



## Preliminary Ecological Appraisal of Tremeirchion Waste Water Treatment Works on Behalf of The Wye & Usk Foundation

| Date       | Author        | Project Number | Approved by | Version | Comments   |
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| 20/09/2024 | Richard Cutts | 4346           | Keymar Wake | V1      |  |
| 04/10/2024 | Richard Cutts | 4346           | Keymar Wake | V2      | Minor amendments to descriptions of the proposed works |
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Author contact information: richard@enfysecolgy.co.uk

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## Executive Summary

|  |  |                          |                |
|--|--|--------------------------|----------------|
| <b>Site</b>                                  | Tremeirchion Waste Water Treatment Works   | <b>OS Grid Reference</b> | SJ 06847 72642 |
| <b>Surveyors</b>                             | Richard Cutts and Ashley Payne   | <b>Survey Date</b>       | 05-09-2024     |
| <b>Type of Survey</b>                        | Preliminary Ecological Appraisal   |                          |                |
| <b>Summary of Proposed Work</b>              | Construction of an Integrated Constructed Treatment Wetland (ICTW) scheme at the existing Tremeirchion WwTW comprising the installation of two underground septic tanks, the creation of three wetland cells with planting, a welfare facility, new internal access road(s), perimeter fencing and landscaping works |                          |                |
| <b>Designated Sites Affected</b>             | The site is within 1km of two designated non-statutory ecological sites, Nant Pen Is'r Waen and Pwll Echo Wildlife Sites. Neither site will be affected by the proposed works.   |                          |                |
| <b>Habitats Affected</b>                     | Improved grassland and broadleaved woodland  |                          |                |
| <b>Species Affected</b>                      | There will be no direct impacts on protected species, although there is likely to be some loss of potential bird nesting habitat   |                          |                |
| <b>Survey Conclusions</b>                    | The majority of the site is low diversity improved grassland, which will be enhanced by the scheme. A small section of Ancient Woodland will be affected, with the likely loss of a small number of trees, but the overall woodland cover will not be reduced.   |                          |                |
| <b>Further Surveys Required</b>              | No further surveys required  |                          |                |
| <b>Avoidance Requirements</b>                | Biosecurity measures are recommended, especially for workers entering the stream.  |                          |                |
| <b>Mitigation / Restoration Requirements</b> | Reasonable avoidance measures include specific guidance regarding the timing of clearance works to avoid disturbance of hibernating animals or nesting birds.  |                          |                |
| <b>Compensation Requirements</b>             | Hedgerow planting will compensate for the loss of any trees during the works. Bird boxes should be installed to provide nesting opportunities while the hedgerow becomes established.  |                          |                |
| <b>Proposed Enhancements</b>                 | The creation of the wetland cells and species-rich grassland will provide a significant biodiversity enhancement to the site. Additional opportunities for biodiversity enhancement include erecting bird and bat boxes.   |                          |                |

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## 1.0 Introduction

### 1.1 Project Introduction

- 1.1.1 Enfys Ecology were commissioned by the Wye & Usk Foundation to undertake a Preliminary Ecological Appraisal (PEA) of an area of land at the Waste Water Treatment Works (WwTW) in Tremeirchion.
- 1.1.2 The proposed development involves the construction of an Integrated Constructed Treatment Wetland (ICTW) scheme at the existing Tremeirchion WwTW, comprising the installation of two underground septic tanks, the creation of three wetland cells with planting, a welfare facility, new internal access road(s), perimeter fencing and landscaping works. There will be a discharge into the adjacent stream (Nant Penisa Waun).
- 1.1.3 The site is predominantly agricultural grassland, with the proposed discharge route passing through a narrow section of neighbouring woodland.
- 1.1.4 Two previous ecological reports have been produced for the site: A Preliminary Ecological Appraisal of the grassland (Evans, 2022), and an ecological scoping report for proposed discharge routes (Tucker and Cutts, 2024).
- 1.1.5 Survey effort for this report was focussed on the area of the proposed wetland cells and the woodland area in the immediate vicinity of the proposed discharge route, including the areas approximately 50 metres upstream and downstream of the discharge point. Other adjacent habitats (woodland and the existing waste water treatment works) were not surveyed in detail, but brief descriptions have been included in this report.
- 1.1.6 The primary objectives (CIEEM, 2017a) of a Preliminary Ecological Appraisal Report (PEAR) are to:
- identify the likely ecological constraints associated with a project;
  - identify any mitigation measures likely to be required;
  - identify any additional surveys that may be required to inform an Ecological Impact Assessment (EclA); and,
  - identify the opportunities offered by a project to deliver ecological enhancement.
- 1.1.7 This document has been produced to advise a client of ecological constraints and opportunities to inform their design options (avoidance), likely mitigation, restoration and compensation requirements, and the need for further surveys. In addition, the report may provide initial recommendations in relation to relevant ecological enhancement opportunities given the site's context. This report alone may not necessarily provide the Local Planning Authority with enough information to assess the ecological impacts of a proposal.
- 1.1.8 This report has been produced in accordance with CIEEM (2017a) 'Guidelines for Preliminary Ecological Appraisal' and CIEEM (2017b) 'Guidelines for Ecological Report Writing'.
- 1.1.9 This report has been produced by Richard Cutts. Richard has a background in ecological and geological fieldwork, and has been at Enfys Ecology since 2022. He has significant experience

in undertaking Phase1 and UKHabs surveys in North Wales. Richard also carries out a range of protected species work, including bats, amphibians, reptiles and badgers. He is a qualifying member of CIEEM and an Approved Assessor for Building with Nature.

1.1.10 The survey work to inform this report was carried out in September 2024. Habitats and species found within a discrete area of land are subject to change, this report should therefore be considered valid for a period of eighteen months in accordance with best practice (CIEEM, 2019).

1.1.11 Relevant legislation and planning policy information are included in Appendix A.

## 1.2 Project Proposals

1.2.1 The reports / drawings provided by the client at the time of production of this PEAR are detailed in Table 1.1.

**Table 1.1: Project Information Sources**

| Information   | Organisation                        | Reference and Date                            |
|---|-------------------------------------|---|
| Proposed site layout  | Dŵr Cymru                           | B17505-00DM13-03-AB-DR-CA-CI5006 (27/06/2024) |
| Preliminary Landscaping Plan Integrated Constructed: Wetland Development at Tremeirchion WwTW | The Wye & Usk Foundation            | V1.0 (24/04/2024)                             |
| Land adjacent to sewage works, Tremeirchion, Denbighshire: Preliminary Ecological Appraisal   | Worcestershire Wildlife Consultancy | 2022/059 B (26/06/2024)                       |
| Tremeirchion Waste Water Treatment Works: Ecological Assessment                               | Enfys Ecology                       | EE.4346.23.HT (16/01/2024)                    |

## 2.0 Site Description

### 2.1 Survey Area

2.1.1 The survey area is an agricultural field and a section of broadleaved woodland with a stream (Nant Penisa Waun) running through it from the north-east to the south-west; the proposed wetland area is in the northern part of the agricultural field and immediately south-east of the woodland. The woodland extends approximately 400m south-west from the survey site, and the waste water treatment site is located immediately to the north-east. A small unnamed road borders the north side of the woodland. Agricultural fields surrounded the site in all directions, with a few scattered standalone mature trees. A small woodland is approximately 0.15km north of the site, with a line of trees extending west to connect with the road. A small woodland approximately 0.35km to the south has poor connectivity to the site. A few farm buildings and houses were located near the site with the closest being approximately 0.1km to the west. The survey area is shown in Figure 2.1 below.



