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integrating nature conservation

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Ecological Impact Assessment

The Paddock
Meadow View,
Blagrove Lane
Wokingham,
RG41 4AU

August 2025

Darwin Ecology Ltd
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QUALITY CONTROL		
The information which we have prepared and provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct.		
Prepared by	Senior Ecologist Neil Carter-Whitehead BSc (Hons) MSC	August 2025
Approved by	Senior Ecologist Amanda Honour BSc MSc ACIEEM	August 2025

This report remains valid for 2 years from date of issue.

Survey data are valid for 12-18 months from the date the survey was undertaken.

Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living creatures are capable of migration and whilst protected species may not have been located during the survey duration, their presence may be found on site at a later date.

The views and opinions contained within the document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to works.

1. EXECUTIVE SUMMARY

1.1. Darwin Ecology Ltd was commissioned by Rob Ward to undertake an Ecological Impact Assessment (EcIA) of proposals for the buildings and habitats at The Paddock, Meadow View, Blagrove Lane, Wokingham, RG41 4AU. The assessment was required to support a planning application for the construction of five new residential units with associated landscaping and was informed by a desk study and habitat walkover survey.

1.2. The site comprises a paddock with some scattered trees, with associated farm buildings and hedges. During the habitat walkover survey habitats on site comprised modified grassland, broadleaved woodland, buildings, hard standing, native hedgerows, and hedgerows with trees.

1.3. The site was overall assessed to provide habitat suitable to support low numbers of common species of reptile, great crested newts during their terrestrial phase, dormouse, [redacted] and foraging habitat for hedgehog, nesting and foraging habitat for birds and limited resources for invertebrates.

1.4. As these species are only likely to be present in very low numbers, if at all, further survey is considered to be disproportionate. Due to the limited potential for protected species onsite and limited extent of the proposals there are no recommendations for further surveys, but instead precautionary mitigation has been recommended.

1.5. Mitigation measures will include:

- Tree root protection zones to be implemented by a qualified arboriculturist and at least one fruit tree or native tree species to be planted if the plum tree is to be removed or damaged during the works;
- A sensitive lighting plan for bats;
- General mitigation measures to protect common amphibians, reptiles and terrestrial mammals during works.
- Should any vegetation clearance be required it should be conducted outside nesting bird season (March to September inclusive). If this is not possible due to scheduling requirements, a suitably experienced ecologist must conduct a nesting bird check in advance of the works.

1.6. Outline enhancement recommendations have been made including:

- At least one integrated bat box such as a Schwegler 1FR bat tube or Green&Blue Bat Brick, to be installed into the external brickwork of the each new dwelling.
- Hedgehog gaps to be installed within any fence lines or walls.
- A wildlife beneficial landscaping scheme to include planting of additional fruit trees within the garden of the new dwelling.

2. INTRODUCTION AND BACKGROUND

Background

2.1. Darwin Ecology Ltd was commissioned by Rob Ward to undertake an EcIA of proposals for the buildings and habitats at The Paddock, Meadow View, Blagrove Lane, Wokingham[1]. The assessment was required to support a planning application for the construction of five new residential units with associated landscaping and was informed by a desk study, habitat walkover survey, and internal and external building inspection.

2.2. The proposed drawings on which this assessment is based are provided at **Appendix 1, Proposed Plans**.

2.3. The internal and external building inspection followed the Bat Conservation Trust (BCT) Good Practice Guidelines (2023).

2.4. The habitat walkover survey followed the Chartered Institute for Ecological and Environmental Management (CIEEM) Guidelines for Preliminary Ecological Appraisal (2017). Habitats on site were broadly mapped to a minimum of 25m^2 in accordance with current guidance from *UK Habitat Classification Version 2.0 UKHab Ltd (2023).*

2.5. The subsequent EcIA follows the CIEEM Guidelines for EcIA in the UK and Ireland (2018).

Site Overview

2.6. The site comprises a paddock with some scattered trees, with associated farm buildings and hedges (see **Figure 1**).

2.7. The site is in a suburban location south of Wokingham, with pastoral fields to the north, and west, and a residential development to the south and west (see **Figure 2**).

Scope of Assessment

2.8. The process of EcIA aims to identify, quantify and evaluate the potential effects of development-related or other proposed actions on habitats, species and ecosystems.

2.9. Potential effects on the following ecologically sensitive receptors have been considered during the EcIA of Meadow View:

- Statutory and non-statutory designated sites; and
- On-site habitats of intrinsic importance (such as buildings or discrete habitat features).

[1] Ordnance Survey (OS) grid reference SU 79883 67042.

Figure 1: Site location within the local landscape. Copyright Google Earth Pro (Aug 2025)

Figure 2: Site location within the wider landscape. Copyright Google Earth Pro (Aug 2025)

3. LEGISLATION & POLICY

General Wildlife Legislation

3.1. Wildlife in the United Kingdom (UK) is protected through European and national legislation, supported by national and local policy and guidance. Development can contribute to conservation and enhancement goals outlined by these various legislation and policy by retaining and protecting the most valuable ecological features within a site and incorporating enhancements to provide biodiversity net gain.

3.2. This section provides a brief summary of the principle legalisation and policy that triggers the requirement for preliminary and further ecological assessments in the UK. The presence of protected species within a site are a material consideration during the planning process. Preliminary and any necessary further ecological assessments provide an ecological baseline for a site and evaluation of the potential impact of proposals.

3.3. It is the responsibility of those involved with development works to ensure that the relevant legislation is complied with at every stage of a project. Such legislation applies even in the absence of related planning conditions or projects outside the scope of the usual planning process (i.e. permitted development projects or projects requiring Listed Building Consent only).

Bat Legislation

3.1. In England and Wales, all bat species and their roosts are legally protected under the European *Habitats Directive (1992)*; the *Conservation of Habitats and Species Regulations (2017)*; the *Wildlife and Countryside Act (1981) (as amended)*; the *Countryside and Rights of Way Act, 2000*; and the *Natural Environment and Rural Communities Act (NERC, 2006)*.

3.2. Barbastelle *Barbastella barbastellus*, Bechstein's *Myotis bechsteinii*, greater horseshoe *Rhinolophus ferrumequinum*, lesser horseshoe *Rhinolophus hipposideros*, brown long-eared *Plecotus auritus*, soprano pipistrelle *Pipistrellus pygmaeus*, and noctule *Nyctalus noctula* bats are all species of principal importance in England under *Section 41* of the *Natural Environment and Rural Communities Act 2006*.

3.3. You will be committing a criminal offence if you:

- Deliberately capture, injure or kill a bat;
- Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats;
- Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time);
- Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat; or
- Intentionally or recklessly obstruct access to a bat roost.

3.4. The government's statutory conservation advisory organisation, Natural England, is responsible for administering European Protected Species (EPS) licences that permit activities that would otherwise lead to an offence.

3.5. A licence can be obtained if the following three tests have been met:

- Regulation 53(9)(a) - there is "no satisfactory alternative" to the derogation, and;
- Regulation 53(9)(b) - the derogation "will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range" and;
- Regulation 53(2)(e) - the derogation is for the purposes of "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".

National Planning Policy

3.6. The *National Planning Policy Framework (2023)* aims to minimise impacts on biodiversity and provide net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity. Chapter 15 'Conserving and enhancing the natural environment' details what local planning policies should seek to consider with regard to planning applications.

3.7. Planning policies and decisions should contribute to and enhance the natural and local environment by:

> *180 a)* Protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
>
> *180 b)* Recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
>
> *180 d)* Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
>
> *181)* Plans should: distinguish between the hierarchy of international, national and local designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; 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;

182) Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty (AONB) which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas, and should be given great weight in National Parks and Broads. The scale and extent of development within all these designated areas should be limited, while development within their settings should be sensitively located and designed to avoid or minimise adverse impacts on the designated area.

3.8. Specific policies regarding habitats and biodiversity comprise:

185) 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.

186) When determining planning applications, local planning authorities should apply the following principles:

a) If significant harm to biodiversity resulting from a development cannot be avoid (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 of Sites of Special Scientific Interest (SSSIs), 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 feature of the site that make it of special scientific interest, and any broader impacts on the national network of SSSIs;

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 reasons and a suitable compensation strategy exists; and

d) Development whose primary objective is to conserved or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around development should be 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.

187) The following should be given the same protection as habitats sites:

a) Potential Special Protection Areas (SPAs) and possible Special Areas of Conservation (SACs);

b) Listed or proposed Ramsar sites; and

c) sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential SPAs, possible SACs, and listed or proposed Ramsar sites.

Local Planning Policy

3.9. The local planning policy for the site is the Wokingham Borough Council Core Policy, with relevant policies comprising:

Policy CP7 - Biodiversity: Sites designated as of importance for nature conservation at an international or national level will be conserved and enhanced and inappropriate development will be resisted. The degree of protection given will be appropriate to the status of the site in terms of its international or national importance.

Development:

A) Which may harm county designated sites (Local Wildlife Sites in Berkshire), whether directly or indirectly, or

B) Which may harm habitats or, species of principle importance in England for nature conservation, veteran trees or features of the landscape that are of major importance for wild flora and fauna (including wildlife and river corridors), whether directly or indirectly, or

C) That compromises the implementation of the national, regional, county and local biodiversity action plans

will be only permitted if it has been clearly demonstrated that the need for the proposal outweighs the need to safeguard the nature conservation importance, that no alternative site that would result in less or no harm is available which will meet the need, and:

i) Mitigation measures can be put in place to prevent damaging impacts; or

ii) Appropriate compensation measures to offset the scale and kind of losses are provided.

