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Ecological Impact Assessment

Plot 6b
Land Adjacent to 6 Emsworth House Close
Emsworth House Close
Hampshire
PO10 7JR

March 2024

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.		
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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 Shakir Ali to undertake an Ecological Impact Assessment (EcIA) of proposals for the habitats at Land Adjacent to 6 Emsworth House Close, Emsworth House Close, Hampshire PO10 7JR[1]. The assessment was required to support a planning application for the construction of a single two storey detached dwelling, it was informed by a desk study and a habitat walkover survey.

1.2. During the habitat walkover survey, habitats recorded within the site comprised mostly of short sward (amenity) modified grassland with some areas of sparse ruderal vegetation and de-vegetated bramble scrub against the north and east boundaries.

1.3. A veteran oak tree with suitable roosting features for bats was identified on the boundary fence with a substantial portion of its canopy overhanging the proposed site. Other trees identified on site included an immature multi stemmed sycamore, rowan and a pollarded (to ground level) fruit tree.

1.4. If canopy works are planned for the adjacent off-site veteran oak tree, a high level inspection of the potential roosting feature will be required in order to assess its status with regards to bats.

1.5. The proposed site is located within the impact risk zone for the SSSI's that make up the Chichester and Langstone harbour SAC and SPA. As such a Habitats Regulations Assessment (HRA) is required to fully assess the development's impact upon these designated statutory sites.

1.6. As the development falls within the catchment for the Solent nutrient neutrality, the local planning authority requires that a nutrient neutrality report for the development be completed.

1.7. Trees on site and the adjacent non native hedgerow showed suitability for nesting birds. It would be preferable for works to commence out side of nesting season (April to August inclusive).

1.8. Mitigation in the form of fencing (HERAS or similar) off the adjacent onsite and off site trees and hedgerows, to protect against damage during the construction phase. The fencing should conform to tree root protection areas in line with BS5837:12.

1.9. A pre-works site inspection should take place by a suitable qualified ecologist, to check for badger activity, and nesting birds.

1.10. It is advised that the grass vegetation on site is kept mown short and that any taller herbs and brambles are regular cut back as they presently are. This will help prevent the site becoming suitable habitat for amphibians/reptiles/ mammals in the lead up to development

[1] Ordnance Survey (OS) grid reference SU 74162 06040

and help ensure that impacts to any species will be kept to a minimum when development works begin.

1.11. Due to the unsuitability of on site habitat no further surveys are deemed necessary with regards to European protected species, it is considered that works can proceed under general mitigation measures.

1.12. A sensitive lighting scheme should be incorporated in to the plans for the eastern (rear) aspect of the property's in order to prevent any light spill onto potential bat roosting / commuting and foraging features of the veteran oak tree and linear urban garden features. Further details regarding lighting is supplied in the appendix.

1.13. General enhancements are recommended with regards planting for biodiversity and integrating suitable bat and bird boxes in to the final development. .

2. INTRODUCTION AND BACKGROUND

Background

2.1. Darwin Ecology Ltd was commissioned by Shakir Ali to undertake an Ecological Impact Assessment (EcIA) of proposals for the habitats at Land Adjacent to 6 Emsworth House Close, Emsworth House Close, Hampshire PO10 7JR[2]. The assessment was required to support a planning application for the construction of a single two storey detached dwelling, it was informed by a desk study and a habitat walkover survey.

2.2. The proposed drawings on which this assessment is based are provided in the Appendix.

2.3. The tree inspection followed the Bat Conservation Trust (BCT) Good Practice Guidelines (2023) and the habitat walkover survey followed the Chartered Institute for Ecological and Environmental Management (CIEEM) Guidelines for Preliminary Ecological Appraisal (2017).

2.4. The subsequent EcIA follows the CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland (2018).

Site Overview

2.5. The site is situated in an urban residential area and comprises approximate 0.0437 Ha of amenity grassland bounded by urban gardens associated dwellings and a pavement. There are no buildings on the proposed site (see **Figure 1**).

2.6. The wider landscape comprises the developed urban environment of Emsworth (see **Figure 2**). These give way to the tidal estuarine habitat of Langstone harbour approximately 700 m to the south, arable fields approximately 500 m to the west/north and further urban areas to the east.

Scope of Assessment

2.7. 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.

2.8. Potential effects on the following ecologically sensitive receptors have been considered during the EcIA of Land Adjacent to 6 Emsworth House Close:

- Statutory designated sites;
- On-site habitats of intrinsic importance (such as priority habitats); and
- Habitats with the potential to support protected species, including bats, dormice *Muscardinus avellanarius*, great crested newts *Triturus cristatus* and other common amphibians, common reptiles, birds, badgers *Meles meles*, and invertebrates.

[2] Ordnance Survey (OS) grid reference SU 74162 06040

2.9. 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.

2.10. Otters Lutra lutra and water voles *Arvicola amphibious* are not considered further in this report due to the lack of running water on site, distance to the nearest watercourse (a very small seasonal drainage ditch some 70 metres to the east), and the small scale of the application site.

2.11. 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 surrounding landscape (Copyright Google Earth 2024).

Figure 2: Site location within the wider landscape (Copyright Google Earth 2024).

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

3.4. 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)*.

3.5. 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*.

3.6. 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.

3.7. The government's statutory conservation advisory organisation, Natural England, is responsible for administering EPS licenses that permit activities that would otherwise lead to an offence.

3.8. 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

3.9. 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.

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

> *174 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);
>
> *174 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;
>
> *174 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;
>
> *175)* Plans should: distinguish between the hierarchy of international, national and local designated sites; allocate land with the lease 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;

176) 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 area.

3.11. Specific policies regarding habitats and biodiversity comprise:

179) 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.

180) 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 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.

