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Enhancement and Mitigation Strategy

Including Biodiversity Monitoring Strategy

Triggs Farm, Goudhurst, Kent

Report for Shore Grove Limited

December 2023

Our Ref: KETN17 511

Bakerwell Ltd. Company No: 10511578, VAT No: 258900680
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Quality Assurance

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Date	December 2023
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About Us

Bakerwell Limited has two offices serving the south and east of the UK, led by directors Fiona Baker and Donna Popplewell. The Directors have collectively 24 years' experience in the ecological consultancy industry, hold relevant degrees, are qualified botanists, and are trained in the use of biodiversity metrics to calculate no net loss/gain.

All staff are members, or training to be members, of the professional body for the environmental industry, the Chartered Institute of Ecology and Environmental Management (CIEEM) and hold Natural England European protected species licences for great crested newts, bats, and dormice. Bakerwell Limited has SMAS Worksafe Health and Safety Accreditation; all staff hold relevant CSCS cards.

Bakerwell Limited is a consultancy specialising in ecological planning advice and surveys. Bakerwell also work in collaboration with trusted associates to provide Landscape Architecture, Arboriculture and Energy assessments.

Contents

Figures

Appendices

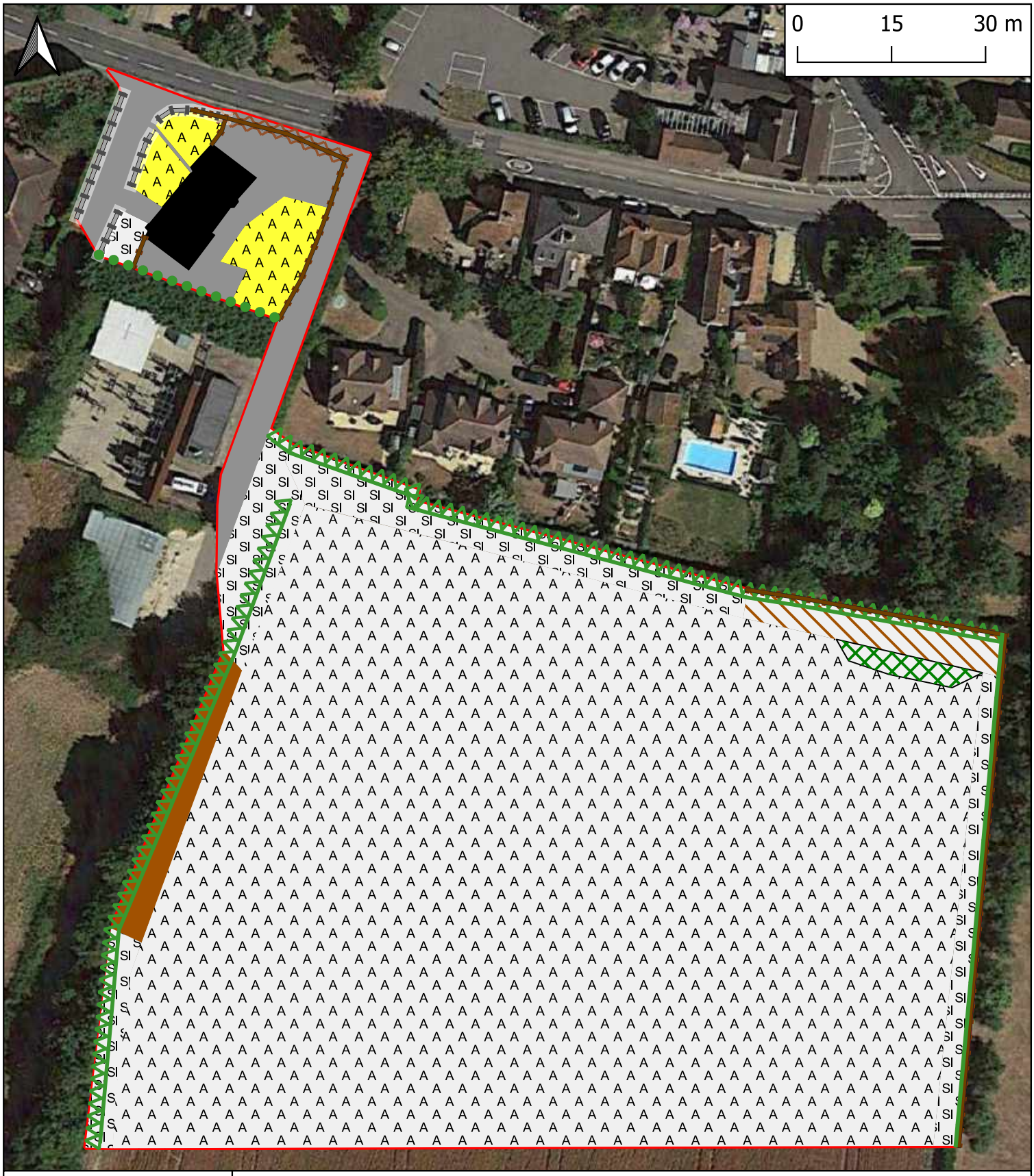

Figure 1: Phase 1 Habitat Survey

Site: Triggs Farm
Date: December 2023
Job: KETN17 511
Author/Reviewer: SA/FB

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Key

- Site Boundary
- A2.1 - Dense Scrub
- B6 - Poor Semi-improved Grassland
- C1.1 - Bracken - continuous
- C3.1 - Tal Herbs/Ruderals
- J1.1 - Cultivated/Disturbed Land - Arable
- J1.2 - Cultivated/Disturbed Land - Amenity Grassland
- J3.6 - Buildings
- J5 - Hardstanding
- J1.4 - Introduced shrub
- J2.1.1 - Species-rich Hedge
- J2.4 - Fence
- J2.5 - Wall
- J2.1.2 - Species-poor Hedge
- A1.1.1 - Line of Trees

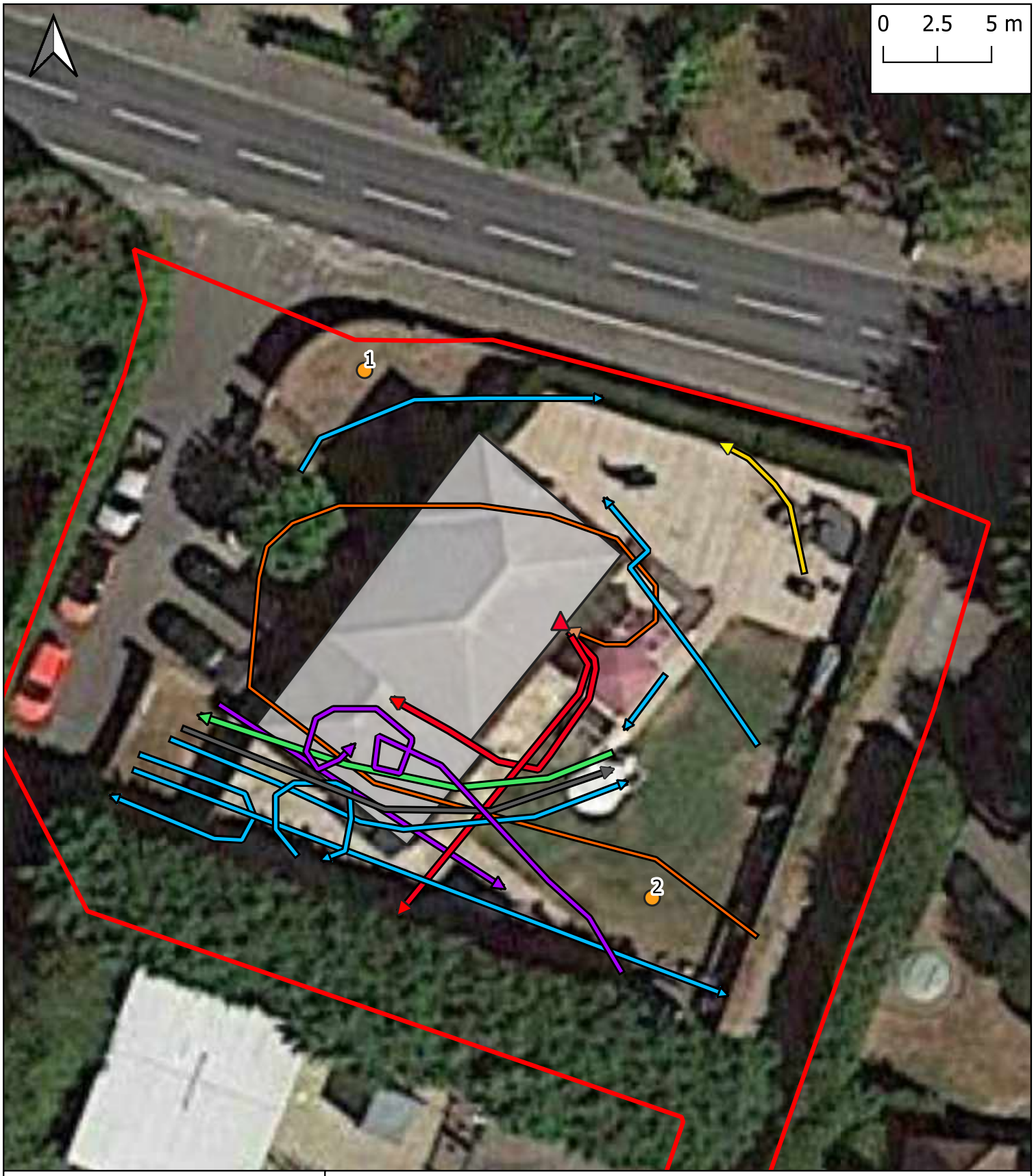

Figure 2: 2021 Bat Survey Results

Site: Triggs Farm
Date: December 2023
Job: KETN17 511
Author/Reviewer: SA/FB

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Key

- Site Boundary
- Surveyor Location
- Emergence/Re-entry Point
- Confirmed Common Pipistrelle Roost

Flight Lines Observed

- Myotis Sp.
- Soprano Pipistrelle
- Common Pipistrelle
- Common Pipistrelle (Emergence)
- Brown Long-Eared
- Common Pipistrelle (Re-entry)

