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AMPHIBIAN CONSERVATION PLAN

At

The Oaks
Wrexham Industrial Estate
Wrexham
LL13 9RG

NGR: SJ 38806 49238

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1 INTRODUCTION

1.1 Author and qualifications

This report is written and compiled by Harry Fox BSc MRes, Graduate Ecologist for United Environmental Services (UES) Ltd.

This report has been verified by Tom Kenwright BSc MSc ACIEEM, Senior Ecologist. Tom is licensed by Natural Resources Wales (NRW) to disturb, take and handle great crested newts (GCNs) *Triturus cristatus* under licence number S092335/1.

1.2 Proposed development and previous survey information

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. This Eco-Heritage Zone will be subject to ecological restoration and enhancement measures, with sections made accessible to the public.

To inform the planning permission, GCN impact assessment, presence/absence, population size class assessment (PSCA) and environmental DNA (eDNA) surveys were undertaken of the proposed development site by UES across 2023 to 2025. For full details, please refer to the following reports:

- Great Crested Newt Impact Assessment (2023) – Report reference UES03918/22
- Great Crested Newt Population Size Class Assessment (2024) – Report reference UES03918/34
- Updated Ecology Walkover Survey & GCN Impact Assessment (2025) – Report reference UES03918/46

A record search undertaken by UES in 2023 identified GCN records within the site boundary. One record from 2004 reported 13 adults in an unspecified pond, while a 2021 record noted a single adult and one egg, also in an unspecified pond. As the grid references do not align with existing waterbodies, it is presumed these ponds have either dried up or the records lack spatial accuracy. Numerous off-site GCN records were returned from all directions, with the nearest located approximately 62m north and 162m east of the site. Additional records include common frog *Rana temporaria* on-site, and smooth newt *Lissotriton vulgaris*, palmate newt *Lissotriton helveticus*, and common toad *Bufo bufo* within a 2km radius.

Six ponds and one flowing ditch are present on site. The River Clywedog borders part of the southern boundary, while the Redwither Brook runs along the south-western boundary. The River Clywedog, Redwither Brook, and the onsite ditch are considered unsuitable for use by breeding amphibians, particularly GCNs, due to their fast flow rate and the likely presence of fish, particularly in the River Clywedog.

The terrestrial habitats within the site are 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 exposed 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 in the table below:

Table 1 – 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 breeding	-	Eggs confirm continued 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 Eggs folds confirm breeding	-	Positive eDNA (2/12).

Ponds 1, 1A and 2 have an absence of any aquatic or marginal vegetation and dry annually. 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 confirmed as a breeding site for GCNs, with eggs recorded. However, in 2023, only a single individual was observed during two of six PSCA surveys. A 2025 walkover survey found the pond had declined in suitability due to heavy scrub encroachment, accumulation of leaf litter and organic debris, and dense emergent vegetation such as greater reedmace *Typha latifolia*. These factors have significantly reduced the pond's area and depth of standing water. Without management, such as scrub clearance and removal of organic material buildup, the pond will likely continue deteriorating in its suitability for GCNs.

No GCN egg folds were observed within Pond 4 during an updated walkover survey in 2025. 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 not regularly or currently 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 3 is a confirmed breeding site for GCNs, supporting a medium-sized population with a peak count of 48 individuals recorded during 2023 surveys. During the subsequent 2025 walkover survey, a slight decline in habitat quality was observed, due to organic material buildup, scrub encroachment, and dense emergent vegetation, which all reduced the area of open standing water. Nevertheless, the pond remains suitable for breeding, with egg folds observed.

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 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 individuals 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 not be enough to reach the threshold of 100 individuals needed for a large population.

Almost all GCN activity observed on site has been 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 GCNs, contributing towards the nationally important status of the GCN meta population within the wider Wrexham Industrial Estate.

1.3 Report objectives and structure

This document has been prepared in order to provide the information detailed within the proposed condition suggested in consultation comments provided by NRW on the 14th July 2025 (reference CAS-282028-F0S5). Proposed Condition 2 reads as follows:

"Condition 2: No phase of development, including site clearance, shall commence until a great crested newt (GCN) Conservation Plan has been submitted to and approved in writing by the Local Planning Authority. The Conservation Plan should include, but not necessarily be limited to:

- *The submission (to include proposed timescales and reporting requirements) of further details and associated plans concerning GCN avoidance and mitigation measures including, but not limited to:*
    - *Fence specifications, locations, construction and maintenance (one-way amphibian fence, prior to and throughout the duration of construction operations)*
    - *Considerations of access issues (including PRoW if applicable)*
    - *Monitoring and maintenance requirements and supervised removal.*
    - *The detail of habitat retention, enhancement and creation proposals associated with terrestrial and aquatic habitats. Details to include plans and timescales.*

- *The submission of a long-term site management plan (not less than 25 years) that includes:*
- *Details of habitats and ecological features present or to be created, both in written form and shown on appropriate drawings, including planting plans*
- *Defined aims and objectives (including defined key performance indicators for long term monitoring indicators)*
- *Details of the desired condition for each habitat and criteria to determine when habitats have achieved this.*
- *Details of short and long-term habitat management prescriptions to both achieve and maintain the desired condition.*
- *Details of monitoring methodologies for habitats and species*
- *Details of scheduling and timings of activities*
- *Contingency measures if fish or invasive non-native species (INNS) are detected. Current and any proposed changes to the freehold tenure of the compensation area (tenure of the ecology and heritage area to be approved by the Local Planning Authority)*
- *Persons or bodies responsible for undertaking management and surveillance together with required skills and competencies*
- *Site liaison and wardening*
- *Licensing requirements for management surveillance and other defined activities*
- *Biosecurity measures which consider invasive non-native species and specific diseases (e.g., Chytrid) to prevent the introduction of and where present control, removal or for the long-term management of invasive species both during construction and operation.*
- *Details of reporting, review and update of the plan (informed by monitoring) at specific intervals as agreed.*

- *The submission of detailed measures including plans designed to prevent the accidental capture/killing of GCN during operational phases of the scheme (including the installation and maintenance of an amphibian-friendly surface water management system that does not include gully pots (or other similar features).*
- *Details of timing, phasing and duration of construction activities and conservation measures.*
- *Post-construction monitoring and record dissemination for a period of not less than 25 years. Methodology shall include annual GCN abundance counts and Habitat Suitability Index (HSI) assessments. All ponds (including SuDS water bodies) to be added to the Wales GCN Monitoring Scheme, with individuals/bodies being identified as being responsible for monitoring and reporting works.*

The Conservation Plan shall be carried out in accordance with the approved details".

This report should be read in conjunction with the Landscape and Ecology Management Plan (LEMP) that been prepared for the proposed development. The LEMP details how the site landscaping will be implemented, maintained, and managed, with clear responsibilities assigned to relevant organisations. This Amphibian Conservation Plan only addresses specific relevant mitigation, compensation and enchantment measures with regards to amphibians, particularly GCNs.

This report should also be read in conjunction with Appendices 1-5.

2 IMPACT ASSESSMENT

2.1 Impacts without mitigation

The GCN surveys indicate that the site supports a medium-sized population, with peak counts of one individual in Pond 4 and 48 individuals in Pond 3. No GCNs were recorded in onsite Ponds 1, 1A, 2, or 3A, with negative eDNA retuned for these waterbodies during the most recent surveys.

The development proposals are for the construction of a warehouse unit with associated landscaping and infrastructure. Ponds 1 and 1A will be removed, however both ponds are dry for most of the year and are no longer considered to function as aquatic habitats or to be suitable to support breeding GCNs.

Ponds 2, 3, 3A and 4 will be retained as part of the proposals and Ponds 2, 3 and 4 will enhanced as part of the scheme.

The proposed development avoids direct impacts to all known breeding ponds and retains the majority of suitable terrestrial habitat. However, some habitat loss will occur within the proposed Industrial Unit Compound, and there remains a risk of impacts during construction. Scrub clearance for grassland restoration within the wider Eco-Heritage Zone also presents risks and will involve the temporary but short-term removal of terrestrial habitat.

Without mitigation, the construction phase of the development could have the following impacts on GCNs, other amphibian species and their associated habitats:

- Killing or direct harm
- Disturbance
- Loss 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.

2.2 European Protected Species mitigation licence

Due to the anticipated impacts on GCNs without mitigation, works will need to proceed under the mitigation and compensation measures detailed in sections 3 and 4 of this report. Works will not commence until a European Protected Species (EPS) mitigation licence has been granted by NRW.

The information provided below will be used by NRW to determine whether the proposed activity affecting the European protected species meets the requirements of Regulations 55(2)(e), 55(9)(a) and 55(9)(b) within The Conservation of Habitats and Species Regulations 2017. These are known as the 'purpose', 'no satisfactory alternatives' and 'favourable conservation status' tests.

2.2.1 Consideration of Regulation 55(2)(e): The 'Purpose' Test

Regulation 55(2)(e) "in the interests of preserving public health or public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment".

The development is proposed in part for reasons of overriding public interest and for socio-economic reasons. The sections of site where built development will take place lie within the settlement line of the Wrexham Industrial Estate, as detailed within the Wrexham Unitary Development Plan (UDP) 1996-2005 (adopted February 2005).

The benefits arising from the proposal predominantly include the provision of long-term employment opportunities in an area of high unemployment. The proposed works will also indirectly benefit the local community, for example bringing work and custom to local tradesmen, shops and restaurants / cafes, both in the construction and operational phases of the development.

Furthermore, the development includes the creation of an Eco-Heritage Zone, whereby the wider site will be retained, enhanced and subject to long-term management and monitoring. The development of a relatively small portion of the site provides the mechanism to secure long-term management and enhancement of the wider Wildlife Site as an Eco-Heritage Zone. Through the implementation of mitigation, compensation, and enhancement measures, the scheme will restore the ecological integrity of the Local Wildlife Site. The proposed enhancement works will also include the creation of accessible areas within sections of the Wildlife Site for the local community, providing access to green spaces.

2.2.2 Consideration of Regulation 55(9)(a): The 'No Satisfactory Alternative' Test

Regulation 55(9)(a) "that there is no satisfactory alternative."

All areas designated for built development fall entirely within the settlement boundary of the Wrexham Industrial Estate, as defined in the Wrexham UDP. The settlement line serves as a planning boundary that distinguishes between areas designated for development and those protected as open countryside. As such, areas within the settlement line have already been identified as broadly suitable for development, ensuring that development is concentrated in appropriate locations with existing infrastructure.

