



41 KINGSWAY, CHANDLER'S FORD

ECOLOGICAL IMPACT ASSESSMENT

21/06/2024

CLIENT: Sebastian Hoenig

PROJECT NO.: KINGSW-2024

AUTHOR: Sophie Lancaster

sophie@soecology.co.uk

SoEcology Ltd is registered in England and Wales

Company No. 12914239

Registered address: Cooke & Co, Meon House, Rear of 189 Portswood Rd, Hampshire, SO17 2NF

Executive Summary

SoEcology Ltd was commissioned by Sebastian Hoenig to produce an Ecological Impact Assessment report to support a planning application for 41 Kingsway, Chandler's Ford, SO53 1EL, grid reference: SU 43887 21359.

The development proposals are for a loft conversion and side extension which includes the removal of the detached garage.

A Preliminary Ecological Assessment was undertaken in January 2024, which included a Preliminary bat Roost Assessment of the buildings on-site. The survey recorded low numbers of droppings within the loft confirmed via DNA analysis to be attributed to brown long-eared bat. The garage and garden shed are not suitable for roosting bats. In response to the Preliminary bat Roost Assessment findings, further bat surveys in the form of three dusk emergence surveys have been undertaken between May and June 2024, with at least three weeks spacing between each survey. The three dusk emergence surveys did not record any emergences. Taking into consideration the quantity of droppings the survey effort, DNA and dusk emergence survey results it has been concluded that the property is a day roost of brown long-eared bat in occasional use, which is of site value. A Natural England mitigation licence is to be attained to facilitate the destruction of the bat roost. The licence will include the mitigation measures detailed in this report.

The proposals will not result in a net increase in residential dwellings and the Site is not located within or adjacent to a statutory designation. However, pollution control measures for the highly engineered ditch on-site have been proposed within this report as it runs into Monks Brook; a tributary of the River Itchen, which is afforded national and international protection.

The habitats on-site, great crested newt, badger, water vole and otter have been scoped out for further assessment. Measures to avoid a loss in biodiversity have been inherently incorporated into the design proposals, as the extension will predominantly be retained within the existing hardstanding and building footprint.

Mitigation measures have been provided in this report for invasive plants, reptiles, hedgehog and nesting birds, to avoid a wildlife offence from being committed. Due to the small scale and nature of the proposals no further surveys are needed for these ecological features.

Compensation and enhancement recommendations are provided in this report with the aim of pro-actively influencing the design phase to achieve a net gain in biodiversity in accordance with the National Planning Policy Framework and local policy.

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1 Introduction

SoEcology Ltd was commissioned by Sebastian Hoenig to produce an Ecological Impact Assessment (EclA) report for 41 Kingsway, Chandler's Ford, SO53 1EL, grid reference: SU 43887 21359.

The purpose of the EclA report is to support a planning application for the renovation of the bungalow, which will include demolition of the detached garage, a loft conversion and side extension.

The purpose of an EclA report is:

- To identify potential significant ecological effects associated with the development proposals;
- To provide appropriate mitigation measures to ensure compliance to relevant policies and legislation (see Section 2);
- To provide an assessment of significant residual effect;
- To identify how mitigation measures will be secured;
- To identify appropriate compensation and enhancement measures to negate any negative significant residual effects and with the aim of achieving a net gain in biodiversity, in compliance with relevant policy; and
- To set out requirements for post-construction monitoring, if required.

This report may require amending if the proposals change since the report submission date displayed on the front page. It is important to note that the survey results are valid for 12 months from the date of the last site visit. If this time elapses the survey will need to be updated.

This report was written by Sophie Lancaster, an Ecologist working in private consultancies since 2013. Sophie has completed a masters (MSc) in Environmental Consultancy and is an Associate member of the Chartered Institute of Ecology and Environmental Management (ACIEEM). Sophie holds protected species licences for bats (level 2 class licence) and great crested newt (class 1). Sophie is a capable botanist and has undertaken National Vegetation Classifications and is thus capable of undertaking UKHab surveys to Level 5. Sophie has undergone formal training for UKHab assessments and the Biodiversity Metric through CIEEM. Sophie keeps up to date on the changes in Biodiversity Metric and attends available webinars.

2 Planning Policy and Legislation

This section does not provide a comprehensive list of nature conservation policies and legislation within the United Kingdom. The policies and legislation listed below are those relevant to the project only.

2.1 National Planning Policy

The most recent National Planning Policy Framework (NPPF) was published in December 2023. The NPPF sets out the Government's planning policies for England and how these should be applied. Paragraphs of relevance within the NPPF include:

Paragraph 180 of the NPPF states that *"Planning policies and decisions should contribute to and enhance the natural and local environment by:/... minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures."*

Paragraph 181 of the NPPF states that *"plans should/... take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries."*

Paragraph 185 of the NPPF states that *"To protect and enhance biodiversity and geodiversity, plans should:*

- a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and
- b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

Paragraph 186 of the NPPF states that *"When determining planning applications, local planning authorities should apply the following principles:*

- a) *if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- b) *development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*
- c) *development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons¹ and a suitable compensation strategy exists; and*
- d) *development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be*

¹ For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat.

integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

Paragraph 187 of the NPPF also states that potential Special Protection Areas, possible Special Areas of Conservation and proposed Ramsar sites are to be afforded the same protection as designated Special Protection Areas, Special Areas of Conservation and Ramsar sites.

The NPPF is also complemented by the Circular 06/2005: Biodiversity and Geographical Conservation – Statutory Obligations and Their Impacts Within The Planning System (Office of the Deputy Prime Minister, 2005). Paragraph 99 states that *“It is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision.”*

The Hedgerows Regulations 1997 were made under Section 97 of the Environment Act 1995. The Circular provides a comprehensive statement of planning requirements in relation to hedgerows: *“They aim to protect important hedgerows in the countryside by controlling their removal through a system of notification to local planning authorities. The system applies to most countryside hedgerows in England and Wales, and covers hedgerows on, or adjoining land used for agriculture or forestry, the breeding or keeping of horses, ponies or donkeys, common land or village greens, SSSIs, or local nature reserves. They do not apply to garden hedges. To be important, the hedgerows must meet certain criteria set out in the Hedgerow Regulations 1997. Permission for removal of a hedgerow is not required if it is less than 20 metres long (unless both ends join with other hedgerows or it is part of a longer hedgerow), or is in, or borders a garden. Similarly, permission to remove a hedgerow is not required in certain circumstances for emergency/access purposes.”*

2.2 The Environment Act

The Environment Act was passed in November 2021, after the Environment Bill received Royal Assent. Under Schedule 14 of the Act biodiversity net gain is a mandatory condition for planning applications, with most developments required to achieve a 10% net gain in biodiversity. As this proposal is a householder application it is exempt from the net gain in biodiversity requirements.

2.3 Local Planning Policy

The Eastleigh Borough Local Plan 2016-2036 was adopted on 25 April 2022. It sets out the policies and plans to guide future development to 2036. Policy DM11 is in relation to nature conservation.

1. **General Approach** - The Council will work with statutory and voluntary agencies and developers, and will determine planning applications, to:
 - a. Protect, conserve and enhance all:
 - i. international, national and local nature conservation designations; and
 - ii. networks of natural habitats and features, including the Local Ecological Network, Priority Biodiversity Areas and Priority Biodiversity Links, watercourses, wetland complexes, woodland trees, and trees and hedgerows important to biodiversity and local character; and facilitate their adaptation to climate change wherever possible;
 - b. assist in achieving national, county and local biodiversity targets as set out in Biodiversity Action Plans (BAPs);
 - c. seek a net gain of biodiversity on all development sites (including sites for redevelopment) through the protection, enhancement and connection of existing and provision of new habitats and features of nature conservation interest compatible

with the native biodiversity characteristics of the Borough, having regard to local geodiversity and soils; and

- d. contribute to major elements of the PfSH Green Infrastructure Strategy and other strategies for the provision and enhancement of multifunctional green infrastructure including green routes, ecological networks and biodiversity enhancements (see strategic policy S9).

- 2. International Designations** - Development which is likely (either individually or in combination with other developments) to adversely affect the integrity of an international or European nature conservation site will not be permitted subject only to imperative reasons of overriding public interest and securing any necessary compensatory measures in the absence of alternative solutions. A 'project level' Habitat Regulations Assessment will be required where there are likely significant effects or uncertainty. Any mitigation measures required to ensure no adverse impact must be implemented at the appropriate time.

The Council will work with PfSH, Natural England, the Environment Agency and other wildlife organisations to develop and implement with developers a strategic approach to the protection and enhancement of international and European sites from the direct and indirect effects of development. Within Eastleigh Borough this will include:

- a. **Implementing:**

- i. the Solent Recreation Mitigation Strategy (requiring contributions from residential developments within 5.6 kilometres of the Solent Special Protection Area to the Strategy); and
- ii. the interim and any future New Forest Recreation Mitigation Strategy if required; or alternative agreed site specific measures to address recreational disturbance;
- b. preserving the water quality and flows within the Itchen and Hamble, Southampton Water and Solent;
- c. protecting the River Itchen SAC, in particular the maintenance and where appropriate restoration of habitats and qualifying species to favourable conservation status (as defined by article 1 of the Habitats Directive); and
- d. seek contributions towards measures set out in the Southern Damselfly Conservation Strategy (or other strategy) specifically to deliver biodiversity net gain.

- 3. National and Local Designations** - Development will not be permitted if it is likely (either individually or in combination with other developments) to have a direct or indirect adverse effect on a Site of Special Scientific Interest (SSSI), Site of Importance for Nature Conservation (SINC) or Local Nature Reserve (LNR) as shown on the policies map (or on a more recent plan provided by the Hampshire Biodiversity Information Centre) unless it can be demonstrated that:

- a. There are no alternative solutions;
- b. The adverse effects are unavoidable;
- c. Measures are taken to mitigate or, as a last resort, compensate for adverse effects;
- d. There is an overall biodiversity net gain; and,
- e. If there are any residual adverse effects which cannot be avoided, mitigated or compensated, the benefits of the development must clearly outweigh the adverse effects on the nature conservation value of the site and any broader impacts on national and local designations.

- 4. Priority habitats, protected and priority species and local ecological network** - Development will not be permitted if it is likely (either individually or in combination with other

developments) to have a direct or indirect adverse effect on priority habitats, protected or priority species, or on the local ecological network unless it can be demonstrated that:

- a. there are no alternative solutions;
 - b. the adverse effects are unavoidable;
 - c. measures are taken to mitigate or, as a last resort, compensate for the adverse effects;
 - d. there is an overall biodiversity net gain; and
 - e. if there are any residual adverse effects, the benefits of the development clearly outweigh the adverse effects on priority habitats, priority and protected species, and the local ecological network
5. **Irreplaceable habitats** - Development will not be permitted if it results in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees), unless there are wholly exceptional reasons and a suitable compensation strategy exists.
 6. **Buffers** - Buffers free from development will be provided to designated sites to avoid/mitigate impacts, including recreational impact and impacts on edge habitats, and to maintain dark skies.
 7. **Surveys** - Development will not be permitted unless it can be demonstrated that:
 - a. there have been thorough habitat and species surveys;
 - b. the great crested newt strategic survey and strategy have been considered in all developments within 500m of a great crested newt pond; and
 - c. the strategic bat trapping survey has been considered in all developments within the locality of a woodland or connected habitat networks.

2.4 International Designated Sites

Internationally designated sites include Special Protection Areas (SPAs), Ramsar sites and Special Areas of Conservation (SAC).

