

Trevor Basin

Preliminary Ecological Appraisal

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Executive Summary

Arcadis Consulting (UK) Limited was commissioned by Wrexham Borough County Council to provide preliminary ecological advice in support the redevelopment of the Trevor Basin site, Wrexham. A Preliminary Ecological Appraisal (PEA) has been undertaken to assess the site for potential ecological constraints and identify any requirements for further survey, mitigation, or enhancement opportunities.

A desk study and a field survey were undertaken in October and November 2022 to assess and map habitats within the site. An initial assessment was undertaken in the field to determine the potential of on-site habitats to support protected and notable species.

The desk study indicated that there are six statutory protected sites (of ecological relevance) within 10km of the site and eight non-statutory) within 2km of the site. There were no areas of Ancient Woodland within 200m of the survey area. River Dee SAC/SSSI is located approximately 500m to the south west and is hydrologically connected to the site via Tref-y-nant brook.

The site comprised of a large area of former industrial land on a mostly west facing slope. The remainder of the site was occupied by broadleaved semi-natural woodland, mixed species scrub, ruderal and ephemeral land, poor semi-improved grassland, and several scattered trees.

The site contained habitats with the potential to support protected or notable species. If future developments are proposed, then potential ecological constraints may include:

- River Dee SAC/SSSI
- Non-native invasive plant species
- Amphibians, including great crested newts
- Reptiles
- Nesting birds
- Roosting, foraging and commuting bats
- Badgers
- Otter
- Hedgehog

In line with national and local planning policy, there is also the opportunity to enhance the site for biodiversity. As part of the re-wilding proposals on-site, there is scope to enhance all habitats on site.

1 Introduction

1.1 Background

Arcadis Consulting (UK) Limited was commissioned by Wrexham Borough County Council to undertake a Preliminary Ecological Appraisal (PEA) of a former manufacturing site located at Trevor Basin (central grid reference SJ 2771 4260), hereafter referred to as 'the site'.

The site is part of a former chemical works which operated from the 1920s until 2010, when production stopped. Most of the buildings have been demolished. At the time of survey, the site was largely hardstanding and mixed scrub, with some ponds and wooded areas.

1.2 Proposed Development

The proposed plans include redevelopment of part of the site into a new arrival car and coach park identified within the Trevor Basin and Surrounding Area Masterplan 2021, as a primary arrival point for the Pontcysyllte & Canal World Heritage Site (WHS). 'Rewilding' of the remainder of the site is proposed to create a restricted access brownfield nature reserve with heritage routes.

1.3 Site Location and Setting

The site is located at Cefn Mawr, Ruabon, Wrexham, LL14 3BH. Figure 1 highlights the site boundaries which are outlined in red. The site is immediately surrounded by woodland, housing, car parks and residential areas in the north, east and west. Woodland, roads, residential and commercial land use are located to the south. The village of Cefn-mawr is surrounded by farmland and woodland pockets. The River Dee and associated riparian woodland meanders to the south, approximately 1km away from the site.

Figure 1. Site boundary (red line)



1.4 Scope of Work

The scope of this assessment includes the following:

- A desk study, which included a search for sites designated for biodiversity and protected / notable habitats and species;
- A field survey was undertaken within the red line (Figure 1) to record all habitats and assess their potential to support protected / notable species; and
- A preliminary assessment to highlight potential impacts that proposals may present to biodiversity, as well as possible requirements for further survey effort, mitigation measures and enhancement opportunities.

2 Legislation, Guidance and Policy

This assessment has been undertaken in accordance with current national legislation, national planning policy, local plans and policies relating to biodiversity in the context of the Proposed Development. A summary of the relevant legislation and the requirements of these policies is provided below.

2.1 Relevant Legislation

The following legislation (Table 1 below), policy and guidance (Table 2) has been considered regarding the methodology and assessment included in this report.

Table 1. Relevant legislation

Legislation	Details
Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 ('Habitats Regulations') (HMSO, 2019a)	<p>The Regulations require authorities on behalf of the Secretary of State to maintain a list of sites which are important for either habitats or species (Natura 2000 sites – Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)) and to provide protection for these sites through designation, planning and other controls.</p> <p>The Regulations make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 4. However, these actions can be made lawful through the granting of licenses by the appropriate authorities (Natural Resources Wales in Wales).</p> <p>Licenses may be granted for a number of purposes (such as science and education, conservation, preserving public health and safety), but only after the appropriate authority is satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on the favourable conservation status of the species concerned.</p>
The Wildlife and Countryside Act 1981, as amended (WCA) (HMSO, 1981)	The Act provides protection to native species (particularly threatened species), their resting places and places of shelter by making it an offence to kill, injure, take, damage, destroy, sell or possess them (with exceptions).
Protection of Badgers Act 1992 (HMSO, 1992)	The Act makes it an offence to kill or take a badger, to cruelly ill-treat a badger, or to interfere with a badger sett, including disturbing a badger while it is occupying a sett.
Countryside and Rights of Way Act 2000 (HMSO, 2000)	The Act places a duty on government departments to have regard for the conservation of biodiversity and maintain lists of species and habitats for which conservation steps should be taken or promoted, in accordance with the Convention on Biological Diversity. It also strengthens legal protection for species considered to be threatened under the Wildlife and Countryside Act 1981 and increases powers for the protection and management of Sites of Special Scientific Interest (SSSI).
The Environment (Wales) Act 2016. Section 7 (HMSO, 2016).	The Environment (Wales) Act 2016 section 7 places a duty upon public bodies to maintain the list of living organisms and types of habitats they deem are of high importance for the purpose of maintaining and enhancing biodiversity in relation to Wales.

Legislation	Details
<p>The Invasive Alien Species (Enforcement and Permitting) Order 2019 (the Invasive Species Order’) (HMSO, 2019b)</p>	<p>This order strengthens the legislation in relation to widely spread species of European Union concern; requiring effective management measures to be put in place to minimise their impacts. It is an offence to import, keep, breed / grow, transport, sell, use, allow to reproduce, or release into the environment the species listed in Schedule 2 of this Order.</p>
<p>Environment Act 2021 (HMSO, 2021)</p>	<p>In line with the 25 Year Plan for the Environment (HM Government, 2018), new development should identify and pursue opportunities for securing measurable net gains for biodiversity and for the wider environment. The Environment Act 2021 introduces a mandatory requirement for 10% biodiversity net gain for new developments to ensure that they enhance biodiversity and create new green spaces for local communities to enjoy. Integrating biodiversity net gain into the planning system will provide a step change in how planning and development is delivered. There is also a strong focus on delivering environmental net gain. This would preferably be achieved on-site, however there are options to deliver these gains off-site and this would be demonstrated via the Biodiversity Metric 3.1.calculator tool (Natural England, 2021)</p>

2.2 Relevant Policy and Guidance

Table 2: Relevant policy and guidance

Policy / Guidance	Details
Planning Policy Wales (PPW) (Welsh Government, 2021)	<p>PPW sets out how the planning system manages the development and use of land in the public interest, prioritising long term collective benefit contributing to improving the economic, social, environmental and cultural wellbeing of Wales. Section 6 is concerned with conserving and enhancing biodiversity and our natural environment.</p> <p>Planning policies and decisions should contribute to and enhance the natural and local environment by:</p> <ul style="list-style-type: none"> • Taking opportunities to develop green infrastructure where possible • Green networks, corridors and connecting habitat within developed areas should be protected and enhanced. • All the landscapes of Wales are valued for their intrinsic contribution to a sense of place and local authorities should protect and enhance their special characteristics, whilst paying due regard to their social, economic, environmental, and cultural benefits they provide, and to their role in creating valued places. <p>The Environment (Wales) Act 2016 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 the 6 objectives for habitats and species.</p> <p>The planning system has a key role to play in helping to reverse the decline in biodiversity and increasing the resilience of ecosystems, at various scales, by ensuring appropriate mechanisms are in place to both protect against loss and to secure enhancement. Addressing the consequences of climate change should be a central part of any measures to conserve biodiversity and the resilience of ecosystems. Information contained in SoNaRR, Area Statements and species records from Local Environmental Record Centres should be taken into account. Development plan strategies, policies and development proposals must consider the need to:</p> <ol style="list-style-type: none"> 1. Support the conservation of biodiversity, in particular the conservation of wildlife and habitats; 2. Ensure action in Wales contributes to meeting international responsibilities and obligations for biodiversity and habitats; 3. Ensure statutorily and non-statutorily designated sites are properly protected and managed; 4. Safeguard protected and priority species and existing biodiversity assets from impacts which directly affect their nature conservation interests and compromise the resilience of ecological networks and the components which underpin them, such as water and soil, including peat 5. Secure enhancement of and improvements to ecosystem resilience by improving diversity, condition, extent and connectivity of ecological networks.

