



Landscape & Ecological Management Plan

West Hoathly Brickworks, Sharpthorne

Ecosupport Ltd
K4 Keppel,
Daedalus Park,
Lee-on-the-Solent
PO13 9FX

info@ecosupport.co.uk

VAT: 228 4314 18



Report	Landscape and Ecological Management Plan (Condition 16) & Biodiversity Enhancement Layout (Condition 17) (combined)
Site Name	West Hoathly Brickworks, Sharpthorne
Author(s)	Darrelle Moffat BES (Hons) PGCert ACIEEM
Checked By	Adam Jessop MSc MCIEEM (Principal Ecologist)
Client	Ashill Reg Ltd.
Date of Issue	3 rd March, 2025
Status	<i>For submission</i>

EXECUTIVE SUMMARY

Ecosupport Ltd were commissioned to produce a Landscape and Ecological Management Plan (LEMP) and a Biodiversity Enhancement Layout (BEL) for the development of the site known as 'West Hoathly Brickworks, Sharpthorne'. This was requested to satisfy the discharge of conditions 16 and 17 of the planning approval (DM/23/0827) ***(NB due to the degree of overlap, both elements have been combined into a single report)***.

Previous ecological survey work was carried out by Ecology Solutions and the application was informed by an Ecological Assessment (Ecology Solutions, 2023). The baseline information within this report has been based on this previous information/report.

This report incorporates and expands on the measures detailed within the above-named report as well as the SANG Management Plan already produced and, in particular, covers the prescription management of the habitats within the site post-development for a period of at least 30 years. Extensive biodiversity enhancements are also described and a Biodiversity Enhancement Layout has been provided.

Table of Contents

EXECUTIVE SUMMARY.....	2
1.0 INTRODUCTION	6
1.1 Aim	6
1.2 Objectives.....	7
1.3 Description	8
1.4 Proposals	9
2.0 BASELINE DATA.....	10
2.1 Habitats	10
2.2 Bats	13
2.2.1 Roosting Bats – Previous Survey Work (2022)	13
2.2.2 Roosting Bats – Updated Survey Work (2024).....	16
2.2.3 Foraging and Commuting Bats – Previous Survey Work (2022)	17
2.2.4 Foraging and Commuting Bats – Updated Walkover (2024).....	17
2.3 Badgers.....	17
2.3.1 Badgers – Previous Walkover (2022)	17
2.3.2 Badgers – Updated Walkover (2024)	17
2.4 Reptiles.....	18
2.4.1 Reptiles – Previous Survey Work (2022)	18
2.4.2 Reptiles – Updated Walkover (2024).....	18
2.5 Great Crested Newts (GCN)	18
2.5.1 GCN – Previous Survey Work (2021)	18
2.5.2 GCN – Previous Natural England Licence Application	19
2.5.3 GCN – Previous Survey Work (2022)	19
2.5.4 GCN – Evaluation	19
2.6 Hazel Dormice	20
2.7 Birds	20
2.8 Hedgehogs.....	20
2.9 Designated Sites	20
3.0 MITIGATION, COMPENSATION AND ENHANCEMENTS	23
3.1 Bats	23
3.1.1 Roosting Bats in Buildings.....	23
3.1.2 Habitat Retainment & Dark Corridor	25
3.1.3 Sensitive Lighting	25
3.1.4 Bat Boxes	27
3.1.5 Bat Bricks	27
3.2 Badgers.....	28
3.2.1 Updated Walkover	28
3.2.2 Avoidance of Harm.....	28
3.2.3 Long-term Management	28
3.3 Reptiles.....	29
3.3.1 Mitigation Strategy during Construction.....	29
3.3.1.1 Receptor Area	29

3.3.1.2 Fencing.....	29
3.3.1.3 Translocation	29
3.3.1.4 Destructive Search.....	29
3.3.2 Reptile Enhancement Features	30
3.3.3 Mitigation during long-term management	31
3.4 Great Crested Newts (GCN)	31
3.4.1 Mitigation Strategy During Construction	31
3.4.2 Enhancements.....	32
3.4.3 Precautionary measures during management works	32
3.5 Hazel Dormice	32
3.5.1 Precautionary working methods.....	32
3.5.2 Precautionary Measures During Management Works.....	33
3.6 Notable and Birds of Conservation Concern	33
3.6.1 Mitigation During Vegetation Clearance.....	33
3.6.2 Enhancements.....	34
3.6.3 Long-term Management Precautions	35
3.7 Hedgehogs.....	35
3.7.1 Avoidance of Harm.....	35
3.7.2 Enhancements.....	36
3.8 Invertebrates	36
3.8.1 Enhancements.....	36
3.9 Protection of Biodiversity Protection Zones, Designated Sites & Retained Habitats	37
4.0 HABITAT CREATION, ENHANCEMENT & MANAGEMENT.....	38
4.1 Introduction.....	38
4.2 Within the Residential Development Area	38
4.2.1 Urban Trees.....	38
4.2.2 Wildflower Grassland	39
4.2.3 Species-rich Amenity Grassland	40
4.2.4 SUDs Features	41
4.2.5.2 Management	42
4.3 Within the SANG.....	43
4.3.1 Woodland	43
4.3.2 Species-rich Grassland.....	46
4.3.4 Ponds	47
4.4 Species Enhancement Features	48
4.5 Responsibility	49
4.6 Compliance Check.....	49
4.7 Management Timeline.....	49
5.0 IMPLEMENTATION PLAN	50
6.0 CONCLUSION	61
7.0 REFERENCES.....	62
APPENDICES	64
Appendix 1. Biodiversity Enhancement Layout	64

Appendix 2. Reptile / GCN Fencing and Receptor Plan 65
Appendix 3. Biodiversity Protection Zone Plan..... 66

1.0 INTRODUCTION

1.1 Aim

The aim of this report is to bring together and expand on all relevant sections of the previous ecological reports associated with the site called 'West Hoathly Brickworks, Sharpthorne' and use them to inform a site-wide LEMP and BEL. This will describe the ecological constraints on-site, any necessary mitigation and compensation measures, extensive biodiversity enhancement measures and a prescription of the management of habitats for a period of at least 30 years within the site. This will ensure the creation and management of habitats is suitable and achieves a net gain for biodiversity with all features of ecological importance protected.

This report was requested to satisfy the discharge of conditions 16 and 17 of the planning approval (DM/23/0827) which state the following:

Condition 16

"Prior to the commencement of any development above ground/slab level, a Biodiversity Enhancement Layout, providing the finalised details and locations of the enhancement measures contained within the Ecological Assessment (Ecology Solutions, March 2023) shall be submitted to and approved in writing by the local planning authority.

The enhancement measures shall be implemented in accordance with the approved details prior to occupation and all features shall be retained in that manner thereafter.

Reason: To enhance protected and Priority species & habitats and allow the LPA to discharge its duties under the NPPF 2021 and s40 of the NERC Act 2006 (Priority habitats & species)."

Condition 17

"A Landscape and Ecological Management Plan (LEMP) shall be submitted to, and be approved in writing by, the local planning authority prior to commencement of the development. The content of the LEMP shall include the following:

- a) Description and evaluation of features to be managed.*
- b) Ecological trends and constraints on site that might influence management.*
- c) Aims and objectives of management.*
- d) Appropriate management options for achieving aims and objectives.*
- e) Prescriptions for management actions.*
- f) Preparation of a work schedule (including an annual work plan capable of being rolled forward over a five-year period).*
- h) Details of the body or organisation responsible for implementation of the plan.*
- i) Ongoing monitoring and remedial measures.*

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.

Reason: To allow the LPA to discharge its duties under the Conservation of Habitats and Species Regulations 2017 (as amended), the Wildlife & Countryside Act 1981 (as amended) and s40 of the NERC Act 2006 (Priority habitats & species) and to accord with Policy DP38 of the District Plan.

The management outlined within this report includes the following:

- Creation and management of trees, wildflower grassland, species-rich amenity grassland, SUDs features, woodland and hedgerows
- Enhancement and management of woodland, species-rich grassland, and ponds
- Implementation of sensitive lighting and dark corridors along key bat foraging and commuting habitat
- Erection of integrated and tree-mounted bat and bird bricks / boxes
- Requirement for a European Protected Species Licence (EPSL) for roosting bats and demolition of buildings B1 and B4a under a method statement
- Reptile relocation strategy
- Requirement for a GCN EPSL and in-situ translocation
- Precautionary clearance measures for Hazel Dormice
- Installation of 12no. reptile enhancement features
- Creation of 25no. fallen deadwood and 25no. standing deadwood features
- Provision of Hedgehog fence gaps

The baseline assessments relevant to this report were undertaken by Ecology Solutions in 2022 with an updated walkover conducted by Ecosupport Ltd. in November 2024. This report has incorporated the recommendations from the Ecology Assessment (Ecology Solutions, 2023) and the SANG Management Plan (Ecology Solutions, 2023) which were submitted as part of the planning permission. This also follows the previous restoration proposals / works that were carried out as part of the previous clay quarry (under Condition 20 of Planning Ref. WSCC/081/14/HO) and therefore aims to be in line with all previous agreements.

1.2 Objectives

The following objectives are considered for this report in order to protect and enhance the ecology on site:

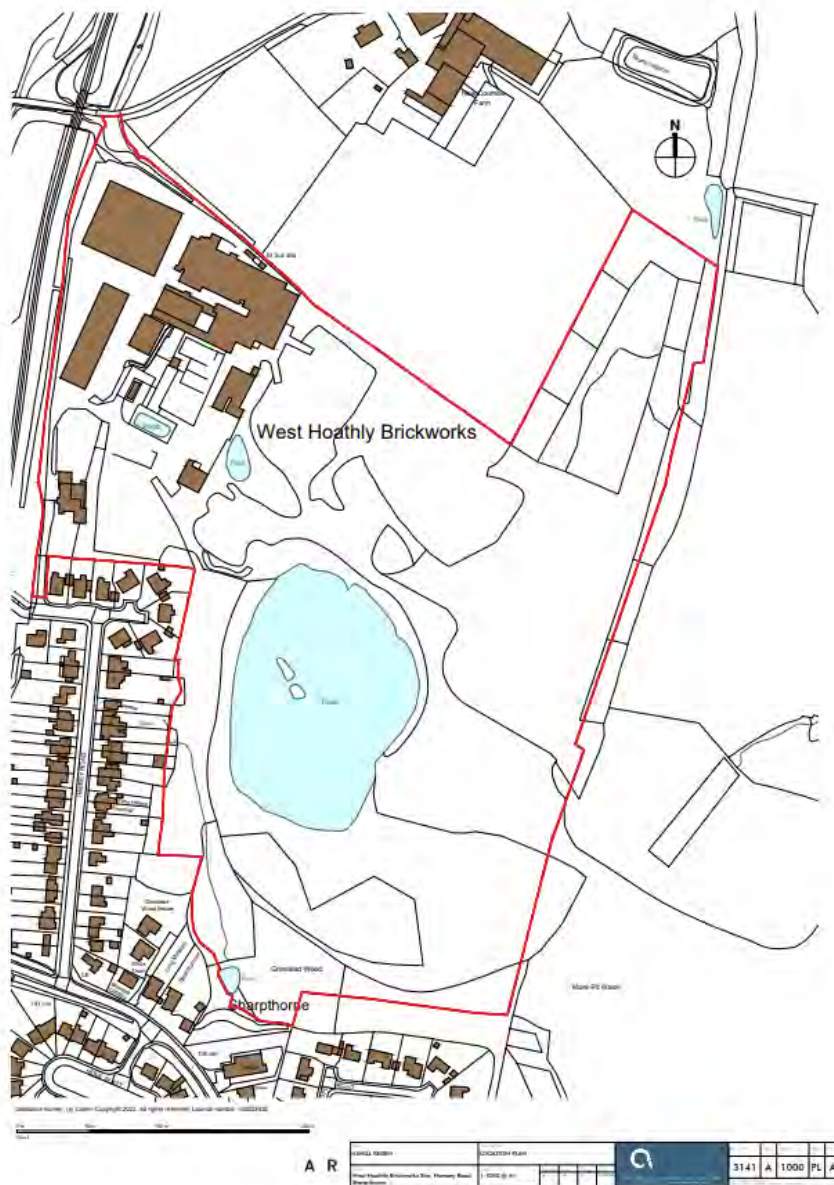
1. To preserve existing habitat and create and manage new habitats to provide the greatest benefit to bats, Badgers, reptiles, amphibians, Hazel Dormice, Hedgehogs and birds.
2. To ensure the created and enhanced habitats within the site fulfil their ecological function and remain in an appropriate condition to provide a benefit to biodiversity.
3. To protect retained trees and woodland and provide suitable planting compensation.
4. To create and maintain new habitat features for bats, reptiles, amphibians, Hazel Dormice, Hedgehogs and birds.

5. To detail management responsibilities and practices, including ongoing monitoring and remedial measures.
6. To ensure the development results in a net gain for biodiversity.

1.3 Description

The site comprises the buildings, hardstanding and surrounding woodland / tree lines which made up the former West Hoathly brickworks off Hamsey Road, Sharpthorne, East Grinstead (centred on OS grid reference TQ 37362 32885) (**Fig 1**). The site is bound by the railway line to the west, residential dwellings to the south, and pastures to the north and east. The immediate surrounding environ is semi-rural comprising a mix of woodlands, grasslands, and the residential areas of Sharpthorne and West Hoathly.

Figure 1. Redline boundary of the site (Omega Architects, 2023) (Drawing Number: 1000).



1.4 Proposals

The proposals entail the demolition of existing structures and redevelopment of the site to provide 108 residential dwellings (class c3) and associated works, including the provision of an onsite SANG, access, landscaping, parking and associated works.

Figure 2. Proposed layout for the residential portion of the site (Murdoch Wickham, 2023).



2.0 BASELINE DATA

2.1 Habitats

Site walkovers were conducted by Ecology Solutions in July and November 2022 during which the habitats present on site were identified in accordance with Habitat Definitions Version 1.1 (UK Hab Ltd., 2020). Adam Jessop MSc MCIEEM (Principal Ecologist with Ecosupport Ltd) then undertook an updated walkover on the 7th November 2024 with categorisation of habitats on site updated in line with the Habitat Definitions Version 2.0 (UKHab Ltd., 2023).

