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Preliminary Ecological Appraisal

November 2025

Project Reference: PR-25-0327

Land to North of Croesfoel Court

Croesfoel Court
Wrexham
LL14 4BJ

National Grid Reference: SJ 3086 4831



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Executive Summary

As part of a retrospective planning application (P/2025/0536) with Wrexham Country Borough Council concerning land to the north of Croesfoel Court, Wrexham, Tyrer Ecological Consultants carried out a Preliminary Ecological Appraisal (PEA) in October 2025.

The PEA was commissioned by MAT Design Limited; proposals are understood to involve the retrospective change of use of land to a 4 pitch family gypsy and traveller site.

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:

Habitats & Terrestrial Fauna

During the diurnal assessment, it became apparent that the site had been cleared in its entirety. It was found that the site may have previously been host to a mosaic of habitats, capable of supporting a myriad of different species.

A site specific Biodiversity Enhancement Plan (BEP) to provide adequate on site compensation for bats, birds, terrestrial mammals, herpetofauna and invertebrates, and a Habitat Management and Monitoring Plan (HMMP) to compensate for the loss of habitat mosaic, is recommended to be produced in order to suitably compensate for habitat losses and provide mitigation for impacted species by the site clearance. Such plans will also assist in helping the site meet its Green Infrastructure goals.

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1.0 Introduction & Scope

1.1 As part of a retrospective planning application (Reference: P/2025/0536[1]) with Wrexham County Borough Council concerning land to the north of Croesfoel Court, Wrexham, Tyrer Ecological Consultants carried out a Preliminary Ecological Appraisal (PEA) in October 2025.

1.2 The PEA was commissioned by MAT Design Ltd; proposals are understood to involve the retrospective change of use of land to a 4 pitch family gypsy and traveller site. See **Figure 1.1** below for a proposed post-development site plan.



Figure 1.1 – *Proposed post-development site plan (© MAT Design Ltd)*

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.

[1] See: https://register.wrexham.gov.uk/pr/s/detail/a0lSq000001HrqXIAS?c__r=Arcus_BE_Public_Register&language=en_GB&tabset-ff68f=3

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, 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),
- Any accessible ponds located within a 250m radial buffer of the site were subject to the industry standard Habitat Suitability Index (HSI) assessment in relation to great crested newt (*Triturus cristatus*), in accordance with ARG UK Advice Note 5 (2010), where applicable,
- Watercourses were assessed relative to their potential to provide suitable habitat for otter (*Lutra lutra*) and water vole (*Arvicola amphibius*),
- 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 an EPS licence 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 (2019) (EU Exit),
- Countryside Rights of Way (CRoW) Act (2000),
- Natural Environment and Rural Communities (NERC) Act (2006),
- Planning (Wales) Act (2015),
- Planning Policy Wales (PPW) Edition 12 (2024),
- 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
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.

Species Group/Species	Relevant Legislature	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.
Otter	CRoW Act (2000) Conservation of Habitats & Species Regulations (2019) EU Exit) Wildlife and Countryside Act (1981) (as amended)	Otter and their resting areas are afforded full protection from damage/ destruction and otters may not be injured/ killed/ taken at any age. Once identified, holts are protected whether the animal is occupation or not.
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).
Water Vole	CRoW Act (2000) Wildlife and Countryside Act (1981) (as amended)	Water voles are fully protected against intentional killing, capture or injury and intentional or reckless disturbance, obstruction, damage or destruction of their burrows.

Relevant Policy

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 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.

2.13 Policy SP14 Natural Environment of the Wrexham County Borough Local Development Plan 2013-2028 (Adopted December 2023) mirrors these statements within PPW 2024 and goes on to state the following:

"Development will only be permitted where it seeks to protect, conserve and enhance the natural environment including:

- *Special Areas of Conservation, Special Protection Areas, and Ramsar Sites;*
- *Sites of Special Scientific Interest and National Nature Reserves;*
- *Protected Species and their habitat;*
- *The Clwydian Range and Dee Valley Area of Outstanding Natural Beauty*
- *Local Wildlife Sites;*
- *Local Nature Reserves;*
- *Special Landscape Areas;*
- *Natural landscape features and Green Infrastructure such as trees, hedges and woodland which contribute to the quality and diversity of the natural environment and play an important role in mitigating the impact of climate change;*
- *The quality of natural services including water, soundscape, air and soils; and*
- *Habitats and species of principal importance to Wales"*

Priority Habitats & Species

2.14 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 Environment (Wales) Act – Section 7 list, which supersedes the UK Biodiversity Action Plan (UKBAP) and the NERC Act under devolved Welsh governance.

Additional guidance may be drawn from Local Biodiversity Action Plans (LBAP) and other conservation priorities set out by Natural Resources Wales (NRW).

3.0 Methodology

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

Desktop Study

3.2 Prior to a site visit, a desktop study was conducted using online resources to obtain information pertaining to any sites afforded statutory (e.g. SSSI) and non-statutory (e.g. LWS) designations within 2.0 kilometres of the site boundary. To do so, the Multi Agency Geographic Information for the Countryside (MAGiC – provided by DEFRA) and DataMapWales[2] were all accessed to gather such information. These mapping services were also utilised to locate any priority habitats or publicly viewable protected species records, to help further form conclusions in the context of the study site and the proposed development.

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

3.4 Historic satellite imagery was reviewed using sources such as Google Earth (© 2024/25) to help establish past use of the land and determine the nature of adjoining and extending habitats; such information aids in the understanding of how the site might interact with its surroundings ecologically and its value in that context, and how the development may impact at a wider scale.

3.5 In addition, the Wrexham County Borough Council 'View 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 – North Wales Environmental Information Service, 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 28th October 2025 in bright and clear conditions (14ºC), average wind 1/12 (Beaufort scale), average 40% cloud cover, by the following surveyor (see **Table 3.1** overleaf).