**Figure 2.1: The survey area (red outline) and immediate surroundings**

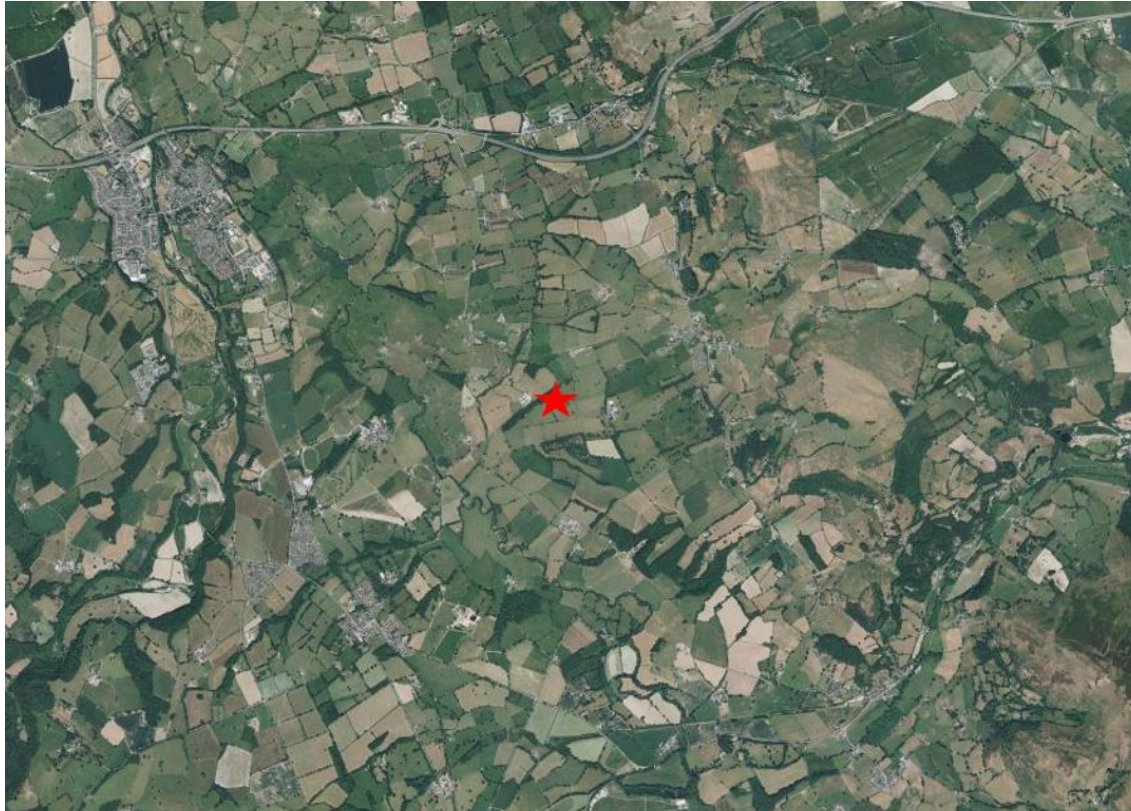
Base image © Google Maps 2024

## 2.2 Wider Area - Connectivity and Green Infrastructure

- 2.2.1 The wider landscape comprises agricultural fields in all directions, with hedgerows and patches of woodland. A small river to the north (Afon Bach) connects with the stream running through the site approximately 0.7km to the south-west (downstream). Another small watercourse lies approximately 0.4km to the south and joins the Afon Bach a further 0.2km downstream. The village of Tremeirchion is approximately 0.9km to the east of the site.
- 2.2.2 (PPW 12, paragraph 6.2.1); Green infrastructure (GI) is defined in Planning Policy for Wales (PPW) Edition 12<sup>1</sup> as “*the network of natural and semi-natural features, green spaces, rivers and lakes that intersperse and connect places*”. Green infrastructure (GI) can function at a range of different scales; from entire ecosystems such as wetlands and rivers to parks, fields and gardens at the local scale and street trees, hedgerows, roadside verges, and green roofs/walls at the micro scale. Development proposals should take GI into consideration in order to avoid negative impacts on habitats and species, and seek ways to maintain and enhance biodiversity.
- 2.2.3 This site and the surrounding areas – with the exception of the various structures and hard surfaces of the waste water treatment works - were at the time of survey considered to be entirely comprised of areas considered green infrastructure under current planning guidance. The entire site is in a largely natural state, although the grassland has been modified by agricultural use (grazing). There is some connectivity to habitats in the wider landscape, particularly along the watercourse, but connectivity is restricted by large areas of open agricultural grassland which are bordered by hedgerows in poor condition.
- 2.2.4 The wider area is shown in Figure 2.2 below.

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<sup>1</sup> See: <https://www.gov.wales/planning-policy-wales>



**Figure 2.2: The site (red star) and the wider surrounding area**

Base image © Google Maps 2023

## 3.0 Methodology

### 3.1 Desk Study

- 3.1.1 A desk study was previously undertaken (Tucker and Cutts, 2024) through Cofnod, the North Wales Environmental Information Service, to determine the presence of statutory and non-statutory sites for nature conservation, and records of protected, or species and habitats of principal importance listed under Section 7 of the Environment (Wales) Act 2016. The records were used to inform the survey and recommendations, and to provide context for evaluating the species and habitats found during the survey. Any relevant species results from the desk study are referred to in Section 4.
- 3.1.2 The desk study used the following search radii for this project: 1km.
- 3.1.3 The desk study also included review of the following ecological reports which were made available for this site:
- **Land adjacent to sewage works, Tremeirchion, Denbighshire: Preliminary Ecological Appraisal** (Worcestershire Wildlife Consultancy, 2022; report reference 2022/059 B); and,
  - **Tremeirchion Waste Water Treatment Works: Ecological Assessment** (Enfys Ecology, 2024; report reference EE.4346.23.HT).

### 3.2 Field Survey

- 3.2.1 The field survey was conducted on 5<sup>th</sup> September 2024 by Richard Cutts and Ash Payne, both suitably experienced professional ecologists.
- 3.2.2 The weather conditions during the survey were overcast but dry and cool with no breeze.
- 3.2.3 All parts of the site were visited where possible, the habitats were mapped following the standard Phase I Habitat Survey methodology (JNCC, 2010). Any rare or invasive species or incidental sightings of protected species were recorded, as necessary. A search for evidence or potential for protected species was carried out, including amphibians, bats, and reptiles. Evidence of badgers (*Meles meles*) including setts, dung pits, hairs, footprints, and scratching posts or trees was searched for. Trees with suitable features for roosting bats, including knot holes and other crevices, hollow trunks and dense ivy coverage were identified.

### 3.3 Limitations

- 3.3.1 The survey was undertaken at the end of the main flowering period; some flowering plants present may no longer be visible in later August and so will not have been recorded, but the survey was still carried out within the appropriate season for PEA, and this is unlikely to have significantly limited the accuracy of the survey in this instance.

- 3.3.2 Some areas of the woodland could not be accessed or thoroughly searched due to dense and impenetrable holly, dog rose and bramble, or fallen trees. Wherever possible these areas were viewed from nearby, and reasonable effort was made to search for signs of protected species within these areas. This is not considered to have affected the results of the survey as vegetation types could be seen and recorded, however it is possible that some plant species or animal traces were missed. The waste water treatment works, which were located within a secure compound outside of the survey area, were not directly accessed but brief observations were made from adjacent areas about the habitats present.
- 3.3.3 The results of this survey consist only of those species encountered during a short space of time on one day. Species that use the site infrequently or are present at different times of the year may not be recorded, and the absence of species from the results of a single survey should not be taken as indicating the species' definite absence from the area in question. Descriptions of plant species concentrate on the most obvious and abundant species present as determinant of habitats present.
- 3.3.4 While reasonable efforts have been made to search for invasive non-native species (INNS), and any seen were recorded, this is not a comprehensive invasive species survey and does not claim or imply the definite absence of Japanese knotweed or other invasive plants, for which a specific survey should be commissioned.

## 3.4 Terminology

- 3.4.1 In this report 'site' and 'survey area' are used to refer to the area surveyed by the ecologist, which is subject to the proposed development or planning application. The only exception may be some unavoidable use of 'site' when discussing designated sites such as SSSIs. 'Search area' refers to the area from which data was obtained for the desk study.
- 3.4.2 English species names are generally (but not exclusively) used in the text for readability, however Appendix C contains a list of species recorded and gives scientific names.

## 4.0 Results

### 4.1 Desk Study – Designated and Notable Sites

- 4.1.1 There were no statutory designated within 1km of the survey area.
- 4.1.2 There were two non-statutory designated sites within 1km of the survey area; these are detailed in Table 4.1, below.
- 4.1.3 There were four areas of ancient woodland within 1km of the survey area. This includes most of the block of woodland south-east of the waste water treatment works, including the proposed discharge route.

**Table 4.1: Designated Sites within 1km of the Site**

| Name               | Designation   | Approximate distance from site (km) | Reason for designation |
|--------------------|---------------|-------------------------------------|------------------------|
| Nant Pen Is'r Waen | Wildlife Site | 0.16km                              | Oak woodland           |
| Pwll Echo          | Wildlife Site | 0.6km                               | Oak woodland           |

### 4.2 Desk Study – Species Records

- 4.2.1 Cofnod hold 326 records (totalling 438 individual records) within 1km of the site within the last 20 years, including 18 records of UK and European protected animal species; individual records can include a number of sightings and therefore reflect the minimum number of plants or animals of a given species observed in the area. There were no records from within the survey area itself.
- 4.2.2 There were three records of great crested newts, all 800m north of the site; specific dates are not available for these records, but they were collected between 1993 and 2004.
- 4.2.3 There were three otter records within 1km with the closest 500m north of the site.
- 4.2.4 There were two records of water vole within 1km of the site. The closest was 270m west in 2005.
- 4.2.5 There were four records of bats within 1km of the site; the closest is an unidentified bat 275m to the west. Species that have been recorded in the area, including older records, include brown long-eared bat, lesser horseshoe and pipistrelle.
- 4.2.6 There were also numerous Schedule 1 bird species within 1km of the site, with the closest being barn owl recorded 270m from the site. Other Schedule 1 species included goshawk, peregrine, redwing and fieldfare.

### 4.3 Desk Study – Flora Records

4.3.1 There were no records of notable flora from within the study site. There were two older records of native bluebell (*Hyacinthoides non-scripta*) within 1km of the site.

4.3.2 There were no records of invasive non-native species from within the site. There were three records of Himalayan balsam (*Impatiens glandulifera*) in watercourses within 1km of the site.

### 4.4 Phase 1 Habitat Survey

4.4.1 The following Phase 1 Habitat and feature types were recorded within the site:





|        |   |
|--------|---|
| A1.1.1 | Broadleaved woodland – semi-natural   |
| A1.3.1 | Mixed woodland – semi-natural   |
| B4     | Improved grassland  |
| G2     | Running water   |
| J2.2.2 | Defunct hedge – species-poor  |
| J2.4   | Fence   |
| J2.6   | Dry ditch   |
| J4     | Bare ground   |
| J5     | Other – here used for waste works treatment works hardstanding and other infrastructure |

4.4.2 A Phase 1 Habitat map with target notes is provided in Figure 4.1 below. Descriptions of the habitats are provided in Table 4.2 with information associated with target notes provided in Table 4.3. Where relevant, photographs are included with the text.



**Figure 4.2: Phase 1 Habitat Survey Map**  
 Base image © OpenStreetMap Contributors 2024

**Table 4.2: Habitat Descriptions**

| Habitat Description   | Photo   |
|---|---|
| <p>Improved grassland occupied most of the site, extending beyond the proposed wetland site to the field boundaries. It was dominated by perennial rye grass, with creeping buttercup, ribwort plantain, white clover. Other grasses included Yorkshire fog, meadow grass and creeping bent. The sward was slightly higher than was observed during the previous survey (Tucker and Cutts, 2024), although there were signs of cattle grazing. Otherwise, there appears to have been no change in this habitat following the original survey (Evans, 2022).</p> <p>Patches of bare ground were noted at the north-western corner of the field and on the northern boundary, coinciding with the presence of scattered trees within the field (oak, sycamore and Scot's pine).</p> <p>A dry ditch was present along the southern edge of the field, and floral diversity was slightly higher in the vicinity. Low numbers of a range of additional species observed, including daisy, dandelion, hogweed, ragwort, scarlet pimpernel, creeping cinquefoil and field speedwell.</p> <p>Additional species were also noted at the north-eastern corner of the field, where the ground was disturbed in the access track and grass cover was patchier; these included pineappleweed, broadleaf plantain and shepherd's purse.</p> <p>The grassland extended into the waste water treatment works compound, which was not directly accessed during the survey. Vegetation in this area was higher than in the adjacent field, dominated by grasses (notably perennial rye grass and Yorkshire fog)</p> | <p><i>Improved grassland</i></p>  <p><b>View east across the proposed wetland area</b></p>  <p><b>View north across the grassland, from the southern field boundary</b></p>  <p><b>Bare ground below oak and young sycamore trees in the north-western corner of the field</b></p>  <p><b>Patch of bare ground below Scot's pine; view west along the northern field boundary</b></p> |

but with more abundant forbs in comparison with the field. Species that were apparent and locally abundant included dock, hogweed, nettles, field buttercup and dandelion. The differences in sward height and forb abundance between this area and the field likely reflect different management of this area (i.e. lack of grazing) rather than a fundamental change of the habitat type.