A full description of the habitats present on site can be found within the Ecological Assessment for the site (Ecology Solutions, 2023) however the updated UKHab categorisations have been listed below with any notable changes described.

The following habitats were identified across the site:

- Buildings (u1b5) (**Fig 3**) (main development parcel only)
- Developed Land; Sealed Surface (u1b) (**Fig 3**) (main development parcel only)
- Artificial Unvegetated; Unsealed Surface (u1c) (**Fig 4**) (main development parcel and SANG) (NB the extent of this habitat within the proposed SANG area has significantly reduced as a result of the habitat creation works approved under WSCC/081/14/HO).
- Sparsely Vegetated Urban Land (u1f) with ruderal / ephemeral (81) (**Fig 4**) (main development parcel and SANG) (NB the extent of this habitat within the proposed SANG area has significantly reduced as a result of the habitat creation works approved under WSCC/081/14/HO).
- Other Neutral Grassland (g3c) with scattered scrub (10), scattered rushes (14), tall forbs (16), and scattered trees (32) (main development parcel and SANG) (***NB the extent of this grassland has significantly increased within the proposed SANG area as a result of habitat creation works approved under WSCC/081/14/HO.***)
- Broad Leaved Woodland (w1g) with line of trees (33) (**Fig 5**) (main development parcel and SANG)
- Mixed Scrub (h3h) (main development parcel and SANG)
- Bramble Scrub (h3d) (main development parcel and SANG)
- Other Standing Water (r1g) with pond (non-priority) (41), freshwater – artificial (49), and ditch (50) (**Fig 6**) (main development parcel and SANG) (***NB water was noted to have accumulated to form a temporary pond feature (Fig 7) within the previous area of ruderal / ephemeral habitat in the east of the main development parcel.***)
- Other Coniferous Woodland (w2c) with line of trees (33) (main development parcel only)
- Native Hedgerow (h2a) (main development parcel and SANG)
- Built-Up Areas and Gardens (u1) with introduced shrub (847) (main development parcel only)

Figure 3. Example of the developed land and buildings on site (taken November 2024).



Figure 4. Artificial unvegetated land as well as sparsely vegetated urban land (taken November 2024).



Figure 5. View towards the broadleaved woodland with the seeding that's taken place in the SANG area visible on the ground (taken November 2024).



Figure 6. View of one of the non-priority habitat ponds within the main development parcel (taken November 2024).



Figure 7. View of one of the presumed temporary ponds within the east of the main development parcel on site (**NB this area was previously mapped as ruderal / ephemeral**) (taken November 2024).



2.2 Bats

2.2.1 Roosting Bats – Previous Survey Work (2022)

Ecology Solutions (2023) conducted a Preliminary Roost Assessment of all of the buildings on site during **July 2022**. No evidence of roosting bats was identified internally and the majority of the buildings were considered to be unsuitable for roosting bats apart from buildings B1 and B4a which were assessed as being of moderate potential for roosting bats. B3 was also considered to offer very low potential for roosting bats.

Ecology Solutions (2023) subsequently undertook emergence / re-entry surveys of B3, B1 and B4a with a summary of their results included within **Table 1** below and details of roost locations indicated in **Fig 8**.

Table 1. Results and evaluation of the emergence / re-entry surveys undertaken by Ecology Solutions in summer 2022 (2023).

Building	Date	Survey Type	Results	Evaluation
B1	3 rd August	Dusk emergence	1 x Soprano Pipistrelle emergence	Soprano Pipistrelle day roost present
	24 th August	Dawn re-entry	2 x Soprano Pipistrelle re-entries	
B4a	4 th August	Dawn re-entry	1 x Common Pipistrelle re-entry	Common Pipistrelle day roost present
	23 rd August	Dusk emergence	No emergences	
	1 st October	Dawn re-entry	1 x Common Pipistrelle re-entry	
B3	23 rd August	Dusk emergence	No emergences	No roosts present

Figure 8. Location of the bat roosts within Buildings B1 and B4a on site as identified by Ecology Solutions in summer 2022 (2023). Yellow = Soprano Pipistrelle day roost. Blue = Common Pipistrelle day roost.



Ecology Solutions (2023) also undertook two dawn backtracking surveys on the 4th August and 24th August 2022 respectively as a precautionary measure to provide further confidence as to whether any of the other industrial buildings on site supported roosting bats. No emergences were noted.

2.2.2 Roosting Bats – Updated Survey Work (2024)

Ecosupport Ltd. conducted an updated Preliminary Roost Assessment of the buildings on site on the 7th November 2024. All of the buildings were noted to be in much the same condition as they were previously with no change to their roosting potential and no new evidence of roosting bats identified (Figs 9 & 10).

Figure 9. View of B1 on site (taken November 2024).



Figure 10. View of B4a on site (taken November 2024).



2.2.3 Foraging and Commuting Bats – Previous Survey Work (2022)

As described above, Ecology Solutions (2023) conducted two dawn backtracking surveys on the 4th and 24th August 2022 with each of these carried out in combination with an activity transect of the main development parcel. Overall, activity levels were considered to be low with widespread bat species found to be dominant and 5 species recorded in total including Common Pipistrelle, Soprano Pipistrelle, Myotis sp., Noctule, and Serotine.

No activity surveys were conducted within the proposed SANG.

2.2.4 Foraging and Commuting Bats – Updated Walkover (2024)

During the updated walkover conducted in 2024 by Ecosupport Ltd., the habitats within the main development parcel were noted to be largely unchanged since the previous survey work took place. Therefore, it is considered that the existing survey work provides an accurate reflection of the bat activity on site and that further survey work would be unlikely to produce contrasting results.

2.3 Badgers

2.3.1 Badgers – Previous Walkover (2022)

Ecology Solutions (2023) conducted site walkovers during July and November 2022 with no evidence of Badger activity recorded across the main development parcel or the proposed SANG.

2.3.2 Badgers – Updated Walkover (2024)

During the updated walkover conducted in 2024 by Ecosupport Ltd., no evidence of Badger activity was recorded across the main development parcel or the proposed SANG. However, the woodlands, scrub, and grassland were considered to offer potential foraging and commuting habitat for Badgers.

2.4 Reptiles

2.4.1 Reptiles – Previous Survey Work (2022)

Ecology Solutions (2023) undertook site walkovers in July and November 2022 and found that the main development parcel supported small areas of suitable reptile habitat in the form of rough grassland. Subsequently, Ecology Solutions (2023) undertook a suite of seven presence / likely absence surveys within the main development parcel during September 2022 which identified “small numbers of Slow Worm”, “a single Grass Snake and single Common Lizard”.

As the proposed SANG area is not due to be adversely impacted and did not form part of the application site at the time of the ecological surveys, this area was not subject to a reptile survey. However, given that the proposed SANG is connected to the main development parcel, Ecology Solutions (2023) concluded that reptiles can be assumed present within areas of suitable habitat.

2.4.2 Reptiles – Updated Walkover (2024)

During the updated walkover conducted in 2024 by Ecosupport Ltd., the habitats within the main development parcel were noted to be largely unchanged since the previous survey work took place. Therefore, it is considered that the existing survey work provides an accurate reflection of the reptile population on site and that further survey work would be unlikely to produce contrasting results.

2.5 Great Crested Newts (GCN)

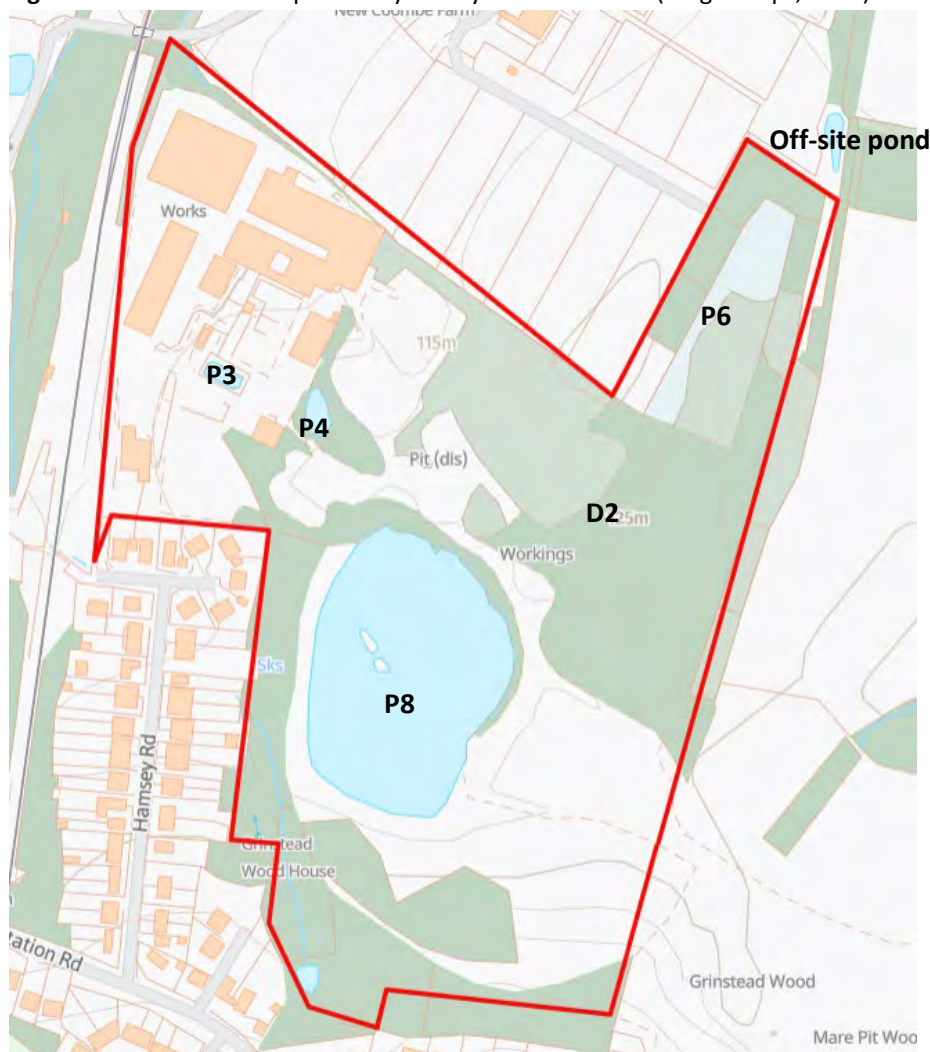
2.5.1 GCN – Previous Survey Work (2021)

In support of an application for nature restoration at the brickworks (WSCC/081/14/HO), various GCN surveys have taken place and a summary of this information is provided below.

NB to avoid confusion, pond numbers refer to those assigned within the Baseline Habitats plan produced by Ecology Solutions (2023) and illustrated in Fig 11 below.

Eco-Tech conducted eDNA surveys of waterbodies P6, P8, P4, P3 and an off-site pond during April 2021 of which only P6 returned a positive result for GCN presence. Eco-Tech also conducted an egg search within D2 which determined that GCN were likely to be present (FPCR, 2022).

FPCR (2022) subsequently conducted an HSI assessment of the above noted ponds with the off-site pond and P6 deemed to be of moderate and excellent suitability for GCN respectively. Based on the results of the HSI assessments and the findings from Eco-Tech, population surveys were conducted on the off-site pond, P6 and D2 between May and June 2021 with survey techniques including bottle trapping, sweep netting, torching, and egg searching. GCN were found to be likely absent from the off-site pond. However, a low population of GCN were found to be present within P6 and D2 with a peak count of 10 GCN across both waterbodies.

Figure 11. Location of the previously surveyed waterbodies (Magic Maps, 2025).

2.5.2 GCN – Previous Natural England Licence Application

To enable the nature restoration works (for the SANG) approved under WSCC/081/14/HO, a GCN licence was applied for and granted during 2022. Under this licence, a receptor area was established within the north of the proposed SANG area and bound by exclusion fencing to prevent GCN from re-entering the brickworks site. Trapping was undertaken within the main development parcel and proposed SANG area between July and August 2022 with a total of 19 GCN relocated to the receptor.

2.5.3 GCN – Previous Survey Work (2022)

Ecology Solutions did not undertake targeted GCN surveys however, during the 2022 reptile surveys, a single GCN was identified under a reptile refugia along the eastern boundary of the main development parcel.

2.5.4 GCN – Evaluation

During the updated walkover conducted in 2024 by Ecosupport Ltd., the habitats within the main development parcel were noted to be largely unchanged since the previous survey work took place (although were more unmanaged). Of particular relevance to GCN, the extent of suitable habitat was

much the same aside from the presence of a new temporary pond feature in the east of the main development parcel (**Fig 7**).

However, given that a single GCN was identified during the 2022 reptile survey and considering that the exclusion fencing did not continue along the northern boundary of the main development parcel, it is considered that a small number of GCN may still be present on site.

2.6 Hazel Dormice

During both of the walkovers conducted by Ecology Solutions (2023) in 2022 and the updated walkover conducted by Ecosupport Ltd. in 2024, much of the site was found to be unsuitable for Dormice (comprising largely of hardstanding, unsealed surfaces, and ruderal habitat) with suitable habitat restricted only to the woodlands. The tree lines and scrub on site were noted to be sparse and poorly structured and were therefore only of very limited value for Hazel Dormice.

Ecology Solutions (2023) concluded that Dormouse surveys would not be necessary and, instead, precautionary working measures would be put in place during works to any suitable Dormouse habitat. Given the lack of local records and limited potential for Dormice to be present on site while considering that the development will result in minimal impacts to suitable Dormouse habitat, it is considered that this approach is appropriate and proportionate for the scale of impact (with mitigation detailed further in **Section 5.7** below).

2.7 Birds

During both of the walkovers conducted by Ecology Solutions (2023) in 2022 and the updated walkover conducted by Ecosupport Ltd. in 2024, much of the site was found to be unsuitable for nesting birds (comprising largely of hardstanding, unsealed surfaces, and ruderal habitat) with suitable habitat restricted largely to the woodlands, hedgerows, tree lines, and scrub.