[2] See: https://datamap.gov.wales/maps/new#/

Table 3.1 – Site surveyor credentials

Name	Description of most relevant credentials
Mr. T. Lefebure Qualifying CIEEM	• A Junior Ecologist with a range of experience and currently undergoing extensive training, • MSc in Environmental Assessment and Management, • Accredited agent on the Natural Resources Wales Bat Licence (S093795-1) of Mrs. K. Wilding. • Meets the requirements of CIEEM's Competency Framework Section S (Surveying) to Capable or higher level.

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.7 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*).

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.

Otter

3.22 Survey methodology detailed within published criteria (CIEEM, 2017) and best practice guidelines; '*Monitoring the Otter*' (Chanin, 2003) was followed during the preliminary ecological appraisal and focused on features more likely to be used by otters including bases of large trees, dense vegetation, culverts, confluences of watercourses and / or boulders.

3.23 The preliminary check involved walking accessible areas of Pentrebychan Brook for a distance of up to 250m both up- and downstream, checking for signs of otter including:

- Sightings – confirmed sighting of an otter during the survey,
- Spraint – black, crinkly scent marker, often with fish bones within,
- Paths and slides – distinctive, tube shaped pathways through vegetation,
- Padding – wide, five-toed footprint,
- Anal jelly – jelly-like deposited secretion,
- Castling – a raised area used to spraint upon,
- Feeding remains – discarded fish carcasses or other remains of otter feeding,
- Holts – a hole used by otter for resting,
- Couches – daytime resting places for otter,
- Footprints – otter prints left within substrate such as sand or mud.

3.24 The identification of otter habitat features is determined by a range of factors but for this report are categorised as below:

- Actual – the feature shows clear signs of otter use including well-worn paths, associated spraints and / or footprints, or camera trap imagery showing recorded presence;
- Possible – the feature meets the requirements for otter with known activity in the area and signs of otter in close vicinity to the resting place but no indication the entrance is in use;
- Potential – the feature meets the requirements for otter but no signs of otter in close proximity.

Water Vole

3.25 Any ditches and / or watercourses were assessed relative to their potential to offer suitable habitat for water vole, which includes a preliminary search for:

- Sightings – confirmed sighting of a water vole during the survey,
- Latrines – collections of droppings,
- Burrows – holes along the water's edge and in the bank above,
- Footprints – forefoot and hind foot,
- Pathways in vegetation – low runs or tunnels pushed through vegetation,
- Feeding remains – piles of chewed lengths of vegetation with 45-degree cuts to the ends,
- Cropped grass around tunnel entrances – grazed vegetation to form a 'lawn' around burrow.

3.26 The methodology and impact assessment for water voles followed guidance within the Water Vole Conservation Handbook, 3rd Edition (Strachan & Moorhouse, 2011) and the Water Vole Mitigation Handbook – The Mammal Society Mitigation Guidance Series (2016).

3.27 The water vole habitat suitability assessment has been designed by Harris et al. (2009). The method grades sites by a simple scoring index with each character scoring 1 if present and 0 if absent. These scores are then applied to habitat categories of: <3: Unsuitable, 3-5: Sub-optimal, >5 Optimal. The criteria are as follows:

- Well-developed (>60%) bank-side and emergent vegetation to provide cover;
- Year-round availability of food sources;
- Suitable refuge areas above extremes in water levels;
- Steep banks suitable for burrowing;
- Permanent open water;
- Presence of berm (ledge at water level);
- Lack of disturbance through poaching, grazing and/or recent management; and
- Nest building opportunities in vegetation above water level.

Herpetofauna

3.28 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). The information gathered would then be used to aid in establishing if more detailed surveys are required.

NB: *English Nature's (now Natural England) Great Crested Newt Mitigation Guidelines (2001) states 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.*

3.29 Whilst the above guidelines are not specific to Wales, the NRW GCN licences for development, infrastructure, or maintenance work Method Statement Template[3] specifically reference these guidelines and thus they are considered applicable in this case.

3.30 Following current best practice a proportionate assessment of the water bodies range within 250m from site has been applied. Where a development is anticipated to affect GCN the search can be extended up to 500m or more.

3.31 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.

[3] See: https://cdn.cyfoethnaturiol.cymru/693700/detailed-scientific-project-method-statement-eng.doc

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

3.32 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*).

3.33 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.
- Grass snake (*Natrix helvetica*) have broadly similar habitat requirements to the above species, but with an increased reliance on wetland habitats where they prey on amphibian species.

3.34 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

3.35 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)

3.36 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.

3.37 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. T. Lefebure.

4.0 Limitations

4.1 This report does not contain a comprehensive list entailing the totality of botanical taxa on site. 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 undertaken outside of the optimum period. However, based upon the habitats identified at the application site, it is considered unlikely that any habitats or species of conservation concern would be missed due to seasonal timing. Survey timing is therefore not considered a limitation.

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

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

4.5 The survey was conducted outside of the optimal period for water vole surveys (typically April – September); an assessment of habitat suitability for this species can, however, be undertaken year-round and thus this is not considered a constraint.

4.6 During the diurnal assessment, it became apparent that the site had been cleared in its entirety, which limits the scope of the ecological assessment. As the report is intended to support a retrospective application, the works have already been completed or are in progress. Consequently, the absence of on-site habitats and features has limited the ability to fully assess the range of potential ecological impacts based on the previous condition and status of the site. Therefore, this limitation has been taken into account when developing the recommendations and conclusions of the report.

4.7 Pond 1 was not able to be accessed given its location within privately owned land. While this pond has been considered in the assessment, the lack of access is not considered a significant limitation given the identification of a previous assessment that concludes in a likely absent in protected species such as GCN, which strongly reduces any potential impact of the development to protected aquatic species.

4.8 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 the B5098, approximately 3.0km south-west of Wrexham city centre. The site is broadly comprised of areas of unmanaged grassland, with scattered trees, as well as a hedgerow running along the west of the site boundary, with a total area of approximately 0.59 hectares (ha) (see **Figure 5.1** below for location of the site within the surrounding landscape).