Policy / Guidance	Details
Chartered Institute for Ecology and Environmental Management Preliminary Ecological Appraisal Guidelines (2017)	The aim of the guidelines is to: promote good practice in undertaking Preliminary Ecological Appraisal (PEA) and provide a common framework for PEA in order to promote better communication , understanding and cooperation between stakeholders. The aim of a PEA is to identify the likely ecological constraints associated with a project; identify any mitigation measures likely to be required, following the mitigation hierarchy; identify any additional surveys that may be required to inform an Ecological Impact assessment and; identify the opportunities offered by a project to deliver ecological enhancement.
Chartered Institute for Ecology and Environmental Management Advice Note on the Lifespan of Ecological Reports and Surveys (2019)	The advice note states data collected within the last 12 months is valid in most cases. Data 12-18 months old is valid except from where a site may offer features usable by a mobile species within a short timeframe, where a mobile species is present on site or local vicinity or where country specific or species specific guidance dictates otherwise. If survey data is 18 months to 3 years old, an updated PEA will need to be carried out and a site visit will be required by an experienced ecologist but may still be valid. Data older than 3 years will not be valid.
Handbook for Phase 1 Habitat Survey: a technique for environmental audit (Joint Nature Conservation Committee (JNCC), 2010)	The Phase 1 Handbook (JNCC, 2010) provides a standardised system for classifying and mapping wildlife habitat throughout the United Kingdom. The aim of the Phase 1 habitat survey is to provide a rapid record of vegetation and wildlife habitat within the site.
BS 42020:2013 Biodiversity: Code of Practice for Planning and Development (British Standards Institution 42020: 2013)	The British Standards Institute guidance provides coherent methodology for biodiversity management to help protect and enhance UK biodiversity.

3 Methodology

3.1 Overview

This section sets out the methodologies applied to establish the baseline conditions and identifies any limitations encountered.

The baseline was established through a desk-based study and field survey. The latter comprised a habitat survey which was extended to consider all protected and notable species relevant to the area.

3.2 Desk Study

A desk study was undertaken in November 2022 to identify any existing ecological information relating to the survey area and its surroundings. The search areas applied for the information sought are provided in Table 3.

Table 3: Desk study search buffers

Feature	Distance of Search Area
International or European statutory designated sites	10km
National statutory designated sites	5km
Non-statutory designated sites Protected and notable species Invasive, non-native species Granted EPSM licences	2km
Protected and notable habitat (including ancient woodland)	200m

The following resources were used:

- The Multi-Agency Geographical Information for the Countryside (MAGIC) (MAGIC, 2022) website was used to search for statutory designated sites of nature conservation value, granted European Protected Species Mitigation (EPSM) licence applications within the last 10 years, ancient woodland and Habitats of Principal Importance in Wales (HPIE) listed under section 7 of the Environment Wales Act).
- Ordnance Survey (OS) mapping and aerial photography (Google mapping) were studied to place habitats within the study area in the wider context, identify potential ecological features that may not be evident on the ground during the field survey, and identify potential barriers to animal movements (such as road networks, built development and major water courses).
- Cofnod – North Wales Environmental Information Service were approached to provide ecological records of protected and notable species, habitats and non-statutory designated site information within 2km of the site. Only species recorded within the last 10 years were included in this assessment.

3.3 Field Survey

The survey was conducted on the 31 October and 1 November 2022 by Andrea Cordon MCIEEM, an appropriately skilled and experienced Senior Ecologist. Weather conditions during the survey were dry and mild. The results of this field survey will be referenced within this report.

The field survey comprised a walkover of the habitats within and immediately adjacent to the site boundary, with a classification with reference to the Phase 1 Habitat Survey methodology (JNCC, 2010). The survey followed the 'Preliminary Ecological Appraisal' methodology as set out in the 'Guidelines for Preliminary Ecological Appraisal' (CIEEM, 2017), which is compliant to the methodology described in the 'Handbook for Phase 1 Habitat Survey – a technique for environmental audit' from the Joint Nature Conservation Committee (JNCC, 2010). The survey identified actual or potential presence of legally protected or otherwise notable species and habitats. The main habitats within the site were mapped and are shown at an appropriate scale on a Phase 1 Habitat Map in Appendix A. Target Notes (TN) are provided in Appendix B.

The survey does not provide a comprehensive list of all species present; however, a summary of the dominant plant species was noted, as were any uncommon species or species indicative of particular habitat types. Plant names follow the 'New Flora of the British Isles' (Stace, 2019). The common and scientific name of each of the botanical species is provided when first mentioned in the text, but only the common name is stated thereafter.

3.4 Assessment and Evaluation

In addition to establishing the baseline ecological interest within the site, the survey intended to identify areas where further surveys may be required, during the appropriate season. The potential for habitats to support legally protected or notable species was assessed from field observations carried out during the walkover and combined with the results of the desk study.

The presence or likelihood of occurrence of any legally protected, noteworthy and/or invasive species was assessed from field observations carried out during the field survey walkover and combined with the results of the desk study. This was ranked as follows and relies on habitat suitability and an evaluation of existing data.

- **Negligible** – while presence cannot be absolutely discounted, habitats are very limited or of poor quality for a particular species or species group. There may be no local returns from a data search and the surrounding habitats are considered unlikely to support wider populations of a species/species group. The site may also be outside or peripheral to the known natural range for a species/species group.
- **Low** – habitats are of poor to moderate quality for a given species/species group. There are few or no returns from the data search, but presence cannot be discounted on the basis of national distribution, the nature of surrounding habitats, habitat fragmentation or recent disturbance, etc.
- **Medium** – habitats are of moderate quality providing opportunities for a given species/species group. Desk study reveals local occurrence, or the area is within the national distribution and with suitable surrounding habitat. Factors limiting the likelihood of occurrence may include small habitat area, habitat isolation, and/or disturbance.
- **High** – habitats are of high quality for a given species/species group. Desk-top study provides evidence of local occurrence. The area is within/peripheral to a national or regional stronghold and/or has good quality surrounding habitat and good connectivity.
- **Confirmed Presence** – presence confirmed from the current survey or by recent, confirmed records.

3.5 Survey Limitations

Field surveys are limited by a variety of factors which affect the presence of flora and fauna (i.e. climatic variation, season and species behaviour). A lack of evidence of a protected species during a survey does not mean that the species is absent; hence the survey also records and assesses the ability of habitats to support such species. The time frame in which the survey is implemented provides a snapshot of activity within the survey area and cannot necessarily detect all evidence of use by a species.

It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no investigation can ensure the complete characterisation of the natural environment. The field survey does not constitute a full botanical survey. Plant species may have been under-recorded, unidentifiable or not visible due to the time of year the survey was carried out.

The protected species assessment provides a preliminary view of the likelihood of protected species occurring within the site. This is based on the suitability of the habitat, known distribution of the species in the local area (provided by data searches and historic survey information) and any direct evidence within the survey area. It should not be taken as providing a full and definitive survey of any protected species group. It is only representative of the time the survey was carried out. Additional surveys may be recommended if, based on the preliminary assessment or during subsequent surveys, it is considered reasonably likely that protected species may be present.

4 Results

4.1 Reporting Outline

The results of the desk study and field survey are described below, with sites or features of nature conservation interest detailed as appropriate.

Supporting documents to be read in conjunction with the results and subsequent discussion are as follows:

The habitat and protected species plan are presented in Appendix A, whilst the associated Target Notes (TN) and photographs are included in Appendix B.

4.2 Desk Study

4.2.1 Designated Nature Conservation Sites

Six statutory and eight non-statutory designates sites of nature conservation value are located within the search area.

Details of designations are summarised in Table 4 and Table 5.

