



DARWIN ECOLOGY
integrating nature conservation

The Hopkiln, Bury Court
Bentley, Farnham
GU10 5LZ
Email: info@darwin-ecology.co.uk
www.darwin-ecology.co.uk

Ecological Impact Assessment

Hutts Farm Cottage
Blagrove lane
Wokingham
RG41 4AX

February 2025
R4

Darwin Ecology Ltd
Registered Office: 8 Layton Lane, Shaftesbury, Dorset SP7 8EY
Company No. 07654823

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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	Assistant Ecologist Maya Crate BSc (Hons) MSc	February 2025
Approved by	Principal Ecologist Olatz Gartzia BSc MSc ACIEEM	February 2025
R2 by	Consultant Ecologist Libby Pinches BSc (Hons)	July 2025
R3 by		October 2025
R4 by		February 2026
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.		

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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 Mr Bob Ryan to undertake an Ecological Impact Assessment (EclA) of proposals for the habitats at Hutts Farm Cottage, Blagrove Lane, Wokingham, Berkshire RG41 4AX. The assessment was required to support a planning application for the erection of three residential dwellings on an area of modified grassland and was informed by a desk study and a habitat walkover survey.
- 1.2. During the habitat walkover survey, the site comprised a large expanse of modified grassland, a non-native ornamental hedgerow and a small number of medium mature scattered trees.
- 1.3. The modified grassland provided low foraging and commuting potential for protected and notable species and the non-native hedgerow was of a monoculture nature, further limiting the suitability for protected and notable species on site. Therefore, no phase two surveys are required.
- 1.4. The proposals will result in the loss of a large expanse of modified grassland, which is currently being utilised as an amenity garden, and the non-native hedgerow. Most of this grassland will be lost to the footprint of the three new dwellings and associated parking spaces. However, aspects of modified grassland will be replaced in the form of further amenity gardens following the works. New mixed native species hedgerows will be planted on the eastern boundary, to replace the non-native hedgerow, and along the northwest, southwest and plot boundaries.
- 1.5. Enhancement recommendations have been made in order to ensure that opportunities are available for protected species following the completion of the development and that the ecological value of the site is enhanced in the long-term.

2. INTRODUCTION AND BACKGROUND

- 2.1. Darwin Ecology Ltd was commissioned by Mr Bob Ryan to undertake an Ecological Impact Assessment (EclA) of proposals for the habitats at Hutts Farm Cottage, Blagrove Lane, Wokingham, Berkshire RG41 4AX¹. The assessment was required to support a planning application for the erection of three residential dwellings on an area of modified grassland and was informed by a desk study and a habitat walkover survey.
- 2.2. The proposed drawings on which this assessment is based are provided at **Appendix 1, Proposed Plans**.
- 2.3. 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 25m² in accordance with current guidance from *UK Habitat Classification Version 2.0 UKHab Ltd (2023)*. The subsequent EclA follows the CIEEM Guidelines for EclA in the UK and Ireland (2018).
- 2.4. A previous habitat walkover and building inspection was undertaken in 2023 on the habitats and dwellings directly bordering the southern boundary by Darwin Ecology Ltd. During this survey, the surveyor also assessed the habitats within the red line boundary. The habitats were noted to be in the same condition as in this update survey. The local ponds were also assessed during this 2023 survey.

Site Overview

- 2.5. The site is located southwest of the town of Wokingham, approximately 2km from the town centre in a low-density residential area. The site comprises a large area of grassland bordered by hedges and a wooden post fence. The wider boundary of the site comprises a two-storey residential building and detached two-storey outbuilding, surrounded by hardstanding grounds with several mature trees throughout the property. A well-grazed horse field borders the site directly to the west (see **Figure 1**).
- 2.6. The wider landscape comprises residential properties to the south and west of the site and agricultural grazing land to the north. Patches of broadleaf woodland are present in the surrounding area, as well as golf course 300 metres south. The east of the site develops into a higher-density residential area with an industrial site located to the northeast (see **Figure 2**).

Scope of Assessment

- 2.7. The process of EclA aims to identify, quantify and evaluate the potential effects of development-related or other proposed actions on habitats, species and ecosystems.
- 2.8. Potential effects on the following ecologically sensitive receptors have been considered during the EclA of Hutts Farm Cottage:

¹ OS Grid reference: SU 79832 67192

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

2.9. The aim of this report is to:

- Identify and describe ecologically sensitive receptors within the site;
- Carry out an impact assessment of the proposed works and how they will directly / indirectly affect the ecological receptors identified;
- Outline the relevant legislation and protection afforded to protected species present at the site; and
- Provide avoidance, compensation, mitigation and enhancement measures recommended to avoid harm / injury to protected species.