Figure 5.1 – *Location of red line and blue line boundary within surrounding landscape © Google Earth Pro 2025*

5.2 The site is located within a peripherally sub-urban area of Wrexham, adjacent to the A483, with land use becoming increasingly industrialised to the east, with a large residential and business estate, and a large expanse of agricultural fields to the west, including small pockets of woodlands and Pentrebychan brook, which flows east to west below the site. To the south-east of the application site can be found Rhostyllen Hill, a former colliery that has since become dominated by woodland habitat, surrounding the spoil tip.

Relevant Planning History

5.3 A search of the council planning portal found no planning applications which pertain to the land to the north of Croesfoel Court within the last 5 years, with the exception of the current planning application. However, multiple applications were returned within the nearby postcode, including the construction of a footpath/cycleway and bridge (**P/2024/1695**[4]). A PEA and aerial tree assessment for bats was conducted by Ecological Design Consultant Ltd in June and September 2025, respectively. The PEA report found evidence of otter within close proximity of a nearby brook and the tree assessment found 1 tree of 37 that required further assessment.

[4] See: https://register.wrexham.gov.uk/pr/s/detail/a0lSq000000miDFIAY?c__r=Arcus_BE_Public_Register&language=en_GB&tabset-ff68f=3

Designated Sites

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

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

Site name	Designation type	Interest features
Johnstown Newt Sites (0.9km south)	Special Area of Conservation (SAC)	Natural Resources Wales site management plan[5] states that: "The site is recognised for its exceptional population of Great Crested Newts current management focuses on improving the habitat for newts."
Stryt Las a'r Hafod (0.9km south)	Site of Special Scientific Interest (SSSI)	The Natural Resources Wales citation[6] states: "Stryt Las a'r Hafod is a composite site located close to the village of Johnstown, south-west of Wrexham, at an altitude of 130m. It is of special interest for its amphibians. Of particular interest is the population of the great crested newt Triturus cristatus. This species has suffered a marked decline throughout Great Britain and Continental Europe as a result of habitat loss. Great Britain is considered to be one of the strongholds for this species in western Europe."

5.5 Given the degree of spatial separation between the application sites and the designated sites listed previously, in combination with the fact that the proposals are retrospective in nature, it is considered highly unlikely that the ongoing works pose a risk of impact. No further consultation with NRW is likely to be required in relation to statutory designated sites.

Habitats

5.6 An online search of DataMapWales identified the following Section 7 Terrestrial Habitats of Principal Importance within a 2.0km search radius (see **Table 5.2** below).

Table 5.2 – Priority habitats located within 2.0km buffer

Habitat Type	Designation
Lowland Fens and Reedbeds	NRW Priority Habitat
Traditional Orchards	NRW Priority Habitat
Wood Pasture and Parkland	NRW Priority Habitat

[5] See: https://www.naturalresources.wales/media/672594/Johnstown%20Newt%20Site%20Management%20Plan%20April%202008%20_English_.pdf
[6] See: https://naturalresources.wales/media/663230/SSSI_1376_Citation_EN001202e.pdf

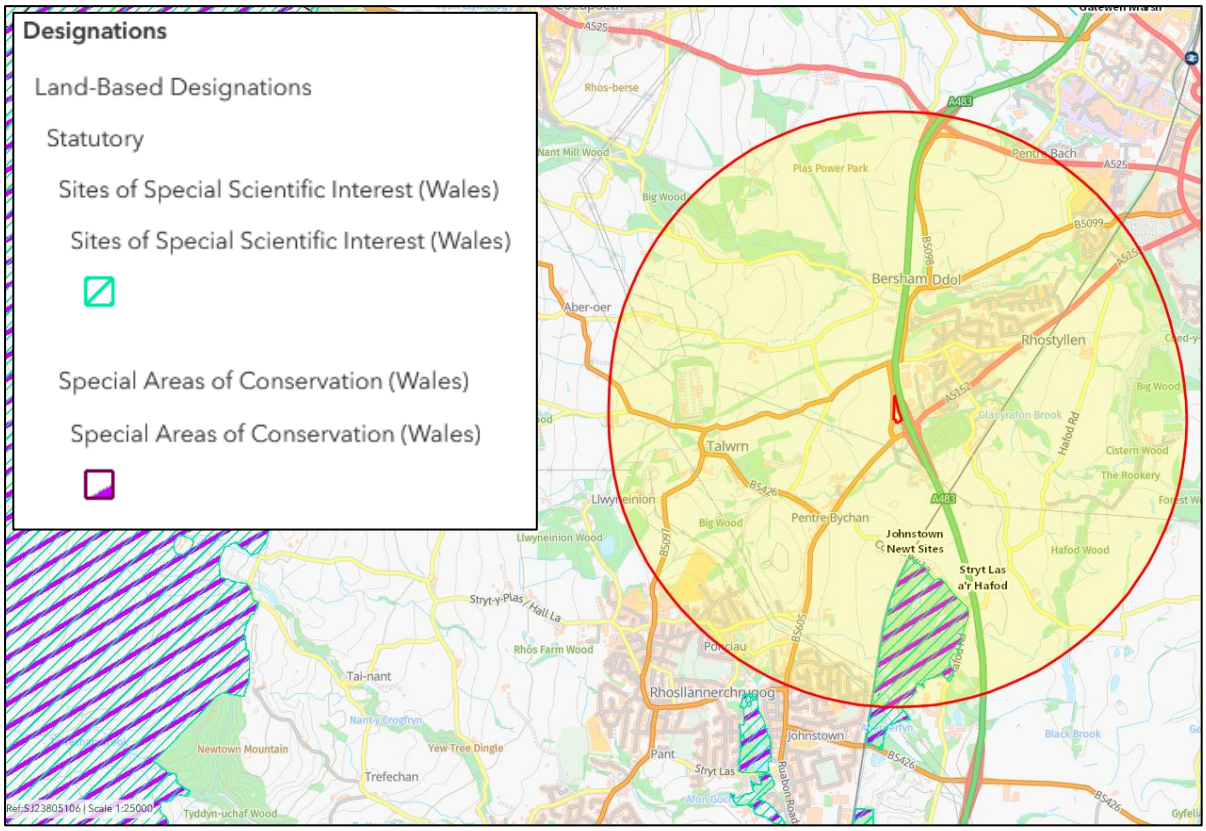


Figure 5.2 – *Designated site data for the area within 2.0km of application site © MAGiC Maps 2025*