181) 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

3.12. *The local planning policy for the site is the Hampshire Local Plan (adopted 2014), with relevant policies comprising:*

Hampshire Local Plan: Joint Core Strategy As adopted 2014

Local Plan is the key document that sets out the priorities and policies for development in a certain area. It shows the opportunities for development in the area, and states what will and will not be permitted and where, and describes actions and priorities for wildlife and habitats to be protected. The current local plan was adopted in 2014, and is currently under review to be updated. Natural and Built Environment Objectives include the following;

- To make best use of land in sustainable settlements to minimise the impact of development upon the countryside;
- To ensure that any decisions or activities relating to land within, or affecting the setting of, the South Downs National Park meet the relevant National Park purposes as set out in statute;
- To conserve and enhance landscape quality, distinctiveness and character in the wider landscape;
- To conserve and enhance designated sites and natural habitats whist creating networks of habitats and wildlife corridors to encourage adaptation to climate change;

- To conserve and enhance the District's attractive built and historic environment, including heritage sites, conservation areas, listed buildings, archaeological sites and important open areas and the settings of these assets;
- To plan for new development to be built to a high quality that promotes the use of sustainable resources in developments, in particular to minimise waste, increase energy efficiency in new and existing developments and to maximise the proportion of energy generated from renewable sources within environmental constraints;
- To protect and enhance water quality, water supply, groundwater and minimise the risk of flooding in the District;
- To prevent development resulting in unacceptable levels of air, noise, land, light or other pollution and to ensure that new development is adequately protected against such pollution;
- To address the causes of climate change and ensure that the District is able to adapt to it within environmental constraints.
- Central to the Local Plan: Joint Core Strategy is the need to provide protection and enhancement to the built and natural environment, in particular the internationally and nationally protected wildlife habitats and nationally important heritage sites, and to ensure that the beauty, wildlife and cultural heritage of the South Downs National Park are conserved and enhanced.
- New development will protect and where possible enhance biodiversity by considering, in particular, the impact of any change on the designated sites but also the many other sites which are of local value for wildlife.

Relevant policies include:

CP20 Landscape: The special characteristics of the district's natural environment will be conserved and enhanced. New development will be required to:

- Protect and enhance settlements in the wider landscape, land at the urban edge and green corridors extending into settlements;
- Protect and enhance natural and historic features which contribute to the distinctive character of the district's landscape, such as trees, woodlands, hedgerows, soils, rivers, river corridors, ditches, ponds, ancient sunken lanes, ancient tracks, rural buildings and open areas; and
- Incorporate appropriate new planting to enhance the landscape setting of the new development which uses local materials, native species and enhances biodiversity.

CP21 Biodiversity: Development proposals must maintain, enhance and protect the District's biodiversity and its surrounding environment. New development will be required to:

- Maintain, enhance and protect district wide biodiversity, in particular the nature conservation designations;
- Extend specific protection to, and encourage enhancement of, other sites and features which are of local value for wildlife, for example important trees, rivers, river corridors and hedgerows, but which are not included in designated sites;
- Contribute towards maintaining a district–wide network of local wildlife sites, wildlife corridors and stepping stones between designated sites and other areas of biodiversity value or natural green space;
- Ensure wildlife enhancements are incorporated into the design to achieve a net gain in biodiversity; and
- Protect and, where appropriate, strengthen populations of protected species.

CP28 Green Infrastructure: Development will be permitted provided that it maintains, manages and enhances the network of new and existing green infrastructure.

Hampshire Biodiversity Action Plan

3.13. The local biodiversity action plan relevant to the site is the Hampshire biodiversity Action Plan. It aims to set out a long-term strategy for biodiversity conservation within Hampshire and provide a series of objectives and actions for achieving successful conservation of habitats and species across the county, the relevant parts are laid out below. To advance biodiversity conservation in Hampshire, the following objectives have been identified:

- to audit the nature conservation resource of Hampshire;
- to identify from the audit habitats and species of priority nature conservation concern, including those which are locally distinct;
- to prepare action plans for habitats and species of priority concern and follow through with programmes of implementation and monitoring;
- to ensure that data on habitats and species is sufficient to enable effective implementation and monitoring of biodiversity objectives;
- to review general issues affecting biodiversity, such as agriculture and development, and chart a course of appropriate action;
- to raise awareness and involvement in biodiversity conservation across all sectors;
- to encourage individuals and organisations to review their role in biodiversity conservation and the resources required, and develop their own action in response to the Biodiversity Action Plan for Hampshire;
- to maintain an ongoing partnership which will co-ordinate, develop and support action for biodiversity;
- to monitor and review progress towards meeting the above objectives and the targets set out in the habitat and species action plans; and
- to periodically update the Biodiversity Action Plan for Hampshire and its component habitat and species action plans to take account of changing circumstances.

4. METHODOLOGY

Desk Study

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

- The MagicMap website was reviewed, to obtain information on any designated sites of nature conservation interest within 2 km of the site and details of any EPS licences issued within 2 km;
- The East Hampshire District 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, maps and mapnik data, and 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 Sites of Special Scientific Interest (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 Jonathan Bayliss BSc (Hons) conducted a walkover survey at Land Adjacent to 6 Emsworth House Close on 14th November 2023. The weather conditions at the time of the survey were rain with a F4 breeze and approximately 12°C.

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

- Bats;
- Common amphibians;
- Reptiles;
- Dormice *Muscardinus avellanarius*;
- Other terrestrial mammals, including hedgehog *Erinaceus europaeus* and badger;
- 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 and water vole are not considered further in this report due to the lack of running water on site and the nearest water course being some 600 m to the south east. The site also does not offer any suitable habitat for these species.

