

**CLYWEDOG WEIRS – FELIN PULESTON,
WREXHAM**

PRELIMINARY ECOLOGICAL APPRAISAL

JUNE 2023

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Revised	-

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June 2023
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EXECUTIVE SUMMARY

- Cheshire Ecological Services (CES), the commercial division of Cheshire Wildlife Trust, was commissioned to conduct a Preliminary Ecological Appraisal (PEA) of land around a section of the River Clywedog, where proposals are made for the removal of a weir.
- The purpose of the PEA was to gain baseline ecological information of the site in order to assess its current status, to identify any ecological constraints that may be associated with the site or surrounding land, and to recommend further survey if necessary.
- The PEA consisted of a desk-based study and a field survey undertaken by Suzie Whitnall ACIEEM on 10th May 2023.
- The site totals approximately 0.13 hectares and consists of the River Clywedog, broadleaved woodland, semi-improved grassland and scrub. The weir is proposed for removal to improve fish passage, increase connectivity and re-naturalise sediment transport in the river. As such, long-term benefits of the weir removal outweigh the short-term temporary impacts of the proposed works. Mitigation measures detailed in this report combined with the Dynamic Rivers' Outline Method Statement (MS) (Dynamic Rivers 2022) will aim to mitigate any likely adverse effects the temporary works will have on the river habitats and any protected species/habitat associated with it.
- In the absence of mitigation measures the proposed works could potentially impact on statutory and non-statutorily designated nature conservation sites, notably Sontley Marsh SSSI and Erddig Estate WS, and also impact on Priority habitat - the river. Mitigation measures and procedures outlined in the Outline MS (2022) will reduce the temporary impacts on these sites and priority habitat. The works aim to improve the river habitat in the long-term.
- Protected, Notable and Invasive species are present/likely to be present within the surrounding area and have the potential to move into/ pass through the site during the works, including nesting birds, fish, great crested newts & other amphibians, hedgehogs, reptiles and invasive species.
- Mitigation measures and recommendations for the protection of these species are detailed within the report, including Reasonable Avoidance Measures for bats, GCN & other amphibians and reptiles.
- Records of otter are associated with areas both up and down-stream of the site, and due to several factors including bank reprofiling, weir removal and the proposed timing of works within the otter breeding season (due to fish restrictions), an otter survey is recommended of the site.
- The site does not offer barn owl with any suitable roosting opportunities and badger are likely to be absent from the site.

1.0 INTRODUCTION

- 1.1 Cheshire Ecological Services (CES), the commercial division of Cheshire Wildlife Trust, was commissioned to conduct a Preliminary Ecological Appraisal (PEA) of land around a section of the River Clywedog (hereafter referred to as the 'site'), where proposals are made for the removal of a weir and reprofiling and widening of this section of the river.
- 1.2 The removal of the weir and associated works have been proposed to improve fish passage, increase connectivity and re-naturalise sediment transport in the river.
- 1.3 The purpose of the PEA was to gain baseline ecological information of the site in order to assess its current status, to identify any ecological constraints that may currently be associated with the site or surrounding land, and to recommend further survey if necessary.
- 1.4 The survey was conducted by Senior Ecologist Suzie Whitnall BSc (Hons) MSc on 10th May 2023. Suzie is a member of the Chartered Institute of Ecology and Environmental Management (ACIEEM), competent in habitat survey with FISC Level 4. This report has been quality assured by Senior Ecologist Kyle Mellish BSc ACIEEM.
- 1.5 Weather conditions at the time of survey were sunny and clear, with a temperature of 16°C.

2.0 SITE DESCRIPTION

- 2.1 The area of land requested to be surveyed totals approximately 0.13 hectares and is hereafter referred to as the 'site'.
- 2.2 The site is centred on OS grid reference: SJ 332582 349303.
- 2.3 The site is situated within the National Trust Erddig County Park, Felin Puleston, on the south-west outskirts of Wrexham Town within the unitary authority area of Wrexham County Borough Council (refer to Appendix A: Site Location Plan).
- 2.4 The site is located within the northern end of Erddig County Park, just off the A5152. Suburban environs are present to the north and east comprising residential housing, industrial buildings, and a cemetery. Semi-rural habitats are present to the south and west comprising parkland and agricultural/pastoral fields.
- 2.5 At the time of survey, the site consisted of the River Clywedog, scrub, broadleaved woodland and semi-improved grassland.

