eventually be passed onto the Residents Management Company.

2.3 Bats

The trees to be removed will be felled using soft felling techniques (i.e. works will start from the top of the tree and work down, felling the trunk in sections, remaining vigilant of any holes or crevices) in line with best practice guidelines.

2.4 Nesting Birds

Any removal of or disturbance to any vegetation on site will be undertaken between October and February inclusive (outside of bird-breeding season). If works to trees or vegetation are required within the nesting bird season (March – September) an ecologist shall check the site before any works take place (within 24 hours of any work). If an active nest is identified a 5meter buffer will be established within which no clearance and/or disturbance can take place until the ecologist has confirmed the chicks have fledged.

2.5 Badgers

During construction any pits or trenches, will be left with an access plank at night to provide a means of escape for Badgers. In the event that a Badger is found to have become trapped, an experienced ecologist will be contacted for advice.

A toolbox talk will be given to the construction team on site which will cover information on signs of badgers and proceedings if one is found on site during the works. The construction team and site manager will also be briefed to monitor the reptile fences daily and to report any breaches so that they can be repaired as soon as possible as Badgers frequently cause damage to fencing.

The Badger sett which previously appeared to be in use, was monitored with a trail camera in 2021 and found not to be in use at that time, must be monitored during the construction phase to ensure that it is still not being used. If signs of use are found, it must be checked by a suitably qualified ecologist, with suitable precautions taken against disturbance. If badgers have occupied the sett, a more rigid type of reptile fencing may be needed.

2.6 Water Vole and Otter

The following timescales will be enforced, as a precautionary approach, to ensure Water Vole and Otters will not be negatively indirectly impacted:

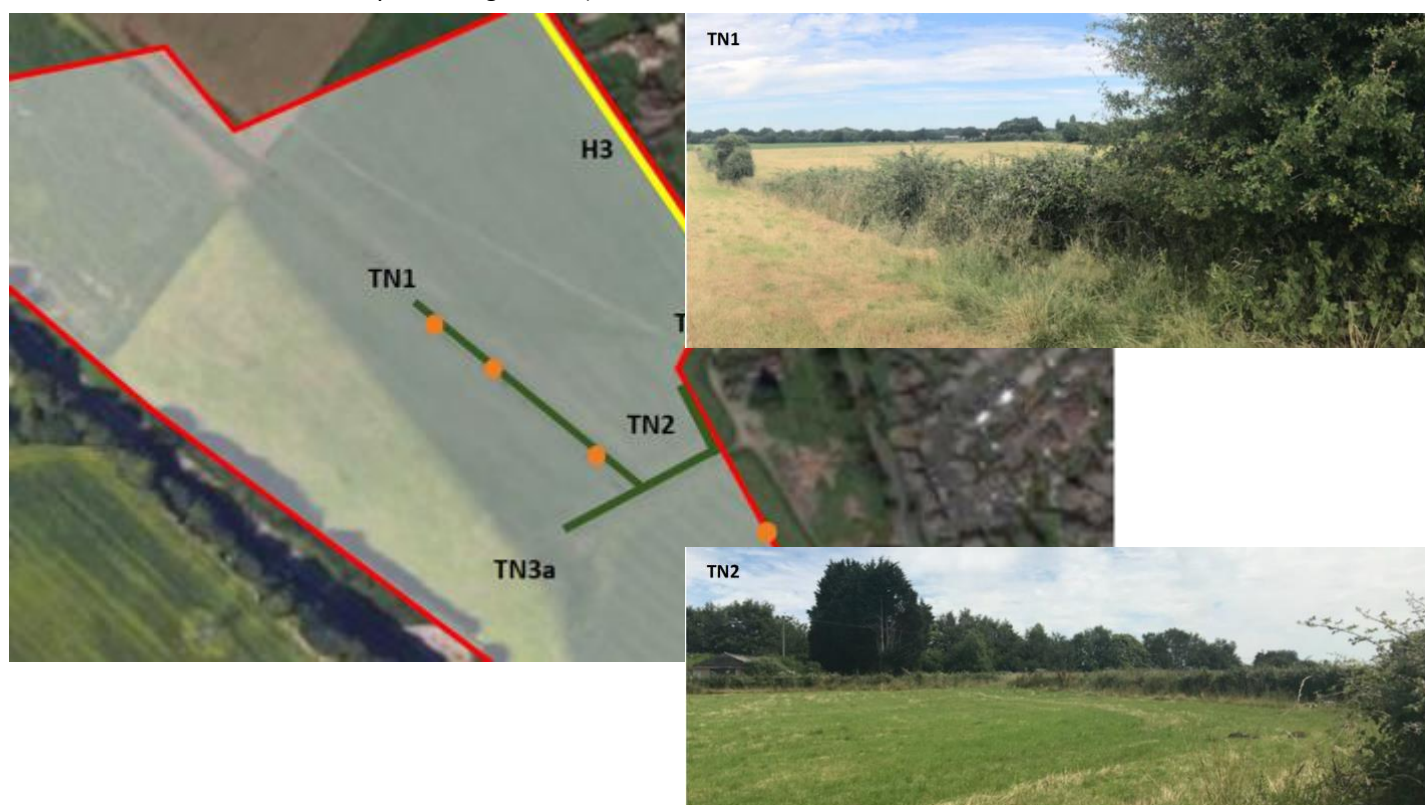
- In April, ground vegetation must be trimmed to approximately 10-15cm, after which a hand-search will be undertaken by an ecologist. Vegetation must then be maintained at a short sward height to prevent colonisation of protected species prior to topsoil stripping and channel infilling.