SPAs, Ramsar sites and SACs form the Natura 2000 network of sites of nature conservation significance within Europe. SACs are designated under the Habitats Directive² to ensure the favourable conservation status of each habitat type and species. SPA's are designated under the Birds Directive and are designated for 194 threatened species, all of which being migratory bird species. Ramsar are afforded to wetlands of international importance, designated under the Ramsar Convention.

Within the UK these designations are protected under the Conservation of Habitats and Species Regulations 2017 (as amended) and Local Planning Authorities (LPA) are required to review all planning applications for potential to affect internationally designated sites. The application site does not need to be on or adjacent to an internationally designated site to have a potential impact. Where an LPA deems a significant effect on a European site to be likely, an Appropriate Assessment is to be undertaken to determine the implications of the development for the site's conservation objectives.

2.5 Nationally Designated Sites

National designations include Sites of Special Scientific Interest (SSSI) and National Nature Reserves (NNR).

² Council Directive on the conservation of wild birds of 2nd April 1979 (79/409/EEC) and Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora of 21st May 1992

In accordance with Section 28 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 9 of the Countryside and Rights of Way Act 2000, LPAs are required to notify Natural England of a developments potential to likely damage a SSSI before granting planning permission. If a development is anticipated to affect a national designation an Appropriate Assessment is not required, however, the LPA will determine appropriate course of action to prevent adverse effects on the designation. Natural England will be consulted whether or not the application site is located on or adjacent to a SSSI, as indirect effects are also considered. SSSIs designations also frequently cover the same footprint of international designations.

NNR are offered the same level of protection under the National Parks and Access to the Countryside Act 1949, strengthened by the Wildlife and Countryside Act 1981 (as amended).

2.6 Locally Designated Sites

Local Nature Reserves (LNRs) are statutory designations afforded by Local Authorities, protected under the National Parks and Access to the Countryside Act 1949 and the Natural Environment and Rural Communities Act 2006. LNRs qualify for their importance to wildlife, geology, education or public enjoyment and are frequently also SSSIs. They are protected against on site or adjacent development and development that negatively impacts a LNR will only be granted in exceptional circumstances. The level of protection is decided locally via Local Plans and local-by-laws and varies from site to site.

2.7 Non-statutory Locally Designated Sites

Non-statutory designations are site designated by Local Authorities for their nature conservation value at a local level. The name given to such designations differs between Local Authorities from Local Wildlife Sites (LWSs), Sites of Importance to Nature Conservation (SINCs) or Sites of Nature Conservation Importance (SNCIs). The means of their protection is the same as for LNR (see paragraph 2.6).

2.8 Protected Species Legislation

2.8.1 Plants

Protection

Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) provides a comprehensive list of species that are protected under Section 13, which protects the plants listed from picking and the sale of plants or parts of plants. The list includes species such as bluebell *Hyacinthoides non-scripta*.

Nine higher plant species and four lower plant species are afforded additional protection under Annex II of the Habitats Directive. Species listed on Annex II are those where their conservation requires the designation of SACs. Species on the list that are present within the south of England include: shore dock *Rumex rupestris*; marsh saxifrage *Saxifraga hirculus*; early gentian *Gentianella angelica*, creeping marshwort *Apium repens*; western rustwort *Marsipella profunda*; and, pearlwort *Petalophyllum ralfsii*.

Invasive Species

Schedule 9, Part II of the Wildlife and Countryside Act 1981 (as amended) lists invasive plants, which uncontrolled are likely to have a significant adverse impact on biodiversity; other environmental interests; or, social or economic interests. The Act makes it an offence to plant or otherwise cause to grow in the wild any plant listed. Species commonly recorded include: variegated yellow archangel *Lamiastrum galeobdolon* subsp. *argentatum*; Himalayan balsam *Impatiens glandulifera*; Spanish bluebell *Hyacinthoides hispanica*; Virginia creeper *Parthenocissus quinquefolia*; Japanese knotweed

Fallopia japonica; Montbretia *Crocasmia x crocosmiiflora*; rhododendron *Rhododendron ponticum*; and New Zealand pigmyweed *Crassula helmsii*.

2.8.2 Reptiles

There are six species of reptile within the UK. The smooth snake *Coronella austriaca* and sand lizard *Lacerta agilis* are our only European protected species under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended), which makes it an offence to:

- a) Deliberately capture, injure or kill;
- b) Deliberately disturb or recklessly disturb whilst in its structure or place of shelter or protection;
- c) Damage or destroy a breeding site or resting place;
- d) Obstruct access to structures or places of shelter and protection;
- e) Keep, transport, sell or exchange, or offer for sale or exchange, any live or dead animal; and
- f) Take or destroy eggs.

If found guilty of any of the above offences you can be sent to prison for up to six months and receive an unlimited fine.

Slow-worm *Anguis fragilis*, common lizard *Zootoca vivipara*, adder *Vipera berus* and grass snake *Natrix helvetica* are protected in the UK under Schedule 5 of the Wildlife and Countryside Act (1981), which makes it illegal to intentionally kill, injure, sell or trade such animals.

2.8.3 Birds

All birds, their nests and eggs are protected under the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to:

- a) Intentionally kill, injure or take a wild bird;
- b) Possess a wild bird or the egg of a wild bird;
- c) Damage and destroy or take an egg of a wild bird;
- d) Take, damage or destroy a nest whilst in use;
- e) Advertise or sell any wild bird or their eggs; and
- f) Use prohibited methods to kill or take wild birds.

Additional protection is offered to birds listed under Schedule 1 of the Wildlife and Countryside Act, such as barn owl *Tyto alba*. The Schedule makes it an offence to intentionally or recklessly disturb listed birds when nest building, in or near a nest that contain young and disturb dependent young.

If found guilty of any of the above offences you can be sent to prison for up to six months and receive an unlimited fine.

Additional protection is offered to birds listed under Annex I of the Birds Directive. Species listed on Annex I are those where their conservation requires the designation of SPA's. Although it is important to note that the recording of the species listed does not automatically qualify a site for SPA status. The species listed include a large number of waders found along the south coast of England, as well as, but not limited to, kingfisher *Alcedo atthis*, Dartford warbler *Sylvia undata*, nightjar *Caprimulgus europaeus* and stone curlew *Burhinus Oedicnemus*.

2.8.4 Bats

All UK species of bat are fully protected as a European Protected Species under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended), which makes it an offence to:

- a) Deliberately capture, injure or kill;
- b) Deliberately disturb a bat while in a structure or place of shelter or protection;
- c) Damage or destroy a breeding site or resting place;
- d) Obstruct access to their resting or sheltering place; and
- e) Keep, transport, sell or exchange, or offer for sale or exchange, any live or dead animal.

If found guilty of any of the above offences you can be sent to prison for up to six months and receive an unlimited fine.

Foraging and commuting routes are not directly protected under the legislation, however, there is potential for the loss of habitats or alterations (e.g. increased light pollution) could result in an offence being committed. The loss of the only suitable commuting habitat to a roost could result in the damage /destruction/obstruction of a roost.

Four British bat species are afforded additional protection under Annex II of the Habitats Directive. These species include barbastelle *Barbastella barbastellus*; Bechstein's bat *Myotis bechsteinii*; greater horseshoe bat *Rhinolophus ferrumequinum*; and, lesser horseshoe bat *Rhinolophus hipposideros*. Species listed on Annex II are those where their conservation requires the designation of SACs.

2.8.5 Other mammals

The Wild Mammal Protection Act 1996 makes it an offence for any person to mutilate, kick, beat, nail or otherwise impale, stab, burn, stone, crush, drown, drag or asphyxiate any wild mammal with intent to inflict unnecessary suffering to any wild mammal. This includes red fox *Vulpes Vulpes*, deer and European rabbits *Oryctolagus cuniculus*.

2.8.6 Habitats and Species of Principle Importance

Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006, provides a list of habitats and species of principle importance for the conservation of biodiversity in England. The list provided under Section 41 succeeds the UK Biodiversity Action Plan (BAP). Section 40 of the NERC Act requires governing bodies such as LPA's to ensure the conservation of biodiversity is regarded during their decision making process. The species list includes many species referred to within Section 2.0 of this report, as well as, brown hare *Lepus europaeus* and harvest mouse *Micromys minutus*.

3 Methodology

This section of the report details the scope of the assessment, data acquired, surveys undertaken and how potential impacts are assessed.

3.1 Scope of the Assessment

For all projects it is imperative that the zone of influence is established. CIEEM defines zone of influence to be *“the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities”* (CIEEM, 2018). The zone of influence is determined by a suitably experienced ecologist, taking into consideration the site proposals, desk study and field survey results. The zone of influence differs for each ecological feature³. Section 4.0 identifies the projects zone of influence for each ecological feature.

The scope of the assessment initially takes into consideration all possible ecological features that have potential to be impacted by the proposal. The baseline ecological conditions (Section 4.0) includes the outcomes of the desk study and field survey(s), which results in a process of elimination, with ecological features assessed to be likely absent not considered further in the report. Scoping is an ongoing process influenced by further surveys and assessment. Further surveys are required where an impact on an ecological feature cannot be avoided.

3.2 Desk Study

3.2.1 Local Environmental Record Centre

Hampshire Bat Group (HBG) was contacted in January 2024 to provide data on bats within a 2km radius of the Site. A data search request for additional ecological features including non-statutory designations was not deemed necessary due to the small scale and nature of the proposals.

3.2.2 Multi-Agency Geographic Information for the Countryside

Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) online resource was also accessed in January 2024. A search was undertaken to identify any statutory designated sites within a 1km radius and to detect whether the Site is located within the varying buffer zones of internationally designated sites, which require additional consideration in regard to in-direct effects. The Impact Risk Zones (IRZ) were also obtained from MAGIC, which are used to help guide and assess planning applications for likely effects on SSSIs. MAGIC was also accessed to identify any European Protected Species (EPS) mitigation licence applications for protected species within a 2km radius and to identify whether the Site is within the Core Sustenance Zone (CSZ)⁴ for a communal bat roost, to help define the Zone of Influence for the species.

3.2.3 Additional Data Sources

Online mapping resources such as OS mapping was used to identify the presence of habitats such as ponds and woodland and hedgerow networks within the surrounding landscape to aid in assessing the Sites connectivity to notable habitats/green corridors and its potential for protected and notable species colonisation. Particular attention was given to the presence of ponds and other waterbodies within a 500m metre (m) radius to assess the Sites potential to support great crested newt.

³ Ecological features – habitats, species and ecosystems that may be affected given the nature of the proposals and geographical location of the application site.

⁴ Core Sustenance Zone (CSZ) is defined as “the area surrounding a communal bat roost within which habitat availability and quality will have a significant influence on the resilience and conservation status of the colony using the roost” (Collins, 2023).

GoogleEarth and MAGIC maps were used to collate existing baseline habitat data in advance of the habitat survey to plan the survey appropriate and determining the hierarchal level of classification and scale of mapping required (Butcher, 2020). GoogleEarth timeline is also useful for determining historic management and the possibility for ecological features to be present despite existing sub-optimal conditions, due to habitual tendencies.

3.3 Field Survey

Habitat Survey

The survey followed the UK Habitat Classification (UKHab) system (UKHab Ltd, 2023). This classification system integrates with the Phase 1 habitat survey classification which has been the prominent mapping system for ecologists until recently. UKHab integrates NVC, European Nature Information System (EUNIS) and Farm Environment Plan (FEP). The UKHab is also the classification system for in Natural England's Statutory Biodiversity Metric and thus, is used to determine biodiversity net loss/gain resulting from a development.