Proposed Development

- 2.6 The current proposals include the removal of the weir, walling and gabions, the regrading/reprofiling of the riverbed, the creation of three rapids, a bed check feature to help slow the flow of the river once the weir is removed and the widening of the river through excavation around the weir section. Tree planting is also proposed along the western side of the river.
- 2.7 The construction period is expected to be approximately 6-8 weeks. There is a fish embargo period on the river from 16th October to 15th May, and as such no works on the river can be carried out within this period. The works are likely to proceed post 15th May 2024.

3.0 SURVEY METHODS

3.1 The PEA consisted of a desk-based study and field survey.

Desk-based study

3.2 The desk-based study comprised consultation with the following consultees:

- Defra’s online mapping facility ‘MAGIC’
- Cofnod - the local environmental records centre for North Wales
- DataMapWales - A Geo-Portal for Wales
- Ordnance Survey - OS mapping of the local and wider area

3.3 MAGIC and DataMapWales were reviewed for the presence of statutorily designated nature conservation sites within 5km of the site, in addition to Priority habitats.

3.4 Cofnod provided information on protected sites and Priority species within a 1km radius from the centre of the site, within the past 20 years.

3.5 Ordnance Survey mapping of the local area was reviewed to search for the presence of habitats and features of potential ecological relevance to this survey, such as ponds.

Extended Phase 1 Habitat Survey

3.6 This survey involved the mapping of various habitat types on the site in addition to any habitat features and botanical species of conservation importance, presented in Appendix B. A thorough walk-over survey was undertaken of the site. The methodology for this survey followed that described by the Joint Nature Conservation Committee (JNCC, 2010).

3.7 Priority habitats and species, for which there is a national or local Biodiversity Action Plan (BAP) and those listed under Section 42 of the Natural Environment and Rural Communities Act, 2006 (for Wales), were recorded as such where present. The Section 42 list of Priority habitats and species has now been superseded by the Section 7 list of the Environment (Wales) Act 2016; however, the lists are currently exactly the same and the two should therefore be considered interchangeable.

3.8 Preliminary searches were also carried out for legally protected and Priority species such as badgers, bats and great crested newts (under relevant surveyor class licenses where applicable). Scientific names and the national status of vegetative species recorded follow Stace (2019). Scientific and common names are stated in the text.

3.9 All trees were assessed for their suitability to support roosting bats and were categorised in accordance with the Bat Conservation Trust’s (BCT) Bat Survey Good Practice Guidelines (2016). The guidelines outline the initial survey requirements of all trees and where necessary, detail the required further actions and likely mitigation. Trees were

allocated the following categories, based on an assessment of potential roost features when viewed from the ground:

Table 1: BCT Bat Roost Potential Categorisations

Suitability	Description – Roosting habitats	Commuting and foraging habitats
Negligible	Trees with negligible habitat features to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats,
Low	Trees with one of more potential roost sites that could be used by individual bats opportunistically, although they are unlikely to be suitable for maternity or hibernation roosting. This category also includes trees of sufficient size and age that elevated inspection may reveal features not previously identified, or features seen that have very limited roosting potential.	Habitat that could be used by small numbers of commuting bats such as gappy hedgerows or unvegetated stream, but isolated, i.e., not very well connected to the surrounding landscape by other habitats. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	Trees with one or more potential roost sites to support roosting bats but unlikely to support a roost of high conservation status (with respect to roost type only).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland, or water.
High	Trees with one of more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses, and grazed parkland. Site is close to and connected to known roosts.

Survey Limitations

3.10 The observations made during this survey have been used to assess the presence, or potential presence, of protected and Priority species within the proposed area of works

and to recommend further actions where required. It should however be noted that this survey serves as a single visit representing a 'snapshot in time' whereby only the species present at the time of survey were recorded.

- 3.11 Positive evidence of species that use the site periodically or are in growth at different times of the year may not have been recorded. It is important to consider that the absence of a species from a particular survey does not necessarily indicate the absence (or continued absence) of that species from the area.
- 3.12 The survey was conducted in May and therefore considered to be a suitable time of year to undertake botanical assessments of a site comprising both grassland and woodland.