Table 4: Statutory designated sites for biodiversity within the search area

Site Name	Reason for Designation	Distance and Direction from Site (km)
Afon Dyfrdwy (River Dee) SSSI/SAC	The site is of special interest for its fluvial geomorphology, Carboniferous geology, range of river habitat types, saltmarsh transition habitats, populations of Floating Water-plantain (<i>Luronium natans</i>), Slender Hare's-ear (<i>Bupleurum tenuissimum</i>), Sea Barley (<i>Hordeum marinum</i>), Hard-grass (<i>Parapholis strigosa</i>), otter (<i>Lutra lutra</i>), Atlantic salmon (<i>Salmo salar</i>), bullhead (<i>Cottus gobio</i>), brook lamprey (<i>Lampetra planeri</i>), river lamprey (<i>Lampetra fluviatilis</i>), sea lamprey (<i>Petromyzon marinus</i>), club-tailed dragonfly (<i>Gomphus vulgatissimus</i>) and other aquatic invertebrates.	0.5 south west
Nant-y-Belan and Prynella Woods SSSI	This site is of particular interest for its botany. It represents a large area of semi-natural woodland comprising of Sessile Oak (<i>Quercus petraea</i>), with Ash (<i>Fraxinus excelsior</i>), Wych Elm (<i>Ulmus glabra</i>), Wild Cherry (<i>Prunus avium</i>), Sycamore (<i>Acer pseudoplatanus</i>), Beech (<i>Fagus sylvatica</i>), Yew (<i>Taxus baccata</i>), Alder (<i>Alnus glutinosa</i>), Hazel (<i>Corylus avellana</i>), Holly (<i>Ilex aquifolium</i>), Hawthorn (<i>Crataegus monogyna</i>), Rowan (<i>Sorbus aucuparia</i>), Privet (<i>Ligustrum vulgare</i>), Bird Cherry (<i>Prunus padus</i>), Wild Service Tree (<i>Sorbus torminalis</i>) and other plants.	2.7 south east

Site Name	Reason for Designation	Distance and Direction from Site (km)
Berwyn a Mynyddoedd De Clwyd (Berwyn and South Clwyd Mountains) SAC / Berwyn/ Dinas Bran SPA/SSSI	The site is a special area of conservation due to Annex I habitats, it supports the most extensive tract of near-natural blanket bog in Wales. The vegetation is dominated by Heather (<i>Calluna vulgaris</i>), Hare's-tail Cottongrass (<i>Eriophorum vaginatum</i>), Crowberry (<i>Empetrum nigrum</i>), and Cloudberry (<i>Rubus chamaemorphus</i>). It also supports European Dry Heaths – the largest in Wales – and consists of the following vegetation: Heather, Bilberry (<i>Vaccinium myrtillus</i>), Wavy Hair-grass (<i>Deschampsia flexuosa</i>), Red Bog-moss (<i>Sphagnum capillifolium</i>) and heartleaf Twayblade (<i>Listera cordata</i>).	2.8 north west
Castell y Waun a'i Barcdir / Chirk Castle and Parkland SSSI	Castell y Waun a'i Barcdir/Chirk Castle and Parkland is of special interest for being one of the best examples of ancient wood pasture and parkland in Wales, containing a large number and diverse species of veteran and ancient trees. The site is also of special interest for the important invertebrate species that these trees support. Also of special interest is the breeding roost of lesser horseshoe bats (<i>Rhinolophus hipposideros</i>) in the castle buildings. One area of grassland supports a diverse assemblage of grassland fungi which is of special interest and of national importance, including 15 species of waxcap (<i>Hygrocybe spp.</i>).	3.5 south
Johnstown Newt Sites SAC/SSSI	These sites are special areas of conservation because a large population of great crested newts (<i>Triturus cristatus</i>) are present. Breeding sites are provided partly by a mining subsidence pool , natural water-filled hollows on clay and other ponds have been created as part of nature conservation management. Terrestrial habitat varies from marshy grassland, grazed farmland and swamp through to scrub and broadleaved habitat.	3.9 north east
Caeau Pen-y-coed SSSI	Caeau Pen-y-coed is of special interest for its unimproved neutral grassland which is associated with areas of acidic grassland and other habitats including mature woodland, scrub and bracken. Vegetation include: Crested Dog's-tail (<i>Cynosurus cristatus</i>), Common Knapweed (<i>Centaurea nigra</i>), Meadow Vetchling (<i>Lathyrus pratensis</i>), Red Fescue (<i>Festuca rubra</i>), Common Bent (<i>Agrostis capillaris</i>), Sweet Vernal-grass (<i>Anthoxanthum odoratum</i>), Cock's-foot (<i>Dactylis glomerata</i>) and Yorkshire-fog (<i>Holcus lanatus</i>). Herbs present in the sward include those indicative of unimproved grassland such as Common Bird's-foot Trefoil (<i>Lotus corniculatus</i>) and Rough Hawkbit (<i>Leontodon hispidus</i>).	5.0 west

Table 5: Non-statutory designated sites for biodiversity within the search area

Site Name	Reason for Designation	Distance and Direction from Site (km)
Acrefair Railway Cutting Wildlife Site (WS)	Coarse neutral grassland dominated by tall False Oat-grass (<i>Arrhenatherum elatius</i>) with scattered Hawthorn bushes. Yorkshire fog is abundant with frequent Common Knapweed, Common Sorrel (<i>Rumex acetosa</i>), Lesser Stitchwort (<i>Stellaria graminea</i>), Creeping Thistle (<i>Cirsium arvense</i>) and Meadow Foxtail (<i>Alopecurus pratensis</i>).	0.7 east
Plas Bennion WS	This is a site with several embankments of coal spoil but there is erosion due to motor bikes. The embankments have been colonized by Silver Birch (<i>Betula pendula</i>) and Willow (<i>Salix</i> sp.) scrub with a poor ground flora of Wavy Hair-grass and common bent. The patches of short semi-improved neutral grassland surrounding the embankments are dominated by Lesser Trefoil (<i>Trifolium dubium</i>) with Common Bent. Red Bartsia (<i>Odontites vernus</i>) is frequent with some common centaury (<i>Centaureum erythraea</i>) and Eyebright (<i>Euphrasia</i>). A small patch of marshy grassland with Bulrush (<i>Typha latifolia</i>) also occurs.	1.0 north east
Spring wood WS	This site is of interest for its broadleaved woodland.	1.2 south west
Frncysyllte Quarries WS	Several large disused limestone quarries with cliffs and spoil heaps, colonised by broadleaved woodland and scrub. The canopy is dominated by Ash and Sycamore and there is Willow, Birch and Ash scrub. The ground flora is variable. The southern quarry has large patches of Springy Turf-moss (<i>Rhytidiadelphus loreus</i>) and Yellow-wort (<i>Blackstonia perfoliata</i>), Common centaury and Thyme-leaved Speedwell (<i>Veronica serpyllifolia</i>) occur. A few Crab Apple trees (<i>Malus sylvestris</i>) are present on the tops of the cliffs. The species-poor semi-improved coarse grassland is dominated by False Oat-grass. It is potentially a good area for birds.	1.4 south west
Pisgah Quarry (North Wales Wildlife Trust)	The site is of interest for woodland birds and plant life such as Cowslips (<i>Primula veris</i>)	1.5 south west

Site Name	Reason for Designation	Distance and Direction from Site (km)
Llyn carr WS	The site is of interest for its scrub, swamp and open water.	1.7 south west
Disused railway WS	The site supports scrub and neutral and calcareous grassland on a disused railway. Scrub species include Sycamore, Hawthorn, Ash, Blackthorn (<i>Prunus spinosa</i>), Dog-rose (<i>Rosa canina</i>), Bramble (<i>Rubus fruticosus</i> agg.), Silver Birch and Dogwood (<i>Cornus sanguinea</i>). Grassland species found are False Oat-grass, Sterile Brome (<i>Bromus sterilis</i>), Golden Oat-grass (<i>Celtica gigantea</i>), Musk Thistle (<i>Carduus nutans</i>), Common Knapweed, Common Centaury, Smooth Hawk's-beard (<i>Crepis capillaris</i>), Wild Carrot (<i>Daucus carota</i>), Oxeye Daisy (<i>Leucanthemum vulgare</i>), Common Ragwort (<i>Jacobaea vulgaris</i>), Primrose (<i>Primula vulgaris</i>), Wild Basil (<i>Clinopodium vulgare</i>) and Common Vetch (<i>Vicia sativa</i>). Plants associated with disturbed ground include Hop Trefoil (<i>Trifolium campestre</i>), White Campion (<i>Silene latifolia</i>), Bladder Campion (<i>Silene vulgaris</i>), Common Poppy (<i>Papaver rhoeas</i>), Black Medick (<i>Medicago lupulina</i>) and Common Restharrow (<i>Ononis repens</i>).	1.8 south west
Llanerch Farm/Ddol Isa Mountain WS	A steep wooded common land hillside. Woodland on the lower slopes is dominated by Beech and Pedunculate Oak (<i>Quercus robur</i>) on the upper slopes. The understorey is mainly Bracken (<i>Pteridium aquilinum</i>) and Bramble, and the ground flora is poor.	1.9 south west

4.2.2 Ancient Woodland

There were no areas of Ancient Woodland within 200m of the site boundary.

