

Preliminary Ecological Appraisal

July 2022

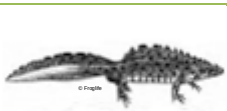
Land adjacent to Talfryn Cottage

Erbistock

Wrexham

LL13 0DF

National Grid Reference: SJ34114279



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Preliminary Ecological Appraisal

Document Title	Preliminary Ecological Appraisal
Version No.	1.0
Prepared for	Blueprint Architectural Ltd
Prepared by	Tyrer Ecological Consultants Ltd

Authors	Mis. T. Hesketh
Surveyors	Mr J. Pescod Qualifying CIEEM
Survey Date	21/05/2022
Reviewed by	Mr J. Pescod Qualifying CIEEM
Review Date	17/06/2022
Approved by	Kylee Wilding CEnv MIEMA ACIEEM
Date of Issue	04/07/2022

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Executive Summary

As part of a proposed planning application regarding a plot of land adjacent to Talfryn Cottage; a Preliminary Ecological Appraisal (PEA) was undertaken by Tyrer Ecological Consultants Ltd during March 2022, in accordance with the *Guidelines for Preliminary Ecological Appraisal* (CIEEM, 2017) and other best practice guidance. It is understood that proposals entail the erection of a new dwelling and detached garage including associated landscaping and access. This survey and report were commissioned by Blueprint Architectural Ltd.

Extensive findings, conclusions, and recommendations are presented throughout the report; however, the reader should be aware of the following Key recommendations:

Habitats: The hedgerow along the southern boundary qualifies for the UKBAP habitat 'Hedgerows'. *Recommendations in relation to retention or, as a last resort, compensation, are detailed within section 8.1.*

Breeding Birds: The hedgerow to the south of the site offers suitable nesting platforms for rural and garden birds such as House Sparrow (*Passer domesticus*). *All vegetation clearance works should occur outside of the breeding bird season of March-August unless it can be demonstrated by a suitable qualified, professional ecologist that breeding birds are absent beforehand.*

Hedgehog: The site contains habitats suitable for occasional foraging and commuting by European Hedgehog. *Recommendations to prevent risk to this species are outlined in section 8.10 of this report.*

GCN: The application site is broadly unsuitable for Great Crested Newt (GCN), though the presence of potential suitable habitat and potential breeding ponds within the immediate area were identified during the desktop survey. *No further surveys are required in relation to this species; however, a thorough program of Reasonable Avoidance Measures (RAMs) should be detailed in a Method Statement created by a suitably experienced ecologist and strictly adhered to throughout the works, as per sections 8.11-8.12.*

Biodiversity Benefit: A series of recommendations have been given within section 8.0 and Appendix III which provide opportunities for net biodiversity benefit at the development site and within the wider area. Enhancement opportunities include recommendations relative to the provision of favourable planting and landscaping, with wildlife boxes.

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1.0 Introduction & Objectives

- 1.1 As part of a proposed planning application regarding a plot of land adjacent to Talfryn Cottage (see Figure 1.1); a Preliminary Ecological Appraisal (PEA) was undertaken by Tyrer Ecological Consultants Ltd during March 2022, in accordance with the *Guidelines for Preliminary Ecological Appraisal* (CIEEM, 2017) and other best practice guidance. It is understood that proposals entail the erection of a new dwelling and detached garage including associated landscaping and access.

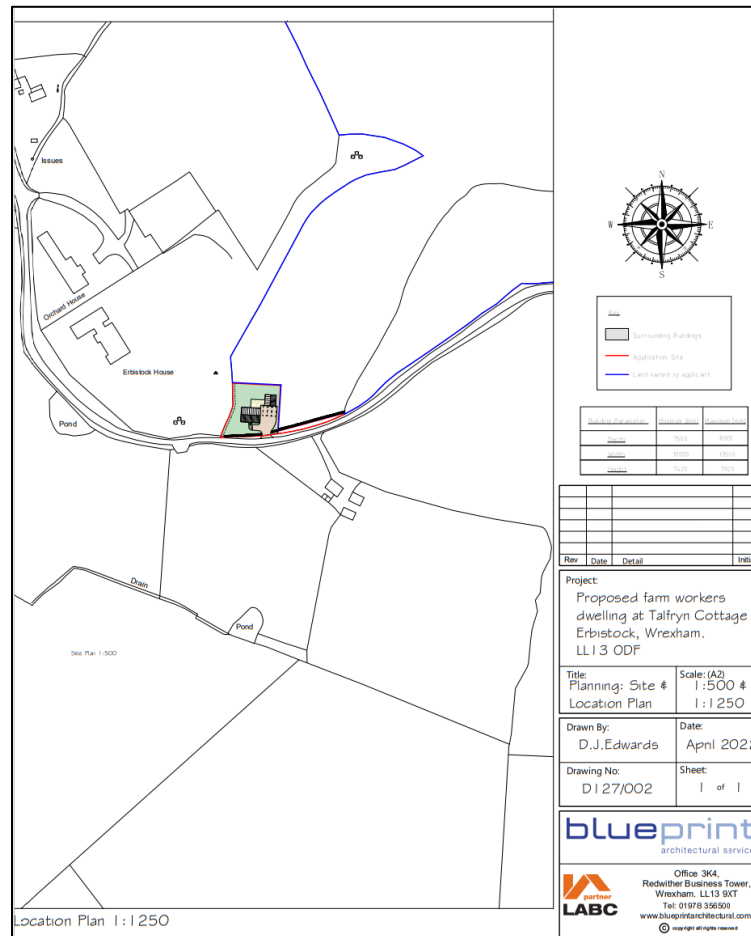


Figure 1.1: Existing site plan (©Blueprint Architectural Ltd).

- 1.2 Ecological surveys, particularly where a specially protected / noteworthy species is or may be present, are generally required as part of the Local Authority's Planning Policies. This survey and report were commissioned by Blueprint Architectural Ltd.

Aims & Objectives

- 1.3 The survey aimed to ascertain the nature of the land, and where possible obtain information on any priority wildlife habitats, or species, that may be present and if so determine if they will be affected by the proposals. The survey, therefore, includes the following objectives:

- Gather baseline ecological information on site/off site (as necessary),

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- Identify any likely ecological constraints associated with the proposals for the site (i.e. the presence of protected/priority habitats or species that exist within the confines of the application boundary, or zone of influence (ZOI),
- Identify mitigation/compensation measures likely to be required in line with the mitigation hierarchy (i.e. avoidance > impact minimisation > mitigation > compensation),
- Identify additional survey requirements following on from this preliminary appraisal,
- Identify a series of enhancement opportunities for biodiversity in line with national and local planning policy following '*Biodiversity Net Gain: Good practice principles for development*' (CIEEM *et. al.*, 2019).

1.4 As part of this ecological appraisal:

- Habitats on site were identified, measured and mapped using the UK Habitat Classification – Habitat Definitions Version 1.1 (2020);

1.5 As part of the Local Planning Authorities (LPA) planning policies and obligations to the Planning Framework, ecological surveys are generally required prior to planning permission being granted, particularly where protected/priority species are, or may be present, that could be affected by the proposals for which the application seeks consent.

1.6 This report will therefore provide baseline information as derived from the diurnal appraisal process outlined above and recommend any necessary additional surveys, or work, where applicable, to provide a conclusive ecological impact assessment.

1.7 The Applicant should be aware that if during the appraisal:

- The application site/area was found to be suitable for any European Protected Species (EPS), otherwise protected, or priority habitats/species, or,
- Signs of use by particular protected species were found, suspected, or,
- Seasonal constraints significantly limit the gathering of ecological information to arrive at an accurate conclusion on which the planning application can proceed,

Then more detailed surveys may be recommended where necessary, to allow the ecologist to arrive at a conclusive impact assessment.

1.8 If any protected species was subsequently found during detailed further surveys and/or may be affected by the development proposals, then a European Protected Species Mitigation Licence (EPSML) may be required to proceed with the development.

1.9 Where more detailed surveys are recommended by the ecologist, following ecological appraisal, then Local Planning Authorities (LPA) on the advice of their ecological advisors, may not grant permission until such time that all relevant material information is gathered in accordance with their obligations to the legislature.

1.10 Protected/priority species omitted from this report have been discounted due to factors including obvious absence/isolation of suitable habitats, and/or distributional aspects negating the necessity to survey for them, and/or the proposed works were not considered to negatively impact the species or encroach on areas where the species may be present.

2.0 Legislation & Policy

2.1 The key legislature considered for the purposes of this report includes the following:

- The Environment (Wales) Act (2016),
- Conservation of Habitats and Species Regulations (amendment) (2019) (EU Exit),
- Countryside Rights of Way (CROW) Act (2000),
- Natural Environment and Rural Communities (NERC) Act (2006),
- Protection of Badgers Act (1992),
- Town and Country Planning Act (1990),
- Wildlife and Countryside Act (1981) (as amended),

2.2 These acts entail relevance to both protected and invasive species. The degree of protection offered to taxa provided within existing UK and EU legislature often varies depending on species/group, for example, some species may purely be protected during one of its life stages (e.g. common species of breeding bird whilst nesting/with eggs/young); some species may receive full protection within the EU (e.g. otter), whereas others may be protected solely on a national basis (e.g. grass snake).

