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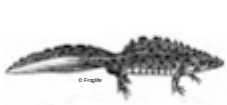
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Preliminary Ecological Appraisal

May 2022

The Poplars,
Cockbank Lane,
Marchwiel,
Wrexham,
LL13 0SU

National Grid Reference: SJ35334609



The Poplars, Cockbank Lane, Marchwiell, Wrexham, LL13 0SU
Preliminary Ecological Appraisal

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Executive Summary

As part of a proposed planning application regarding The Poplars, Marchwiell, Wrexham; a Preliminary Ecological Appraisal (PEA) was undertaken by Tyrer Ecological Consultants Ltd during March 2022, in accordance with the *Guidelines for Preliminary Ecological Appraisal* (CIEEM, 2017) and other best practice guidance. It is understood that proposals entail the redevelopment of the property including a larger driveway and detached garage. This survey and report was commissioned by Blueprint Architectural Ltd.

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

Habitats: The UKBAP priority habitat 'Hedgerows' was recorded along the northern and western site boundaries. *It is recommended that this hedgerow is retained in full; any hedgerow lost should be replaced with native woody species replanting as per section 8.1.*

Bats: Based upon the results of the survey it is concluded that the dwelling, outbuildings OB1 and OB2, and the timber shed are categorised as offering 'Negligible' potential in relation to bats and no further surveys are recommended. Due to the presence of a minor gap between the timber fascia board and the brick work at OB1, and purely as a precautionary measure, it is recommended that the building undergoes supervision during dismantling of these features by a suitably qualified ecological clerk of works (ECoW).

See section 8.5 for further details.

Breeding Birds: During the survey birds were seen carrying nesting material at the site, historic nesting evidence was located within the shrubbery to the west of the site. Thus, the hedgerows, shrubs and trees provide suitable nesting platforms which could be utilized by breeding birds. *Any vegetation clearance or demolition works should therefore be undertaken outside of the breeding birds' season of March-August unless it can be demonstrated by a suitable qualified, professional ecologist that breeding birds are absent beforehand.*

Lapwings were recorded displaying breeding behaviour in the immediately adjacent fields, these are ground nesting birds and therefore subject to disturbance through ground works i.e. the vibrations and excessive noise. *Therefore, it is recommended that a ground nesting bird walkover takes place prior to the commencement works within the adjacent field to ensure no individuals are nesting within a 10m buffer of the site boundary.*

Hedgehog: The site contains habitats suitable for foraging, commuting, and refuge for European Hedgehog. *It is recommended that a Method Statement including details of Reasonable Avoidance Measures (RAMs) is created by a suitably qualified Ecologist/Ecological Clerk of Works to avoid risk of harm to species as outlined in section 8.14 of this report.*

Herptiles: Habitats present within the site boundary are of low value to Great Crested Newt (GCN) and the pond is not considered suitable for breeding by this species; however, due to the presence of an extensive pond network with known GCN records in the wider areas, the occasional presence of this and other more common amphibian species is possible. *A programme of RAMs has been recommended within section 8.18 as a precautionary measure to protect amphibians should they be present within the vicinity. The applicant and all contractors should be aware that in the event that if at any stage GCN are encountered during works, or at any other stage of the work programme, works would be required to immediately cease and an Ecologist made aware as to provide further guidance in this*

situation. In the event that GCN or their refuge/shelter would be directly impacted upon, including disturbance, an EPSML to legally proceed with the development may be required following detailed further presence/absence surveys.

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

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Preliminary Ecological Appraisal

1.0 Introduction & Objectives

- 1.1 As part of a proposed planning application regarding The Poplars, Marchwiel, Wrexham (see Figure 1.1); a Preliminary Ecological Appraisal (PEA) was undertaken by Tyrer Ecological Consultants Ltd during March 2022, in accordance with the *Guidelines for Preliminary Ecological Appraisal* (CIEEM, 2017) and other best practice guidance. It is understood that proposals entail the redevelopment of the property including a larger driveway and detached garage.
- 1.2 Ecological surveys, particularly where a specially protected / noteworthy species is or may be present, are generally required as part of the Local Authority's Planning Policies. This survey and report were commissioned by Blueprint Architectural Ltd.

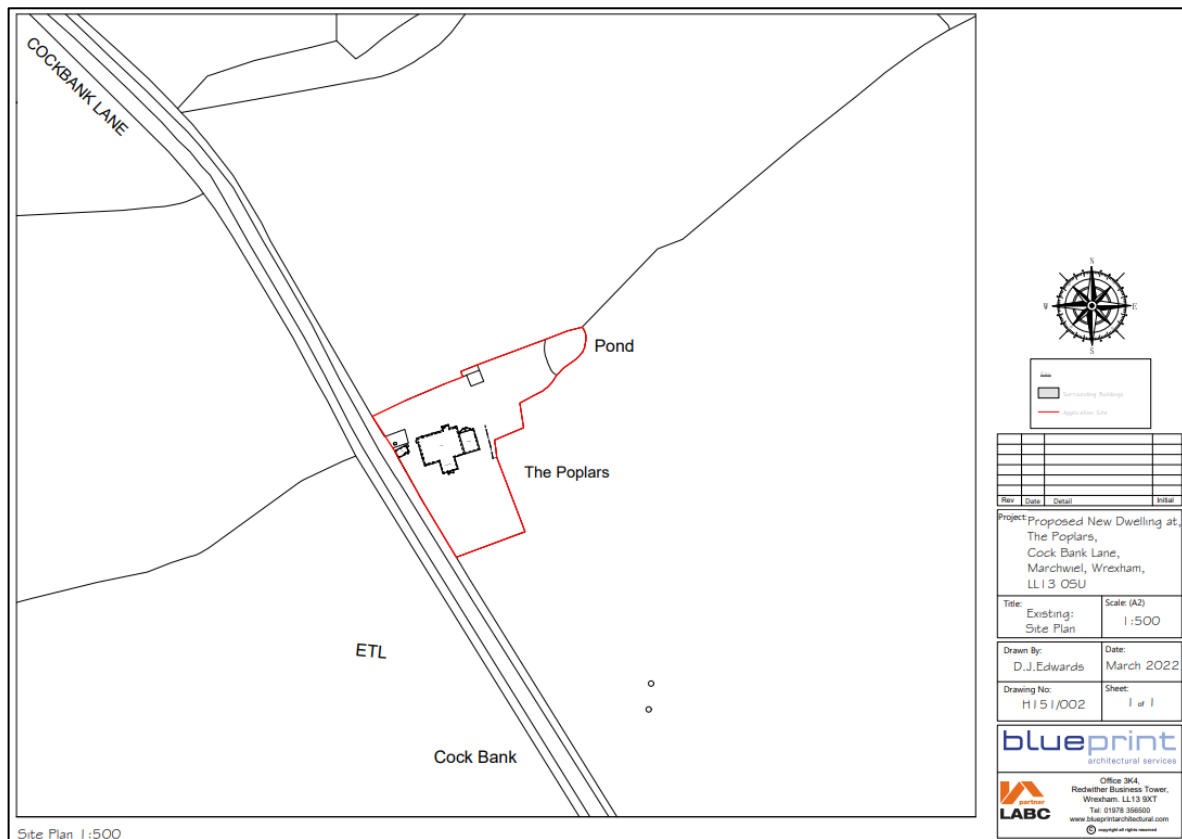


Figure 1.1: Proposed site plan

Aims & Objectives

- 1.3 The aim of the survey was to ascertain the nature of the land, and where possible obtain information on any priority wildlife habitats, or species, that may be present and if so determine if they will be affected by the proposals. The survey therefore includes the following objectives:
- Gather baseline ecological information on site/off site (as necessary),
 - 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),

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- Identify mitigation / compensation measures likely to be required in line with the mitigation hierarchy (i.e. avoidance > impact minimisation > mitigation > compensation),
- Identify additional survey requirements following on from this preliminary appraisal,
- Identify a series of enhancement opportunities for biodiversity in line with national and local planning policy following '*Biodiversity Net Gain: Good practice principles for development*' (CIEEM et. al., 2019).

1.4 As part of this ecological appraisal:

- Habitats on site have been identified and mapped using the '*Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Handbook*' (JNCC, 2010);
- Four buildings have been assessed for their potential to host roosting bats;
- Four ponds were assessed for their suitability as Great Crested Newt breeding ponds.