4.2.3 Records of Protected and Notable Species

Desk study results for protected and notable species are discussed in section 4.4 below.

4.3 Habitats

4.3.1 Semi-natural Broadleaved Woodland

The main block of woodland in the north west of the site followed the course of the Tref-y-Nant brook, occupying a broadly flat area at the bottom of the hill. The core of the woodland in the north appeared to be at

least 30 years old with large mature trees, although the remains of old buildings within the woodland would indicate this was once industrial. The dominant trees were Ash and Sycamore, with occasional Pedunculate Oak, Silver Birch, Alder (*Alnus glutinosa*), Scots Pine (*Pinus sylvestris*) and Goat Willow (*Salix caprea*). The understory comprised Rowan (*Sorbus aucuparia*), Dog-rose, Hawthorn, Butterfly-bush (*Buddleja davidii*), Hazel and Wych Elm (*Ulmus glabra*). The ground flora was dominated by Ivy (*Hedera helix*), with Dog's Mercury (*Mercurialis perennis*), Bramble and Butterburr (*Petasites hybridus*) also having significant coverage, and many other woodland species. The trees appeared generally healthy and there was little deadwood, either standing or fallen, in the areas visited save a few small branches.

The woodlands in the southern and eastern parts (see TN1 for an example) were more recent, probably colonised since the closure of the manufacturing site, with mostly semi-mature broadleaved, and conifer species. The canopy there was dominated by Ash and Sycamore, though occasionally Beech, and rarely Wild Cherry (*Prunus avium*) and Hazel were also found. The trees were generally semi-mature and smaller, up to 3-4m. The ground flora in all woodland areas was again dominated by Ivy, with Dog's Mercury and other woodland plants, plus but some small areas of bare ground, and Bramble.

4.3.2 Scattered Trees

There were few scattered mature ornamental trees outside of the woodland, presumably part of the landscaping while the site was operating. These were generally Ash, but included Cedar (*Cedrus* sp.), Sycamore and Pedunculate Oak. The majority of the remaining vegetation was recent regeneration. Some smaller Hazel and Hawthorn trees were present, and ornamental planting around a car park at the northern end of the site. The cemetery to the north west of the site was surrounded on three sides by a line of tall Lombardy Poplar (*Populus nigra italica*).

The site boundary was generally a metal fence; however, there was a line of mature scattered trees, in the north, dividing a hardstanding car park from the main site. This was dominated by Cypress (*Cupressus* sp.), with scattered Silver Birch and Sycamore.

4.3.3 Scrub

Scattered Scrub

The majority of the site consists of a large open area of hardstanding and bare ground, with naturally regenerating scrub (TN2), mostly low shrubs of up to 2m in height, which included a mix of native and non-native ornamental plants. The northern end of the site was more characteristic of scattered scrubland, whereas the scrub to the south was generally much more concentrated, likely as there was less hardstanding and more gravel in these areas.

Most predominantly recorded was Butterfly-bush, but there was also abundant Silver Birch, Hawthorn, Rowan and Sycamore, plus Bramble, Honeysuckle (*Lonicera periclymenum*), Dog-rose and Guelder-rose (*Viburnum opulus*). Traveller's-joy (*Clematis vitalba*) was abundant over much of the site and occasionally formed areas of dense ground cover, particularly in the north of the site. Cotoneasters (*Cotoneaster* sp.) were also present as ground cover in a few areas. Hedge bindweed (*Calystegia sepium*) was abundant throughout, alongside some stands of Rosebay Willowherb (*Chamaenerium angustifolium*) and other Willowherbs (*Epilobium* sp.).

Dense Scrub

There were small areas of dense scrub scattered around the south, east and west of the site, including near the western entrance and on the woodland margins. These were generally low growing including stands of

Cotoneaster and Bramble covering, and dense and impenetrable Silver Birch and Butterfly-bush in the west with nearly no ground flora.

4.3.4 Poor Semi-improved Grassland

The main grassy areas of the site were in the south west and appear to have been originally planted as amenity grassland, likely when the site was actively used. The management of these grassy areas is different, with parts of the grassland to the south having been maintained frequently, while the large areas north east of the ponds appears to have been left to grow long.

The longer sward (TN3) was dominated by grasses, including Perennial Rye-grass (*Lolium perenne*), Cock's-foot, Yorkshire-fog and Meadow-grass (*Poa* sp.), but was quite diverse and included herbs such as Common Ragwort, Hogweed (*Heracleum sphondylium*), Thistles (*Cirsium* sp.), Common Knapweed, Creeping Buttercup (*Ranunculus repens*) and occasional Common Bird's-foot Trefoil. The shorter-sward grasslands in the south were similarly composed; however, generally less species-rich. In the west, within the dense scrub, were several clearings which have been recolonised by grassland species, resulting in a similar species mixture to that of the larger grassland areas, with frequent tall Willowherbs, Thistles and Hogweed.

4.3.5 Running Water

Tref-y-nant brook (TN4) flows through the woodland in the north west of the site. The brook was approximately 1m wide and between 10 and 30cm deep, flowing in a shallow channel over stone and gravel. The channel was very shaded, with no aquatic vegetation..

4.3.6 Standing Water

There were three large ponds within the site (see TN5, TN6 and TN7 for pond descriptions).

4.3.7 Amenity Grassland

A small area of amenity grassland was present in the cemetery in the north of the site. The grassland was regularly mowed and species-poor.

4.3.8 Hardstanding

Approximately 65% of the site was made up of a large area of hardstanding and bare ground which comprised of a series of terraces and brick walls, asphalt roads that crisscross the site, or concrete pads where buildings once stood. These areas were overgrown with Butterfly-bush and tree saplings.

In the north, an area of hardstanding comprised a disused carpark with ornamental shrubs and trees, which have overgrown. Silver Birch, Cypress, Bindweed (*Convolvulus* sp.), Firethorn (*Pyracantha coccinea*), Wall Cotoneaster (*Cotoneaster horizontalis*), mosses and Bramble were beginning to cover the hardstanding.

The remaining areas comprised of gravel with very little to no bare soil. It is possible that the gravel areas resulting from the demolition of the buildings overlies more hardstanding, because vegetation was very limited over most of these areas with some mixed scrub regenerating across the area. These included Butterfly-bush, by far the most common shrub species, plus Silver Birch (*Betula pendula*) and Hawthorn, Rosebay Willowherb, Hogweed, Creeping Buttercup and Common Ragwort. The ground flora was still sparse and areas of continuous ground cover very rare.

4.4 Protected and Notable Species

4.4.1 Non-native Invasive Plant Species

Records of seven non-native invasive species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were returned by the desk study within 2km of the site. The species included Japanese Knotweed (*Fallopia japonica*), Montbretia (*Crocsmia x crocosmiiflora*), Indian (Himalayan) Balsam (*Impatiens glandulifera*), Wall Cotoneaster, Variegated Yellow Archangel (*Lamiastrum galeobdolon* subsp. *argentatum*), Canadian waterweed (*Elodea canadensis*) and Japanese rose (*Rosa rugosa*).