2.3 Table 2.1 contains appropriate legislature to each species/group specifically respective to the site, and provides the relevance of said legislation.

Table 2.1 - Relevant Legislation

Species Group/Species	Relevant Legislature	Level of Protection
Badger	Protection of Badgers Act (1992), Wildlife and Countryside Act (1981) (as amended)	Illegal to wilfully kill, injure or take a badger (or attempt to do so). Cruelly ill-treat a badger. Dig for a badger. Intentionally or recklessly damage or destroy a badger sett, or obstruct access to it. Cause a dog to enter a badger sett. Disturb a badger when it is occupying a sett.
Bats	CROW Act (2000) The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (SI 2019/579) Wildlife and Countryside Act (1981) (as amended) Environment (Wales) Act (2016)	All British bats and their roosts are afforded full protection from damage/destruction and bats may not be injured/killed/taken at any stage. Bats are also protected from reckless disturbance; once identified, roosts are protected whether the bat is in occupation or not.

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Birds (Breeding)	CRoW Act (2000) Wildlife and Countryside Act (1981) (as amended) Environment (Wales) Act (2016)	All wild birds (with only minor exceptions) and their nests whilst being built or containing eggs or dependant young are protected.
Great Crested Newt (GCN)	CRoW Act (2000) Conservation of Habitats and Species Regulations (2019) (EU Exit) Wildlife and Countryside Act (1981) (as amended) Environment (Wales) Act (2016)	Great Crested Newts (GCN's) are fully protected from disturbance, killing, injuring or possession at any life stage. Confirmed breeding ponds and resting places are afforded the same protection.
Invasive Plant Species	Wildlife and Countryside Act (1981) (as amended)	Species listed within Schedule 9 Wildlife and Countryside Act (1981) (as amended) as invasive, including Japanese Knotweed (<i>Reynoutria japonica</i>) and Himalayan Balsam (<i>Impatiens glandulifera</i>). The Act makes it an offence for any person to grow or cause to grow in the wild any plants listed as invasive.

Policy

- 2.4 Planning Policy Wales (PPW) 11th Edition (2021) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales. PPW, the TANs, MTANs and policy clarification letters comprise national planning policy.
- 2.5 PPW and the National Development Framework (published as Future Wales – the National Plan 2040) set out how the planning system at a national, regional and local level can assist in delivering these requirements through Strategic Development Plans (SDPs) and Local Development Plans (LDPs).
- 2.6 PPW (2021) states:

“The presence of a species protected under European or UK legislation, or under Section 7 of the Environment (Wales) Act 2016 is a material consideration when a planning authority is considering a development proposal which, if carried out, would be likely to result in disturbance or harm to the species or its habitat and to ensure that the range and population of the species is sustained. Planning authorities should advise anyone submitting a planning application that they must conform with any statutory species protection provisions affecting the site, and potentially the surrounding area, concerned. An ecological survey to confirm whether a protected species is present and an assessment of the likely impact of the

development on a protected species may be required in order to inform the development management process. It is considered best practice that screening to determine the presence of protected species should be carried out by a competent ecologist on the basis of data provided by the relevant Local Environmental Record Centre."

- 2.7 Planning authorities must therefore follow a step-wise approach to maintain and enhance biodiversity and build resilient ecological networks by ensuring that any adverse environmental effects are firstly avoided, or minimized, or mitigated, and as a last resort compensated for; enhancement must be secured wherever possible.
- 2.8 The first priority for planning authorities is therefore to avoid damage to biodiversity and ecosystem functioning. Where there may be harmful environmental effects, planning authorities will need to be satisfied that any reasonable alternative sites that would result in less harm, no harm or pro-gain have been fully considered.
- 2.9 The Environment (Wales) Act 2016 ("the Act") - requires local planning authorities to have regard to area statements in the development of Local Development Plans. The Act introduced an enhanced biodiversity and resilience of ecosystems duty (Section 6 Duty). This duty applies to public authorities in the exercise of their functions in relation to Wales and will help maximise contributions to achieving the well-being goals. The Nature Recovery Action Plan supports this legislative requirement to reverse the decline in biodiversity, address the underlying causes of biodiversity loss by putting nature at the heart of decision-making and increasing the resilience of ecosystems by taking specific action focused around objectives for habitats and species.

Part 1 of the Act promotes sustainable management of natural resources, and in Part 1 section 6 states:

"A public authority must seek to maintain and enhance biodiversity in the exercise of functions in relation to Wales, and in so doing promote the resilience of ecosystems, so far as consistent with the proper exercise of those functions."

- 2.10 This is further supported by PPW (2021) which requires developments to achieve a Net Benefit for Biodiversity (NBB):

*"Planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. This means development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a **net benefit for biodiversity**. In doing so planning authorities must also take account of and promote the resilience of ecosystems, in particular the follow aspects:*

- diversity between and within ecosystems;*
- the connections between and within ecosystems;*
- the scale of ecosystems;*
- the condition of ecosystems including their structure and functioning; and*
- the adaptability of ecosystems."*

- 2.11 There are several plans, strategies and national, sub-regional and local policy statements which provide a framework for development in the Plan area. The Planning and Compulsory Purchase Act (2004) makes it a requirement for local planning authorities in Wales to prepare a Local Development Plan (LDP) for their areas.

Wrexham Borough Council prepared a plan, namely the 'Wrexham Unitary Development Plan (1996 – 2011)', which was formally adopted in February 2005 and supersedes any previous development plans for the area. A new plan, the 'Wrexham Local Development Plan 2 (2013 - 2028)', which will replace the current adopted plan, is currently under review. Until this new plan is adopted, the Wrexham Unitary Development Plan remains in effect.

3.0 Priority Habitats & Species

National context

- 3.1 In the United Kingdom, legal protection and otherwise legislative recognition is afforded to particular habitats and species. Certain habitats and species are considered to hold nature conservation importance and are thus protected due to factors such as their ecological functionality, their rarity, their vulnerability, environmental importance or declining population/status. They are referred to as priority habitats and priority species.
- 3.2 Section 7 of the Environment Act (Wales) places a duty on Welsh Ministers to publish, review and revise lists of types of habitats and species in Wales which they consider are of key significance to sustain and improve biodiversity. The Welsh Ministers must also take all reasonable steps to maintain and enhance the habitats published in these lists, and encourage others to take such steps. Section 7 of 'The Act' alongside the UK Biodiversity Action Plan (UKBAP) provided a statutory basis for lists of habitats and species of national conservation importance - now transposed under section 41 (s.41) of the Natural Environment Rural Communities Act 2006 (NERC Act).
- 3.3 The following Priority habitats and species are considered relevant to the survey area:

Habitats:

- Hedgerows.

Species:

- Brown long-eared (*Plecotus auritus*),
- Soprano Pipistrelle (*Pipistrellus pygmaeus*),
- Bird species that include: House Sparrow (*Passer domesticus*), Dunnock (*Prunella modularis*), Song Thrush (*Turdus philomelos*), Bullfinch (*Pyrrhula pyrrhula*),
- Great Crested Newt (GCN) (*Triturus cristatus*),
- Common toad (*Bufo bufo*),

District context

- 3.4 Local Biodiversity Action Plans (LBAPs) are a way of encouraging people to work together and deliver a program of continuing action for biodiversity at a local level. LBAPs also embrace the idea of 'local distinctiveness'; habitats and species which are not considered UK conservation priorities can be catered for by LBAPs if they are of particular local significance.

LBAPs set out practical steps that aim to:

- Help protect biodiversity,
- Enhance and improve biodiversity where possible, and,
- Promote biodiversity at a local level

4.0 Survey Methods

- 4.1 As part of the Ecological Appraisal report, desk-top and field-based studies were conducted. Methods for both components of the appraisal are given below.