It is considered that there is no satisfactory alternative as the UDP has already identified the relevant part of the site as suitable for development. In determining the settlement line, the UDP gives consideration to other planning policies, especially those relating to protection of wildlife sites, green barriers and countryside.

There is considered to be no satisfactory alternative in terms of site design. All construction works will be confined to a small portion of the site, entirely within the area allocated for such use under the Wrexham UDP. The remainder of the site lies outside this allocation and will not be subject to any construction works. Furthermore, the proposed restoration of the Wildlife Site will significantly enhance its ecological value and strengthen its function as a 'green barrier' between the industrial estate and the surrounding countryside.

2.2.3 Consideration of Regulation 55(9)(b): The 'Favourable Conservation Status' Test

Regulation 55(9)(b) "that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range."

The mitigation measures outlined in this document are designed to ensure that GCNs are adequately safeguarded throughout the development works

The majority of the site will be retained and enhanced through restoration works followed by long-term management and monitoring, with targeted enhancements for protected species, including GCNs. The central aim is to restore the species-rich wildflower grassland and the mosaic of habitats for which the site was originally designated. These restored habitats along with retained woodland, scrub, and ponds, will be subject to long-term management focused on maintaining and improving their suitability for supporting GCN populations.

The location of the development within the north-western corner of the site, adjacent to existing roads and industrial infrastructure, avoids severance of key commuting corridors to the north, south, and east. Consequently, the proposed development is expected to have a negligible effect on GCN movements and will not lead to fragmentation or isolation of the on-site population from the broader meta-population.

3 MITIGATION MEASURES

As GCNs are known to be present on site and could adversely be impacted by the proposals, an EPS mitigation licence will need to be granted by NRW to allow the works to commence. This EPS licence can only be granted once planning permission has been secured and will need to be in place prior to the start of any works on site that could impact GCNs. NRW aim to process licence applications within 30 working days.

Given the distance between the proposed working area and Pond 3, which is considered likely to be the only breeding pond currently in use on 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 proposed construction area, 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. As such, it is considered that a full trapping and translocation scheme would be disproportionate to the risk of potential adverse impacts.

One-way exclusion fencing

Despite the limited potential for GCNs to be present within the proposed working area, there remains some, albeit limited potential to adversely impact the low number of GCNs and other amphibian species that may use this area for foraging, commuting or sheltering on an occasional basis.

As such, it is proposed that the designated construction area will be enclosed with temporary one-way exclusion fencing prior to the commencement of any works on site (except for ecological enhancement works within the wider site and vegetation management works required to facilitate the fence installation). This fencing will be angled to prevent amphibians from entering the construction zone, while allowing any individuals (or other wildlife) within the area to exit safely.

The proposed construction area is predominantly bordered by suitable terrestrial habitat, however adjacent habitats to the north and north-west include barriers to amphibian movement including Oak Road and expanses or urbanised land (buildings and hardstanding). These features provide no opportunities for GCNs and are very unlikely to be crossed by commuting amphibians. As such, the fencing of these sections of the perimeter are not considered to be necessary, allowing unimpeded access to the site from Oak Road without the need to install amphibian grids. See Appendix 1 – Amphibian fencing plan, for the proposed location of exclusion fencing.

The exclusion fencing will either be traditional GCN perimeter fencing that is installed at an angle that would allow amphibians to pass over it and to exit the working area, or will be comprised of specific one-way fencing material, such as the ACO One-way Amphibian Fence. If standard GCN perimeter fencing us to be used and installed at an angle, it will be a semi-permanent material that is stabilised against ultraviolet (UV) damage and designed to last up to 5 years. An example product is the Caudon Semi Permanent Newt Fencing. The supplier/make or model of fencing is to be determined at the time based on availability etc. However, all material used will be sourced from a reputable supplier (such as Caudon or Wildlife Fencing) and will be approved by the project ecologist prior to installation.

The amphibian fencing will then remain in place for the duration of the construction phase of the development works.

Removal of vegetation required to facilitate the installation of the one-way fencing will be undertaken under the supervision of a licenced ecologist, or an ecologist appointed as an accredited agent who is deemed sufficiently experienced by the licence holder. The vegetation will be cut / mown to a height of approximately 5-10cm, to facilitate a detailed finger-tip search for amphibians without any risk of harm. Following a detailed inspection of the fence route and a finger-tip search by the supervising ecologist, the groundbreaking works and installation of the amphibian fencing will proceed. It is considered that an ecologist does not need to be in attendance during fence installation, however the fence must be checked and deemed satisfactory by a suitability qualified ecologist upon the completion of its installation.

The removal of vegetation above 5cm in height has no potential to adversely impact GCNs provided it is undertaken sensitively under ecological supervision. As such, it considered that vegetation clearance works required to facilitate the installation of the one-way fencing can be undertaken in advance of the licence approval, provided it is undertaken sensitively as detailed above. This will give more capacity to undertake the clearance works at an appropriate time of year, e.g. avoiding nesting bird season. In the unlikely event that a GCN is observed during vegetation clearance prior to licence approval, works in this area will stop immediately. Following the approval of the GCN licence, the remaining vegetation below 5-10cm in height will be removed and the fencing will be installed.

Maintenance and removal of one-way fencing

Following its installation, the one-way fencing will be reviewed by a suitably experienced ecologist to ensure correct installation. Any issues will be recorded and rectified as soon as possible.

The fencing will be subject to monthly inspections to ensure that they remain intact and functional, with no potential points of access for amphibians. These monthly inspections will also need to be undertaken by an ecologist. Any issues will be recorded and rectified as soon as possible.

Following the completion of the construction phase of the development, the one-way fencing will then be removed in suitable weather conditions (i.e. when nighttime temperatures exceed 5°C) under ecological supervision.

Vegetation removal within the construction area

Given the limited potential for GCNs to be present within the proposed working area and the limited risk of impacts from vegetation clearance works, it is considered that vegetation clearance works to a minimum height of 10cm within the one-way fencing can take place without the need for ecological supervision (unless it is required to protect other taxa such as nesting birds). It is also considered that there is no need for specific timing restriction for vegetation removal or subsequent works within this area.

Following the clearance of vegetation to a minimum height of 10cm, no further works will take place for a period of at least 48 hours, to allow amphibians to exit the site of their own accord. Following this 48-hour period, a licenced ecologist or a suitability qualified accredited agent will attend site to provide a toolbox talk to contractors, to undertake a fingertip search and removal of potential refugia, and to oversee the removal of large stumps and other sensitive features where deemed necessary.

Vegetation removal within the wider Eco-Heritage Zone

The enhancement works within the Eco-Heritage Zone include the removal of large areas of dense scrub, which is necessary to reverse the homogenisation of the site, create a mosaic of habitats and restore the Wildlife Site.

These enhancement measures, including scrub clearance, will be delivered through a 15-year phased programme, comprising six phases at three-year intervals (see Appendix 3 – Phasing Plan). This approach enables adaptive management, allowing lessons learned from earlier phases to inform subsequent interventions. It also minimises ecological disruption by staggering the otherwise large-scale removal of scrub, thereby reducing immediate impacts on species currently utilising these habitats (including GCNs and other amphibians) and allowing time for newly created habitats to establish and function as ecological replacements.

Scrub clearance to facilitate grassland removal will be undertaken outside of the nesting bird season and will be completed in September or October. Scrub will be cut to a height of 10cm, arisings will be collected, and this area will be left for at least 48 hours to allow any sheltering GCNs and other wildlife to vacate the area. Any scrub clearance within 100m of Ponds 3 and 4 (known to be in use by GCNs) will be undertaken under ecological supervision, to ensure that the potential risk to GCNs is reduced to the lowest possible level.

Following the minimum 48-hour period, an ecologist will oversee the removal of all stumps and the top 5cm of topsoil to remove the build-up of nutrients from the recent scrub growth. The removal of a thin layer of topsoil is favoured over deep top-soil removal or soil reversion given the presence of grassland indicator species and an established seedbank, in addition to a reduced risk of impacts to GCNs. Topsoil and stump removal will be undertaken in October or November, prior to the peak GCN hibernation period.

Works within the wider Eco-Heritage Zone with the potential to adversely impact GCNs are limited to scrub clearance and ground works, both of which are short-term impacts taking place over single or a small number of days. Given this and that these works are being undertaken to enhance the ecological value of the wider site, it is not considered necessary or proportionate to install amphibian fencing (one-way or standard) and to undertake trapping or translocation scheme for these works.

Reasonable avoidance measures

The following reasonable avoidance measures will be implemented at all times during the construction phase of the development, and during any habitat creation or enhancement works within the Eco-Heritage Zone:

- Any potential hibernacula created on site during the construction works are to be removed by hand. If hibernacula cannot be removed by hand e.g., due to its weight, it will be lifted vertically opposed to being dragged horizontally and the area will be checked immediately afterwards for sheltering wildlife. Hibernacula could include piles of brash, rubble, bricks, debris, brash piles etc.

- No excavations are to be left open overnight. If this is not feasible a plank should be left within the excavation at a 45-degree angle to allow trapped wildlife to escape. Any open excavations should be checked for trapped wildlife in the morning prior to start of works on site.

- All open excavations are to be checked for trapped wildlife immediately prior to backfilling.

- Where possible, materials will be stored on pallets off the ground in order to reduce the risk of amphibians sheltering underneath them.

Removal of amphibians from the working area

In the unlikely event any GCNs or other amphibians are found within the working area during the development works, they will be captured by hand and translocated to suitable area of cover outside of the working area but within the wider Eco-Heritage Zone.

Operational phase of the development

During the operational phase of development, gully pots will be installed on site and will either be set back, covered with a mesh to prevent amphibians from falling within or will be fitted with a means of escape such as an amphibian ladder. The supplier/make or model of amphibian ladders will be determined at the time based on availability etc. However, all material used will be sourced from a reputable supplier will be approved by the project ecologist prior to installation. Examples of suitable amphibian ladders include the ACO Wildlife Gully Ladder or the British Herpetological Society (BHS) Amphibian Gully Pot Ladder.

Following the installation of set-back gully pots, meshed gully pots or amphibian ladders, a check of their correct installation will be undertaken by an ecologist, and any issues rectified as soon as possible.

Summary

The above measures will ensure the protection of GCNs and other common amphibian species using the site. These measures will form part of the EPS mitigation licence application and will therefore need to be agreed with NRW. As such, these measures may be subject to minor changes and will be implemented in accordance with the approved EPS mitigation licence.