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



Figure 2: Site location within the wider landscape. Copyright Google Earth Pro (Feb 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).
- 3.4. The principal pieces of legislation relating to wildlife and of relevance to this report are:
 1. *EU Habitats Directive (1992)*;
 2. *EU Birds Directive (1979)*;
 3. *Conservation of Habitats and Species (Amendment) Regulations 2017*;
 4. *The Wildlife and Countryside Act 1981 (as amended)*;
 5. *The Natural Environment and Rural Communities Act 2006*; and
 6. *The Protection of Badgers Act 1992 (extended under The Hunting Act 2004)*.
- 3.5. The above legislation aims to protect sites and species and give detailed descriptions of exactly how these features are protected and what actions would constitute an offence.

National Planning Policy

- 3.6. The *National Planning Policy Framework (2024)* 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:

187 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);

187 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;

187 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 and incorporating features which support priority or threatened species such as swifts, bats and hedgehogs;

188) 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;

189) Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural beauty 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 areas.

3.8. Specific policies regarding habitats and biodiversity comprise:

192) 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.

193) 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, 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 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 reasons 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 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.

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

- a) Potential Special Protection Areas and possible Special Areas of Conservation;
- b) Listed or proposed Ramsar sites; and
- c) sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.

Local Planning Policy

3.9. The local planning policy for the site is the Wokingham Borough Local Development Framework, with relevant policies comprising:

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:
 - Mitigation measures can be put in place to prevent damaging impacts; or
 - Appropriate compensation measures to offset the scale and kind of losses are provided.

CP8 - Thames Basin Heaths Special Protection Area

Development which alone or in combination is likely to have a significant effects on the Thames Basin Heaths Special Protection Area will be required to demonstrate that adequate measures to avoid and mitigate any potential adverse effects are delivered.

- 3.10. The Thames Basin Heaths SPA Avoidance Strategy may also be relevant to this site. Development resulting in an increase in residential units at a distance of up to 5km from the SPA can cause significant disturbance to the breeding success of rare bird populations due to the impact of residents using the site for recreational activities. All housing developments within 5km of the SPA will be subject to stringent tests and impact assessments and Waverley Borough Council has worked with Natural England to produce this Strategy to enable housing developments to continue.
- 3.11. The local biodiversity action plan relevant to the site is Wokingham Biodiversity Action Plan. It aims to set out a long-term strategy for biodiversity conservation within Wokingham and provide a series of objectives and actions for achieving successful conservation of habitats and species across the county.

Wokingham Biodiversity Action Plan

- 3.12. The Wokingham Borough Council BAP is a critical part of local planning policy, paragraph 4.42 of the Core Strategy states “....All developments should take account of the biodiversity, and where possible developments should contribute to the enhancement of the borough’s biodiversity. The Wokingham District Biodiversity Action Plan highlights targets where proposals can contribute towards their achievement...” The Wokingham Borough Biodiversity Action Plan is also listed as part of the policy background to Policy TB23: Biodiversity and Development in the emerging Managing Development Delivery (MDD) DPD.
- 3.13. The new Wokingham Biodiversity Action Plan retains the structure of the former plan, featuring the five Habitat Action Plans (HAPs) including a Communities, Towns and Villages HAP, Woodland HAP, Grassland and Hedgerow HAP, Wetland HAP and Heathland HAP. All the HAPs include targets for the protection, management/enhancement and creation of their respective broad habitats types across the Borough. The management/enhancement elements of the HAPs are measured through the statutory national indicator on management of Local Wildlife Sites (LWS), known as Single Data List 160. The HAPs have set a target to achieve 60% of LWS in appropriate management by 2024. The targets for habitat creation have been set with regard to SDL SANG proposals that are likely to come forward within the plan period.

4. METHODOLOGY

Desk Study

- 4.1. A desk study was undertaken for designated sites and bat 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 2km;
 - 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; 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. Assistant Ecologist Maya Crate BSc(Hons) MSc conducted a walkover survey at Hutts Farm Cottage on the 6th February 2025. The weather conditions at the time of the survey were dry with no breeze and clear sky and approximately 5°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* and badger *Meles meles*;
 - Schedule 1 birds, including but not limited to; Barn Owl *Tyto alba*, Lapwing *Vanellus vanellus* and Skylark *Alauda arvensis*

- 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 mantegazzianum*.

