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Preliminary Ecological Appraisal

January 2024

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Willington,
Malpas
SY14 7NA

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Executive Summary

As part of a proposed planning application with Wrexham County Council concerning a barn at Willington Cross Farm, Tyrer Ecological Consultants carried out a Preliminary Ecological Appraisal (PEA) in November 2024.

The PEA was commissioned by Blueprint Architectural Services; proposals are understood to involve the conversion of the existing building into a residence and the demolition of a shed.

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 is categorised as pertaining to a bat roost suitability of '**Low**', in accordance with Bat Conservation Trust – Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th ed. (2023).

*It is recommended that a **single dusk / emergence survey** is in relation to B1 and that this survey is conducted during the active season of bats (May – August), 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. It is estimated that a total of two surveyors will be required to cover all aspects 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 is categorised as pertaining to a bat roost suitability of '**Negligible**', in accordance with Bat Conservation Trust – Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th ed. (2023).

No further dusk/emergence surveys are recommended in relation to B2, however, a pre-commencement check for bats and breeding birds will be required alongside Ecological Clerk of Work supervision throughout the demolition.

Birds

Regarding wider breeding bird species, historic nesting evidence was identified in both B1 and B2 alongside many further suitable nesting platforms. Additionally, the hedge and associated trees which bound that site hosts many further suitable nesting platforms, which may support breeding birds within the nesting bird season of March – August, inclusive.

Any works to either B1 or B2, or vegetation clearance 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 should be checked by a professional Ecologist for nesting birds within 48 hours or less prior to works commencing.

Other terrestrial mammals

Hedgehogs have the potential to be impacted upon by the works.

*A programme of Reasonable Avoidance Measures (RAMs) is recommended to be enacted on the site to prevent impacting these species. See **Section 7.0** for details.*

Herpetofauna

The presence of both great crested newt and other, more common amphibians is unlikely, but cannot be conclusively ruled out, and therefore may be impacted by the works.

The RAMs discussed should be extended to cover GCN and generalist amphibians.

Green Infrastructure

The key green infrastructure present on site is considered to be the hedgerow and associated small trees. As landscaping proposals have not been included within the proposals at this time, it is unclear how much of the on-site habitats will be lost. 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.

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1.0 Introduction & Scope

1.1 As part of a proposed planning application with Wrexham County Council concerning a barn at Willington Cross Farm, Tyrer Ecological Consultants carried out a Preliminary Ecological Appraisal (PEA) in November 2024.

1.2 The PEA was commissioned by Blueprint Architectural Services; proposals are understood to involve the conversion of the existing building into a residence and the demolition of a shed. See **Figure 1.1** for the red line boundary of the site.

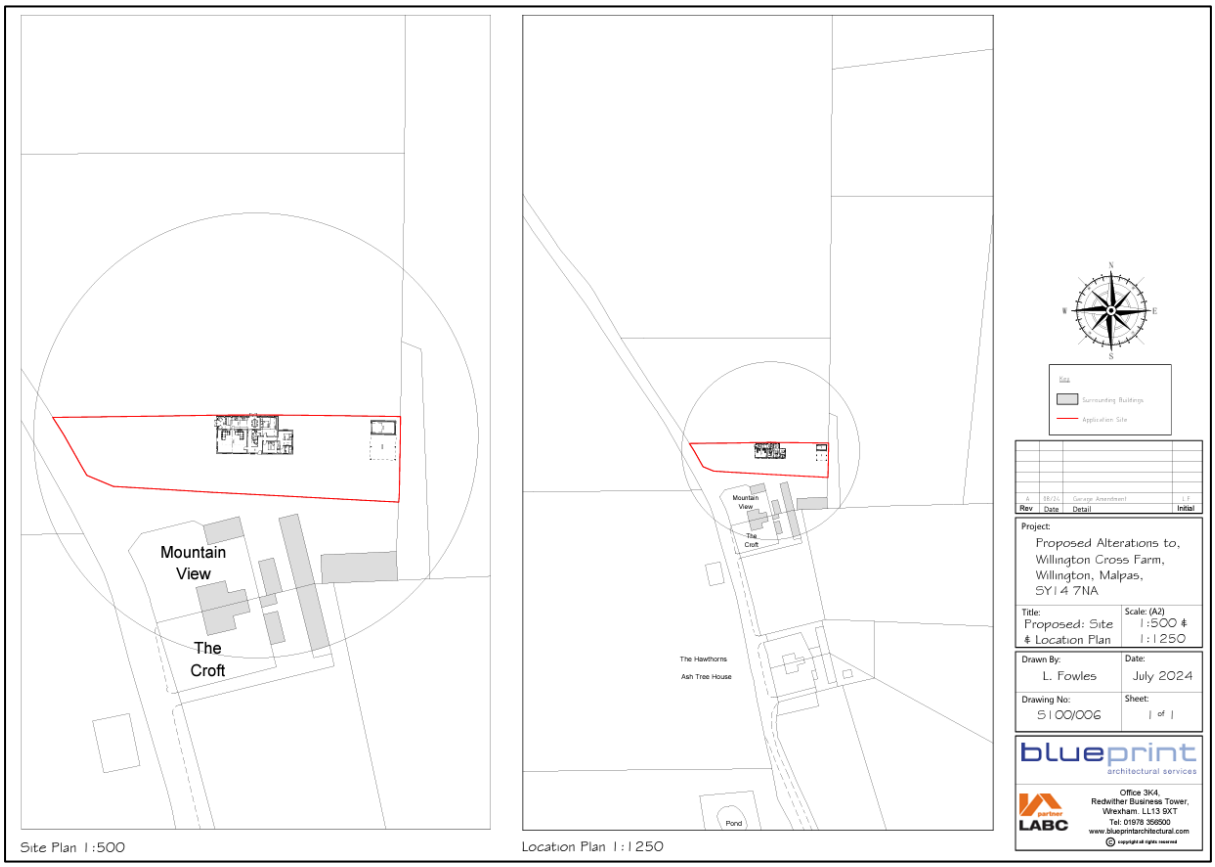


Figure 1.1 – *Existing site plan © Blueprint Architectural Services*

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),
- 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 (2023) (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.

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 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 (see **Figure 2.1** below) 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.