4. METHODOLOGY

Desk Study

4.1. A desk study was undertaken for designated sites, and protected species and habitat records within 2km of the site:

- The MagicMap website was reviewed, to obtain information on any designated sites of nature conservation interest within 2km of the site and details of any EPS licences issued within 1km, extended to 2km for bats;
- The Wokingham Borough Council Planning Portal was searched for past and pending planning applications that may have associated ecological documents detailing results of bat surveys;
- A data search was requested from Thames Valley Environmental Records Centre (TVERC) for non-statutory designated sites, and protected and notable species within 2 km; and
- Google Maps and Ordnance Survey (OS) Leisure Maps was utilised to view aerial photographs and maps to assess the ecological context of the site within the wider landscape.

4.2. Natural England has developed a tool to help assess the potential risks to SSSIs by proposed developments. These are known as 'Impact Risk Zones' (IRZs) and they define the area around a SSSI that could be sensitive to development, considering the particular sensitivities of the feature for which the site is designated.

4.3. The IRZs help inform whether a development proposal may affect a SSSI and if so, whether it is necessary for the Local Planning Authority (LPA) to seek pre-application advice from Natural England. Information on the IRZs was determined from the MAGIC website to determine if the LPA is required to seek consultation for the current development.

Habitat Walkover Survey

4.4. Senior Ecologist, Neil Carter-Whitehead, conducted a walkover survey at on 9th May 2025. The weather conditions at the time of the survey were dry and sunny, at approximately 18^{o}C.

4.5. The walkover survey assessed habitats present within the application red line boundary for their potential to support protected species, including:

- Bats;
- Great crested newt *Triturus cristatus* and common amphibians;
- Reptiles;
- Dormouse *Muscardinus avellanarius*;

- Other terrestrial mammals, including hedgehog *Erinaceus europaeus* [redacted]
- Schedule 1 birds, including but not limited to; Barn Owl *Tyto alba*, Lapwing *Vanellus vanellus* and Skylark *Alauda arevnsis*
- Breeding birds; and
- Invertebrates.

4.6. As there is no running water within the site, in combination with their nationally sparse distribution, it is considered highly unlikely that white clawed crayfish *Austropotamobius pallipes* would be using the site and they are therefore not considered further in this report.

4.7. Otter *Lutra lutra* and water vole *Arvicola amphibious* are not considered further in this report due to the lack of running water on site and within the wider area. The site also does not offer any suitable habitat for these species.

4.8. The site was also searched for non-native, invasive plant species, with particular care to search for the most commonly occurring and problematic species, such as Japanese knotweed *Fallopia japonica*, Indian balsam *Impatiens grandiflora* and giant hogweed *Heracleum mentegasianum*.

Limitations

4.9. Ecological surveys are limited by factors that affect the presence of plants and animals such as the time of the year, weather, and migration patterns. The survey was undertaken in May and therefore represents a valid sample of ecological evidence present on that date/ season.

4.10. No other limitations were encountered, or assumptions made during either the desk study or the field survey and it is considered that with the access gained and recording undertaken an accurate assessment of the site's ecological importance has been made.

5. SURVEY RESULTS

Desk Study

5.1. No statutory designated sites were identified within 2km of the site.

5.2. The site falls within the IRZ zone of Longmoor Bog SSSI and Heath Lake SSSI. It also lies within the Thames Basin Heath SPA 7km linear mitigation zone.

5.3. The results from local records search identified seven non-statutory designated sites within 2km of the site. These are detailed in **Table 1.**

Table 1: Non-Statutory designated sites within 2km of the site.

Designated sites	Name and designation type	Reason for designation	Approximate distance from site
Within Site Boundaries	*There are no non-statutory designated sites within the site boundaries.*		
Within 2km of Site	*Bottle Copse Local Wildlife Site (LWS)*	*The site is designated for ancient woodland.*	*530m due north-west*
	The Moors LWS	*The site is designated for wet woodland and ponds with breeding newts.*	*570m due south-west*
	Woosehill Meadows LWS	*The site is designated for mixed woodland, wet woodland, and bullhead Cottus gobio.*	*1200m due north*
	Bearwood Estate - Woods and Lakes LWS	*The site is designates for ancient woodland, heathland and grassland, and a lake.*	*1650m due north-west*
	Gorrick Plantation LWS	*The site is designated for lowland mixed deciduous woodland and wet woodland*	*1500m due south-east*
	Land East and West of Sandhurst Road	*The site is designated for lowland mixed deciduous woodland and wet woodland*	*1500m due south-east*
	Woodland near Ludgrove School	*The site is designated for lowland mixed deciduous woodland*	*1700m due east*

5.4. There are eight areas of priority deciduous woodland within 1km of the site site, the closest of which is located 150m due west of the site. No other priority habitats were identified.

5.5. One parcel of ancient woodland was identified within 1km of the application site, located 500m due north-west

Habitat Walkover Survey

5.6. The site is dominated by modified grassland with boundary hedges, and a small area of hard standing with some out-buildings. This section is to be read in conjunction with **Figure 3. Table 2** below outlines the summary of habitats identified on site, as well as their applicable secondary codes.

Table 2: Habitat applicable codes

Primary Habitat	UK Hab Primary Code	Applicable Secondary Code(s) used	Secondary Code(s) description
Modified Grassland	*g4*	*32*	*Individual trees*
Developed land, sealed surface	*u1b*	-	-
Buildings	*b1*	-	-
Woodland, Other Broadleaved	*w1g1*	-	-
Native hedgerow	*h2a*	*11*	*Hedgerow with trees*
Species rich native hedgerow	*h2a5*	-	-

Modified Grassland

5.7. The site is dominated by modified grassland, with perennial ryegrass *Lolium perenne*, Timothy *Phleum pratense,* white clover *Trifolium repens*, common sorrel *Rumex acetosa,* ribwort plantain *Plantago lanceolata,* meadow buttercup *Ranunculus acris.* The grassland is closely mown, with a consistent short sward.

5.8. Scattered trees within the grassland include apple trees *Malus x domestica*.

Woodland, Other Broadleaved

5.9. The woodland in the north east of the site includes pedunculate oak, field maple, elm *Ulnus procera*, elder *Sambucus nigra*, bramble *Rubus fruticosus agg.*, and common nettle *Urtica dioica*.

Species rich native hedgerow

5.10. The hedgerow that bounds the west of the site includes hawthorn *Craetagus monogyna*, hazel *Corylus avellana,* field maple *Acer campestre*, pedunculate oak *Quercus robur,* blackthorn *Prunus spinosa*, holly *Ilex aquifolium,* bramble*,* dog rose *Rosa canina*, traveller's joy *Clematis vitalba*, and ivy *Hedera helix.*