Ecology Solutions (2023) concluded that breeding bird surveys would not be necessary and, instead, standard precautionary working measures would be put in place during works to any suitable nesting bird habitat. Given that the vast majority of suitable nesting bird habitat on site is set to be retained and considering that surveys would be unlikely to identify any new areas of importance to breeding birds, it is considered that this approach is appropriate and proportionate for the scale of impact (with mitigation detailed further in **Section 5.8** below).

2.8 Hedgehogs

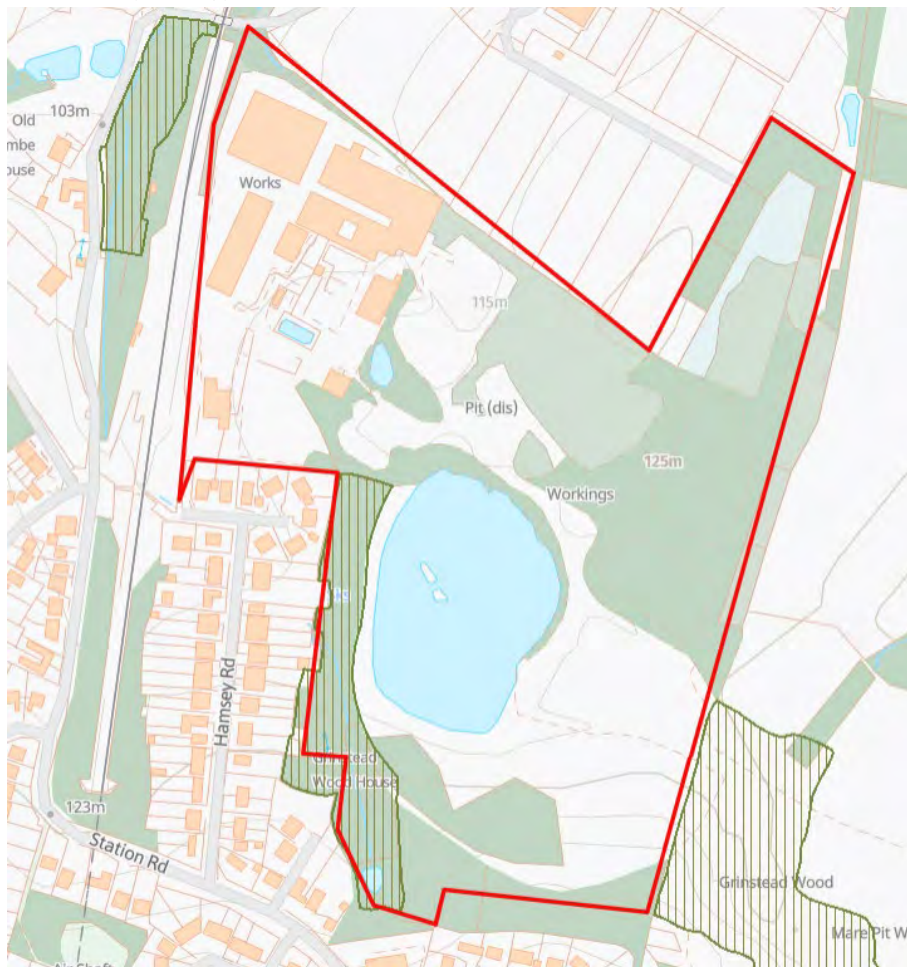
Given the presence of woodland within the site boundary, it is possible that Hedgehogs may use the site for foraging and commuting.

2.9 Designated Sites

NB details of the all of the designated sites lying within the vicinity of the site are provided within the Ecological Assessment (Ecology Solutions, 2023). Only those sites which are relevant to on-site mitigation requirements and may be impacted during the construction phase of the development or during habitat management are detailed herein.

As identified by Ecology Solutions (2023) and illustrated in **Fig 12** below, one parcel of Ancient Semi-Natural Woodland (ASNW) lies within the site boundary (within the proposed SANG area) while two further parcels lie within close proximity to the eastern and western boundaries of the site (although the western parcel lies across the other side of the railway track).

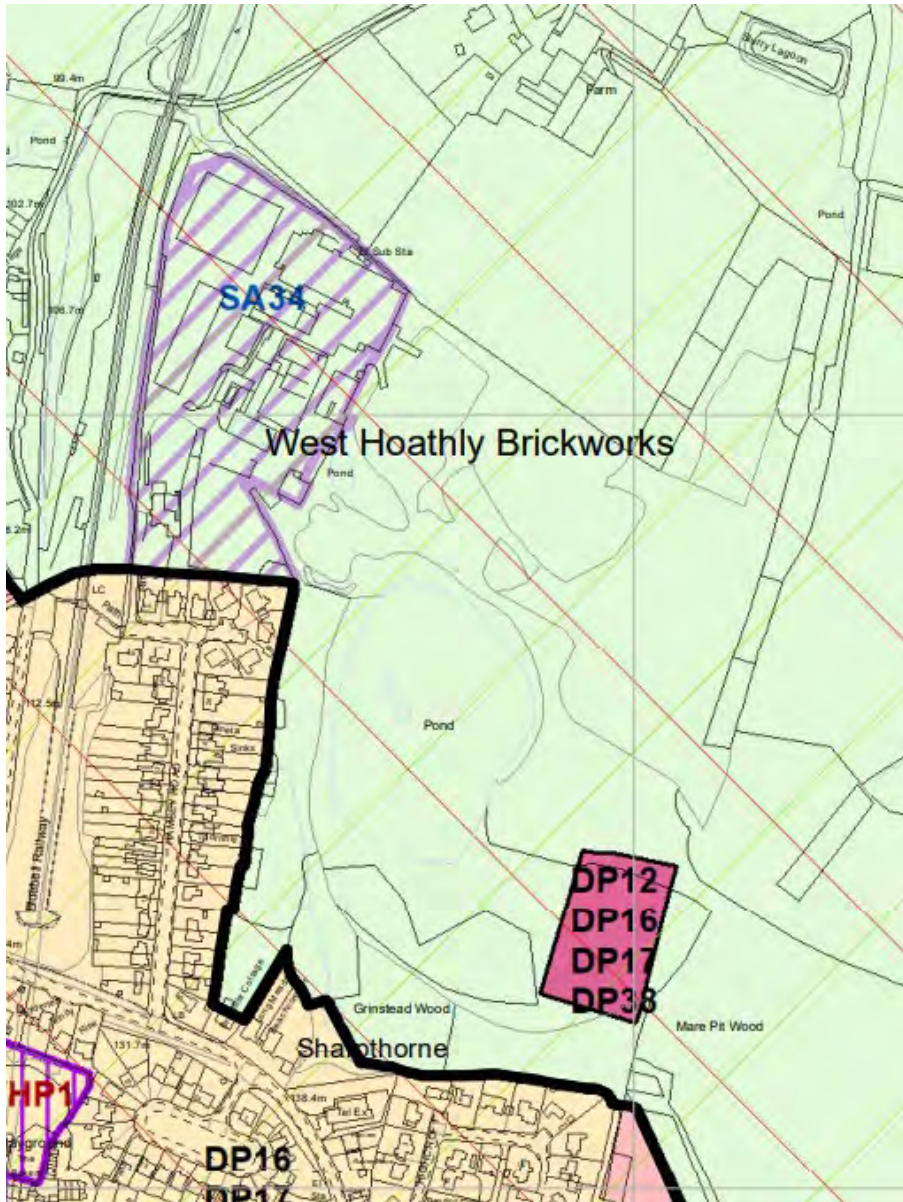
Figure 12. Location of the Ancient Semi-Natural Woodland parcels identified within / close to the site as identified by Ecology Solutions (2023).



Furthermore, the West Hoathly SSSI is located in the south-eastern corner of the SANG as identified within the local plan map in **Fig 13** below.

As well, the Ashdown Forest SPA/SAC/SSSI complex is present 1.9km to the east of the application site. All residential sites within 7km of the Ashdown Forest Catchment are required to provide mitigation. The on-site SANG will be created and managed to meet requirements for SANG sites in this catchment.

Figure 13. Screenshot from Mid Sussex District Council local plan map illustrating the location of West Hoathly SSSI (pink) within the West Hoathly Brickworks site (Mid Sussex District Council, 2022).



3.0 MITIGATION, COMPENSATION AND ENHANCEMENTS

The chapter addresses the relevant mitigation, compensation and enhancement required to provide appropriate protection to species found within the site. Mitigation refers to measures that can be undertaken to avoid or reduce ecological impacts. Compensation refers to measures taken in order to offset potential significant impacts and finally enhancements result in a net gain for ecology.

Measures relating to habitat creation and management are addressed in **Section 4.0**. With the extensive habitat creation and enhancement and long-term secured management of the SANG, the SANG habitats will more than compensate all minimal lost habitats within the development area and will significantly enhance the site for all species. Therefore it is not considered any bespoke compensation is required.

3.1 Bats

3.1.1 Roosting Bats in Buildings

Buildings B1 and B4a support Pipistrelle day roosts and a European Protected Species Licence (EPSL) will be required prior to works taking place and works to the roosts will need to be carried out sensitively under the supervision of an ecologist.

3.1.1.1 EPS Licence

All works that affect the bat roosts within buildings B1 and B4a must take place under a European Protected Species Licence obtained from Natural England. The destruction of the roosts and capture of bats (if required) will need to be carried out under the supervision of a licensed Ecologist. All works would be detailed within the EPSL Method Statement required as part of the licence application.

3.1.1.2 Updated Emergence Surveys

For the purposes of informing the EPS licence, a single updated emergence survey will be conducted for both B1 and B4a. This will include the use of NVAs (Night Vision Aid) to cover the entirety of each building.

Nevertheless, given that no bats or fresh droppings were identified within either building during the updated inspection in 2024, it is considered unlikely that the status of the roosts will have changed. Therefore, the below sections detail the appropriate mitigation strategy for the Common Pipistrelle and Soprano Pipistrelle day roosts identified.

3.1.1.3 Timing

Given that the roosts present are day roosts, no specific timing restrictions are required under the Bat Mitigation Guidelines (Reason, P.F. and Wray S., 2023). However, as bats are particularly vulnerable when they are in a torpid state, works will take place in suitable weather conditions (i.e. when overnight temperatures do not drop below 8 degrees immediately prior to or after works to the roost take place) as defined by best practice guidance (Mitchell-Jones et al. 2004).

3.1.1.4 Toolbox Talk and Supervision

Prior to any works getting underway the licensed bat worker will give a Toolbox talk which will detail best practice methods of sensitive stripping/removal of roofing tiles/materials (including the roof lining), as well as the sensitive dismantling of any other features considered suitable for roosting bats.

Personnel will be educated on signs of bats and that, in the unlikely event a bat is found whilst the licensed ecologist is not on site, that **all works should stop immediately** until the licensee returns to site.

The licensed bat worker will then assist contractors with the removal of construction materials surrounding the roost and any other areas which are considered to be high risk for roosting bats.

3.1.1.5 Capture (if required)

If during the sensitive removal of construction materials bats are discovered, the supervising ecologist will place the individuals into a holding bag (a soft cloth bag with closure-strings and with seams on the outside (Mitchell-Jones and McLeish, 2004)) to ensure the bat keeps calm and will not take flight during daylight hours. They will then immediately transport the bat to the mitigating bat box where the bat will be released and left undisturbed. During this time, the licensed bat worker will be wearing appropriate bat handling gloves to ensure the bat does not come to any harm. The licensed bat worker will have ample experience in handling a variety of bats and is confident in doing so.

3.1.1.6 Mitigation Bat Boxes

Prior to any works getting underway 2 No. Vivara Pro Large Multi-Chamber bat boxes (**Fig 14**) will be erected onto suitable retained trees on site. This box is designed as a summer roosting space for various species of bats, including crevice-dwelling species such as Common and Soprano Pipistrelles. The bat box maintains a stable temperature inside and is painted black to absorb warmth. The box should be erected 3-6m high and in an open, sunny position (preferably facing a southern direction).

Once the works have been completed these boxes will be left in situ in perpetuity to compensate for the loss of 1 No. Common Pipistrelle day roost and 1 No. Soprano Pipistrelle day roost.

Figure 14. The Large Multi Chamber Bat Box to be erected on site (NHBS, 2023).



3.1.2 Habitat Retainment & Dark Corridor

Ecology Solutions (2023) identified that potential impacts from the proposals are limited to lighting impacts as no significant losses to areas of habitat of value to foraging and commuting bats is proposed for removal and extensive habitat creation/management is proposed in the SANG.

A key requirement of the lighting scheme was to design a dark corridor within the 15m buffer surrounding the ancient woodland, with adverse light spill limited to 0.4 lux or less. Further general sensitive lighting requirements within the rest of site are detailed below.

3.1.3 Sensitive Lighting

3.1.3.1 Lighting - Site Construction

In order to avoid any disturbance to bats (and other potential nocturnal wildlife), construction works will be limited to daylight hours and will not be undertaken 30 minutes prior to dusk through to dawn. All lighting will be sensitive to the use of the site by nocturnal wildlife and will comply with Guidance Note 08/23 Bats and Artificial Lighting at night (ILP / BCT, 2023).

3.1.3.2 Lighting - Site Operation

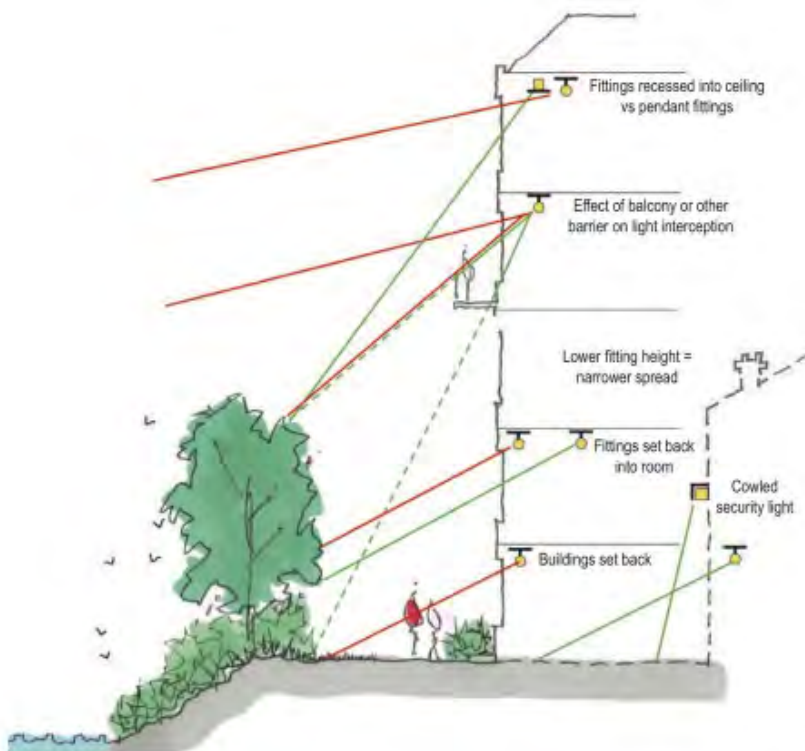
It is recommended that any lighting implemented on site complies with the following the newly published *Guidance Note 08/23 Bats and Artificial Lighting at night* (ILP / BCT, 2023) produced via a collaboration between the Institute of Lighting Professionals (ILP) and the Bat Conservation Trust (BCT), 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 **Fig 20**) 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 15. Internal lighting mitigation options (ILP, 2023).