4.8. The site is situated within a built up residential area with no suitable ponds on site or within 500 m of the site. The nearest GCN class survey licence return is situated approximately 4.5 km north. Although there is some suitable ruderal habitat onsite, the above factors make it unlikely that GCN are present on site and they are not considered further in this report.

4.9. 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*.

Ground Level Tree Assessment

4.10. A Ground Level Tree Assessment (GLTA) was carried out by Assistant Ecologist Jonathan Bayliss BSc (Hons) at Land Adjacent to 6 Emsworth House Close on 14th November 2023 in accordance with the following methodology, based on recommendations set out in the BCT Good Practice Guidelines (2023).

4.11. All trees within and adjacent to the site with potential to be impacted by the proposed works were assessed. The trees were searched from the ground using a torch and binoculars. Trees were assessed for evidence of use by bats and birds as well as potential roosting features, such as storm damage, rot holes, ivy *(Hedera helix)* cover, flaying bark and splits in the trunk and also birds nesting. Each tree was assessed for its potential to support roosting bats as detailed in **Table 1 and Table 2.**

Table 1: Guidelines for assessing the suitability of trees

Suitability	Description
None	Either no PRFs in the tree or highly unlikely to be any
FAR (Further Assessment Required)	Further assessment required to establish if PRFs are present in the tree
PRF (Potential Roost Feature)	A tree with at least one PRF present (to be categorised further in line with Table 2)

Table 2: Guidelines for categorising the potential suitability of PRFs

Suitability	Description
PRF - I	PRF is only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats
PRF - M	PRF is suitable for multiple bats, and may therefore be used by a maternity colony

Limitations

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

4.13. Ecological data is typically deemed valid for 18 months. This report remains valid for 2 years from the date of the survey, however, a walkover survey after 18 months may be required to demonstrate whether or not the habitats have remained as described.

4.14. The desk study does not include data from the local environmental records centre (LERC). However, following CIEEM guidelines (2017) it is possible to conduct a robust assessment without the need of LERC data, for example for small-scale projects or on sites such as;

- A field in active arable cultivation where there is no impact on any hedges, trees or water bodies;
- A small area of cultivated garden/amenity grassland, as above; or
- A small urban site comprising mostly asphalt or compacted hardstanding.

4.15. The site comprises a small area (approximately 0.0437 ha) of predominantly amenity grassland and therefore the lack of LERC data is not considered a limitation to the ecological assessment of the site.

4.16. Many species of bat in the UK are crevice-dwelling, and bats or signs of bats can be difficult to find within a tree. In addition, due to their nature there are likely many areas of a tree that are inaccessible to the surveyor.

4.17. 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.

Table 3: Statutory designated sites within 2 km of the proposed site.

Designated sites	Name and designation type	Reason for designation	Approx distance from site
Within 2km of Site	CHICHESTER AND LANGSTONE HARBOURS RAMSAR ReferenceUK11013	5812.9 ha of two linked estuarine basins including extensive intertidal mudflats, saltmarsh, sand/shingle spits, and dunes supporting reedbeds and some grassland. Wintering waterbirds regularly exceed 20,000 individuals and include several species of national and international importance	700m South
	SOLENT MARITIME Special Area of Conservation (SAC) ReferenceUK0030059	11243 ha of coastal plain estuarine system containing Annex 1 habitats as a primary feature of: • 1130 Estuaries • 1320 Spartina Swards (Spartinion Maritime • 1330 Atlantic salt meadows	700m south
	CHICHESTER AND LANGSTONE HARBOURS Special Protection Areas)(SPA) ReferenceUK9011011	Internationally important in supporting an average of 25,000 wintering wildfowl and 77,000 wintering waders. It is also a migratory site for numerous bird species as well as a breeding site for three species of tern.	700m south
Within 2km of Site	Chichester Harbour SSSI Reference1000116	Chichester Harbour is a 3695 ha of estuarine basin in which at low water extensive mud and sandflats are exposed. Rich in intertidal habitats and associated bird life.	700m South
	Warblington Meadow SSSI Reference1000925	Unimproved grazing marsh cited for its gradation from base rich marsh to old reclaimed salt marsh and its associated plant communities.	1.2km south west
	BROOK MEADOW (EMSWORTH) Local Nature Reserve (LNR) Hectares3.94	Graslands surrounded by woodlands flanked by stream with associated wildflower and insect communities. Home for a water vole community.	800m east

5. SURVEY RESULTS

Desk Study

5.1. The proposed site does not sit within any statutory or non statutory designated sites.

5.2. There are records of six statutory designated sites within 2 km of the proposed site including a RAMSAR, special area of conservation (SAC), special protected area (SPA), site of special scientific interest (SSSI) and a local nature reserve (LNR). Further details can be found in Table 3 below. These are detailed in **Table 3.**

5.3. A search of East Hampshire District Council Planning Portal showed no relevant planning applications with associated ecological documents within the last two years in the nearby area.

5.4. The site is located within the Solent area nutrient neutrality zone. For new development with overnight accommodation Reg 63 of the Conservation of Habitats and Species Regulations 2017 must be applied and additional measures required.

5.5. The site falls within the IRZ for the Chichester Harbour SSSI. Apart from the Solent nutrient neutrality zone (above) The proposed plans do not fall under any further categories representing an impact risk to the SSSI. The categories representing SSSI risk impact are summarised below:

- **Infrastructure Pipelines and underground cables**
- **Wind & Solar Energy**
- **Minerals, Oil & Gas**
- **Rural Non Residential Large non residential** developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha.
- **Residential** development of 50 units or more.
- **Rural Residential** Any residential development of 50 or more houses outside existing settlements/urban areas.
- **Air Pollution.** Any industrial/agricultural development that could cause AIR POLLUTION
- **Combustion.** General combustion processes >20MW energy input.
- **Waste Landfill.** Inc: inert landfill, non-hazardous landfill, hazardous landfill.
- **Composting.** Any composting proposal
- **Discharges.** Any discharge of water or liquid waste of more than 2m³/day to ground (ie to seep away) or to surface water, such as a beck or stream.
- **Water Supply Large infrastructure,**
- **Notes 1.** Strategic solutions for recreational impacts are in place. Please contact your Local Planning Authority as they have the information to advise on specific requirements.

