Tyrer Ecological Consultants Ltd
Specialists in Protected Species

Bringing Together Over 30 Years of

Ecological Excellence

Tyrer Ecological Consultants Ltd, Roselands, Suite 1, 2 & 5, 3, Cross Green, Formby, L37 4BH

Preliminary Ecological Appraisal

February 2025

Project Reference: PR-0427-24

Pickhill Farm
Cross Lanes
Wrexham
LL13 0UL

National Grid Reference: SJ 39160 47790



Document Title	Preliminary Ecological Appraisal
Project Reference	PR-0427-24
Issue Number	1.1
Prepared for	Blueprint Architectural Services
Prepared by	Tyrer Ecological Consultants Ltd

Surveyors		Mr. J. Hark Qualifying CIEEM, Mr. T. Lefebure
Author		Mr. J. Hark Qualifying CIEEM, Mr. T. Lefebure
Survey Date		07/01/2025
Reviewed by	Miss K. Judson Qualifying CIEEM	Mr. J. Pescod ACIEEM
Review Date	19/02/2025	26/02/2025
Approved by		Mrs. K. Wilding CEnv MIEMA ACIEEM
Date of Issue		27/02/2025

Terms of use:

This report has been prepared by Tyrer Ecological Consultants Ltd with all reasonable skill, care and diligence within the terms of the instruction and permissions granted by the client. The results, conclusions and recommendations of this report are proportionate and in line with the British Standard 42020:2013.

Tyrer Ecological Consultants Ltd have produced this report with all due integrity and adhere to the CIEEM Professional Code of Conduct, with the aim of upholding these objectives and the reputation of the profession.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client.

This report and contents therein are to be used only in conjunction with the Planning Application for which the report has been produced. It must not be used for any other purpose, copied, re-produced or sent to any other party other than the Local Planning Authority Department without the express permission of Tyrer Ecological Consultants Ltd. Furthermore. the data contained herein must not be copied, re-produced or sent to any other party/organisation whatsoever without the express permission of Tyrer Ecological Consultants Ltd.

Tyrer Ecological Consultants Ltd will however consider forwarding data that is collected as part of its reports to the relevant wildlife records centre.

Executive Summary

As part of a proposed planning application with Wrexham County Council concerning Pickhill Farm, Tyrer Ecological Consultants carried out a Preliminary Ecological Appraisal (PEA) in January 2025.

The PEA was commissioned by Blueprint Architectural Services; proposals are understood to involve the demolition of the existing building followed by the subsequent construction of a new residential dwelling.

Extensive findings, conclusions and recommendations are presented throughout the report; however, the reader should be aware of the following further surveys and key recommendations.

Key recommendations:

Bats

Based upon the findings of the DBW covered through sections 5.0 – 6.0 of the report and supported by **Appendix I, B1 at Pickhill Farm** is categorised as pertaining to a bat roost suitability of '**High**', in accordance with Bat Conservation Trust – Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th ed. (2023) (BCT Guidelines).

Table 7.1. Recommended timings for presence/absence surveys to give confidence in a negative result for structures (also recommended for trees where other methods such as PRF inspection are not possible, but unlikely to give confidence in a negative result). To be used in tandem with Table 7.2.

Low roost suitability or PRF-I	Moderate roost suitability	High roost suitability or PRF-M
May to August (structures) No further surveys required (trees)	May to September[a], with at least one of surveys between May and August[b]	May to September[a], with at least two of surveys between May and August[b]

*It is recommended that **three dusk / emergence surveys** are conducted during the active season of bats (May – August, extending into September), with two of the surveys conducted between May and September, in order to establish if / how the building is being used by bats, and if so, identify the species present, abundance, roost locations and flight lines around the site following emergence surveys. A total of **5 surveyors** would be required to cover all elevations host to roost potential.*

Based upon the findings of the DBW covered through sections 5.0 – 6.0 of the report and supported by **Appendix I, B2 and B3 at Pickhill Farm** are categorised as pertaining to a bat roost suitability of '**None**', in accordance with BCT Guidelines. No further surveys are therefore recommended at these buildings.

Birds

Regarding wider breeding bird species, there is an abundance of viable nesting platforms within B1 and the associated introduced shrub habitats, and within the single tree at the application site and the further trees outside. All of which provide abundant suitable nesting locations within the nesting bird season of March – August, inclusive.

In addition, a single nest was recorded from within an area of B1.

Any vegetation clearance or demolition works to B1, should therefore be carried out outside of the breeding bird season, typically March – September inclusive. For works within the breeding bird season, any areas that can support nesting birds, including B1, should be checked by a professional Ecologist for nesting birds within 48 hours or less prior to works commencing.

Given that the works will result in the loss of nesting sites, it is recommended that a bespoke biodiversity enhancement plan in relation to birds is produced by a suitably qualified ecologist (SQE) in order to adequately compensate for the loss of these nesting sites. This could be secured by a suitably worded planning condition.

Other terrestrial mammals

Badgers, hare and hedgehogs have a minor risk of being impacted by the proposed development.

*Therefore, as a precautionary measure a programme of Reasonable Avoidance Measures (RAMs) should be employed at the site during development, particularly where excavations / trenches will be made. See **Section 7.0** for details on the RAMs required.*

Herpetofauna

Regarding great crested newt (GCN) the results of the desktop study suggest that a breeding population of GCN may be supported within the 250m surrounding the application site, given the presence of three waterbodies, two of which have been assessed as 'good' suitability for GCN, and the location of the site within an area designated as 'Potential Habitat for Great Crested Newt' by DataMapWales. Whilst a number of minor barriers are also present within the vicinity of the application site, it is considered that these do not significantly reduce the ability of GCN to commute within the landscape.

To this end, it is considered that an Environmental DNA (eDNA) survey should be undertaken at P4 to reasonably ascertain presence / absence of GCN within the nearby pond.

Any eDNA approach would need to be carried out from mid-April to June 30th when local planning authorities will accept data as part of a planning application. The information gathered will help provide an initial impact assessment. Following the eDNA survey, depending on the results, a development license may or may not be required; further surveys to reinforce the license may also be required.

The presence of wider common amphibians and reptiles is considered possible onsite.

Green Infrastructure

The key green infrastructure present on site is considered to be the introduced scrub and the modified grassland. The proposals indicate the loss of a negligible area of modified grassland, but also the creation of a 'front garden' which will likely mitigate this minor loss. In accordance with the step-wise approach to be adopted by authorities in Wales, it is recommended that the scheme **avoids** impacting upon the mixed scrub and tree line onsite. Should this not be possible, impacts to these areas should be **minimised**, or as a final resort, any removal of or negative impacts upon these habitats should be effectively **mitigated / restored**.

It is therefore considered that, by following the above approach, the scheme will not have an adverse impact on the diversity, extent, condition, connectivity or the adaptability of the green infrastructure on site. A further report in the form of a Green Infrastructure Statement will likely be necessary once plans are finalised.

Table of Contents

1.0 Introduction & Scope

2.0 Legislation & Policy

3.0 Methodology

4.0 Limitations

5.0 Desk Study Results

6.0 Field Study Results

- **6.1** Habitat Survey & BNG Baseline Summary
- **6.2** Vegetation
- **6.3** Bats
- **6.4** Birds
- **6.5** Other Terrestrial Mammals
- **6.6** Herpetofauna
- **6.7** Invertebrates

7.0 Conclusions & Recommendations

8.0 Green Infrastructure Statement

9.0 Bibliography

Appendix I: Site Photographs

Appendix II: Botanical Species List

Appendix III: Biodiversity Enhancement: General Recommendations

Appendix IV: UK Habitats Map

1.0 Introduction & Scope

1.1 As part of a proposed planning application with Wrexham County Council concerning Pickhill Farm, Tyrer Ecological Consultants carried out a Preliminary Ecological Appraisal (PEA) in January 2025.

1.2 The PEA was commissioned by Blueprint Architectural Services; proposals are understood to involve the demolition of the existing building followed by the subsequent construction of a new residential dwelling. See **Figure 1.1** for the red line boundary of the site.

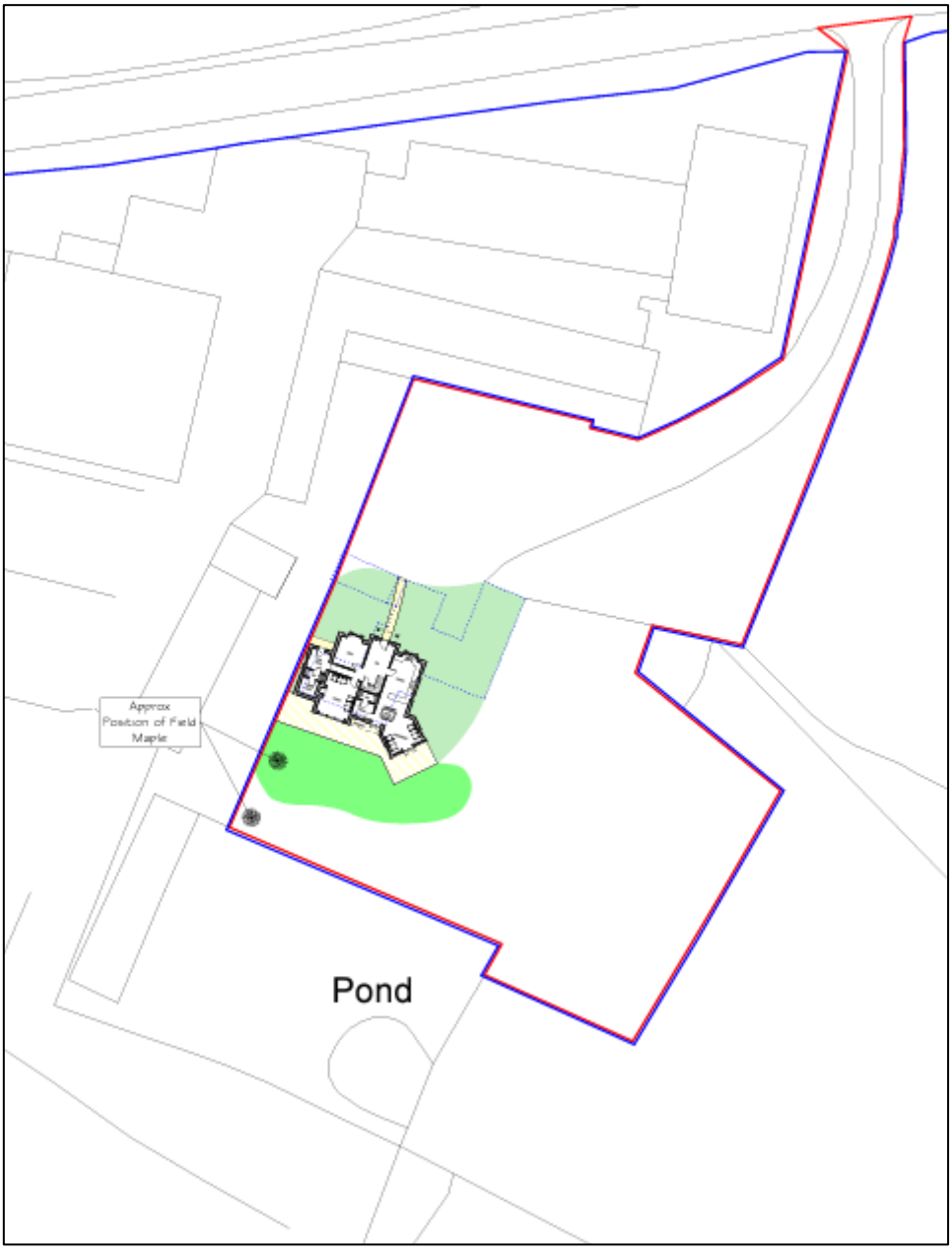


Figure 1.1 – *Proposal plan showing existing site layout (red outline) (© Blueprint Architectural Services).*

1.3 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 habitats or species are, or may be,

present, and where these species have the potential to be impacted by the proposals for which the applicant seeks consent.

1.4 The PEA was carried out in accordance with the 'Guidelines for Preliminary Ecological Appraisal, 2nd Edition' (CIEEM, 2017) and all associated 'CIEEM Competencies for Species Survey (CSS)', whilst this report has been presented in accordance with the British Standard 42020:2013 Biodiversity – Code of Practice for Planning and Development.

Aims & Objectives

1.5 The appraisal aims to ascertain the baseline nature of the site 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 and present baseline ecological information on site/off site (as necessary) within a suitable report,
- Identify, measure and map habitats using UK Habitat Classification – Habitat Definitions Version 2.0 (2023) habitats,
- 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 measures likely to be required in line with the mitigation hierarchy (i.e. impact avoidance > minimisation > mitigation > compensation),
- Identify any additional survey requirements,
- Identify general enhancement opportunities for biodiversity in line with national and local planning policy,
- Set out any requirements for post-development monitoring, management, or other commitments, and how they can be secured, where required.