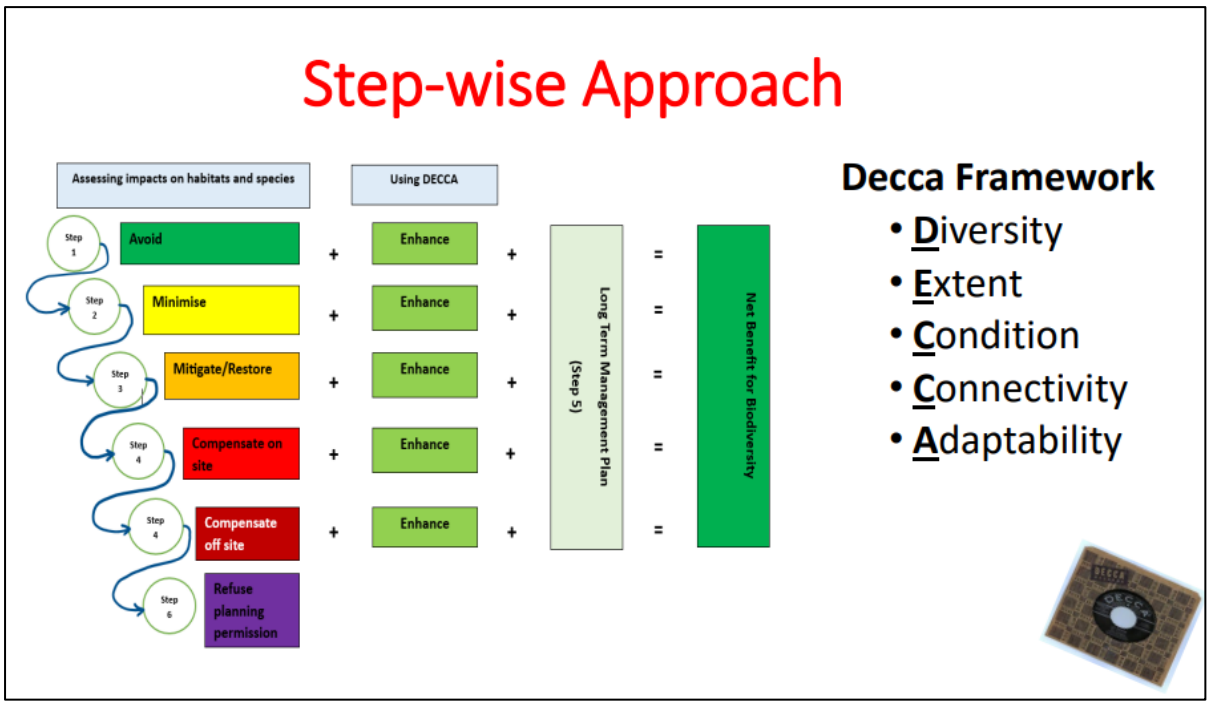


Figure 2.1 – *The step-wise approach / DECCA framework to be adopted by authorities in Wales*

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 UK Biodiversity Action Plan (UKBAP), Section 41 (s.41) of the NERC Act 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), 'Lle' (A Geo-Portal for Wales) 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 (© 2023/24) 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 7th November 2024 in overcast conditions (9ºC), average wind 2/12 (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 Class 2 Natural England bat licence of Mrs. K. Wilding (CLS-14227). • Accredited agent on the Natural England Great Crested Newt: CL08 Class 1 licence (2022-106040-CL08-GCN) of Mr. D. Burrows.

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**).

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 (GCN) (*Triturus cristatus*). 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 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*).

3.25 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.

3.26 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

3.27 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)

3.28 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.

3.29 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 surveyor Mr. J. Hark.

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 optimal time of the year to carry out a preliminary ecological appraisal / UK Habitats survey is April to October; the survey was therefore carried out within a sub-optimal period. It is considered, however, that enough information was gathered during the site visit on which to base ecological conclusions and recommendations, based on the habitat types encountered presenting no significant issues in such regard.

4.3 The survey took place outside of both the active bat season and the breeding bird season; whilst sub-optimal, survey timing is not considered a constraint in this instance as roost or nest site suitability can be assessed by a competent surveyor at any time of the year.

4.4 Internal access to the storage shed (B2) was limited due to safety concerns, however the building was small and simple, and a comprehensive view of the interior was achieved from the accessible areas. This was not considered a significant limitation.

4.5 In considering all potential 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 site is located to the east of Willington Cross Lane, south of the village of Tallarn Green and, approximately 14.0km south-east of Wrexham city centre. The site is comprised of a pair of agricultural outbuildings set within a small parcel of agricultural grassland, bound by hedges, with a total area of 0.02ha (see **Figure 5.1** below for location of the site within the surrounding landscape).

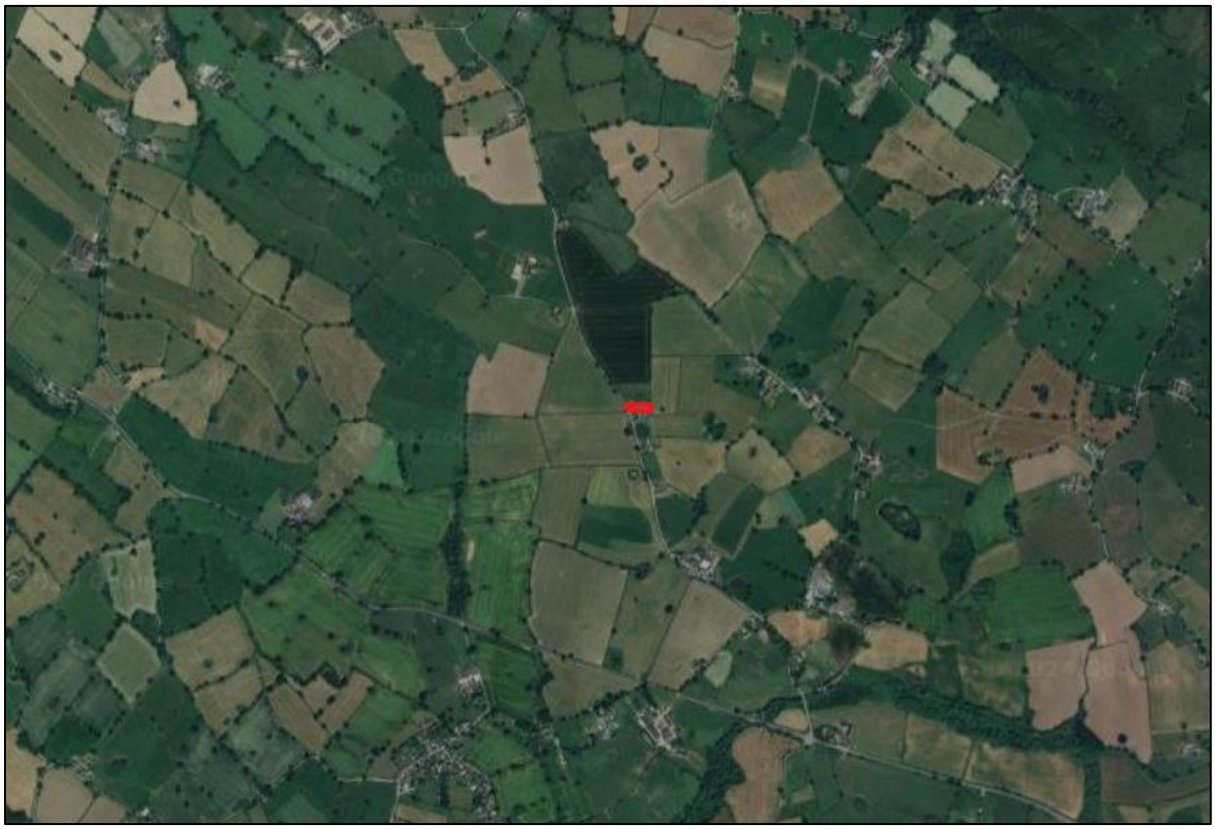


Figure 5.1 – *Location of red line boundary within surrounding landscape © Google Earth Pro 2024*

5.2 The immediate environment is dominated in each direction by arable grasslands and croplands, with scattered residential dwellings and farm complexes also present throughout. A network of hedgerows runs throughout the landscape, in addition to scattered small waterbodies, individual trees and small woodland copses'. Minor waterways are present in the form of Wych brook further to the north and Cumber's brook further to the south.