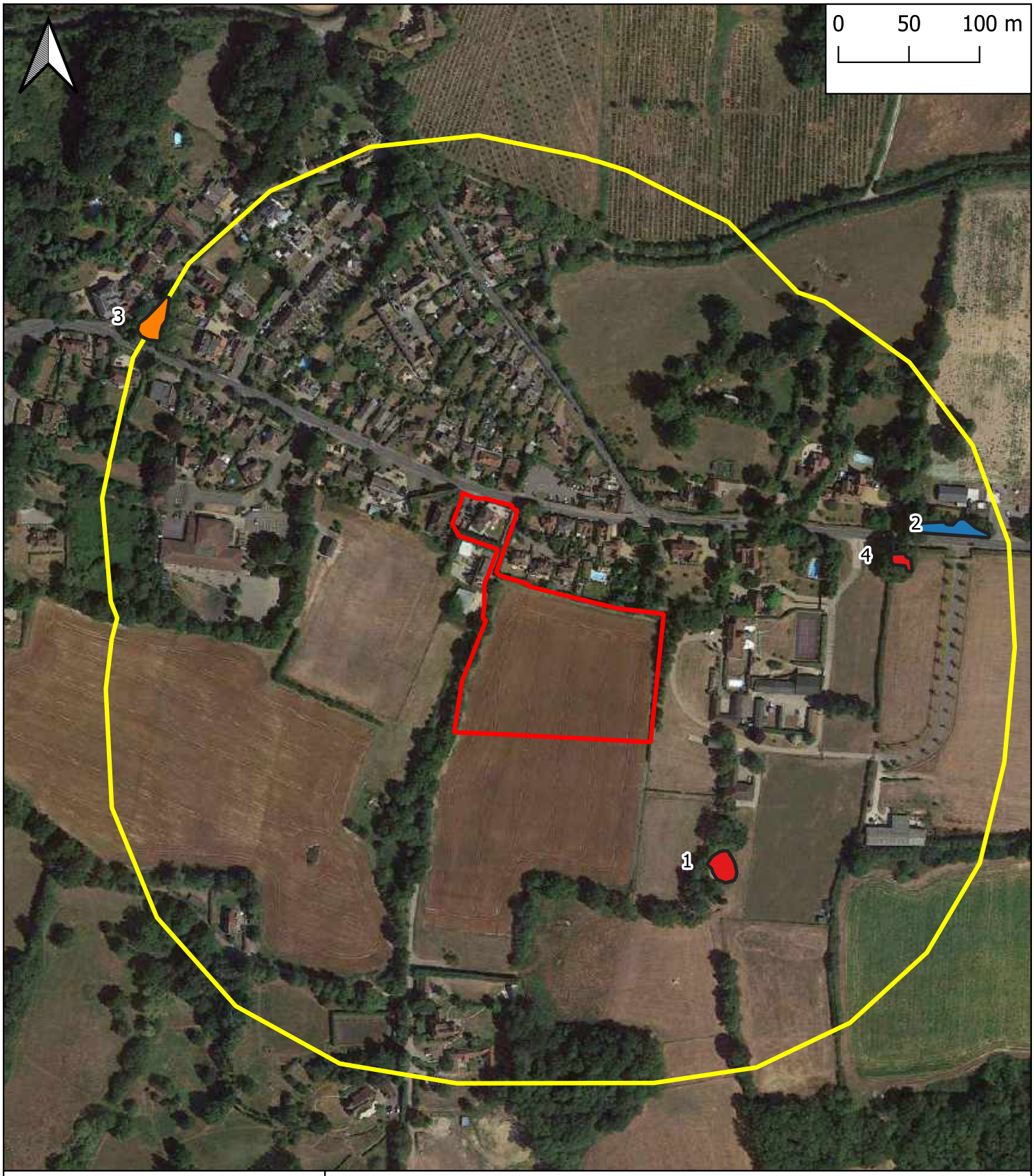

Figure 3: 2023 GCN HSI Survey Results

Site: Triggs Farm
Date: December 2023
Job: KETN17 511
Author/Reviewer: SA/FB

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Key

Site Boundary

250m Buffer

2023 HSI Scores

Average (0.6-0.69)

Below Average (0.5-0.59)

Poor (<0.5)

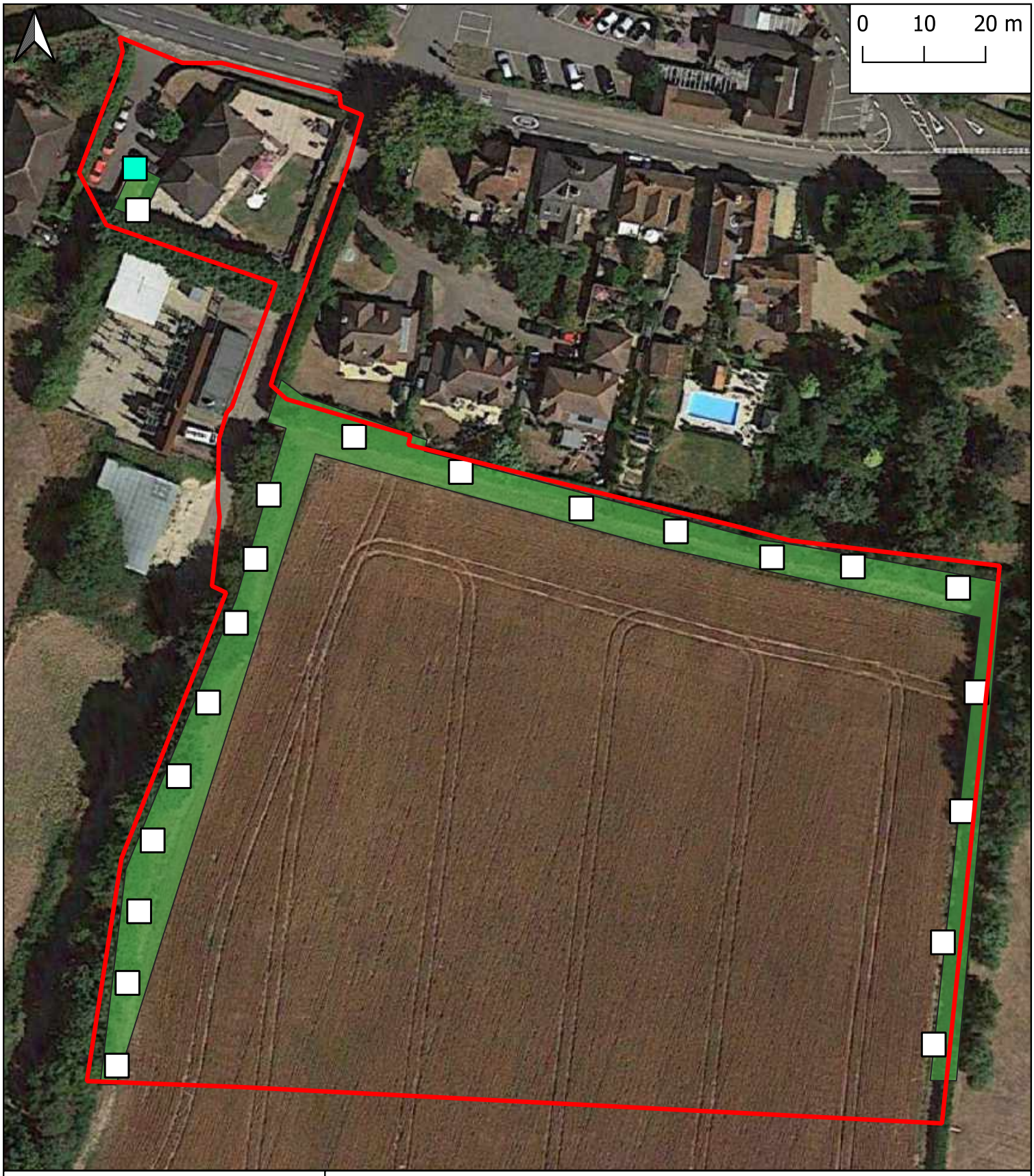

Figure 4: 2021 Reptile Survey Results

Site: Triggs Farm
Date: December 2023
Job: KETN17 511
Author/Reviewer: SA/FB

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Key

Site Boundary

Reptile Refugia

Slow Worm (1 Adult, 2 Juvenile)

No Reptiles Recorded

Reptile Survey Area

Figure 5: Mitigation & Enhancements

Site: Triggs Farm
Date: December 2023
Job: KETN17 511
Author/Reviewer: SA/FB

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Key

- Site Boundary
- New Native Sepcies-Rich Hedgerow
- Reptile Exclusion Fencing
- Non-Native Hedge Planting
- Dark Corridor
- Wildflower Meadow
- Marginal Pond Planting
- Species-rich Grassland
- Ammenity Space
- Pond
- Wildlife Buffer
- Pole-mounted Bat Box
- Wall-mounted Bat Box
- Wall-mounted Bird Box
- Invertebrate box
- Log Pile
- Hibernacula
- Interpretation Board
- Tree Planting

Figure 6: Ecological Management

Site: Triggs Farm
Date: December 2023
Job: KETN17 511
Author/Reviewer: SA/FB

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Key

Site Boundary

Hedgerows
To follow a 3-year rotational cut

- Native Hedge Planting Management
- Non-Native Hedge Planting Management - Maintained at 60cm

Grassland Management
To follow a conservation cutting regime sensitive to the reptiles present. The cut will be set at a height of >15cm, carried out annually in autmn /winter between November and February.

- Wildflower Meadow Management
- Tussock Grass Mix Management
- Wildlife Buffer Grassland Manangement
- Marginal Pond Planting - 3 year rotational cutting of vegetation around the pond to be carried out in flowering season, with seleticve thinning between Sept-Nov
- Ammenity Space Management - Managed formally with regular mowing to maintain sward height of 50mm
- Pond Management - 3 year rotational dredging to be carried out Nov-Jan, annually if required. Material to be left on the side for 48hrs before disposal
- 0.5m Buffer Strip - Maintained around log piles and hibernacula during grassland manangment
- Tree Planting Management - To recieve formative pruning to ensure a good shape to the crown

Habitat Features
To be checked annually for damage

- Pole-mounted Bat Box
- Wall-mounted Bat Box
- Wall-mounted Bird Box
- Invertebrate box
- Log Pile - Positioned and maintaned to allow sunlight.
- Hibernacula - Positioned and maintaned to allow sunlight.
- Interpretation Board

1 Executive Summary

1.1 Bakerwell Ltd were commissioned by Shore Grove Limited to provide an Enhancement and Mitigation Strategy (EMS), including a biodiversity management and monitoring Strategy, for Triggs Farm, Goudhurst, Kent, TN17 1DT (hereafter referred to as 'the site').

1.2 This EMS is provided to satisfy condition 19 of planning approval 21/02855/FULL and details the measures to be undertaken to safeguard protected species using the habitats on the site of the approved development.

1.3 The proposal plan consists of 12 properties, each with off-road parking and gardens, and includes the demolition of the residential building in the northwest of the site.

1.4 This EMS refers to the results of an Ecological Assessment (EA) conducted by Bakerwell Ltd in 2022 (Bakerwell 2022) and site visit to confirm current habitats on 21.11.23. The results of this EA are summarised in the Ecological Background (Section 5).

1.5 Mitigation measures relate to the common pipistrelle *Pipistrellus pipistrellus* roost in the existing house, for which a Natural England (NE) European Protected Species Mitigation Licence (EPSML) will be obtained, and historical presence of a common pipistrelle roost in the existing garage. Mitigation measures for bats are outlined in Section 11 and the EPSML Method Statement (MS).

1.6 Mitigation measures are also provided for the displacement of reptiles from the development site to a receptor site. The mitigation features described within this document will be put in place prior to and during construction as part of the enabling works.

1.7 Precautionary mitigation measures are provided for European badgers *Meles meles*, breeding birds, and European hedgehogs *Erinaceus europaeus*. Checks and precautionary measures in the unlikely event that great crested newts (GCN) *Triturus cristatus* or hazel dormice *Muscardinus avellanarius* are found will be followed.

1.8 This EMS also details the enhancement measures outlined in the EA, including habitat enhancement via native planting, the provision of bat and bird bricks/boxes, and hibernacula or refugia.

1.9 Provided the measures detailed within this report are implemented, there will be no significant impact to any protected species as a result of the development.

1.10 The measures described in this report and incorporated into the design of the development includes enhancements for wildlife that will result in a positive overall impact for protected species in line with the National Planning Policy Framework (NPPF).

2 Introduction

2.1 Bakerwell Ltd were commissioned by Shore Grove Limited to provide an Enhancement and Mitigation Strategy (EMS), including a biodiversity management and monitoring Strategy, for Triggs Farm, Goudhurst, Kent, TN17 1DT (hereafter referred to as 'the site').

2.2 This EMS is provided to satisfy condition 19 of planning approval 21/02855/FULL and details the measures to be undertaken to safeguard protected species using the habitats on the site of the approved development.