1.6 As a functioning component of this specific ecological appraisal:

- Habitats on site were identified, measured and mapped using the UK Habitat Classification – Habitat Definitions Version 2.0 (2023),
- Buildings and trees were subject to preliminary roost assessment (PRA) for Bats and scored against the bat roost suitability parameters defined in the Bat Conservation Trust – Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th ed. (2023),
- Three ponds were subject to a habitat suitability assessment in relation to great crested newts (*Triturus cristatus*) (GCN),
- In accordance with Welsh planning policy, opportunities were identified for the site to achieve net biodiversity benefit, and to provide information to satisfy the requirements of a green infrastructure statement.

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

1.8 The Applicant should be aware then 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 / communities / species, or,
- Signs of use by particular protected species were found, or suspected, or,
- Seasonal constraints significantly limit the gathering of ecological information to arrive at an accurate conclusion upon 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.

1.9 If protected species were subsequently found either during appraisal or during detailed further surveys and / or may be affected by the development proposals, then a European Protected Species Development Licence (EPSDL) from Natural Resources Wales (NRW) may be required to proceed with the development.

1.10 Where more detailed surveys are recommended by the Ecologist, following ecological appraisal, then LPAs, 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.

1.11 Protected / priority species omitted from this report have been discounted due to negating 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 impact the species or encroach on areas where the species may be present.

2.0 Legislation & Policy

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

- BS 42020:2013 Biodiversity – Code of Practice for Planning and Development (2013),
- Conservation of Habitats and Species Regulations (2017) (as amended),
- Countryside Rights of Way (CRoW) Act (2000),
- Natural Environment and Rural Communities (NERC) Act (2006),
- National Planning Policy Framework (2024) (as last revised),
- Protection of Badgers Act (1992),
- The Environment (Wales) Act (2016),
- The Hedgerow Regulations (1997),
- The Invasive Alien Species (Enforcement and Permitting) Order 2019,
- Town and Country Planning Act (1990),
- Wild Mammals Protection Act (1996),
- 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, 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-eradicate 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) Conservation of Habitats and Species Regulations (2019) (EU Exit) 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 life stage. Once identified, roosts are protected whether the bat is in occupation or not.

Species Group/Species	Relevant Legislature	Level of Protection
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. Birds listed on Schedule 1 Wildlife & Countryside Act (1981) (as amended) are afforded a greater level of protection.
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 as invasive, including Japanese Knotweed (*Reynoutria japonica*) and Himalayan Balsam (*Impatiens glandulifera*), for example, carry notoriety regarding development. The Act makes it an offence for any person to grow or cause to grow in the wild any plants listed as invasive.
Reptiles	Conservation of Habitats and Species Regulations (2019) (EU Exit) - SL/SS Wildlife and Countryside Act (1981) (as amended) - SL/SS CRoW Act (2000)	All native reptile species have some degree of protection in the UK, through section 8(1) and (5) (specified in Schedule 5) of the Wildlife and Countryside Act 1981 (as amended). Sand lizard (SL) and smooth snake (SS) are species of principal importance however with greater protection(s).

2.4 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.

2.5 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."

2.6 Section 7 of the Act 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 NERC Act.

2.7 Planning Policy Wales (PPW) 12th Edition (2024) 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.

2.8 PPW 12th Edition (2024) 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."

2.9 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).

2.10 PPW also 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 (not including non native invasive species), locally or nationally and must work alongside nature and it must provide a net benefit for biodiversity and improve, or enable the improvement, of the resilience of ecosystems. A net benefit for biodiversity is the concept that development should leave biodiversity and the resilience of ecosystems in a significantly better state than before, through securing immediate and long-term, measurable and demonstrable benefit, primarily on or immediately adjacent to the site. The step-wise approach outlined below is the means of demonstrating the steps which have been taken towards securing a net benefit for biodiversity. In doing so, planning authorities must also take

account of and promote the resilience of ecosystems, in particular the following attributes, known as the DECCA Framework:

- *diversity between and within ecosystems;*
- *the extent or scale of ecosystems;*
- *the condition of ecosystems including their structure and functioning;*
- *the connections between and within ecosystems; and*
- *adaptability of ecosystems including their ability to adapt to, resist and recover from a range of pressures likely to be placed on them through climate change for example.*

2.11 As well as to consider Green Infrastructure (GI), at both a local and landscape scale:

"The Environment (Wales) Act 2016, provides a context for the delivery of multi-functional green infrastructure. Its protection and provision can make a significant contribution to the sustainable management of natural resources, and in particular to protecting, maintaining and enhancing biodiversity and the resilience of ecosystems in terms of the diversity within and connections between ecosystems and the extent and condition of these ecosystems, so that they are better able to resist, recover from and adapt to pressures. This means that the development of green infrastructure is an important way for local authorities to deliver their Section 6 duty."

2.12 Planning authorities must therefore follow a stepwise 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.

2.13 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.

2.14 Policy NE2 of the Wrexham County Borough Local Development Plan (2013 – 2028), adopted 20th December 2023, mirrors these statements within PPW 2024 and goes onto state the following:

"Development which adversely affects the nature conservation and/or geological importance of locally designated sites, habitats and species will only be permitted in exceptional circumstances where it can be demonstrated that:

i. There is no satisfactory alternative location for the development which avoids nature conservation impacts; and
ii. Compensation measures are designed to ensure that there is no reduction in the overall nature or geological conservation value of the site."

Priority Habitats & Species

2.15 In the United Kingdom, legal protection and otherwise legislative recognition is afforded to particular habitats and species based on a variety of ecological factors. These are typically referred to as priority habitats and species and can be identified under a variety of legislation and local policy, notably the aforementioned UKBAP as well as under Local Biodiversity Action Plans (LBAPS).

3.0 Methodology

3.1 As part of the ecological appraisal report, a desk-top and field-based study is conducted. Methods for both components of the appraisal are given below.

Desktop Study

3.2 Prior to 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 2.0 kilometres of the site boundary. To do so, the Multi Agency Geographic Information for the Countryside (MAGiC – provided by DEFRA), and DataMapWales were all accessed to gather such information. These mapping services were also utilised to locate any priority habitats or publicly viewable protected species records, to help further form conclusions in the context of the study site and the proposed development.

3.3 Additionally, the Natural Resources Wales (NRW) and Joint Nature Conservation Committee (JNCC) websites were accessed to provide citation details for statutory designated sites as well as habitat information in proximity to the site.

3.4 Historic satellite imagery was reviewed using sources such as Google Earth (© 2024/25) 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.

3.5 In addition, the Wrexham County Council 'Search planning applications' online 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.

3.6 A commercial data request to the Local Environment Records Centre serving the area, in this case Cofnod, has not been sourced at this time, with the combination of online EPSML data, extensive company records and the daytime survey data available to the ecologist considered to contain enough information in relation to the protected species likely to be present on site. **If, however, 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.**

1) The Guidelines for Accessing, Using and Sharing Biodiversity Data in the UK (CIEEM, 2020) states data searches in:

"*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.*"

Field survey

3.7 A daytime preliminary ecological appraisal (PEA) was conducted on the 6th January 2025 in conditions including light drizzle and snowfall (3ºC), average wind 4/12 (Beaufort scale), average 100% cloud cover, by the following surveyor (see **Table 3.1** overleaf).

Table 3.1 – Site surveyor credentials

Name	Description of most relevant credentials
Mr. J. Hark Qualifying CIEEM	• Consultant Ecologist with a range of training and experiences, including within habitat management and invasive species control. BSc (Hons) Wildlife Conservation & Ecology, MSc Wildlife Conservation. • Accredited agent on the Natural Resources Wales Bat License of Mrs. K. Wilding (S086297/1). • Accredited agent on the Natural England Great Crested Newt: CL08 Class 1 licence (2022-106040-CL08-GCN) of Mr. D. Burrows. • Meets the requirements of CIEEM's Competency Framework Section S (Surveying) to Capable or higher level.
Mr. T. Lefebure	• A Junior Ecologist with a range of experience and currently undergoing extensive training; holds a MSc in Environmental Assessment and Management.

Floristic assessment

Habitats

3.8 The survey followed the UK Habitat Classification Version 2.0 (UKHabs, 2023) methodology, which was introduced as the successor to the Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Methodology standards (JNCC, 2010). Survey techniques were also carried out with reference to the Chartered Institute of Ecology and Environmental Management (CIEEM) Technical Guidance Series "Guidelines for Preliminary Ecological Appraisal, 2nd Edition" (CIEEM, 2017).

Vegetation

3.9 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 Regulations (2017) (as amended). Species nomenclature follows Stace, C. (2019) – definitive English names.

3.10 In addition to attributing ecological value to red-listed / BAP species, in accordance with existing CIEEM guidance, a geographic frame of reference is also adopted. Plant species and habitats may be recognised for their ecological value on a geographical scale which is adopted on a site-to-site basis (*International – National – Regional – County/Vice-County – Local*). For botanical species list compiled in full, see **Appendix II**.

3.11 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) and Schedule 2 of The Invasive Alien Species (Enforcement and Permitting) Order 2019 (IASO).

Faunal assessment

3.12 During the site walkover, direct presence and / or evidence of priority fauna encountered was documented, whilst in tandem the area was assessed for the potential to support the priority

species discussed in **Section 6.0**. The walkover also aimed to identify any ephemeral pools or unmapped waterbodies.

Bats

3.13 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, 4th ed. (2023) (see **Figures 3.1 – 3.3** overleaf).

3.14 The site was assessed for bats; a daytime bat walkover (DBW) was undertaken to observe, assess and record any habitats or features suitable for usage by bats, either as commuting, foraging or roosting provision. Wider connectivity to other habitats was also considered during the DBW.

3.15 Buildings and other permanent / semi-permanent structures (where present) would be subject to a preliminary roost assessment (PRA), to identify potential areas which may be of value to bats and to determine evidence of use. This typically involves a systematic search of the external aspects of any structure(s), comprising an investigation of features known to be used by bats (for example roofing material, soffits, fascia, lead flashing hanging tiles) using a high-powered torch and close-focus binoculars, where necessary. Where possible, an internal assessment of the structure was also carried out, with the aid of a high-powered torch and endoscope, where necessary, to identify any evidence of bat use of a structure. Field signs of bats typically comprise bat droppings, urine splashing, fur-oil staining, incidental animal presence, dead specimens and / or the presence of prey items, such as moth wings.

3.16 Trees (where present) would be subject to a ground level tree assessment (GLTA) using equipment such as close-focus binoculars and a high powered-torch. Potential roost features (PRFs) 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 climbing species with stem diameters in excess of 50mm or pre-existing bat / bird boxes. These PRFs can then be determined as PRF-I or PRF-M, dependent on their suitability for individual / low numbers of bats or their capability to host multiple bats.

3.17 Factors considered during the preliminary roost assessment include:

- Practical experience of the surveyor,
- Knowledge of bat species relevant to the site location and geographical range,
- Nature of the immediate / surrounding habitat in relation to foraging opportunities,
- Presence / absence of roost potential,
- Value and types of roost potential, if present (i.e. – maternity, hibernation, transitional).

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.

Potential suitability	Description	
	Roosting habitats in structures	**Potential flight-paths and foraging habitats**
None	No habitat features on site likely to be used by any roosting bats at any time of the year (i.e. a complete absence of crevices/suitable shelter at all ground/underground levels).	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitats that provide continuous lines of shade/protection for flight-lines, or generate/shelter insect populations available to foraging bats).
Negligible[a]	No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.	No obvious habitat features on site likely to be used as flight-paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions[b] 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 and not a classic cool/stable hibernation site, but could be used by individual hibernating bats[c]).	Habitat that could be used by small numbers of bats as flight-paths 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 with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions[b] and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only, such as maternity and hibernation – the categorisation described in this table is 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 flight-paths 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 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[b] and surrounding habitat. These structures have the potential to support high conservation status roosts, e.g. maternity or classic cool/stable hibernation site.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight-paths 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 Negligible is defined as 'so small or unimportant as to be not worth considering, insignificant'. This category may be used where there are places that a bat could roost or forage (due to one attribute) but it is unlikely that they actually would (due to another attribute).

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

c 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.*, 2016 and Jansen *et al.*, 2022). Common pipistrelle swarming has been observed in the UK (Bell, 2022 and Tomlinson, 2020) and winter hibernation of numbers of this species has been detected at Seaton Delaval Hall in Northumberland (National Trust, 2018). 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 prominent buildings in the landscape, urban or otherwise.

Figure 3.1 – *BCT guidelines extract*

Table 4.2. Guidelines for assessing the suitability of trees on proposed development sites for bats, to be applied using professional judgement.	
Suitability	**Description**
NONE	Either no PRFs in the tree or highly unlikely to be any
FAR	Further assessment required to establish if PRFs are present in the tree
PRF	A tree with at least one PRF present

Figure 3.2 – *BCT extract on tree roost suitability criteria*

Table 6.2. Guidelines for categorising the potential suitability of PRFs on a proposed development site for bats, to be applied using professional judgement.	
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.