UKHab is hierarchical in the level of classification that can be attained, comprising a total of 5 levels. Level 1 being broad and Level 5 being very specific (NVC level classification). This survey followed the professional edition hierarchy (UKHab-P) and surveyed up to Level 4.

Extra detail on the classified habitats is provided by the inclusion of secondary codes. Secondary codes provide additional information on the environment, management and origin of mapped features. Secondary codes also replace mosaic habitats, which are now mapped by the primary habitat with a secondary code combination. In some instances, secondary codes provide important subdivisions of habitats not covered by Primary Habitat levels and are always included where relevant within a survey.

The Site is mapped using the fine-scale minimum mapping unit (MMU) 25m², 5m length, as detailed survey effort is deemed necessary for the planning application.

The UKHab survey is mapped using QGIS mapping software. The key follows the UK Hab Basic Edition Suggested Symbolology (Butcher, 2020). The variation in habitats are distinguished by an Alpha Code (A-Z). Where the UKHab primary habitat is the same but the secondary codes differ, a separate Alpha Code is required. A table of the variations of primary and secondary codes recorded on site is in Section 4.2 of this report.

For each habitat species composition, management, vegetation structure and age or permanence, where evident is recorded and an assessment of the habitats suitability to support protected and notable species is undertaken.

Preliminary bat Roost Assessment

The habitat survey considers the potential for protected species, as mentioned in the above paragraph, however, some species require more detailed assessment in the field to confirm potential for presence, such as roosting bats. For this reason, Preliminary bat Roost Assessment is detailed separately in this methodology, below.

The buildings on-site were assessed for their roosting bat suitability in accordance with the Bat Conservation Trust (BCT) best practice guidance (Collins, 2023). This includes a search of the external elevations for evidence of bats such as droppings and urine staining and potential roosting features such as lifted tiles and fascia's. The Equipment used during the PRA of the buildings includes a recording form, a camera, binoculars, high powered torch and endoscope.

An internal inspection was also undertaken for evidence of bats such as droppings and any access opportunities for bats using a high-powered torch. The buildings roosting bat suitability is scored as either negligible, low, medium, high or confirmed in accordance with the BCT criteria, which determines the necessary mitigation requirements.

The Site does not support trees at risk of being directly or indirectly impacted by the development, which required the need for a tree PRA.

Table 3-1: BCT guidelines on assessing potential suitability and subsequent mitigation.

Potential suitability	Description	Mitigation
None	No habitat features on site likely to be used by any roosting bats at any time of year (complete absence of crevices or suitable shelter).	None
Negligible	No obvious habitat features on-site. However, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.	Professional judgement. Precautionary measures likely.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of year. The potential roost site does not provide enough space, shelter, protection, appropriate conditions, or suitable surrounding habitat to be used by large numbers of bats.	Buildings: One dusk emergence survey. May to August. Trees: precautionary measures likely.
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation significance (e.g. maternity or hibernation roost).	Two dusk emergence survey visits. May to September, with at least one survey between May and August
High	A structure with one or more potential roost sites that are obviously suitable for large numbers of bats on a more regular basis and potentially longer periods of time due to their size, shelter, protection, conditions and surrounding habitat. These structures have the potential to support a roost of high conservation significance.	Three dusk emergence survey visits. May to September, with at least two surveys between May and August

The habitat survey and PRA was undertaken by SoEcology Ltd Ecologist Sophie Lancaster. Sophie attained an MSc in environmental Consultancy in 2013, since which she has worked full-time as an Ecologist for private consultancies undertaking habitat and protected species surveys. Sophie is an Associate member of the Chartered Institute of Ecology and Environmental Management (CIEEM). The survey was undertaken on the 19 January 2024 at 2pm and for the duration of the survey the weather was 5°C/Beaufort Scale 0 (calm)/10%cloud cover.

3.3.1 Limitations

There are intrinsic limitations associated with a PRA of a building, as it is not always possible to scope out the presence of bats, as they can roost within inaccessible areas such as between roof lining and tiles and within cavity walls. A PRA is only capable of scoping in the presence of bats via the identification of direct evidence such as individuals, droppings and urine staining.

A full biological record centre desktop study was not undertaken as part of this assessment and bat data was attained only. This is as a full record centre desktop study was not considered necessary given the limited scale of impacts.

All internal spaces of the property were accessed during the PRA and no limitations beyond those intrinsically associated with the PRA methodology were recorded.

It is not possible for the surveyor to confirm presence/likely absence for all ecological receptors and assessments are made on the likelihood of presence based on whether there is suitable habitat on-site, the site connectivity and geographical positioning and desk-top study data.

3.4 Bat Survey

Three dusk emergence surveys were undertaken between the 03 May 2024 and 18 June 2024. Two surveyors and three cameras with Infra-red setting and eight infra-red torches were present at each survey to adequately cover the property. The positioning of the surveyors and equipment is provided in Appendix 10.3. The dusk emergence surveys were undertaken 15 minutes before sunset and at least 1.6/1.7 hours after sunset (see Table 3-2). A dawn survey was not required as Night Vision Aids (NVAs) were used for all three dusk emergence surveys, enabling the dusk surveys to identify late emerging species in total darkness. Dawn surveys are *“no longer routinely recommended for presence/absence surveys due to the risk of bats returning early and being missed”* (Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition)., 2023). A screenshot of the camera view is taken at the end of each survey (see photographs 28 to 36) as proof of visibility at the darkest point of the survey. The use of NVA's was undertaken in line with BCT's Interim guidance, included in Appendix 10.4. The interim NVA guidance provides more detail on appropriate use of NVAs than the 2023 Bat Survey Guidelines, which has shifted the emphasis to using NVAs as a standard protocol rather than as an optional or complementary method for both building and tree emergence surveys. Final independent guidance on infrared NVA's is still in production at the time of this report being issued.

The bat surveys were undertaken by experienced bat surveyors Sophie Lancaster, Tom Yately, Jasmine Phippard and Samuel Cooper. All surveyors have undertaken training on Preliminary Roost Assessments and bat emergence surveys and the use of SoEcology NVA set-up, by SoEcology. The training occurs every April and existing surveyors are advised to attend to boost their memory just before the start of a new survey season and so that they are aware of any changes to the NVA set-up and survey methodology. The bat detectors used were Elekon Batlogger M and Elekon Batlogger M2. The NVA's used include a Canon XA11 and Canon XA30 camcorders elevated from the ground using tripods. Nighfox XB5 850nm Low Glow Infrared Torches were positioned in set locations in front of the camera and elevated from the ground using tripods to maximise illumination of the property. Each surveyor is provided with an ARZOPA Portable Monitor which is a 15.6" screen to watch the NVA footage in real time. Surveyors have noted that they can more effectively confirm emergences when watching the screens, even in light conditions as their field of vision is improved. Each surveyor is provided with a survey form to record emergences/re-entries and general activity seen and heard. The time the camera started rolling, as stated by the accompanying bat detector is recorded on the survey form, to enable accurate identification of species if an emergence/re-entry is filmed but not seen by a surveyor.

On completion of each survey the data collected on the bat detectors were analysed using BatExplorer and BatSound. The camera footage was played back for the entirety of the unmanned camera and at times on the manned camera the surveyor has recorded "rewatch" either due to being distracted or a possible emergence being recorded. The camera reviewing process is as advised by BCT's assigned author of the Infrared survey guidelines; Richard Crompton.

Table 3-2: Bat survey dates, times and weather conditions

Dusk Emergence Survey – Survey 1			
Date	03/05/2024	Sunset Time	20:31
Start Time	20:11	Finish Time	22:04
Start Temperature	13°C	Finish Temperature	11°C
Start Cloud Cover	10%	Finish Cloud Cover	0%
Start Wind Speed	Light air	Start Wind Speed	Light air
Dusk Emergence Survey – Survey 2			
Date	27/05/2024	Sunrise Time	21:05
Start Time	21:46	Finish Time	22:45
Start Temperature	16°C	Finish Temperature	12°C
Start Cloud Cover	0%	Finish Cloud Cover	0%
Start Wind Speed	Light air	Start Wind Speed	Calm
Dusk Emergence Survey – Survey 3			
Date	18/06/2024	Sunset Time	21:22
Start Time	21:06	Finish Time	23:02
Start Temperature	17°C	Finish Temperature	16°C
Start Cloud Cover	0%	Finish Cloud Cover	20%
Start Wind Speed	Light air	Start Wind Speed	Light air

3.4.1 Limitations

No limitations were recorded in relation to the bat surveys, as they were undertaken during suitable weather and the optimal time of year, and the roosting bat feature was clearly visible throughout the survey due to the use of NVAs, made evident from photographs 28 to 36. The length of the survey accounts for the emergence time range extremes for all UK bat species⁵ (Andrews, 2017). The NVA's also remove the limitation regularly associated with Natterer's and brown long-eared bats which emerge from roosts without registering on detectors and therefore, their emergence can more easily be missed by the surveyor (BTHK, 2018). Furthermore, the NVA's further remove intrinsic limitations associated with human based method as the NVA's do not get distracted or disturbed and remain focused on the potential roosting features.

The BCT survey guidelines (Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition), 2023) state *"When used appropriately, NVAs can be used to reduce the number of surveyors. This requires the camera, lenses, lamps and techniques, complemented by a bat detector soundtrack, to reliably match or exceed what a surveyor can achieve and evidence provided."* Richard Crompton is developing independent guidance on infrared cameras and has presented informative webinars. Canon XA's are considered higher specification cameras that can cover a full building elevation and are highly recommended by Richard Crompton. SoEcology has also designed a survey methodology incorporating all of Richard Crompton's advice, which includes ensuring that there are sufficient surveyors to cover bat activity around a property. For most standard properties this requires two surveyors positioned at the front and rear, to attain detailed records on bat activity heard and seen within proximity of the property, including any activity indicative of an emergence or re-entry. A perceived risk with unmanned NVA's is that if a bat is recorded emerging on camera, species may not be confirmed. This risk has been eliminated by ensuring the unmanned camera is paired with a high-quality automated bat detector in the form of a Batlogger M2 and a camera set-up form is also completed for each camera set-up. The camera set-up form requires surveyors to write down the start

⁵ Brown long-eared bat recorded to have the latest emergence extreme of 94 minutes within Andrews, 2017.

time of recording on the camera and detector and the time disparity between the two devices, if any. This enables the reviewer of the camera footage to match up seen bat activity on the camera footage with the recordings on the paired detector. Also, the unmanned camera is strategically positioning where a surveyor is considered to be of least value and to cover elevations that are partially covered by the surveyors (typically side elevations) and whose written recordings will include activity heard/seen around said elevation or has come from said elevation, and thus has not replaced surveyors to a "significant degree". This is also not considered a risk in this instance as the unmanned camera did not record any emergencies. Overall, SoEcology's use of NVA's for this project adheres to current guidance and adequately achieves the aims of the survey effort.

It is not possible to identify population numbers/abundance of any one species recorded on-site, as it is not possible to distinguish between individual bats via their echolocations. For instance, it is not possible to confirm whether multiple passes are from one bat going back and forth or multiple individuals passing once. Activity based data can only confirm the species present and variation in utilisation at differing sampling locations on-site on different months and nights. The timing of echolocation calls can help assess the likelihood of roosts nearby and to an extent the way the Site is used by varying bat species can be concluded.

Noctules, Leisler's bat and serotine calls can be hard to distinguish between in a cluttered environment. Noctule and Leisler's bat distinctive 'chip-chop' calls tend to fade in a cluttered environment and call duration reduce similar to serotine. Recordings within cluttered environments were made and identification at species level was attempted taking into consideration measurement parameters.