**View west into the treatment works from the compound entrance; tall grass alongside hardstanding**



**View north into the treatment works from the field; marked change in grass height and the abundance of docks beyond the boundary fence**

#### *Species-poor hedgerow*

Hawthorn hedges were present along the majority of the western, southern and eastern field boundaries, growing alongside post and wire or wooden fences, in various stages of disrepair. Only a small section of hedgerow on the western field boundary coincided with the edge of the proposed wetland area.

In most places there were large gaps at the base of the hedgerows, with bare ground or patchy grassland cover and no distinct hedgerow ground flora. Dog rose, blackthorn and ivy were occasionally present in the hedgerow, and a small number of gorse bushes were also observed on the southern field boundary.

Taller oak trees were also scattered along these boundaries. Smaller trees formed part of the hedgerow, but where mature oaks were present the hedgerow appeared to have been shaded out and hawthorn were absent.



**View south-east from the north-western corner of the field; defunct hawthorn hedge (left) with oak trees forming the field boundary**



**Ditch and hawthorn hedge on the southern field boundary (left); view east**

### *Broadleaved woodland and stream*

A block of broadleaved woodland formed the northern boundary to the proposed wetland area, and the proposed discharge route runs through approximately ten metres of the woodland to join the Nant Penisa Waun stream. Only areas within approximately 50 metres of the proposed discharge point were surveyed in detail for the purposes of this report. A more detailed description, covering a larger area of the woodland and stream, is available in the previous ecological report (Tucker and Cutts, 2024). No significant changes to either habitat were observed.

The woodland consisted of a mixture of broadleaved species, dominated by oak with sycamore, hazel, ash, field maple, holly and a small number of pines. Locally the canopy cover of coniferous species exceeded 10%, which would indicate mixed woodland habitat, but the overall character was of broadleaved woodland. The age structure was varied and included both fallen and standing deadwood. Ground flora was dominated by ivy, with bramble, dog's mercury and nettles. Additional flora observed in more open areas to the east of the waste water treatment works, along the access track, included cocks foot, pendulous sedge, wood avens, sorrel, cow parsley, herb-Robert, and hogweed.

The stream was unvegetated and dominantly muddy, but occasionally gravelly. The banks were shallow, becoming steeper upstream (north-east); the south-east bank was generally steeper and higher than the north-west bank. There appeared to have been some erosion and undercutting of the banks following the previous visit. 'Burrows' observed on the previous visit (Tucker and Cutts, 2022) could not be located, although similar structures were observed extending into sections of the banks; it was not possible to determine whether these were the result of animal activity or slumping of the banks.



**View north into the woodland, approximately at the proposed discharge point**



**Woodland and stream, close to the proposed discharge point**



**View south from the stream, approximately along the proposed discharge route**



**Eastern end of the woodland, view south-west along the access track towards the waste water treatment works (stream out of sight to the right)**

*Mixed woodland*

A small area of the woodland to the east of the water treatment works, and immediately north-east of the proposed development area, had a higher proportion of conifers and has been mapped as mixed woodland. This transitioned into broadleaved woodland to the north, but for convenience the access track has been taken as the boundary. This area was not surveyed in detail, but contained numerous pines and cypresses in addition to the broadleaved tree species and understorey plants seen elsewhere in woodland.






**View south-west from the north-eastern corner of the field, with mixed woodland to the left**



**Pines and cypresses along with broadleaved species; view north from the field**

**Table 4.3: Target Note Descriptions**

| Target Note | Description   |   |
|-------------|---|---|
| 1           | A small pond was previously observed in the woodland immediately adjacent to the north-western corner of the proposed development area (Tucker and Cutts, 2024). No standing water was present at the time of this survey, but the extent of the (clearly ephemeral) pond was marked by an area of waterlogged leaf litter. |  <p data-bbox="959 745 1434 808"><b>Waterlogged leaf litter, demarking the position of an ephemeral pond</b></p>                      |
| 2           | Several badger latrines were observed in the base of the ditch on the southern field boundary. Many were covered in leaf litter, but some appeared to be fresher.   |  <p data-bbox="935 1220 1458 1283"><b>Latrines in the base of the dry ditch on the southern field boundary</b></p>                   |
| 3           | A recent animal trail was observed crossing the field at a point close to the latrines (Target Note 2).   |  <p data-bbox="932 1897 1461 1960"><b>Animal trail crossing the field (arrow) marked by a strip of slightly flattened grass</b></p> |

## 4.5 Flora

- 4.5.1 Floral diversity of the site was low overall, due mainly to large areas of the site being covered by grazed improved grassland. The woodland was more diverse, but only a small area will be affected by the proposed works.
- 4.5.2 None of the species recorded during the survey are protected by the Wildlife and Countryside Act 1981 (as amended) or listed under Section 7 of the Environment (Wales) Act 2016. No other nationally or locally rare species were recorded.
- 4.5.3 Appendix C contains a list of plant species recorded during the survey.

## 4.6 Invasive Non-Native Species

- 4.6.1 No invasive non-native species were observed within the survey area or immediate surroundings.

## 4.7 Fauna

- 4.7.1 The potential for the site to support protected species and the survey results for protected species including records within a 1km radius of the site are described in Table 4.4 below.

Table 4.4: Results of Protected and Notable Species Assessment

| Species   | Suitability of Habitat  | Desk Study Records   | Further Species Consideration Required? |
|---|---|--|---|
| Amphibians – including great crested newts<br><i>Triturus cristatus</i> (GCN) | <p>The pond adjacent to the site had poor suitability for breeding GCN; the pond was shallow and ephemeral, and lacked aquatic vegetation. The woodland includes suitable foraging and commuting habitat for amphibians.</p> <p>While streams and damp woodland habitat provide connectivity for any amphibians in the area, there are no known ponds with 500m of the survey area that would be suitable for breeding GCN.</p>   | There were three records of GCN between 1993 and 2004, 800m north of the site.   | No                                      |
| Badger<br><i>Meles meles</i>  | <p>No setts were found in or immediately adjacent to the survey area but signs of badger activity were observed close to the site. In addition to previous signs of badger activity in the woodland (Tucker and Cutts, 2024), a latrine was located on the southern field boundary with an associated trail (likely badger given its relationship to the latrine) ran through the proposed development area to the adjacent woodland.</p> <p>The woodland had potential for both foraging and sett building.</p>  | <p>There were four records of badgers within the 1km of the site, with the closest was 400m from the site.</p> <p>Older records include badgers recorded to the south-west, within the same woodland as the survey area. The most recent of these was in 2002.</p> | Yes                                     |
| Bats  | <p>There were multiple trees in the woodland that had features which could potentially be used by roosting bats (e.g. holes, loose bark). Older oak trees along the field boundaries could also have potential roost features. No suitable potential roost features were observed in trees along the proposed discharge route.</p> <p>The woodland and hedgerows would be suitable for bat foraging and commuting, although connectivity to the wider landscape is patchy. The open grassland would provide limited foraging potential but may be used by some species, partly due to its proximity to higher-quality woodland habitat.</p> | <p>There were four records of bats within 1km of the site. The closest was an unidentified bat 274m to the west.</p> <p>Species that have been recorded in the area, including older records, include brown long-eared bat, lesser horseshoe and pipistrelle.</p>  | Yes                                     |

**Table 4.4: Results of Protected and Notable Species Assessment**

| Species                                    | Suitability of Habitat  | Desk Study Records   | Further Species Consideration Required? |
|--|---|--|---|
| Birds                                      | The woodland, field boundary trees and more intact sections of hedgerows would provide suitable nesting and foraging habitat for a variety of birds. Grassland on the site would also provide nesting habitat for ground-nesting birds, but nesting opportunities would be restricted by the current grazing regime.  | There were 162 recent records of 53 species of birds within a 1km radius of the site.<br><br>There are ten recent records of Schedule 1 species within 1km, with the closest being barn owl 270m from the site.  | Yes                                     |
| Dormice<br><i>Muscardinus avellanarius</i> | The woodland would provide good foraging and nesting opportunities for dormice. However, the block of woodland is small and has very poor connectivity with other suitable dormouse habitat.  | Dormice are present in the region, but there were no records in the immediate vicinity of the site and known populations are at least 3km from the site.   | No                                      |
| Hedgehog<br><i>Erinaceus europaeus</i>     | The woodland had good foraging habitat and shelter for hedgehogs, and they may forage along the edges of the field.   | There was one record of a hedgehog 670m east on the road in 2021.  | Yes                                     |
| Reptiles                                   | Open grassland, with a short sward resulting from grazing, provides very limited opportunities for reptiles. The woodland would provide places of shelter but limited foraging habitat for reptiles.  | There were no records of reptiles within 1km of the site.  | No                                      |
| Water vole<br><i>Arvicola amphibius</i>    | The stream had low suitability for water voles, with poor foraging habitat and the banks providing limited opportunities for burrowing; 'burrows' observed at the edges of the stream (Tucker and Cutts, 2024) were not characteristic of water vole. The stream was well-connected with other watercourses and would provide commuting opportunities for water vole. | There were two records of water vole within 1km of the site. The closest was 270m west in 2005.<br><br>There was a recent (2017) record of American mink in the area; these are an invasive non-native species that will heavily predate water vole populations. | No                                      |