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 habitat walkover survey was undertaken in January, which is a sub-optimal period for identifying many native plant species as many plant species have not grown into recognisable growth forms. Considering the context of the site, the current use of the site as an amenity garden, and the habitats to be impacted by the proposals, it is considered unlikely that this would have a significant impact on the reliability of the survey results or conclusions.
- 4.10. The report is not designed, nor is it required to present a completed inventory of flora/fauna.
- 4.11. This report remains valid for 18 months from the date of the survey however, a walkover survey within this period may be required to demonstrate whether or not the habitats have remained as described.
- 4.12. During the inspection of the two nearby ponds, it was not possible to complete a full HSI assessment of one of these waterbodies. For P2, access was denied by the landowner and therefore the surveyor could not complete an on site assessment of this waterbody. Aerial maps and imagery were examined to gain further information on this waterbody. The lack of HSI assessment is not considered a significant limitation as the pond has limited connectivity to the site and it is understood that the pond supports a population of geese, reducing the likelihood of this pond being used as a breeding site by GCN.

5. SURVEY RESULTS

Desk Study

- 5.1. There is one statutory designated site within 2km of the site, namely Holt Copse and Joel Park Local Nature Reserve, located 1.9km north from the site. This site was designated for its lowland mixed deciduous woodland including ancient semi natural woodland.
- 5.2. A search of the Wokingham Borough Council planning portal revealed no past or pending documents detailing ecological importance within close proximity within the past two years.
- 5.3. There are 8 areas of priority deciduous woodland within 1km of the application site, with the closest being 100m from the site. This area of woodland is also registered on the National Forest Inventory (Woodland - Broadleaved). Further priority habitats within 1km of the site comprise two areas of traditional orchard located approximately 870m west.
- 5.4. There is one area of ancient woodland within 1km of the application site, Bottle Copse which is approximately 460 m northwest from the site.

Habitat Walkover Survey

- 5.5. Overall, the site comprised a large expanse of modified grassland with a small number of medium mature scattered trees and a non-native ornamental hedgerow on the eastern border. This section is to be read in conjunction with **Figure 3. Table 1** below outlines the summary of habitats identified on site, as well as their applicable secondary codes.

Table 1: Habitat applicable codes

Primary Habitat	UK Hab Primary Code	Applicable Secondary Code(s) used	Secondary Code(s) description
Modified grassland	g4	108	Frequently mown
		203	Mature tree
		510	Bare earth
Non-Native and ornamental hedgerow	h2b	-	-
Built linear features	U1e	-	-

Modified grassland g4 (Secondary codes: 108, 203, 510)

- 5.6. Modified grassland is the dominant habitat within the site and primarily consists of common grass species, including annual meadow grass *Poa annua*, Yorkshire fog *Holcus lanatus*, and fescue *Festuca sp.* This grassland is regularly mown and kept to a short sward height, with an average height of less than 5cm. It is a species-poor grassland with other species present including small amounts of ground ivy *Glechoma hederacea*, creeping buttercup *Ranunculus repens*, a very small amount of cleavers *Galium aparine* and nipplewort

Lapsana communis. Small areas of bare earth are present throughout the grassland and there is evidence of molehills.

- 5.7. The southeastern corner of the field has around 10% coverage of moss *Bryophyta* within the grassland creating a slightly different composition to the rest of the grassland, This area also has a very small encroachment of ivy *Hedera helix* and bramble *Rubus fruticosus* from the bordering road verge. The western aspect of the site is bordered by a well-grazed horse field which had horses present at the time of the survey.
- 5.8. Three scattered trees are present within the grassland, two are medium oaks located on the southern boundary bordering the current residential property. The third is another medium oak tree present on the eastern border.

Non-native and ornamental hedgerow

- 5.9. A non-native hedgerow borders the site on the eastern aspect which is mostly comprised of cherry laurel. This is relatively dense in nature until the northeastern corner where the cherry laurel becomes sparse and small hazel *Corylus avellana* trees are interspersed. The southeastern corner also contains ornamental bamboo interspersed with the cherry laurel.

Built linear features

- 5.10. The site is bounded by wooden post fencing with wire on the north, east and western boundaries. There is no built feature on the southern aspect of the site, meaning it directly borders the current residential property.