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 No statutory designated sites for nature conservation are present within a 2.0km search radius of the site (see **Figure 5.2** for a visual aid).

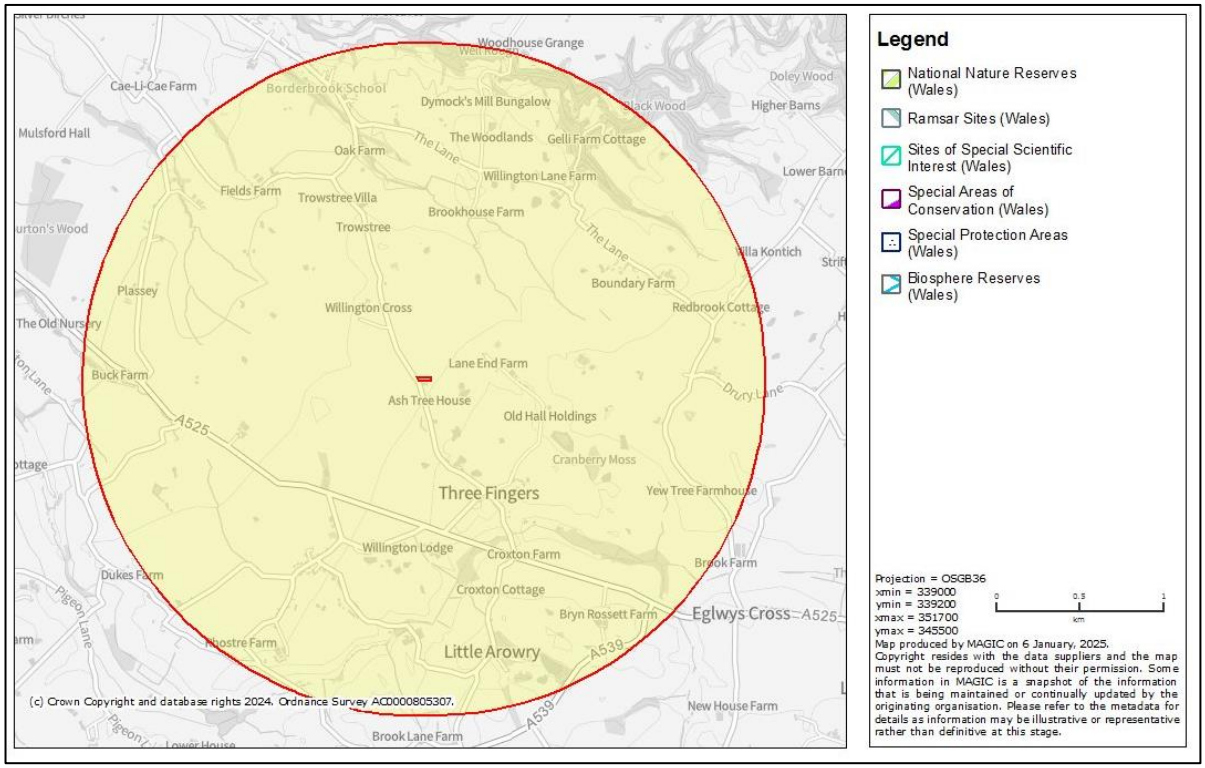


Figure 5.2 – *Designated site data for the area within 2.0km of application site © MAGiC Maps 2024*

Habitats

5.5 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 5.1**).

Table 5.1 – Priority habitats located within 2.0km buffer

Habitat Type	Designation
Ancient semi-natural woodland	Ancient woodland inventory
Lowland fens and reedbeds	NRW Priority Habitat
Purple Moor Grass and Rush Pastures	NRW Priority Habitat
Traditional orchards	NRW Priority Habitat

Bats

5.6 Given the domination of agricultural grasslands and croplands within the immediate vicinity, which is of a relatively low value for foraging and commuting bats, the high-quality foraging and commuting features within the landscape are limited mostly to hedgerows, individual trees, small waterbodies and isolated areas of domestic garden and grassland. The hedge network present within the surrounding agricultural areas offer suitable dark, sheltered commuting corridors for a range of bat species. The species most likely to exist within proximity to the site are common pipistrelle (*Pipistrellus pipistrellus*), a generalist species, able to roost in a range of conditions, and noctule (*Nyctalus noctule*), which are commonly found foraging high above agricultural landscapes.

5.7 Tyrer Ecological Consultants Ltd have previous and ongoing projects involving bats within the 2.0-kilometre area surrounding the site – as such, the following biological data (see **Table 5.2**) is readily available to the Ecologist from the company database – all data has been previously submitted to the LERC serving the area, which, in this case, is Cofnod.

Table 5.2 – LERC submitted biological data records collected by Tyrer Ecological Consultants Ltd

Year	Distance from site	Context (where relevant)
2020	1.9km north-west	Accumulations of droppings belonging to common pipistrelle and brown long-eared bat, day roost of whiskered/Brandt's bat and common pipistrelle.

Birds

5.8 Given the dominance 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*), farmland birds such as yellowhammer (*Emberiza citrinella*) and ground nesting species such as curlew (*Numenius arquata*) and lapwing (*Vanellus vanellus*), alongside more common garden and woodland species. The mosaic of farmland and woodland interspersed with native 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 Given the distinct lack of significant woodlands within the immediate landscape and the flat, open nature of the agricultural land, it is unlikely that areas within close proximity to the site host features or conditions which are of high value to badgers, although it is possible that they are occasionally present when commuting or dispersing from more suitable areas, further afield. In addition, the network of hedgerows along field margins in the surrounding area offers suitable commuting features to support the potential presence of European hedgehog and brown hare.