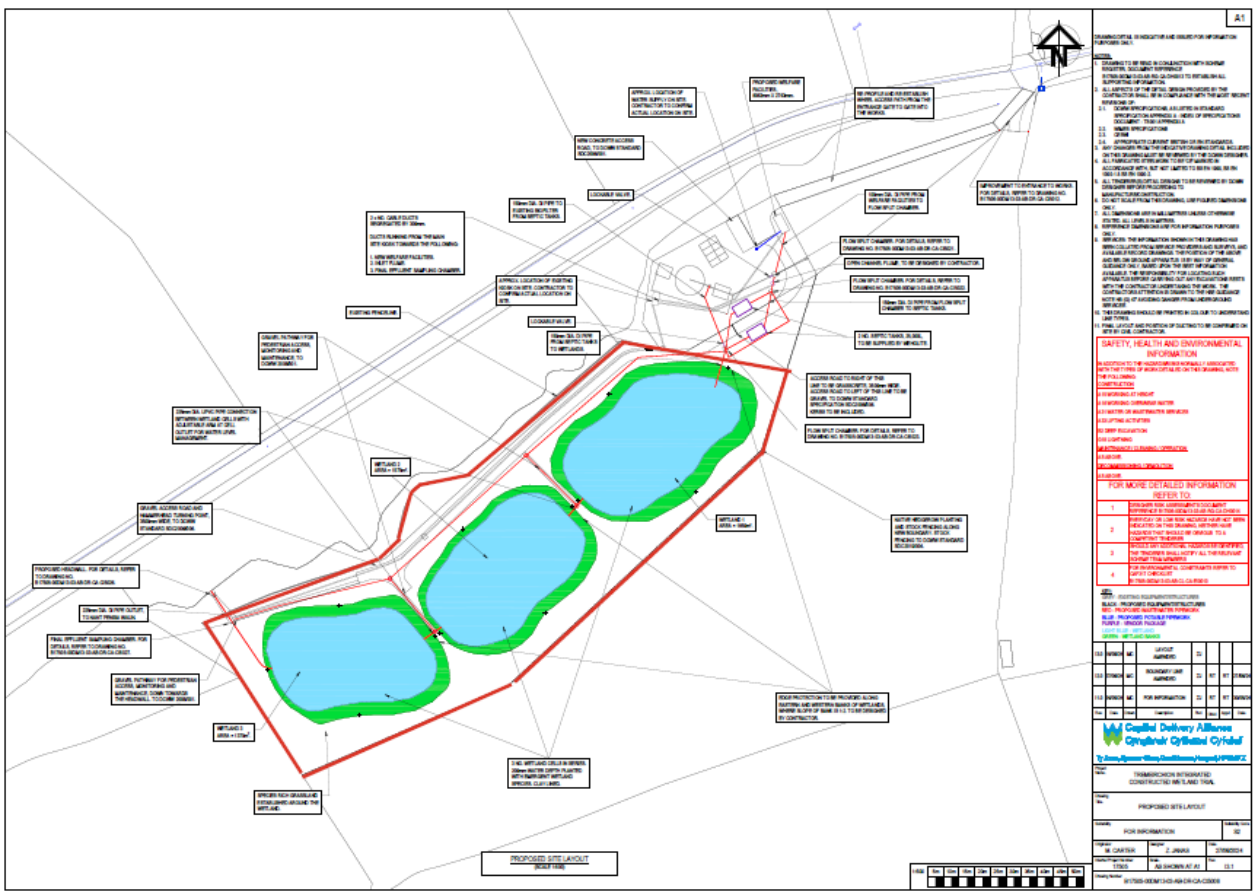
**Table 4.4: Results of Protected and Notable Species Assessment**

| Species                     | Suitability of Habitat  | Desk Study Records   | Further Species Consideration Required? |
|-----------------------------|---|--|---|
| Otter<br><i>Lutra lutra</i> | The stream would provide poor foraging potential for otter and limited opportunities for holt-building, but could provide a commuting route for local otter populations, and is well-connected to other watercourses with otter populations. No signs of otter activity (e.g. spraints, tracks) were observed during the survey.  | There were three records of otter in the area with the closest 500m north in 2020. | No                                      |
| Other species               | High turbidity and a lack of aquatic vegetation in the stream suggests that only a limited invertebrate fauna would be present. However, the 'burrow' structures that were previously observed are reminiscent of crayfish burrows (Tucker and Cutts, 2024). Native white-clawed crayfish and invasive signal crayfish are both present in Wales; signal crayfish are more tolerant of turbid water. Signal crayfish burrowing often results in undermining/collapse of banks, which could explain the most recent observations of tunnel-like structures associated with bank slumping, but no definitive evidence of their presence could be found. | There were no records of white-clawed crayfish or signal crayfish in the area      | Yes – biosecurity only                  |

## 5.0 Discussion

### 5.1 Proposed Works

5.1.1 The proposed development involves the construction of an Integrated Constructed Treatment Wetland (ICTW) scheme at the existing Tremeirchion WwTW comprising the installation of two underground septic tanks, the creation of three wetland cells with planting, a welfare facility, new internal access road(s), perimeter fencing and landscaping works. The existing WwTW will be retained as a standby facility throughout the commissioning and three-year operating technique agreement period (the minimum lifetime of the development). Following this three-year period, provided the ICTW technology has proved to be successful, the existing WwTW would be decommissioned, and once all buildings and structures are demolished, the area would be seeded with meadow land plants. Figure 5.1 below shows the current plans for the site.



**Figure 5.1: Plan of the Proposed Works**  
Base image © Dŵr Cymru Cyfyngedig 2024

### 5.2 Impacts on Designated and Notable Sites

5.2.1 The proposed works will not have an impact on any statutory designated nature conservation sites.

- 5.2.2 The proposed works have the potential to impact on the following non-statutory statutory designated nature conservation site: Nant Pen Is'r Waen Wildlife Site. This Wildlife Site is a direct continuation of the broadleaved woodland in the survey area, located 160m to the south-west. While there will be no direct impacts on this Wildlife Site, there is a hydrological connection to it and therefore a risk of any run-off from the works affecting the Wildlife Site; it was noted that the stream was already very turbid, and therefore low volumes of sediment influx during construction would be unlikely to have a significant or lasting impact.
- 5.2.3 The works will have an impact on ancient woodland, namely the area of broadleaved woodland immediate south-east of the waste water treatment works. Some trees loss or pruning is expected in the area of the proposed discharge route, and potentially along the southern edge of the woodland.

### 5.3 Habitats

- 5.3.1 Table 5.3 provides information with respect to the habitats which were recorded on site and whether these habitats are listed as a 'habitat of principal importance' under Environment (Wales) Act 2016 or listed as a local Biodiversity Action Plan habitat, or other local conservation priority habitats. Consideration of the potential impacts of the proposed project on the habitats are also discussed.

**Table 5.3: Overall Site Assessment Rating**

| Habitat Recorded   | Habitat Value | Brief Discussion  |
|--|---------------|---|
| Improved grassland   | -             | The improved grassland on site has low ecological value and low diversity, and is a common habitat within the wider surroundings.   |
| Broadleaved/mixed woodland   | HPI, ASNW     | The woodland habitats broadly fall under the 'lowland mixed deciduous woodland' HPI, and include a range of broadleaved species representative of this HPI. All areas of the woodland south-east of the treatment works have also been classified as Ancient Semi Natural Woodland. |
| Key:<br>HPI – Habitat of Principal Importance under Environment (Wales) Act 2016<br>ASNW – Ancient Semi Natural Woodland |               |   |

- 5.3.2 The woodland areas are potentially valuable habitat, but the rest of the site is of relatively low ecological value. The open, grazed grassland has limited diversity and the enclosing hedgerows (only a small section of which border the proposed development area) are species-poor and in generally poor condition. The watercourse is shallow, very shaded and turbid.

## 5.4 Flora

5.4.1 None of the plant species recorded during the survey are protected by the Wildlife and Countryside Act 1981 (as amended) or listed on Section 7 of the Environment (Wales) Act 2016. In addition, no nationally or locally rare species were recorded.

## 5.5 Fauna

5.5.1 The primary impact of the scheme on fauna using the site is likely to be disturbance during the works, with minimal loss of high-quality habitats. The impact of this is likely to be outweighed by the enhancements to the habitats.

5.5.2 **Amphibians** – The woodland provides suitable foraging habitat and shelter for amphibians, but they are less likely to be using the open grassland. The creation of the proposed wetland areas will greatly improve the habitat on site for amphibians, including providing potential breeding areas. Some basic Reasonable Avoidance Measures (RAMS) should be put in place during any works to minimise any risk of harm to amphibians that may be using the site. These are provided in Section 6.3.5.

5.5.3 **Badger** – There is evidence that badgers are using the site and surrounding areas, with suitable foraging and sett building habitats present. Badger activity is centred on the higher-quality habitat within the woodland, but foraging through the field (and therefore the proposed works area) is also highly likely. No further surveys are required, but the RAMS in Section 6.3.7 must be followed to minimise any impacts on badgers using the area.

5.5.4 **Bats** - The woodland provides good quality habitat for foraging and commuting bats, although connectivity with the wider landscape is limited. Some of the trees in the woodland had features which could potentially be used by roosting bats. Trees along the proposed discharge route were checked for potential roost features and none were observed; however, if suitable features are subsequently found on **any** trees that require felling or pruning then a suitably licenced ecologist should be consulted before the works proceed.

5.5.5 Lighting guidance and general avoidance measures should be followed to minimise the disturbance to any bats using the site or adjacent habitats for roosting, commuting or foraging. These are detailed in Section 6.2.3 and Section 6.3.2.