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

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

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

- The application site/area was found to be suitable for any European Protected Species (EPS), otherwise protected, or priority habitats/species, or,
- Signs of use by particular protected species were found, or suspected, or,
- Seasonal constraints significantly limit the gathering of ecological information to arrive at an accurate conclusion on which the planning application can proceed,
- Where accessible, open water habitat within 250 metres to the site was scored for Great Crested Newt (GCN) (*Triturus cristatus*) value using the industry standard habitat suitability index (HSI) assessment;

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

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

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

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

2.0 Legislation & Policy

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

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

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

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

Table 2.1 - Relevant Legislation

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

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

Policy

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

“The presence of a species protected under European or UK legislation, or under Section 7 of the Environment (Wales) Act 2016 is a material consideration when a planning authority is considering a development proposal which, if carried out, would be likely to result in disturbance or harm to the species or its habitat and to ensure that the range and population of the species is sustained. Planning authorities should advise anyone submitting a planning application that they must conform with any statutory species protection provisions affecting the site, and potentially the surrounding area, concerned. An ecological survey to confirm whether a protected species is present and an assessment of the likely impact of the development on a protected species may be required in order to inform the development management process. It is considered best practice that screening to determine the presence of protected species should be carried out by a competent ecologist on the basis of data provided by the relevant Local Environmental Record Centre.”

- 2.7 Planning authorities must therefore follow a step-wise approach to maintain and enhance biodiversity and build resilient ecological networks by ensuring that any adverse environmental effects are firstly avoided, or minimized, or mitigated, and as a last resort compensated for; enhancement must be secured wherever possible.

- 2.8 The first priority for planning authorities is therefore to avoid damage to biodiversity and ecosystem functioning. Where there may be harmful environmental effects, planning authorities will need to be satisfied that any reasonable alternative sites that would result in less harm, no harm or pro-gain have been fully considered.
- 2.9 The Environment (Wales) Act 2016 (“the Act”) - requires local planning authorities to have regard to area statements in the development of Local Development Plans. The Act introduced an enhanced biodiversity and resilience of ecosystems duty (Section 6 Duty). This duty applies to public authorities in the exercise of their functions in relation to Wales and will help maximise contributions to achieving the well-being goals. The Nature Recovery Action Plan supports this legislative requirement to reverse the decline in biodiversity, address the underlying causes of biodiversity loss by putting nature at the heart of decision-making and increasing the resilience of ecosystems by taking specific action focused around objectives for habitats and species.

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

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

- 2.10 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.
- 2.11 There are several plans, strategies and national, sub-regional and local policy statements which provide a framework for development in the Plan area. The Planning and Compulsory Purchase Act (2004) makes it a requirement for local planning authorities in Wales to prepare a Local Development Plan (LDP) for their areas.
- 2.12 Wrexham Borough Council prepared a plan, namely the ‘Wrexham Unitary Development Plan (1996 – 2011)’, which was formally adopted in February 2005 and supersedes any previous development plans for the area. A new plan, the ‘Wrexham Local Development Plan 2 (2013 - 2028)’, which will replace the current adopted plan, is currently under review. Until this new plan is adopted, the Wrexham Unitary Development Plan remains in effect.
- 2.13 All British bats and their ****roosts** are afforded protection under Schedule 5 of the Wildlife & Countryside Act (1981) (as amended) and are listed in Schedule 2 of the Conservation of Habitats & Species Regulations 2017. When dealing with cases where a European Protected Species (all UK bats) may be affected, a planning authority is a competent authority within the meaning of the Regulation 7 of the 2017 Regulations and therefore has a statutory duty to have due regard to the provisions of the Regulations in the exercise of its functions.
- 2.14 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.

- 2.15 Figure 2.2 below is a process model that surmises how ecological issues should be dealt with in the context of the planning process.

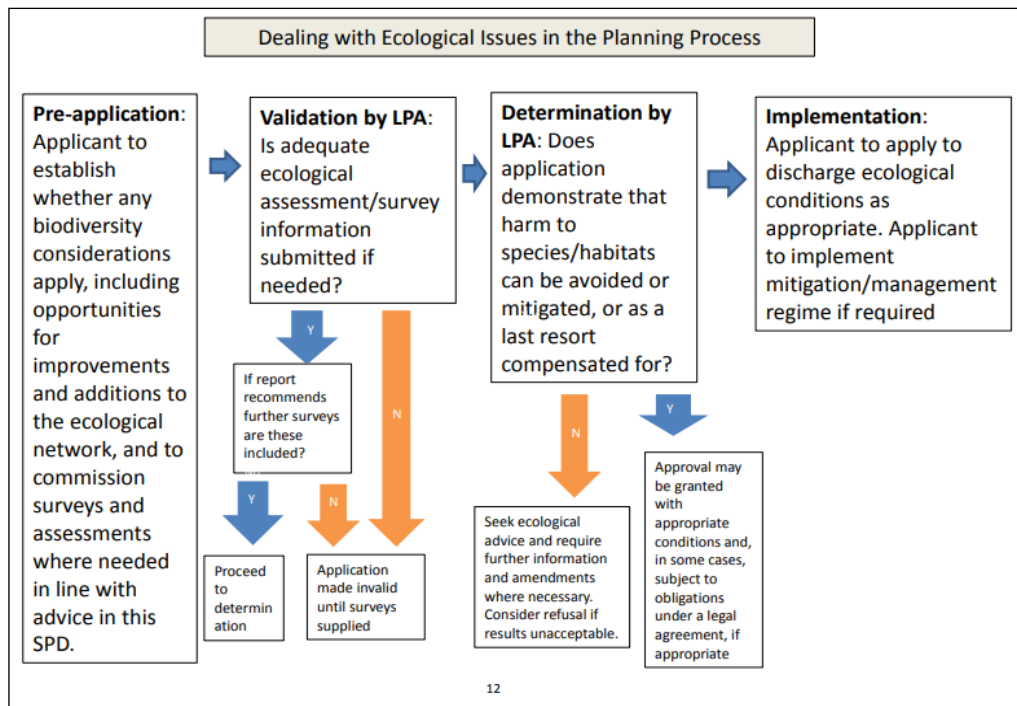


Figure 2.2 - Dealing with ecological issues in the planning process

3.0 Priority Habitats & Species

National context

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

Habitats:

- Hedgerows
- Ponds

Species:

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

District context

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

LBAP's set out practical steps that aim to:

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

4.0 Survey Methods

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

Desktop Study

- 4.2 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 3.0km of the site boundary. To do so, the 'Multi Agency Geographic Information for the Countryside (MAGIC – provided by Defra)' along with 'Lle a Geo-Portal for Wales' were accessed to gather such information.
- 4.3 Historic satellite imagery was reviewed using sources such as Google Earth (© 2020/21) to help establish past use of the land and determine the nature of adjoining and extending habitats; such information aids in the understanding of how the site might interact with its surroundings ecologically and its value in that context, and how the development may impact at a wider scale.
- 4.4 In addition the Council Planning Portal 'Search for planning applications' function was utilised to help inform the desktop study by analysis of existing publicly accessible ecological survey results that have been carried out locally within the previous five years.
- 4.5 A commercial data request to the Local Environment Records Centre serving the area has not been sourced during this preliminary appraisal assessment and is justified through application of the following recent guidance:

1) The Guidelines for Accessing, Using and Sharing Biodiversity Data in the UK (CIEEM, 2020) states: "It is generally expected that a desk study, including a data search, will be a

key part of the ecological surveys or reports produced to inform a planning application. **Freely available web-based sources of data and contextual information should always be used**; in some cases, it may be acceptable to not undertake a data search with the LERC or other relevant NSS or local interest groups, for example:

- ii) Situations where the data search would be extremely unlikely to provide information needed to inform the assessment; due to the **scale** and **location** of the proposed development. The appropriateness of excluding a data search will need to be judged on a case-by-case basis as, in most situations, it will be essential to carry out such a search even if the development is very small or is likely to have a low impact. It can be very difficult to demonstrate that a data search would not have provided relevant information without obtaining and reviewing those data.*
- iii) In some cases for Preliminary Roost Assessments of buildings in low impact / small-scale scenarios, such as an extension to a residential property, loft conversions (full or partial), installation of Velux/dormer windows, single modern agricultural or similar building conversion or demolition; however, it should not be assumed that data searches are never required for such scenarios and this must be judged on a case by case basis and justified accordingly.*

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

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

Field Survey

- 4.6 A daytime preliminary ecological appraisal was conducted on 8th April 2022 in bright, dry conditions (15C), wind 2/12 (Beaufort scale), 60% cloud by the following surveyor (Table 4.1).