Herpetofauna

5.11 Based on the desktop assessment, three ponds were identified within 250m of the application site, all of which were located approximately 200m from the site boundary and none of which were deemed to be well connected to the site. Connectivity between **P1-P2** and the site is limited by the heavily managed agricultural grassland between them, although a hedgerow in the areas may act as a limited connecting feature. Connectivity between **P3** and the site appears to be similarly limited by heavily managed agricultural land but is also separated from the site by a minor road, representing an additional minor barrier to dispersal. See **Figure 5.3** below, for a visual aid.

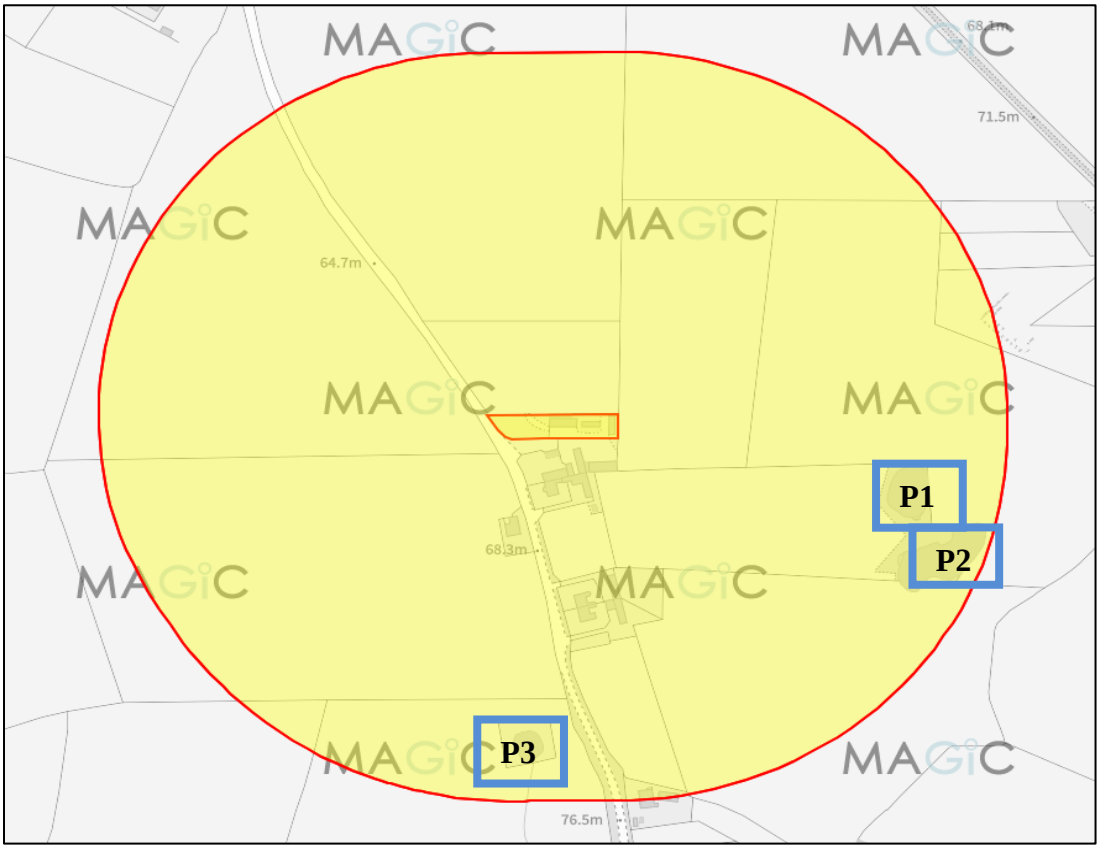


Figure 5.3 – Three ponds (P1-3) within 250m radius of the site.
(Sourced: Magic Map Application (defra.gov.uk))

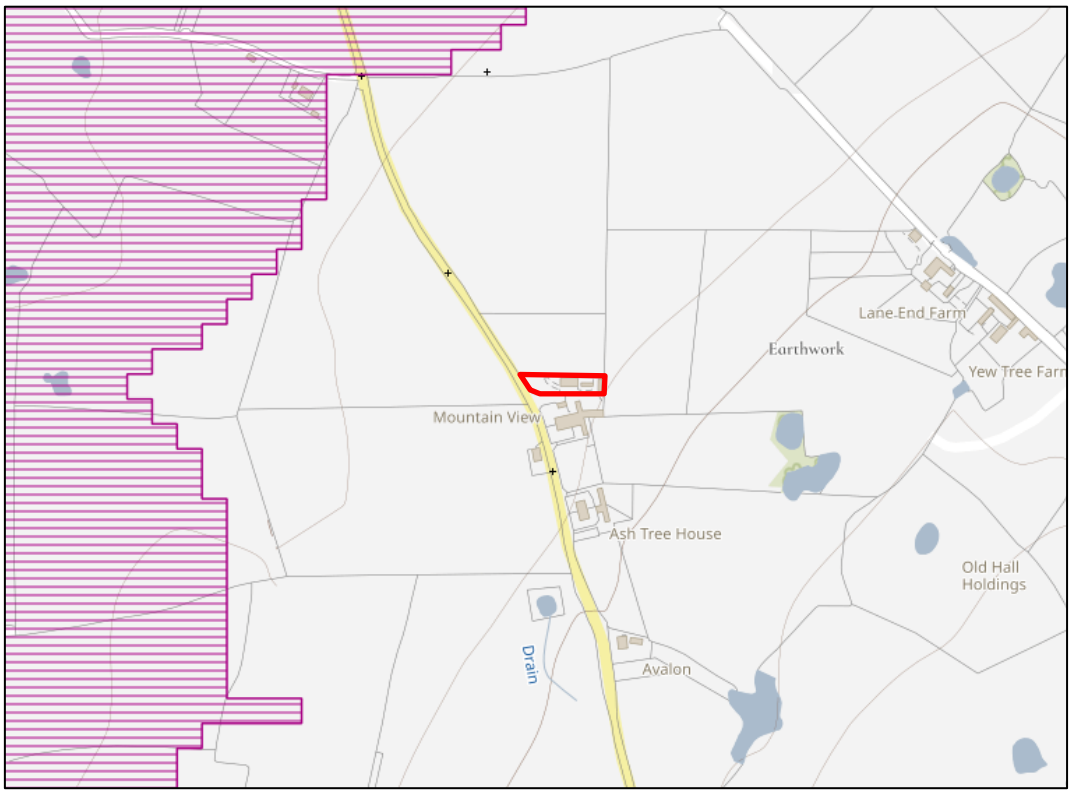


Figure 5.4 – Location of the site in relation to the DataMapWales 'Potential Habitat for Great Crested Newt' layer. (Sourced: DataMapWales (Datamap.gov.wales))

5.12 The site is not located within 250m of the DataMapWales layer 'Potential Habitat for Great Crested Newt', however, the area immediately north and west of the 250m buffer is identified as 'Potential Habitat for Great Crested Newt'. See **Figure 5.4** above, for a visual aid.

