United Environmental Services Ltd
1 Booths Park,
Chelford Road,
Knutsford,
Cheshire
WA16 8QZ

www.ues.org.uk
enquiries@ues.org.uk
01565 757788

ECOLOGICAL IMPACT ASSESSMENT

At

The Oaks
Oak Road
Wrexham Industrial Estate
Wrexham
LL13 9RG

NGR: SJ 38806 49238

Prepared for:	FI Real Estate Management Ltd
Written by:	Tom Kenwright, UES Senior Ecologist
Approved by:	Toby Hart, UES Managing Director
	[redacted]
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EXECUTIVE SUMMARY

This Ecological Impact Assessment (EcIA) evaluates the potential ecological effects of the proposed development at The Oaks, Wrexham Industrial Estate, comprising the construction of a B8 warehouse unit with associated infrastructure and the creation of a Green Eco-Heritage Zone.

Extensive ecological baseline surveys were undertaken by United Environmental Services (UES) between 2022 and 2025, including habitat classification (Phase 1 and National Vegetation Classification (NVC)), protected species assessments (bats, amphibians, badgers *Meles meles*, birds, reptiles, otter *Lutra lutra*, water vole *Arvicola amphibius*), and invasive species mapping. The site lies within a designated Wildlife Site and supports habitats of local to county importance, including lowland mixed deciduous woodland, semi-improved grassland, and breeding ponds for great crested newts (GCNs) *Triturus cristatus*.

Mitigation and compensation measures are provided within section 7 of this report in order to reduce the impacts of the proposals to the lowest practicable levels.

The measures required to protect ecological receptors from impacts will be fully detailed in a Construction Environmental Management Plan (CEMP):Biodiversity/Ecological Design Strategy (EDS) which site staff can work to. Similarly, the proposed landscaping enhancement measures are fully detailed within the Landscape and Ecological Management Plan (LEMP) that has been prepared for the site (see report reference UES03918/32).

Provided that the measures within this report are followed, it is anticipated that the residual impacts of the proposed development will be neutral or beneficial for most receptors, resulting in a moderate positive outcome for biodiversity overall. The proposals align with Planning Policy Wales (Edition 12) and the Wrexham Unitary Development Plan (UDP), delivering a net benefit for biodiversity and supporting local conservation priorities.

This report should be read with appendices 1 to 16, which provide GIS mapping, and key results of the further protected species and habitat surveys. Full details of the phase 2 survey results and methodologies are available within the respective ecological survey reports.

1 INTRODUCTION

1.1 Author and surveyor qualifications

This report is written by Tom Kenwright BSc MSc ACIEEM, UES Senior Ecologist.

Tom holds a level 5 Botanical Society of Britain and Ireland (BSBI) Field Identification Skills Certificate (FISC), which certifies him as competent to undertake phase 1 habitat and NVC surveys. Tom is licensed by Natural Resources Wales (NRW) to disturb all species of bat and take or handle all species other than greater *Rhinolophus ferrumequinum* or lesser horseshoe *Rhinolophus hipposideros,* under licence number S094176/1. Tom is licensed by NRW to disturb, take and handle GCNs under licence number S095290/1. Tom is trained in tree climbing and aerial rescue to CS38 level.

This report has been approved by Toby Hart BSc MCIEEM PIEMA, UES Managing Director. Toby holds a level 6 BSBI FISC, which is only awarded in exceptional circumstances where the surveyor is a very competent professional field botanist and is of national status. Toby is licensed by NRW to disturb all species of bat and take or handle all species other than greater or lesser horseshoe under licence number S095644/1. Toby is licensed by NRW to disturb, take and handle GCNs under licence number S093149/2. Toby is trained in tree climbing and aerial rescue to CS38 level.

1.2 Report objectives and scope of study area

This report provides an assessment of the potential ecological impacts associated with the proposed development of a parcel of land known as 'The Oaks', located at Oaks Road, Wrexham Industrial Estate, Wrexham. This was completed in order to:

- Establish the baseline conditions likely to be present on site at the time of the proposed development, by collecting information on the ecological resources or features which could be affected.
- Identify possible impacts to any habitats, species and protected sites, which may arise as a result of implementing the construction and operational phases of the proposed development.
- Assess the ecological / nature conservation importance of these resources and features, as well as assessing the significance of the identified impacts on them.
- Identify the potential requirement for mitigation or compensation, to ensure the safeguarding and / or conservation status of these resources or features.
- Assess the importance and significance of residual effects associated with the mitigated and compensated development.

The zone of influence considered within the scope of this assessment includes all land within the red line boundary. Where relevant, other ecological resources, receptors and important habitats which are spatially separate from the site are considered.

1.3 Proposed development

A planning application has been submitted (reference P/2025/0430) for the creation of a Green Eco-Heritage Zone and the construction of a single B8 warehouse unit with integral offices, new vehicular access, car and HGV parking, servicing and storage, landscaping, heritage and ecology mitigation and ancillary development.

1.4 Structure of the report

This report describes the methods used to assess the existing baseline ecological conditions of the site and surroundings, the potential direct and indirect impacts of the development, the mitigation and compensation measures required to prevent, reduce or offset the impacts, and the residual impacts after the development.

This report should be read with appendices 1 to 16 and the following reports which provide full details of survey methodologies and results:

- Preliminary Ecological Appraisal – February 2023 (report reference UES03918/02)
- Bat Scoping Survey V3 –November 2024 (report reference UES03918/19)
- Ground Level Tree Assessment V2 – April 2025 (report reference UES03918/20)
- Bat Activity Survey – December 2024 (report reference UES03918/21)
- Great Crested Newt Impact Assessment – November 2023 (report reference UES03918/22)
- Breeding Bird Survey – May 2024 (report reference UES03918/23)
- Reptile Presence / Absence Survey V2 – November 2024 (report reference UES03918/24)
- Dingy Skipper Survey – November 2024 (report reference UES3918/26)
- Invasive Species Walkover Survey – January 2024 (report reference UES03918/28)
- National Vegetation Classification Survey V2 – August 2025 (report reference UES03918/29)
- Badger Scoping Survey – April 2025 (report reference UES03918/33)
- Great Crested Newt Population Size Class Assessment V2 – December 2024 (report reference UES03918/34)
- Bat Presence / Absence Survey V2 – December 2024 (report reference UES03918/36)
- Bat Hibernation Survey V2 – December 2024 (report reference UES03918/37)
- Bat Aerial Tree Assessment and Presence / Absence Surveys V2 – April 2025, reference UES02629/38
- Green Infrastructure Statement – May 2025 (report reference UES03918/42.
- Updated Ecological Walkover Survey – May 2025 (report reference UES03918/46)
- Water Vole and Otter Survey – August 2025 (report reference UES03918/56).

2 LEGISLATION

The following Statutory Instruments and Acts of Parliament are of relevance to this ecological impact assessment:

- Countryside and Rights of Way (CRoW) Act 2000;
- Environment (Wales) Act 2016
- Hedgerow Regulations 1997;
- The Conservation of Habitats and Species Regulations 2017 (as amended by EU Exit Regulations 2019);
- The Protection of Badgers Act 1992;
- Wildlife and Countryside Act 1981 (as amended);
- Invasive Alien Species (Enforcement and Permitting) Order 2019
- Animal Welfare Act 2006

The sections and outcomes of the above articles of legislation are detailed below for each species or habitat that is relevant to the scope of this assessment.

2.1 Designated sites

2.1.1 Non-statutorily protected sites

Non-statutorily sites in Wales are locally or regionally recognised for their ecological value but do not carry direct legal protection. They are material planning considerations and are important for local conservation priorities.

2.1.2 Statutory protected sites

European sites in Wales are protected under the Conservation of Habitats and Species Regulations 2017 (as amended), commonly referred to as the Habitats Regulations. These regulations afford a high level of protection to sites designated as Special Protection Areas (SPA) and Special Areas of Conservation (SAC). In addition, sites listed under the 1971 Ramsar Convention (on the conservation of wetlands of international importance) are treated as equivalent to SACs and SPAs in terms of planning and ecological protection.

- SPAs are designated for their importance to wild bird populations
- SACs support habitats and non-avian species considered rare or vulnerable at a European level
- These sites form part of the UK National Site Network, overseen in Wales by NRW

Sites of Special Scientific Interest (SSSI) are designated under the Wildlife and Countryside Act 1981 (as amended). They represent areas of national importance for their flora, fauna, geological or physiographical features. In Wales, NRW is responsible for identifying, notifying, and managing SSSIs.

National Nature Reserves (NNRs) in Wales are designated by NRW under either the National Parks and Access to the Countryside Act 1949 or the Wildlife and Countryside Act 1981. These sites are selected for their exceptional ecological or geological value and are managed to conserve their features and support public understanding.

Local Nature Reserves (LNRs) are declared by local authorities in Wales, following consultation with NRW, under the National Parks and Access to the Countryside Act 1949. LNRs typically support local biodiversity and provide opportunities for education and community engagement.

2.2 Habitats and species of principal importance

Section 6 of the Environment (Wales) Act 2016 places a legal obligation on public bodies in Wales to 'maintain and enhance biodiversity' whilst carrying out their functions. Section 7 of the act places a duty on Welsh Ministers to publish, review and revise lists of types of habitats and species in Wales which they consider are of key significance to sustain and improve biodiversity. The Welsh Ministers must also take all reasonable steps to maintain and enhance the habitats published in these lists and encourage others to take such steps.

2.3 Trees

Trees may be protected on an individual or group level through a Tree Preservation Order (TPO). In order to carry out works to trees with a TPO, prior written consent must be obtained from the Local Planning Authority. Trees may also be protected through a condition of planning consent or designated conservation areas.

2.4 Amphibians

Great crested newts

GCNs and their habitat (aquatic and terrestrial) are afforded full protection by the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017. If both national and international legislation are taken together, it is an offence to:

- Deliberately, intentionally or recklessly kill, injure or capture GCNs
- Deliberately, intentionally or recklessly disturb GCNs in such a way to be likely to significantly affect:
    - their ability to survive, breed, reproduce, rear or nurture their young
    - their ability to hibernate or migrate
    - their local distribution or abundance
- Deliberately, intentionally or recklessly take or destroy the eggs of GCNs
- Damage or destroy breeding sites or resting places of GCNs
- Intentionally or recklessly disturb sheltering GCNs, or obstruct access to their resting place
- Keep, transport, sell or exchange, or offer for sale or exchange any live or dead GCN, any part of GCN or anything derived from GCNs

Penalties for offences include unlimited fines (formerly up to £5000), plus up to six months imprisonment, for each offence committed.

GCNs are also protected by the Protection of Animals Act 1911, which prohibits cruelty and mistreatment. Releasing a GCN in such a way as to cause undue suffering may be an offence under the Abandonment of Animals Act 1960.

In addition to the above, there are various statutory provisions relating to the transport of animals, designed to ensure their welfare.

GCNs are also listed as a species of principal importance under Section 7 of the Environment (Wales) Act 2016.

Other amphibians

More common British amphibians, such as common frog *Rana temporaria*, common toad *Bufo bufo*, smooth newt *Lissotriton vulgaris* and palmate newt *Lissotriton helveticus* are protected only by Section 9(5) of the Wildlife and Countryside Act 1981 (as amended). This section prohibits sale, barter, exchange, transporting for sale and advertising to sell or to buy.

The above common amphibian species are also listed as UK Species of Conservation Concern. Due to general declines in most British amphibian species in recent years, many local authorities require amphibian surveys as a planning condition, or as part of environmental information submitted as part of a planning application, even where the presence of GCN is ruled out.

Natterjack toad *Epidalea calamita* and pool frog *Pelophylax lessonae* are also offered the same level of protection as GCNs, through the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017.

Natterjack and common toad are also listed as species of principal importance under Section 7 of the Environment (Wales) Act 2016.

Waterbodies that support all five common species of British amphibians in high numbers, may be afforded protection in local plans, as Sites of Importance for Nature Conservation (SINC), or a similar equivalent, for sites of local importance. A site may require statutory protection as a Site of Special Scientific Interest (SSSI).

2.5 Badgers

Badgers and their habitat are protected under The Protection of Badgers Act 1992 and are also included on Schedule 6 of the Wildlife and Countryside Act 1981, and Appendix III of the Bern Convention. The legislation affords badgers protection against deliberate harm or injury making it an offence to:

- Wilfully kill, injure, take, possess or cruelly ill-treat a badger (or attempt to do so)
- To interfere with a sett by damaging or destroying it
- To obstruct access to, or entrance of, a badger sett
- To disturb a badger whilst it is occupying a sett

Penalties for offences include fines of up to £5000, plus up to six months imprisonment, for each offence committed.

Works that disturb badgers whilst they are occupying a sett are illegal without a licence. Disturbance can occur even without direct interference or damage to the sett in question. In general, the following activities are likely to require a licence:

- Use of heavy machinery or significant earth moving within 30m of a sett
- Use of lighter machinery (usually any wheeled vehicles) within 20m of a sett
- Any digging, chain saw use or scrub clearance within 10m of a sett

2.6 Bats

In the United Kingdom, all species of bat and their roosts are afforded full protection under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (known as the "Habitats Regulations"). If both national and international legislation are taken together, it is an offence to:

- Deliberately, intentionally or recklessly kill, injure or capture a bat
- Deliberately, intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection
- Deliberately, intentionally or recklessly damage, destroy or obstruct access to any place that a bat uses for shelter or protection (even if the bat is not present at the time)
- Keep, transport, sell or exchange, or offer for sale or exchange any live or dead bat, any part of a bat or anything derived from a bat

Under UK law, a bat roost is *any structure or place which any wild [bat] … uses for shelter or protection*. As bats often reuse the same roosts, legal opinion is that a roost is protected whether or not the bats are present at the time of the activity taking place.

Penalties for offences include unlimited fines, plus up to six months imprisonment, for each offence committed.

The following bat species are listed as species of principal importance under Section 7 of the Environment (Wales) Act 2016:

- Barbastelle *Barbastella barbastellus*
- Bechstein's bat *Myotis bechsteinii*
- Noctule *Nyctalus noctula*
- Common pipistrelle *Pipistrellus pipistrellus*
- Soprano pipistrelle *Pipistrellus pygmaeus*
- Brown long-eared bat (BLE) *Plecotus auritus*
- Greater horseshoe
- Lesser horseshoe

2.7 Breeding birds

All wild birds, their nests and young are protected throughout England and Wales by the Wildlife & Countryside Act 1981 (as amended). It is illegal to kill, injure or take any wild bird, or damage or destroy the nest or eggs of breeding birds. The legislation applies to all bird species, common and rare.

In addition to the protection afforded to all wild birds, more vulnerable species listed on Schedule 1 of the Act receive enhanced protection when breeding. Schedule 1 species, including their dependent young, are protected from intentional or reckless disturbance whilst at or near the nest, in addition to the protection afforded the more common species.

The Environment (Wales) Act 2006 offers further protection to the nests of some species that regularly re-use their nests, even when the nests are not in use.

The leading governmental and non-governmental conservation organisations in the UK have reviewed the population status' of 244 UK bird species. "Birds of Conservation Concern 5: the Red List for Birds" is the most recent publication summarising their findings. Three lists, Red, Amber and Green, have been produced based on the most up-to-date evidence available and criteria include conservation status at global and European levels and, within the UK: historical decline, trends in population and range, rarity, localised distribution and international importance. These lists are a valuable resource when considering conservation priorities.

2.8 Invasive plant species

A number of invasive, non-native plant species are listed under Schedule 9 (Part II) of the Wildlife and Countryside Act 1981 (as amended). The listed species most commonly encountered in ecological surveys are Japanese knotweed *Reynoutria japonica*, Montbretia *Crocosmia x crocosmiiflora* and variegated yellow archangel *Lamiastrum galeobdolon subsp. argentatum*. Section 14(2) of this Act makes it an offence to *plant or otherwise cause to grow in the wild (including as a result of development works)* any plant listed on Schedule 9 (Part II).

A number of invasive, non-native plants species are listed under Schedule 2 (Part II) of the Invasive Alien Species (Enforcement and Permitting) Order 2019. The listed species most commonly encountered in ecological surveys are Himalayan balsam *Impatiens glandulifera* and giant hogweed *Heracleum mantegazzianum*. Section 3 of this Act makes it an offence to *plant* or *otherwise causes to grow in the wild (including as a result of development works)* any plant which is listed on Schedule 2 (Part II).

Soil or plant material contaminated with non-native and invasive plants can cause ecological damage and may be classified as controlled waste. It is an offence to keep, treat or inappropriately dispose of waste that could harm the environment or human health. If there is any doubt, the local authority or Environment Agency should be contacted to confirm requirements.

2.9 European otter

European otter are offered full protection through the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017. If both national and international legislation are taken together, it is an offence to:

- Deliberately, intentionally or recklessly kill, injure or capture otters
- Deliberately, intentionally or recklessly disturb otters in such a way to be likely to significantly affect:
    - their ability to survive, breed, reproduce, rear or nurture their young
    - their ability to migrate

    - their local distribution or abundance
- Damage or destroy breeding sites or resting places of otters
- Intentionally or recklessly disturb sheltering otters, or obstruct access to their resting place
- Keep, transport, sell or exchange, or offer for sale or exchange any live or dead otter, any part of an otter or anything derived from otter

Penalties for offences include unlimited fines (formerly up to £5000), plus up to six months imprisonment, for each offence committed.

Otters are also listed as species of principal importance under Section 7 of the Environment (Wales) Act 2016.

3 PLANNING POLICY

3.1 National planning policy

Guidance on nature conservation and planning policy is provided in Planning Policy Wales (Edition 12) Chapter 6 – Distinctive and Natural Places.

Section 6.4.5 of Planning Policy Wales states that *'authorities must seek to maintain and enhance biodiversity in the exercise of their functions. This means development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity. In doing so planning authorities must also take account of and promote the resilience of ecosystems, in particular the following aspects:*

- *diversity between and within ecosystems;*
- *the connections between and within ecosystems;*
- *the scale of ecosystems;*
- *the condition of ecosystems including their structure and functioning; and*
- *the adaptability of ecosystems'*

Section 6.4.6 states that '*in fulfilling this duty, planning authorities must have regard to:*

- *the list of habitats and species of principal importance for Wales, published under Section 7 of the Environment (Wales) Act 2016;*
- *the SoNaRR, published by Natural Resources Wales; and*
- *any Area Statement that covers all or part of the area in which the authority exercises its functions'*

Section 6.4.7 states that '*Planning Authorities should also refer to up to date ecological survey information (where appropriate)'.*

Section 6.4.11 states that '*planning authorities must follow a stepwise approach to maintain and enhance biodiversity and build resilient ecological networks by ensuring that any adverse environmental effects are firstly avoided, then minimized, mitigated, and as a last resort compensated for; enhancement must be secured wherever possible.*'

The key principles of this approach are summarised below:

1. **Avoidance**
   Design proposals to prevent harm to biodiversity and ecological networks from the outset—through site selection, layout, and timing.

2. **Minimisation**
   Where impacts are unavoidable, reduce their extent and severity using appropriate mitigation measures (e.g. buffer zones, sensitive lighting).

3. **Compensation**
   Provide ecological compensation for residual impacts, ensuring that lost habitats or functions are replaced in a meaningful and measurable way.

4. **Enhancement**
   Deliver net benefit for biodiversity by improving ecological conditions beyond baseline. This is now a requirement, not an optional add-on.

For full policy context, refer to PPW Edition 12, Section 6.4 and Figure 12: Biodiversity and Ecological Networks.

Section 6.4.20-6.4.23 details how protected sites fit into the stepwise approach and reads as follows:

'Statutorily designated sites must be protected from damage and deterioration, with their important features conserved and enhanced by appropriate management. The contribution of the designated site to wider resilient ecological networks should be recognised and captured as part of a strategic approach to planning policy and decision making. The links between planning and wider management activity for the restoration and recovery of nature should be made. Complementary, and joint, action between all sectors and beyond the boundaries of the designated sites themselves is necessary to improve extent, connectivity and adaptability and address the nature emergency.

The supporting reasoning for the designation at all levels and an outline of the qualifying features of the designation should be clearly recorded as part of the Green Infrastructure Assessment and considered in formulating development plans, when designing new development proposals and in development management decisions.

As part of a Green Infrastructure Assessment it may be necessary to differentiate between the relative significance of the designation, when considering the value of the nature conservation interests and the weight to be attached to this value in respect of development proposals. It should be recognised that all designated sites will have a unique and important role as part of ensuring resilient ecological networks and this contribution may be equally as important in a local context as its designation status.

Planning authorities should consider opportunities to restore networks of habitats to a healthy condition identified as a result of undertaking the Green Infrastructure Assessment and the identification of appropriate interventions to secure delivery against the attributes of resilience, namely, diversity, extent, connectivity, condition and adaptability. This includes identifying opportunities for restoration and nature recovery even if this is beyond its own administrative boundaries. Taking a spatial approach which, for example, identifies buffer zones around designated sites or stepping stones to improve connectivity between them will strengthen the ability of designated sites to fully perform their role at the heart of resilient ecological networks and to encourage nature recovery on a larger scale.'

Section 6.4.31-6.4.33 specifically references non-statutorily protected sites:

'Although non-statutory designations do not have a statutory process for their protection, Sites of Importance for Nature Conservation, Local Wildlife Sites, Local Nature Reserves, and Regionally Importance Geodiversity Sites make a vital contribution to delivering an ecological network for biodiversity and resilient ecosystems, and they should be given protection in development plans and the development management process. Non-statutory sites can form the core of a vital network of threatened habitats, play an essential role in protecting, maintaining, connecting and restoring biodiversity and contribute to nature recovery and a net benefit for biodiversity. Before authorising development likely to damage a local wildlife designation, planning authorities should give notice of the proposed operation to the local authority Ecologist and third sector environmental organisations. In all cases a written opinion must be secured from the local authority Ecologist. Where a Green Infrastructure Assessment has identified that certain features or characteristics of the site need to be maintained or enhanced, planning authorities should state in their development plans what features or

characteristics require protection and why, and explain how the policies will achieve this protection. Assessments should similarly consider the presence of protected and priority habitats and species including those on the Section 7 list and appropriate weight attached to their protection.

Where, for reasons of scale, local authorities have decided not to map non-statutory designations on a proposals or a constraints map, development plans should include a criterion-based policy to provide for sites that meet the qualifying criteria for non-statutory designation (including those sites that are currently unidentified); these sites carry equal weight to mapped sites.

Policies for non-statutory sites should make it clear that such designations do not preclude appropriate developments, where there are no adverse impacts on the features for which a site is designated and on wider ecosystem resilience. Where harm is unavoidable it should be minimised by mitigation measures and offset as far as possible by compensation measures designed to ensure there is no reduction in the overall conservation value of the area or feature,132 and a net benefit for biodiversity secured.'

3.2 Local planning policy

By Order of the High Court of Justice (19th May 2025), Wrexham County Borough Council's decision of 20th December 2023 to adopt the Wrexham Local Development Plan (LDP) has been quashed. The LDP is no longer part of the development plan for Wrexham County Borough and is now un-adopted.

The development plan for Wrexham County Borough is now the Wrexham Unitary Development Plan 1996-2011 (adopted 2005).

Wrexham County Borough Council's local planning policy pertaining to wildlife and biodiversity is set out in policies PS2, PS11 and GDP1, and chapter 5 (Environment and Conservation) of the UDP 1996-2005 (adopted February 2005). Ecological policies relevant to the proposed development are summarised in the below subsections.

Policy PS2
'Development must not materially detrimentally affect countryside, landscape/townscape character, open space, or the quality of the natural environment.'

Policy PS11
'Encouragement will be given to proposals which improve the biodiversity value of sites and to the establishment of local nature reserves where the nature conservation and landscape interest of the land will be protected and enhanced.'

Policy GDP1
'All new development should: Safeguard sites and areas of nature conservation and wildlife interest, and to provide new habitats where there is an unavoidable loss of existing habitats and areas of wildlife interest.'

Policy EC4
'Development proposals should provide for the conservation and management of hedgerows, trees, orchards, woodland, wildlife and other natural landscape and water features, and include new planting in order to enhance the character of the landscape and townscape.

Development which results in the loss or significant damage to valuable trees, important hedgerows or ancient woodland sites will not be permitted.'

Policy EC6

'Development either within or close to sites of biodiversity interest will only be permitted where it can be clearly demonstrated that the need for the development outweighs the need to safeguard the intrinsic nature conservation value of the site. Where such development is permitted, damage should be kept to a minimum, and compensatory measures should be provided. Measures to improve the biodiversity value of sites and enhance their natural conservation interest and landscape quality including the establishment of local nature reserves, will be supported.'

4 METHODOLOGY

This section describes the details of the consultation, desk study and field surveys that have been undertaken to inform the baseline conditions and to assess the ecological / nature conservation value of the ecological receptors relevant to this assessment.

4.1 Consultation and review of data

In order to collate ecological information on species and / or habitats of interest that may be present, as well as to determine the geographical scope of the search area, a desk study was undertaken. The following sources were used:

- National – Using the UK Government's Multi-Agency Geographical Information for the Countryside (MAGIC) website, information relating to statutorily protected sites was obtained. These sites were scoped to a distance of 10km from the proposed development site.

- Local – As part of the Preliminary Ecological Appraisal (PEA) undertaken by UES in November 2022, a search for protected sites and records of protected or otherwise notable species within a 2km search radius around the proposed development site was obtained from COFNOD – North Wales Environmental Information Service.

4.2 Field surveys (including scoping and reasons for exclusion)

4.2.1 Preliminary ecological appraisal

An ecological walkover survey of the site was carried out on 23rd October 2022. The purpose of the survey was to identify, record and map dominant habitat types within the development area and highlight any further species or habitats surveys required based on the quality of those habitats. When conducting the surveys particular focus was concentrated on the following species and habitat features:

- Amphibians
- Reptiles
- Badger
- Bats
- Hazel dormouse
- Hedgehogs
- Birds
- Trees
- Hedgerows
- Plant communities
- Invasive species
- Otter
- Water vole
- White-clawed crayfish

The habitats were assessed by using the phase 1 habitat survey technique, which is a system for environmental audit widely used within the environmental consultancy field. The survey was undertaken in accordance with the methodology in the 'Handbook for phase 1 habitat survey - A technique for environmental audit' (Joint Nature Conservation Committee (JNCC), 2010) as recommended by Natural England, and in the "Guidelines for Preliminary Ecological Appraisal" (CIEEM, 2017).

The survey area encompasses all of the land within the development footprint and the land to a distance of 30m outside it where accessible.

The phase 1 habitat survey methodology was extended to record any signs of habitats suitable to support protected / invasive species and any incidental observations of other noteworthy species.

Due to delays with the submission of a planning application following the completion of ecological surveys, an updated walkover survey was undertaken by UES on the 7th May 2025. The purpose of the survey was to identify any changes in the location, type and quality of habitats on site and the potential for changes in the use of the site by invasive, protected or otherwise notable species.

Survey limitations

The original PEA walkover survey was conducted in November, when not all plants are readily identifiable. However, sufficient vegetative identification was possible, allowing a robust assessment of habitats to be undertaken.

The updated walkover survey was conducted within the optimal time of year for botanical surveys, and during a period when all protected species that are known or have the potential to be present on site are active, making it more likely to observe evidence of their presence. As such, there are considered to be no limitations to the updated walkover survey.

4.2.2 National vegetation classification survey

A detailed NVC survey was undertaken of the areas of grassland on site on the 20th July 2023.

Sampling of the vegetation was undertaken according to the methodology detailed in the NVC Users' Handbook (Rodwell, 2006) and British Plant Communities Volume 3 (Rodwell, 1992). This involved recording the plant species present within a series of 2m x 2m quadrats, which were placed within what were visually considered to be stands of homogenous vegetation. A minimum of five quadrats were recorded in each area where the vegetation was considered to potentially be representative of a distinct vegetation community. All plants recorded within a quadrat were assigned a DOMIN score, based on the percentage cover.

Frequencies were then assigned to each species recorded in each surveyed vegetative community based on how many quadrats the species was present within.

Analysis of field data

Following the completion of the field work, the plant communities surveyed were then classified according to NVC standards. This analysis was based on the following:

- The largely dichotomous key to vegetative communities within the British Plant Communities Vol. 3.
- Computer analysis using the Modular Analysis of Vegetation Information System (MAVIS) software package, created by the Centre for Ecology and Hydrology (CEH).
- Comparison of floristic tables and community descriptions within the British Plant Communities Vol. 3.
- Surveyor experience.

Comparison with selection criteria for Wildlife Sites in Wales

Within Wales, non-statutory protected sites that have biological designation features (opposed to geological features) are referred to as Wildlife Sites. No specific selection criteria are available for Wildlife Sites within Wrexham County and so the grassland communities on site have been compared with the 'Wildlife Sites Guidance Wales, A Guide to Develop Local Wildlife Systems in Wales' (Wales Biodiversity Partnership, 2008).

Neutral grassland features as a habitat type in the selection guidelines for Wildlife Site Guidance Wales, which makes specific reference to the lowland meadow habitat type. The guidance describes lowland meadows as 'those which have developed on soils which are not strongly of either an acidic or basic nature and are typically of moderate fertility. Key grasses include species such as crested dog's-tail *Cynosurus cristatus*, red fescue *Festuca rubra*, common bent *Agrostis capillaris* and in some cases false oat-grass *Arrhenatherum elatius* and Yorkshire fog *Holcus lanatus*.'

Table 3 within Appendix 1 of the selection criteria document also contains a list of species indicative of unimproved neutral grasslands in South Wales.

The document suggests that the following should be considered for selection as local wildlife sites:

- All examples of:
    - Meadow foxtail - great burnet grasslands (MG4)
    - Crested dog's-tail - common knapweed grasslands (MG5)
    - Crested dog's-tail - marsh marigold grasslands (MG8)
- All relatively species-rich neutral grasslands (which could include MG1, MG6 & MG10 communities) of any significant extent.
- Examples of neutral grasslands that contain uncommon species, such as whorled caraway *Carum verticillatum* or adder's tongue *Ophioglossum vulgatum*.

Comparison with habitats of principal importance

The presence of any Habitats of Principal Importance for the conservation of biodiversity as listed within Section 7 of the Environment (Wales) Act 2016 were determined by comparing the surveyed grasslands against the published criteria for Habitats of Principal Importance (formerly UK BAP Priority Habitats).

The description for lowland meadow Habitat of Principal Importance doesn't have strict selection criteria based on the presence of absence of specific species and instead states the following:

"A wide-ranging approach is adopted in this plan to lowland grasslands treated as lowland meadows. They are taken to include most forms of unimproved neutral grassland across the enclosed lowland landscapes of the UK. In terms of National Vegetation Classification plant communities, they primarily embrace each type of Cynosurus cristatus-Centaurea nigra grassland, Alopecurus pratensis-Sanguisorba officinalis floodplain meadow and Cynosurus cristatus-Caltha palustris flood-pasture. The plan is not restricted to grasslands cut for hay, but also takes into account unimproved neutral pastures where livestock grazing is the main land use."