Table 4.1 - Surveyor credentials

Name	Description of relevant credentials
Miss T. L. Hesketh (Junior Ecologist)	An experienced Junior ecologist with 2 years professional training and experience; holding a BSc in Biology and MSc in Conservation Management a course accredited by CIEEM. Accredited agent on the Class 2 Natural Resources Wales bat license of Mrs K Wildling (SO90606-1).

Floristic assessment

- 4.7 The survey followed the UK Habitat Classification Version 1.1 (Butcher, et.al., 2020) being introduced as part of the roll out of Biodiversity Net-gain with reference to the Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Methodology standards (JNCC, 2010)

and reference to the Chartered Institute of Ecology and Environmental Management (CIEEM) Technical Guidance Series “*Guidelines for Preliminary Ecological Appraisal, 2nd Edition*” (CIEEM, 2017).

- 4.8 During the survey walkover, botanical assemblages were assessed and the land was inspected for the presence of red-listed (Stroh *et al*, 2014; Hodgetts, 2011), s.41 and LBAP species alongside specially protected species as listed under Schedule 8 of the Wildlife and Countryside Act (WCA) (1981) (as amended) and / or Schedule 5 The Conservation of Habitats and Species (amendment) (EU exit) Regulations (2019). Species nomenclature follows Stace, C. (2019) – definitive English names.
- 4.9 Additional 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 notoriety on a geographical scale which is adopted on a site-to-site basis (see Figure 4.1 below).

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

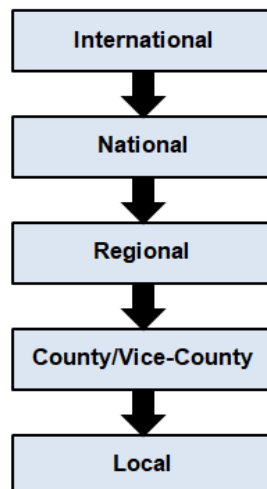


Figure 4.1 - Geographic Frame of Reference entailing degrees of conservation importance

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

Faunal assessment

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

Bats

- 4.12 The site would be assessed for bats, buildings (where present) would be inspected for potential places that may be of value to bats and to determine evidence of use. This typically involves a search for potential roost features (PRF) both internally (investigation of loft

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spaces/upper floors/internal elevations) as well as externally, comprising an investigation of features (roof material, building components) using a high-powered torch. Field signs of bats typically comprise bat droppings, incidental animal presence, dead specimens and/or prey items. The surrounding habitat was also considered in terms of general suitability. Four structures are present within the application site boundary.

- 4.13 Trees (where present) would be inspected for places that may be of value to bats and to determine if evidence of use was present; this typically involves a search for potential roost features along with an investigation of those features using a high-powered torch or close focus binoculars. Potential roost features can include woodpecker holes, rot holes, hazard beams, other vertical or horizontal cracks or splits in stems and branches, partially decayed lifted bark, knot holes, man-made holes, tear-outs, cankers in which cavities have developed, other hollows or cavities, including butt-rots, double-leaders forming compression forks with included bark, gaps between overlapping stems or branches, partially detached Ivy with stem diameters in excess of 50mm or bat/bird boxes. Three mature trees are present within the application site boundary.
- 4.14 Criteria for preliminary bat roost assessment are based upon the determinants given in the Bat Conservation Trust - Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd ed. (2016): (see Figure 4.2).

Table 4.1 Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, to be applied using professional judgement.

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

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

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

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

Figure 4.2 - Bat Conservation Trust (BCT) guidelines extract

- 4.15 Factors considered during the preliminary roost assessment include:

- Knowledge of bat species relevant to the site location and geographical range,
- Nature of the immediate / surrounding habitat in relation to foraging opportunities,
- Presence and conditions of loft spaces, upper floors, roof linings,
- Presence / absence of roost potential,

- Value of roost potential, if present.

Breeding Birds

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

Other terrestrial mammals

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

GCN

- 4.18 During desktop assessment a 250m 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 Newts (GCN). The information gathered would then be used to aid in establishing if more detailed surveys are required.
- 4.19 One pond was located within the site boundary and a further five ponds were located within a 250m buffer of the site.
- 4.20 In order to quantify risks to GCN in a PEA, a range of factors need to be considered (see below and Figure 4.3):
- 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,
 - Presence of significant barriers between ponds and site,
 - Area of site habitat loss and permanence of that loss.

Increases risk to GCN	Decreases risk to GCN
large population size, high local pond density, good terrestrial habitat, low pre-existing habitat fragmentation, large development footprint, long construction period	small population size, low local pond density, poor terrestrial habitat, substantial pre-existing dispersal barriers, small development footprint, short construction period

Figure 4.3 - Factors that can increase / decrease risk of committing an offence

Applying the GCN HSI

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

Its main uses are:

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

4.22 GCN HSI Limitations:

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

4.23 The site and its surroundings were assessed for suitability for use by reptiles, with particular attention paid to features that could be used as basking areas (e.g. south-facing slopes), hibernation sites (e.g. banks, walls, piles of hardcore) and opportunities for foraging (e.g. rough grassland and scrub). Beebee & Griffiths (2000) state specific habitat preferences of common UK reptiles:

- Common Lizards (*Zootoca vivipara*) use a variety of habitats from woodland glades to heaths, walls and pastures, as well as brownfield sites,
- Slow-worms (*Anguis fragilis*) use similar habitats to Common Lizards, and are often found in rank grassland, gardens and derelict land under refugia,
- Grass Snakes (*Natrix natrix*) have broadly similar requirements to Common Lizards but with a greater reliance on ponds and wetlands, where they prey on amphibians.

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

Table 4.2 - Important habitat characteristics for reptiles

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

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

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

4.25 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.

4.26 All aspects of the field survey were undertaken in line with the current government and CIEEM standing guidance during the COVID-19 ‘Coronavirus’ pandemic.

4.27 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 Miss T. Hesketh.

5.0 Limitations

- 5.1 This report does not contain a comprehensive list entailing the totality of botanical taxa on site. Species listed within Appendix II are recorded from a combination of the seasonal timing the survey took place and botanical identification skills of the surveyor. Many plant species are only evident at certain times of the year; consequently, it is possible that some plant species may have gone undetected.
- 5.2 No internal survey took place at the property due to accesses constraints. However, sufficient information was gathered during the external inspection of the buildings from which to base sound ecological recommendations. Having considered this, no significant limitations were experienced that might adversely influence the results, conclusions, and recommendations of this report.
- 5.3 Of the five ponds identified within 250m of the site boundary during the desktop assessment, two were not accessible due to their location within private land and were therefore not assessed.

6.0 Desk Study Results

- 6.1 The Poplars, situated off Cockbank Lane in Marchwiell, Wrexham (the application site, circa 0.16 ha) is approximately 4.3km southeast of Wrexham town centre (see figure 6.1).



Figure 6.1 - Location of application site within the surrounding landscape (Source: Google 2021/22)

- 6.2 The application site can be broadly described as a vegetated garden with a lawn, vegetated/tree lined borders and a pond at the eastern end of the site; four buildings are present including the dwelling and three outbuildings.
- 6.3 The site is situated in rural Marchwiell, surrounded by agricultural and arable land to all environs; the land is separated by boundary features such as hedgerows, ditches and mature treelines, and intersected by minor roads. There is a small farm complex to the north of the site consisting of several agricultural buildings and associated residential dwellings, whilst to south lies a small hamlet off Cockbank Lane. Scattered trees and occasional ponds are also present throughout the immediate landscape.
- 6.4 The extending habitat continues in similarity to that of the immediate, with the inclusion of various woodlands such as Cock Bank Wood, an ancient semi-natural woodland 380m southeast of the site. To the southwest of the site also lies Plassey Golf Course and Holiday Park. The villages of Marchwiell and Cross Lanes lie to the north, north-east respectively, and the River Dee is approximately 1.9km south of the site.
- 6.5 In respect to connectivity, the site has good connectivity with the surrounding environs, with dispersal barriers limited to minor roads; flying species and terrestrial mammals would have no issue accessing the site, slower moving terrestrial species may be discouraged but their presence on site cannot be ruled out entirely.