4 COMPENSATION & ENHANCEMENT MEASURES

The proposed development is expected to result in the loss of some suitable terrestrial habitat for GCNs, specifically areas of dense scrub. However, the affected area represents only a relatively small portion of the site. When considered alongside the proposed habitat enhancement measures which will improve and expand habitat availability and opportunities for the on-site GCN population, the overall residual impact is anticipated to be positive.

The measures set out below detail how any potential losses will be compensated for so that GCNs are provided with long-term habitat which fulfills their requirements. Full details of the proposed habitat creation and management measures are detailed within the LEMP that has been prepared for the development by UES. The habitat creation, enhancement and management will form part of the EPS mitigation licence application and will therefore need to be agreed with NRW. As such, these measures may be subject to minor changes and will be implemented in accordance with the approved EPS mitigation licence.

4.1 Pond creation and enhancement

Pond creation

Ponds 1 and 1A will be lost to facilitate the proposed development, however these ponds have degraded in quality over recent years due scrub encroachment, resulting from a lack of management. These ponds are very small in area, of low quality, and are dry for most of the year, making them unsuitable to support breeding GCNs. To compensate for their loss and provide an enhancement in the availability of GCN breeding opportunities on site, three new ponds of varying shape, size, and depth will be created within the wider Eco-Heritage Zone. Two of the new ponds will be created within Phase 3, the third in Phase 4 (see Appendix 3 – Phasing plan and Appendix 4 – 15-year Landscaping plan).

As the primary purpose of the ponds is to provide breeding opportunities for GCNs, they will largely share key design features, however subtle design differences are proposed to provide different conditions and ecological niches, targeting a range of species.

The ponds will vary in depth to ensure a variety of ecological niches and provide a range of micro habitats. The two ponds created within Phase 3 will have a maximum depth of 1.5m and 2.5m, whilst the pond created in Phase 4 will have a maximum depth of 1m.

Ponds that hold water until late summer to allow GCN larvae to metamorphose and leave the water, but dry annually or every few years, are of the greatest value to GCNs as the regular drying ensures that fish cannot survive. However, during periods of extended dry weather, shallow ponds can rapidly lose water and dry up completely, potentially killing all newt larvae before they can metamorphose. This isn't considered to be a significant issue if a standalone event, as GCNs can have long-life spans and one year of breeding failure should not be catastrophic to the survival of the population. However, due to a trend in increasing annual temperatures, the proposed ponds have been designed to include a range of depths that will ensure suitable breeding habitat remains at all times. This will give the GCNs present a greater resilience to changing environmental conditions. Shallower ponds and deeper ponds are to be created as these are preferred by common toad *Bufo bufo*, which prefer to breed in water at a depth of 1.5m or more. In addition, a range of pond depths will ensure the site can support a greater range of aquatic and marginal plants and aquatic invertebrates, many of which specialise in shallow water habitats, or those that are more susceptible to drying.

To ensure structural diversity and sufficient egg-laying material for breeding GCNs are present, the drawdown zone and the shelf within the two ponds created in Phase 3 will be planted with a variety of marginal and emergent species in the next available planting season (April-June) following pond excavation.

In the longer term, these newly created ponds will also support many other plant species as part of a process of natural succession. The pond created within Phase 4 will not be planted and will instead be naturally colonised by emergent, marginal and aquatic plant species.

In order to regulate the oxygen levels in the pond, at least two submerged oxygenating plant species will be planted within all of three ponds in April-June in the second year following establishment, once water levels have settled. Suitable species include hornwort *Ceratophyllum demersum*, common water crowfoot *Ranunculus aquatilis* and spiked water milfoil *Myriophyllum spicatum*.

The proposals incorporate the creation of numerous swales and an attenuation basin within the Industrial Unit Compound. Whilst these features are primarily being created to manage surface water, their establishment and ongoing management will be partly driven by ecology, and they will provide an ecological benefit. The swales are expected to be dry for most of the year, however the attenuation basin may hold standing water and provide breeding opportunities for amphibians.

Retained ponds

The ponds currently present on site (see Appendix 2 – Pond Plan) are in varying stages of succession, however all ponds are approaching a late stage. Ponds in varying stages of succession is generally considered be beneficial, as it provides different niches and conditions, supporting a greater diversity of species than if ponds were all of the same age, size and depth. However, three of the ponds on site (1, 1a and 2) now remain dry for most of the year and are no longer considered to be aquatic habitats. A reduction in the suitability to support breeding GCNs has been observed within all ponds over the course of UES' involvement with the site. This is predominantly as a result of scrub encroachment, dense vegetation growth or the build-up of leaf litter, resulting in eutrophic conditions and a reduction in the depth and area of standing water.

Ponds 2, 3 and 4 will be retained and subject to ecological enhancement measures and long-term management and monitoring. Pond 3a is a series of three small, connected, water-filled concrete tanks that lack aquatic or marginal vegetation, with the exception of duckweed *Lemna spp*. This small aquatic feature provides limited opportunities for enhancement measures and will be retained and left unmanaged as part the proposals.

Pond 2 will be restored as part of Phase 1 of the ecological restoration works, through the clearance of scrub from around the perimeter of the pond. Leaf litter and other detritus that has built up within the basin of the pond will be removed, retaining the ponds shallow and gently sloping margins whilst ensuring the centre of the pond has a maximum depth of at least 1m. Following scrub clearance and excavation, this pond will not be planted and will instead be naturally colonised by emergent, marginal and aquatic plant species.

Pond 3 is the main GCN breeding pond on site, known to support a medium population. The pond is a large concrete lined and walled tank, with a depth of approximately 1m. The tanks walls extend approximately 1m from the ground and it is surrounded by dense scrub on all aspects. Aquatic and emergent vegetation is diverse and abundant, with willow saplings encroaching where substrate has accumulated at the margins of the pond. A reduction in the

quality of the pond and the availability of open standing water has been observed during UES' involvement with the project. This has been as a result of the build-up of leaf litter and other organic material, the encroachment of scrub and the choking of the pond by emergent vegetation. As part of Phase 1, this pond will be subject to enhancement measures to ensure its longevity and maximise its potential to support breeding GCNs.

As Pond 3 already supports an established GCN population, intervention will be minimal and limited to the removal of all encroaching willow scrub within the pond, removal of scrub around the margins of the pond to ensure it remains entirely unshaded, and the removal of leaf litter and built-up organic material within the base of the pond. Scrub removed will be cut to a height of 10cm using hand tools reduce the risk of impacts to GCNs sheltering within at ground level.

To reduce the build-up of leaf-litter within the pond while safeguarding GCNs and other amphibians present, these works will be timed to avoid sensitive life stages, with works scheduled for late autumn (October–early November) when GCNs are least likely to be present in the pond. This will prevent disturbance to eggs, larvae, breeding and hibernating adults.

Leaf litter and other organic material will be removed from one-third of the pond area, to minimise disruption and limit the area of disturbance. Material will be extracted using hand tools and low-impact methods (e.g. rakes, nets) to avoid sediment disturbance within the wider pond. Arisings will be temporarily stored on tarpaulins adjacent to the pond for at least 24 hours before disposal, allowing any amphibians and invertebrates within a chance to escape.

A licenced ecologist or suitably qualified accredited agent will oversee all work, ensuring compliance with licensing requirements and adaptive management if GCNs or other protected species are encountered. The proposed ongoing monitoring of the pond will inform the need for future clearance works.

Pond 4 is in a late successional stage and is being choked by emergent greater reedmace Typha latifolia and shaded by dense scrub at the margins. Despite this, the pond still holds standing water and functions as an aquatic habitat, albeit in a limited capacity. Ephemeral, late-stage ponds provide optimal conditions for many aquatic invertebrate species, a nationally scare example is the mud snail *Omphiscola glabra*. Given the retention of Pond 3 and the proposed creation of three new ponds that will be managed to maintain an early-mid successional state, this pond will largely be maintained in its current condition and subject to minimal management. As part of Phase 4 the pond will be subject to selective scrub clearance to ensure that no more than 50% of the pond's margins are heavily shaded, preventing the pond from drying completely and failing to function as an aquatic habitat. The pond will also be subject to the removal of a small quantity of the emergent vegetation, ensuring that no more than 75% of the ponds surface is covered. As with Pond 3, scrub clearance will be undertaken from September to February inclusive and removal of emergent vegetation will be undertaken from October to early-November inclusive. These works will also be undertaken under the supervision of a licenced ecologist or suitably qualified accredited agent.

Annual site inspections will inform the need for future scrub and vegetation removal, ensuring that scrub cover is maintained between 50-75% and emergent vegetation cover is maintained between 75-90%.

Ongoing pond management

Once fully established, newly created ponds and retained ponds will not require a great amount of management. However, ponds will be subject to long-term management and

monitoring, specifically focussing on the control of algal blooms, fish, non-native invasive and scrub encroachment.

If any of the swales or the attenuation basin are found to retain water during the summer months or for most of the year, they will be treated as aquatic habitats and managed as detailed ponds.

Full details of ongoing pond management and monitoring is provided within the LEMP report.

4.2 Terrestrial habitat creation and enhancement

The development will involve considerable ecological enhancement works to the large areas of retained habitat within the Eco-Heritage Zone. Large sections of mature scrub and woodland will be retained around the site margins and across the southern half of the site. Within the central areas of site, targeted scrub clearance will be undertaken to reinstate the wildflower grasslands that were once present and for which the LWS was designated.

Of the 21.8ha site boundary, approximately 17.8ha (81.6%) of the site will be retained or subject to habitat creation and enhancement. This includes the reinstatement of large areas of wildflower grassland as well as the creation of several ponds. Additionally, the retained areas of mature scrub, woodland, grassland and ponds will be enhanced. The proposed habitat creation and enhancement will provide high-quality terrestrial habitat for GCNs and other amphibians.

Although the enhancement works may temporarily reduce the suitability of habitat for GCNs, the newly established wildflower grassland and scrub mosaic will offer improved foraging and commuting opportunities for the onsite GCN population. These habitat enhancement activities will be delivered sensitively and in a phased manner over a 15-year period, with careful scheduling to minimise ecological impacts.

4.3 Hibernacula and log/brash piles

Hibernacula

As an additional ecological enhancement targeting GCNs, three amphibian hibernacula will be created during various phases of the restoration works, as shown within the Ecological Enhancements Plan at Appendix 5.

The hibernacula will be created by excavating a pit in the ground (0.5-1m deep, 0.5-1m wide, and 1-2m long). Ideally, the pits will then be filled using materials already present on site, including hay, brash, cut timber / logs and brick / rock hard-core, or the materials can be sourced from elsewhere if necessary. The pits will be piled up to a height of approximately 1m above ground level. Hibernacula will then be loosely capped with topsoil or turf, ensuring that access is still available through to the lower layers at the margins. The following diagram provides a visual representation of the hibernaculum, with the only additional requirement to the diagram being that a pit is first excavated.