The ranges of echolocation intensity exhibited between individual bat species makes it improbable that ultrasound sampling will be equal, regardless of the make and model of detectors used. For example, all detector surveys under-record species with weak echolocation calls (Bechstein's, Barbastelle and long eared *Plecotus* spp.).

There are seven species of bats within the UK of the genera *Myotis* and two species of *Plecotus* bat. These two genera are difficult to differentiate between and determine at species level. Effort has been made to identify at species level (although speculatively), where start and end frequencies provide an indication of species. There can also be confusion between *Plecotus* bat and serotine bat registrations in cluttered environments.

3.5 Assessment

The assessment evaluates the importance of ecological features and the impact and residual effect of a development in accordance with CIEEM (2018) guidance⁶.

The importance of an ecological feature is based on geographical context, in accordance with the following scale of reference:

- International and European
- National
- Regional
- County

⁶ CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.

- River Basin District
- Local
- Site
- Negligible⁷ or likely absent⁸

The geographical evaluation is determined by professional judgement and legislation and policy documents and data on the distribution of species and habitats. Ecological features assessed as “negligible” or “likely absent” are not considered beyond Section 4.0. Ecological features assessed to be of site value in Section 4.0 are not considered to be important at a geographical scale and can be scoped out of further assessment. However, the loss of ecological features of “site value” may be considered cumulatively for compensation and/or enhancement measures to adhere to national and local policy e.g. no net loss of biodiversity. It is important to note that habitats are assessed separately to species and a habitat assessed to be of site value or negligible value may have potential or be confirmed to support protected species and will indirectly undergo further assessment regarding said specie(s).

The assessment considers potential impacts on each ecological feature assessed to be of local value or greater from all phases of the development e.g. construction, operation and decommissioning. The impacts are characterised as follows:

- Complexity – e.g. direct/indirect, cumulative
- Positive or negative
- Magnitude – numerical value of area of habitat lost and percentage decline in species population.
- Extent – the spatial or geographical area the impact may occur
- Duration – timeframe of impact, taking in consideration the life cycle of the species impacted
- Reversibility – can determine the significance of the effect as some habitats/populations are easier and quicker to replace/recover than others
- Frequency – this can influence the resulting effect e.g. recreational activity
- Timing – similar to frequency and can avoid impacts in some instances.

Once impacts of the proposal have been established attempts are to be made to avoid and mitigate negative impacts. Once the measures to avoid and mitigate ecological impacts have been finalised, an assessment of the residual impact(s) is to be undertaken to determine the significance of the effects on ecological features. Where significant residual effects cannot be avoided compensatory measures are to be provided. Compensatory measures will be considered against ecological objectives in determining the outcome of the application. Compensation measures are detailed in a separate section of this report, alongside recommendations for enhancements. This clear differentiation between avoidance/mitigation, compensation and enhancement, ensures the report adheres to the ‘mitigation hierarchy’.

Where the residual impact is so minor that the proposals are unlikely to have an effect on an ecological feature at a local scale or above, then the significance of the residual impact is referred to as ‘non-significant positive/negative effect’.

⁷ E.g. Land absent of vegetation e.g. hardstanding and buildings

⁸ Protected species assessed to be likely absent from Site.

A significant effect is referenced to a geographical scale, taking into consideration the geographical importance of an ecological feature and the overall scale of impact the proposals will have on the ecological feature itself. Significant effect is specified in CIEEM (2018), as follows:

“Significant effect is simply an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project. A significant effect is a positive or negative ecological effect that should be given weight in judging whether to authorise a project: it can influence whether permission is given or refused and, if given, whether the effect is important enough to warrant conditions, restrictions or further requirements such as monitoring.”

The EclA report will accord to the precautionary principle and where uncertainty exists for determining no significant effect, a significant effect is to be assumed.

4 Baseline Ecological Conditions

This section of the report details the baseline ecological conditions of the Site based on the desktop study, UKHab survey results, roosting bat surveys and potential for other protected species presence. An assessment of ecological value at a geographical scale is made for each ecological feature based on the survey results.

4.1 Designated Sites

The desk top study identified no statutory designations within a 1km radius of the Site. The nearest designation is Hocombe Mead LNR located 1.4km north-west, designated for its ancient woodland and wet meadows.

The proposals will not result in an increase in residential properties and therefore, no impacts are anticipated on designations further afield from an increase in recreational pressure. However, the highly engineered stream within the front garden flows to Monks Brook, which is a tributary to the River Itchen and the estuary which is afforded national and international protection in the form of River Itchen SAC & SSSI; Solent and Southampton Water SPA & Ramsar; Lee-on-the Solent to Itchen Estuary SSSI. The highly engineered stream flows during times of heavy rain and winter months only and is heavily culverted and runs through an urban setting and therefore, potential pollution impacts to the river and estuary from the renovation will be minimal. However, avoidance measures are advisable and designated sites are considered further in Section 5.0 of this report.

4.2 Habitats

The habitats present on-site are listed in Table 4-1 below. The table should be read in conjunction with the UKHab survey plan, found in Appendix 10.2.

Table 4-1: List of habitats present on-site based on the UKHab classification system and the geographical scale of value of each habitat. The UKHab survey plan is in Appendix 10.2.

UKHab Primary Code	UKHab Secondary Code	Description	Scale of Importance
U1	50; 108; 203; 847	Built-up areas and gardens – <i>dry ditch; frequently mown lawn; mature tree; introduced shrub.</i>	Site
U1b5	-	Buildings	Negligible
U1b	-	Developed land; sealed surface	Negligible
W	827	Woodland - <i>Garden</i>	Local
R1	-	Standing water and canals	Site

The vegetated garden comprises a managed lawn with a high density of moss and fine grasses. Herbaceous species are sparse and the most predominant species recorded was daisy *Bellis perennis*. Located on the eastern end of the lawn boundary is a dry ditch, which acts as a line of separation between the traditional manicured garden and the woodland habitat that makes up the rest of the rear garden. Considering the rear garden ditch was dry in January and when the months prior had been wetter than average, it is considered highly likely that this ditch rarely holds water. No detailed survey was undertaken of the woodland habitat as it is sufficiently distanced from the works and is not to be impacted. The introduced shrub predominantly borders the Site boundaries and includes: cherry laurel *Prunus laurocerasus*, *Daphne* sp., witch-hazel *Hamamelis* sp., Japanese skimmia *Skimmia japonica*, *Rhododendron* sp., *Hydrangea* sp., rose *Rosa* sp. and firethorn *Pyracantha* sp. The most

notable ecological feature within the Site is a mature oak *Quercus robur* located on the western boundary, on the top of the western bank of the highly engineered stream. The mature oak tree is sufficiently distanced from the construction area and is not to be impacted.

The scale of importance given to the highly engineered stream on-site is "site" as the scale of importance from a habitat perspective is determined irrespective of its association with designated sites but based on the likely impacts if the on-site section of highly engineered stream was lost. It is a man-made structure that is heavily culverted along its length and no aquatic vegetation was recorded within the ditch at the time of the survey, which despite the time of the year, is considered to be likely a true representation of aquatic vegetation present due to the heavy shading. At the time of the survey the water levels were 5-10cm deep and fast flowing. The banks to the highly engineered stream were between 1.5 to 2m in height and steep, and predominantly comprised introduced shrubs. Due to the extensive culverting and its urban route, it does not provide an important habitat for aquatic species and fish are absent.

4.3 Protected Species

4.3.1 Plants

There are two varieties in the *Rhododendron* species group that are listed as invasive under Schedule 9 of the Wildlife and Countryside Act 1981, namely *Rhododendron ponticum* and *Rhododendron ponticum* x *Rhododendron maximum*. Under the Act it is illegal to plant or otherwise cause to grow this plant in the wild. It is not confirmed that the *Rhododendron* on-site are the invasive varieties and were relatively small.

The invasive, yellow variegated archangel *Lamium galeobdolon* subsp. *argenteum* is present on-site. This invasive species is listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). Under the Act it is illegal to plant or otherwise cause to grow this plant in the wild.

The Site does not support plants of nature conservation value and the notable plants recorded are invasive varieties only. Therefore, the Site is assessed to be of **negligible value** for plants.

4.3.2 Invertebrates

The Site offers a nectar resource for invertebrates, however, due to the Site's manicured nature and small size, it is unlikely that notable species and assemblages rely on it. Overall, the Site is assessed to be of **site value** for invertebrates.

4.3.3 Amphibians

Research has concluded that in terms of distance travelled by great crested newt from breeding ponds, they have been found at highest densities within terrestrial habitats of up to 200m and many studies have concluded a maximum migratory range of approximately 250m from a pond (Franklin, 1993) (Jehle, 2000) (Oldham, 1986). OS maps recorded the nearest standing waterbody to be located 255m north, which is part of Hiltingbury Lakes and is the water source for the on-site highly engineered stream. The Lakes are managed by Eastleigh Borough Council and are active fishing lakes. The lakes are not known to support great crested newt and are unsuitable for supporting the species due to their large size, with fish stock and waterfowl presence. Hiltingbury Lakes are also isolated and surrounded by dense residential development.

A search for great crested newt records on Magic maps did not record any confirmed registrations and the nearest registration is located more than 3km west of the Site.

Overall, great crested newt are assessed to be locally absent and thus, **likely absent** on-site and are not considered further in this report.

4.3.4 Reptiles

Mature gardens are suitable for supporting low numbers of reptiles, with slow-worm frequently found in gardens within built-up landscapes. Slow-worms are found within compost piles, unmanaged grassland and areas of shrub and herbaceous growth that provides dense ground cover. The lawn on-site is not suitable for sheltering slow-worm, albeit does provide basking opportunities. The introduced shrub on-site predominantly lacks in dense ground cover and is relatively bare and open and thus, unsuitable for sheltering slow-worm. The only exception being the introduced shrub habitat located on the banks of the highly engineered stream. The presence of aquatic habitat may also attract species such as grass snake. The woodland habitat located within the rear half of the back garden does provide suitable habitat for reptiles including potential hibernacula opportunities.

Overall, due to the small extent of suitable reptile habitat, the Site would not support a viable population in its own right, but there is potential for a low population of widespread species of reptile to be present. Therefore, the Site is assessed to be of **site value** for widespread species of reptile.

4.3.5 Birds

The Site's small size makes it unsuitable for ground nesting birds and it is of limited suitability for over-wintering birds, however, small numbers of over-wintering species may occasionally occur. Due to the sites limited suitability for such species, ground nesting birds and over-wintering birds are not considered further in this report.

A bird box was recorded on the south-west elevation of the bungalow, which was not reported to support a birds nest during the bat surveys. No other potential nesting bird opportunities associated with the building was recorded. The potential for birds nesting within the dense introduced shrub cannot be ruled out. The woodland and mature oak are suitable nesting habitats on-site, which are to be retained and not impacted by the works.

The habitats suitable to support birds within the Site are widespread and makes up a very small percentage of suitable nesting habitat within the local landscape, therefore the habitats are assessed to be of **site value** for birds.

4.3.6 Badgers

No evidence of badger was recorded on site, such as, snuffle holes, prints and latrines, and the local landscape is dominated by enclosed gardens, which makes it sub-optimal for commuting badger. The managed grassland and woodland offers foraging opportunities, although limited in extent. The school playing fields that backs onto the property can also provide suitable foraging habitat for badger.

Overall, the rear garden woodland is significantly separated by the proposed works and the likelihood of badger accessing the garden and a clan being present within the local landscape considering the extensive fragmentation from the sub-urban development is considered unlikely. Overall, due to the nature of the proposals, site visit and desk-top study, the likelihood of impacts on badger is **negligible** and they are not considered further in this report.