If Water Vole or Otters or evidence of any of the species is discovered all works will stop and NE may be consulted.

2.7 Dormouse Mitigation Strategy

As presence of Dormice has been identified on-site, a **Natural England EPS Mitigation Licence** has been applied for all works directly impacting suitable Dormouse habitat (See **Fig 7**). This licence will detail one of the following two methodologies:

Figure 7. Suitable Dormouse habitat to be removed under RM3 works (scrub indicated by the green line, standard trees by the orange circles)..



2.7.1 Single Stage Clearance

This methodology is suitable for any small-scale habitat loss where no more than 50m² of habitat will be cleared in one day.

- Fingertip search of all vegetation to be cleared, by the licenced ecologist, immediately prior to clearance commencing (on the same day and every day clearance occurs).

- Prior to works commencing, the named ecologist or accredited agent will provide all site operatives with a toolbox talk to inform them of the potential presence of dormice, their legal status, means of identification, habitat requirements, the methodologies required to avoid impacts on the species and what they should do if a dormouse is found. A written record that this has been undertaken, signed by attendees, will be kept and made available to Natural England should it be required.
- Cut material will be removed from the areas and chipped and removed from site or area of working operations
- Hand tools will be utilised to sensitively cut vegetation down to ground level in **a single stage**. This will be undertaken in a directional fashion to passively encourage Dormice to move away from the works area towards retained, suitable hedgerow habitat to the south of the proposed access. Where areas of developing scrub are being cut, this will be done directionally towards the retained habitats. All arisings will be chipped on-site immediately.
- Dormouse nest boxes will be placed into the areas of retained hedgerow/woodland as close to the works as possible to act as receptors in the unlikely event of any Dormice being found.
- Works will take place outside of the core breeding periods (May – September inclusive) and avoid the hibernation period (November – March) and as such, the most appropriate timings would be April and October.

2.7.2 Two-stage Clearance

Where more than 50m² or >10m length gaps in hedgerows or treelines will be created, a two-stage clearance methodology will be employed. While this is required for any large-scale works, it is recommended all removals are undertaken using this method where possible.

Stage 1 – An initial clearance will be carried out during winter months (December to March) while Dormice are in hibernation. Vegetation will be cleared to 30cm above ground level using mechanical hand tools and tracking of heavy machinery over the area subject to clearance will be avoided. The licensed ecologist will provide all contractors with a Toolbox Talk prior to works to explain how works are to be carried out in a sensitive manner. All clearance will be carried out under the supervision of the licensed ecologist, who will inspect all vegetation, leaf litter and potential refugia for the presence of Dormice.

Stage 2 – Following the completion of stage one, vegetation will be cleared to ground level using hand tools from early May. At this time, any Dormice present should have emerged from hibernation and moved into more suitable retained areas of habitat. Again, the licensed ecologist will provide a Toolbox Talk for sensitive clearance and will supervise all clearance works, inspecting any roots, crevices or potential sheltering sites for Dormice prior to removal. Vegetation should be retained at ground level for the duration of the proposed construction works.

Any Dormice discovered during the works will be either be left undisturbed in place (if deemed safe by the ecologist) or will be relocated to a similar location to where they were found in retained habitat

(e.g. if the animal is found within leaf litter then the animal will be placed in leaf litter). Dormouse nest boxes will be placed into the areas of retained hedgerow/woodland as close to the works as possible to act as receptors in the unlikely event of any Dormice being found.

