LAND AT FURNERS LANE, HENFIELD

Reptile Mitigation Strategy

January 2025

Report ref: SWE-P24-0054-R3
Planning application ref: DC/24/1538

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PROJECT: Land at Furners Lane, Henfield

CLIENT: Elivia Homes

PREPARED BY: Sam Watson BSc (Hons) MCIEEM

PROJECT DESCRIPTION: Erection of 29 homes with associated landscaping, open space, parking and creation of new vehicular access from Furners Lane.

REPORT SCOPE: Reptile mitigation strategy

REPORT REF: SWE-P24-0054-R3

DATE OF ISSUE: January 2025

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Drawings

0054-1001-1	Proposed reptile fence layout

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Appendix 1	Ecological Design Statement and Landscape Ecological Management Plan for Nolands Farm, prepared by EcoSupport

1.0 INTRODUCTION

Background

1.1 Sam Watson Ecology was appointed by Elivia Homes to prepare a reptile mitigation strategy for a population of reptiles at a site known as Land at Furners Lane, Henfield (approximate central grid reference TQ 21798 16061).

1.2 This follows the submission of an application for planning consent to construct 29 homes on the site, together with associated landscaping, open space, parking and creation of new vehicular access from Furners Lane. SWE prepared an Ecological Impact Assessment (EcIA) and Biodiversity Net Gain assessment (SWE ref: SWE-P24-0054-R1-rev2) for the application, and comments received from the council on the application (Place Services response, dated 6th January 2025) include a request for a reptile mitigation strategy.

Site survey

1.3 As part of the EcIA for the application, a survey to confirm the presence or likely absence of reptiles on the site, was carried out in 2022. The methodology for this was based on the 1999 Froglife guidance[1] and involved 78 pieces of artificial refugia in the form of sheets of corrugated bitumen approximately 50 x 100cm in size, being placed out around the site on 23rd March 2022.

1.4 Following a short 'bedding in' period, the site was revisited on eight occasions between 12th April and 9th May 2022 so that the refugia could be checked for reptiles. Any reptiles seen were identified to species level, allocated to an age class and sexed where possible. Checks of the refugia were carried out during periods of favourable weather when reptiles could reasonably be expected to be active, i.e. warm days with a temperature above 9°C and with an absence of heavy or continuous rain.

1.5 The results of the reptile survey are provided in Table 2 below. Two reptile species were confirmed on the site: slow worm *Anguis fragilis* and common lizard *Zootoca vivipara*. The presence of sub-adult animals would suggest the site is also used for breeding. Reptiles were recorded across the whole site with no clear bias in distribution to a particular area.

[1] Froglife (1999) *Reptile survey: an introduction to planning, conducting and interpreting surveys for snakes and lizard conservation.* Froglife Advice Sheet 10. Froglife, Halesworth.

Table 1 – reptile survey results

Date	Slow Worm			Common lizard		Time	Temperature	Cloud Cover
	M	F	SA	A	SA			
12/04/2022	1			1		09:45	14	20%
14/04/2022	1		1	3		12:30	16	40%
19/04/2022	1	2		4		16:00	15	60%
20/04/2022				4		13:30	15	10%
26/04/2022	1	3		3	2	18:05	14	90%
27/04/2022		3		4	1	08:45	12	100%
04/05/2022	1	2		3		11:50	13	70%
09/05/2022	2	2	1	18	1	18:00	18	25%

M = male, F = female, SA = sub-adult

2.0 LEGISLATION

2.1 Slow worm and common lizard are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), in respect of Part 9 sections (1) and (5). Section (1) states –

"*9 Protection of certain wild animals*

(1) Subject to the provisions of this Part, if any person intentionally kills, injures or takes any wild animal included in Schedule 5, he shall be guilty of an offence."

2.2 Reasonable effort needs to be made to ensure that the construction of the proposed development would not result in this protection being infringed. Due to the extent of the development within the site there is considered to be insufficient habitat available to retain the population on-site, and an off-site receptor is therefore proposed.

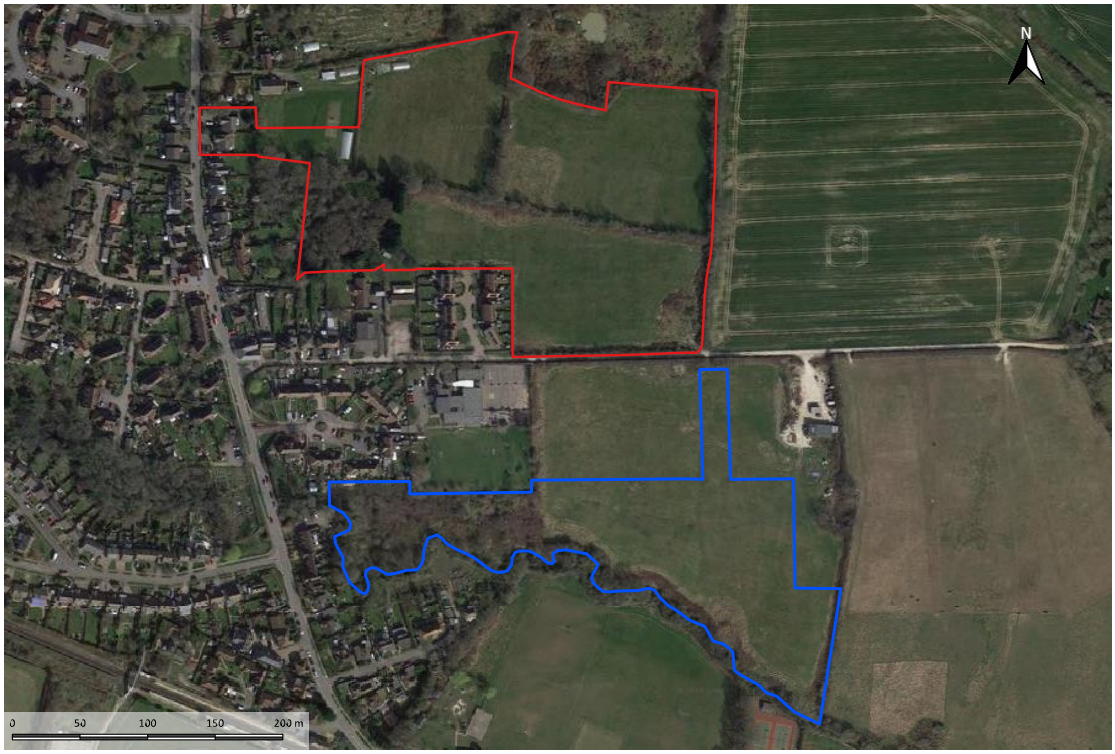
3.0 MITIGATION

Overview

3.1 Whilst approximately half of the site will be open space, there is assessed to be insufficient capacity in the retained grassland for it support both the current population and those from the development area. As such, an off-site receptor is required to which reptiles from the development area can be relocated via a translocation.

Receptor site

3.2 Elivia Homes have obtained planning consent (Lewes District Council ref: LW/21/0262) to develop a site known as Nolands Farm, Plumpton Green (approximate central grid reference: TQ36621653). As part of the development, a parcel of land adjacent to the south (blue land – see below) has been secured primarily for the delivery of enhancements under statutory Biodiversity Net Gain requirements. Part of the land will, however, also be a receptor for the small number of common lizards and slow worms recorded within that development site in 2017.



3.3 Full details of how the blue land will be managed are set out in the Ecological Design Statement and Landscape and Ecological Management Plan, prepared by EcoSupport to discharge Condition 11 attached to the reserved matters consent for the development. A full copy of this report is included at Appendix 1. To ensure that the receptor includes sufficient

capacity for the reptiles translocated to it from that development, the plan at paragraph 4.10.1 states – "*An area of rough grassland is proposed to the centre of an existing scrub parcel in this area. The creation of this rough tussocky grassland will provide valuable habitat for reptiles and amphibians.*"

3.4 In addition to this habitat creation and pertinent to its use as a receptor for Furners Lane is the wider pasture field. Whilst this is to be enhanced to a wildflower meadow and managed to deliver biodiversity net gain, the management prescriptions will also enhance it for reptiles. This intervention will result in a significant amount of habitat suitable for reptiles being created, well in excess of that needed just to support the reptiles from Nolands Farm. This additional capacity can therefore be used to provide a receptor for the reptiles at Furners Lane. Indeed, the development at Furners Lane will result in the loss of c1.37ha of reptile habitat. The meadow at Nolands Farm is c1.67ha, which is over 20% larger than the area lost, a significant increase.

3.5 As part of the enhancements within the meadow a pond is to be created and 3No hibernacula will also be added. To further enhance it, an additional 4No hibernacula will be created to ensure that the meadow has sufficient hibernation capacity and therefore fulfils the same function as the habitat removed at Furners Lane.

3.6 Whilst it is recognised that Nolands Farm is some distance from Furners Lane, being approximately 15km to the west, it has several other significant advantages that are considered to outweigh this potential disadvantage. Firstly, the receptor is part of an existing planning consent and so it is protected from future development. The management of the receptor is also agreed via the discharge of the condition 11 (reference: LW/23/0673 condition 11 – Ecological Design Strategy) attached to the reserved matters consent and is therefore secured. Similarly, the future funding of the management is also secured. These factors mean that Horsham District Council can have a very high level of confidence in success of the translocation for Furners Lane.

4.0 TRANSLOCATION

Methodology

4.1 Translocation will follow industry standard guidance[2] and be undertaken during the reptile active season which is typically between March and September (inclusive), depending on seasonal variations in weather patterns during any given year. The decision to translocate animals outside of this period will be strictly at the discretion of the supervising ecologist and will only be permitted if there is no increased risk to the welfare of the slow worms and common lizards.

4.2 The translocation will involve the installation of a reptile fence c.1.2m high around the development site to isolate it from surrounding habitat (see Drawing 0054-1001-1). This will prevent any off-site reptiles from entering the development site once the translocation has commenced. In tandem with the installation of the fence, the site will be saturated with artificial refugia (c.2-300 pieces) in the form of sheets of bitumen approximately 0.5 x 0.76m in size.

4.3 Following a short 'bedding in' period, checks of the refugia will then be carried out on all subsequent 'trapping days' thereafter. Any reptiles seen during each check will be captured and transported to the receptor at Nolands Farm, where they will be released into one of the hibernacula so that they can immediately shelter to avoid the risk of predation. Wherever possible, each check will be timed to coincide with optimal weather conditions for finding reptiles, i.e. days with a temperature above 9°C and without heavy or continuous rainfall. Any checks undertaken outside of these conditions will only be counted as a 'trapping day' if at least one reptile is found.

4.4 The survey at Furners Lane indicated that is supports a 'good' population of common lizards and a 'low' population of slow worms. As such, the translocation is likely to require between 60 and 90 days to completed, with the aim of the translocation being to reach a point at which there are at least five consecutive 'trapping days' when no reptiles are seen during the refugia checks. Once this point is reached the development site can be considered 'clear' of reptiles in accordance with accepted industry practice. Notwithstanding this, to ensure a sufficient level of effort is expended, a minimum of 60 days trapping will be undertaken before the five day 'rule' can be applied.

Additional precautions

4.5 If necessary, habitat manipulation, such as vegetation strimming, may be undertaken during the translocation, either to reduce the suitability of areas in which no reptiles are being found and/or to concentrate reptiles into defined areas to increase the capture rate. Any

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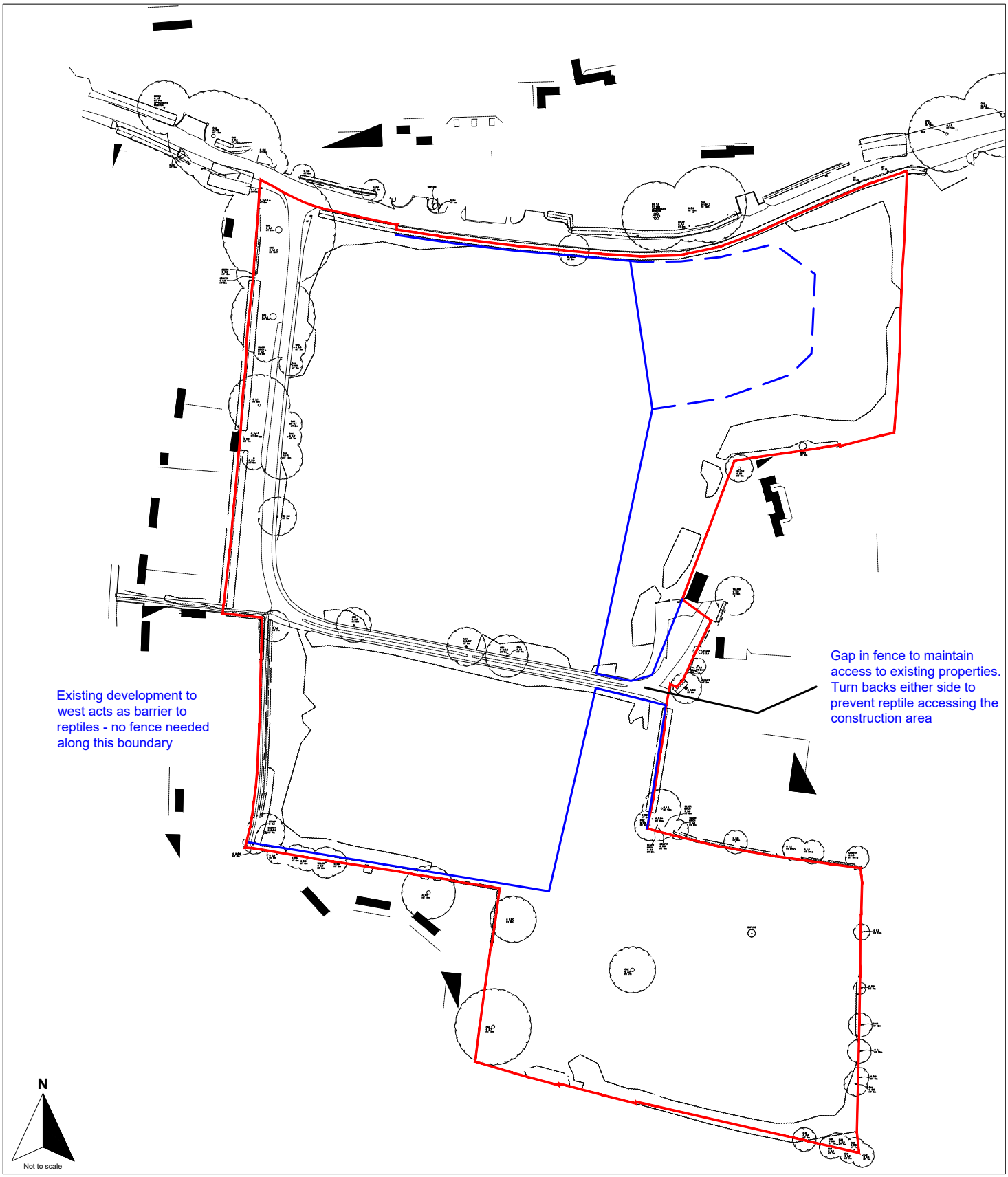
[2] HGBI (1998) *Evaluating Local Mitigation/Translocation Programmes: Maintaining Best Practice and Lawful Standards.*

such habitat manipulation will only be carried out by hand, using handheld tools such as line trimmers and brush cutters. This process does not require the vegetation to be completely removed, instead it is reduced in height to 150mm above ground level to make it less favourable, thereby encouraging any reptiles present to move to other parts of the site. Indeed, it would not be in the interest of any reptiles to completely clear the vegetation as this would leave them exposed to predation due to a lack of shelter and would also greatly reduce the availability of prey.

4.6 It may also be necessary to carry out localised habitat manipulation during the translocation where this is needed to investigate the possible presence of, and/or allow access to, features in which reptiles could be sheltering so that these can be destructively searched. A destructive search involves the careful mechanical dismantling and removal of existing features/structures on the site that could contain reptiles, such as piles of brash and logs. Destructive searching will only be carried out once the five day 'rule' detailed at 4.4 above has been met and only under the direct supervision of the supervising ecologist throughout.

5.0 MONITORING

5.1 Monitoring is required to assess the success of the translocation and the effect of the ongoing management, and will involve a standard seven visit refugia survey being carried out of the receptor in April, May or September in years one and three following completion of that translocation. The results of the surveys will be used to amend the management, if necessary, to ensure that this is promoting the development of high-quality reptile habitat.



Site boundary

Reptile fence - permanent - remains for duration of construction

Reptile fence - temporary - removed once SuDS basin is complete

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SWE

Project - Land at Furners Lane, Henfield		
Client - Elivia Homes		
Title - Proposed reptile fence layout		
Date - January 25	Drawing - 0054-1001-1	Rev -

Ecological Design Statement And Landscape & Ecological Management Plan

Nolands Farm, Plumpton

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Report	Landscape & Ecological Management Plan / Ecological Design Strategy (conditions 10 - 14)
Site Name	Nolands Farm, Plumpton Green
Author(s)	Lewis Lakudzala MRes, ACIEEM
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Client	Elivia Homes
Date of Issue	6th December 2024
Status	**Final for submission**

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EXECUTIVE SUMMARY

Ecosupport Ltd were commissioned by Eliva Homes to produce a combined Landscape and Ecological Management Plan (LEMP) and Ecological Design Strategy (EDS) for the development at Nolands Farm, Plumpton Green as required by comments 10 - 14 received from East Sussex County Council approval of reserved matters (ref: LW/23/0673) following outline planning permission (LW/21/0262).

The following documents have been produced for the outline application and reserved matters applications:

- *Ecological Impact Assessment* - The Ecology Co-op (January, 2021a)
- *Biodiversity Impact Calculation* – The Ecology Co-op (2020)
- *Biodiversity Net Gain Statutory Metric Calculation* (update to above)- Ecosupport Ltd (December, 2024)
- *Landscape and Ecology Management Plan and Ecological Design Strategy* – The Ecology Co-op (2023)
- *Construction Environmental Management Plan* – The Ecology Co-op (2023)
- *Construction Environmental Management Plan (Biodiversity)* (update to above)- Ecosupport Ltd (December, 2024)

These reports address the necessary mitigation and compensation for protected species present on site include a series of management prescriptions to enhance the site for biodiversity. The measures within the reports have been incorporated and expanded on within this report.

This management strategy covers the prescription management of the habitats within the site post-development for a period of at least 30 years as well as the biodiversity mitigation and enhancements to be included within the site.

Furthermore, this management strategy addresses the Biodiversity Net Gain Assessment undertaken at this site. The purpose of this assessment is to quantify the biodiversity value of the site prior to its development, and the predicted value post development. This is measured in biodiversity units, calculated according to the habitats present based on their size, distinctiveness and condition. This enables the quantitative calculation of the predicted change in biodiversity value as a result of the proposed development, with the objective of achieving a net gain in biodiversity.