3.1.4 Bat Boxes

As stipulated by Ecology Solutions (2023), it is proposed for 20 bat boxes of varying design to be provided on suitable trees within the site, predominantly within the proposed SANG and adjacent to ancient woodland. Locations of these boxes are shown on the appended **Biodiversity Enhancement Layout**) with the following box specifications* indicated below:

- 5 No. Vivara Pro Harlech WoodStone bat box (**Fig 16**)
- 5 No. Vivara Pro Miramare Large WoodStone bat box (**Fig 16**)
- 10 No. Vivara Pro Large Multi Chamber WoodStone bat box (**Fig 16**)

Figure 16. Vivara Pro Harlech WoodStone bat box (left), Miramare Large WoodStone bat box (centre) and Large Multi Chamber Woodstone bat box (right) to be erected on mature trees on site (NHBS, 2024).



The woodcrete bat boxes will be erected by or under the supervision of an ecologist to ensure they are placed in the most appropriate / effective locations.

****NB Ecology Solutions (2023) recommended Schwegler bat boxes but due to occasional issues in obtaining these, alternative boxes have been specified that are more readily available***

3.1.5 Bat Bricks

Half of the new dwellings will have a single Ibstock (**Fig 17**) (or similar) bat brick integrated into the dwellings (54 No. in total). These features are entirely self-contained and available in a variety of different colours to match different construction materials. Ideally these boxes should be located away from windows and positioned in order to benefit from some degree of sunlight exposure (see the appended **Biodiversity Enhancement Layout** for approximate locations).

Figure 17. Ibstock bat brick 'B' which will be integrated into half of the new dwellings on site (NHBS, 2023).



3.2 Badgers

3.2.1 Updated Walkover

Although no evidence of Badgers was recorded on site, the site does have potential for foraging and commuting Badgers. Therefore, a walkover of the site is recommended to be undertaken by a suitably qualified ecologist in search of recent Badger activity immediately prior to works commencing (within 4 weeks of ground works starting). In the case that evidence of recent Badger activity is identified, further survey works may be required to assess the status of any potential Badger setts on site.

3.2.2 Avoidance of Harm

The following avoidance measures will be carried out during construction to allow connectivity within the site for mammals and prevent any harm to mammals that may be present:

- 10-15cm gaps will be maintained at least every 200m in external fencing to allow mammals to move within the site.
- Any excavations or trenches will be covered nightly and/or a rough wooden plank will be placed inside at a 45 degree angle to allow animals to climb out.
- Pipework with a diameter >15cm will be covered at the end of each day to prevent animals such as hedgehogs from entering.
- All electrical equipment or installations will be secured or fenced to prevent wildlife entering and being electrocuted.
- A 10mph speed limit will be imposed on site to prevent collision with wildlife.
- If an injured animal is found, the ECoW must be immediately consulted and if required the RSPCA Helpline (0300 123 4999) to rescue the animal.

3.2.3 Long-term Management

Following completion of construction works, no further mitigation requirements are recommended as it is expected that habitat management works are unlikely to adversely impact on Badgers and will

provide suitable opportunities for Badgers to forage and disperse. If any potential setts are identified within habitat to be managed that may be subject to impacts, advice from an ecologist will be sought.

3.3 Reptiles

3.3.1 Mitigation Strategy during Construction

Reptiles were identified within the site and a reptile translocation will take place from the main development parcel / construction area into the proposed SANG. This will involve installation of exclusion fencing.

3.3.1.1 Receptor Area

The proposed SANG area (including the GCN receptor area) will serve as the receptor area for any reptiles captured from the main development parcel. Extensive areas of meadow grassland already exist across the SANG as a result of the nature restoration works conducted in accordance with WSCC/081/14/HO. Marshy grassland is also present within the GCN receptor area which would be particularly suitable for Grass Snakes. Finally, as part of the proposed SANG management plan, hibernacula will be created within the SANG (detailed below) which will further enhance the receptor for reptiles.

3.3.1.2 Fencing

HDPE exclusion fencing will be installed around the boundaries of the main development parcel / construction area. Locations of fencing can be seen in **Appendix 2**. This will be installed prior to translocation works and will remain in situ until construction is complete.

3.3.1.3 Translocation

Reptile refugia (e.g. roofing felts and tins) will be placed at high density around all areas to be trapped out. Capture of reptiles will take place in suitable weather conditions (i.e. temperatures are 10-20°C with no rain). Capture of reptiles can be carried out between April and September and must be completed prior to construction. All reptiles captured will be moved into the proposed SANG area which serves as the reptile receptor.

The survey indicated that the site supported a low population of Slow Worms, Grass Snakes and Common Lizards and the HGBI (1998) guidelines therefore recommend a minimum of 60 capture effort days are expended. However, given the low number of reptiles identified (peak count of 1 adult Grass Snake, 1 adult Common Lizard and 2 adult Slow Worms), it is considered that 30 capture days would be more proportionate. This will be reviewed on an ad-hoc basis throughout the capture period and the relocation may come to an end once 5 consecutive visits have been carried out without identifying any reptile presence.

3.3.1.4 Destructive Search

Following completion of the translocation, a destructive search will be carried out. An excavator with a toothed bucket will gently remove the surface vegetation and topsoil under supervision of the ECoW and any additional reptiles captured will be moved to the receptor. This must take place in suitable weather / timing (i.e. April to early October, temperatures of 10-20°C with no rain).

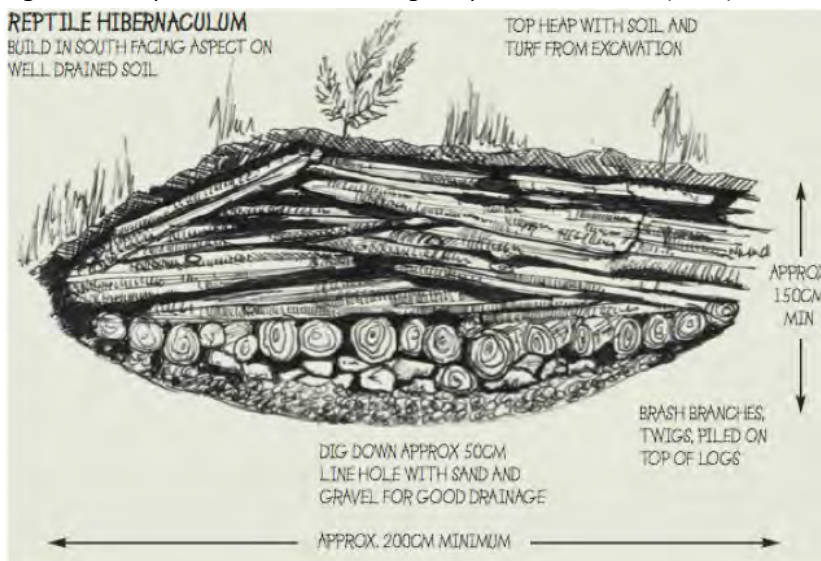
3.3.2 Reptile Enhancement Features

8 reptile features will be installed within the SANG to enhance it for reptiles. This will include:

- 2no. large reptile hibernacula
- 2no. egg-laying compost heaps for Grass Snakes (adopting the same design as the hibernaculum shown in **Fig 18**)
- 4no. log/brash piles

The large reptile hibernacula will be constructed based on the HART (2009) design, measuring approximately 200cm width and will provide potential locations for hibernation within the site (**Fig 18**).

Figure 18. Reptile hibernaculum design as provided in HART (2009).



The compost piles will be created based on the Grass Snake egg-laying heap specifications by HART (2009) which includes layers of brash on the bottom with compost on top (**Fig 19**). The remaining eight features will be created by piling logs (**Fig 19**) and/or brash in suitable locations and will measure approximately 1m width.

NB It is recommended that cuttings from management on site are used for the creation of these habitat piles.

The proposed location of these features are shown in the appended **BEL** plan. These will all be placed in locations that will receive at least partial sun, although some variation of sun/shade ratio is ideal to provide a range of conditions/temperatures.

Figure 19. Example of a horizontal log pile



3.3.3 Mitigation during long-term management

The long-term management proposals of the SANG will ensure reptile habitat is enhanced and maintained, which is considered in **Section 4.0** of this report. However, management works must consider precautionary measures to ensure reptiles aren't impacted by the works.

During management within the SANG (such as management of grassland), management will adopt a two-stage cut of suitable habitat (initially to 15cm, then to ground level after at least 24 hours) carried out in a directional manner to encourage reptiles to disperse into undisturbed habitats. These works will be carried out during the active reptile season (March to October) when weather conditions are suitable (temperatures of 10-20°C with no rain).

Management of grassland will also be rotational, ensuring the retention of at least 30% of suitable habitat area within the SANG at any given time. This will ensure there is always suitable habitat availability and will create a varied age structure to habitats to provide a range of micro-climates and conditions for reptiles.

3.4 Great Crested Newts (GCN)

3.4.1 Mitigation Strategy During Construction

GCN are present on site and a translocation will take place to remove and exclude GCN from the works area during construction with exclusion fencing installed as well. An extant GCN licence has already been obtained in association with an application for nature restoration works for the SANG (WSCC/081/14/HO). However, a new GCN mitigation licence will be sought to carry out the works as it is understood GCN were still present on site following previous translocation works. The full details of the mitigation strategy are outlined in the CEMP: Biodiversity (Ecosupport, 2025) produced to discharge Condition 15 but involves the following measures:

- An updated suite of GCN population surveys will be undertaken between March and June on waterbodies which previously supported GCN (see P6 and D2) and updated eDNA surveys will be carried out on all waterbodies within 500m that are accessible and suitable for GCN

- A new GCN mitigation licence will be obtained from Natural England prior to commencement of works
- Trapping will be used to exclude GCN from the main development parcel / construction area with HDPE exclusion fencing installed around the boundary of this area connecting to existing fencing present along the boundary of the receptor area and pitfall traps and carpet tiles installed. Trapping will take place for a minimum of 30 days and until there are 5 negative capture days
- Captured GCN will be relocated into the northern area of the SANG which will be the GCN receptor area
- After completion of the capture, a destructive search will be carried out involving sensitive stripping of habitat in the development area using a digger with a toothed bucket. All potential refugia will be sensitively dismantled by hand.

3.4.2 Enhancements

The GCN receptor site has already previously been enhanced for GCN. In addition the ponds with GCN will be retained and enhanced within the SANG area and extensive habitat enhancement will provide greater opportunities to the GCN on site. The reptile enhancement features (detailed in **Section 3.3.2 above**) and deadwood piles will also provide habitat feature opportunities for sheltering for GCN as well and therefore no further enhancements specific to GCN are recommended.

3.4.3 Precautionary measures during management works

During long-term management works, due regard will be given to GCN that may be present. During management within the SANG (such as management of grassland and scrub), management will adopt a two-stage cut the same as for reptiles (initially to 15cm, then to ground level after at least 24 hours) carried out in a directional manner to encourage amphibians to disperse into undisturbed habitats. These works will be carried out during the active season (March to October) when weather conditions are suitable (nightly temperatures for several nights above 5°C).

Management of grassland will also be rotational, ensuring the retention of at least 30% of suitable habitat area within the SANG at any given time. This will ensure there is always suitable habitat availability and will create a varied age structure to habitats to provide a range of micro-climates and conditions.

3.5 Hazel Dormice

3.5.1 Precautionary working methods

Dormice are known to be in the wider area but it is expected there will be limited impacts to potential habitat for Hazel Dormice. As such, precautionary methods will be used for clearance affecting suitable vegetation including woodland, trees or shrubs.

3.5.1.1 Mitigation Dormouse Boxes

Prior to vegetation clearance commencing, 5 Dormouse nest boxes will be installed throughout suitable retained habitat (which will lie outside of private gardens post-development) to act as receptors for any Dormice found during the sensitive clearance works (outlined below). These will also act as enhancement features following completion of the precautionary mitigation works.

3.5.1.2 Sensitive Clearance Methodology

All clearance of suitable Dormouse habitat will adopt the following methodology:

- 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). If any Dormice are found, works will cease and Natural England will be consulted.
- The licenced ecologist will deliver a toolbox talk to the vegetation clearance contractors, detailing the sensitive measures required. The ecologist will then supervise all vegetation clearance. No clearance will be undertaken without the supervision of the ecologist.
- 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 habitats (i.e retained tree line along southern boundary). All arisings will be moved away from the cleared areas immediately to an area within the central part of the site and will then be chipped and immediately removed from site.
- In the unlikely event of any Dormice being discovered (within areas where they cannot be left in situ), they will be moved (along with their nest) into one of the nest boxes.

No more than 500 m² of habitat will be cleared in a single day and works will take place during late April to mid-May (provided temperatures are warm enough for Dormice to have emerged from hibernation) or during October to avoid the breeding period (but ensure works are done during a time when Dormice are active).

3.5.2 Precautionary Measures During Management Works

Any management works affecting woodland and/or scrub habitat will be sensitive of potential presence of dormice. The 'Protocol for undertaking woodland management in England where dormice are present' (Forestry Commission & Natural England, 2019) will be followed for management works. Activities such as canopy thinning, coppicing and scrub management will be carried out between November and March to avoid impacting dormice during the active breeding season when nests may be present. Works will avoid disturbance to the ground and roots will be retained intact.