These NVC plant communities are: MG5 Crested Dog's-tail – Common Knapweed; MG4 Meadow Foxtail – Great Burnet; and MG8 Crested Dog's-tail – Marsh marigold. Grasslands representative of these NVC communities should therefore be considered to qualify as the lowland meadow Habitat of Principal Importance.

Limitations

The NVC survey was undertaken at an appropriate time of year to undertake detailed botanical surveys of grassland habitats. As such, there are considered to be no limitations to the survey.

4.2.3 GCN impact assessment

Impact assessment

A site visit was undertaken on 19th and 20th April 2023 to assess all ponds, ditches and aquatic features on site and within 500m of the site boundary for their potential to support GCNs using the Habitat Suitability Index (HSI). The HSI is a tool used to provide a numerical indication of the quality of a waterbody in terms of GCN breeding and associated habitat requirements on a scale of 0-1 (0 indicating unsuitable habitat, 1 representing optimal habitat).

HSI scores incorporate ten Suitability Indices (SIs), all of which are factors thought to affect GCNs, namely:

SI 1: Site location
SI 2: Size of pond
SI 3: Pond permanence
SI 4: Water quality
SI 5: Perimeter shading
SI 6: Waterfowl presence
SI 7: Fish presence
SI 8: Number of ponds within 1km
SI 9: Terrestrial habitat
SI 10: Macrophyte cover

In some cases, a net may be used to assess certain SIs, such as water quality. Once a measurement or category has been given for each SI this can then be converted to a figure between 0 and 1 for use in the HSI calculation. This figure is either translated from an assigned category or measurement or read from a graph in the case of a percentage or number.

The HSI is then calculated from the following formula:

$$HSI = (SI1 \times SI2 \times SI3 \times SI4 \times SI5 \times SI6 \times SI7 \times SI8 \times SI9 \times SI10)^{1/10}$$

This will give a final HSI result between 0 and 1, providing a measure of habitat suitability for GCN.

The information gathered from the survey was used to provide a likelihood of GCNs and other amphibians being present in the area, in both aquatic and terrestrial habitats.

Limitations

The surveys were undertaken at an appropriate time of year. Access was not granted to all offsite waterbodies, however this has been taken into account within this assessment when making recommendations and is not considered to be a significant limitation given the number of waterbodies that have been accessed and the data available.

4.2.4 GCN eDNA and population size class assessment (PSCA)

Population size class assessment

The survey methodology followed that of Natural England's GCN mitigation guidelines (2001). Standard presence / absence surveys require four site visits, however when presence has been confirmed, a further two visits (total of six) are required to assess the size of the population within a pond.

Surveys used a combination of at least three of the four recommended survey methods (bottle trapping, netting, torching and egg searching), as detailed below. All amphibian species observed during the surveys were recorded, along with their gender and life stage, if possible, to determine.

Bottle trapping

Bottle traps are placed around the margins of the pond and are left overnight, before collecting them early the following morning. Where safe to do so, traps are set all around the pond at a density of one trap per two metres of shoreline. Some studies indicate that bottle trapping is the most reliable method for detecting the presence of GCN, and it is especially useful for surveying turbid or weed-covered ponds. This method also allows the accurate identification of any amphibians caught. Bottle traps should not be used where there is a risk of disturbance by people or animals, or when the overnight air temperature drops below 5°C, or during very hot weather when water temperatures will be high and dissolved oxygen levels low.

Torching

GCNs can be searched for at night using a powerful torch. In clear ponds this can be a very effective way of detecting and counting newts during the breeding season, but this method can be limited in heavily vegetated or turbid ponds. It is recommended that the entire margin of the pond is walked once, slowly checking for newts. Surveys should only take place when the night air temperature is > 5°C and there is no or little wind or rain to disturb the water's surface.

Netting

GCNs can be captured by sampling the area around the pond edge using a long-handled net. There should be at least 15 minutes of netting per 50m of shoreline. Netting should be undertaken with care to minimize damage to beds of submerged aquatic vegetation which may contain newt eggs and / or larvae.

Egg search

All native newts lay eggs singly on submerged leaves of aquatic plants and other suitable submerged items. Careful examination of pond vegetation can therefore be used to establish the presence of newts in a pond during the breeding season. GCN eggs can be distinguished from other newt species' eggs, therefore enabling species-specific presence / absence to be determined.

Environmental DNA (eDNA) testing

Where GCN presence had not already been confirmed through the other survey methods prior to 30th June, eDNA samples were also taken to aid in determining the likely presence or absence of GCNs.

eDNA testing provides a GCN presence / absence result from water samples taken from a pond, following specific protocols detailed in Biggs *et al.,* 2014. These protocols have been approved by Natural England as a method to determine GCN presence or absence in a waterbody, within the newt breeding season, from 15th April to 30th June.

Using the sterile kit provided from a laboratory, 20 water samples were taken from intervals around each pond and then mixed together. From there, a 15ml sample was transferred into each of the 6 sample tubes, which contained a preserving fluid. The samples were sent to the laboratory for analysis as soon as possible. If required, samples were refrigerated until they were sent to the laboratory.

PSCA timings and weather conditions

Table 1 – GCN PSCA survey timings and weather conditions

SITE VISIT NO	DATE	TEMP. (°C)	CLOUD COVER (%)	WIND	RAIN
1	05/05/2023	15	20	Gentle breeze	Dry
2	08/05/2023	16	60	Still	Dry
3	11/05/2023	11	80	Gentle breeze	Light
4	14/05/2023	10	100	Gentle breeze	Light
5	17/05/2023	11	90	Gentle breeze	Dry
6	15/06/2023	21	0	Still	Dry

Survey limitations

PSCA surveys were not undertaken of Pond 2 as it was found to be dry / holding insufficient water at the time of the survey. An updated eDNA survey was undertaken of Pond 2 in May 2024, the results of which were negative, indicating an absence of GCNs. Given the lack of sufficient water to support the GCN life cycle and the negative eDNA result, it is considered that this pond is unsuitable for use by breeding GCNs and hence this is not a limitation.

No access was granted to undertake further GCN presence / absence or PSCA surveys of any offsite ponds. All suitable onsite ponds could be surveyed and the potential for an increased peak count of GCNs using the site has been considered. As such, this is not considered to be a significant limitation and sufficient survey results are available to inform a robust assessment of GCN use of the site, and to determine the potential impacts on GCNs as a result of the development of the site.

Updated GCN impact assessment and eDNA assessment

An updated GCN impact assessment was undertaken as part of the updated walkover survey undertaken on the 7th May 2025. This included an updated HSI assessment and eDNA sampling of all onsite ponds (where possible) according to the methodology detailed above.

4.2.5 Badger scoping and activity survey

Badger scoping survey

As part of the badger scoping survey, a badger walkover survey was conducted of the site on the 23rd May 2024. The survey covered the entire site and a 30m buffer zone (where accessible), which was searched in order to find and record any field signs of badger use. Signs of badger use searched for and recorded where present included:

- Badger setts - main, annexe, subsidiary and outlier
- Bedding at sett entrances (such as grass or leaves)
- Dung pits - small, excavated pits in which droppings are deposited
- Latrines - concentrations of dung pits
- "Snuffle holes" - small scrapes where badgers have excavated whilst foraging for food
- Badger hairs around sett entrances or caught on nearby fences or vegetation
- Conspicuous badger paths - channels through vegetation that are well used leading to or from setts
- Scratch marks on trees (predominantly in the local vicinity of sett entrances)
- Day nests - patches of grass or other vegetation where badgers may have spent time above ground
- Footprints

If found, activity levels at setts were gauged using the following criteria:

- Number of well-used holes (with one or more of the features: well-worn entrance; freshly excavated soil; bedding material)
- Number of partially used holes (leaves or twigs in entrance and/or mosses and other plants growing in or around entrance)
- Number of disused holes (partially or completely blocked, with a considerable amount of excavation required for reoccupation)

Monitoring survey

[redacted]

The badger activity monitoring survey involved the installation of motion-triggered, night vision camera traps outside each of the three potential setts. Cameras were positioned appropriately, in order to give the best coverage of these areas and all potentially active burrows.

Cameras were set to record between sunset and sunrise for 21 consecutive nights (11th November – 2nd December 2024). Batteries and memory cards were replaced weekly

throughout this period, during which signs of activity (fresh bedding, footprints, hairs etc) were searched for within the immediate vicinity of all entrance burrows.

Activity levels were then gauged using all of the information gathered and setts were classified using the definitions shown in the following table:

Table 2 – Badger sett classification

SETT TYPE	DEFINITION
Main	Several holes with large spoil heaps and obvious paths emanating from and between sett entrances.
Annexe	Normally less than 150m from a main sett, comprising several holes. May not be in use all of the time, even if the main sett is very active.
Subsidiary	Usually at least 50m from a main sett, with no obvious paths connecting to other setts. May only be used intermittently.
Outlier	Little spoil outside holes. No obvious paths connecting to other setts and only used sporadically. May also be used by foxes and rabbits.
Inactive / not badger sett	No evidence of badger activity and not observed to be in use by badgers. May be used by other species such as rabbits and foxes.

Limitations

The site contains numerous areas of dense scrub, with some areas too dense to be fully accessed and searched. All habitats on site were inspected as thoroughly as possible and no evidence of badger activity such as mammal paths were observed leading into dense areas of scrub that couldn't be fully accessed. Additionally, a full suite of ecological surveys has been undertaken on site across 2022-2025, and no additional evidence of badger activity was observed. As such, it is considered that the site is subject to low levels of badger activity and as robust a survey as possible has been undertaken. The limitation of dense scrub has been taken into account within the recommendations section of this report, which includes measures to ensure that no badgers are harmed as a result of the proposed development.

4.2.6 Reptile presence / absence survey

The methodology of the field survey broadly follows that detailed in Froglife Advice Sheet 10: Reptile Survey (1999), which is used as a standard technique for reptile surveys across the UK.

Three standard survey techniques were employed in the search for reptiles: a walkover survey, *in situ* refugia and artificial refugia. To ascertain presence or likely absence of reptiles on a site, seven site visits are required. If reptiles are found to be present, further site visits are required to assess the size classes of any reptile population present.

Walkover survey

Surveyors walked slowly between refugia locations, examining suitable basking places to record any incidental sightings of reptiles.

In situ refugia

Where present, log piles and discarded potential refugia, such as corrugated sheet materials, were examined during site visits. Where considered necessary by the project ecologist, destructive searches of log piles were conducted to ensure no reptiles or other signs of reptiles, such as sloughed skins, were missed. These searches were undertaken with care to ensure that no reptiles were harmed. Log piles were then returned to their original state once the search was complete.

Artificial refugia

Artificial refugia were laid throughout the suitable reptile habitats on site and examined on each site visit.

Refugia consisted of bitumen coated corrugated sheets and felt as well as metal corrugated sheets, all of which measured approximately 0.5m x 0.5m. These refugia warm up quickly and retain heat, thus attracting reptiles. A combination of materials was used as each material has different thermal properties. Metal sheets gain and lose heat quicker than bitumen coated sheets, and therefore each can be more suitable to different reptiles in different situations. The refugia were collected upon completion of the survey work.

Froglife (1999) guidance recommends a density of 10 artificial refugia per hectare of suitable habitat, however it is recognised that other guidelines recommend in some instances a higher density is needed to fully assess reptile use of a site. The total survey area was approximately 23 hectares, however the majority of the site is composed of dense scrub which is impenetrable and not possible to survey. These large areas of scrub are of limited suitability for use by reptiles. Areas of suitable reptile habitat on site are limited to small areas of grassland and grassland paths that run through the scrub habitats, and the margins of the scrub. As such, 175 artificial refugia were deployed across the site. This number of refugia was deemed more than sufficient to establish reptile presence or likely absence on the site given that the majority of the site comprises dense scrub that is of sub-optimal quality for reptiles/

The refugia were left to bed down for 14 days prior to the first checks. This was to allow the refugia to develop favourable conditions, such as suitable humidity and temperature gradients, and for any reptiles present to become more familiar with them.

Timings and weather conditions

Table 3 – Reptile survey dates and weather conditions

SITE VISIT N^{O}	DATE	TEMP. (°C)	CLOUD COVER (%)	WIND	RAIN
Refugia laid	25/04/23	13ºC	60%	Light breeze	No
1	11/05/23	13ºC	50%	Light breeze	No
2	23/05/23	15ºC	15%	Calm	No
3	09/06/23	20ºC	0%	Calm	No
4	16/06/23	21ºC	0%	Calm	No
5	26/07/23	18ºC	100%	Light breeze	No

6	11/08/23	20ºC	60%	Light breeze	Light rain
7	11/09/23	15ºC	50%	Calm	No

Limitations

Approximately 60 refugia were lost over the duration of the surveys. This was considered to be partly due to vegetation growth engulfing the refugia over the course of the survey period, in addition to interference and removal by members of the public accessing the site. By the end of the survey, 115 refugia were still deployed and accessible on site. The number of refugia decreased gradually throughout the surveys and the majority of the refugia were present during the initial surveys. This is not considered to be a significant limitation as a large number of refugia were accessible during all of the survey visits.

4.2.7 Ground level tree assessment, aerial tree assessment & presence / absence surveys for bats

A ground-level assessment was undertaken of all trees within the defined survey boundary between the 19th and 27th April 2023, using binoculars and a high-powered torch. An additional area was surveyed on the 25th June 2024 (see Appendix 9).

Trees were inspected on all aspects and assessed for their potential to contain roosting bats, based on the number and quality of suitable roosting features present, as detailed in BS8596:2015 Surveying for Bats in Trees and Woodland and Bat Conservation Trust (BCT) guidelines (Collins, 2016).

Potential roosting features, as described in Bat Roosts in Trees (Bat Tree Habitat Key, 2018) are listed in Table 4 below.

Table 4 – Types of PRFs found in trees

DISEASE & DECAY FEATURES	DAMAGE FEATURES	ASSOCIATION FEATURES	OTHER FEATURES
Woodpecker holes	Lightning strikes	Fluting	Bat boxes
Squirrel holes	Hazard beams	Ivy	Bird boxes
Knot holes	Subsidence cracks		
Pruning cuts	Shearing cracks		
Tear-outs	Transverse snaps		
Wounds	Welds		
Cankers	Lifting bark		
Compression forks	Desiccation fissures		
Butt rots	Frost cracks		

Based on the quality of features present, trees were assessed as having negligible, low, moderate or high suitability for roosting bats.

Where accessible at ground level, PRFs were inspected with an endoscope by the licensed ecologist, in order to identify any roosting bats or field signs of bats and to inspect the internal conditions of the PRF. Field signs of bats searched for included:

- Scratches, staining or droppings around entry points or within a cavity
- Presence of bat-fly cases
- Odour
- Smoothing of surfaces around cavity
- Audible chattering / squeaking at dusk or in warm weather (during the active season)

Survey limitations

The density of the scrub across much of the site limited the accessibility of some areas. Where mature and semi-mature trees were observed within particularly dense areas of scrub that prevent full accessibility, trees were assessed from as close as possible using binoculars. Due to the young age of the scrub across the majority of the survey area, trees with suitability to support roosting bats are limited and generally clustered in specific areas. In addition, the density of the scrub significantly reduces the suitability of such areas for use by roosting bats, which are not adapted to flight within scrub of this density and are much more likely to roost in more accessible features on site and within the local area. As such, this is not considered be a significant limitation and as robust an assessment as possible has been undertaken.

Aerial tree assessment

Following the ground-level assessment, all 28 trees assessed as having moderate potential to support roosting bats were subject to an aerial assessment between the 8th and 30th August 2023. As part of the aerial inspection, trees were climbed using ropes and harnesses by trained ecologists in order to inspect the potential roosting features more closely using an endoscope.

Based on the availability of new information from the close inspection of features during the aerial inspection, trees were either kept as the having the same roosting suitability as assessed during the ground level assessment, or were re-classified as negligible, low, moderate or high suitability.

Trees still considered to have moderate potential to support roosting bats following the initial aerial inspection, and which contained features which could confidently be fully inspected with an endoscope, were subject to an additional aerial inspection between the 11th and 14th September 2023.

As such, all trees that could be fully inspected with an endoscope were subject to two aerial tree inspections, with one of the inspections in August during the peak bat survey season, and the second in September, as per BCT guidelines. Aerial tree inspections were undertaken at least two weeks apart for each tree.

Bat presence / absence surveys

During the ground-level and aerial tree inspections, five trees (T10, T21, T26, T32, and T54) were found to contain features that could not be fully inspected via endoscope (e.g. due to the shape or depth of the cavity) or were considered unsafe to climb. With the exception of T10, these trees were subject to two further bat presence / absence surveys, with one of the surveys in August during the peak bat survey season, and the second in September, as per BCT

guidelines. Bat presence / absence surveys were undertaken at least two weeks apart for each tree.

Tree T10 was not subject to a second bat presence / absence survey as the use of an endoscope with an articulated head allowed for a comprehensive aerial tree inspection to be undertaken as the second survey in September. Though the use of the articulated endoscope, all PRFs within the tree could be thoroughly inspected.

During these presence / absence surveys, all potential roosting features within these trees were covered by a surveyor or infrared camera during the dusk emergence or dawn re-entry periods.

Bat echolocation, flight and habitat characteristics were recorded where possible, in order to determine the species. The level and type of bat activity was also recorded to establish how bats are using the site.

Equipment

BATLOGGER M bat detectors and recorders were used during the bat presence / absence surveys. This device records bat echolocation calls across the full spectrum, with a sensitivity range of 10 – 150 kHz. The integrated heterodyne live monitoring also allows the observer to hear the echolocation calls in real time, with automatic tuning. The recordings are individually time/date, GPS and temperature stamped, and are of high enough quality to produce time expansion quality sonograms.

Anabat Walkabout bat detectors were also used during the bat presence / absence surveys. This allowed the observer to hear bat echolocation calls and see the sonograms in real time, aiding identification. All registrations were automatically recorded onto a memory card and time/ date stamped. The device can record and display both zero crossing and full spectrum bat echolocation calls and has a built-in GPS and mapping system.

Anabat Scout bat detectors were also used during the bat presence / absence surveys. This allowed the observer to hear bat echolocation calls in real time, with automatic tuning. All registrations were automatically recorded onto a memory card and time/ date stamped. The device can record and display both zero crossing and full spectrum bat echolocation calls and has a built-in GPS and mapping system.

Canon XA11 Professional Video Cameras were used in conjunction with infra-red LED illuminators to monitor PRFs within trees during the presence / absence surveys. Footage from the survey was recorded and reviewed post-survey. This enabled a more thorough assessment of the use of the trees throughout the entirety of the survey and ensured that any bats using the trees were identified, even when ambient light levels may have prohibited surveyors from observing bats.

Weather conditions

Table 5 – Bat presence / absence survey of trees - Weather conditions and survey timings

DATE	SURVEY TYPE	TIMINGS	SUNSET / SUNRISE	TEMP.	WIND	RAIN	CLOUD COVER
10/08/23	Emergence (T10 & T54)	20:35 – 22:20	20:50	23°C	Still	None	50%

18/08/23	Emergence (T21, T26)	20:18 – 22:03	20:33	18°C	Light breeze	Moderate rain throughout	100%
20/08/23	Emergence (T32)	20:14 – 21:59	20:29	18°C	Still	None	0%
11/09/23	Re-entry (T21, T26, T32, T54)	05:08 – 06:53	06:38	16°C	Light breeze	None	70%

Survey limitations

Moderate rain was recorded during the emergence survey conducted on the 18th August 2023. Despite this, bats were still recorded as active throughout the survey, with moderate levels of activity consistent with the previous survey. As such, this is not considered to be a significant limitation.

4.2.8 Bat activity surveys

Transect survey

A transect route was mapped across the site following the PEA and covered a distance of 3.9km. Care was taken to cover the entire site, especially any habitats considered to be of particular suitability for roosting, foraging or commuting bats.

The site is predominantly considered to present moderate suitability habitat for bats; therefore one survey visit was carried out each month, from April to October inclusive with the exception of June. The omission of this month is not considered to have a significant impact on the results of the survey, as an additional transect survey was undertaken in July.

During each survey visit, two surveyors walked slowly along the transect route, equipped with Elekon Batlogger M bat detectors and recorders. This device records bat echolocation calls across the full spectrum, with a sensitivity range of 10 – 150 kHz. The integrated heterodyne live monitoring also allows the observer to hear the echolocation calls in real time, with automatic tuning. The recordings are individually time/date, GPS and temperature stamped and are of high enough quality to produce time expansion quality sonograms. Any observations of bats were recorded, including time, species, location, number of bats, flight direction, flight height and behaviour, where possible.

The starting point and direction of the transect route was varied throughout the surveys, to reduce survey bias.

The survey dates, timings and weather conditions are provided in Table 6 below:

Table 6 – Bat activity survey dates, timings and weather conditions

MONTH	DATE	SUNSET / SUNRISE	SURVEY TIMINGS	TEMP	WIND	RAIN	CLOUD COVER
April	20/04/23	20:20	20:05 – 22:05	11°C	Still	Dry	0%
May	26/05/23	21:20	21:05 – 23:05	14°C	Still	Dry	30%

July	04/07/23	21:40	21:25 – 23:25	15°C	Still	Light rain	40%
	16/07/23	21:30	21:15 – 23:15	16°C	Light breeze	Dry	80%
August	09/08/23	20:52	20:37 – 22:37	13°C	Light breeze	Patchy rain	90%
	10/08/23	05:42	03:57 - 05:57	10°C	Light breeze	Dry	50%
September	10/09/23	19:40	19:25 – 21:25	21°C	Light breeze	Dry	15%
October	25/10/23	18:06	17:51 – 19:51	12°C	Light breeze	Patchy rain	70%

Static detector monitoring

In addition to the transect surveys, three static detectors were deployed across the site, fixed to mature trees in discrete locations that were anticipated to record bat activity.

The static detectors were set to record for a minimum of five consecutive nights per month in their respective locations, from April to October. Following each recording cycle, each detector's batteries were changed, the data was retrieved, and detectors re-set to record. The following static detectors were used during the survey:

- Two Anabat Swift static bat detectors were used throughout the surveys. This device uses frequency division technology with a frequency range of 5 – 150khz and records echolocation calls in zero crossing format. It has an integrated GPS receiver which automatically sets the internal clock, calculates sunset and sunrise times and records the location. All registrations are automatically recorded onto an SD card and time, date and temperature stamped.

- One Anabat Express static bat detector was also used. This device uses frequency division technology with a frequency range of 5 – 150khz and records echolocation calls in zero crossing format. It has an integrated GPS receiver which automatically sets the internal clock, calculates sunset and sunrise times and records the location. All registrations are automatically recorded onto an SD card and time, date and temperature stamped.

Limitations

The site is considered to present moderate suitability habitat for bats; therefore one survey visit was carried out each month, from April to October inclusive with the exception of June. The omission of this month is not considered to have a significant impact on the results of the survey, as an additional transect survey was undertaken in early July.

Static detector 1 failed to record bat activity during the month of September due to water damage within the equipment. However, the other static detectors deployed on site recorded sufficient data during this period. Static 1 recorded the least amount of data between all statics throughout the monitoring period. The static detector and transect surveys combined, ensured that all suitable habitat onsite was surveyed to determine its importance with regards to bats.

Static detector 2 failed to record bat activity due to technical / file corruption issues in August. However, the other static detectors deployed on site recorded sufficient data during this period.

The October transect data was lost due to file corruption. As such, detailed numbers of recordings and heat maps are not available, however the general results of the survey are available and have been considered within this report.

Due to the overall amount of data gathered during the transect and static detector surveys, collected over the majority of the active bat season, it is considered that the results present a good representation of the bat activity within the proposed development site. The above limitations are therefore not considered to be significant, as robust conclusions and appropriate recommendations can still be made based on the data.

4.2.9 Breeding bird survey

Field survey

The survey methodology broadly followed the British Trust for Ornithology (BTO)/JNCC /Royal Society for the Protection of Birds (RSPB) breeding bird survey technique. This technique records the location and movements of individual birds present within a defined survey area.

Six survey visits were undertaken between March and August 2023, in order to undertake population territory mapping of key bird species found on site. The surveys were started within one hour of sunrise, in order to observe the period of peak bird activity. Weather conditions during each survey were recorded and are presented in the table below. Site visits were not undertaken in heavy rain, very poor visibility or strong wind.

Table 7 – Breeding bird survey dates and weather conditions

SITE VISIT N^{O}	DATE	Temp (°C)	CLOUD COVER (%)	RAIN	WIND (0-12)	VISIBILITY
1	31.03.2023	9	100	Light for 10 mins	1	Good
2	15.04.2023	6 - 12	30	0	0 – 1	Good
3	07.05.2023	14	5	0	0	Good
4	19.06.2023	11 - 16	5	0	0 – 1	Good
5	20.07.2023	13	100	Light for 10 mins	1	Good
6	04.08.2023	14	100	0	1 – 3	Good

On each survey visit, a pre-determined transect route was walked throughout the survey area by the surveyor, equipped with binoculars. The surveyor stopped at points during the transect, where a good vantage point of the site was possible; this was done to enable the surveyor to observe bird behaviours. The starting point and route direction were varied during each survey to reduce survey bias.

During the survey visits, the following details were recorded:

- Bird species, numbers, age and sex (where possible)
- Bird behaviour (e.g. singing, calling, feeding, territorial aggression)
- Any associations with particular habitat types or locations

These registrations were recorded on a map using the recognised BTO species codes.

The data collected was then assessed and bird species were categorised according to the following definitions:

- Confirmed breeding: Includes species for which territories were positively identified as a result of the number of registrations, the location of an active nest or the presence of recently fledged young.

- Likely breeding: Includes a pair observed in suitable nesting habitat in the breeding season, agitated behaviour and / or alarm calls from adults suggesting the probable presence of a nest or young nearby. Behaviour observed on an insufficient number of occasions to confirm the presence of a territory.

- Possible breeding: Includes species observed in breeding season in suitable nesting habitat with a singing male present or breeding calls heard.

- Non-breeding: Fly over species observed but suspected to be still on migration or summering non-breeders.

In addition to the targeted bird surveys, a suite of ecological surveys has been undertaken of the site by UES throughout 2023-2025 (including nocturnal bat surveys) and incidental records of key bird sightings were also recorded; these incidental records contribute to the site species list and have been considered within this assessment.

The field survey data was then analysed in relation to the conservation status of each species recorded on site. Species conservation status is based on the following recognised lists:

- Global IUCN Red List of Threatened Species: Extinct, Critically Endangered, Endangered, Vulnerable or Near Threatened
- Birds of Conservation Concern 5 List (BoCC): Red, Amber or Green
- Population Status of Birds in Wales list (PSBW): Red, Amber or Green

The data was also analysed against the following articles of legislation:

- Wildlife and Countryside Act, 1981 (WCA): Schedule 1 species
- Environment (Wales) Act 2016: Section 7 species
- The EU 'Birds Directive': Annexe 1 species
- UK Rare Breeding Birds Panel (RBBP) species

Limitations

The surveys were undertaken under appropriate weather conditions at an appropriate time of year. Dense scrub is present through a large part of the site, however suitable access routes were created along the survey transect to ensure that the whole site was covered to allow a robust survey. No significant limitations were encountered during the surveys.

4.2.10 Otter and water vole survey

A detailed otter and water vole survey of the watercourses at the site boundary and their adjacent habitats was conducted on the 14th of August 2025. The survey covered the sections of Redwither Brook and the River Clywedog that border the site boundary.

The survey was conducted in suitable weather conditions and was not undertaken following a period of prolonged rainfall, which can wash away field signs. The habitats were assessed for their potential to support water voles and otters and an inspection was carried out to search for evidence of both species.

Additional evidence of otter activity was observed on the 28th August 2025 during an unrelated ecology survey.

Otter survey

Along the watercourses, any bankside ledges, bridges or other structures were searched for otter field signs and assessed for their suitability to support otters. Any otter field signs were mapped and photographed. Field signs searched for included:

- Holts – places / structures used by otter on a 'permanent' basis
- Lying up areas / couches - 'temporary' areas used by otters for resting, grooming or feeding whilst above ground
- Spraints – otter droppings, usually found on exposed rocks, logs, ledges or other bankside structures
- Feeding remains - partially eaten fish, fish scales, eggs, frogs, piles of mussel shells or crayfish remains
- Paths and runs in vegetation or at the water's edge
- Slides – established entrances into a watercourse
- Footprints

Water vole survey

A detailed inspection of the watercourses was carried out from the banks and within the watercourses where possible. Water vole field signs were searched for during the inspection, such as:

- Latrines / dropping piles
- Feeding stations or vegetation piles (fresh and old)
- Burrows (sometimes also with "lawns" associated with them)
- Paths and runs in vegetation or at the water's edge
- Footprints

Survey limitations

The development site experienced a period of prolonged warm weather throughout the summer of 2025, which may have resulted in lower water levels than usual. However, this is not deemed to be a significant limitation to the results of the survey and may have led to more exposed bankside ledges or areas of mud which displayed footprints of riparian species.

Small sporadic sections of the watercourse could not be accessed due to the density of scrub. Additionally, some sections of the channel and the far/offsite bank could not be accessed due to deep water and/or dense vegetation, however, they could be inspected visually using binoculars.

These are not considered to be significant limitations; however, they have been considered when preparing the recommendations section of this assessment.

4.2.11 Dingy and grizzled skipper butterfly surveys

The methodology of the field survey broadly follows that detailed in Butterfly Conservation's Monitoring Butterflies by Annual Timed Counts. A total of four surveys were conducted over June and July 2023.

Surveyors walked slowly across all accessible areas of the site over a period of at least two hours. The transect was paused for at least 5 minutes to allow for sufficient observation at all areas identified as containing suitable dingy skipper *Erynnis tages* or grizzled skipper *Pyrgus malvae* habitat (larval food plants or nectar resources for adults). All observed butterfly species were recorded.

Timings *and weather conditions*

Table 8 – Butterfly survey dates and weather conditions

SITE VISIT N^{O}	DATE	TIMINGS	TEMP. (°C)	CLOUD COVER (%)	WIND	RAIN
1	06/06/23	13.00-15.00	16	50	F1	None
2	21/06/23	12.15-14.45	22	40	F2	Very light rain for 5 minutes at 13:30.
3	07/07/23	11.30-13.30	15	30	F2	None
4	24/07/23	12.30-15.00	17	60	F3	None

Limitations

Light rain was present for five minutes during the second survey, however there was high levels of butterfly activity both before and afterwards. As such, this is not considered to have significantly affected the results.

Some parts of the site could not be fully accessed due to the density of scrub. This is not considered to be a significant limitation as these areas are considered to be unsuitable to support the target butterfly species due to a lack of larval food plants and nectar resources for foraging adults. The majority of the site could be surveyed, including all areas of suitable habitat.

4.2.12 Invasive species walkover survey

An invasive species walkover survey was undertaken on 5th October 2023. The survey was undertaken to inform on the presence of any invasive species within the defined survey area.