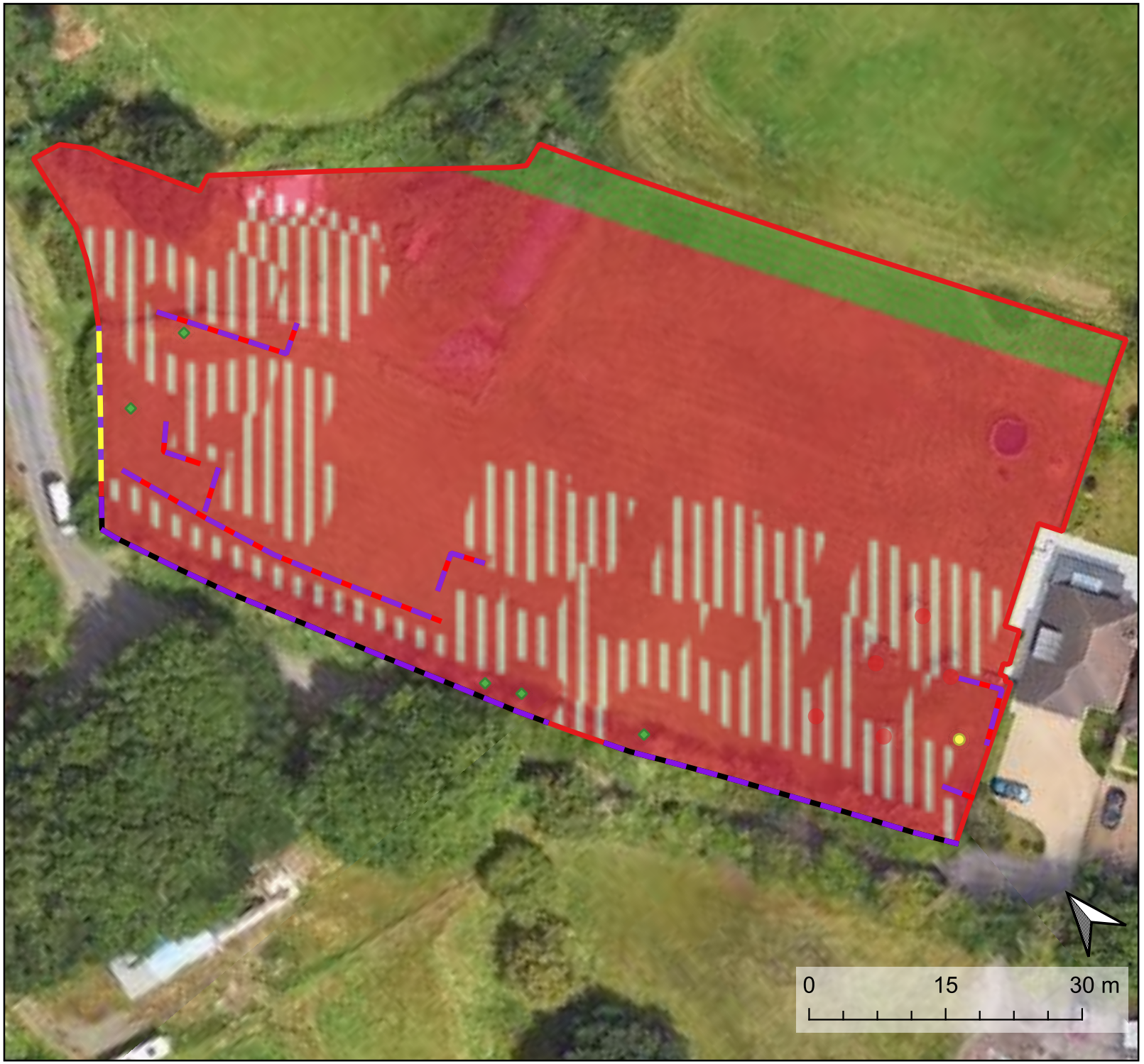
Native hedgerow

5.11. The hedgerow that bounds the north of the site and separates the grassland includes bramble, pedunculate oak, and dog rose.

5.12. The hedgerow that bounds the north of the site includes hawthorn and dog rose.

Developed land - sealed surface

5.13. An area of hard standing with an out-building is situated in the north of the site, with another shed to the north. The outbuilding and shed were subjected to an inspection for suitability for roosting bats and nesting birds and is detailed in the protected species section below.



Legend

- Red Line Boundary

INDIVIDUAL TREES

- Proposed Small Urban Tree
- Retained Small Rural Tree
- Lost Tree

HEDGEROWS

- Non-native and ornamental hedgerow
- Native hedgerow
- Species-rich native hedgerow with trees
- Lost

HABITATS

- Developed land; sealed surface
- Other woodland; broadleaved
- Vegetated garden

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Appendix: Post-development Habitat Map

Date: August 2025

Image 1: The grassland on the site viewed from the south.

Image 2: The scattered apple trees within the south of the site, and the hedgerow bounding the west of the site.

Image 3: The hedgerow bounding the north of the site.

Image 4: The hard standing and outbuilding.

Image 5: The second shed on the site.

Image 6: The hedgerow with trees that bounds the north-east of the site.

Protected Species

Bats

5.14. Eleven EPSLs concerning bats were identified within 2km, as detailed in **Table 8.**

Table 8: ESPL granted for bats within 1km of the site

Case Reference	Licence dates	Species designation	Licensable Impact	Approximate distance from site
2014-2425-EPS-MIT	*22/07/2014 - 31/10/2015*	*Common pipistrelle brown long-eared bat*	*Destruction of resting site*	*835m due north-west.*
EPSM2012-5339	*12/09/2013 - 30/09/2015*	*Common pipistrelle brown long-eared bat Natterer's bat*	*Destruction of resting site*	*1335m due south-west*
2015-11806-EPS-MIT	*05/09/2015 - 26/08/2017*	*Common pipistrelle*	*Destruction of resting site*	*1445m due north-east*
2017-31502-EPS-MIT	*29/09/2017 - 30/04/2023*	*Common pipistrelle*	*Destruction of resting site*	*1450, due north-west*
EPSM2013-6034	*30/07/2013 - 30/09/2014*	*Common pipistrelle brown long-eared bat*	*Destruction of resting site*	*1550m due west*
2015-9568-EPS-MIT	*06/05/2015 - 30/04/2020*	*Common pipistrelle*	*Destruction of resting site*	*1650m due south*
EPSM2011-3236	*10/08/2011 - 30/09/20134*	*Common pipistrelle*	*Destruction of resting site*	*1800m due west*
EPSM2009-561	*15/04/2009 - 31/12/2010*	*Common pipistrelle Soprano pipistrelle Brown long-eared bat*	*Destruction of resting site*	*1850m due south*
2014-3612-EPS-MIT	*24/10/2014 - 22/10/2019*	*Soprano pipistrelle*	*Destruction of resting site*	*1900 m due south-east*
2014-4890-EPS-MIT	*23/03/2014 - 31/08/2015*	*Brown long-eared bat*	*Damage to resting site*	*1985m due south*
2016-22176-EPS-MIT	*01/04/2016 - 31/03/2021*	*Brown long-eared bat*	*Destruction of resting site*	*1995m due north*

5.15. The TVERC identified records of 11 species of bat, with the most recent record being from 2026, and the nearest being from 45m due north-west of the site. This record includes common pipistrelle, soprano pipistrelle, brown long-eared bat, and noctule bat.

5.16. The hedgerows, woodland, and trees around site provide good foraging and commuting opportunities for bat species and is connected to a wider network of mature hedgerows to the east and west of the site. The modified grassland provides limited foraging and commuting potential for bats.

5.17. None of the scattered trees within the site are large enough to have PRFs suitable to support roosting bats.

Building Inspection

5.18. The two structures on the site comprise a shed and a round storage building. The shed is constructed of corrugated metal, while the round storage building is constructed out of a single large piece of corrugated asbestos. Neither of these structures were identified as having any potential roosting features for bats. The construction of these structures leaves very limited potential to support roosting bats, and as such both are considered to have **negligible potential.**

Great Crested Newt and Common Amphibians

5.19. A search of Magic revealed no EPS licences for great crested newt within 1km of the site boundary. Two records of great crested newt survey licence returns were identified within 1km of the site, the closest of which was 320m due south-west, and was from 2014.

5.20. The site itself provides a sub-optimal environment for great crested newt and common amphibians due to the lack of structural variation in the grassland. The site was dominated by a large area of short sward modified grassland which created limited foraging and commuting opportunities for great crested newt. The hedgerows that bound the site have some potential to support commuting amphibians.

5.21. There were no potential hibernacula on site which could support great crested newt.

5.22. There are no water bodies within the application site, however a desk study identified four ponds and three ditches within 250m of the site,. These water bodies are shown in Figure 4.

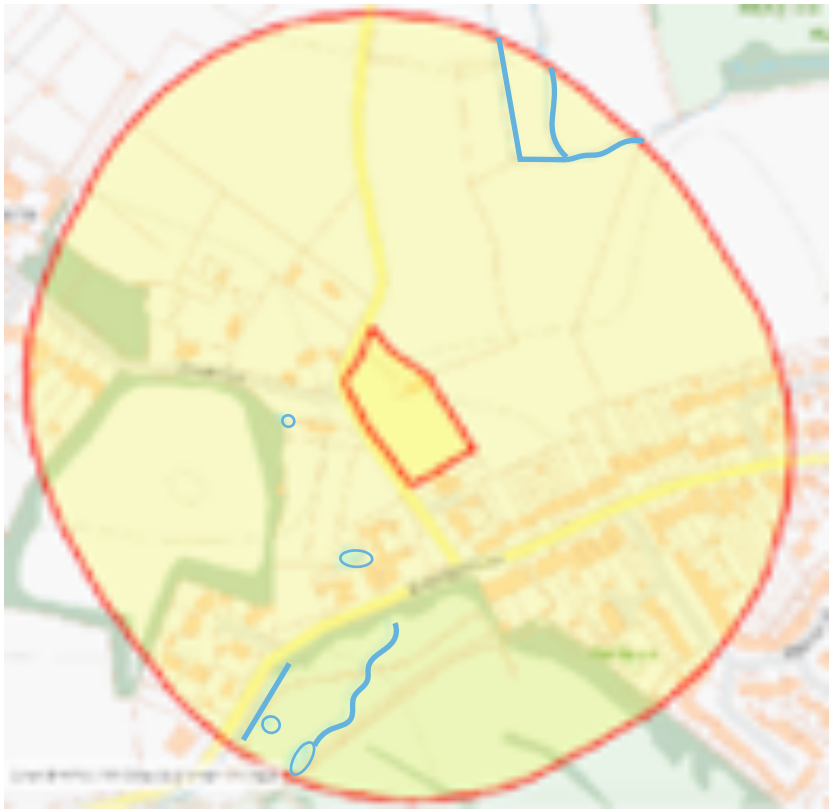

Figure 4: Waterbodies within 250m of the site.

5.23. The wider landscape, could provide limited foraging and commuting opportunities for great crested newt due to a number of well-grazed fields. If they were present within this landscape, they would be able to access the site, however the habitats on site would not support large populations.

Reptiles

5.24. A search of Magic Maps revealed no past or present EPS licences for reptiles within 1km of the site boundary.

5.25. The TVERC records search identified three records of reptiles within 2km of the site concerning common lizard, grass snake, and slow-worm. The most recent record was from 2022, located 1350m due north-west of the site. The closest record concerns slow worms, and is located 390m due north-west of the site.

5.26. The modified grassland offers limited potential to support reptiles, with this habitat offering limited foraging, commuting, and resting opportunities for these species. Small patches of bare earth present throughout the grassland could provide some basking opportunities for reptiles. The hedgerows that bound the west and north of the site provide suitable commuting opportunities for reptiles.

5.27. There were no areas of potential hibernacula identified within the site boundary during the habitat walkover.

5.28. The wider landscape also contained suitable habitats for reptiles, including large areas of fields and their associated margins. If present in the wider landscape, reptiles may be able to access the site and utilise it on occasion.