Japanese Knotweed (TN8), Montbretia (TN9) and Wall Cotoneaster (TN10) were recorded during the survey. Non-native Butterfly-bush was abundant on the site; however, this species is not classed as 'invasive' and is not listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

Invasive / non-native plant species were confirmed to occur within the site.

4.4.2 Invertebrates

The desk study returned records of 15 invertebrate species within 2km of the site, all of which are listed as Environment (Wales) Act (2016), Section 7. The closest recorded invertebrate species was the white-letter hairstreak (*Satyrrium w-album*), located approximately 430m from the site. Other species included: scarce yellow sally (*Isogenus nubecula*), cinnabar (*Tyria jacobaeae*), dingy skipper (*Erynnis tages*), southern yellow splinter (*Lipsothrix nervosa*), wall (*Lasiommata megera*), buff ermine (*Spilosoma lutea*), small emerald (*Hemistola chrysoprasaria*), small phoenix (*Ecliptopera silaceata*), flounced chestnut (*Anchoscelis helvola*), autumnal rustic (*Eugnorisma glareosa*), ghost moth (*Hepialus humuli*), Welsh clearwing (*Synanthedon scoliaeformis*), sword-grass (*Xylena exsoleta*) and shaded broad-bar (*Scotopteryx chenopodiata*).

The site features an abundance of nectar bearing shrubs, and the site potentially serves as an important resource for more mobile species from the surrounding areas. The bare ground present is an undervalued habitat for invertebrates, and could be used for basking, hunting, and burrowing. Brownfield and early successional sites are a valuable resource for invertebrates, and whilst it is likely that this site probably has at present too high a proportion of hardstanding to be of great value, the value for invertebrates should not be discounted.

The woodland has a high proportion of Sycamore and a small number of non-native conifers, which are not necessarily associated with a diverse native invertebrate fauna. The ground is generally sparse with little deadwood, however the areas of dense scrub along the internal boundaries of the woodland do provide a diverse woodland margin in places.

The likelihood that the site supports a significant assemblage of protected or notable terrestrial invertebrates was assessed as low.

4.4.3 Amphibians

Cofnod held two records of great crested newt within 2km. One of these records was located within the site, in Lagoon C (TN7), and was from a 2015 ecological survey undertaken in inform the planning decision making process. Great crested newts have also been observed within both Lagoon B (TN6) and C (TN7) during maintenance works (Ian Biggs, personal communication, 31 October 2022). A further record of great crested newt was located approximately 900m north east of the site.

Cofnod also held records of common toad (*Bufo bufo*), common frog (*Rana temporaria*), smooth newt (*Lissotriton vulgaris*) and palmate newt (*Lissotriton helveticus*) within 2km of the site.

The three ponds within the site all have potential for breeding by amphibians. Pond assessments included applying the Habitat Suitability Index (HSI) following ARG UK (2010) to determine their suitability for supporting great crested newt. Results are summarised below:

- The southern-most pond (pond A, TN5) is the least shaded, however this pond has a concrete surround which limits the amount of vegetation able to grow around the perimeter and thus reducing suitability for great crested newt. This pond achieved a HSI score of 0.35, indicative of 'poor' suitability for great crested newt.
- The pond in the middle of the three (pond B, TN6) had open water for breeding displays, and numerous aquatic vegetation for egg laying. This pond was assigned a HSI score of 0.69, indicating average score.
- The northern-most pond (pond C, TN7) was assigned a HSI score of 0.88, qualifying as excellent condition.

The site also has potential for terrestrial use by amphibian species in the denser areas of grassland, woodland, and scrub, and with breeding habitat it is considered likely that common amphibians (i.e. common toad, common frog, smooth newt and palmate newt) are present on site.

Great crested newt is confirmed to be present on site. The likelihood that the site supports and other common amphibians was assessed as high.

4.4.4 Reptiles

The desk study returned three records of grass snake (*Natrix helvetica*) and nine records of slow worm (*Anguis fragilis*) within 2km of the site. The closest record was of slow worm approximately 270m from the site. The closest record of grass snake was located approximately 900m away from the site. Reptiles are priority species listed on the Environment (Wales) Act (2016) in Schedule 7.

The site contains large areas of suitable habitat for reptile species, containing a good mix of open bare ground, scrub, rubble and cracked walls, and isolated grassy areas. The site has relatively poor connectivity to other habitat, being isolated by roads and built-up areas.

The presence of reptiles will depend on their ability to access the site since the closure and demolition of the chemical works, which would require populations nearby. Cofnod have records of both slow worm and grass snake within relatively close proximity to the site. It is therefore considered possible that reptiles are present on site.

The likelihood that the site supports reptiles was assessed as moderate.

4.4.5 Birds

The desk study returned many records of birds within the local area. Eleven notable species have been recorded on-site, including kingfisher (*Alcedo atthis*), black-headed gull (*Chroicocephalus ridibundus*), peregrine falcon (*Falco peregrinus*), herring gull (*Larus argentatus*), house sparrow (*Passer domesticus*), marsh tit (*Poecile palustris*), dunnoek (*Prunella modularis*), bullfinch (*Pyrrhula pyrrhula*), starling (*Sturnus vulgaris*), wren (*Troglodytes troglodytes*) and song thrush (*Turdus philomelos*). Both kingfisher and peregrine falcon are listed on Schedule 1 of the Wildlife and Countryside Act (1981 as amended), meaning they are afforded additional protection from disturbance when nests are active.

The site had abundant suitable habitat for nesting birds. Woodland, scattered trees and scrub across the site are suitable for nest building. The larger trees may contain holes and gaps which nesting birds can use; all the taller vegetation on the site should be considered potential bird-nesting habitat.

The presence of birds on site was confirmed by the desk study and the likelihood of nesting birds considered high.

4.4.6 Bats

The desk study returned numerous records of bats, with most records within 500m of the site being of pipistrelles (*Pipistrellus* sp.). In total, there were records of nine bat species within 2km of the site, including; Myotis bat species (*Myotis* sp.), Natterer's bat (*Myotis nattereri*), noctule bat (*Nyctalus noctula*), common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and brown long-eared bat (*Plecotus auritus*), all of which are listed as Priority Species in the Environment (Wales) Act (2016) in Schedule 7. All bat species in the UK are European Protected Species (EPS) under the Conservation of Habitats and Species Regulations 2019 as amended (HMSO, 2019a). There were no records of bats on site and the nearest roost was located approximately 300m from the site.

The site contains woodland with numerous large and mature trees, and it is likely that at least some of the trees are suitable for use by roosting bats. The area is also likely to be used by foraging or commuting bats as there are good flight lines along the site boundaries, and possibly along the scrub covered areas.

The likelihood that the site supports roosting, commuting and/or foraging bats was assessed as high.

4.4.7 Badger

The desk study returned 22 records of badgers (*Meles meles*) within 2km of the site. There were no records of badger from closer than 500m. Records were concentrated along the Dee valley to the south west.

There was no evidence of badger activity within the site. The site is suitable for foraging and, if there are badgers in the area, there are no major barriers that would inhibit their visit to the site. There were no setts observed, and the large majority of the site is considered unsuitable for sett excavation due to the predominant hardstanding.

The woodland and eastern side of the site appeared to be more suitable. The embankments up to the old canal course are lined with stone and so unlikely to be suitable, and the woodland area is predominantly flat and wet. During the survey, no large banks of earth or other obvious sites for setts were recorded, though some parts of the woodland were inaccessible so a full search of the site could not be undertaken.

The likelihood that the site supports badger setts is considered moderate.

4.4.8 Water Vole and Otter

The desk study returned 12 records of water vole (*Arvicola amphibius*) and otter (*Lutra lutra*) within 2km. The closest record of a water vole was 948m from the site. One record of a dead female otter was identified as within the site and it is possible the otter was commuting through the site.

The brook may be visited by otters from the river to the south but is likely too small to support holts or other resting places. As the brook is separated from the river Dee corridor by a culvert, which is approximately 200m long and so likely to deter otters moving upstream, however they can readily move overland over these distances. Cofnod have several records of otter from the Dee, including near the outlet of the brook and it is

likely that the area is visited. The stream is not suitable for water vole, with very little grass fodder or burrowing opportunities owing to the presence of large stones.