Desktop Study

- 4.2 Before a site visit a desktop study was conducted using online resources to obtain information pertaining to any sites afforded statutory (e.g. SSSI) and non-statutory (e.g. LWS) designations within 2.0km of the site boundary. To do so, the 'Multi Agency Geographic Information for the Countryside (MAGIC – provided by Defra)' along with 'Lle a Geo-Portal for Wales' and DataMapWales were accessed to gather such information; this interactive mapping service was also used to locate any European Protected Species Mitigation Licenses (EPSML) and species records to further inform conclusions concerning protected species in the context of the study site and its proposed development.
- 4.3 Historic satellite imagery was reviewed using sources such as Google Earth (© 2018-2022) to help establish past use of the land and determine the nature of adjoining and extending habitats; such information aids in the understanding of how the site might interact with its surroundings ecologically and its value in that context, and how the development may impact at a wider scale.
- 4.4 In addition the Council Planning Portal 'Search for planning applications' function was utilised to help inform the desktop study by analysis of existing publicly accessible ecological survey results that have been carried out locally within the previous five years.
- 4.5 A commercial data request to the Local Environment Records Centre (LERC) serving the area has not been sourced during this preliminary appraisal assessment and is justified through the application of the following recent guidance:

1) The Guidelines for Accessing, Using and Sharing Biodiversity Data in the UK (CIEEM, 2020) states: "It is generally expected that a desk study, including a data search, will be a key part of the ecological surveys or reports produced to inform a planning application. **Freely available web-based sources of data and contextual information should always be used**; in some cases, it may be acceptable to not undertake a data search with the LERC or other relevant NSS or local interest groups, for example:

*ii) Situations where the data search would be extremely unlikely to provide information needed to inform the assessment; due to the **scale** and **location** of the proposed development. The appropriateness of excluding a data search will need to be judged on a case-by-case basis as, in most situations, it will be essential to carry out such a search even if the development is very small or is likely to have a low impact. It can be very difficult to demonstrate that a data search would not have provided relevant information without obtaining and reviewing those data.*

iii) In some cases for Preliminary Roost Assessments of buildings in low impact / small-scale scenarios, such as an extension to a residential property, loft conversions (full or partial), installation of Velux/dormer windows, single modern agricultural or similar building conversion or demolition; however, it should not be assumed that data searches are never required for such scenarios and this must be judged on a case by case basis and justified accordingly.

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2) The Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017) states: *“Very occasionally it might be possible to carry out a robust PEA without obtaining LERC/NBDC/CEDaR data; this will usually only apply to **low impact or small-scale projects** (e.g. by virtue of size, extent, duration of works, magnitude and locality), and should be determined on a case-by-case basis.”*

As exemptions, as made bold above, can be applied for the proposed development in good practice due to the small scale and low-impact nature of the proposed development, it is considered unnecessary to conduct a commercial data request at this time, however, if a data search is considered to be necessary by the Local Authority or advisory body to better inform the appraisal, a proportionate data search should be commissioned with results interpreted into the conclusions and recommendations of a re-issued/updated report.

Field Survey

- 4.6 A daytime preliminary ecological appraisal was conducted on 31st May 2022 in dry conditions (12°C), wind 1/12 (Beaufort scale), and 20% cloud by the following surveyor (Table 4.1).

Table 4.1 - Surveyor credentials

Name	Description of relevant credentials
Mr J. Pescod MRes (Consultant Ecologist)	Five years of professional consultant experience & training; accredited agent on the (Class 2) Natural England bat licence Mrs. K. Wilding (CLS-14227) and the CL08 Great Crested Newt Survey Level 1 licence of Mr. M. Pritchard (2018-34062-CLS-CLS England); Qualifying CIEEM.

Floristic assessment

- 4.7 The survey followed the UK Habitat Classification Version 1.1 (Butcher, et.al., 2020) being introduced as part of the rollout of Biodiversity Net-gain with reference to the Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Methodology standards (JNCC, 2010) and reference to the Chartered Institute of Ecology and Environmental Management (CIEEM) Technical Guidance Series *“Guidelines for Preliminary Ecological Appraisal, 2nd Edition”* (CIEEM, 2017).
- 4.8 During the survey walkover, botanical assemblages were assessed, and the land was inspected for the presence of red-listed (Stroh *et al*, 2014; Hodgetts, 2011), s.41 and LBAP species alongside specially protected species as listed under Schedule 8 of the Wildlife and Countryside Act (WCA) (1981) (as amended) and/or Schedule 5 The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019). Species nomenclature follows Stace, C. (2019) – definitive English names for vascular plants, Smith, A. (2004) for mosses, and Dobson, F. (2018) for lichens.
- 4.9 Additional to attributing ecological value to red-listed / BAP species, under existing CIEEM guidance, a geographic frame of reference is also adopted. Plant species and habitats may be recognised for their ecological notoriety on a geographical scale which is adopted on a site-to-site basis (see Figure 4.1 below).

For a site-relevant species list, see Appendix II.

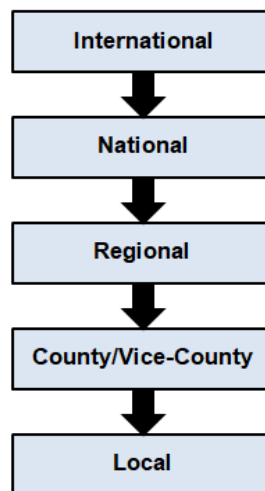


Figure 4.1 - Geographic Frame of Reference entailing degrees of conservation importance

- 4.10 In combination with assessing the area in relation to flora and habitats of conservation importance, the land was also assessed in relation to the presence of invasive non-native species (INNS) as listed under Schedule 9 (Part II) of the Wildlife and Countryside Act (1981) (as amended).

Faunal assessment

- 4.11 The identification and/or evidence of fauna encountered would be documented whilst in tandem the area was assessed for the potential to support the priority species covered in the previous tables. The 'walkover' also aimed to identify any ephemeral pools or unmapped waterbodies.

Bats

- 4.12 The site would be assessed for bats, and buildings (where present) would be inspected for potential places that may be of value to bats and to determine evidence of use. This typically involves a search for potential roost features (PRF) both internally (investigation of loft spaces/upper floors/internal elevations) as well as externally, comprising an investigation of features (roof material, building components) using a high-powered torch. Field signs of bats typically comprise bat droppings, incidental animal presence, dead specimens and/or prey items. The surrounding habitat was also considered in terms of general suitability. No buildings are present within the site boundary.
- 4.13 Trees (where present) would be inspected for places that may be of value to bats and to determine if evidence of use was present; this typically involves a search for potential roost features along with an investigation of those features using a high-powered torch or close focus binoculars. Potential roost features can include woodpecker holes, rot holes, hazard beams, other vertical or horizontal cracks or splits in stems and branches, partially decayed lifted bark, knot holes, man-made holes, tear-outs, cankers in which cavities have developed, other hollows or cavities, including butt-rots, double-leaders forming compression forks with included bark, gaps between overlapping stems or branches, partially detached Ivy with stem diameters over 50mm or bat/bird boxes. All trees present were inspected for their potential to host roosting bats.

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- 4.14 Criteria for preliminary bat roost assessment are based upon the determinants given in the Bat Conservation Trust - Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd ed. (2016): (see Figure 4.2).

Table 4.1 Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, to be applied using professional judgement.		
Suitability	Description Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions ^a and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation ^b). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential. ^c	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions ^a and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions ^a and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

^a For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.

^b Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten *et al.*, 2015). This phenomenon requires some research in the UK but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in large buildings in highly urbanised environments.

^c This system of categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015).

Figure 4.2 - Bat Conservation Trust (BCT) guidelines extract

- 4.15 Factors considered during the preliminary roost assessment include:

- Knowledge of bat species relevant to the site location and geographical range,
- Nature of the immediate habitat concerning foraging opportunities/surroundings,
- Presence and conditions of loft spaces, upper floors, roof linings where present,
- Presence/absence of roost potential,
- Value of roost potential, if present.

Breeding Birds

- 4.16 Buildings, trees, hedges, and scrub (where present) would be checked for evidence of nesting birds and suitability for relevant species. Bird species observed and heard were recorded on site, and a search was made for nest material, or areas suitable for nesting. Additional to the site's capacity to support generally common species for breeding, the area was also subject to an assessment for the site's capacity to support species specially protected under Schedule 1 of the Wildlife & Countryside Act (1981) (as amended), for example, Barn Owl (*Tyto alba*) and other priority species.

Other terrestrial mammals

- 4.17 The walkover included a search for field signs of Badger (*Meles meles*) which includes signs of activity such as digging, setts, 'runs' leading to and from a sett and the existence of latrines or 'snuffle' holes where badgers have foraged in the ground. Any signs indicative of the use

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of the site by European Hedgehogs (*Erinaceus europaeus*), Brown Hare and Water Vole, or habitats of value to them, were also recorded.

GCN

- 4.18 During a desktop assessment a 250m search was undertaken from a site-central grid reference concerning the presence of ponds, ditches or other water bodies that may support Great Crested Newts (GCN). The information gathered would then be used to aid in establishing if more detailed surveys are required.

NB: *English Nature's (now Natural England) Great Crested Newt Mitigation Guidelines (2001) state ponds within 500m of a proposed development site should be considered for their potential to support GCN, however, in some instances this distance may be reduced to 250m due to the presence of physical barriers and obstructions or based on the likely magnitude of impacts arising from the proposed development.*

- 4.19 Based on small scale and low impact nature of the proposals, and using best practice guidance, a 250m buffer was used. No ponds are present within the site boundary, three ponds were identified within 250m from aerial imagery.
- 4.20 The site and its surroundings were assessed for suitability for use by reptiles, with particular attention paid to features that could be used as basking areas (e.g. south-facing slopes), hibernation sites (e.g. banks, walls, piles of hardcore) and opportunities for foraging (e.g. rough grassland and scrub). Beebee & Griffiths (2000) state specific habitat preferences of common UK reptiles:
- Common Lizards (*Zootoca vivipara*) use a variety of habitats from woodland glades to heaths, walls and pastures, as well as brownfield sites,
 - Slow-worms (*Anguis fragilis*) use similar habitats to Common Lizards, and are often found in rank grassland, gardens and derelict land under refugia,
 - Grass Snakes (*Natrix natrix*) have broadly similar requirements to Common Lizards but with a greater reliance on ponds and wetlands, where they prey on amphibians.