5.5.6 **Birds** - No evidence of nesting birds was seen within the site, but all of the trees and more hedgerow on and adjacent to the site would provide suitable nesting and foraging opportunities and must be considered potential nesting habitat. RAMS detailed in Section 6.3.8 will be followed to prevent disturbance to nesting birds.

5.5.7 **Hedgehog** - The site has good potential for hedgehogs and good connectivity to other suitable hedgehog areas. However, the works are considered unlikely to negatively affect hedgehogs, and no mitigation measures are proposed, other than those covered under the Site General Reasonable Avoidance Measures in Section 6.3.2.

5.5.8 **Reptiles** - The site is considered unlikely to support a population of reptiles; there are no records in the vicinity and the site contains very little suitable habitat. As with amphibians, the works are unlikely to have a significant negative impact on any reptiles that may be present; the RAMS set out in Section 6.3.6 will minimise any impacts on any reptiles encountered during the scheme.

## 5.6 Invasive Non-Native Species (INNS)

- 5.6.1 There are records of Himalayan balsam (*Impatiens glandulifera*) in nearby watercourses and while none was observed in the survey area, this species can spread rapidly; particularly with the water course running through the site. If Himalayan balsam becomes established on the site it will require control, and in particular efforts to prevent spreading this plant. Regular monitoring should be carried out to ensure invasive non-native species (including aquatic species in the proposed wetland) do not become established. General biosecurity measures should be followed at all times during the works (see Appendix D) and if any invasive species become apparent on site, the works should stop and advice should be sought from a specialist.
- 5.6.2 There were also potential signs of signal crayfish (*Pacifastacus leniusculus*) in the stream. Signal crayfish can carry and spread crayfish plague, a disease that causes extremely high mortality rates in native white-clawed crayfish. Therefore, as a precaution, biosecurity procedures are recommended if any contractors need to enter the stream, in order to prevent the potential spread of disease and animals (see Section 6.2.5).
- 5.6.3 No specific surveying for signal crayfish is required at this point. However, if present, signal crayfish could cause significant damage to the watercourse over time, and it is therefore recommended that long-term site monitoring includes periodic checks of bank stability around the discharge point.

## 6.0 Avoidance, Mitigation and Restoration

### 6.1 The Step-Wise Approach

6.1.1 Development proposals should take green infrastructure into consideration in order to avoid negative impacts on habitats and species, and seek ways to maintain and enhance biodiversity. Impacts on habitats and species should be treated in a step-wise manner (Planning Policy Wales PPW12, paragraph 6.4.15), by seeking to:

- **Avoid** damage to biodiversity in its widest sense by maintaining the largest possible area of existing habitat supporting biodiversity and functioning ecosystems, particularly Section 7 habitats and species where present, through careful development design and consideration of long-term maintenance and management and ensuring that retained habitats continue to be well connected to adjacent habitats to provide connectivity for key species.
- **Mitigate** or **restore** by identifying measures to address the specific negative effects by repairing damaged habitats and disturbed species. The measures should seek to restore in excess of like for like, accounting for disturbance and time lags for the recovery of habitat and species, and in every case, mitigation or restoration measures should seek to build ecosystem resilience within the site and where possible the wider area.
- As a last resort off-site **compensation** for unavoidable damage must be provided. This must be of significant magnitude to fully compensate for any loss.
- All development must **deliver a net benefit** for biodiversity and ecosystem resilience from the baseline state (proportionate to the scale and nature of the development proposed).

### 6.2 Avoidance

6.2.1 Based on the ecological information set out in this Preliminary Ecological Appraisal, impacts on the following Habitats of Principal Importance for Wales from development should be avoided wherever possible:

- Lowland mixed deciduous woodland

6.2.2 Impacts on the woodland will be minimal, and largely restricted to a narrow area where the discharge point will be created; there is also the potential that some tree pruning or felling will be required along the edge of the field. However, these areas have a small footprint and there will be negligible loss of this habitat and no overall loss of habitat functionality.

6.2.3 With respect to the potential impact of bats from lighting associated with development schemes, the Institute of Lighting Professionals (2023) 'Bats and Artificial Lighting at Night' guidance suggests that the ecological mitigation hierarchy applies to lighting design: impacts to biodiversity should be avoided in the first instance through design and where this has been clearly demonstrated not to be possible, appropriate mitigation needs to be put in place.

Compensation is the least desirable option, so all other avenues should first be explored and ruled out. In parallel, opportunities to design lighting betterment for biodiversity should be sought wherever possible.

- 6.2.4 It is therefore important to integrate avoidance measures into developmental design, by retaining ecologically functional 'dark corridors' within schemes wherever feasible, and in preference to seeking lighting mitigation strategies. Consideration should be given to the lighting effect of a scheme on Key Habitat and Supporting Habitat areas for bats, as well as commuting routes.
- 6.2.5 General biosecurity measures which should be adopted as part of any development project are provided in Appendix D. Any staff or contractors who enter the watercourse should follow 'check, clean, dry' guidance (NNS, 2024) before leaving site in order to prevent the spread of disease or invasive aquatic organisms.

### 6.3 Mitigation

- 6.3.1 This section sets out the likely mitigation measures which could be adopted as part of the project to minimise potential impacts on biodiversity features.
- 6.3.2 The following general mitigation measures should be adopted at all times during the works:
- Prior to the start of works, a toolbox talk should be given to everyone involved in the project to set out any ecological protection measures and a log of this should be kept.
  - Working areas should be kept to the minimum required.
  - Works should be avoided within 1 hour of dawn and dusk where possible, in order to avoid disturbance to nocturnal animals. If works during this time are needed, all lighting should be directional and directed away from boundary edges and any surrounding habitat.
  - Storage of fuel must follow best practice. Potential pollutants should be restricted to site compounds and hardstanding areas. Spill kits should be readily available throughout the works.
  - Should it be necessary to have any excavations left open overnight a suitable ramp (such as a plank or branch) must be provided to allow badgers, and other animals to escape the pit. Ramps could be created by grading the slope at the edges or using scaffold boards.
  - All materials brought onto site should be stored on hardstanding where possible. Materials should be stored on raised pallets or bagged, to prevent amphibians (or other wildlife) from taking refuge beneath them.
  - Any terrestrial mammals seen must be allowed to leave the area on their own. If this is not possible e.g. the animal is injured or trapped then an ecologist must be called.

- If at any point in the works an amphibian or reptile is found within the works area all works in the vicinity of the sighting must immediately cease. Common amphibians should be moved from the working area by site workers (wearing gloves) and placed in a nearby hedgerow. Reptiles will usually retreat to a safe area of their own accord. If, at any point, GCN are discovered during the works then works will have to stop and a licence may be required from NRW before they can continue.
- 6.3.3 The following mitigation measures should be adopted during the construction-phase in order to minimise any potential impacts on habitats or species.
- 6.3.4 **Woodland / Trees** - Root protection zones around retained trees, if required, should be clearly marked or appropriate protection fencing should be used during the construction period to ensure that there is no access to, or risk of damage to these areas.
- 6.3.5 **Stream** – There is a risk of run-off during the works, which could negatively impact the stream and downstream habitats. It is recommended that mitigation measures are put in place to minimise this risk, which could include producing a construction environmental management plan (CEMP) or a waste management plan in accordance with NetRegs GPP5.
- 6.3.6 **Amphibians / Reptiles** - Care must be taken regarding clearance of any piles of brushwood, rubble, plant material or other ‘habitat piles’ in the colder months due to the possibility of disturbing hibernating animals including amphibians and reptiles. Such piles should not be disturbed between October and April or when daytime temperatures are below 10°C.
- 6.3.7 **Badgers** - If at any point a badger sett is discovered on or adjacent to the site, then a suitably qualified ecologist should be informed; the ecologist will assess the sett and advise if any further action is required. Works in close proximity to an active badger sett (typically 30m with machinery or as low as 10m with hand tools) **are likely to require a licence and must not proceed until one is obtained.**
- 6.3.8 **Nesting Birds** - The removal of vegetation from the woodland should be completed outside the bird breeding season (i.e. avoiding the period March to the end of September inclusive). If it proves necessary to work during the breeding season then a survey must be carried out immediately prior to works starting (no more than 48 hours beforehand) to ensure that no active nests will be affected. **If active nests are found then work must be delayed until all chicks have fledged.**
- 6.3.9 **Bats** – Trees along the proposed discharge route have been surveyed for features which could potentially be used for roosting bats. However, should **any** additional trees require felling or pruning then they must be checked for potential bat roosts prior to the works.

## 7.0 Compensation and Enhancement

### 7.1 Compensation

7.1.1 This section of the report identifies which habitats / species features may need to be compensated for as part of the proposed development, and provides information to incorporate the recommended compensation proposals into the scheme design.

7.1.2 Consideration of the development proposals for the site have identified that compensation for the loss of / damage to the following habitats may be required:

- Broadleaved/mixed woodland
- Improved grassland

7.1.3 Hedgerows will be planted along the new site boundaries, which will compensate for loss of any trees from the woodland and provide an overall habitat enhancement (see Section 7.2). Details of these hedgerows were provided in the Preliminary Landscaping Plan and include a mixture of appropriate native species, as detailed in Table 7.1.

7.1.4 If removal of the tree next to the proposed welfare facilities is considered necessary (tree 7735 in the Arboricultural Impact Assessment; Bardsley, 2024), the proposed hedgerow planting is more than sufficient to cover the loss of the tree.

**Table 7.1: Recommended Native Tree and Hedgerow Species**

| Latin name                | Common name  | Hedgerow composition |
|---------------------------|--------------|----------------------|
| <i>Crataegus monogyna</i> | Hawthorn     | 30%                  |
| <i>Corylus avellana</i>   | Hazel        | 30%                  |
| <i>Prunus spinosa</i>     | Blackthorn   | 10%                  |
| <i>Acer campestre</i>     | Field maple  | 10%                  |
| <i>Ilex aquifolium</i>    | Holly        | 10%                  |
| <i>Ulmus procera</i>      | English elm  | Up to 10%            |
| <i>Cornaceae</i>          | Dogwood      |                      |
| <i>Ligustrum vulgare</i>  | Privet       |                      |
| <i>Sambucus nigra</i>     | Elder        |                      |
| <i>Populus nigra</i>      | Black poplar |                      |
| <i>Malus sylvestris</i>   | Crab apple   |                      |
| <i>Rosa canina</i>        | Dog rose     | Additional planting  |

7.1.5 All of the improved grassland on site will be lost, but the majority will be replaced by higher-value habitats, and is therefore considered to be enhancement of this habitat (see Section 7.2). A small area of grassland will be lost through the creation of new access tracks but the overall quality of the habitats on site will be greatly improved through the proposed works, no additional compensation will be required for the lost improved grassland.