4.3 Impacts assessment

This assessment follows the CIEEM guidelines for ecological impact assessment (Version 1.2, 2022) when assessing the significance of impacts.

The significance of an impact is a matter of professional judgement but can be described in general terms as being a product of the ecological / nature conservation importance of a receptor (site habitat or species), and the magnitude of the predicted impact. The more

ecologically important the receptor and the greater the magnitude of the impact, the higher the significance of that impact is likely to be. Other characteristics which affect the significance of an impact include the extent, duration, timing, reversibility and frequency of the impact.

The ecological or nature conservation importance of each ecological receptor relevant to the proposed development and this assessment are detailed within Section 5 – Baseline Conditions, before impacts are described and characterised within Section 6 – Impact Assessment. However, it is recognised that other environmental disciplines in the planning process can follow a different criteria for significance. Therefore, an impact significance matrix has also been produced for each ecological receptor relevant to the proposed development and this assessment.

The categories of ecological or nature conservation importance used in these matrices are as follows:

- International – ecological receptors of importance in a European / global context
- National – ecological receptors of importance in the context of Wales
- County – ecological receptors of importance in the context of Wrexham County
- Local – ecological receptors of importance in the context of Wrexham industrial Estate and surrounding areas
- Site – habitats and species of less than local importance, but of some value
- Negligible or no conservation value – not significant

Table 9 below provides an indication of the terms in which the significance of ecological impacts is considered.

Table 9 – Generalised impact significance matrix.

ECOLOGICAL IMPORTANCE OF SITE OR FEATURE	MAGNITUDE OF POTENTIAL IMPACT			
	HIGH	MEDIUM	LOW	NEGLIGIBLE
International	Critical	Critical	Major	Minor
National	Critical	Major	Moderate	Minor
County	Major	Moderate	Minor	Minor
Local	Moderate	Minor	Minor	Not significant
Site	Minor	Minor	Not significant	Not significant
Negligible	Not significant	Not significant	Not significant	Not significant

5 BASELINE CONDITIONS

This section presents a description of the ecological baseline conditions, based upon the results of the ecological record search, the PEA and additional species-specific surveys.

5.1 Protected sites

5.1.1 Non-statutorily protected sites

A desk study was conducted for the proposed development site and surrounding area. Non-statutorily protected sites were scoped to a distance of 2km.

There are three non-statutorily protected sites within 2km of the proposed development site:

- **Wrexham Industrial Estate Wildlife Site**
  This designation encompasses, three land parcels within the Industrial Estate, including Bryn Road (450m to the north) and Erlas Black Wood (830m to the north-west). The third land parcel is Cefn Park, which has the same boundary as the survey boundary, that is to say that the survey area is the Cefn Park parcel of the Wildlife Site.

  The following has been taken from the citation as the reason for the incorporation of the Cefn Park parcel within the Wildlife Site designation:

  "The derelict land known as Cefn Park, on the southern edge of the Industrial Estate, consist of a complex mosaic of scrub, grassland and tall herb. Species-rich grassland occurs where there is rabbit grazing with cowslip *Primula veris*, restharrow *Ononis repens*, yellow-wort *Blackstonia perfoliata*, common centaury *Centaurium erythraea* and common bird's-foot trefoil *Lotus corniculatus*. Other species of interest include dyer's greenweed *Genista tinctoria* in among scrub and grass vetchling *Lathyrus nissolia* in rank grassland. Worn paths and motorbike tracks criss-cross the site and many species present such as prickly lettuce *Lactuca serriola*, smith's pepperwort *Lepidium heterophyllum* and bristly oxtongue *Helminthotheca echioides* typify disturbed ground. A mosaic of woodland and damp grassland occurs adjacent to the River Clywedog. The woodland is dominated by mature hawthorn *Crataegus monogyna* with alder *Alnus glutinosa* and crack willow *Salix fragilis* along the river. The ground flora is sparse but dog's mercury *Mercurialis perennis*, hart's-tongue fern *Asplenium scolopendrium* and male fern *Dryopteris filix-mas* do occur. Meadowsweet *Filipendula ulmaria*, great willowherb *Epilobium hirsutum* and canary reed-grass *Phalaris arundinacea* occur in the damper patches."

  The section of the Wildlife Site at Bryn Lane encompasses a strip of species-rich grassland beside a ditch and contains similar grassland species. The land parcel at Erlas Black Wood encompasses a small area of broadleaved woodland dominated by mature oak *Quercus sp.*

- **Peter's Dingle Wildlife Site**
  Located approximately 0.6km south of the proposed development site, the designation supports ash *Fraxinus excelsior*/pedunculate oak *Quercus robur* woodland along a brook. The understorey is of wych elm *Ulmus glabra*, elder *Sambucus nigra*, hawthorn, wild privet *Ligustrum vulgare* and hazel *Corylus avellana*, the latter becoming abundant in areas where it has been coppiced. The field layer is often dominated by ivy *Hedera*

helix, bramble *Rubus fruticosus agg.*, and stinging nettle *Urtica dioica*, however dog's mercury, yellow archangel *Lamium galeobdolon*, giant fescue *Festuca gigantea*, black bryony *Dioscorea communis* and harts'-tongue fern are also present.

- **Cefn Park Wildlife Site**
  Located approximately 1.45km north-west of the proposed development site, the designation supports a series of broadleaved woodlands within Cefn Park Estate. Big Wood is the largest (8.9ha) and is dominated by ash with oak, sycamore *Acer pseudoplatanus* and occasional mature wych elm. The understorey is continuous with frequent holly *Ilex aquifolium*, young sycamore and wych elm. The woodland has a rich ground flora including dog's mercury, English bluebell *Hyacinthoides non-scripta*, wood anemone *Anemone nemorosa* and ramsons *Allium ursinum*. Rhododendron Spinney is also dominated by ash but with beech *Fagus sylvatica* and sweet chestnut *Castanea sativa* and a locally dense understorey of rhododendron *Rhododendron ponticum*. Alder, crack willow and goat willow *Salix caprea* dominate the poorly drained eastern side where great horsetail *Equisetum telmateia* and greater pond sedge *Carex riparia* occur as well as a fen dominated by common reed *Phragmites australis.*

Wildlife Sites are a county-based designation and hence are considered to be of county importance.

5.1.2 Statutorily protected sites

A desk study was conducted for the proposed development site and surrounding area. Statutorily protected sites were scoped to a distance of 10km, see Appendix 1.

The proposed development site lies within a SSSI Impact Risk Zone (IRZ) within which Natural England only request that they are consulted on industrial / agricultural developments that could cause air pollution (including industrial processes, livestock and poultry units with floorspace >500m2, slurry lagoons & digestate stores > 750m2, manure stores > 3500t) and general combustion processes >50MW energy input.

There is a single statutorily protected site within 2km of the proposed development site:

- **Afon Dyfrdwy (River Dee) SSSI**
  Located approximately 1.6km east of the proposed development site, the SSSI covers the River Dee and its floodplain. The designation covers much of the same area as the River Dee (England) SSSI and the River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid SAC. The site has been designated for its nationally important transition through a range of river types from mesotrophic to eutrophic. The site has also been designated for supporting Atlantic salmon *Salmo salar*, otter, brown trout *Salmo trutta*, bullhead *Cottus gobio*, brook lamprey *Lampetra planeri*, river lamprey *Lampetra fluviatilus*, sea lamprey Petromyzon marinus and club-tailed dragonfly *Gomphus vulgatissimus.*

There are sixteen statutorily protected sites (designated for ecological reasons) within 2km of the proposed development site:

- Chwarel Singret SSSI
- Cloy Brook Pastures SSSI
- Dee Cliffs, Farndon SSSI
- Gatewen Marsh SSSI
- Johnston Newt Sites SSSI
- Llay Bog SSSI
- Marford Quarry SSSI
- Midland Meres and Mosses Phase 2 Ramsar
- Old Pulford Brook Meadows SSSI
- River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid SAC
- River Dee (England) SSSI
- Sontley Marsh SSSI
- Strytlas A'r Hafod SSSI
- Vicarage Moss SSSI
- Well Rough and Long Plantation SSSI

Given the distances from site and the nature of development, it is considered unlikely that the proposed development will have any direct or indirect impact on any statutorily protected sites.

The proposed development is purely industrial/commercial and does not have a residential aspect. As such, it is considered that the proposed development will not result in any additional significant recreational pressure upon any of the protected sites within the local area and these sites are not considered further within this assessment.

5.2 Habitats

The results of the phase 1 habitat survey undertaken as part of the PEA in 2025 are shown on the accompanying map at Appendix 2 – Phase 1 habitat plan. Habitats are colour-coded in accordance with the phase 1 standard.

The following principle habitat types were characterised on site:

- A1.1.1 Broadleaved, semi-natural woodland
- A2.1 Dense scrub
- A3.1 Broadleaved scattered trees
- B2.2 Semi-improved neutral grassland
- B5 Marshy grassland
- B6 Species-poor, semi-improved grassland
- C3.1 Tall ruderal
- G1 Standing water
- G2 Running water
- J1.2 Amenity grassland
- J1.3 Ephemeral / short perennial
- J2.4 Fence
- J2.5 Wall
- J3.6 Buildings
- J4 Bare ground
- J5 Hardstanding

5.2.1 A1.1.1 Broad-leaved, semi-natural woodland

A band of mature riparian woodland runs along the banks of the River Clywedog on the southern site boundary and along some of the Redwither Brook at the south-western site boundary. These areas of woodland are dominated by alder with some crack willow, goat willow and grey willow *Salix cinerea* present. The ground flora of woodland predominantly comprises tall herbaceous woodland on the banks of the watercourses, including stinging

nettle, creeping thistle *Cirsium arvense*, common hogweed *Heracleum sphondylium*, wild angelica *Angelica sylvestris*, great willowherb and bramble.

This band of riparian woodland extends northwards at the south-eastern corner of the site where additionally canopy species are present including pedunculate oak, silver birch *Betula pendula*, ash, hawthorn and elder.

A relatively large area dominated by mature hawthorn was previously mapped as woodland in the ecological assessment undertaken by Kingdom Ecology. As this area is dominated by hawthorn, with occasional other shrub / understory species such as elder, it should not be classified as woodland according to the phase 1 habitat survey methodology, which states that stands of mature hawthorn, blackthorn *Prunus spinosa* or grey willow, even if more than 5m tall, should be categorised as dense scrub. This hawthorn dominated scrub is discussed below in Section 5.2.2.

No significant change in this habitat was noted during the updated walkover survey undertaken by UES in May 2025.

The woodland on site varies in age and condition, however the majority is considered to meet the criteria to qualify as the Lowland Mixed Deciduous Woodland Habitat of Principal Importance. Semi-natural woodland within the county of Wrexham is a limited resource, however given the relatively small areas and narrow stands of woodland on site and the limited ecological connectivity to larger areas of woodland and other habitats of principle importance within the wider landscape, this woodland is not considered to be of county importance. Woodland habitats, even those of lower quality are limited within the context of the Wrexham Industrial Estate and so the woodland on site is considered to be of local importance.

5.2.2 A2.1 Dense scrub

The majority of the site is dominated by dense scrub, comprising a mix of species. The majority of the scrub is semi-mature and is dominated by either bramble, blackthorn, hawthorn, goat willow or grey willow. Additional shrub species such as elder, dog rose *Rosa canina* and bramble are present, in additional to young trees, including ash, pedunculate oak, sycamore, crab apple *Malus sylvestris* and silver birch.

The majority of the scrub is dense, allowing low levels of light to penetrate to the ground level. Consequently, large areas are lacking ground flora and common shade-tolerant species are the most abundant species, such as cleavers *Galium aparine* and ivy. Most of the scrub appears to have encroached upon areas of grassland and the margins of some stands contain remnants of the species-rich grassland with species such as pepper saxifrage, meadowsweet, common knapweed *Centaurea nigra* and common agrimony *Agrimonia eupatoria*.

The eastern section of the site contains an area of mature hawthorn scrub that was previously mapped as woodland, as detailed above in Section 5.2.1. Unlike the majority of the scrub on site, the hawthorn structure mimics woodland with the mature shrubs forming a canopy layer but without a dense understory. This has allowed for a more diverse ground flora that includes species such as primrose *Primula vulgaris* and dog's mercury, albeit in small quantities.

The areas of dense scrub on site do not qualify as a Habitat of Principal Importance and are not considered to be a habitat of national or county significance given. However, given the large quantity of scrub present on site, and the maturity of the dense hawthorn scrub within the south-eastern section of the site, this habitat is considered to be of local importance.

5.2.3 A3.1 Broadleaved scattered trees

There are a number of mature or semi-mature scattered trees across the site. Some are solitary; however the majority of the trees lie within the areas of dense scrub and in lines or grouped around buildings, suggesting that they have originally been planted. Tree species vary but mostly comprise oak, sycamore and ash, with some crab apple, alder and crack willow also present.

Scattered trees are not a Habitat of Principal Importance and the trees on site are not ancient and are not subject to TPOs. Given the small number of scattered trees present on site, their limited age classifications and the availability of numerous scattered trees the wider surrounding landscape, the trees on site are considered to be of site importance.

5.2.4 Grasslands

B2.2 Semi-improved neutral grassland

The site was originally designated in part for its species-rich grassland, however a lack of management has allowed the majority of grasslands to be lost to encroaching scrub. Small areas of semi-improved grassland remaining on site are limited to pathways and small clearings with the scrub, which have been subject to some management or scrub clearance to maintain minimal levels of access across the site. Most of the grasslands appear to have a moderate species-diversity, containing some species indicative of higher quality grassland. Despite this, many areas have significant encroaching scrub and appear to be succeeding into a lower quality rank sward, dominated by a small number of competitive and coarse grasses such as cock's-foot *Dactylis glomerata*, Yorkshire fog and false oat-grass.

Very small areas of particularly species-rich grassland are present and contain numerous species indicative of unimproved grassland, including pepper saxifrage, greater bird's-foot trefoil *Lotus pedunculatus*, lesser meadow-rue *Thalictrum minus*, wild carrot *Daucus carota*, common fleabane, common knapweed, grass vetchling *Lathyrus nissolia*, common spotted orchid *Dactylorhiza fuchsii*. This area, in addition to most areas of grassland on site, is being encroached by bramble and other species and is unlikely to retain its species-richness without intervention.

Small parts of the grassland on site resemble the MG5 community however given their very small size at the margins of scrub and their poor condition due to significant encroaching scrub and ruderal species, they are not considered to meet the criteria to qualify as the Lowland Meadow Habitat of Principal Importance.

B5 Marshy grassland

A small area of marshy grassland is present within the north-eastern section of the site. This community lies within a grassland glade within the scrub, however only a small section of the glade appears to have impeded drainage. Species present include soft rush *Juncus effusus*, hard rush, wild angelica, marsh bedstraw *Galium palustre*, meadowsweet and greater bird'-foot trefoil.

As the grassland does not represent the communities MG4, MG5 or MG8, it does not meet the criteria to qualify as the Lowland Meadow Habitat of Principal Importance.

B6 Species-poor, semi-improved grassland

Small stands of species poor grassland are present across the site. These grasslands resemble the MG1 *Arrhenatherum elatius* NVC community and are dominated by a small number of coarse and competitive grass species such as cock's-foot and false oat-grass, with a low diversity and abundance of forbs.

As these grasslands are species poor and do not represent the communities MG4, MG5 or MG8, they do not meet the criteria to qualify as the Lowland Meadow Habitat of Principal Importance.

C3.1 Tall ruderal

Large stands of tall ruderal vegetation are present across the site. These areas appear to have succeeded from unmanaged grassland and are beginning to succeed into dense scrub. Species present are indicative of nutrient enrichment or a lack of management, with the majority of these areas dominated by stinging nettle with frequent common hogweed and bramble. As with the margins of some stands of dense scrub, some areas of tall ruderal vegetation have remnants of species-rich grassland with small quantities of common knapweed, common agrimony, wild carrot, meadowsweet and pepper saxifrage.

As these areas of tall ruderal vegetation are relatively species poor and does not represent the communities MG4, MG5 or MG8, they does not meet the criteria to qualify as the Lowland Meadow Habitat of Principal Importance.

Overall, the combined value of the grasslands on site are considered to be of local significance, however this is solely due to the presence of the small areas of species-rich semi-improved grassland that remain but are slowly being lost to scrub encroachment. All other areas of grassland on site are considered to be of no higher importance then at the site level.

5.2.5 G1 Standing water

Four ponds were previously identified on site during the ecology surveys undertaken by Kingdom Ecology in 2016. Of these four ponds, Ponds 1 and 2 were found to be ephemeral waterbodies in 2016 and were subsequently found to be completely dry and no longer functioning as aquatic habitats during an updated site visit in 2019.

As part of the suite of ecological surveys undertaken by UES, the following waterbodies/historical waterbodies have been observed on site:

- Pond 1 – A small shallow depression in the north-western section of the site. Located within and heavily shaded by dense scrub. This pond dries annually and for large parts of the year. Found to contain a maximum of 20cm during the suite of ecological surveys undertaken by UES between 2022 and 2025. No aquatic, emergent or true marginal vegetation. Considered to no longer function as a semi-permanent aquatic habitat or a pond.

- Pond 1A – A small shallow depression in the western section of the site. Located within and heavily shaded by dense scrub, this pond dries annually and for large parts of the

year. Found to contain a maximum of 20cm during the suite of ecological surveys undertaken by UES between 2022 and 2025. No aquatic, emergent or true marginal vegetation. Considered to no longer function as a semi-permanent aquatic habitat or a pond.

- Pond 2 – A large but shallow depression in the south-western section of the site that. is located within and heavily shaded by dense scrub. No aquatic, emergent or true marginal vegetation is present, and the pond was found to be dry during all ecological surveys undertaken by UES. As such, it is not considered to hold water for sustained periods and considered to no longer function as a semi-permanent aquatic habitat or a pond.

- Pond 3 – A concrete-lined, walled tank within the eastern section of the site. The pond measures approximately 138m^2 and is approximately 1m in depth. The tanks walls extend approximately 1m from the ground and it is surrounded by dense scrub on all aspects. Aquatic and emergent vegetation is abundant and includes broadleaved pondweed *Potamogeton natans*, common duckweed *Lemna minor*, brooklime *Veronica beccabunga*, floating sweet grass *Glyceria fluitans*, soft rush *Juncus effusus*, hard rush, great reedmace *Typha latifolia*, branched bur-reed *Sparganium erectum*. Marginal vegetation is limited given the raised concrete walls, however willow *Salix spp.* saplings are present where substrate has accumulated at the margins of the pond.

  This pond was found to be suffering from a build-up of organic material, the encroachment of scrub and the choking of the pond by emergent vegetation, all of which has reduced the availability and depth of open standing water.

- Pond 3a - A small concrete tank within the southern section of the site that is sunk into the ground and is divided by walls into three compartments that are connected by small underwater pipes. The pond measures approximately 20m^2 and is suspected to be at least 1.5m deep, with at least 1m of sediment. A dense layer of common duckweed is present across most of the pond and no other aquatic or emergent vegetation is present other than a small amount of water forget-me-not *Myosotis scorpioides*. Due to the concrete walls, marginal vegetation is limited to ground flora species from the surrounding woodland and scrub.

- Pond 4 – This pond is located within the eastern section of the site and measures approximately 125m^2. The pond is dominated and choked by emergent greater reedmace and is surrounded by dense scrub. Other aquatic and emergent species present include brooklime *Veronica beccabunga* duckweed, water starwort *Callitriche sp.* and branched bur-reed. Marginal vegetation comprises soft rush, water mint *Mentha aquatica*, lesser water parsnip *Berula erecta*, floating sweet-grass, stinging nettle, great willowherb, bittersweet *Solanum dulcamara*, hard rush and meadowsweet.

  During the updated 2025 walkover survey, this pond was found to have been subject to significant encroachment from scrub, accumulation of leaf litter and other organic material and the choking of the pond by emergent vegetation such as greater reedmace. These three pressures have significantly reduced the area and depth of standing water. It is considered likely that the pond will continue to reduce in quality without intervention such as scrub control and the removal of the buildup of leaf litter and organic material.

Ponds 3 and 4 are considered to qualify as the Pond Habitat of Principal Importance, as they currently or have recently been known to support GCNs, a species protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).

Despite two of the ponds on site qualifying as Habitats of Principal Importance, they are in a late successional stage and are rapidly declining in quality. Additionally, the site is located within an area of with a very high pond density. As such, Ponds 3 and 4 are considered to be of local importance only, however all other waterbodies on site no longer function as aquatic habitats or are very small and of very limited value. As such, all other waterbodies on site are considered to be of negligible importance, or of importance at the site level only.

5.2.6 G2 Running water

Two watercourses are present at the site boundaries; the River Clywedog at the southern boundary and Redwither Brook at the south-western boundary.

The River Clywedog appeared to be in spate at the time of the initial walkover survey and evidence of debris from recent flooding events was present on the banks. The river flows west to east and meanders along the boundary, briefly breaking into two channels and forming a small island before converging in the south-eastern corner of the site. The river is shaded by a thin strip or riparian woodland and the banks are vegetated with herbaceous species as detailed above in Section 5.2.1. The invasive species Himalayan balsam was observed all along the watercourse (Appendix 13) and a single stand of Japanese knotweed was observed on the banks (Appendix 13).

Redwither Brook flows north-west to south-east through a straight linear channel before joining a more natural channel that connects and flows into the River Clywedog. The banks of the brook are partly bordered by alder and willow woodland, however the woodland is absent from the central section which is vegetated with dense stands of tall ruderal vegetation and encroaching scrub. Himalayan balsam was observed along the entire length of the watercourse (Appendix 13).

A short section of ditch measuring approximately 37m in length runs through the northern section of the site. The ditch contains flowing water with a slow-moderate flow rate. The ditch flows from north to south and is culverted at both ends. The banks are relatively gently sloping and are heavily shaded from the surrounding scrub, with herbaceous vegetation sporadic and limited to species such common male fern, remote sedge *Carex remota* and hart's-tongue fern. No aquatic or emergent vegetation was observed within the ditch.

The watercourses at the site boundary form part of the wider river system within Wrexham and the River Clywedog flows into the River Dee, a watercourse designated as an SAC. As such, the watercourses at the site boundary are considered to be of county importance.

5.2.7 J1.2 Amenity grassland

Two small amenity grassland laws are present on site. The northern lawn appears to be intensively managed and subject to regular mowing. It is considered that the lawn within the centre of the site was originally subject to regular mowing but has been maintained as a short sward in recent years through a mixture of rabbit grazing and human disturbance. The lawns are dominated by perennial ryegrass *Lolium perenne* with a small diversity and abundance of

forbs and other grass species such as Yorkshire fog, creeping buttercup *Ranunculus repens* and common daisy *Bellis perennis*.

This habitat is considered to be of negligible ecological value and any impacts as a result of the proposed development are not considered to be significant. As such impacts on this habitat have been scoped out at this point of the assessment.

5.2.8 J1.3 Ephemeral / short perennial

The areas of bare ground and hardstanding on site have been colonised by ephemeral / short perennial vegetation. The majority of this vegetation is small and sporadic and could not be mapped on the phase 1 habitat plan at Appendix 2. A small number of larger areas of continuous vegetation are present and have been mapped.

At the time of designation as a local wildlife site, the site contained large areas of open, disturbed habitat, occurring in a mosaic of bare ground, ephemeral communities, wildflower-rich grassland and scrub. It is likely that parts of the site previously qualified as the 'open mosaic habitat on previously development land' (OMH) Habitat of Principal Importance.

To qualify as the OMH Habitat of Principle Importance, a mosaic of habitats that meet all five of the following qualifying criteria must be present:

1. 'The area of open mosaic habitat is at least 0.25ha in size.

2. There is a known history of disturbance at the site or evidence that soil has been removed or severely modified by previous use(s) of the site. Extraneous materials/substrates such as industrial spoil may have been added.

3. The site contains some vegetation. This will comprise early successional communities consisting mainly of stress-tolerant species (e.g. indicative of low nutrient status or drought). Early successional communities are composed of (a) annuals, or (b) mosses/liverworts, or (c) lichens, or (d) ruderals, or (e) inundation species, or (f) open grassland, or (g) flower-rich grassland, or (h) heathland.

4. The site contains unvegetated, loose bare substrate and pools may be present.

5. The site shows spatial variation, forming a mosaic of one or more of the early successional communities (a)–(h) above (criterion 3) plus bare substrate, within 0.25ha.'

Since the sites designation as an LWS, it has been subject to reducing levels of management and has remained unmanaged for a number of years. This lack of management has allowed encroaching scrub to dominate at the expense of more notable habitats, reducing the sites structural and botanical diversity (Appendix 3). This was observed during the 2022 PEA, at which point, areas of grassland were limited to small paths and glades and open ephemeral communities are limited to small sporadic patches located at the edges of retained pathways within an otherwise dominant and continuous stand of scrub.

No parts of the site are considered to qualify or resemble the OMH Habitat of Principle Importance due to the absence of a mosaic structure with spatial variation.

Given their small size and isolated nature, the retained areas of ephemeral / short perennial vegetation on site are of limited value and are considered of value at the site level.

5.2.9 J2.4 Fence

Some of the site boundaries are demarcated fences, including post and wire fences and chain-link fences.

This habitat is considered to be of negligible ecological value and any impacts as a result of the proposed development are not considered to be significant. As such impacts on this habitat have been scoped out at this point of the assessment.

5.2.10 J2.5 Wall

Numerous concrete retaining wall are present across the site.

This habitat is considered to be of negligible ecological value and any impacts as a result of the proposed development are not considered to be significant. As such impacts on this habitat have been scoped out at this point of the assessment.

5.2.11 J3.6 Buildings and structures

The site contains 24 buildings that remain from the sites previous use as part of a munitions factory and have more recently been used for recreational purposes for airsoft. The buildings are all open from floor to ceiling and vary in size.

In addition to the buildings, numerous other man-made structures are present across the site, including concrete-lined pits, retaining walls and underground walkways.

This buildings and structures on site are of value to breeding birds and roosting bats, but are otherwise of negligible ecological value. As bats and breeding birds are considered independently within this assessment, the buildings as standalone ecological receptors have been scoped out at this point of the assessment.

5.2.12 J4 Bare ground

Areas of unvegetated bare ground that appear to have been subject to recent clearance works are present across the site.

This habitat is considered to be of negligible ecological value and any impacts as a result of the proposed development are not considered to be significant. As such impacts on this habitat have been scoped out at this point of the assessment.

5.2.13 J5 Hardstanding

Numerous small areas of hardstanding and access paths are present across the site and include areas of gravel and concrete.

This habitat is considered to be of negligible ecological value and any impacts as a result of the proposed development are not considered to be significant. As such impacts on this habitat have been scoped out at this point of the assessment.

5.3 Protected species or resources

As part of the PEA, specific observations of wildlife were also recorded. Wildlife observations focused on protected species, invasive species or species of conservation concern. Where potential for the presence of protected species was identified, further species or group specific surveys were undertaken. Full details of the results of these surveys are provided below.

5.3.1 Amphibians

Records of GCNs were returned from within the site boundary itself. One record is from 2004 and details 13 adults within an unspecified pond. The other record dates from 2021 and details a single adult and an egg within an unspecified pond. The locations / grid references for the records do not correlate with the waterbodies on site and so it is presumed that the records are from ponds that have dried up and are no longer present, or they are lacking accuracy and could be from any of the waterbodies on site. Numerous offsite records of GCNs were also returned from all directions, the closest of which are located approximately 62m north and 162m east. A record of a common frog was also returned from the site and records of smooth newt, palmate newt and common toad were returned from within 2km.

Six ponds and a single flowing ditch are present on site (Appendix 4). The River Clywedog flows along part of the southern site boundary and the Redwither Brook flows along the western and part of the southern boundaries.

Redwither Brook, the River Clywedog and the onsite flowing ditch are all considered to be unsuitable to support breeding amphibians due the flowing water and the likely presence of fish with the River Clywedog and potentially within Redwither Brook.

The terrestrial habitats within the development footprint are broadly suitable for GCNs and other amphibians. The areas of woodland, scrub and semi-improved grassland provide an array of moderate to high quality opportunities for foraging and commuting amphibians. Additionally, there are potential hibernation opportunities in the exposed tree root systems, dense vegetation / leaf litter within the areas of scrub and woodland and rubble piles on site.

A summary of the GCN survey results of all onsite waterbodies is provided below (also see Appendix 5 & 6):

Table 10 – Summary of onsite pond GCN survey results.

WATERBODY NUMBER	2023 SURVEY RESULTS	2024 SURVEY RESULTS	2025 SURVEY RESULTS
Pond 1	Negative eDNA	-	Negative eDNA
Pond 1A	Negative eDNA	-	Negative eDNA
Pond 2	Positive eDNA (1/12).	Negative eDNA	Dry - unsuitable
Pond 3	Peak count of 48 during PSCA surveys	-	Eggs confirm continued breeding

	Eggs confirm breeding		
Pond 3A	Positive eDNA (2/12) Peak count of 0 during PSCA surveys	-	Negative eDNA
Pond 4	Peak count of 1 during PSCA surveys Egg folds confirm breeding	-	Positive eDNA (2/12).

Ponds 1, 1A and 2 have an absence of any aquatic or marginal vegetation and dry annually, holding insufficient levels of standing water for most of the year. Given this and the negative eDNA results, these historic ponds are not considered to be in use or suitable for use by breeding GCNs.

Pond 3a is not considered to be suitable for use by breeding GCNs due to its small size and lack of sufficient egg-laying opportunities. It is considered that the very low number of positive eDNA replicates returned for the pond in 2023 (2/12) indicated either a false positive result, or the use by a single or very low number of GCNs in a temporary capacity, likely for foraging or on an exploratory basis. This is evidenced by the negative eDNA result returned in the updated 2025 survey.

Pond 4 was previously found to be in use by breeding GCNs (evidenced by eggs), however a peak count of a single individual was observed during two of the six PSCA surveys undertaken of the pond in 2023. During the updated 2025 walkover survey, this pond was found to have reduced in suitability to support breeding GCNs due to significant encroachment from scrub, accumulation of leaf litter and other organic material and the choking of the pond by emergent vegetation such as greater reedmace. These three pressures have significantly reduced the area and depth of standing water. It is considered likely that the pond will continue to reduce in quality without intervention such as scrub control and the removal of the buildup of leaf litter and organic material.

No GCN egg folds were observed within Pond 4 during the updated walkover survey. Despite the survey being undertaken in the peak GCN breeding period, a very low number of positive eDNA replicates returned for the pond (2/12). As such, it is considered likely that the pond is likely no longer being used by breeding GCNs and the positive eDNA result represents the use by a single or very low number of GCNs in a temporary capacity, likely for foraging or on an exploratory basis.

Pond three is a confirmed GCN breeding pond in use my a medium-sized population, as a peak count of 48 individuals was observed during the 2023 surveys. Pond 3 was also found to have slightly reduced in suitability to support GCNs during the updated walkover survey due to the build-up of organic material, the encroachment of scrub and the choking of the pond by emergent vegetation, all of which has reduced the availability of open standing water. Despite this, the pond remains suitable to support breeding GCNs, and egg folds were observed during the 2025 walkover survey.