Red Line Boundary



Rural Tree



Non-native and ornamental hedgerow



Modified grassland



Project: Hutts Farm Cottage,
Wokingham, RG41 4AX

Figure 3: PEA Map

Date: February 2025

Info@darwin-ecology.co.uk
www.darwin-ecology.co.uk

Habitat Walkover Survey Photos



Image 1: Modified grassland southern aspect



Image 2: Modified grassland northern aspect showing the bordering wooden post and wire fencing



Image 3: Modified grassland showing patches of bare earth and one of the mature trees



Image 4: Closer image of the Southern aspect showing the bordering residential property



Image 5: Dense non-native and ornamental hedgerow with a medium mature tree



Image 6: Sparse nature of the hedgerow on the northeastern aspect

Protected Species

Bats

5.11. There are 11 EPS Licences for bats within 2km of the site boundary. These are detailed in **Table 2**.

Table 2: ESPL granted for bats within 2km 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	Brown long-eared, Common pipistrelle	Destruction of a resting place	747m northwest
2017-31502-EPS-MIT	29/09/2017 - 30/04/2023	Common pipistrelle	Destruction of a resting place	1.3km northwest
2015-11806-EPS-MIT	05/09/2015 - 26/08/2017	Common pipistrelle	Damage and destruction of a resting place	1.3km northeast
EPSM2013-6034	30/07/2013 - 30/09/2014	Brown long-eared, Common pipistrelle	Destruction of a resting place	1.4km west
EPSM2012-5339	12/09/2013 - 30/09/2015	Brown long-eared, Common pipistrelle, Natterers	Destruction of a resting place	1.4km southwest
EPSM2011-3236	10/08/2011 - 30/09/2013	Common pipistrelle	Destruction of a resting place	1.7km west
2015-9568-EPS-MIT	06/05/2015 - 30/04/2020	Common pipistrelle	Destruction of a resting place	1.8km south
EPSM2009-561	15/04/2009 - 31/12/2010	Common pipistrelle, soprano pipistrelle, brown long-eared	Destruction of a resting place	1.8km south
2016-22176-EPS-MIT	01/04/2016 - 31/03/2021	Brown long-eared	Destruction of a resting place	1.8km north
EPSM2013-6081	09/01/2014 - 31/10/2024	Common pipistrelle	Destruction of a resting place	1.9km south
2014-3612-EPS-MIT	24/10/2014 - 22/10/2019	Soprano pipistrelle	Destruction of a resting place	2km south

5.12. The hedgerows 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 of the site. The modified grassland provides limited foraging and commuting potential for bats.

5.13. None of the trees on site were assessed to offer suitable roosting opportunities for bat species, with none of the trees that were of the age or character having any potential roosting features.

Great Crested Newt and Common Amphibians

- 5.14. A search of Magic revealed no EPS licences for great crested newt within 1km of the site boundary. There were also no records of great crested newt survey licence returns.
- 5.15. 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. There is also a lack of scrub on site further limiting suitable habitats on site for great crested newt.
- 5.16. There were no potential hibernacula on site which could support great crested newt.
- 5.17. There are no water bodies within the application site, however a desk study identified two ponds within 250m of the site. One was located 90m southeast (P1) and the other was located 193m south (P2) (See Figure 4).

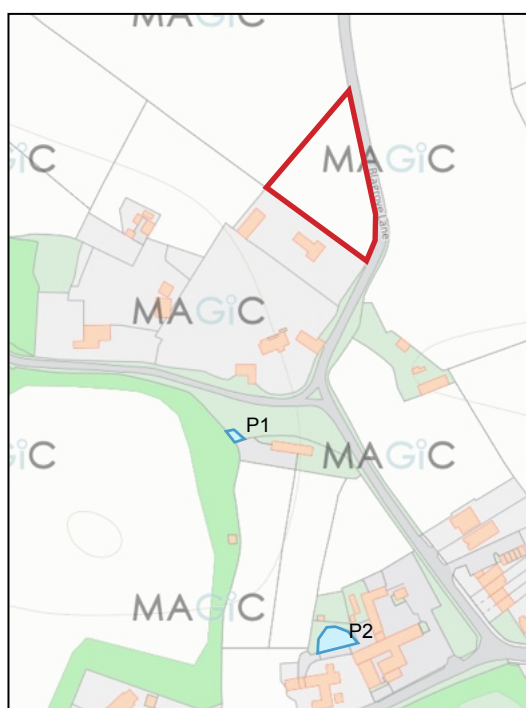


Figure 4: Waterbodies within 250m of the site boundary

- 5.18. P1 was accessible during the time of the survey and underwent a HSI score, this returned a poor result showing it was not suitable to support great crested newt (Table 3). During a 2023 site visit by Darwin Ecology, the pond was seen to be completely dry. P2 was not accessible due to being housed on private land. The pond was roughly 190m² in size (taken from satellite imagery) and supported a population of geese. The presence of waterfowl reduces the likelihood of GCN being present however, from satellite imagery, the pond appears to have good macrophyte cover and minimal shading from bank vegetation. The surrounding terrestrial habitat has some suitable areas of scrub to the south but is primarily

horse paddock to the north which is not suitable terrestrial habitat due to a maintained short sward length. Additionally there was limited connectivity between P2 and the site due to the presence of multiple walls, fences, and roads between the two areas. Therefore, even if P2 supported GCN populations, it would be unlikely that they could successfully migrate to access the site at Hutts Farm Cottage.