The likelihood that the site supports water vole is negligible. The presence of otter on site has been confirmed by the desk study; however, the likelihood that the site supports otter holts is considered low.

4.4.9 Hedgehog

The desk study returned 22 records of hedgehog (*Erinaceus europaeus*) within a 2km radius. The closest record was 315m from the site.

The site is suitable for hedgehogs as it contains woodland edges and suburban habitat. They are often found in urban areas including gardens and may be found in woodland, scrub and grassland areas.

The likelihood that the site supports hedgehog is considered high.

5 Discussion

5.1 Overview

The following ecological features have been scoped out (as not requiring further consideration (with regard to proposed development on site (no potential impacts are anticipated).

- Non-statutory designated sites: There are eight non-statutory sites within 2km of the site, the closest of which is Acrefair Railway Cutting Wildlife Site which is located 700m away from the site. This site is designated due to its botanical diversity. It is not anticipated that the nature conservation interest of any of the sites would be affected by the proposals due to the distance and lack of impact pathways.
- Ancient woodland: There are no ancient woodland sites within 200m of the site. As such, this receptor is unlikely to be impacted and has been scoped out.
- Invertebrates: The site was not considered likely to support an important assemblage of invertebrate species. No significant effects on invertebrate communities are predicted.
- Water vole: There are a lack of suitable habitats. The watercourse is too shaded and vegetated and the banks were made of rock or stone so were unsuitable for burrowing.

The following ecological features have been scoped in, meaning that adverse impacts are possible, and they need at least some consideration as the scheme develops over time.

- Statutory designated sites: The site is not within any statutory protected area. The closest is River Dee SAC/SSSI, which is located approximately 500m to the south west and connected to the site via Tref-y-nant brook. Although the proposed re-wilding works are unlikely to have a direct impact on either Tref-y-nant brook or the SAC/SSSI, the proposed new arrival car and coach park is located approximately 10m away from Tref-y-nant brook. As such, there is the potential for adverse effects on the SAC/SSSI as a result of pollution during construction.
- Non-native Invasive Plant Species: Japanese Knotweed, Montbretia and Cotoneaster were identified within the site during the survey. Butterfly-bush was recorded within scrub, scattered scrub and hardstanding areas. Although not on Schedule 9, this species is also widely considered invasive in most parts of the UK.
- Amphibians: Great crested newt is present within the site and other common amphibians are highly likely to occur within suitable habitats.
- Reptiles: The varied structure of the grassland onsite plus scrub and hardstanding provide good sheltering and basking habitat for reptiles. Owing to the suitable habitat on site, it is likely reptiles are present.
- Birds: The site contains abundant suitable habitat for nesting birds. If vegetation clearance is undertaken on site during this period, in the absence of mitigation, there is potential for negative impacts on nesting bird species. The scheme may also cause some losses in nesting bird habitat. Consideration should also be given to the potential presence of Schedule 1 birds nesting on or in close proximity to the site, which should be protected from disturbance when nests are active.
- Bats: There are several mature trees on site that could provide roosting habitat for bats in the area. As proposals have not been fully confirmed for the site it must be assumed that the potential roost features across the site could be impacted by development. Further assessments / surveys will be required if these features are to be impacted. Furthermore, any newly introduced artificial lighting may cause more permanent adverse impacts by disrupting night-time bat activity traffic. This will need to be assessed once designs for the development are known.

- **Badger:** There is potential for badger to utilise area of the site. There were 22 records of badgers including setts, tracks and sightings within 2km of the site. No records were found within the site. Badgers are very mobile and can build setts within apparently unsuitable areas.
- **Otter:** There were local records within 2km of the site, and one record within the site. Although the brook within the site has low suitability for holt creation, the site is suitable for commuting and foraging in the lagoons.
- **Hedgehogs:** There are no records for hedgehogs on-site; however, there are 30 records within 2km of the site. Hedgehogs are found in urban environments, border habitats such as edges of broadleaved woodland. Hedgehogs may be present on site.

5.2 Further Survey Work Required

The following recommendations are made on the understanding that no proposed development works have yet been confirmed, and that any habitats within the site have the potential to be impacted or removed.

5.2.1 Statutory Designated Sites

The site is connected hydrologically via Tref-y-nant brook to the River Dee. As such, there is potential for adverse effects on the River Dee SAC/SSSI as a result of pollution during construction activities if these take place in close proximity to Tref-y-nant brook. Dependent on the final scope of works, Habitat Regulations Assessment (HRA) screening may be required in order to assess the potential for any likely significant effects upon this site.

5.2.2 Non-native Invasive Plant Species

As the presence of invasive species has been identified on the site, it is recommended that a scoping survey be undertaken to fully ascertain the extent of the Knotweed, Montbretia and Wall Cotoneaster. An invasive species management plan will need to be produced detailing appropriate eradication measures to be carried out prior to the commencement of works. Although not listed on Schedule 9, it is recommended that Butterfly-bush is removed to encourage a more diverse vegetation to establish.

5.2.3 Amphibians

Great crested newts are known to be present within the site, particularly within Lagoon B (TN6) and C (TN7). Other common amphibians are also likely to be present on site. The construction of the new arrival car and coach park would impact upon terrestrial habitat suitable for amphibians and 'rewilding' of the remainder site may also affect both aquatic and terrestrial habitats depending on the scale of the proposed works.

Further great crested newt surveys would need to be undertaken to support future development to update the existing baseline and determine the extent of this species within the site and connected habitats. Great crested newt presence/absence surveys should be undertaken of all suitable waterbodies within the site and those that have terrestrial habitat connectivity and are situated up to 500m from the site boundary. Presence/absence surveys should either follow the methodology outlined by English Nature (2001) or comprise environmental DNA surveys as described by Biggs *et al.*, 2014).

5.2.4 Reptiles

For the same reasons as described above for reptiles, it is advised that development proposals are informed by reptile presence/likely absence surveys of suitable habitats within the site in accordance with good practice guidance, including the 'Herpetofauna Workers' Manual' (Gent and Gibson, 2003) and Froglife (1999), to

determine the extent and importance of the reptile population and inform mitigation design (including retention/creation of sufficient habitat).

5.2.5 Birds

The site contains abundant suitable bird nesting habitat. Dependent on the final development scope, breeding bird surveys may be required, due to the potential presence of several Schedule 1 birds, peregrine falcon and kingfisher.

5.2.6 Bats

As it is likely that bats use the area for foraging and commuting, they may be impacted by any works, particularly regarding any lighting used within the woodland which may discourage them from using the area. Depending on the final development location and design and the outcome of the assessments, bat activity surveys may be required to be undertaken to assess bat commuting and foraging habitats within the site, as well as outline mitigation measures.

The trees across the site have some potential to support roosting bats. Any trees to be removed or managed should be assessed for bat roosting potential by a suitably experienced ecologist. A full Potential Roosting Features (PRF) survey that considers all trees with any cracks, crevices or ivy covered must be considered potentially suitable for bats. If any features suitable for bats are found then further surveys will be needed, either through tree climbing by an appropriately licenced ecologist, or an emergence/re-entry survey, monitoring the tree with bat detectors at night to see if bats emerge from or enter any of the features.

Bat survey methodology should follow the Bat Conservation Trust's (BCT) 'Good Practice Guidelines' (Collins, 2016) or an updated version of this guidance if available.

5.2.7 Badger

Since badgers may colonise new habitat in relatively short period of time, it is recommended that a pre-construction badger inspection of the site is completed to confirm that no setts will be damaged, or badgers disturbed by site activities.

6 Mitigation

Mitigation detailed in this section is based on information known to date. With the addition of further survey work and more detail regarding the development proposals, it may be necessary to mitigate for significant effects that have not been assessed/determined in full at this stage. Therefore, the mitigation measures below must be considered indicative at this stage and must be updated as part of a more comprehensive EclA in due course.

6.1.1 Statutory Designated Sites

The site is connected hydrologically via Tref-y-nant brook to the River Dee. As such, there is potential for adverse effects on the River Dee SAC/SSSI as a result of pollution during construction activities if these take place in close proximity to Tref-y-nant brook.

Appropriate pollution control measures would need to be implemented during site clearance and construction for works which are within and / or adjacent to Tref-y-nant brook to prevent uncontrolled surface water run-off and pollution towards the SAC/SSSI.