No access to offsite ponds was granted to undertake further presence / absence surveys or population size class assessments. The presence of GCNs within a number of offsite ponds within 500m of the site was confirmed during previous eDNA and GCN impact assessment surveys undertaken by UES to inform unrelated planning applications. GCNs using these offsite ponds for breeding may use the terrestrial habitats on site at other times of year and there may be movement between the meta population within the wider Wrexham Industrial Estate. As such, there is some potential for the actual peak count of GCNs using the site to be slightly higher than the 48 observed during the PSCA surveys. Given the distance and the presence of potential barriers to movement between offsite ponds and the proposed development site, in addition to the presence of suitable terrestrial habitat within the wider landscape and surrounding all offsite ponds, it is considered highly unlikely that a significant number of additional GCNs will use the site and this number would likely not be enough to reach the threshold of 100 individuals needed for a large population.

Almost all GCN activity was confined to Pond 3 within the eastern section of the site. Given the peak count of individuals and confirmed breeding status, it is considered that the site supports a medium population of GCNs, and Pond 3 is a locally important feature for GCN, contributing towards the nationally important status of the GCN meta population within the wider Wrexham Industrial Estate.

GCNs and their habitat (aquatic and terrestrial) are afforded full protection by the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017. As such, they can be considered to be a species of both international and national importance. Despite this, the UK is a stronghold for GCNs, and one estimate puts the national population at around 400,000 animals in 18,000 breeding sites (JNCC, undated). Given that the site is only considered to support a medium population with a maximum count of 48 individuals, it is not considered to be of international or national significance. However, the Wrexham Industrial Estate is known to support an overall large meta population of GCNs that is of importance at the county level. Given the number of GCNs observed on site and the potential for these individuals to form part of this meta-population, coupled with the terrestrial habitat, aquatic breeding habitat and the habitat linkages that the site provides, the site and the GCNs it supports are considered to be of local-county significance.

5.3.2 Reptiles

Records of slow worm, adder and grass snake were returned, all of which are located within Wrexham Industrial Estate, over 400m to the north-west and south-west of the site boundary. The single grass snake record dates from 2018, and the two slow worm and adder records date from ‘before 2009’ and ‘before 1999’, respectively.

The site has an area of approximately 23ha and is generally dominated by dense scrub. Small stands of semi-improved grassland are present across the site including glades and pathways through the scrub. Other habitats present on site include hardstanding access tracks and small areas of marshy grassland, tall ruderal vegetation, bare ground, scattered broadleaved trees and ephemeral / short perennial vegetation. The southern section of the site contains stands of woodland.

The large areas of scrub are of limited suitability for use by reptiles and areas of high-quality reptile habitat are limited to small areas of grassland and the edges of the scrub. These areas provide foraging, commuting, basking, and hibernating opportunities for common reptile species.

The River Clywedog flows along the southern site boundary and Redwither Brook flows along the south-western boundary. Additionally, a number of ponds are present on site and are known to support numerous amphibian species, however the majority dry annually. These freshwater features provide suitable foraging and commuting habitat for grass snakes, which predominantly predate amphibians.

The habitats on site are considered to be broadly unsuitable to support adders, which are specialists of heathland, moorland, coastal and woodland edges habitats.

The immediate surrounding area (within 0.5km) comprises agricultural and pasture fields to the south and east, with interconnecting field boundary hedgerows, interspersed with broad leaved trees. Wrexham Industrial Estate extends to the north and west, with numerous roads and urbanised areas. The surrounding fields and hedgerows will provide some foraging and commuting opportunities for reptiles and provide connectivity to higher quality habitat further afield.

The wider surrounding area (within 2km) is similar in composition, with arable and pasture fields containing networks of field boundary hedgerows dominating the landscape to the south and east. Wrexham and Wrexham Industrial Estate lie to the north and west.

Despite the broad suitability of the habitats, no reptiles were observed during the reptile presence / absence surveys or during the other the numerous ecological surveys undertaken of the site.

Reptiles are not considered to be present on site or within the immediate vicinity of the site and are very unlikely to be adversely impacted by the development proposals. As such, reptiles have been scoped out at this point of the assessment.

5.3.3 Badgers

[redacted]

The habitats on site are considered to provide moderate-high quality foraging and commuting habitat for badgers and the areas of dense scrub and woodland on site provide sheltered sett building opportunities.

[redacted]

Despite a comprehensive and thorough search of the area, the previous badger sett identified within the south-western section of the by Kingdom Ecology between 2016 and 2019 could not be located during the updated 2022 PEA or the 2024 badger scoping survey. The previous surveys that identified the burrow were conducted between 6 and 9 eight years ago, and the site has been left unmanaged since. As such, the entire site has been subject to significant scrub encroachment, and it is considered that the sett was abandoned during this time.

[redacted]

No badgers were observed on any of the cameras during the monitoring period and no evidence of badger activity was recorded during the weekly inspections of the cameras and potential setts. As such, it is considered that none of the three burrows are in use as badger setts.

Sett 2 was not subject to an activity monitoring survey as it appears to be inactive and due to its location and sufficient distance from the proposed working area. In the unlikely event this sett is in use, it is considered that it will be used no more than as an outlier sett, used on an occasional basis by a single or very low number of individuals.

[redacted]

it is considered that the site is likely used on an occasional basis for a foraging and commuting purposes. As such, the site is considered to be of importance at the site level for this species.

5.3.4 Bats

The protected species records search highlighted records of the following bat species within 2km of the site:

- Brandt's bat *Myotis brandtii*
- Whiskered bat *Myotis mystacinus*
- Lesser horseshoe
- Daubenton's bat *Myotis daubentonii*
- Noctule
- BLE bat
- Common pipistrelle
- Soprano pipistrelle

Other records were returned but only identified bats to genus level for *Myotis*, *Plecotus* and *Pipistrellus* species., as well as records of 'unidentified bats'.

No records of bats were returned from within the proposed development site itself.

Summer roosts in buildings

As part of the bat scoping survey, all buildings and structures on site were assessed for their suitability to support roosting bats, the results of which are summarised in the table below (also see Appendix 10):

Table 11 – Summary of bat roosting potential of buildings

NEGLIGIBLE BAT ROOSTING SUITABILITY	LOW BAT ROOSTING SUITABILITY	MODERATE BAT ROOSTING SUITABILITY	CONFIRMED TO CONTAIN A BAT ROOST
Buildings 10, 11, 12, 17, 18, 19, 21, 28, 29, 33, 34, 35, 36, 37, 38, 39 and 40	Buildings 1, 2, 4, 5, 6, 7, 9, 15, 22, 23, 24, 25, 26, 27, 30, 31 and 32	Buildings 13, 16 and 20	Buildings 3 and 8

Building 14 appears on historical site plans, but could not be located during the survey, likely due to its small size and the density of surrounding scrub.

Building 25 lies within a different land parcel, which has subsequently been removed from the scope of the planning application.

During the bat scoping survey and the subsequent bat presence / absence surveys, a minimum of three species of bat were found roosting across the following nine roosts, all of which are considered to be day roosts used on an occasional basis by a single or very low number of bats:

- Roost 1 – Building 3 – 1x *Myotis sp.*
- Roost 2 – Building 8 – 1x *Pipistrelle sp.*
- Roost 3 – Building 8 – 1x *Pipistrelle sp.*
- Roost 4 – Building 9 – 1x *Pipistrelle sp.*
- Roost 5 – Building 20 – 1x soprano pipistrelle
- Roost 6 – Building 13 – 1x common pipistrelle
- Roost 7 – Building 16 – 1x unidentified species
- Roost 8 – Building 20 – 1x common pipistrelle
- Roost 9 – Building 13 – 1x common pipistrelle

Although bats were not found to be roosting in most of the buildings, the quality and type of roosting features present within all buildings on site are likely to only be used as roosts of low conservation status (day, night and transitional roosts only) and likely on a sporadic and transient basis, involving frequent 'roost switching' behaviour. As such, there remains some potential for bats to use any of the buildings assessed as having low of moderate potential to support roosting bats in the future.

Hibernation roosts in building

Twenty of the buildings on site were assessed as having some potential to be used by hibernating bats as they are all unheated, have areas with cool and constant temperatures during the winter and contain either sheltered cavities that could be used by crevice-dwelling species or sheltered rooms / larger open spaces that could be used by hibernating horseshoe bats (Appendix 11). In most cases, the hibernation potential is very limited to a single feature or area.

Subsequent hibernation surveys found a minimum of four species of bat to be active within the buildings on site during the survey period: common pipistrelle, soprano pipistrelle, BLE and an unidentified *Myotis* bat. Although bat activity was recorded within the buildings during

the survey, it was inconsistent and very low level. No bats were found to be hibernating within any of the buildings during the building inspections and all bat activity is considered to be from foraging or commuting bats, passing over or through the buildings during period of warmer weather.

Bat roosts in trees

The GLTA covered all trees with the potential to be impacted by the proposed development and assessed 37 trees and the 4 groups of trees as having low potential to support roosting bats and 28 trees as having moderate potential.

Following the GLTA, all 28 trees assessed as having moderate potential to support roosting bats were subject to further aerial tree inspections where accessible, ensuring that all moderate potential trees were subject to at least 2 endoscope inspections of all PRFs during the bat survey season of May to August inclusive.

The close assessment of PRFs during the aerial inspection allowed for an updated roosting assessment and trees were recategorized accordingly.

During the ground-level and aerial tree inspections, five trees (T10, T21, T26, T32, and T54) were found to contain features that could not be fully inspected via endoscope (e.g. due to the shape or depth of the cavity) or were considered unsafe to climb. As such, these trees were subject to further bat presence / absence surveys.

No evidence of roosting bats was observed during any of the bat surveys undertaken of trees.

Following the completion of all aerial assessments and bat presence / absence surveys, trees within the survey area were categorised as follows (also see Appendix 9):

Table 12 – Summary of bat roosting potential of trees

BAT ROOSTING POTENTIAL	TREE NUMBER
Negligible	T7, T9, T14 and all other unnumbered trees within the survey area.
Low	T1, T2, T3, T4, T5, T6, T8, T10, T11, T12, T15, T16, T18, T19, T20, T22, T23, T25, T27, T29, T30, T31, T33, T34, T35, T36, T38, T39, T40, T41 T44, T48, T49, T50, T51, T52, T55, T56, T57, T58, T59, T60, T61, T62, T63, T64, T65, G1, G2, G3, G4
Moderate	T13, T17, T21, T24, T26, T28, T32, T37, T42, T43, T45, T46, T47, T53, T54

Although bats were not found to be roosting within any trees on site, bats use trees for roosting on a very sporadic and transient basis and their remains some potential for bats to use the trees identified as having potential to support roosting bats in the future.

Foraging and commuting

The bat activity surveys found a total of seven species to be using the wider site, including common pipistrelle, soprano pipistrelle, BLE, noctule, lesser horseshoe, Leisler's *Nyctalus leisleri* and unspecified *Myotis* bats.

Common pipistrelles were the most abundant species during the surveys, accounting for approximately 46% of all recordings. Soprano pipistrelle bats accounted for 42% of all transect survey recordings whilst noctule, BLE, lesser horseshoe, *Myotis* and Leisler's bats were recorded to a lesser extent.

Overall, moderate levels of bat activity were recorded during the surveys, with bats exhibiting foraging and commuting behaviours. Bat activity was recorded across the entire site but was generally highest along the southern woodland, tree lines, and commuting corridors through the centre of the site due to breaks in the dense scrub. The woodland and tree lines associated with the ponds on site provided hotspots of activity.

Overall, the site as a whole is considered to be of local importance to bats given the presence of multiple low-conservation status roosts, the availability of foraging and roosting opportunities and its connectivity to the wider surrounding landscape.

5.3.5 Birds

Various species records were returned from within 2km of the site, including several Species of Principal Importance and Wildlife and Countryside Act 1981 Schedule 1 species. Records of the following species were returned from within the site boundary itself: bullfinch *Pyrrhula pyrrhula*, buzzard *Buteo buteo*, blackcap *Sylvia atricapilla*, great spotted woodpecker *Dendrocopos major*, green woodpecker *Picus viridis*, chiffchaff *Phylloscopus collybita*, whitethroat *Sylvia communis* and Cetti's warbler *Cettia cetti*.

The site was found to support a typical bird assemblage (both diversity and density) for the habitats present. Due to its large size and the length of time that the site has been left unmanaged, the areas of scrub woodland and grassland support diverse and abundant invertebrate prey, which supports a wide range of bird species through the breeding season.

A total of 56 bird species recorded during the breeding bird surveys, 35 were assessed as confirmed or likely breeding within 50m of the redline boundary. Of these 35 species, the following 14 are considered to be of conservation concern:

Table 13 – Bird species of conservation concern confirmed or likely to be breeding on site

BTO CODE	COMMON NAME	SCIENTIFIC NAME	CONSERVATION STATUS	CYMRAEG	BREEDING STATUS
SD	Stock Dove	*Columba oenas*	Amber (GB)	Colomen Wyllt	Likely breeding
WP	Woodpigeon	*Columba palumbus*	Amber (GB)	Ysguthan	Breeding
SH	Sparrowhawk	*Accipiter nisus*	Amber (GB)	Gwalch Glas	Likely breeding
TO	Tawny Owl	*Strix aluco*	Amber (GB)	Tylluan Frech	Likely breeding
WW	Willow Warbler	*Phylloscopus trochilus*	Amber (GB); Red (Wales)	Telor yr Helyg	Likely breeding
SW	Sedge Warbler	*Acrocephalus schoenobaenus*	Amber (GB)	Telor yr Hesg	Likely breeding
WH	Whitethroat	*Curruca communis*	Amber (GB), Red (Wales)	Llwydfron	Breeding
WR	Wren	*Troglodytes troglodytes*	Amber (GB)	Dryw	Breeding
SG	Starling	*Sturnus vulgaris*	Red (GB, Wales); Sec7	Drudwen	Likely breeding
ST	Song Thrush	*Turdus philomelos*	Amber (GB, Wales); Sec7	Bronfraith	Breeding
M.	Mistle Thrush	*Turdus viscivorus*	Red (GB); Amber (Wales)	Brych y Coed	Likely breeding
D.	Dunnock	*Prunella modularis*	Amber (GB); Sec7	Llwyd y Gwrych	Breeding
BF	Bullfinch	*Pyrrhula pyrrhula*	Amber (GB); Red (Wales); Sec7	Coch y Berllan	Breeding
GR	Greenfinch	*Chloris chloris*	Red (GB); Amber (Wales)	Llinos Werdd	Likely breeding

A further 18 species were assessed as possible breeding within 50m of the site; the following 13 species are considered to be of conservation concern or are protected by UK legislation:

Table 14 – Bird species of conservation concern that are possible breeding on site

BTO CODE	COMMON NAME	SCIENTIFIC NAME	CONSERVATION STATUS	CYMRAEG	BREEDING STATUS
MA	Mallard	*Anas platyrhynchos*	Amber (GB, Wales)	Hwyaden Wyllt	Possible breeding
MH	Moorhen	*Gallinula chloropus*	Amber (GB)	Iâr Ddŵr	Possible breeding
GB	Great Black-backed Gull	*Larus marinus*	Amber (GB); Red (Wales)	Gwylan Gefnddu Fwyaf	Possible breeding
HG	Herring Gull	*Larus argentatus*	Red (GB, Wales); Sec7	Gwylan y Penwaig	Possible breeding
LB	Lesser Black-backed Gull	*Larus fuscus*	Amber (GB, Wales)	Gwylan Gefnddu Leiaf	Possible breeding
KF	Kingfisher	*Alcedo atthis*	Green (GB), Amber (Wales); Sch1.1; Ann1	Glas y Dorlan	Possible breeding
RO	Rook	*Corvus frugilegus*	Amber (GB)	Ydfran	Possible breeding
CW	Cetti's Warbler	*Cettia cetti*	Green (GB); Sch1.1	Telor Cetti	Possible breeding
HS	House Sparrow	*Passer domesticus*	Red (GB); Amber (Wales); Sec7	Aderyn y Tô	Possible breeding
GL	Grey Wagtail	*Motacilla cinerea*	Amber (GB, Wales)	Siglen Lwyd	Possible breeding
PW	Pied Wagtail	*Motacilla alba yarellii*	Amber (GB)	Siglen Fraith	Possible breeding
LI	Linnet	*Linaria cannabina*	Red (GB, Wales); Sec7	Llinos	Possible breeding

Other notable species of conservation concern recorded on site, but are not considered to be breeding include:

Table 15 – Bird species of conservation concern observed on site but unlikely to be breeding

BTO CODE	COMMON NAME	SCIENTIFIC NAME	CONSERVATION STATUS	CYMRAEG	BREEDING STATUS
H.	Grey Heron	*Ardea cinerea*	Green (GB), Amber (Wales)	Crëyr Glas	Non breeding
BO	Barn Owl	*Tyto alba*	Green (GB); Sch1.1	Tylluan Wen	Non-breeding
RE	Redwing	*Turdus iliacus*	NT; Amber (GB, Wales); Sch1.1; RBBP	Coch Dan Adain	Non breeding
RT	Redstart	*Phoenicurus phoenicurus*	Amber (GB)	Tingoch	Non breeding

Whilst the site supports a moderate number of nationally protected breeding bird species and a high number of species of conservation concern, most are generalist species that will use other habitats present within the local area. Most of the habitats present on site (scrub and woodland) are available within the wider surrounding landscape and the wider county. However, given the large size of the site and the areas of habitat present, the site as a whole is considered to be of importance at the local level.

Two Schedule 1 breeding species were recorded during the surveys and are assessed as 'possibly' breeding on or within 50m of the site: Cetti's warbler and Kingfisher.

Cetti's warbler activity was limited to two individuals heard singing in the western section of the site during the first survey, but not during any other surveys. There is suitable habitat present on site for Cetti's warblers, however as they are wetland and reedbed associates, this is sub-optimal habitat and is limited to the areas of vegetation within the immediate vicinity of the watercourse at the site boundaries. Due to lack of singing throughout the breeding season and the bird only being recorded briefly during the one survey, it is considered unlikely that they were breeding on site and the individuals recorded were likely wintering birds.

Kingfishers were not recorded during any of the breeding bird surveys, however a single kingfisher was recorded along the River Clywedog at the southern site boundary during another ecological survey in April 2023. Suitable habitats are present for breeding kingfishers along the River Clywedog and Redwither Brook, however the banks are mostly shallow and sandy or formed of steep concrete, leaving very small sections with suitable burrowing opportunities.

No evidence of kingfisher nesting burrows was observed during the otter and water vole survey undertaken of the Clywedog and the Redwither Brook in August 2025.

Whilst there remains some potential for both Cetti's warbler and kingfisher to breed on site, suitable nesting habitat is limited to the watercourses at the site boundary or habitats within the immediate vicinity. There is no evidence to suggest that either species is breeding on site or using the site on a regular occurrence.

5.3.6 Hazel dormouse

No records of hazel dormouse *Muscardinus avellanarius* were returned from within 2km of the proposed development site and they are not known to be present within the local area.

The large areas of scrub woodland provide some suitable habitat, however the majority of these habitats are not particularly species rich and are lacking sufficient quantities of key species such as hazel and honeysuckle *Lonicera periclymenum*. Additionally, the site is isolated from larger areas of suitable woodland habitat within the wider landscape by large continuous urbanised areas and agricultural fields.

No evidence of hazel dormice activity was observed during the numerous surveys undertaken of the site.

Hazel dormice are not considered to be present on site or within the immediate vicinity of the site and are very unlikely to be adversely impacted by the development proposals. As such, this species has been scoped out at this point of the assessment.

5.3.7 Hedgehogs

Numerous records of hedgehog *Erinaceus europaeus* were returned from within 2km of the proposed development site and records of hedgehog were returned from within 0.57km from the site.

The areas of woodland, scrub and grassland on site provide suitable foraging and commuting opportunities for hedgehogs and the woodland and scrub provide suitable sheltering and hibernating opportunities.

No evidence of hedgehog activity was observed on site during the ecological surveys. However, due to the suitability of habitats and their presence within the local area, there is the potential that hedgehogs are using the site. As such, the site is considered to be of site value with regards to hedgehog.

5.3.8 Otter

Thirteen records of otter were returned from within 2km of the proposed development site. With the exception of a record of a shot otter from 1945, all records are located along the River Clywedog or the connected Redwither Brook. The most recent record date from 2019 and the closest record is located approximately 360m from the site boundary.

The watercourses on site are broadly suitable for use by otters. The Redwither Brook lacks sufficient depth to support notable fish populations or other prey species, however the River Clywedog provides some foraging opportunities. The riparian woodland, bankside trees and dense scrub may provide temporary sheltered resting opportunities, however breeding and long-term holt opportunities are limited by the absence of suitable bank-side hollows and cavities beneath tree root systems.

Otters are known to use offsite sections of both watercourses for foraging or commuting, as evidenced by the results of the record search. Otters are confirmed to be present on site or within the immediate vicinity of the site, as evidenced by the otter carcass observed on site. There remains some potential that the otter carcass was dragged onto the site by a predator or scavenger, however even if this was the case, it will have likely originated from the immediate vicinity of the site and from an otter using these watercourses, as there are no other suitable watercourses within the local area.

Given the suitability of the watercourses, the limited foraging and sheltering opportunities and the limited evidence of otter activity observed on site during the surveys, it is considered that otters are using the watercourses on site for foraging and/or commuting in a limited and transitory capacity, most likely as low-frequency commuting corridors for otters traversing through the wider landscape. Otters are not considered to be using the habitats on site or immediately adjacent to the site for long-term resting or breeding and have limited capacity to do so in the future. As such, the site is considered to be of local value to otters.

5.3.9 Water vole

No records of water vole were returned from within 2km of the proposed development site.

The habitats on site offer extremely limited potential for supporting water vole. The on-site watercourses are predominantly over-shaded, with banks heavily dominated by scrub and Himalayan balsam, offering some, albeit sub-optimal foraging opportunities. The banks are mostly shallow and sandy or formed of steep concrete, leaving very small sections of suitable burrowing opportunities. No field signs of water vole, such as burrows, feeding remains, or latrines, were identified during the survey or during any of the other ecological surveys undertaken of the site across 2022-2025.

Given the lack of water vole records in the local area, together with the survey findings, it is considered that water voles are not present on site, or within the immediate vicinity of the site. As such, this species has been scoped out at this point of the assessment.

5.3.10 White-clawed crayfish

No records of white-clawed crayfish *Austropotamobius pallipes* were returned from within 2km of the proposed development site and they are not known to be present within the local area.

The habitats on site are considered to be unsuitable to support this species as the River Clywedog and Redwither Brook at the site boundary are heavily vegetated, shaded and lack the sufficient substrate to provide refugia, breeding and foraging opportunities.

No evidence of white-clawed crayfish was observed during the numerous surveys undertaken of the site.

White-clawed crayfish are not considered to be present on site or within the immediate vicinity of the site and are very unlikely to be adversely impacted by the development proposals. As such, this species has been scoped out at this point of the assessment.

5.3.11 Invasive species

Three invasive species have been observed on site during the ecological surveys undertaken on site, including a detailed invasive species survey in October 2023; Himalayan balsam, Japanese knotweed and montbretia.

Himalayan balsam is predominantly present along the River Clywedog that runs along the southern boundary of the site.

A dense stand of Japanese knotweed (in excess of 200 plants) is present in the south-western section of the site, growing on a bund within an area of broadleaved woodland. A further small stand is present at the southern boundary, adjacent to the River Clywedog.

Ten individual plants of Montbretia are present within the south-eastern section of the site.

No significant change in the location of invasive species was observed on site during the updated walkover survey. However, it was noted that since the initial invasive species walkover survey in 2023, the abundance of Himalayan balsam has increased within the affected area and the large stand of Japanese knotweed in the western section of the site has increased in size.

Japanese knotweed and montbretia are listed under Schedule 9 of the Wildlife and Countryside Act 1981 and Himalayan balsam is listed under Schedule 2 of the Invasive Alien Species (Enforcement and Permitting) Order 2019. As such, it is an offence to plant or otherwise cause these species to grow in the wild.

Invasive species are of no ecological / invasive conservation value. The potential impacts associated with their disturbance and spread of these species, and the significance of this impact is discussed further in Section 6.

5.3.12 Invertebrates

General invertebrate assemblage

A suite of terrestrial invertebrate surveys was undertaken in 2016 by professional entomologist Andy Jukes, with findings incorporated into the ecological assessment prepared at the time by Kingdom Ecology. The only protected, notable, or key species recorded during the surveys were three butterfly species of principal importance, as detailed below.

The survey found that the habitats of greatest value for invertebrates were those associated with the industrial heritage of the site, including the flowery short swards, taller grassland swards, ephemeral pools and scrub fringe. The woodland of the eastern side of the site also presented some opportunities for localised and high-fidelity species, but the area was degraded owing to off-road biking and lack of suitable management. The assessment suggested that this area could be made to be of higher value through suitable management.

The mosaic of habitats present at the time was considered valuable for invertebrates, offering nesting and breeding opportunities in close proximity to foraging resources

However, since 2016, the site has remained unmanaged. Extensive scrub encroachment has led to the loss of grassland habitats and the desiccation of ephemeral pools. The structural and compositional diversity that previously supported invertebrate interest has been replaced by large, homogeneous stands of dense scrub. Consequently, the site is considered to have declined in ecological quality for terrestrial invertebrates relative to its 2016 condition.

Given this degradation and the absence of key habitat features, an updated general invertebrate survey was deemed unnecessary.

Butterfly Species of Principal Importance

Numerous records of dingy skipper, grizzled skipper and small heath *Coenonympha pamphilus* butterflies were returned from the site itself and from within 2km of the site. All three species are listed as Species of Principal Importance under Section 7 of the Environment (Wales) Act 2016, making them a material planning consideration.

All three species were recorded on site during the invertebrate surveys undertaken in 2016. Numerous small heath butterflies were observed and were suspected to be breeding on site. A small number of dingy skipper were observed and it was suspected that the population was fragile due to a lack of significant habitat and ongoing scrub encroachment. A single grizzled skipper was observed on site during the surveys, and it was suggested that if breeding on site, the site was likely susceptible to loss of the species due to ongoing scrub encroachment.

The site has been subject to an updated assessment for the presence of larval foodplants associated with these species. For dingy skipper, small and isolated patches of common bird's-foot trefoil are present, along with a single area supporting greater bird's-foot trefoil. However, horseshoe vetch *Hippocrepis comosa* is absent. For grizzled skipper, common agrimony and creeping cinquefoil *Potentilla reptans* are scattered across marginal grassland and scrub edges, but wild strawberry *Fragaria vesca* is entirely absent. Overall, the site lacks sufficient aggregations of larval foodplants to support viable populations of either skipper species.

Grassland areas on site support larval foodplants for small heath, including bent grasses (*Agrostis spp.),* meadow grasses (*Poa spp.*), and fescues (*Festuca spp.),* which are abundant where grassland has persisted. However, these areas are limited and increasingly fragmented due to scrub encroachment.

Despite the dominance of dense scrub across the site, some peripheral areas of semi-improved grassland and ephemeral/short perennial vegetation remain. These support a range of flowering species suitable for adult foraging, along with scattered patches of bare ground and short sward vegetation that could provide basking opportunities.

Since the 2016 surveys, the site has undergone significant degradation due to a lack of management. Scrub encroachment has reduced the extent and quality of grassland and open mosaic habitats, resulting in a decline in larval foodplant availability and nectar resources. Consequently, the site's suitability to support all three butterfly species has diminished.

Targeted butterfly surveys undertaken by UES in 2023 recorded 16 butterfly species and a range of other invertebrates, including dragonflies, moths, flies, and bees. However, no evidence of dingy skipper, grizzled skipper, or small heath was found during these surveys or during any other ecological assessments of the site. These species are known to occur within the wider Wrexham Industrial Estate, and may still use the site occasionally for foraging or commuting. There remains limited potential for small heath to attempt breeding, but the site is no longer considered capable of supporting viable populations of any of the three species, nor is it considered to be of notable value for their conservation.

As such, these species have been scoped out of the assessment, however the development proposals include specific enhancements to encourage the recolonisation of the site by all three species.

Overall, the site is considered to be of local value for invertebrates, primarily attributable to its size and the extent of semi-natural and habitats present. However, extensive encroachment by dense scrub has led to marked habitat degradation and homogenisation. As a result, the

site is no longer regarded as being of significant conservation value for specialist or notable invertebrate species.

5.3.13 Summary of ecological importance

Table 16 – Summary of ecological importance of receptors

ECOLOGICAL FEATURE	ECOLOGICAL IMPORTANCE OF FEATURE
Statutorily protected sites	Scoped out
Non-statutorily protected sites	County
Woodland	Local
Dense scrub	Local
Grasslands	Site - local
Waterbodies	Site - local
Watercourse	County
Other habitats and general biodiversity	Site
Amphibians	Local - county
Reptiles	Scoped out
Badgers	Site
Bats	Local
Birds	Local
Hazel dormouse	Scoped out
Hedgehogs	Site
Otter	Local
Water vole	Scoped out
White-clawed crayfish	Scoped out
Invasive species	N/A
Invertebrates	Local

6 IMPACT ASSESSMENT

This section provides an assessment of the significance of predicted impacts on the valued ecological habitats and species with specific reference to the proposed development. The predicted impacts are described in the absence of mitigation and consider both the construction and operation phases of the development.

6.1 Non-statutorily protected sites

Three non-statutorily protected Wildlife Sites are located within 2km of the proposed development site: Wrexham Industrial Estate Wildlife Site (including the Cefn Park parcel, which overlaps with the proposed development area) Peter's Dingle Wildlife Site, and Cefn Park Wildlife Site.

Whilst some habitats will be removed to facilitate development within the wildlife site, this is predominantly limited to self-seeded, relatively young scrub that has colonised due to a prolonged absence of management. This successional shift has reduced the site's structural and botanical diversity, with notable grassland species now largely absent or declining.

The development avoids the most ecologically valuable areas of scrub and all woodland habitats, and retains the majority of the site for enhancement. No works are proposed within close proximity to Peter's Dingle or Cefn Park Wildlife Sites, and there is no hydrological or ecological connectivity that would result in indirect impacts.

Given the relatively small proportion of land within the wildlife site that is to be used to facilitate the proposed development and the degraded condition of the habitats within the development footprint, unmitigated impacts are considered to be of medium magnitude impact at a county level, and therefore of **moderate significance.**

6.2 Woodland

Removal or damage

There will be no loss of woodland habitats as a result of the proposed development and the proposed development has been located a sufficient distance from all areas of woodland on site to ensure that there is no risk of adverse impacts through encroachment of root protection areas or disturbance. As such, it is considered that there will be **no significant adverse impacts** on woodland habitats as a result of the proposed development.

6.3 Dense scrub

The proposals will result in the loss of scrub habitats to facilitate the proposed development. In addition, large areas of scrub on site will be removed to facilitate the proposed ecological enhancement measures within the wider site, including species-rich grassland restoration.