Dormouse

5.29. A search of Magic Maps revealed no past or present EPS licences for dormouse within 1km of the site boundary.

5.30. The TVERC data request returned no records of dormouse within 2km of the site. Dormice are known to be under-recorded, and as such could still be present within the wider landscape. Dormice are known to be present within Berkshire.

5.31. The modified grassland was deemed unsuitable to support dormice as this habitats offered negligible foraging, commuting or nesting opportunities for these species. No evidence of dormouse was found within the site boundary in the form of nests or chewed nuts.

5.32. The woodland, hedgerows, and hedgerows with trees have potential to support dormice, though the amount of these habitats to be removed means that the risk of harm to individual dormice is negligible.

Other Terrestrial Mammals

5.33. The TVERC data search returned 79 records [redacted] within 2km of the site. The most recent is from January 2025, and the nearest is situated approximately 100m due east of the site. The data search also identified a single record each of hedgehog and otter from undisclosed locations.

5.34. [redacted]

5.35. The grassland on site offers some foraging potential [redacted] hedgehog but is limited by its lack of structural variation. The hedges and fences that bound the site would not prevent these species from accessing the site.

5.36. The site also offers suitable resources for other mammals such as rabbit *Oryctolagus cuniculus* and fox *Vulpes vulpes*.

5.37. The wider landscape would support terrestrial mammals due to the surrounding grassland areas and tree margins providing good foraging and commuting potential for a variety of species. It is likely that mammals pass through this site regularly.

Breeding Birds

5.38. No nests were identified on site at the time of the survey.

5.39. The hedges and woodland that bound the site offer some foraging, commuting, and nesting opportunities for a variety of bird species.

5.40. The modified grassland may provide some good foraging habitat for local birds. It is likely that the site supports an assemblage of common garden bird species.

5.41. No evidence of features suitable to support roosting barn owls were identified on site. The habitats on site do not offer suitable hunting habitat for barn owls, with the grassland present on site lacking the complexity and species diversity required to attract populations of small mammal.

Invertebrates

5.42. The site likely supports an assemblage of common invertebrates due to the presence of flowering species within the grassland offering nectar and pollen resources. However, there is no structural diversity, standing water, or deadwood on site which reduces the range of niches available for invertebrates.

5.43. It is likely that the site supports a variety of common and uncommon invertebrates.

5.44. The site is unlikely to support stag beetle *Lucanus cervus* and roman snail *Helix pomatia* due to a lack of suitable habitat on site.

6. IMPACT ASSESSMENT

Designated Sites and Priority Habitats

Status on Site

6.1. No statutory designated sites were identified within 2km of the site, and the nearest non-statutory designated site is situated over 500m from the site. As such the construction phase is unlikely to directly impact any designated or non-designated sites.

6.2. The site is located within Impact Risk Zones for two SSSIs, which applies restrictions to large developments (50 or more houses), pipelines and cables outside of existing networks, solar schemes and wind turbines, quarries, landfill, transport proposals, and combustion processes etc. However, the proposed works do not come under any description which would require the local planning authority to consult Natural England.

6.3. The site is situated within the buffer zones Thames Basin Heath SPA, although it falls outside of the key 5km buffer.

Potential Impacts

6.4. Due to the increase in residential units on site, there is potential for the nearby ancient woodland, wildlife sites, green spaces, and statutory designated sites to be negatively impacted through an increase in footfall. However, as the increase in units is anticipated to be low (five), and the site being located within an already developed area comprising moderate density residential units, it is unlikely that this increase in footfall would have a significant negative impact on these habitats and sites.

Habitats

Status of Habitats on Site

6.5. The habitats on site include modified grassland with scattered trees, a small amount of woodland, and hedgerows. These habitats are common and widespread. The scattered trees and hedgerows are of moderate ecological value whilst the modified grassland is of low ecological value.

Potential Impacts

6.6. It is anticipated that roughly 60-70% of the grassland habitat will be lost as part of the proposals. It is anticipated that the scattered trees will be lost as part of the proposed works, but none of the boundary trees are being removed. One gap will be created in the hedgerow to the west of the site, with another gap created in the hedge to the north of the site, to facilitate access into the site. In total 20m of hedgerow will be removed. The loss of these habitats will have a moderate impact on the local level.

6.7. It is anticipated that the hedgerow that separates two areas within the north of the site will be removed, but the remaining hedgerows will be retained. Areas of new tree and shrub planting will be includes as a part of the proposal.

6.8. The loss and fragmentation of the modified grassland and hedgerow will result in a significant loss of foraging, commuting, and resting/nesting opportunities within the local area. The loss of hedgerow and scattered trees will be compensated for with new native tree, shrub, and hedgerow planting. Overall, the proposals will have a moderate negative permanent impact on the local level.

Recommendations

Habitat Screening: Heras fencing will be installed along the outer edge of the development footprint to maintain any retained tree root protection zones and ensure that retained habitats are not negatively impacted by construction activities. Screening barriers will be implemented on habitat protection fencing during the construction phase of the development, to prevent dust and waste from the construction site from contaminating retained habitats at the boundaries of the site. No surface run-off from the construction site will be allowed to flow towards retained habitats or those adjacent to the site.

6.9. *Tree root protection zones:* All retained trees on the site and at site boundaries will be protected in accordance with British Standards BS 5837:2012. Root protection areas will be 12x the diameter at breast height (DBH) or the reach of the longest branch (whichever is greater), unless otherwise advised by a qualified arboriculturist. Trees located off site but with their roots on site should also be protected. No materials should be allowed to be stored within these root protection areas and no heavy machinery should run over them.

6.10. *Planting:* An area of new tree planting along the eastern border, comprising native shrub and tree species, with a woodland seed mix (i.e. Emorsgate EW1 Woodland mixture or another similar mix) being sown and managed to improve the species diversity of the woodland understory at ground level. These enhancements should be designed to increase the opportunities available to protected and notable species.

6.11. The landscape proposals for the site should include at least 60% native species. No invasive non-native species should be used within the landscape proposals for the site.

Protected Species

Bats

Status of Bats on Site

6.12. The hedgerows, modified grassland, and scattered trees offer good foraging and commuting opportunities for bat species.

6.13. Several mature trees on the eastern and western boundaries of the site may have potential to support roosting bats due to having the age and character to support preliminary roosting features.

6.14. It is likely that bats regularly use the site to forage and commute. Additionally, it is likely that bats use the mature oak trees around the boundaries of the site to roost.

Potential Impacts

6.15. The loss of hedgerow, modified grassland, and scattered trees will result in a loss of suitable foraging and commuting habitat for bats. The works do not include the removal of any trees within the boundary hedgerows, but do include creating gaps in the boundary hedges, which likely provide good foraging and commuting features for these species.

6.16. Where new lighting will be required on the site (both during and after the works), if light should spill onto the previously unlit hedgerows, this may impact the flight paths of foraging and commuting bats, and may modify any bat roosts present within boundary trees. There is potential that light-spill onto these previously unlit habitats would deter bats from using these flight paths, resulting in habitat fragmentation.

6.17. This would have a moderate impact on local bat populations.

6.18. No trees which could have potential to support roosting bats are to be removed, however, any roosts present may be impacted by light pollution, modifying the roosts present.

6.19. If the works change to include the removal of any further trees, the removal of any trees which have potential roosting features without an aerial assessment could result in the destruction of a bat roost. In the absence of mitigation, the works would therefore result in an offence under the *Conservation of Habitats and Species Regulations (2017).*

6.20. Therefore, if the works change to include the removal of any trees along the boundaries of the site, any trees to be removed will require a full ground level tree assessment. If the assessed tree is decided to have potential to support roosting bats, a full aerial assessment will be required to fully assess the presence or absence of potential roosting features, and to assess the use of these features by bats.

Mitigation

6.21. *Timing of Works:* The majority of works affecting summer bat roosts can take place between March and October, avoiding the winter hibernation season (November to February inclusive). In the event that further emergence/re-entry surveys identify maternity roosts at the site, works would also be required to avoid the main maternity season (June to August inclusive).

6.22. *Lighting:* Any new external lighting should be directed to avoid light spillage onto vegetation, particularly linear habitat features such as woodland edges or potential roosting sites within trees and buildings. Bats are sensitive to light and could potentially avoid the area if access points or the surrounding areas become lit. Appropriate lighting options will prevent a negative impact on bats potentially using the habitats on site and should be approved by a suitably qualified and licensed bat ecologist. Lighting plans should be approved and signed

off by a licensed bat ecologist prior to submission, to ensure the scheme is suitable for bats. If appropriate measures are taken to reduce light spillage from the development, it is likely that there will be no negative impacts on local bat populations.

6.23. See **the appendix** for further information on designing lighting to minimise impacts on bats.

Dormice

Baseline

6.24. The hedgerows bordering and within the site provide potential foraging, commuting, and nesting resources and opportunities for dormice. Additionally, the site has good connectivity to suitable habitat to support dormice within the wider landscape.

6.25. Therefore, there is potential for dormice to access and use site, and potential for dormice to inhabit the suitable habitats around the borders of the site.