- 6.6 The described ecological frameworks are considered to offer a fair array of habitats with good inter-connectivity in the landscape and to the application site, which is of benefit to several species/groups for which the survey was undertaken, notably flying animals such as bats, birds and terrestrial mammals associated with rural settings; herptiles are unlikely to be present as open agricultural land offers limited shelter/value for herptiles from predators such as corvids when compared to more structured habitats such as the local woodlands and hedgerows, which limits site suitability for species such as newts, lizards and snakes.
- 6.7 The protected species most typically associated with the habitats described is the Common Pipistrelle (*Pipistrellus pipistrellus*) bat, frequently associated with buildings in rural settings, and this species presence in the surrounding landscape is likely.
- 6.8 One statutorily designated site features within 2.0 kilometres (see Table 6.1, Figure 6.3).

Table 6.1 - Designated sites in proximity to the survey area

Site name	Designation type	Interest features
Afon Dyfrdwy / River Dee 1.9km SE	Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC)	This site forms SSSIs in both Wales and England, and is notified for its transition through a range of river types from mesotrophic to eutrophic and for the species it supports which include Atlantic Salmon (<i>Salmo salar</i>), Otter (<i>Lutra lutra</i>), and Club-tailed Dragonfly (<i>Gomphus vulgatissimus</i>). The lower reaches of the River Dee support Britain's only known population of the stonefly (<i>Isogenus nubecula</i>.) Between Llangollen and Bangor-on-Dee, sandstone, mudstone and hard limestone river type vegetation again predominates, this time with the unusual hybrid crowfoot (<i>Ranunculus x bachii</i>) (<i>R. fluitans</i> x <i>aquatilis</i>) occurring in large stands. The Dee is one of only two known UK localities for this hybrid. In this section the river shows signs of nutrient enrichment with the introduced Canadian waterweed (<i>Elodea canadensis</i>) becoming more prevalent.

- 6.9 In relation to ponds one exists on site; there are five further ponds mapped within 250 metres, and an additional 14 ponds within 500 metres; the connectivity between the site and local pond network can be described as moderate due the presence of hedgerows and lack of significant barriers between the site and the surrounding pond network. For visual aid / pond layout see Figure 6.2 overleaf.

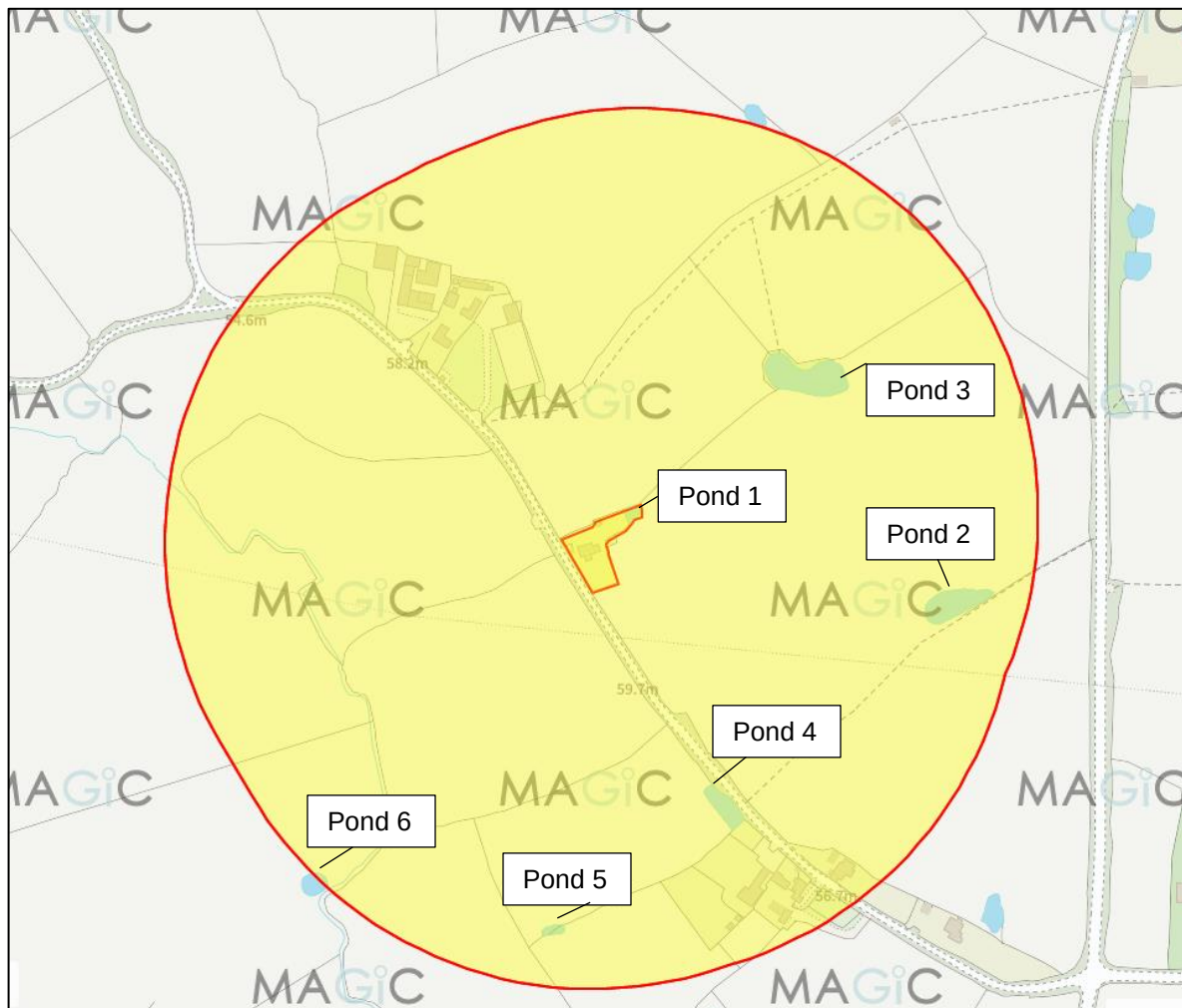


Figure 6.2 – Map showing a 250m buffer and the location of the five mapped ponds within the surrounding landscape in relation to the applications site. (Source: adapted from MAGIC Maps, 2021)

Desktop study - Species records

- 6.10 **Bats:** A search of extensive bat records held by Tyrer Ecological Consultants Ltd revealed a single roost record located approximately 1km east of the site.
- 6.11 **Great Crested Newt:** Whilst the site is located within a wider pond network, no records pertaining to GCN were returned in the desktop search.