5.13 Based on the presence of three waterbodies within 250m of the application site and the proximity of the site to the DataMapWales 'Potential Habitat for Great Crested Newts' layer, whilst taking into account the distance between the site and the identified ponds and the poor terrestrial connectivity, it is considered possible that great crested newt would be present within the surrounding landscape, but unlikely to be within functionally connected habitat to the site. Additional limited opportunities for more generalist amphibians also exist within the locale.

5.14 The largely homogenous nature of the immediate environment, with cropped arable fields dominating, is not considered to offer any suitability for reptiles, with a lack of ecotones or habitat mosaics.

Invertebrates

5.15 The expansive arable environs are also unlikely to host nationally significant populations of invertebrates.

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 Modified grassland	**102** Sheep grazed **510** Bare ground	The western portion of the site consists of sparse grassland atop recently disturbed ground, which is used to graze a small number of sheep, which maintains a low – medium sward height throughout. Bare ground is present within this area where a vehicle track is present. The species composition included graminoids such as perennial rye-grass (*Lolium perenne*) and rough meadow-grass (*Poa trivialis*) and a forb assemblage which included white clover (*Trifolium repens*), creeping buttercup (*Ranunculus repens*), creeping thistle (*Cirsium arvense*), dandelion (*Taraxacum spp.*), pineappleweed (*Matricaria discoidea*), greater plantain (*Plantago major*), curled dock (*Rumex crispus*), common vetch (*Vicia sativa*), common nettle (*Urtica dioica*) and ground ivy (*Glechoma hederacea*).
u1c Artificial unvegetated – unsealed surface	**510** Bare ground	The eastern portion of the site is predominantly devoid of vegetation, consisting of bare earth within limited colonisation of grass and forbs at the boundaries. The vegetative component of this area pertains to significantly less than 10% of the area. Species presents include perennial rye-grass, curled dock and pineappleweed.
u1b5 Buildings	-	Two buildings onsite; the former agricultural barn and the porta-cabin storage shed. See **Section 6.3** for further information on structural composition.
h3d Bramble scrub	**-**	Small areas on either side of the storage shed are dominated by bramble (*Rubus fruticosus* agg.) scrub, which also extends behind the building, outside of the site boundary.
Linear habitat	**Sec. Codes**	**Description**
h3d Non-native and ornamental hedgerow	**-**	A section of hedge which runs through the eastern portion of the site and appears to have been planted/replanted recently. The hedge was dominated by cypress (*Cupressus spp.*) but also contained small areas of elder (*Sambucus nigra*) and alder (*Alnus glutinosa*) and a ground flora consisting of common ivy (*Hedera helix*).
H2a6 Other native hedgerow	**11** Hedgerow with trees	A stretch of hedge which bounds the western area of the site. The woody component of the hedge was dominated by hawthorn (*Crataegus monogyna*) but included occasional hazel (*Corylus avellana*) and holly (*Ilex aquifolium*) and a group of four small

		scots pine (*Pinus sylvestris*), the DBH of which ranged from 20cm to 5cm. The ground flora generally consisted of common ivy, common nettle, common chickweed (*Stellaria media*), hedge woundwort (*Stachys sylvatica*) and common vetch (*Vicia sativa*).

6.1.2 Based upon the above, the site is not considered locally notable for its green infrastructure, being comprised of the buildings, modified grassland pasture and bare ground, and the hedges. The key green infrastructure present on site is therefore considered to be the 'other native hedgerow' and the trees it contains.

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) or Schedule 2 of the Invasive Alien Species Order (2019) were observed within the red line boundary.

6.3 Bats

6.3.1 Two buildings were identified within the site boundaries, labelled as **B1** and **B2** and described in **Table 6.3.1**, below.

Table 6.3.1 – Building descriptions and roost suitability assessment

B1
B1 is a detached agricultural barn of timber frame and cladding construction with approximate maximum dimensions of 18m x 9.5m x 5m (Length x Width x Height) and is vaulted from floor to ceiling throughout. The building features components such as a low brick foundation, timber clad walls, a pitched corrugated asbestos roof, uPVC windows and large metal agricultural doors on the western gable. A lean-to extension is present on the northern orientation, which is open north, east and west. In respect to its condition the surveyor is not qualified to assess structural state, however the aesthetic condition of the building was adjudged to be good, having recently been subject to re-painting, internal wall boarding and window replacement. However, the corrugated asbestos roof was observed to contain gaps and was superficially warped in some areas. Internally, no loft space was present owing to the vaulted, single open space nature of the building. The ceiling was observed to be clad with timber, and no roofing felt was identified, although the corrugated roof sheeting was visible through the cladding in some areas. The space was cool, draughty and bright, owing to the windows and ill-fitting doors. No evidence of bats (i.e. droppings, feeding remains, urine staining at PRFs etc) was identified within the buildings, however it was apparent that the building had recently been cleaned at the time of the survey. With the above in mind, it is considered that the structure does not pertain to suitable conditions for the requirements of breeding roosts of loft-dwelling bats, such as brown long-eared bat, lacking the thermal stability and low light levels required. Although this does not

rule out occasional use by single/low numbers of brown long-eared bat, for which suitable foraging and commuting features are present within the immediate environment.

No roof liner was observed within the building; where present, traditional bitumen 1F underfelt (or similar) can improve a building's value to bats notably for crevice-dwelling bats of the *Pipistrellus* genus, whereby the bats roost between linings and the roof cover material provided external access opportunities exist.

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.*

Potential roosting features (PRF's) were present inside the building in the form of gaps within or between timbers in the roof and frame, which appear mostly superficial and non-extensive, with the internal space accessible via a gap above the door on the southern orientation, through gaps in the apex of the roof and further gaps around the large doors on the western orientation. Some PRF's within the timber framework appear to potentially provide access underneath the asbestos roof sheeting, although this features likely provides unsuitable conditions for roosting. External PRF's were limited to a crevice behind the barge boards on the western and eastern gables.

Considering the small number of low quality PRF's identified and the limited suitable surrounding habitat, B1 is duly categorised as pertaining to '**Low**' bat roost suitability in accordance with Bat Conservation Trust – Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th ed. (2023).

B2

B2 is a prefabricated porta-cabin style building of approximate maximum dimensions 13m x 5m x 2m. The building features component such as steel support beams, plywood doors and walls, single glazed metal framed windows and a mono-pitched corrugated steel roof.

The aesthetic condition of the building was adjudged to be poor, owing to multiple smashed windows, missing sections of roof sheet, rotten timbers and an entirely rotten floor internally. Water damage was evident throughout.

Full internal access was not obtained to this building due to safety concerns, however it could be ascertained that the building was used to store household and agricultural items and was cold, damp and draughty internally, with extensive light ingress through windows and missing roof sheets. The floor of the building, immediately Infront of the access door was observed to have collapsed.