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1.0 INTRODUCTION

1.1 Aim

The aim of this report is to provide a prescription of the management of habitats for a period of at least 30 years within the site and to bring together all relevant sections of the previous ecological reports associated with the site called 'Nolands Farm' in Plumpton Green and use them to inform a site-wide Landscape Ecological Management Plan and Ecological Design Strategy. This will ensure the creation and management of habitats is suitable and achieves a 10% net gain for biodiversity with all features of ecological importance are protected. This report will address comments 10-14 raised by East Sussex County Council on the granted reserved matters application (LW/23/0673):

*"**EDS/LEMP***

***10.** Additional documents provided include the BIC version 1 with accompanying Metric tool, which is the version considered at appeal. The LEMP/EDS has been amended in line with this version of the BNG calculation. The LEMP/EDS is therefore based on a scheme for 86 houses rather than 83 and does not take account of the recent layout changes discussed above. Whilst it is acknowledged that condition 9 refers to that BIC report, it requires an EDS that addresses "…enhancement of the site to provide a minimum 10% biodiversity net gain in broad accordance with the details set out in the Biodiversity Impact Calculation report…" (our emphasis). To accurately reflect the current scheme, the BNG calculation should be updated, and the EDS and LEMP revised accordingly. We therefore reiterate our previous advice that the most recent BIC should be provided, including the full calculation tool and any associated condition assessment sheets. It is further recommended that the BNG calculation is updated to the current version of the Metric (v. 4.1). From the information available, it is considered likely that the scheme will be able to deliver the minimum 10% BNG required.*

***11.** The revised LEMP/EDS clarifies that the area proposed as a receptor site for amphibians and reptiles has not been included in the biodiversity net gain (BNG) calculations; this demonstrates that additionality has been considered and is welcomed.*

***12.** The LEMP/EDS section 4.1.2 states that the existing hedgerows on site will be managed to ensure there is a benefit to local biodiversity. Detail as to the management required should be provided, e.g. timing and frequency of cuts, height, width etc. Appropriate management of newly created hedgerows will also be required and should be detailed.*

***13.** Section 4.1.4 relates to wildflower meadow creation and states that works will be carried out using the precautionary habitat manipulation measures for reptiles outlined in the CEMP. However, the LEMP/EDS refers to the wrong version of the CEMP, and the mitigation required for reptiles includes trapping and translocation rather than precautionary habitat manipulation. Habitat creation should also give due consideration to the final agreed mitigation/licensed works for GCN which may vary from reptile mitigation.*

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14. *The LEMP/EDS proposes 15 bird boxes as enhancements. As previously advised, BS42021: 2022 Integral nest boxes – selection and installation for new developments recommends a ratio of one bird box per dwelling within a development. The current proposed provision is c. 1:5. It is therefore recommended that the provision is increased to 1:1 in line with best practice. Integrated nesting bricks (as opposed to externally mounted boxes) are preferred for reasons of security, longevity, reduced maintenance, reduced predation, thermal stability and aesthetic integration with the building design. Where there are clear constraints (and these are evidenced) to integrating bricks, externally mounted boxes can be used. A specification for the artificial nesting boxes/bricks should be provided and include information on target species and brick number, type, location, installation and maintenance. Swift bricks are a cost-effective approach for biodiversity as they are considered a 'universal' fix for small cavity-nesting bird species as they will also be used by house sparrows, starlings, great tits, blue tits and occasionally house martins and nuthatches. where a multiple cavity brick is provided, such as the Schwegler 17A (triple cavity), this would result in the same provision but with a lower number of bricks being needed etc."*

In addition, condition 11 of the granted reserved matters applications requires the following:

'*No development shall take place until an ecological design strategy (EDS) addressing: the protection of important biodiversity features (woodland to the north-east of the red line boundary and the veteran tree on the northern boundary) during construction; provision of appropriate semi-natural buffers (minimum 5m native thorny vegetation to the woodland, and a buffer to the veteran tree at least in accordance with Standing Advice from Natural England and the Forestry Commission); and long-term management of those buffers, has been submitted to and approved in writing by the local planning authority. The EDS shall include the following:*

purpose and conservation objectives for the proposed works;
review of site potential and constraints;
detailed design(s) and/or working method(s) to achieve stated objectives;
extent and location /area of proposed works on appropriate scale maps and plans;
type and source of materials to be used where appropriate, e.g. native species of local provenance;
timetable for implementation demonstrating that works are aligned with the proposed phasing of development;
persons responsible for implementing the works;
details of initial aftercare and long-term maintenance;
details for monitoring and remedial measures;
details for disposal of any wastes arising from works.

The EDS shall be implemented in accordance with the approved details and all features shall be retained in that manner thereafter.'

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The management outlined within this report includes the following:

- Implementation of sensitive lighting for bat foraging and commuting habitat
- Erection of bat and bird bricks / boxes
- European Protected Species (EPS) licenses for bats and dormice
- Precautionary working approach for badgers
- Installation of 3 No. reptile / amphibian hibernaculum
- Enhancement and creation of species-rich grassland across the site
- Enhancement and improvement to the woodland on site
- Creation of wildflower meadow, mixed scrub, native hedgerows and individual trees across the site
- Creation of three attenuation ponds with associated wetland planting within
- Dense scrub and the creation of rough grassland habitat with three new hibernacula.
- Provision of hedgehog fence gaps

The baseline assessments relevant to this report were undertaken by The Ecology Co-op in September 2016 with updated walkovers conducted in March 2020 (The Ecology Co-op) and June 2024 (Ecosupport Ltd). This report has incorporated the recommendations from the Ecological Impact Assessment (The Ecology Co-op, 2021) Landscape and Ecology Management Plan and Ecological Design Strategy (The Ecology Co-op, 2021) which were submitted as part of the granted outline planning permission.

1.2 Objectives

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

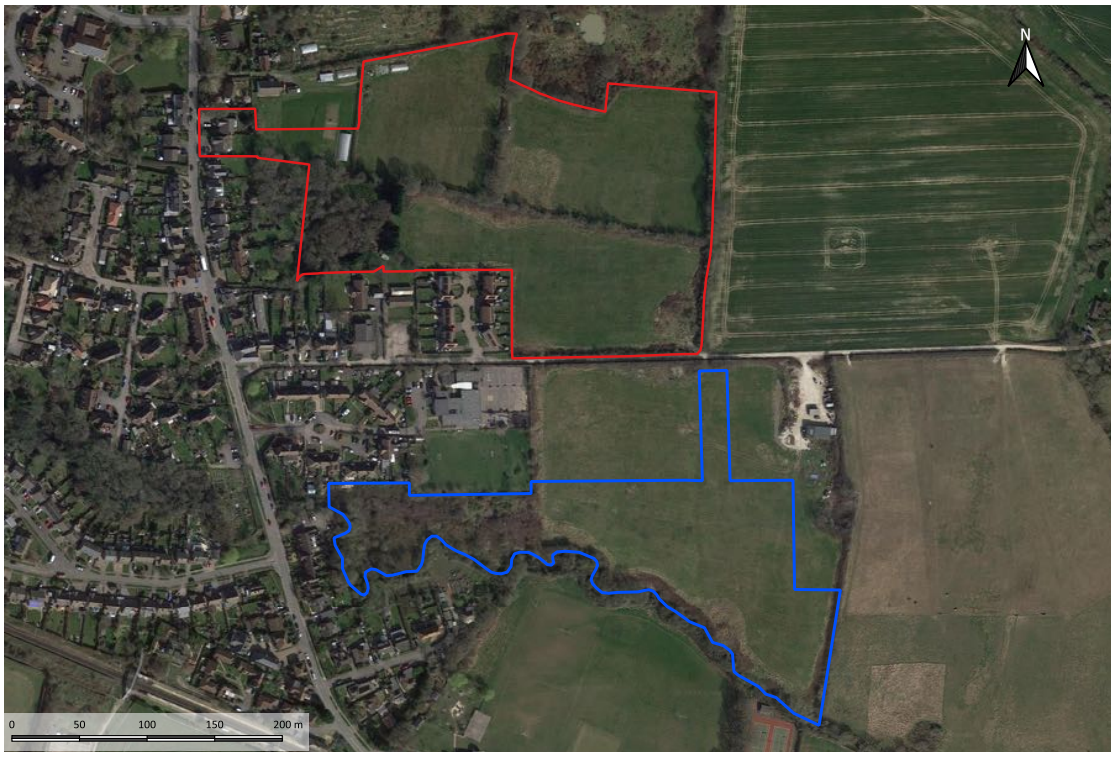
1. To preserve existing habitat and create and manage new habitats to provide the greatest benefit to bats, Badgers, reptiles, amphibians, Hazel Dormice, Hedgehogs and birds.
2. To ensure the created and enhanced habitats within the site fulfil their ecological function and remain in an appropriate condition 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, Badgers, 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 10% net gain for biodiversity.

1.3 Description

The site comprises a farm holding which includes three fields of pasture, a small field used for small scale fruit and vegetable farming located on the east side of Plumpton Green, East Sussex, BN7 3FA (centred on OS grid reference TQ36621653). The site measures approximately 8.10ha in total which is split into two sections (**Fig 1**), the section north of North Barnes Lane which is within the red line Application Site and the other section south of this

lane, which is within the blue lined area within the control of the Applicant. The fields are bordered by mature species-rich hedgerows, tree lines and fence lines. A parcel of broadleaved woodland sits in the western section of the site. Bevern Stream borders the site immediately to the south but is not included within the site ownership.

Figure 1. An aerial image showing the redline boundary of the approximate construction zone with the blueline indicated.



1.4 Proposed Development

Outline planning permission was granted at appeal for the demolition of 2 No. existing dwellings and outbuildings and the erection of up to 86 No. residential dwellings, including 40% affordable housing, village business hub, provision of pedestrian and vehicular access, open space, associated infrastructure and landscaping. The development also incorporates soft and hard landscaping including native tree and hedgerow planting, the inclusion of greenspace with wildflower areas and the enhancement of the woodland to the west through targeted management for biodiversity.

Reserved matters permission has now been granted for 83 dwellings no. new residential dwellings (LW/23/0673).

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2.0 BASELINE DATA

2.1 Habitats

A Phase 1 habitat survey of the site was completed by The Ecology Co-op in September 2016 with a repeat walkover undertaken in March 2020 in which the habitats across the site were identified for the most part to be consistent with those previously identified. The most recent visit was conducted by Lyndsey Barratt BSc (Hons) PGCert MCIEEM and Adam Jessop MSc MCIEEM on the 27th June 2024 with habitat classifications on site pre-development updated in line with the categories specified for a UK Habitats survey, using Habitat Definitions Version 2.0 (UKHab Ltd., 2023).

2.1.1 Modified Grassland (g4) (616 – Allotments; 828- Vegetated Garden)

Three large and one small modified grassland fields are located on site (**Fig 2)** The southern field has a dense, tight sward which is shortly mown and dominated by Yorkshire fog (*Holcus Lanatus*), with Creeping Buttercup (*Ranunculus repens*), Broadleaved Dock (*Rumex obtusifolius*), Common Fleabane (*Pulicaria dysenterica*) and Dandelion (*Taraxacum officinale*).

The central field immediately north of North Barnes Lane is dominated by Cock's Foot (*Dactylis glomerata*), Yorkshire Fog (*Agrostis* sp.) and Dandelion, Hoary Ragwort (*Senecio erucifolius*), Common Ragwort (*Jacobaea vulgaris*) Broadleaved Dock, Creeping Buttercup and White Clover (*Trifolium repens*). The northern field was composed of Yorkshire fog, *Agrostis* sp., Soft Rush (*Juncus effusus*) with some Creeping Thistle (*Cirsium arvense*), Creeping Buttercup, White Clover. Short sward grassland was associated with the garden space of Nolands Farm with vegetable growing plots present. The following plants were identified within this amenity grassland; Cock's Foot, Perennial Rye Grass (*Lolium perenne*), *Fescue festuca* sp., Creeping Buttercup and White Clover.

Figure 2. Modified grassland present throughout the fields on site (taken June 2024).

2.1.2 Intensive Orchards (c1e)

An area of the tightly-mown grassland includes 16 semi-mature Apple Trees (*Malus domestica*) (**Fig 3**), located to the west within the garden space of Nolands Farm. An allotment with an area of 0.02Ha is also located in this area. These are fairly intensively managed, the grassland frequently mown and there are no other habitats present.

Figure 3. Intensive orchard present on the short sward modified grassland (taken June 2024).

2.1.3 Neutral Grassland (g3)

There are two sections of the site mapped as neutral grassland. The first is located to the north and the second small area to the south. The northern semi-improved field was composed of Yorkshire Fog, Cock's-Foot and Perennial Rye Grass, Timothy Grass (*Phleum pratense*), Soft Rush and an *Agrostis* species. Additional herbaceuous plants present included Meadow Buttercup *Ranunculus acris*, Red Clover *Trifolium pratense*, Common Cat's Ear (*Hypochaeris radicata*), Vetches. *Vicia spp*., Common Nettle (*Urtica dioica*), Meadowsweet (*Filipendula ulmaria*), Creeping Thistle (*Cirsium arvense*), Ground Ivy (*Glechoma hederacea*) and Broadleaved Dock with clumps of Birds-Foot Trefoil (*Lotus corniculatus)*.

The southern semi-improved area is rough, long, unmanaged and uncut with dense vegetation and some scattered tree poles including Oak (*Quercus* spp)., Hawthorn (*Crataegus monogyna*), Ash (*Fraxinus excelsior*). Species found in the habitat include, Timothy, Cock's Foot, Oat-grass (*Arrhenatherum sp*)., Yorkshire Fog, Common Nettle, Broadleaved Dock, Creeping Thistle, Common Hogweed (*Heracleum sphondylium*), Common Ragwort, Common Fleabane (*Pulicaria dysenterica*), Creeping Cinquefoil (*Potentilla reptans*), Wild Carrot (*Daucus carota*) and Pignut (*Conopodium majus*).

2.1.4 Bramble Scrub (h3d)

Very dense scrub runs along the stream to the south and is present in the southwest corner of the site. This area is dominated by Bramble (*Rubus fruticosus* agg.), Willowherbs (*Epilobium spp*.), Himalayan Balsam (*Impatiens glandulifera*), Teasel (*Dipsacus fullonum*), Creeping

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Thistle, Hedge Bindweed (*Calystegia sepium*), Hop (*Humulus lupulus*) and Willow Saplings (*Salix* sp.).

Scattered scrub dominated by Brambles with Willowherb species, some Broadleaved Dock, Elder (*Sambucus nigra*) and Common Nettle is located to the west of the central field. A small length dominated by Brambles and Blackthorn (*Prunus spinosa*) is present only to the north boundary of the north field and a length composed of Brambles and Rose between the modified and neutral grassland field.

2.1.5 Lowland Mixed Deciduous Woodland (w1f) (10 – Scattered scrub; 33 – Line of trees)
This woodland appeared to largely comprise of natural regenerative growth. The canopy is dominated by a small number of mature oak trees and also includes a mature Ash, whilst the understorey was partly choked with Sycamore (*Acer pseudoplatanus*) and Goat Willow (*Salix caprea*), with lesser amounts of Blackthorn, Holly (Il*ex aquifolium*), Hawthorn and English Elm saplings (*Ulmus minor*). Of particular note is a mature Wild Service Tree (*Sorbus torminalis*) and two sapling trees. There is some scrub fringing the woodland, with Bramble and Common Nettle dominating.

2.1.6 Species-rich native Hedgerow (h2a5) (50 – Ditch)
This habitat type runs along the other side of North Barnes Lane. The length along south is box shaped and approximately 3m in height, dense and in good condition. It is composed of Wild Privet (*Ligustrum vulgar*), Hawthorn, Ivy (*Hedera helix*), Rose (*Rosa* spp.), Brambles, Ash, Plums (*Prunus* spp.) Blackthorn (*Prunus spinosa*), Spindle (*Euonymus europaeus*) with some Cleavers and Black Bryony (*Dioscorea communi*) growing through the hedge and Nettles around the hedge base.

The length to the north is box shaped and approximately 3m height and 2.5m wide. It is in good condition and composed of Hawthorn, Ash, Blackthorn, Wild Privet, Ivy, Bramble, Rose sp. and Apple. with Pedunculate Oak (*Quercus robur*) rare along its length.

The hedgerow along the eastern boundary of the field located north of North Barnes Lane is species rich and consists of Blackthorn, Hawthorn, Rose sp., Brambles, Damson (*Prunus* spp.), Hazel (*Corylus avellana*), Ash, Field Maple (*Acer campestre*) and Pedunculate Oak. It is approximately 3.5m in height and also supports three semi mature trees; a field maple and two pedunculate oaks.

The following species make up the length along part of the northern boundary, Blackthorn, Hawthorn, Ivy, Ash, Field Maple, Wild Privet, Damson. This hedge is approximately 3m tall, in dense and in good condition. A box shaped species rich hedge which is approximately 1.5- 2m tall runs along the western boundary of the semi-improved field. The species identified included Beech, Hawthorn, Ivy, Rose sp., Brambles, Field Maple, Sycamore, Ash and Elder along with a single Field Maple and Ash Tree. It becomes defunct to the north with Blackthorn, Field Maple and Brambles dominating this section.

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2.1.7 Species-rich native Hedgerow (h2a5) (11 hedgerow with trees)

This habitat runs along the southern boundary of the field located north of North barns lane. As with the other hedgerows it is in good condition and is between 4 and 5 metres in height. It is dense along the majority of its length. At the west of the hedge, scrubby species composed of Blackthorn saplings and Bramble extends up to 2m metres into the field. The hedge is composed of Hawthorn, Field Maple, Blackthorn, Pedunculate Oak, Rose sp., Bramble, Spindle, Holly, Dogwood (*Cornus sangiunea*) and Ash. Species rich hedgerows with trees also run along the eastern boundary of the northern field and between the semi improved and improved field.

2.1.8 Native Hedgerow (h2a5) (11 hedgerow with trees)

This habitat type is located along part of the northern site boundary with only Hawthorn, Blackthorn, Pedunculate Oak, Rose and Brambles recorded.

2.1.9 Buildings (u1b5)

Two houses, Chestnut House and Saxon Gate are located on the west of the site, alongside station road. Two polytunnels currently used for vegetable growing are located upon the northwest of the site. The polyethene tunnels are supported by metal poles.

2.2 Bats

2.2.1 Data Search

SxBRC provided the following bat records from within 2km of the site: Brown Long-Eared (*Plecotus auritus*), Common Pipistrelle (*Pipistrellus pipistrellus*), Daubenton's Bat (*Myotis daubentonii*), Natterer's Bat (*Myotis nattereri*), Noctule (*Nyctalus noctula*), Serotine (*Eptesicus serotinus*), Soprano Pipistrelle (*Pipistrellus pipistrellus*) and Whiskered Bat (*Myotis mystacinus*) as well as an unidentified Long-eared Bat species. A maternity roost for Common Pipistrelles, 450m north of the site, dated 2012 was identified. A Noctule and Brown Long-eared Bat hibernation roost was recorded in 2006 located south of the site.

2.2.2 Preliminary Roost Assessment (Trees)

2.2.2.1 Ground-based Assessment (The Ecology Co-op)

Two oak trees along the northern site boundary and one in the north-eastern corner of the semi improved field were identified have bat roosting potential during the initial site walkover survey. These support woodpecker holes, rot holes and splits. Some trees along the eastern and western boundaries of the southernmost field had thick layers of ivy which can form features for roosting bats themselves or conceal potential features in the trunk and limbs.

2.2.2.2 Tree Climbing (The Ecology Co-op)

All of the trees within the site were inspected from the ground for features that could be considered potentially suitable for supporting roosting bats. This ground assessment led to 15 large, mature trees being climbed and six of these trees were identified to support features that were assessed as having moderate or low suitability as bat roosts. The northern hedge boundary of the site supports the greatest concentration of trees with potentially suitable

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roosting crevices for bats. There were no trees classified as supporting a 'high' suitability for roosting bats, however four trees supported a 'moderate' potential to support roosting bats and two with a 'low' potential. The results are shown in **Fig 4**.

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Table 1. Tree assessment data recorded from climbing assessments carried out at North Barnes and Nolands Farm (Ecology Co-op, 2021).