2.3 This EMS is provided to clear Condition 19 of planning application 21/02855/FULL, which states:

> *"No development shall take place until a scheme for the enhancement of biodiversity has been submitted to and approved in writing by the Local Planning Authority. The approved scheme shall take account of any protected species that have been identified on the site, and in addition shall have regard to the enhancement of biodiversity generally. It shall include details of management of all communal areas and landscape features. It shall be implemented in accordance with the approved proposals within it and shall be carried out in perpetuity unless otherwise agreed in writing by the Local Planning Authority."*

2.4 The development site is located to the east of Goudhurst, central O.S. grid reference TQ 73087 37718. To the north of the site is the A262 and residential housing. The east and south of the site are bound by amenity grassland and areas of hedgerows and mature treelines. South of the site, there is an unnamed road and an amenity grassland playing field.

2.5 The site itself is formed of a residential house of traditional construction with associated hardstanding, amenity grass, and ornamental planting. The southeastern section of the site comprises the northern half of an arable field within poor semi-improved grassland and ruderal weeds to the hedge boundaries.

2.6 The development comprises the construction of 12 dwellings, with associated parking and landscaping, and demolition and reconstruction of the existing property. The proposal also includes individual trees, an orchard, hedgerow planting and an attenuation pond.

2.7 Measures within this report refer to the proposal illustrated on the Landscape Masterplan 5987-LLB-XX-XX-DR-L-0001 and mitigation and enhancements given in the EA (Bakerwell 2022).

2.8 5987-LLB-XX-XX-DR-L-0001 provides an update to layout plans used as reference for the EA, therefore, the mitigation and enhancement measures have been adjusted where relevant to the revised proposal approved under permission 21/02855/FULL.

2.9 Ecological constraints to inform the purpose and objective of works are detailed in Section 8. Proposed mitigation for protected species to be put in place are detailed in Section 11 and shown in Figure 5. Enhancements are detailed in Section 12 and shown

in Figure 5.

2.10 This report has been compiled to follow the British Standard 42020:2013 Code of Practice for Planning and Development and the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Report Writing (2017).

2.11 Recommendations within this report aim to demonstrate that the approved development will conserve and enhance biodiversity in accordance with Chapter 15 of National Planning Policy Framework, Section 174 and meet the objectives of the Tunbridge Wells Borough Council Core Strategy (adopted 2010) and Goudhurst Neighbourhood Development Plan (adopted 2020).

3 Aims and Objectives

3.1 The aim of this strategy is to provide the measures to be taken to avoid and mitigate harm to the retained, enhanced, and created habitats for protected species on site.

3.2 The EA in 2022 confirmed the habitats on site support bat roosts and reptiles. Measures to avoid causing harm to these species are therefore the focus of the mitigation strategy regarding protected species. Precautionary measures are also provided for GCN, hazel dormice, badgers, breeding birds, and hedgehogs which may use the site for commuting and foraging.

3.3 Specifically, the objectives of this document are to:

- Identify any changes in habitat and further survey required to inform a NE EPSML
- Detail mitigation to protect retained habitats on site
- Detail mitigation to protect roosting bats
- Detail mitigation to protect reptiles
- Provide a specification and plan for herptile fence displacement
- Detail measures to avoid disturbing breeding birds
- Detail precautionary measures to protect badgers and hedgehogs during construction
- Detail measures to check for GCN and dormice.
- Provide habitat creation and enhancements for the above species
- Confirm how ecological features will be monitored and managed post-development
- Confirm those responsible for mitigation, monitoring and management actions

4 Ecological Background

4.1 A Phase 1 habitat assessment following JNCC (2010) methodology was undertaken of the site (Figure 1) by Corylus Ecology in 2016 (Corylus 2016), followed by an updated survey conducted by Bakerwell in 2021 (Bakerwell 2022). In both Phase 1 assessments, the habitats on site were classified as semi-improved grassland, ornamental planting, arable field, treelines, and tall ruderals. Phase 1 survey results were updated in 2021 and reviewed in 2023.

4.2 Desk studies completed in 2016, 2021, and 2023 found no statutory designated sites existing within the site boundary. The closest statutory protected site is Combwell Wood Site of Special Scientific Interest (SSSI) approximately 3.4km northwest of the site. Section 41 habitats, semi-improved grassland, grass moorland, deciduous woodland, and ancient woodland are all found within 1km of the site.

4.3 The site falls within the Impact Risk Zone (IRZ) of Combwell Wood (SSSI), Scotney Castle SSSI, the Robins Wood SSSI, Sissinghurst Park Wood SSSI, Marden Meadows SSSI, and the River Beult SSSI. These do not require Natural England to be a consultee on planning applications for residential proposals, unless water or other liquid of greater than $20m^3$/day will be discharged to ground or surface water.

4.4 There are no non-statutory designated sites on site. The closest non-statutory site is a local wildlife site located 520m west of site at Goudhurst church yard.

4.5 Bat emergence and re-entry surveys in 2016 recorded one common pipistrelle emerging from the roof tiles of the garage structure and one common pipistrelle emergence from the hanging tiles on the northern elevation of the main building. Surveys completed by Bakerwell in 2021 recorded two common pipistrelle emergences and one re-entry from the eastern aspect of the existing house. As such, the house and garage are considered confirmed bat roosts.

4.6 Preliminary surveys completed in 2016 deemed the site and surrounding habitats to have low or no suitability for GCN, reptiles, dormice, and badgers. Further surveys for these species were not completed in 2016.

4.7 Bakerwell Ltd. conducted additional preliminary checks for protected species. GCN HSI assessments were conducted for accessible ponds within 250m of the site in 2021. HSI assessments were repeated, where possible, in 2023 to obtain updated results.

4.8 The site was considered to hold low potential for reptiles during preliminary surveys in 2021; seven reptile presence/absence surveys were completed. The habitats on site were re-assessed for their potential to support reptiles during the 2023 site visit.

4.9 The site was deemed to hold limited potential for dormice, this was limited to the western hedgerow, which was hand searched in 2021 (no dormice or evidence of dormice was found) the majority of which will be retained, precautionary measures were provided.

4.10 The site was also deemed to hold low potential for breeding birds, badgers, and hedgehogs in 2021; this is unchanged in 2023.

5 Updated Survey Findings

5.1 In 2023, Bakerwell Limited carried out a site walkover to determine the validity of the survey results collected in 2021. Sam Ashby and Olivia Padua completed the site walkover, searching for the habitats and potential for protected species identified in 2021 (Bakerwell 2022). The following details the methodology and results of these surveys.

Phase 1 Habitat Survey

Methodology

5.2 Sam Ashby and Olivia Padua identified habitats present on site, following the standard Phase 1 Habitat Survey methodology (JNCC, 2010), on 21st November 2023. Any habitat classifications that differed from those identified in 2021 were noted on an appropriately scaled map, see Figure 1.

Results

5.3 The habitat classification results were predominantly identical to those recorded in 2021. The semi-improved grassland surrounding the existing property continues to be managed as a short sward. The arable field to the southeast also appears to have been routinely managed, with shorter crop sward than identified in 2021. The bracken located along the western boundary of the arable field appeared to be less dense than observed in 2021, though this is likely attributed to the time of survey. All the linear features identified in 2021 remain on site, namely intact hedges, fences, walls, and tree lines.

5.4 The only distinguishable difference in habitats between 2021 and 2023 surveys is the density of a blackthorn *Prunus spinosa* patch to the northeast of the arable field. This habitat appears to hold higher potential for nesting birds than was noted in 2021. It is recommended that this patch is managed prior to the nesting bird season (March to August inclusive). Precautionary measures for breeding birds will be required prior to works on this habitat, and others including overhanging tree limbs and hedges, occurring within the nesting bird season (Section 11).

5.5 As the habitat classification results obtained in 2023 largely resemble those of 2021, and the potential for protected species has not significantly increased, further surveys were not recommended. However, the Phase 1 Habitats plan was amended to display the unmanaged blackthorn scrub patch (*A2.1 Dense Scrub*; Figure 1).

Bats

Methodology

5.6 Sam Ashby and Olivia Padua under the supervision of Fiona Baker bat survey licence number CL 18 – 2015 – 12847- CLS-CLS, level 2 searched for the Potential Roost Features (PRFs) identified during the 2021 surveys (Bakerwell 2022), including the hanging roof tile above an eastern-facing window on the existing property. Additional PRFs, in the existing building and trees on site, were also searched for, following the Bat Conservation Trust (BCT) Good Practice Guidelines (Collins 2023) survey methodology.

5.7 All trees within and immediately adjacent to the red line boundary were assessed and natural holes, hollows, and cavities (cracks and splits), loose bark, epicormic and ivy growth were investigated as PRFs. A search for evidence of use by bats was also conducted, looking for individuals or dead animals, droppings, tiny scratches, urine staining, flies, smoothing of surfaces around access points, a bat distinctive smell and in warm weather any audible squeaking.

Results

5.8 The building on site has been confirmed to support a common pipistrelle day roost (Bakerwell 2022), see Figure 2. The site visit in 2023 found no changes to the building, compared to 2021. Thus further surveys were not recommended for the purposes of this report.

5.9 As the existing property is to be demolished for the proposal a Natural England (NE) European Protected Licence EPSML (EPSML)will be sought prior to works and is detailed further in Section 11. NE will require survey results that are less than 1 year old (and from the most recent survey season) to inform the EPSML Application, the update surveys will be carried out between May and September in line with the most recent bat guidance (BCT, 2023).

5.10 No trees suitable for bat roosts were identified in 2023; this is consistent with results in 2016 and 2021.

GCN

Methodology

5.11 Sam Ashby (Accredited under Fiona Baker, Survey Licence No. 2020-44367- CLS-CLS) and Oliva Padua conducted HSI assessments on accessible ponds within 250m of the site boundary on 21st November, following ARG (2010). Ponds assessed are shown on Figure 3 with their determined level of suitability. HSI assessments are not a replacement for GCN surveys but are a general measure of suitability of a pond for GCN, based on physical characteristics of a pond and the surrounding environment.

5.12 The criteria used to assess suitability of a pond are: geographical location, pond area and permanence, water and terrestrial habitat quality, shade, presence of water fowl or fish, number of ponds within 1km and percentage of macrophyte cover. A scoring method is assigned for each criterion. An overall score is then obtained which is used to define pond suitability as follows:

- <0.5 poor suitability
- 0.5-0.59 below average
- 0.6-0.69 average
- 0.7-0.79 good
- >0.8 excellent

Results

5.13 Ponds 1, and 4 achieved scores of poor, pond 2 was found to be average and pond 3 below average, see Figure 3

5.14 Connectivity between these ponds and the site remains limited. Furthermore, the proposal will retain boundary hedgerows and lines of trees. Further GCN surveys are therefore not recommended. However, precautionary measures will be undertaken to avoid impacts to GCN, see Section 11.

Reptiles

Methodology

5.15 Reptile presence/absence surveys in 2021 confirmed the presence of a very low population of slow worm *Anguis fragilis* on site, see Figure 4. Sam Ashby and Olivia Padua surveyed the site in November 2023 to assess whether the potential for reptiles has changed since 2021. Habitat features including dense scrub or long grassland, and potential refugia such as spoil or compost piles, were searched for within the site boundary.

Results

5.16 The site visit confirmed no change to the suitability of habitat for reptiles since 2021. Therefore, additional reptile surveys are not recommended. Mitigation and enhancement measures to account for the slow worm population recorded in 2021 are required for the proposal, see Section 11).

6 Responsibilities

6.1 The responsibility for the completion of the mitigation and enhancements to open space landscaping and management and monitoring during the construction period will fall to the Applicant, who will appoint the necessary contractors to complete the works.