4.3.7 Bats

HGB returned records of at least 10 bat species within a 2km radius in the last 10 years. The most notable record is of western barbastelle, considered rare and afforded extra protection under Annex II of the Habitats Directive. The nearest western barbastelle record is located 600m north-west in year 2018. Other species recorded within a 2km radius of the Site include soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctula*, long-eared bat species *Plecotus* sp., common pipistrelle *P. pipistrellus*, serotine *Eptesicus serotinus*, brown long-eared bat *P. auritus*, Daubenton's bat *Myotis*

daubentonii, *Myotis* species, Whiskered/Brandt's bat/*Alcathoe M. mystacinus/M. brandtii/M. alcathoe*; Brandt's bat, whiskered bat, Natterer's bat *M. nattereri* and Leisler's bat *N. leisleri*.

HBG returned 22 confirmed bat roost locations within a 2km radius of the Site. The closest bat roosts are located approximately 400m from the Site and include Serotine, soprano pipistrelle, brown long-eared bat. The most notable roost record is from 2020 of a Natterer's bat maternity roost located 1.9km north-west.

Magic returned records of four European Protected Species (EPS) mitigation licence applications to facilitate the destruction/damage of resting places and breeding sites. The closest licence application is from 2015 located 400m west. The licence was granted to lawfully facilitate the destruction of non-breeding roosts of serotine, common pipistrelle, soprano pipistrelle, brown long-eared bat.

Table 4-2 below provides a comprehensive result of known bat roost locations and EPS licence applications for bat roosts within a 2km radius.

Table 4-2: Locations of bat roosts recorded within a 2km radius of the Site in the past 10 years.

Roost Location	Year of Record	Bat species	Roost Status	EPS Licence Ref.
400m west	2015	Serotine, common pipistrelle, soprano pipistrelle, brown long-eared bat.	Summer roost	2017-27981-EPS-MIT
400m west	2019	Brown long-eared bat	Unknown	
400m west	2017	Serotine	Unknown	
400m north	2021	Brown long-eared bat, soprano pipistrelle	Day roost	
450m north	2020	Soprano pipistrelle	Non-breeding	2020-49783-EPS-MIT
500m east	2021	Common pipistrelle	Day roost	
600m north-west	2015	Pipistrellus sp. and long-eared bat	Unknown	
620m north-west	2018	Common pipistrelle	Unknown	
700m north	2013	Pipistrellus sp. and serotine	Unknown	
820m north-east	2018	Common pipistrelle	Day roost	
1km north-east	2015	Brown long-eared bat	Unknown	
1km north-east	2016	Common pipistrelle and soprano pipistrelle	Non-breeding	2016-21370-EPS-MIT
1km north-east	2019	Soprano pipistrelle	Unknown	
1km north-east	2019	Common pipistrelle	Unknown	
1.2km north	2017	Brown long-eared bat	Unknown	
1.3km south-west	2015 & 2017	Brown long eared bat	Unknown	
1.3km south-west	2017	Common pipistrelle	Unknown	
1.4km north	2022	Brown long-eared bat, common pipistrelle and soprano pipistrelle	Unknown	
1.7km north-west	2019	Long-eared bat	Day roost	

1.8km north-west	2017	Common pipistrelle	Unknown	
1.8km north-west	2019	Brown long-eared bat	Unknown	
1.8km north-west	2019	Brown long-eared bat	Unknown	
1.85km north-east	2017	Brown long eared bat, common pipistrelle and soprano pipistrelle	Non-breeding	2017-28716-EPS-MIT
1.9km north-east	2018	Pipistrelle sp.	Unknown	
1.9km north-west	2020	Natterer's bat	Maternity roost	
1.9km south	2018	Common pipistrelle	Unknown	

A total of 26 confirmed roosts have been recorded within a 2km radius, which is a higher-than-average data return. The quantity of roost registrations is reflective of the area, which supports a high density of properties but within a leafy sub-urban setting, which is effluent and property renovations which would initiate bat surveys are more likely. The leafy suburban design also makes the area suitable for foraging and commuting bat species that are more tolerant to light pollution and increases likelihood of bats roosting within the properties.

Internal Inspection

The bungalow comprises a vast loft space, reaching a height of around 3m at the apex. The loft is fully boarded and has been recently cleared out. A low number of bat droppings (~20) were recorded on the insulation towards the eaves where boarding is not present and thus, were not brushed away during the clear out of the loft. The bat droppings were submitted to SureScreen Scientifics for DNA analysis and the sample was confirmed to be attributed to brown long-eared bat, with a sequence similarity of 98.92%, which is an accurate test result.

The bitumen 1f felt lining in the loft was torn in multiple locations and the tiles were visible behind, which enables bat entry/egress into the loft space.

The garage is open to the roof internally and has not been cleared. The garage was fully searched and no evidence of bats was recorded. The garage is single skinned and comprises a pitched corrugated asbestos roof, visible from the inside and no voids are present suitable for bats to roost within.

External Inspection

The bungalow is brick-built with uPVC soffits and windows in very good condition and no gaps evident. The tiled roof is in very good condition and no obvious signs of lifting present and the only notable gap beneath the tiles being associated with a flue pipe on the rear side of the property.

The garage, small, shiplap garden shed and greenhouse are absent of suitable roosting bat features and are of **no suitability** for roosting bats.

Roosting Bat Survey

Roosting bat surveys were undertaken of the bungalow between May and June 2024. The outcome of the surveys is provided in Table 4-3 below.

Table 4-3: Roosting bat Survey results and general bat activity recorded.

Survey Date	Emergence/re-entry Records	Recorded Bat Activity		
03/05/2024	None	Species	First Pass	Last Pass
		Common pipistrelle	20:52	22:06
		Soprano pipistrelle	21:22	21:53
		Long-eared sp.	21:10	-
		Serotine	21:04	21:59
		Noctule	20:48	21:40
		Leisler's bat	21:10	21:56
		<i>Nyctalus</i> sp.	21:04	22:07
		Activity overview: The first recording being of noctule flying high overhead. Activity was moderate, with common pipistrelle, serotine bat and <i>Nyctalus</i> species all being equally abundant. A few calls could more confidently be attributed to either noctule or Leisler's bat but majority could not be confidently assessed as being of one or the other and caution was given. Surveyor at the front noted bats foraging around the large oak tree and the surveyor to the rear did not see much of the activity as it was likely occurring immediately behind, associated with the back gardens woodland edge.		
27/05/2024	None	Species	First Pass	Last Pass
		Common pipistrelle	21:23	22:26
		Soprano pipistrelle	21:35	22:27
		Serotine	21:54	22:02
		Activity overview: Overall activity was significantly less than previously recorded, with common pipistrelle dominating and serotine activity being very low. The surveyor to the rear recorded slightly higher activity than the front, and the nature of the foraging activity was similar to that recorded on the first survey.		
18/06/2024	None	Species	First Pass	Last Pass
		Common pipistrelle	21:30	23:02
		Soprano pipistrelle	21:43	22:21
		<i>Myotis</i> sp.	22:43	-
		Noctule	22:06	22:09
		Leisler's bat	22:43	-
		<i>Nyctalus</i> sp.	22:06	23:02
		Activity overview: Activity increased again on the third survey with serotine far surpassing common pipistrelle in number		

		of registrations recorded. Similarly to the initial survey, a few calls could more confidently be attributed to either noctule or Leisler's bat but majority could not be confidently assessed as being of one or the other and caution was given. Levels of activity was relatively equal front and back and the same foraging habits were noted as recorded on previous surveys.
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No bats were recorded emerging during the dusk emergence surveys. Considering the presence of low numbers of droppings and their good condition it is determined that the property is in occasional use as a day roost by brown long-eared bat and has been occupied within the last 2 years. In accordance with CIEEM Bat Mitigation Guidelines (Reason, 2023), the roost is of **site value**.

The bat survey recorded a total of seven species of bat foraging/commuting during the surveys. The level of serotine and *Nyctalus* foraging activity is notable and it has been determined with relative confidence that a portion of the *Nyctalus* sp. activity is attributed to Leisler's bat, which is considered rare and of restricted distribution within South of England, along with serotine bat (Reason, 2023). The other species recorded are considered more widespread. The activity was predominantly associated with the tree lined roadside, with foraging around the large oak at the front and foraging activity also occurred at the rear gardens woodland edge. Overall, due to the Sites small size, it makes up a small total area of suitable foraging habitat within the local area and its loss would not result in significant fragmentation and thus, it is considered to be of **site value**.

4.3.8 Water Vole & Otter

Heavily culverted watercourses, such as the highly engineered stream that runs through the Site are a deterrent for water vole. This highly engineered stream runs through a suburban setting where human disturbance and domestic cat predation would be high, water vole are considered **likely absent**. The highly engineered stream does not support fish and thus, does not provide a food resource for otter. Hiltingbury Lakes is fish stocked and would provide a food source, but as a fishing lake in an urban setting, such sightings would be documented, and the culverted nature of the highly engineered stream would result in a high risk of road casualties if they were present. Overall, otter is considered **likely absent**.

4.3.9 Other Wildlife

There is potential for hedgehog *Erinaceus europaeus* to utilise the Site and they are a species of principal importance under Section 41 of the NERC Act and a Biodiversity Action Plan (BAP)⁹ species. Hedgehog are also listed as vulnerable to extinction in the UK by the Red List for British Mammals.

Overall, the Site is assessed to be of **site value** for hedgehog.

4.4 Baseline Conditions Overview

The Site is located within the zone of influence of the following designated sites River Itchen SAC & SSSI; Solent and Southampton Water SPA & Ramsar; Lee-on-the Solent to Itchen Estuary SSSI. Due to the highly engineered stream within the front garden being a tributary to Monks Brook, which leads to the River Itchen and the estuary.

⁹ UK BAP was superseded in 2012 by the UK Post-2010 Biodiversity Framework. However, UKBAP it is still referred to as the species and habitats agreed under UK BAP still form the basis of conservation action today.

The Site comprised habitats of site value or habitats of higher distinctiveness but due to the nature of the development, are sufficiently distanced from the construction works and do not require mitigation.

The following protected species are considered likely absent from Site and are not considered further in this report: great crested newt; badger; water vole and otter.

The Site is considered to be of site value for the following protected species: reptiles; nesting birds; invertebrates and hedgehog. Invasive plant species frequently found within private gardens are also present. No further surveys are deemed necessary, however, precautionary mitigation measures are provided in Section 5 of this report, where deemed necessary, to avoid the risk of a wildlife offence being committed.

The DNA test and dusk emergence surveys concluded the bungalow to support a brown long-eared bat day roost in occasional use. Mitigation measures are provided within Section 5 of this report.

5 Assessment of Effects and Mitigation

In accordance with CIEEM guidelines, where ecological features have been evaluated at “site value”, no further assessment is deemed necessary as the impact on these receptors is not likely to be of significance. However, mitigation measures may still be required to ensure compliance with current wildlife legislation and best practice guidelines.

The Site is approximately 0.15ha in size and comprises buildings, hardstanding, manicured garden, a highly engineered stream and a woodland garden. The proposals are for a loft conversion and a side extension which will require the removal of the garage and will predominantly be retained within the existing hardstanding and building footprint. The design of the proposed development has followed the mitigation hierarchy; firstly, impacts to biodiversity have been largely avoided by retaining the works within existing developed land and significantly distanced from the woodland habitat. Secondly, adverse effects have been avoided or minimised through mitigation measures and lastly where there are significant residual adverse ecological effects despite the mitigation proposed, these can be offset by appropriate compensatory measures.