Tree no.	Tag no.	Grid reference	Species	DBH (m)	Roosting feature	Height (m)	Orientation	Assessment of potential bat roosting feature	Description of feature
1	135	TQ3673816613	Oak	1.3	Branch cavity	8	NE	Moderate	Branch cavity extends beneath bark to approx. 10cm depth
2	136	TQ3661616621	Oak	1	Branch cavity	3	SW	Moderate	Branch cavity with narrow chamber to a depth of 15cm
3	137	TQ3660016628	Oak	0.8	Branch cavity	6	SW	Low	Two connecting, wide, branch cavities with squirrel nesting in bottom of cavity
					Branch cavity	10	SW	Low	Branch cavity with blue tit nest at bottom
5	139	TQ3662316630	Oak	1	Woodpecker hole	4	SW	Moderate	Two woodpecker holes extending back approx. 15cm
					Woodpecker hole	6	S	Moderate	Upward facing branch split approx. 6cm deep

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6	140	TQ3656216661	Oak	1	Woodpecker hole	5	W	Moderate	Active woodpecker nest hole.

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Figure 4. The locations of the trees supporting potential bat roosting habitat, including four trees supporting a Moderate (orange) potential for supporting roosting habitat and one tree supporting low (yellow) potential. (The Ecology Co-op, 2021).

2.2.3 Preliminary Roost Assessment (Buildings)

2.2.3.1 Chestnut House (The Ecology Co-op)

Chestnut House is a modern brick-built detached house, likely to be less than 30 years old, with modern slate effect concrete roof tiles. A flat roof extension is situated off of the eastern side. The wooden soffits around the sides of the property are tight fitting with no visible gaps identified. All the roof tiles sit flush, and the ridge tiles appear to be tightly plugged with no potential roosting space for crevice dwelling bats. Hanging tiles are located on the western gable end of the building, a small number of gaps were recorded where the patterned tiles do not sit flush, which could be used by crevice dwelling bat species. No direct evidence of bats was recorded in association with the exterior of the building.

The building supports a large airy void which is approximately 12m (l) x 9m (w) x 3.5m (h). There are extensions to the east and western sides of the void, the west supports a small void which could not be accessed whilst the eastern section is flat roofed with the absence of a void. The main void is boarded through the central section and has a bitumen lining throughout. Many wooden cross beams clutter the roof space, but the large size of the void does create suitable flight lines for bats. Approximately 75 droppings, morphologically consistent with long eared bats *Plecotus* sp. were present as a cluster towards the northern end of the void with a further 20 identified at both of the gable ends. Some of the droppings at the gable ends were discoloured with age whilst more than 30% of the larger concentration appeared to be relatively fresh. Evidence of mice and rats using the void in the form of dropping were also noted. From the external aspect no clear access points could be identified for bats to enter the roof void.

A sample of bat droppings were taken from the Chestnut House property and sent for DNA analysis to the University of Warwick. This analysis confirmed that these droppings were from the Brown Long-eared Bat (*Plecotus auritus*).

2.2.3.2 Saxon Gate (The Ecology Co-op)

The Saxon Gate property is a detached modern two-storey residential dwelling of brick construction with pitched and cross-gabled roof clad with roof slates and clay ridge tiles. The upper part of the western gable is clad with clay hanging tiles at the apex. Gaps large enough to be potential bat roosting features were identified around some of the patterned hanging tiles. The eaves are sealed with tightly fitted soffit boxes with no gaps identified. All of the roof slates, ridge tiles and lead flashings around the chimney are tightly fitted with no discernible gaps. No direct evidence of bats externally was recorded. The property supports a single large roof void which has an internal height of approximately 2m from floor to apex. It has a modern timber frame with beams cluttering the void space and is lined throughout with bitumen roofing felt. No discernible access points were identified for bats into the roof void and no direct evidence of bats was present.

2.2.4. Updated Preliminary Roost Assessment (Ecosupport Ltd, 2024)

During the updated walkover on the 27th of June 2024, the buildings on site were subject to an updated Preliminary Roost Assessment conducted by Lyndsey Barratt BSc (Hons) PGCert MCIEEM (Class 2 survey license number 2018-38386-CLS-CLS) and Adam Jessop MSc MCIEEM (class level 2 survey licence number 2015-13366-CLS-CLS). A small number of droppings from *Plecotus* spp, totaling approximately 20 to 30, were found in Saxon Corner during the updated PRA. Both dwellings experienced rainwater leaks that damaged the upper floor ceiling, which resulted in slightly elevated light levels in the loft spaces.

2.2.5 Emergence Surveys

2.2.5.1 Previous Survey Work (The Ecology Co-op, 2017 & 2020)

Chestnut House supports up to three Common Pipistrelle day roosts, within the hanging tiles on the western (front) face of the property. These features are likely to be used by individual bats in the Spring and Summer months as shelter during the day. Common Pipistrelle is a common and widespread species within the UK, and of 'Least Concern' on the Red List for British Mammals[1].

2.2.5.2 Updated Survey Work (Ecosupport Ltd 2024)

A suite of two emergence surveys were completed in July and August 2024. Surveyor numbers and positions utilised the same observation points used within previous surveys, however, infra-red cameras aided surveyors with observations after dark[2]. No emergences were recorded on either survey from Chestnut House or Saxon Gate. General bat activity was

[1] The Mammal Society, 2020. Red List for Britain's Mammals. Available at: https://www.mammal.org.uk/wpcontent/uploads/2020/06/RedList_19June2020.pdf.

[2] Infrared cameras used were Nightfox Whisker- full specs listed in Appendix II.

moderate and dominated by Common Pipistrelles. Other species recorded include Noctules, Soprano Pipistrelles, Serotine, and *Plecotus* spp.

2.2.5.3 Bat Roosts in Trees

Up to six mature oak trees within the hedgerows at the site have a low to medium potential to support roosting bats, but no roosts were identified at the time of the survey. However, bats are transient, and the trees may now support roosting bats. Multiple bat species may roost in trees including some of those recorded commuting at the site. As such a range of different species were recorded during the emergence surveys, one of which is an Annexe II species (*Barbastella barbastellus*), therefore the site is is considered to be important for roosting bats at the ***local to district level.***

NB None of the trees identified with roosting potential are being removed as part of this application.

2.2.6 Activity Surveys

2.2.6.1 Previous Survey Work (The Ecology Co-op, 2016, 2017 & 2020)

Activity surveys and logger deployments across 2016 to 2017 and 2020 indicate that the site supports commuting and foraging bats including the following species and genera: Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle, Noctule, Leisler's Bat, Brown Long-eared Bat, Myotis Spp., Barbastelle, and Serotine.

Much of the activity occurs within the northern section of the site to be developed, with less activity recorded in the southern portion of the site to be retained and enhanced. The activity is predominantly along the site boundaries, though some foraging was recorded between fields for Noctule and Common Pipistrelle bat.

Common Pipistrelle was recorded most frequently during logger deployments, followed by *Myotis* sp. There was moderate activity recorded for noctule and Soprano Pipistrelle, with very low numbers of brown long-eared, Nathusius' Pipistrelle, Leisler's Bat and Barbastelle Bats also recorded.

Though most of these species are fairly widespread across the UK, the following species are listed as 'Vulnerable' on the on the Red List for British Mammals: Serotine and Barbastelle, the latter of which is also an Annex II species under the Conservation of Habitats and Species Regulations 2019. Nathusius' Pipistrelle which was recorded on the site in very low numbers is listed as 'Near Threatened' on the Red List for British Mammals. However, given the small numbers of these bats recorded on the site in comparison to Noctule, Soprano Pipistrelle and Common Pipistrelle which are fairly widespread and common, the site is not considered to be important to commuting and foraging bats beyond the local level.

2.2.7 Bat Trapping (The Ecology Co-op, 2017)

Following initial bat activity surveys and the first bat logger assessment, it was decided that it would be useful to undertake a bat trapping survey using a harp trap with accompanying sonic lure. These surveys can be particularly useful to help to identify *Myotis* bat species, which have similar calls that can be difficult to distinguish. Further to this, it can be possible to sex bats and get an idea of their age, which can be useful in determining the use of an area of land by bats.

The trapping assessment was carried out on the 31st July and 15th August 2017 by Theresa Stewart (Natural England Level 4 WML-Cl-20 bat licence: 2017-28263-CLS-CLS), who has extensive experience in trapping and handling bats and was assisted by Jess Burkitt according to best practice guidelines as issued by the Bat Conservation Trust. The two harp traps were installed in locations where they were considered most likely to catch bats, whilst also attempting to get a reasonable spread across the site and establish the use of field boundaries by bats. The locations of the two harp traps are shown in **Fig 5** below.

Figure 5. The locations of the two bat harp traps (white stars) across North Barnes and Nolands, Plumpton Green.

2.3 Badgers

2.3.1 Data Search

No records of Badger presence were returned by SxBRC.

2.3.2 Site Assessment (The Ecology Co-op)

During the Phase 1 survey in 2016, multiple mammal runs were identified across the site (**Fig 6**). Subsequently, checks of the sand traps in the entrance to the four identified setts along the eastern site boundary identified no activity by Badgers.

During the updated survey in 2020, no further sett entrances had established since the walkover in 2017.

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Figure 6. Map indicating the location of the four Badger sett entrances identified in 2017.

2.3.3 Evaluation

Though four sett entrances were identified long the eastern site boundary, these were not recorded to be in use. Despite this, the site offers foraging habitats for Badgers and they may commute or forage across the site. Overall, the site is not considered to be important to Badgers beyond the **site level.**

2.4 Reptiles

2.4.1 Data Search

Numerous records were returned by SxBRC for reptiles including Slow Worm, Common Lizard, Grass Snake and Adder. The closest record is for two Slow Worm records, located 140m north of the site, dated 2014.

2.4.2 Previous Survey Work (The Ecology Co-op, 2017)

The initial site survey found that the site supported multiple areas of suitable habitat for reptiles in the form of ruderal habitat, rough grassland, marginal longer vegetation and grassland of the semi-improved field. Suitable hibernacula were also identified in the form of wood chipping and a compost pile of leaves and grass cuttings were identified across the site. During a presence/likely absence survey in 2017, reptiles were found across the site. This included a 'low' population of Slow Worms and Common Lizards. The survey findings, dates and conditions are presented in **Fig 7** & **Table 2** below.

Table 2. Reptile survey results for Nolands Farm (The Ecology Co-op, 2017). Key: CL=common lizard, M=male, F=female, cc=cloud cover, BF=Beaufort scale.

Date	Start time	Air temp (°C)	Refugia temp (°C)	Weather conditions	Results
20/04/17	11:15	10.5	17	CC 10% hazy, sunny, BF2-3	0
10/05/17	15:00	16	31	CC 10%, BF2-3	0
15/05/17	13:30	13	18.5	CC 100%, overcast, BF2-3	FSW ~30cm under sheet 1
21/05/17	16:00	19	23	CC 10%, BF2-3	CL under sheet 4, SW under sheet 1
23/05/17	10:40	16	24	CC 90%, sunny spells, BF0-2	0
26/05/17	08:15	17	23	CC 0%, BF2-4	FSW ~30cm under sheet 1
29/05/17	08:15	15	17	CC60%, hazy sunny spells, BF0-1	CL under wood near chalk pile, FSW 30cm under sheet 1

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Figure 7. Reptile survey results for Nolands Farm (The Ecology Co-op, 2017). Key: Blue = reptiles present; yellow = reptiles absent.

2.4.3 Evaluation

The site supports a 'low' population of Common Lizard and Slow Worm, both common species of reptile within the UK. As such, the site is not considered to be important for reptiles beyond the local level.

2.5 Great Crested Newts

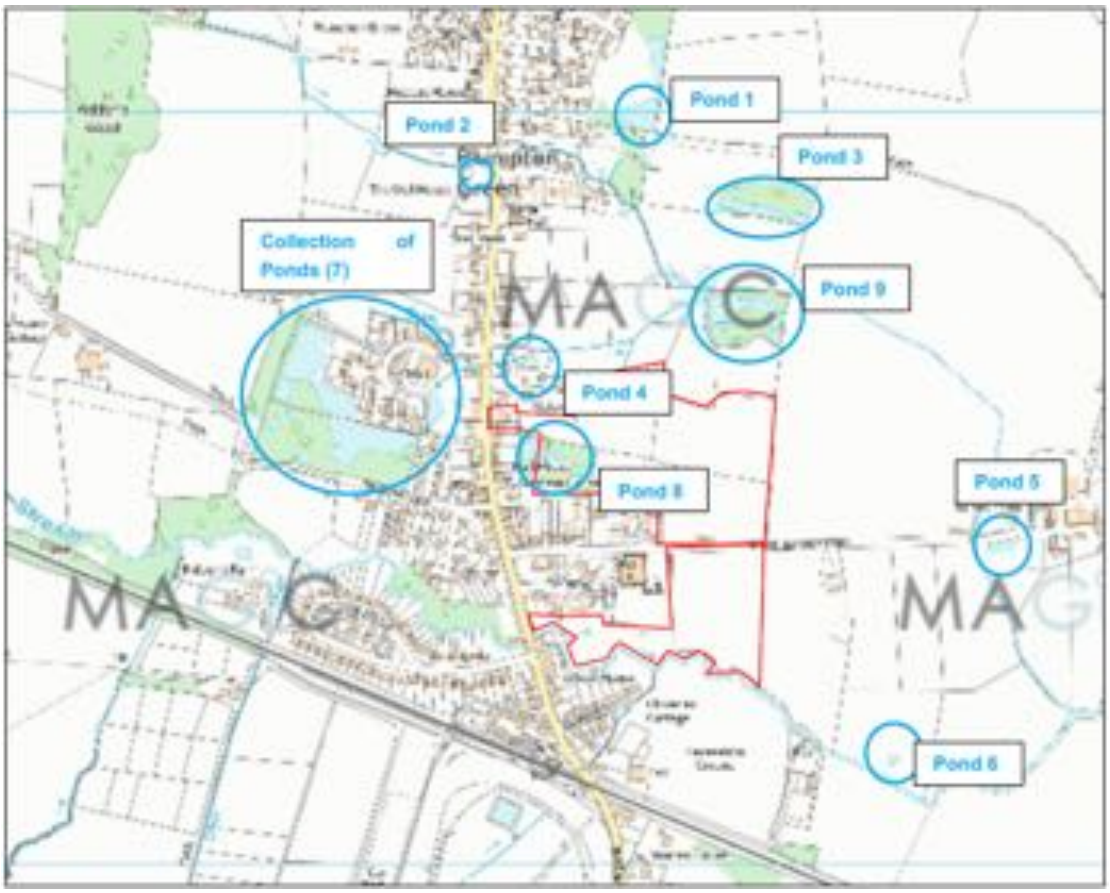
2.5.1 Data Search

SxBRC returned nine records for Great Crested Newts within 2km of the site. The closest record appears to be associated with the 'woodland ponds' located close to the western boundary with the actual record located 70m from the site boundary. A further record is associated with the large collection of ponds west of the site located approximately 300m away from the site.

2.5.2 Waterbodies

Following a review of OS mapping and aerial imagery, five ponds were identified within 250m of the site and nine within 500m (see **Fig 8**).

Figure 8. Ponds within 500m of the boundary to the site (Magic Maps).



2.5.3 Previous Survey Work (The Ecology Co-op, 2017 & 2020)

The presence / likely absence surveys and population assessments conducted on Ponds 3 and 4 in 2017 indicated that while Pond 3 supported Great Crested Newts, they were confirmed absent from Pond 4. During updated surveys in 2020, access was given to Pond 3 and no Great Crested Newts were found to be present within this waterbody.

Table 3. Summary of Great Crested Newt assessments and surveys.

Pond Number	Distance from Site (m)	Grid reference	Significant barriers	Access	Survey methods	Notes
1	315	TQ 36574 17000	Small Stream	Could not be obtained. No reply to letter sent in February 2017.	N/A	
2	300	TQ 36343 16922	Station Road	No record of ownership on land registry.	N/A	
3	245	TQ 36729 16869	Small Stream	Yes		GCN present in 2017 and 2022, but not present in 2020.
4	60	TQ 36420 16665	None	Yes in 2017 but not in 2020, 2022 or 2024.		GCN not present. It should be noted this pond is hydrologically linked to Pond 9 which is also absent of GCN.
5	440	TQ 37047 16420	None	Could not be obtained. No reply to letter sent in February 2017.	N/A	
6	450	TQ 36902 16122	None	Could not be obtained.	N/A	

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				No reply to letter sent in February 2017.		
Woodland ponds (8)	Adjacent to broadleaved woodland	TQ 36428 16540	None	eDNA in 2024 returned a negative result.	eDNA	GCN not present.
Western collection of ponds (7)	120	TQ 36181 16571	Station Road	Access denied via telephone communication.	N/A	Stocked with fish (carp *Cyprinus carpio*, perch *Perca fluviatilis*, rudd *Scardinius erythrophthalmus*, roach *Rutilus rutilus*).
Northern collection of ponds (9)	115	TQ 36706 16742	None	Yes	eDNA	No GCN during past surveys or eDNA in 2022, but Common rudd (*Scardinius erythrophthalmus*) and Three-Spined Stickleback (*Gasterosteus Aculeatus*) present.

In addition, in support of the nearby Elivia Homes development to the north[3] completed updated surveys on ponds 3 and 9 (the northern collection of ponds) in 2022. Pond 9 was subject to an eDNA assessment which returned negative, and a small population of GCN were found in Pond 3.

Efforts were made to access Pond 4 in 2024; however, permission was not granted. Although Pond 4 was not assessed, it is connected to Pond 9, which tested negative for Great Crested Newts (GCN) in 2022. Therefore, it is considered unlikely that GCN would be present in Pond 4.

[3] Planning ref: LW/23/0010/CD 'Land Adjacent All Saints Church, Plumpton Green'

An updated eDNA survey was also completed of Pond 8 in 2024 which returned a negative result of GCN presence (**Fig 9**). It should be noted that during this visit, only two of the ponds within the collection of ponds in this area still had water present (at low levels).

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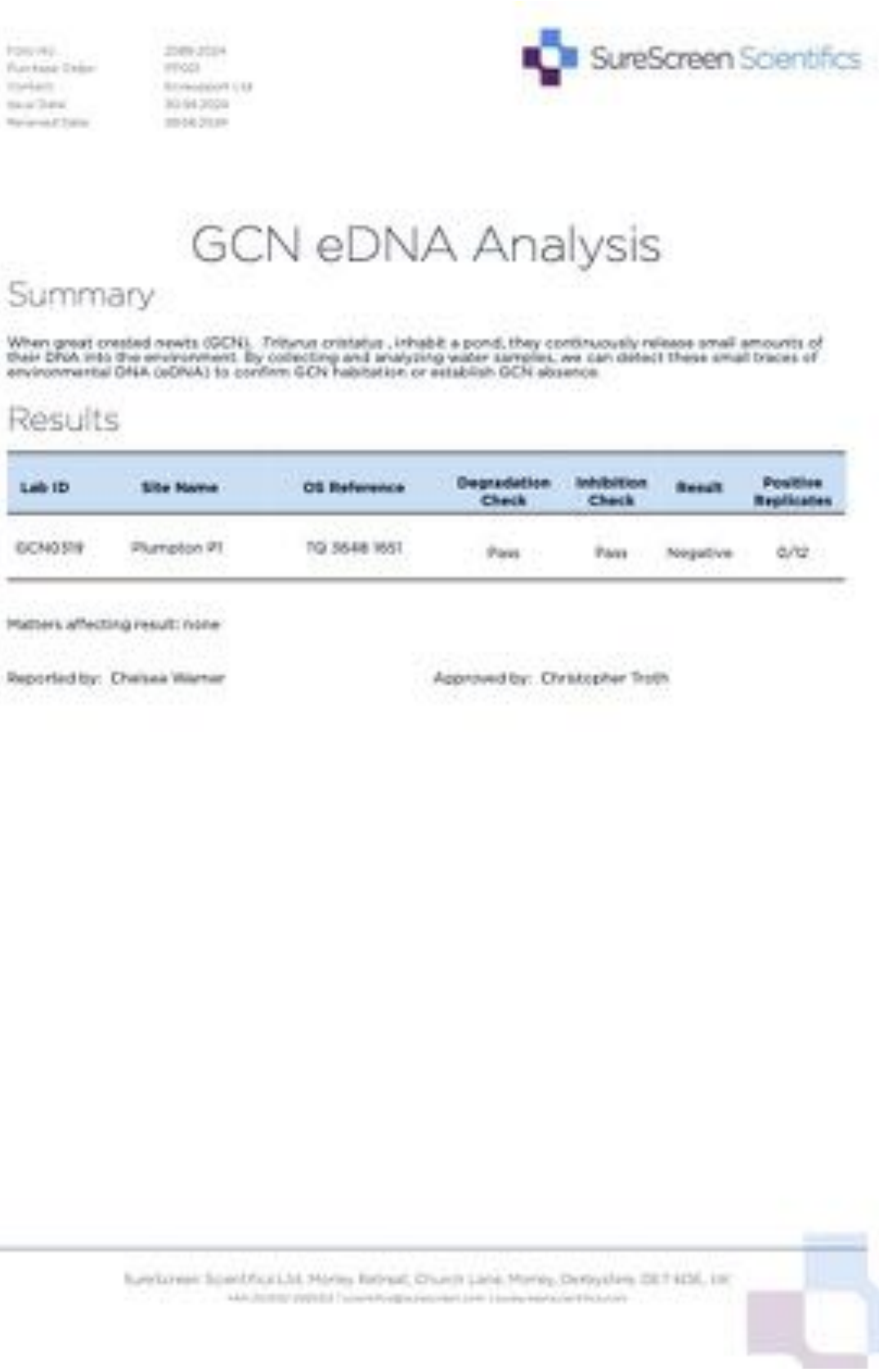
Figure 9. Surescreen eDNA result for Pond 8.