Table 3: ARGUK GCN HSI Calculator

Pond Name		P1
SI No	SI Description	SI Value
1	Geographic location	1
2	Pond area	0.05
3	Pond permanence	0.1
4	Water quality	0.33
5	Shade	1
6	Water fowl effect	1
7	Fish presence	1
8	Pond Density	1
9	Terrestrial habitat	0.67
10	Macrophyte cover	0.5
HSI Score		0.47
Pond suitability		<i>Poor</i>

- 5.19. 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

- 5.20. A search of Magic Maps revealed no past or present EPS licences for reptiles within 1km of the site boundary.
- 5.21. 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. There were no habitats on site which provided good potential for foraging and commuting.
- 5.22. There were no areas of potential hibernacula identified within the site boundary during the habitat walkover. The wider boundary had a pile of bricks which could create potential hibernacula for reptiles, showing they could be present within the wider landscape.
- 5.23. 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

- 5.24. A search of Magic Maps revealed no past or present EPS licences for dormouse within 1km of the site boundary.
- 5.25. 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.
- 5.26. The hedgerows provided limited foraging and commuting potential due to their monoculture nature of non-native planting and gaps present between the hazel, fragmenting it from the wider habitat.
- 5.27. The wider landscape provided some suitable habitat for nesting, commuting and foraging dormice due to the bordering tree lines. The hedgerows on site create limited connectivity to the wider landscape, however, if dormice were to enter the site there would be limited suitability on site to support them. Therefore, dormice are not considered further.

Other Terrestrial Mammals

- 5.28. No evidence of badger (such as hairs, mammal paths latrines, snuffle holes, or scat) or badger setts/sett entrances were identified on-site or within 30m of the site.
- 5.29. The grassland on site offers some foraging potential for badger and hedgehog but is limited by its lack of structural variation. There were gaps in the wire fencing allowing mammals to access the site.
- 5.30. 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 on occasion.

Breeding Birds

- 5.31. No nests were identified on site at the time of the survey.
- 5.32. The areas of non-native hedgerow habitat on site offer some foraging, commuting, and nesting opportunities for a variety of bird species.
- 5.33. 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.

Invertebrates

- 5.34. 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.

6. IMPACT ASSESSMENT

Designated Sites and Priority Habitats

- 6.1. The site falls within the Impact Risk Zone for the Longmoor Bog SSSI which applies restrictions to large developments (50 or more houses), transport proposals, combustion processes etc. However the proposed works do not come under any description which would require the local planning authority to consult Natural England.
- 6.2. It is not anticipated that the proposed works will directly impact any statutory designated sites, locally designated sites, priority habitats, or ancient woodland through land-take or other direct impacts due to the localised nature of the works. Additionally, there are moderate density residential areas situated between the development area and these sites, providing a buffer for indirect impacts.

Habitats

Status of Habitats on Site

- 6.3. The habitats on site include modified grassland with mature scattered trees and a non-native ornamental hedgerow. These habitats are common and widespread and are of low ecological value. The scattered trees and non-native hedgerows are of moderate ecological value whilst the modified grassland is of low ecological value.

Potential Impacts

- 6.4. These proposals will result in the loss of modified grassland and the non-native and ornamental hedgerow under the footprint of the three new buildings with associated parking spaces and access driveway.
- 6.5. The existing hedgerow will be replaced with a mixed native species hedgerow which will compensate for the loss. This proposed hedgerow will also extend along the northwest, southwest and plot boundaries which will enhance the site.

Recommendations

- 6.6. *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 the retained habitats.
- 6.7. *Tree root protection zones:* All retained trees at site boundaries will be protected in accordance with British Standards BS5837:2012. 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.

- 6.8. The proposed plan includes area of new planting. Where this is considered, native tree and shrub species must be used to enhance the ecological value of the site. No invasive species identified in Schedule 9 of the Wildlife and Countryside Act will be permitted.
- 6.9. The native hedgerow planting should have at least five different native species in order to be considered a species rich hedgerow which would benefit local populations of birds and invertebrates.