Due to the highly engineered stream within the front garden being a tributary to Monks Brook, which leads to the River Itchen and the estuary. The Site is located within the zone of influence of the following designated sites River Itchen SAC & SSSI; Solent and Southampton Water SPA & Ramsar; Lee-on-the Solent to Itchen Estuary SSSI.

Due to the nature of the development no further consideration is required for the habitats on-site.

The proposals are anticipated to result in no to minimal net loss of biodiversity. Despite the inherently low impacts, the application will not adhere to the NPPF aim for a net gain in biodiversity without the provision of enhancements provided in Section 7 of this report.

The presence of widespread species of reptile, nesting birds, and hedgehog could not be scoped out, however, due to the nature of the development and the habitats on-site, no further surveys are deemed necessary, and the risk of impacts can be avoided via precautionary mitigation measures.

The ecological features requiring further consideration is invasive plant species and roosting bats, with a Natural England Mitigation Licence required for the loss of the brown long-eared day roost in occasional use.

No monitoring is mentioned within this section as there are no ecological features of such significance to require monitoring during the operational phase of the development. Due to the nature of the proposals no cumulative effects are anticipated.

5.1 Designated Sites

Potential Impacts

Without appropriate mitigation measures the proposals risk polluting the highly engineered stream that runs through the Site with building rubble, chemical spills and dust. This highly engineered stream flows into Monks Brook, which is a tributary to the River Itchen and the estuary which is designated for the following designations: River Itchen SAC & SSSI; Solent and Southampton Water SPA & Ramsar; Lee-on-the Solent to Itchen Estuary SSSI. The pollution impact if unmitigated is very low and non-significant due to the culverted nature of the highly engineered stream, its location; running through a suburban setting where it is likely subject to gardeners herbicides and road run-off etc.

Mitigation measures

To avoid the risk of debris and pollutants entering the highly engineered stream the following precautions are to be taken:

- Any chemical storage is to be located at least 5m from the highly engineered stream;
- A spill kit will be maintained on site at all times in order to react to any chemical spills which may occur.
- In the unlikely circumstance litter such as, equipment or materials falls into the ditch, it is to be physically removed from the highly engineered stream as soon as possible;
- The Environment Agency should be contacted to report the incident and for further advice. The current incident hotline is 0800 80 70 60;
- Any skips are to be placed on the existing driveway, which is relatively distanced from the highly engineered stream;
- Under no circumstances will waste water be emptied into the highly engineered stream;
- To avoid the amount of dust entering the highly engineered stream Heras fencing is to be installed in front of the introduced shrub banks (existing shrubs provide a natural barrier). The Heras fencing is to be dressed with a geo-textile fabric to limit the amount of dust and debris from leaving the Site and entering the highly engineered stream.
- Any piles of soil must be stored in the rear garden to avoid sediment washing into the highly engineered stream.

Significance of Residual Effects

- Provided that the mitigation measures are followed, the development will result in **no significant effect**. No compensation measures are deemed necessary.

5.2 Protected Species

5.2.1 Plants

Potential Impacts

The retention of the invasive yellow variegated archangel and rhododendron (if confirmed to be *R. ponticum*), as classified under Schedule 9 of the Wildlife and Countryside Act 1981 is detrimental to the local environment. Under the act it is an offence to plant or allow these species to be released into the wild.

Mitigation measures

The yellow variegated archangel is to be removed from Site, to prevent its spread. This is to be achieved through excavation, provided that the roots are fully removed. If the rhododendron is confirmed as *R. ponticum* it is to be felled and if stump removal is not possible it is to be injected with herbicide.

Significance of Residual Effects

Provided that the mitigation measures are followed, the development will result in a **non-significant positive effect**. Compensation measures are not necessary, however, opportunities for enhancement are provided in Section 7.

5.2.2 Reptiles

Potential Impacts

There is potential for widespread species of reptile to utilise the Site in low numbers. There is a minor risk of reptiles being harmed during the construction phase.

Mitigation measures

The only habitat within proximity of the construction zone that has potential to support sheltering reptiles is the dense shrub banks associated with the wet ditch. The shrub bank is to be inherently protected as part of the pollution control measures detailed in Section 5.1.

Significance of Residual Effects

Provided that the mitigation measures are followed, the development will result in a **no significant effect**. Compensation measures are not necessary, however, opportunities for enhancement are provided in Section 7.

5.2.3 Birds

Potential Impacts

The removal of dense shrubs and the bird box on-site risk harming active bird nests, if present, and the reduction of suitable nesting habitat.

Mitigation measures

The removal of any introduced shrub and bird box to be lost or impacted by the works should be undertaken outside the breeding bird season which extends from March to September, inclusive. If this is not possible, a suitably experienced ecologist will be present within 24 hours prior to clearance to inspect the suitable nesting habitat for active nests. Any active nests will be retained within a suitable buffer determined by the ecologist until the young have fledged. Such checks can be combined with bat mitigation works, to be undertaken as part of a Natural England licence.

Significance of Residual Effects

Provided that the mitigation measures are followed, the development will result in a **non-significant negative effect**. Compensation measures for the loss of nesting habitat are provided in Section 6 and enhancement recommendations are provided in Section 7.

5.2.4 Bats

Potential Impacts

The proposal will result in the destruction of a bat roost and the construction phase risks disturbing roosting bats and risk resulting in the death and/or injury of bats if unmitigated. The proposals will result in the loss of the loft space and the removal of the tiled roof, which is the likely entry/egress feature.

The construction zone does not support foraging and commuting habitat of value for bats and the proposals is not anticipated to result in the direct loss of suitable foraging and commuting habitat. However, the oak tree at the front of the property and the woodland edge within the rear garden are utilised by foraging bats and the increase in glazing could reduce the foraging value within the immediate facility. However, considering the suburban location and the presence of street lighting on Kingsway, potential impacts are to be non-significant.

Mitigation measures

Prior to demolition works commencing on-site, it is recommended that a Natural England protected species licence is attained for a brown long-eared bat as this permits the disturbance and capture of bats and the destruction of a roost following a mitigation methodology, detailed below. It is important to note that planning consent must be attained prior to submitting a Natural England licence application.

The species protection provision of the Habitats Directive, as implemented by the Conservation (Natural Habitats etc.) Regulations 2010, contains three 'derogation tests' which must be applied by the Local Planning Authority at the Planning Application stage and by Natural England when deciding whether to grant a licence to a person carrying out an activity which would harm a European Protected Species.

The three tests that must be met to successfully obtain a bat licence are as follows:

- The consented operation must be for 'preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment';
- There must be 'no satisfactory alternative'; and
- The action authorised 'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range'.

Preserving Public Health and Safety or other Imperative Reasons of Overriding Public Interest

The proposals are to address existing accommodation restrictions and the bungalow needs updating, irrespective of this planning application.

No Satisfactory Alternative

A "do nothing approach" is not a viable option for the reason outlined above. Furthermore, the proposed works are retained within the footprint of existing developed land. To undertake an extension of the dwelling to gain more bedrooms would result in the loss of vegetated habitat and would extend towards either/both the highly engineered stream and rear garden woodland.

Maintaining the Favourable Conservation Status of the Species at the Site

The significance of the day roost is considered no greater than site value as it is unlikely to be the only day roost used in the area. A Natural England mitigation licence will ensure the incorporation of suitable alternatives.

The necessary mitigation is as follows:

Timing constraints: There are no summer timing constraints for a low conservation status roost, however, demolition is to be undertaken outside of the hibernation period of November to early March as the presence of hibernating bats cannot be ruled out. The most optimal time for undertaking works is considered spring and autumn.

Prior to works commencing on the property the following must be undertaken:

- Installation of an Isabella Bat Box on a suitably sized tree within the rear garden.
- External and internal inspection for presence of bats by licensed Ecologist. Where considered appropriate, any bats found will be placed within the bat box previously installed.
- A toolbox talk will be given to contractors on-site, and signage will be installed informing contractors of issues relating to bats and construction works. The toolbox talk will explain the findings of the bat surveys and where bats are most likely to be found, and explain the bat destructive search methodology.

Once the toolbox talk is undertaken a destructive search methodology will be undertaken under supervision of the licensed bat worker. The destructive search methodology includes the soft strip of the tiled roof, via removal by hand and working from scaffolding or MEWP.

Light pollution is detrimental to bats, as well as other wildlife and therefore, is to be avoided where feasible. Where lighting is required there are mitigation options for both external and internal luminaires to reduce luminance (brightness) and illuminance (light spill), as follows:

External lighting mitigation options:

- Motion sensor lighting for security and safety only, with the following factors to be considered:
 - Careful aiming, positioning and selection of luminaires. LEDs with no UV component are to be installed and it's preferable to distance lights from 'dark zones/wildlife corridors' than to have the lights installed immediately behind, as the brightness of a luminaire is a deterrent even where there is no light spill and directional lights can still result in a small amount of light spill behind;
 - Luminaires are to be directed away from ecological receptors which include any bat and bird box installation on-site and the large oak tree at the front and rear garden woodland.
 - Avoid white light and warm colour recommended. Preferable colours are 3000°k to 2700°k (where feasible) with peak wavelengths greater than 550nm;
 - 0% upward light output and no tilting of the light head;
 - Change luminaire to one with more suitable luminous intensity distribution;
 - Use vegetation, fencing and walls as a light buffer. Climbers can also be planted on the fences and walls to provide a biodiversity enhancement;
 - As a last resort, the incorporation of shields, baffles and cowls fitted to the luminaires;

Internal lighting mitigation options:

- Install recessed luminaires or install luminaires above the window head height. Studies have identified the incorporation of recessed luminaires within properties have reduced the extent of light spill from 30m to 8m;
- Blackout blind installation.
- Glazing treatments, such as low transmission glazing treatments. Light transmission through 'tinted' glass can be reduced with specially coated materials, similar to blackout glass or tinted windows, which can reduce visible light transmittance to ~66%.

Significance of Residual Effects

Provided that the mitigation measures are followed, the development will result in a **non-significant negative effect**. Compensation measures for the loss of roosting site are provided in Section 6.

5.2.5 Other Mammals

Potential Impacts

The proposals are not anticipated to result in the loss of suitable foraging and sheltering habitat for hedgehog, however, there is a risk of harm/death of individuals sheltering within dense shrub growth.

Mitigation measures

The only habitat within proximity of the construction zone that has potential to support sheltering hedgehog is the dense shrub banks associated with the wet ditch. The shrub bank is to be inherently protected as part of the pollution control measures detailed in Section 5.1.

Significance of Residual Effects

Provided that the mitigation measures are followed, the development will result in a **no significant effect**. Compensation and enhancement measures are not deemed necessary.

6 Compensation

6.1.1 Birds

It is recommended that the existing bird box is translocated to a tree within the woodland, facing north and at least 3m high. It is also preferable for bird boxes to be hidden by foliage to avoid risk of predation when in use.

Installation of an integrated house sparrow box on the north-east elevation of the proposed building, located immediately beneath the eaves. A suitable box includes the Habibat Sparrow Nest Box. It is important that the nest box is distanced from any fence lines or walls, to prevent cat predation.

A swift brick is not proposed as a compensation measure as there are no north facing elevation with brickwork up to 5m in height.