Despite the generally dilapidated nature of the building, a small number of low qualities PRFs were identified between timbers at the roof level and it is considered that the building may be used by roosting bats very occasionally under specific conditions (i.e. sudden bouts of bat weather), but this could not be conclusively ascertained during the survey. No evidence of the presence of bats was observed within B2.

Considering the above conditions, B2 is duly categorised as pertaining to '**Negligible**' bat roost suitability in accordance with Bat Conservation Trust – Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th ed. (2023).

6.3.2 During the GLTA of the four small Scots pine within the boundary hedge, no obvious PRFs were identified by the surveyor, with the trees lacking 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**'.

6.3.3 From a habitat suitability assessment in relation to bat activity, the habitats onsite are likely of low value for bats, with the hedges offering some limited foraging potential and acting as part of a commuting corridor to further hedgerows and agricultural land. The presence of bats within the site boundary on a foraging and commuting basis is considered possible.

6.4 Birds

6.4.1 In relation to WCA Schedule 1 specially protected bird species such as barn owl (*Tyto alba*) the site does not present suitable nesting platforms but does host potential suitable roosting platforms within the roof joists, although these are inaccessible when the barn doors are shut. No direct evidence of the presence or historical presence of barn owl within the building was observed. 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, evidence of historical nesting was observed within the internal timber frame of B1, particularly within voids in the rafters, between the timber clad ceiling and the corrugated asbestos roof. The character of these nests likely attributes them to Eurasian wren (*Troglodytes troglodytes*) or European robin (*Erithacus rubecula*). Small areas of historical staining were identified across the roof joists, also likely attributable to small passerine birds. In addition, a nest cup, likely attributable to swallow (*Hirundo rustica*) was identified atop a door frame within B2. As such, both buildings contain suitable nesting platforms for a range of breeding passerine birds during the nesting bird season of March – August inclusive.

6.5 Other Terrestrial Mammals

Badger & hedgehog

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. While habitats with limited potential suitability for this species are present within the extending environment, and the habitats onsite are largely unsuitable for this species. Given the site's location and character, impacts to this species can likely be conclusively ruled out.

6.5.2 Whilst no direct evidence of hedgehog was identified, the site habitats provide potentially suitable refuge within the hedge boundary, underneath B2 and within piled construction materials present to the north and south of B2. Further, the grassland on site likely provides some suitable foraging habitat for hedgehog. 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, three standing waterbodies were identified within a 250m radius of the site boundary. Connectivity between these ponds and the site was deemed to be limited, with the expansive agricultural land offering little suitable foraging or refuge opportunities and little in the way of linking commuting features. Furthermore, the site lies outside of the DataMapWales layer 'Potential Habitat for Great Crested Newt'.

6.6.3 No standing waterbodies were identified within the site boundary during the site visit.

6.6.4 The identified ponds (P1-3) outside of the site boundary were found to be outside of the ownership of the client and therefore permission was not granted to access the ponds to conduct an amphibian Habitat Suitability Index (HSI) during the PEA.

6.6.5 In a terrestrial contextual assessment, the site provides very limited suitable terrestrial habitat for GCN. The small patches of bramble scrub and boundary hedge may offer some suitable refuge opportunities, whilst the modified grassland is sparse and cropped short by sheep grazing, therefore presenting a poor-quality foraging resource. Two small areas of piled building materials, timbers etc are present to the north and south of B2, both of which may provide some refuge opportunities for GCN. Given the scope of the proposals, the limited suitable dispersal habitat in the surrounding area and the low-quality opportunities presented by the on-site habitats, impacts to GCN by the proposals are considered unlikely.

Wider amphibians

6.6.6 Whilst the terrestrial habitat both on site and in the surrounding area is of generally low value for generalist amphibians, the presence of a pond network in the extended environment along with commuting features such as hedgerows, it is considered that generalist amphibians may occasionally access the site and could find limited suitable refuge features within the hedges and piled materials. Their presence is considered possible, although unlikely.

Reptiles

6.6.7 Considering the largely homogenous arable nature of the surrounding landscape and the low quality opportunities presented by the on-site habitats, it is considered unlikely that reptiles are present on the site.

6.7 Invertebrates

6.7.1 The habitats onsite are considered highly unlikely to support a locally notable invertebrate assemblage.

7.0 Conclusions & Recommendations

Designated sites

7.1 Based on the information available on MAGiC Maps, the site is not located within any statutory designated sites.

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 is categorised as pertaining to a bat roost suitability of '**Low**', in accordance with Bat Conservation Trust – Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th ed. (2023) (see **Figure 7.1** overleaf).

7.8 It is recommended that a **single dusk / emergence survey** is in relation to B1 and that this survey is conducted during the active season of bats (May – August), 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. It is estimated that a total of two surveyors will be required to cover all aspects host to roost potential.

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 is categorised as pertaining to a bat roost suitability of '**Negligible**', in accordance with Bat Conservation Trust – Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th ed. (2023) (see **Figure 7.1** overleaf).

7.10 No further dusk/emergence surveys are recommended in relation to B2, however, a pre-commencement check for bats and breeding birds will be required alongside Ecological Clerk of Work supervision during the dismantling of the roof of B2.

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.

Figure 7.1 – *BCT extract on 'Negligible and Low' suitability criteria*

7.11 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, outside of the supervision of the ECOW, 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 7.2** overleaf for indicative evidence of bats.



Figure 7.2 – *Evidence of bats – droppings on the left / a common pipistrelle bat on the right – indicative*

7.12 During the GLTA, each of the trees 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 7.3**). No further surveys are necessary in relation to the trees.

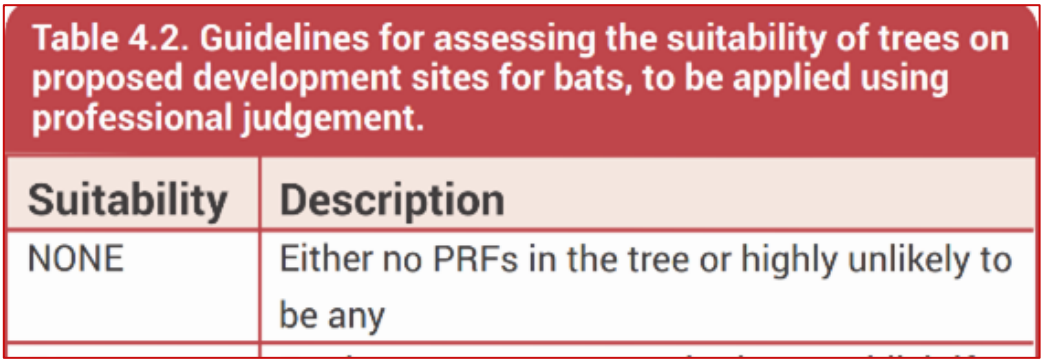


Table 4.2. Guidelines for assessing the suitability of trees on proposed development sites for bats, to be applied using professional judgement.