Protected Species

Bats

Status of Bats on Site

- 6.10. The hedgerows and scattered trees on site provide good foraging and commuting habitats for bats, and it is likely that bats access and use the site regularly due to the presence of common pipistrelle roosts on the residential dwelling.
- 6.11. None of the trees on site that were assessed to be of the age or character to support roosting bats had potential roosting features. One of the mature trees contained a bat box.
- 6.12. No trees will be lost as part of the proposals

Mitigation

- 6.13. Where new lighting is proposed, a sensitive lighting plan (including baseline and calculated lux contours) will be required to ensure that bats can continue to use the site, specifically ensuring that light spill does not impact the value of retained and protected habitats for this species by ensuring light levels during the operational phase do not exceed 0.5 lux or baseline levels. The lighting plan should be designed by a lighting engineer with direct consultation from a licensed bat ecologist and can be secured by pre-commencement condition. The lighting plan will then be approved and signed off by a licensed bat ecologist prior to finalising the plan, to ensure the scheme is suitable for bats.
- 6.14. Upward lighting must be avoided by fitting lights with downward facing baffles and fixtures to ensure no light spillage above an angle of 70°. Lighting will be triggered by motion sensors using a short timer where possible and in compliance with building regulations. Warm white LEDs will be used in preference to bright white LEDs. All lighting plans should be reviewed by a suitably qualified ecologist before finalising and submitting for approval.
- 6.15. See **Appendix** for further information on designing lighting to minimise impacts on bats.

Amphibians and Reptiles

Status on Site

- 6.16. Habitats on site provide low foraging, commuting, and resting opportunities for amphibian and reptile species, due to the very short sward nature of the modified grassland and lack of scrub habitats. Additionally, there are a lack of suitable refugia on site, further reducing the potential that the site supports populations of these species.
- 6.17. Due to the presence of some low suitability habitat on site, and the good connectivity between the site and the general wider area, there is potential for these species to pass through and use the site on occasion.

Potential Impacts

- 6.18. There will be a loss of modified grassland due to the construction of three new dwellings, however, a proportion of this will be replaced with new modified grassland in the form of amenity gardens which will likely be of the same short sward nature and therefore, there will be no net loss of suitable foraging and commuting habitat on site.
- 6.19. Two ponds were located within 250m of the site but one was assessed as having poor potential for great crested newt and the second had an abundance of geese and was fragmented from the site boundary.
- 6.20. Due to the potential for reptiles and amphibians to pass through the site, in the absence of mitigation, the construction works have the potential to injure/kill individual reptiles or amphibians if they are present on site during the works.

Recommendations

- 6.21. Any ground vegetation to be impacted should be maintained to a short sward length before the works begin to prevent the habitat becoming suitable for reptiles.
- 6.22. Should the vegetation grow longer than 30cm then any vegetation clearance should be done by hand and only during the reptile key active season (March-September, inclusive). Weather should be 9°C or higher, and dry with no strong winds. This will allow active reptiles to move to more suitable habitat nearby, if they are present within the working area.
- 6.23. 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 pallets.
- 6.24. 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.

- 6.25. As the site falls within a GCN Habitat Zone (Red), reasonable avoidance measures should be implemented during the construction phase to ensure that in the unlikely event GCN are able to access the site, they are not injured by the works.
- 6.26. Reasonable avoidance measures which should be implemented in this case include:
- 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 GCN will be provided for the Site Office with contact numbers of a licensed GCN ecologist to contact if any are found;
 - 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 pallets; and
 - In the event a newt is discovered on site during the construction phase then all works must stop and a licensed GCN ecologist contacted.

Other Terrestrial Mammals

Status on Site

- 6.27. The hedgerows, modified grassland, and scattered trees on site provide good foraging, resting, and commuting opportunities for terrestrial mammals.
- 6.28. Whilst no evidence of terrestrial mammals was identified on site, it is likely that terrestrial mammals will pass through and use the site on occasion.

Potential Impacts

- 6.29. The proposals will result in a small loss of foraging habitat on site. However, an area of the grassland area is being replaced post-works. More native hedgerow planting is proposed post works which will compensate for the loss.
- 6.30. If terrestrial mammals are able to access the site during proposed works, they may be injured due to the destructive activity or trapped in any excavations. The habitats which will be lost are sub-optimal for terrestrial mammals.