Figure 3.3 – *BCT extract on tree roost categorisation criteria*

Birds

3.18 The site was inspected for evidence of nesting 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 – this can take the form of searching structures, woody vegetation, semi-aquatic vegetation such as reeds and / or ground flora. Elevations of any buildings or structures on site were inspected for evidence of birds that show a high dependency upon built structures, many of which are in a state of decline. These might include the following species for example (list non-extensive):

- House martin (*Delichon urbica*): Birds of Conservation Concern (BoCC) red status,
- House sparrow (*Passer domesticus*): BoCC red status,
- Starling (*Sturnus vulgaris*): BoCC red status,
- Swift (*Apus apus*): BoCC red status.

3.19 Additional to the site's capacity to support generally common species for breeding, the area was also subject to an assessment for wider capacity to support species with extra protection under Schedule 1 of the Wildlife & Countryside Act (1981) (as amended) and other priority species.

Other terrestrial mammals

3.20 The walkover included an assessment for the presence / suitability of badger (*Meles meles*), which includes signs of activity such as prints, hairs, digging, setts, 'runs' leading to and from a sett and the existence of latrines or 'snuffle' holes where badgers have foraged in the ground.

3.21 The site was also assessed for the presence / suitability of European hedgehog (*Erinaceus europaeus*) and other priority mammals.

Herpetofauna

3.22 During desktop assessment, a 250 metres radial search was undertaken from a site central grid reference in relation to the presence of ponds, ditches or other water bodies that may support great crested newt. The information gathered would then be used to aid in establishing if more detailed surveys are required.

NB: *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.*

3.23 In order to quantify risks to GCN in a PEA, a range of factors need to be considered (see below and **Table 3.2**):

- Presence of ponds on site, and impacts to those ponds,
- Site proximity to any additional ponds within 250-500m,
- Pond quality (suitable for breeding, or not),
- Nature, extent, and connectivity of available terrestrial habitat around the pond(s), considering core, intermediate and distant ranges, to be affected by works,
- Presence of significant barriers between ponds and site,
- Area of site habitat loss and permanence of that loss.

Table 3.2 – Factors that can increase/decrease risk of committing an offence

Increases risk to GCN	Decreases risk to GCN
Large population size	Small population size
High local pond density	Low local pond density
Good terrestrial habitat	Poor terrestrial habitat
Low pre-existing habitat fragmentation	Substantial pre-existing dispersal barriers
Large development footprint	Small development footprint
Long construction period	Short construction period

3.24 The GCN Habitat Suitability Index (HSI) is a quantitative measure of habitat quality evaluating the suitability of habitat for GCN. The HSI outputs a result of between 0 and 1, derived from an assessment of ten habitat variables known to influence the presence of newts, with a result of 1 being optimal habitat (high probability of occurrence), while an HSI of 0 is very poor habitat (minimal probability of occurrence). The HSI is calculated on a single pond basis but takes into account surrounding terrestrial habitat and local pond density. The tool is particularly useful in survey and mitigation; one benefit is that it can be undertaken in a single field visit (with supporting desk work) and at any time of the year (though some variables are more easily measured in spring and summer).

Its main uses are:

- *In surveys, to assess habitat quality in a repeatable, objective manner. In particular, the HSI allows individual factors that influence newt presence to be easily identified. These factors could help explain a very high or very low count. A high HSI can justify employing additional survey effort or methods if no newts are found initially.*

- *In impact assessments, to allow a measure of how damaging a development could be. HSI might also be used as a screening tool to select no impact or minimal impact options.*
- *In risk assessments, helping to decide whether an offence might be committed, and therefore whether a licence should be applied for. If a pond has a very low HSI score (say <0.5) then there would typically be a minimal chance of GCN presence. Hence, with due care and in limited circumstances the HSI might be used in the absence of newt surveys to help conclude that an offence is highly unlikely and therefore work could proceed in that area without a licence. This application of the HSI should only be used where the predicted impacts - were newts to be present - would be low (e.g. development at least 100m from pond, permanent habitat loss <0.5ha or temporary habitat loss <5ha). The developer should be aware that there would still be a risk of committing an offence, but it would typically be so low as to be negligible. Obviously, note that if HSI >0.5, this is not confirmation of newt presence; a newt presence/absence survey would be required to confirm this.*
- *In habitat enhancement, HSI could be used to identify the low-scoring factors in an existing pond that need addressing to improve its quality for newts.*
- *In post-development monitoring, to allow an assessment of habitat condition.*

3.25 GCN HSI Limitations:

The GCN HSI is not a substitute for undertaking newt surveys; it indicates but cannot confirm presence or absence of GCN. A licence application that infers GCN presence solely from HSI data (i.e. no newt survey data presented) will be rejected. Very low HSI scores may be used along with scheme details to infer a minimal chance of committing an offence in low impact situations. This is on a risk assessment basis and developers should be aware of the potential hazards of this approach. Care should be taken when interpreting low HSI scores; for example, a low scoring pond close to an occupied newt pond may still support newts.

3.26 The site and surrounding habitats were also assessed relative to their potential to offer suitability for wider, generalist amphibians, in addition to GCN, for example common toad (*Bufo bufo*) and common frog (*Rana temporaria*).

3.27 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, leaf litter, 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 lizard (*Zootoca vivipara*) use a variety of habitats from woodland glades to heaths, walls and pastures, as well as brownfield sites,
- Slow worm (*Anguis fragilis*) use a variety of habitats, similar to the common lizard, however are more associated with gardens and brownfield sites.

3.28 In assessment of a site for reptiles several important habitat characteristics are considered, outlined in **Table 3.3** below, as derived from the Reptile Habitat Management Handbook (Edgar, 2010).

Table 3.3 – 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**

Invertebrates

3.29 The 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.

Quality Assurance (QA)

3.30 The results, conclusions and recommendations of this report are based on a number of 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 in relation to shelter, foraging and commuting opportunities.

3.31 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 the surveyors Mr. J. Hark & Mr. T. Lefebure.

4.0 Limitations

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

4.2 The survey took place outside of the bat active season (broadly acknowledged May-September), therefore, there was a lower probability of encountering direct evidence of bats, such as through droppings. However, potential roost features and suitability of potential roost features can still be judged as effectively and conclusively as within the active season of bats. Therefore, whilst suboptimal, survey timing is not considered a limitation in this instance.

4.3 The survey was conducted outside the breeding bird season typically considered to be March-September, therefore breeding bird behaviour has a negligible probability of being encountered. Nonetheless, suitability for breeding birds is readily identifiable all year round and nesting material from the recent summer can often attest to the presence of breeding birds, as such, timing is not considered a constraint in this instance.

4.4 A single loft space was identified within B1 and was accessed by Mr. J. Hark via a small loft hatch. Upon inspection, the loft space did not appear safe to be further accessed, but a comprehensive assessment of the character of the space was achieved from the loft hatch. This loft space did not cover the footprint of the building and therefore was assessed that other loft spaces do exist that were not accessible during the survey and a precautionary approach has therefore been taken when considering the roost suitability assessment and further survey recommendations. This is therefore not considered to present a limitation in this instance.

4.5 No access was available to a single identified off-site pond, as it was located outside of the ownership of the client. However, HSI assessments of three other ponds located within 250m of the development were completed, and the inaccessible pond was found to be located such that a minor road separates it from the application site. As such, it is considered that a suitable assessment of the potential for GCN to be impacted by the development has been achieved without accessing this pond, and that the lack of access should not be considered a constraint.

4.6 No other access constraints were encountered by the surveyors during the diurnal appraisal, and having considered possible survey constraints, no significant limitations were experienced that might adversely influence the results, conclusions, and recommendations of this report.

5.0 Desk Study Results

5.1 The application is located to the south of Cross Lanes within an agricultural setting. The site is located approximately 1.5km north of Wrexham Industrial Estate and 6.5km north-west of Wrexham city centre. The site is comprised of a historic farmhouse, hard-standing access track, a small area of domestic garden and a small section of pasture. The site totals an area of approximately 0.35ha (see **Figure 5.1** below for location of the site within the surrounding landscape).

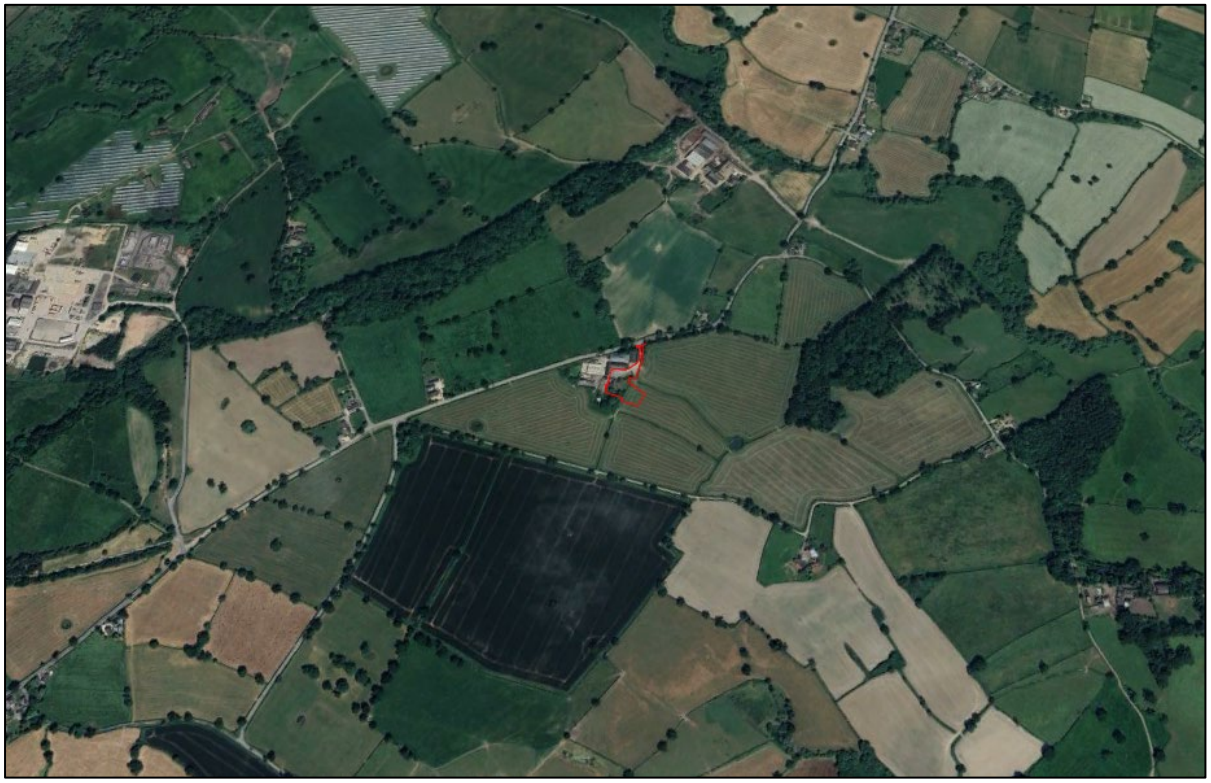


Figure 5.1 – *Location of red line boundary within surrounding landscape (© Google Earth Pro 2025).*

5.2 Both the immediate and extending environments are characterised by arable and agricultural land in all directions. Scattered individual trees, fragments of deciduous woodland, residences, farm complexes and road networks are also present within the extending environment. Features of interest in the extending environment include a large industrial estate comprised of buildings and hard standing located circa 1.6km north-west of the application site, whilst running approximately 1.5km south-east of the application site boundary is the River Dee.

Relevant Planning History

5.3 A search of the Wrexham County Council planning portal revealed that no publicly visible planning applications have been undertaken at the site in the past 10 years. A number of applications have been made in the immediate area, but no relevant ecological documentation has been produced/is readily available as part of any of the applications.

Designated Sites

5.4 Two statutory designated sites for nature conservation are present within a 2.0km search radius of the site (see **Table 5.1** overleaf for information and **Figure 5.2** for a visual aid).