Bats

5.7 Tyrer Ecological Consultants Ltd have a range of previous and ongoing projects involving bats within the 2.0km area surrounding the site – as such, the following biological data (see **Table 5.3** below) 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 5.3 – LERC submitted biological data records collected by Tyrer Ecological Consultants Ltd

Year	Distance from site	Context (where relevant)
2019	1.7km east	Soprano pipistrelle day roost
2019	1.9km east	Transect Surveys conducted between April and October. 9 bat species recorded during that period.

5.8 The application site is located directly adjacent to the west of the A483, a busy road that carries a substantial amount of traffic through the region, impacting on the foraging and commuting suitability for bat species and disrupting the connectivity of the region between the east and west. That being said, there are some notable features within close proximity of the site that would provide good quality foraging and commuting, including the riparian corridor of the Pentrebychan Brook found to the south, especially for Daubenton's bat (*Myotis daubentonii*), which specialises in foraging over water. There is further evidence of suitable habitat that could support a myriad of bat species, notably around Rhostyllen Hill where a large area of woodland has developed since colliery works has ceased. It is considered that a range of bat species could be supported by these habitats, but that the two species most likely to exist within proximity to the site are the brown-long eared (*Plecotus auritus*) and common pipistrelle (*Pipistrellus pipistrellus*), both of which are also likely to utilise nearby dwellings, where possible.

Birds

5.9 The location of the site, within a mosaic of expansive, open agricultural land and within close proximity to Pentrebychan Brook, Rhostyllen Hill and further urban areas indicates a range of habitats which could support a variety of different bird species associated with watercourses, such as grey wagtail (*Motacilla cinerea*) and dipper (*Cinclus cinclus*) and with agricultural land, including raptors such as barn owl (*Tyto alba*) and ground nesting species such as curlew (*Numenius arquata*) and lapwing (*Vanellus vanellus*). Several species well-adapted to urban and woodland environments are also likely to utilise the site and surrounding areas including blackbird (*Turdus merula*), goldfinch (*Cardeulis cardeulis*) and chiff chaff (*Phylloscopus collybita*). The combination of riverine and agricultural landscapes surrounding the site likely support a high diversity of bird species.

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

Other Terrestrial Mammals

5.11 Given the semi-rural location and prevalence of both woodland parcels and agricultural land within the immediate landscape, it is considered likely that badger and hedgehog are present within the locality and may occasionally utilise the site.

5.12 Given the proximity of the site to Pentrebychan Brook, and the presence of riparian woodlands and agricultural grasslands within the area, it is considered possible that otter and water vole are occasionally present within the locality. Although no waterbodies were found on the application site, it is considered possible that otter could occasionally access the site itself as a terrestrial resource (See **Figure 5.3** overleaf).

Herpetofauna

5.13 Based on the desktop assessment, a single waterbody is present within 250m of the application site, specifically from 155m west of the site boundary (See **Figure 5.3** overleaf). There is no identified 'Potential Habitat for Great Crested Newts' within 250m based on the 'Potential Habitat for Great Crested Newts' DataMapWales layer, with the closest identified areas located approximately 550m south-west. Additionally, it was identified that the site is located within proximity to the A483 as well as the Pentrebychan Brook, both of which likely forms a barrier to dispersal.

5.14 Based on the absence of a waterbody within the application site and the potential barriers to dispersal in the form of the brook to the south of the site and the roads to the south, east and west, coupled with the poor terrestrial area being made-up of arable land, it is considered unlikely that great crested newt could be present in proximity to the site. That being said, opportunities for generalist amphibians are likely to exist within nearby waterbodies, woodlands and grasslands and are considered likely to be present.

5.15 The mosaic of agricultural grazing grassland, small woodland blocks, riparian woodlands and small domestic dwellings provides a limited level of suitable habitat for reptiles.