In the assessment of a site for reptiles, important habitat characteristics are considered, outlined in Table 4.2, as derived from the Reptile Habitat Management Handbook (Edgar, 2010).

Table 4.2 - Important habitat characteristics for reptiles

1. Location (in respect of species range)	7. Connectivity to good quality habitat
2. Vegetation structure	8. Prey abundance
3. Insolation	9. Refuge opportunity
4. Aspect	10. Hibernation habitat potential
5. Topography	11. Disturbance regime
6. Surface geology	12. Egg-laying site potential

- 4.21 The application site was assessed for the presence of features that should be considered of high value to invertebrates. Several important features were considered, based on the assemblage descriptions provided within the Research Report "Surveying terrestrial and freshwater invertebrates for conservation evaluation" (NERR005, 2007), including but not limited to:

- Wood decay
- Early successional mosaic habitat
- Shaded ground layer
- Still and flowing water

4.22 The results, conclusions and recommendations of this report are based on several factors i.e.

- Skills and experience of the surveyor,
- Knowledge of flora and fauna relevant to the site location and geographical range,
- Nature of the immediate and surrounding habitat concerning shelter, foraging and commuting opportunities.

4.23 The results, conclusions and recommendations of this report have been assessed by Mrs K. Wilding, Director of Tyrer Ecological Consultants Ltd, and her assessment concurs with the findings and recommendations of Mr Pescod.

5.0 Limitations

5.1 This report does not contain a comprehensive list entailing the totality of botanical taxa on site. Species listed within Appendix II are recorded from a combination of the seasonal timing the survey took place and the botanical identification skills of the surveyor. Many plant species are only evident at certain times of the year; consequently, some plant species may have gone undetected.

5.2 The optimal time of the year to carry out a preliminary ecological appraisal / UK Habitats survey is April to October; therefore, the survey was undertaken within the optimal period.

5.3 The survey was conducted at a time when bats are within their active season when evidence of bats can be most apparent; thus, survey timing is not considered a constraint in this instance.

5.4 Two of the three ponds identified within 250m of the site boundary during the desktop assessment were not accessible due to their locations within private land. No other access limitations were experienced with the surveyor able to access all areas of the site required to provide robust ecological recommendations and conclusions.

6.0 Desk Study Results

- 6.1 The Land adjacent to Talfryn Cottage, Erbistock ("the application site", less than 0.1 hectares) is located to the north of an unnamed lane approximately 7.5km south of Wrexham town centre (see Figure 6.1).



Figure 6.1 - Location of application site (red boundary) within the surrounding landscape. (Source: Google 2021)

- 6.2 The application site can be broadly described as section of pasture grassland forming part of a larger field extending to the north and east, bordered by a small broadleaved woodland to the west and a hedgerow to the south. The immediate habitat is dominated by agricultural land, intersected with hedgerows and lines of mature trees, with stands of Restored Ancient Woodland (RAW) to the northeast, south and southwest of the site in the form of Drury's Plantation, Erbistock Gorse and Princess Wood respectively. Scattered trees and occasional ponds are also present throughout the immediate landscape.
- 6.3 The extending habitat continues in similarity to that of the immediate, comprising of agricultural and arable land with large areas of deciduous woodland scattered across the landscape, the vast majority of which are RAW's, with smaller areas of ancient semi-natural wood land to the west. The River Dee lies 1.5km to south and the west of the site boundary, and the land is intersected by a network of minor farm tracks and B roads connecting occasional detached properties and farms.
- 6.4 In respect to connectivity, the site has good connectivity with the surrounding environs, with dispersal barriers limited to minor roads; flying species and terrestrial mammals would have no issue accessing the site, slower moving terrestrial species may be discouraged but their presence on site cannot be ruled out entirely.

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- 6.5 The described ecological frameworks are considered to offer a good array of habitats with reasonable inter-connectivity in the landscape though not to the application site, which is of benefit to many species/groups for which the survey was undertaken, namely flying animals such as bats and birds associated with rural settings along with a variety of small terrestrial mammals.
- 6.6 The protected species most typically associated with the habitats described is the Common Pipistrelle (*Pipistrellus pipistrellus*), frequently associated with buildings in rural and urban environments, whilst the agricultural grasslands offer some foraging potential for Barn Owl (*Tyto alba*).
- 6.7 There is one designated site for nature conservation within 2.0km of the application site (see Table 6.1):

Table 6.1 - Statutory designated site within 2km of the application site

Site name and Location	Designation type	Interest features
River Dee 1.5km south	Site of Special Scientific interest SSSI	The main channel of the River Dee lies within both Wales and England, and is notified as two separate SSSIs – the Afon Dyfrdwy (River Dee) SSSI in Wales and the River Dee (England) SSSI in England. The features for which the SSSIs are notified, in particular migratory fish, depend upon the whole river ecosystem. The River Dee below Llyn Tegid is a predominantly mesotrophic river with a diversity of vegetation types reflecting its geology and geographical location. Near the outflow of Llyn Tegid, the community is typical of a sandstone, mudstone and hard limestone river type intergrading with a mesotrophic river type dominated by gravels, pebbles and cobbles. Species such as hemlock water-dropwort (<i>Oenanthe crocata</i>), alternate water-milfoil (<i>Myriophyllum alterniflorum</i>), intermediate water-starwort (<i>Callitriche hamulate</i>), water mosses (<i>Fontinalis antipyretica</i>) and (<i>F. squamosa</i>), and reed canary-grass (<i>Phalaris arundinacea</i>) are present. In spite of the large size of the river, the moderate gradient allows pond water-crowfoot (<i>Ranunculus peltatus</i>) to dominate. The nationally and internationally rare floating water-plantain (<i>Luronium natans</i>) also occurs here. The otter is of special interest and is found throughout the site, especially where appropriate bank side cover exists to provide secure holts and lying up areas. Water vole <i>Arvicola (terrestris)</i> have been recorded on the middle and lower reaches of the River Dee.

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Desktop study - Species records

- 6.8 **Bats:** A search of extensive bat records held by Tyrer Ecological Consultants Ltd from 2014-present revealed no records of roosts or bat activity within 2km of the site.
- 6.9 **Great Crested Newt:** No records of GCN were identified during the desktop assessment. No ponds exist on site; three ponds (see Figure 6.2) are present within 250m at approximately 233m to the northeast (Pond 1), 65m to the west (Pond 2), and 116m to the south (Pond 3); during the site walkover, Pond 1 was found to be absent/dried. The site additionally lies adjacent to areas of potential habitat for GCN as derived from DataMapWales.

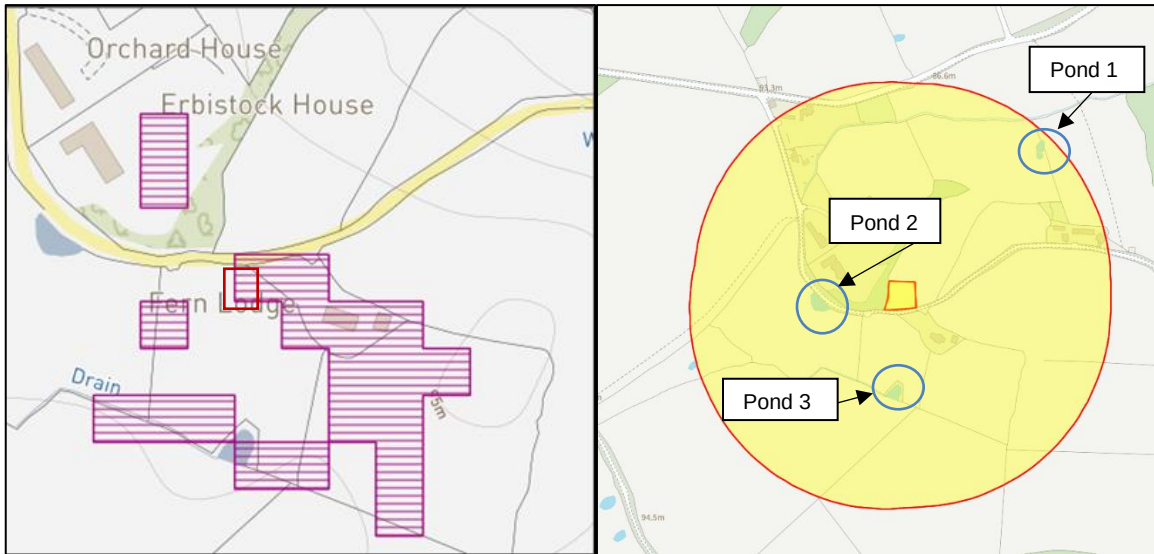


Figure 6.2 – Location of Potential Habitat for Great Crested Newts Layer taken from DataMapWales (left) and Ponds 1-3 within 250m of the application site (right) (Source: adapted from MAGIC Maps, 2022 & DataMapWales 2022)