Table 5.1 – Statutory Designated Sites within 2.0 kilometres of application site and reasons for designation

Site name	Designation type	Interest features
Afon Dyfrdwy (River Dee) (1.0km south-east)	Site of Special Scientific Interest (SSSI) (Wales)	Natural Resources Wales (NRW) Citation[1] states: "Afon Dyfrdwy (River Dee) is of special interest for its fluvial geomorphology, Carboniferous geology, range of river habitat types, saltmarsh transition habitats, populations of floating water plantain *Luronium natans*, slender hare's-ear *Bupleurum tenuissimum*, sea barley *Hordeum marinum*, hard-grass *Parapholis strigosa*, otter *Lutra lutra*, salmon *Salmo* salar, bullhead *Cottus gobio*, brook lamprey *Lampetra planeri*, river lamprey *Lampetra fluviatilis*, sea lamprey *Petromyzon marinus*, club-tailed dragonfly *Gomphus vulgatissimus* and other aquatic invertebrates." (This SSSI is a component feature of the SAC described below).
Afon Dyfrdwy a Llyn Tegid (River Dee and Bala Lake) (1.25km south-east)	Special Areas of Conservation (SAC) (Wales)	Natural Resources Wales Citation[2] states: "The aquatic plant community includes Wirtgen's water-crowfoot *Ranunculus x bachii* and pond water-crowfoot *R. peltatus* and also floating water-plantain *Luronium natans*. Water-crowfoot forms extensive beds along the whole length of the Dee where flow conditions are suitable. Other aquatic plants which occur within the site include intermediate water-starwort *Callitriche hamulata*, alternate-flowered water-milfoil *Myriophyllum alterniflorum* and bryophytes including *Rhynchostegium riparoides* and *Fontinalis antipyretica*. Marginal vegetation consists mainly of reed canary-grass Phalaris arundinacea with occasional branched bur-reed *Sparganium erectum*."

5.5 Additionally, the site is found to be positioned within the Impact Risk Zone (IRZ) of the Afon Dyfrdwy (River Dee) SSSI, at a distance of 1.0km to the north-east. Based on the IRZ information available on MAGiC Maps, the site does not meet any of the threshold criteria which would require further consultation with Natural Resources Wales (NRW). Given the spatial separation between the site and the designated site, and the small scale of the proposals relative to the extending environment, recreational impacts upon any SSSIs are unlikely.

[1] See: https://www.cofnod.org.uk/resources/sssi/2554/SSSI_2554_Citation_EN001.pdf
[2] See: https://naturalresources.wales/media/673374/river_dee___bala_lake_32_plan.pdf

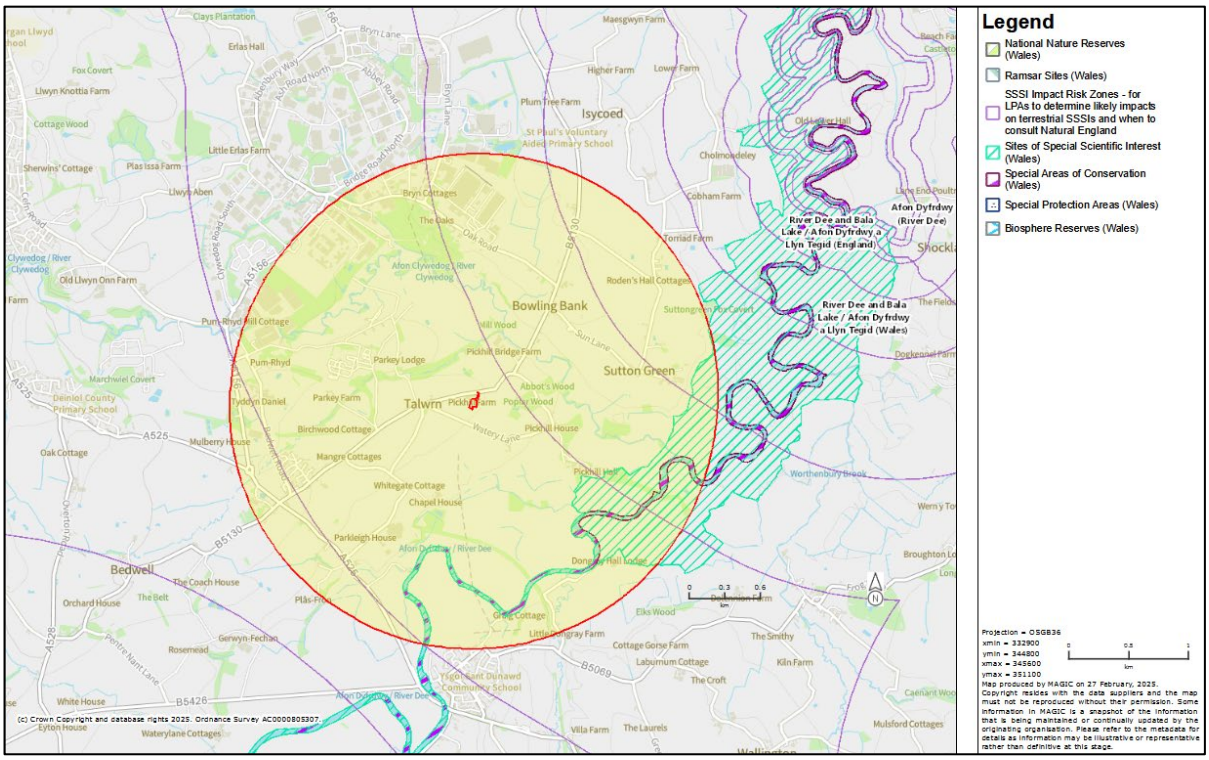


Figure 5.2 – *Designated site data for the area within 2.0km of application site (© MAGiC Maps 2025)*

Habitats

5.6 An online search of DataMapWales identified the following priority habitats within the 2.0km search radius, though none are present within the site boundary (see **Table 5.2**).

Table 5.2 – Priority habitats located within 2.0km buffer

Habitat Type	Designation
Lowland fens and reedbeds	NRW Priority Habitat
Traditional orchards	NRW Priority Habitat
Ancient and Semi-natural Woodland	UKBAP Habitat

Bats

5.7 Given the open agricultural land, nearby watercourses and small areas of woodland that are likely subject to minimal lighting and disturbance, it is possible that bat species may use the area to commute to the immediate and wider landscape as well as for foraging purposes. The species considered most likely to exist within proximity are the soprano pipistrelle (*Pipistrellus pygmaeus*) often associated with roosting in occupied dwellings, as well as the brown long-eared bat (*Plecotus auritus*) which is more commonly associated with deciduous woodland and semi-natural habitat. Further to this, the River Dee located to the south-east of the site in the extending environment offers suitable foraging habitat for species associated with wetland and riverine habitats such as Daubenton's (*Myotis daubentonii*) bat.

Birds

5.8 Given the presence of open agricultural land and rough grassland in proximity to the site, a variety of bird species are considered likely to exist in proximity to the site, including raptors

such as barn owl (*Tyto alba*) and other species associated to farmland habitats such as swallows (*Hirundo rustica*) alongside more common garden and woodland species. The mosaic of rural farmland, open pasture near water and woodland interspersed with hedgerows and tree lines likely supports a moderate diversity of bird species.

5.9 The aforementioned linear and area features suitable for bats would also afford connective habitat for bird species in the wider landscape.

Other Terrestrial Mammals

5.10 Taking into account the network of woodland present in the extending environment, which is likely to encompass suitable conditions for the requirements of badger, and with loose connectivity to the site via scattered trees and hedgerows, the presence of badger in proximity to the site is considered possible. In addition, species such as European hedgehog and European hare (*Lepus europaeus*) are also likely to be potentially present in proximity to the site given the tree lines and hedgerows bordering these fields, and the extensive pastural nature of the extending environment.

Herpetofauna

5.11 The desktop assessment revealed that three waterbodies (**P1**, **P3** & **P4**) are present within the 250m radius of the application site (see **Figure 5.3**, overleaf) with one further waterbody present within the land of wider ownership (**P2**).

5.12 Owing to the presence of the aforementioned ponds with 250m of the application site boundary and one within the land of wider ownership, present within the site boundaries and within 250m of the site, it can be suggested that the surrounding area is suitable to support breeding populations of great crested newts in addition to more general amphibians, subject to habitat suitability and sufficient landscape scale connectivity.

5.13 Moreover, the site is located within the DataMapWales layer 'Potential Habitat for Great Crested Newts', indicating that the application site and surrounding area has been identified to host suitable conditions to potentially support a population of great crested newt.

5.14 The site is located such that the immediate environment is dominated by arable farmland, which may present some moderate quality foraging and commuting habitat within long grass (i.e. silage fields prior to harvesting) and within hedgerows, however, a network of minor roads is also present which present minor barriers to the dispersal of GCN within this landscape. Isolated patches of deciduous woodland are present within the wider environment which present high quality foraging habitat and potential hibernacula.

5.15 The largely homogenous nature of the immediate and extending environments, presents a generally unsuitable landscape for reptiles with cropped arable fields presenting large areas of poor-quality reptile habitat, separating out the small areas of deciduous woodland which may present some more suitable conditions.



Figure 5.3 – *Location of water bodies (blue regions) within a 250m radial buffer of the site (© Google Earth Pro 2024/25)*

Invertebrates

5.16 The arable and developed environs are also unlikely to host nationally significant populations of invertebrates owing to these habitats being relatively homogenous meaning they generally features a low abundance of ecotones, have a simple structure and are often heavily improved and fertilised with a low diversity of flowering plants. Invertebrates present are likely generalist or those associated with arable and agricultural environments and therefore common and widespread throughout lowland Britain.

6.0 Field Survey Results

6.1 Habitat Survey & Green Infrastructure

6.1.1 See **Table 6.1.1** (below) for baseline information and habitat descriptions; refer to **Appendix I** for any supporting imagery; additional scientific names are given in **Appendix II**. Refer to **Appendix IV** – UK Habitats Map for the location of described habitats & Target Notes (TN).

Table 6.1.1 – UK Habitat types within the survey area

Area habitat	Sec. Codes	Description
g4(1) Modified grassland	**106** Mown **827** Garden	Grassland areas to the front and rear of the property, and along the access track, exhibit signs of regular mowing and management as domestic lawns. The sward is dominated by perennial rye-grass (*Lolium perenne*) with a forb assemblage which includes frequent common chickweed (*Stellaria media*), occasional creeping buttercup (*Ranunculus repens*), dandelion (*Taraxacum agg.*), daisy (*Bellis perennis*), curled dock (*Rumex crispus*) and white clover (*Trifolium repens*), and rare occurrence of sow thistle (*Sonchus sp.*) and creeping thistle (*Cirsium arvense*). Scattered scrub is present in the form of rare occurrence of yew (*Taxus baccata*), cherry laurel (*Prunus laurocerasus*) and holly (*Ilex aquifolium*).
g4(2) Modified grassland	**107** Mown and collected **110** Silage and haylage	A grassland area to the east of the property which forms a small, portion of a larger agricultural grassland, likely used as silage. The graminoid assemblage consists of dominant perennial rye-grass and the forb species present include frequent white clover and occasional creeping buttercup, common mouse-ear (*Cerastium fontanum*), broad-leaved dock (*Rumex obtusifolius*), dandelion and curled dock.
u1b Developed land – sealed surface	**-**	The access track and farmyard are constructed of poured concrete pads which form a sealed surface.
u1b5 Buildings	**818** Residential building	Three structures present within the site boundary. See **Section 6.3** for further information on structural composition.
u1c Artificial unvegetated – unsealed surface	**-**	A paved pathway leading around the eastern and southern aspects of the property.

Area habitat	Sec. Codes	Description
u1d Suburban mosaic of developed and natural surface	**827** Garden **847** Introduced shrub	Two areas dominated by domestic garden shrub species such as twisted hazel (*Corylus avellana contorta*), cherry laurel, yukka (*Asparagaceae sp.*), pampas-grass (*Cortaderia selloana*), elder (*Sambucus nigra*) and butterfly-bush (*Buddleja davidii*).
Individual trees	**-**	A single individual tree, identified as a cypress (*Cupressus sp.*), is present within the redline boundary.
Linear habitat	**Sec. Codes**	**Description**
h2b Non-native and ornamental hedgerow	**-**	A short section of hedge consisting entirely of cypress.

6.1.2 Based upon the above, the site is not considered locally notable for its green infrastructure, being comprised of the building, hardstanding, mixed introduced scrub, modified amenity grassland and a short ornamental hedgerow. The key green infrastructure present on site is therefore considered to be the modified grassland. No UK BAP Priority habitats are located within the site boundary.

6.1.3 While not finalised as of yet, it is understood that proposals at the site entail the demolition of the building onsite, followed by the construction of a single dwelling, occupying much of the same footprint as the original building.

6.2 Vegetation

Notable species

6.2.1 No species of conservation importance were located anywhere within the site during the appraisal.

Invasive non-native species (INNS)

6.2.2 No INNS, listed under either Schedule 9 (Part II) of the Wildlife and Countryside Act (1981) (WCA) or Schedule 2 of the Invasive Alien Species Order (2019) (IASO) were observed within the red line boundary.

6.3 Bats

6.3.1 Three structures were identified within the site boundary, see **Figure 6.1** below for the location of structures (B1, B2 & B3) within the application site boundary.