SureScreen Scientifics

GCN eDNA Analysis

Summary

When great crested newts (GCN), *Triturus cristatus* , inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analyzing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

Results

Lab ID	Site Name	OS Reference	Degradation Check	Inhibition Check	Result	Positive Replicates
GCN0519	Plumpton P1	TQ 3648 1651	Pass	Pass	Negative	0/12

Matters affecting result: none

Reported by: Chelsea Warner Approved by: Christopher Troth

2.5.4 Evaluation

Great Crested Newts were present within 250m of the site during surveys undertaken in 2017 (although only 5m^2 of the site is within 250m of this population). Updated surveys in 2020, showed that Pond 3 no longer supports Great Crested Newts, however presence was found once again in 2022. As the site itself supports suitable habitats for Great Crested Newts and amphibians they may be present on the site. Despite this, the majority of the site is situated beyond 250m away from the closest confirmed GCN population. Therefore, the site is considered to be important to Great Crested Newts at the **site level**.

The site has moderate value for the species, with rough grassland (albeit regularly subject to a hay cut in mid-summer), hedgerows, ruderal habitat and scrub offering suitable cover for foraging and the hedgerows and dense scrub. Broad leaved woodland adjacent to the site also supports dead wood for hibernating individuals. In addition, the log piles and wood chip pile could also potentially provide suitable hibernacula or summer refugia for this species.

2.6 Hazel Dormice

2.6.1 Data Search

SxBRC returned 16 records for Dormice with the most recent dated 2015. Of all the records, six of these are associated with an area of woodland habitat south-west of the site, south of the railway line which is expected to act as a possible barrier to migration, which is located between 1.1km south-west of the site.

2.6.2 Previous Survey Work (The Ecology Co-op, 2020)

During Dormouse surveys at the site a maximum of three Dormouse nests were identified (**Figs 9 and 10**). Wood Mouse (*Apodemus sylvaticus*) nests and individuals were also found within the nest boxes. No direct observations of Dormice were made during the surveys, however as Dormice may only occupy nest tubes intermittently, it is not always expected to observe individuals.

2.6.3 Updated Survey Work (Ecosupport Ltd, 2024)

The Phase II Dormouse surveys were updated by Ecosupport Ltd between July-October 2024 in support of a Natural England mitigation licence for the site. The tubes were placed as close to the original locations as possible. In August 2024, one deceased Dormouse was located in a tube along the northern boundary, with a further two empty nests located. In September 2024 a further two Dormice were found along the northern boundary with an additional empty nest.

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Figure 9. Aerial image showing the location of the Dormouse nests identified at North Barnes and Nolands..

Figure 10. A potential Dormouse nest identified within a hedgerow at North Barnes and Nolans Farm, with the presence of some fresh green leaves that can be indicative of Dormice.

2.6.4 Evaluation

The site supports Hazel Dormice within the hedgerows surrounding the fields and the site. These are very well connected to further hedgerows, tree lines and woodland parcels within the immediate and wider landscape. Given that suitable habitat for Hazel Dormouse is not limited in the local vicinity of the site and the small number of nests identified on the site, the habitats contained by Land at North Barnes and Nolands are considered to be important for the conservation of Dormice at the **local level.**

2.7 Notable and Birds of Conservation Concern (BoCC)

2.7.1 Data Search

Records for Barn Owl (*Tyto alba*), Turtle Dove (*Streptopelia turtur*), Nightingale, Lapwing (*Vanellus vanellus*), Skylark (*Alauda arvensis*) and Yellowhammer were returned within 2km of the site and may be supported by the habitats found on the site.

2.7.2 Previous Survey Work (The Ecology Co-op, 2017)

All of the dense and continuous scrub, hedges, hedgerows with trees, semi-mature and occasional large mature trees have the potential to support a variety of common nesting birds. In total, 33 species of bird were recorded during the survey; of these, six species are 'red' listed under the Birds of Conservation Concern (BoCC) and four are 'amber' listed. The following species recorded during the survey are also listed under Section 41 of the NERC Act (2006): Common Bullfinch (*Pyrrhula pyrrhula*), Common Starling (*Sturnus vulgaris*) and Song Thrush (*Turdus philomelos*). Most importantly, Nightingale (*Luscina megarhynchos*) was recorded likely breeding on the site. In addition, Linnets (*Carudelis cannabina*), and House Sparrow (*Passer domesticus*) were also recorded.

2.7.3 Evaluation

The site supports multiple areas of breeding bird habitat in the form of the woodland, scrub and hedgerows. It has been found to support six red listed and four amber listed species, of which three are S41 species and have the potential to breed on the site. Given the presence of Nightingale, which is likely to breed on site, the site is considered important to breeding birds at the **county level**.

2.8 Riparian Mammals

2.8.1 Data Search

SxBRC returned no records of Water Voles (*Arvicola amphibius*) from within 2 km of the site.

2.8.2 Site Assessment

Bevern Stream is located along the southern boundary of the site. It is 1.5 - 3m wide with steep sided banks. Large areas of the banks have vegetation cover which Water Voles require for foraging and cover from predators, though dense Bramble growth in places prevents more suitable succulent plants from growing. The vegetation is dense in some areas with Branched Bur Reed, Willowherb, Hedge Bindweed, Common Nettle, Cow Parsley, Himalayan Balsam and Common Nettle however there are sections where the banks are bare and exposed which is less suitable. A short section of this stream was searched for any evidence of water voles with none identified and only a single rat dropping found.

2.8.3 Evaluation

Given that Bevern Stream is not contained by the site, the site itself is considered of **negligible** importance to water voles, and as such this species is not considered any further within this impact assessment.

2.9 Hedgehogs

2.9.1 Data Search

SxBRC returned 15 records for hedgehogs between 2005 and 2014 within 2km of the site.

2.9.2 Site Assessment

West European hedgehog may be present within the woodland, hedgerows and scrub in the southern section of the site.

2.9.3 Evaluation

The longer areas of grassland and ruderal habitat at the site may provide a foraging resource for hedgehogs. They may also shelter within the woodland or dense scrub and use the hedgerows to commute across the landscape. The site lies immediately adjacent to similar suitable habitat, and the site is therefore not considered to be important to hedgehog beyond the local level.

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2.10 Harvest Mouse

2.10.1 Data Search

A single harvest mouse record from 2006 associated with a farm located 1580m to the south was returned by SxBRC.

2.10.2 Site Assessment

The site supports some habitat which is potentially suitable for harvest mouse in the form of dense continuous scrub with rough grassland along the southern boundary and the boundary hedgerows.

2.10.3 Evaluation

There is a small amount of suitable harvest mouse habitat on the site, and as this species can be found within a variety of habitats, the site is not considered to be important for harvest mouse beyond the site level.

2.11 Invasive Non-native Species

2.11.1 Data Search

SxBRC returned no records of invasive non-native species.

2.11.2 Site Assessment

Himalayan balsam (*Impatiens glandulifera*) was identified within the dense scrub bordering Bevern Stream, which is an invasive species, listed under Schedule 9 of the Wildlife and Countryside Act 1981.

2.11.3 Evaluation

Given that Himalayan balsam was identified within the dense scrub bordering the stream and within the stream, there is the potential for this to spread rapidly throughout the scrub and further along the stream. This can outcompete the native species, destabilase the stream banks causing erosion over time and distract pollinators away from other native species. This will have a negative effect on the habitats contained by the site as well as Bevern Stream and given how quickly it can spread along a waterway this is considered to be significant at the **local level.**

2.12 Biodiversity Net Gain – Baseline Habitats & Condition

The following sections provide the condition assessment of the habitats detailed within **Section 2.1** with reference to the Biodiversity Impact Assessment undertaken by The Ecology Co-op, 2020) and the updated Biodiversity Net Gain metric (Ecosupport Ltd, 2024).

2.12.1 Non-Linear Habitats- On-site

Table 4 below outlines the condition assessment of the non-linear habitats that are present on site.

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Please note some habitats on site were not subject to a condition assessment as they have a predetermined condition of 'Condition Assessment N/A' or 'N/A – Other' under current guidance within the BNG Metric.

Table 4. Existing non-linear habitats: Conversion of Phase 1 habitat categories for input into The Statutory Biodiversity Metric Calculation Tool (Ecosupport Ltd, 2024).

Habitat types		**Condition assessment**	
Mapped Phase 1 Habitat	**UK Habitat Classification System Environment Bank calculator**	**Key features**	**Condition**
Broadleaved woodland - semi-natural	Woodland and Forest – Other Woodland; Broadleaved	In the western section of the site is a parcel of broadleaved woodland. This had some mature Oak *Quercus* spp. and Ash *Fraxinus excelsior* trees in the canopy, but it was choked in the understory by Sycamore *Acer pseudoplatanus.* Also supports Goat Willow *Salix caprea,* with lesser amounts of Blackthorn *Prunus spinosa, H*olly *Ilex aquifolium,* Hawthorn *Crataegus monogyna* and English Elm saplings *Ulmus minor.* There is one mature Wild Service Tree *Sorbus torminalis* and two saplings within this woodland. Clearly fails two criteria but supports some mature trees and a good variety of species within a 10m area. Currently protected from agricultural operations. Somewhat choked with vegetation, and in need of management.	**Moderate**
Scrub-scattered	Heathland and Scrub - Bramble scrub	Scattered scrub dominated by Bramble with Willowherb species, some broadleaved dock, elder and Common Nettle is located to the west of the south field. A small length dominated by Brambles and Blackthorn runs along the northern boundary of the north field. A length of scrub including bramble and *Rosa* spp. between the neutral semi-improved and improved field. Lack of age range and species variation, fails multiple criteria.	**Poor**

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Neutral semi-improved grassland	Grassland: Other neutral grassland	There is a field in the northern section of the site. This comprised Yorkshire Fog *Hofcus fanatus, C*ock's-foot *Dactyfis gfomerata, P*erennial Rye Grass *Lofium perrene,* Timothy *Phfeum pratense,* Soft Rush *Juncus effusus* and a bent grass species *Agrostis* sp. Additional grassland plants present included Meadow Buttercup *Ranuncufus acris,* Red Clover *Trifofium pratense, C*ommon Cat's Ear *Hypochaeris radicata,* Vetch species *Vicia spp., C*ommon Nettle, Meadowsweet *Fifipendufa ufmaria,* Creeping Thistle *Cirsium arvense,* Ground Ivy *Gfechoma hederacea* and broadleaved dock with clumps of Birds- foot Trefoil *Lotus cornicufatus.* Approximately one third of it had been recently cut with the rest of the field composed of longer uncut vegetation. Most of five criteria being failed, lacking in definitive species used to define habitat through Phase 1 habitat assessment.	**Poor**

Improved grassland	Grassland - modified grassland	The central field just north of North Barnes lane is dominated by cocksfoot, Yorkshire fog and Agrostis species with some dandelion, hoary ragwort *Senecio erucifofius,* common ragwort *Jacobaea vufgaris,* broadleaved dock, creeping buttercup and white clover *Trifofium repens.* The vegetation across this field was short and recently mown with cuttings present. The northern field had been recently cut and was composed of Yorkshire Fog, Agrostis sp. and soft rush, with some creeping thistle, creeping buttercup and white clover. Nolands Farm had a tightly mown garden area with vegetable growing plots present. The following plants were identified within this grassland; cock's foot, perennial rye grass, fescue species *Festuca* spp., creeping buttercup and white clover. Agricultural type grassland, most of five criteria being failed.	**Poor**

Other tall herb and fern - ruderal	Sparsely vegetated land - ruderal/ephemeral	There are multiple small areas of ruderal habitat across the site. This supports field goosefoot species *Chenopodium spp.,* borage *Borago officinalis,* redshank *Polygonum persicaria,* and broadleaved dock. Ruderal habitat with fairly low biodiversity value. Potentially restorable with good management, but most condition criteria failed and cover of undesirable species above 20% in some places.	**Poor**
Cultivated/ Disturbed land - amenity grassland	Urban amenity grassland	There are two amenity grassland garden spaces to the rear of Chestnut House and Saxon Gate. Most of criteria being failed.	**Poor**

Buildings	Urban - developed land; sealed surface	Two houses lie within the site footprint; Chestnut House and Saxon Gate. Two polytunnels currently used for vegetable growing are located upon the north west of the site, these are supported by metal poles.	**N/A - Other**
Bare Ground	Urban - developed land; sealed surface	There is a small area of hard standing at the front and to the rear of the Chestnut House and Saxon Gate properties including patios and a driveway. There is also North Barnes lane which separates the site into north and south sections.	**N/A - Other**
Bare Ground	Urban - Vacant/derelict/bareg ro und	A narrow strip of gravel hardstanding is located at the south east corner of the central field. Some sparse vegetation has grown through including knot grass *Polygonum aviculare,* scentless mayweed *Tripleurospermum inodorum,* greater plantain *Plantago major* and white clover. Most of condition criteria being failed.	**Poor**
Other habitat	Urban - orchard	An orchard with multiple semi-mature and pole apple trees *Matus domestica* is located to the west within the garden space of Nolands Farm. Beneath these is improved amenity grassland. Poorer quality traditional orchard, failing some criteria.	**Moderate**

Standing water - mesotrophic	Lakes - Temporary lakes, ponds and pools	A completely dried-up pond within the woodland with some dampness at the bottom. No vegetation present. Fails multiple criteria, pond not functional and in *very* poor health.	**Poor**

2.12.2 Non-linear Habitats- Off-site

Table 5. Existing non-linear habitats: Conversion of Phase 1 habitat categories for input into The Statutory Biodiversity Metric Calculation Tool (Ecosupport Ltd, 2024).

Habitat types		**Condition assessment**	
Mapped Phase 1 Habitat	**UK Habitat Classification System Environment Bank calculator**	**Key features**	**Condition**
Scrub - dense/co ntinua us	Heathland and Scrub - Bramble scrub	There is dense scrub in the south of the site along the Bevern Stream. This is predominated by dense Bramble *Rubus fruticosus* with some small oak saplings. Lack of age range and species variation fails multiple criteria.	**Poor**
Improved grassland	Grassland - modified grassland	The southern field has a tightly mown sward dominated by Yorkshire Fog, with some creeping buttercup *Ranuncufus repens,* Broadleaved Dock, Common Fleabane *Puficaria dysenterica* and Dandelion *Taraxacum officinafe.*	**Poor**
Other tall herb and fern - ruderal	Sparsely vegetated land - ruderal/ephemeral	There are multiple small areas of ruderal habitat across the site. This supports field goosefoot species *Chenopodium spp.,* borage *Borago officinalis,* redshank *Polygonum persicaria,* and broadleaved dock. Ruderal habitat with fairly low biodiversity value. Potentially restorable with good management, but most condition criteria failed and cover of undesirable species above 20% in some places.	**Poor**
Neutral semi-improved grassland	Grassland: Other neutral grassland	Of the same species composition of that on-site (see **Table 4**). Most of five criteria being failed, lacking in definitive species used to define habitat through Phase 1 habitat assessment.	**Poor**

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2.10.2 Linear Habitats

Table 6 below outlines the condition assessments for the linear habitats that are present on site.

Table 6. Existing linear habitats: Conversion of Phase 1 habitat categories for input into The Statutory Biodiversity Metric Calculation Tool (Ecosupport Ltd, 2024).

Habitat types		**Condition assessment**	
UK Habitat Classification System Environment Bank calculator	**Key features**	**UK Habitat Classification System Environment Bank calculator**	**Key features**
Intact hedge - species-poor	Native Hedgerow	A length of hedgerow running along the northern boundary of the northern neutral grassland field. This supports hawthorn, blackthorn, pedunculate oak, rose and bramble. Fails in less than two condition criteria.	**Good**

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Intact hedge - native species- rich	Native Species Rich Hedgerow	This habitat type runs along either side of North Barnes Lane. The length along south is box shaped and approximately 3m in height. It is dense and in good condition. It is composed of wild privet *Ligustrum vulgare,* hawthorn, ivy *Hedera helix,* rose, bramble, ash, plum sp. *Prunus spp.,* blackthorn, Spindle *Euonymus europaeus* with some cleavers *Galium aparine* and black bryony *Dioscorea communis* growing through the hedge, with nettle around the hedge base. The length to the north is 2.5m wide and the same shape and height as the southern section. It is in good condition and composed of hawthorn, ash, blackthorn, wild privet, *ivy,* bramble, rose sp. and apple *Malus spp.* with pedunculate oak *Quercus robur* trees along its length. A further length forms part of the boundary between Nolands Farm and the semi-improved neutral grassland field. This is box shaped approximately 1.5 to 2m tall. The species identified included beech *Fagus sylvatica,* hawthorn, *ivy,* rose sp., brambles, field maple, sycamore, ash and elder along with a single field maple and ash tree. All sections *above* failed in less than two condition criteria.	**Good**
Defunct hedge - species-poor	Native Hedgerow	The remainder of the boundary between Nolands Farm and the semi-improved neutral grassland field includes a length of defunct hedgerow. This supports blackthorn, field maple and bramble. Fails a total of more than 4 criteria given poor structure.	**Poor**
Hedge with trees - species-poor	Native Hedgerow with trees	This habitat type is located along part of the northern site boundary with hawthorn, blackthorn, pedunculate oak, rose and bramble. Less than 4 condition criteria failures total.	**Moderate**

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Hedge with trees - native species rich	Native Species Rich Hedgerow with trees	The hedgerow along the eastern boundary of the field located north of North Barnes Lane consists of blackthorn, hawthorn, rose sp., brambles, damson *Prunus* spp., hazel *Corylus avellana,* ash, field maple *Acer campestre* and pedunculate oak. It is approximately 3.5m and also supports three semi mature trees; a field maple and two pedunculate oaks. The northern boundary of this field and the southern boundary of the northernmost improved grassland field comprises blackthorn, hawthorn, ivy, ash, field maple, wild privet and damson. This hedge is approximately 3m tall, dense and in good condition. A species rich hedgerow with trees runs along the eastern boundary of the northernmost field. A number of the trees along its length have ivy up their trunks. Species included hawthorn, ash, brambles, ivy, blackthorn, pedunculated oak, rose sp. and field maple. The hedge forming part of the boundary between the semi-improved and improved field is composed of pedunculate oak, rose, brambles, field maple, hawthorn, damson and goat willow. All sections above failed in less than two condition criteria.	**Good**
Hedge with trees - native species rich	Native Species Rich Hedgerow with trees - Associated with bank or ditch	This habitat runs along the southern boundary of the field located north of North barns lane. As with the other hedgerows it is in good condition and is between 4 and 5m in height. It is dense along the majority of its length. At the west of the hedge scrub composed of blackthorn saplings and bramble extends up to 2m metres into the field. The hedge is composed of hawthorn, field maple, blackthorn, pedunculate oak, rose sp., bramble, spindle, holly, dogwood *Thelycrania sangiunea* and ash. Failed in less than two condition criteria, given good structure and species composition.	**Good**

Coniferous parkland/scatter ed trees	Line of Trees	There is a line of mature cypress Cupressus spp. trees running along the eastern boundary of the woodland in the western section of the site. There are wide gaps in the canopy. Broken canopy where gaps are over 5m in length.	**Poor**

Broadleaved parkland/ scattered trees	Line of Trees	There is a line of trees running from the western boundary of the orchard at Nolands Farm to the northern boundary of Chestnut House. Broken canopy where gaps are over 5m in length and make up over 10% of the length. Over There are wide gaps in the canopy. Broken canopy where gaps are over 5m in length.	**Poor**
Fence	Urban - Built Linear Features	Fences are located along some of the boundaries of the site. A mixture of wooden and wire fence has been used. Along the northern length of fence hawthorn, bramble and rose have grown up in some places. No condition assessment necessary.	**N/A - Other**
Dry ditch	Lakes - Ditches	A dry ditch runs along the southern boundary of the garden space associated with Nolands farm. It is approximately 1m deep and just over **1**m wide. This feature also runs in front of the hedgerows within the semi-improved field to the east. Fails five or more of the criteria and was dried out.	**Poor**

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**.