- **Notes 2 NUTRIENT IMPACT AREA.** For new development with overnight accommodation Reg 63 of the Conservation of Habitats and Species Regulations 2017 must be applied and additional measures required. LPA to refer to Natural Englands Nutrient Neutrality advice.

5.6. There are twelve areas of priority deciduous woodland within 2 km of the site located approximately 550 m to the north east [This area of woodland is also registered on the National Forest Inventory (Woodland - Broadleaved)]. Further priority habitats within 1 km of the site comprising:

- Good quality semi-improved grassland
- Coastal/floodplain grazing marsh
- Lowland dry acid grassland
- Lowland meadows

5.7. There are no areas of ancient woodland within 2 km of the application site.

Habitat Walkover Survey

Habitats

5.8. The site is a vacant plot of amenity land supporting an area of short sward modified grassland with some sparse ruderal species (containing some horticultural/garden types) at its edge. One small parcel of recently cleared bramble scrub was identified on site. A habitat map showing the location and extent of these is provided in figure 3 and also in the appendix.

5.9. Immediately adjacent to the site is a non-native species hedgerow comprising cherry laurel *Laurus nobilis*. The hedgerow contains a large veteran oak immediately on the boundary fence.

5.10. Along the northern boundary stood an immature multi stemmed sycamore *Acer pseudoplantus a Rowan Sorbus aucuparia* and an unidentified fruit tree (pollarded to ground level, with suckers rising from it.

Modified grassland g4 (secondary code 81, ruderal)

5.11. Modified grassland species included perennial rye grass *Lolium perenne*, cocksfoot *Dactylis glomerata*, fescue *Festuca sp*, rough hawkbit *Leontodon hispidus*, white clover *Trifolium repens,* cleavers *Galium aparine,* yellow oat grass *Trisetum flavescens,* creeping buttercup *Ranunculus repens,* chickweed *Stellaria media,* daisy *Bellis perennis,* dandelion Taraxacum sp, and ribwort plantain *Plantago lanceolata*.

5.12. Areas of sparse ruderal vegetation were present along the boundary fences and where the grassland transitioned to bramble scrub. There were some escaped unidentified garden

cultivars mixed within more native species. Species recorded here included comfrey *Symphytum officinale,* white dead nettle *Lamium album,* nettle *Urtica dioica,* dock *Rumex.sp,* Spanish bluebell *Hyacynphoides hispanica.*

Bramble scrub h3d

5.13. The bramble *Rubus fruticosa* scrub on site existed against the boundary and around the edges of the grassland, it had recently been cleared to ground level with some rudimentary ruderal species beginning to show.

Figure 3. Habitat Map. (Copyright Google maps 2024)

Protected Species

Bats

5.14. One record of a European protected species (EPS) license existed within 2 km (approximately 600m east) of the site. The license (2019-44235-EPS-MIT) allowed for the destruction of a resting place for soprano pipistrelle bat.

5.15. The mature oak tree located immediately adjacent to the site was assessed for its potential to supports bats, with the results outlined in **Table 4.** The PRF identified on the tree is of a suitable size and shape to support multiple numbers of bats.

Table 4: Ground Level Tree Assessment Results

Tree	Image	Assessment
T1		Veteran Oak with limb damage on boundary fence. Overhanging the property. Rot hole at 5 m high on main trunk Categorised as **PRF-M**, suitable for multiple bats. No nesting birds identified. Located at SU 74173 06054

5.16. No direct evidence of bats was observed on site.

5.17. Suitable habitat on site for bats is limited and localised in nature to urban gardens and non native hedgerows. The immediate and wider site area is lit well by streetlights.

5.18. Further foraging and commuting habitat exists adjacent to the site, with connections to mainly urban gardens and non native hedgerow linear features.

Reptiles/Amphibians

5.19. There are no ponds on or adjacent to the site

5.20. Being an urban site, surrounded by a network of urban gardens (and possibly small ponds), there exists the possibility that common frogs, toads, newts, slow worms and grass snakes could be utilising the site in some way.

5.21. The grassland and ruderal areas lack structure and height to serve as suitable habitat but there are some suitably sized items of discarded rubbish on site within the ruderal areas which could provide very localised refuge opportunities.

Dormice

5.22. There are no records of EPS licences for licensable works impacting dormouse within 2 km of the application site. The nearest EPS license is located approximately 5 km to the west.

5.23. No suitable habitat exists on site for foraging, commuting of hibernating dormice.

5.24. No direct evidence of dormice (nest/chewed nuts etc) was observed onsite.

Other Terrestrial Mammals

5.25. No sett holes, latrines, snuffle holes, mammal trails or any other evidence of badgers was observed on site.

5.26. The site is bordered by a fence and a road and therefore offers little in the way of connectivity for commuting mammals.

5.27. The site was flat with short sward grassland, some (de-vegetated) bramble and ruderal vegetation providing generally unsuitable conditions for sett creation.

5.28. The short sward grassland and the site's position surrounded by urban gardens provided some suitability for commuting and foraging hedgehogs. There is currently no habitat on site suitable for hibernating hedgehogs.

Breeding Birds

5.29. No nests were observed in any of the vegetation on site.

5.30. Suitable nesting habitat exists within trees on site and also within the immediately adjacent non native hedgerow.

Invertebrates

5.31. The mainly short sward modified grassland provides little opportunity for insects and their lifecycles. The brambles scrub and sparse ruderal vegetation provide some limited habitat for foraging for common assemblages of invertebrate.