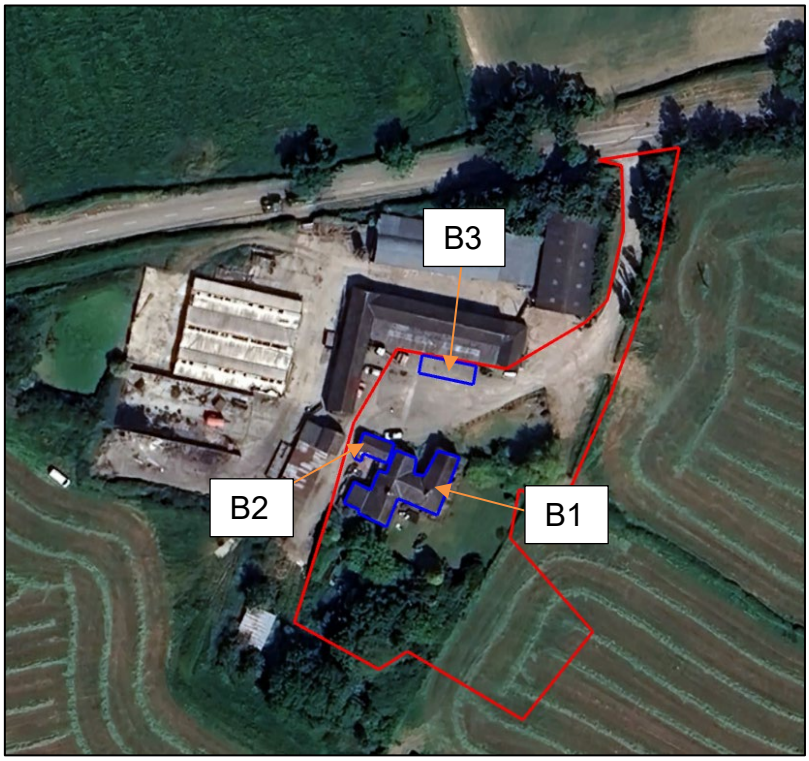


Figure 6.1 – *Locations of B1, B2 & B3 within the application site boundary. (© Google Earth Pro 2024/25)*

B1

6.3.2 B1 is an unoccupied two storey, red-brick dwelling with some evidence of timber support protruding from the outside wall, with a pitched slate tile roof, to the approximate maximum dimensions of 20m x 22m x 8m (length x width x height). The building is of a complex nature, featuring two separate sets of north-facing gables and a single south facing gable along with two separate attached single-story sections to the western elevation, one of which is attached via a covered walkway. The building features single-glazed, timber-framed windows, double-glazed uPVC framed windows, timber and steel sliding doors, cast iron and uPVC guttering and timber barge boards. In respect of its condition, the surveyor is not qualified to assess structural state; however, the aesthetic condition of the building was adjudged to be poor, with the building showing extensive signs of degradation due to the age and disuse. It is also worth noting that the oldest section of the farmhouse is currently supported by steel braces, signifying the poor condition of the structure.

6.3.3 A single access point to a loft space was identified within the eastern section of the building. The loft space was accessed but not extensively searched due to health and safety concerns about the un-boarded floor and the historic nature of the building. The loft space was assessed from the access hatch and was found to present a space of approximately 13m x 6m x 1.5m which was generally dark, however exhibited a small number of small points of light ingress from the northern gable and presented a cold, and draughty environment.

6.3.4 Based upon the above, the building is considered broadly unsuitable for the breeding purposes of loft-dwelling bat species such as the brown long-eared bat; these species require open loft

spaces with dry, stable thermal characteristics and room for free flight in order to raise their young. This does not necessarily rule out use of the building by such species for purposes other than breeding; however, no meticulous search for evidence of use could be undertaken due to the access limitations.

6.3.5 A bitumastic underlining was identified beneath the roofing materials; where present, a bitumastic underfelt can typically improve the value of a building for bats whereby they roost between the roofing cover and the underlining. Subject to access to the lower and upper levels of the dwelling there are theoretically viable crevice dwelling opportunities which are sheltered from external light ingress within the building. However, these were not extensive throughout and were mostly identified to be located around the internal north gable wall.

NB: *The breeding roosts of Pipistrelle bats are proportionally higher in occupied residential dwellings where the warm, dry conditions favour the requirements of a maternity colony but other structures are also used, especially for hibernation or by male bats which do not need the same conditions as a maternity colony.*

6.3.6 From the exterior it is apparent that further loft spaces exist, however they could be accessed during the survey. From internal and external inspection, it can be observed that the building is of a similar age throughout with no recent or historic extensions and therefore the character of the loft spaces throughout the building is likely congruent

6.3.7 B1 was found to also feature a cellar space, accessible through a hatch in the floor of the ground floor. The cellar was observed to be filled with water, to a level approximately 20cm below the level of the ground floor joists. The applicant confirmed that the cellar space is often subject to a high-water level.

6.3.8 Externally, the building features a substantial number of PRFs; including many lifted roof slates and areas of missing mortar throughout the roof pitches. Gaps under the eaves, a crevice where a roof timber emerges from the south-facing gable, gaps behind/under barge boards, and significant masonry gaps in a north facing gable, which potentially lead into voids in the wall, were also identified as PRFs.

6.3.9 Given the large number of highly suitable crevice PRFs, and further inaccessible loft spaces that may hold value, whilst taking into account foraging and commuting features within the vicinity of the application site, Pickhill Farm is duly categorised as pertaining to a bat roost suitability of '**High**', in accordance with Bat Conservation Trust – Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th ed. (2023).

<u>B2 - Outbuilding</u>

6.3.10 B2 is a small outbuilding located approximately 50m south of B1 and is presumed to have been an outhouse. This building is of red brick construction with corrugated steel panel roofing and with approximate maximum dimensions of 2m x 2m x 2m (length x width x height).

6.3.11 The building is entirely absent of external or internal features that could support either crevice or loft dwelling species, and has therefore been categorised as pertaining to a bat suitability of '**None**'.

<u>B3 – Static Caravan</u>

6.3.12 B3 is a static caravan which has been recently brought to the site to house the applicant due to the uninhabitable conditions of B1. The structure consists of a corrugated steel-clad unit with uPVC windows with a false-tiled roof (a sheet of plastic or fibreglass moulded to look like tiles). The structure has approximate maximum dimensions of 10m x 4m x 3m. No PRFs were

identified in relation to this structure, and its character offers generally unsuitable roosting conditions for bats.

6.3.13 Given the lack of PRF's and the generally unsuitable character of the building, B3 at Pickhill Farm has been categorised as pertaining to a bat suitability of '**None**'.

Trees

6.3.14 During the GLTA of the single individual tree within application site, no obvious PRFs were identified by the surveyor, with the trees absent of any features that would offer any crevice or roosting potential. As such, all of the trees onsite are categorised as pertaining to a bat roost suitability of '**None**'.

6.3.15 From a habitat suitability assessment in relation to bat activity, the habitats onsite are likely of moderate value for bats, with the individual tree offering some foraging potential and acting as part of a commuting corridor to wider woodland blocks. The presence of bats within the site boundary on a foraging and commuting basis is considered likely.

6.4 Birds

6.4.1 In relation to WCA Schedule 1 specially protected bird species such as barn owl (*Tyto alba*) the site provides no suitable nesting platforms, and no direct evidence, or evidence of historic nesting was identified at the application site. It is considered unlikely that the site would be utilised by any specially protected bird species.

6.4.2 In relation to more common bird species, the individual trees and introduced shrub habitat onsite offer an abundance of suitable nesting platforms, which could support a variety of breeding passerine birds during the nesting bird season of March – August inclusive. These platforms are likely to be suitable for common garden bird species such as robin (*Erithacus rubecula*), wren (*Troglodytes troglodytes*) and blackbird (*Turdus merula*). Furthermore, many of the previously identified PRF's for bats within the building likely also provide suitable conditions for the nesting requirements of birds associated with nesting within buildings, including swallow (*Hirundo rustica*) or house martin. Considering the nature of the surrounding agricultural land, it also needs to be considered that ground-nesting species may be present within the locality of the site such as curlew *(Numenius arquata)*, corn bunting (*Emberiza calandra*) and lapwing (*Vanellus vanellus).*

6.4.3 A nest was observed in a covered area between two sections of the building, this nest was of a character which suggested it could be attributed to European swallow and could potentially have been of a historic nature (see **Figure 6.2** overleaf).

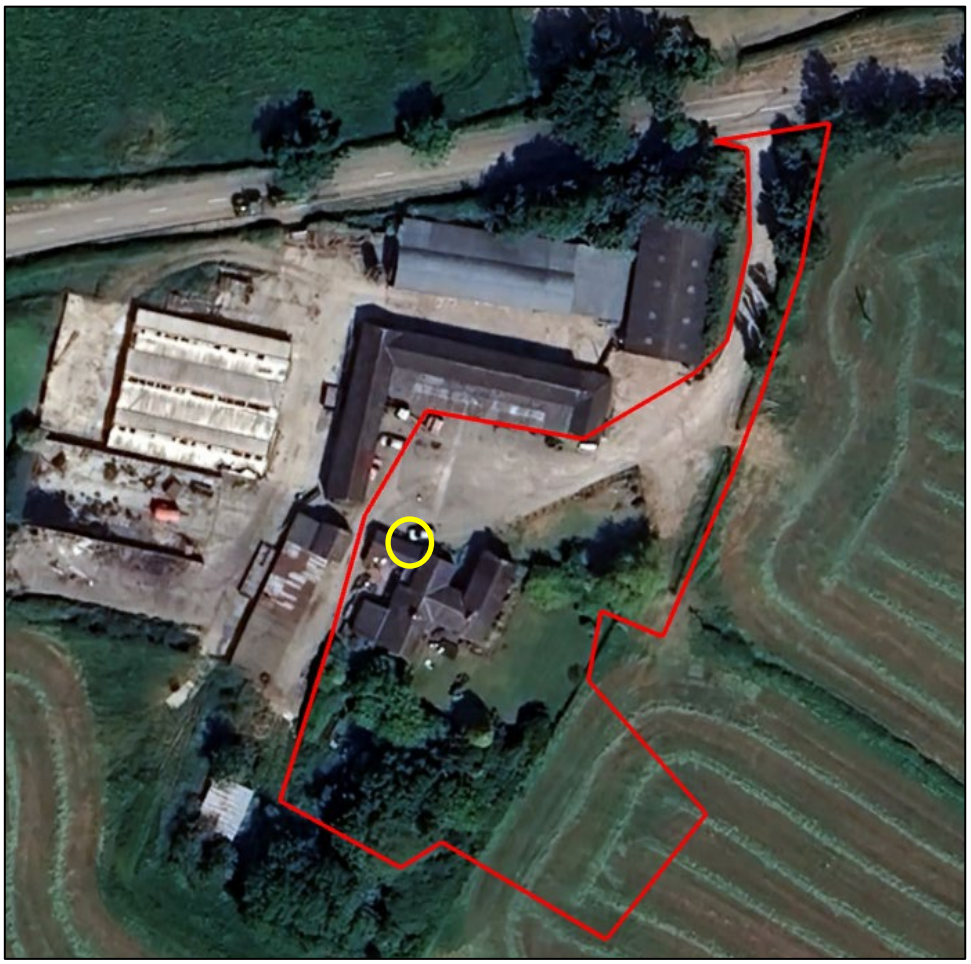


Figure 6.2 – *Location of bird nest (yellow circle) within the site boundary (© Google Earth Pro 2024/25).*

6.5 Other Terrestrial Mammals

6.5.1 No field signs of badger, such as latrines, pathways, hairs, footprints, or feeding signs, for example snuffle holes and scratched trees / logs, were located within the application site boundary. Whilst habitats with potential suitability for this species are present within the extending environment, they are spatially separated from the site and the habitats onsite are largely unsuitable for this species; given the site's location and character, impacts to this species can likely be ruled out.

6.5.2 Whilst no direct evidence of hedgehog or hare was identified, the site habitats provide potentially suitable refuge with the taller vegetation providing suitably protected areas for rest, whilst the grassland provides a suitable foraging habitat. Their occasional presence within the site is therefore considered possible.

6.6 Herpetofauna

Great crested newt (GCN)

6.6.1 Important elements to consider when assessing likely impacts against GCN includes:

- The scale, nature and magnitude of proposals,
- 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 around the pond,
- Area of site habitat loss,
- Nature of habitat to be lost and potential value to GCN,
- Most up to date Government guidance considering EPS.

6.6.2 As derived from the desktop assessment:

- Four ponds (**P1-4**) were identified within a 250m radius of the site, including a single pond (**P1**) within the redline boundary.
- The application site is located within the DataMapWales layer 'Potential Habitat for Great Crested Newts'.
- Moderate favourability terrestrial habitat for GCN is present within the immediate environment along with minor barriers to dispersal.

6.6.3 Upon inspection, during the site visit, it was apparent that **P1** was no longer present and had likely been filled in some years prior (prior to current client ownership). The area in which the pond was supposed to be located was characterized by modified grassland of a type concurrent with the other modified grassland on-site. **P1** is therefore not considered further within this report.