The following diagram provides a visual representation of the hibernacula, with the only additional requirement to the diagram being that a pit is first excavated.

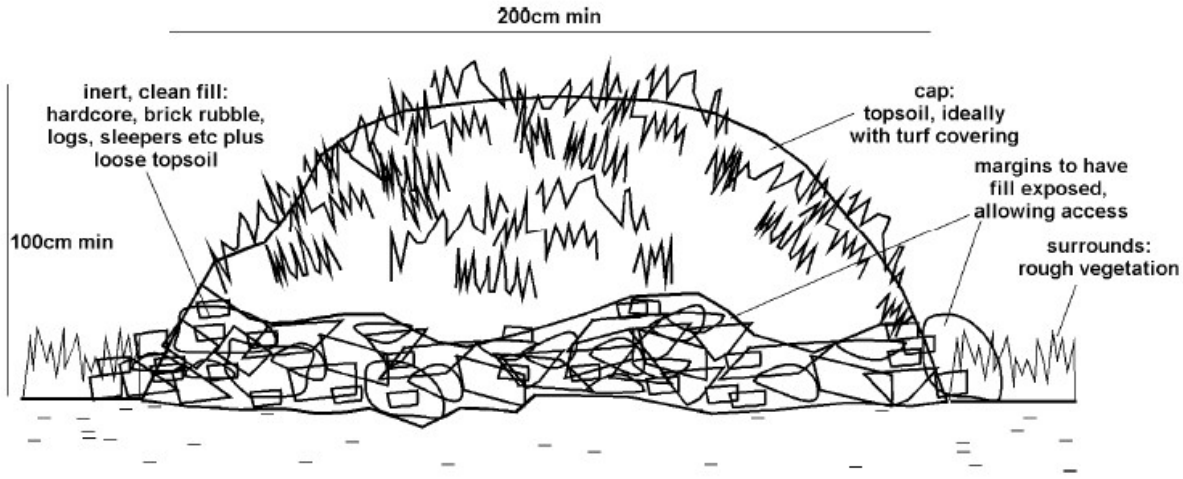


Figure 1 – Hibernacula design.

Log/brash piles

In addition, three log/brash piles will be created within the woodland and areas of dense scrub onsite to provide additional sheltering and hibernation opportunities for GCN.

The log / brash piles will be created using arisings from the initial scrub removal works. Felled trees and other arisings will be cut and manipulated so that a mix of different size logs and brash are present in each pile. This is to provide structural diversity and micro niches that favour different species e.g. larger cavities between logs for hedgehogs and smaller cavities for invertebrates.

Further log / brash piles will be created using the arisings from the long-term management of the scrub and woodland within the wider site,

5 MONITORING AND MANAGEMENT

5.1 Population monitoring

The GCN EPS mitigation licence secured from NRW prior to the start of works will require ongoing GCN population monitoring surveys of the retained and newly created ponds, including the created attenuation pond (if holding sufficient water). These monitoring surveys will be undertaken by UES (or any other appointed project ecologist). Any individuals undertaking these surveys must hold an appropriate NRW GCN survey licence or be listed as an accredited agent under another ecologist's licence.

Monitoring surveys will cover a 25-year period starting in the next available survey period following the commencement of the development works. The surveys will be undertaken in accordance with the Wales GCN Monitoring Scheme and will involve 2-3 annual torch counts and an egg search of all retained and created ponds, in addition to annual Habitat Suitability (HSI) Assessments of all ponds. All torch counts will be undertaken during the peak breeding season of mid-April to mid-May and all HSI assessments will be undertaken during at the optimal time of year, between April and September inclusive.

The results of the monitoring will be reported through the Wales GCN Monitoring Scheme with results uploaded annually by the 30th September.

The results of the monitoring surveys will also be used to identify the need for remedial measures and changes to the management plan to benefit GCNs. The need for intervention and potential changes to the management plan will be triggered by an absence of breeding (only once breeding has previously confirmed in the pond) and a notable decline in population size (i.e. more than 20% drop from the previous year). These negative indicators must be observed over two consecutive survey periods as yearly fluctuations are to be expected from external factors such as climate. Declines in population size within specific ponds are acceptable provided overall population levels on site are broadly stable or increasing.

The responsibility for commissioning ecological monitoring surveys lies with the landowner / developer / licensee (FI-REM) and must be undertaken by suitably qualified and GCN licensed ecologists, or their accredited agents.

5.2 Habitat creation, ongoing management and responsibilities

Responsibility

The responsibility for all initial habitat creation works lies with FI-REM (developer / landowner). FI-REM and any appointed contractors will be responsible for ensuring that the habitat creation works are carried out to in accordance with this document, the LEMP and the GCN EPS mitigation licence issued by NRW.

Subsequent management of the habitats within the Industrial Unit Compound will be the responsibility of the management company appointed to manage this part of the site.

Subsequent management of the habitats within the Restoration Area and the Wider Eco-Heritage Zone will be the responsibility of FI-REM (developer / landowner) and will be secured through a Section 106 Agreement. An ecology cooperative has been established and involves FI-REM (developer / landowner), United Environmental Services (ecological consultant), North Wales Wildlife Trust and Enfys Ecology Ltd. Butterfly Conservation and Amphibian and

Reptile Conservation are also advisory members of the cooperative. Furthermore, whilst Wrexham Borough Council's Ecologist and NRW aren't members of the cooperative, their expertise and advice will be regularly sought from the cooperative.

Through the cooperative, Enfys Ecology and the North Wales Wildlife Trust will be appointed as the management company and responsible body, responsible for undertaking the ongoing habitat management works within the Eco-Heritage Zone, as detailed within the LEMP. They must ensure that the ongoing measures detailed within the LEMP are implemented. They will also be responsible for monitoring the establishment of habitats as well as monitoring them for any changes affecting their quality or function. If evidenced and identified as necessary by the ongoing monitoring surveys and the results of earlier works, changes can be made to the proposed methodology for habitat creation measures and the long-term management plan, provided they are agreed by the cooperative.

Habitat monitoring

As part of the 30-year management plan, annual site inspections will be undertaken of the created and retained ecology areas by Enfys Ecology, North Wales Wildlife Trust and / or the project ecologist. Following this, annual meetings will be held and will include all members of the ecology cooperative. The purpose of the meeting will be to discuss any issues, particularly in relation to failed habitat establishment and management, and to determine whether any remedial works are necessary to restore the habitats to a satisfactory standard, or to implement further enhancement measures. This meeting will be held from late summer to winter, so that the habitats can be assessed when in flower (e.g. wildflower meadows) and to allow for the required remedial works to be arranged.

5.3 Timetable of works

Table 2 below summarises and details the timings of mitigation measures that will be implemented to protect GCNs and other amphibians during construction and wider site enhancement works.

Table 2 – Timetable of works relating to GCNs.

ACTIVITY	COMMENTS	TIMINGS
Mitigation measures		
Initial vegetation removal along proposed amphibian exclusion fence line	Undertaken under the supervision of a licenced ecologist, or an ecologist appointed as an accredited agent who is deemed sufficiently experienced by the licence holder. The vegetation will be cut / mown to a height of approximately 5-10cm, to facilitate a detailed finger-tip search for amphibians without any risk of harm.	No timing restrictions but must be prior to any other clearance works on site associated with the proposed development.
Removal of remaining vegetation along amphibian exclusion fence line and fingertip search	Removal or remaining vegetation below 5-10cm in height following a fingertip search where necessary by licenced ecologist or accredited agent.	No timing restrictions but must be prior to any other clearance works on site associated with the proposed development. Can only be undertaken following approval of EPS mitigation licence.
Installation of one-way amphibian fencing	Following a detailed inspection of the fence route and a finger-tip search by the supervising ecologist, the groundbreaking and installation of the amphibian fencing will proceed. It is considered that an ecologist does not need to be in attendance during fence installation, however the fence must be checked and deemed satisfactory by a suitability qualified ecologist upon the completion of its installation.	No timing restrictions but must be prior to any other clearance works on site associated with the proposed development. Can only be undertaken following approval of EPS mitigation licence.
Checks of one-way amphibian fencing	To be checked monthly by the project ecologist (from installation until removal)	Monthly - For as long as the fence is installed.
Phased vegetation clearance within exclusion fencing area / construction area, and toolbox talk	Given the limited potential for GCNs to be present within the proposed working area and the limited risk of impacts from vegetation clearance works, it is considered that vegetation clearance works to a minimum height of 10cm within the exclusion fencing can take place without the need for ecological supervision (unless it is required to protect other taxa such as nesting birds). Following the clearance of vegetation to a minimum height of 10cm, no further works will take place for a period of at	No specific timings

	least 48 hours, to allow amphibians to exit the site of their own accord. Following this 48-hour period, a licenced ecologist or a suitability qualified accredited agent will attend site to provide a toolbox talk to contractors, to undertake a fingertip search and removal of potential refugia, and to oversee the removal of large stumps and other sensitive features where deemed necessary.	
Vegetation clearance as part of ecological enhancement works within the Eco-Heritage Zone	See Table 4 below.	See Table 4 below.
Implementation of reasonable avoidance measures	To be implemented during all construction works and wider site enhancement works.	At all times
Removal of one-way amphibian fencing	Removed in suitable weather conditions under ecological supervision.	Following the completion of the development works within the fenced area.
Installation of features to prevent amphibians being trapped in gully pots during the operational	Gully pots will be installed on site and will either be set back, covered with a mesh to prevent amphibians from falling within or will be fitted with a means of escape such as an amphibian ladder.	Prior to the operational phase of the development / occupation of the building.
Inspection of setback gully pots, meshed gully pots or amphibian ladders.	To be undertaken by an ecologist.	Following installation.
Monitoring		
GCN population monitoring surveys and HSI assessments of all retained and newly created ponds	Results to be submitted to COFNOD annually.	Annually, starting the next available survey (mid-April to mid-May) period following the commencement of the development works

Tables 3 and 4 below summarise the management requirements and responsibilities and have been taken from the LEMP report that has been prepared for the site. These tables form the 30-year management plan and should be read in conjunction with the LEMP report, which include more detail which should not be overlooked.

All initial works within the Industrial Unit Compound area are to be undertaken at the appropriate time of year as indicated in Table 3 below and are to begin within 2 years of the commencement of construction works, unless specified otherwise.