6.2 All works to sensitive areas as shown in Figure 5 will be overseen by the appointed

Ecologists, who will provide an Ecological Clerk of Works (ECoW) to supervise works in sensitive areas. As a condition of the NE EPSML for bats all site personnel must attend a toolbox talk, the toolbox talk will be extended to include measures for all protected species and habitats. The register of the tool box talk will be provided to NE.

6.3 The site foreman will be responsible for ensuring that the timing and specification of works as laid out in this report and Appendicies is completed. Contact details for the Residential Site Manager will be confirmed to Tunbridge Wells Borough Council prior to enabling and construction works commencing on site.

6.4 The responsibility for management for landscaping and monitoring post construction period will fall to the management company.

6.5 Monitoring of the development will be carried out during construction by the ECoW, who will monitor the construction site at regular intervals to ensure that the measures in this report are followed.

6.6 Periodic monitoring during the management phase will follow be undertaken by the management company post development, with revisions of the strategy to be completed in the event the monitoring identifies failure of the objectives.

6.7 Toolbox talks will be provided to all site personnel prior to the start of construction works and at key points prior to works in or adjacent to sensitive areas by the Ecologist.

Table 1: Responsible Personnel

Responsible Person	**Company**	**Email**	**Phone**
TBC	The Applicant	TBC	TBC
Site Foreman TBC	Appointed Contractor TBC	TBC	TBC
Client EcologistTBC	Appointed Ecologist	TBC	TBC
ECoW	Appointed Ecologist	TBC	TBC
TBC	Management Company (TBC)	TBC	TBC

7 Construction Programme

7.1 Enabling works are expected to commence in 2024, followed by the construction phase. This report section has been produced to cover mitigation and enhancement measures prior to and during enabling and construction phases.

7.2 Table 2 summarises the ecological mitigation measures that will be undertaken for each

phase of the construction programme.

Table 2: Summary Ecological Construction Programme

Date	Key Stages	Mitigation Measures	Timing Restrictions
2024	Prior to Enabling Works	• Ecological Tool box talk to all site personnel • Install Heras fencing to the site boundary, with a 20cm gap at the base for wildlife permeability • Install semi-permanent exclusion fencing to demarcate a reptile receptor site, under ecological supervision, and protect with Heras fencing (Appendix 2; Figure 5) • Install log pile and hibernacula in receptor site • Erect pole-mounted bat box in a position decided by the ecologist on site	Prior to commencement of enabling works In reptile active period (Apr – Oct
		• Soft demolition of existing property, under NE EPSML following a search for bats by licenced ecologist and EPSML methodology	Feb-Nov, avoiding hibernation periods for bats
2024	Enabling works	• Destructive search of vegetation, as identified by the ecologist • Removal of hedgerow for access, under ecological supervision for dormice (and breeding birds • Removal of overhanging tree limbs, where necessary, outside nesting bird season or under ecological supervision	Apr – Oct in reptile active period Hand check of small area between May-Nov. Avoiding breeding bird season Mar - Aug
TBC	Habitat Creation/ Enhancements	• Creation of habitats within the central amenity space and to the boundaries of the site, including hedgerow planting and native trees • Creation of attenuation pond, followed by recommended planting and security fencing • Installation of habitat enhancements around the attenuation pond	None
TBC	Construction	• Implementation of lighting strategy • Cover trenches/holes overnight • Bat and bird boxes built into residential unit and garage walls • Hedgehog Highways built into residential fencing	• None

Date	Key Stages	Mitigation Measures	Timing Restrictions
TBC	Final landscaping of residential & amenity areas/handover to management company	• Completion of landscaping works • Removal of all reptile fencing on completion of all landscape works	• None • Removal of reptile fencing during reptile active period Apr-Oct

8 Ecological Constraints Summary

Ecological Constraints Summary

8.1 The key ecology constraints identified by surveys completed are summarised in the ecological background (Section 4). Updated surveys completed in 2023 are detailed in Section 5. These constraints with summarised mitigation measures are listed below for the site**:**

- Common pipistrelle roost within the existing residential building;
    - A EPSML for batswill be sought prior to demolition works to this building.
    - Bat boxes will be installed to provide alternative roost locations (Section 11; Figure 5).
        - As a condition of the EPSML 1 bat box will be erected prior to demolition adjacent to the property
    - The existing hedgerow south of the existing building will be retained and enhanced to maintain and increase foraging opportunities for bats.
- Reptiles pre
    - A receptor area for reptiles will be carried out prior to any vegetation clearance
    - Removal of habitats suitable for during the active period for reptiles (Table 2) under ecological supervision.
- Boundary hedgerows and treelines bordering all sides will be retained and enhanced where possible.
    - Tree, treeline, or hedgerow removal will be subject to ecological checks for dormice and nesting birds and carried out to avoid disturbance of nesting birds and hibernating dormice, see Table 2.

- Precautionary measures for dormice and GCN when removing the section of western hedgerow for vehicle access;
    - Hand search and cut under eco supervision, and destructive searches during the active period, see Table 2.
- Precautionary measures to account for the potential presence of badgers and hedgehogs will be employed at all times.
    - Maintaining site accessibility and covering trenches/holes

9 Legislation

9.1 Bats, dormice, and GCN and their breeding and resting places, are protected under the EU Habitats Directive (transposed into UK law as the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 and the Wildlife and Countryside Act 1981 (as amended)). This legislation protects bats, dormice, and GCN from killing, injury, capture and disturbance and their roosts from damage, destruction, and obstruction. Defences within the legislation provide for tending/caring for a bat solely for the purpose of restoring it to health and subsequent release.

9.2 Reptiles are protected from killing and injury under UK law as the Conservation of Species and Habitats Regulations 2010 and the Wildlife and Countryside Act 1981 (as amended).

9.3 Badgers and their setts are protected in the UK under the Protection of Badgers Act 1992. It is an offence to wilfully kill, injure or take a badger, cruelly treat or dig for a badger, intentionally or recklessly destroy, obstruct or damage their setts or disturb a badger while it is occupying a sett.

9.4 All birds, their nests, and eggs are protected by law under the Wildlife and Countryside Act 1981 (as amended). Therefore, it is an offence to intentionally take, damage, or destroy the nest of any wild bird while it is in use of being built. Further, it is an offence to intentionally or recklessly disturb a wild bird listed on Schedule 1 while building a nest or occupying a nest containing eggs or dependent young.

9.5 Hedgehogs are protected under Schedule 6 of the WCA, 1981 (as amended) from killing. Hedgehogs are also listed under the Wild Mammals Protection Act (1996), prohibiting cruel treatment to hedgehogs, and are listed as a species of 'principal importance' under the NERC Act (2006).

9.6 Where a development will impact protected species or their habitats, licences to permit illegal activities (derogation licences) or protected species licences are issued. Works affecting protected species carried out without a licence may be breaking the law. Similarly, it is an offence not to comply with the conditions of a derogation licence.

10 Protected Species Ecology

Bats

10.1 Bats are mammals of the order Chiroptera; with their forelimbs adapted as wings, they are the only mammals naturally capable of true and sustained flight. In the UK there are 18 species of bat, each with their own distinct ecology and behaviours. All UK bats are nocturnal and use echolocation to hunt for insects at night on the wing. Bats also use their echolocation to navigate in the dark, flying alongside linear features such as hedgerows and treelines.

10.2 Maintaining linear features is therefore important in areas where bats are active. It is also important for bats to have dark areas over foraging habitat such as parks and woodland edges, as well as commuting routes such as hedgerows, and roosting sites, as even low levels of light can deter bats from flying in lit areas or leaving their roosts.

10.3 UK bats hibernate over the winter in hibernation roosts and are active over the spring, summer, and autumn where they will use other types of roost, depending on their activities, the weather, lifecycle stage, and other factors. Bat roosts are protected from disturbance, obstruction, damage, and destruction, and are the most likely place where developers come into contact with bats. Bat roosts can be in a variety of locations, materials, and sizes, including buildings, trees, caves, and many types of natural or man-made crevices.

10.4 UK bats have one breeding season each year where females give birth to a single pup. A summary of the annual lifecycle of bats can be found in Table 5.

Table 5. The Annual Lifecycle of UK Bats

Time of year	Bat activity
December to February	Hibernating
March to April	Feeding on warmer nights, females starting to move to maternity roosts
May to July	Pregnant females in maternity roosts, giving birth and suckling young
August	Young starting to fly, mothers leave the roost first
September to October	Adults mating, feeding, and storing fat for winter
November	Torpid for longer, hibernation begins

10.5 Our smallest UK bats typically weigh from 3-8g with a head and body length of 35-45mm and wingspan of 200-235mm. Our largest bat, the noctule *Noctula nyctalus* has a head and body length of 37-48mm and weigh between 18-40g. The forearm measures 48-58mm and have a wingspan of 320-400mm (Dietz and Kiefer 2014).

10.6 Threats to bats include loss of roosting habitat, predation by cats, and mortality from insecticides and some fungicides used for timber treatment.

Common Pipistrelle

10.7 Common pipistrelles are a small brown coloured bat with short ears, dark or red brown fur to the back with a slightly paler yellow brown underside. Of all British bat species, common pipistrelles are the most common, with a widespread distribution across the UK. Populations of common pipistrelle in Great Britain are considered to have increased since 1999 (Dietz and Kiefer 2014). Common pipistrelles forage in woodland, hedgerows, grassland, farmland, suburban and urban habitats, flying 2-10m above ground, catching and eating insects on the wing (known as aerial hawking).

Dormice

10.8 Dormice have golden-brown fur and large black eyes and are the only small British mammal with a furry tail. They measure around 8-12cm long nose to tail, with adults weighing on average 15-20g (but can be 35g prior to hibernation) and can live up to 5 years in the wild.

10.9 Dormice are nocturnal and arboreal, rarely coming down to the ground during spring and summer. They hibernate from October/November to March/April in woven nests beneath the leaf litter on the woodland floor, the base of hedgerows or tussocky grassland adjacent to these. During the active season, when conditions are cold or wet, or if food is scarce, they curl up into a ball and go into a state similar to hibernation known as torpor.

10.10 A dormouse diet consists of flowers, pollen, and insects as well as fruits, berries and nuts, favouring a mixed deciduous woodland. Dormice are associated with ancient woodland, hazel coppice, and bramble scrub, with plenty of different foods available.

Herpetofauna

10.11 Herpetofauna (reptiles and amphibians) are ectothermic; these species do not generate internal body heat and absorb energy from their surroundings. Therefore, herptiles avoid cold periods by hibernating in suitable habitat features known as hibernacula.

Great crested newt

10.12 Great crested newts are one of three newt species native to the UK, though GCN are considerably larger than the smooth newt *Lissotriton vulgaris* or palmate newt *Lissotriton helveticus*. GCN are widespread across England and Wales. Both sexes display dark colouration on the back, head, and legs but an orange underside with black spots. The flanks are dark with irregular white spots which extend along the limbs, with the tips of the digits orange-yellow. During the breeding season (March to June), males display a wavy crest extending from the neck to the base of the tail. GCN will frequent suitable waterbodies during the breeding season, after which they will forage on invertebrates in woodlands, hedgerows, and grasslands.

10.13 GCN hibernate from October to March when conditions are suitable, usually temperatures consistently below 5°C, beneath debris piles, tree roots, and dense vegetation. Handling GCN, or any amphibian, without protection can introduce harmful substances and diseases potentially proving fatal. GCN are vulnerable to fungal infections, notably chytridiomycosis.

Slow worms

10.14 Slow worms are a legless lizard with a smooth shiny appearance, though they are often mistaken for snakes. Slow worms have eyelids and the ability to shed their tails; snakes do not display these features. Females have a coppery brown back, darker flanks, and a black underside while males are grey with a steel grey underside. Slow worms are the UK's most encountered lizard and are found in a wide range of habitats, with rough grassland, hedgerows, open woodland, and wasteland being favoured. This reptile is most likely to be encountered in gardens, often found basking and hunting in compost heaps.