3.6 Notable and Birds of Conservation Concern

3.6.1 Mitigation During Vegetation Clearance

In order to avoid disturbance of nesting birds or damage to their nests, any works impacting the vegetation and buildings on site will be undertaken outside of the bird nesting season (March – August). If this is not possible, the area of vegetation / building to be removed will be thoroughly checked by an ecologist immediately prior to demolition/clearance. If any active nests are found, they will be left undisturbed with a suitable buffer (ca. 5m) until nestlings have fledged.

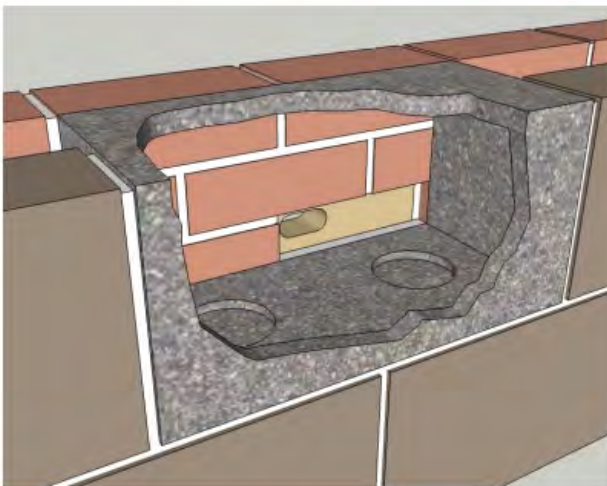
3.6.2 Enhancements

There will be extensive habitat enhancement within the SANG on-site and therefore it is expected there will be improved habitat for various species of birds. This is described in the habitat management sections below. In addition, a number of bird boxes/features will be installed on site as described below.

3.6.2.1 Swift Bricks

A ratio of 50% of new dwellings will contain integrated bird nesting features (54no. total). The 'CJ Wildlife Swift maxi nesting box' (**Fig 20**) with entrance via a CJ Wildlife 'Cambridge Swift full-face brick' is recommended. Swift features can also accommodate other bird species such as House Sparrows, and tits. The Cambridge System is a concept comprising an entrance piece and a nest box embedded in the cavity and inner leaf. If this model is not suitable for the building specifications, an alternative swift box with internal floor space exceeding 400cm squared must be used. The swift bricks will be located at minimum height of 5m, in a protected area away from winds and with a clear flight path and ideally in a colony of 2-3 boxes.

Figure 20. A schematic of how the Cambridge full face Swift brick leads into a cavity created by the prior installation of the Swift maxi nesting box.



3.6.2.2 Bird Boxes

In addition a total of 20 bird boxes will be installed on suitable retained trees within the wider application site. Locations of these boxes are shown on the appended **BEL** plan) with the following box specifications* indicated below:

- 10 No. Vivara Pro Barcelona nest box (**Fig 22**)
- 10 No. Vivara Pro Seville nest box (**Fig 21**) with a mix of 28mm and 32mm entrances

****NB Ecology Solutions (2023) recommended Schwegler bird boxes but due to occasional issues in obtaining these, alternative boxes have been specified that are more readily available***

Figure 21. Vivara Pro Seville 32mm bird box (NHBS, 2025).



Figure 22. Vivara Pro Barcelona bird box (NHBS, 2025)



The Vivara Pro nest boxes should be located in a protected area on mature trees (ideally away from locations where they may be sensitive to cat predation) and at a height of approximately 1.5-3m and away from prevailing winds.

3.6.3 Long-term Management Precautions

All vegetation clearance in the woodland, shrub and scrub will avoid the bird nesting season (March to August) or be preceded by a nesting bird check as described in *section 3.6.1*. Similarly, the management of the grassland will also generally be carried out in late-summer to autumn when ground-nesting birds are unlikely to be present but any active nests present will be retained in situ and left undisturbed.

3.7 Hedgehogs

3.7.1 Avoidance of Harm

The measures for Badgers detailed in *section 3.2.2* will be sufficient to prevent harm coming to any Hedgehogs that may be commuting across the site during construction.

3.7.2 Enhancements

The extensive habitat creation/enhancement will provide extensive opportunities for hedgehogs within the site. To ensure permeability for small mammals across the site, the garden fences of the properties will ensure at least 2 gaps are present within the gravel boards / bases of each fence line to allow for movement of Hedgehogs between gardens and into the wider area. The gaps should be at least 15 cm high by 15 cm wide with permeability for small mammals.

Small signage could be installed at these points to ensure they remain open upon completion of the development. The People's Trust for Endangered Species provide such signage, the purchase of which also supports conservation efforts (**Fig 23**).

Figure 23. Example of Hedgehog Highway signage to be placed above fence gaps provided to allow movements between gardens.



3.8 Invertebrates

3.8.1 Enhancements

In addition to extensive habitat enhancement that will enhance habitat availability for invertebrates, deadwood features will be installed into the woodlands. 5no. fallen deadwood features (e.g. log piles) will be created in the woodland and standing deadwood will be created where deemed suitable by the arborist. These will be created as part of management works.

3.8.1.1 Standing Deadwood

Standing deadwood will be created from trees selected for thinning/removal as part of woodland management works. Where suitable, as determined by an arboricultural consultant, trees will either be topped to thin the canopy, with the trunk retained in situ at 3-5m height, or where preferred, the tree will be subject to ring barking, in which a section of bark is removed in a circumference of the trunk. This results in the slow death of the tree over time in place. Safety to the public on site as part of the SANG will be considered by the arboricultural consultant in determining best methods. The number and locations of standing deadwood features will be determined by the arboricultural consultant, who will inform on-site.

3.8.1.2 Fallen Deadwood

Where trees are removed as part of the felling/thinning management and/or coppicing works, 5no. log piles will be created (as shown in **Fig 19**). These will be placed in areas of the woodland in damp, shaded locations.

3.9 Protection of Biodiversity Protection Zones, Designated Sites & Retained Habitats

As described within the CEMP: Biodiversity (Ecosupport, 2025), several Biodiversity Protection Zones (BPZs) are being established on site to protect sensitive features during construction. This includes the wider SANG area, which also encompasses the area of ancient woodland and the West Hoathly SSSI, as well as the 15m ancient woodland buffer and the GCN and reptile receptors. In addition, retained vegetated boundaries around the development area will also be protected during the works. The boundaries of these zones will be installed with protective heras fencing following BS 5837:2012 Trees to prevent entry into these areas during the works. The BPZs and location of this protective heras fencing can be seen in **Appendix 3**.

The protective fencing will remain in place until construction works are complete, no site personnel or machinery will enter the BPZs, and no materials will be stored within these areas. Where personnel must access the BPZs to carry out management works (such as for the creation of footpaths, landscaping and habitat enhancement), the minimum required personnel and smallest-sized machinery possible will be used to carry out the works (e.g. hand machinery will be used wherever suitable or a mini digger will be used as opposed to a large excavator).

4.0 HABITAT CREATION, ENHANCEMENT & MANAGEMENT

4.1 Introduction

As part of the proposed development, extensive areas of habitat on site will be retained, enhanced, created and managed with the locations of these habitats indicated in the Residential Landscape Masterplan and SANG Masterplan appended. A SANG Management Plan (Ecology Solutions, 2023) has previously been produced to outline management of the SANG area on site and this LEMP has been written in line with previous recommendations.

4.2 Within the Residential Development Area

The habitats to be created within the residential area are shown in the Residential Landscape Masterplan appended. Creation and management of these habitats are described in the sections below. Creation, enhancement and management of habitats within the associated SANG are described below in **Section 4.3**.

4.2.1 Urban Trees

4.2.1.1 Proposed Planting

Urban trees comprising a mix of native and non-native species will be planted throughout the development site. The species mixes have been provided based on location as shown in the Tree Location Plan in the appended Residential Landscape Masterplan and in **Fig 24** below. These trees will provide a foraging resource for bats and birds and provide potential bird nesting habitat. A total of 186 trees are expected to be planted in this area.

Planting will be carried out in the first year. The best time to plant is late autumn and it is recommended to avoid freezing temperatures or heat. Rootgrow or Bonemeal will be applied to the new plants to encourage healthy root growth.

Figure 24. Proposed tree species in the residential urban area (Murdoch Wickham, 2023)

Proposed Trees

● Street & Verge Trees

Planted as semi-mature and advanced nursery stock

Acer campestre
Carpinus betulus 'Frans Fontaine'
Sorbus aria 'Lutescens'
Prunus avium
Tilia cordata 'Rancho'

● Trees for Front Garden

Planted as advanced nursery stock & multi-stems 2-3m high

Amelanchier lamarckii (multi-stem)
Amelanchier x arborea 'Robin Hill'
Ilex aquifolium 'Nellie Stevens'
Malus 'Evereste'
Magnolia x loebneri 'Merrill'

● Open Space Trees

Planted as semi-mature and advanced nursery stock (minimum 30% oak)

Acer campestre
Betula pendula
Carpinus betulus
Prunus avium
Pinus sylvestris
Sorbus aucuparia
Tilia cordata
Ulmus 'New Horizon'
Quercus robur

● Car Park Trees

Planted as advance nursery stock

Acer campestre 'Elsrijk'
Carpinus betulus 'Frans Fontaine'
Crataegus prunifolia
Pyrus calleryana 'Chanticleer'

● SUDS & Water Associated Trees

Planted as advanced nursery stock and multi-stems

Alnus glutinosa
Betula pendula (multi-stem)
Salix alba (pollards)

● Rain Garden Trees

Planted as semi-mature and advanced nursery stock

Acer campestre 'Elsrijk'
Carpinus betulus
Corylus columna
Liquidambar styraciflua 'Worplesdon'

● Trees for Rear Gardens

Planted as selected standards

Crataegus monogyna
Ilex aquifolium 'Nellie Stevens'
Malus sylvestris
Prunus 'Accolade'
Sorbus aria

The residential Landscape Masterplan is proposing circa 186 new trees

4.2.1.2 Management

4.2.1.2.1 Mycorrhizal Treatment

To ensure a successful establishment of the newly planted trees, it is recommended that mycorrhizal treatment to the tree roots is conducted during the planting, this would reduce the risk of tree mortality and increase the long-term tolerance of these trees to periods of drought or adverse soil conditions thus ensuring a higher chance of successful long-term establishment.

4.2.1.2.2 Weed Management

All newly planted trees must have a 1-metre exclusion zone whereby weeds are routinely and pro- actively removed for the first 2 – 3 years. Bark mulch is recommended around each tree and will act as an effective management method to also suppress weed colonisation.

4.2.1.2.3 Pruning

The trees will be subject to light pruning as required in October to ensure that they are developing healthy growth forms (but pruning will not be extensive enough to restrict expected canopy or height for their species).

4.2.1.2.4 Monitoring and Replacement

Trees will be inspected every 18 months up until 5 years by a suitably experienced arborist during late winter – early spring of each year when required. These monitoring visits will assess the general health of the trees and determine if any remedial action is required, including noting any presence of disease. As part of these monitoring visits, the arborist will produce a monitoring report which will be sent to the LPA outlining the results and appropriate recommendations (i.e. remedial works, removal /replacement). Any plants that are removed, die or become seriously damaged or defective shall be replaced like for like in the next planting season (up until the 5 year period).

4.2.2 Wildflower Grassland

4.2.2.1 Proposed Planting

Wildflower grassland is proposed to be created around the SUDs features and along some of the perimeters of site boundaries. These areas will be sown with Emorsgate EM4 – Meadow Mixture for Clay Soils. The creation of these grassland areas will provide valuable foraging habitat for Badgers, Hedgehogs, reptiles and bats.

Prior to sowing of the grassland area, the ground will be prepared as per manufacturer's instructions by removing weeds and preparing the soil. The seed will be sown as recommended by the manufacturer.

4.2.2.2 Management

Wildflower areas do not require any additional watering or fertilizer. Cutting a meadow and removing the clippings retains low nutrient levels in the soil and suppresses coarse grasses which would otherwise out-compete the wildflowers. The growth should be cut back to a

height of 50-75mm. Cuttings should be left in situ for approximately one week to dry and drop seeds, after this the arisings are to be removed from site.

First year management: Perennial species take at least a full year to establish. For newly sown areas the first summer will be dominated by annual weeds (species indicative of sub-optimal condition) arising from the soil seed bank and by grass growth. This should be controlled by regular mowing throughout the first year to minimise competition and weed seed production.

Management Once Established: It is recommended the wildflower grassland undergoes two annual cuts. However, the grassland should not be cut from May to late-June during the flowering season. The grassland will be left to flower and will be cut once in summer/early autumn from between late-June to September. It is recommended the timing is varied in sections to create greater diversity and ensure there is always habitat available and give wildlife a chance to move. Varying the mowing times from year to year is the best way to maintain a diverse balanced sward and minimise cover of sub-optimal species.

4.2.3 Species-rich Amenity Grassland

4.2.3.1 Proposed Planting

The remaining areas of public grassland (such as along verges and in POS areas) will be species-rich amenity grassland. This will be created by sowing a species-rich lawn seed mix such as Emorsgate EL1 Flower Lawn Seed mixture. The seed mixture comprises of a mix of low-growing native species including: Yarrow (*Achillea millefolium*), Kidney Vetch (*Anthyllis vulneraria*), Betony (*Betonica officinalis*), Common Knapweed (*Centurea nigra*), Hedge Bedstraw (*Galium album*), Lady's Bedstraw (*Galium verum*), Field Scabious (*Knautia arvensis*), Rough Hawkbit (*Leontodon hispidus*), Oxeye Daisy (*Leucanthemum vulgare*), Black Medick (*Medicago lupulina*), Ribwort Plantain (*Plantago lanceolata*), Hoary Plantain (*Plantago media*), Cowslip (*Primula veris*), Selfheal (*Prunella vulgaris*), Meadow Buttercup (*Ranunculus acris*), Bulbous Buttercup (*Ranunculus bulbosus*), White Clover (*Trifolium repens*), Common Bent (*Agrostis capillaris*), Crested Dogstail (*Cynosurus cristatus*), Red Fescue (*Festuca rubra*), Smaller Cat's-tail (*Phleum bertolonii*), and Smooth-stalked Meadow-grass (*Poa pratensis*).