Phase 1 of enhancement works to the Eco-Heritage Zone will commence the same year that any site clearance, construction or initial habitat works take place (Year 1). Some works within Phase 1 may extend or be delayed beyond Year 1 to align with ecological constraints and

optimal implementation periods. Each subsequent phase will commence at the earliest appropriate opportunity within its designated year e.g. Phase 2 will begin in Year 3, Phase 3 in Year 6 etc.

The 30-year ongoing management plan for both parts of the site will commence immediately following the start of construction works or initial habitat creation works, whichever occurs first, unless specified otherwise.

Table 3 – Industrial Unit Compound 30-year management schedule

ACTIVITY	DESCRIPTION	TIMINGS
Initial works – carried out by appointed contractors		
Initial arboricultural works	Following the recommendations of the Arboricultural Impact Assessment produced for the site.	During the development - September to February inclusive. If not possible, then a bird nest scoping survey should be carried out immediately prior to the works.
Tree planting	As detailed within the Planting Schedule and Specification Plan (drawing number 311/LAND/L/110 Revision P02).	During the development, although planting between October and March is preferred.
Hedgerow planting	As detailed within the Planting Schedule and Specification Plan (drawing number 311/LAND/L/110 Revision P02).	During the development, although planting between October and March is preferred.
Sowing of four different types of grassland	Including preparatory ground works as detailed within the Planting Schedule and Specification Plan (drawing number 311/LAND/L/110 Revision P02).	March to April is optimal, however can be sown at other times of year provided there is sufficient warmth and moisture in the soil.
Swale and attenuation basin creation	As detailed within the Planting Schedule and Specification Plan (drawing number 311/LAND/L/110 Revision P02).	During development, no timing restrictions.
30-year ongoing management plan – carried out by the appointed site management company		
Arboricultural works / tree pruning	As and when needed e.g. to address specific health and safety risks	September to February inclusive. If not possible, then a bird nest check should be carried out immediately prior to the works.
Tree / hedge plant establishment assessment	Inspection of newly planted trees / hedgerows to monitor establishment after first growing season. Any trees deemed not to be in sufficient health / sufficiently well-established are to be replaced by the planting contractor.	After first full growing season, in late summer when leaves are still present to provide indication of plant health.
Initial pruning of hedgerows		October to February following planting
Subsequent pruning of hedgerows	As required to maintain desired height of 1.5m.	September to February inclusive. If not possible, then a bird nest check should

		be carried out immediately prior to the works.
First-year management of wildflower meadow areas, swales and attenuation basin	First cut of weeds that have been left and allowed to establish, followed by regular mowing over autumn and winter.	First cut - August after first year of sowing Ongoing regular mowing from – August to March inclusive.
Second-year onwards management of wildflower meadow areas, swales and attenuation basin	Annual hay-cut followed by regular mowing over autumn and winter.	Hay cut – July to August Ongoing regular mowing – August to March inclusive.
First-year management of native grassland lawn areas	Mow as regularly as needed during first growing season	No timing restrictions
Second-year onwards management of native grassland lawn areas	3-5 mows during the growing season, staggered across the grassland to ensure areas of differing sward height at all times. Regular mowing over autumn and winter.	3-5 mows – April to October inclusive Ongoing regular mowing – November to March inclusive.
Management of amenity grassland and ornamental shrub planting	In accordance with the site's management programme.	No time restrictions.

Table 4 – Eco-Heritage Zone 30-year management schedule

ACTIVITY	DESCRIPTION	TIMINGS
Phase 1 – Initial works – Commencing Year 1 (the year during which any construction or initial habitat clearance works commence)		
Scrub removal to facilitate restoration of wildflower grassland and Pond 2	To a height of 5cm using hand-tools or machinery but not disturbing the soil. Any scrub clearance within 100m of Ponds 3 and 4 will be under ecological supervision. Including collection and removal of all arisings.	September to October during the first available period following the commencement of any works associated with the clearance or construction of the Industrial Unit Compound area.
Ground works to prepare proposed wildflower grassland areas for seeding	Removal of large stumps and 5cm layer of topsoil under ecological supervision, following finger-tip search of any potential refugia and around large stumps.	October to November, immediately following scrub removal. Can be continued in early March if needed.

	A period of at least 48 hours must be left between scrub clearance and ground works.	
Wildflower grassland seeding	May require minor further ground preparation works first.	March following the scrub clearance and preparatory ground works, including topsoil removal.
First-year management of restored wildflower grassland	Mown three times over summer to a height of 5–10 cm. To suppress annual weeds and encourage root development of sown wildflowers. Collection and removal of all arisings to reduce nutrient loading and prevent smothering of seedlings.	Mown in May, July and September.
Removal of leaf-litter and excavation of restored Pond 2	Retaining the pond's shallow and gently sloping margins whilst ensuring the centre has a depth of at least 1m.	Immediately following scrub clearance around the pond.
Importation of inert materials for creation of disturbed areas	Very small quantities of inert materials such as crushed brick, sand, and low-nutrient subsoil, to locally vary the growing substrate and suppress competitive vegetative communities and scrub encroachment. Under the supervision of a suitably experienced ecologist, who will advise on locations and quantities accordingly.	Immediately following scrub clearance and ground preparation works to facilitate wildflower grassland sowing.
Removal of scrub around Pond 3	Cut to a height of 10cm using hand tools reduce the risk of impacts to GCNs sheltering within at ground level. Undertaken under ecological supervision.	September to February inclusive. Within the first available period following the commencement of construction works or site clearance.
Removal of leaf-litter and organic material within Pond 3	Removal from one-third of the pond, to limit the area of disturbance. Material will be extracted using hand tools and low-impact methods (e.g. rakes, nets) to avoid sediment disturbance wider pond. Arisings will be temporarily stored on tarpaulins adjacent to the pond for at least 24 hours before disposal, allowing any amphibians and invertebrates present within a chance to escape. Undertaken under ecological supervision.	October–early November. Within the first available period following the commencement of construction works or site clearance.

Installation of bird and bat boxes affixed to trees	Under ecological supervision and as detailed in the Ecological Enhancements Plan at Appendix 5.	Within Year 1, no specific timing restrictions.
Installation of bat boxes within retained building and installation of security measures.	Under ecological supervision and as detailed in the Bat Conservation Plan prepared for the site.	Within Year 1, no specific timing restrictions.
Creation of brash / log pile	Using material from prior scrub clearance works undertaken within this phase.	Following scrub clearance and ground preparation works to facilitate wildflower grassland sowing
Phase 2 – Initial works – Commencing in Year 3		
Scrub removal to facilitate restoration of wildflower grassland	To a height of 5cm using hand-tools or machinery but not disturbing the soil. Any scrub clearance within 100m of Ponds 3 and 4 will be under ecological supervision. Including collection and removal of all arisings.	September to October within Year 3.
Ground works to prepare proposed wildflower grassland areas for seeding	Removal of large stumps and 5cm layer of topsoil under ecological supervision, following finger-tip search of any potential refugia and around large stumps. A period of at least 48 hours must be left between scrub clearance and ground works.	October to November, immediately following scrub removal. Can be continued in early March if needed.
Wildflower grassland seeding	May require minor further ground preparation works first.	March following the scrub clearance and preparatory ground works, including topsoil removal.
First-year management of restored wildflower grassland	Mown three times over summer to a height of 5–10 cm. To suppress annual weeds and encourage root development of sown wildflowers. Collection and removal of all arisings to reduce nutrient loading and prevent smothering of seedlings.	Mown in May, July and September.
Creation of amphibian hibernacula	Including excavation of pits and filling with suitable materials, before capping with topsoil and turf. Under ecological supervision.	Following scrub clearance and ground preparation works to facilitate wildflower grassland sowing
Creation of brash / log pile	Using material from prior scrub clearance works undertaken within this phase.	Following scrub clearance and ground preparation works to facilitate wildflower grassland sowing

Phase 3 – Initial works Commencing in Year 6		
Scrub removal to facilitate restoration of wildflower grassland	To a height of 5cm using hand-tools or machinery but not disturbing the soil. Any scrub clearance within 100m of Ponds 3 and 4 will be under ecological supervision. Including collection and removal of all arisings.	September to October within Year 6.
Ground works to prepare proposed wildflower grassland areas for seeding	Removal of large stumps and 5cm layer of topsoil under ecological supervision, following finger-tip search of any potential refugia and around large stumps. A period of at least 48 hours must be left between scrub clearance and ground works.	October to November, immediately following scrub removal. Can be continued in early March if needed.
Wildflower grassland seeding	May require minor further ground preparation works first.	March following the scrub clearance and preparatory ground works, including topsoil removal.
First-year management of restored wildflower grassland	Mown three times over summer to a height of 5–10 cm. To suppress annual weeds and encourage root development of sown wildflowers. Collection and removal of all arisings to reduce nutrient loading and prevent smothering of seedlings.	Mown in May, July and September.
Creation of 2x ponds		Immediately following scrub clearance and ground preparation works to facilitate wildflower grassland sowing.
Planting of marginal and emergent species within 2x newly created ponds	The drawdown zone and the shelf within both ponds created in Phase 3 will be planted with marginal and emergent species.	April to June in the next available planting season following pond excavation
Planting of oxygenating plants within 2x created ponds		April-June in second year following pond establishment.
Creation of amphibian hibernacula	Including excavation of pits and filling with suitable materials, before capping with topsoil and turf. Under ecological supervision.	Following scrub clearance and ground preparation works to facilitate wildflower grassland sowing
Phase 4 – Initial works Commencing in Year 9		
Scrub removal to facilitate restoration of wildflower grassland.	To a height of 5cm using hand-tools or machinery but not disturbing the soil.	September to October within Year 9.

	Any scrub clearance within 100m of Ponds 3 and 4 will be under ecological supervision. Including collection and removal of all arisings.	
Ground works to prepare proposed wildflower grassland areas for seeding	Removal of large stumps and 5cm layer of topsoil under ecological supervision, following finger-tip search of any potential refugia and around large stumps. A period of at least 48 hours must be left between scrub clearance and ground works.	October to November, immediately following scrub removal. Can be continued in early March if needed.
Wildflower grassland seeding	May require minor further ground preparation works first.	March following the scrub clearance and preparatory ground works, including topsoil removal.
First-year management of restored wildflower grassland	Mown three times over summer to a height of 5–10 cm. To suppress annual weeds and encourage root development of sown wildflowers. Collection and removal of all arisings to reduce nutrient loading and prevent smothering of seedlings.	Mown in May, July and September.
Creation of new pond		Immediately following scrub clearance and ground preparation works to facilitate wildflower grassland sowing.
Planting of oxygenating plants within created excavated pond		April-June in second year following pond establishment.
Selective scrub removal around retained Pond 4.	To ensure that no more than 50% of the pond's margins are heavily shaded. Undertaken under ecological supervision. Cut to a height of 10cm using hand tools reduce the risk of impacts to GCNs sheltering within at ground level.	September to February inclusive. Within the first available period within Phase 4.
Selective emergent vegetation removal within retained Pond 4.	To ensure that no more than 75% of the ponds surface is covered. Material will be extracted using hand tools and low-impact methods (e.g. rakes, nets) to avoid sediment disturbance wider pond.	October–early November. Within the first available period within Phase 4.