Recommendations

- 6.31. General mitigation measures are considered sufficient to protect terrestrial mammals during demolition and construction works within the application area. In particular, during all construction works any trenches or excavations will be covered overnight or a ramp provided to allow any wildlife to escape should they fall in. These must be inspected each

morning and immediately prior to infilling to check that protected species are not present in any excavations.

- 6.32. Gaps measuring 13cm x 13cm will need to be created in any fences on site in order to allow hedgehog and other small mammals to move freely between adjacent gardens. A badge/sign above the access gaps must be installed so that all current and subsequent property owners will be aware of their purpose and importance.

Breeding Birds

Status on Site

- 6.33. The areas of non-native hedgerow habitat on site offer good foraging, commuting, and nesting opportunities for a variety of bird species.
- 6.34. 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.
- 6.35. A very small area of suitable nesting habitat is proposed to be lost as part of the proposals. Additional hedgerow planting will be added following the works and will have a mix of native species, increasing the value of the site for birds. The proposals will result in a no loss of suitable foraging habitat for birds and this is therefore not considered likely to have a significant negative impact on local birds.
- 6.36. Should proposals change to include the removal of suitable nesting habitat, this has the potential to disturb, injure, or kill nesting birds should they be present at the time of the works.

Potential Impacts

- 6.37. A small area of cherry laurel hedge will be removed as part of the works creating new access into the three dwellings

Recommendations

- 6.38. The removal of any suitable vegetation should occur outside of the breeding bird season (February - August).
- 6.39. If any vegetation removal is required during the breeding bird season (February - 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).

Invertebrates

Status on Site

- 6.40. The application area has low value for invertebrates due to the nectar/pollen resources, and structural variation in the grassland. There is also no standing water on site which would increase the value for invertebrates further.

Potential Impacts

- 6.41. The low-value habitats which will be lost during the works will be recreated following the construction phase.

Recommendations

- 6.42. Where new planting is considered in the plan, native tree and shrub species should be used to enhance the ecological value of the site.
- 6.43. It is recommended that if any trees are pruned or felled then some of the material produced should be retained on site and stacked within the woodland and grassland habitats to provide habitat piles and hibernacula that invertebrates and other animals may utilise post-development.
- 6.44. Inclusion of some standing water (even something as limited as a bird bath), could improve the value of the site for invertebrates.

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. To increase the roosting opportunities for bats in the area, at least one roosting feature must be integrated into each new building. This could be an integrated bat box such as a Schwegler 1FR bat tube or Green&Blue Bat Brick, which are built into the external brickwork in order to provide new roost locations. Alternatively, where traditional building methods are to be used, discrete features 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 **Appendix**).
- 7.3. Where discrete features are being created, breathable roofing membrane must **NOT** be used in order to avoid hazards to bats.
- 7.4. Alternatively, at least one external bat box, such as Greenwoods Small Hollow or Vivara Pro Beaumaris bat box can be installed on any mature trees on site. 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 (see **Appendix 5**).

Birds

- 7.5. To provide extra nesting opportunities, at least one bird box should be installed on each new building or any retained trees. Bird boxes should be installed at least 4 m from ground level and with unobstructed air space in front (see **Appendix 5**).

Wildlife Beneficial Landscaping Scheme

- 7.6. 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.

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

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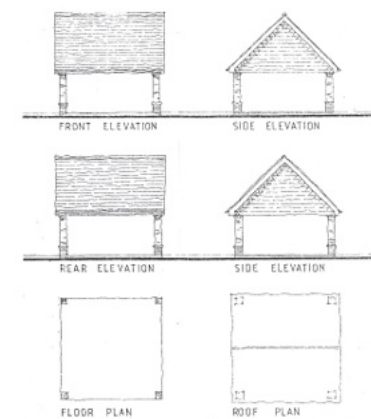
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APPENDICES

Notes

All dimensions and levels on site are to be checked prior to commencement of work.