This ground will be prepared and the seed will be sown as per the manufacturer's instructions. The sowing of these seeds will be completed either during the Spring (March-May) or the late Summer (August-October) when the temperatures are warm, and the ground is dry. The seed must be surface sown at an even distribution throughout the entire landscaped area.

4.2.3.2 Management

These areas of grassland are expected to be subject to regular management.

First year management: During the first year the grassland areas must be regularly maintained to a height of 40-60mm. Mowing will take place every 3-4 weeks (or more frequently as needed) during the growing season to prevent the establishment of weeds. All arisings must be taken from site to prevent the addition of too many nutrients into the soil.

Management Once Established: Once the seed is established after the first year, regular mowing is still expected which will result in a shorter sward height however grass should not be cut lower than 25-40mm. Wherever possible, mowing will be relaxed from late June for 4-8 weeks (to only be cut when untidy) to allow flowering of herbaceous species and enhance the benefit of this habitat for local wildlife.

4.2.4 SUDs Features

Two attenuation basins and a swale will be created as part of the SUDs within the site. The edges of these will be seeded with wildflower grassland and managed as per **Section 4.2.2** above.

Optionally, the SUDs features can be planted with marginal aquatic plants (see recommendations in **Section 4.3.4.1 below**). However, this is not considered necessary as the new pond stage can be an important stage for wildlife.

In the early years, blanket weed could cover ponds and SUDs. This should be pulled out carefully. Once the pond has settled blanket weed will usually be kept in check by pond animals.

Any plant that starts to dominate should be thinned out and rotational thinning can also help create variation in structure if marginal vegetation establishes. Only one third of a pond should be cleared per year, with each section managed every 2-3 years in rotation. Once cleared, plants or debris should be left along the edge for a few days to allow any trapped wildlife to return to the water. Any invasive species that are noted should be immediately removed and an invasive species specialist may be required to provide input on a management plan to eradicate the species.

In addition, dredging of the pond will take place only when required (i.e. it is noted that the pond is becoming silted and lacking depth). This is not expected to be more than once per 5-year period. Any dredging carried out will aim to maintain a gentle sloping profile and creation of shallow shelves for wildlife.

All works within the SUDs will take place in late October to early November when amphibians will be least affected, after larvae would have left the pond to transition to their terrestrial stage but before any amphibians such as Toads would be potentially hibernating.

4.2.5 Hedgerows

4.2.5.1 Proposed Planting

Multiple new hedgerows will be planted within the development site and two existing native hedgerows will be enhanced with gap planting. As per the BNG Assessment associated with the development, the new hedgerows will target moderate condition species-rich hedgerows and the existing hedgerows will be enhanced to moderate condition.

The hedgerows will be planted with a minimum of five native woody species. Native species to be considered for these hedgerows include (but are not limited to):

- Field Maple (*Acer campestre*)
- Hornbeam (*Carpinus betulus*)
- Holly (*Ilex aquifolium*)
- Crab Apple (*Malus sylvestris*)
- Dogwood (*Cornus sanguinea*)
- Hawthorn (*Crataegus monogyna*)
- Blackthorn (*Prunus spinosa*)
- Hazel (*Corylus avellana*)
- Guelder Rose (*Viburnum opulus*)
- Dog Rose (*Rosa canina*)

The shrubs will be planted in staggered double rows with 5 plants per linear metre (if using bareroot stock) or 3-4 plants per linear metre (if using container grown stock). As described in the above sections, these hedgerows will provide valuable nesting habitat for birds and will also contribute to foraging and sheltering opportunities for hedgehogs.

4.2.5.2 Management

Given the formal locations of the majority of the hedgerows on site, it is expected that they will be clipped annually to maintain the desired height and width. The enhanced boundary hedgerows, however, will be managed for the benefit of biodiversity.

Management prescriptions will be as follows:

- The boundary hedgerows will be allowed to develop into a tall, dense, bushy structure maintained at a height of 3-4 metres. The interior hedgerows will be cut more frequently but will be maintained at a minimum height of 1.5m.
- All hedgerows will be cut using hand tools outside of the nesting bird season which spans March to August inclusive.
- Boundary and connecting hedgerows will be cut between December to February (outside the active dormouse breeding season and after Autumn fruiting)
- Coppicing or laying will be used should the hedgerow become gappy or sparse.
- If the size of the hedgerow must be reduced, avoid cutting the top and cut one side.

4.2.5.3 Monitoring & Remedial Measures

The hedgerows will be inspected by a suitably experienced ecologist to assess general health and recommend any remedial actions as necessary. Any plants that are removed, die or become seriously damaged will be replaced like-for-like in the next planting season. These monitoring visits will be carried out annually in the first 3 years and bi-annually in Years 4-10.

4.3 Within the SANG

4.3.1 Woodland

The majority of woodland has already been created as part of the restoration plan for the previous quarry on site and the SANG will provide management in perpetuity to ensure enhancement of conditions. In addition, some small sections of woodland planting are proposed around the edges of the walking route that will provide additional woodland copses. Therefore, there will be two management timelines, one for enhancement/maintenance of the existing plantation woodland and one for the newly planted woodlands.

4.3.1.1 Planting

4.3.1.1.1 Tree and Shrub planting

Where new woodland is proposed, this will be planted as part of Year 0 during construction. It is recommended that a mix of native tree and shrub sizes are selected with the aim to plant a multi-structure woodland. Species already planted in the surrounded areas of woodland are considered suitable. Recommended species include Pedunculate Oak (*Quercus robur*), Field Maple (*Acer campestre*), Hazel (*Corylus avellana*), Hawthorn (*Crataegus monogyna*), Holly (*Ilex aquifolium*), Blackthorn (*Prunus spinosa*), Dog Rose (*Rosa canina*), Rowan (*Sorbus aucuparia*), Small-leaved Lime (*Tilia cordata*), Guelder Rose (*Viburnum opulus*) and Crab Apple (*Malus sylvestris*). As described in the above sections, this planting will be of value for foraging and commuting Dormice, bats, Badgers, and Hedgehogs as well as nesting birds. Shrubs will be planted at 1m centres in groups of 3. The best time to plant is late autumn and it is recommended to avoid freezing temperatures or heat.

If tree guards / stakes are used as part of the planting for stability, they will be removed in Year 5 post-planting.

4.3.1.1.2 Ground Flora

As a further enhancement, these areas will also be sown with a native woodland ground flora seed mixture such as Emorsgate EW1 – Woodland Mixture which comprises of various woodland ground flora species including Ramsons (*Allium ursinum*), Bluebells (*Hyacinthoides non-scripta*) and Wood Avens (*Geum urbanum*). It is recommended that the existing woodland sections are also sown with the ground flora mixture where ground flora is currently lacking.

4.3.1.1.3 Woodland edge

Mixed scrub is proposed to be planted around the edges of some of the woodland to provide woodland edge habitat. Planting will occur at the same time as the trees and shrubs above. Recommended species include Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Field Maple (*Acer campestre*), Hazel (*Corylus avellana*), Holly (*Ilex aquifolium*), and Guelder Rose (*Viburnum opulus*).

If tree guards / stakes are used as part of the planting for stability, they will be removed in Year 5 post-planting.

4.3.1.1.4 Monitoring & Remedial Measures

Monitoring will be carried out of all new woodland to ensure it is establishing well. The woodland will be inspected by a suitably experienced ecologist to assess general health and recommend any remedial actions as necessary. Any plants that are removed, die or become seriously damaged will be replaced like-for-like in the next planting season. These monitoring visits will be carried out annually in the first 3 years and bi-annually in Years 4-10, after which it is expected the woodland will be more established.

4.3.1.2 Felling / thinning

Selective thinning will be conducted to promote regeneration and a vigorous, dense regrowth in the understory and to diversify the woodland species and structure. Such work must be undertaken during the period December – February to avoid the breeding bird season and active dormouse season. In the existing woodland areas, this will begin in Year 0 and in new woodland areas, this will begin in Year 15.

It is considered likely a botanical survey will identify areas of highest botanical value and this will influence the location of thinning, conducted by a suitably qualified botanist. Trees considered to be high value specimens will be retained to encourage veteranisation of quality trees. The woodland will be thinned (i.e. trees removed) to benefit retained trees and promote regeneration. The optimal canopy target is 75% cover, which allows greater development of the understory to create a more diverse woodland. Selective thinning will be carried out **on a 10 year rotation** to maintain a canopy target of 75% cover but this will be carried out every 3-5 years varying the woodland sections to be managed. In addition to canopy trees, thinning may be carried out of the understorey to maintain a diverse species mix (i.e. if any one species becomes dominant this may be beneficial).

The target trees to be removed are those showing signs of disease or poor growth; The specific target trees and areas of woodland will be determined by the supervising ecologist or arborist.

It is recommended a botanical survey is carried out to identify areas of highest botanical value and this will influence the location of thinning. In addition, all mature trees to be removed or topped will require an inspection by an ecologist prior to removal to search for potential roost features (PRFs) for bats. It is recommended any trees containing PRFs are retained where safe to do so. The recommended botanical survey should be undertaken during the optimum survey season during the first year of woodland management to identify areas of botanical interest. Where practical to do so, as determined by the arborist, some potential selected trees will be kept as standing deadwood, as described in *section 3.8.1*.

4.3.1.3 Rotational Coppicing

Occasional rotational coppicing may be required of the newly planted or retained trees on site to prevent overcrowding and promote natural new growth. All Hazel present on site will be managed on a rotational coppicing scheme. This involves cutting young trees down to a low level to promote new growth and prevent over-shading. This will be rotationally implemented, with only a small portion approximately 20% of Hazel coppiced **every 5 years** during winter

months (Dec to Feb), but only once the Hazel has grown to a size that will be beneficial and appropriate.

Some of the deadwood can be retained for the creation of brash/wood piles for wildlife. This includes the features created in the grassland for reptiles and those to be kept within the woodland.

4.3.1.4 Deadwood Habitat Creation

A limited number of standing deadwood features will be created as part of the woodland management. The creation of these features is described above in *section 3.8.1* but will be informed by the advice of the arboricultural consultant.

5no. fallen deadwood features will be created on site as log piles, constructed from removed or coppiced trees.

4.3.1.5 Natural Regeneration / Replanting

In all woodland areas, natural regeneration following the management prescriptions above is preferred to allow the woodland to become more structurally and botanically diverse. The woodland composition will be monitored to determine condition and only if natural regeneration is not achieving the target condition will additional planting be carried out.

If the understory requires diversification, in Year 10 localised shrub planting will be carried out. Species to be planted will be determined by an arboricultural or silvicultural consultant but will be native woodland species suitable to the area.

4.3.1.6 Edge Management

The aim of edge management is to achieve a transition buffer between the woodland and the grassland by maintaining a dense shrubby edge along the woodland and to prevent encroachment of scrub into the grassland.

This will be managed by selective clearing the edge on a 4-year rotation, with works commencing once the habitat has established (expected between Years 5 -10). No more than 25% of ride areas will be managed in any one year. The management will aim to:

- Target thinning of species that are becoming more dominant along the edge to maintain a diverse ratio.
- Create a scalloped edge along the woodland
- Target removal of species that are unhealthy or in poor condition

4.3.1.7 Removal of Invasive / Undesirable Species

Any invasive / noxious species that establish in the woodland will be removed in as sensitive a manner as effective. For highly invasive non-native species (such as Rhododendron), particular care will be carried out and specialists will be consulted if required to ensure its suitable removal and limit of spread and target pesticides may be required as recommended by a specialist. These works will be carried out as soon as possible and may require repeat management over multiple years to ensure complete eradication.

4.3.1.8 Monitoring

Monitoring of established woodland will be carried out every 5 years, prior to thinning and coppicing works. This will be carried out by a qualified arboricultural consultant and/or qualified ecologist to make recommendations for remedial measures and target specimens for removal/management. An adaptive management approach will be carried out and these monitoring visits will be used to make changes to the management regime as considered suitable for the habitat.

4.3.2 Species-rich Grassland

Large areas of the SANG will be managed as species-rich grassland. The majority of this grassland has already been created as part of the restoration plan for the quarry but some additional grassland creation will take place in the section of grassland of the SANG closest to the development site.

Creation and first-year management of the grassland areas will be described as above in *section 4.2.2*.

Long-term management of the species-rich grassland within the SANG will differ for dry grassland (comprising the majority of area) and wet areas of grassland (i.e. around areas of the ponds especially at the north of site). The main reason for this is to manage the wet grassland for GCN and to create a more varied structure in the rest of the dry areas. In addition, amenity areas will be managed more frequently for public use.

4.3.2.1 Management of Dry Grassland

It is recommended the wildflower grassland undergoes an annual cut. However, the grassland should not be cut from May to late-June during the flowering season. The grassland will be left to flower and will be cut once in summer/early autumn from between late-June to September. Sections of grassland should be cut at different times to ensure there will be varied structure and varying the mowing times from year to year is the best way to maintain a diverse balanced sward and minimise cover of sub-optimal species.

All cuts will occur in two stages for reptiles and GCN to avoid adverse impacts. The first cut will be to no lower than 150mm and the habitat will be left at least 24 hours to allow wildlife to disperse, after which it can be cut to its target height.

As described in the SANG management plan, to achieve a varied sward target heights will vary:

- 20% of habitat will be left uncut in any one year;
- 5% will be scarified as bare ground;
- 20% will be cut short to <50mm;
- The remaining area will be cut to approximately 70mm height.

4.3.2.2 Management of Wet Grassland

The areas of species-rich grassland that establish as wet meadow will be managed less intensively. An annual cut will be carried out in late-summer to early autumn and no more

than 1/3 of the wet grassland will be cut in any given year. The grassland will be cut to a target height of 100-150mm.

In addition, if any weedy species begin to establish, these will be targeted for management and if needed will be hand-pulled to avoid them becoming dominant.

4.3.2.3 Amenity Areas

Where public amenity areas will be present within the SANG (such as where mown pathways and picnic areas are proposed), the species-rich grassland will be maintained more frequently. This will be maintained as per **Section 4.2.3.2** for species-rich amenity grassland, which involves regular cuts short and mowing will be relaxed from late-June for 4-8 weeks if possible.