Photographs

Image 1. Overview of site

Image 2. Veteran, boundary oak, showing potential bat roosting feature

Image 3, Felled tree with rowan and sycamore background

Image 4. Sparse ruderal vegetation with Spanish bluebells

Image 5. Ground level pollarded fruit tree with new growth

Image 6. Sycamore against boundary fence.

6. IMPACT ASSESSMENT

Sensitive Receptors/Ecological Important Features

6.1. The proposals comprise the complete clearance of the site in order to construct two detached dwellings with associated curtilage.

6.2. The following species have been evaluated as being subject to potential adverse effects in the absence of mitigation:

- Bats
- Amphibians
- Reptiles
- Badgers and hedgehogs; and
- Breeding birds.

Designated Sites

Baseline

6.3. The proposed site is not located within any statutory or non statutory designated sites. There are records of six statutory designated sites within 2 km of the proposed site including a RAMSAR, SAC, SPA, SSSI, LNR.

6.4. The site is located within the IRZ for Chichester Harbour SSSI, this makes up part of the Christchurch and Langstone harbours SAC and SPA.

6.5. The site is located within the Solent area nutrient neutrality zone. For new development with overnight accommodation Reg 63 of the Conservation of Habitats and Species Regulations 2017 must be applied and additional measures required.

Potential Impacts

6.6. Due to the creation of permanent overnight accommodation by the proposed development, increased footfall is expected. An increase in nutrient loading for the waters entering the SAC and SPA is also expected

Mitigation

6.7. A Habitats Regulations Assessment (HRA) will be required to fully assess the development's impact upon the nearby SAC and SPA .

6.8. As the development falls within the catchment for the Solent nutrient neutrality, The Local Planning Authority requires that a nutrient neutrality report for the development be completed.

Habitats

Baseline

6.9. The site is a vacant plot of amenity land supporting an area of short sward modified grassland with some sparse ruderal species (containing some horticultural/garden types) at its edge. One small parcel of (recently cleared) bramble scrub was identified on site.

6.10. Immediately adjacent to the site is a non-native species (cherry laurel *Laurus nobliis*) hedgerow. The hedgerow contains a large veteran oak immediately outside the boundary fence.

6.11. Along the northern boundary were single stands of immature multi stemmed sycamore *Acer pseudoplantus, Rowan Sorbs aucuparia* and an unidentified fruit tree (pollarded to ground level, with suckers rising from it).

Potential Impacts

6.12. The site and its existing habitat is set to be de-vegetated and cleared in order to complete the development.

6.13. Impacts to the adjacent hedgerow and trees exist primarily during the construction phase

Mitigation

6.14. Due to the low ecological value of this relatively small area of short sward modified grassland (with associated sparse ruderal and bramble scrub areas), general enhancement to the site as set out below in section 8 will be sufficient to mitigate agains removal of the on site habitat.

6.15. It is recommended that the eastern boundary hedgerow is protected using HERAS (or similar) type fencing to prevent damage during the construction phase.

6.16. All trees on and immediately adjacent to the site must have their root zones protected in line with BS5837:12

Protected Species

Bats

Baseline

6.17. The PRF identified in the adjacent oak tree has potential to support multiple numbers of bats. The immediate site area is lit well by nearby street lights, foraging/commuting habitat is limited to urban gardens and non native hedgerows.

6.18. The final position of the tree will be between 5-10 m to the rear of the proposed residential development.

Potential impacts

6.19. The oak tree is not presently designated for removal. The tree does have potential to be impacted by the works as its canopy overhangs the site and may require reducing. Canopy reduction works have the potential to disturb any bats that may be using the identified roosting feature.

6.20. Light spillage from the new development has potential to disturb any bats that may be using the veteran oak for roosting as well as any that may be using the urban gardens for foraging/commuting

Mitigation

6.21. If any works are to take place on the tree, a high level inspection of the potential roosting feature will be required in order to assess its status with regards to bats.

6.22. A sensitive lighting scheme should be employed post development as discussed below.

6.23. *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 pre 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 likel that there will be no negative impacts on local bat populations.

6.24. Given the above avoidance /mitigation strategies, it is considered likely that there will be <u>no residual impacts</u> on bats.

6.25. See **Appendix** for further information on designing lighting to minimise impacts on bats.

Reptiles/Amphibians

Baseline

6.26. There are no ponds on site or within 500 m of the site.

6.27. This urbanised site is surrounded by a network of gardens (and potentially associated small ponds), the possibility exists that common frogs, toads, newts, slow worms and grass snakes could be utilising some of the bramble scrub and ruderal areas as well as some of the discarded rubbish on site in some way.

Potential Impacts

6.28. De-vegetation and clearance of the site presents some low, localised risks to amphibians and reptiles that may be on-site.

Mitigation

6.29. It is advised that the grass vegetation on site is kept mown short and that any taller herbs and brambles are regular cut back as a they presently are. This will help prevent the site becoming suitable habitat for amphibians/reptiles/ mammals in the lead up to development and help ensure that impacts to any species will be kept to a minimum when development works begin.

6.30. Given the above avoidance /mitigation strategies, it is considered likely that there will be no residual impacts on reptiles/amphibians

Dormice

Baseline

6.31. There are no records of EPS licences for licensable works impacting dormouse within 2 km of the application site. No direct evidence was observed and no suitable habitat exists on site for foraging, commuting of hibernating dormice.

Potential Impacts

6.32. It is not thought the proposed works will impact dormice habitat.

Mitigation

6.33. Given the lack of suitable habitat onsite it is considered likely that there will be no residual impacts on dormice.