2.7.3 Compensatory Planting

The below planting has been recommended within the Phase 1 stage of the development as part of the Dormouse method statement. This planting schedule has been added to the updated landscape plan (MILL21068 20M-Sheet3). This planting will remain in place in perpetuity, and be managed in accordance to the licenced method statement.

'The permanent loss of approximately 0.15ha of habitat will be compensated for through the planting of new hedgerow onsite which will run from the northern boundaries of site by reinforcing and planting fruiting species beneficial for dormice.'

Species that will be included within the re-enforced hedgerow will include (reflective of those found on-site and in the wider area):

- Hazel (*Corylus avellana*)
- Hawthorn (*Crataegus monogyna*)
- Blackthorn (*Prunus spinosa*)
- Wayfaring Tree (*Viburnum lantana*)
- Wild Privet (*Ligustrum vulgare*), and climbers such as
- Dog Rose (*Rosa canina*) and Honeysuckle (*Lonicera periclymenum*).
- Field Maple (*Acer campastre*)
- Guelder Rose (*Viburnum opulus*)
- Oak (*Quercus robur*)'

2.7.3 Monitoring

Please note, since completion of the first draft of this report, the Dormouse EPS mitigation licence has been granted including the following monitoring recommendations:

- A total of 16 Dormouse nest boxes have been installed in the western section of the site (**Plan 2**). These fall within Phase 1 of the development.
- Dormouse boxes will be checked once per year between the years of 2023-2032 by a licenced ecologist (or accredited agent) working under mitigation licence 2022-62167-EPS-MIT. Monitoring should cover the suitable active period between May and October, inclusive.
- Any nests found in poor condition (dilapidated/rotting) will be removed during each monitoring check of the boxes. Any nest boxes that have become dilapidated or damaged will also be replaced.

2.7.4 Interim Management

Once the developer purchased the land, the site was appropriately managed after Hazel Dormice were found to ensure no disturbance to the protected species occurred. This

involved avoiding any clearance of hedgerows and scrub where possible and precautionary measures were recommended if works were necessary.

2.8 Operational Phase

2.8.1 Bats

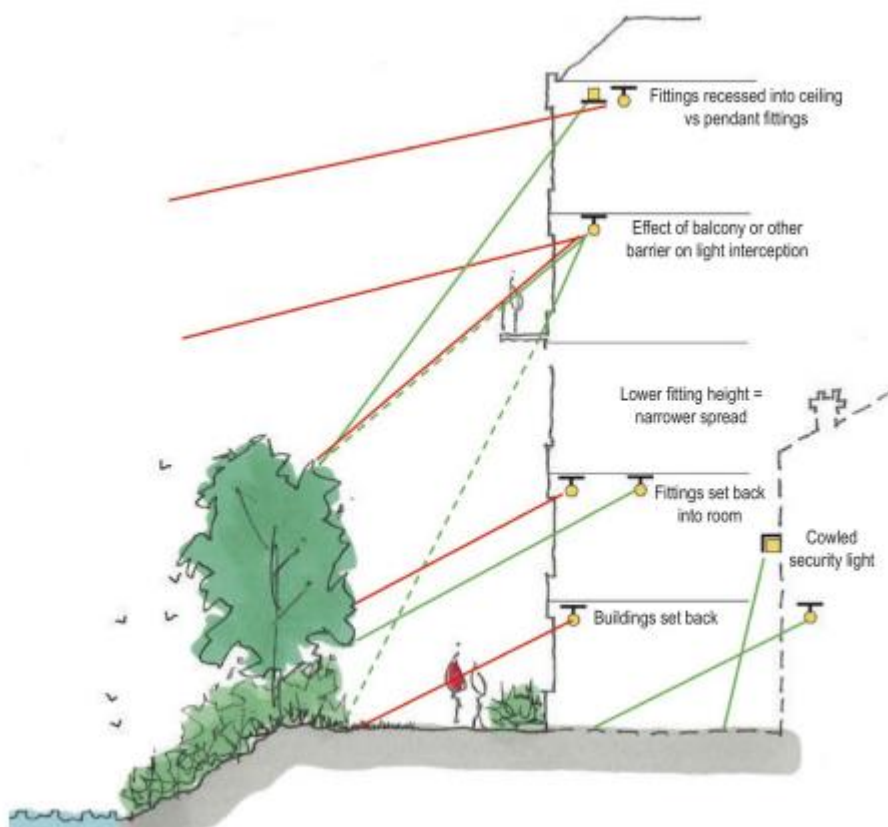
The following guidance has been taken from the document (*Guidance Note 08/23 Bats and Artificial Lighting at night*) (**Fig 8**) produced via a collaboration between the Institute of Lighting Professionals (ILP) and the Bat Conservation Trust (BCT), which outlines the latest recommendations to minimise the impacts of increased artificial lighting on bats. The key recommendations within this document have been outlined below and will be implemented as far as is practicable.