Despite the proposed removal of scrub habitats on site, large areas of scrub within the wider site are proposed for retention, particularly the most mature and ecologically valuable areas of scrub within the eastern section of the site. The majority of the proposed areas of scrub due to be removed comprise self-seeded scrub that has encroached upon more open habitats

within the last 20 years and does not represent a particularly ecologically valuable or notable example of this habitat.

Given the proportions of vegetation that are due to be retained on site, including the areas of highest quality, the loss of dense scrub on site is considered to be a medium magnitude impact at local level, therefore it is considered to be of **minor significance.**

6.4 Watercourses

The proposed development will not result in any direct physical impacts to watercourses. All waterbodies on site or at the site boundaries, including the River Clywedog, Redwither Brook, and the northern ditch are located outside the proposed development area, with a minimum 10m buffer zone retained between all watercourses and the proposed works, including soft landscaping.

Despite this spatial separation, there remains some, albeit limited risk of indirect impacts during the construction phase. These include pollution from water runoff, accidental spills, or mobilisation of contaminants and disturbance of riparian habitats through increased noise, vibration, or human activity near buffer zones.

Impacts on the watercourses at the site boundaries could result in cumulative downstream effects on connected watercourses, including the River Dee SAC.

These risks are considered low due to the inherent mitigation provided by the location of the development and the absence of works within 10m of all watercourse. However, without further mitigation, there remains a residual risk of temporary degradation in water quality or disturbance to aquatic and riparian species during construction. This is considered to be a low magnitude impact at a county level, therefore, it is of **minor significance.**

6.5 Other habitats and general biodiversity

The development proposals will result in the loss of small areas of additional habitats including scattered trees, semi-improved grassland, tall ruderal vegetation, ephemeral / short perennial vegetation and hardstanding.

Given the small size of these areas due to be removed, this is considered to be a low magnitude impact at a site level, therefore it is **of negligible significance.**

6.6 Amphibians

The site supports a medium population of GCNs, with breeding activity concentrated in Pond 3. Pond 4 has shown intermittent use by very low numbers of individuals, while other ponds on site are either unsuitable or no longer functional. The terrestrial habitats within the development footprint include woodland, scrub, and small areas semi-improved grassland, which offer moderate to high quality foraging, commuting, and hibernation opportunities.

The proposed development avoids direct impact to all known breeding ponds and retains the majority of suitable terrestrial habitat. However, some habitat loss will occur within the built compound area, and there remains a risk of impacts during construction, including disturbance, injury during vegetation clearance, and temporary disruption to terrestrial

movement routes. Scrub clearance for grassland restoration also presents risks and a temporary removal of terrestrial habitat.

Amphibians using the site during the operational phase of the development are at risk of falling and becoming trapped within gully pots installed on site. The potential for this impact is reduced given the distance between the built area and known breeding ponds.

Overall, unmitigated impacts are considered to be of low magnitude at a local-county level, and therefore of **minor significance**,

6.7 Badgers

The site supports habitats of moderate to high suitability for badger foraging and commuting, with dense scrub and woodland offering potential sett-building opportunities. Historical surveys confirm badger activity on site, including a suspected main or subsidiary sett observed in 2016 and confirmed active in 2019. However, recent surveys (2022 and 2024) found no evidence of continued use, and significant scrub encroachment suggests abandonment.



The development footprint avoids Sett 2 and a 20m buffer zone has been embedded into the landscaping and habitat enhancement works around Sett 2. The majority of the site is being retained and enhanced, with habitat mosaics designed to support faunal movement and foraging. As such, direct impacts to badgers are not anticipated. However, if badgers are using the working areas within the site for foraging or commuting purposes during the construction phase of the development, they are at risk of direct harm through becoming trapped in excavations or by being exposed to harmful materials.

During the operational phase, external lighting will be installed within the built compound. While badgers are known to be relatively light-tolerant and frequently use urban environments, artificial lighting can have detrimental impacts, influencing movement patterns and habitat use. Given that lighting will be confined to the compound and the potential for light spill is limited to immediately adjacent habitats, the scale of impact is expected to be minimal, particularly in the context of the wider retained and enhanced site.

These impacts are considered to be of medium magnitude at a site level, and therefore of **minor significance**.

6.8 Bats

The development proposals have been informed by a comprehensive suite of ecological surveys, with the location and design chosen to minimise impacts on high-value habitats and protected or otherwise notable species recorded on site.

All existing buildings and structures will be retained and will be unaffected by the proposed works. Accordingly, there will be no direct impact on the nine confirmed bat roosts identified within these buildings, nor on any additional structures that may be used by roosting bats on an occasional or transient basis but were not detected during the presence/absence surveys.

In parallel with the building assessments, the development proposals have been shaped by the survey findings to minimise impacts on bats and trees with roosting potential.

To facilitate construction, only five trees with bat roosting potential (T8, T10, T11, T12, and T25) are proposed for removal (Appendix 9). Each of these was assessed as having low suitability for roosting bats, with potential roost features (PRFs) limited to those capable of supporting individual bats on an occasional basis. None of these PRFs are suitable for roosts of high conservation significance such as maternity or hibernation.

Additional tree removal will be required to deliver the proposed ecological enhancement measures across the wider site, including targeted scrub and woodland thinning and removal to facilitate the restoration of wildflower grassland. The landscaping and enhancement strategy has been designed to retain trees with bat roosting potential wherever feasible. All trees assessed as having moderate roosting potential will be retained, and only one tree with low roosting potential is to be removed to facilitate these enhancement works.

The proposed development has been carefully designed to avoid impacts on the most ecologically valuable habitats for bats. Works will primarily affect areas of dense scrub, small patches of neutral grassland, and scattered trees. All ponds, excluding one dry, scrubbed-over historical pond will be retained, along with all areas of woodland.

While the scrub and small areas of grassland habitats to be removed do offer foraging and commuting opportunities, the limited scale of development relative to the overall site, combined with the retention of higher-quality habitats, ensures that sufficient bat foraging resources will remain. The location of the development within the north-eastern corner of the site, adjacent to existing roads and industrial infrastructure, avoids severance of key commuting corridors to the north, south, and east.

Importantly, the riparian corridors along the southern and south-western boundaries will be fully retained, preserving a high-quality commuting route that maintains connectivity with off-site habitats to the west.

External lighting will be restricted to the immediate vicinity of the proposed industrial unit, including the access road, parking areas, and service yard. Given the location of the development area well away from the highest quality habitats, and the overall size of the retained and enhanced areas of habitat, any light spill will be limited to newly created habitats within or adjacent to the development footprint. This is not considered to represent a significant impact, particularly in light of the retention of extensive areas of moderate and high-quality foraging habitat and commuting corridors. Furthermore, external lighting can be designed to be sensitive to nocturnal wildlife, incorporating directional fittings and timing controls to minimise the potential impact to the lowest practicable level.

Overall, the unmitigated impacts are considered to be of low magnitude at a local level, and therefore of **minor significance**.

6.9 Birds

Risk of harm

The site supports a diverse assemblage of breeding birds, with 35 species confirmed or likely breeding and a further 18 possibly breeding on site or within 50m of the site boundary.

Fourteen of the confirmed/likely breeders are species of conservation concern, including two Schedule 1 species; Cetti's warbler and kingfisher. Both species were recorded on site on single occasions and are not considered to be breeding on site. Given the limited amount of suitable habitat and the distance of at least 10m between the development area and the watercourses, it is anticipated there will be no direct impacts or loss of habitat for either of these species, even if they begin breeding on site prior to the commencement of development works.

The proposed development will result in the loss of some scrub and grassland habitats within the built compound area, which provide foraging and nesting opportunities. While the majority of suitable habitat will be retained and enhanced, there remains a risk of disturbance to nesting birds during vegetation clearance and construction works, particularly in the breeding season. Temporary disruption to foraging and territory use may also occur.

Overall, the unmitigated impacts are considered to be of low magnitude at a local level, and therefore of **minor significance.**

6.10 Hedgehogs

Direct harm

Although no direct evidence of hedgehog activity was recorded during ecological surveys, the presence of suitable habitats combined with local records, suggests that hedgehogs may use the site on an occasional or transient basis for foraging, commuting, and hibernation.

The proposed development will retain large areas of suitable hedgehog habitat, including woodland, mature scrub, and scattered grassland areas. However, some habitat loss will occur within the development footprint, and there remains a low risk of disturbance or injury during vegetation clearance and construction works. Temporary disruption to commuting routes may also occur, particularly where scrub corridors are removed or fragmented.

Overall, unmitigated impacts are considered to be of low magnitude at a site level, and therefore of **negligible significance.**

6.11 Otter

Otters are known to use parts of the River Clywedog and Redwither Brook within the wider landscape, with multiple records returned from within 2 km of the site, including one from approximately 360m away. Both watercourses at the site boundary provide suitable foraging and commuting habitat.

It is considered that otters are using the watercourses on site for foraging and/or commuting in a limited and transitory capacity, most likely as low-frequency commuting corridors for otters traversing through the wider landscape. Otters are not considered to be using the habitats on site or immediately adjacent to the site for long-term resting or breeding and have limited capacity to do so in the future.

The proposed development avoids direct impact to both watercourses, with a minimum 10m buffer zone retained. As such, direct impacts to otters or their habitats are not anticipated. However, there remains a low risk of indirect disturbance during construction, including noise, vibration, and increased activity within proximity of the watercourses.

Overall, unmitigated impacts are considered to be of low magnitude at a local level, and therefore of **minor significance**.

6.12 Invasive species

Three invasive non-native plant species have been recorded on site: Himalayan balsam Japanese knotweed and montbretia. These species are present in discrete areas, predominantly along the River Clywedog and within the south-western and south-eastern sections of the site.

No invasive species fall within the proposed development footprint. As such, there is considered to be no risk of spread or disturbance as a direct result of the development proposals. The built compound and associated works are spatially separated from all known invasive species locations, and no ground disturbance is proposed within affected areas.

It is considered that there is no risk of increasing the impacts of invasive species as a result if the development proposals.

6.13 Invertebrates

In its current, unmanaged state, the site has lost much of the structural and botanical diversity that formerly supported a rich invertebrate assemblage and butterfly Species of Principle Importance. Dense scrub now dominates, fragmenting the remaining pockets of short, flower-rich swards, ephemeral pools and scrub fringes. The proposed development will remove predominantly self-seeded young scrub to create the built compound area, in addition to small areas of semi-improved grassland.

Given the retention of all areas of woodland, large areas of scrub, including the mature scrub of the highest quality, all permanent of semi-permanent aquatic habitats and most areas of all existing semi-improved grassland, the unmitigated impacts are considered to be of low magnitude at a local level and therefore of **minor significance**

6.14 Summary

Table 17 – Summary of impacts

ECOLOGICAL FEATURE	ECOLOGICAL IMPORTANCE OF FEATURE	MAGNITUDE OF POTENTIAL IMPACT	SIGNIFICANCE
Non-statutorily protected sites	County	Medium	Moderate
Woodland	Local	Negligible	Not significant
Dense scrub	Local	Medium	Minor
Watercourse	County	Low	Minor
Other habitats and general biodiversity	Site	Low	Not significant
Amphibians	Local-county	Low	Minor
Badgers	Site	Medium	Minor

Bats	Local	Low	Minor
Birds	Local	Low	Minor
Hedgehogs	Site	Low	Not significant
Otters	Local	Low	Minor
Invasive species	N/A	Negligible	Not significant
Invertebrates	Local	Low	Minor

7 MITIGATION, COMPENSATION & ENHANCEMENT

This section describes the measures which are required to mitigate or compensate for any significant environmental impacts. It also includes any required enhancement measures, where applicable.

7.1 Non-statutorily protected sites

Although the development lies within a designated Wildlife Site, the proposals have been designed to avoid the most valuable habitats and to deliver strategic ecological enhancement across the wider site. The retained areas will be subject to a long-term management plan (minimum 30 years), and will include monitoring surveys to assess effectiveness and guide adaptive management.

Full details are provided within the LEMP report that has been prepared for the site (report reference UES03918/32) however key measures include:

- Restoration of species-rich grassland through phased scrub clearance and reseeding
- Enhancement of retained ponds and creation of three new ponds
- Retention and management of mature scrub and all woodland areas
- Control and removal of invasive species
- Provision of bat boxes, bird boxes, amphibian hibernacula and log/brash
- Targeted habitat creation for notable butterfly species (dingy skipper, grizzled skipper, small heath) known to have historically used the site

All vegetation clearance will be supervised by a suitably qualified ecologist, and a suite of additional mitigation measures will be implemented to safeguard protected of otherwise notable habitats and species.

These measures will restore the mosaic of habitats that originally justified the Wildlife Site designation and will provide targeted benefits for species of local and county importance.

7.2 Woodland

All woodland habitats within the site boundary are to be retained and protected as part of the proposed development.

To maximise their ecological value, the retained woodland areas will be subject to targeted enhancement measures as part of the wider site management. Given that these areas of woodland are already well-established, extensive intervention is neither necessary nor desirable, as excessive management risks undermining existing habitat integrity.

As such, enhancement measures will be proportionate and focused, comprising:

- Selective thinning and coppicing, prioritising the removal of non-native species.
- Creation of deadwood habitats.
- Control of invasive species.

- Installation of bat boxes, bird boxes, and log/brash piles.

These actions will maintain and subtly improve the structural and ecological diversity of the areas of woodland without compromising their established character. Full details are provided in the LEMP that has been prepared for the site.

7.3 Dense scrub

The proposed development will result in the loss of scrub habitats on site. However, whilst some of this is to facilitate the construction of proposed infrastructure, some is a deliberate and ecologically justified outcome, as the removal of dense scrub is necessary to facilitate the restoration of species-rich grassland and other open habitats of equal or greater biodiversity value.

Dense scrub currently dominates much of the site, forming large, continuous stands that have established over the past two decades due to a sustained absence of management and disturbance. This successional shift has occurred at the expense of the open mosaic habitats that originally characterised the site and formed the basis for its designation as a non-statutory Wildlife Site.

Given that the scrub has largely displaced the site's original priority habitats, no specific compensation for its loss is proposed. The restoration of structurally diverse, botanically rich open habitats at the expense of a proportion of the sites scrub habitats is considered an appropriate and strategic approach, aligning with the site's original conservation value and supporting a broader range of specialist and declining species.

7.4 Watercourses

To address the limited risk of indirect impacts on watercourses during construction, a suite of site-specific mitigation measures will be implemented. Pollution prevention protocols are detailed within the CEMP that has been prepared for the site, including adherence to industry standard best practice guidance and secure handling of fuels and chemicals. Details of emergency spill procedures and staff training are also included to ensure rapid response capability.

The retention of a minimum 10m buffer zone around all watercourses will prevent direct disturbance, and no construction works, or access will occur within these areas. Measures to limit indirect disturbance such as fencing, signage, lighting controls, and restricted working hours are set out in the CEMP:Biodiversity / EDS report. These provisions will safeguard riparian habitats and associated species throughout the construction phase.

7.5 Other habitats and general biodiversity

A comprehensive enhancement strategy of the wider site, as detailed within the LEMP, will be implemented to ensure the site contains a mosaic of scrub, wildflower-rich grassland, ponds, bare ground and ephemeral / short perennial vegetation. All retained and newly created habitats will be subject to ongoing management and monitoring for a period of at least 25 years.

7.6 Amphibians

To safeguard GCNs and other amphibians, and to ensure compliance with relevant legislation, all development and enhancement work will be registered under an EPS mitigation licence. Full details of the mitigation, compensation and enhancement measures will be detailed within an Amphibian Conservation Plan that is being prepared for the site.

Key measures include the creation of three new ponds, restoration of Pond 2, and enhancement of retained Ponds 3 and 4. These aquatic features will be managed long-term to maintain breeding suitability and maximise their ecological value.

Construction-phase mitigation will include one-way amphibian fencing around the built compound, phased vegetation clearance, ecological supervision, and fingertip searches during vegetation clearance. Given the distance between the proposed working area and Pond 3, which is considered likely to be the only breeding pond onsite, it is considered that the that the works can proceed with minimal risk of adversely impacting GCNs and hence without the need for a full fencing, trapping and translocation scheme. The rationale for this approach is based on the assessment that only very low numbers of GCNs are likely to be using the western section of the site, as evidenced by the negative eDNA results of ponds within the western section of the site (Ponds 1, 1A and 2) and the absence of GCNs observed under artificial refugia installed across the site as part of reptile presence / absence surveys (Appendix 7).

Scrub clearance for grassland restoration will be phased over a 15-year period, ensuring that sufficient terrestrial habitat is retained at all times. These works will be timed to reduce the risk of encountering and impacting GCNs, and will be subject to the same ecological oversight and mitigation measures, with the exception of the one-way fencing, which is not considered to be needed or feasible given the small areas and very short length of time impacts of each phase will occur over.

Measures will also be implemented to ensure that amphibians do not become trapped within the gully pots during the operational phase of the development, including the installation of amphibian ladders.

It is considered that the development and proposed mitigation, compensation and enhancement measures are proportionate and sufficient to avoid harm, maintain population viability, and deliver long-term ecological enhancements for GCNs and other amphibians.

[redacted] Reasonable avoidance measures will be implemented to minimise disturbance and will be detailed fully within the CEMP:Biodiversity / EDS report that is being prepared for the site.

Prior to the commencement of works, the proposed working area will be subject to a targeted inspection, and any scrub removal within dense areas will be undertaken under ecological supervision. This will ensure that any previously unidentified or newly established setts are identified and appropriately protected. Should a suspected sett be found, the affected area will be retained, and a suitable buffer zone established to prevent damage or disturbance until the appropriate surveys can be undertaken to establish whether the sett is in use as an active

badger sett or not. If the sett is found to be in use by badgers, works within close proximity to the sett will not commence until a licence from NRW can be secured to allow the closure of the sett.

Operational lighting will be confined to the built compound, and the potential for light spill into adjacent habitats will be limited. The compound occupies a relatively small proportion of the site, and the retained and enhanced habitats surrounding it will continue to support badger movement and foraging. No additional lighting mitigation is proposed, but the overall lighting strategy has been designed to minimise unnecessary illumination of ecologically sensitive areas.

Compensation and enhancement measures include the retention and long-term management of mature scrub, woodland, and watercourses, alongside the creation of species-rich grassland, new ponds, and brash/log piles. These features will improve foraging resources and connectivity across the site, supporting continued badger use in the long-term.

7.8 Bats

As there will be no adverse impacts to any buildings on site, there is no need / potential to implement any mitigation measures with regards to bat roosts in buildings.

Despite no bat roosts being observed within trees due to be removed to facilitate the proposals, mitigation measures will be implemented during the felling of any trees with bat roosting potential due to the transient nature within which bats use trees for roosting and the residual risk of bats being present at the time of the works.

To minimise impacts on nocturnal wildlife, any external lighting installed will be designed in accordance with bat-sensitive principles. This will include the use of directional luminaires, shielding, and timing controls where feasible, ensuring light spill is reduced to the lowest practicable level.

To compensate for the loss of roosting habitat associated with the removal of five trees assessed as having low bat roosting potential, five bat boxes will be installed across the site. In addition, roosting opportunities will be enhanced through the installation of seven bat boxes on retained trees and a further eight boxes within retained buildings. Measures will be implemented to secure these boxes against disturbance or damage, including the prevention of unauthorised access to buildings housing internal boxes.

Further habitat-based enhancements will be delivered through the retention and long-term management of woodland and scrub corridors, alongside the creation of a mosaic of species-rich grassland, scrub, scattered trees, and ponds. These features will support roosting and foraging activity and maintain ecological connectivity across the site.

Full details of the proposed mitigation, compensation, and enhancement measures will be provided within the site-specific Bat Conservation and Management Plan documents.

7.9 Birds

To safeguard breeding birds, all tree felling, arboricultural works, and vegetation clearance are to take place outside of the breeding bird season and will not be undertaken from March to August inclusive. If this is not possible and works need to take place during this period, a

targeted nest survey is to be undertaken immediately prior to the works by a suitably qualified ecologist or an ecological clerk of works appointed to oversee the works where considered necessary e.g. due to the density of vegetation. If any nesting birds are found, a no works exclusion zone of at least 5m (potentially larger depending on the species) will be implemented around the nest until it has been confirmed by a suitability qualified ecologist that the nest is no longer in use.

Habitat connectivity and nesting opportunities will be maintained through the retention of woodland, scrub, and grassland mosaics. Enhancement measures will include the creation of structurally diverse vegetation, installation of bird boxes, and management of retained habitats to support invertebrate prey availability. These actions will benefit both generalist and conservation concern species. Full details of the proposed habitat creation and enhancement measures, including the number, models and locations of proposed bird boxes are provided within the LEMP report that has been prepared for the site.

7.10 Hedgehogs

To safeguard hedgehogs during construction, reasonable avoidance measures will be implemented, including sensitive vegetation clearance protocols and pre-commencement checks of suitable sheltering and hibernation habitat. These measures will be detailed within the CEMP:Biodiversity / EDS report being prepared for the site.

Habitat connectivity will be maintained through the retention of woodland, scrub corridors, and grassland mosaics, ensuring continued access across the site. The creation of new ponds, log/brash piles, and structurally diverse vegetation will enhance foraging and sheltering opportunities. Fencing around the built compound may block hedgehog access, however given that a commuting corridor will be retained to the south, this is not considered to be a significant adverse impact. There will be no purposefully installed means of hedgehog access into the built compound as there is no need given the limited habitat creation proposed within this area, the retention of a commuting corridor to the south and the associated increased the risk of injury and death from moving traffic.

These measures will ensure that hedgehogs can continue to use the site safely and effectively, while enhancing its long-term suitability for the species.

7.11 Otter

Given the minimum 10m buffer zone between the proposed development works and the watercourses, the potential adverse impacts on otters and very limited and minimal mitigation measures are required accordingly.

Pollution prevention protocols detailed within the CEMP will reduce the risk of adverse impacts of pollution of the watercourse is reduced to the lowest practicable level. Furthermore, measures to limit indirect disturbance such as fencing, signage, lighting controls, and restricted working hours are set out in the CEMP:Biodiversity / EDS report. These provisions will safeguard riparian habitats and associated species throughout the construction phase.

To minimise impacts on nocturnal wildlife, any external lighting installed will be designed to be wildlife friendly and will include the use of directional luminaires, shielding, and timing controls where feasible, ensuring light spill is reduced to the lowest practicable level.

7.12 Invasive species

Although invasive species are not present within the development footprint, targeted control and eradication measures will be implemented as part of the wider ecological enhancement strategy.

The Japanese knotweed and montbretia on site will be eradicated as part of these enhancements, with removal and disposal undertaken in accordance with regulatory guidance. Due to its abundance, dispersal capability, and upstream seed sources, it is anticipated that it may not be possible to entirely eradicate Himalayan balsam from the wider site. However, ongoing control and removal will be undertaken to reduce its abundance and prevent further spread across the site.

Should additional invasive species be identified during clearance, works in the affected area will cease immediately and a no-works buffer zone will be established. The species will then be subject to appropriate control or eradication measures prior to resumption of works in this area.

Details of long-term management, control and eradication of invasive species will be detailed within the CEMP:Biodiversity / EDS report being prepared for the site, including annual site inspections to identify new occurrences and the implementation of appropriate control and eradication measures accordingly.

7.13 Invertebrates

A comprehensive enhancement strategy of the wider site, as detailed within the LEMP, will restore the mosaic and habitats previously identified as important for invertebrate assemblages at the time of the site's designation as a local wildlife site. The proposed measures have been designed to facilitate the natural recolonisation of the site by dingy skipper, grizzled skipper and small heath butterflies. Key measures include:

- Restoration of species-rich grassland by clearing dense scrub in phases and reseeding with mixes containing bird's-foot trefoil and other larval foodplants.
- Creation and management of short, floristically diverse swards, patches of bare ground and ephemeral vegetation to offer basking and nesting microhabitats.
- Enhancement and reinstatement of dried-up and declining ponds, in addition to pond creation, supporting aquatic invertebrates such dragonflies, flies and beetles.
- Creation of a mosaic of scrub and open communities to provide sheltered scrub fringes.
- Creation of log/brash piles to serve as overwintering refugia.
- Ongoing invertebrate monitoring to track recolonisation by the three target butterfly species and to inform adaptive management.

8 RESIDUAL IMPACTS

8.1 Non-statutorily protected sites

Following the implementation of embedded design measures, strategic habitat restoration and enhancement, and long-term management, no significant residual impacts on non-statutorily protected sites are anticipated.

The development footprint has been chosen and designed to avoid the most ecologically valuable areas within the Wildlife Site, and the proposals will reverse the successional decline that has occurred due to prolonged lack of management. The enhancement scheme will restore species-rich grassland, improve aquatic habitats, and support a wider range of faunal species.

The development of a relatively small proportion of the site provides a mechanism to secure the long-term retention and enhancement of the wider site, in addition to its long-term management and monitoring. Through the implementation of the avoidance, mitigation, compensation and enhancement measures detailed in Section 7 above, it is considered that the proposed development will result in a significant net benefit for biodiversity and the wildlife site, including specific benefits for species that are particularly notable within the context of the wider industrial estate, such as the dingy skipper butterfly.

Overall, it is considered that the residual impact on the Wildlife Site will be of **moderate beneficial ecological significance**, with the benefit arising from the restoration of degraded habitats and the strategic re-establishment of key designation features from the Wildlife Site designation.

8.2 Woodland

All woodland habitats within the site are to be retained and protected throughout the development. As such, no direct loss of woodland is anticipated.

Enhancement measures will be implemented to subtly improve the ecological value of these areas, including selective thinning, coppicing of non-native species, invasive species control, and the provision of bat boxes, bird boxes, and log/brash piles.

These interventions are low-impact and designed to enhance the existing areas of woodland without compromising their integrity.

Given the lack of potential adverse impacts and the limited scale and sensitive nature of the proposed management, no adverse residual impacts are anticipated, and **a minor beneficial impact is expected.**

8.3 Dense scrub

The proposed development will result in the loss of extensive areas of dense scrub, both to accommodate built infrastructure and to enable wider ecological enhancement, including the restoration of wildflower grassland across the site.

While dense scrub is not a Habitat of Principal Importance, it is a habitat of moderate ecological value, particularly for the provision of sheltering, breeding, and foraging opportunities for multiple taxa. However, it represents a mid- to late-successional community that often encroaches upon and displaces early-successional habitats, which are typically dependent on active management or disturbance to persist.

The site was originally designated as a Wildlife Site due to its open mosaic and wildflower grassland habitats, which supported a range of generalist and specialist species. In the absence of ongoing management which has almost entirely ceased in recent years, dense scrub has progressively colonised the site, leading to the loss of structural and botanical diversity, and reducing the suitability of the site for many specialist species.

The proposals will retain the most structurally diverse and ecologically valuable areas of scrub, while reinstating a mosaic of habitats including wildflower grassland, ephemeral communities on open ground, ponds, and scrub. This approach will restore the site's original ecological character and enhance its biodiversity value, supporting a broader range of specialist and declining species.

Although the proposals will result in a residual **moderate negative impact** with respect to scrub habitats, this is necessary to reverse the homogenisation of the site and to deliver a significant net benefit for biodiversity. The replacement of dense scrub dominated by generalist species with a structurally diverse and botanically rich habitat mosaic will better reflect the site's original designation and its strategic importance within the Wrexham Industrial Estate and wider county context.

8.4 Watercourses

Following the implementation of embedded design measures and site-specific mitigation detailed in the CEMP and CEMP:Biodiversity/EDS, no significant residual impacts on watercourses are anticipated.

The retention of a minimum 10 m buffer zone around all waterbodies, combined with pollution prevention protocols and disturbance controls, will ensure that the River Clywedog, Redwither Brook, and the northern onsite ditch remain unaffected by construction activities. Invasive species control and riparian habitat protection will contribute to a minor long-term ecological benefit, improving habitat quality and reducing the risk of downstream spread.

Overall, it is considered that the residual impact on watercourses will be of **neutral to minor beneficial ecological significance**.

8.5 Other habitats and general biodiversity

Following the implementation of the targeted grassland restoration and wider enhancement measures, in addition to the long-term management of the site, no significant residual negative impacts on biodiversity are anticipated. The site will transition from a scrub-dominated homogenous landscape to a high-value mosaic of grassland, scrub, open ground and aquatic habitats.

The development of a relatively small proportion of the site provides a mechanism to secure the long-term retention and enhancement of the wider site, in addition to its long-term management and monitoring. Through the implementation of the habitat creation and

enhancement measures detailed within the LEMP, it is considered that the proposed development will result in a **moderate positive** net benefit for biodiversity.

8.6 Amphibians

Following the implementation of embedded design measures, licensed mitigation, and the Amphibian Conservation Plan that is being prepared for the site, no significant residual impacts on GCNs, or any other amphibian species, are anticipated.

Breeding ponds will be retained, restored, or newly created, and terrestrial habitat will be protected and enhanced. Construction-phase risks will be managed through ecological supervision and one-way fencing.

The site will continue to support a medium population of GCNs and contribute to the wider meta-population within the Wrexham Industrial Estate. Habitat enhancements and long-term management are expected to improve the quality and availability of terrestrial and aquatic breeding opportunities.

Overall, the residual impact on GCNs and other amphibians is anticipated to be of **minor beneficial ecological significance.**

8.7 Badgers

Following the implementation of embedded design measures, ecological supervision, and the reasonable avoidance measures detailed within the CEMP:Biodiversity/EDS, no significant residual impacts on badgers are anticipated.

Potential Sett 2 will be retained and protected on a precautionary basis, with a 20m buffer zone. Construction works will be subject to pre-commencement inspection and ecological oversight to ensure that any previously unidentified or newly established setts are detected and safeguarded. This precautionary approach reflects the transitional nature of badger use on site and the potential for occasional sett establishment within dense scrub habitats.

Operational lighting will be confined to the built compound, with limited potential for light spill into adjacent habitats. Given badgers' known tolerance of artificial lighting and use of urban environments, and the small footprint of the compound relative to the wider site, no significant impacts are anticipated.

The majority of the site is being retained and enhanced, with habitat mosaics designed to support faunal movement and foraging. These enhancements including the creation and long-term management of a mosaic of species-rich grassland, ponds and scrub is expected to improve habitat quality and connectivity for badgers in the long-term.

Overall, residual impact on badgers is anticipated to be of **neutral to minor beneficial ecological significance.**

8.8 Bats

Following the implementation of embedded design measures, targeted mitigation, and site-wide habitat enhancements, residual impacts to bats are anticipated to be minor beneficial at a local level.

No direct impacts to confirmed roosts will occur, as all buildings and structures supporting bat roosts will be retained and remain unaffected by the proposed works. While five trees with low roosting potential are to be removed, precautionary felling protocols will be followed to address the residual risk of transient roost use. These measures are expected to reduce the likelihood of direct harm to individual bats to a negligible level.

External lighting will be restricted to the immediate development footprint and designed in accordance with bat-sensitive principles. Given the location of the built compound away from high-value habitats and the retention of extensive foraging and commuting corridors, any light spill is expected to be minor and localised, with no significant disruption to bat activity.