	Arisings will be temporarily stored on tarpaulins adjacent to the pond for at least 24 hours before disposal, allowing any amphibians and invertebrates present within a chance to escape. Undertaken under ecological supervision.	
Creation of brash / log pile	Using material from prior scrub clearance works undertaken within this phase.	Following scrub clearance and ground preparation works to facilitate wildflower grassland sowing.
Phase 5 – Initial works Commencing in Year 12		
Scrub removal to facilitate restoration of wildflower grassland.	To a height of 5cm using hand-tools or machinery but not disturbing the soil. Any scrub clearance within 100m of Ponds 3 and 4 will be under ecological supervision. Including collection and removal of all arisings.	September to October within Year 15.
Ground works to prepare proposed wildflower grassland areas for seeding	Removal of large stumps and 5cm layer of topsoil under ecological supervision, following finger-tip search of any potential refugia and around large stumps. A period of at least 48 hours must be left between scrub clearance and ground works.	October to November, immediately following scrub removal. Can be continued in early March if needed.
Wildflower grassland seeding	May require minor further ground preparation works first.	March following the scrub clearance and preparatory ground works, including topsoil removal.
First-year management of restored wildflower grassland	Mown three times over summer to a height of 5–10 cm. To suppress annual weeds and encourage root development of sown wildflowers. Collection and removal of all arisings to reduce nutrient loading and prevent smothering of seedlings.	Mown in May, July and September.
Phase 6 – Initial works Commencing in Year 15		
Scrub removal to facilitate restoration of wildflower grassland.	To a height of 5cm using hand-tools or machinery but not disturbing the soil. Any scrub clearance within 100m of Ponds 3 and 4 will be under ecological supervision. Including collection and removal of all arisings.	September to October within Year 15.
Ground works to prepare proposed	Removal of large stumps and 5cm layer of topsoil under ecological supervision,	October to November, immediately following scrub removal.

wildflower grassland areas for seeding	following finger-tip search of any potential refugia and around large stumps. A period of at least 48 hours must be left between scrub clearance and ground works.	Can be continued in early March if needed.
Wildflower grassland seeding	May require minor further ground preparation works first.	March following the scrub clearance and preparatory ground works, including topsoil removal.
First-year management of restored wildflower grassland	Mown three times over summer to a height of 5–10 cm. To suppress annual weeds and encourage root development of sown wildflowers. Collection and removal of all arisings to reduce nutrient loading and prevent smothering of seedlings.	Mown in May, July and September.
Creation of amphibian hibernacula	Including excavation of pits and filling with suitable materials, before capping with topsoil and turf. Under ecological supervision.	Following scrub clearance and ground preparation works to facilitate wildflower grassland sowing
30-year ongoing management plan – covering all phases and commencing immediately following the start of works within each phase		
5-year site inspection of woodland areas by a suitability qualified arboriculturist or ecologist.	To identify the need for any further management intervention e.g. selective thinning, invasive species eradication etc.	April – August. Undertaken every 5 years, starting in Year 1.
Selective thinning of trees, coppicing and clearance of understory within woodland and areas of mature hawthorn scrub	As advised by ecologist or arboriculturist following 5-year site inspection and management meeting. Following confirmation from ecologist that it will not impact potential bat roosting features. Ensuring retention / creation of standing deadwood where possible and processing arisings into habitat piles.	September to February only (outside of the nesting bird season).
Eradication of invasive species montbretia and Japanese knotweed.	As detailed within the CEMP:Biodiversity & EDS. Complete eradication of Japanese knotweed is anticipated to take a number of years and will continue beyond the completion of Phase 1.	April – August. Within the next available season following the commencement of construction works or site clearance.
Ongoing control of invasive Himalayan balsam	Annual pulling and removal when plants are readily identifiable but yet to set seed. To be undertaken annually for first	May-June, annually for first five years.

	five years, after which a review of the effectiveness will determine if measures are working and worth continuing or altering the frequency.	
Ongoing management of disturbed ephemeral areas	Monitoring for invasive species colonisation. Control measures undertaken if required. Monitoring of dominant ruderals. Control measures required if dominance not controlled by natural processes. Removal of scrub, at discretion of project ecologist or appointed management company. Continued presence of bare ground required; creation of new areas as initial areas become vegetated.	Annually, June to August. Annually, as required. As required, October to February. As required, October to February.
Ongoing pond management	Water level monitoring to ensure no leaks. Hydrological advice and remedial works may be required. Monitoring for invasive species colonisation. Monitoring scrub encroachment. Monitoring of algal blooms. To be raked off if required.	Ongoing monitoring. At least twice per year during first 3 years from creation. April and August. June and August inclusive, annually. Annually, no timing restrictions. If and when algal blooms develop.
Second-year and ongoing management of restored wildflower grassland	Two cuttings each year, to a height of 5-10cm. All arisings are to be left *in situ* for 48-72 hours, before collection and removal. During each cut, the sward should be monitored for establishing scrub including brambles, and these should be uprooted, cut back or use of appropriate herbicide.	Cuts in April and August annually.
Management meetings	To discuss the establishment and condition of habitats, and whether any remedial actions are required to restore habitats.	Annually, August – September.

6 BIOSECURITY MEASURES

6.1 Background

Numbers and incidences of amphibian diseases have increased in the UK in recent years. The most notable of these are chytridiomycosis and ranavirus. Chytridiomycosis is caused by two species of microscopic fungi *Batrachochytrium dendrobatidis* ("Bd") and B. *salamandrivorans* ("Bsal"), which are often simply referred to as "chytrid". Chytrid infection has been responsible for mass mortalities of amphibians with declines and extinctions in some species on six continents, including Europe. Ranavirus (ranaviral disease), caused by infection with one of many types of ranavirus, also has a global distribution, though it appears to cause population declines less frequently than chytrid. Other infectious agents are present in amphibians, such as herpesvirus and the parasitic infections *Amphibiocystidium* and *Ribeiroia*, however much less is known about them and they are not considered to be as widespread.

Ranavius is now commonly reported from parts of the UK and infection can lead to local population declines of up to 80% in common frogs *Rana temporaria*. Whilst Bd caused chytrid is now known to be widespread in the UK, it does not appear to have caused the types of mass die-offs reported in Europe. However, such events can be difficult to detect even when they are occurring, and it can take many years for the full effects of disease introduction to manifest. Whilst Bsal is known to be present in captive amphibians in the UK, it has not yet been detected in the wild. However, it is believed to be a major potential threat to newt health should it become established, particularly the great crested newt which is known to be highly susceptible.

Amphibian diseases are frequently found to be spread by human activity and the introduction of non-native species.

Given the scope of the works and the lack of interaction with amphibians and existing ponds, it is considered highly unlikely that the works associated with the construction phase of the development would result in the introduction or spread of amphibian diseases. The proposed long-term habitat management works and amphibian monitoring surveys have a much greater risk of introducing or spreading an amphibian disease given the frequency and likelihood of contact with amphibians or standing water.

6.2 Biosecurity measures during operational phase

Amphibian and Reptile Groups of the UK (ARG UK) consider that controlling outbreaks of amphibian diseases in the wild is practically impossible except under very particular circumstances, and so prevention is the best strategy. Alongside prevention, ARG UK highlight the importance of reporting signs of infection, so that we can learn more about diseases and their effects and develop an early warning system for detection of novel threats.

During the operational phase, the limited access to the public will significantly reduce the risk of disease introduction, however there will be some public access to parts of the site and ongoing habitat management will be undertaken in addition to annual GCN monitoring surveys.

To reduce the risk of spreading disease onto site, the following biosecurity mitigation measures are to be implemented during any future site habitat management works or monitoring surveys:

- All contractors, surveyors, group leaders (for education activities) attending site must read this biosecurity section of the report and agree to implement all biosecurity measures.

- The handling of amphibians will only be undertaken, when necessary, which is considered to be limited to monitoring surveys (unlikely to be required as part of the methodology), moving amphibians to areas of safety during management works or undertaking pond-dipping as part of public engagement or educational visits.

- If handling amphibians is required or if contact with pond water is necessary, powder-free disposable vinyl gloves will be used and will be rinsed before contact with the amphibians or pond water. Vinyl will be used rather than latex or nitrile because the latter two may be harmful to amphibians.

- If entering any waterbodies, footwear mutt be washed and disinfected (see disinfection procedure below) immediately prior to and after the site visit.

- Following exposure to amphibians or pond water, all clothing is to be washed on a 40^{o}C cycle with biological detergent. If contractors undertaking habitat management or surveyors undertaking monitoring surveys have visited another site immediately prior to visiting this site, a change of clothes must be brought and used prior to access.

- No amphibians will be brought onto site and all amphibians handled during monitoring surveys will be released at the location of capture.

- Any dead or obviously sick amphibians will be treated as a high infection risk and will not be handled unless necessary. Any potential incidences of an amphibian disease will be reported as detailed in the section 6.3 below.

6.3 In the event of disease outbreak

In the unlikely event that a potential amphibian disease is recorded on site, the following additional biosecurity measures will be implemented:

- The number of survey visits will be kept to the minimum necessary.

- Surveyor numbers attending will be limited to the lowest practicable number and surveyors must not have visited any other bodies of standing water the same day.

- Surveys will be undertaken without entering waterbodies where possible. If surveyors need to enter waterbodies, footwear will be disinfected between individual waterbodies within the site.

- Pond-dipping and any other public engagement or educational visits that involve entering ponds or potentially handing amphibians will not be undertaken.

Any suspected disease outbreak will be reported via The Garden Wildlife Health Project (www.gardenwildlifehealth.org), which has been established to investigate disease in a range of native wildlife species in Great Britain. Photographs of the affected animal(s), the location and details of the symptoms observed are key pieces of information to report.