10.15 As seen in other native reptiles, slow worms hibernate from late October to March though this is dependent on temperature; hibernation conditions include temperatures consistently below 8°C. Slow worms typically hibernate underground, often in disused mammal burrows, in dense vegetation such as grass tussocks, or within soil or debris piles. The mating period is April to May with young born live from late August to early September.

Birds

10.16 Bird populations are considered to be good indicators of the broad state of wildlife. Farmland birds have been in decline since 1970; this decline has been attributed to a number of reasons, primarily the loss of invertebrates and seeds as food sources. As such, the UK government designated 19 bird species as Farmland Bird Indicators, 12 of these are specialists: corn bunting *Emberiza calandra*; goldfinch *Carduelis carduelis*; grey partridge *Perdix perdix*; lapwing *Vanellus vanellus*; linnet; starling; stock dove *Columba oenas*; tree sparrow *Passer montanus*; turtle dove; whitethroat; yellowhammer *Emberiza citronella* and skylark *Alauda arvensis*; (DEFRA 2021).

Badgers

10.17 The European badger is Britain's largest terrestrial carnivore and present throughout much of Europe. Badgers are nocturnal mustelids (of the weasel family) with distinctive black and white striped heads and grey bodies. Badgers are typically 60-90cm in body length with a stocky build with short legs. Badgers are omnivorous, with earthworms comprising approximately 50% of their diet, but insects, small mammals, carrion, cereals, and fruits are also eaten.

10.18 Badgers require a combination of deciduous woodland and nearby pasture for foraging and making of their burrows or setts, with a large territory size of 30-150ha. Setts are connected by tunnels which may be as deep as 4m underground and extend for up to 300m from the sett entrance.

10.19 Clear pathways may lead to well-used setts, and other field signs such as latrines,

snuffle holes, footprints and removed bedding may be present around the setts or the badger pathways. Badgers often use the same routes for patrolling territory, commuting, or foraging. Latrines and snuffle-holes are often found along these routes, which typically appear as direct paths.

Hedgehogs

10.20 Hedgehogs are the UKs only spined mammal, weighing between 800-1200g, with a body length of 179-263mm. Hedgehogs prefer to forage in short grassland and areas of scrub, though they are mostly associated with hedgerows using them to move between foraging areas, nest sites, and for hibernation. Hedgehogs can travel up to 3km per night and are thought to be non-territorial; male hedgehogs have been known to cover an area of 32ha to forage and annual range of 52ha (VWT 2023).

11 Mitigation

11.1 To meet National Planning Policy Framework paragraph 174, the mitigation hierarchy has been considered during the design of the development. The hierarchy states adverse effects on biodiversity should be avoided where possible. Where adverse effects cannot be avoided through design, mitigation measures should be implemented to minimise the adverse impacts and effects of the development upon biodiversity. Where avoidance and mitigation are not possible, compensation measures can be considered. Alongside the efforts to avoid, mitigate or compensate for the adverse impacts and effects of the approved development, opportunities to enhance the ecological value of the site should be considered.

11.2 Figure 5 shows the locations of mitigation measures detailed below, with a schedule of the timing detailed in Appendix 1.

Hedgerows

11.3 The species-rich hedgerows existing along the northern and western boundaries of the arable field will be retained. The pre-existing western hedgerow will lie adjacent to the boundaries of residential gardens. Newly planted species rich hedge will be planted to the western site boundary to provide a natural protection to the pre-existing hedge as an alternative to wooden close board fencing, see Figure 5.

11.4 A ~30m section of the western hedgerow will be removed to the northwest of the arable field to enable an access road; ecological supervision will be required prior to removal to search for evidence of protected species, including breeding birds and dormice. A destructive search beneath this hedgerow will be conducted (see Section 11.21).

11.5 The hedgerow extending north to south along the eastern boundary of the arable field is currently poor in species diversity, dominated by non-native common laurel *Prunus laurocerasus.* This hedgerow will be removed for the proposal; removal will be subject to ecological supervision as detailed in Section 11.21.

11.6 To replace hedgerow to be removed and provide an alternative linear feature along this boundary a replacement hedgerow will be planted (Figure 5). The replacement hedgerow will comprise native species only, including hawthorn *Crataegus monogyna*, blackthorn, and hazel *Corylus avellana* amongst other species. Suitable seeding mixtures, such as the Woodland Trust Traditional Hedge Mix and Emorsgate EH1 Hedgerow Mixture for ground flora, will be used (Appendix 5).

Bats

11.7 No potential roosting features were identified on any of the trees on site and no trees are due to be directly affected by the approved development. Therefore, there will be no impacts to bat roosts in trees from the development. However, if the scope of the proposal is altered and additional trees will be impacted, an updated bat tree roost assessment survey will be undertaken prior to felling by a suitably licenced ecologist. If any bat roosts are identified, the ecologist's advice will be followed.

11.8 The existing residential dwelling on site supports a common pipistrelle roost within gaps beneath roof tiles upon the southeastern aspect, with historic evidence of a common pipistrelle in the associated garage on a southern aspect. The latest proposal indicated the entire building, including the adjoined garage, will be demolished.

11.9 A NE EPSML will be sought prior to any works to this building or areas immediately adjacent. Following granting of the EPSML, works to the building will follow the order of works and methodology detailed in the EPSML method statement (MS), and conditions of the licence, including the following:

- The provision of a toolbox talk by a Licensed Ecologist, or an Accredited Agent, to ensure contractors are aware of the ecological features on site and the methodology to be undertaken. The toolbox talk will cover relevant legislation, bat ecology, the sensitive features for bats on site, and safe methods of working with records kept of dates and attendees for submission to NE.

- The timing of the licensable works including demolition and removal of roosting features will be restricted to October and November or March and April to avoid periods when bats are most vulnerable (the breeding and hibernation period for bats).

- All licensable works will be carried out under ecological supervision. Prior to work commencing, the Licenced Ecologist or Accredited Agent will check for the presence of bats and works will not commence until bats have vacated the building.

- Prior to the start of works to remove any of the buildings, a pole-mounted bat box such as the Eco Rocket Bat Box will be installed in proximity to linear features suitable for foraging to provide temporary shelter for any bats found during works covered by the EPSML (Figure 5). Since the entirety of the existing building will be demolished, a wall-mounted bat box is not feasible in this instance. No trees are considered suitable for tree-mounted bat boxes.

- The buildings will be subject to a soft strip of external and internal features suitable for bats. The soft strip of roost features will require hand lifting and checking where safety allows. These works will be carried out under ecological supervision by the licenced ecologist, or accredited agent or where allowed by the licence ecological assistant of the licenced ecologist.
- Any bats found will be allowed to vacate the building or relocated to the nearest bat box as deemed appropriate by the licenced ecologist under the conditions of the licence. In the situation where access to remove bats is not possible, works will focus on alternative building locations until the bats have moved of their own accord.
- Works will take place during daylight hours only; no artificial lights will be used to light the boundary habitats during the demolition or later construction. There will be no loud or vibrating equipment stored or used within the vicinity of the replacement roost structures.

11.10 Where capture and/or handling of bats are necessary, only the Named Ecologist, Accredited Agent, or an Assistant directly supervised by the Named Ecologist may do so. Guidance following the Bat Worker's Manual (JNCC 2004) will be followed at all times. Capture/handling/exclusion of bats must only be undertaken in conditions suitable for bats to be active. Bats each will be captured by a gloved hand or hand-held net, given a health check and then each placed carefully inside a drawstring, calico cloth holding bag or similar for transport to the installed pole-mounted bat box.

11.11 To mitigate the loss of existing roosts, two integrated bat boxes will be incorporated into the design of the new properties built in place of the existing property (units 1 and 2). Suitable models include the Habibat Bat Box 001 or Ibstock Bat Box Brick B (Figure 5). The bat boxes will be installed on a southern or southeastern aspect to replicate historic roost access points, at a height of at least 3m from ground level with an unobstructed access point (Reason & Wray 2023).

11.12 Due to the suitability of the boundary features and the use of the site by foraging and commuting bats, the lighting scheme will ensure there is no light spillage onto the hedgerow south of the existing building. A dark corridor will be implemented here to ensure that there is no impact on commuting bats, invertebrates, and other light sensitive nocturnal wildlife post development that will be using the connective boundary features (Figure 5) (Zeale *et al.* 2018).

11.13 The lighting scheme will include the following measures:

- The lighting strategy will comply with the latest guidance (BCT 2023);
- Construction works will take place during daylight hours only and no artificial lights will be used to light the retained hedgerows habitats during construction;
- The lighting for the development will take account of commuting and foraging bats by including a dark corridor boundary and other key features (Figure 5), within which there will be no new light spillage;

- Within the dark corridor the lighting scheme will be designed to follow the Bats and Artificial Lighting guidance which states that 0.4 lux (vertical plane) – 0.2 lux (horizontal) is recommended for dark buffer as it is within the range of light that light adverse bat species hunt within. In addition, light spill beneath features used by bat/or intended for use by bats for foraging and commuting should reach no more than 1-2m in height from the ground (BCT 2023);

- The lighting for the scheme will ensure no new light spill onto enhancements such as bat and bird boxes/roosts (Figure 5);

- Footpaths will be sensitively lit where located outside dark corridors;

- Sensitive lighting will include the placement of baffles/downward-facing lights or bollard level lighting and use of low wattage lights with limited lighting within the UV spectrum and timed to cover peak periods of human activity to go off for the rest of the night;

- The replacement residential building will incorporate a lighting design that prevents light spillage onto external features and habitats, including countersunk interior lights positioned where interior walls prevent direct illumination of external features.

Dormice

11.14 Habitat on site with suitability for dormice was limited to the western hedgerow. Ecological supervision will be required for any removal of hedgerows, such as the section in the northwest corner of the arable field to enable the access road. The ECoW will conduct a hand search of habitats to be removed and 50m either side, searching for dormice or their nests. The blackthorn patch to the northeast corner of the arable field will also be subject to ecological supervision. Removal can take place in the active period for dormice May – November following the Ecow checks.

11.15 If a dormouse or nest are discovered on site, works will cease until ecological advice is sought and, if necessary, a EPSML for dormice is obtained. The newly planted species-rich hedgerows will result in increased foraging and commuting opportunities for dormice.

Slow Worms

11.16 A single adult slow worm was recorded to the northwest of the site within the amenity grassland habitat adjacent to the existing residential property, with two juveniles recorded in boundary habitats. Since the existing building will be demolished for the proposal, the adjacent amenity grassland will likely be subject to heavy disturbance, for this reason it is not possible to retain this habitat.

11.17 Due to the low population of slow worms present and general unsuitability of the habitats on the wider site for reptiles except for boundary habitats, a full translocation effort is not considered proportional. Therefore, a reptile receptor will be prepared in advance of any vegetation clearance as described below.

11.18 The retained grassland to the northern boundary of the arable field will lie inside the exclusion fencing, with a hibernaculum and log pile installed within (Figure 5; Appendix 3; Appendix 4). The area will be seeded with additional grassland and forb native species to obtain a tussocky structure.