3.1 Bats

3.1.1 Natural England License

Any works that impact upon any of the bat roosts identified on site (**section 2.2.5**) will need to take place under an EPSL obtained from Natural England and under the supervision of a Licensed Ecologist. 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 with the main principles of this outlined in the below sections.

3.1.2 Timing

As the site supports day roosts, the optimum period for carrying out works is 1st September – 1st May however there are no specific timing constraints regarding this type of roost providing weather conditions are suitable (i.e. when temperatures are in line with best practice guidelines).

Works must avoid the hibernation period (November – February or when temperatures have dropped below 8°C over four consecutive days and nights), when bats are in a torpid state and therefore more vulnerable (as per Bat Mitigation Guidelines). Works will take place in suitable weather conditions as defined by best practice guidance (Mitchell-Jones et al. 2004).

3.1.3 Supervision

Prior to any works commencing, the licensed Ecologist will carry out an updating search of the internals of the loft voids to establish whether any bats are in residence which, if so, can be moved to the mitigation bat boxes to minimise the level of disturbance.

The licensed bat worker will give a Toolbox talk which will detail best practice methods of sensitive stripping/removal of roofing tiles/materials and identifying signs of bats. Personel 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 on the buildings to the point that all areas where bats could be roosting have been removed.

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3.1.4 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 be immediately transported the bat to one of the mitigating bat boxes where the bat will be released and left undisturbed. During this time, the licenced bat worker will be wearing appropriate bat handling gloves to ensure the bat does not come to any harm. Similarly, if during the sensitive demolition a bat is found, the same steps will be taken to ensure the bat is relocated as swiftly as possible and with the least amount of distress. The licenced bat worker will have ample experience in handling a variety of bats and is confident in doing so.

3.1.5 Sensitive Stripping Method

Scaffolding will be put in place to facilitate the removal of tiles, if needed, by hand. Tiles will be removed via sensitive methods by the licensed ecologist with help from the contractors.

3.1.6 Bat Boxes (Mitigation)

Prior to any works getting underway two Schwegler 2F bat boxes (with DFP) (**Fig 11**) and two multi0chamber bat boxes (or suitable alternative) will be erected on the retained trees on site. This bat box is designed as a summer roosting space for crevice- dwelling species such as Pipistrelles. The bat box maintains a stable temperature inside and is painted black to absorb warmth. This box should be erected 3-6m high and in an open, sunny position (preferably facing a southern elevation). Once the works have been completed this box should be left in perpetuity to provide an additional long-term enhancement for local bats.

The bat boxes are manufactured from long-lasting Woodstone which will not rot, leak, crack or warp, and will last for at least 20 - 25 years, making it suitable for long-term mitigation projects. It also provides a rough surface for bats to cling on to and climb. This is a proportionate approach to mitigating for the loss of low-level roosts.

English Nature (2004) state that 'where roosts of low conservation significance are to be lost to development, bat boxes provide an appropriate form of mitigation, either alone or, preferably, in combination with the provision of roosts in buildings'.

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Figure 11. Schwegler 2f Bat Box (NHBS, 2021).

3.1.7 Use of Roofing Felt

Bitumen roofing felt must be utilised as opposed to Breathable Roof Membrane (BRM) as there is evidence to suggest that BRM poses a threat to bats occupying a structure due to entanglement in the fibres (Natural England, 2015). Any new roof underlining associated with the new building will include bitumen roofing felt as opposed to BRM or other fibrous materials, as a precautionary measure. This is particularly important as bat access tiles are being proposed.

3.1.8 Sensitive Lighting

A document (*Guidance Note 08/23 Bats and Artificial Lighting at night*) has been 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 provided there are no conflicts with any legal limits of illumination (in which case a suitable compromise should be reached).

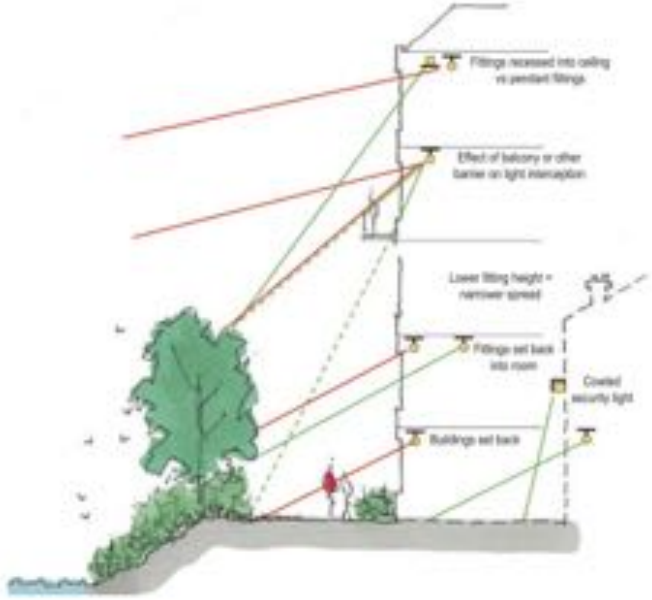
'Light sources, lamps, LEDs and their fittings come in a myriad of different specifications which a lighting professional can help to select. However, the following should be considered when choosing luminaires and their potential impact on Key Habitats and features:

- *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 12**) 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 12. Internal lighting mitigation options (ILP 2023).



3.1.9 Enhancements for Roosting Bats

3.1.9.1 Trees

A limited number of trees on site have been selected for removal. The trees determined as warranting removal include a number of non-native Cypress trees, as well as some trees identified as having significant defects (such as ash dieback). The trees originally identified for removal are located within existing hedgerow/treeline features and shall be managed to form monoliths/standing deadwood, rare and highly valuable habitat that will benefit roosting bats and nesting birds alike. An appropriate management plan must be set out by a suitably qualified arboriculturist to ensure the dead trees pose no threat to property or life and can be maintained in a way to preserve their ecological value without risk of harm.

3.1.9.2 Buildings

To provide a net positive benefit for bats within the proposed development, it is proposed that bespoke bat roosting features and access points should be incorporated into the fabric of new buildings in selected locations across the site, close to existing flight-lines and habitat features of value to foraging and commuting bats. Suitable features and boxes are shown in **Fig 13** and will provide suitable roosting opportunities for Pipistrelle (*Pipistrellus)* species, Brown Long-eared (*Plecotus auritus*), Noctule (*Nyctalus noctula*), Serotine (*Eptesicus serotinus)*, Brandt's (*Myotis brandtii)* and Whiskered Bats (*Myotis mystacinus)*, which were all recorded on the site. A variety of existing integrated bat boxes exist and can be selected for, additionally custom designs can be made to fit a variety of specifications. It is proposed that at least one bat box is incorporated into each building on site, this can be positioned to any aspect (formally only southern aspects were selected, however ongoing surveys indicate a variety of aspects are used by bats at varying times of year). Each feature will have specific incorporation specifications (such as minimum height positioned), suppliers' instructions must be followed to ensure proper installation; where no specific height is specified, a suitably qualified ecologist will be contacted to advise.

Figure 13. Left to right: Schwegler 2FR Bat Tubes, Beaumaris Woodstone Bat Box and the 1WI Schwegler Summer and Winter Bat Box, Bat Access Tile Set.

The integral bat roosting features in buildings will be largely maintenance-free, apart from an annual check that they remain in position. Any damaged boxes are to be replaced like for like. However, an important component to these habitat features will be managing the expectations of residents and other users of the development site, including dealing with any concerns, questions, or unauthorized interference. It is recommended that prospective buyers of these properties are made aware of the legal protection afforded to bats and birds, and their obligations as owners. Bat boxes should only be maintained by a suitably qualified/licensed ecologist, as they may support roosting bats.

3.2 Badgers

3.2.1 Impact Avoidance

Prior to the commencement of works on the site, a pre-construction walkover survey should be undertaken to determine whether new setts have been established on or adjacent to the site. The four existing inactive sett entrances should also be examined to check that use of these entrances has not been re-established.

If new setts have been established, a 20m buffer will need to be set up to avoid these areas, and if this cannot be achieved a licence from Natural England must be sought to legally proceed with the works.

3.2.2 Mitigation Measures

As standard practice, construction site safeguarding measures are recommended during the construction period to prevent harm to badgers. All deep excavations should be kept covered at night, or a means of escape provided (ramp or ladder) to prevent entrapment of badgers, and all hazardous waste, chemicals or food should be suitably contained to prevent access by badgers.

3.2.3 Residual Impacts

With the adoption of the above avoidance and mitigation measures, as well as enhancements there will be no significant residual negative effects on badgers as a result of the development.

3.2.4 Compensation Measures

Given that no residual effects have been identified, no specific compensation measures are considered necessary with regards to badgers.

3.3 Reptiles

3.3.1 Impact Avoidance

Many of the hibernacula present on the site should be retained where possible. It will not be possible to retain the ruderal habitat, longer grassland and scattered scrub as these form part of the development footprint.

3.3.2 Mitigation Measures

Given that impacts to reptiles cannot be avoided, a reptile translocation will be necessary. As the Southern Section of the site is to be retained and enhanced, reptiles within the site will be translocated to this on-site receptor area.

3.3.2.1 Fencing

Semi-permanent exclusion fencing will be installed around the perimeter of all fields to both facilitate the reptile capture (**Appendix 1**). This provides a division between the areas of retained and protected vegetation and the 'working' areas i.e. those areas where humans and machinery will disturb the ground and also will prevent reptiles from passively passing through the site from surrounding favourable habitat.

The fencing will remain in place until all works are completed. Any breaches/damaged fence will be repaired and/or replaced as quickly as possible, at the cost of the contractors responsible.

Artificial refugia will be distributed throughout the main body of the site. The refugia used will be a mixture of bitumen roofing felt and corrugated metal. The density will be increased, if necessary, to facilitate the capturing process, in an attempt to reduce the number of capture days required.

3.3.2.2 Capture

Suitably qualified ecologists, with experience in reptile capture will undertake the capture between April-October. Reptiles will be captured by hand from beneath the artificial refugia and placed into a suitable container during suitable conditions (i.e. between 10oC and 20oC with little or no wind or rain). All captured reptiles will be released into the receptor area immediately. By ensuring that all reptiles are translocated by the end of October it will allow sufficient time for reptiles to find suitable hibernation sites within the receptor site.

The guidelines for carrying out reptile captures based on population class sizes are outlined within **Table 6** below adopted from HGBI (1998) where a 'Low' population of Slow Worms and a 'Low' population of Grass Snakes require 60 suitable days of capturing.

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Table 6. The minimum capture effort for common reptile species based on HGBI (1998). The figures relevant to this scheme are emboldened and italicised

Species	Population Size (adult density)	Refugia Density / ha	Minimum No of Trapping Days in Good Weather
Slow Worm	High (> 100 / ha)	100	All suitable days between March and September (min 90 suitable days)
	Medium (>50 / ha)	100	All suitable days between March and September (min 70 suitable days)
	Low (< 50 / ha)	***50***	***60 Suitable days***
Common Lizard	High (>80 / ha)	100	All suitable days between March and September or for two years (min. 90 suitable days)
	Medium (>40 / ha)	100	All suitable days between March and September or two years (min. 70 suitable days)
	Low (<20 / ha)	***50***	***60 suitable days***

Despite the recommendation for 60 capture days, it is considered a lower figure than this would be appropriate given the limited extent of the suitable habitat on site (I.e. 30 days although this can be reviewed during the capture works and should capture numbers exceed those anticipated, the full 60 days will likely be required). Capture visits will continue until 5 consecutive visits have been carried out in ideal weather conditions where no reptiles are captured (or seen), it is considered that the relocation can come to an end. This approach is based on survey guidance (Highways Agency, 2005), which suggests that a minimum of five visits are required to establish whether reptiles are present or likely to be absent from a site, during a standard survey. Therefore, if no reptiles are recorded after five visits (in optimal survey conditions), it can be concluded that reptiles are likely to be absent from the site (or the capture works complete).

3.3.2.3 Destructive Search

Following the conclusion of the relocation, a destructive search of the site will be necessary. The decision as to whether this would need to be more than a targeted destructive search of localised areas would depend on the number and location of reptiles captured during the relocation exercise in the wider site. Destructive search would entail the removal of any remaining natural reptile refugia within areas of the site where particularly high densities of reptiles were captured.

3.3.3 Residual Impacts

Although the translocation will prevent harm to individual reptiles, it will not prevent the loss of suitable habitat at the site. As such, there will be a residual **likely negative** effect on reptiles as a result of the development.

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3.3.4 Compensation Measures

The in-situ receptor area in the south of the site will be enhanced for reptiles through the management of the dense scrub and the creation of rough grassland habitat with three new hibernacula.

3.4 Great Crested Newts (GCN)

3.4.1 Impact Avoidance

The removal of suitable habitat suitable for Great Crested Newts is required as part of the development and though some suitable habitat is to be retained, this cannot be avoided completely.

3.4.2 Mitigation Measures

Based on the updated survey information provided in **Table 3**, the Natural England rapid risk assessment tool was used as a guidance to the scale of impacts. The outcome of this is provided below in **Table 7.**

Table 7. Workings from the Natural England rapid risk assessment.

Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom)	Notional offence probability
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	No effect	0
Land 100-250m from any breeding pond(s)	0.001 - 0.01 ha lost or damaged	0.005
Land >250m from any breeding pond(s)	1 - 5 ha lost or damaged	0.04
Individual great crested newts	No effect	0
	Maximum:	0.04
Rapid risk assessment result:	GREEN: OFFENCE HIGHLY UNLIKELY	

The **GREEN OFFENCE HIGHLY UNLIKELY** indicates the development activities are of such a type, scale and location that an offence is unlikely. Despite this, the presence of GCN within 500m to the site does need to be considered and, as such, a precautionary method statement will be followed. It is considered the mitigation for reptiles (capture, translocation, and destructive search) will be sufficient to ensure that, should any GCNs be present on-site, these will be identified.

3.4.3 Natural England Licence

As an offence is unlikely (**Table 7**), it is not considered a NE mitigation is required. If any GCN are encountered during mitigation works or during the construction phase, works should cease immediately and a suitably licensed ecologist should be consulted and works going forwards may need to take place under a NE licence.

3.4.4 Residual Impacts

Although the translocation will prevent harm to individual great crested newts, it will not prevent the loss of suitable habitat at the site. As such, there will be a residual **uncertain negative** effect on this species as a result of the development at the **site level.**

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3.4.5 Compensation Measures

The in-situ receptor area in the south of the site will be enhanced for this species through the management of the dense scrub and the creation of rough grassland habitat with three new hibernacula.

3.5 Hazel Dormice

3.5.1 Impact Avoidance

Dormice have been confirmed as present within the hedgerows bordering the site. The removal of hedgerow lengths which may support dormice to create access points and roads cannot be avoided.

3.5.2 Mitigation Measures

Upon receipt of full planning permission, an EPS mitigation licence application will be submitted to Natural England, together with a detailed method statement on mitigation measures to prevent harm to individual dormice when clearing the areas of suitable habitat within the proposed construction zone.

Outline mitigation and compensation is described below and covered within this document. However, full details will be outlined within the method statement which will support the dormouse EPS mitigation license. The rough mitigation steps likely to be required as part of the EPS licence are as follows:

1 All the above-ground vegetation will first be coppiced to approximately 200mm above ground, using hand-held power tools (i.e. chainsaw) in late autumn (September-November). The works will be undertaken with care to avoid compaction of the ground. This timing avoids the breeding season for dormice and the bird nesting season, but dormice may be active on warm days, giving them the opportunity to move into adjacent retained habitat.
2 The excavation of the stumps and root balls will be postponed until spring the following year. This ensures that any remaining hibernating dormice have become active and moved into adjacent retained habitat.
3 Where small areas of habitat are to be removed to facilitate to construction of the new access route through a hawthorn hedgerow and demolition of buildings, reasonable avoidance measures will be employed. The areas of habitat removed in this way will be restricted and subject to the confirmation from a suitably qualified ecologist. The measures will include a hand search by a suitably qualified ecologist to confirm the absence of any dormouse nests and supervision of the vegetation removal.

Additionally, as for bats, an ecologically sensitive lighting scheme must be used to ensure that hedgerow and woodland habitats on the site's boundaries will not be illuminated in any way by artificial lighting from the development both during the construction and operational phases of the development.

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3.5.3 Residual Impacts

Though the mitigation above will prevent harm to individual dormice during both the construction and operational phases of the development, there will still be a loss of habitat on the site, and the potential for increased predation by domestic cats. As such, there will be a residual **likely negative** effect on dormice as a result of the development.

3.5.4 Compensation Measures

To compensate for the loss of suitable dormouse habitat as part of the proposed development replacement hedgerow habitat must be created. The development incorporates over 1km of new hedgerow across the site. As outlined for breeding birds and within this document, these hedgerows should include at least 50% thorny species including Hawthorn, Blackthorn and Holly, to prevent increased predation by cats. This should also be included within the buffer planting around the woodland parcel. They should also incorporate species which benefit Dormice by comprising of a variety of flowering and fruiting species to provide an optimum food resource as well as shelter and nesting opportunities. Specific details will be set out in the method statement which will support the dormouse EPS mitigation license.

3.6 Notable and Birds of Conservation Concern

3.6.1 Impact Avoidance

To prevent a breach of the Wildlife and Countryside Act, removal of the scattered scrub areas and lengths of hedgerow should be completed outside of the breeding bird season. (typically, 1st March to 31st August), unless features are first searched by a suitably qualified ecologist and no active nests are found. If a nest is found, a buffer of minimum 5m must be maintained around the nest until all of the young have fledged safely.