6.6.4 Of the three remaining ponds within 250m, two were identified to be within the ownership of the client and therefore permission was granted to access them to conduct the HSI assessment. The third pond (**P2**) was identified to be outside of the client ownership and access was therefore not achieved.

6.6.5 Additionally, a further waterbody (labelled **P5**) was identified approximately 60m west of the site boundary during the field survey (see **Figure 6.3** for pond locations). This waterbody appeared to likely be of a temporary nature and was potentially the result of recent snowmelt and widespread flooding at the time; however, **P5** has been included in this assessment conducted as a precaution.

6.6.6 In a terrestrial contextual assessment, the site provides some low value habitat for GCN, with the introduced shrub offering sheltered areas and the modified amenity grassland presenting a low value foraging habitat. The paving which surrounds the farmhouse likely presents limited additional refuge though occasional cracks and crevices within the concrete paving were observed which theoretically provides temporary refuge opportunity for GCN within the terrestrial phase of their lifecycle.



Figure 6.3 - *Location of waterbodies identified in desk study (blue points) and waterbodies identified during onsite survey (yellow points) within a 250m radial buffer of the site (© Google Earth Pro 2024/25).*

6.6.7 The GCN HSI was applied to the three accessible water bodies within 250m of the application site (**P3, P4** & **P5**). See **Table 6.6.1** for pond descriptions and **Tables 6.6.2 – 6.6.3** for detailed HSI results in line with current guidance. **Figure 6.6.2** showcases relative pond occupancy proportions.

Table 6.6.1 – Pond descriptions within 250m radial buffer, with included HSI scores

Pond 3 (P3)	
P3 is located 0.24km south-east of the application site, surrounded by small trees that stem from three sections of hedgerow, which then give way to agricultural grassland. A man-made ditch was found to run from the site directly into P1. P3 has an estimated area of 250m², likely never dries, is 30% shaded, has minor waterfowl impacts, or potential to support fish. The pond is surrounded by moderate terrestrial habitat (grazed pasture and hedgerows) and has no macrophyte cover. Based on the above, the HSI value of the pond has been calculated as pertaining to a suitability score of 'Good'. See **Table**	

6.6.2 below for further information on the individual category scorings.	
Pond 4 (P4)	
P4 is located 0.23km south-west of the application site and was located within an agricultural field adjacent to the site. P4 has an estimated area of 200 m^2, likely sometimes dries, is 30% shaded, has minor waterfowl impacts, and little potential to support fish. The pond is surrounded by moderate terrestrial habitat made up of pasture grassland and hedgerows. The macrophyte cover of the pond was found to be 40%. Based on the above, the HSI value of the pond has been calculated as pertaining to a suitability score of 'Good'.	
Pond 5 (P5)	
P5 is located approximately 60m west of the application site and was located directly adjacent to an area of hardstanding farmyard. This waterbody appeared to potentially be of a temporary nature. P5 has an estimated area of 150m^2, likely dries annually, is 20% shaded, has minor waterfowl impacts, and little potential to support fish. The pond is surrounded by moderate terrestrial habitat made up of pasture grassland and hedgerows. The macrophyte cover of the pond was found to be 0%. Based on the above, the HSI value of the pond has been calculated as pertaining to a suitability score of 'Below Average'.	

Table 6.6.2 – HSI quantitative assessment of the ponds

Pond Reference	P1	P2	P5
SI1 – Location	1	1	1
SI2 – Pond area	0.4	0.3	0.2
SI3 – Pond drying	0.9	0.5	0.1
SI4 – Water quality	-	-	-
SI5 – Shade	1	1	1
SI6 – Fowl	0.67	0.67	0.67
SI7 – Fish	0.67	0.67	1
SI8 – Ponds	1	1	1
SI9 – Terr'l habitat	0.67	0.67	0.67

SI10 – Macrophytes	0.3	0.7	0.3
HSI	**0.71**	**0.71**	**0.52**

Table 6.6.3 – HSI scoring chart (a suitability scoring method for GCN developed by Mr. L. Brady)

Great Crested Newt (GCN) HSI Scoring					
HSI Score	<0.50	0.50 - 0.59	0.60 - 0.69	0.70 - 0.79	>0.80
Pond Suitability	Poor	Below Average	Average	Good	Excellent

NB: *The HSI for great crested newts is a measure of habitat suitability. It is not a substitute for newt surveys. In general, ponds with high HSI scores are more likely to support great crested newts than those with low scores. However, the system is not sufficiently precise to allow the conclusion that any particular pond with a high score will support newts, or that any pond with a low score will not do so. There is a positive correlation between HSI scores and the numbers of great crested newts observed in ponds. So, in general, high HSI scores are likely to be associated with greater numbers of great crested newts. However, the relationship is not sufficiently strong to allow predictions to be made about the numbers of newts in any particular pond.*

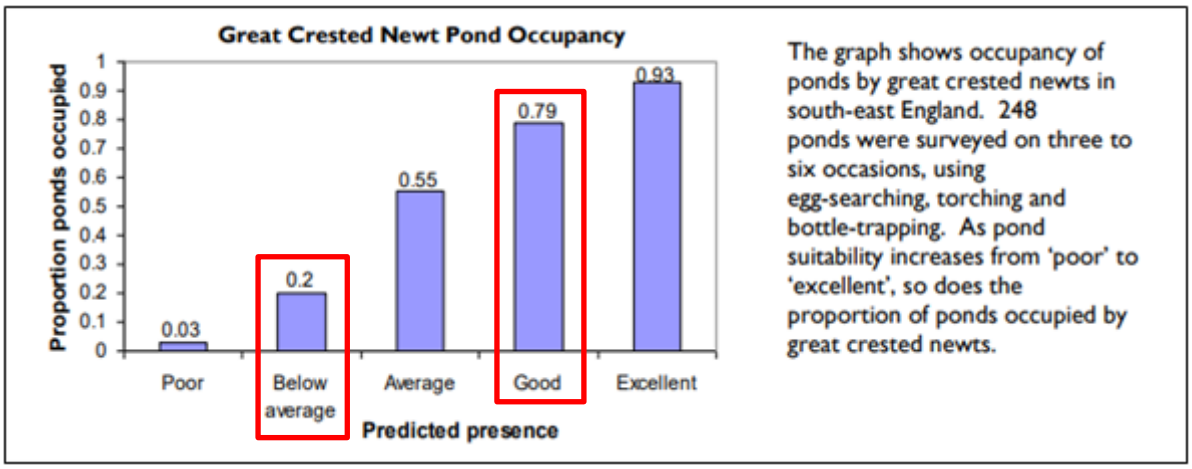


Figure 6.6.2 – *GCN pond occupancy (© ARC UK)*

Wider amphibians

6.6.8 It has been identified that the surrounding environment has an established pond network, alongside several ditches and hedgerows within the surrounding area. As a result, it is likely that more generalist amphibians could utilise these networks surrounding the arable land and additionally may find some suitability onsite for refuge within the sub-optimal, yet suitable habitats on site in the form of garden shrub and amenity grassland. The presence of common amphibians onsite is thus considered possible.

Reptiles

6.6.9 Similarly, the habitats on-site offer little suitable foraging or commuting suitability for reptiles and lack suitable habitat structure. Additionally, the largely homogenous developed and arable land surrounding the site mean that the presence of reptiles onsite is considered unlikely.

6.7 Invertebrates

6.7.1 The commonplace and heavily managed habitats onsite are considered highly unlikely to support a locally notable invertebrate assemblage or species.

7.0 Conclusions & Recommendations

Designated sites

7.1 Pickhill Farm is positioned within the Impact Risk Zone (IRZ) of Afon Dyfrdwy (River Dee) SSSI, at a distance of approximately 1.0km to the north-east.

7.2 Based on the IRZ information available on MAGiC Maps, the site does not meet any of the threshold criteria which would require further consultation with Natural Resources Wales (NRW). Given the spatial separation between the site and the designated site, and the small scale of the proposals relative to the extending environment, recreational impacts upon any SSSIs are unlikely.

Habitats

7.3 No habitats of national or local priority status were located within the site boundary during the diurnal appraisal to warrant any specific intervention measures.

7.4 Any landscaping should look to incorporate native species as discussed in **Appendix II**.

Vegetation

7.5 No priority vegetative species were identified on the site by the surveyors during the diurnal appraisal to warrant any specific intervention measures.

7.6 No INNS listed on either Schedule 9 of the WCA or Schedule 2 of the IASO were recorded on site by the surveyor during the diurnal appraisal.

Bats

7.7 Based upon the findings of the DBW covered through sections 5.0 – 6.0 of the report and supported by **Appendix I, B1** at Pickhill Farm is categorised as pertaining to a bat roost suitability of '**High**', in accordance with Bat Conservation Trust – Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th ed. (2023) (see **Figure 7.1** below).

7.8 It is recommended that **three dusk emergence surveys** are conducted during the active season of bats (May – August, extending into September), with two of the surveys conducted between May and September, in order to establish if / how the building is being used by bats, and if so, identify the species present, abundance, roost locations and flight lines around the site following emergence surveys. A total of **5 surveyors** would be required to cover all elevations host to roost potential.

Table 7.1. Recommended timings for presence/absence surveys to give confidence in a negative result for structures (also recommended for trees where other methods such as PRF inspection are not possible, but unlikely to give confidence in a negative result). To be used in tandem with Table 7.2.

Low roost suitability or PRF-I	Moderate roost suitability	High roost suitability or PRF-M
May to August (structures) No further surveys required (trees)	May to September[a], with at least one of surveys between May and August[b]	May to September[a], with at least two of surveys between May and August[b]

Figure 7.1 – *BCT extract on 'High' suitability criteria*

7.9 Based upon the findings of the DBW covered through sections 5.0 – 6.0 of the report and supported by **Appendix I, B2** and **B3** at Pickhill Farm are categorised as pertaining to a bat roost suitability of '**None**', in accordance with Bat Conservation Trust – Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th ed. (2023) (see **Figure 7.2** below).

7.10 No further surveys in the form of dusk/dawn emergence / re-entry surveys are therefore recommended owing to a total absence of PRFs or suitability noted at the buildings.

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.

Potential suitability	Description	
	Roosting habitats in structures	Potential flight-paths and foraging habitats
None	No habitat features on site likely to be used by any roosting bats at any time of the year (i.e. a complete absence of crevices/suitable shelter at all ground/underground levels).	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitats that provide continuous lines of shade/protection for flight-lines, or generate/shelter insect populations available to foraging bats).

Figure 7.2 - *BCT extract on 'None' suitability.*

7.11 However, bats are a transient group, and buildings can deteriorate over time. In the highly unlikely event that bat(s), or evidence of bat(s), are found during the proposed works relevant to B2 or B3, then, as a legal requirement, the work at the site should immediately cease and an Ecologist should be contacted for further advice. If bat(s) or their roost(s) will be affected, then an EPSML may be required to legally commence with the works. See **Figure 7.3** below for indicative evidence of bats.



Figure 7.3 – *Evidence of bats – droppings on the left / a common pipistrelle bat on the right – indicative*

7.12 During the GLTA, the single tree onsite was assessed to pertain to a bat roost suitability of '**None**' in accordance with Bat Conservation Trust – Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th ed. (2023) (see **Figure 7.4**). No further surveys are necessary in relation to the trees.

Table 4.2. Guidelines for assessing the suitability of trees on proposed development sites for bats, to be applied using professional judgement.

Suitability	Description
NONE	Either no PRFs in the tree or highly unlikely to be any

Figure 7.4 – *BCT extract on tree roost suitability criteria*

7.13 The applicant should be aware that, if during further surveys, evidence is gathered that confirms bat(s) or their roost(s) are found on site and will be impacted upon, then further surveys may be required which could inform a European Protected Species licence, which may be required to legally commence with the proposals.

7.14 Where more detailed bat surveys are recommended by the Ecologist, following an initial daytime investigation, then Local Planning Authorities, on the advice of their ecological advisors, may not determine the application until such time that all relevant information is gathered, i.e., by conducting dusk / dawn surveys. The advice that is provided by the ecological advisors is also in accordance with the obligations placed upon Local Authorities by way of its duties under the Conservation of Habitats & Species Regulations 2017 (as amended). Therefore, it would be prudent to make enquiries to the relevant departmental Planning Officer before submitting a Planning Application that includes an ecological survey report that recommends more detailed surveys.

7.15 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 landscape, subject to their presence, particularly if increased light spillage occurs in areas that are currently free from illumination. A bat-sensitive lighting plan is therefore recommended in order to avoid potential impacts to bats. Several options to consider have been listed overleaf (see **Table 7.1** overleaf), though the reader is referred to the Bat Conservation Trust's 'Bats and Artificial Lighting at Night' guidelines (August 2023) for further information.