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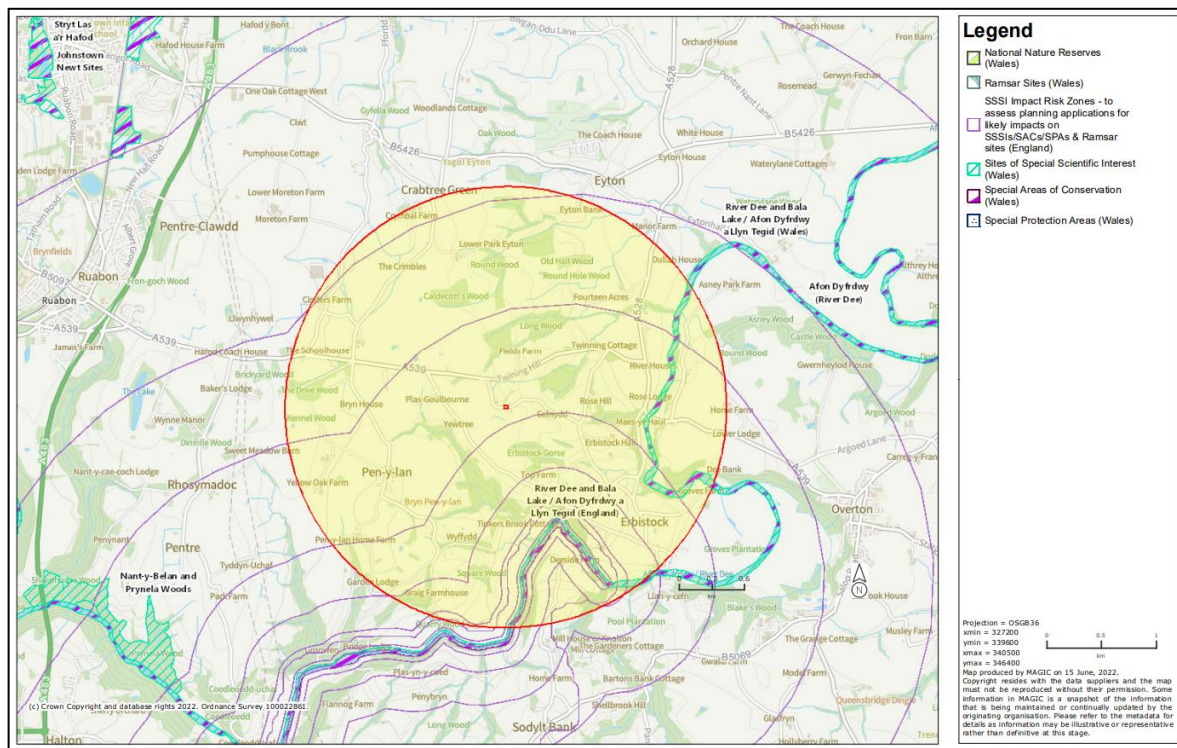


Figure 6.3 – Location of granted EPSMLs (blue ringed) and designated sites relative to the application site (Source: adapted from MAGIC Maps, 2022)

7.0 Field Survey Results

7.1 Habitat Survey

7.1.1 See Table 7.1 (below) for habitat descriptions. Refer to Appendix IV - UK Habitats Map for the location of all described habitats & Target Notes (TN). Species nomenclature follows Stace, C. (2019) – definitive English names.

Table 7.1 - UK Habitats recorded within the survey area with target notes

Habitat	Description
h2a – Hedgerow (priority habitat) 81 - Flailed hedgerow	A hedgerow lining the southern boundary of the site; young trees are present forming a canopy extending over the surrounding habitats following a lack of recent management, and species present include an abundance of Hawthorn (<i>Crataegus monogyna</i>) with Elder (<i>Sambucus nigra</i>), Holly (<i>Ilex aquifolium</i>), Blackthorn (<i>Prunus spinosa</i>), and understory species including Cleavers (<i>Galium aparine</i>) and Dog's Mercury (<i>Mercurialis perennis</i>).
g3c – Other neutral grassland 59 – Cattle grazed	The site is comprised of rank grassland which is heavily grazed by cattle. Species composition varies across areas of the grasslands with the dominant grasses and forbs changing; however, scattered and encroaching scrub and scattered rushes occur throughout. Graminoids include Cock's-foot (<i>Dactylus glomerata</i>), Common Bent (<i>Agrostis stolonifera</i>), Marsh Foxtail (<i>Alopecurus geniculatus</i>) and Perennial Rye-grass (<i>Lolium perenne</i>), whilst forbs include Creeping Thistle (<i>Cirsium arvense</i>), Greater Plantain (<i>Plantago Major</i>), Common Nettle (<i>Urtica dioica</i>), Common Ragwort (<i>Senecio jacobaea</i>), Dandelion (<i>Taraxacum agg.</i>), Garlic Mustard (<i>Alliaria petiolata</i>), Bittersweet

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		Nightshade (<i>Solanum dulcamara</i>), Creeping Cinquefoil (<i>Potentilla Reptans</i>) Broad Leaved Dock (<i>Rumex obtusifolius</i>), White Clover (<i>Trifolium repens</i>) and Germander Speedwell (<i>Veronica Chamaedrys</i>).
u1e – Built linear feature		A post and wire fence runs along the western boundary of the application site.
Target Notes	1	Location of Variegated Yellow Archangel (<i>Lamium galeobdolon subsp. argentatum</i>)

- 7.1.2 One habitat of conservation importance was identified within the site boundary in the form of the Hawthorn dominated hedgerows lining the western access road and the southern site boundary which qualifies as the UKBAP habitat ‘Hedgerows’ due to its composition of greater than 80% native woody species.

7.2 Vegetation

- 7.2.1 No species of conservation importance were noted on the site; however, one species listed as invasive under Schedule 9 of the WCA was noted within 7m northwest of the site boundary in form of Variegated Yellow Archangel (*Lamium galeobdolon subsp. argentatum*) (see Figure 7.1).

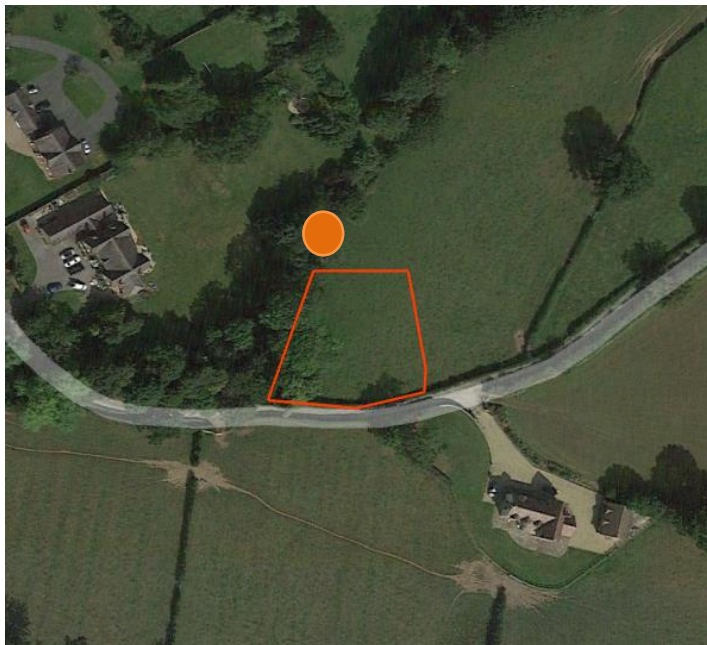


Figure 7.1 – Location of Variegated Yellow Archangel (orange) north of the application site
 (Source: adapted from Google Earth)

7.3 Bats

- 7.3.1 There are no buildings or mature trees on site, however the trees immediately to the west of the site should be considered of value to bats they are likely to be used for foraging and commuting routes which form part of a wider ecological network with key linkage habitat between sites in the local setting.

7.4 Breeding Birds

- 7.4.1 In relation to Schedule 1 (WCA) specially protected bird species such as Barn owl, whilst this species may utilise the site in the wider area with hunting habitat provided in the open grassland and surrounding arable fields, no evidence of nesting was identified in any of the barns and no other suitable nesting habitat is present at the site, and the proposed application is unlikely to impact upon such species.
- 7.4.2 Whilst no current or historic evidence of nesting birds was identified anywhere within the site boundary. The southern boundary hedgerow offers suitable habitat for garden and rural birds such as House Sparrow (*Passer domesticus*).

7.5 Other Terrestrial Mammals

Badger

- 7.5.1 No field signs were located to indicate the presence of Badgers, including any setts, latrines, pathways, hairs, footprints or feeding signs such as snuffle holes and scratched trees/logs; the application is suitable for foraging though in the absence of any evidence the presence of this species is unlikely.

European Hedgehog

- 7.5.2 In relation to European Hedgehog, the grassland habitats present offers foraging and commuting habitat in their current state but is absent of any habitat that might be utilised for hibernation or refuge, and the occasional presence of this species is considered possible.