6.1.2 Non-native Invasive Plant Species

The Japanese Knotweed, Wall Cotoneaster and Montbretia should be removed as a priority prior to the commencement of works under an ecological method statement by a specialist contractor (Japanese knotweed).

6.1.3 Amphibians

The result of the surveys would inform the need for a European Protected Species Mitigation (EPSM) licence from Natural Resources Wales, depending on the nature, scale and location of future development. An EPSM licence would require the provision of a method statement for the works which would include suitable mitigation measures and retention/creation of sufficient habitat. Future development should seek to retain waterbodies regardless of great crested newt presence. These measures would also benefit other amphibians.

6.1.4 Reptiles

In the absence of any further survey information regarding reptiles at this stage, it is recommended that habitat of value for reptiles on site – scrub, and un-managed grassland, is retained as part of the proposals. If this cannot be avoided, it may be necessary to establish the presence/absence of these species on site through further survey. If present, then a mitigation strategy will be required to safeguard them from killing or injury.

6.1.5 Birds

The site contains abundant suitable bird nesting habitat. If any felling or clearance is proposed, this should either be felled outside the nesting season (beginning of March – end of July). If clearance works are required within the main nesting season, then a nesting bird check must be undertaken by a suitably qualified ecologist prior to the clearance works. If an active nest is found during the inspection, then an exclusion cordon must be put in place around the nest and remain in-situ until the chicks within the nest have fledged.

6.1.6 Bats

No bat roosts have yet been confirmed on site. However, if the trees or structures identified as having bat potential are likely to be impacted at a later stage and if bat roosts are discovered in any of the trees to be affected, then appropriate mitigation to suit the species and type of roost must be designed. Any bat roost found must be mitigated with the addition of artificial roosting features into mature trees or new buildings on site.

The removal of any known bat roosts would need to take place under a EPSM licence from Natural Resources Wales and carried out in a careful and considered way to ensure that no bats are killed or injured during demolition work or construction.

In terms of foraging and commuting bat species using the site, following the recommended transect surveys, it is recommended that existing scrub and broadleaved habitat associated with the site are integrated into the proposals as dark corridors for bats and other nocturnal wildlife. This will continue the ecological functionality of the site and by retaining foraging routes and connectivity to the wider landscape. Such mitigation is also likely to include the design and implementation of a sensitive lighting strategy.

6.1.7 Badger, Otter, Hedgehog and other Small Animals

Any excavations required for construction works should be covered at night or a soil ramp or wooden plank installed to ensure that any animals can escape.

Reasonable avoidance measures must be put in place to avoid harming hibernating animals (e.g. hedgehog, amphibians and reptiles) during site clearance and construction, such as ensuring that suitable refuges and potential hibernation sites are removed outside of the winter months.

7 Enhancement Opportunities

7.1 Suggested Enhancements for Biodiversity

In line with the 25 Year Plan for the Environment (HM Government, 2018) and the Planning Policy Wales (Welsh Government, 2021), new development should identify and pursue opportunities for securing measurable net benefits for biodiversity and for the wider environment. Compared to England, Wales do not currently use a metric to calculate net benefits, instead places the emphasis on considering biodiversity benefits early at design stage. Alongside the net benefits for biodiversity, developments should positively contribute to ecosystem resilience. The following opportunities should be considered.

7.1.1 Semi-Natural Broadleaved Woodland

The woodland could be managed by thinning out conifers, the retention of standing and fallen deadwood and creation of a more diverse woodland edge. This includes selective coppicing to increase light understory and increase understory diversity – more diverse species could be planted in the understory. Felled wood should be retained and used to create habitat piles for reptiles, amphibians, other invertebrates and small mammals. Ivy should be cleared and more diverse ground flora could be planted. Bat and bird boxes could be installed on suitable trees in the woodland to encourage these species.

7.1.2 Poor Semi-Improved Grassland

The grassland area should be managed by cutting at a reduced intensity to present short mown areas – timed at specific points in the year to prevent loss of seed heads and ensure a build up of seeds occur in the soil. Clippings should be removed after 48 hours. The sward should be allowed to grow and cut in later August or early September. The grassland area should be cut back 4-6cm after flowering to encourage annual species to remain present in the sward. No chemicals must be used. Seed mixes should include wildflower species and parasitic plants to help monitor grassland growth – reducing grass dominance. Reseeding would help maintain diversity and could be done by rotoation or scrapes.

7.1.3 Ponds

The ponds could benefit from removal of duckweed and shading scrub, and possibly clearance of some vegetation and removal of silt and reprofiling, depending on the depth. The shading of the ponds should be reduced by removing or reducing surrounding scrub to increase light levels. Clearance of reed and reedmace is recommended where this is becoming dominant. The ponds would benefit from dredging of silt – aiming to create an area of 2m depth in the centre, grading into gently sloping banks with shallower water to support vegetation. To note, where great crested newts are present, management of these ponds should be undertaken under an EPSM licence.

7.1.4 Amenity Grassland

The amenity grassland should be cut at a lower intensity – could be managed in the same way as the poor semi-improved grassland.

7.1.5 Hardstanding

Existing areas of hardstanding could be broken up to expose bare ground which can be planted or left to naturally vegetate. This would create a variety of ground conditions and vegetation types – supporting a variety of invertebrate species. Butterfly-bush growing on the hardstanding should be removed or thinned where possible to encourage and plant a variety of native species and increase diversity. Removal of Cotoneaster in the hardstanding areas will be required. Rubble from broken up hardstanding could be used to create refugia and shelter for reptiles, amphibians, other invertebrates and small mammals across the site particularly in the woodland, grassland and scrubland areas.

7.1.6 Bat and Bird boxes

Bat and bird boxes could be installed on suitable retained trees or through the installation of poles in suitable areas to help mimic their natural roost/nest sites, provide an alternative resting place or to encourage species into areas where there are few existing suitable roost/nest sites.

There are many different types of bat boxes to support urban dwelling bats such as common pipistrelle and soprano pipistrelle bats presented below in Figure 2 although other options are available that have similar thermal properties and are of similar style.

Bird box examples are presented below in Figure 3.

Figure 2: Bat box examples



Boxes above are Chavenge Cavity Bat Box ([Chavenge Cavity Bat Box \(wildcare.co.uk\)](http://wildcare.co.uk)) and Schwegler 1FF Bat Box (<https://www.arkwildlife.co.uk/product/schwegler-1ff-bat-box/>).

Figure 3: Bird box examples



Boxes above are Woodstone Barcelona Open Nest Box ([Barcelona Open Nest Box - Grey \(wildcare.co.uk\)](http://wildcare.co.uk)) and Woodstone Seville nest box 32 mm ([Woodstone Seville Nest Box 32 mm \(wildcare.co.uk\)](http://wildcare.co.uk)).