Table 7.1 – Extract from *Bats and Artificial Lighting at Night*, BCT

Appropriate luminaire specifications: Light sources, lamps, LEDs and their fittings come in a myriad of different specifications which a lighting professional can help to select. However, the following should be considered when choosing luminaires and their potential impact on Key Habitats and features:

- All luminaires should lack UV elements when manufactured. Metal halide, compact 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.
- A warm white light source (2700Kelvin or lower) should be adopted to reduce blue light component.
- Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012).
- Internal luminaires can be recessed (as opposed to using a pendant fitting) where installed in proximity to windows to reduce glare and light spill.
- Waymarking inground markers (low output with cowls or similar to minimise upward light spill) to delineate path edges.
- Column heights should be carefully considered to minimise light spill and glare visibility. This should be balanced with the potential for increased numbers of columns and upward light reflectance as with bollards.
- Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered - See ILP GN01.

- Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt.
- Where appropriate, external security lighting should be set on motion-sensors and set to as short a possible a timer as the risk assessment will allow. For most general residential purposes, a 1 or 2 minute timer is likely to be appropriate.
- Use of a Central Management System (CMS) with additional web-enabled devices to light on demand.
- Use of motion sensors for local authority street lighting may not be feasible unless the authority has the potential for smart metering through a CMS.
- The use of bollard or low-level downward-directional luminaires is strongly discouraged. This is due to a considerable range of issues, such as unacceptable glare, poor illumination efficiency, unacceptable upward light output, increased upward light scatter from surfaces and poor facial recognition which makes them unsuitable for most sites. Therefore, they should only be considered in specific cases where the lighting professional and project manager are able to resolve these issues.
- Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed. However, due to the lensing and fine cut-off control of the beam inherent in modern LED luminaires, the effect of cowls and baffles is often far less than anticipated and so should not be relied upon solely.

Birds

7.16 No impacts are applicable in relation to any Sch.1 (WCA) specially protected bird species such as barn owl, and no further surveys or recommendations are necessary in relation to specially protected birds, with no evidence of nesting within the site boundary.

7.17 Regarding wider breeding bird species, there is an abundance of viable nesting platforms within the application site within the garden shrub habitats, individual tree and within areas of both **B1** and **B3** which likely provide abundant suitable nesting locations within the nesting bird season of March – August, inclusive. A single nest was identified within a covered walkway area of **B1**, which is likely attributable to European swallow. Given that the works will result in the loss of these nesting sites, it is recommended that a bespoke biodiversity enhancement plan in relation to birds is produced by a suitably qualified ecologist (SQE) in order to adequately compensate for the loss of these nesting sites. This could be secured by a suitably worded planning condition.

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 and disturbance under the Wildlife & Countryside Act 1981 (as amended). It is a punishable offence to interfere in any way with an active nest.*

7.18 Any vegetation clearance or demolition works to **B1**, should therefore be carried out outside of the breeding bird season, typically March – September inclusive. For works within the breeding bird season, any areas that can support nesting birds, including **B1**, should be checked by a professional Ecologist for nesting birds within 48 hours or less prior to works commencing.

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.*"

7.19 Where / if active nests are / have been 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.

Other terrestrial mammals

7.20 The results of the desktop and field study indicate that the occasional presence of badger, hedgehog and hare onsite, or commuting through the site, is considered possible. As such, it is recommended that Reasonable Avoidance Measures (RAMs) are enacted at the site to avoid any impacts to this species. RAMs to minimise construction impacts and prevent harm or injury to hedgehog should include, as a minimum:

- All working hours should be limited to daylight (dawn – sunset, or dawn – 6pm in winter) to avoid disturbing any hedgehog in vicinity of the development area.
- A pre-commencement check of the site, any stored materials and the immediate vicinity of development footprint will be carried out prior to any works each morning in order to check for the presence of hedgehog.
- Materials that may cause entrapment such as plastic / metal fencing, as well as those which could be potentially harmful to terrestrial mammals such as chemicals, should not be left around the site following the cessation of daytime work.
- No bulky equipment / general construction aggregates should be left around the development area, instead leave them on bare ground away from the risk zone.
- Stock piling of spoil material MUST be left un-compacted and not allowed to grass over, as if grassed over and compacted, terrestrial mammals may be encouraged to excavate new areas for refuge.
- Fires must not be used as a means of the disposing of waste materials.
- Any trenches or excavations must either be covered at the end of each working day, or a low angle (no more than 45°) sloping board of approximately 300mm width should be provisioned within any uncovered excavations to provide a means of escape for any terrestrial mammals.

Herpetofauna

7.21 Regarding GCN the results of the desktop study suggest that a breeding population may be supported within the 250m surrounding the application site, given the presence of three waterbodies, two of which have been assessed as ‘good’ suitability for GCN, and the location of the site within an area designated as ‘Potential Habitat for Great Crested Newt’ by DataMapWales. Whilst a number of minor barriers are also present within the vicinity of the application site, it is considered that these do not significantly reduce the ability of GCN to commute within the landscape.

7.22 The scope of the works do not include the loss of any significant habitats for GCN, comprising the loss of a small area of amenity grassland for the replacement dwelling. Nonetheless, the character of the wider landscape which offers moderately favourable habitat for GCN indicates that there is reasonable likelihood that GCN may be present at the site in at least a commuting capacity and therefore impacts to GCN cannot be ruled out at this time.

7.23 To this end, it is considered that an Environmental DNA (eDNA) survey should be undertaken at **P4** to reasonably ascertain presence / absence of GCN within the nearby pond. The results could scope in a wider assessment and allow a more robust impact assessment and suite of subsequent recommendations to be arrived at.

7.24 Any eDNA approach would need to be carried out from mid-April to June 30th when local planning authorities will accept data as part of a planning application. The information gathered will help provide an initial impact assessment. Following the eDNA survey, depending on the results, a development license may or may not be required; further surveys to reinforce the license may also be required.

Wider herpetofauna

7.25 The presence of generalist amphibians is considered possible. Any works on site should therefore have due regard to local wildlife as discussed, and the RAMs detailed previous for terrestrial mammals should be extended to cover common amphibians.

7.26 Should any frogs or toads be encountered within the works area, they should be handled with wet gloves to prevent impact / injury and moved to an area of like for like habitat outside of the works area away from potential harm. The applicant and all contractors should be aware that if at any stage newts are encountered during works, or at any other stage of the programme of works, such works would be required to immediately cease and the Ecologist / ECoW would be made aware as to provide further guidance, if an Ecologist is not already present.

7.28 Impacts to reptiles are also considered negligible, given the site's disconnection from any potentially suitable habitats and the nature of the available habitat on-site.

Invertebrates

7.29 The site is not considered to be locally distinct for this species group and no specific intervention measures apply. Enhancement options have been presented in **Appendix III**.

8.0 Green Infrastructure Statement

8.1 As discussed in section 6.0, the key green infrastructure present on site is considered to be the non-native shrub and modified grassland. The proposals entail the loss of a minor area of modified grassland, with the majority of the new dwelling to be sited within the outline of the existing dwelling. The proposed building is smaller than the existing, and, although no landscaping plans have been received, a front garden is likely to be created, which will likely mimic the existing habitats and mitigate the small loss of modified grassland.

8.2 In accordance with the step-wise approach to be adopted by authorities in Wales, it is therefore recommended that the scheme **avoids** impacting upon the non-native shrub and modified grassland onsite. Should this not be possible, impacts to these areas should be **minimised**, or as a final resort, any removal of or negative impacts upon these habitats should be effectively **mitigated / restored**.

8.3 It is considered that, by following the above approach, the scheme will not have an adverse impact on the diversity, extent, condition, connectivity or the adaptability of the green infrastructure on site. A further report in the form of a Green Infrastructure Statement will likely be necessary once plans are finalised.

8.4 In addition to the above, as a means of enhancement and aiding the design of the scheme in keeping with local and national planning policy considering biodiversity net-gain principles, the proposals may consider incorporating wildlife friendly provisions in addition to those described. Further recommendations, regarding birds, native botanical species and invertebrates are provided within **Appendix II**.

9.0 Bibliography

- **Amphibian and Reptile Groups of the United Kingdom (ARG UK)**. 2010. *ARG UK Advice Note 5 - Great Crested Newt Habitat Suitability Index*.
- **Baker, J., Beebee, T., Buckley, J., Gent, T. and Orchard, D.** 2011. *Amphibian Habitat Management Handbook*. Amphibian & Reptile Conservation, Bournemouth.
- **Bat Conservation Trust (BCT),** 2023. *Bats and Artificial Lighting at Night, Guidance Note GN08/23.* Available from: https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/
- **Beebee, T. & Griffiths, R**. 2000. *Amphibians and Reptiles.* Collins
- **British Standards Institution (BSI)**. 2012. *Trees in relation to design, demolition and construction - recommendations*. BS 5837:2012. ISBN 978 0 580 69917 7.
- **BSBI**, 2020. *BSBI Online Plant Atlas*. Available from: https://plantatlas2020.org/atlas
- **CIEEM**, 2018. *Guidelines for Ecological Impact Assessment in the UK and Ireland*, 2nd edition. Available from: www.cieem.net/data/files/Publications/EcIA_Guidelines_Terrestrial_Freshwater_and_Coastal_Jan_2016.pdf
- **CIEEM**. 2020. *Guidelines for Accessing, Using and Sharing Biodiversity Data in the UK*. 2nd Edition. Chartered Institute of Ecology and Environmental Management. Winchester, UK
- **CIEEM**, 2017. *Guidelines for Preliminary Ecological Appraisal*, 2nd edition. Available from: www.cieem.net/data/files/Publications/Guidelines_for_Preliminary_Ecological_Appraisal_Jan2018_1.pdf
- **CIEEM**, 2019. *Biodiversity Net Gain: Good practice principles for development*. Available from: www.cieem.net/data/files/Publications/Biodiversity_Net_Gain_Principles.pdf
- **CIEEM**, 2019. *ON THE LIFESPAN OF ECOLOGICAL REPORTS & SURVEYS*. Available from: https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf
- **Collins, J** (ed.) 2023. *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (4th edition). The Bat Conservation Trust, London.
- **Communities & Local Government (C&LG)**, 2024. *National Planning Policy Framework*. Available from: https://www.gov.uk/government/publications/national-planning-policy-framework--2
- **Dean, M., Strachen, R., Gow, D. and Andrews, R.**, 2016. *The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series).* The Mammal Society, London.
- **DEFRA**, 2018. *Net gain: Consultation Proposals*. Available from: https://consult.defra.gov.uk/land-use/net-gain/supporting_documents/netgainconsultationdocument.pdf
- **DEFRA**, 2022. *Keepers of time: ancient and native woodland and trees policy in England*. Available from: https://www.gov.uk/government/publications/keepers-of-time-ancient-and-native-woodland-and-trees-policy-in-england/keepers-of-time-ancient-and-native-woodland-and-trees-policy-in-england
- **Drake, C. M., Lott, D. A., Alexander, K. N. A. and Webb, J.**, 2007. *Surveying terrestrial and freshwater invertebrates for conservation evaluation*. Natural England. Available from: https://publications.naturalengland.org.uk/file/63016
- **Edgar, P., Foster, J. and Baker, J**. 2010. *Reptile Habitat Management Handbook*. Amphibian & Reptile Conservation. Bournemouth.
- **English Nature**, 2001. *Great Crested Newt Guidelines. Version Aug 2001.*

- **Froglife**, 2015. *Surveying for reptiles*. Available from: https://www.froglife.org/wp-content/uploads/2013/06/Reptile-survey-booklet-3mm-bleed.pdf
- **Global Biodiversity Information Facility (GBIF)**, 2019. Available from: https://www.gbif.org/.
- **GOV.UK**. 2015. *Reptiles: surveys and mitigation for development projects.* Available online www.gov.uk/guidance/reptiles-protection-surveys-and-licences.
- **Gunnell, K. Grant, G. and Williams, C.**, 2012. '*Landscape and urban design for bats and biodiversity*'. Bat Conservation Trust.
- **Harris, J. E., Markwell, H. J., and Raybould, B. R.**, 2009. *A method for assessing water vole habitat suitability*. In Practice: Bulletin of the Institute of Ecology and Environmental Management. 65: 28 – 31**.**
- **Hodgetts, N.** 2011*. A revised Red List of bryophytes in Britain*. Field Bryology 103: 40-48.
- **Joint Nature Conservancy Council (JNCC)**, 2010. *Handbook for Phase 1 habitat survey.* Available from: http://jncc.defra.gov.uk/PDF/pub10_handbookforphase1habitatsurvey.pdf
- **Magic Maps Application**, 2024. Available from: www.natureonthemap.naturalengland.org.uk/MagicMap.aspx
- **Mitchell-Jones, A. J. (ed.)**, 1987. *The bat worker's manual*. Dept. BWM, Nature Conservancy Council, Northminster House, Peterborough, PE1 1UA
- **Natural England**, 2015. *Great Crested Newts: Surveys and mitigation for developments and projects*. Available from: https://www.gov.uk/guidance/great-crested-newts-surveys-and-mitigation-for-development-projects.
- **North West Biodiversity Audit Group (NWBAG)**, 1999. *A biodiversity audit of north-west England.*
- **Oldham R.S.; Keeble J.; Swan M.J.S.; Jeffcote M**., 2000. *Evaluating the suitability of habitat for the Great Crested Newt* (*Triturus cristatus*). Herpetological Journal 10 (4), 143-155.
- **Reason, P.F. & Wray, S.** 2023**.** *UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats*. Chartered Institute of Ecology and Environmental Management, Ampfield
- **Rose, F, 1999.** *Indicators of ancient woodland: The use of vascular plants in evaluating ancient woods for nature conservation.* Available from: http://pad.basingstoke.gov.uk/documents/4753/01/02/76/01027625.PDF
- **Sewell, D., Griffiths, R. A., Beebee, T. J., Foster, J., and Wilkinson, J. W.**, 2013. *Survey protocols for the British herpetofauna*. Available from: http://www.narrs.org.uk/documents/Survey_protocols_for_the_British_herpetofauna.pdf
- **Stace, C**. 2019. *New Flora of the British Isles*, 4th edition. Cambridge University Press, The Edinburgh Building, Cambridge, CB2 2RU.
- **Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., Win, I**., 2021. *The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain*, British Birds 114, 723 – 747.
- **Strachen. R; Moorhouse. T.**, 2011. *The Water Vole Conservation Handbook*, 3rd ed. Wildlife Conservation Research Unit, University of Oxford.