- *'Light sources, lamps, LEDs and their fittings come in a myriad of different specifications which a lighting professional can help to select. However, the following should be considered when choosing luminaires and their potential impact on Key Habitats and features:*
- *All luminaires will lack UV elements when manufactured. Metal halide, compact fluorescent sources should not be used*
- *LED luminaires will be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability*
- *A warm white light source (2700Kelvin or lower) will be adopted to reduce blue light component*
- *Light sources will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012)*
- *Internal luminaires can be recessed (as opposed to using a pendant fitting - See **Figure 6**) where installed in proximity to windows to reduce glare and light spill*
- *Waymarking inground markers (low output with cowls or similar to minimise upward light spill) to delineate path edges (see Case Study 1)*
- *Column heights will be carefully considered to minimise light spill and glare visibility. This should be balanced with the potential for increased numbers of columns and upward light reflectance as with bollards*
- *Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered - See ILP GN01*
- *Luminaires will always be mounted horizontally, with no light output above 90° and/or no upward tilt*
- *Where appropriate, external security lighting will be set on motion sensors and set to as short a possible a timer as the risk assessment will allow. For most general residential purposes, a 1 or 2 minute timer is likely to be appropriate*
- *Use of a Central Management System (CMS) with additional web-enabled devices to light on demand Use of motion sensors for local authority street lighting may not be feasible unless the authority has the potential for smart metering through a CMS*
- *The use of bollard or low-level downward-directional luminaires is strongly discouraged. This is due to a considerable range of issues, such as unacceptable glare, poor illumination efficiency, unacceptable upward light output, increased upward*

light scatter from surfaces and poor facial recognition which makes them unsuitable for most sites. Therefore, they should only be considered in specific cases where the lighting professional and project manager are able to resolve these issues. See Case Study 6

- *Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed. However, due to the lensing and fine cut-off control of the beam inherent in modern LED luminaires, the effect of cowls and baffles is often far less than anticipated and so should not be relied upon solely'*

Figure 8. Internal lighting mitigation options (ILP 2023)



A five-meter buffer is also being retained along all hedges to minimise impacts towards commuting and foraging bats.

2.8.2 Hedgehogs

Although not recorded on site access for Hedgehogs potentially utilising the site will be achieved either through cutting a 5" hole into the bottom of the fence or leaving out a small section of gravel board (ensuring 5" clearance). This will create a Hedgehog highway (**Plan MILL1001**) through the rear gardens.

To ensure homeowners are aware of the gaps and the importance of maintaining access to these, a leaflet will be produced and included in the new homeowner information pack (this can also provide information on other ecological enhancements across the site such as bat and bird boxes). PTES also have signage which can be attached to the fence above the access holes (**Figure 9**).

2.8.3 Dormice

The aforementioned homeowner leaflet will also include information about Dormice, Dormouse boxes, a request not to disturb them, and contact information of the developer named on the Dormouse mitigation licence (Bellway Homes) should any issues with the boxes be encountered (i.e. damage, interference, missing/open lids or missing boxes). This information will also include information on the compensatory planting and the hedgerow connecting structures in place to advise on their relevance and importance for Dormice, and to discourage interference.

Figure 9. Hedgehog access signage.



2.9 Habitats

2.9.1 Protection of Trees and Retained Hedgerows

Works will be in line with Section 4.0 of the Arboricultural Impact Assessment & Method Statement (MILL22017). Including:

Tree protective fencing - British Standard recommends a standard fencing design for tree protection. This is a weld mesh panel design, mounted upon a well-braced scaffold framework. This is adequate for this site and all the retained trees can be suitably protected by its erection before any works start on site. Once erected, all barriers will be regarded as sacrosanct, and will not be removed or altered without prior recommendation by the project arboriculturist and approval of the local planning authority.

Supervision – Supervision is required should any unplanned access and/or work be required in the construction exclusion zone. Supervision will require the arboriculturist to be present throughout the task, to ensure all the arboricultural objectives are met. If the task is to take a long period of time, provided the arboriculturist is satisfied, and after an initial 'tool-box talk', the supervision may be reduced to telephone contact between the site foreman/contractor and arboriculturist.