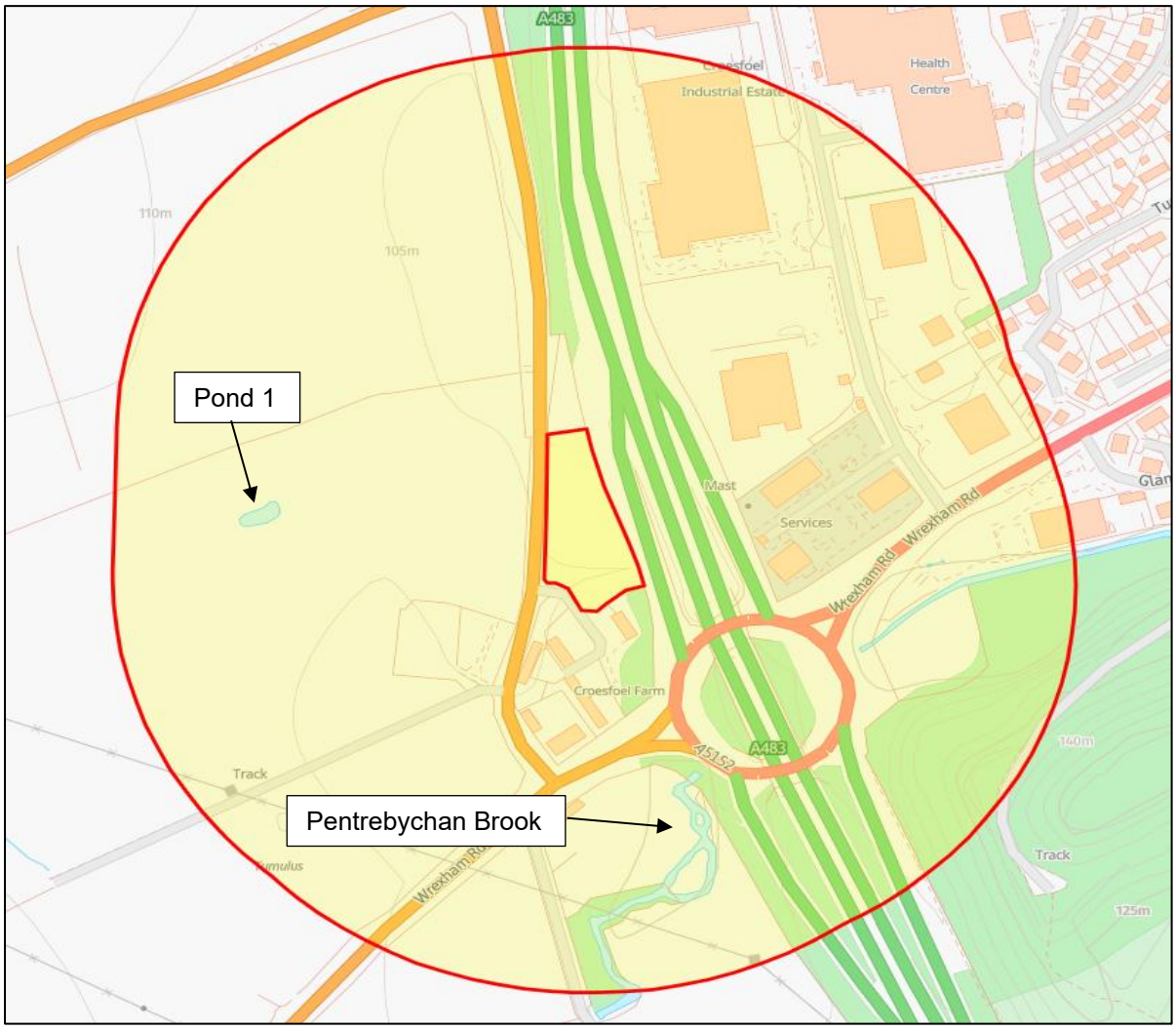


Figure 5.3 – *Location of ponds and watercourses within 250m of the site boundary (adapted from: MAGiC Maps 2025)*

Invertebrates

5.16 It is unlikely that the application site has comparable value for invertebrate species, with the surrounding area being formed of arable land to the west and urban land to the east. There is potential for some invertebrate diversity within the parcels of woodland along the riparian habitat adjacent to Pentrebychan brook, though unlikely to host nationally significant species with these areas. Moreover, with the site itself is formed predominantly of less-suitable, semi-natural habitat and does not form a continuity link and therefore is 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. Refer to **Appendix III** – 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
u1b6 Other developed land	-	No vegetation is present within the site boundary, with the site entirely comprised of a compounded, gravel surface. Using both historical satellite and street-view imagery it appears that, prior to site clearance, the site consisted of unmanaged grassland, with areas of bramble scrub to the south-east. Based on historic imagery, here were several trees along the eastern boundary that have since been removed. It is also possible that some spaces may have held water with ephemeral pools forming during wetter periods and street-view imagery shows several rubble piles with vegetation growth distributed across the site. Whilst an exact assessment of the on-site habitats cannot be made, it is clear that a mosaic of habitats existed prior to clearance.
Linear habitat	**Sec. Codes**	**Description**
h2a6 (H1) Other native hedgerow	-	A hedgerow bounding parallel to the north-west of the application site. Woody species consist of hawthorn (*Crataegus monogyna*), common & Atlantic ivy (*Hedera helix*) and hazel (*Corylus avellana*) whilst ground flora was largely dominated by common nettle (*Urtica dioica*) and bramble (*Rubus fruticosus*).
h2a6 (H2) Other native hedgerow	-	A hedgerow running parallel to the south-west of the application site. Woody species include dominant holly (*Ilex aquifolium*), hawthorn, common & Atlantic ivy and sycamore (*Acer pseudoplatanus*), with ground flora consisting of garlic mustard (*Alliaria petiolata*), white ramping-fumitory (*Fumaria capreolata*), Yorkshire-fog (*Holcus lanatus*) and bramble.

6.1.2 The 'Other native hedgerow' habitats present along the western site boundary of the site fits the description of the section 7 priority habitat (Hedgerow) which states:

"A hedgerow is defined as any boundary line of trees or shrubs over 20m long and less than 5m wide, and where any gaps between the trees or shrub species are less that 20m wide (Bickmore, 2002). Any bank, wall, ditch or tree within 2m of the centre of the hedgerow is considered to be part of the hedgerow habitat, as is the herbaceous vegetation within 2m of the centre of the hedgerow. All hedgerows consisting predominantly (i.e. 80% or more cover) of at least one woody UK native species are covered by this priority habitat, where each UK country can define the list of woody species native to their respective country. Climbers such as honeysuckle and bramble are recognised as integral to many hedgerows, however they require other woody plants to be present to form a distinct woody boundary feature, as such

they are not included in the definition of woody species. The definition is limited to boundary lines of trees or shrubs, and excludes banks or walls without woody shrubs on top of them."

6.1.3 Based upon the above, prior to clearance, the site may have been considered locally notable for its green infrastructure, given the mosaic of habitats present. However, in its current state, the site is not considered locally notable for its green infrastructure, with the site being cleared to bare ground. Key green infrastructure present on site is therefore considered to be the native hedgerow priority habitat.

6.1.4 Additionally, land within the blue line boundary was also assessed. This land was also found to be cleared, with three individual trees present in the form of sycamore (*Acer pseudoplatanus*), pedunculate oak (*Quercus robur*) and beech (*Fagus sylvatica*). A hedgerow was also present along the western boundary, similar to that of **H1** identified within the red line boundary, with a similar species composition.