- **Stroh. P. A; Leach. S. J; August. T. A; Walker. T. J; Pearman. D. A; Rumsey. F. J; Harrower. C. A; Fay. M. F; Martin. J. P; Pankhurst. T; Preston. C. D; Taylor. I**., 2014. *A Vascular Plant Red-List for England*, 2nd edition. Trollius Publications.

- **UKHab Ltd.**, 2023. *UK Habitat Classification Version 2.0*. Available from: https://ukhab.org/

Appendix I: Site Photographs



Plate 1 - *Character of B1.*



Plate 2 - *Eastern aspect of B1.*



Plate 3 – *Northern aspect of B1.*



Plate 4 – *Character of gable (northern aspect).*



Plate 5 - *Character of B1 and wider site.*



Plate 6 - *Steel Braces on the southern aspect of B1.*



Plate 7 - *PRF within cracks in the masonry and damage to building.*



Plate 8 – *PRF within the gable of B1 (southern aspect).*



Plate 9 - *PRF within damaged fascia.*



Plate 10 - *PRF within damaged Fascia and Soffit.*



Plate 11 – *PRF within damaged, raised and missing tiles of the roof.*



Plate 12 - *General character of B2 with B1 in background.*



Plate 13 - *Western aspect of B2.*



Plate 14 - *PRF within exposed timber frame on gable end wall of B1.*



Plate 15 - *PRF within lifted roof tiles and damaged mortar of B1.*



Plate 16 - *Internal damage to northern aspect of B1.*



Plate 17 - *General internal character of B1.*



Plate 18 - *General character of the loft space.*



Plate 19 – *General character of loft space.*



Plate 20 - *Character of ridge beam with bitumen lining.*



Plate 21 – *Location of nest.*



Plate 22 – *General character of the garden space.*



Plate 23 - *General character of the garden space.*



Plate 24 - *General character of P3.*



Plate 25 - *General character of P5.*



Plate 26 - *General character of P4.*



Plate 27 - *General character of P1.*

Appendix II: Botanical Species List

Species nomenclature follows Stace, C (2019) – definitive English names; scientific names for given flora are presented below.

Any invasive non-native species are denoted by the acronym (**INNS**).

Taxon	Common Name	Scientific Name
Anthophyta	Broad-leaved dock	*Rumex obtusifolius*
	Butterfly-bush	*Buddleja davidii*
	Cherry laurel	*Prunus laurocerasus*
	Chickweed	*Stellaria media*
	Common ragwort	*Jacobaea vulgaris*
	Creeping buttercup	*Ranunculus repens*
	Creeping thistle	*Cirsium arvense*
	Curled dock	*Rumex crispus*
	Cypress	*Cupressus sp*
	Daisy	*Bellis perennis*
	Dandelion	*Taraxacum officinale* **agg.**
	Elder	*Sambucus nigra*
	Hazel	*Corylus avellana*
	Holly	*Ilex aquifolium*
	Meadow buttercup	*Ranunculus acris*
	Pampas-grass	*Cortaderia selloana*
	Perennial rye-grass	*Lolium perenne*
	Ribwort plantain	*Plantago lanceolata*
	Sow thistle	*Sonchus arvensis*
	White clover	*Trifolium repens*
	Yucca	*Yucca gloriosa*
Pinophyta	Yew	*Taxus baccata*

Appendix III: Biodiversity Enhancement: General Recommendations

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.

Breeding Birds – Swallow



Although Swallows are currently placed on the Green list for Birds of Conservation Concern (BoCC), meaning that they are under the least protection, numbers of this species can fluctuate heavily based on environmental and ecological factors, with high regional variation observed.

Swallows will readily adopt these nest cups which are based on the size and shape of natural swallow nests. The nest cup is ideal for placing in a garage, shed, stable, barn or even beneath an archway and should be placed beneath the roof with free access. It provides somewhere secure for swallows to nest and means that they will expend less energy in producing their own nest. It also means that they do not need to find suitable nest building mud which can be in short supply in a dry spring. This WoodStone® Swallow Bowl is made from durable WoodStone®, a mixture of concrete and wood fibres, that is guaranteed to last for years and is mounted on an exterior grade plywood board.

Breeding Birds – Other



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.

Hedgehog Home

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.

Amphibians – Hibernacula

Hibernacula are underground chambers that amphibians and reptiles use throughout the winter to protect themselves from the cold. Creating a hibernaculum will provide a safe space for amphibians and reptiles to hibernate over winter, as well as a spot for solitary bees to soak up the sun and for birds to relax. These habitats can be integrated into a wide variety newly created or enhanced habitats and attract herps to new areas.

You will need:

- A spade
- Logs and branches
- Rocks and bricks
- 2-3 drainpipe cut-offs or cement pipes (if using plastic drainpipes, roughen the insides with sandpaper, so that they are not too slippery for animals to climb
- Turf or meadow flower seeds (optional)

How to make your hibernaculum yourself:

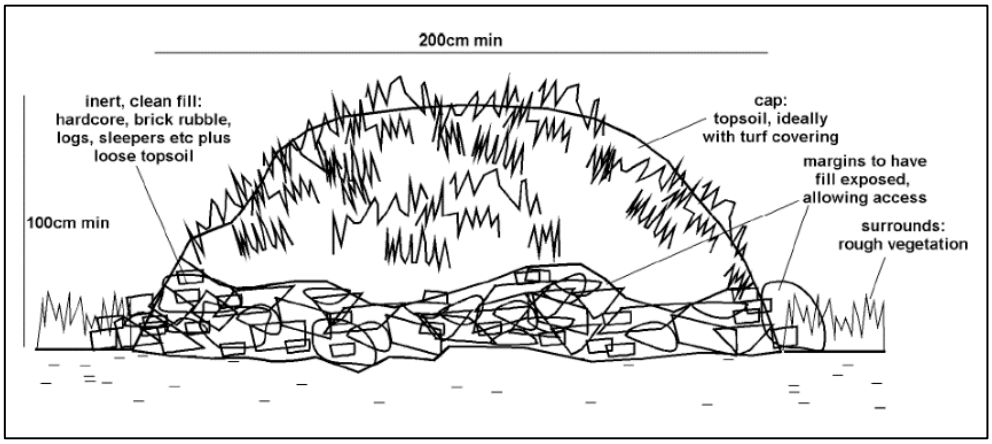
- In a sunny spot, dig a hole about 50cm deep and 1.5 metres across.
- Fill with logs, branches, bricks and rocks, leaving plenty of gaps in between.
- Insert entrance tubes (drainpipes) at ground level into the hole.
- Cover the pile with soil (to about 50cm high).
- Plant meadow seeds or long grasses over the mound to create a feast for summer pollinators.

To construct a hibernaculum to Natural England standard:

- In desired areas, remove the turf from the footprint of the hibernaculum and set aside.
- On well-drained soil excavate to a depth of approximately 500 mm and set aside spoil (this is unnecessary on poorly drained soils).

- Fill the footprint or pit with core material. Materials likely to retain moisture are preferable, such as cut timber, brash and grubbed up tree roots. Other material such as inert hardcore, bricks, rocks, and building rubble may also be used. Materials that will decompose should not be placed beneath heavy components such as bricks or rocks, to reduce the risk of collapse.
- Pack the larger spaces within the core materials with wood chippings, loose topsoil or spoil.
- Cover the hibernaculum with the turves removed from the footprint.
- Take care not to create structures that might attract rodents, such as piles of rubble with many entrance holes. There has been no rigorous investigation of the optimum size of hibernacula, but larger hibernacula are probably more useful than small constructions because they contain a variety of different microhabitats and are more likely to maintain stable conditions.
- A suggested minimum size is 4.0 m long by 2.0 m wide by 1.0 m deep. 2.0 x 2.0 x 1.0 metres (length x width x height) as a minimum.

Illustrative aid for hibernaculum:





Invertebrates – Insect Hotels



Insect hotels provide a habitat for a variety of insects. Designs can be small or large enough to create a focal point in a wildlife garden and sturdy enough to last for years. Ensure hotels are made from untreated wood, which is important as insects need natural materials to thrive, and split into sections that each contain a different nesting material. There should be pine cones for ladybirds, wood slits for butterflies and moths, bamboo canes for solitary bees, and loose pieces of wood for beetles. Placement: Size against walls or fences and fix to prevent toppling. The feet keep the main body off the damp ground. You could push bricks against them to keep the bug hotel upright, which would also encourage woodlice and even frogs that enjoy cool stone conditions.

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
* Dimensions: W 215mm x D 105mm x H 65mm
* Weight: 2.9kg
* Colours: White grey, yellow, dark grey and red

Native Planting and/or Landscaping

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. New hedgerows should be primarily comprised of blackthorn, hawthorn, hazel, and holly, whilst climbers/creepers such as hops and honeysuckle can be planted at the base of boundary features such as fences and walls, and new tree planting should include species such as pedunculate oak, wild cherry, and alder buckthorn.

	Common Name	Scientific Name	Planting Preference
Ferns	Male Fern	*Dryopteris filix-mas*	Semi-shade or shaded
	Soft Shield-fern	*Polystichum setiferum*	Semi-shade or shaded
	Maidenhair Fern	*Adiantum capillus-veneris*	Suitable for rockeries / walled gardens
	Royal Fern	*Osmunda regalis*	Full sun in moist-damp areas
Herbaceous plants	Bloody Crane's-bill	*Geranium sanguineum*	Dry soils - suitable for rockeries
	Columbine	*Aquilegia vulgaris*	Semi-shade or open areas
	English Bluebell	*Hyacinthoides non-scripta*	Moist soils in semi-shade or open areas
	Giant Bellflower	*Campanula latifolia*	Semi-shade or open areas
	Greater Knapweed	*Centaurea scabiosa*	Dry-moist soils. Suitable for borders
	Greater Woodrush	*Luzula sylvatica*	Moist soils in semi-shade or open areas
	Meadow Crane's-bill	*Geranium pratense*	Humid-moist soils. Suitable for borders
	Musk Mallow	*Malva moschata*	Dry-moist soils. Suitable for borders and rockeries
	Sea Campion	*Silene uniflora*	Dry soils - suitable for rockeries
	Stinking Hellebore	*Helleborus foetidus*	Semi-shade or open areas
Climbers	Honeysuckle	*Lonicera periclymenum*	Dry-moist soils
	Hops	*Humulus lupulus*	Dry-moist soils
	Ivy	*Hedera helix*	Dry-moist soils
	Sweet-briar	*Rosa rubiginosa*	Dry-moist soils
Woody Shrubs	Dogwood	*Cornus sanguinea*	-
	Guelder Rose	*Viburnum opulus*	-
	Hawthorn	*Crataegus monogyna*	-
	Hazel	*Corylus avellana*	-
	Holly	*Ilex aquifolium*	-
Trees	Alder Buckthorn	*Frangula alnus*	-
	Osier	*Salix viminalis*	-
	Pedunculate Oak	*Quercus robur*	-
	Purple Willow	*Salix purpurea*	-
	Rowan	*Sorbus aucuparia*	-
	Silver Birch	*Betula pendula*	-
	Wild Cherry	*Prunus avium*	-
	Wych Elm	*Ulmus glabra*	-

Appendix IV: UK Habitats Map