6.4 Disinfection procedure

The following procedure will be followed when disinfecting, vehicle wheels, survey equipment and boots prior to entry onto the site:

1. Use brush to scrub off any debris, plant fragments, mud etc.
2. Rinse with water.
3. Soak in 4% bleach solution for at least 5 minutes, or Virkon for at least one minute. Vehicles wheels should instead be sprayed with disinfectant and left for 5 minutes prior to entry.
4. Rinse with clean water.
5. Allow to dry before next use (won't be possible if multiple sites are being visited in a single day or for vehicle wheels).
6. Keep field equipment inside plastic bags during transit and storage (after thorough drying) to reduce the chance of transmitting pathogens.

Disinfection of survey equipment and boots can be undertaken anywhere prior to visitation. Disinfection of vehicle wheels must be undertaken at the site boundary immediately prior to entry onto site.

Disinfectant solutions should be disposed of following the supplier's instructions. Unless otherwise stated, used disinfectant solutions should be poured directly into a drain connected to the sewerage system and flushed with clean water (note that not all drains are connected to sewerage systems), or disposed of as hazardous waste. Used gloves should be disposed of as domestic waste.

6.5 Disease identification

Chytrid

Chytrid is known to infect all UK amphibian species and whilst it can often be symptomless, it is characterised by multiple skin erosions and ulcerations all over the body, particularly the tips of the toes.

Additional symptoms can also include:

- Excessive shedding of skin
- Reddening or discoloured skin
- Abnormal posture
- Unusual behaviour such as nocturnal species being active during the day or remaining out in the open for long periods of time.

Ranavirus

All species of amphibian in the UK are considered to be susceptible to ranavirus infection, but the common frog and the common toad are most frequently reported with the disease.

Ranavirus can be tricky to diagnose without a post mortem, but animals may display one or more of the following symptoms:

- Abnormal wasting (emaciation)

- Redness of the skin (erythema)
- Skin ulcers or sores
- Bleeding (systemic haemorrhaging), especially from mouth/anus
- Breakdown of limbs (limb necrosis)
- Eye problems

The most common symptom is simply to find a large number of dead frogs in a short space of time. The animals are often thin and lethargic before death.

7 CONCLUSION

The proposed development will retain and enhance approximately 81.6% of the site, encompassing habitat suitable for breeding, commuting, and foraging GCNs. Although the loss of dense scrub within the working area will reduce terrestrial habitat availability, this impact is mitigated by the preservation and improvement of other suitable habitats and ecological features. Two historic ponds will be lost as part of the development; however, none support GCNs or are suitable for use by breeding GCNs. The two onsite ponds confirmed as GCN breeding sites will be retained and subject to enhancement works to improve their overall suitability with respect to GCN.

The measures detailed in this document will reduce the risk of harm to GCNs and other amphibians to the lowest practicable levels. They ensure that site staff have the knowledge and processes required to avoid breaches of legislation, and that suitable amphibian habitat is in place for the long-term future.

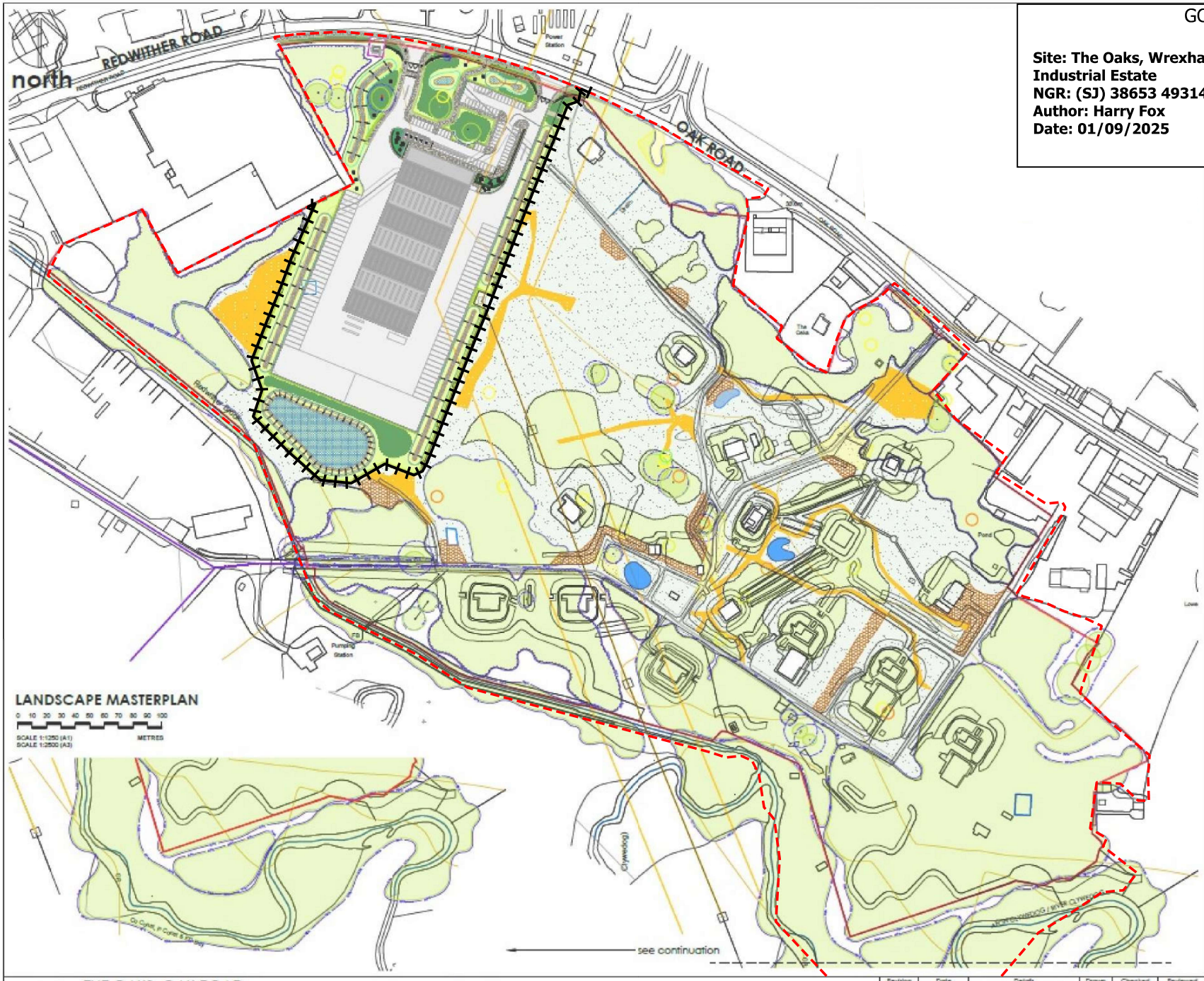
The proposed landscaping scheme will maintain habitat linkages for amphibians and other wildlife across the site. No fragmentation, isolation, or long-term adverse impacts on local amphibian populations are anticipated as a result of the development. To the contrary, it is expected that the proposed development will improve the overall habitat quality of the Wildlife Site for GCNs, and the development provides a mechanism to secure long-term management and monitoring.

APPENDICES

Appendix 1 – Amphibian fencing plan

GCN Fencing Plan

Site: The Oaks, Wrexham Industrial Estate
NGR: (SJ) 38653 49314
Author: Harry Fox
Date: 01/09/2025



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

One-way GCN fencing
Survey Boundary

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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

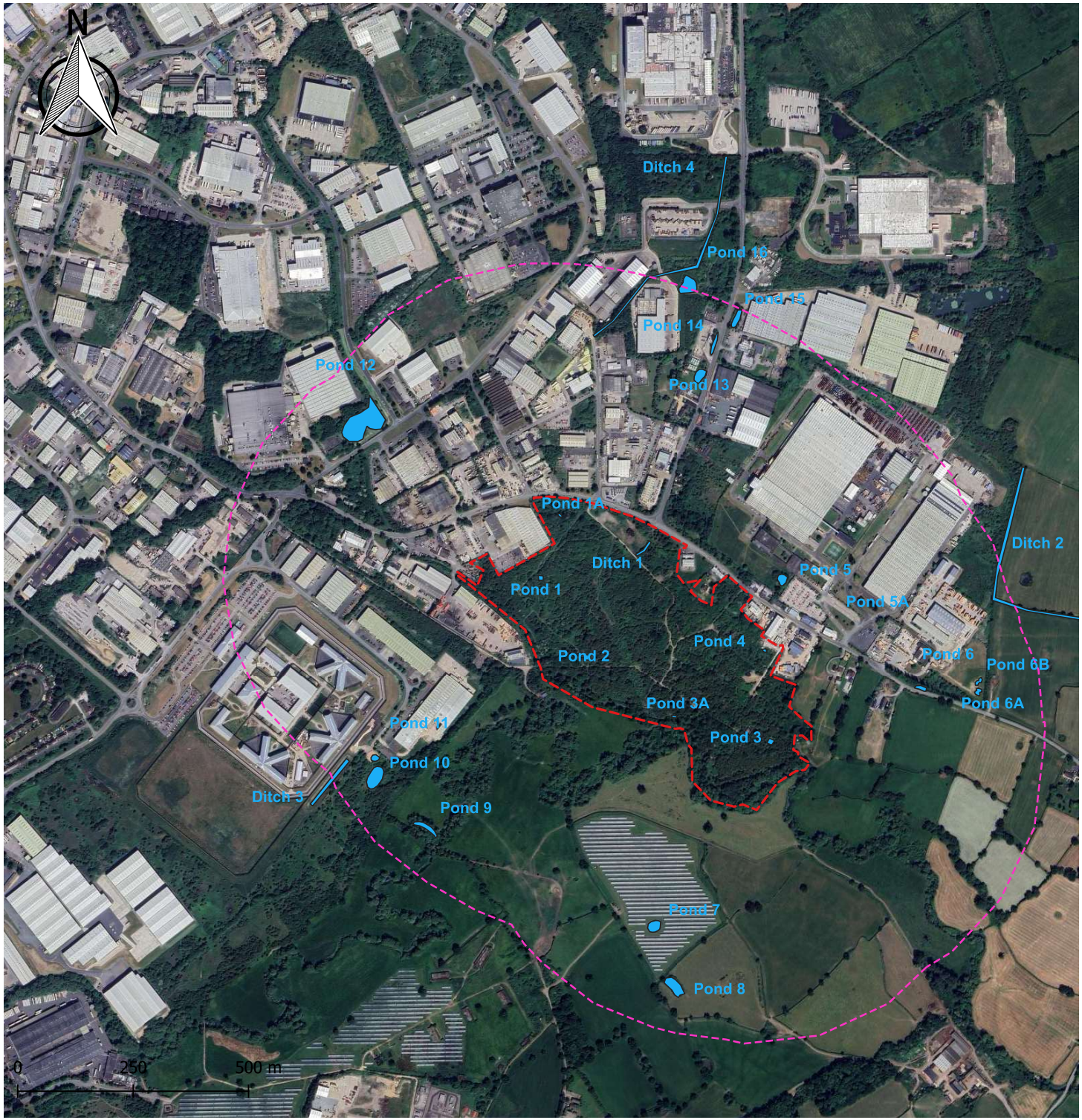
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P01	07/02/2025	PRE-APPLICATION CONSULTATION	MD	XXXX	MD
P02	19/05/2025	PLANNING APPLICATION	MD	XX	MD
P03	22/08/2025	PLANNING APPLICATION & LEMP	MD	XX	MD