4.0 DESK-BASED STUDY RESULTS

- 4.1 Defra’s online mapping facility MAGIC indicates that there are four statutorily designated nature conservation sites within 5km:

Table 2: Statutory Designated Nature Conservation Sites

Site	Distance from the proposal	Reason/s for Designation
Sontley Marsh SSSI	1.5km south-west	Designed for its botanical interest and southern mesotrophic mire wetlands.
Gatewen Marsh SSSI	1.9km north-west	Designed for its botanical interest and southern mesotrophic mire wetlands.
Stryt Las a’r Hafod SSSI And Johnstown Newt Sites SAC	2.4km south-west	Stryt Las a’r Hafod is a composite site located close to the village of Johnstown, southwest of Wrexham. It is of special interest for its amphibians, including great crested newt <i>Triturus cristatus</i> .

- 4.2 The site is functionally linked to Sontley Marsh SSSI, as the River Clywedog runs through the eastern boundary of the SSSI and is located downstream from the proposed site. Mitigation measures have been designed to lessen the impact, such as the creation of rapids to maintain the flow of the water in the short and long term and maintain water quality flowing downstream. Further measures to mitigate for the temporary impacts from the removal of the weir and gabions have been considered and outlined in the Felin Puleston Weir – Outline Method Statement (Dynamic Rivers 2022). The proposed removal of the weir and associated works is considered unlikely to adversely impact the SSSI.
- 4.3 It is considered unlikely that any of the other statutorily designated nature conservation sites will be adversely impacted on the grounds of distance and lack of functional linkages with any such sites.
- 4.4 Cofnod and MAGIC identified several Priority Habitats within 1km of the site. These included the River Clywedog (Priority River Habitat) which runs through the site, ancient semi-natural woodland within the Erddig Country Park - the closest area located between the residential housing and parkland approximately 95m to the east of the site, and veteran trees identified within the parkland and to the south; the closest located approximately 60m to the south-west.
- 4.5 The proposed works will directly impact the River Clywedog; a relatively small section of which (160m) flows through the site. The proposed works will temporarily impact the river through reprofiling, widening, and removal of the weir and wall gabions, with the use of small machinery to complete the works. The temporary works has potential to

release sediment into the river which could lead to a short-term increase in turbidity downstream, however mitigation measures and procedures such as timings of work (outside fish spawning season) and creation of rapids downstream prior to the weir removal, which are detailed in the Outline Method Statement should minimise the temporary impacts on the river. The short-term impacts will be outweighed by the long-term benefits to river functionality.

- 4.6 It is considered that the works to the river will not have any negative impacts on the other Priority habitats, ancient broadleaved woodland and veteran trees. Although, several trees are proposed to be removed to facilitate the reprofiling and widening of the river, none of the affected trees are located with the ancient woodland or are categorised as veteran.
- 4.7 Cofnod identified the presence of one non-statutorily designated Wildlife Sites (WS) within 1km of the site comprising the Erdidig Estate WS, which the proposed site is located entirely within. The estate has an area of 191.6ha and is owned by the National Trust. Habitats on site include *Alnus - Fraxinus - Lysimachia* woodland, *Fraxinus - Acer - Mercurialis* woodland, improved grassland, marsh/marshy grassland, *Quercus robur - Pteridium - Rubus* woodland, semi-improved neutral grassland, semi-natural broadleaved woodland and standing water. The proposed work area is located in the very north-west end of the WS.
- 4.8 The proposed scale of the works is considered unlikely to have a long-term negative impact on the WS and will improve the river habitat including increasing connectivity and re-naturalise sediment transport. The naturalised banks and river sediment created will also provide a range of niches for riparian botanical and fauna species, in an area which is currently of limited ecological value.
- 4.9 The data returned by Cofnod was reviewed to search for records of species pertinent to the proposal, including legally protected and controlled species, and species of material consideration to planning. Those records are presented below in Table 2.