6.1.2 Bats

There is no section of brickwork at least 4m in height, which would not be adjacent to large expanse of glazing to the apex of the proposed front and rear gables. Therefore, integrated bat boxes would be sub-optimally positioned if incorporated into the property. There are numerous suitably sized trees within the rear garden and therefore, it is advised that an additional bat box (to that proposed for mitigation) is installed on a tree on-site. A suitable position will be determined by the licensed Ecologist attending Site as part of the Natural England mitigation licence works. Isabella Bat Box is a high quality woodcrete bat box (available on nhbs.com), which is suitable for brown long-eared bats, as well as noctule bats whose activity was recorded on-site. It is not a requirement as part of a Natural England mitigation licence to incorporate compensation for lost roosting features into buildings and the creation of like-for-like provisions for low conservation status day roosts of widespread species such as common pipistrelle, soprano pipistrelle and brown long-eared bat. The Bat Earned Recognition Licence process actively request Ecologists to not include compensation measures within the licence form for the loss of such low conservation roosts and only mitigation is to be included. The compensation measure is proposed to satisfy planning policy and for good ethical practice.

Pollinator friendly planting mentioned in Section 7 has the potential to increase prey for foraging bats.

7 Enhancements

7.1.1 Plants

The removal of invasive species is an enhancement. When considering landscaping around the property, planting is to avoid species that are toxic to bees, such as *Rhododendrum* spp. Consideration can also be given to providing all-year round food source for pollinators, as warmer winters are disturbing hibernating patterns of insects. The Royal Horticultural Society provide an extensive list of pollinator plants that flower by season (Royal Horticultural Society, 2019).

7.1.2 Invertebrates

A standard enhancement incorporation within new builds are bee bricks. These are best placed on southerly aspects at least 1m from the ground. Bee bricks can come in white and off-white colours and therefore, it is recommended that they are installed at the top of the white brickwork proposed on the south-west side. The bee bricks provide homes for solitary bees only which are non-aggressive.

Stag beetles were recorded during the final bat survey and therefore, the incorporation of a stag beetle loggery within the garden would be a positive addition.

7.1.3 Reptiles

The planting of flower beds with dense ground cover and the creation of a hibernaculum within the rear garden would benefit reptiles. Hibernaculum can be created using logs, brash and also scouting out for materials such as bricks and stone. A hibernaculum should be at least 1m(d)x1m(h)x2m(w). The base is to comprise logs, brash, clean hardcore, brick rubble, stones mixed with topsoil. Topsoil will be placed on top sufficient for vegetation to form.

7.1.4 Birds

Installation of bird boxes on suitable sized trees on-site at least 3m in height and not positioned within direct sunlight.

7.1.5 Bats

Installation of an integrated bat box on the property is best located on the north-east elevation, where no windows are proposed, provided there is no risk of cat predation (e.g. from garden boundary features). As it is only single storey elevation, the maximum height it can be installed is 3.5m on the eastern most end. Although 4m is the preferred minimum height, 3m is considered a suitable height for bat occupation. A suitable bat box is Habibat Bat Box, available on nhbs.com.

8 Conclusions

The Site is approximately 0.15ha in size and comprises buildings, hardstanding, manicured garden, a highly engineered stream and a woodland garden. The proposal is for a loft conversion, side extension and the removal of the garage.

The PRA recorded low numbers of droppings confirmed via DNA analysis to be attributed to brown long-eared bat. Three dusk emergence surveys did not record any emergences. Taking into consideration the condition of the droppings the survey effort concluded that the property is a day roost in occasional use, which is of site value. A Natural England mitigation licence is to be attained to facilitate the destruction of the bat roost. The licence will include the mitigation measures detailed in this report.

The habitats on-site, great crested newt, badger, water vole and otter have been scoped out for further assessment. Measures to avoid a loss in biodiversity have been inherently incorporated into the developments design proposals as it will predominantly be retained within the existing hardstanding and building footprint.

Pollution control measures for the highly engineered stream have been proposed within this report as it runs into Monks Brook which is a tributary of the Itchen, that is afforded national and international protection.

Mitigation measures have been provided in this report for invasive plants, reptiles, hedgehog and nesting birds, to avoid a wildlife offence from being committed.

The mitigation measures set out within this report ensures the development will adhere to relevant legislation and planning policies. The mitigation measures within this report can be secured through planning conditions and a Natural England EPS licence for the identified bat roost.

Compensation and enhancement measures have been recommended in this report, in accordance with the CIEEM mitigation hierarchy, NPPF and local policy.

9 References

- Andrews, H. P. (2017). *A review of empirical data in respect of emergence and return times reported for the UK's 17 bat species*. AEcol & Andrews Ecology Ltd.
- CIEEM. (2017, December). *Guide to Ecological Surveys and Their Purpose*. Retrieved from <https://cieem.net/wp-content/uploads/2019/02/Guide-to-Ecological-Surveys-and-Their-Purpose-Dec2017.pdf>
- CIEEM. (2017). *Guidelines for Preliminary Ecological Appraisal, 2nd edition*. Winchester: Chartered Institute of Ecology and Environmental Management.
- CIEEM. (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2*. Winchester: Chartered Institute of Ecology and Environmental Management.
- Collins, J. (2023). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition)*. London: The Bat Conservation Trust.
- Defra. (2024). *Multi-Agency Geographical Information for the Countryside*. Retrieved from MAGIC: <https://magic.defra.gov.uk/MagicMap.aspx>
- Edwards, C. (2006). *Practice Guide Managing and controlling invasive rhododendron*. Edinburgh: Forestry Commission.
- Franklin, P. (1993). *The migratory ecology and terrestrial habitat preferences of the great crested newt Triturus cristatus at Little Wittenham Nature Reserve*. M.Phil Thesis. De Montfort University. Dept. Applied Biology and Biotechnology.
- Jehle, R. (2000). *The Terrestrial Summer Habitat of Radio-Tracked Great Crested Newts (T. cristatus) and Marbled Newts (Triturus marmoratus)*. Herpetological Journal: 10(4): c137-142.
- Office of the Deputy Prime Minister. (2005, August 16). *Biodiversity and geological conservation: circular 06/2005*. Retrieved from [gov.uk: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7692/147570.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7692/147570.pdf)
- Oldham, R. S. (1986). *tatus and Ecology of the Warty Newt Triturus Cristatus, Final Report*. Report by Leicester Polytechnic under contract to Nature Conservancy Council, Contract No. HF 3/05/123 Year 3.
- Royal Horticultural Society. (2019, August). *RHS Plants for Pollinators Garden Plants*.
- UKHab Ltd. (2023). *The UK Habitat Classification Version 2.0*.

10 Appendices

10.1 Photographs



Photograph 1: View of the front of the bungalow with a roof in good condition.



Photograph 2: View of the north-west elevation roof.



Photograph 3: View of the gravel driveway that leads to the garage.



Photograph 4: View of the north-east boundary shrub border, which is relatively bare.



Photograph 5: View of the front garden lawn with the wet ditch to the right.



Photograph 6: View of the Site entrance which runs over the wet ditch.



Photograph 7: View of the wet ditch and the steep embankments.



Photograph 8: View of the introduced shrub embankment on the west flank of the stream.



Photograph 9: View of the wet ditches eastern flank embankment



Photograph 10: View of the front garden from the southern boundary looking north.



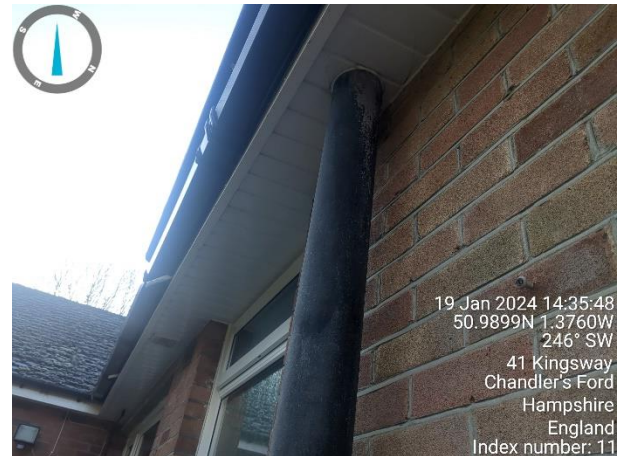
Photograph 11: View of the south-west roof elevation, within the only spot within the plot where it is visible.



Photograph 12: View of the bungalow from the rear.



Photograph 13: View of the flues where bat access to the loft from underneath surrounding tiles is possible.



Photograph 14: View of the soffits, which do not provide any gaps for bat access.



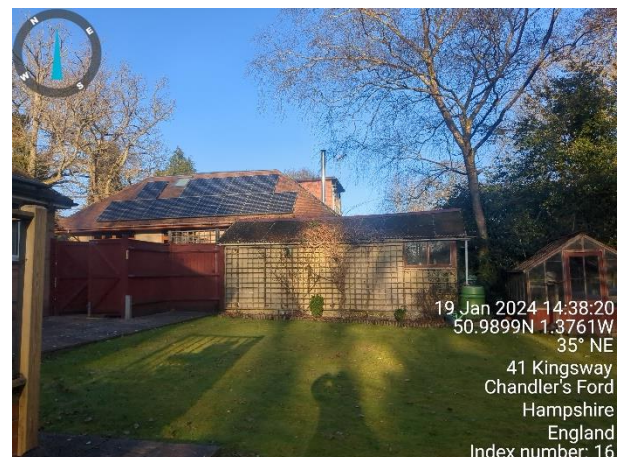
Photograph 15: Example view beneath a window frame of no missing mortar and no gaps for bats to access a cavity.



Photograph 16: View of the thin section of garden that runs along the southern flank of the bungalow.



Photograph 17: View of the shiplap shed on the southern boundary.



Photograph 18: View of the garage and manicured lawn to be impacted by works.

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Photograph 19: View of the interior of the garage.



Photograph 20: View of the manicured lawn and rear of the bungalow.



Photograph 21: View of the wet ditch flowing fast and shallow.



Photograph 22: View of the woodland within the rear half of the back garden, which is suitably distanced from the works.



Photograph 23: View within the bungalows loft looking south.



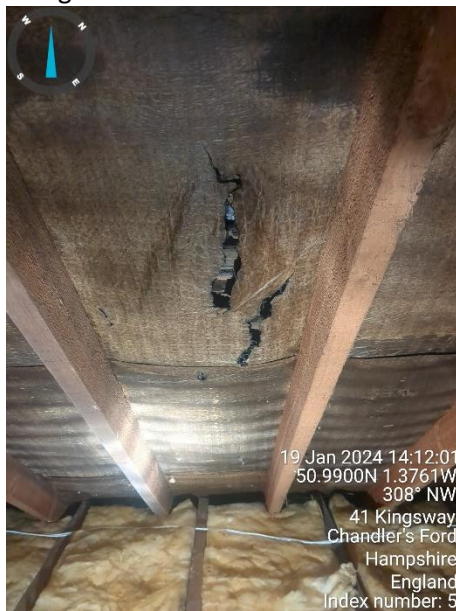
Photograph 24: View within bungalows loft looking north.



Photograph 25: View of a tear in the bitumen felt lining.



Photograph 26: View of the scattered bat droppings on the insulation.



Photograph 27: View of a tear in the bitumen felt lining.



Photograph 28: View of the rear of the property on 03/05/2024 at the end of the dusk emergence survey using NVAs.



Photograph 29: View of the side of the property on 03/05/2024 at the end of the dusk emergence survey using NVAs.



Photograph 30: View of the front and side of the property on 03/05/2024 at the end of the dusk emergence survey using NVAs.



Photograph 31: View of the rear of the property on 27/05/2024 at the end of the dusk emergence survey using NVAs.



Photograph 32: View of the front and side of the property on 27/05/2024 at the end of the dusk emergence survey using NVAs.



Photograph 33: View of the side of the property on 27/05/2024 at the end of the dusk emergence survey using NVAs.



Photograph 34: View of the front and side of the property on 18/06/2024 at the end of the dusk emergence survey using NVAs.