11.19 Measures must be taken to ensure reptiles present are translocated from the amenity grassland area, and any other suitable habitats identified by the ECoW, prior to enabling works. The following measures will be undertaken during suitable periods (April to October, dependent on temperature):

- The ECoW will provide a toolbox talk to all personnel on site;
- Following a hand search of vegetation for reptiles by the Ecow vegetation will be strimmed, where necessary, to 15cm above ground;
- Vegetation clearance will be carried out from the south to the north to displace reptiles and other wildlife towards the receptor area.
- The ECoW will conduct a hand search of the vegetation for reptiles and other wildlife;
- Vegetation will then be strimmed to ground level;
- The ECoW will conduct an further hand search;
- The searched area will be subject to a destructive search, whereby a small excavator (≤5 ton) with a toothed bucket (≤1m wide) will scrape topsoil to reveal wildlife beneath;
- Brash, spoil, debris piles, or any other potential hibernacula will be dismantled by hand to reveal wildlife within;
- Any wildlife revealed by the destructive search will be captured by the ecologist and relocated to the receptor site.

11.20 A destructive search will also be conducted beneath the sections of hedgerow removed to the western boundary of the arable field. Litter, construction debris and material, spoil piles, and other potential hibernacula will be removed or placed away from hedgerows and long vegetation where GCN or reptile colonisation may occur.

11.21 In the event that reptiles are found during construction works, all works in the vicinity will stop whilst advice is sought from the ecologist.

11.1 Reptile exclusion fencing as per the specifications in Appendix 2 will be erected immediately after the vegetation clearance. To prevent damage to the exclusion fencing, Heras fencing will be erected in front (within the site) of the exclusion fencing and remain until development completion.

11.2 Due to the linear nature of the receptor to reduce the risk of overshading the receptor site, the proposed hedgerow planting immediately south of the will be maintained at 60cm.

11.3 Following the completion of all construction and landscaping works the reptile exclusion fence will be removed allowing reptiles access to the wider area.

GCN

11.1 The precautionary methodology described for dormice and reptiles will also provide mitigation in the unlikely event any GCN are found. In the event a GCN is found all work will cease and a EPSML will be obtained before works continue.

Breeding Birds

11.2 Small sections of suitable breeding bird habitat are due to be removed to facilitate development, including a section of the hedgerow to the northwest of the arable field and a patch of blackthorn to the northeast of the arable field. It is also likely that overhanging tree limbs will be removed during works.

11.3 A precautionary methodology will be followed during the removal of the habitats listed above, and any other potential nesting features identified by the ECoW. Removal of these habitats will, where possible, avoid the bird nesting season, March to August inclusive. Should it not be possible to avoid this period, works will be completed under the supervision of a suitably qualified ecologist who will check for nesting birds a maximum of 48 hours prior to removal of vegetation.

11.4 If an active bird nest is discovered, a buffer zone will be erected and works will cease in that area until the young have fledged. The development includes extensive tree and hedgerow planting resulting in an increase in bird nesting potential on site.

11.5 Leaflets will be provided to homeowners to encourage the use of collar-mounted devices such as bells or Catbib™ which have been shown to reduce the rates of cat predation (Nelson *et al.* 2005; Calver *et al.* 2007).

Badgers

11.6 No evidence of badgers of their setts were recorded on site thus a NE EPSML for badgers is not required for this development.

11.7 There is a possibility of badgers commuting and foraging through the site, therefore, precautionary measures are required during construction to avoid trapping badgers in trenches or holes. Any steep-sided holes or trenches will be covered overnight, or a sturdy ramp or plank placed within to provide an escape route.

11.8 The gap in the centre of the planted hedgerow to the southern boundary will enable wildlife to commute via the site. If fencing is installed here to delineate the site boundary, a 20x20cm gap will be incorporated into the fence design to retain site access for wildlife. If this is not possible, badger gates will be installed to retain the permeability of the site.

Hedgehogs

11.9 No hedgehogs were found on site though it is plausible that hedgehogs use the boundary hedgerows to commute to wider habitats. Therefore, precautionary measures will be taken during vegetation clearance.

11.10 Precautionary measures will comprise careful lifting, transfer, and removal of any piles

of vegetation or debris. Care will be taken when cutting back hedgerows, with hand searches by a qualified ecologist carried out prior to clearance and when moving deadwood and brash piles. Covering of holes and trenches for badgers will also serve to prevent trapping hedgehogs.

12 Enhancements

12.1 Chapter 15 "Conserving and enhancing the natural environment" paragraph 180d of the National Planning Policy Framework (NPPF) (September 2023) states:

"*opportunities to improve biodiversity in and around developments should be integrated as part of their design….*"

Habitats

Tree Planting

12.2 Trees will be planted to the south of the site, centrally is an area to be maintained as an amenity and recreational area, trees here will form an ornamental orchard. Surrounding this scattered trees will be a mix of ornamental and native species, with at least five native species present (Appendix 5).

12.3 The use of mycorrhizal fungi placed beneath the trees aids the natural establishment process, negating the need for fertilizers. Planted saplings will be surrounded by a deep mulch, such as broadleaf sourced woodchip, weeds will be removed from the base of the tree until established.

Hedgerow Planting

12.4 In addition to the new hedgerow planted along the eastern site boundary, native species-rich hedgerows will be planted at the south of the site (Appendix 5). Any newly planted trees and shrubs will be planted with mycorrhizal fungi below, surrounded by a deep mulch, and 'halo' weeded (removal of other species surrounding a planted whip) in the first year to promote healthy growth. Any that fail within the first 5 years will be replaced. New hedgerow planting should be faced up until established to achieve a dense hedgerow.

12.5 Formal hedgerows will demarcate residential boundaries, fence lines, and pathways. These hedgerows will be formed of native species only, to create additional foraging and commuting opportunities for wildlife, using appropriate species mixtures such as Woodland Trust Traditional Hedge Mix and Emorsgate EH1 Hedgerow Mixture for ground flora (Appendix 5).

Wildflower & Grassland Planting

12.6 Wildflower meadow mix will be planted adjacent to the attenuation pond to increase foraging opportunities for wildlife. A wildflower seed mixture suitable for seasonally flooded soils will be used, such as Emorsgate EM8 Meadow Mixture for Wetlands or EM8F Wildflowers for Wetlands (Appendix 5). Appropriate seed mixtures will be

planted in the spring to achieve 9 – 15 or more species per m^2 present and varied sward height.

12.7 Soil preparation is key to the success of the grassland. Where farming practices have included soil fertilisation, ruderal weeds will be apparent for a year or two after re-seeding and may become dominant. To achieve a diversity of wildflowers and grasses, top soil removal should be considered, where this is not possible topsoil will not be replaced prior to planting and seeding, instead for the first two years after seeding a monthly cut between March and November of areas of plants indicative of nutrient enrichment (nettles, docks and thistles) will be carried out to reduce the dominance of these within the area.

12.8 The creation of the wildflower meadow will increase plant biodiversity on site, and benefit dwindling invertebrate pollinators including butterflies, moths, bees, spiders, and millipedes. This in turn will benefit bats, herpetofauna, birds, and mammals.

12.9 Amenity grassland to the southern central area of the site, and other areas such as roadside verges and peripheral edges, will be planted with EM3 General Purpose Meadow Mixture and managed as short sward, with a tussocky grass mix to create refuge for wildlife towards . The Emorsgate EG10 Tussock Grass Mixture and are recommended (Appendix 5).

Attenuation Pond

12.10 The attenuation pond to be installed will be planted with native emergent and marginal species to support aquatic wildlife. The Emorsgate EP1 Pond Edge Mixture and EP1F Wildflowers for Pond Edge are recommended (Appendix 5).

12.11 Should the banks of the pond be found to be unstable or the soil unsuitable for seeding, an alternative to seeding may be required for successful vegetation establishment. Pre-planted coir rolls, designed to vegetate and stabilise ponds, lakes, and river banks, may be used. The use of coir rolls or pallets is an effective method of erosion control and will result in the rapid establishment of marginal vegetation. The coir is biodegradable and will eventually break down. No other materials, such as plastic netting, are to be used in conjunction with the coir when planting as this material will persist when the coir has degraded and can be fatal to animals that get caught in the netting.

12.12 The pond will include one gently sloping bank to allow access for terrestrial wildlife access to drinking water and a means of escape.

Protected Species

Bats

12.13 Research into bat mitigation by The University of Exeter and CIEEM (Lintott & Mathews 2018) has shown bats are unlikely to use bat boxes or bricks where less than five are installed as bats roost transiently, requiring several to be available at a time to facilitate roost selection based on weather conditions and other factors.

12.14 Five wall-mounted (such as the Beaumaris Woodstone Box) or integrated bat boxes will

be installed on erected properties towards the southern boundary of the site facing the dark corridor. The bat boxes will be installed on a southern or southeastern aspect, at a height of at least 3m from ground level with an unobstructed access point. Approximate locations are shown in Figure 5, the ECoW will advise actual locations on site.

GCN & Reptiles

12.15 The management of the new wildflower grassland and tussock grassland habitats will provide a mosaic of long and short grassland suitable for commuting and foraging. Additionally, two log piles will be installed adjacent to the attenuation pond to create foraging opportunities and refugia for herpetofauna. The native species-rich hedgerows planted will ensure connectivity to wider habitats remains.

12.16 Additional log, dead wood, or brash piles will be retained on site, placed adjacent to the wildflower meadow or a position advised by the ecologist. The installation of an invertebrate box, such as the Schwegler Clay and Reed Insect Nest, will encourage prey for reptiles, amphibians, birds, and small mammals. In addition, promoting invertebrates will improve the overall biodiversity across the site, by increasing the abundance of pollinators, and support the created wildflower habitats.

Breeding Birds

12.17 A range of tree and hedge planting will provide a greater diversity of suitable habitat and foraging opportunities for birds. Additionally, four wall-mounted or integrated bird boxes will be installed upon new buildings to increase nesting opportunities across the site. Bird boxes are to be installed 3-4m above ground on a northern or northeast aspect; Figure 5 shows indicative positions to be decided by the on-site ecologist prior to installation.

12.18 Swift *Apus apus* boxes are considered universal as they may be accessed by small species such as house sparrows *Passer domesticus*. The Manthorpe Swift Brick or Cambridge Swift Nest Box System are suitable integrated boxes. If integrated bird boxes are not preferred, suitable wall-mounted products include the Schwegler 18 Swift Nest.

Other Species

12.19 The species recommended for planting within the new hedgerows, wildflower meadow, and tussocky grassland areas will provide enhanced opportunities for foraging for badgers, hedgehogs, and other wildlife on site. A range of species will also benefit from the invertebrate box installed in the wildflower meadow.

12.1 Connectivity across the site will be enhanced by incorporating 13x13cm holes into each garden fence, enabling hedgehogs and other small species to commute between gardens. Hedgehog Highway signs will be erected above these holes to discourage residents from blocking the entrances. Ensuring wildlife permeability across the site will help improve site-wide biodiversity and ensure the protected species on site have access to a range of habitats.

12.2 The latest site proposal indicates the attenuation pond and surrounding planting will lie immediately adjacent to a residential unit. It is recommended that this is separated by adequate security fencing, in addition to health and safety considerations there is a risk of residents damaging/encroaching into habitats and enhancement features planted for biodiversity benefits.

12.3 An interpretation board will be installed to increase public awareness and dissuade residents from inadvertently harming wildlife or habitats. The interpretation board will detail the importance of the biodiversity features detailed above, including wildflower and grassland planting, native hedgerows, log piles, and hibernacula.

13 Management and Monitoring

13.1 Management and monitoring to be completed during construction and post-construction, monitoring will measure the success of the mitigation, enhancement, and management measures.

Habitats

Management

Habitats and ecological features with management areas are shown in Figure 6.

Amenity

13.2 Grassland in the area of formal amenity use will be managed through an appropriate cutting regime to maintain sward at a height of 50mm. The exception to this will be areas adjacent to the trees and hedges where grassland will be allowed to flower, management of these areas will replicate the conservation cutting programme described for the area of wildflower meadow planting.