Other Terrestrial Mammals

- 7.5.3 No evidence of other specially protected terrestrial mammals was identified anywhere within the site boundary; with the heavily grazed grassland of limited value to species such as Brown Hare.

7.6 Herptiles

Great Crested Newt (GCN)

- 7.6.1 In order to assess risk to GCN, a number of factors need to be considered. These include:
- Site proximity to a potential breeding pond and to any additional ponds,
 - Habitat linkage / barriers between potential breeding ponds and the site,
 - Nature and extent of available terrestrial habitat (50-100m) around the pond(s),
 - Area of site habitat loss and permanence of that loss,
 - Nature of habitat to be lost and its potential value to GCN as refuge/overwintering habitat.
- 7.6.2 As derived from the desktop assessment evidence of GCN in the locale included:
- No records of GCN were identified within 2.0km of the application site boundary;
 - No ponds are present on site however there are three ponds within 250m with moderate connectivity to the application site;
 - Areas demarcated as potential habitat for GCN on DataMapWales.

- 7.6.3 Two ponds (Ponds 2-3, excluding Pond 1 which was found to be dried) were identified within 250m during the desktop assessment, and the surrounding area has been identified as of potential value to GCN; however, the habitat present within the application site is predominantly limited to heavily grazed, close-cropped grassland which provides no commuting, foraging, or refuge value to GCN, and is furthermore subject to frequent disturbance by cattle under its current management regime. The southern boundary hedgerow does provide some limited value to GCN, and due to the presence of potential breeding ponds, it is possible that individuals may occasionally use this feature for commuting.

Other Herptiles

- 7.6.4 Given the habitat occurring within the boundary as described, it is possible that more common robust amphibians such as Common Frog (*Rana temporaria*) and Common Toad (*Bufo bufo*) will utilise the site.
- 7.6.5 In respect to reptiles, the site is absent of habitat mosaics typically favoured this taxon, with all habitats with discrete boundaries and limited opportunities for basking, foraging and shelter.

7.7 Invertebrates

- 7.7.1 An assessment of habitats and features on site found it to be broadly absent of ecotones or other on-site features likely to provide habitat for an array of invertebrates. The application site is therefore unlikely to be of value to sufficient invertebrate species to be considered of local or greater significance.

8.0 Conclusions & Recommendations

Habitats & Vegetation

- 8.1 The Hawthorn dominated hedgerows along the southern site boundary qualifies for the UKBAP habitat 'Hedgerows'. The hedgerow would ideally be retained in full; however, it is understood that under the current proposals it will be moved to allow better visibility of the proposed new driveway. If the hedgerow cannot be translocated without loss of the existing trees, the replanted hedgerow should consist of an array of native woody species appropriate for the area (see Appendix III for an indicative list of appropriate species).
- 8.2 No botanical species of conservation interest were identified at the site. One species registered invasive under Schedule 9 of the WCA was noted within 7m of the site boundary in form of Variegated Yellow Archangel (*Lamium galeobdolon subsp. argentatum*). Whilst it is not an offence for this species to be present on a site, it is an offence to spread or allow it to spread; to prevent incidental spread of this species during the proposed works it is recommended that a precautionary working method statement with appropriate biosecurity protocol is instated prior to commencement of site works.
- 8.3 To provide an opportunity for Net Benefit for Biodiversity and to improve the value of the site for native wildlife, a list of appropriate native species that might be incorporated into the proposed development has been supplied (see Appendix III).

Bats

- 8.4 No trees or buildings are present within the site boundary. Recommendations to enhance the wider site for bats in line with Net Benefit for Biodiversity (NBB) have been provided in Appendix III.
- 8.5 Installation of overly harsh artificial lighting as part of any development that exceeds current levels may have a negative impact upon foraging/commuting bats in the principally along the western boundary of the application site, particularly in this case as the development will increase the light spillage in areas that are currently free from illumination. A bat-sensitive lighting plan is therefore recommended in order to avoid potential impacts to bats that may use the surrounding treelines. Several options to consider have been listed below, though the reader is referred to the Bat Conservation Lighting Guidelines for further information.

Appropriate luminaire specifications

Luminaires come in a myriad of different styles, applications and specifications which a lighting professional can help to select. The following should be considered when choosing luminaires.

All luminaires should lack UV elements when manufactured. Metal halide, fluorescent sources should not be used. LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability. Lighting should be directed to where it is needed and light spillage avoided. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvres and shields to direct the light to the intended area only. Planting can also be used as a barrier or manmade features that are required within the build can be positioned so as to form a barrier.

Predicting where the light cone and light spill will occur: There are lighting design computer programs that are widely in use which produce an image of the site in question, showing how the area will be affected by light spill when all the factors of the lighting components listed above are taken into consideration. This should be a useful tool to inform the mitigation process.

Light levels: The light should be as low as guidelines permit. If lighting is not needed in any particular area, do not light. Numerous software programmes are currently available which can be used inform lighting plans, demonstrating how lighting decisions will illuminate a site.

Please refer to the 'Landscape and urban design for bats and biodiversity' (Gunnell et. al., 2012, Bat Conservation Trust)

Guidance Note 8 'Bats and Artificial Lighting' 2018, Bat Conservation Trust for further information.

Breeding Birds

- 8.6 No impacts are applicable in relation to specially protected bird species such as Barn owl, and no further recommendations need be applied in relation to WCA Schedule 1 protected species.
- 8.7 Whilst no current or historic evidence of nesting birds was identified within the application site, the hedgerow to the south of the site would offer suitable nesting platforms for rural and garden birds such as house sparrow. It also offers high value roosting and commuting habitat to birds on passage between sites, functioning as an ecological steppingstone. As breeding birds are protected during nesting / when at the nest, timings implications may apply if any of these features were to be lost / managed during the spring / summer months.
- 8.8 It is recommended that any loss of potential nesting bird habitat takes place outside of the bird breeding season (1st March to 31st August inclusive), unless a competent Ecologist has undertaken a careful, detailed check for active birds' nests within a reasonable timeframe (24-48 hours) before the management. Where/if active nests are located by the ecologist, then any works which may affect them would have to be delayed until the young have fledged and the nest has been abandoned naturally, this can be aided, for example, via implementation of appropriate buffer zone(s) around the nest site (typically 5-10 metres) in which no disturbance is permitted until the nest is no longer in use. This would have to be coordinated through the expert judgement of the professional ecologist and species pending.

Point 3.24 of the British Standards Publication 42020:2013 defines a professional ecologist as: *"a person who has, through relevant education, training or experience, gained recognised qualifications and expertise in the field of ecology and environmental management."*

NB: *All wild birds (with only minor exceptions) and their nests whilst being built or containing eggs or dependant young are protected from destruction, damage under the Wildlife & Countryside Act 1981 (as amended). It is a punishable offence to interfere in any way with an active nest.*

Terrestrial Mammals

- 8.9 No field signs were located to suggest the presence of Badgers, and no further surveys are required nor impacts likely to occur to this species.
- 8.10 In relation to Hedgehog, habitats present offer some suitability for occasional foraging and commuting, and their presence is thus possible. It is therefore recommended that if Hedgehogs are encountered during working operations, particularly if there is a risk of danger to the animals, they should be carefully placed in like-for-like habitat away from the working area. Low-angled, sloping boards of approximately 300mm width should be placed within any excavations at the end of each working day to facilitate a means of escape for small mammals.

Herptiles

- 8.11 Based on the field assessment alone, it is considered highly unlikely that GCN will utilise the application site for any purpose. However, taking into account the proximity of Ponds 2-3 and the areas of potential habitat for GCN identified on DataMapWales, the presence of this species cannot be conclusively ruled out. Consideration has been given towards presence/absence surveys of the nearby ponds; but due to the paucity of favourable habitat within the application site boundary and the abundance of more favourable environs in the immediate area, notably the adjacent woodland, a precautionary approach is instead recommended. Therefore, a program of Reasonable Avoidance Measures (RAMs) detailed within a working Method Statement should be created, to identify key working protocols to be in effect during the work schedule.
- 8.12 The RAMs should be drafted by a suitably licenced ecologist and should provide a detailed audit trail that includes significant dates, outlines an appropriate timing schedule, and provides a signing in sheet for contractors who should comply with a toolbox talk provided by an Ecological Clerk of Works (ECoW). Upon gaining understanding of the details contained within the Method Statement and signing the audit form the applicant would be expected to comply with the measures recommended by the ecologist/ECoW. It is recommended that this document should be stipulated as a pre-commencement planning condition.

The RAMs would be subject to the approval of the local planning authority – following its approval, strict adherence to the terms of its contents would be a requirement of the named authority and the applicant would be the liable party forthwith, with the Ecologist/ECoW acting for an on behalf of the applicant.

The application and all contractors would be made aware that if at any stage GCN are encountered during works, or at any other stage of the work programme, works would be required to immediately cease and the ECoW be made aware as to provide further guidance if they are not already present at the site.

In the even that GCN(s) or its/their place of rest/habitat would be directly impacted upon, including disturbance, an EPSML to legally proceed with the development may be required following further presence/absence surveys that serve to establish population size class or level of risk.