6.2 Vegetation

Notable species

6.2.1 Prior to site clearance, it is possible that species of conservation importance existed within the perimeter of the site, given the mosaic of habitats within the space. However, during the survey of the site, no species of conservation importance were located anywhere within the site during the appraisal.

Invasive non-native species (INNS)

6.2.2 It is possible that INNS were present within the site boundary given the likely historic disturbance of the site due the urban nature of the area and the unmanaged nature of the grassland prior to clearance. However, No INNS were identified on site by the surveyors during the appraisal.

6.3 Bats

Buildings

6.3.1 Based on historic imagery, no evidence of buildings or other structures have previously existed on the application site. Six structures were present within the site boundary during the site visit. However, due to the nature of the retrospective application, it is accepted, based from the plans, that these structures have been installed as part of the application. As a result, it is fair that these buildings will not be impacted. See **Appendix III** for the locations of these buildings in relation to the site boundary.

Trees

6.3.2 Prior to clearance, historic satellite imagery suggests that several trees were present within the red line boundary, particularly along the eastern boundary where eight trees can be seen within close proximity of each other. No trees were present within the red line boundary of the site due to the site being cleared prior to the site visit.

Habitat

6.3.3 From a habitat suitability assessment in relation to bat activity, prior to works, the site would likely hold moderate value for bats, with the individual trees providing potential commuting and foraging habitat whilst also linking the substantial tree lines present to both the north and south of the application site as well as helping link to the nearby riparian and woodland habitats. Moreover, the mosaic habitat within the boundary and the grassland may have also provided

good foraging habitat. In turn, prior to clearance, the presence of bats within the site boundary on a foraging and commuting basis is considered possible. With the site now cleared, the habitats onsite are likely of low value for bats, with the ground mostly cleared to bare earth and only the hedgerow present when conducting the site visit due to the retrospective nature of this report.

6.4 Birds

6.4.1 In relation to WCA Schedule 1 specially protected bird species such as barn owl (*Tyto alba*) the site provides no suitable nesting platforms, direct evidence, or evidence of historic nesting due to site clearance. That being said, prior to clearance, it is considered possible that the site would be utilised by barn owl due to its good links to open agricultural land to the west which may be utilised by the species for hunting and also for resting, with several trees found in the area prior to site clearance.

6.4.2 In relation to more common bird species, the application site is not likely to attract large numbers of birds due to its remediated status. However, it is likely that several species continue to make use of the hedgerow that runs parallel to the west of the site boundary. Given the semi-urban nature of the site, this could include common garden bird species such as robin (*Erithacus rubecula*), wren (*Troglodytes troglodytes*) and blackbird (*Turdus merula*). Prior to site clearance, it is likely that the site attracted a variety of different species that made use of the grassland, individual trees, and hedgerows to commute, forage and nest.

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 potential suitability for this species are present within the extending environment, they are largely disconnected from the site and the habitats onsite are largely considered generally unsuitable for this species; given the clearance of the site, impacts to this species can likely be conclusively ruled out. Prior to site clearance, it is possible that badger may have used the site for commuting purposes, with woodland further to the east and developed tree-lines to the north and south providing good habitat. However, it is unlikely that badger now utilise the site.

6.5.2 Similarly, no direct evidence of hedgehog was identified, with the cleared condition of the site providing little suitable refuge for the species, with exception of the hedgerow to the west of the site. Prior to clearance, it is likely that the site habitats provided good shelter for hedgehogs and it is still possible that their occasional presence within the site is possible.

Otter and water vole

6.5.3 While Pentrebychan Brook lies approximately 150m to the south of the application site and could feasibly support otter in particular, given the prevalence of preferable habitat around the riparian zone and the woodland found in Rhostyllen Hill, in conjunction with a road dividing the site to the brook, creating substantial connectivity restrictions, the presence of otter or water vole within the site boundary is very unlikely. Prior to clearance, the site may have provided some hunting opportunity. However, given the severe connectivity issues from the brook to the site as well as preferred habitat being located along the riparian area of the brook, it is unlikely otter access the site. Additionally, as the site has been recently cleared to bare ground, it is unlikely that either species would utilise the site.

6.5.4 During the diurnal assessment of the site, no direct evidence of the presence of otter and/or water vole within the immediate vicinity of the survey area was found.

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, a single standing waterbody (P1) has been identified within 250m of the site boundary, located approximately 150m to the west of the application site boundary. Access to the identified waterbody was not possible due to its location within private land, due to the ponds location within an area of farmed land and a road crossing between the two areas. In addition, there is an absence of strong connectivity from the site to the identified pond; the environment beyond the pond extends into a road and open agricultural grassland, which both may serve as a dispersal barrier due to the homogenous nature of the habitat, which offers limited protective cover and habitat connectivity for GCN.

6.6.3 From a terrestrial contextual assessment, the site is considered to be broadly unsuitable in supporting the terrestrial phase of this species. Prior to site clearance, there is evidence to suggest that the site provided some terrestrial habitat, with the unmanaged grassland and hedgerows both providing commuting and resting places. However, the poor connectivity to the site, with busy roads and the presence of a brook that divides the southern region of the wider area, makes it unlikely that GCN utilised this site. This assessment is also based on the site now being predominantly encompassed by bare ground and the presence of several structures due to the retrospective nature of this report. Areas of hedgerow along the western boundary of the site do present some foraging habitat alongside refugia; however, the site is surrounded by expansive agricultural land to the west and the aforementioned major roads to the east, increasing disturbance and lack of connectivity between the site and potential suitable habitat further afield.

6.6.4 In summary, the absence of suitable terrestrial habitat on site, lack of connectivity to favourable habitat in the surrounding environment, and high disturbance surroundings suggest that GCN are highly unlikely to utilise the site.

Other amphibians

6.6.5 Despite the clearance of the site, owing to the presence of a single waterbody close to the application site, with Pentrebychan Brook to the south of the site, the presence of wider amphibians within the site is considered possible.