Compensation for the loss of low-value roosting habitat will be delivered through the installation of five bat boxes across the site. Roosting opportunities will be further enhanced via the provision of seven boxes on retained trees and eight boxes within retained buildings, with measures in place to prevent disturbance or damage. These enhancements represent a net gain in roosting availability and structural diversity.

Habitat-based enhancements including the retention and management of woodland and scrub corridors, and the creation of species-rich grassland, scrub, scattered trees, and ponds will improve site-wide foraging resources and maintain ecological connectivity. The retention of riparian corridors along the southern and south-western boundaries will preserve key commuting routes linking to off-site habitats.

Taken together, the precautionary approach to tree removal, sensitive lighting design, and the suite of compensation and enhancement measures are expected to result in a **minor beneficial impact** to bats at a local level, contributing positively to site-wide ecological functionality.

8.9 Birds

Timing sensitive works to outside of the nesting bird season or undertaking a pre-commencement nesting bird check will ensure risk of harm is minimised to the lowest practicable level.

The proposed level of habitat retention, creation and enhancement including the retention of wildlife corridors at the site boundaries will ensure that connectivity to offsite habitats and sufficient foraging and nesting opportunities will remain available for the bird species currently using the site. The proposed creation of ecologically varied and high value habitats such as ponds and wildflower grassland will ensure that the site has the capacity to support an increased variety of birds by providing a wider range of food sources and nesting opportunities.

Further compensation for the loss of nesting opportunities and the enhancement of nesting opportunities for species that are currently not breeding on site will be incorporated through the provision of a suite of bird boxes.

The overall residual impact of the completed and operational development on breeding birds is anticipated to be **neutral, however some generalist species will experience a minor negative change and others will experience a minor positive change with regards to the availability of nesting opportunities.**

8.10 Hedgehogs

Following the implementation of embedded design measures and the mitigation strategy detailed within the CEMP:Biodiversity/EDS, no significant residual impacts on hedgehogs are anticipated.

Habitat connectivity and foraging resources will be retained and enhanced, and operational lighting will be confined to a small area with limited potential for ecological disruption. Reasonable avoidance measures during construction and vegetation clearance will minimise the risk of injury or disturbance, and habitat enhancements and management will improve long-term suitability foraging, sheltering and hibernation.

Overall, residual impact on hedgehogs is anticipated to be of **neutral to minor beneficial ecological significance.**

8.11 Otters

Following the implementation of embedded design measures and the mitigation strategy detailed within the CEMP:Biodiversity/EDS, no significant residual impacts on otters are anticipated.

Both watercourses will be retained and protected, and construction-phase risks will be managed through spatial separation and sensitive working practices. No holts or resting sites are present, and no direct impacts are expected. The precautionary approach adopted will ensure that any future use of the site by otters is not compromised.

Riparian habitat management and invasive species control may result in a minor long-term ecological benefit, improving foraging opportunities and supporting continued transitory use of the site.

The overall residual impact of the completed and operational development on otters is anticipated to be **neutral.**

8.12 Invasive species

Following the implementation of targeted eradication, and long-term management measures, no residual impacts associated with invasive species are anticipated.

The development footprint is free from invasive species, and there is considered to be no risk of spreading invasive species through the construction phase of the development. The removal of Japanese knotweed and montbretia, and the ongoing control of Himalayan balsam, will result in a minor long-term benefit to habitat quality and reduce the risk of downstream spread.

Annual monitoring and responsive management will ensure that any future occurrences are addressed promptly and effectively.

Overall, residual impact with regards to invasive species is anticipated to be of **minor beneficial ecological significance.**

8.13 Invertebrates

Following the implementation of the targeted grassland restoration and enhancement measures, in addition to the long-term management of the site, no significant residual negative impacts on invertebrates are anticipated. Instead, the site will transition from a scrub-dominated landscape to a high-value mosaic of grassland, scrub edge, open ground and aquatic habitats.

Natural dispersal from adjacent populations of dingy skipper, grizzled skipper and small heath within the wider Wrexham Industrial Estate is considered highly feasible given their flight capabilities and the absence of physical barriers. Over time and following establishment, these species are expected to recolonise the restored habitats, delivering a **minor to moderate beneficial residual impact** for both specialist butterflies and the wider invertebrate assemblage

8.14 Summary

Table 18 – Summary of residual impacts

ECOLOGICAL FEATURE	RESIDUAL IMPACT
Non-statutorily protected sites	Moderate positive
Woodland	Minor positive
Dense scrub	Moderate negative
Watercourses	Neutral - minor positive
Other habitats and general biodiversity	Moderate positive
GCNs	Minor positive
Badgers	Neutral – minor positive
Bats	Minor positive
Birds	Neutral / minor positive and minor negative for specific species
Hedgehogs	Neutral - minor positive
Otters	Neutral
Invasive species	Minor positive
Invertebrates	Minor – moderate positive

9 CONCLUSION

The proposed development at The Oaks has been informed by a robust suite of ecological surveys and assessments, ensuring that all relevant receptors have been identified and appropriately considered. The site supports habitats and species of local to county importance, including a medium population of GCNs, multiple bat roosts, and a diverse assemblage of breeding birds.

The development footprint has been carefully designed to avoid the most sensitive ecological features, and a comprehensive mitigation strategy has been developed to safeguard protected species and habitats. Enhancement measures, including pond creation, grassland restoration, and targeted habitat provision for priority species will deliver long-term biodiversity benefits and restore key features of the site's original Wildlife Site designation.

Residual impacts are anticipated to be neutral or minor beneficial for most receptors, with a moderate positive outcome for biodiversity overall. Although the proposals will result in residual negative impact with respect to scrub habitats, this is necessary to reverse the homogenisation of the site and to deliver a significant net benefit for biodiversity. The replacement of dense scrub dominated by generalist species with a structurally diverse and botanically rich habitat mosaic will better reflect the site's original Wildlife Site designation and its strategic importance within the Wrexham Industrial Estate and wider county context.

The proposals comply with national and local planning policy, including the stepwise approach outlined in Planning Policy Wales and the biodiversity safeguarding principles of the Wrexham UDP.

In conclusion, the development is ecologically acceptable and will result in a net benefit for biodiversity, subject to the implementation of the mitigation and management measures detailed within this report and associated documents.

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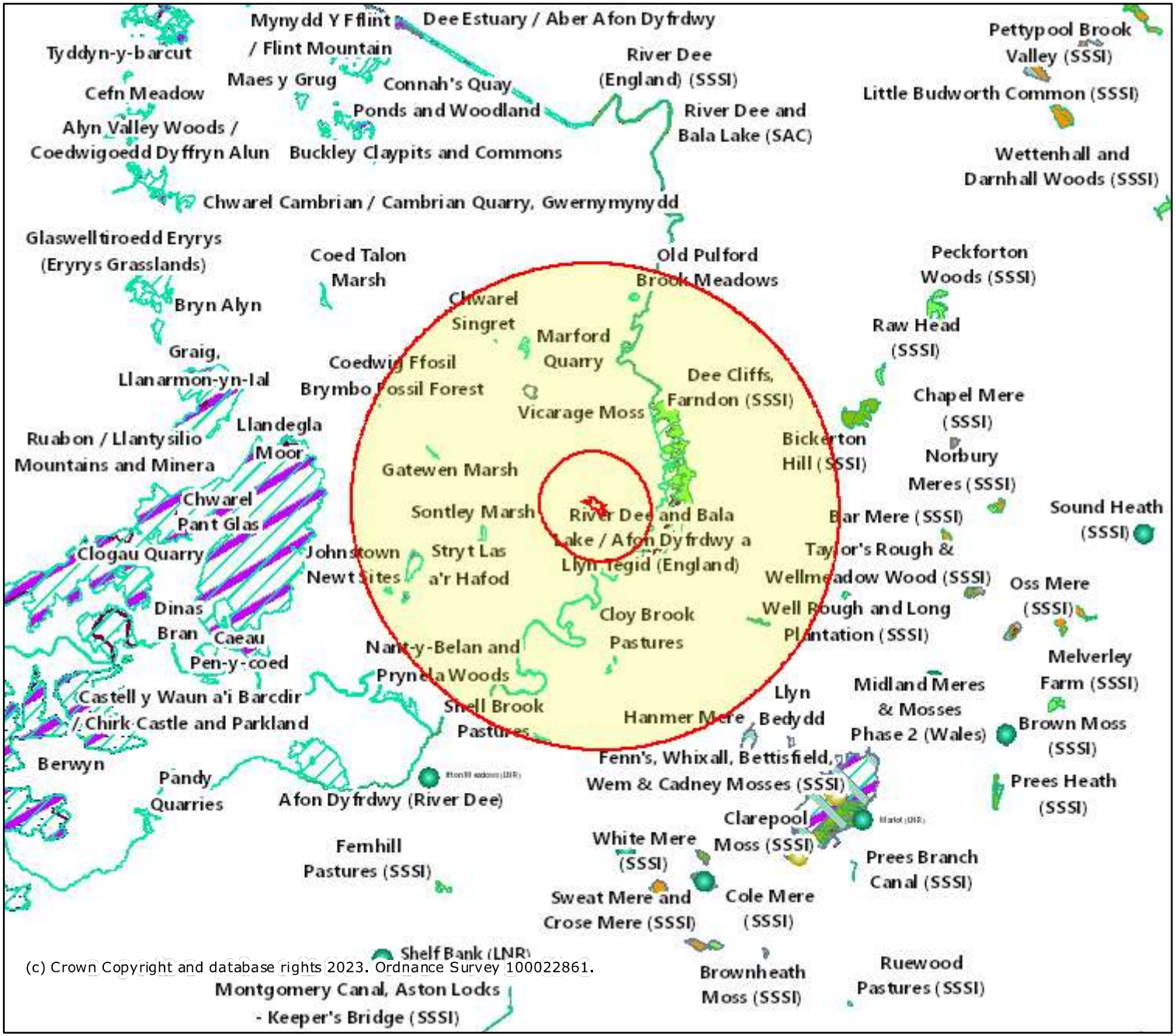
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APPENDICES

Appendix 1 – Statutorily protected sites

Statutorily designated sites - 10km



Legend

- Local Nature Reserves (England) - points
- National Nature Reserves (England) - points
- National Nature Reserves (Wales) - points
- Ramsar Sites (England)
- Proposed Ramsar Sites (England)
- Ramsar Sites (Wales)

Sites of Special Scientific Interest Units (England)

- Favourable Condition
- Unfavourable Recovering
- Unfavourable no change
- Unfavourable Declining
- Part Destroyed
- Destroyed
- Not Assessed
- Sites of Special Scientific Interest (England)
- Sites of Special Scientific Interest (Wales)
- Special Areas of Conservation (England)
- Possible Special Areas of Conservation (England)
- Special Areas of Conservation (Wales)
- Special Protection Areas (England)
- Potential Special Protection Areas (England)
- Special Protection Areas (Wales)

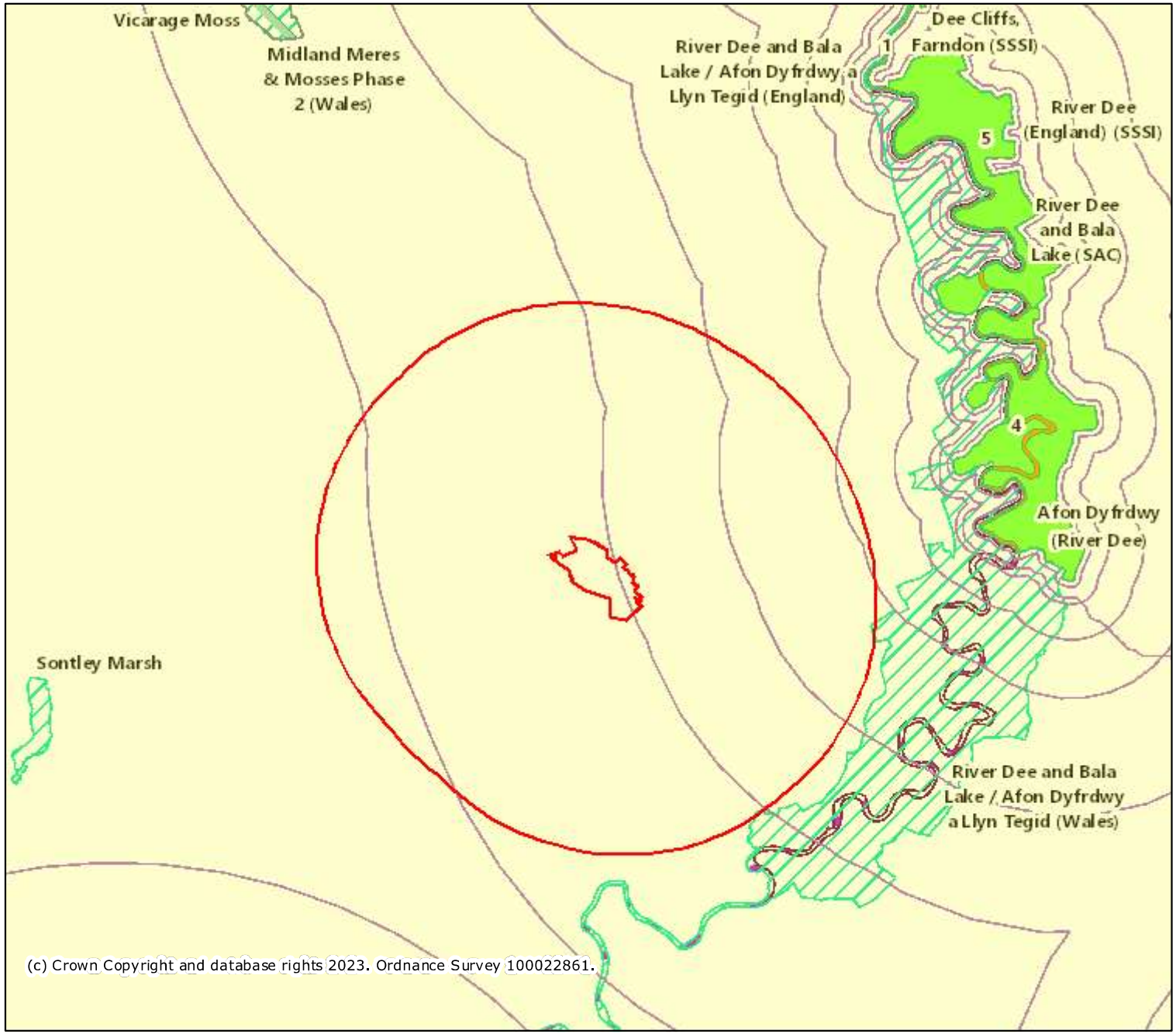
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ymax = 368500

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Map produced by MAGIC on 24 January, 2023.

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Statutorily designated sites - 10km



Legend

- Local Nature Reserves (England)
- National Nature Reserves (England)
- National Nature Reserves (Wales)
- Ramsar Sites (England)
- Proposed Ramsar Sites (England)
- Ramsar Sites (Wales)

Sites of Special Scientific Interest Units (England)

- Favourable Condition
- Unfavourable Recovering
- Unfavourable no change
- Unfavourable Declining
- Part Destroyed
- Destroyed
- Not Assessed
- Sites of Special Scientific Interest (England)
- SSSI Impact Risk Zones - to assess planning applications for likely impacts on SSSIs/SACs/SPAs & Ramsar sites (England)
- Sites of Special Scientific Interest (Wales)
- Special Areas of Conservation (England)
- Possible Special Areas of Conservation (England)
- Special Areas of Conservation (Wales)
- Special Protection Areas (England)
- Potential Special Protection Areas (England)
- Special Protection Areas (Wales)

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Appendix 2 – Phase 1 habitat plan

Target Note 1 - Pond 1 and location of common frog

Target Note 2 - Pond 1a

Target Note 3 - Pond 2

Target Note 4 - Pond 3

Target Note 5 - Pond 3a

Target Note 6 - Pond 4

Target Note 7 - Ephemeral pool and marshy vegetation

Target Note 8 - Large rubble piles

Target Note 9 - Small stand of Japanese knotweed

Target Note 10 - Large stand of Japanese knotweed

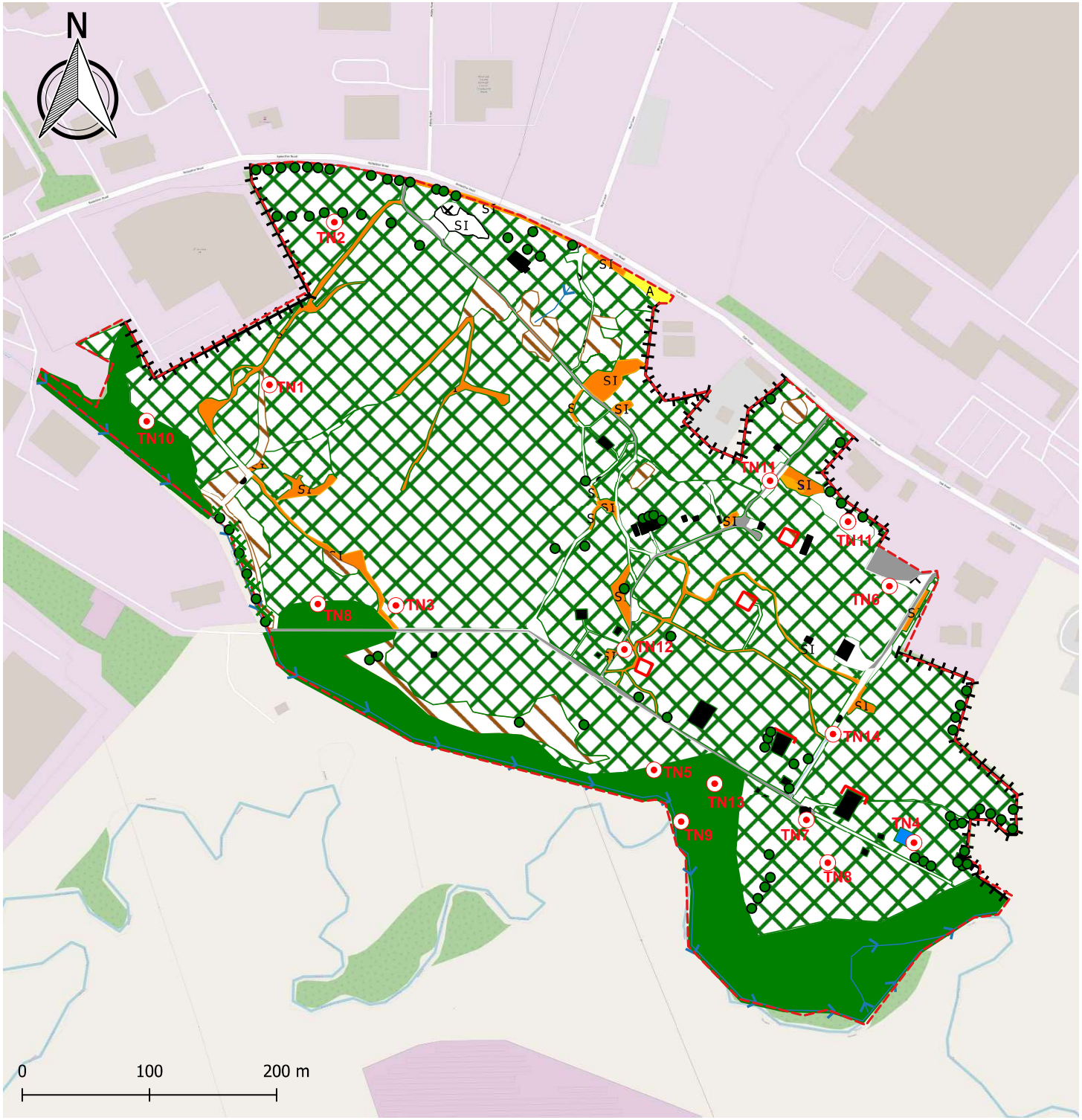
Target Note 11 - Areas of recently cleared ground

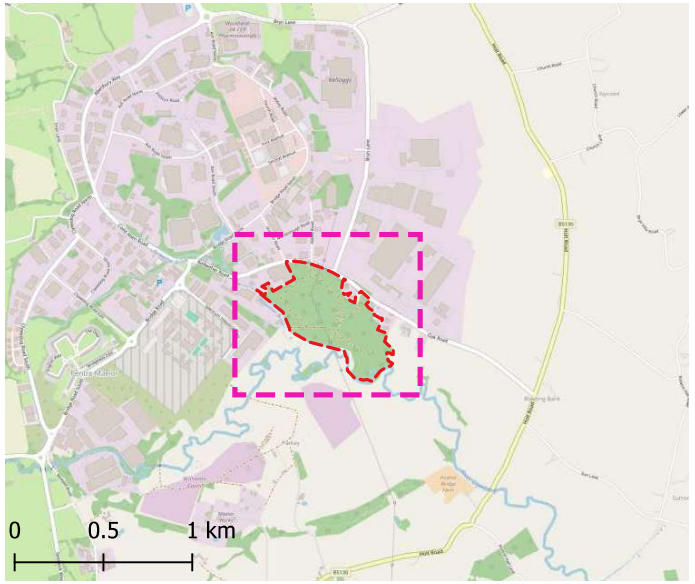
Target Note 12 - Juvenile smooth newt observed beneath refugia

Target Note 13 - Yellow archangel

Preliminary Ecological Appraisal

Site: The Oaks, Wrexham
NGR: SJ 38699 49320
Author: Tom Kenwright
Date: 15/05/2025





KEY:

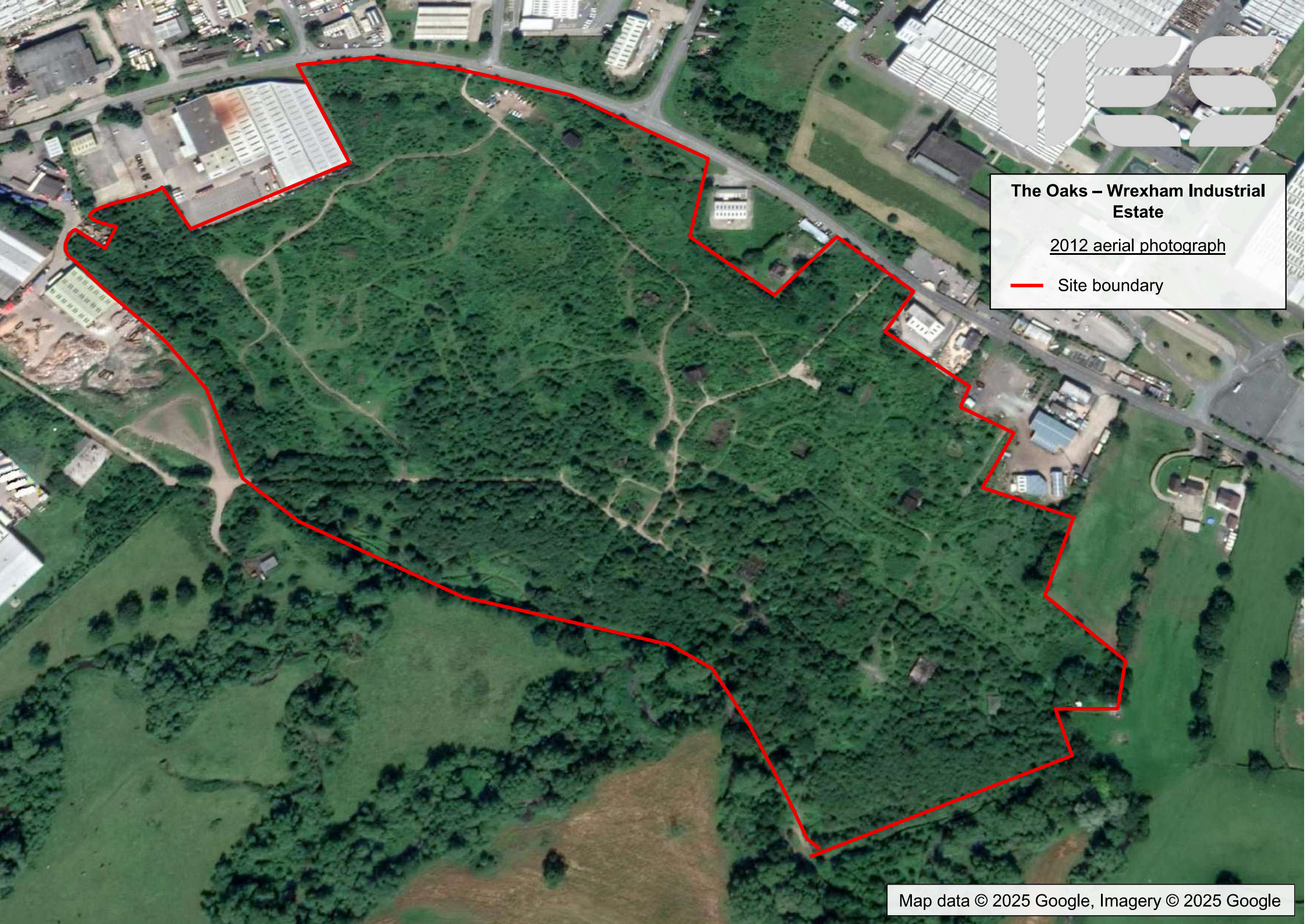
- A1.1.1 - Broadleaved woodland - semi-natural
- A2.1 - Scrub - dense/continuous
- A3.1 - Broadleaved scattered trees
- SI B2.2 - Semi-improved neutral grassland
- B5 - Marsh/marshy grassland
- SI B6 - Poor semi-improved grassland
- C3.1 - Ruderal tall herb and fern
- G1 - Standing water
- G2 - Running water
- A J1.2 - Amenity grassland
- J1.3 - Ephemeral/ short perennial
- J2.4 - Fence
- J2.5 - Wall
- J3.6 - Buildings
- J4 - Bare ground
- J5 - Hardstanding
- Survey boundary
- Target Notes
- Artifical watercourse created by burst water pipe

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Appendix 3 – Aerials


The Oaks – Wrexham Industrial Estate
2023 aerial photograph
Site boundary
Map data © 2025 Google, Imagery © 2025 Google

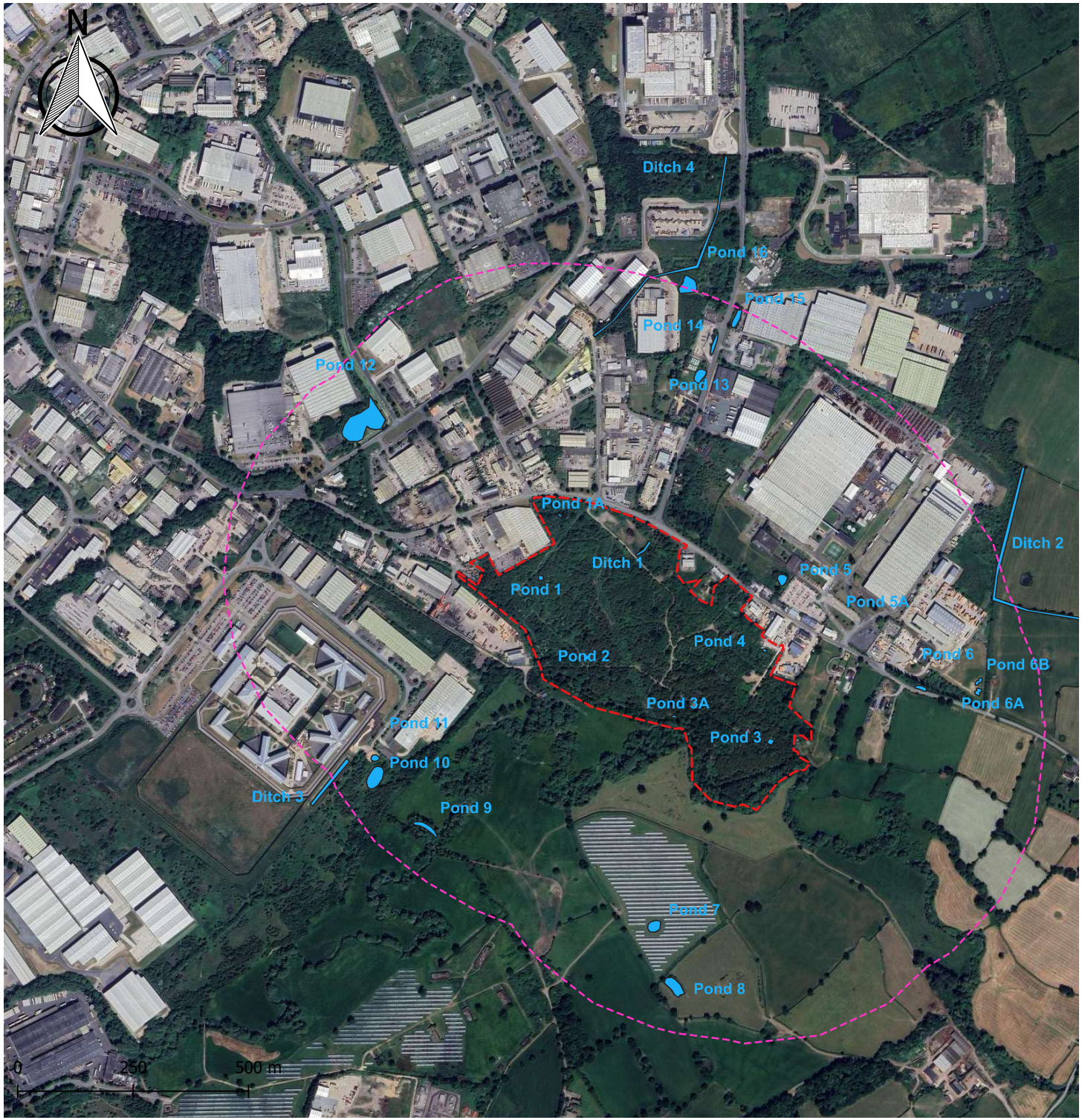

The Oaks – Wrexham Industrial Estate
2012 aerial photograph
Site boundary
Map data © 2025 Google, Imagery © 2025 Google

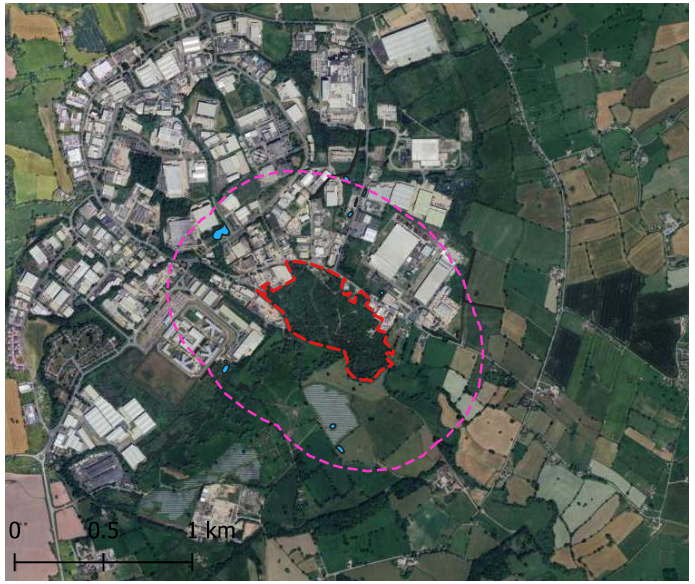

The Oaks – Wrexham Industrial Estate
2006 aerial photograph
Site location
Map data © 2025 Google, Imagery © 2025 Google

Appendix 4 – Pond plan

500m Pond Plan

Site: The Oaks, Wrexham
NGR: SJ 38699 49320
Author: Tom Kenwright
Date: 04/04/2023





KEY:

- Survey boundary
- Waterbodies
- 500m buffer zone to survey boundary

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Appendix 5 – eDNA results

SureScreen Scientifics

Folio No: E16747
Report No: 1
Purchase Order: UES03918
Client: UES Ltd
Contact: Noah Polton

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS (TRITURUS CRISTATUS)

SUMMARY

When great crested newts (GCN), *Triturus cristatus*, inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analysing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

RESULTS

Date sample received at Laboratory: 24/04/2023
Date Reported: 25/04/2023
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1788	The Oaks, Wrexham - Pond 1	SJ 38537 49328	Pass	Pass	Pass	Negative	0
1789	The Oaks, Wrexham - Pond 2	SJ 38616 49178	Pass	Pass	Pass	Positive	1
1791	3A (3 Chambered Concrete tank)	SK 38807 49036	Pass	Pass	Pass	Positive	2
2551	The Oaks, Wrexham - Pond 6	SJ 39316 49094	Pass	Pass	Pass	Negative	0
2553	The Oaks, Wrexham - Pond 8	SJ 38776 48468	Pass	Pass	Pass	Positive	6

2557	The Oaks, Wrexham - Pond 9	SJ 38241 48811	Pass	Pass	Pass	Negative	0

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

Reported by: Chris Troth **Approved by:** Chris Troth

METHODOLOGY

The samples detailed above have been analysed for the presence of GCN eDNA following the protocol stated in DEFRA WC1067 'Analytical and methodological development for improved surveillance of the Great Crested Newt, Appendix 5.' (Biggs et al. 2014). Each of the 6 sub-sample tubes are first centrifuged and pooled together into a single sample which then undergoes DNA extraction. The extracted sample is then analysed using real time PCR (qPCR), which uses species-specific molecular markers to amplify GCN DNA within a sample. These markers are unique to GCN DNA, meaning that there should be no detection of closely related species.