Wider herpetofauna

- 8.13 There is a reasonable likelihood of Common Frog and Common Toad being present on site. Due to general declines in most British amphibian species in recent years, many local authorities require amphibian surveys as a planning condition, or as part of environmental information submitted as part of a planning application, even where the presence of EPS is ruled out. Water bodies that support all five (more common) species of British amphibians in high numbers, may be afforded protection in local plans, as local wildlife sites, or a similar equivalent, for sites of local importance.
- 8.14 If in the event any amphibians are encountered during any stage of site operations, and they are at risk of harm, site personnel are advised that using wet gloves they should be removed from harm by being carefully handled and removed off the construction site to be placed in nearby like-for-like habitat.
- 8.15 The site is unlikely to host a population of any reptile species and there are no further recommendations in relation to these taxa.

Invertebrates

- 8.16 No impacts to local populations of invertebrates are foreseen; no further surveys are recommended though enhancement measures for invertebrates as provided within Appendix III may help the proposed development to achieve its NBB aims.

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Appendix I: Site Photographs



Plate 1: Character of the site to the northwest



Plate 2: Character of the southern hedgerow



Plate 3: Variegated Yellow Archangel



Plate 4: Woodland to the west of the site and site entrance

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Appendix II: Site-Specific Botanical Species List

Each species recorded was given an abundance value according to the standard DAFOR scale, where:

- D = Dominant
- A = Abundant
- F = Frequent*
- O = Occasional*
- R = Rare*

*These values can be prefixed by the letter L (locally) to provide more subtle biogeographical data.

Taxon	Common Name	Scientific Name	DAFOR
Bryophyta (Mosses)	Springy Turf-moss	<i>Rhytidiadelphus squarrosus</i>	F
Pinophyta (Coniferous trees)	Leyland Cypress	<i>Cupressus x leylandii</i>	LF
	Yew	<i>Taxus baccata</i>	O
	Blackthorn	<i>Prunus spinosa</i>	LA
	Bramble	<i>Rubus fruticosus</i> agg.	F
	Broad-leaved Dock	<i>Rumex obtusifolius</i>	F
	Cleavers	<i>Galium aparine</i>	O
	Cock's-foot	<i>Dactylis glomerata</i>	F
	Common Bent	<i>Agrostis stolonifera</i>	A
	Common Ivy	<i>Hedera helix</i>	LF
	Common Nettle	<i>Urtica dioica</i>	F
	Creeping Thistle	<i>Cirsium arvense</i>	O
	Dandelion	<i>Taraxacum</i> agg.	O
	Dog's Mercury	<i>Mercurialis perennis</i>	LF
	Elder	<i>Sambucus nigra</i>	O
	Garlic Mustard	<i>Alliaria petiolata</i>	O
	Greater Plantain	<i>Plantago major</i>	O
	Hawthorn	<i>Crataegus monogyna</i>	LF
	Holly	<i>Ilex aquifolium</i>	R
	Meadow Buttercup	<i>Ranunculus acris</i>	O
	Meadow Foxtail	<i>Alopecurus pratensis</i>	F
	Perennial Rye-grass	<i>Lolium perenne</i>	A
	Soft Rush	<i>Juncus effusus</i>	O

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Appendix III: Biodiversity Enhancement

Native Planting and/or Landscaping - recommended species

The below species have been assessed against the local soil and habitat types and are deemed suitable for the site.

All plant material should comply with the minimum requirements in BS 3936-1: 1992 Specification for trees and shrubs and BS 3936-4: 2007 Specification for forest trees and BS 8545: 2014 Trees from Nursery to Independence in the Landscape. Any plant material, which in the opinion of the appointed Landscape Architect, does not meet the requirements of the Specification, or is unsuitable, or defective in any other way, will be rejected. The minimum specified sizes in the plant schedule will be strictly enforced. The contractor should replace all plants rejected at own cost.

	Common Name	Scientific Name	Planting Preference
Ferns	Male Fern	<i>Dryopteris filix-mas</i>	Semi-shade or shaded
	Soft Shied-fern	<i>Polystichum setiferum</i>	Semi-shade or shaded
	Maidenhair Fern	<i>Adiantum capillus-veneris</i>	Suitable for rockeries / walled gardens
	Royal Fern	<i>Osmunda regalis</i>	Full sun in moist-damp areas
Herbaceous plants	Bloody Crane's-bill	<i>Geranium sanguineum</i>	Dry soils - suitable for rockeries
	Columbine	<i>Aquilegia vulgaris</i>	Semi-shade or open areas
	English Bluebell	<i>Hyacinthoides non-scripta</i>	Moist soils in semi-shade or open areas
	Giant Bellflower	<i>Campanula latifolia</i>	Semi-shade or open areas
	Greater Knapweed	<i>Centaurea scabiosa</i>	Dry-moist soils. Suitable for borders
	Greater Woodrush	<i>Luzula sylvatica</i>	Moist soils in semi-shade or open areas
	Meadow Crane's-bill	<i>Geranium pratense</i>	Humid-moist soils. Suitable for borders
	Musk Mallow	<i>Malva moschata</i>	Dry-moist soils. Suitable for borders and rockeries
	Sea Campion	<i>Silene uniflora</i>	Dry soils - suitable for rockeries
	Stinking Hellebore	<i>Helleborus foetidus</i>	Semi-shade or open areas
Climbers	Honeysuckle	<i>Lonicera periclymenum</i>	Dry-moist soils
	Hops	<i>Humulus lupulus</i>	Dry-moist soils
	Ivy	<i>Hedera helix</i>	Dry-moist soils
	Sweet-briar	<i>Rosa rubiginosa</i>	Dry-moist soils
Woody Shrubs	Blackthorn	<i>Prunus spinosa</i>	-
	Dogwood	<i>Cornus sanguinea</i>	-
	Guelder Rose	<i>Viburnum opulus</i>	-
	Hawthorn	<i>Crataegus monogyna</i>	-
	Hazel	<i>Corylus avellana</i>	-
	Holly	<i>Ilex aquifolium</i>	-
Trees	Alder Buckthorn	<i>Frangula alnus</i>	-
	Osier	<i>Salix viminalis</i>	-
	Pedunculate Oak	<i>Quercus robur</i>	-
	Purple Willow	<i>Salix purpurea</i>	-
	Rowan	<i>Sorbus aucuparia</i>	-
	Silver Birch	<i>Betula pendula</i>	-
	Wild Cherry	<i>Prunus avium</i>	-
Aquatic/marginal plants	Common Water-crowfoot	<i>Ranunculus aquatilis</i>	Ponds
	Marsh Marigold	<i>Caltha palustris</i>	Marginal vegetation
	Ragged Robin	<i>Silene flos-cucculi</i>	Marginal vegetation
	Water Mint	<i>Mentha aquatica</i>	Marginal vegetation
	Water-violet	<i>Hottonia palustris</i>	Ponds
	White Water-lily	<i>Nymphaea alba</i>	Ponds

Enhancing a development site for Bats

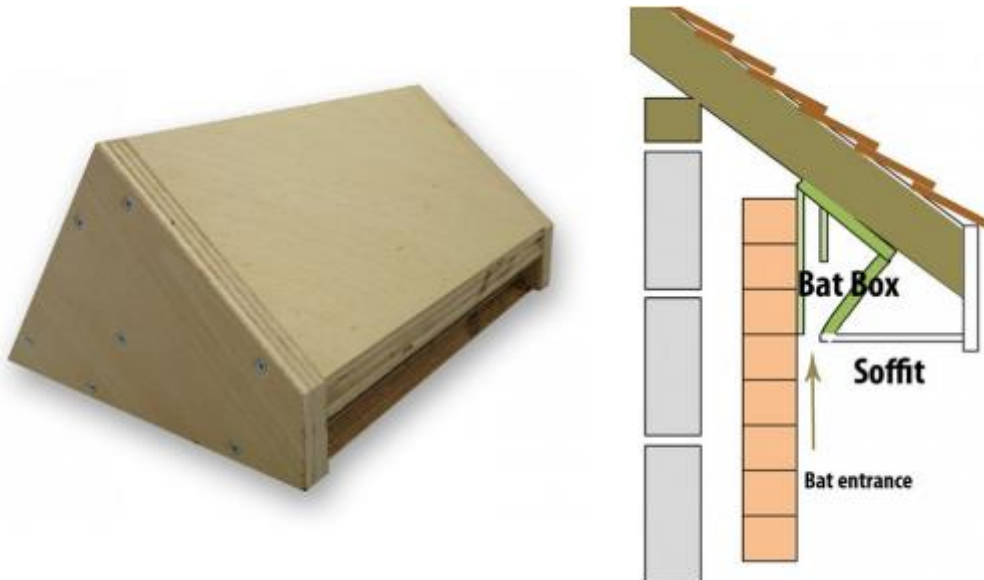
Integrated bat box

The Habibat Bat Box is a solid box made of insulating concrete with internal roosting space. The box blends seamlessly into brick-built properties and may be incorporated into the fabric of buildings, being best placed on gable elevations.