Potential Impacts

6.26. Two sections of hedgerow will be removed as part of the works, reducing the foraging, nesting, and commuting resources and opportunities available for dormice on site. The total loss in hedgerow is approximately 20m across two new entrances to the site, meaning that each gap is approximately 10m. The hedgerow is largely isolated from habitat with good potential to support dormouse in the wider landscape. The immediate surrounding habitat is pastoral farmland and residential development, and as such has limited potential to support dormouse.

6.27. The loss of this habitat would also reduce the connectivity between the site and suitable habitats within the surrounding landscape, resulting in habitat fragmentation. Therefore, the works would have a minor negative impact on a local scale.

6.28. If dormice are present in these scrub and woodland areas during the works and the enhancement process, there is potential that they may be harmed or killed.

Mitigation

6.29. Where hedgerow clearance is required, two methods for removing habitat can be undertaken, depending on the timing of the works. These are:

1) the above ground vegetation is cleared to approximately 500mm above ground, using handheld power tools (e.g. chainsaw, strimmer, brush cutter) in the winter (November to March inclusive) with the stumps and roots removed in summer (May to September inclusive); or

2) the above ground vegetation is coppiced to approximately 500mm above ground, using handheld power tools with the stumps and roots removed immediately in summer (May to September inclusive

6.30. All habitat clearance that impacts the hedgerows will at all times be overseen by a suitably qualified Ecological Clerk of Works (ECoW). Prior to commencement of habitat clearance works, the ECoW will provide a 'Toolbox Talk' to confirm the process that the habitat clearance will follow and they will ensure that it is understood that work must ONLY proceed under their guidance.

Great Crested Newt and Common Amphibians

Status on Site

6.31. The habitats on site offer some foraging, commuting, and resting opportunities for amphibian species, with potential refugia and hibernacula being present within the hedgerows on site.

6.32. Additionally there are two ponds and three ditches within 250m of the site boundary, connected by hedgerows.

6.33. Therefore, if there are great crested newts and amphibians within the surrounding landscape, they would be able to easily access site. The site has suitability to support these species, and as such, their presence on site is likely.

Potential Impacts

6.34. If great crested newts and amphibians do use the site, the loss of the modified grassland, and sections of hedgerows will result in a loss of foraging, commuting, and resting opportunities, as well as a potential loss of hibernacula/refugia, for local amphibian populations.

6.35. If present on site at the time of development, the works have potential to harm or kill individual amphibians.

Recommendations

6.36. It is likely that common amphibians are present on site, and regularly access and use the site to forage, commute, and rest.

6.37. Reasonable avoidance measures which should be implemented in this case include:

- Any ground vegetation within the application boundary should be maintained to a short sward length before the works begins to prevent the habitat becoming suitable for reptiles and amphibians.
- Should the vegetation grow longer than 30cm then any vegetation clearance should by done by hand and only during the reptile key active season (March-September, inclusive). Weather should be 9 degrees or higher, and dry with no strong winds. This will allow active reptiles and amphibians to move to more suitable habitat nearby, if they are present within the working area.

- In order to prevent creating suitable refuges for reptiles during construction, all stored materials should be raised off the ground on pallets or skids. Aggregates, such as gravel or sand, must be delivered in bulk bags and stored on palettes.
- If the existing potential refugia are to be removed, they should be dismantled by hand with a licence ecologist present to ensure that no individuals of these species are harmed
- All contractors on site will attend a tool box talk given by a licensed GCN ecologist, including information on GCN and other amphibians which may be present within the site and immediate area;
- A laminated summary of the identification of UK amphibian species will be provided for the Site Office with contact numbers of a qualified ecologist to contact if any are found;
- All works which may impact amphibians will be undertaken during the day.
- Any excavations or trenches on site must be covered whilst works are paused (such as overnight), or a ramp should be provided in order to prevent animals from becoming trapped;
- In order to prevent creating suitable refuges for amphibians during construction, all stored materials should be raised off the ground on pallets or skids. Aggregates, such as gravel or sand, must be delivered in bulk bags and stored on palettes; and
- In the event a GCN is discovered on site during the construction phase then all works must stop and a licensed GCN ecologist contacted.

Reptiles

Status on Site

6.38. The habitats on site offer foraging, commuting, and resting opportunities for reptile species, particularly within the hedgerows on site.

6.39. Therefore, it is likely that reptiles regularly access and use the site, and there is potential that populations of reptile are present on site.

Potential Impacts

6.40. The loss of the grassland and hedgerow habitats on site will result in a loss of foraging, commuting, and resting habitat within the local area, alongside the loss of hibernacula and refugia. This will have a minor negative impact on the local level.

Recommendations

6.41. It is likely that small numbers of common species of reptile are present on site, and regularly access and use the site to forage, commute, and rest.

6.42. Reasonable avoidance measures which should be implemented in this case include:

- Any ground vegetation within the application boundary should be maintained to a short sward length before the works begins to prevent the habitat becoming suitable for reptiles and amphibians.
- Should the vegetation grow longer than 30cm then any vegetation clearance should by done by hand and only during the reptile key active season (March-September, inclusive). Weather should be 9 degrees or higher, and dry with no strong winds. This will allow active reptiles and amphibians to move to more suitable habitat nearby, if they are present within the working area.
- In order to prevent creating suitable refuges for reptiles during construction, all stored materials should be raised off the ground on pallets or skids. Aggregates, such as gravel or sand, must be delivered in bulk bags and stored on palettes.
- If the existing potential refugia are to be removed, they should be dismantled by hand with a licence ecologist present to ensure that no individuals of these species are harmed
- All contractors on site will attend a tool box talk given by an ecologist, including information on GCN and other amphibians which may be present within the site and immediate area;
- A laminated summary of the identification of UK amphibian species will be provided for the Site Office with contact numbers of a qualified ecologist to contact if any are found;
- All works which may impact amphibians will be undertaken during the day.
- Any excavations or trenches on site must be covered whilst works are paused (such as overnight), or a ramp should be provided in order to prevent animals from becoming trapped; and
- In order to prevent creating suitable refuges for amphibians during construction, all stored materials should be raised off the ground on pallets or skids. Aggregates, such as gravel or sand, must be delivered in bulk bags and stored on palettes.

Other Terrestrial Mammals

Status on Site

6.43. The site contains suitable habitat to support [redacted] hedgehogs, with the hedgerows and modified grassland providing foraging, commuting, and resting opportunities for these species.

6.44. [redacted]

Potential Impacts

6.45. [redacted] hedgehogs are able to access the site during proposed works, they may be injured due to the destructive activity or trapped in any excavations.

6.46. Some of the habitats which will be lost provide good foraging, resting, and commuting opportunities for these species. Therefore, their loss will result in a loss of opportunities and resources within the local area. It is anticipated that the new tree and shrub planting, will compensate for some of the loss of the suitable habitats on site.

6.47. [redacted]

Recommendations

6.48. General mitigation measures are considered sufficient to protect terrestrial mammals during demolition and construction works within the application area. It is considered that the methods outlined under the amphibian section above will be sufficient to protect hedgehogs [redacted] should they be present on site.

6.49. Any excavations should be covered or protected overnight to prevent entrapment. Ramps should also be placed in any excavations to provide a way out if any animals do become entrapped.

6.50. The proposed new planting should contain native species to create a biological corridor to encourage movement of animals in the area.

6.51. [redacted]

6.52. Given the above avoidance and mitigation strategies, it is considered likely that there will be no residual impacts [redacted]

Breeding Birds

Status on Site

6.53. The hedgerows and scattered trees on the site provide good foraging and nesting opportunities for a variety of bird species. It is likely that the site is frequented by an assemblage of common, uncommon, and rare birds.

Potential Impacts

6.54. The removal of the hedgerows and scattered trees will result in a loss of local foraging and nesting habitats for birds. The majority of the boundary hedge and all of the boundary trees will be retained as part of the proposals.

6.55. In the absence of mitigation, if nesting birds are on site during the and hedgerow removal process, the works may have the potential to injure/kill individual nesting/breeding birds.

Recommendations

6.56. If any vegetation removal is required, or the proposed plans change to include the removal of the trees, this removal should occur outside of the breeding bird season (March - August inclusive).

6.57. If any vegetation removal is required during the breeding bird season (March - August), a pre-works check by a suitability qualified ecologist will be conducted no more than 24 hours before the removal to ensure that no active nests are present. If active nests are recorded, a suitable buffer will be retained around these until all chicks have fledged (to be confirmed by a suitably qualified ecologist).

6.58. A wildlife friendly landscaping scheme is recommended to enhance the site and provide suitable foraging habitat for birds.

Invertebrates

Status on Site

6.59. The application site has habitats suitable to support a wide range of common and uncommon invertebrate species, with the modified grassland and hedgerows providing foraging, commuting, and nesting/resting habitats for these species.

Potential Impacts

6.60. The loss of suitable habitats on site will result in a loss of commuting, foraging, and resting opportunities for invertebrate species.

6.61. A large proportion of this habitat loss is anticipated to be compensated for by the new tree and shrub planting.

Recommendations

6.62. Where new planting is considered in the plan, native tree and shrub species should be used to enhance the ecological value of the site.

7. ENHANCEMENT RECOMMENDATIONS

7.1. National planning policy states that all developments should seek to enhance onsite biodiversity whether impacts on protected species are recorded or not. Incorporating enhancement features into new or renovated buildings should be carefully considered. These features can be simple and inexpensive, please see below for specific recommendations.