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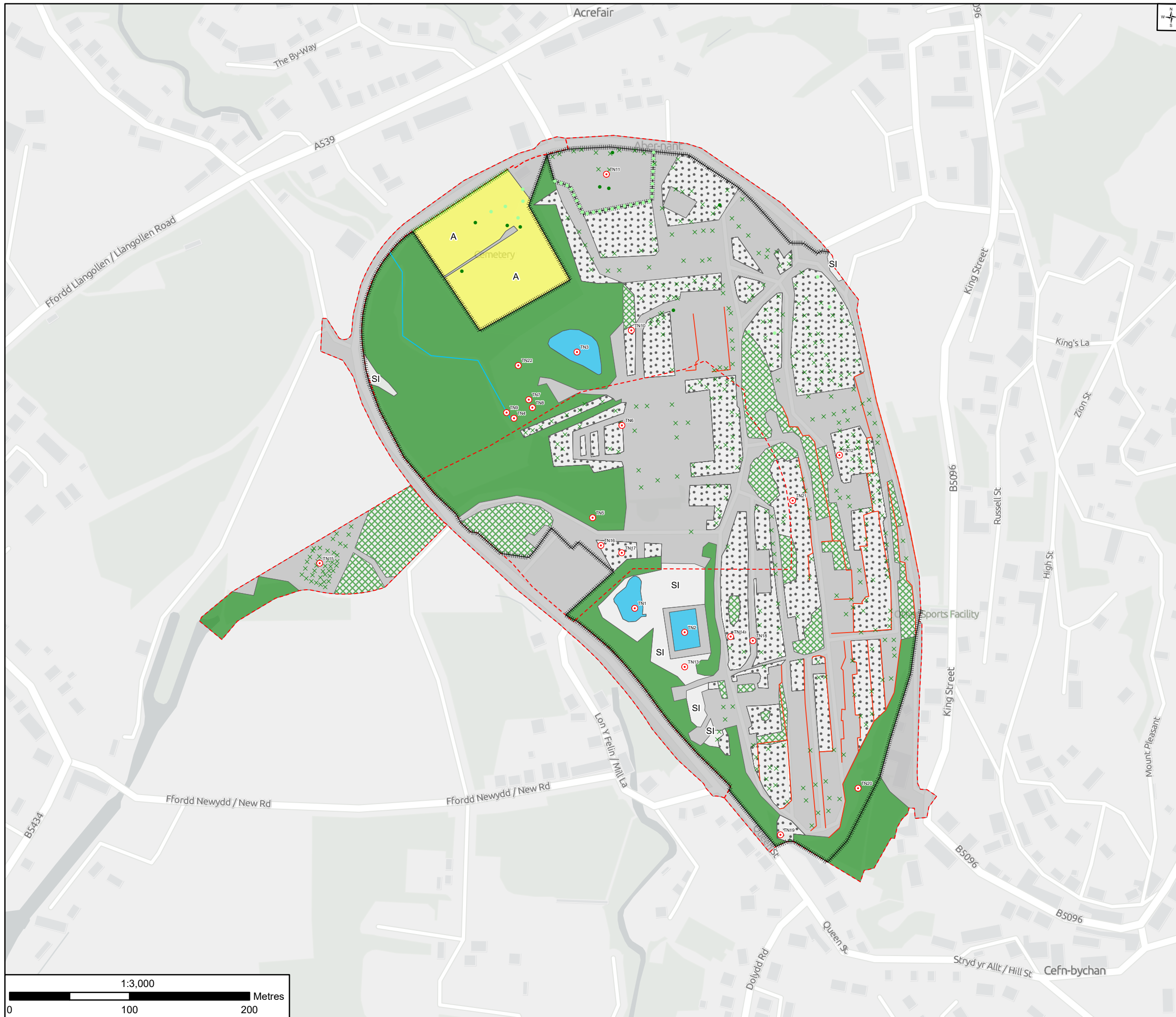
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Appendix A: Figures

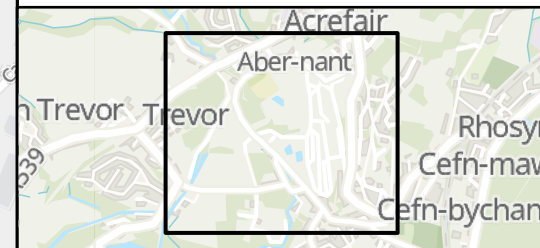
Figure 4: Phase 1 Habitat Survey Map



Legend


- Site Boundary
- Broadleaved Parkland/Scattered Trees
- Coniferous Parkland/Scattered Trees
- Scrub - Scattered
- Running Water
- Hedge with Trees - Species-Poor
- Fence
- Wall
- Broadleaved Woodland - Semi-Natural
- Scrub - Dense/Continuous
- Poor Semi-Improved Grassland
- Standing Water
- Cultivated/Disturbed Land - Amenity Grassland
- Bare Ground
- Other Habitat
- Target Note

Notes
 Service Layer Credits: GB Topographic: Contains OS data © Crown Copyright and database right 2022
 Contains data from OS Zoomstack
 GB Light Grey: Contains OS data © Crown Copyright and database right 2022
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Rev	Date	Description	Drawn	Check	Approv
01	06/12/22	INITIAL ISSUE	YG	MC	EC

Client:



PROJECT:
TREVOR BASIN

Site: Trevor Basin **Client:** Wrexham borough county council



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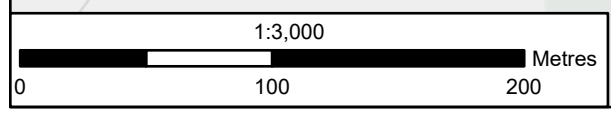
Title:

Phase 1 Habitat Survey
Trevor Basin




Designed	A. Cordon	Date	06 Dec 22	Signed
Drawn	Y. Giri	Date	06 Dec 22	Signed
Checked	M. Coates	Date	06 Dec 22	Signed
Approved	Ed. Cardwell	Date	06 Dec 22	Signed
Scale:	1:3,000	Datum:	AOD	
Original Size:	A3	Grid:	OS	
Suitability Code:	S2	Project Number:	10054502	




Suitability Description: For Information


Drawing Number: _____ Revision: **P01**




Appendix B: Target Notes



Target Note	Description	Photograph
1	<p>The woodland here was dominated by Ash, with generally Ivy or bare ground below, plus Common Nettle (<i>Urtica dioica</i>) and Willowherbs. There was a large fallen tree and other piles of fallen brash and wood, forming habitat piles for invertebrates and small vertebrates. There was not much standing or fallen deadwood within the site other than this area.</p>	
2	<p>Large open area of hardstanding and bare ground with naturally regenerating scrub. Multiple rubble piles suitable as basking / resting plates for amphibians and reptiles.</p>	
3	<p>This section of grassland was unmanaged and grown tall, in contrast to the other grasslands to the south which were still managed and were cut short. The sward was quite diverse, though still considered semi-improved grassland it was borderline semi-improved neutral grassland, and probably the result of the loss of management to an area that was amenity grassland when the site was open, with further colonisation by grassland plants.</p>	

Target Note	Description	Photograph
4	<p>The Tref-y-nant brook entered a culvert at this point via a large grille, continuing underground out of the site to the south. The adjacent clearing was dominated by Butterbur.</p>	
5	<p>Lagoon A. Pond contained within a concrete basin (and linked via pipes to a pumping station to the south, part of the site drainage system). Open water surface, with clear water. The marginal vegetation included Bulrush, Common Reed (<i>Phragmites australis</i>) and Meadowsweet (<i>Filipendula ulmaria</i>) and was approximately 2m wide. On the margins, there was also Willow and Ash regeneration. Concrete sides colonised by moss and stonecrops (<i>Sedum</i> spp.).</p>	
6	<p>Lagoon B. Former settling pond surrounded by Willow, Ash and Rowan. Some open water in the centre, but the majority of the water surface on the margins was covered with Common Reed and Bulrush. No other aquatic vegetation was seen. The surrounding grassland was quite sparse with bare patches, featuring Rosebay Willowherb, Bramble, Wild Strawberry (<i>Fragaria vesca</i>) and Common Rock-rose (<i>Helianthemum nummularium</i>).</p> <p>Great crested newts have been observed during maintenance activities of this pond (Ian Biggs, personal communication, 31 October 2022).</p>	

Target Note	Description	Photograph
7	<p>Lagoon C. Large pond with steep sided banks and heavily shaded by surrounding woodland. Some Duckweed (<i>Lemna</i> sp.) was present on the water surface at the time of survey. Marginal vegetation comprise Bulrush. Other vegetation on margins included Ash regeneration and ornamental shrubs. A Cypress tree line was present around the east and south edges.</p> <p>Great crested newts have been observed during maintenance activities of this pond (Ian Biggs, personal communication, 31 October 2022).</p>	 A photograph showing a pond (Lagoon C) surrounded by dense vegetation and trees. The water surface is calm, reflecting the surrounding greenery. The banks are steep and covered with various plants, including tall reeds and shrubs. The background is filled with a thick line of trees, some with autumn-colored foliage.

Target Note	Description	Photograph
8	Japanese Knotweed stands along the brook and within the site	 The photograph section contains two images of Japanese Knotweed. The top image shows a cluster of plants with large, heart-shaped leaves, some green and some yellowing, growing in a wooded area with a tree trunk visible on the left. The bottom image shows a dense thicket of similar plants, with many leaves showing signs of autumn decay, set against a background of trees and a bright sky.

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Target Note	Description	Photograph
9	Montbretia recorded within area of scattered Goat Willow scrub.	
10	Wall Cotoneaster spread out over hard standing area.	

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