Wildflower Meadow

13.3 Wildflower and tussocky grassland areas will be subject to conservation cuts, whereby vegetation is cut twice during winter (November-February) to approximately 15cm to promote flowering the following spring and seed distribution in late summer and autumn.

Pond

13.4 The pond sits within an area of wildflower planting, wildflower planting to the upper banks will grade into marginal planting to the lower banks. Management of the banks

will be carried out where overcrowding or poor indicator species are found to be present. The thinning of vegetation will be based on a three year rotation of cutting to 1/3rd of the bank to ensure good cover of 2/3rd of the bank in any year.

13.5 Where plants are found to be overcrowded, plants on the bank will be thinned. Unwanted or overcrowded species of plants will be selectively removed by hand between September and November.

13.6 The pond may become filled with sediment over time, where this is inhibiting the pond function dredging may be needed. Every three.

Trees

13.7 The management of boundary trees will be no intervention unless works are required for health and safety reasons, in this instance the advice of an arboriculturist should be sought.

13.8 Trees planted to the central area will recieve formative pruning. Annual management of the orchard trees to maintain good shape to the crown as ornamental orchard. Native species will be allowed to grow naturally following formative pruning.

Hedgerows

Formal Hedgerows

13.9 Formal hedgerow will be managed to maintain a height of 60cm and dense form. Hedgerow management will occur outside of the nesting bird season (March to August inclusive).

Informal Hedgerows

13.10 Hedgerow management will follow guidance from DEFRA (2023), following establishment of new planting and for pre-existing hedgerows trimming will be carried out on a three-year rotation. This means that where a different third of the hedge will be cut each year ensuring at least two thirds are flowering. Hedgerow management will occur outside of the nesting bird season (March to August inclusive).

Protected Species

Reptile Receptor

13.11 The newly reptile receptor consists of grassland to be managed as wildflower grassland and a species rich native hedge backed with chain link fencing. A hibernacula and log pile are also included for reptile shelter and basking.

13.12 Grassland cutting will avoid the area within 0.5m of the hibernacula and log pile to provide areas of additional shelter.

Monitoring

Habitats

13.13 The newly created habitats will be monitored to assess the objectives of the landscape and ecology measures are being met, where relevant monitoring will inform replanting in the case of individual plant failure and that overall habitats are successfully established.

13.14 Planted hedgerows, trees, wildflower meadow, tussock grassland, and marginal pond planting will be monitored quarterly during the first year of planting, with subsequent annual visits until the habitats are fully established.

Ecological Features

13.15 Ecological features will be assessed during the construction phase to ensure that they have been correctly installed. They will also be inspected prior to handover to the management company, any repairs or replacements needed at this time will be made prior to handover.

Construction Phase

13.16 The following will be monitored annually until all works have been completed, informing required maintenance or repairs where necessary:

- Bat, bird, and invertebrate habitat boxes.
    - Bat boxes are protected by law. Maintenance of bat boxes, if required, will be conducted under the supervision of a licenced ecologist.
- Log piles and hibernacula:
    - These features will remain in areas open to sunlight, away from the public, with overshading vegetation cut back where necessary.
- Reptile exclusion fencing:
    - Vegetation hanging over or penetrating the fencing will be cut back.
    - Torn reptile exclusion fencing material will be repaired or replaced. Broken stakes will be replaced.
    - Heras fencing will remain in front of the reptile fencing at all times.
- Fencing gaps for badgers and hedgehogs.

13.17 Monitoring visits will also comprise general site checks, noting any features that may cause harm to wildlife or habitats including, but not limited to, the following as outlined in Section 11:

- Storage of materials and waste:
    - Debris, litter, spoil, material, and any other piles created during construction may be colonised by herpetofauna or small mammals.
    - If the creation of such features is unavoidable, they will be stored to the centre of the site, away from hedgerows and other suitable habitats.

- Covering holes, trenches, and other deep excavations overnight that wildlife may fall into:
    - The attenuation pond will comprise gentle sloping to enable wildlife to escape. If this is not possible, rocks will be built up against the banks to allow wildlife to climb out.
- Inappropriate lighting measures that deviate from the aforementioned lighting scheme to reduce impacts on bats (Section 11).

13.18 A biodiversity monitoring compliance report confirming the implementation of the mitigation measures at the end of the construction including landscaping. Copies of the biodiversity monitoring report will be provided to the LPA, and records will be provided to the local biodiversity records centre.

13.19 Where a change in management is required to meet the objectives of this report, the EMS will be updated and reissued to the LPA.

Post Development Phase

13.20 During the lifetime of the development the management company will be responsible for replacement of any missing or damaged features. Checks of the features shown in Figures 5 & 6 and detailed above should be carried out no less than annually. Checks should be timed to be after the key hibernation periods for the species that may be present and avoid key maternity periods, therefore, the advised time for checks and replacement of aged, damaged or lost features is April – May or September to November. All features to be repaired or replaced should first be checked for the presence of nesting animals. Any works to features for bats will require a bat survey licenced ecologist to be present.

13.21 Any adjustments to bat boxes will require a bat licenced ecologist to carry out checks prior to works to meet legislation pertaining to this species group.

14 Conclusion

14.1 This EMS details the measures to be taken to safeguard protected species at the site and to fulfil the requirements of Condition 19 of the approved planning permission 21/02855/FULL.

14.2 Mitigation, enhancement, management and monitoring measures are given to avoid impacts and provide longterm enhanced habitats for bats and reptiles recorded on site, and other species that may frequent the habitats on site now or in the future.

14.3 A NE EPSML is required for bats prior to any works to the northern parcel. The methodologies provided in this report and a method statement provided with the granted licence will be followed to prevent harm to bats on site.

14.4 A displacement effort for reptiles is required to prevent harm to the low slow worm population on site. The mitigation measures provided in this report will be followed to ensure the receptor site can support the displaced population and prevent reptiles colonising the construction zone.

14.5 The planting timing and recommended species given in Appendices 1 and 5 will benefit many other species and pollinators. The combination of improved plant species diversity, habitat quality, and ecological features to be provided within the newly created wildflower meadow, tussock grassland, and pond margins improve the ecological functionality of the site. Furthermore, the provision of habitat boxes and other enhancements will ensure the site is of greater value to the species present or potentially present.

14.6 Providing the mitigation detailed in this report is implemented, the approved development will remain compliant with relevant biodiversity legislation and the NPPF.

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16 Appendices

Appendix 1: Biodiversity Method Statement Schedule

Appendix 2: Reptile Exclusion Fencing Specification

Appendix 3: Hibernacula Design

Appendix 4: Log Pile Diagram

Appendix 5: Suitable Native Species Planting Lists

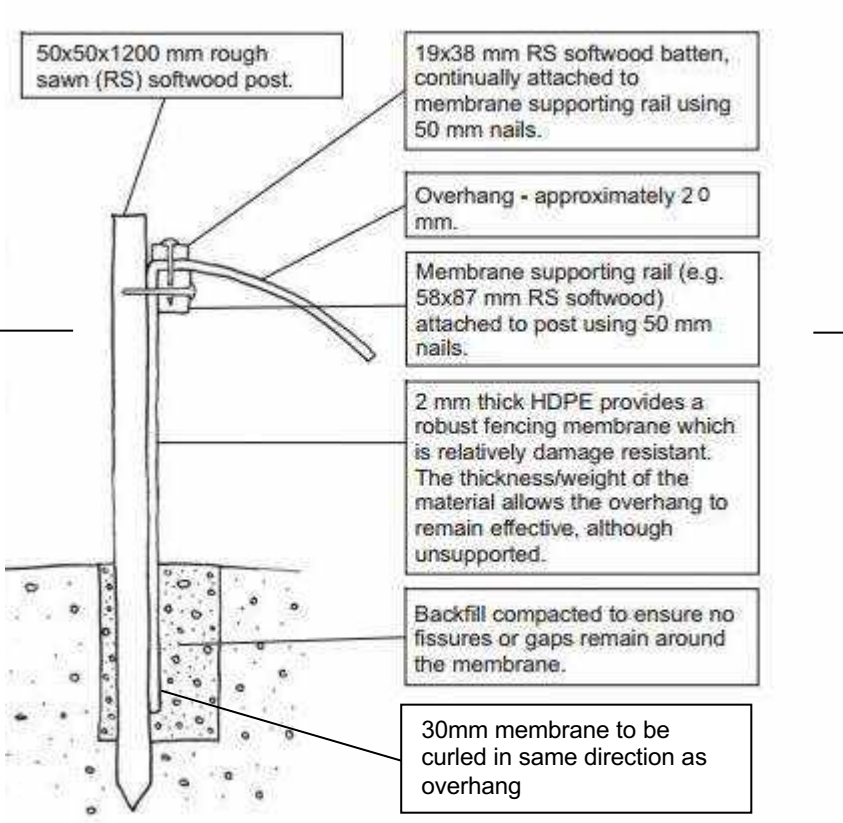
Appendix 1 Biodiversity Method Statement Schedule

Task	Task Description	Ecologically Appropriate Time (Month)												Year 1 (incl. enabling)	Year 2	Final year of Construction
		J	F	M	A	M	J	J	A	S	O	N	D			
Demolition of property on Cranbrook Road (Following EPSML method statement, supervised by licenced ecologist)	Erection of pole-mounted bat box to the south of site															
	Toolbox talk by licenced ecologist and search for bats															
	Soft strip of roof material															
	Relocation of bats (by licenced ecologist)															
	Install two integrated bat boxes on units 1-2															
Fencing	Install boundary Heras fencing set to 20cm to allow continued mammal movement															
	Install semi-permanent reptile exclusion fencing to receptor area, under supervision															
	Removal of semi-permanent exclusion fencing following completion of all construction and landscaping (under ecological supervision)															Following completion of all construction and landscaping
Vegetation Clearance	Removal of grassland/arable habitat, followed															

Task	Task Description	Ecologically Appropriate Time (Month)												Year 1 (incl. enabling)	Year 2	Final year of Construction
		J	F	M	A	M	J	J	A	S	O	N	D			
	by destructive search															
	Removal of hedgerows	Ecological supervision required														
	Tree limb removal, if required			Ecological supervision required												
New Habitat Planting	Wildflower grassland and meadow seeding															
	Native tree and hedge planting															
	Pond marginal and emergent planting															
Ecological Features	Install one log pile and one hibernacula in receptor area													Before habitat clearance		
	Install two log piles around pond															
	Install invertebrate box															
	Erect five bat bricks/boxes and four bird boxes in residential units and garage walls															
	Install interpretation board, if required															

Appendix 2 Reptile Exclusion Fencing Specification

Site / Construction Area (& Heras Fencing)