Bats

7.2. Tree mounted bat boxes (at least three) should be installed on any mature trees at the site borders. The locations of these boxes must be agreed with a suitably qualified ecologist prior to installation to ensure they are appropriately positioned to maximise the potential for uptake by bats. Bat boxes should be installed at least 4m from ground level and with unobstructed air space in front (see **Appendix)**

7.3. At least one integrated bat box, such as a Schwegler 1FR bat tube or Green&Blue Bat Brick, should be implemented into the external brickwork of each new dwelling in order to provide new roost locations (five in total). If it is not possible to integrate bat features into the new building then at least one bat box such as the Greenwoods Small Hollow or Vivara Pro Beaumaris bat box can be installed on each of the new dwellings. Bat boxes should be installed at a height of at least 4m, preferably on a southern un-cluttered aspect with good connectivity to linear features such as other mature trees and hedgerows. The location should be determined by a licensed bat ecologist to ensure likelihood of repeated use is increased.

7.4. Additionally, where traditional building methods are to be used, integrated, discrete features within a roof can be built into a wet ridge. This is done by providing a gap in the mortar allowing access for bats. By linking together a couple of ridge tiles, the feature becomes more suitable for a greater range of species and number of bats (see the **Appendix**).

7.5. Where discrete features are being created, breathable roofing membrane must **NOT** be used in order to avoid hazards to bats.

Bird Boxes

7.6. To enhance the site for birds, 1x integrated swift box should be incorporated into each new building (five in total). The locations of these boxes must be agreed with a suitably qualified ecologist prior to installation to ensure they are appropriately positioned to maximise the potential for uptake by birds. These are suitable for providing nesting opportunities for swifts but are also known to be used by a range of more common bird species that may be present in the local area.

7.7. Sparrow terrace nest boxes are also recommended (at least three in total) as house sparrow *Passer domesticus* populations are in decline and provision of a terrace box will

offer nesting space for a number of pairs. House sparrows are very social and like to nest in colonies. Bird boxes can be installed on any elevation.

7.8. Tree-mount bird boxes suitable for garden and rural species can also be installed on any trees or building on site (see **Appendix**). Bird boxes should be installed at least 4 m from ground level and with unobstructed air space in front.

7.9. Within the development, wildlife friendly landscaping and the inclusion of native hedgerow planting at the perimeter of the site will provide additional nesting and foraging opportunities for bird species (see **Appendix** for further information).

Reptiles and amphibians

7.10. To provide new resting and hibernating habitat for reptile and amphibians, small deadwood piles or hibernaculum features will be incorporated at appropriate areas of the site, such as at the base of hedgerows (see **Appendix** for further details).

Invertebrate Features

7.11. Habitats within the site can best be enhanced through appropriate management practices, although specific features, such as bee bricks, can be incorporated at the application site if desired (see **Appendix**).

7.12. Inclusion of some standing water (even something as limited as a bird bath), could improve the value of the site for invertebrates

Wildlife Beneficial Landscaping Scheme

7.13. Any future landscape planting should seek to enhance biodiversity, improve connectivity to the surrounding habitats and provide food and shelter for a wide range of wildlife. All amenity planting and formally landscaped areas should be designed using a variety of plant species beneficial for wildlife. These do not necessarily have to be native but should be chosen for their ability to provide nectar or fruit and should be non-invasive species. There are a number of specialist seed mixes available specific to certain soil types, growing conditions and designed to benefit different groups of species such as bees or butterflies and moths.

7.14. All habitats should be managed in a suitable way to encourage a wide variety of insects and other wildlife to use the site.

7.15. Further information regarding habitat creation, enhancement and management can be provided on request and submitted with further survey results for the final planning application.

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Bats & Lighting

THE IMPACT OF LIGHTING ON BATS

Bats favour a dark environment for both roosting and foraging as they are adapted to low-light conditions. Artificial lighting will disturb bats if the lighting covers roost access points, flight paths or foraging habitats.

The main peak of nocturnal insect abundance occurs at dusk and a delay in emergence results in a lower foraging rate for bats.

Artificial lighting creates a 'vacuum effect' for nocturnal insects. During the night nocturnal insects use the light of the moon* to navigate. However, artificial lighting and even sky glow above cities obscures the natural moonlight as it is closer and radiates light in multiple directions.

Some species of bats have been recorded foraging around street lights such as Pipistrelle species and Nyctalus species. However, species that are less tolerant of artificial light are at a disadvantage when foraging as insects are drawn away from these species usual foraging grounds into the zones of artificial light.

Lighting must be considered in context to any development as increased lighting may cause roost abandonment, reduced reproductive success, and reduced foraging. Mitigation to reduce the impacts of lighting for bats is therefore of great importance in bat conservation.

Table 1: Summary of predicted impact of lighting for each species/genus

Impact / Reference	High	Medium	Low
Maternity roost	All species		
Night roost	Rhinolophus hipposideros Rhinolophus ferrumequinum Myotis spp. Plecotus spp.	Pipistrellus spp. Nyctalus spp. Eptesicus serotinus Barbastella barbastellus	
Emergence	All species		
Foraging	Rhinolophus hipposideros Rhinolophus ferrumequinum Myotis spp. Plecotus spp.		Pipistrellus spp. Nyctalus spp. Eptesicus serotinus Barbastella barbastellus
Commuting	Rhinolophus hipposideros Rhinolophus ferrumequinum Myotis spp. Plecotus spp.		Pipistrellus spp. Nyctalus spp. Eptesicus serotinus Barbastella barbastellus
Swarming	All species		
Hibernation	All species		

*For more information see Warrant, E., and Dacke, M. (2016) Visual Navigation in Nocturnal insects. *Physiology*, 31, 182-196.

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Bats & Lighting

Sources of light that can disturb bats include; light spill via windows, sport floodlighting, car headlights, roadside lighting, security lighting, aesthetic lighting of waterways, and aesthetic illumination of buildings. Glare will affect bats over greater distance than the target area directly illuminated.

Avoidance is the most effective method, but if this is not possible the following measures should be considered.

What lighting should I use?

- Low pressure sodium lights or 'warm' LEDs
- Wavelength above 540nm
- Colour temperature below 2700K
- Shielded lights that prevent light spill above a 70 degree angle
- Passive infrared (PIR) motion sensors

What to avoid:

- Lighting roost entrances, flightpaths, and foraging or commuting routes
- Reflective surfaces beneath lighting
- High level lights
- Non-directional lighting

Lighting should be considered at an early stage allowing impacts to be minimised through the design of the site.

Key Points

- Keep lighting intensity to the minimum level required
- Limit the times that lights are on to provide some dark periods (e.g. switching installations off between midnight and 5am)
- Dim lighting according to demand
- As an alternative to lighting pathways use paving materials that reflect moonlight
- Low level lighting allows darkness to be retained within higher vegetation
- Set dark habitat buffers - lighting should always be a minimum of 25m from vegetated margins and 40m from waterbodies
- Incorporate dark corridors within the site
- Compensate for the loss of dark areas by enhancing other dark areas
- Consider building design - install internal lighting away from windows

Bat Conservation Trust guidance note 08/18 'Bats and artificial lighting in the UK & http://www.cost-lonne.eu/recommendations/

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General Mitigation

General Mitigation for Bat Roosts

Bat Mitigation Class Licence (BMCL)

Registration for a BMCL can be submitted following planning approval. This licence permits the disturbance and/or capture of bats and/or damage/destruction of bat roosts of low conservation significance. You may apply for a BMCL in the following circumstances:

- No more than three common species of bat;
- Only individual or small numbers of bats of each species; and
- No more than three roosts in total across all structures at the site.

Natural England aim to provide licensing details in 10 working days

European Protected Species Licence (EPSL)

An application must be submitted by the local planning authority and must be granted before any works can commence on site. You must apply for an EPSL in the following circumstances:

- More then three species of bat or rooting structures are present at the site
- Rarer species are present
- Presence of a Maternity roost
- Roost present within a tree

Natural England aim to provide licensing decisions in 30 working days. Licences will only be granted where it can be shown there will be no detriment to the species of bats concerned.

Timing: If your roost is a confirmed **Hibernation** roost works cannot be carried out in **Oct-Feb**
If your roost is a confirmed **Maternity** roost works cannot be carried out in **May-Aug**

Materials

Breathable membrane (pictured on the left) should **not** be used in new loft voids as this can lead to entanglement and trapping of bats and increase the variability of the microclimate in the loft. Instead **bitumen felt** (pictured on the right) should be utilised as bats can grip onto it, helping to maintain a safe and suitable environment.

Supervision

Once you have been granted your licence, a Natural England bat-licensed ecologist will need to be on site to over see the stripping of any identified or potentially suitable roosting features. If any bats are found on site they can then be lawfully handled and placed safely into a newly provided bat box.
After the strip has taken place the provision of new roosting opportunities must be placed on site as mitigation such as bat boxes which are suitable for the roosting bat species which were found on site.