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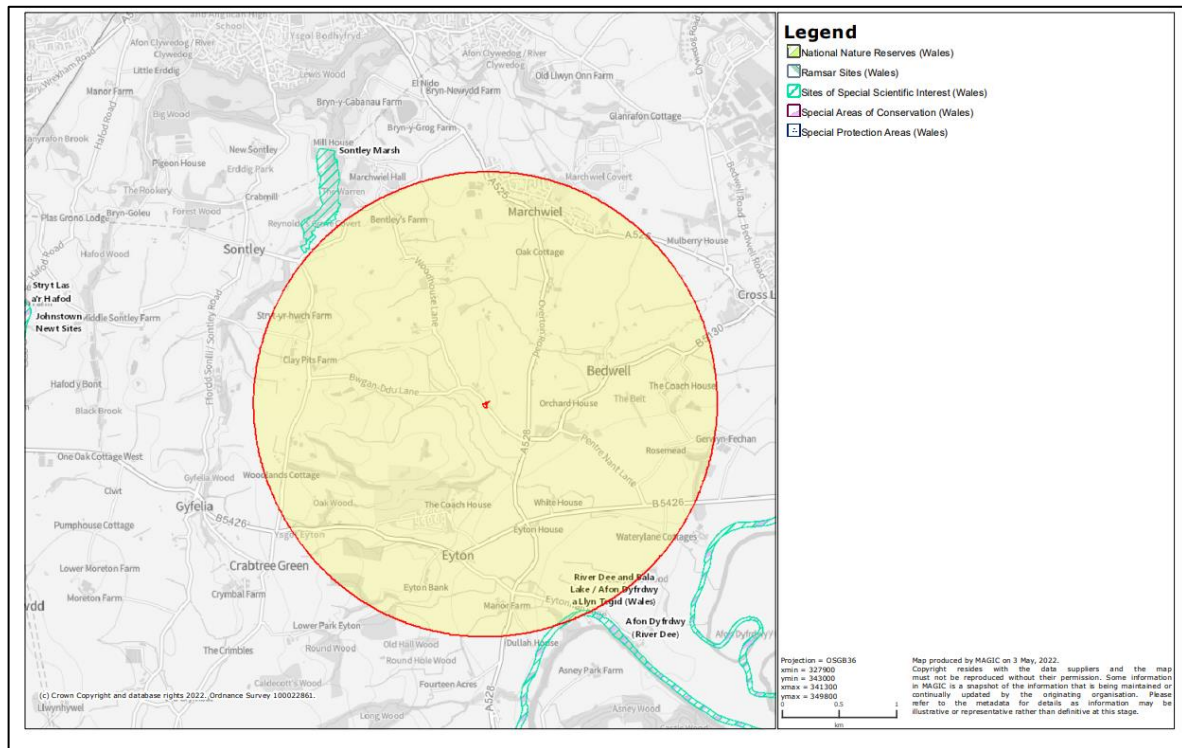


Figure 6.3 – Location of designated sites relative to the application site (Source: adapted from MAGIC Maps, 2022)

7.0 Field Survey Results

7.1 Habitat Survey

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

Table 7.1.1 - UK Habitat types within the survey area with target notes

Primary Habitat Code	Broad Habitat	Description
g4	Modified Grassland	Lawn to the north, south and east of the dwelling dominated by Perennial Rye-grass (<i>Lolium perenne</i>), Daisy (<i>Bellis perennis</i>), Germander Speedwell (<i>Veronica chamaedrys</i>) and Cowslips (<i>Primula veris</i>).
h2a	Hedgerow (Priority Habitat)	Hawthorn (<i>Crataegus monogyna</i>) dominated hedgerow forming the boundary at the west and north of the site. Other species within the hedge and within the understorey of the hedge include Lords-and-Ladies (<i>Arum maculatum</i>), Common Ivy (<i>Hedera helix</i>), Cow Parsley (<i>Anthriscus sylvestris</i>)
w1g6	Line of Trees	The borders of the site are lined with trees such as Sycamore (<i>Acer pseudoplatanus</i>), Lombardy poplar (<i>Populus Nigra</i>), Ash (<i>Fraxinus excelsior</i>) Cherry Plum (<i>Prunus cerasifera</i>), and Rowan (<i>Sorbus aucuparia</i>). Below the trees are species such as Common Ivy (<i>Hedera helix</i>) and Bush Vetch (<i>Vicia sepium</i>).
u1b5	Buildings	The dwelling, two outbuildings and shed; see Section 7.3.
u1b	Developed land: sealed surface	The driveway and access.
u1e	Built linear Feature	The wall adjacent to the driveway. <u>Applicable secondary codes</u> 68 – Mortared wall <u>Habitat code</u> u1e 68

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r1	Standing open water and canals	A heavily shaded pond to the west of the site, no macrophytes were present at the time of the survey however this was to be expected at the time of the year. The pond is shaded by Goat Willow (<i>Salix Caprea</i>). <u>Applicable secondary codes</u> 364- Natural Pond <u>Habitat code</u> r1 364
Target Note	TN1	Area of possible refugia

- 7.1.2 One habitat of conservation importance was identified in the form of a Hawthorn (*Crataegus monogyna*) dominated hedgerow to the west and north of the site; qualifying as the UKBAP habitat 'Hedgerows' due to its composition of 80% or greater native woody species.

7.2 Vegetation

- 7.2.1 No species of conservation importance were located anywhere within the survey area.
- 7.2.2 No species listed as invasive on Schedule 9 of the WCA were recorded within the application site boundary

7.3 Bats

Residential dwelling

- 7.3.1 The residential property at The Poplars is a two-storey brick-built detached house, with a white rendered finish and slate pitched roof. There is a single-storey flat roofed extension to the east of the property which encompasses a garage and potting shed, and to the south of the building there is small conservatory; the approximate maximum dimensions do the property are 15m x 11m x 6m (L x W x H).
- 7.3.2 As no internal inspection was carried out (see section 5.2) it was not possible to ascertain the suitability of the loft space in The Poplars for the breeding requirements of loft-dwelling bat species such as the Brown Long-eared (*Plecotus auritus*) bat; this is a species which prefers dark, unrestrictive loft spaces with room for free flying, and a stable temperature free from draughts. Conditions other than those listed do not necessarily discount buildings from being used by such species for other purposes than breeding. The wider environment offers favourable foraging for this species with commuting corridors which link the site to the small surrounding areas of woodland in the local landscape.
- 7.3.3 It was additionally not possible to ascertain whether a roof lining is installed in The Poplars; where present traditional bitumen 1F underfelt or other such under linings typically improve a buildings value to bats notably for crevice-dwelling bats of the *Pipistrellus* genus, whereby the bats roost between linings and the roof cover material provided external access opportunities exist. No meticulous search for evidence of either loft- or crevice-dwelling bats could be undertaken internally at The Poplars.

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

- 7.3.4 Externally, the building has a tight-fitting roof providing no entry into the internal spaces; furthermore, there are no suitable ingress points around the wooden soffits or at the gable ends, or anywhere else on the structure which is considered devoid of any potential roost features. A single gap in the soffit to the west of the property was noted, however this gap was 7cm wide and House Sparrows were noted as utilising this gap during the survey. It was therefore deemed unsuitable for use by crevice dwelling bats, and the building is thus duly categorised as holding '**Negligible**' bat roost potential in accordance with Bat Conservation Trust 'Bat Surveys: Good Practice Guidelines' (2016).

Shed

- 7.3.5 There is an ivy-covered timber shed to the east of the site, whilst the ivy is dense it is tightly fitting to the structure offering no crevice potential for bats; the shed is otherwise well sealed with no suitable ingress points observed. The shed is thus deemed as holding '**Negligible**' bat roost potential in accordance with current BCT guidance.

Outbuilding 1

- 7.3.6 A brick-built outbuilding (OB1) sits to the north of the site with a mono-pitched corrugated steel roof, timber fascia, and with the interior appearing to be illuminated via external windows; however, no internal assessment took place. Externally there are gaps at wooden fascias which may offer some minor ingress opportunity, however these appear to be non-extensive in nature.

Outbuilding 2

- 7.3.7 Situated to the west of the site there is a small brick-built outbuilding (OB2) with a rendered finish and a mono-pitched slate roof. Similarly, to OB1 the interior appears to be illuminated via external windows though no internal assessment took place. There are no gaps, ingress opportunities, cracks or crevices that could be utilised by crevice-dwelling species, the roof, mortar and ridge are all intact. Thus, deemed as holding '**Negligible**' bat roost potential in accordance with Bat Conservation Trust 'Bat Surveys':

Trees

- 7.3.8 Trees within the survey area include Sycamore (*Acer pseudoplatanus*), Lombardy poplar (*Populus Nigra*) and Ash (*Fraxinus excelsior*). These were collectively assessed to pertain to '**Negligible**' bat roost suitability owing to the absence of any cracks, crevices, trunk cavities, or other such potential roost features that are typically utilised by roosting bats.

7.4 Breeding Birds

- 7.4.1 In relation to Schedule 1 (WCA) specially protected bird species such as Barn owl, whilst surrounding arable areas hold value for hunting for this species, no suitability exists at the application site for breeding given an absence of appropriate buildings or trees; no impacts to such species are therefore anticipated.

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7.4.2 During the survey birds were seen carrying nesting material at the site, historic nesting evidence was also located within the shrubbery to the east of the site. The hedgerow, trees and shrub present throughout the site all provide suitable nesting platforms that have potential to support breeding birds and the proposed development may impact upon these features; therefore, nesting birds are a material consideration, specifically in relation to timings in relation to the re-development of this site. Lapwings were also noted displaying breeding behaviour in the immediately adjacent field to the east.