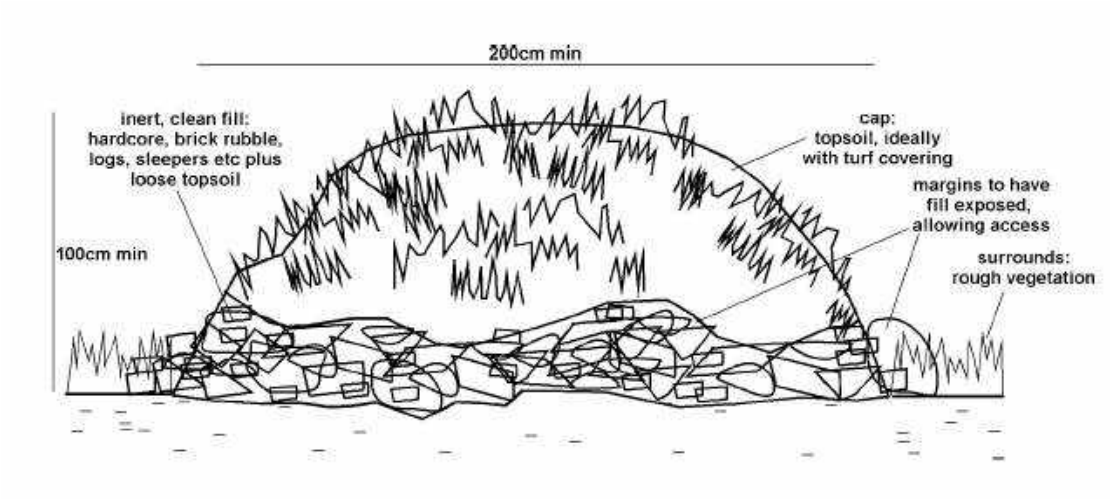


Reptile Receptor

Appendix 3 Hibernacula Design

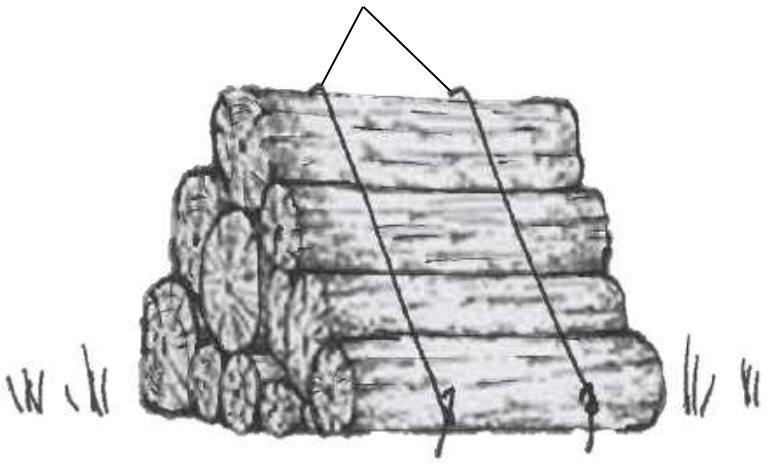
Suggested Hibernacula Design (after English Nature, 2001)

The design mimics artificial and natural conditions in which herptiles have been found overwintering. Dimensions should not be below 2m length x 1m width and 1m height. Hibernacula should be placed on free draining surfaces, with the fill located in an excavated depression in the ground above the flood line. Hibernacula should not be placed near SUDS ponds or in areas where there is a risk of flooding.



Appendix 4 Log Pile Diagram

Logs tied down with wire, kept taut and pinned to the ground with pegs.



Log piles to be stacked in existing grassland habitat, in unshaded position, preferably south facing. Log piles to be formed from native arisings following tree felling, or locally sourced native hardwood.

Appendix 5

Suitable Native Species Planting Lists

Habitat:	**Native species-rich Hedgerow**
Recommended Seed Mix:	**Woodland Trust Traditional Hedge Mix**
https://shop.woodlandtrust.org.uk/hedgerow-tree-packs	
Scientific Name	*Common Name*
Crataegus monogyna	Hawthorn
Prunus spinosa	Blackthorn
Corylus avellana	Hazel
Malus sylvestris	Crab apple
Sambucus nigra	Elder
Recommended Seed Mix:	**Emorsgate EH1**
https://wildseed.co.uk/product/mixtures/complete-mixtures/special-habitat-mixtures/hedgerow-mixture/	
Scientific Name	*Common Name*
Wildflowers	
Agrimonia eupatoria	Agrimony
Alliaria petiolata	Garlic Mustard
Centaurea nigra	Common Knapweed
Clinopodium vulgare	Wild Basil
Digitalis purpurea	Foxglove
Galium album - (Galium mollugo)	Hedge Bedstraw
Geum urbanum	Wood Avens
Hypericum perforatum	Perforate St John's Wort
Leucanthemum vulgare	Oxeye Daisy
Plantago lanceolata	Ribwort Plantain
Primula veris	Cowslip
Prunella vulgaris	Selfheal
Silene dioica	Red Campion
Stachys sylvatica	Hedge Woundwort
Torilis japonica	Upright Hedge-parsley
Vicia cracca	Tufted Vetch
Grasses	
Agrostis capillaris	Common Bent (w)
Brachypodium sylvaticum	False Brome (w)
Cynosurus cristatus	Crested Dogstail
Deschampsia cespitosa	Tufted Hair-grass (w)
Festuca rubra	Slender-creeping Red-fescue
Poa nemoralis	Wood Meadow-grass

Habitat:	**Wildflower Meadow around Attenuation Pond**
Recommended Seed Mix:	**Emorsgate EM8 Meadow for Wetlands**
https://wildseed.co.uk/product/mixtures/complete-mixtures/meadow-mixtures-for-specific-soils/meadow-mixture-for-wetlands/	
Scientific Name	*Common Name*
Wildflowers	
Achillea millefolium	Yarrow
Achillea ptarmica	Sneezewort
Betonica officinalis - (Stachys officinalis)	Betony
Centaurea nigra	Common Knapweed
Filipendula ulmaria	Meadowsweet
Galium verum	Lady's Bedstraw
Geum rivale	Water Avens
Leucanthemum vulgare	Oxeye Daisy
Lotus pedunculatus	Greater Birdsfoot Trefoil
Plantago lanceolata	Ribwort Plantain
Primula veris	Cowslip
Prunella vulgaris	Selfheal
Ranunculus acris	Meadow Buttercup
Rhinanthus minor	Yellow Rattle
Rumex acetosa	Common Sorrel
Sanguisorba officinalis	Great Burnet
Silene flos-cuculi - (Lychnis flos-cuculi)	Ragged Robin
Succisa pratensis	Devil's-bit Scabious
Vicia cracca	Tufted Vetch
Grasses	
Agrostis capillaris	Common Bent
Alopecurus pratensis	Meadow Foxtail (w)
Anthoxanthum odoratum	Sweet Vernal-grass (w)
Briza media	Quaking Grass (w)
Cynosurus cristatus	Crested Dogstail
Deschampsia cespitosa	Tufted Hair-grass (w)
Festuca rubra	Slender-creeping Red-fescue
Hordeum secalinum	Meadow Barley (w)
Schedonorus pratensis - (Festuca pratensis)	Meadow Fescue (w)
Habitat:	**Wildflower Meadow around Attenuation Pond**
Recommended Seed Mix:	**Emorsgate EM8F Wild Flowers for Wetlands**
https://wildseed.co.uk/product/mixtures/wild-flower-only-mixtures/wild-flowers-for-wetlands/	
Scientific Name	*Common Name*

Achillea millefolium	Yarrow
Achillea ptarmica	Sneezewort
Betonica officinalis - (Stachys officinalis)	Betony
Centaurea nigra	Common Knapweed
Filipendula ulmaria	Meadowsweet
Galium verum	Lady's Bedstraw
Geum rivale	Water Avens
Leucanthemum vulgare	Oxeye Daisy
Lotus pedunculatus	Greater Birdsfoot Trefoil
Plantago lanceolata	Ribwort Plantain
Primula veris	Cowslip
Prunella vulgaris	Selfheal
Ranunculus acris	Meadow Buttercup
Rhinanthus minor	Yellow Rattle
Rumex acetosa	Common Sorrel
Sanguisorba officinalis	Great Burnet
Silene flos-cuculi - (Lychnis flos-cuculi)	Ragged Robin
Succisa pratensis	Devil's-bit Scabious
Vicia cracca	Tufted Vetch
Habitat:	**Species-rich Grassland**
Recommended Seed Mix:	**Emorsgate EG10 Tussock Meadow Mixture**
https://wildseed.co.uk/product/mixtures/grass-only-mixtures/tussock-grass-mixture/	
Scientific Name	*Common Name*
Alopecurus pratensis	Meadow foxtail
Dactylis glomerata	Cocksfoot
Festuca rubra	Strong-creeping Red-fescue
Phleum pratense	Timothy
Schedonorus arundinaceus (Festuca arundinacea)	Tall Fescue
Schedonorus pratensis (Festuca pratensis)	Meadow Fescue
Cynosurus cristatus	Crested dogstail
Holcus lanatus	Yorkshire fog
Lolium perenne	Perennial rye grass
Poa pratensis	Smooth-stalked meadow grass
Habitat:	**Species-rich Grassland**
Recommended Seed Mix:	**Emorsgate EM3 Special General Purpose Meadow Mixture**
https://wildseed.co.uk/product/mixtures/complete-mixtures/general-purpose-meadow-mixtures/special-general-purpose-meadow-mixture/	
Scientific Name	*Common Name*

Wildflowers	
Achillea millefolium	Yarrow
Betonica officinalis - (Stachys officinalis)	Betony
Centaurea nigra	Common Knapweed
Centaurea scabiosa	Greater Knapweed
Daucus carota	Wild Carrot
Filipendula ulmaria	Meadowsweet
Galium album - (Galium mollugo)	Hedge Bedstraw
Galium verum	Lady's Bedstraw
Knautia arvensis	Field Scabious
Leontodon hispidus	Rough Hawkbit
Leucanthemum vulgare	Oxeye Daisy
Lotus corniculatus	Birdsfoot Trefoil
Origanum vulgare	Wild Marjoram
Plantago media	Hoary Plantain
Poterium sanguisorba - (Sanguisorba minor)	Salad Burnet
Primula veris	Cowslip
Prunella vulgaris	Selfheal
Ranunculus acris	Meadow Buttercup
Rhinanthus minor	Yellow Rattle
Rumex acetosa	Common Sorrel
Silene dioica	Red Campion
Silene flos-cuculi - (Lychnis flos-cuculi)	Ragged Robin
Trifolium pratense	Wild Red Clover
Grasses	
Agrostis capillaris	Common Bent
Cynosurus cristatus	Crested Dogstail
Festuca rubra	Slender-creeping Red-fescue
Phleum bertolonii	Smaller Cat's-tail
Habitat:	**Attenuation Pond Edge**
Recommended Seed Mix:	**Emorsgate EP1 Pond Edge Mixture**
https://wildseed.co.uk/product/mixtures/complete-mixtures/special-habitat-mixtures/pond-edge-mixture/	
Scientific Name	*Common Name*
Wildflowers	
Achillea ptarmica	Sneezewort
Angelica sylvestris	Wild Angelica
Caltha palustris	Marsh Marigold
Eupatorium cannabinum	Hemp Agrimony
Filipendula ulmaria	Meadowsweet
Geum rivale	Water Avens
Hypericum tetrapterum	Square-stalked St John's Wort

Iris pseudacorus	Yellow Iris
Lotus pedunculatus	Greater Birdsfoot Trefoil
Lycopus europaeus	Gypsywort
Lythrum salicaria	Purple Loosestrife
Mentha aquatica	Water Mint
Pulicaria dysenterica	Common Fleabane
Ranunculus acris	Meadow Buttercup
Scrophularia auriculata	Water Figwort
Scutellaria galericulata	Skullcap
Silene flos-cuculi - (Lychnis flos-cuculi)	Ragged Robin
Succisa pratensis	Devil's-bit Scabious
Vicia cracca	Tufted Vetch
Grasses	
Agrostis capillaris	Common Bent
Alopecurus pratensis	Meadow Foxtail (w)
Anthoxanthum odoratum	Sweet Vernal-grass (w)
Briza media	Quaking Grass (w)
Cynosurus cristatus	Crested Dogstail
Deschampsia cespitosa	Tufted Hair-grass (w)
Festuca rubra	Slender-creeping Red-fescue
Hordeum secalinum	Meadow Barley (w)
Schedonorus pratensis - (Festuca pratensis)	Meadow Fescue (w)