If GCN DNA is present, the DNA is amplified up to a detectable level, resulting in positive species detection. If GCN DNA is not present then amplification does not occur, and a negative result is recorded.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. True positive controls, negative controls and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added security.

SureScreen Scientifics Ltd is ISO9001 accredited and participate in Natural England's proficiency testing scheme for GCN eDNA testing. We also carry out regular inter-laboratory checks on accuracy of results as part of our quality control procedures.

INTERPRETATION OF RESULTS

SIC: **Sample Integrity Check** [Pass/Fail]
When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results.

DC: **Degradation Check** [Pass/Fail]
Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation of the spiked DNA marker may lead indicate a risk of false negative results.

IC: **Inhibition Check** [Pass/Fail]
The presence of inhibitors within a sample are assessed using a DNA marker. If inhibition is detected, samples are purified and re-analysed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.

Result: **Presence of GCN eDNA** [Positive/Negative/Inconclusive]

Positive: GCN DNA was identified within the sample, indicative of GCN presence within the sampling location at the time the sample was taken or within the recent past at the sampling location.
Positive Replicates: Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for GCN presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative GCN presence.
Negative: GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection.

SureScreen Scientifics

Folio No: E17033
Report No: 1
Purchase Order: UES03918
Client: UES Ltd
Contact: Noah Polton

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS (TRITURUS CRISTATUS)

SUMMARY

When great crested newts (GCN), *Triturus cristatus*, inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analysing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

RESULTS

Date sample received at Laboratory: 02/05/2023
Date Reported: 03/05/2023
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1771	The Oaks, Wrexham - Pond 1A	SJ 38562 49469	Pass	Pass	Pass	Negative	0

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

Reported by: Gabriela Danickova **Approved by:** Chris Troth

METHODOLOGY

The samples detailed above have been analysed for the presence of GCN eDNA following the protocol stated in DEFRA WC1067 'Analytical and methodological development for improved surveillance of the Great Crested Newt, Appendix 5.' (Biggs et al. 2014). Each of the 6 sub-sample tubes are first centrifuged and pooled together into a single sample which then undergoes DNA extraction. The extracted sample is then analysed using real time PCR (qPCR), which uses species-specific molecular markers to amplify GCN DNA within a sample. These markers are unique to GCN DNA, meaning that there should be no detection of closely related species.

If GCN DNA is present, the DNA is amplified up to a detectable level, resulting in positive species detection. If GCN DNA is not present then amplification does not occur, and a negative result is recorded.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. True positive controls, negative controls and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added security.

SureScreen Scientifics Ltd is ISO9001 accredited and participate in Natural England's proficiency testing scheme for GCN eDNA testing. We also carry out regular inter-laboratory checks on accuracy of results as part of our quality control procedures.

INTERPRETATION OF RESULTS

SIC: **Sample Integrity Check** [Pass/Fail]
When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results.

DC: **Degradation Check** [Pass/Fail]
Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation of the spiked DNA marker may lead indicate a risk of false negative results.

IC: **Inhibition Check** [Pass/Fail]
The presence of inhibitors within a sample are assessed using a DNA marker. If inhibition is detected, samples are purified and re-analysed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.

Result: **Presence of GCN eDNA** [Positive/Negative/Inconclusive]
Positive: GCN DNA was identified within the sample, indicative of GCN presence within the sampling location at the time the sample was taken or within the recent past at the sampling location.
Positive Replicates: Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for GCN presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative GCN presence.
Negative: GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection.

Folio No: 621-2024
Purchase Order: UES03918.35
Contact: United Environmental Services Ltd (UES)
Issue Date: 07.05.2024

GCN Report

Technical Report

SureScreen Scientifics

Folio No: 621-2024
Purchase Order: UES03918.35
Contact: United Environmental Services Ltd (UES)
Issue Date: 07.05.2024

SureScreen Scientifics

GCN eDNA Analysis

Summary

When great crested newts (GCN), *Triturus cristatus* , inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analyzing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

Results

Lab ID	Site Name	OS Reference	Degradation Check	Inhibition Check	Result	Positive Replicates
GCN0807	The Oaks	SJ3860949155	Pass	Pass	Negative	0/12

Matters affecting result: none

Reported by: Daisy Chambers

Approved by: Jennifer Higginbottom

SureScreen Scientifics

Methodology

The samples detailed above have been analyzed for the presence of GCN eDNA following the protocol stated in DEFRA WC1067 'Analytical and methodological development for improved surveillance of the Great Crested Newt, Appendix 5.' (Biggs et al. 2014). Each of the 6 sub-sample tubes are first centrifuged and pooled together into a single sample tube which then undergoes DNA extraction. The extracted sample is then analyzed using real-time PCR (qPCR), which uses species-specific molecular markers to amplify GCN DNA within a sample. These markers are unique to GCN DNA, meaning that there should be no detection of closely related species.

If GCN DNA is present, the DNA is amplified up to a detectable level, resulting in positive species detection. If GCN DNA is not present then amplification does not occur, and a negative result is recorded. Analysis of eDNA requires attention to detail to prevent the risk of contamination. True positive controls, negative controls, and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added analytical security.

SureScreen Scientifics Ltd is ISO9001 accredited and participates in Natural England's proficiency testing scheme for GCN eDNA testing.

Interpretation of Results

Sample Integrity Check: When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results. Any samples which fail this test are rejected and eliminated before analysis.

Degradation Check: **Pass/Fail**. Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation of the spiked DNA marker may lead indicate a risk of false negative results.

Inhibition Check: **Pass/Fail.** The presence of inhibitors within a sample is assessed using a DNA marker. If inhibition is detected, samples are purified and re-analyzed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.

Result: **Presence of GCN eDNA (Positive/Negative/Inconclusive)**
Positive: GCN DNA was identified within the sample, indicative of GCN presence within the sampling location at the time the sample was taken or within the recent past at the sampling location.
Positive Replicates: Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for GCN presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with the WC1067 Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative GCN presence.
Negative: GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection.
Inconclusive: Controls indicate inhibition or degradation of the sample, resulting in the inability to provide conclusive evidence for GCN presence or absence.

Folio No:	1314-2025
Purchase Order:	UES03918
Contact:	United Environmental Services Ltd (UES)
Issue Date:	13.05.2025
Received Date:	09.05.2025

GCN Report

Technical Report

SureScreen Scientifics

Folio No: 1314-2025
Purchase Order: UES03918
Contact: United Environmental Services Ltd (UES)
Issue Date: 13.05.2025
Received Date: 09.05.2025

SureScreen Scientifics

GCN eDNA Analysis

Summary

When great crested newts (GCN), *Triturus cristatus* , inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analyzing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

Results

Lab ID	Site Name	OS Reference	Degradation Check	Inhibition Check	Result	Positive Replicates
GCN25 1198	The Oaks - P1A	SJ 38562 49469	Pass	Pass	Negative	0/12
GCN25 1205	The Oaks - P3A	SJ 38809 49036	Pass	Pass	Negative	0/12
GCN25 1236	The Oaks - P1	SJ 38537 49328	Pass	Pass	Negative	0/12
GCN25 1278	The Oaks - P4	SJ 38996 49158	Pass	Pass	Positive	2/12

Matters affecting result: none

Reported by: Amy Bermudez

Approved by: Lauryn Jewkes

Methodology

The samples detailed above have been analyzed for the presence of GCN eDNA following the protocol stated in DEFRA WC1067 'Analytical and methodological development for improved surveillance of the Great Crested Newt, Appendix 5.' (Biggs et al. 2014). Each of the 6 sub-sample tubes are first centrifuged and pooled together into a single sample tube which then undergoes DNA extraction. The extracted sample is then analyzed using real-time PCR (qPCR), which uses species-specific molecular markers to amplify GCN DNA within a sample. These markers are unique to GCN DNA, meaning that there should be no detection of closely related species.

If GCN DNA is present, the DNA is amplified up to a detectable level, resulting in positive species detection. If GCN DNA is not present then amplification does not occur, and a negative result is recorded. Analysis of eDNA requires attention to detail to prevent the risk of contamination. True positive controls, negative controls, and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added analytical security.

SureScreen Scientifics Ltd is ISO9001 accredited and participates in Natural England's proficiency testing scheme for GCN eDNA testing.

Interpretation of Results

Sample Integrity Check: When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results. Any samples which fail this test are rejected and eliminated before analysis.

Degradation Check: **Pass/Fail**. Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation of the spiked DNA marker may lead indicate a risk of false negative results.

Inhibition Check: **Pass/Fail.** The presence of inhibitors within a sample is assessed using a DNA marker. If inhibition is detected, samples are purified and re-analyzed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.

Result: **Presence of GCN eDNA (Positive/Negative/Inconclusive)**
Positive: GCN DNA was identified within the sample, indicative of GCN presence within the sampling location at the time the sample was taken or within the recent past at the sampling location.
Positive Replicates: Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for GCN presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with the WC1067 Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative GCN presence.
Negative: GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection.
Inconclusive: Controls indicate inhibition or degradation of the sample, resulting in the inability to provide conclusive evidence for GCN presence or absence.

Appendix 6 – HSI results

GCN HSI Calculations

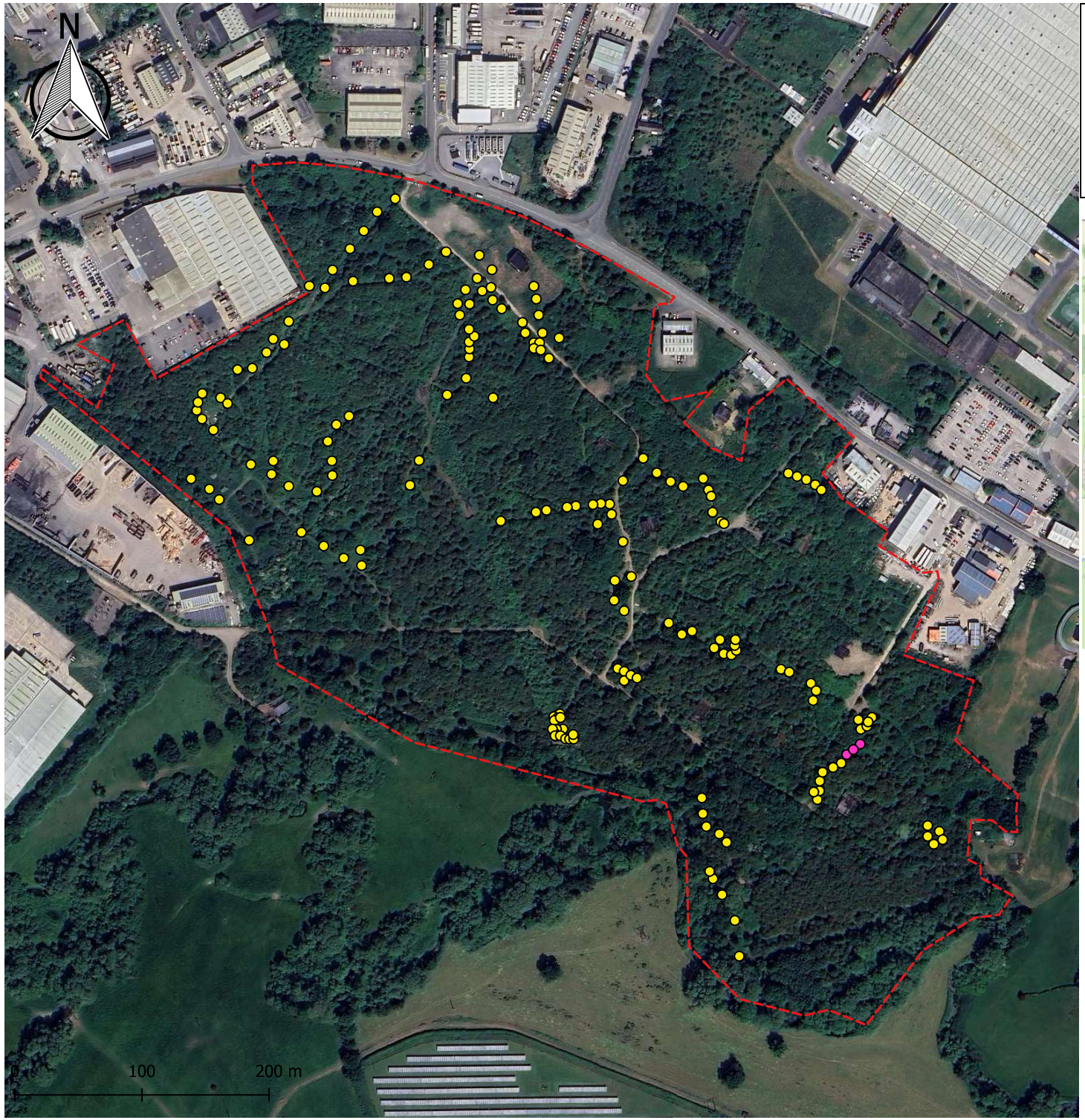
	Pond number	P1		P1A		P2		P3		P3A		P4	
	Grid reference	SJ 38537 49328		SJ 38562 49469		SJ 38616 49178		SJ 39007 48972		SJ 38800 749036		SJ 38996 49158	
	Survey year	2023	2025	2023	2025	2023	2025	2023	2025	2023	2025	2023	2025
SI number	SI description												
1	Geographic location	1	1	1	1	1	1	1	1	1	1	1	1
2	Pond area	0.05	0.05	0.2	0.2	0.4	0.4	0.3	0.3	0.05	0.05	0.3	0.3
3	Pond permanence	0.1	0.1	0.1	0.1	0.1	0.1	0.9	0.9	0.9	0.9	0.5	0.5
4	Water quality	0.67	0.33	0.33	0.33	0.33	0.33	0.67	0.67	0.33	0.33	0.67	0.67
5	Shade	0.6	0.4	0.2	0.2	0.2	0.2	1	1	1	1	1	0.6
6	Water fowl	1	1	1	1	1	1	1	1	1	1	1	1
7	Fish	1	1	1	1	1	1	1	1	1	1	0.67	1
8	Pond density	1	1	1	1	1	1	1	1	1	1	1	1
9	Terrestrial habitat	1	1	1	1	1	1	1	1	1	1	1	1
10	Macrophyte cover	0.3	0.3	0.3	0.3	0.3	0.3	0.9	0.85	0.3	0.3	1.00	0.80
HSI score:		0.48	0.43	0.46	0.46	0.49	0.49	0.83	0.83	0.58	0.58	0.76	0.74
Pond suitability:		**Poor**	**Poor**	**Poor**	**Poor**	**Poor**	**Poor**	**Excellent**	**Excellent**	**Below average**	**Below average**	**Good**	**Good**

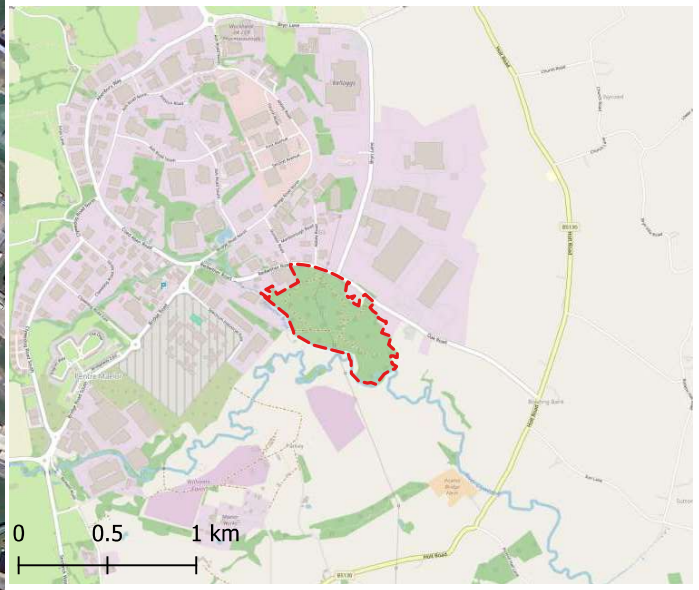
HSI Score	Pond Suitability
< 0.50	Poor
0.50 - 0.59	Below average
0.60 - 0.69	Average
0.70 - 0.79	Good
> 0.80	Excellent

Appendix 7 – Reptile survey plan

Reptile Survey Plan

Site: The Oaks, Wrexham
NGR: SJ 38699 49320
Author: Tom Kenwright
Date: 29/11/2024





KEY:

- Artifical refugia
- Artifical refugia used by amphibians
- Survey boundary

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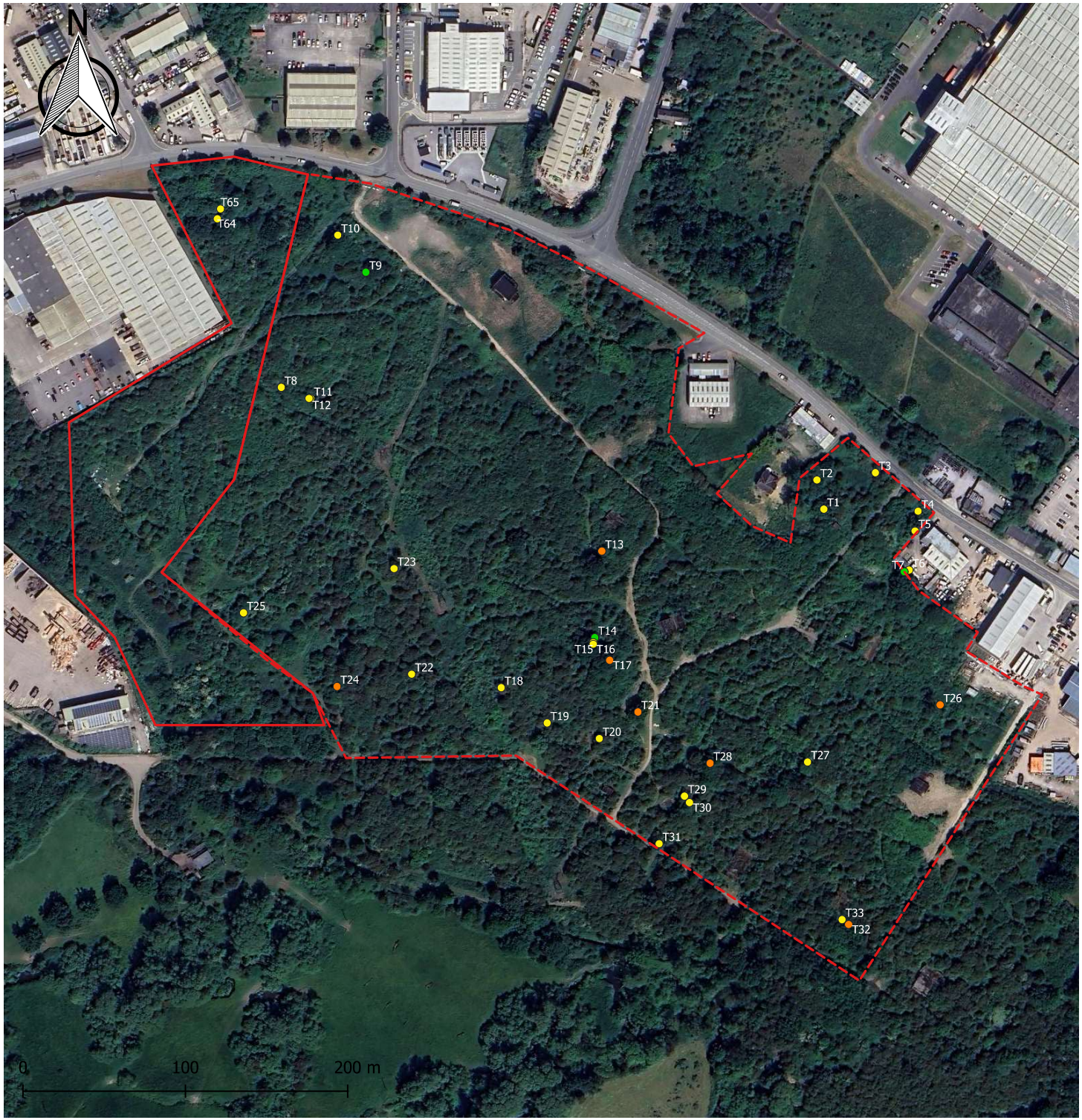
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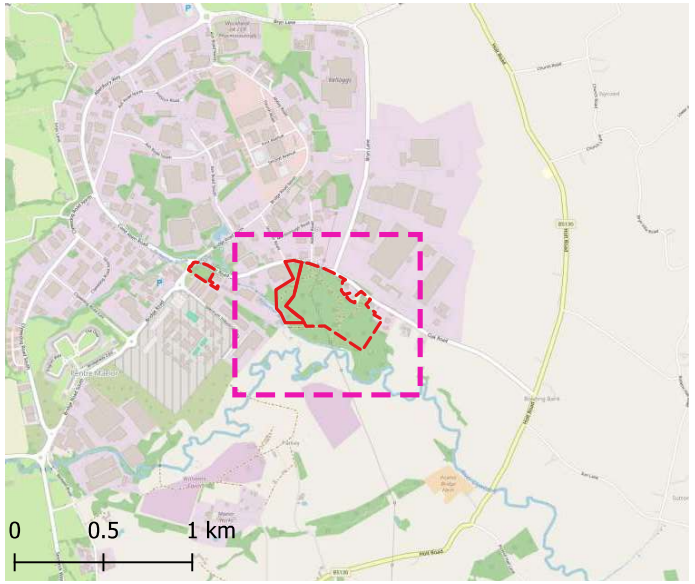
Appendix 8 – Badger survey plan

Appendix 9 – Bat tree survey plan

Aerial Tree Assessment

Site: The Oaks, Wrexham
NGR: SJ 38699 49320
Author: Tom Kenwright
Date: 02/04/2025





KEY:

- 2023 survey boundary
- 2024 survey boundary
- Trees with negligible bat roosting potential
- Tress with low bat roosting potential
- Trees with moderate bat roosting potential

Map data © 2025 Google, Imagery © 2025 Google

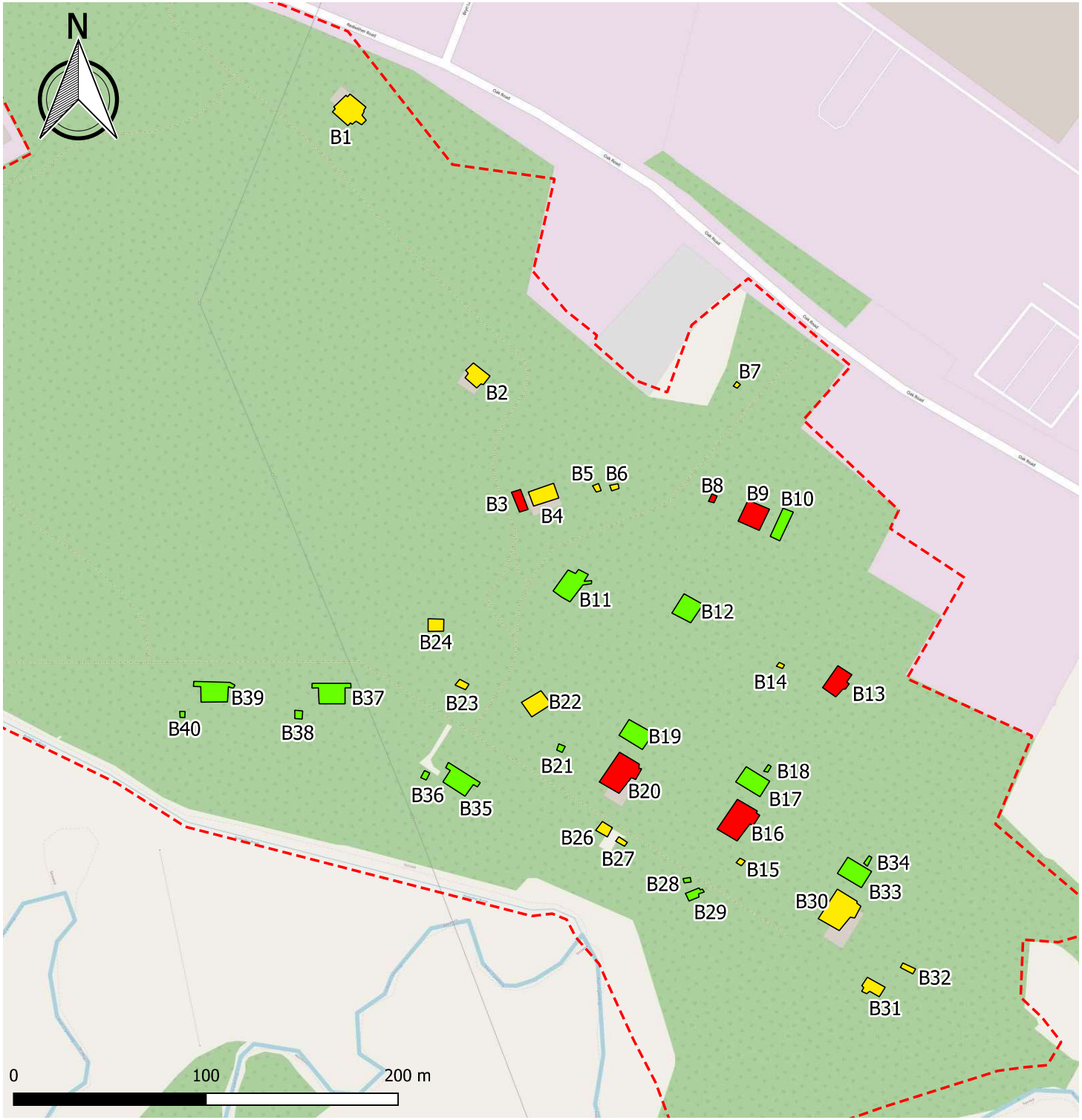
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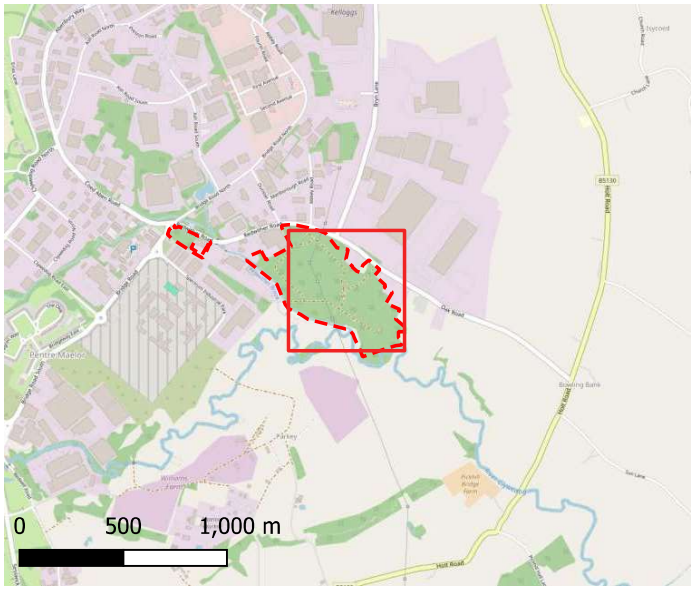
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Appendix 10 – Bat building survey plan

Bat Presence / Absence Report

Site: The Oaks, Wrexham
NGR: SJ 38786 49263
Author: Ysobella Cox
Date: 06.12.2024





Key

- Building containing confirmed bat roost. Works to be completed under a European Protected Species License issued by Natural Resources Wales
- Building with no confirmed bat roosts but potential to support roosting bats. Works to be completed under a non-licenced bat method statement.
- Building with negligible bat roosting potential. No further mitigation or compensation measures required.
- Survey Boundary