3.0 TIMINGS OF ECOLOGICAL MITIGATION AND PROTECTION.

Table 2 below provides timings associated with species-specific mitigation.

Table 2. Ecological Mitigation and Protection Timings.

Activity	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Erect Tree Protection Fencing												
Reptile Capture, Translocation and Destructive Search												
Soft felling of trees												
Removal of additional vegetation (not Hedgerow)												
Reduction of Hedgerow to 30cm												
Remove Hedgerow stumps												
Maintenance and monitoring of Dormouse nest boxes												

4.0 ECOLOGICAL ENHANCEMENTS

The following features will be introduced as a result of the second reserved matters section of the development. Please see **Plan 1** for locations.

4.1 Planting

The length of scrub to be removed will be replaced like for like in terms of length along the north eastern boundary (**Fig 10**) (please see landscape plan for more information).

Figure 10. Proposed location of new scrub planting in RM3 (light green).



New scrub planting should include Hazel, Oak, Elder and Dogwood with interspersed Honeysuckle. Bramble should be allowed to develop within this area to increase nesting habitat for Dormice. In addition, between the area of scrub planting, a linear feature of longer, tussocky grassland should be retained to create an 'ecotone' between the scrub planting and adjacent areas of open space to provide a buffer between Dormouse/nesting bird habitat and shorter grassland areas. EM10F will be sown within existing vegetation because this mixture can cope with competition from taller tussocky vegetation. Species include but are not limited to Yarrow, Agrimony, Garlic Mustard, Lesser Burdock, Common Knapweed, Greater Knapweed, Rough Chervil, Wild Teasel and Woolly Thistle.

4.1.1 Responsibility

The newly created scrub habitats along the north eastern boundary (please see the landscape plan for further details) will be managed for a minimum period of 12 months by the developer post completion of development, covering the first part of the establishment period. Ownership / management responsibilities for the POS will then be transferred to a management company.

4.1.2 Management of Newly Planted Areas

General Notes

- Control of grass and weed species that may compete with planted trees (either spraying or mulching)
- Replacement of dead stock
- Largely non-intervention of trimming or reduction in the first 5 years of new planting to encourage establishment and fruiting. Any spiral guards and canes will be removed in years 3-5 dependent on

establishment levels.

- Any plants that are removed, die or become seriously damaged or defective within five years of planting shall be replaced like for like in the next planting season.

Attracting Nocturnal Flying Insects

Planting a mixture of flowering plants, trees (including fruit trees) and shrubs encourages a diversity of insects to sustain bats. It is beneficial that the flowers vary in colour (although pale flowers that are more easily seen in poor light and so attract insects at dusk), fragrance, shape, amount of nectar and time of flowering. (It is important to provide native flowering plants, shrubs and trees throughout spring, summer and autumn). Flowers with 'landing platforms' for insects (i.e. flowers from the Daisy and Carrot families) increase opportunities for insects and in turn foraging bats.

Trees

Native trees are important to foraging bats. Key species are Willow, Birch and Oak as they can support high numbers of insects. In addition, once matured they can eventually provide roosting opportunities (see **Table 3** below).

Table 3. Tree species for foraging and roosting potential (Gunnel et al. 2012).

Native Tree species	Roosting potential	Supporting foraging
Oak	Very good	Very good
Willow	Minimal	Very good
Beech	Very good	Good
Ash	Good	Good
Elm	Good	Good
Birch	Minimal	Very good

Grassland

Native grassland/wildflower, tree and shrub planting has been proposed as part of the site-wide landscaping of open space. All newly planted areas will conform to species mixes and management recommendations outlined in the submitted Landscape Management and Maintenance Plan (ref MIL22017 Rev.A).

4.2 Bat Roost Features

In the interest of promoting ecology and to keep in line with National and Local policy it was recommended that bat boxes be integrated within 25% of the new dwellings. The Bat Box C design available from Ibstock has been designed specifically for crevice dwelling bat species such as the Common and Soprano Pipistrelles recorded on site.

In general, bats seek warm spaces to help them with rearing young. For this reason, bat boxes should be located where they will receive at least partial sunlight (facing south, south-west or south-east). However, by installing bat boxes in more than one orientation will allow for a choice of roosting conditions. To increase the chances of bats roosting in a bat box, the bat boxes will be placed adjacent to vegetation features such as hedges and tree lines. Bats will

be more likely to discover the artificial roost if it is placed close to an existing flight path.