As a proportion of the site works will likely be carried out during the nesting bird season, a buffer of minimum 5m should be maintained from all retained hedgerows and the woodland, with Heras fencing or similar erected around these habitats to prevent construction vehicles from coming too close and disturbing birds through noise, dust and vibrations.

3.6.2 Mitigation Measures

All removed habitats should be replaced across the site, which has already been incorporated into the landscaping for the proposed development. Moreover, any new hedgerows planted across the site should comprise 50% thorny species such as Blackthorn (*Prunus spinosa),* Hawthorn (*Cretaegus monogyna)* and Holly (*Illex aquifolium)* to prevent increased predation by domestic cats on nesting birds as a result of the proposed residential development. Thorny species should also be included within the buffer planting around the woodland parcel.

As the site may support Nightingales, which are severely declining within the UK, some patches of native scrub should be created around the edges of the existing woodland parcel and along the dense species-rich hedgerows to provide increased suitable habitat for this species on the site. This scrub should be managed carefully and cut in rotation so that there is always habitat available for this species. Additionally, as the woodland parcel management

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is to be improved and include the removal of some of the sycamore that chokes the understory, coppicing some of the sycamore as well as the willow, will also create suitable habitat for this species over time.

3.6.3 Residual Impacts

With the above avoidance measures and mitigation in place, as well as enhancement measures for common breeding bird species, there will be no residual impacts on bats as a result of the proposed development and it will have a **likely positive** effect.

3.6.4 Compensation Measures

Given that no residual effects have been identified, no specific compensation measures are considered necessary with regards to breeding birds.

3.6.5 Enhancements

Habitat management on site (see **Section 4.0**) will compensate and increase opportunities for birds within the site. In addition, integrated bird nesting provision will be provided within the new dwellings at a ratio of 1:1. Using nest boxes of varying designs would maximise the species complement attracted to the site, and where possible these could be tailored to provide opportunities for red listed/BAP species known from the local area. A variety of boxes will be installed, both within the building fabric of the new properties and on trees within the boundaries. The recommended boxes are shown in **Figs 14a - 14c** below (see **Appendix I** for box locations).

Vivara Pro Seville 28mm Woodstone Nest Boxes can be affixed to the external walls of a building or a mature tree. These will provide a nesting opportunity for Blue Tit (*Cyanistes caeruleus)*, Great Tit (*Parus major)* or Coal Tit (*Periparus ater)* which were all recorded on the site. These should be installed at least 3m above ground level, with a clear flight path and facing away from prevailing winds, ideally on the south or eastern face of a building or tree.

Schwegler 3S Starling Nest Boxes can be affixed to mature trees and Starling Nest Boxes can be affixed to buildings across the site, which will provide nesting opportunities for Starlings (*Sturnus vulgaris)*. This species was recorded on the site and is Red listed under the Birds of Conservation Concern (BoCC) and is a Section 41 species. These should be installed at least 3m above ground level, with a clear flight path and facing away from prevailing winds, ideally on the south or eastern face of a building or tree.

Additionally, as many of the mature hedgerows within the development are to be retained, 1ZA Schwegler Wren Roundhouses should be placed within a shady areas within hedgerows, scrub or dense vegetation. These will support Wrens (*Troglodytes troglodytes)*, which were recorded on the site. These nesting features can also be placed near hedgerows in less sheltered areas, as these will support other small breeding birds. Bird nesting boxes, particularly sparrow terraces should be emptied of nesting material in winter to prevent the build-up of parasites

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Figure 14a. Left to right; Vivara Pro Seville 28mm Woodstone Nest Box, Starling Nest Box, 3s Schwegler Starling Nest, and 1ZA Schwegler Wren Roundhouses Box.

In addition, Swift bricks can be also incorporated into the new dwellings. The 'CJ Wildlife swift maxi nesting box' with entrance via a CJ Wildlife 'Cambridge swift full face brick' (**Fig 14b**) is recommended as it provides ideal nesting opportunities for swifts and the full face brick is available in different colours and can also be painted if necessary to blend in with the surrounding brickwork. These will be located away from direct lighting, windows and prevailing winds.

Figure 14b. CJ Wildlife swift maxi nesting box (left) and Cambridge Swift full-face brick (right) to be integrated into the newly built dwelling.

Schwegler 17A (triple cavity) swift boxes can be used as a suitable alternative which can provide multiple nesting opportunities with a reduced number of boxes (**Fig 14c**). These boxes are suitable for colony formation due to three separate brood chambers within a single housing. If these models are not suitable for the building specifications, an alternative swift box with internal floor space exceeding 400cm squared must be used. A list of swift boxes can be found on the RSPB website via the following link (https://www.rspb.org.uk/globalassets/downloads/about-swifts/swift-bricks.pdf) however it is worth noting that some of these do not have an internal floor space exceeding 400cm squared and are therefore not considered appropriate.

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Figure 14c. Schwegler No.17a Swift box (right) (NHBS, 2024)

3.7 Hedgehogs

3.7.1 Mitigation Measures

As the removal of scrub and hedgerow habitats on the site is to be undertaken under an EPS licence for Dormice and therefore also under the supervision from a suitably qualified ecologist, hedgehogs, if present should be identified. If any hedgehogs are identified in hibernation (usually between November and early March), then either the area where the hedgehog is found should remain undisturbed or at the discretion of a suitably qualified ecologist, it may be possible to move the animal with the material that it is hibernating into a safe location.

Where hedgerows are not possible and fencing must be used within the proposed development, to prevent habitat fragmentation and to create connectivity across a mosaic of garden habitats within the proposed development, 'hedgehog highways' should be placed within the fence lines of the new properties, to allow this species to safely forage and commute across the site. Hedgehog highways should include holes approximately 13cm x 13cm and should link as many neighbouring gardens or suitable habitat at the site as possible. These are easy to include either within walls or fences. Plaques can be installed nearby to alert new homeowners about the purpose of these features.

Additionally, though impacts upon individual hedgehogs will be mitigated for using the methods above, suitable habitat across the site is to be removed. However, to mitigate this loss, wildflower meadows, open green space and new hedgerows are already proposed as part of landscaping across the development, which, once established will provide a good food source and shelter, replacing that which has been lost.

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Figure 15a (left) & 15b (right) - Hedgehog Highway Sign (left). B - Eco Hedgehog Hole Fence Plate (right).

3.8 Harvest Mouse

3.8.1 Mitigation Measures

As the hedgerow and scattered scrub removal is to be conducted under an EPS licence for Hazel Dormouse, it is likely that any Harvest Mouse nests present within this area would be found. The scrub and longer grassland in the south of the site by Bevern Stream to be managed for reptiles and Great Crested Newts as part of the in-situ receptor site will be cut using reasonable avoidance measures under supervision of an ecologist, meaning that Harvest Mouse nests again would again likely be found during this process if present. To ensure that none are missed prior to vegetation cutting, the ecologist on site can hand search the vegetation in sections prior to cutting commencing.

Should harvest mice be found at any time, works should stop immediately and a suitably qualified Ecologist contacted.

3.9 Biodiversity Net Gain Results

In accordance to the condition assessment completed of habitats outlined within the submitted Biodiversity Impact Assessment (The Ecology Co-op 2021), and the updated walkover completed by Ecosupport Ltd in June 2024, the below enhancement recommendations, calculations for the net gain to biodiversity completed in the Statutory Metric has **achieved a net gain of 66.76% (or 9.84 habitat units) (Fig 16).** In addition to this, there is a **net gain of 94.11% (or 10.52 hedgerow units) (Fig 16) linear habitats**.

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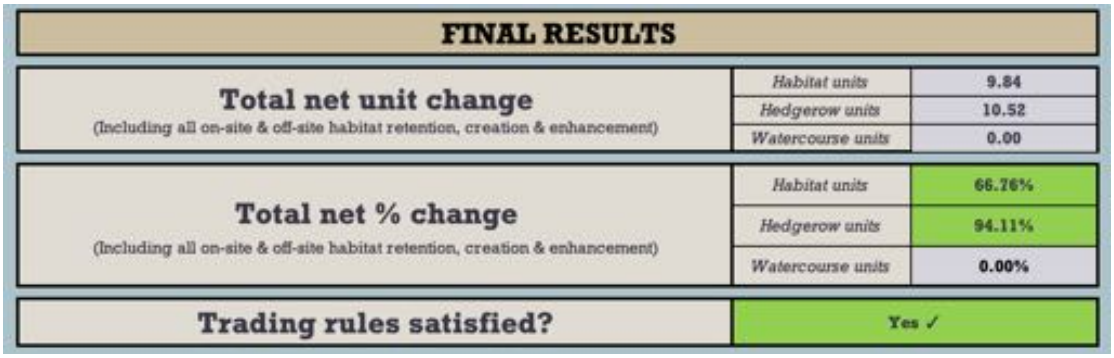
Figure 16. Headline BNG results in the statutory metric.



FINAL RESULTS		
Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	9.84
	Hedgerow units	10.52
	Watercourse units	0.00
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	66.76%
	Hedgerow units	94.11%
	Watercourse units	0.00%
Trading rules satisfied?	Yes ✓	

On-site compensation for these losses are provided by the inclusion of amenity greenspace in the development. Additionally, up to 20 medium street trees are to be planted across the housing development. Two large SuDS will also be created and sown with an appropriate native wetland or pond mix. The dried-up pond within the woodland will also be reinstated, and there will be improved management of the broadleaved woodland parcel to improve its biodiversity. This could be achieved through some clearance of the Sycamore (*Acer pseudoplatanus*) and other shrubs choking the understory. The habitats to be retained and created are shown in **Fig 18.**

In the southern section of the site, which is to remain undeveloped, the improved grassland is to be retained, with a portion to be enhanced with wildflower seeding. A pond to enhance the receptor site for Great Crested Newts will be created. The scrub along Bevern Stream is to be largely retained and managed carefully which will benefit reptiles likely to be translocated into this area in the long-term. And a portion of the scrub will be cleared to provide a rough grassland area.

Overall, the creation and enhancements of the site habitats will contribute 21.94 habitat units to the scheme, taking into account the 'difficulty factor' and time it takes for the ecological benefits to arise.

The current scheme layout as much of the hedgerows and tree lines as possible (1.05km), with some short sections to be removed (0.04km) across the site to create access points for roads and footpaths (**Fig 17**). This represents a loss of 0.51 hedgerow units overall.

A total of 1.34km of new native species-rich hedgerows, some with trees, as well as tree lines will be planted across the site as well as tree lines to reinforce buffer areas. All new hedgerows and treelines will be native species-rich using plants from UK stock and where possible of local provenance. One tree line bordering Station Road will use ornamental species to provide screening. Overall, this will contribute a gain of 4.85 hedgerow units to the scheme, taking into account the 'difficulty factor' and time it takes for the ecological benefits to arise. It is expected that the proposed hedgerows and tree lines will reach a moderate to good condition.

Figure 17. Plan showing the northern portion of the site to be developed. Including habitats to be retained (green labels) and lost (red labels). Retained hedgerows are green, lengths lost are red and proposed new hedgerows and treelines are blue.

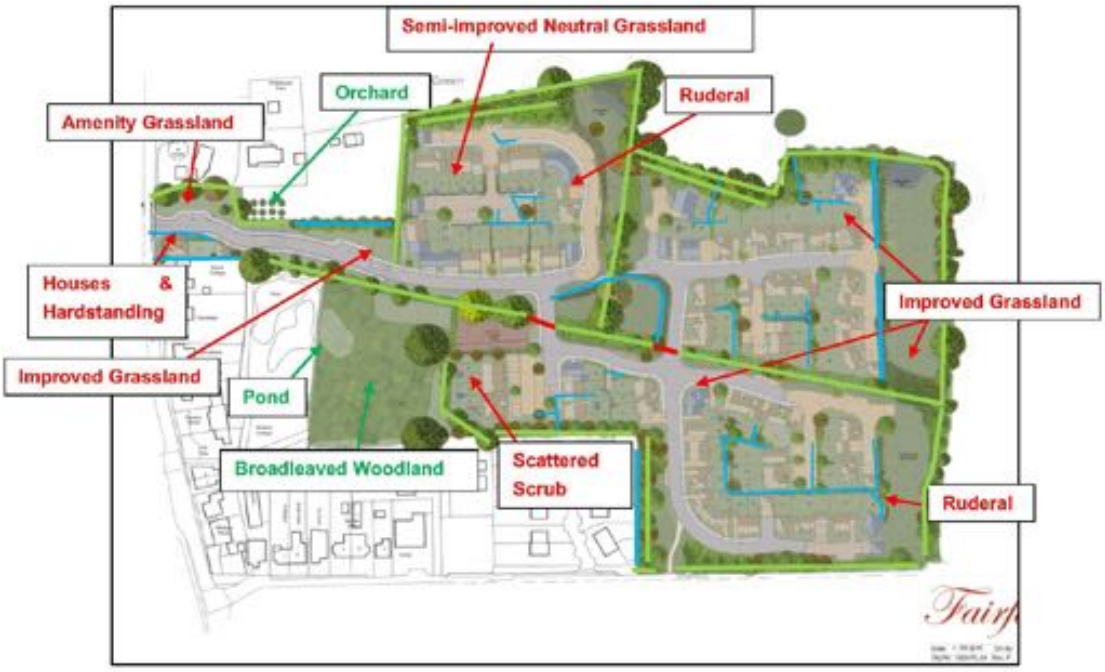


Figure 18. Map showing the southern section of the site with retained habitats (green labels) and habitats to be created or enhanced (blue labels).

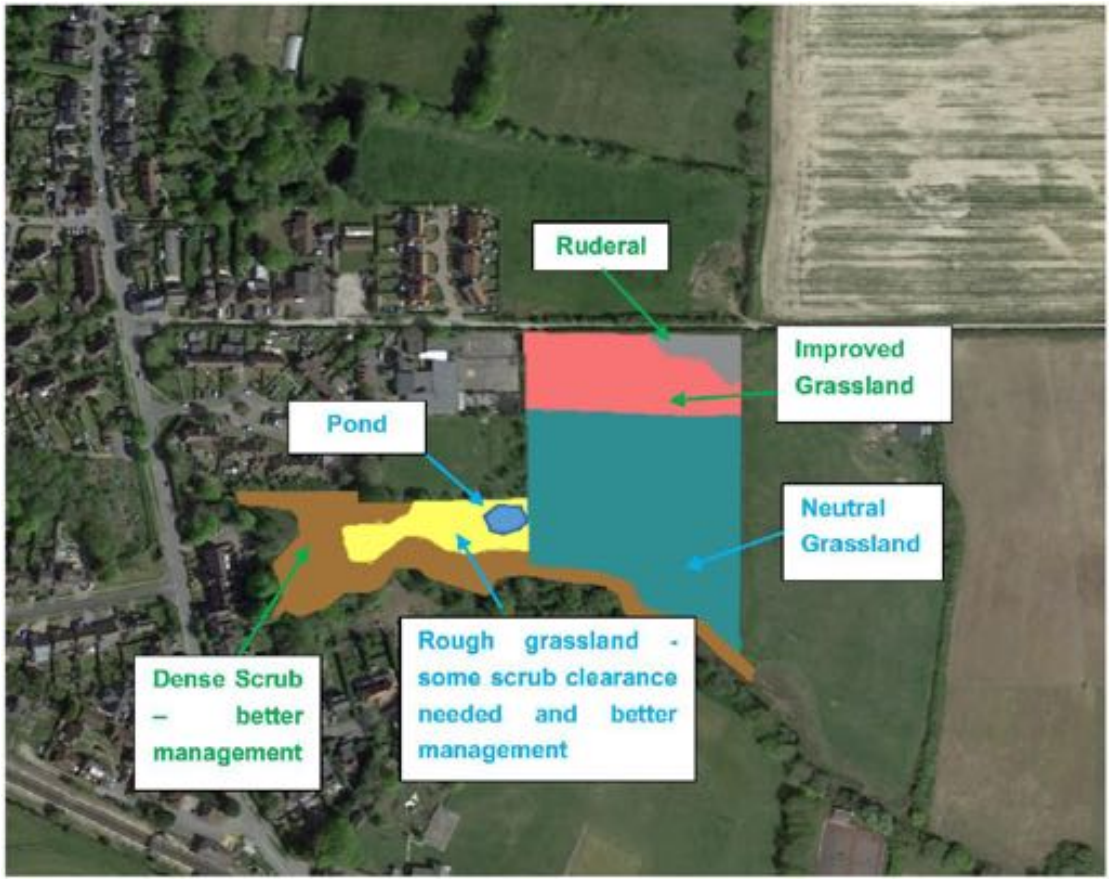


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Table 6. A summary of the Biodiversity Impact Calculation under the current scheme on Land at North Barnes and Nolands, Plumpton Green (The Ecology Co-op, 2020)

On-site baseline	Habitat Units	19.99
	Hedgerow Units	10.99
	River Units	N/A
On-site post-intervention (including habitats retention, creation, enhancement and succession}	Habitat Units	23.37
	Hedgerow Units	15.34
	River Units	N/A
Total net unit change (including all on-site and off- site habitat retention/creation}	Habitat Units	3.38
	Hedgerow Units	4.34
	River Units	N/A
Total net% change (including all on-site and off- site habitat creation and retained habitats}	Habitat Units	**16.90%**
	Hedgerow Units	**39.51%**
	River Units	N/A

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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 **Appendix I**. This section includes details on how habitat enhancement and creation works will be carried out, and how such habitats will be managed and monitored for long-term biodiversity improvement.

4.2 Protection of Retained Habitats

All of the habitats to be retained or enhanced will be protected from damage during the works and will be fenced using Heras fencing or similar to prevent access by machinery. Where large mature trees are present, they will be protected using standard arboricultural tree protection measures which include protection of the canopy and prevents root compaction.

No vehicles will enter the protective ring fencing and no materials will be stored within their circumference. All protective fencing must be in place prior to any construction machinery arriving on site, before any works on site get underway, and will remain in place until all work is completed. This will minimise the level of disturbance within the retained boundary habitat / buffer areas during the works and ensure the habitats and any wildlife species that may be using them are protected.

Northern Section (Redline)

4.3 Wildflower Meadow Creation

4.3.1 Proposed Planting

Multiple areas of greenspace are included within the development, some of which has been allocated as areas for wildflower seeding, however the previous iterations of wildflower areas are to remain, locating the wildflower parcels to areas of greenspace to the far east, centre and far west). The areas proposed for seeding are currently soft landscaping and can be prepared as below (or altered following consultation with supplier):

- deep ploughing to invert and bury the nutrient-rich topsoil and bring the more nutrient poor subsoil to the surface;
- strip the topsoil layer to expose the nutrient poor subsoil beneath. The topsoil can be re-used in other parts of the site as required, e.g. to establish residential gardens, or other landscape planting areas;
- overlay the existing ground with nutrient-poor subsoil excavated from other parts of the site such as that arising from excavation of foundations of buildings and road construction. It is important to remove the existing vegetation to ensure adequate binding of the soil layers and avoid creating a layer of nutrient rich dead vegetation into the soil horizons.

All the above options will be refined where necessary through soil testing and carefully planned in terms of soil volumes and transport costs.

Seed mixes used must be of native species composition and locally sourced (where possible); two examples of the above considered suitable for the site are: Emorsgate Seeds – mixture EM4- Meadow Mixture for clay soils (**Table 7**) or Wildflower Lawns and Meadows – Economy seed mix for clay, loam or sandy soils with wild orchid (**Table 8**).

Table 7. Composition of EM4 – Meadow mixture for clay soils.