Reptiles

6.6.6 Prior to clearance, the nature of the site may have been well-suited to reptiles, given the possible mosaic of habitats present, particularly with the wide distribution of established rubble-piles. During the site visit, the site was largely absent of any suitability for reptiles, with an absence of suitable ecotones or other terrestrial features. Furthermore, the described

barriers to dispersal within the immediate vicinity of the site also apply to the ability of reptiles to access the site. Impacts to reptiles are therefore considered negligible.

6.7 Invertebrates

6.7.1 Given the possible mosaic of different habitats within the application site prior to clearance, there is some potential that some invertebrate diversity may have existed within the site boundary. However, given the semi-natural conditions of the site it is unlikely the site hosted nationally significant populations of invertebrates. During the site visit, the site was found to be absent of any habitats which are considered likely to support specially protected invertebrates and thus it is considered unlikely that specially protected invertebrate species are present within the site boundary.

7.0 Conclusions & Recommendations

Designated sites

7.1 Two statutory designated sites for nature conservation are present within a 2.0km search radius of the site, namely Johnstown Newt Sites (SAC) and Stryt Las a'r Hafod (SSSI). Given that both these sites are located 0.9km south of the application site, it is considered unlikely that works will impact the designated sites, given the nature and degree of spatial separation.

Habitats

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

7.3 Given that the works have resulted in the clearance of this site, it is recommended that a bespoke biodiversity enhancement plan in relation to lost habitat is produced by a suitably qualified ecologist in order to adequately compensate for the loss of habitats onsite. This could be secured by a suitably worded planning condition. Any landscaping should look to incorporate native species as discussed in **Appendix II**.

Vegetation

7.4 No priority vegetative species were identified on the site by the surveyors during the diurnal appraisal.

7.5 Similar to the above, no INNS listed under either Schedule 9 (Part II) of the Wildlife and Countryside Act (1981) (as amended) or Schedule 2 of The Invasive Alien Species (Enforcement and Permitting) Order 2019 (IASO) were identified on site by the surveyor.

Bats

7.6 Six structures were present within the site boundary during the site visit. However, due to the nature of the retrospective application, it is assumed that these structures have been installed as part of the application and therefore no recommendations in relation to further emergence surveys are considered necessary.

7.7 As bats are a highly transient species group and can use buildings that offer potential roost features at any time of the year, it should be stated that if bats, or evidence of bats (see **Figure 7.1**), is found at any stage during the works then as a legal requirement the work at the site should immediately cease and a bat ecologist be contacted for further advice.

7.8 If bat(s) or their roost will be affected then a Natural Resources Wales Mitigation licence will be required to legally continue with the work. Notwithstanding the granting of a licence, works that would affect a roost cannot take place if a maternity colony is in occupation.

7.9 No trees are present in the red line boundary of the development and therefore, none were assessed in relation to bat roost suitability.

7.10 In order to enhance the sites suitability for bats, and to mitigate for the loss of what previously appears to have been a Moderate value foraging and commuting resource, the development scheme should consider enhancement for bats as part of its biodiversity goals, in accordance with local and national planning policy. See **Appendix II** for suitable enhancement measures.



Figure 7.1 – *Bat droppings (left) and pipistrelle bat (right)*

7.11 Installation of overly harsh artificial lighting as part of any development that exceeds current levels may have a negative impact upon foraging / commuting bats in the landscape, subject to their presence, particularly if increased light spillage occurs in areas that are currently free from illumination. A bat-sensitive lighting plan is therefore recommended in order to avoid potential impacts to bats, to be produced in conjunction with the aforementioned enhancement plan. Several options to consider have been listed below, though the reader is referred to the Bat Conservation Trust's 'Bats and Artificial Lighting at Night' guidelines (August 2023) for further information.

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

7.12 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.

7.13 In relation to other bird species, the hedgerows to the west of the application site were found to be suitable to host a variety of smaller species for foraging, commuting and nesting purposes. No other vegetation is present within the red line boundary.

7.14 Given that the works have resulted in the clearance of this site and the likely loss of a variety of bird breeding platforms, it is recommended that a bespoke biodiversity enhancement plan in relation to birds is produced by a suitably qualified ecologist in order to adequately compensate for the loss of nesting habitats onsite. This would also help the proposals meet local biodiversity goals; appropriate nesting boxes suitable for an array of bird species are provided within **Appendix II**.

Other terrestrial mammals

Badger & hedgehog

7.15 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 for this species. There is still the possibility that hedgehog access the site for commuting purposes and, in turn, enhancements in the form of hedgehog homes and gates to allow for safe passage through the site. The aforementioned biodiversity enhancement plan should include details to compensate for the loss of suitable habitat for hedgehog.

Otter and water vole

7.16 The presence of otter in the extended environment is considered plausible, however, given that the site has been cleared to bare ground, with preferable habitat around the riparian zone and the woodland found in Rhostyllen Hill and connectivity issues to the site, it is considered unlikely that the development will result in any impact towards the species.

7.17 The site was assessed as offering unsuitable habitat for water vole with no evidence or likelihood of usage identified by the surveyor; thus, no further recommendations apply.

Herpetofauna

7.18 The results of the desk and field study suggest that the presence of GCN within the application, or impacts from the development, are highly unlikely due to the absence of suitable on-site habitats and lack of connectivity between the site and potential suitable habitat further afield. No further recommendations apply.

7.19 Given their more robust nature, the presence of generalist amphibians onsite is considered possible.

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

7.21 Prior to clearance, the nature of the site may have been well-suited to reptiles, given the possible mosaic of habitats present, particularly with the wide distribution of established rubble-piles. However, given that the site was cleared it is unlikely that reptiles still inhabit the site. In turn, enhancement works are recommended for both amphibians and reptiles, which should be included within the biodiversity enhancement plan. General recommendations are provided within **Appendix II**.

Invertebrates

7.22 The site is not considered to be locally distinct for this species group, and no specific intervention measures apply. Given the scale of the clearance however, which has reduced the suitability of the site for invertebrates, it is recommended that enhancements in relation to this group are included within the prior mentioned enhancement plan; general recommendations are provided within **Appendix II**.