7.4.3 The following birds were encountered during the survey (see Table 7.4.1).

Table 7.4.1 – Bird species encountered during the survey

Species	Scientific Name	Status	Context (where relevant)
Blue tit	<i>Cyanistes caeruleus</i>	Green	Seen in shrubs along all boundaries
Dunnock	<i>Prunella modularis</i>	Amber	Seen in the shrubs to the west of the site
Goldfinch	<i>Carduelis carduelis</i>	Green	Seen commuting across the site
House Sparrow	<i>Passer domesticus</i>	Red	Seen carrying nesting material
Lapwing	<i>Vanellus vanellus</i>	Red	In the adjacent field
Robin	<i>Erithacus rubecula</i>	Green	Seen carrying nesting material north of the site
Wren	<i>Troglodytes troglodytes</i>	Amber	Seen in the ivy on the shed
S.41 - a bird listed on section 41 of the Natural Environment Rural Communities Act 2006 (NERC Act) LBAP - A local biodiversity action plan listed species Q - Qualifying species of nearby SSSI site(s) SPEC - a species of conservation concern, Amber or Red, Red being the highest conservation priority			

7.5 Other Terrestrial Mammals

Badger

7.5.1 Field signs indicative of mammal use were located during the survey in terms of foraging signs such as foraging signs, runs, 'push throughs' across the site. However, these were indicative of rabbit due to the size and locations of the push throughs.

European Hedgehog

7.5.2 In relation to European Hedgehog, the habitats present offer moderate foraging and sheltering/hibernation provisions as it currently exists, with refuge areas in the hedgerow. Use of the site by European Hedgehog is possible, and recommendations to prevent risk of injury to individuals of this species are provided in section 8.0.

7.6 Herptiles

Great Crested Newt (GCN)

- 7.6.1 In order to assess risk to GCN, a number of factors need to be considered. These include:
- Site proximity to a potential breeding pond and to any additional ponds,
 - Habitat linkage / barriers between potential breeding ponds and the site,
 - Nature and extent of available terrestrial habitat (50-100m) around the pond(s),
 - Area of site habitat loss and permanence of that loss,
 - Nature of habitat to be lost and its potential value to GCN as refuge/overwintering habitat.
- 7.6.2 One pond is present within the application site, a further five ponds fall within 250m of the site boundary, and additionally 14 ponds are present within 500m of the site boundary (see figure 6.2); the pond network features moderate connectivity to the site via hedgerows and other linear features such as ditches, however, many of the adjacent ponds are set in unfavourable habitat for GCN such as ploughed and arable fields.
- 7.6.3 In addition to the pond on site three of the five ponds within 250 metres were scored for breeding value to Great Crested Newt (GCN) using the industry standard habitat suitability index (HSI) assessment (see Table 7.6.1 - 7.6.3 below for the assessment whilst Figure 7.6.1 provides predicted occupation rates of ponds); the ponds are then described in subsequent sections. Ponds beyond the 250m buffer have not been assessed but have been considered in relation to connectivity.

Table 7.6.1 - HSI Quantitative Assessment of Ponds within 250 metres

Pond ref	Pond 1	Pond 2	Pond 3	Pond 4
SI1 - Location	1	1	1	1
SI2 - Pond area	0.1	1	0.95	0.6
SI3 - Pond drying	0.5	1	0.9	0.1
SI4 - Water quality	0.33	0.67	0.67	0.33
SI4 - Shade	0.8	1	1	0.8
SI6 - Fowl	0.67	0.67	0.67	0.67
SI7 - Fish	0.67	0.33	0.67	0.67
SI8 - Ponds	1	1	1	1
SI9 - Terr'l habitat	0.33	0.33	0.33	0.33
SI10 - Macrophytes	0.55	0.7	0.5	0.4
HSI	0.50	0.71	0.73	0.50

Table 7.6.2 - HSI scoring chart (a suitability scoring method for GCN developed by Mr. L. Brady)

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

Table 7.6.3 - Pond description

	
Pond Reference: Pond 1 Grid Reference: SJ35374611 HSI Result: Below Average	Description: Pond 1 is a small garden pond to the east of the site (circa 80 square metres) it is heavily shaded by willow and other various broadleaf trees such as a sycamore. The pond is shallow and silted with no macrophyte cover, and evidence of waterfowl along the eastern bank was present. Terrestrial habitat is limited to that present on the banks of the pond and hedgerows within the site as the rest of the site is comprised of amenity lawn and agricultural land to the east.
	

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Pond Reference: Pond 2 Grid Reference: SJ35494619 HSI Result: Good	Description: A kidney shaped pond to the east of the site (circa 900 square metres) situated in arable land, macrophytes are limited to species such as Common Bulrush (<i>Typha Latifolia</i>), there are scattered trees along the western boundary of the pond which shade the pond in sections. No evidence of either fish or waterfowl was observed however both may be present in some capacity. The water is likely to only dry during drought years. Terrestrial habitat is limited to arable land and adjacent grassland which is being grazed by horses and scrub, with limited areas for foraging and refuge beyond the banks of the pond.
 The photograph shows a pond with a kidney-like shape, bordered by trees on the left and right sides. The water is calm, reflecting the sky and the surrounding vegetation. In the foreground, there are tall, dry reeds or grasses growing out of the water. The background shows a line of trees and a clear sky with some clouds.	
Pond Reference: Pond 3 Grid Reference: SJ35564605 HSI Result: Good	Description: A Farmland Pond (circa 600 square metres) situated in arable land, macrophytes are limited to species such as Common Bulrush (<i>Typha Latifolia</i>). Similarly to Pond 2 there are scattered trees along the banks providing partial shade. The water is likely to only dry during drought years. Terrestrial habitat is similarly comprised of arable, grassland and scrub, again with limited areas for foraging and refuge beyond the banks of the pond.

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Pond Reference:
Pond 3

Grid Reference:
SJ35434592

HSI Result:
Below Average

Description: A small pond adjacent to Cockbank Lane (circa 300 square metres); there are no macrophytes within the pond, the pond is heavily shaded and shallow, and the water is likely to dry three in ten years. The surrounding habitat is limited to hard standing, arable grassland and residential gardens. There is no opportunity for foraging along the banks and limited cover.

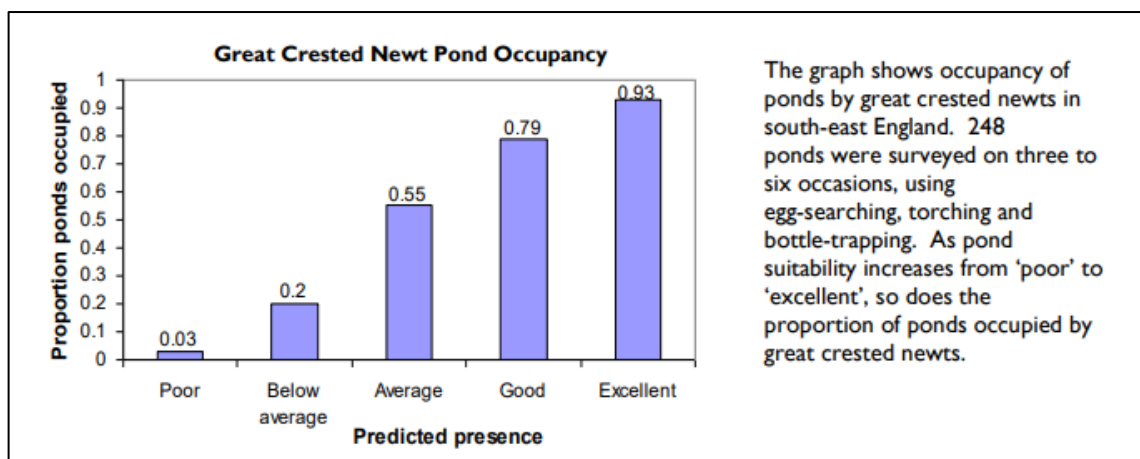


Figure 7.6.1 – Great Crested Newt Pond Occupancy (Source: ARC UK)

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

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and the numbers of great crested newts observed in ponds. So, in general, high HSI scores are likely to be associated with greater numbers of great crested newts. However, the relationship is not sufficiently strong to allow predictions to be made about the numbers of newts in any particular pond.