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

Figure 7.3 – *BCT extract on tree roost suitability criteria*

7.13 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, particularly including any retained woodland, hedgerows and tree line. 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

7.14 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.

7.15 Regarding wider breeding bird species, evidence of historic nesting activity was found within both B1 and B2. Additionally, viable nesting platforms exist within the trees and hedgerow which likely provide suitable nesting locations within the nesting bird season of March – August, inclusive.

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.*

7.16 Any vegetation clearance 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 should be checked by a professional Ecologist for nesting birds within 48 hours or less prior to works commencing.

7.17 Any roof works or works to seal B1 or demolition works to B2 should also be carried out outside of the breeding bird season. For works within the breeding bird season, any areas that can support nesting birds 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.*"

7.18 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

Badger & hedgehog

7.19 The results of the desktop and field study indicate that impacts to badger by the proposals can be conclusively ruled out; no further recommendations are necessary.

7.20 The presence of hedgehog onsite however, 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 great crested newt (GCN), the results of both the desktop and field study suggest that risks of this species being present within the application site are unlikely but cannot be conclusively ruled out.

7.22 Furthermore, given the presence of a pond network within the extended environment but also considering the low-value terrestrial habitat in proximity to the site, the presence of generalist amphibians onsite is considered possible.

7.23 To prevent impacting upon local populations of common frog and common toad it is recommended RAMs outlined previous for mammals are extended to include such species and, on a purely precautionary basis, GCN.

7.24 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.

7.25 Impacts to reptiles are also considered negligible, given the site's disconnect from any potentially suitable habitats.

Invertebrates

7.26 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 native hedgerow and associated trees. As landscaping proposals have not yet been received, it is unknown how much of the site is proposed to be cleared to facilitate development/landscaping.

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 native hedgerow and associated trees. 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.

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**.

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Appendix I: Site Photographs



Plate 1 – *The southern aspect of B1*



Plate 2 – *The western gable of B1 and adjacent g4 grassland.*



Plate 3 – *A further view of the western aspect of B1*

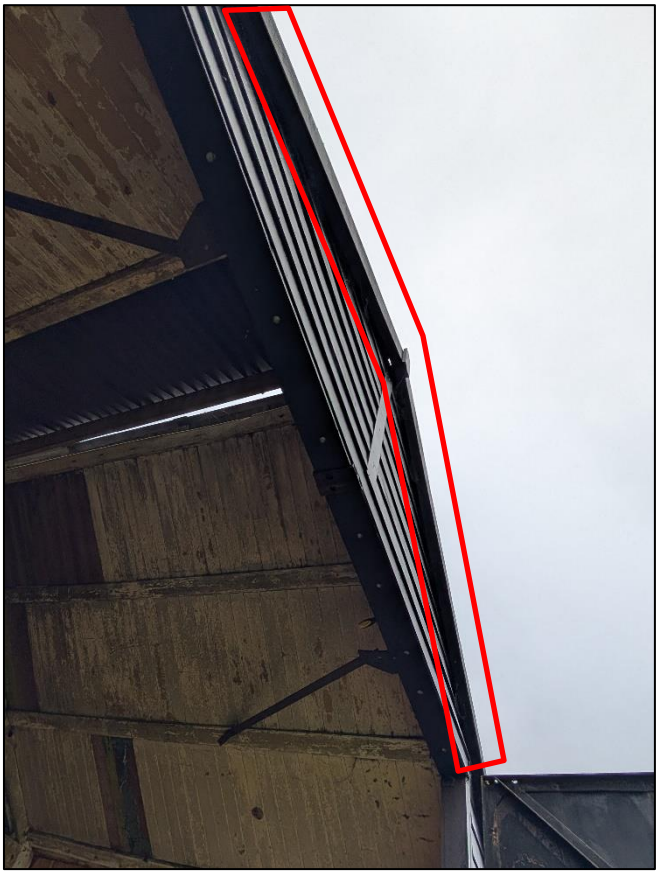


Plate 4 – *A PRF behind the barge board on the western orientation of B1*



Plate 5 – *An internal view of B1*



Plate 6 – *Further view of B1*



Plate 7 –*Character of the timber clad ceiling of B1, containing various minor PRF's*



Plate 8 – *Historic bird nesting evidence within the ceiling of B1*



Plate 9 – *External character of B2, evidencing missing roof sheets and poor general condition.*



Plate 10 – *Further external character of B2, evidencing the poor general condition.*



Plate 11 – *Piled timber and materials adjacent to B2 which may provide refuge for GCN.*



Plate 12 – *Damage to the floor of B2 which rendered the building unsafe for further access,*



Plate 13 – *Internal character of B2, exhibiting the nest cup.*



Plate 14 – *Four small Scots pine within the hedge on the south-western boundary.*



Plate 15 – *'Other Native hedgerow' along the southern and western boundaries.*



Plate 16 – *G4 grassland with areas of bare ground present in the western portion of the site.*

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	Alder	*Alnus glutinosa*
	Bramble	*Rubus fruticosus* **agg.**
	Broad-leaved dock	*Rumex obtusifolius*
	Cock's-foot	*Dactylis glomerata*
	Common chickweed	*Stellaria media*
	Common ivy	*Hedera helix*
	Common nettle	*Urtica dioica*
	Common vetch	*Vicia sativa*
	Creeping buttercup	*Ranunculus repens*
	Creeping thistle	*Cirsium arvense*
	Curled dock	*Rumex crispus*
	Cypress	*Cupressus spp.*
	Dandelion	*Taraxacum officinalle* **agg.**
	Elder	*Sambucus nigra*
	Germander speedwell	*Veronica chamaedrys*
	Ground-ivy	*Glechoma hederacea*
	Hawthorn	*Crataegus monogyna*
	Hazel	*Corylus avellana*
	Hedge woundwort	*Stachys sylvatica*
	Herb-Robert	*Geranium robertianum*
	Holly	*Ilex aquifolium*
	Perennial rye-grass	*Lolium perenne*
	Pineappleweed	*Matricaria discoidea*
	Rough meadow-grass	*Poa trivialis*
	Scots pine	*Pinus sylvestris*

Appendix III: Biodiversity Enhancement: General Recommendations

Bats

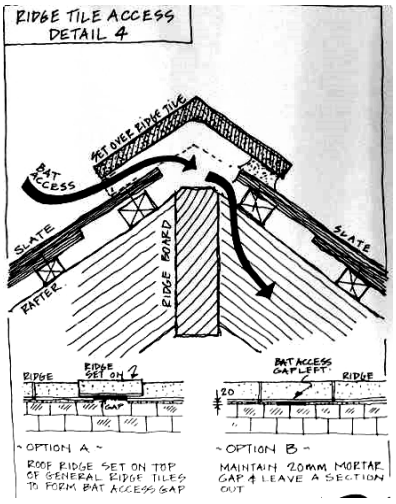
Integrated bat box

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



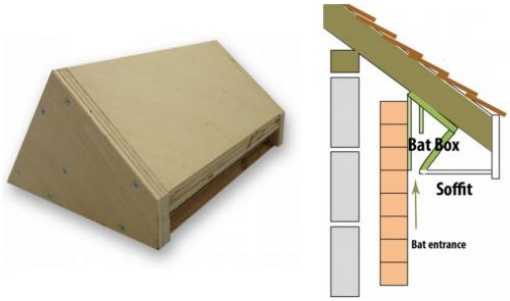
Ridge access

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



Soffit access

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



Externally fitted boxes

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



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 – 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:

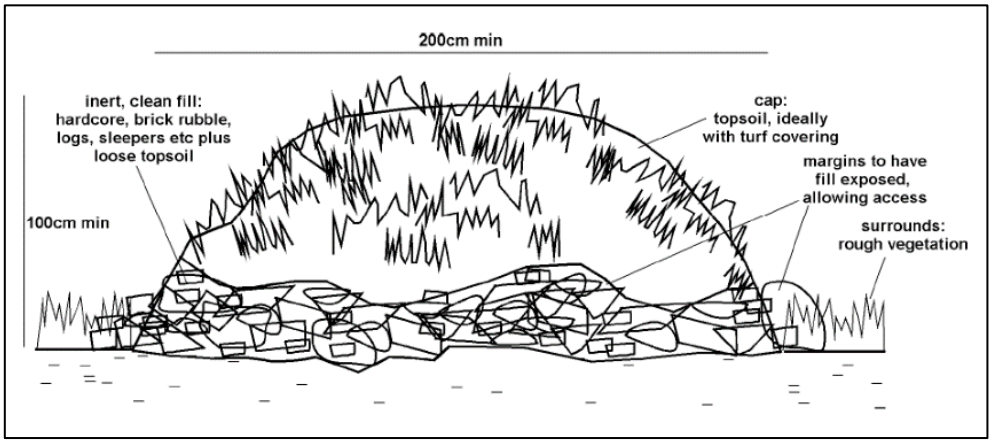
- In a sunny spot, dig a hole about 50cm deep and 1.5 metres across.

- 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

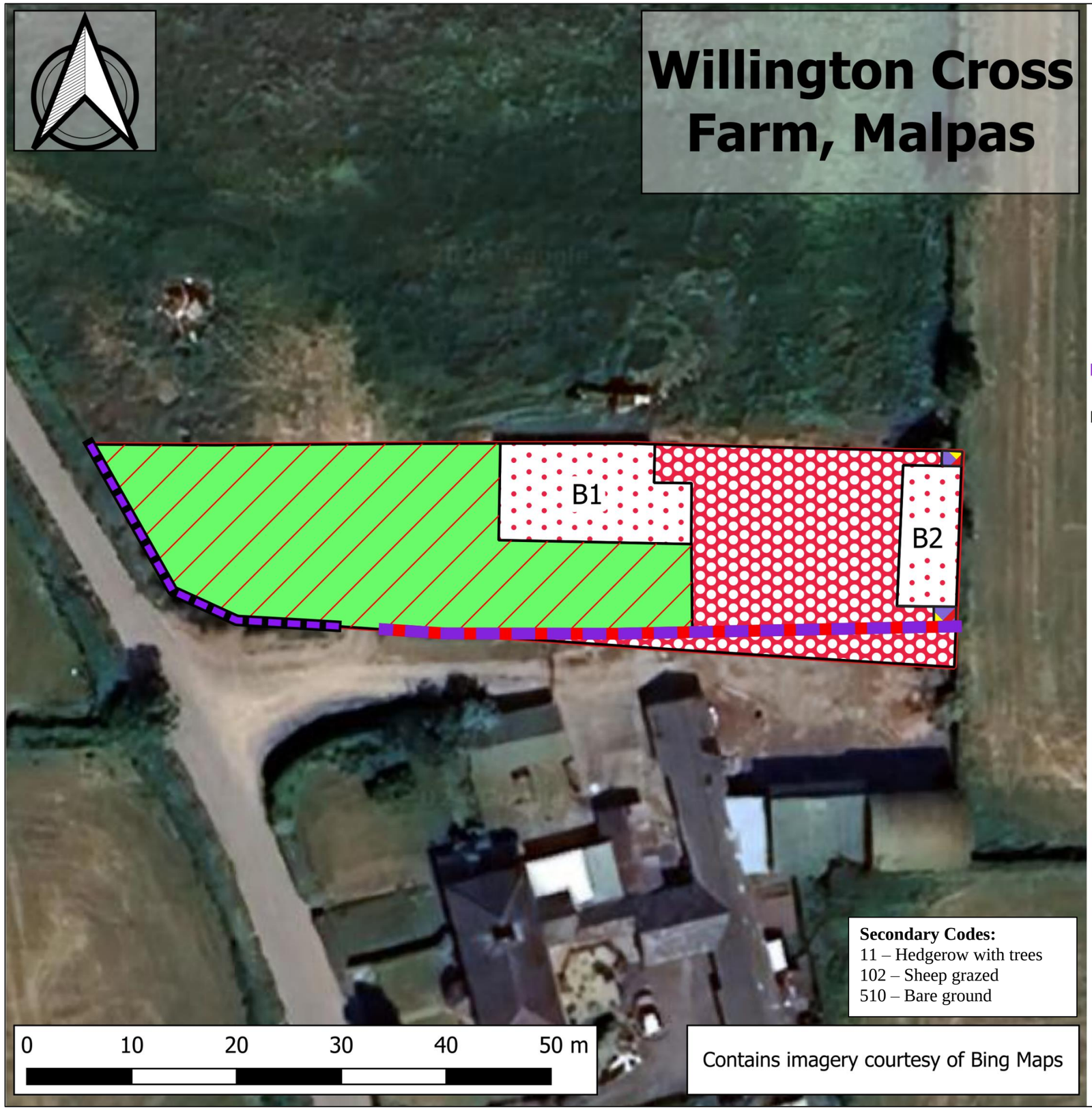
* Material: Concrete
* Dimensions: W 215mm x D 105mm x H 65mm
* Weight: 2.9kg
* Colours: White grey, yellow, dark grey and red

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	*Vibernum 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



Tyrer Ecological Consultants Ltd
Specialists in Protected Species

UK Habitats Key

- Redline boundary
- h2b - Non-native and ornamental hedgerow
- h2a6 - Other native hedgerow
- g4 - Modified grassland
- h3d - Bramble scrub
- u1b5 - Buildings
- u1c - Artificial unvegetated, unsealed surface

Survey Date: 07/11/2024
Drawn: Mr. J. Hark
Date Drawn: 07/01/2025
Checked & Approved: Mrs. K. Wilding
Size: A3
Scale: 1:300
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