4.3.3 Trees

4.3.3.1 Planting

A number of new individual parkland trees will be planted within the SANG. Species have not yet been specified in the landscape plan but recommended species include: Willow (*Salix spp*), Hornbeam (*Carpinus betulus*), Oak (*Quercus robur*), Small-leaved Lime (*Tilia cordata*), Field Maple (*Acer campestre*), and Cherry (*Prunus avium*).

4.3.3.2 Management

In the first five years, management will be carried out as described above in **Section 4.2.1.2** for the urban trees. This will allow them to establish and remain in healthy condition. Any plants that are removed, die or become seriously damaged or defective shall be replaced like for like in the next planting season.

Once established, some trees will be subject to pollarding (where suitable and if required) to promote parkland trees with veteran characteristics. This will be preceded by an arboricultural survey, with pollarding and any other remedial measures recommended by the arborist to promote healthy growth. This will be carried out in winter months and pollarding management will be undertaken on a 10-15 year rotation beginning in Year 10.

4.3.4 Ponds

4.3.4.1 Marginal Planting

The largest pond (P8 in Fig 11) will be planted with marginal aquatic species to provide additional habitat around some of the edges. Species to consider, but should not be limited to, include:

- Water Mint (*Mentha aquatica*)
- Water Forget-me-not (*Myosotis scorpioides*)
- Marsh Marigold (*Caltha palustris*)
- Yellow Flag Iris (*Iris pseudacorus*)
- Rush (*Juncus spp*)
- Water Figwort (*Scrophularia auriculata*)

Planting is most ideal in spring (March to early-June) when the weather is warmer and plants can establish before drier periods. The plugs should be planted in the soil of the pond edges in areas that are shallow or on shelves with a water depth of 0cm to up to 25% the height of the plant. Follow manufacturer instructions on the desired planting preferences for each species.

4.3.4.2 Pond Management

As the ponds have already been established within the SANG, extensive management is not expected, but the following prescriptions will be carried out.

4.3.4.2.1 Dredging & Thinning

Any plant that starts to dominate should be thinned out and rotational thinning can also help create variation in structure. Only one third of a pond should be cleared per year, with each section managed every 2-3 years in rotation. Once cleared, plants or debris should be left along the edge for a few days to allow any trapped wildlife to return to the water. Any invasive species that are noted should be immediately removed and an invasive species specialist may be required to provide input on a management plan to eradicate the species.

In addition, dredging of the pond will take place only when required (i.e. it is noted that the pond is becoming silted and lacking depth). This is not expected to be more than once per 5-year period. Any dredging carried out will aim to maintain a gentle sloping profile and creation of shallow shelves for wildlife.

All works within the pond will take place in late October to early November when amphibians will be least affected, after larvae would have left the pond to transition to their terrestrial stage but before any amphibians such as Toads would be potentially hibernating.

4.3.4.2.2 Pond Edge Management

All grassland surrounding the pond edges will be managed as per *section 4.3.2.2* for wet grassland.

In addition, management of scrub/trees may be required to ensure the pond does not become overshadowed. The target shade cover of the pond edge is under 50%. Therefore, thinning of scrub and/or trees will be carried out to achieve this target. This will be carried out in winter months (December to February), outside the active bird nesting and dormouse seasons.

4.4 Species Enhancement Features

All species features (i.e. bird/bat nest boxes, dormouse boxes and hibernacula) will be monitored. Annual maintenance checks will be carried out and boxes will be cleaned out as necessary (by a licensed ecologist).

Any boxes that are missing or in a poor condition will be replaced as needed as soon as possible.

4.5 Responsibility

The developer and project manager will be responsible for briefing all site personnel of the ecological sensitivities of the site and implementing the mitigation measures outlined above as well as the habitat enhancement, creation and management works. If any protected species are encountered during the construction works, it will be the responsibility of the project manager to cease works and immediately contact an ecologist for advice.

Following completion of the works, it is expected the overall obligations and works specified by the LEMP will be the responsibility of a private management organisation (PMO) to be appointed by the developer. After the PMO is set up, it will be the responsibility of the PMO to appoint or contract suitably qualified and experienced contractors and specialists as required by the details of this LEMP. All contractors and sub-contractors carrying out work for the PMO will be required to adhere to the LEMP as well as any relevant planning and wildlife legislation.

All management / maintenance works as described above will be secured through an appropriate Section 106 agreement for the site that will legally oblige the developer or other agreed party to carry out the works.

4.6 Compliance Check

A compliance visit will be completed by a suitably qualified ecologist prior to first occupation of the development site. The check will be conducted annually for the first 5 years post completion, and every 5-years thereafter until year 30. The compliance check will be carried during a suitable time of year and in suitable weather conditions. The ecologist will check all biodiversity ecological enhancements set out to assess if they have been completed and make an assessment if any recommended changes are required to management.

4.7 Management Timeline

An annual management timeline of all ecological enhancement features and habitats has been provided in **Section 5.0** with the described management works set to continue in perpetuity – this should be taken as a summary of the necessary measures and should be read in conjunction with the rest of this report to provide the appropriate level of detail.

5.0 IMPLEMENTATION PLAN

Schedule of ecological enhancement feature installation as well as habitat creation / enhancement, management and monitoring in perpetuity (for 30 years).

General Activity	Specific Activity	Dates / Timing	Description
Mitigation, Compensation and Enhancements			
Protection of Biodiversity Protection Zones	Protective fencing installed	Prior to commencement of construction	- Protective fencing will be installed as per the Biodiversity Protection Zone plan (Appendix 3) prior to commencement of works - This will encompass the SANG area, ancient woodland and 15m buffer, the GCN/reptile receptors within the SANG and retained boundary vegetation around the development - This will remain in place until all construction works are completed, after which it can be removed.
Bats	Updated emergence surveys	Pre-commencement, May - June	A single updated emergence survey will be conducted for buildings B1 and B4a
	Obtain Natural England European Protected Species Licence	Pre-commencement, once Conditions 15-17 approved & updated surveys carried out	A Natural England European Protected Species Licence will be obtained for the day roosts present in the buildings B1 and B4a
	Deliver toolbox talk and supervise building demolition	During construction phase, April – October	- Demolition of Buildings B1 and B4a will adhere to the below measures - A suitably qualified ecologist will deliver a toolbox talk outlining safe working practices to minimise risk to bats during building demolition. - An updated internal and external inspection will be conducted to check for new evidence of roosting bats. - Building materials will be removed sensitively with an ecologist present.
	Installation of 1 No. mitigation bat box	Anytime, prior to building demolition	2 No. Vivara Pro Large Multichamber bat boxes will be erected onto retained mature trees prior to demolition of B1 and B4a

General Activity	Specific Activity	Dates / Timing	Description
	Installation of bat bricks and boxes	Anytime, prior to site operation	54 No. bat bricks to be integrated into the walls of the new dwellings. 20 No. bat boxes to be erected onto mature retained trees.
Badgers	Updated walkover and exclusion	Anytime, pre-commencement	An updated walkover will be conducted one month prior to commencement to check for Badger activity. If activity is identified, further survey may be required
	Avoidance of harm	During the construction phase	- If any excavations are left open overnight, an earth ramp will be created or a wooden ramp installed to allow any animals that fall in to escape. - Any pipes that need to be left over night on site will be capped to avoid animals becoming trapped.
Reptiles	Installation of reptile exclusion fencing	April, prior to relocation scheme	Additional HDPE exclusion fencing will be erected around the boundaries of the main development parcel/construction area to prevent reptiles moving into the construction area during works (Appendix 2)
	Ex-situ relocation scheme	April – June	- Reptile refugia will be set out on site and 30 trapping days (minimum) will be completed with reptiles relocated to the receptor in the SANG - There must 5 consecutive negative trapping days before the capture operation may end.
	Destructive search	June – September, once the relocation is finished	Once the relocation scheme has concluded, a destructive search of areas of suitable reptile habitat on site shall take place under supervision of an ecologist.
	Receptor enhancement	Anytime, following completion of the relocation scheme	8 No. reptile features will be installed within the SANG (2no. hibernacula, 2no. egg-laying heaps, 4no. log/brush piles)
GCN	Updated surveys	March - May	- An updated suite of GCN population surveys will be undertaken on P6 and D2 which support GCN - eDNA surveys will be carried out on any other waterbodies within 500m that are accessible

General Activity	Specific Activity	Dates / Timing	Description
	Obtain Natural England European Protected Species Licence	Pre-commencement, once Conditions 15-17 approved & updated surveys carried out	A Natural England European Protected Species Licence will be obtained for GCN
	Installation of GCN exclusion fencing	April – June, prior to relocation scheme	- Additional HDPE exclusion fencing will be erected around the boundaries of the main development parcel/construction area to prevent reptiles moving into the construction area during works (Appendix 2) - Pitfall traps and carpet tiles installed
	Ex-situ relocation scheme	April – June	30 trapping days (minimum) will be completed with GCN relocated to the GCN receptor in the SANG - There must 5 consecutive negative trapping days before the capture operation may end.
	Destructive search	June – September, once the relocation is finished	Once the relocation scheme has concluded, a destructive search of areas of suitable reptile habitat on site shall take place under supervision of an ecologist.
Hazel Dormice	Installation of dormouse boxes	Anytime, prior to clearance works	5 No. dormouse boxes will be erected within suitable habitat on site
	Single stage clearance	Late April to mid-May or October	- Prior to clearance, a toolbox talk will be delivered covering legal protection, identification and sensitive working methods for Hazel Dormice. - Suitable habitat will be subject to a fingertip search by a suitably qualified ecologist and cleared in a single stage to ground level using hand tools.
Nesting Birds	Vegetation removal	October – February (or March – August under supervision)	- Any removal of nesting bird habitat undertaken during nesting bird season will need to be supervised by a suitably qualified ecologist with a nesting bird check completed prior to clearance. - Any active nests will be retained with a 5m buffer of vegetation.

General Activity	Specific Activity	Dates / Timing	Description
	Installation of bird boxes and bricks	Anytime, prior to site operation	20 No. nest boxes to be erected on retained mature trees 54 No. swift bricks to be integrated into the new dwellings on site.
Hedgehogs	Fence gaps	During construction phase	Garden fences within the site will also ensure at least 2 gaps are present within the gravel boards / bases of each fence line to allow for movement of Hedgehogs between gardens and into the wider area.
Invertebrates	Creation of deadwood features	During woodland management	- Standing deadwood will be created in the woodland at the discretion of the arboricultural consultant 5no. fallen deadwood features (log piles) will be created
Management Within the Residential Development Area			
Habitat creation Individual Trees (Section 4.2.1)	Planting	Late Autumn	- Plant trees as specified within the residential urban area. - Apply Rootgrow or Bonemeal to encourage healthy root growth. - Apply Mycorrhizal treatment to the tree roots.
	Year 1 Management	Routinely as required	- Remove weeds from a 1m exclusion zone around each newly planted tree. - Apply mulch around the base of the tree as required.
	Years 2 – 30 Management	Weeding: Years 2 and 3, monthly as required Pruning: October	- Remove weeds from a 1m exclusion zone around each newly planted tree. - The trees will be subject to light pruning as required in October to ensure that they are developing healthy growth forms (but pruning will not be extensive enough to restrict expected canopy or height for their species).
	Monitoring	Late Winter – Early Spring	Trees will be inspected every 3 years by a suitably experienced arborist during late winter – early spring of each year when required. These monitoring visits will assess the general health of the trees and determine if any remedial action is required, including noting any presence of disease. As part of these monitoring visits, the arborist will produce a monitoring report which will be sent to the

General Activity	Specific Activity	Dates / Timing	Description
			LPA outlining the results and appropriate recommendations (i.e. remedial works, removal /replacement). Any plants that are removed, die or become seriously damaged or defective shall be replaced like for like in the next planting season.
Habitat Creation Wildflower Grassland (Section 4.2.2)	Creation of grassland	Ideally Autumn or Spring	- Prepare ground as per manufacturer's instructions - The areas of wildflower grassland will be sown with Emorsgate EM4 – Meadow Mixture for Clay Soils
	Year 1 Management	Routinely as required	Control annual weed growth by mowing to 50-75mm throughout the first year to minimise competition and weed seed production.
	Years 2 – 30 Management	First cut: mid to late Summer Second cut: late Autumn	- Conduct hay cut in late-June to September, cutting to 50-75mm, varying timings in sections and annually - Conduct second cut in late Autumn. - Leave cuttings in situ for 1 week and then remove.
Habitat creation Species-rich Amenity Grassland (Sections 4.2.3)	Creation of grassland	Ideally Autumn or Spring	- Prepare ground as per manufacturer's instructions - The areas of wildflower grassland will be sown with Emorsgate EL1 Flower Lawn Seed mix or a similar species-rich lawn mix
	Year 1 Management	Routinely as required	Control annual weed growth by regular mowing throughout the first year to 40-60mm to minimise competition and weed seed production.
	Years 2 – 30 Management	Routinely as required	- Regular mowing is expected in this area but grass should be cut no lower than 25-40mm. - Mowing should be relaxed from late June for 4-8 weeks and only cut when untidy to allow species to flower
Habitat Creation SUDs – Attenuation basins and swale (Section 4.2.4)	Creation of features	During Construction	- The features will be excavated and created during construction. - If preferred, marginal aquatic plants can be planted in wet areas but this is not considered necessary

General Activity	Specific Activity	Dates / Timing	Description
	Years 1-3 Management	Routinely as required	- Blanket weed should be pulled out carefully - Aquatic / marginal plants will be allowed to establish as suitable - Edges of the features will be managed as per the Wildflower Grassland above (Section 4.2.2)
	Years 4 – 30 Management	Late October to early November	- Edges of the features will be managed as per the Wildflower Grassland above (Section 4.2.2) - Thinning within the pond/pond edge should be carried out on a 2-3 year rotation with no more than 1/3 of a water feature cleared in a year - Any plants/debris cleared should be left along the edge for a few days and then removed from site - Dredging of the pond will only take place as required to maintain depth and will not be carried out more than once per 5 years
Habitat creation Hedgerows (Sections 4.2.5)	Planting	Late Autumn	Plant with native shrub species in double staggered rows with 5 plants per linear metre (if using bareroot stock) or 3-4 plants per linear metre (if using container grown stock). A minimum of five native woody species will be used but greater diversity is encouraged
	Years 1 - 30 Management	Winter i.e. December - February (outside of bird nesting season and dormouse season)	- Formal hedgerows to be clipped as necessary to maintain desired height and width with a minimum 1.5m height - Use hand tools and avoid the use of flails. - Allow boundary hedgerows to grow to 3-4m cutting only one side if necessary to control growth.
	Year 1 - 30 Monitoring	Late Winter – Early Spring Years 1 – 3: Annually Years 4 – 10: Bi-annually	- Hedgerows will be inspected by a suitably experienced ecologist to assess the general health of the hedgerow. - Remedial action will be taken as necessary. - Any plants that are removed, die or become seriously damaged will be replaced like-for-like in the next planting season.