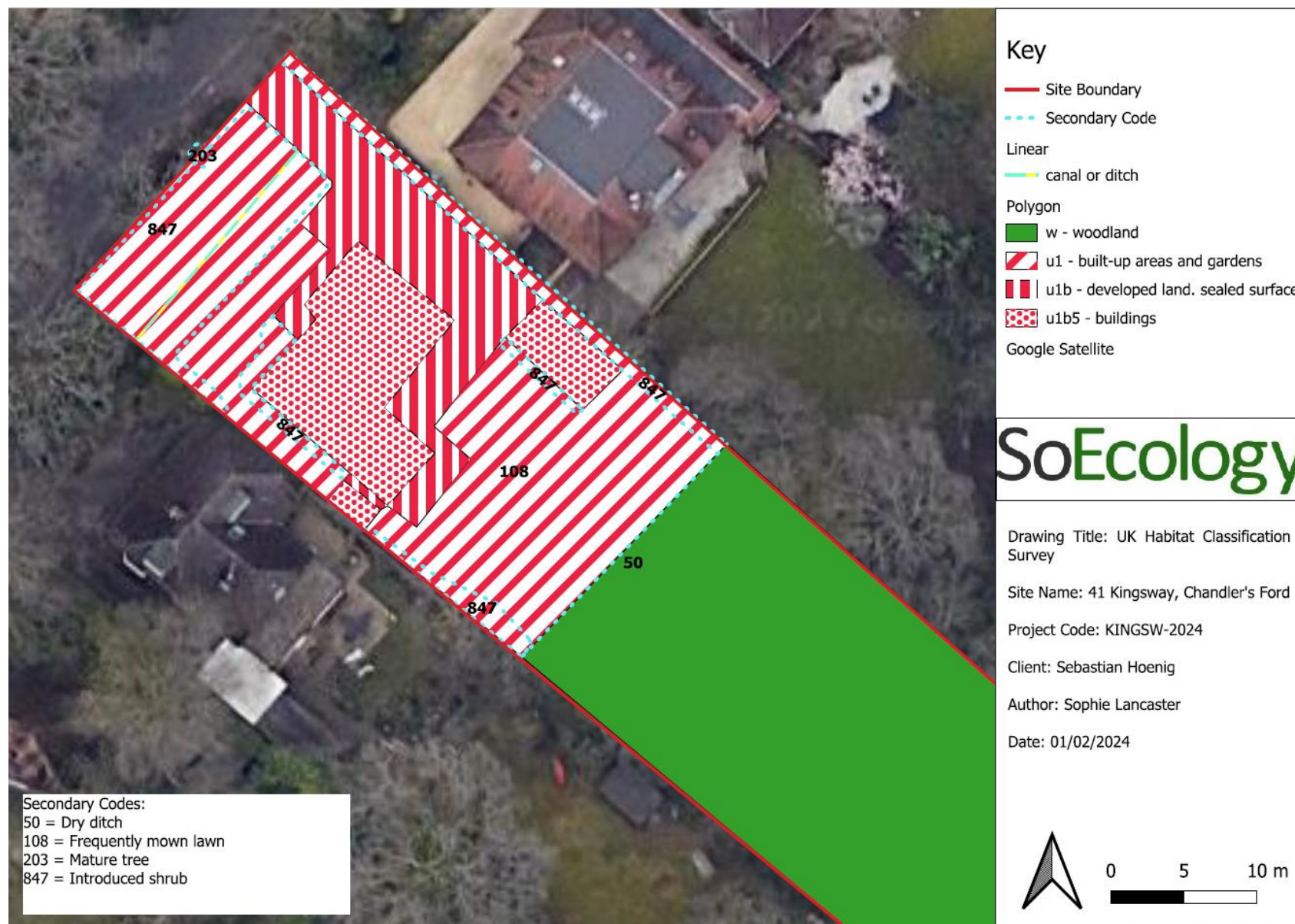


Photograph 35: View of the side of the property on 18/06/2024 at the end of the dusk emergence survey using NVAs.



Photograph 36: View of the rear of the property on 18/06/2024 at the end of the dusk emergence survey using NVAs.

10.2 UKHab Survey Plan



10.3 Bat Surveyor & Equipment Location Plan



10.4 Interim Night Vision Aid Survey Guidance

Bat Conservation Trust



Interim Guidance Note: Use of night vision aids for bat emergence surveys and further comment on dawn surveys

Bat Conservation Trust, May 2022

This Interim Guidance Note aims to provide clarification regarding the role of night vision, infrared and thermal imaging cameras (night vision aids or NVAs) in bat emergence surveys, pending the publication of Bat Surveys for Professional Ecologists Good Practice Guidelines 4th edition, now predicted to be in summer 2022. This note supersedes the 3rd edition (Collins, 2016). The text has been prepared by Bat Conservation Trust (BCT), discussed and agreed with the Statutory Nature Conservation Body (SNCB) mammal specialists and the Technical Review Board for the 4th edition of the survey guidelines have also been given the opportunity to comment.

Separate, more technical guidance on the use of infrared cameras for bat surveys is also in preparation, the final content of which has not been reviewed by BCT or the SNCBs at this time, however for further information see Richard Crompton's presentation delivered at the National Bat Conference in 2021 (found here: <https://battraining.info/betterbat>).

Existing publications

Bat Surveys for Professional Ecologists Good Practice Guidelines 3rd edition (Collins, 2016) advise the use of NVAs as a complementary method to increase precision during emergence surveys, particularly where there is potential for late-emerging species and in dark conditions. However, the current edition of the guidelines states that, whilst this equipment is useful as a complementary technique, *it shouldn't be used to replace surveyors to any significant degree*.

The Thermal Imaging Guidelines (Fawcett-Williams, 2021) state that *cameras can be used to replace one or more surveyors providing the right equipment is deployed correctly by suitably trained personnel*.

The beta version of the Bat Mitigation Guidelines (CIEEM, 2021) states that *the use of visual aids such as infrared or thermal imaging cameras is strongly recommended for tree emergence surveys*.

Available research

Recent research (Davidson-Watts, 2021) reviewed the results of emergence surveys of 74 known roosts in trees (found by radio tracking) comparing those carried out by sight by surveyors and those supported by infrared cameras. The study found that surveyors could not see potential roost features (PRFs) on average 20 minutes after sunset in woodlands and 29 minutes after sunset outside of woodlands. When all the data was pooled, *bats emerged on average 8 minutes after PRFs could no longer be seen by surveyors*, meaning that bats were not seen in 78% of these surveys. Although surveys saw some bats emerging in conditions light enough for surveyors to see them in the remaining 22%, this finding was species-specific, with a much higher probability of observing the emergence of noctule and soprano pipistrelle than any of the other species recorded (note that common pipistrelle wasn't present in the study).

NVAs have become much more accessible and affordable, and the above research demonstrates their efficacy. Similar research is not available for buildings, however where potential bat access points on buildings are shaded, and the species involved emerge late and call quietly, similar results are anticipated.

Bat Conservation Trust



Use of NVAs and the guidelines

For these reasons, the 4th edition of the survey guidelines will shift the emphasis to using NVAs as a standard protocol rather than as an optional or complementary method for both building and tree emergence surveys. There will be a move towards NVAs *being used on all emergence surveys*, with justification required in consultant's reports as to *why they have not been used*, if this is the case.

This requires high-quality cameras paired with recording bat detectors, operated by trained and experienced surveyors. There are limitations to different camera set-ups and weaker units may only be useful for a single small entry or exit point at very close range, which may be adequate for roost characterisation surveys but is less useful for presence/absence, which requires a higher specification camera and better illumination in order to view a larger area, such as one elevation of a building. Cameras need to be set up appropriately and footage should be recorded for analysis back at the office. Reports should describe the equipment used, relevant specifications, how the equipment was deployed and monitored in the field, and the approach used to analyse the videos. They should also include a screenshot from the camera from the darkest point of the survey to illustrate the field of view and visibility.

Can NVAs replace surveyors?

On the topic of whether or not infrared or thermal imaging cameras can replace surveyors, this depends on each individual scenario and the equipment used. The survey guidelines and technical guidance on the use of infrared cameras will cover this topic in more detail.

Cost and training

It is recognised that NVAs can be costly to buy and maintain, and use of them requires training and experience. Therefore this approach, as the basis for good practice, will be phased in over a period of two years starting with the publication of this interim guidance note.

Dawn surveys

Radio tracking studies show that dawn return times are significantly variable both between and within species (Andrews & Pearson, 2022 provides a detailed review of the literature). The average return times quoted in the study are more than two hours before sunrise (the timing advised for dawn surveys in the current guidelines) for many species (Andrews & Pearson, 2022). Froidevaux *et al.* (2020) found that bat detection probability was not affected by whether a survey was carried out at dusk or dawn¹.

The research outlined above creates questions about the efficacy of dawn surveys for determining the presence or likely absence of bats and the value of these over dusk surveys for this specific purpose. Alongside this are health and safety concerns relating to dawn surveys, which can arise from sleep deprivation, particularly if carried out in conjunction with dusk/evening surveys on the same night.

The use of NVAs has the potential to improve the quality of dusk surveys, providing clarity on exact emergence points and bat counts that might not otherwise be available because of the limitations of

¹ This result should be viewed with caution, however, as there were few dawn surveys in the sample and this was not the aim of this research. More research is needed to determine the value of dawn surveys.

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the human eye. Whilst dawn surveys can reward surveyors with displays of dawn swarming behaviour, there is a concern that bats that have returned early will be missed. Of course, where dawn surveys are carried out they can be similarly improved through using NVAs but this does not address the risk of missing bats that have already returned.

The 4th edition of the survey guidelines will therefore transition away from the standard use of dawn surveys, particularly as a method for presence/absence surveys, in favour of dusk surveys supported by NVAs. This does not mean that dawn surveys will become obsolete – it is recognised that they can provide useful information (on entrance points, which are sometimes different from the exit points in complex buildings and for some species) for a known roost or in very specific situations. As always, methods selected by professional ecologists should be based on sound ecological reasoning and in consideration of published evidence which should be stated within the survey reports methods section.

Bibliography

Andrews & Pearson (2022) Review of empirical data in respect of emergence and return times reported for the UK's native bat species Version 6. Available here:

<https://drive.google.com/file/d/1DeGHx9r9-p5XH6R6CRimsmquVD188WY8/view>

Collins (2016) Bat Surveys for Professional Ecologists Good Practice Guidelines 3rd edition. Available here: <https://www.bats.org.uk/resources/guidance-for-professionals/bat-surveys-for-professional-ecologists-good-practice-guidelines-3rd-edition>

Fawcett Williams (2021) Thermal Imaging Bat Survey Guidelines. Available here: <https://www.bats.org.uk/resources/guidance-for-professionals/thermal-imaging-bat-survey-guidelines>

CIEEM (2021) Bat Mitigation Guidelines: A guide to impact assessment, mitigation and compensation for developments affecting bats. Beta version. Available here: <https://cieem.net/i-am/current-projects/bat-mitigation-guidance/>

Davidson-Watts (2021) Can you see what I see? – The importance of night vision aids to conduct effective emergence surveys of tree roosting bats (presentation to UK Bat Steering Group 2021). Available here: <https://www.bats.org.uk/our-work/project-collaborations-partnerships/uk-bat-steering-group>

Froidevaux, J. S. P., Boughey, K.L., Hawkins, C.L., Jones, G. & Collins, J. (2020) Evaluating survey methods for bat roost detection in ecological impact assessment. *Animal Conservation* 23 597–606. Available here: <https://zslpublications.onlinelibrary.wiley.com/doi/epdf/10.1111/acv.12574>