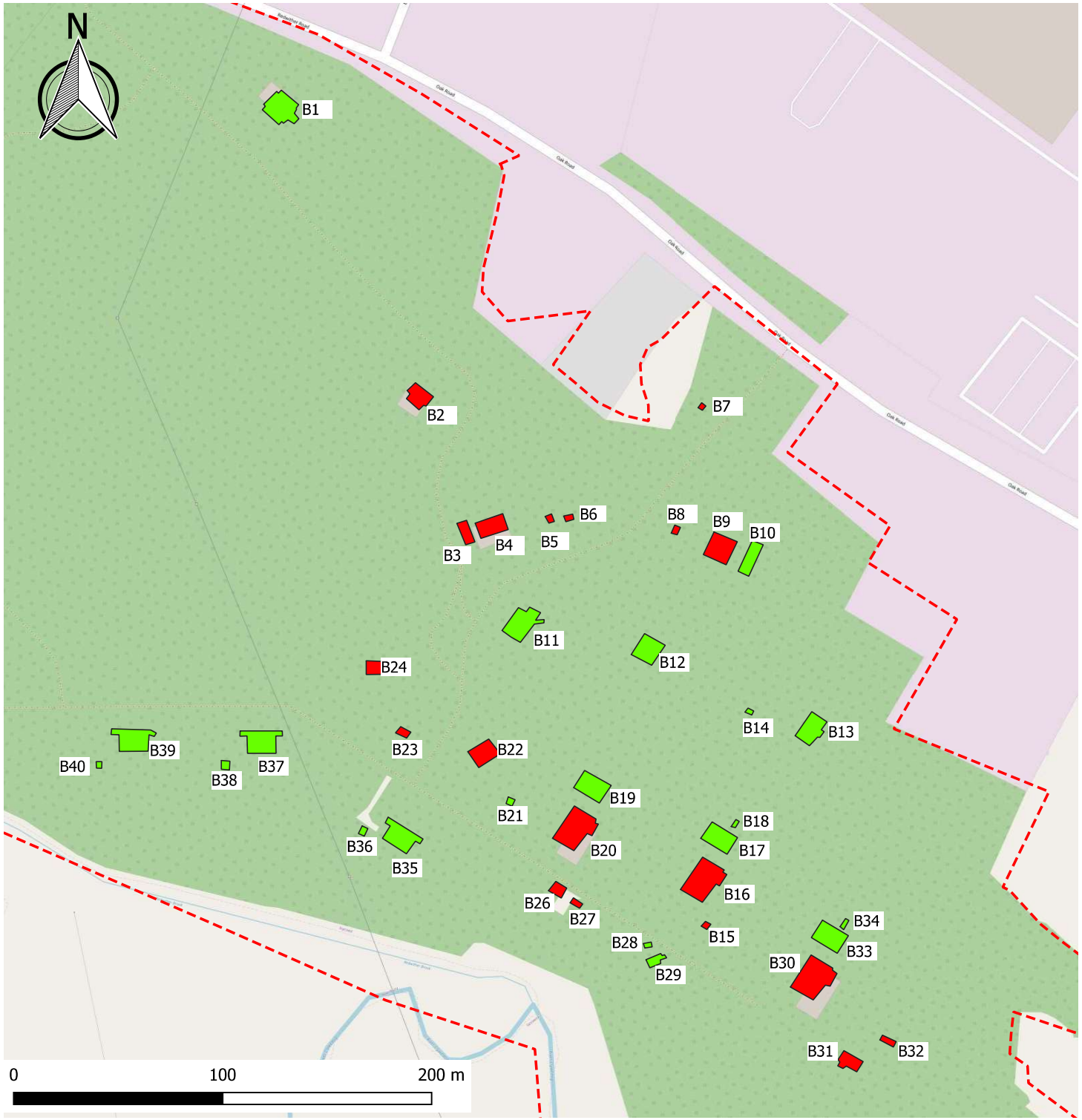
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Appendix 11 – Bat hibernation survey plan

Bat Hibernation Survey

Site: The Oaks, Wrexham
NGR: SJ 38786 49263
Author: Ben Cowell
Date: 01/12/2024





Key

- Hibernation potential
- Negligible potential
- Survey boundary

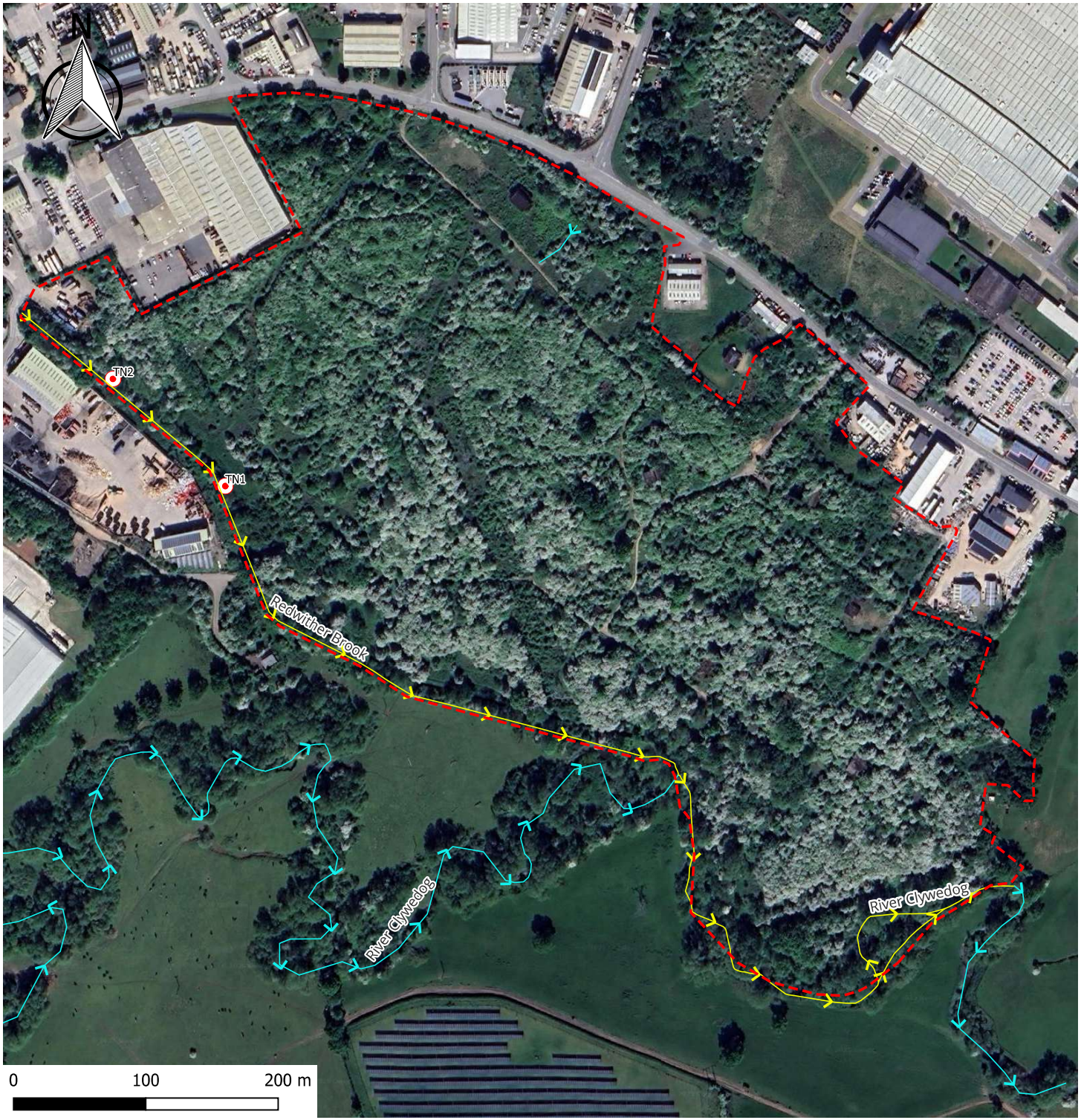
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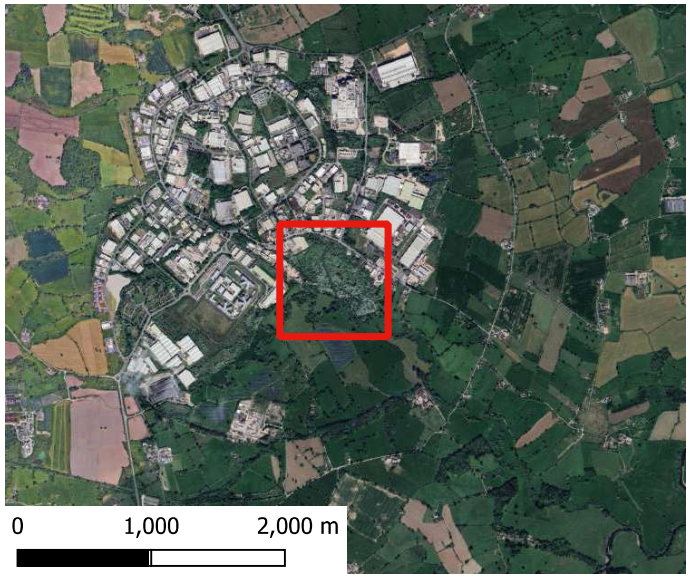
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Appendix 12 – Otter and water vole survey plan

Site Plan

Site: The Oaks, Wrexham Industrial Estate
NGR: (SJ) 38653 49314
Author: Harry Fox
Date: 02/09/2025





Key

- Target notes
- Surveyed sections
- Watercourse
- Site Boundary

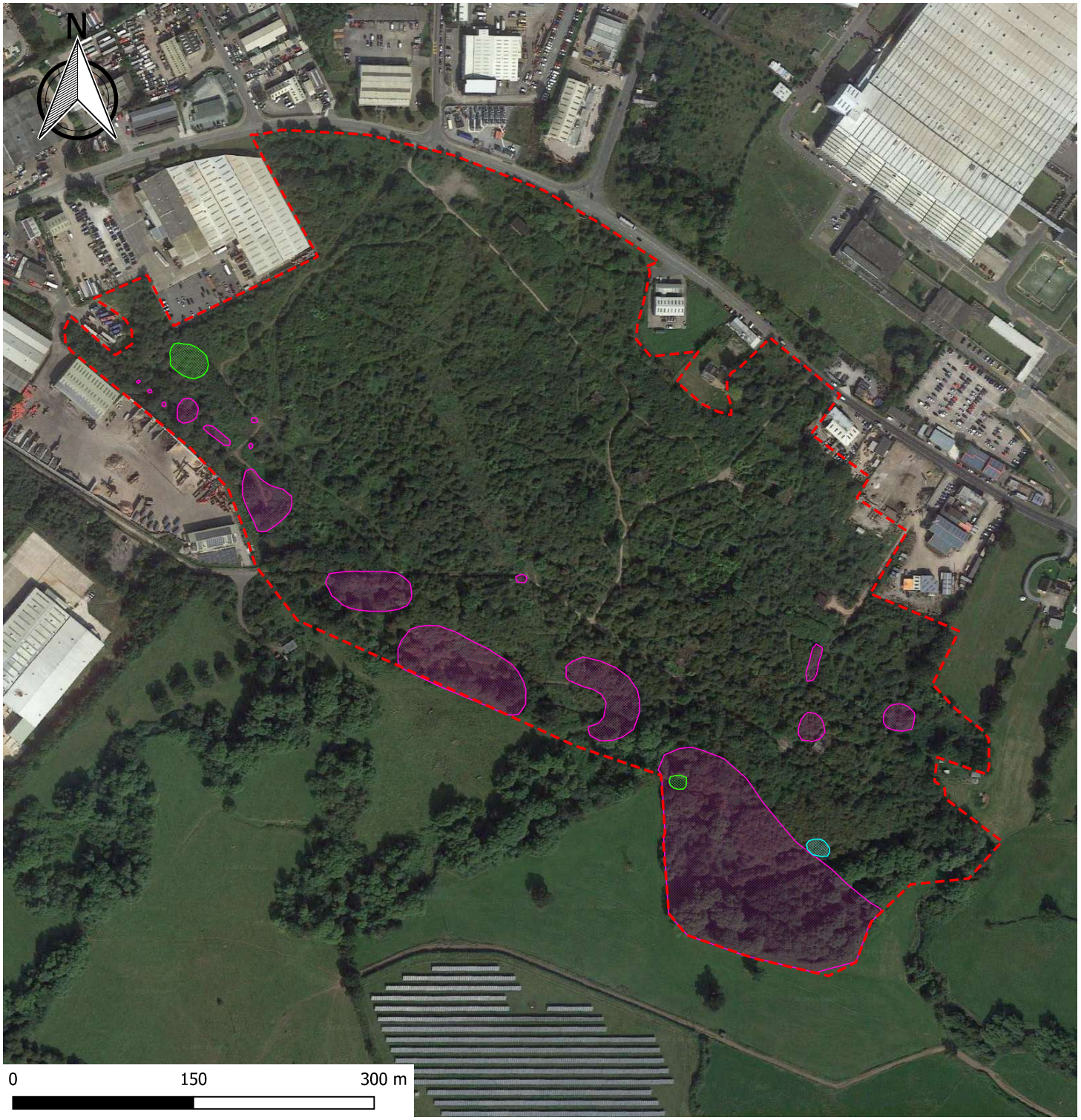
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Appendix 13 – Invasive species survey plan

Invasive Species Walkover

Site: The Oaks, Wrexham
NGR: SJ 38786 49263
Author: Ysobella Cox
Date: 10.01.2024





Key

- Montbretia
- Himalayan Balsam
- Japanese Knotweed
- Survey Boundary

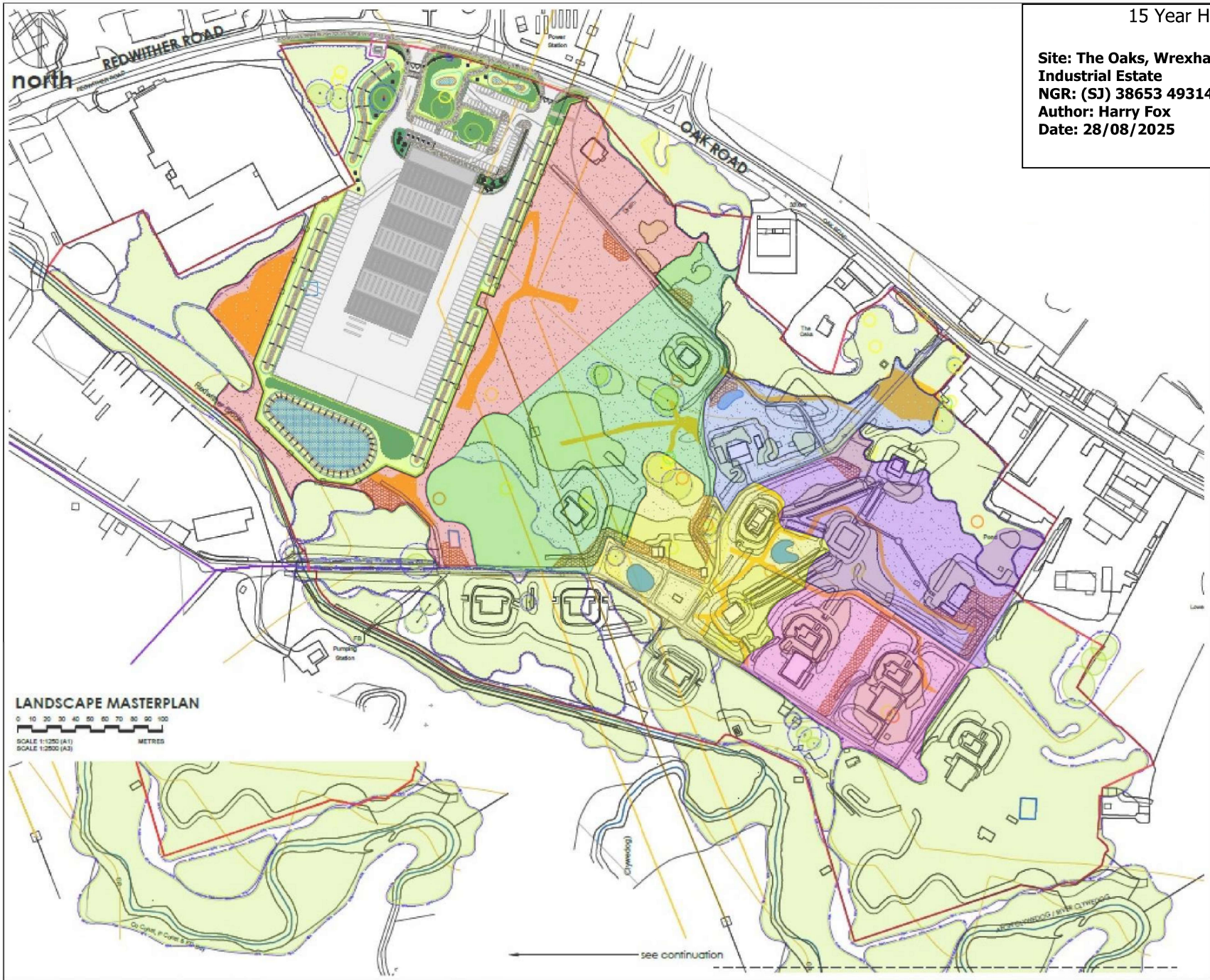
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Appendix 14 – Phasing plan

15 Year Habitat Managment Plan

Site: The Oaks, Wrexham Industrial Estate
NGR: (SJ) 38653 49314
Author: Harry Fox
Date: 28/08/2025



LANDSCAPE MASTERPLAN

0 10 20 30 40 50 60 70 80 90 100
METRES
SCALE 1:1250 (A1)
SCALE 1:2500 (A3)

Location Plan



Legend



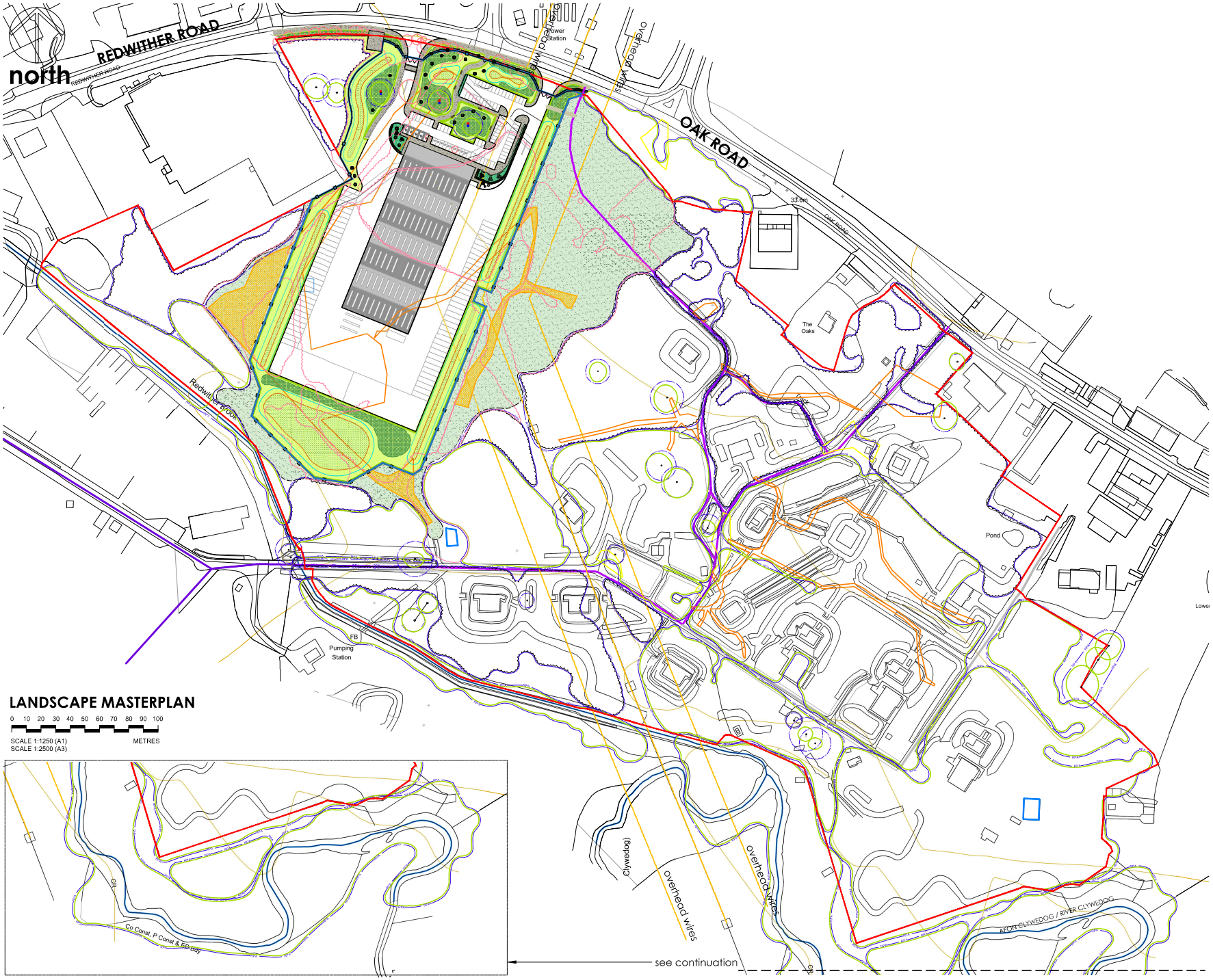
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Project	THE OAKS, OAK ROAD WREXHAM INDUSTRIAL ESTATE	Dwg No	311/LAND/L/104
Title	LANDSCAPE MASTERPLAN PROPOSED SITE AND NATURE RESERVE YEAR FIFTEEN	Scale	1:1250 @ A1 / 1:2500 @ A3
		Revision	P03
		Date	22/08/2025

Revision	Date	Details	Drawn	Checked	Reviewed
P01	07/02/2025	PRE-APPLICATION CONSULTATION	MD	XXXX	MD
P02	19/05/2025	PLANNING APPLICATION	MD	XX	MD
P03	22/08/2025	PLANNING APPLICATION & LEMP	MD	XX	MD

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Appendix 15 – Year 1 landscaping plan



LANDSCAPE MASTERPLAN

0 10 20 30 40 50 60 70 80 90 100

METRES

SCALE 1:1250 (A1)
SCALE 1:2500 (A3)

Notes

1. Dimensions are given in metres and millimetres as stated on the drawing.
2. Centre of site is located at approximately grid reference SJ 38740 49238.
3. Drawing must be reproduced in colour.

Location Plan



Legend

- EXISTING TREES TO BE RETAINED
- EXISTING TREES - ROOT PROTECTION AREA
- EXISTING TREE TO BE REMOVED
- EXISTING AREAS OF SCRUB HABITAT TO BE RETAINED
- EXISTING AREAS OF SCRUB HABITAT TO BE REMOVED
- EXISTING AREAS OF SPECIES RICH GRASSLAND
- EXISTING AREAS OF OPEN MOSAIC HABITAT
- EXISTING WATER FEATURE RETAINED
- EXISTING WATER FEATURE TO BE REMOVED
- PROPOSED UNITBUILDING
- PROPOSED NATIVE SPECIES STANDARD DECIDUOUS TREE
- PROPOSED NATIVE SPECIES SHRUB PLANTING
- PROPOSED ORNAMENTAL SHRUB AND HERBACEOUS PLANTING
- PROPOSED NATIVE MIXED SPECIES HEDGING
- PROPOSED NATIVE SPECIES WILDFLOWER AND GRASS MIX
- PROPOSED NATIVE GRASS MIX
- PROPOSED SHORT AMENITY GRASS MIX
- PROPOSED SWALE / ATTENUATION
- PROPOSED RESTORATION OF SPECIES RICH GRASSLAND AND MOSAIC HABITAT
- PROPOSED FOOTPATHS
- PROPOSED SITE ROADS AND PARKING
- EXISTING PUBLIC RIGHT OF WAY
- PROPOSED PERMISSIVE FOOTPATH

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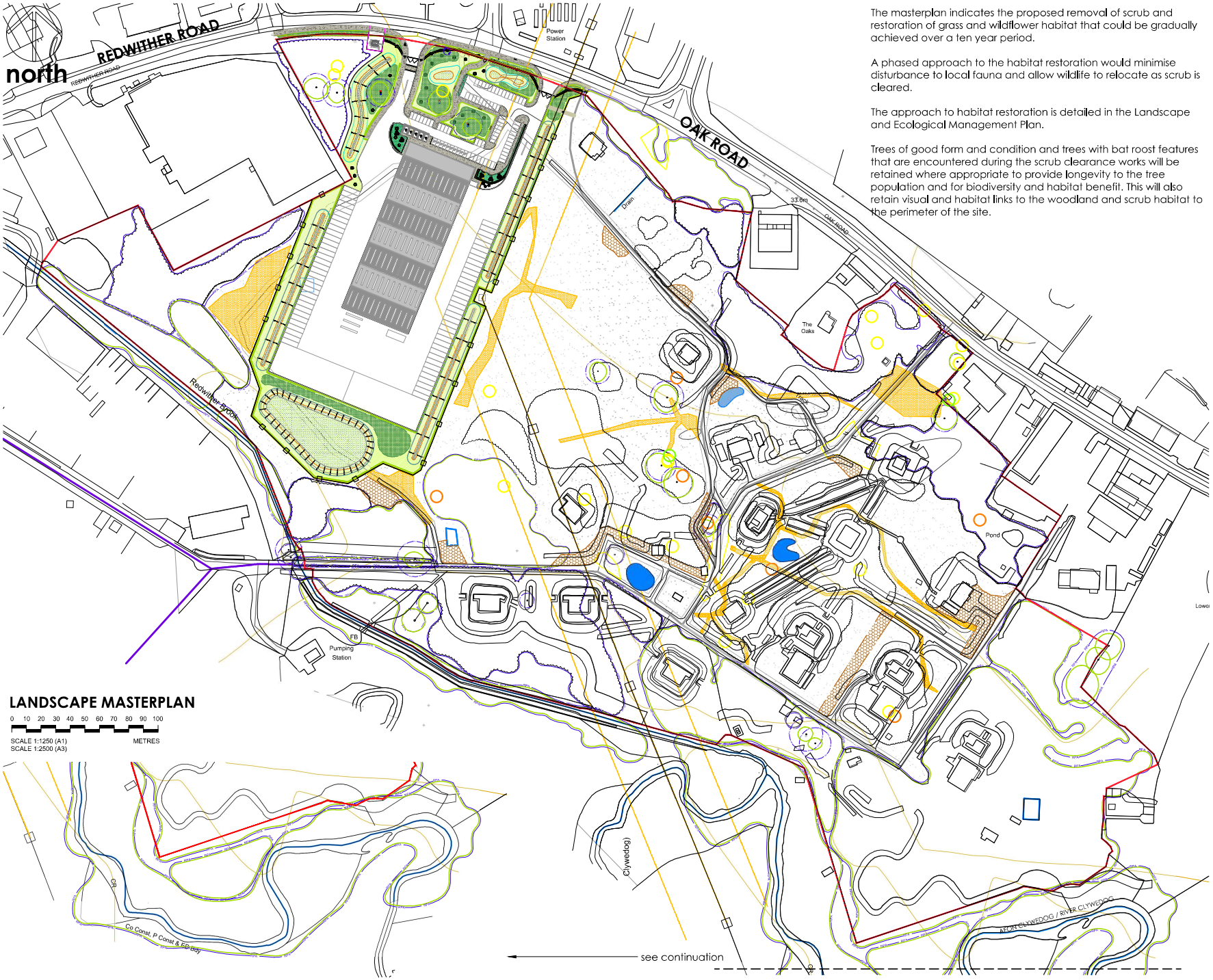
Project	THE OAKS, OAK ROAD WREXHAM INDUSTRIAL ESTATE	**Dwg No** 311/LAND/L/100	**Revision** P03
Title	LANDSCAPE MASTERPLAN PROPOSED SITE AND NATURE RESERVE YEAR ONE	**Scale** 1:1250 @ A1 / 1:2500 @ A3	**Date** 22/08/2025

Revision	Date	Details	Drawn	Checked	Reviewed
P01	07/02/2025	PRE-APPLICATION CONSULTATION	MD	XX	MD
P02	19/05/2025	PLANNING APPLICATION	MD	XX	MD
P03	22/08/2025	PLANNING APPLICATION & LEMP	MD	XX	MD

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Appendix 16 – Year 15 landscaping plan



LANDSCAPE MASTERPLAN

0 10 20 30 40 50 60 70 80 90 100 METRES

SCALE 1:1250 (A1)
SCALE 1:2500 (A3)

The masterplan indicates the proposed removal of scrub and restoration of grass and wildflower habitat that could be gradually achieved over a ten year period.

A phased approach to the habitat restoration would minimise disturbance to local fauna and allow wildlife to relocate as scrub is cleared.

The approach to habitat restoration is detailed in the Landscape and Ecological Management Plan.

Trees of good form and condition and trees with bat roost features that are encountered during the scrub clearance works will be retained where appropriate to provide longevity to the tree population and for biodiversity and habitat benefit. This will also retain visual and habitat links to the woodland and scrub habitat to the perimeter of the site.

Notes

1. Dimensions are given in metres and millimetres as stated on the drawing.
2. Centre of site is located at approximately grid reference SJ 38740 49238.
3. Drawing must be reproduced in colour.

Location Plan



Legend

- EXISTING TREES TO BE RETAINED
- EXISTING TREES - ROOT PROTECTION AREA
- EXISTING AREAS OF SCRUB HABITAT TO BE RETAINED
- EXISTING WATER FEATURE TO BE REMOVED
- TREE WITH NEGLIGIBLE BAT ROOST POTENTIAL
- TREE WITH LOW BAT ROOST POTENTIAL
- TREE WITH MODERATE BAT ROOST POTENTIAL

DEVELOPMENT SITE

- PROPOSED UNIT/BUILDING
- PROPOSED NATIVE SPECIES STANDARD DECIDUOUS TREE
- PROPOSED NATIVE SPECIES SHRUB PLANTING
- PROPOSED ORNAMENTAL SHRUB AND HERBACEOUS PLANTING
- PROPOSED NATIVE MIXED SPECIES HEDGING
- PROPOSED NATIVE SPECIES WILDFLOWER AND GRASS MIX
- PROPOSED NATIVE GRASS MIX
- PROPOSED SHORT AMENITY GRASS MIX
- PROPOSED SWALE / ATTENUATION
- PROPOSED FOOTPATHS
- PROPOSED SITE ROADS AND PARKING

NATURE RESERVE

- EXISTING PUBLIC RIGHT OF WAY
- PROPOSED PERMISSIVE FOOTPATH
- EXISTING AREAS OF SPECIES RICH GRASSLAND
- EXISTING AREAS OF EPHEMERAL / SHORT PERENNIAL VEGETATION
- EXISTING WATER FEATURE RETAINED
- AREA TO BE RESTORED TO SPECIES RICH GRASSLAND
- AREAS TO BE CREATED AS DISTURBED GROUND
- PROPOSED POND - ALLOWED TO COLONISE NATURALLY (1m DEEP)
- PROPOSED POND - TO BE PLANTED WITH NATIVE SPECIES MARGINAL PLANTING (1.2m and 2.2m DEEP)

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Project	THE OAKS, OAK ROAD WREXHAM INDUSTRIAL ESTATE	**Dwg No**	311/LAND/L/104	**Revision**	P03
Title	LANDSCAPE MASTERPLAN PROPOSED SITE AND NATURE RESERVE YEAR FIFTEEN	**Scale**	1:1250 @ A1 / 1:2500 @ A3	**Date**	22/08/2025

Revision	Date	Details	Drawn	Checked	Reviewed
P01	07/02/2025	PRE-APPLICATION CONSULTATION	MD	XXXX	MD
P02	19/05/2025	PLANNING APPLICATION	MD	XX	MD
P03	22/08/2025	PLANNING APPLICATION & LEMP	MD	XX	MD

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