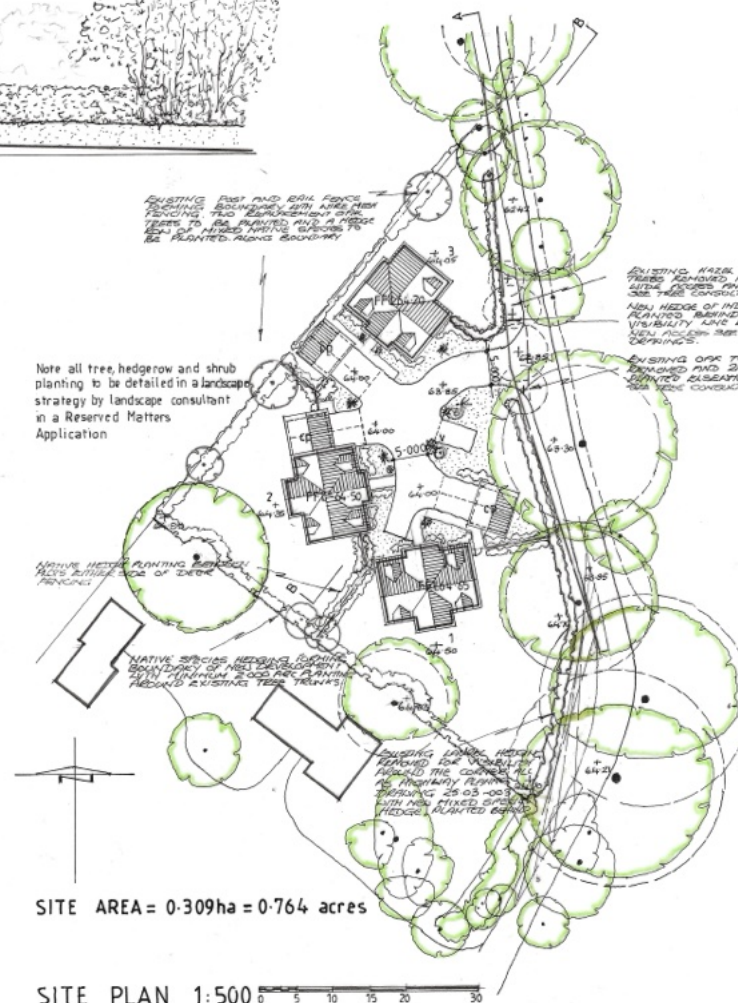
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CARPORT DETAILS 1:200



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SITE PLAN 1:500

Project
**Detached cottages
Adj Huts Farm Cottage
Blagrove Lane
WOKINGHAM
Berks**

Client
Mr R Ryan

Drawing
**SITE PLANS and SITE
SECTIONS**

Scale
As shown at A2

Date
December 2025



Paul Edwards Architecture

12 Sandy Lane, Barkham, Wokingham, Berks RG41 4DB
Tel: 01189772925 Mob: 07851857415 E-mail: paul@paul-edwards-architecture.co.uk

Job 2685 Dwg. 14 B



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 *Pipistrellus* 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	High	Medium	Low
Behaviour			
Maternity roost	All species	-	-
Night roost	<i>Rhinolophus hipposideros</i> <i>Rhinolophus ferrumequinum</i> <i>Myotis</i> spp. <i>Plecotus</i> spp.	<i>Pipistrellus</i> spp. <i>Nyctalus</i> spp. <i>Eptesicus serotinus</i> <i>Barbastella barbastellus</i>	-
Emergence	All species	-	-
Foraging	<i>Rhinolophus hipposideros</i> <i>Rhinolophus ferrumequinum</i> <i>Myotis</i> spp. <i>Plecotus</i> spp.	-	<i>Pipistrellus</i> spp. <i>Nyctalus</i> spp. <i>Eptesicus serotinus</i> <i>Barbastella barbastellus</i>
Commuting	<i>Rhinolophus hipposideros</i> <i>Rhinolophus ferrumequinum</i> <i>Myotis</i> spp. <i>Plecotus</i> spp.	-	<i>Pipistrellus</i> spp. <i>Nyctalus</i> spp. <i>Eptesicus serotinus</i> <i>Barbastella barbastellus</i>
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.



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



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



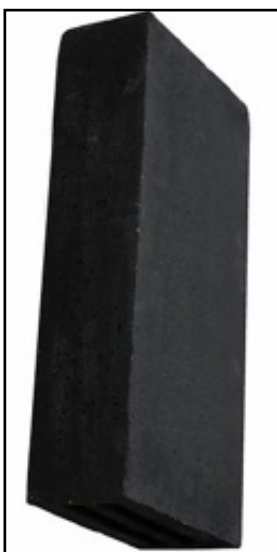
Schwegler 1FS Large Colony Box

- 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 ecostyrocete
- 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



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



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 Nest 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



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.





Creation and design



Hibernacula offer sheltering opportunities for reptile and amphibian species, providing them with essential habitat in which to hibernate during the 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.



Hibernacula 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!





Insect boxes and bug hotels



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.



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.



Wildflower Turf

Wildlife Friendly Landscaping



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.



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.



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.