8.0 Green Infrastructure Statement

8.1 In relation to green infrastructure, the site was subject to clearance activity prior to the attendance date of 28/10/2025, and the baseline key green infrastructure has therefore been determined from a combination of the site visit data and aerial imagery.

8.2 In accordance with the stepwise approach to be adopted by authorities in Wales, it is considered that the scheme has already impacted upon all of the green infrastructure present, with no possibility of minimising the impact or restoring habitats. The next step is therefore to consider how best to compensate for the extensive habitat clearance, with preference given to on-site compensation.

8.3 The key green infrastructure has been identified to consist of ten mature individual broadleaved trees within the site boundaries, a boundary hedgerow and a grassland, potentially attributable for an 'other neutral grassland', given the evidence gathered from satellite imagery which shows very little management in the area for several years. At the time of the site visit, the grassland was identified to have already been predominantly lost and replaced with bare earth, all ten of the mature trees had been felled.

8.4 The post-development plans indicate the intended loss of several trees and a large area of grassland but also include the planting of a substantial number of trees to the north, south and west, with further potential to utilise land available within the blue line boundary. However, the clearance performed at the site up to the time of the site visit does not appear to align with the post development plans, with all the land within the red line and the blue line cleared with the exception of three individual trees in the blue line boundary and the hedgerow that runs along the western boundary of the site. As a result, it is recommended that a Habitat Management & Monitoring Plan (HMMP) is created in conjunction with a biodiversity enhancement plan to ensure that onsite habitat losses can be adequately compensated for. This could be secured via a suitably worded planning condition.

8.5 In addition to the above, various enhancements have been recommended within each of the sub-headings, notably in relation to habitats, bats, birds, hedgehogs and amphibians. The addition of these wildlife friendly provisions (to be incorporated into a site-specific Biodiversity Enhancement Plan) will aid the scheme in meeting both the net benefit for biodiversity and green infrastructure goals.

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Appendix I: Site Photographs



Plate 1 – *General character of the entrance to the site.*



Plate 2 – *Perspective of the cleared nature of the site, note large earth mound created through clearance.*



Plate 3 – *Further evidence of land clearance, including land within the blue line boundary.*



Plate 4 – *Wider image of the site, including current structures present.*



Plate 5 – *Additional perspective of the earth mound created from land clearance of site.*



Plate 6 – *General character of the hedgerow present within the red line boundary.*



Plate 7 – *General character of the hedgerow present within the blue line boundary.*

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 (Flowering Plants)	Bramble	*Rubus fruticosus*
	Common & Atlantic ivy	*Hedera helix*
	Common Nettle	*Urtica dioica*
	Garlic Mustard	*Alliaria petiolata*
	Hawthorn	*Crataegus monogyna*
	Hazel	*Corylus avellana*
	Holly	*Ilex aquifolium*
	Sycamore	*Acer pseudoplatanus*
	White Ramping-fumitory	*Fumaria capreolata*
	Yorkshire-fog	*Holcus lanatus*

Appendix III: Biodiversity Enhancement: General Recommendations

Bats

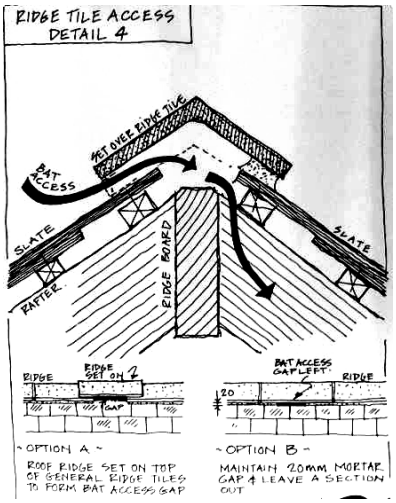
Integrated bat box

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.



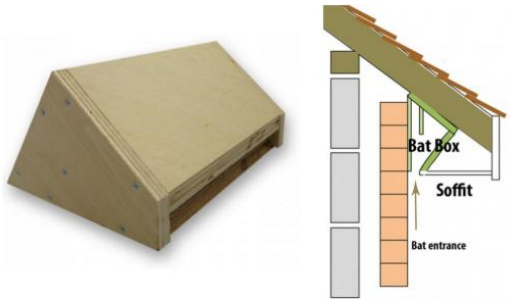
Ridge access

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:

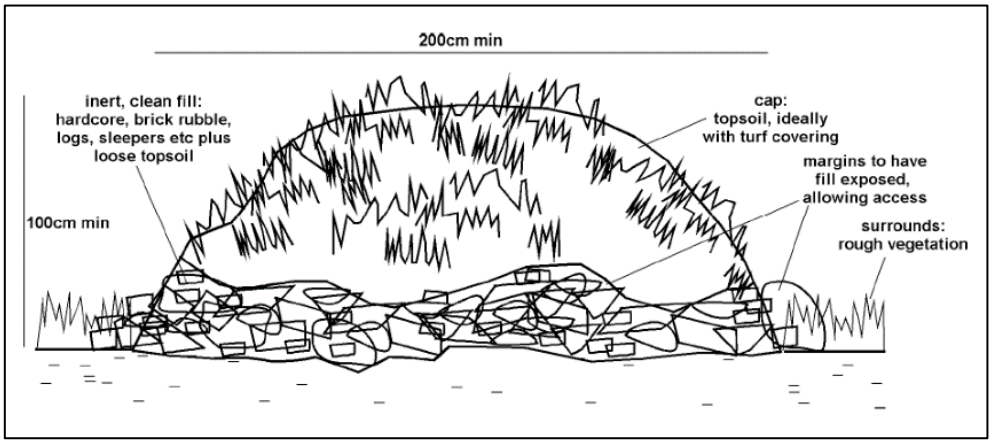
- In a sunny spot, dig a hole about 50cm deep and 1.5 metres across.

- 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