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Fascia & Barge Board

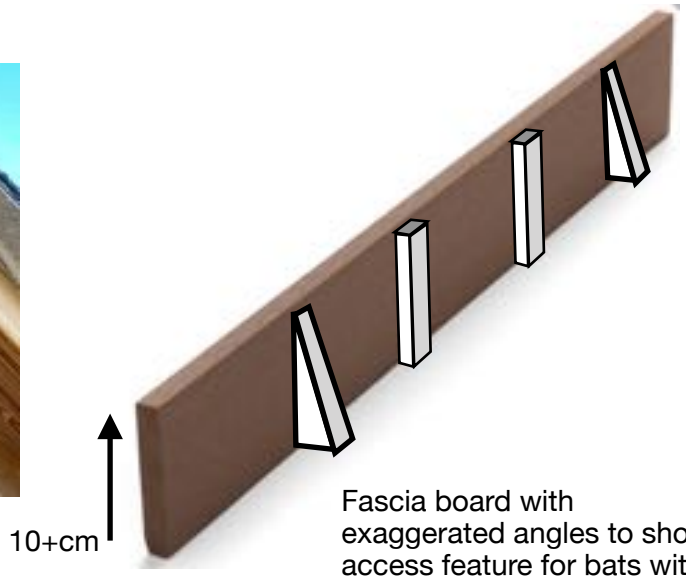
Gaps and Crevices

Crevice-dwelling bat species can utilise gaps in fascias, barge board and soffits, and potentially can gain entry to the interior roof void if the gap is large enough.

These areas of a building are often replaced or repaired which would destroy any identified roosting features. Luckily there are features that can be implemented to compensate for the loss of these features.

A simple option to compensate for a lost roosting feature in a fascia or barge board is to cut an access hole flush with the wall in which the new/replacement fascia, barge board, or soffit box is placed. It needs to be close to the wall as bats need somewhere to land before they can climb up into a gap

Alternatively, features can be created by installing wide barge boards directly on overlapping cladding, which creates suitable gaps for crevice roosting bats where natural crevices are created due to the profile of the boards. Gaps of at least 4 inches deep and approximately 15mm wide at the top are suitable for small bats such as pipistrelle species.



Fascia board with exaggerated angles to show access feature for bats with tapered angle

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Integrated Bat Features

Lifted tile bat access features

Lifted tiles provide a simple, discreet bat roosting opportunity which are great for replicating existing roost features on traditional tiled roofs. They can be cheaply and easily created using materials available on site to provide a bespoke mitigation solutions for bat licence projects.

Lifted tiles should provide a gap of approximately 15-25 mm beneath the tile to provide access to the batten space of the roof. The roof should be lined with bitumastic felt to create the perfect warm crevices suitable for roosting bats.

Small pieces of tile, mortar, pieces of wooden batten or rolled lead tingle can be used to raise the tile and create a suitable access gap for bats.

These features are also suitable for incorporation on areas of hanging tiles to provide bat access to the batten space.

The locations for these features should be agreed with an ecologist to provide optimal conditions for the bat species and roost types present on site.

Lifted tile features can also be used to provide access into a roof void suitable for roosting bats. To provide access into the roof space, a small gap must be cut into the roofing felt. This should be approximately 50 mm x 20 mm to provide access for bats but discourage birds from entering the roof space.

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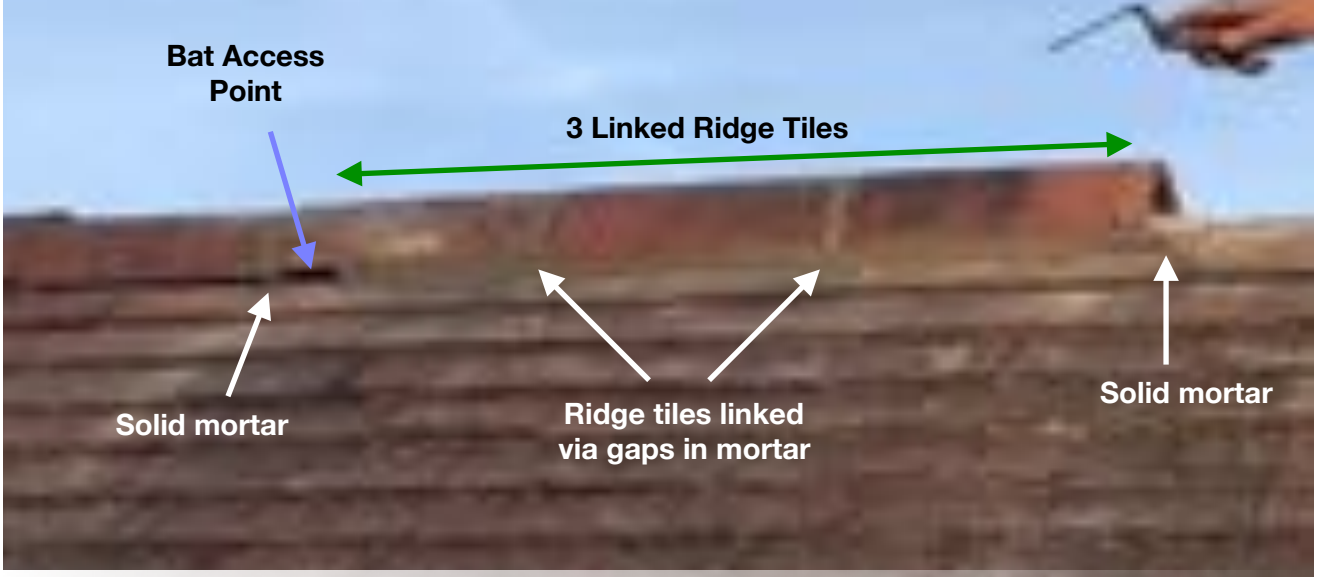
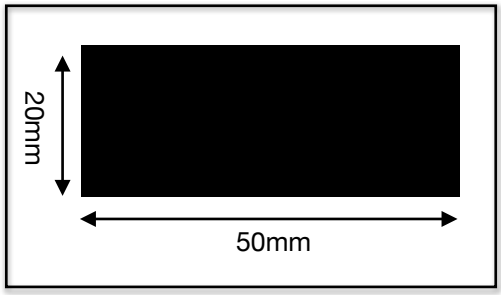
Ridge Tile Crevice Feature



HOW TO CREATE

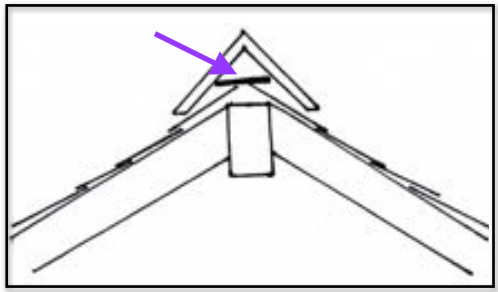
Note: Use three adjacent ridge tiles for one Ridge Tile Crevice Feature

1. Notch out the underside of a ridge tile measuring 20mm high by 50mm wide.

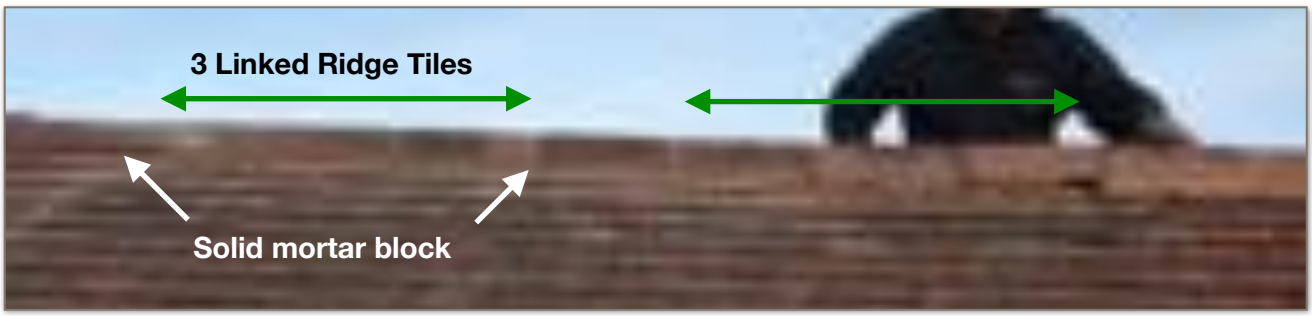


2. Or leave a gap in the mortar of the same size

3. Leave the gap mortar free when bedding the tile onto the ridge.



4. To ensure the three ridge tiles remain linked either; place a broken tile over the ridge and mortar only above the tile (left) or fill one side with mortar and leave the other side empty (do this on alternate sides to ensure the feature does not become draughty) (right).



5. At each end of the three linked ridge tiles insert a solid mortar block to reduce through draughts.

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Integrated Bat Boxes

How to Install

Integrated bat boxes can be installed into the brickwork of buildings to provide a roosting spot for bat species.

Being embedded in the masonry of a building, they do not impact the exterior seal of structure and are commonly integrated in new builds.

With some modification or bespoke design, integrated bat boxes can be installed in such a way that it does not interfere with a building's exterior facade.

The 1FR bat tube has a 45 degree angle for bats to land on and crawl upwards into the bat tube. It has been designed to be installed within or adjacent to the the external skin of the block work or brickwork.

For a rendered finish, the 1FR bat tube can be built into the external skin of breeze blocks (acting as a block) and be rendered over (ensuring the access point is left clear). Ridges should be created in the render immediately below the access point, which will aid the bats when crawling into the bat tube.

For a brickwork finish, the 1FR bat tube should be installed within the brickwork, set back slightly to allow the front to either be rendered over or for a continuity of brick slips to be mortared over the top of the tube. The upper brick slip should overlap the access point and the lower brick slip should be in line with the 45 degree angle of the bat tube.

Alternatively, **Habibat** bat tubes can be purchased that are designed for brickwork design and can be custom made.