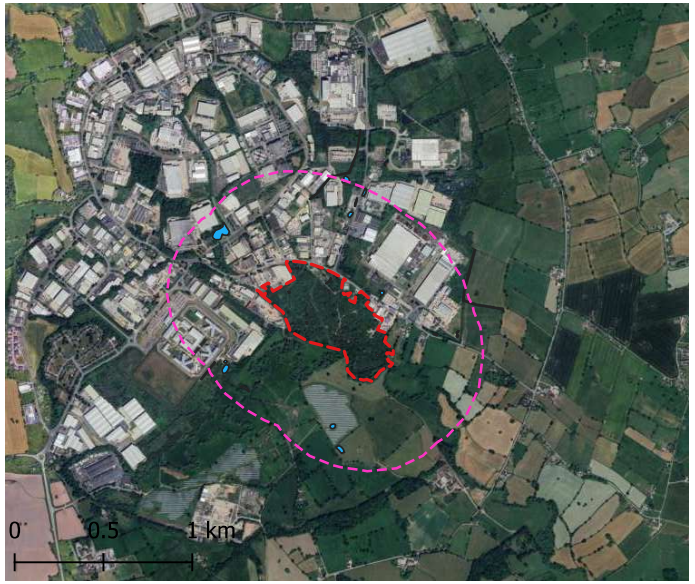
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Appendix 2 – Pond plan

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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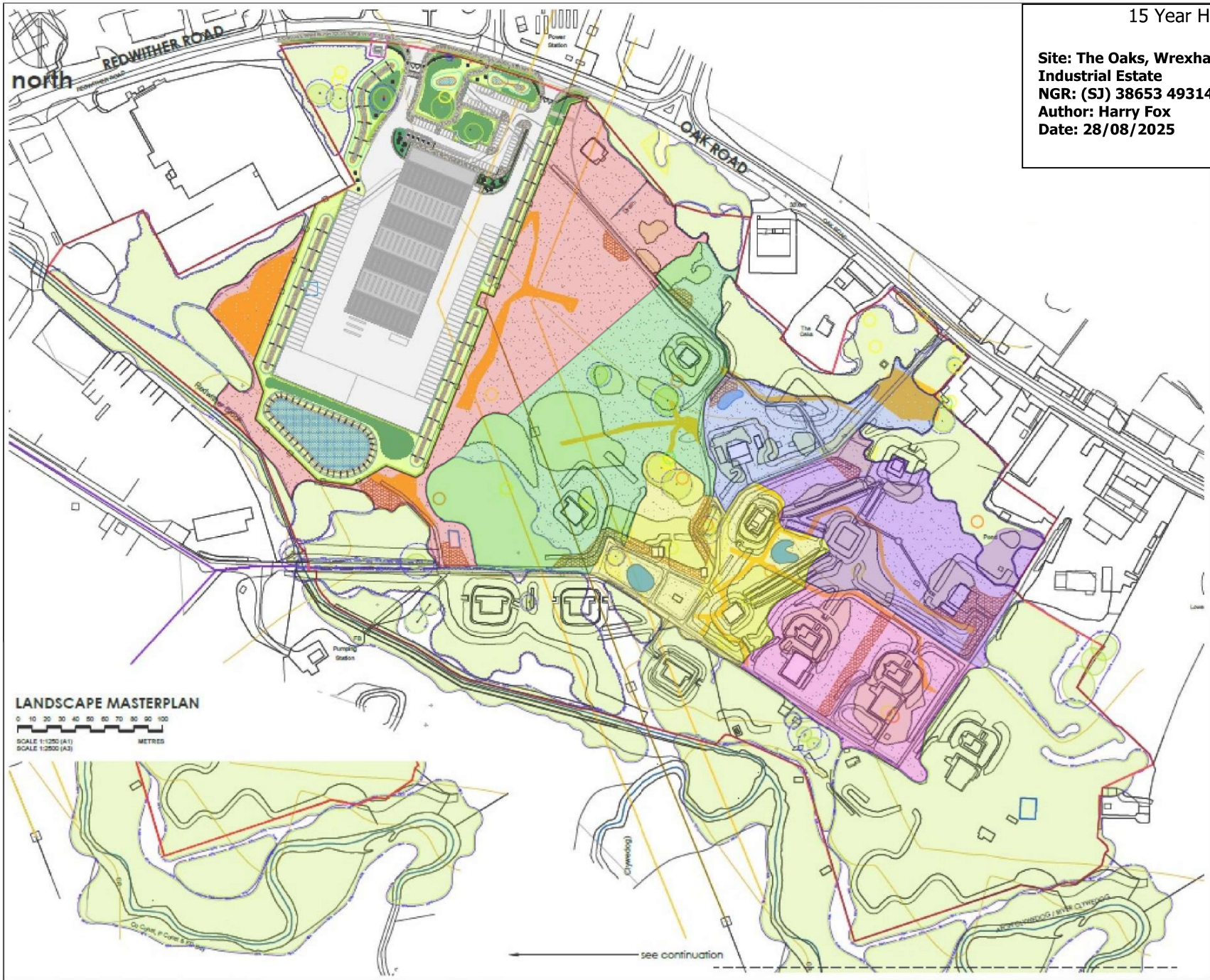
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Appendix 3 – Phasing plan

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



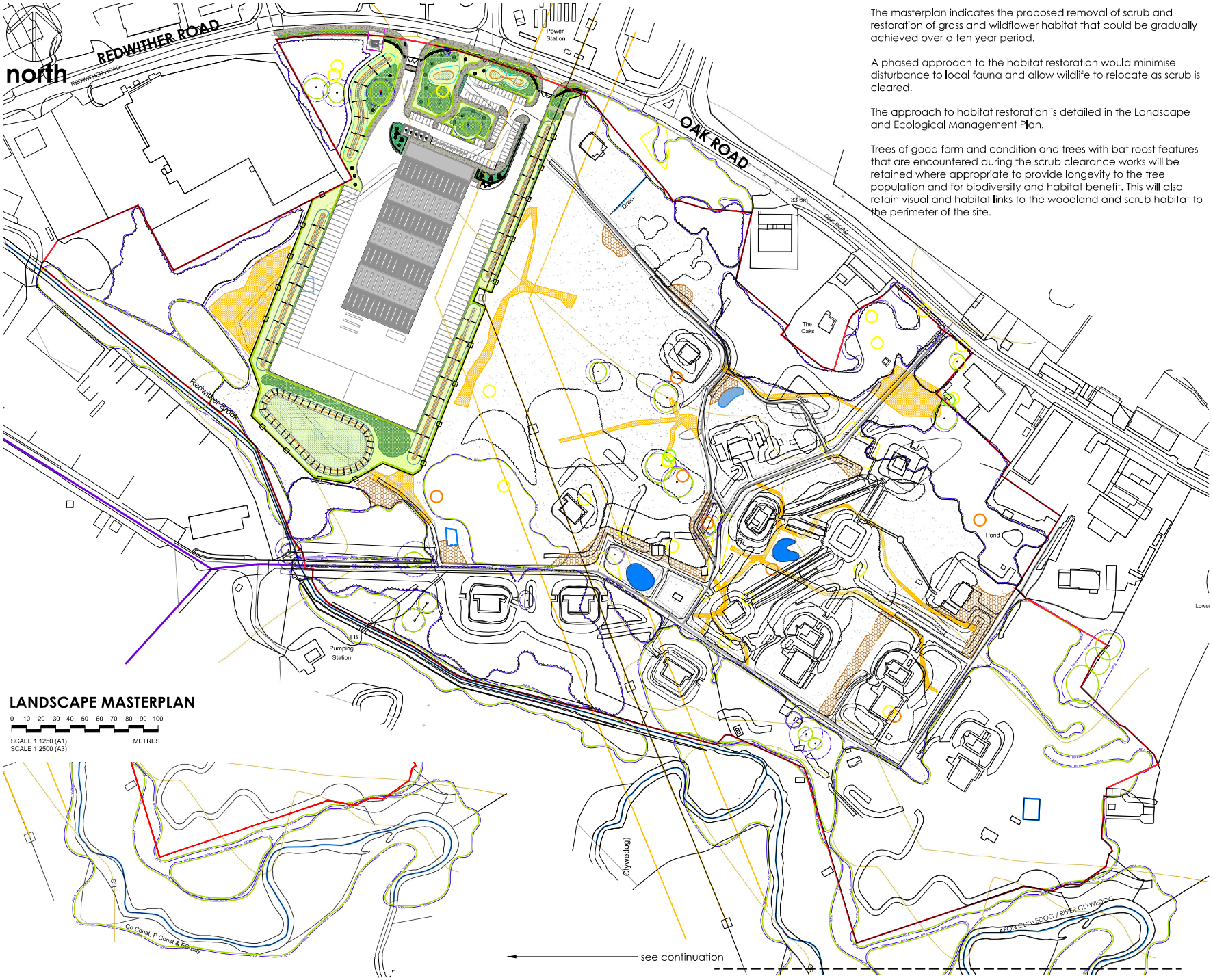
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Appendix 4 – 15-year landscaping plan



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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Appendix 5 – Ecological enhancements plan

Ecological Enhancements Plan

Site: The Oaks, Wrexham Industrial Estate
NGR: (SJ) 38653 49314
Author: Harry Fox
Date: 27/08/2025



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

- Brash/log piles
- Hibernacula
- Schwegler 1B (26mm entrance hole)
- Schwegler 1B (32mm entrance hole)
- Schwegler 2H open-fronted nest box
- Schwegler Startling nest box
- Tawny owl nest box
- Schwegler 1FF bat box
- Schwegler 1FS large colony bat box
- Schwegler 2F bat box
- Schwegler 2FN bat box

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