7.1.6 **Birds** - To compensate for the loss of features which could be used by nesting birds, for example trees removed during the works (which would represent a loss in nesting

opportunities within the site, at least until the new hedgerows become sufficiently mature), bird boxes could be incorporated into the site's layout. Bird boxes should include:

- Boxes with a 32mm entrance (sparrow boxes)
- Boxes for smaller birds (25-28mm entrance)
- Boxes with 45mm opening (starling box)

7.1.7 Boxes should be placed near to and facing areas of trees and should be secured mounted on the trees using non-harmful nails (non-rusting, ideally aluminium). The boxes should ideally be woodcrete or woodstone boxes rather than wooden boxes as they will last longer and with limited maintenance.

## 7.2 Enhancement

7.2.1 Planning Policy Wales (PPW12, paragraph 6.4.5) confirms that planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. This means development should not cause any significant loss of habitats or populations of species (not including non-native invasive species), locally or nationally and must work alongside nature and it must provide **a net benefit for biodiversity** and improve, or enable the improvement, of the resilience of ecosystems.

7.2.2 Based on the development proposals provided at Enfys at this stage in the design process, the following will all provide net gain for biodiversity:

- Hedgerows
- Wetland cells
- Species-rich grassland

7.2.3 New species-rich hedgerows, as detailed in Section 7.1.3, will provide enhancement to the site as well as providing compensation for any lost trees. Additionally, the proposed hedgerows will improve habitat connectivity across the existing site.

7.2.4 The proposed wetland cells will be seeded with a mixture of aquatic/aquatic marginal plants (Preliminary Landscaping Plan; species list replicated in Appendix E of this report), which will greatly increase diversity within the site. The wetland cells will also create habitats suitable for a range of invertebrates, amphibians and reptiles.

7.2.5 It is proposed that all of the retained grassland area is seeded with a grassland and wildflower seed mix which, in conjunction with an appropriate management regime, will increase further enhance biodiversity across the site (Preliminary Landscaping Plan; species list replicated in Appendix E of this report).

7.2.6 Additional bird and bat boxes (in addition to any bird boxes erected as compensation for loss of nesting habitat) could be installed in trees at the edge of the woodland and would be beneficial to these species.

## 8.0 Further Works

### 8.1 Further Works

8.1.1 No further survey work will be required on site as the proposed plans currently stand.

8.1.2 Table 8.1 below provides a summary of ecological considerations associated with the proposed development. Note that “Pre-construction” means prior to the works phase beginning on site, whereas “Immediately prior to clearance” means during the works, but prior (ideally within 48 hrs) to that particular operation (e.g. tree felling, demolition) beginning.

**Table 8.1: Summary of Other Ecological Considerations**

| Constraint                                       | Work Stage   | Species                           | Work                                      | Location                                      | When possible  |
|--|--|-----------------------------------|---|---|--|
| If any vegetation clearance in March – September | Immediately prior to clearance, whenever this occurs | Nesting birds                     | Nesting bird checks                       | Any scrub, tree, or tall vegetation clearance | March-September  |
| Removal of brash or other habitat piles          | All  | Reptiles / amphibians / hedgehogs | Check carefully for animals               | Habitat piles                                 | Must <b>not</b> be done during possible hibernation (November-March) |
| If badger sett located                           | All  | Badgers                           | Seek ecological advice                    | Site  | All year   |
| If additional trees are to be removed            | All  | Bats                              | Further survey required for bat potential | Woodland                                      | All year   |

### 8.2 Green Infrastructure Statement

8.2.1 Planning Policy Wales (PPW12, paragraph 6.2.12) states that a green infrastructure statement should be submitted with all planning applications. This statement should be proportionate to the scale and nature of the development proposed and will describe how green infrastructure has been incorporated into the proposal. This will need to be provided to support a planning application, and should illustrate how the step-wise approach has been adopted in relation to the project proposals.

8.2.2 Further information regarding green infrastructure requirements within Denbighshire County Council is given in Appendix A.

## 9.0 References

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## APPENDIX A Legislation and Planning Policy

### Amphibians

The most common species are protected from sale under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). These are as follows: common frog, *Rana temporaria*; common toad, *Bufo bufo*; palmate newt, *Lissotriton helveticus*; and, smooth / common newt, *Lissotriton vulgaris*. This legislation protects them from sale, or advertising / offering them for sale.

The UK's two rarest amphibians are protected under the Conservation of Habitats and Species Regulations 2017 (known as 'the Habitats Regulations'). This is because they have declined throughout Europe in recent decades. The Habitats Regulations lists the following amphibians as European Protected Species (EPS):

- Great crested (or Warty) newt, *Triturus cristatus*
- Natterjack toad, *Epidalea calamita*

Under the Habitats Regulations, it is an offence if you:

- Deliberately capture, injure or kill any wild animal of an EPS;
- Deliberately disturb wild animals of any such species;
- Deliberately take or destroy the eggs of such an animal; or,
- Damage or destroy a breeding site or resting place of such an animal.

Disturbance is defined as that which is likely:

- To impair their ability: to survive, to breed or reproduce, or to rear or nurture their young, or, in the case of animals of a hibernating or migratory species, to hibernate or migrate; or
- To affect significantly the local distribution or abundance of the species to which they belong.

There are other offences relating to the possession, transport, selling or exchange of a protected species.

### Badgers

The Protection of Badgers Act 1992 fully protects badgers and their setts. Offences include:

- killing, injuring and taking (or attempting these);
- possession of a dead badger (or derivative);
- cruelly ill-treating a badger;
- damaging a badger sett or any part of it;
- destroying a badger sett;
- obstructing access to / entrance of a badger sett;
- causing a dog to enter a badger sett;
- disturbing a badger whilst occupying a sett.

Badgers are also listed on Schedule 6 of the Wildlife and Countryside Act 1981 (as amended), which prohibits certain methods of killing and capture.

### Bats

All species of bat, their breeding sites and their resting places in England and Wales are protected through a 'dual' system of protection, under the England and Wales Habitats Regulations and Wildlife and Countryside Act (1981) as amended. Because two regimes give legal protection to bats, the implications of both regimes must be fully understood.

Regulation (Reg.) 43 of the England and Wales Habitats Regulations makes it an offence to:

- deliberately capture, injure or kill a bat;
- deliberately disturb bats (which includes any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or in the case of animals of a hibernating or migratory species, to hibernate or migrate or to affect significantly the local distribution or abundance of the species to which they belong);
- damage or destroy a breeding site or resting place of a bat; or
- possess, control, transport, sell or exchange, or offer for sale or exchange, any live or dead bat or part of a bat or anything derived from a bat or any part of a bat

Under Section 9 of the W&CA (s.9(4)(b), 9(4)(c) and 9(5) only), it is an offence (in relation to bats) to:

- intentionally or recklessly disturb a bat while it is occupying a structure or place of shelter or protection;
- intentionally or recklessly obstruct access to any structure or place used by a bat for shelter or protection; or
- sell, offer or expose for sale, or have in their possession or transports for the purpose of sale, any live or dead bat or any part of, or anything derived from a bat (or be responsible for adverts suggesting the intention to do this).

Under both laws Natural Resources Wales are empowered to issue licences to carry out work to bat roosts for reasons of overriding public interest. It is not illegal to tend to a disabled bat pending recovery.

### Birds

Under the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way (CROW) Act 2000, all wild birds, their nests and eggs are protected during the breeding season (typically March to August inclusive). This makes it an offence to:

- Intentionally kill, injure or take any wild bird.
- Take, damage or destroy the nest of a wild bird included in Schedule ZA1.
- Take, damage or destroy the nest of any wild bird while that nest is in use or being built.
- Take or destroy an egg of any wild bird.

## Hedgehogs

Hedgehogs are listed under Section 7 of the Environment (Wales) Act 2016, therefore public bodies have a duty to conserve them in the exercise of their functions.

They are listed under Section 6 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence for them to be killed or taken by certain methods.

## Reptiles

All British reptiles are protected from intentional killing, injuring and sale under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), including the four common species:

- Adder, *Vipera berus*
- Grass snake, *Natrix helvatica*\*
- Slow worm, *Anguis fragilis*
- Common lizard, *Zootoca vivipara*

\* The native UK grass snake (also referred to as the barred grass snake) was originally listed under *Natrix natrix* in the W&CA 1981 (as amended); formerly considered to be a sub-species of *N. natrix* (*N. natrix helvatica*), the barred grass snake was recognised as a separate species in 2017 following genetic analysis of European *Natrix* populations.

This legislation aims to protect them from persecution and also from exploitation in the pet trade, and for which the following are offences:

- Intentional killing, injuring or taking.
- Intentionally or recklessly damaging / destroying a place of shelter / protection.
- Intentionally or recklessly disturbing an animal in its place of shelter / protection.
- Intentionally or recklessly obstructing access to its place of shelter / protection.
- Possession (live or dead, including derivatives), sale and offering for sale.

The UK's two rarest reptiles are afforded additional protection under the Conservation of Habitats and Species Regulations 2017 (known as 'the Habitats Regulations'). This is because they have declined throughout Europe in recent decades. The Habitats Regulations lists the following reptiles as European Protected Species (EPS):

- Sand lizard, *Lacerta agilis*
- Smooth snake, *Coronella austriaca*

Under the Habitats Regulations, it is an offence if you:

- Deliberately capture, injure or kill any wild animal of an EPS;
- Deliberately disturb wild animals of any such species;
- Deliberately take or destroy the eggs of such an animal; or,
- Damage or destroy a breeding site or resting place of such an animal.