7.6.4 Ponds 1 and 4 scored 'Below average' and Ponds 2 & 3 scored 'Good'; therefore, these ponds have a 20% and 79% chance of being occupied respectively. However, the surrounding habitat could be considered of low value to GCN as it is largely open arable land with limited cover or shelter.

7.6.5 Ponds 2, 3 & 4 are all located over 100m from the site boundaries and therefore the site falls outside of the 'core zone' of these ponds. The application site itself is largely unsuitable for GCN with swathes of amenity lawn and hard standing, while suitable foraging and sheltering habitat is limited to the boundary features. The pond within the site scores 'below average', is heavily shaded, and is considered unlikely to host a breeding population of GCN.

NB: *Research presented by Natural England provides evidence that GCN are most likely to use terrestrial habitat within 100metres of their breeding ponds, whilst the Great Crested Newt Method Statement for EPSML (Natural England) describes terrestrial habitat zones - the 50metres range of any GCN pond is the 'Core' habitat zone and the area most likely to support newts in a lifetime; the area between 51-250m is the 'Intermediate' zone and 250m+ is the 'Distant' zone; impacts to these zones, from individual ponds, are considered by the ecologist; both permanent and temporary impacts are taken into account.*

7.6.6 Based on the data obtained during the desktop assessment and field survey there is the potential of risk to GCN under the proposed works; to further establish the degree of risk the Natural England Rapid 'Generic' Risk Assessment has been applied to provide a hypothetical impact assessment, under the assumption that GCN are present within the wider landscape and may use the site as foraging or commuting route, as extracted from the Natural England 'Template for Method Statement' (Table 7.6.4). The Natural England Risk Assessment has been implemented as there is currently no readily available alternative supplied by Natural Resources Wales, however the outcomes and recommendations are still in line with NRW guidance.

Table 7.5 Rapid Risk Assessment, as extracted from the Natural England
 'Template for Method Statement'

Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom)	Notional offence probability score
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	No effect	0
Land 100-250m from any breeding pond(s)	No effect	0
Land >250m from any breeding pond(s)	No effect	0
Individual great crested newts	Significant disturbance of newts	0.8
Maximum:		0.8
Rapid risk assessment result:	RED: OFFENCE HIGHLY LIKELY	

- 7.6.7 The result of Red indicates that the development is in a location where an offence is Highly likely, this is because there is a known population of GCN within the wider landscape and therefore the presence cannot be ruled out on site as GCN are a mobile species. However due to the nature, type and scale of development the fact that the pond is being retained the introduction of Reasonable Avoidance Measures such as timings would mitigate the risk.

Common amphibians

- 7.6.8 Given the surrounding habitats as described the application site could be used by generalist common amphibians including Common Frog (*Rana temporaria*) and Common Toad (*Bufo bufo*), subject to their presence in the landscape.

Reptiles

- 7.6.9 In respect to reptiles their presence on site is unlikely due to the lack of the habitat mosaic and varied vegetation structure which provides suitable breeding, hunting, basking and refuge habitat typically utilised by these species, and reptiles are thus not a material consideration in relation to the proposed development.

7.7 Invertebrates

- 7.7.1 An assessment of habitats and features on site found limited ecotones to be present but an absence of deadwood or any other such feature that is likely to be of local significance to invertebrate assemblages or specially protected invertebrates; some impacts are foreseen for this species group though these are likely to be limited to site level.

Conclusions & Recommendations

Habitats

- 8.1 The priority habitat 'Hedgerows' was recorded within the site along areas of the boundary; it is recommended that the western and northern hedgerow is maintained within its entirety with a view to condition improvement; in conjunction to being a priority habitat it provides valuable shelter and foraging opportunities for a myriad of species. Additionally, any loss of hedge in the east of site should be mitigated for through native landscaping including the replanting of native-species rich hedgerow.

Vegetation

- 8.2 No species of conservation importance were located anywhere within the survey area.
- 8.3 No species listed as invasive on Schedule 9 of the WCA were recorded within the application site boundary.
- 8.4 To provide an opportunity for Biodiversity Net Gain and to improve the value of the site for native wildlife, a list of appropriate native species that might be incorporated into the proposed development has been supplied (see Appendix III).

Bats

- 8.5 Based upon the results of the survey it is concluded that the Residential dwelling, OB1, OB2 and the timber shed are categorised as offering 'Negligible' potential and dusk/dawn observations will not be recommended. The dwelling, OB2 and the timber shed is devoid of roosting opportunities for bats. However, on OB1 there is extremely limited non-progressive roost opportunities in the form of the minor gap between the timber fascia and the brickwork, it is recommended the building undergoes supervision during dismantling of these features by a suitably qualified ecological clerk of works (ECoW).

The ECoW should focus on the wooden fascias on the external elevations of OB1 and features within the vicinity in the first instance, timed prior to any developmental works at the building. If at any point evidence of bats is/are located, works should immediately cease as a bat roost will have been identified, triggering a requirement to re-assemble the dismantled feature(s) as close to identical as possible, and bat surveys will likely be required to gather such information as species present, roost type, abundance and flight lines on site, in case an EPSML is required to legally proceed further. If no evidence of bats is observed during the ECoW supervision, no implications are applicable, and the work schedule can proceed to completion.

- 8.6 It should be noted that where bat/s or their roost(s) will be affected by the proposed works then to allow developmental works at the site to legally commence an application for a European Protected Species Mitigation Licence (EPSML) and subsequent granting of a licence will be required. Notwithstanding the granting of a licence, works that would affect a roost cannot take place if a maternity colony is in occupation. It should also be noted that before an EPSML can be applied for, all Planning issues, including Consent and any pre-commencement Planning Conditions relative to bats, should be resolved.
- 8.7 A licence should be applied for if offences are unavoidable, and the work should not be restarted until a licence is obtained. The application should be completed by the developer and a consultant ecologist. The ecologist will need to be able to demonstrate to the

satisfaction of Natural Resources Wales that they have the relevant skills and knowledge of the species concerned

- 8.8 All trees on site were assessed to pertain to a '**Negligible**' categorisation in regard to existing bat roost suitability, owing to the absence of potential roost features such as cracks, crevices/fissures that might otherwise present roosting opportunities to bats. However, the trees and the other areas of woody vegetation throughout the site should be considered valuable to bats as potential foraging/commuting habitat, with lines of trees allowing bats to move between favourable habitats.
- 8.9 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, particularly if increased light spillage occurs in areas of that are currently free from illumination. A bat-sensitive lighting plan is therefore recommended in order to avoid potential impacts to bats that may use the surrounding treelines. Several options to consider have been listed below, though the reader is referred to the Bat Conservation Lighting Guidelines for further information.

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

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

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

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

Please refer to the 'Landscape and urban design for bats and biodiversity' (*Gunnell et. al.*, 2012, Bat Conservation Trust) Guidance Note 8 'Bats and Artificial Lighting' 2018, Bat Conservation Trust for further information.

Breeding Birds

- 8.10 No impacts are applicable in relation to specially protected bird species such as Barn owl, and no further recommendations need be applied in relation to WCA Schedule 1 protected species.

- 8.11 During the survey birds were seen displaying breeding behaviour, and historic nesting evidence was located within the shrubbery to the east of the site. Thus, the hedgerows, shrubs and trees provide suitable nesting platforms which could be utilised by breeding birds. Any vegetation clearance or demolition works should therefore be undertaken outside of the breeding birds' season of March-August unless it can be demonstrated by a suitable qualified, professional ecologist that breeding birds are absent beforehand.

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

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

- 8.12 Lapwings were recorded displaying breeding behaviour in the immediately adjacent fields, these are ground nesting birds and therefore may be subject to disturbance through ground works i.e. the vibrations and excessive noise. Therefore, it is recommended that a ground nesting bird walkover takes place prior to commencement of the works within the adjacent field to ensure no individuals are nesting within a 10m buffer of the site boundary.
- 8.13 It is recommended enhancement for nesting birds be incorporated into the proposed development, as per Appendix III.

Terrestrial Mammals

Badger

- 8.14 There are no further recommendations regarding badger within the report.