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External Bat Boxes

TYPES OF BAT BOXES

Schwegler 2F Double Front Panel

- Manufactured from long-lasting woodcrete
- Lifetime - 20-25 years
- Suitable for pipistrelle and Myotis species
- A second inner wooden panel is fitted adjacent to the front panel imitating a cavity wall

Schwegler 1FD Double Front Panel

- Manufactured from long-lasting woodcrete
- Lifetime - 20-25 years
- Suitable for pipistrelle and Myotis species
- A second inner wooden panel is fitted adjacent to the front panel imitating a cavity wall
- Small entrance hole discourages birds from using the box

Vincent Pro Bat Box

- Manufactured from timber and recycled plastic
- The front and the top of the box is black, which helps heat absorption
- Suitable for a range of species including pipistrelle species, Myotis species, and brown long-eared bats.
- No maintenance required

Schwegler 2FN

- Manufactured from long-lasting woodcrete
- Lifetime - 20-25 years
- Suitable for pipistrelle species, Myotis species, serotine, brown long-eared, noctule and Leisler's bats
- Dual entrance
- Birds and dormice have also been found using this box
- A newer model is now available, Schwegler 3FN, designed with smaller entrance holes which discourage birds and dormice

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External Bat Boxes

Schwegler 1FS Large Colony Box

- Manufactured from long-lasting woodcrete
- Lifetime - 20-25 years
- Suitable for a range of bats including pipistrelle species, Myotis species, Noctule, and brown long-eared bats
- Three grooved inner wooden panels are connected to the front panel, which are ideal for bats to cling to.
- Accommodates large summer colonies

Schwegler 1FF Colony Box

- Manufactured from long-lasting woodcrete
- Lifetime - 20-25 years
- Suitable for a range of crevice dwelling bats including pipistrelle species, barbastelle, noctule, and brown long-eared bats
- Rough wooden surface for bats to cling onto and climb

Greenwoods Ecohabitats Small Hollow Bat Box

- Manufactured from long-lasting ecostyrocrete
- Lifetime - 20-25 years
- Suitable for a range of bats preferring a cavity space, including pipistrelle species, myotis species, noctule, and brown long-eared bats
- Suitable for hibernating bats

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Bird Boxes

TYPES OF BIRD BOXES

Vivar Pro Seville 32mm WoodStone Nest Box

- Manufactured from woodstone - increases longevity and provides a consistent internal temperature
- The nest box compensates for the lack of natural cavities that are found in trees
- Suitable for blue tits, tree sparrows, house sparrows, great tits, crested tits, nuthatches, coal tits and pied flycatchers
- Should be installed between 1.5m and 3m high

House Martin Nest Cups

Swallow Nest Bowl

- Suitable nest building mud is difficult for house martins and swallows to find
- Alterations to house construction and roof design have resulted in a decrease of suitable nesting sites
- Install swallow nest bowls within an outbuilding or garage that has flight access - 6cm below the ceiling
- Install house martin nest cups under the eaves of a house - minimum of 2m high

Swift Nest Box

- Swift numbers are declining partly due to a loss of nesting sites
- The entrance hole discourages other birds such as starlings and sparrows
- Install a minimum of 5m high with unobstructed airspace in front of the nest
- Integrated models of swift nest boxes are also available

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Bird Boxes

5KL Schwegler Nuthatch Nest Box

- Manufactured from woodcrete
- Nuthatches prefer nest boxes with larger cavities. They will often occupy owl nest boxes and fill the entrance hole with mud reducing the size to approximately 32mm
- Nuthatches plaster mud on the internal walls of the cavity and line the floor with wood chipping and leaves to nest
- To discourage nuthatches from using owl nest boxes try installing the 5KL immediately adjacent

Open-fronted Nest Box

- Manufactured from woodstone - lifetime of 20-25 years
- Suitable for robin, wren, spotted flycatchers, and black redstart
- Best installed hidden from view on the wall of a building or hidden within ivy/honeysuckle as the boxes open-front may attract predators
- Install at a height of 1-3m

Sparrow Terrace Next Box

- Sparrow populations are decreasing due to a lack of nesting sites
- Sparrows are a sociable species and prefer to nest in a colony
- Likelihood of uptake is increased if more nesting chambers are available (the example nest box shown contains three nesting chambers)
- Various other nest box designs are available
- Install at a minimum of 2m high

Tawny Owl Nest Box

- Install on a mature tree within a woodland (not on the outskirts)
- Install a minimum of 3m high
- Face the box entrance away from prevailing wind (generally avoiding west/south-west)

Little Owl Nest Box

- Prefer areas of mixed farmland and orchards
- Essential features; small entrance hole (70mm), narrow tunnel, and a dark nesting chamber
- Install on a horizontal tree branch/wall top or beam so that owlets can walk in/out prior to fledging
- Can be installed on any tree species apart from cherry - the cherry harvest coincides with the little owl breeding season
- Entrance hole should face the tree trunk
- Install at a minimum height of 3m

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Deadwood Habitat Piles

Design and creation

Deadwood habitat piles offer valuable habitats for an array of saprophytic (deadwood eating) invertebrates that will in turn provide food for a wide range of predatory species of insects, birds, mammals, reptiles and amphibians.

On sites where vegetation structure is limited, brash and log piles provide an instant enhancement, Deadwood habitat piles also provide shelter and refuge opportunities for larger animals, particularly reptiles and amphibians.

They can also be suitable hibernation sites during the winter for reptiles, amphibians and small mammals including hedgehogs. Think bonfire!

Habitat piles should be located in sunny or part shaded sites. A compact central core, with larger woody material in contact with the ground is recommended to provide the damp and decomposing wood conditions that are most suitable for benefiting saprophytic invertebrates. The outer layers should be laid more loosely on top. This provides a diverse structure within the habitat pile and provides suitable cover and basking opportunities for reptiles.

Habitat piles should be maintained by adding material every few years as the pile decomposes and do not require much management.

To provide optimal conditions for reptiles, amphibians and mammals, log piles should contain a mixture of sizes and shapes with plenty of small diameter material included. This introduces voids of different sizes and creates a complex internal structure.

They can be created to be an attractive feature of the landscape where a more formal appearance is required.

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Hibernacula

Creation and design

Hibernacula offer sheltering opportunities for reptile and amphibian species, providing them with essential habitat in which to hibernate during th winter temporary shelter in the summer during the warmer months.

Hibernacula can be both naturally-occurring and artificial, and can be constructed of a range of materials. Our ecologists can advise on the best locations and materials for the placement of artificial hibernacula.

The optimum locations for hibernacula are on south-facing slopes within freely-draining soils. It is imperative that the hibernacula are exposed to direct sunlight for the majority of the day to ensure maximum thermal capacity.

It is also important that hibernacula are created within a mosaic of habitat types for example open areas of grassland adjacent to sheltered areas of scrub / hedgerow. This ensures excellent basking areas are available adjacent to well connected habitat and areas of shelter.

Hibernacular can range from underground chambers to sheltered areas at ground level, akin to refugia.

By digging a shallow pit and filling it with materials such as rocks and logs, a chamber can be created which contains several gaps within. Access can be enabled by placing entrance tubes at ground level that go into and out of the chamber.

When the chamber and access has been constructed, soil can be piled on top of the hibernacula to seal it. Plant wildflower seeds on top to further benefit local biodiversity!

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Insect boxes and bug hotels

Invertebrates

The provision of insect boxes and bug hotels provide a valuable resource for invertebrates, providing suitable nesting habitat for important native pollinators such as mason bees and leafcutter bees. They can also provide opportunities for a wide range of species to shelter and over-winter during the colder months.

Bug hotels are highly adaptable, and are therefore suitable for almost all developments and habitats. They can be made easily from a range of waste and plant materials, and more specialist items such as bee bricks can be purchased in order to target specific species.

Image: RSPB

Bug Hotel

These are easily implemented in almost any situation as bug hotels can be made from a range of materials, such as bricks, plant pots, tree cuttings, logs and broken tiles.

Bug hotels can also be adapted to benefit specific species, such as bees, woodlice, and ladybirds.

Other terrestrial species such as hedgehogs, reptiles and amphibians can also benefit from sheltering in a bug hotel.

Insect boxes

A range of prefabricated insect boxes such as the Green & Black Bee Brick (left) and the Woodstone Insect Box (above) are available and can be incorporated into or onto buildings or on trees to provide nesting habitats for a range of solitary bee species.

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Wildflower Turf

Wildflower Friendly Landscaping

Wildflower turf provides an instant enhancement to any landscaping project with low maintenance and reliable establishment of native wildflower grassland.

Darwin Ecology Ltd are Accredited Partners of Wildflower Turf Ltd.
Accredited partners are trained in the use and installation of Wildflower Turf Ltd. products to deliver attractive and successful wildflower landscapes.

Wildflower turf is suitable for use in a wide range of applications to provide a naturalistic and attractive meadow landscape and provides a more reliable result compared with traditional seeding methods.

The seeded turf contains a diverse mix of native wildflower meadow species including grasses and flowering plants characteristic of lowland meadows on a range of soil types.

As the grassland matures, the meadow develops a characteristic composition with species that thrive on the local soil.

The flowers in the turf have been chosen to ensure that flowering plants are present from early spring through to autumn.

A diverse and thriving meadow will attract a huge range of invertebrates and pollinators to birds, reptiles and mammals.

Darwin Ecology can help you maximise the impact of your wildflower areas by designing and creating additional habitats for the species you will attract including rustic and visually pleasing deadwood habitats or hibernacula as shown.

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