Wildflowers		
%	**Latin name**	**Common name**
0.5	*Achillea millefolium*	Yarrow
1	*Betonica officinalis - (Stachys officinalis)*	Betony
3.5	*Centaurea nigra*	Common Knapweed
1	*Filipendula ulmaria*	Meadowsweet
2.5	*Galium verum*	Lady's Bedstraw
0.4	*Lathyrus pratensis*	Meadow Vetchling
1	*Leucanthemum vulgare*	Oxeye Daisy
0.5	*Lotus corniculatus*	Birdsfoot Trefoil
1	*Plantago lanceolata*	Ribwort Plantain
0.3	*Primula veris*	Cowslip
2	*Prunella vulgaris*	Selfheal
3	*Ranunculus acris*	Meadow Buttercup
1.5	*Rhinanthus minor*	Yellow Rattle
1.5	*Rumex acetosa*	Common Sorrel
0.2	*Silene flos-cuculi - (Lychnis flos-cuculi)*	Ragged Robin
0.1	*Trifolium pratense*	Wild Red Clover
Grasses		
10	*Agrostis capillaris*	Common Bent
2	*Alopecurus pratensis*	Meadow Foxtail (w)
2	*Anthoxanthum odoratum*	Sweet Vernal-grass (w)
1	*Briza media*	Quaking Grass (w)
36	*Cynosurus cristatus*	Crested Dogstail
24	*Festuca rubra*	Slender-creeping Red-fescue
1	*Hordeum secalinum*	Meadow Barley (w)
4	*Phleum bertolonii*	Smaller Cat's-tail

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Table 8. Composition of Wildflower Lawns and Meadows – Economy seed mix for clay, loam or sandy soils with wild orchid.

Wildflowers	
Common	**Latin**
Yarrow	*Achillea millefolium*
Betony	*Betonica officinalis*
Common Knapweed	*Centaurea nigra*
Common Spotted Orchid	*Dactylorhiza fuchsii*
Wild Carrot	*Daucus carota*
Lady's Bedstraw	*Galium verum*
Meadow Cranesbill	*Geranium pratense*
Cat's-ear	*Hypochaeris radicata*
Field Scabious	*Knautia arvensis*
Meadow Vetchling	*Lathyrus pratensis*
Rough Hawkbit	*Leontodon hispidus*
Oxeye Daisy	*Leucanthemum vulgare*
Toadflax	*Linaria vulgaris*
Birds-foot-trefoil	*Lotus corniculatus*
Ragged Robin	*Lychnis flos-cuculi*
Musk Mallow	*Malva moschata*
Green-winged Orchid	*Orchis morio*
Ribwort Plantain	*Plantago lanceolata*
Cowslip	*Primula veris*
Selfheal	*Prunella vulgaris*
Meadow Buttercup	*Ranunculus acris*
Yellow Rattle	*Rhinanthus minor*
Sorrel	*Rumex acetosa*
Pepper Saxifrage	*Silaum silaus*
Devil's-bit Scabious	*Succisa pratensis*
Goat's-beard	*Tragopogon pratensis*
Red Clover	*Trifolium pratense*
Tufted Vetch	*Vicia cracca*
Grasses	
Common Bent	*Agrostis capillaris*
Sweet Vernal Grass	*Anthoxanthum odoratum*
Quaking Grass	*Briza media*
Crested Dogstail	*Cynosurus cristatus*
Sheep's Fescue	*Festuca ovina*
Slender Creeping Red Fescue	*Festuca rubra ssp. litoralis*
Smaller Cat's-tail	*Phleum bertolonii*
Yellow Oat-grass	*Trisetum flavescens*

The seed mix should be scattered evenly across the prepared soil in late summer to early autumn. In the first year the sward should be cut to a height of ~5cm three times to control the flush of annual weeds growing in the first season.

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The works (in the first year and thereafter) will be carried out using precautionary habitat manipulation, or once the reptile capture has been completed, to ensure that any reptiles or amphibians are not harmed during ground preparation/cutting works (see CEMP for methodology surrounding protected species). All works will take place in accordance with the mitigation recommended for reptiles and Great Crested Newts (see **sections 3.3** & **3.4**)

4.3.2 Management

Where suppliers' management differs that should be followed (after ecological approval), in the absence of specific supplier management regime the following is considered sufficient to achieve the desired habitat.

As part of on-going management, the wildflower habitat should be cut and gathered each year to a height of approximately 40-60mm after flowering in July and August. This process can be carried out through strimming. This is important to ensure that species diversity of the area is maintained, and grass species do not become dominant. Where necessary, a second cut could be taken in March each year if the sward is growing too coarsely. The grassland should not be cut between the 1st of April and mid- August so that plants are given the opportunity to flower. A yearly check for invasive species and appropriate removal of any invasive species identified.

When cutting the wildflower area in the southern section this should be undertaken during the winter months, November to February, which is outside of the active season for reptiles. It is also important

4.4 Woodland

4.4.1 Woodland Enhancement

The existing parcel of woodland is to be subject to improved management to increase the overall condition and value of the woodland parcel. The woodland was assessed to be in moderate condition though could be improved by reducing the number of Sycamore (*Acer pseudoplatanus*) trees and other shrub vegetation currently choking the understorey vegetation. The vegetation can be removed as soon as possible with the intent of reducing or stopping the growth of the problem individuals, where possible; taller specimens of Sycamore to be removed should be left as standing deadwood to provide valuable habitat for a wide diversity of fauna. Shrub removal of native species can be used in hibernacula creation (see CEMP, The Ecology Co-op, 2021) off site.

4.4.2 Management

The woodland parcel shall be regularly monitored removing any non-native or invasive species from the parcel allowing younger trees and native understory to form. Where possible and safe to do so, deadwood shall be allowed to stand providing useful habitats and growth within the woodland parcel. The parcel is existing and has been for >30 years, as such management should be minimal and infrequent checks by a suitably qualified arboriculturist, with proposed management confirmed by a suitably qualified ecologist to ensure no risk of damage to protected species as an indirect result.

4.5 Scrub

4.5.1 Proposed Planting

Small parcels of scrub are proposed around the site, most notable are those adjacent to existing habitats such as woodland or hedgerows; the scrub parcels shall form ecotones between the habitat parcels, offering good visual amenity whilst also offering ecological value and function. The scrub parcel must be planted with native species (a minimum of five species) with at least one of which a woody species. The specific species compositions should vary based on adjacent habitats though an example of suitable species is as follows:

- Bramble (*Rubus fruiticosa* agg.)
- Hawthorn
- Blackthorn
- Box (*Buxus sempervirens*)
- Hazel
- Willow Species (*Salix* spp.).

The scrub parcels should be protected from browsing and grazing during early growth, this is considered unlikely to be a significant concern on this site, however, should indications of browsing or grazing species be noted then protective measures such as tree guards should be put in place. Any failures must be replanted on a like for like basis (both species and density).

4.5.2 Management

Following establishment, scrub will require minimal ongoing management however the following measures can be employed as necessary:

- New scrub will be weeded following first planting and watered whenever necessary during the first growing season.
- Scrub will be cut back annually as needed to ensure the area does not become overgrown and thinned every five years. Different areas of scrub will be cut back / thinned on rotation as per HW & Co (2024) in order to ensure a diverse age range (seedlings, sapling, young shrubs and mature shrubs) and dense structure persists.
- Any existing or later establishing Bramble will be reduced in density and will be maintained at approximately 15% density within the scrub patches.
- Removal of invasive species will be undertaken as necessary if any are to establish on site.
- Ongoing management will be undertaken to prevent successional scrub developing within the adjacent grassland areas.
- Management must take into account the requirement for maintaining habitat connectivity across the site. Should any such vegetation die or its density become sparse, additional planting will be undertaken, replacing like-for-like.

All management of trees and scrub will be undertaken outside of the bird nesting season, which spans February – August inclusive.

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4.6 Individual Trees

4.6.1 Proposed Planting

As included within the landscaping plan, multiple street trees of various sizes will be planted across the development. This will create greater habitat opportunities for a variety of birds and invertebrates. At least five species, of which three species should be flowering and fruiting, should be selected from the list below:

- Pedunculate Oak;
- Bird Cherry *(Prunus padus);*
- Beech (*Fagus sylvatica)*;
- Aspen (*Populus tremuloides);*
- Common Lime *(Tilia x europea);*
- Crab Apple*;*
- Hornbeam;
- Field Maple*;*
- Hazel*;*
- Wild Cherry*.*

Ornamental scattered trees are to be planted along Station Road to provide screening. Ornamental varieties should be selected for their value to biodiversity including those that provide nectar-rich flowers, edible berries and support diverse invertebrate faunas. Ornamental versions of Birch, Cherry, Holly, Maple (*Acer* spp.), Rowan (*Sorbus* spp.) and a variety of fruit trees would be suitable. Cherry Laurel (*Prunus laurocerasus)* and Rhododendron (*Rhododendron* spp.) must not be included within this tree line, or within the planting scheme anywhere else on the site.

4.6.2 Management

Tree saplings must be kept well-watered during establishment. Weeds must be controlled at the base of the trees.

Tree guards, to protect the new saplings from rabbits and deer, to be inspected twice annually to remove weeds and any soil build up inside the tubes for first 3 years and then removed when planting is well established. Tree stakes and ties will be checked annually and after strong winds.

Check for signs of disease regularly specific arboriculture advice should be sought for differences in individual species, though typically checking for disease in late summer early autumn is best to identify thinning leaves and potential bark decay. If disease is identified advice should be sought from an arboriculturist regarding the appropriate method of treatment.

Tree works must only be timed outside the bird nesting season (1st March to 31st August). Where possible shrubs shouldn't be cut until February, so that valuable winter food associated with fruiting shrubs/trees is retained for over-wintering birds.

Replacement planting will be required where trees fail to establish.

4.7 Attenuation Pond

4.7.1 Proposed Planting

Three attenuation ponds are proposed within the scheme, these areas will be planted with water tolerant species to allow for continuous function as attenuation ponds whilst also providing improved biodiversity values. The areas proposed for seeding are currently "soft landscape" areas and can be prepared as below (or altered following consultation with supplier);

- deep ploughing to invert and bury the nutrient-rich topsoil and bring the more nutrient poor subsoil to the surface.
- strip the topsoil layer to expose the nutrient poor subsoil beneath. The topsoil can be re-used in other parts of the site as required, e.g. to establish residential gardens, or other landscape planting areas.
- overlay the existing ground with nutrient-poor subsoil excavated from other parts of the site, such as that arising from excavation of foundations of buildings and road construction. It is important to remove the existing vegetation to ensure adequate binding of the soil layers and avoid creating a layer of nutrient rich dead vegetation into the soil horizons.

All the above options will be refined where necessary through soil testing and carefully planned in terms of soil volumes and transport costs.

Seed mixes used must be of native species composition and locally sourced (where possible); two examples of the above considered suitable for the site are; Emorsgate Seeds – mixture EM8- Meadow Mixture for wetlands (**Table 9**).

Table 9. Composition of EM8 – Meadow mixture for wet soils.

Wildflowers		
%	**Latin name**	**Common name**
10	*Achillea millefolium*	Yarrow
18	*Centaurea nigra*	Common Knapweed
5	*Filipendula ularia*	Meadowsweet
12	*Galium verum*	Ladys Bedstraw
2.5	*Lathyrus pratensis*	Meadow Vetchling
6	*Leucanthemum vulgare*	Oxeye Daisy
4	*Lotus pedunculatus*	Greater Birdsfoot Trefoil
18	*Plantago lancelata*	Ribwort Plantain

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1	*Primula veris*	Cowslip
5	*Ranunculus acris*	Meadow Buttercup
5	*Rhinanthus minor*	Yellow Rattle
4	*Rumex acetosa*	Common Sorrell
5	*Sanguisorba officinalis*	Great Burnet
3	*Silene flos-cuculi*	Ragged Robbin
0.5	*Succisa pratensis*	Devils-Bit Scabious
0.5	*Taraxacum officinale*	Dandelion
0.5	*Vicia cracca*	Tufted Vetch
Grasses		
2	*Agrostis capillaris*	Common Bent
6	*Briza media*	Quaking Grass
50	*Cynosurus cristatus*	Crested Dogtail
2	*Deschampsia cespitosa*	Tufted Hair-Grass
20	*Festuca rubra*	Red-Fescue
2	*Hordeum secalinum*	Meadow Barley
16	*Poa trivialis*	Rough-Stalked Meadow-Grass
2	*Schedonorus arundinaceus*	Tall Fescue

Marginal wetland plants will be planted to the outer boundaries of features, the planting density and species composition may vary due to varying lengths and shapes, available buffer spaces and appropriate visual amenity. The species mixes must not be single species, comprising a minimum of 8 native species. The list below provides an example of suitable species although this list is not extensive and can be altered following ecological consultation:

- Purple Loosestrife (*Lythrum salicaria)*
- Yellow Loosestrife(*Lysimachia vulgaris)*
- Sharp Flowering Rush (*Juncus acutiflorus)*
- Carnation Sedge (*Carex panicea)*
- Water Avens (*Geun rivale)*
- Red Campion (*Silene dioica)*
- Grey Sedge (*Carex divulsa ssp divulsa)*
- Pendulus Sedge (*Carex pendula)*

Sowing should be undertaken in early autumn or in spring (once land has drained) to allow enough time for vegetation to mature. In the first year, annual weed growth may be cut back to encourage the development of a good perennial ground cover. Establishment on sites prone to flooding may be patchy and may take several years to fully colonise.

4.7.2 Management

Following creation, the attenuation ponds should require little management to ensure ongoing function. Though passive checks during wet periods can confirm its function and potential issues from planting or topography can be amended.

In subsequent years, the planting of the pond sowings can be managed in a number of ways (typically determined by soil fertility). Traditional meadow management is ideal with a main summer hay cut in combination with an autumn (and occasionally a spring cut). The grassland should not be cut from spring to late July/August allowing certain species to flower.

Cuts should be done with hand tools (such as a scythe or petrol strimmer) cutting to a height of 50cm where the 'hay' can be left for 1-7 days to dry and shed seeds. After this they can be removed from site.

4.8 Pond Management

An existing pond within the above woodland parcel is currently dried up, offering limited ecological value. As a result of the development this pond will be reinstated through an increased amount of light from the removal of choking vegetation to the woodland parcel, and ongoing aquatic vegetation monitoring with an aim to hold ~25% of the pond with vegetation at any one time. The pond initially shall be dredged/ de-silted between November and February (to reduce the likelihood of impacts upon great crested newts). Silt should be removed carefully to avoid smothering surrounding vegetation.

4.9 Hedgerows

4.9.1 Northern Section

Hedgerows with and without trees are to be planted across the development, bordering the site and the new garden spaces. This will create habitat for bats, dormice, breeding birds and a variety of birds and invertebrates. It will also provide refuge and commuting routes for great crested newts and reptiles.

The hedgerows will include at least 50% native thorny species including but not limited to hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*) and holly (*Ilex aquifolium*) to prevent domestic cats predating on birds and dormice. The remaining mixture should include species which provide a good food source for dormice and should comprise at least five of the following native species:

- Pedunculate Oak (*Quercus robur)*;
- Hornbeam (*Carpinus betulus);*
- Silver Birch (*Betula pendula);*
- Crab Apple (*Malus sylvatica);*
- Honeysuckle (*Lonicera periclymenum);*
- Guelder Rose (*Viburnum lantana)*;
- Field Maple (*Acer campestre);*
- Hazel (*Corylus avellana)*;
- Wild Cherry (*Prunus avium).*

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4.9.1.1 Management

To enable a successful outcome, future management of the retained and planted hedgerows will require on going management works. This will include monitoring, prescriptive tasks and implementation of necessary works. Elements of this future management are detailed below. The *Hedgerow Management and Wildlife* (Barr et al., undated) document outlines three important factors in how hedgerows are managed that affect resident mammal population (and have therefore formed the basis of the recommendations in this section):

1. The type and amount of food available within the hedgerow. Favourable conditions being a large invertebrate population or prolific annual seed and berry crop.
2. The vegetation structure and composition of the hedgerow. For instance, a dense, herb- rich basal layer or a continuous line of hedgerow trees is preferred by several species.
3. The continuity and connectivity of the hedge within the landscape. For instance, a hedgerow that connects patches of small farm woodlands will have greater value as a corridor for the dispersal of mammals.

Monitoring

Annual monitoring will take place of the newly planted trees / hedge areas for the first 3 years, with bi-annual monitoring between 4-10 years. The existing hedgerows / tree lines will be monitored during the first, third and fifth year. This will be carried out by a suitably experienced ecologist during late winter – early spring of each year. These monitoring visits will assess the general health of the hedgerows and determine if any remedial action is required (some of which are outlined below such as replacement planting or altering the frequency of cuts).

Replacement

Any plants that are removed, die or become seriously damaged or defective during the 10-year monitoring period of planting shall be replaced like for like in the next planting season.

If hedgerows become very thin, coppicing of selected plants / laying of short lengths of hedgerow may be required and will be beneficial to promote vigorous, dense regrowth. Such works must be undertaken during the period October – February to avoid the breeding bird season.

Hedge Trimming Regime

The more favourable approach to managing hedgerows for the benefits of small mammals is to encourage minimal interference and ensure when there is any cutting, it does so after autumn fruiting (so late winter is preferable). The key points of the management prescriptions will therefore be as follows (adopting recommendations as outlined within Bright and MacPherson 2002):

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- Cutting will be done on a 3-year cycle (part of the hedges on site cut during the first year, another part of the hedges cut during second year and no cutting during the third year), to provide sustained foraging opportunities across the site every active season. Hedgerows will be allowed to develop into a tall, dense, bushy structures and maintained at a height of 3 – (preferably 4) meters.
- A proportion of hedges (at least 30%) should be left to grow for at least 7 – 10 years.
- Not all hedgerows should be cut in any one year, so some heavy fruiting hedges are always present.
- Flails should not be used if possible meaning management works will likely involve cutting using hand tools
- Coppicing or laying should be used to manage an of the hedgerows on site which become gappy or spars
- If the size of the hedgerow needs to be reduced, avoid cutting the top and cut one side.

Southern Section (Blueline)

4.10 Rough Grassland

4.10.1 Habitat Creation

An area of rough grassland is proposed to the centre of an existing scrub parcel in this area. The creation of this rough tussocky grassland will provide valuable habitat for reptiles and amphibians. Prior to seeding appropriate timing and methodology regarding the initial scrub clearance must be followed to ensure no harm to any protected species that may be utilising the area. An example of a suitable mix of native tussock forming species is listed in **Table 10** below. Similar and approved mixes may be used in place.

Table 10. Composition of EM10 – Tussocky Mix

Wildflowers		
%	**Latin name**	**Common name**
0.8	*Achillea millefolium*	Yarrow
0.4	*Agrimonia eupatoria*	Agrimony
0.1	*Arctium minus*	Lesser Burdock
1.4	*Centaurea nigra*	Common Knapweed
1	*Centaurea scabiosa*	Greater Knapweed
0.8	*Chaerophyllum temulum*	Rough Chervil
0.5	*Cruciata laevipes*	Crosswort
1	*Daucus carota*	Wild Carrot
1.6	*Dipsacus fullonum*	Wild Teasel
0.8	*Filipendula ulmaria*	Meadowsweet
1.8	*Galium album*	Hedge Bedstraw
0.8	*Knautia arvensis*	Field Scabious
0.4	*Lathyrus pratensis*	Meadow Vetchling
1.6	*Leucanthemum vulgare*	Oxeye Daisy
0.4	*Lotus corniculatus*	Birdsfoot Trefoil
1.6	*Malva moschata*	Musk Mallow

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1.8	*Plantago lanceolata*	Ribwort Plantain
1.6	*Poterium sanguisorba*	Salad Burnet
1.2	*Silene dioica*	Red Campion
0.4	*Vicia Cracca*	Tufted Vetch
Grasses		
4	*Alopecurus pratensis*	Meadow Foxtail
20	*Cynosurus cristatus*	Crested Dogstail
16	*Dactylis glomerata*	Cocksfoot
12	*Festuca rubra ssp*	Red Fescue
8	*Holcus lanatus*	Yorkshire Fog
4	*Lolium perenne*	Perennial Ryegrass
6.4	*Poa pratensis*	Smooth-stalked Meadow-grass
9.6	*Festuca arundinacea*	Tall Fescue

The seed mix should be scattered evenly across the prepared soil in late summer to early autumn. In the first year the sward should be cut to a height of ~5cm three times to control the flush of annual weeds growing in the first season.