Soffit access

Where soffits are instated at gable elevations, roost provision may be instated in the form of a soffit bat box with internal roosting space.



Externally fitted boxes

A large number of externally fitted box models for bats exist for buildings and trees. Suitable models for both buildings and trees may include the Greenwoods Ecostyrocure Bat Box.

See - <https://www.greenwoodsecohabitats.co.uk/shop>

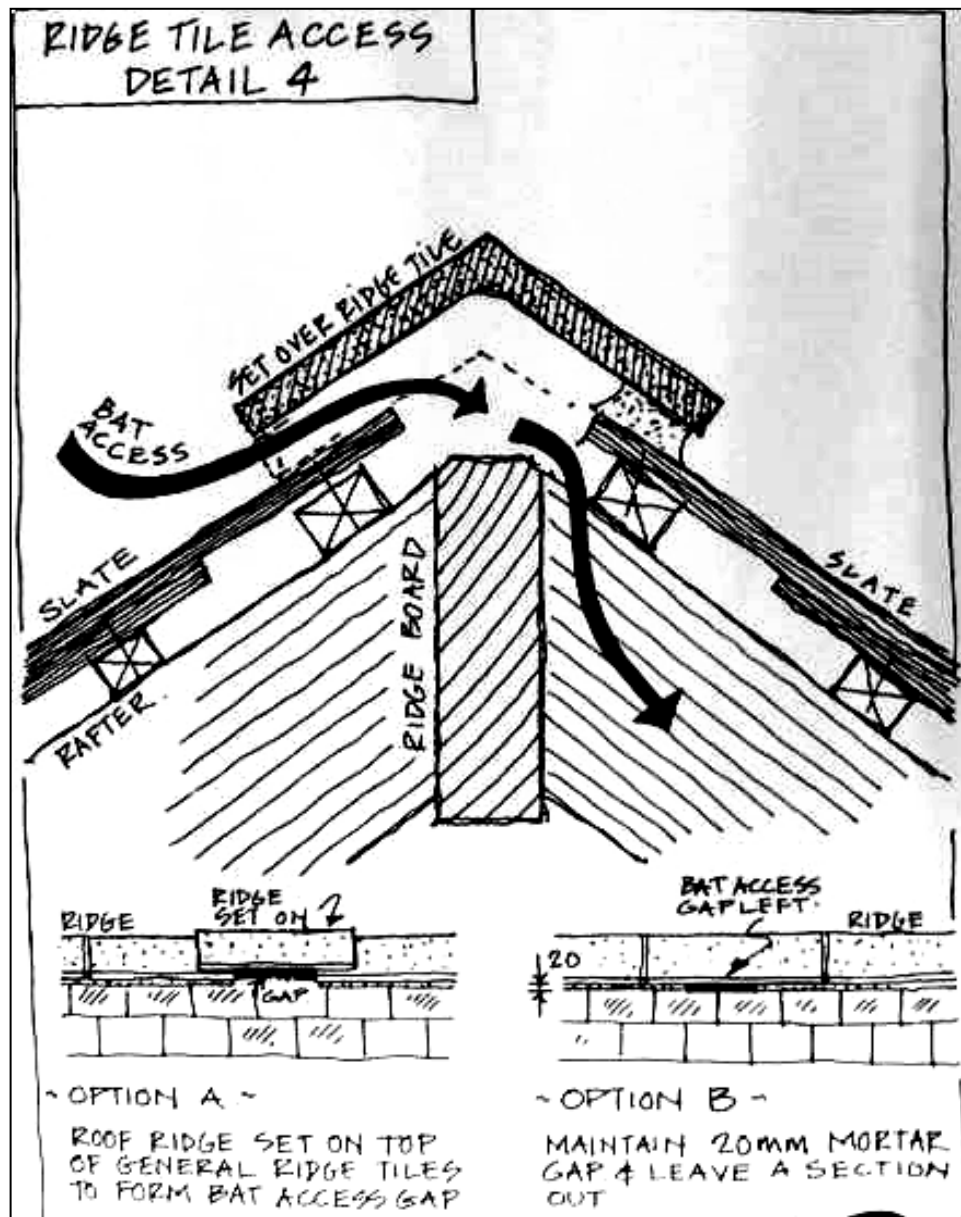


Ridge access

Where appropriate, ridge tile access should be made with the incorporation of traditional Bitumen 1F underfelt immediately beneath ridge tiles. Breathable BRM membrane can cause significant problems where bats are in contact with it, whereby their fine claws become entangled within the fibres of the membrane, entrapping and killing bats.

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Enhancing a development site for Breeding Birds

Nesting Birds - Common/Woodland/Garden

This traditional design has proved to be highly effective in attracting robins, as well as other small species such as black redstart, spotted flycatcher and wren. It is designed to be installed on the walls of houses, barns, garden sheds or other buildings and should be hung so that the entrance is to one side (at an angle of 90° to the wall). The front panel can be easily removed for cleaning.

This type of box should not be made conspicuous on a tree or bush because small predators can enter through the unprotected opening. By hanging on a wall, predators won't be able to reach the box. Alternatively hide the box in ivy, honeysuckle or other climbing plants.



See -**Error! Hyperlink reference not valid.**

Breeding Birds - House Sparrow

The Sparrow Terrace has been designed to help redress the balance of falling House Sparrow numbers. The current UK population is now half of what it previously was in 1980 and this is widely attributed to habitat destruction and lack of suitable nesting spaces. House Sparrows are social birds and like to nest in company, therefore, this terrace provides ideal nesting opportunities for three families. The terrace can be fixed on to the surface of a suitable wall or incorporated into the wall. It is suitable for all types of buildings.



Enhancing a development site for Invertebrates

Bee bricks

The Bee Brick can be used in place of a standard brick or block in construction to create habitat for solitary bees. Alternatively, it can be used as a standalone bee house in your garden or wild patch. It will provide much needed nesting space for solitary bee species such as red mason bees and leafcutter bees, both of which are non-aggressive.

Each Bee Brick contains cavities in which solitary bees can lay their eggs before sealing the entrance with mud and chewed-up vegetation. The offspring will emerge the following spring and the cycle will begin again. Each cavity goes part way into the brick, which is solid at the back. Bee Bricks should be placed in a warm sunny spot on a south-facing wall at a minimum height of 1m, with no vegetation obstructing the holes. It is highly recommended that bee-friendly plants should be located nearby so that the bees using the bricks have food, otherwise it is unlikely that the brick will be used.

Available in a choice of four colours: white grey, dark grey, yellow and red.

Specification

- * Material: Concrete
- * Origin: Cornwall, UK
- * Dimensions: W 215mm x D 105mm x H 65mm
- * Weight: 2.9kg
- * Colours: White grey, yellow, dark grey and red



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Deadwood and other semi-natural provisions

Falling and standing deadwood provides habitat opportunities for a wide range of invertebrates; however, poor execution of enhancement often leads to reduced efficacy. Log piles will generally dry out too quickly or rot too fast depending on their location; it is therefore more effective to place large logs in full sun to allow slow rotting which is favourable for beetles. Some smaller logs in full sun will provide additional habitat for bees and wasps, whilst loose bunds with bare earth also provide abundant opportunities for these and other taxa.



Large, piled logs in shade will rot slowly providing abundant opportunities for beetles



Bunds constructed of sand/earth are valuable to beetles, bees, wasps and other species

Enhancing a development site for Hedgehogs

Hedgehog Home

Specification:

Exterior quality 12mm resin bonded ply. The box remains untreated on the inside. Best situated in a quiet corner of the garden, and covered with leaves and other garden debris. Removable lid for cleaning purposes and reinforced corners, manufactured with surface sunk nails to resist rusting.



Nest box size: Height 22cm x Width 38cms x Length 47cm

Environmentally positive: Direct action to help hedgehog survival rates, encouraging biodiversity; FSC timber; Zero carbon footprint in use.

Hedgehog Highway

Hedgehog numbers have dramatically declined in recent years. Research suggests that this is partly because it is becoming harder for hedgehogs to move freely due to an increase in the number of solid walls and fences being erected around gardens. This reduces the available foraging area and so restricts the amount of food that they can eat as well as reducing the possibility of meeting a mate. Creating a hole in a garden wall or fence will allow local hedgehogs to pass through from garden to garden safely.

A hole measuring 13cm by 13cm is the right size for a hedgehog to pass through but too small for most pets. Once you have made your hole in the fence or wall, you can fix the Eco Hedgehog Hole Plate to the fence, ensuring that the hole does not get blocked or stretched. The plate has six screw holes, three along each side, which can be used to fix the plate to your fence or wall. Additional holes can be made in the plastic if required.

The Eco Hedgehog Hole Plate is made from 100% recycled plastic, which is mostly derived from plastic waste from farms across the UK. The plastic hedgehog hole is UV-stabilised so will not rot or degrade over time.



Specification: Material: Low density Polyethylene board (100% recycled plastic)

* Dimensions: Height 26cm x width 23cm

* Entrance Hole: 13cm x 13cm

* Country of Manufacture: England