European Hedgehog

- 8.14 Due to the presence of hedgerows which provide abundant shelter opportunities, and the grassland which provides foraging opportunities, presence of European Hedgehog on the site is considered possible. It is therefore recommended that an appropriate Method Statement is created by a suitably qualified Ecologist/Ecological Clerk of Works (ECoW), detailing a list of Reasonable Avoidance Measures (RAMs) to prevent risk to this species.

Herptiles

- 8.15 Having carefully considered results derived from a thorough desktop assessment, field survey results, HSI results of ponds on and adjacent to the site, and taking into account the nature of the proposals which will primarily affect habitat which is unsuitable for GCN in its current state, no further surveys are recommended at this time.
- 8.16 Taking into account the presence of GCN within the wider Wrexham County pond network, and purely as a precautionary measure, any management of the site should have due regard to local wildlife, and a thorough, bespoke working Method Statement should be created by a suitably qualified Ecologist outlining key reasonable avoidance measures (RAMs) and working protocols to be in effect during the proposed work schedule / future management once confirmed; this might be secured by a suitably worded planning condition and would

act as a sufficient safeguard for any populations of herpetofauna. These RAMs could also include protection measures for other small terrestrial fauna including, for example, Hedgehogs.

- 8.17 The RAMs should be drafted by a suitably qualified GCN licenced Ecologist/Ecological clerk of works (ECoW) with strong experience of formulating this technical work. Upon gaining understanding of the details contained within the RAMS, the applicant and associated contract team would be expected to comply with the measures recommended within it. Any RAMs would be subject to the approval of the local planning authority - following approval, adherence to the terms of the RAMs would be a requirement of the named authority and the applicant would be the liable party for any non-compliance, with the Ecologist/ECoW acting for and on behalf of the applicant.
- 8.18 The applicant and all contractors would be aware that if at any stage GCN are encountered during works, or at any other stage of the programme, works would be required to immediately cease and the Ecologist/ECoW be made aware as to provide further guidance if an Ecologist is not already present. At no point should any unlicensed person handle a GCN or suspected GCN. Unlicensed handling is illegal and untrained handling may cause

Reptiles

- 8.19 Given the site-based assessment outlined in section 7.0, impacts to reptiles are considered unlikely and impacts to this group are reasonably discounted from the planning proposals. No risks or implications apply, or are further survey recommendations necessary, concerning reptiles at this time.

Invertebrates

- 8.20 Considering the size, area and habitats present within the application site to be affected by the proposed, no impact upon local populations is foreseen; however, to mitigate for the loss of habitat opportunities it is recommended that enhancement for invertebrates be incorporated into the wider site. Indicative suggestions have been provided within Appendix III.

Biodiversity Enhancement:

- 8.21 General recommended ideas to enhance the site for biodiversity in accordance with '*Biodiversity Net Gain: Good practice principles for development*' (CIEEM *et. al.*, 2019), are presented in Appendix III.

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Appendix I: Site Photographs



Plate 1: Site viewed from the west



Plate 2: Pond to the east of the site



Plate 3 – Character of tree lines



Plate 4 – Southern view of The poplars



Plate 5 – Large gap in soffit being utilised by house sparrows



Plate 6 – Northern elevation of The Poplars



Plate 7 – Outbuilding 1



Plate 8 – Outbuilding 2

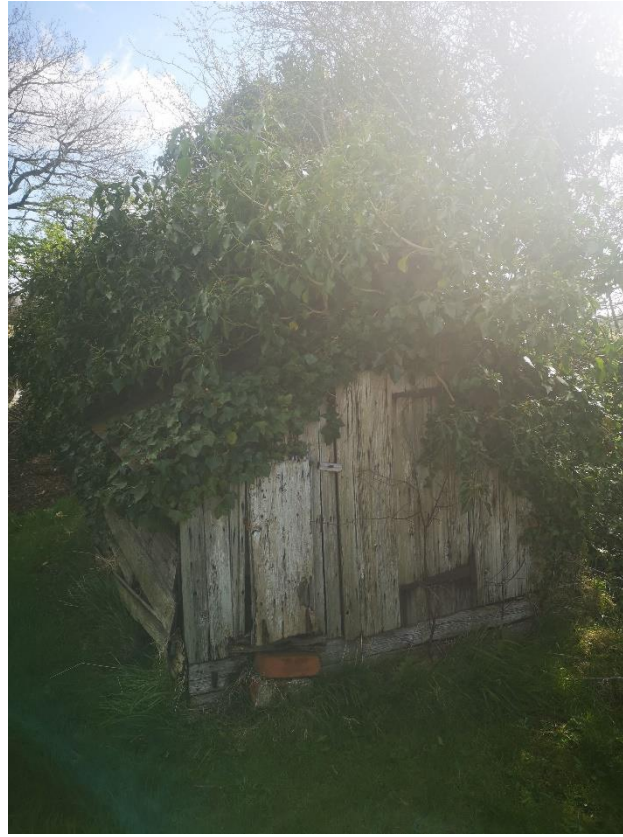


Plate 8 – Timber shed



Plate 10 – Site viewed from the south



Plate 11 – Wider habitat

Appendix II: Site-Specific Botanical Species List

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

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

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

Phylum	Common Name	Scientific Name	DAFOR
Bryophyta (Mosses)	Springy Turf-moss	<i>Rhytidiadelphus squarrosus</i>	LF
Anthophyta (Flowering plants)	Annual Meadow-grass	<i>Poa annua</i>	F
	Broad-leaved Dock	<i>Rumex obtusifolius</i>	F
	Bush Vetch	<i>Vicia sepium</i>	R
	Common Hogweed	<i>Heracleum Sphondylium</i>	F
	Common Ivy	<i>Hedera helix</i>	A
	Common Nettle	<i>Urtica dioica</i>	O
	Cowslips	<i>Primula veris</i>	F
	Creeping Buttercup	<i>Ranunculus repens</i>	O
	Cypress	<i>Cypress sp.</i>	R
	Daisy	<i>Bellis perennis</i>	O
	Dandelion	<i>Taraxacum agg.</i>	O
	Early Dog Violet	<i>Viola reichenbachiana</i>	F
	Flowering Current	<i>Ribes Sanguineum</i>	LF
	Forsythia	<i>Forsythia sp.</i>	R
	Germander Speedwell	<i>Veronica chamaedrys</i>	R
	Hawthorn	<i>Crataegus monogyna</i>	F
	Hedge Bindweed	<i>Calystegia Sepium</i>	O
	Herb Robert	<i>Geranium robertianum</i>	F
	Holly	<i>Ilex aquifolium</i>	O
	Honeysuckle	<i>Lonicera periclymenum</i>	LF
	Ivy Leaved Toad-flax	<i>Cymbalaria muralis</i>	F
	Lawson Cypress	<i>Chamaecyparis lawsoniana</i>	LF
	Lords-and-Ladies	<i>Arum Maculatum</i>	LF
	Male Fern	<i>Dryopteris filix-mas</i>	O
	Perennial Rye-grass	<i>Lolium perenne</i>	D
	Red Fescue	<i>Festuca rubra</i>	F
	Selfheal	<i>Prunella vulgaris</i>	A
	Smooth Sow-thistle	<i>Sonchus Oleraceus</i>	O
	Sycamore	<i>Acer pseudoplatanus</i>	R

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	White Clover	<i>Trifolium Repens</i>	A
	White Dead-nettle	<i>Lamium album</i>	F
	Wood Avens	<i>Geum urbanum</i>	O
	Yorkshire Fog	<i>Holcus Lanatus</i>	LF

Appendix III: Biodiversity Enhancement

Proposed - Native Landscaping

A series of trees, woody shrubs, climbers, herbaceous plants and ferns have been given within the table below which are suitable for incorporation into the proposed development at The Poplars; the list of plants given below are readily commercially available.

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

Enhancing a development site for Breeding Birds

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

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

See - www.nhbs.com/2h-schwegler-robin-box



Enhancing a development site for Invertebrates

Bee bricks

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

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

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

Specification

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



Enhancing a development site for Hedgehogs

Hedgehog Home

Specification:

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



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

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

Hedgehog Highway

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

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

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



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

* Dimensions: Height 26cm x width 23cm

* Entrance Hole: 13cm x 13cm

* Country of Manufacture: England

Appendix IV: Phase 1 Habitat Map