Other Terrestrial Mammals

Baseline

6.34. No sett holes, latrines, snuffle holes, mammal trails or any other evidence of badgers was observed on site.

6.35. The short sward grassland and the site's position surrounded by urban gardens provided some low suitability for commuting and foraging hedgehogs. There is currently no habitat on site suitable for hibernating hedgehogs.

Potential Impacts

6.36. Potential impacts to the above habitats/protected species exist primarily in the construction phase and on no more than a local level.

Mitigation

6.37. As part of the pre-works site inspection, the site should be checked for badger activity.

6.38. The mitigation measures outlined for reptiles/amphibians above (7.31) will be sufficient to protect hedgehogs and other terrestrial mammals during the works.

6.39. General mitigation measures are considered sufficient to protect terrestrial mammals during demolition and construction works within the application area. In particular 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.

6.40. Given the above avoidance /mitigation strategies, it is considered likely that there will be no residual impacts on terrestrial mammals.

Nesting Birds

Baseline

6.41. No nests were observed in any of the vegetation on site. Suitable nesting habitat exists within trees on site and also within the immediately adjacent non native hedgerow and trees.

Potential Impacts

6.42. Potential impacts to this habitat consist mostly of potential damage and disturbance during the works phase of the development to both on site and off site adjacent habitat. Any impacts arising from the works are considered low and of a localised, temporary nature.

Mitigation

6.43. It would be preferable for works to commence out side of nesting season (April to August inclusive), if this is not possible then initial site clearance should be carried out under the supervision of a suitably qualified ecologist prior to the commencement of works

6.44. Given the above avoidance/mitigation strategies, it is considered likely that there will be no residual impacts on birds.

Invertebrates

6.45. The mainly short sward modified grassland provides little opportunity for insects and their lifecycles. The brambles scrub and sparse ruderal vegetation provide some limited habitat for foraging for common assemblages of invertebrate.

6.46. It is considered unlikely that these habitats would support insect populations of any more than local importance.

Mitigation

6.47. Mitigation for any loss of insect habitat will involve a biodiverse landscaping and planting scheme post development as laid out in the enhancement recommendations below in section 8.

6.48. Given the above avoidance/mitigation strategies, it is considered likely that there will be no residual impacts on insects.

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.

Wildlife Beneficial Landscaping Scheme

7.2. 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.

Birds

7.3. It is recommended that integrated universal nest bricks are installed in the new building on site to provide opportunities for swifts, sparrows and other bird species associated with buildings. These should be fitted on a side of the building that gets some shade during the day, to give protection from heat, but not over windows or near to vents. Boxes should be sited at least 5 m above ground, with clear adjacent airspace so the birds can access it in high-speed direct flight.

7.4. Alternatively, tree mounted wood stone bird boxes such as Vivara Pro Seville 32mm or 5KL Schwegler Nuthatch Nest Box (or similar) can be installed in the trees along the western boundary to create additional opportunities for nesting birds. Bird boxes should be installed at least 4 m from ground level and with unobstructed air space in front (see Appendix for further details).

Bats

7.5. It is recommended that an integrated bat box such as Green & Blue integrated bat block (or similar) is installed in the new building on site. Integrated boxes should be installed at a height of at least 4 m, away from windows or doorways, preferably with with good connectivity to surrounding linear features.

7.6. Alternatively, an external bat boxes such as a Vincent Pro (or similar) can be installed externally on the building or on mature trees on site, to provide roosting opportunities for a wide range of bat species.

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.

7.8. Further information regarding habitat creation, enhancement and management can be provided on request.

7.9. Further recommendations regarding enhancements are contained within the appendix.

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APPENDICES

Legend

INDIVIDUAL TREES

- Existing Medium Urban Tree

HABITATS

- Bramble scrub
- Modified grassland
- Ruderal/Ephemeral

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Project:Land at Emsworth House Place,PO10 7JR

Habitat Map

Date: 08/03/2024

Contains Google maps data © copyright (2023) ***NOTE:*** *Areas are indicative and are not shown to exact scale.*

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Bats & Lighting

THE IMPACT OF LIGHTING ON BATS

Bats favour a dark environment for both roos3ng and foraging as they are adapted to low-light condi3ons. Ar3ficial ligh3ng will disturb bats if the ligh3ng 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.

Ar3ficial ligh3ng creates a 'vacuum effect' for nocturnal insects. During the night nocturnal insects use the light of the moon* to navigate. However, ar3ficial ligh3ng and even sky glow above ci3es obscures the natural moonlight as it is closer and radiates light in mul3ple direc3ons.

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 ar3ficial light are at a disadvantage when foraging as insects are drawn away from these species usual foraging grounds into the zones of ar3ficial light.

Ligh3ng must be considered in context to any development as increased ligh3ng may cause roost abandonment, reduced reproduc3ve success, and reduced foraging. Mi3ga3on to reduce the impacts of ligh3ng for bats is therefore of great importance in bat conserva3on.

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

Impact / Behaviour	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, s floodlighting, car headlights, roadside lighting, security lighting, aes 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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Fascia & Barge Board

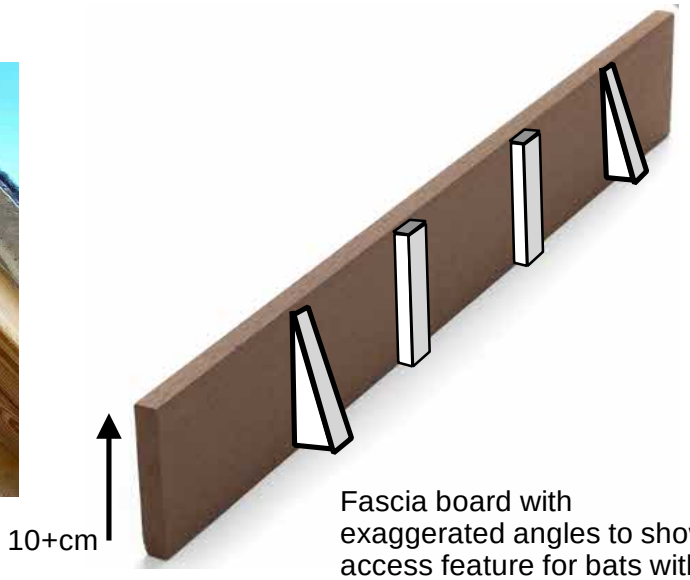
Gaps and Crevices

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 g replicating existing roost features on traditional tiled roofs. They can be cl and easily created using materials available on site to provide a bespoke mitigation solutions for bat licence projects.