Disturbance is defined as that which is likely:

- To impair their ability: to survive, to breed or reproduce, or to rear or nurture their young, or, in the case of animals of a hibernating or migratory species, to hibernate or migrate; or
- To affect significantly the local distribution or abundance of the species to which they belong.

There are other offences relating to the possession, transport, selling or exchange of a protected species.

## Otters

Otters are protected under the Conservation of Habitats and Species Regulations 2017, known as the 'Habitats Regulations', because they have declined throughout Europe in recent decades. The Habitats Regulations lists otters as a European Protected Species (EPS):

Under the Habitats Regulations, it is an offence if you:

- Deliberately capture, injure or kill any wild animal of an EPS;
- Deliberately disturb wild animals of any such species; or,
- Damage or destroy a breeding site or resting place of such an animal.

Disturbance includes, but is not limited to, any disturbance which is likely:

- To impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or (in the case of animals of a hibernating or migratory species) to hibernate or migrate; or,
- To affect significantly the local distribution or abundance of the species to which they belong.

Under the Wildlife and Countryside Act 1981 (as amended) it is illegal to:

- Intentionally or recklessly disturb any otter while it is occupying a structure or place which it uses for shelter or protection [Section 9(4)(b)].
- Intentionally or recklessly obstruct access to any structure or place used by an otter for shelter or protection [Section 9(4)(c)].
- Sell, offer or expose for sale any otter [Section 9(5)].

It is, however, legal for you to tend a disabled otter with the intention of releasing it, or to kill an otter that cannot recover, as long as the injury was not a result of your unlawful act (Habitat Regulations 44(2); W&CA 10(3)(a)(b)). It is not necessary to obtain a licence to collect a dead otter (e.g. a road casualty) for the purpose of submitting it for post mortem as part of the Cardiff University Otter Project (see: <https://www.cardiff.ac.uk/otter-project>).

## Water Vole

The water vole is listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), for which the following are offences:

- Intentionally killing, injuring or taking [Section 9(1)].

- Possession or control of a water vole (live or dead) [Section 9(2)].
- Intentionally or recklessly damaging/destroying a place of shelter/protection [Section 9(4)(a)].
- Intentionally or recklessly disturbing any water vole while it is occupying a structure or place which it uses for shelter or protection [Section 9(4)(b)].
- Intentionally or recklessly obstructing access to any structure or place used by a water vole for shelter or protection [Section 9(4)(c)].
- Selling, offering or exposing for sale any water vole [Section 9(5)].

### Protected Plants

The Wildlife and Countryside Act 1981 (as amended) makes it illegal to uproot any wild plant without the permission of the landowner. In addition, plants which are either rare or vulnerable to exploitation are listed on Schedule 8, for which it is an offence to:

- Intentionally pick, uproot or destroy.
- Sell, offer or expose for sale.

### Invasive Non-Native Species

Invasive non-native species are listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), for which the following are offences:

- Release into the wild, or to allow the escape of, any animal which is not ordinarily resident, or a regular visitor to, Great Britain in a wild state, or which is included in Part 1, Schedule 9.
- Plant in the wild, or otherwise cause to grow there, any plant included in Part 2, Schedule 9.

### National Planning Policy

National Planning Policy in Wales is set out in Planning Policy Wales, Edition 12, issued in February 2024. This document sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales. PPW, the TANs, MTANs and policy clarification letters comprise national planning policy.

PPW Edition 12 Section 6.4 states that “*biodiversity underpins the structure and functioning of ecosystems*” and identifies that the “*planning system has a key role to play in helping to reverse the decline in biodiversity and increase the resilience of ecosystems, at various scales, by ensuring appropriate mechanisms are in place to both protect against loss and to secure enhancement*”. The broad framework for implementing the Environment (Wales) Act 2016 Section 6 Duty, securing a net benefit for biodiversity and building resilience through the planning system includes addressing all of the following attributes: diversity, extent, condition, connectivity, and adaptability to change.

Green infrastructure (GI) is defined in Planning Policy for Wales (PPW) Edition 12 as “*the network of natural and semi-natural features, green spaces, rivers and lakes that intersperse and connect places*”. Green infrastructure can function at a range of different scales, from entire ecosystems to street trees and is capable of providing several functions at the same time and as a result offers multiple benefits, for social, economic and cultural as well as environmental resilience.

Development proposals should take biodiversity and green infrastructure (GI) into consideration in order to avoid negative impacts on habitats and species, and seek ways to maintain and enhance biodiversity. Impacts on habitats and species should be treated in a step-wise manner (PPW 12, paragraph 6.4.15), by seeking to:

- **Avoid** damage to biodiversity in its widest sense by maintaining the largest possible area of existing habitat supporting biodiversity and functioning ecosystems, particularly Section 7 habitats and species where present, through careful development design and consideration of long-term maintenance and management and ensuring that retained habitats continue to be well connected to adjacent habitats to provide connectivity for key species.
- **Mitigate** or **restore** by identifying measures to address the specific negative effects by repairing damaged habitats and disturbed species. The measures should seek to restore in excess of like for like, accounting for disturbance and time lags for the recovery of habitat and species, and in every case, mitigation or restoration measures should seek to build ecosystem resilience within the site and where possible the wider area.
- As a last resort off-site **compensation** for unavoidable damage must be provided. This must be of significant magnitude to fully compensate for any loss.
- All development must **deliver a net benefit** for biodiversity and ecosystem resilience from the baseline state (proportionate to the scale and nature of the development proposed).

PPW12 also sets out the national policy requirements in relation to planning permissions where protected species, trees, hedgerows and woodlands and *irreplaceable natural resources* have the potential to be impacted.

### Local Planning Policy

Denbighshire County Council Local Development Plan 2006 - 2021 Policy RD 1 – Sustainable development and good standard design provides information regarding the creation and protection of green and blue corridors and the provision of biodiversity rich landscaping.

#### **Policy RD 1 - Sustainable development and good standard design**

**Development proposals will be supported within development boundaries provided that all the following criteria are met:**

- xiii) Incorporates suitable landscaping measures, including where appropriate hard and soft landscaping treatment, the creation and/or protection of green and blue corridors, mature landscaping, and arrangements for subsequent maintenance. Landscaping should create a visually pleasant, sustainable and biodiversity rich environment that protects and enhances existing landscape features and also creates new features and areas of open space that reflect local character and sense of place; and**

Policy VOE 1 – Key Areas of importance states that in relation to protection from development that would adversely affect these areas development proposals should maintain, and wherever possible, enhance the Key Areas for their characteristics, local distinctiveness and value to the communities of Denbighshire. Statutory designated sites for nature conservation and local areas designated or identified for their biodiversity value are specifically identified as Key Areas of importance.

### **Policy VOE 1 – Key Areas of importance**

**The following areas will be protected from development that would adversely affect them. Development proposals should maintain and, wherever possible, enhance these areas for their characteristics, local distinctiveness, and value to local communities in Denbighshire:**

- **Statutory designated sites for nature conservation;**
- **Local areas designated or identified because of their natural landscape or biodiversity value;**
- **Sites of built heritage; and**
- **Historic Landscape, Parks and Gardens.**

Denbighshire CC's LDP (p.70) recognises that *“The restoration or enhancement of habitats and species numbers will be supported where these contribute to the Local Biodiversity Action Plan...Facilitating species adaptation and migration through protecting habitat connectivity corridors and enhancing biodiversity is necessary to adapt to climate change”* and goes on to say that *“New development will have regard to the impact, either direct or indirect, on people’s opportunity to enjoy and experience nature, enabling where appropriate, improved public access and understanding of local environmental characteristics”*.

Policy VOE 5 – Conservation of natural resources sets out the requirement for development proposals which may have an impact on protected species or designated sites of nature conservation to be supported by a biodiversity statement. The policy introduces the ecological mitigation hierarchy and identifies where a planning permission will not be granted in relation to adverse biodiversity impacts.

**Policy VOE 5 – Conservation of natural resources.**

**Development proposals that may have an impact on protected species or designated sites of nature conservation will be required to be supported by a biodiversity statement which must have regard to the County biodiversity aspiration for conservation, enhancement and restoration of habitats and species.**

**Where the overall benefits of a development outweigh the conservation interest of a locally protected nature site, mitigation and enhancement measures in or adjacent to these sites should be an integral part of the scheme.**

**If necessary, measures required to mitigate likely adverse effects on the qualifying features of statutory designated sites should be put in place prior to the commencement of development. Measures required to offset any likely adverse effects will be secured by planning conditions and/ or planning obligations.**

**Planning permission will not be granted for development proposals that are likely to cause significant harm to the qualifying features of internationally and nationally designated sites of nature conservation, priority habitats, priority species, regionally important geodiversity sites, or to species that are under threat.**

DCC's 'Supplementary Planning Guidance Note – Conservation and Enhancement of Biodiversity (July 2016)' is one of a series of Supplementary Planning Guidance (SPG) notes amplifying DCC Local Development Plan 2006 – 2021 policies in a format which aims to guide the process, design and quality of new development. The Council's SPG notes are not part of the adopted LDP. However, SPGs can be treated as a material planning consideration when LPAs, Planning Inspectors and the Welsh Government determine planning applications and appeals. The SPG outlines the Council's expectations with regard to the biodiversity information to be submitted with a planning application, scope and standards of submitted ecological surveys; and briefly points out potential additional legal duties on developers as a result of obtaining planning consent.

DCC's 'Supplementary Planning Guidance Note - Trees & Landscaping (July 2016)' states that "*Trees and hedgerows form an important part of our environment and in the delivery of sustainable development, the retention and the planting of new trees and hedges is crucial*". The SPG provides guidance about tree and hedgerow survey, the design of development proposals in relation to trees and hedgerows, tree protection and new tree and hedgerow planting.