Position the bat boxes a minimum of 2 m above ground, although 5-7 m is better to prevent disturbance from people and/or predators. The features should be positioned near the eaves or gable apex of buildings to minimise disturbance.

4.3 Birds

To act as a biodiversity enhancement, 50% of the new dwellings will incorporate two Swift bricks (equivalent to over a 1:1 ratio).

The 'CJ Wildlife swift maxi nesting box' with entrance via a CJ Wildlife 'Cambridge swift fullface brick' is recommended as it provides ideal nesting opportunities for Swifts and the fullface brick is available in different colours and can also be painted if necessary, to blend in with the surrounding brickwork. If this model is not suitable for the building specifications, an alternative swift box with internal floor space exceeding 400cm squared must be used. This feature should be installed at 6-7m above the ground, ensuring that there is unobstructed access for birds entering and leaving. The box should be installed under the eaves in shaded areas out of direct sunlight and away from windows.

Sparrow Terrace features will also be introduced within 10% of the new builds. These can be fixed onto the surface of a suitable wall or incorporated into the brickwork. Although designed specifically for Sparrows it may also occasionally attract Tits, Redstarts and Spotted Flycatchers.

4.4 Log Piles

Six log piles will be created along the eastern and western boundaries within the newly landscaped buffer (locations shown in Plan 1). These will form ideal places of shelter for important species such as Hedgehogs, and a significant habitat resource for invertebrates, which in turn will benefit local foraging bird and bat species.

Three of the log piles should be of a horizontal style (**Fig 11**) and one of a vertical style. The horizontal log pile should be sunk approximately 60cm into the ground to secure them in place (concrete will not be used as this prevents invertebrates from utilising the logs underground). The vertical pile will utilise logs of varying sizes and avoid using dead or decayed wood as this limits the food availability for invertebrates. The horizontal piles will involve informally stacking logs and securing with metal wire. Native wood should be used for both piles. Native wood should be used for both piles. Native **hardwood rather than softwood** should be used **for both types of piles.**

Figure 11. Horizontal log pile.



5.0 MAINTENANCE SCHEDULE FOR ALL GREEN INFRASTRUCTURE AND WILDLIFE FEATURES

Table 4 below provides a brief overview of the schedule for maintaining the green infrastructure on site (please see Soft Landscape Management and Maintenance Plan by ACD Environmental for full details).

Table 4. Maintenance overview.

Green Infrastructure	Action	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Existing Trees	Annual check for signs of deterioration or distress												
	Ensure bat, bird and Dormouse boxes are in place (replace if required)												
	Remedial Action												
Amenity Turf	Grass to be maintained at low level, cut at intervals of not more than 10-14 days depending on growing conditions.												
	Spike annually												
Wildflower Grassland	Year following sowing grass to be cut to 4-7cm												
	Subsequent years												
Newly Planted Shrub and Trees	To be checked for mammal, human or other external damage. Grilles, grids, guards and other protective furniture shall be inspected and removed as soon as it is no longer needed.												
Native Hedgerow	To be trimmed on a three-year rotation to maintain a constant supply of fruit, flowers and seeds for wildlife												
Ornamental Hedgerow	Pruning												
Tussocky Grassland	Control scrub and bramble development, areas are to be cut every 2-3 years.												
Swales	Removal of vegetation												

	Annual Assessment of pond														
	De-silt swale (every 10 years)														

If trees, shrub or hedgerow habitats need to be clipped during bird nesting season or the Dormouse breeding season, this will need to be preceded by a check by an ecologist, and supervised by a licenced Ecologist. If an active bird or Dormouse nest is found, a 5 metre or 15 metre (respectively) buffer needs to be kept free from disturbance. Due to the potential for protected species onsite, these checks must occur immediately going forward, not just once construction has been completed.

Whilst on site the management company will check the Hedgehog highway is open and accessible.

6.0 CONCLUSION

This report details methods and information to provide confidence that the appropriate levels of mitigation are being implemented, in line with Condition 2. It also provides further information on ecological enhancements. Therefore, in combination with the recommendations within the landscape management and maintenance plan, the scheme is considered likely to result in a net gain for biodiversity.

7.0 REFERENCES

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Plan 1-Enhancements Plan (RM3)

Plan 1- Ecological enhancements plan for third reserved matters (June 2022).



Plan 2- Dormouse Mitigation Figure

Plan 3 - EPS Licence Method Statement