The works (in the first year and thereafter) will be carried out using precautionary habitat manipulation to ensure that any reptiles or amphibians are not harmed during ground preparation/cutting works.

4.10.2 Habitat Management

It is important that this habitat is managed for reptiles in perpetuity and monitoring surveys of this site will be necessary at intervals of one and three years.

Mowing of the grassland areas within the reptile receptor areas should be undertaken during the winter months, November to February, which is outside of the active season for reptiles. It is also important that the grassland habitat is mown to a height of 10cm and that machinery does not track over any of the receptor areas to avoid soil compaction.

The hibernacula should also be maintained in perpetuity, and regularly checked for damage within the first 5-years the development is in operation. If they are found to be damaged or removed, they will need to be replaced immediately.

4.11 Scrub Management

The existing dense scrub habitat within the southern site should include a variety of species and maintain different stages of growth at all times from bare ground, to vegetation and deadwood, to provide shelter in close proximity to available food sources (proposed rough grassland) and basking opportunities for reptiles.

The edges of the scrub can be cut to have scalloped edges, which lengthen the scrub and increase shelter points. Cutting in general will encourage re-growth, but it should be cut in rotation to maintain the age structure, as outlined above. As with hedgerows, this cutting

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must only be timed outside the bird nesting season (1st March to 31st August). Where possible shrubs shouldn't be cut until February, so that valuable winter food associated with fruiting shrubs/trees is retained for over-wintering birds. If individual shrubs within the scrub must be cut back, the stump should remain in-situ to increase deadwood habitat.

4.12 Grassland Enhancement

The improved grassland pasture is currently of low ecological value because of previous agricultural management. As it covers a large area, it will likely be challenging to successfully establish the whole area as wildflower. However, this area can be scarified, so there is at least 50% bare ground. One this has been achieved, the bare ground areas should be left for four to six weeks to wait for weeds to grow, which can then be removed.

A wildflower mix (the same as outlined within **section 4.3**) can be sown into these exposed areas, using the same methods. As the grassland is currently improved and the wildflower may struggle to establish due to competition from the pre-existing coarse grassland, Yellow Rattle (*Rhinanthus minor*) seed can be sown in with the mix. This is semi-parasitic and will help to weaken the pre-existing grass, lessening competition for the wildflowers.

The works will be carried out by using the process of precautionary habitat manipulation to ensure that reptiles and amphibians are not harmed during the ground preparation. This will involve the cutting of vegetation to a height of 200mm using handheld strimmers on a day where the ambient temperature is above 9 degrees Celsius. This will remove a significant proportion of cover for reptiles and amphibians while minimising harm to them. A second cut will be made to a height of 50mm, to remove the remaining vegetation from site. This process must be undertaken during the active season for reptiles and amphibians (April to September). A suitably qualified and experienced ecologist will oversee these works.

4.13 Pond

4.13.1 Habitat Creation

A new pond will be created within the new rough grassland area within the southern section of the site in the receptor area for great crested newts, where the land is to remain undeveloped. It will be designed to offer new breeding habitat for amphibians and invertebrates as well as foraging grass snakes.

The pond will be designed to be approximately 200m^2 in area with an irregular shape and ledges to provide a variety of depths, increasing its value for wildlife. To allow for planting and to increase the wildlife value, the pond should have a natural earth bottom which can be achieved by either using a buried pond liner, or by incorporating Bentonite clay into the pond bed. Furthermore, it should be designed to retain at least 20cm of water throughout the year (thus ensuring successful breeding by a number of species), though some seasonal drying of the pond can potentially have benefits for biodiversity. It is important that fish are not introduced as this typically reduces the ecological value of the pond.

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Plants will be introduced to the pond and must include a combination of marginal aquatic plants and oxygenating plants. This will include the following as a minimum:

- 15 bunches of Hornwort (*Ceratophyllum derersum)*, 15 bunches of Curled Pondweed (*Potamogeton crispus)* and 15 bunches of Water Crowfoot to act as oxygenating plants as well as for egg laying by amphibians and invertebrates;
- 40 Watermint plugs (*Mentha aquatica)*, 40 Water Forget-me-not (*Myosotis scorpioides)* Bareroot plugs, 40 Purple Loosestrife (*Lythrum salicaria)* and 40 Yellow Iris (*Lysimachia vulgaris)* for marginal planting that can be used for egg laying and cover;
- 15 Amphibious Bistort (*Polygonum amphibium)* bareroot plugs and 15 Brooklime (*Veronica beccabunga)* bareroot plugs planted in baskets to provide areas of shelter;
- the banks of the pond will be sown with a wetland seed mixture such as 'EP1 – Pond Edge Mixture' produced by Emorsgate Seeds. **Table 11** details the composition of this mixture. Other commercial seed mixes are available.

The plants listed below are available in early autumn and spring, dependent upon species, and should be planted as soon as possible following the creation of this pond.

Table 11. Composition of EP1 – Pond Edge Mixture

Wildflowers		
%	**Latin name**	**Common name**
2	*Carex divulsa ssp divulsa*	Grey Sedge
0.4	*Carex pendula*	Pendulous Sedge
2	*Centurea nigra*	Common Knapweed
2	*Cruciata laevipes*	Crosswort
0.4	*Dipsacus fullonum*	Wild Teasel
2	*Filipendula ulmarla*	Meadowsweet
0.5	*Galium album*	Hedge Bedstraw
1	*Geranium pyreniacum*	Hedge Crane's-Bill
0.3	*Geum rivale*	Water Avens
2.6	*Iris pseudacorus*	Yellow Iris
0.4	*Lycopus europaeus*	Gypsywort
0.2	*Oenanthe pimpinelloides*	Corky-Fruited Water-Dropwort
0.1	*Prunella vulgaris*	Selfheal
0.5	*Rhinanthus minor*	Yellow Rattle
2.6	*Silene dioica*	Red Campion
3	*Silene flos-cuculi*	Ragged Robin
Grasses		
4.00%	*Agrostis capillaris*	Common Bent (w)
4.00%	*Anthoxanthum odoratum*	Sweet Vernal-grass (w)
2.00%	*Carex divulsa subsp. divulsa*	Grey Sedge (w)
38.40%	*Cynosurus cristatus*	Crested Dogstail
1.60%	*Deschampsia cespitosa*	Tufted Hair-grass (w)

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20.00%	*Festuca rubra*	Red Fescue
4.00%	*Hordeum secalinum*	Meadow Barley (w)
8.00%	*Poa trivialis*	Rough-stalked Meadow-grass
2.40%	*Schedonorus arundinaceus*	Tall Fescue

4.13.2 Management

The newly established pond will require some careful monitoring in the first year after it has been established to identify if the nutrient levels in it are too high. This is a common occurrence in new ponds due to the presence of exposed nutrients close to the pond bed. Every two years after establishment where necessary up to 20% of the aquatic vegetation in the pond may need to be removed in order to maintain some open areas in the waterbody (November to February when great crested newts or other amphibians are less likely to be inside the ponds [if present]). The pond should ideally have at least 20% of its surface area free from aquatic vegetation, as this can benefit breeding great crested newts.

The pond will need to be monitored to check that no invasive pond plants such as Canadian Pondweed (*Elodea canadensis)* or Parrots Feather (*Myriophyllum aquaticum*) become established and also that no fish are introduced.

If any of the prescribed pond plants fail to establish, then new plants will also need to be introduced at the previously specified stocking rate. Measures to eradicate any undesirable species should be included in the management.

4.14 Safeguarding

The developer (Elivia Homes) 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.

4.15 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.

4.16 Management Responsibilities

Elivia Homes will assume responsibility for the management and maintenance of the newly created and enhanced habitats. When required, responsibility will include ensuring all management works are completed and qualified ecologists, arborists or landscape managers are contracted, etc. Upon transfer of the land, the new landlords shall bear responsibility for the management and maintenance of habitats within their curtilage. All management works

as described above should be secured through an appropriate Section 106 agreement for the site that will legally oblige Elivia Homes or other agreed party to carry out the works. An annual management timeline of all habitats has been provided in **Section 5.0** and management works should continue in perpetuity.

4.17 Waste Disposal

Any natural waste arising from management works will be utilised on site wherever possible with any excess removed from the site.

In the first instance, waste materials will be used on site as follows:

- Woody materials (e.g. large branches, brash) can be retained within the woodland to increase the availability of deadwood.
- Woody materials can also be used to create and for any necessary repairs to the reptile / amphibian hibernaculum.
- Grass clippings can be retained in situ for 1 week but then must be moved elsewhere to avoid nutrient enrichment.
- Grass clippings can also be used to create and for any necessary repairs to the reptile / amphibian hibernaculum.

5.0 POST CONSTRUCTION MANAGEMENT PLAN

Below indicates the future management and desired outcome of the previously described habitat types, with overlap of the habitat types between the northern and southern sections of the site and same management requirements the below section is detailed by habitat type and not location.

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5.1 Retained and Created Hedgerows

5.1.1 Optimal Habitat

A variety of healthy, semi-mature and mature hedgerows, some with trees across the development site, comprised of native species providing strong barriers through thorny species to protect dormice and birds from cats.

5.1.2 Yearly Management

5.2 Tree Planting

5.2.1 Optimal Habitat

A variety of healthy, semi-mature and mature native tree species across the development site, offering both amenity and ecological value.

5.2.2 Management

Tree saplings must be kept well-watered during establishment. Weeds must be controlled at the base of the trees.

Tree guards, to protect the new saplings from rabbits and deer, to be inspected twice annually to remove weeds and any soil build up inside the tubes for first 3 years and then removed when planting is well established. Tree stakes and ties will be checked annually and after strong winds.

Check for signs of disease regularly specific arboriculture advice should be sought for differences in individual species, though typically checking for disease in late summer early autumn is best to identify thinning leaves and potential bark decay. If disease is identified advice should be sought from an arboriculturalist regarding the appropriate method of treatment.

Tree works must only be timed outside the bird nesting season (1st March to 31st August). Where possible shrubs shouldn't be cut until February, so that valuable winter food associated with fruiting shrubs/trees is retained for over-wintering birds.

Replacement planting will be required where trees fail to establish.

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6.0 IMPLEMENTATION PLAN SUMMARY

Table 12 below provides the timetable to aid correct timing of the annual 'green asset' management at the site.

Table 12. Annual Work schedule for the 5-year management period.

Action for green assets	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Check trees for signs of any disease							X	X	X			
Cutting of hedgerows and trees (if required)		X										
Cutting and gathering of wildflower habitat during the first year					X	X	X	X	X	X		
Cutting and gathering of wildflower habitat on a yearly basis until woodland establishes							X	X				
Keeping tree saplings well-watered	X	X	X	X	X	X	X	X	X	X	X	X
Inspection of tree guards and fences	X	X	X	X	X	X	X	X	X	X	X	X
Replacement planting of failed trees or shrubs	X	X	X								X	X
Inspection of bat and bird boxes (suitably qualified ecologist only)									X	X	X	
Clearance of old bird nests from bird boxes									X			
Inspection of woodland for ongoing management			X	X								

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7.0 MONITORING & REVIEW

Monitoring of the retained and new biodiversity assets should be undertaken to determine the success or failure of each compartment through a site visit by a suitably qualified ecologist 5 years post-construction. If necessary, changes to management actions can prescribed and, if plants fail to establish, replanting will be prescribed. Furthermore, if invasive species are identified within any of the compartments suitable control methods would be outlined in detail.

Any waste identified at any stage of the development is to be appropriately removed and disposed of as per current guidance (varying depending on waste items) whilst informing the relevant authorities and halting works (if required). This is not common practice within ecological works and specific guidance on specific waste should be sought from appropriately qualified consultants.

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8.0 COMPETENCIES, STANDARD AND SPECIFICATIONS OF WORKS

The following competencies/standards/specifications should be adhered to:

- All tree works are to be undertaken by a suitably qualified arboriculturalist;
- The installation of bat boxes is to be undertaken or overseen by a suitably qualified ecologist;
- A site inspection of all green assets post-construction should only be undertaken by a suitably qualified ecologist.

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9.0 CONCLUSION

The aim of this report is to provide a prescription of the management of habitats for a period of at least 30 years within the site and to bring together all relevant sections of the previous ecological reports associated with the site 'Land at North Barns and Nolands Farm' in Plumpton Green and use them to inform a site-wide Landscape & Ecological Management Plan. In combination with this, the report details how this site will deliver a 10% net gain for biodiversity post-development and how this will be secured for a period of 30 years. With the provision of all recommendations within this report, the site is expected to provide a net biodiversity enhancement for wildlife and ensure the local conservation status of protected / notable species on site is preserved.

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APPENDIX I – REPTILE FENCING PLAN

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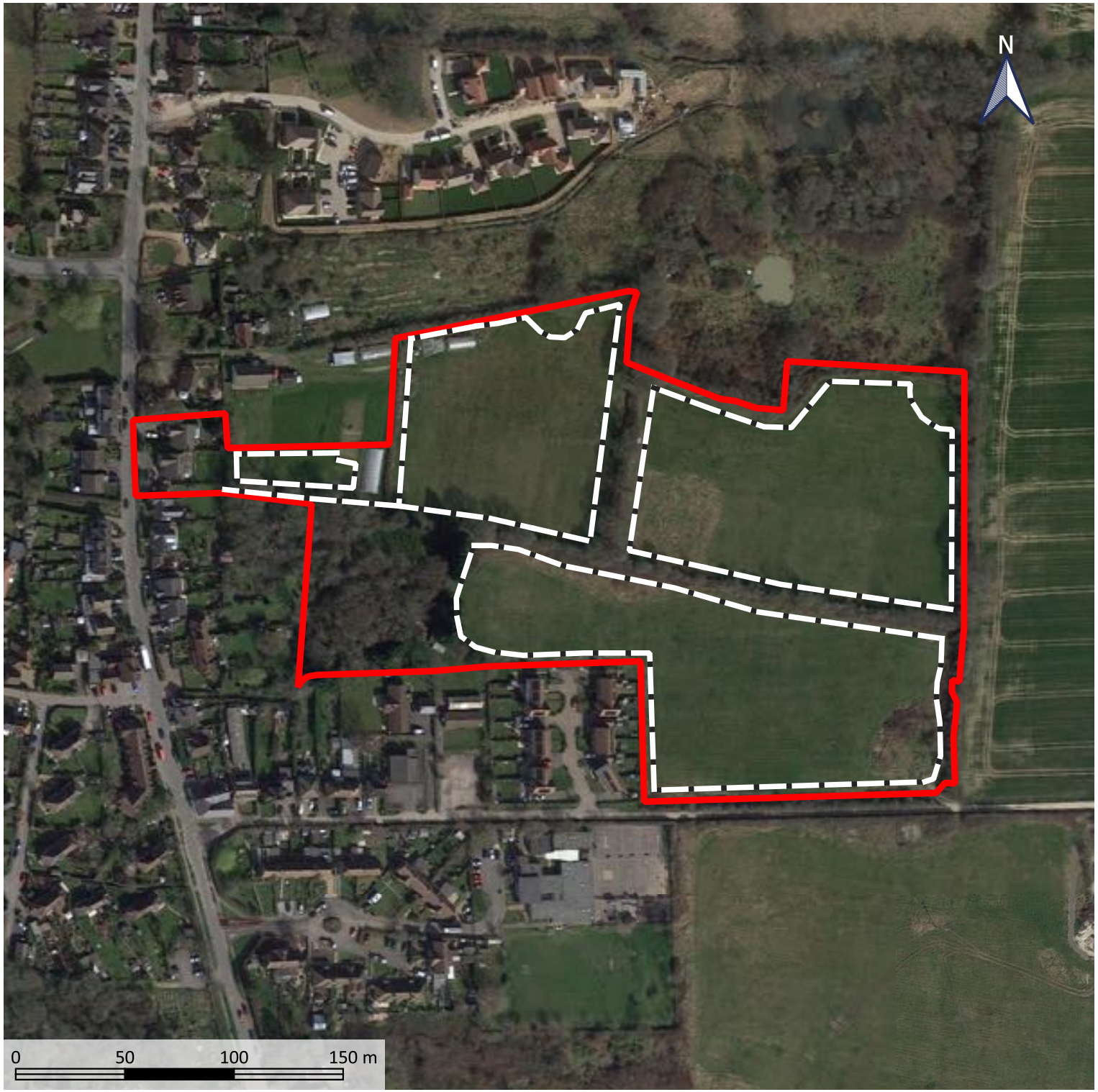

Legend

Redline boundary

Reptile fencing

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Map	Reptile Fencing Plan
Site	Nolands Farm, Plumpton Green
Client	Elivia Homes
Date	13/12/2024

APPENDIX 2- ENHANCEMENTS PLAN

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Legend

- Redline boundary

Enhancements

- Bird box
- Hedgehog fence connectivity
- Dark corridors

Habitat creation / enhancement

- Native shrub for woodland border
- Wildflower meadow
- Attenuation pond
- Marginal wetland planting
- Woodland enhancement

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Map	Enhancement Plan
Site	Nolands Farm, Plumpton Green
Client	Elivia Homes
Date	10/12/2024

Legend

Redline boundary

Enhancements

Hibernacula

Habitat creation / enhancement

Scrub planting

Rough grassland creation

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Map	Enhancement Plan
Site	Nolands Farm, Plumpton Green
Client	Elivia Homes
Date	10/12/2024

APPENDIX 3- NIGHTFOX WHISKER SPECIFICATIONS

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Appendix – Nightfox Whisker Specifications

- *Fixed optical magnification: 1x to 10x (adjustable)*
- *Adjustable digital magnification: 8x*
- *IR wavelength: 850nm*
- *Digital sensor resolution: 1920*1080*
- *Infrared LED power output: 3 watts*
- *Power supply: Built-in lithium battery*
- *Battery Life: 5 hours mixed IR - 10 hours (no IR)*
- *Recharge via USB: Yes*
- *Photo taking capability: Yes*
- *Video recording capability: Yes*
- *Audio recording: Yes*
- *Memory card: Micro SD (32GB included). Min 4GB. Max 256GB*
- *Recording resolution: 1920*1080*
- *Unit dimensions metric: 157*140*57mm*
- *Unit dimensions imperial: 6.2 * 5.5 * 2.2"*
- *Unit weight: 609g inc. battery*
- *Viewfinder technology: TFT*
- *Screen size: 2.86"*
- *Screen resolution: 96*
- *Sensor type: CMOS*
- *Aspect ratio: 5:2*
- *Aperture: F1.6*
- *Viewing angle (FOV):*
- *Aspect ratio: 5:2*
- *Viewing distance at n*
- *Aperture: ƒ/1.6*
- *Minimum focus: 3cm*
- *Sensor frames per second: 30fps (20fps in low light)*
- *Video recording frames per second: 30fps*
- *Integrated Laser Rangefinder: No*
- *EAN: 5060577470687*
- *Battery Composition: Lithium Ion*
- *Number of batteries: 1*
- *Battery weight (grams): 95g*
- *Cells per battery: 1*
- *Watt hours per battery: 18.5Wh*
- *Lithium content (grams): 1.2*
- *Hazardous for: Waste, Transportation*
- *UN classification: UN3481*

(https://nightfoxstore.com/products/nightfox-whisker-night-vision-goggles-infrared-binoculars)