In addition, 'Supplementary Planning Guidance for lighting in the Clwydian Range and Dee Valley Area of Outstanding Natural Beauty' is of relevance. This SPG is relevant in Denbighshire County Council, Flintshire County Council and Wrexham County Borough Council areas where they overlap with the Clwydian Range and Dee Valley AONB. The SPG identifies that "*Artificial light has done much to enhance peoples' use of the night-time environment but it can cause light pollution. Light pollution is the unnecessary brightening of the night sky and this leads to problems. It affects our health and*

*well-being, our safety, and our heritage. It endangers wildlife that needs the dark, and the environment through the over-use of energy and the generation of carbon".* The document sets out guidance to lighting design for the protection of the dark night sky of the Clwydian Range and Dee Valley AONB and enables developers and planners to design, submit and assess lighting schemes that are appropriate to the landscape, whether planning permission is a requirement or not.

Denbighshire County Council have responded to the recent update to Chapter 6 of PPW<sup>1</sup> by stating that *"There is a great deal to consider in the revised Chapter 6, however the main policy changes relate to:*

- *Green Infrastructure*
- *Net Benefit for Biodiversity and the Step Wise Approach*
- *Protection for Sites of Special Scientific Interest*
- *Trees and Woodlands"*

## **APPENDIX B      Desk Study**

Desk Study Data included as separate Appendix

## APPENDIX C Plant Species List

This list is not exhaustive but refers to species observed during the site visit. Mosses (except indicators of bog habitat if present), lichens, algae and other lower plants and fungi were not identified. No protected or notably rare plant species were found.

**Table C.1: Plant Species List**

| English Name           | Scientific Name              |
|------------------------|------------------------------|
| Ash                    | <i>Fraxinus excelsior</i>    |
| Blackthorn             | <i>Prunus spinosa</i>        |
| Bramble                | <i>Rubus fruticosus</i> agg. |
| Broadleaf plantain     | <i>Plantago major</i>        |
| Broad-leaved dock      | <i>Rumex obtusifolius</i>    |
| Cock's foot            | <i>Dactylis glomerata</i>    |
| Common field speedwell | <i>Veronica arvensis</i>     |
| Common nettle          | <i>Urtica dioica</i>         |
| Common sorrel          | <i>Rumex acetosa</i>         |
| Corsican pine          | <i>Pinus nigra</i>           |
| Cow parsley            | <i>Anthriscus sylvestris</i> |
| Creeping bent          | <i>Agrostis stolonifera</i>  |
| Creeping buttercup     | <i>Ranunculus repens</i>     |
| Creeping cinquefoil    | <i>Potentilla reptans</i>    |
| Cypress                | <i>Cupressaceae</i> gen. sp. |
| Daisy                  | <i>Bellis perennis</i>       |
| Dandelion              | <i>Taraxacum officinale</i>  |
| Dog rose               | <i>Rosa canina</i>           |
| Dog's mercury          | <i>Mercurialis perennis</i>  |
| Elder                  | <i>Sambucus nigra</i>        |
| Field maple            | <i>Acer campestre</i>        |
| Gorse                  | <i>Ulex</i> sp.              |
| Hawthorn               | <i>Crataegus monogyna</i>    |
| Hazel                  | <i>Corylus avellana</i>      |
| Herb-Robert            | <i>Geranium robertum</i>     |
| Hogweed                | <i>Heracleum sphondylium</i> |
| Holly                  | <i>Ilex aquifolium</i>       |
| Ivy                    | <i>Hedera helix</i>          |
| Meadow buttercup       | <i>Ranunculus acris</i>      |
| Pedunculate oak        | <i>Quercus robur</i>         |
| Pendulous sedge        | <i>Carex pendula</i>         |
| Perennial rye grass    | <i>Lolium perenne</i>        |
| Pineappleweed          | <i>Matricaria discoidea</i>  |
| Ragwort                | <i>Senecio jacobaea</i>      |
| Ribwort plantain       | <i>Plantago lanceolata</i>   |

|                    |                                |
|--------------------|--------------------------------|
| Rough meadow grass | <i>Poa trivialis</i>           |
| Scarlet pimpernel  | <i>Anagallis arvensis</i>      |
| Scot's pine        | <i>Pinus sylvestris</i>        |
| Shepherd's purse   | <i>Capsella bursa-pastoris</i> |
| Sycamore           | <i>Acer pseudoplatanus</i>     |
| White clover       | <i>Trifolium repens</i>        |
| Willowherb         | <i>Epilobium</i> sp.           |
| Wood avens         | <i>Geum urbanum</i>            |
| Yorkshire fog      | <i>Holcus lanatus</i>          |

## APPENDIX D General Biosecurity Measures

Biosecurity means taking measures to ensure that good practices are in place to minimise the risk of importing and spreading invasive non-native species (INNS), pests and infectious disease. As non-native species or diseases could be transmitted in any water or material, a good biosecurity routine is essential, even if invasive non-native species are not apparent.

General good-practice biosecurity measures include:

- A toolbox talk detailing the general risks of invasive non-native species (INNS) relevant to the site and the project should be delivered to all workers, showing the various life stages and how to recognise these plants.
- A cleaning station should be set up at the site exits including facilities to wash boots and vehicles.
- **All** footwear of staff leaving site (for **any** reason and no matter for how short a time) should be cleaned (i.e., visually free of soil and debris) before leaving site.
- Soil and vegetation should be washed off with clean water (and brushes). Water (which should not be contaminated with any disinfectant or other pollutants) should then be disposed of by pouring on site to soak away. No water should be disposed of directly into a watercourse.
- The wheels or tracks (and any other part which has come into contact with the soil) of all vehicles which have entered the area must be thoroughly washed and be free of soil and debris before leaving the site.
- No one should remove any soil or vegetation from the working area for any reason.

It may be necessary to produce a site-specific and project-specific Biosecurity Risk Assessment to support the construction-phase of the project, once detailed design works have been completed and timings and construction methods are known. This Biosecurity Risk Assessment should identify the specific biosecurity risks associated with the works and detail operational procedures to minimise the risk of spreading invasive non-native species (INNS) and other biosecurity risks.

## APPENDIX E Proposed Species Lists

Proposed species lists for planting/seeding in the new wetland cells and retained grassland are detailed in the tables below; these have been taken from the Preliminary Landscaping Plan (Wye & Usk Foundation, 2024).

**Table E.1: Wetland Species List**

| Scientific Name                 | English Name       | Percentage |
|---------------------------------|--------------------|------------|
| <i>Iris pseudacorus</i>         | Yellow flag iris   | 10%        |
| <i>Carex riparia</i>            | Greater pond sedge | 18%        |
| <i>Typha angustifolia</i>       | Narrowleaf cattail | 14%        |
| <i>Glyceria maxima</i>          | Reed sweet grass   | 18%        |
| <i>Sparganium erectum</i>       | Branchedbur-reed   | 12%        |
| <i>Schoenoplectus lacustris</i> | Common club rush   | 10%        |
| <i>Equisetum hyemale</i>        | Rough horsetail    | 2%         |
| <i>Eleocharis palustris</i>     | Common spike-rush  | 2%         |
| <i>Carex rostrata</i>           | Bottle sedge       | 2%         |
| <i>Caltha palustris</i>         | Marsh marigold     | 2%         |
| <i>Mentha aquatica</i>          | Water mint         | 2%         |
| <i>Persicaria amphibia</i>      | Water smartweed    | 2%         |
| <i>Juncus effusus</i>           | Soft rush          | 2%         |
| <i>Juncus inflexus</i>          | Hard rush          | 2%         |
| <i>Veronica beccabunga</i>      | Brooklime          | 1%         |
| <i>Lythrum salicaria</i>        | Purple loosestrife | 1%         |

**Table E.2: Grassland Species List: Grasses and Clover**

| Scientific Name                              | English Name              |
|--|---------------------------|
| <i>Dactylis glomerata</i>                    | Cock's foot               |
| <i>Phleum pratense</i>                       | Timothy                   |
| <i>Festuca pratensis</i>                     | Meadow fescue             |
| <i>Cynosurus cristatus</i>                   | Crested dog's tail        |
| <i>Trifolium pratense / Trifolium repens</i> | Red clover / white clover |
| <i>Lythrum salicaria</i>                     | Purple loosestrife        |

**Table E.3: Grassland Species List: Other Herbs**

| Scientific Name             | English Name                |
|-----------------------------|-----------------------------|
| <i>Galium verum</i>         | Lady's bedstraw             |
| <i>Betonica officinalis</i> | Betony                      |
| <i>Lotus corniculatus</i>   | Common bird's-foot trefoil  |
| <i>Lotus pedunculatus</i>   | Greater bird's-foot trefoil |

|                                |                      |
|--------------------------------|----------------------|
| <i>Ranunculus bulbosus</i>     | Bulbous buttercup    |
| <i>Ranunculus acris</i>        | Meadow buttercup     |
| <i>Hypochaeris radicata</i>    | Catsear              |
| <i>Primula veris</i>           | Cowslip              |
| <i>Leucanthemum vulgare</i>    | Ox-eye daisy         |
| <i>Taraxacum officinale</i>    | Dandelion            |
| <i>Scorzonoides autumnalis</i> | Autumn hawkbit       |
| <i>Leontodon hispidus</i>      | Rough hawkbit        |
| <i>Centaurea nigra</i>         | Common knapweed      |
| <i>Cerastium fontanum</i>      | Mouse-ear chickweed  |
| <i>Plantago lanceolata</i>     | Ribwort plantain     |
| <i>Succisa pratensis</i>       | Devil's-bit scabious |
| <i>Prunella vulgaris</i>       | Self-heal            |
| <i>Rumex acetosa</i>           | Sorrel               |
| <i>Veronica chamaedrys</i>     | Germander speedwell  |
| <i>Stellaria graminea</i>      | Lesser stitchwort    |
| <i>Trifolium dubium</i>        | Lesser trefoil       |
| <i>Vicia cracca</i>            | Tufted vetch         |
| <i>Lathyrus pratensis</i>      | Meadow vetchling     |
| <i>Achillea millefolium</i>    | Yarrow               |