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

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

These features are also suitabl incorporation on areas of hanging tile to provide bat access to the b space.
The locations for these features shoul be agreed with an ecologist to provi optimal conditions for the bat spec and roost types present on site.

Lifted tile features can also be used to provide access into a roof void suitable fo 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 acces for bats but discourage birds from entering the roof space.

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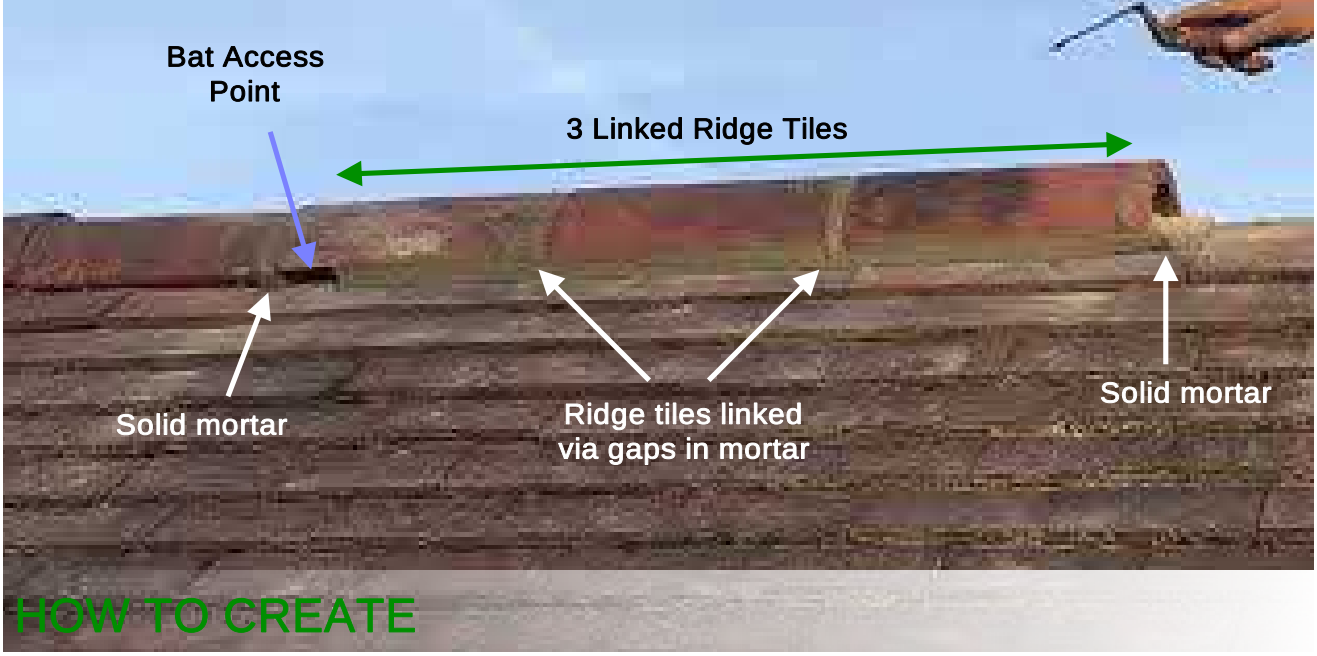
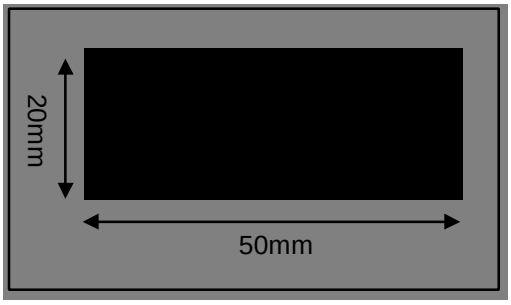
Ridge Tile Crevice Feature



HOW TO CREATE

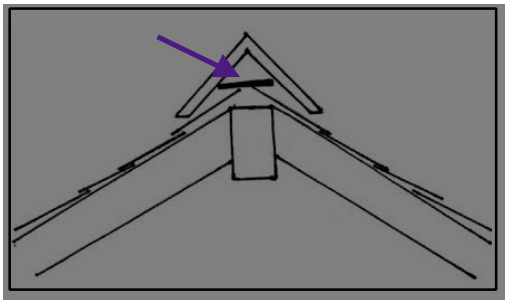
Note: Use three adjacent ridge tiles for one Ridge Tile Crevice Feature