General Activity	Specific Activity	Dates / Timing	Description
Management within the SANG			
Habitat Creation New Woodland (Section 4.3.1)	Planting	In late autumn or early spring	- A mix of native tree and shrub species will be planted in areas of new woodland - Mixed scrub will be planted around the edges of some of the woodland to provide woodland edge habitat - Shrubs will be planted at 1m centres in groups of 3 - A native woodland ground flora seed mix (e.g. Emorsgate EW1 Woodland Mixture) will be sown along the ground under the plants.
	Years 1-10 Management	As needed	- If tree guards/stakes are used, they will be removed in Year 5 post-planting - In Year 10, if required, additional planting will be carried out to diversify species in the understory. - After Year 10, the woodland will be managed as per the existing woodland below
	Years 1-10 Monitoring	Late Winter – Early Spring Years 1 – 3: Annually Years 4 – 10: Bi-annually	- Woodland will be inspected by a suitably experienced ecologist to assess the general health of the habitat. - Remedial action will be taken as necessary. - Any plants that are removed, die or become seriously damaged will be replaced like-for-like in the next planting season.
Habitat Enhancement Woodland (Section 4.3.1)	Thinning	December – February Every 3-5 years beginning in Year 1 for existing woodland and Year 15 for new woodland	- Prior to thinning, it is recommended a botanical survey is carried out to identify trees/areas of highest botanical value. - Any trees selected for thinning will be inspected by an ecologist for potential bat roost features - A number of trees will be removed or 'topped' to achieve a target canopy cover of 75% - Thinning of trees will be carried out on a 10-year rotation (per woodland section)

General Activity	Specific Activity	Dates / Timing	Description
			- Understorey shrubs will be thinned as required, targeting dominant species, to retain a diverse understory mix - Initially, at least 10 trees will be selected to be retained as standing deadwood and 5 trees will be selected during each subsequent management - Removed trees can be used for creation of hibernacula / fallen deadwood log piles
	Rotation coppicing	December – February Every 5 years	- All hazel will be coppiced on rotation 20% of Hazel will be coppiced every 5 years once it is a suitable size - Deadwood can be retained for creation of deadwood/log piles
	Woodland edge management	Annually in December – February Beginning once edge established	- Woodland edge will be selectively cleared on a 4-year rotation - Dominant species will be thinned to maintain a diverse species ratio and species in unhealthy/poor condition will be removed - Clearance will aim to form a scalloped edge
	Removal of invasive / undesirable species	As needed	- Any invasive / noxious species will be removed in as sensitive a manner as effective (to avoid disturbance to the woodland) - Where highly invasive non-native species such as Rhododendron are found, specialist consultants may be required to recommend measures - Treatment will be applied as needed until eradication is confirmed
	Monitoring	Every 5 years	- Monitoring will be carried out by a qualified arboricultural consultant / qualified ecologist - Remedial measures and target species for thinning/coppicing will be identified

General Activity	Specific Activity	Dates / Timing	Description
			An adaptive management approach will be used and changes to the management regime will be made as necessary to ensure the health of the woodland
Habitat Creation Species-rich Grassland (Dry) (Section 4.3.2)	Creation of grassland	Ideally Autumn or Spring	- Prepare ground as per manufacturer's instructions - The areas of wildflower grassland will be sown with Emorsgate EM4 – Meadow Mixture for Clay Soils
	Year 1 Management	Routinely as required	- Control annual weed growth by mowing to 50-75mm throughout the first year to minimise competition and weed seed production. - After first year, the newly created grassland will be managed as per the enhanced grassland below
Habitat Enhancement Species-rich Grassland (Dry) (Section 4.3.2.1)	Years 1 – 30 Management	Annual cut in late-June to September, varying sections seasonally and by target heights	- Cuts will be in two-stages, first to 150mm, left for 24 hours, and then to the target height - Conduct hay cut in late-June to September, varying timings in sections and annually - Target heights will vary: 20% uncut in one year, 5% scarified as bare ground, 20% cut to under <50mm, remainder cut to 70mm - Leave cuttings in situ for 1 week and then remove
Habitat Enhancement Species-rich Grassland (Wet) (Section 4.3.2.2)	Years 1 – 30 Management	Annual cut in late-summer to early-autumn	- No more than 1/3 of wet grassland will be cut in any given year - Grassland will be cut to a height of 100-150mm - Any weedy species that establish will be targeted for management and hand-pulled if needed
Retained Habitat Species-rich Amenity Grassland (Section 4.3.2.3)	Years 1 – 30 Management	Routinely as required	- Regular mowing is expected in this area but grass should be cut no lower than 25-40mm. - Mowing should be relaxed from late June for 4-8 weeks and only cut when untidy to allow species to flower
Habitat creation Individual Trees (Section 4.3.3)	Planting	Late Autumn	- Plant trees as specified within the residential urban area. - Apply Rootgrow or Bonemeal to encourage healthy root growth.

General Activity	Specific Activity	Dates / Timing	Description
			Apply Mycorrhizal treatment to the tree roots.
	Year 1 Management	Routinely as required	- Remove weeds from a 1m exclusion zone around each newly planted tree. - Apply mulch around the base of the tree as required.
	Years 1-5 Management	Weeding: As required Pruning: October	- Remove weeds from a 1m exclusion zone around each newly planted tree. - The trees will be subject to light pruning as required in October to ensure that they are developing healthy growth forms (but pruning will not be extensive enough to restrict expected canopy or height for their species).
	Years 10-30 Management	Pollarding	- Beginning in Year 10, some trees will be subject to pollarding where suitable to do so, as determined by an arborist - Management will be on a 10-15 year rotation
	Monitoring	Late Winter – Early Spring	- Trees will be inspected every 3 years by a suitably experienced arborist during late winter – early spring of each year when required. These monitoring visits will assess the general health of the trees and determine if any remedial action is required, including noting any presence of disease. As part of these monitoring visits, the arborist will produce a monitoring report which will be sent to the LPA outlining the results and appropriate recommendations (i.e. remedial works, removal /replacement). - Any plants that are removed, die or become seriously damaged or defective shall be replaced like for like in the next planting season.
Habitat enhancement Ponds (Section 4.3.4)	Marginal Planting	Spring (March to early-June)	- Marginal plants will be planted around the edges of the largest pond (Pond 8) - Plugs will be planted around the pond edges at a water depth of 0cm to up to 25% the height of the plant, following manufacturer's instructions

General Activity	Specific Activity	Dates / Timing	Description
	Dredging / Thinning	Late-October to early-November	- Thinning within the pond/pond edge should be carried out on a 2-3 year rotation with no more than 1/3 of the pond cleared in a year - Any plants/debris cleared should be left along the edge for a few days and then removed from site - Dredging of the pond will only take place as required to maintain depth and will not be carried out more than once per 5 years
	Pond Edge management	Grassland management: Late summer/early autumn Scrub/tree management: Dec – Feb	- Edges of the ponds will be managed as per the wet grassland above (Section 4.3.2.2) - A target shade cover of the pond edge will be under 50%, achieved by thinning scrub/trees as needed in winter months
Maintenance & Monitoring			
Compliance check (Section 4.6)	Monitoring report (Ecologist)	Years 1 – 5: Annually Years 6 – 30: Every 5 years	- A report will be produced by an ecologist to provide details on all management, assessment of habitats, additional management requirements (if required), management to be carried out in the next phase and reporting on any delays - Each report will be sent to the LPA
Species Enhancement Features	Maintenance	Annually	- An annual maintenance check will be carried out to ensure all boxes are cleaned out as necessary (by a licensed ecologist where required) - Any boxes requiring replacement will be replaced like-for-like as soon as possible

6.0 CONCLUSION

This report brings together and expands on all relevant sections of the previous ecological report and management plan associated with the site called 'West Hoathly Brickworks, Sharpthorne' and uses them to inform a site-wide Landscape and Ecological Management Plan (LEMP) and Biodiversity Enhancement Layout to satisfy the discharge of conditions 16 and 17 of the planning approval (DM/23/0827). The key ecological constraints on site include the presence of Common Pipistrelle and Soprano Pipistrelle day roosts in buildings, foraging and commuting bats, low populations of reptiles, confirmed presence of Great Crested Newts, potential for Hazel Dormice to be present, and nesting birds. All necessary mitigation and compensation measures have been described herein with extensive biodiversity enhancement measures and a prescription of the management of habitats within the development area and associated SANG for a period of at least 30 years also provided. This will ensure the creation and management of habitats is suitable and achieves a net gain for biodiversity with all features of ecological importance protected.

7.0 REFERENCES

Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F (2014) Analytical and methodological development for improved surveillance of the Great Crested Newt. Defra Project WC1067. Freshwater Habitats Trust: Oxford.

Bright, P, Morris, P and Mitchell-Jones, T., (2006) The Dormouse conservation handbook, 2nd edition, English Nature.

Collins, J. (ed) (2023). Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition). The Bat Conservation Trust, London. ISBN-978-1-7395126-0-6.

Ecology Solutions (2023) *Ecological Assessment – West Hoathly Brickworks, Sharpthorne*.

Ecology Solutions (2023) *West Hoathly Brickworks, Sharpthorne SANG Management Plan*. March 2023. 1078M.SMP.vf.

Emorsgate Seeds (n.d.) EM4 – Woodland Mixture. Available at: <https://wildseed.co.uk/product/mixtures/complete-mixtures/meadow-mixtures-for-specific-soils/meadow-mixture-for-clay-soils/>

Emorsgate Seeds (n.d.) EW1 – Woodland Mixture. Available at: <https://wildseed.co.uk/product/mixtures/complete-mixtures/special-habitat-mixtures/woodland-mixture/>

English Nature (2001) Great Crested Newt mitigation guidelines.

FPCR (2022) *Great Crested Newt Report and Mitigation Strategy – Sharpthorne Brickworks, West Hoathly*.

HART (2009) Herefordshire Amphibian & Reptile Team. *Reptile Habitat Management: Guidelines for Landowners*

HGBI (1998) Evaluating Local Mitigation / Translocation Programmes: Maintaining Best Practice and Lawful Standards

ILP / BCT (2023) *Guidance Note 08/23: Bats and Artificial Lighting at Night*

Mitchell Jones, A.J., (2004) Bat Mitigation Guidelines, English Nature

Natural England (2011) Badgers and Development: A Guide to Best Practice and Licensing

Reason, P.F. and Wray, S. (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Chartered Institute of Ecology and Environmental Management, Ampfield.

UKHab Ltd. (2023). UK Habitat Classification – Habitat Definitions Version 2.0 (July, 2023)

APPENDICES

Appendix 1. Biodiversity Enhancement Layout

1. Wider site view
2. Detailed view of Residential Development Area



Legend

- Vivara Pro Bat Boxes (20no.) of mixed styles
- Integrated Bat Bricks (54no.)
- ▲ Integrated Swift Bricks (54no.)
- ▲ Vivara Pro Bird Boxes (20no.) of mixed styles
- Dormouse Boxes (5no.)
- ◆ Reptile Compost Heaps (2no.)
- ◆ Reptile Hibernacula (2no.)
- ◆ Log / Brash Piles (4no.)
- Fallen Deadwood (5no. total)

*Standing Deadwood - Location/No. TBD based on tree suitability determined on site by an arboricultural consultant

— Redline Boundary



K4 Keppel, Daedalus Park
Daedalus Drive
Lee on the Solent, PO13 9FX
E: info@ecosupport.co.uk
T: 01329 832 841

Map	Biodiversity Enhancement Layout (Wide)
Site	West Hoathly Brickworks
Client	Ashill Reg Ltd
Date	12/03/2025

© This map is the copyright of Ecosupport Ltd.
Any unauthorised reproduction or usage by any person is prohibited.



Legend

- Vivara Pro Bat Boxes (20no.) of mixed styles
- Integrated Bat Bricks (54no.)
- ▲ Integrated Swift Bricks (54no.)
- ▲ Vivara Pro Bird Boxes (20no.)
- Dormouse Boxes (5no.)
- ◆ Reptile Compost Heaps (2no.)
- ◆ Reptile Hibernacula (2no.)
- ◆ Log / Brash Piles (4no.)
- Fallen Deadwood (5no.)

*The above numbers are totals across the site and some features may not be seen within this plan of the residential area

— Redline Boundary



K4 Keppel, Daedalus Park
Daedalus Drive
Lee on the Solent, PO13 9FX
E: info@ecosupport.co.uk
T: 01329 832 841

Map	Biodiversity Enhancement Layout (Residential)
Site	West Hoathly Brickworks
Client	Ashill Reg Ltd
Date	12/03/2025

© This map is the copyright of Ecosupport Ltd.
Any unauthorised reproduction or usage by any person is prohibited.

Appendix 2. Reptile / GCN Fencing and Receptor Plan

Appendix 3. Biodiversity Protection Zone Plan



Legend

- Site Boundary
- West Hoathly SSSI Boundary
- ASNW Boundary
- + + + Heras fencing

Biodiversity Protection Zones

- GCN receptor
- Wider SANG
- 15m ASNW buffer
- Retained boundary habitats



K4 Keppel, Daedalus Park
Daedalus Drive
Lee on the Solent, PO13 9FX
E: info@ecosupport.co.uk
T: 01329 832 841

Map	Biodiversity Protection Zones (BPZs)
Site	West Hoathly Brickworks, Sharpthorne
Client	Ashill Reg Ltd
Date	20/02/2025

© This map is the copyright of Ecosupport Ltd.
Any unauthorised reproduction or usage by any person is prohibited.