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

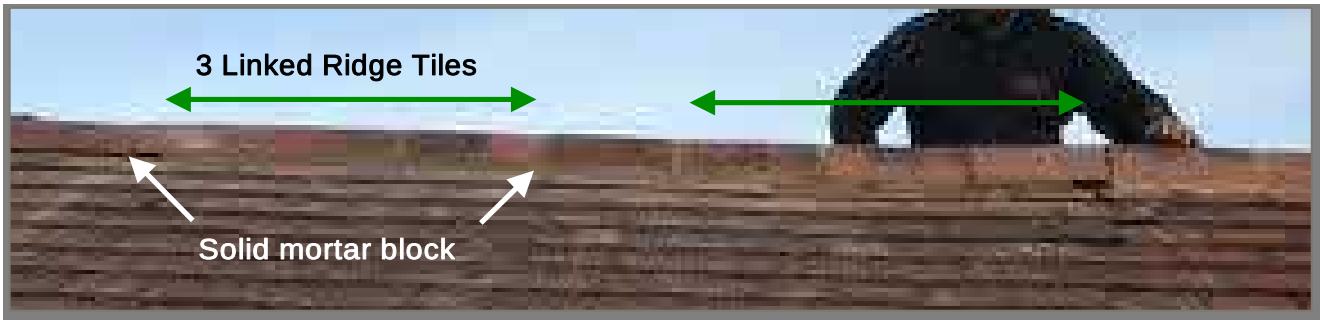


2. Or leave a gap in the mortar of the same size

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.

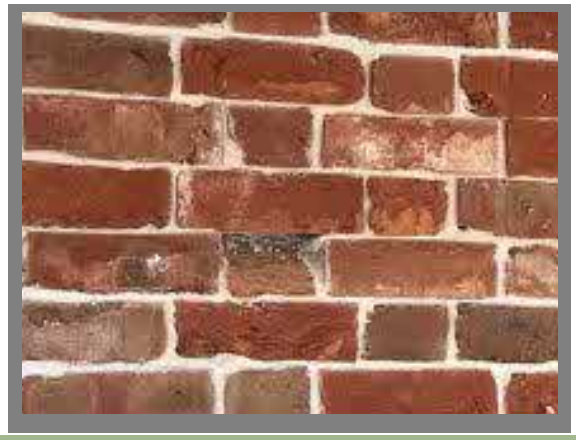
Being embedded in the masonry of a building, they do not impact the exterior seal of structure and are commonly integrated in new builds.

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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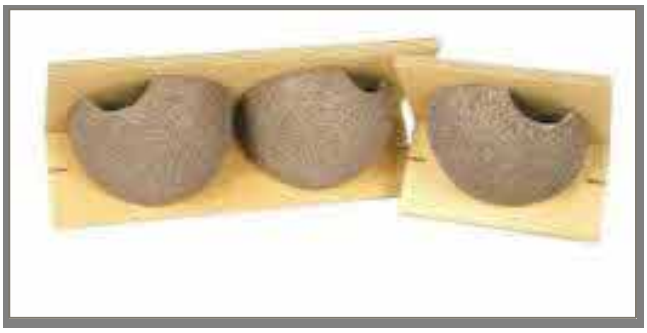
Bird Boxes

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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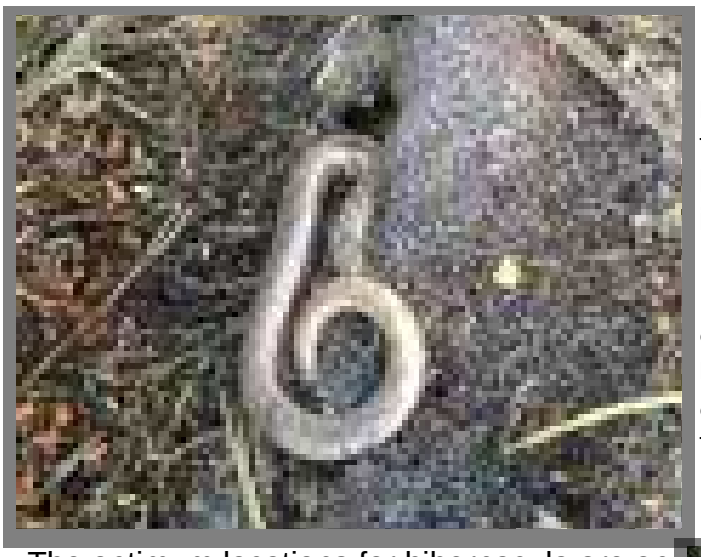
Hibernacula

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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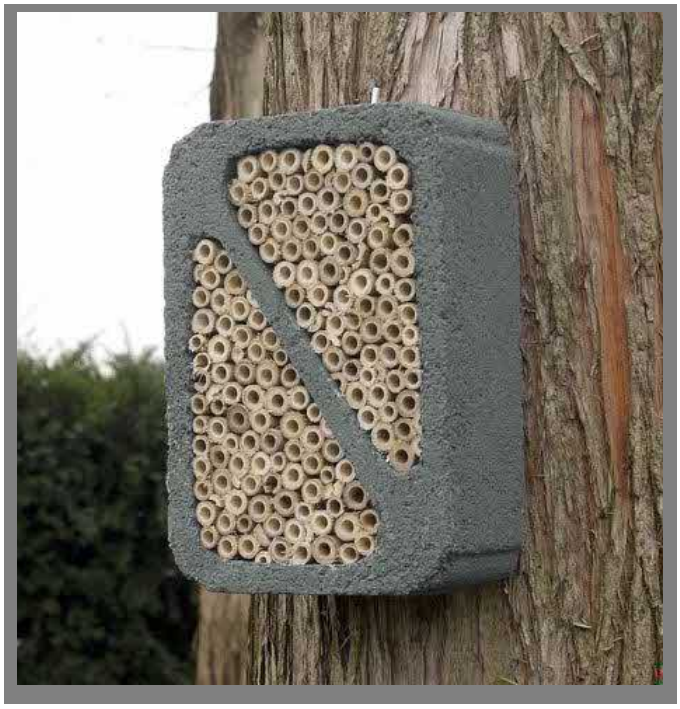
Insect boxes and bug hotels

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.

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

Wildlife 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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