Table 3: Excerpt of Record data-search

Scientific name	Common name	Designations
Amphibian		
<i>Bufo bufo</i>	Common Toad	BAP, S7, WCA5
<i>Lissotriton helveticus</i>	Palmate Newt	WCA5
<i>Lissotriton vulgaris</i>	Smooth Newt	WCA5
<i>Rana temporaria</i>	Common Frog	WCA5
<i>Triturus cristatus</i>	Great Crested Newt	BAP, LBAP-W, S7, WCA5
Birds		
<i>Acanthis cabaret</i>	Lesser Redpoll	BAP, S7, WBR
<i>Accipiter nisus</i>	Sparrowhawk	UKBA
<i>Aegithalos caudatus</i>	Long-tailed Tit	WBA
<i>Alauda arvensis</i>	Skylark	BAP, BDir2.2, S7, UKBR, WBA
<i>Alcedo atthis</i>	Kingfisher	BDir1, WBA, WCA1.1
<i>Aix galericulata</i>	Mandarin Duck	INNS, WCA9
<i>Anas crecca</i>	Teal	BDir2.1, UKBA, WBA
<i>Anas platyrhynchos</i>	Mallard	BDir2.1, UKBA, WBA

<i>Anser anser</i>	Greylag Goose	BDir2.1, UKBA, WCA1.2
<i>Anthus pratensis</i>	Meadow Pipit	Bern2, UKBA, WBA
<i>Apus apus</i>	Swift	RL-EN, UKBR, WBA
<i>Aythya ferina</i>	Pochard	BDir2.1, UKBR, WBR
<i>Aythya fuligula</i>	Tufted Duck	BDir2.1, WBA
<i>Branta canadensis</i>	Canada Goose	BDir2.1, INNS, WCA9
<i>Calidris alpina</i>	Dunlin	BDir1, UKBR, WBR
<i>Chloris chloris</i>	Greenfinch	UKBR
<i>Chroicocephalus ridibundus</i>	Black-headed Gull	BDir2.2, S7, UKBA, WBR
<i>Cinclus cinclus</i>	Dipper	UKBA, WBA
<i>Columba oenas</i>	Stock Dove	BDir2.2, UKBA
<i>Columba palumbus</i>	Woodpigeon	BDir2.1, UKBA
<i>Corvus frugilegus</i>	Rook	BDir2.2, UKBA
<i>Coturnix coturnix</i>	Quail	BDir2.2, UKBA, WBA, WCA1.1
<i>Cuculus canorus</i>	Cuckoo	BAP, S7, UKBR, WBR
<i>Curruca communis</i>	Whitethroat	UKBA, WBA
<i>Cygnus olor</i>	Mute Swan	BDir2.2, WBA
<i>Delichon urbicum</i>	House Martin	UKBR, WBA
<i>Dryobates minor</i>	Lesser Spotted Woodpecker	BAP, S7, UKBR, WBR
<i>Egretta garzetta</i>	Little Egret	BDir1,
<i>Emberiza schoeniclus</i>	Reed Bunting	BAP, S7, UKBA, WBA
<i>Falco peregrinus</i>	Peregrine	BDir1, WCA1.1
<i>Falco subbuteo</i>	Hobby	WBA, WCA1.1
<i>Falco tinnunculus</i>	Kestrel	S7, UKBA, WBR
<i>Ficedula hypoleuca</i>	Pied Flycatcher	S7, UKBA, WBR
<i>Fringilla montifringilla</i>	Brambling	WCA1.1
<i>Fulica atra</i>	Coot	BDir2.1
<i>Gallinago gallinago</i>	Snipe	BDir2.1, UKBA, WBA
<i>Gallinula chloropus</i>	Moorhen	BDir2.2, UKBA
<i>Hirundo rustica</i>	Swallow	WBA
<i>Ichthyaetus melanocephalus</i>	Mediterranean Gull	BDir1, UKBA, WBA, WCA1.1
<i>Larus argentatus</i>	Herring Gull	BAP, BDir2.2, S7, UKBR, WBR
<i>Larus canus</i>	Common Gull	BDir2.2, UKBA, WBR
<i>Larus fuscus</i>	Lesser Black-backed Gull	BDir2.2, UKBA, WBA
<i>Mareca penelope</i>	Wigeon	BDir2.1, UKBA, WBA
<i>Mareca strepera</i>	Gadwall	BDir2.1, UKBA, WBA
<i>Mergus merganser</i>	Goosander	BDir2.2
<i>Milvus milvus</i>	Red Kite	BDir1, WBA, WCA1.1, WCA9
<i>Motacilla cinerea</i>	Grey Wagtail	UKBA
<i>Muscicapa striata</i>	Spotted Flycatcher	BAP, S7, UKBR, WBR
<i>Oenanthe oenanthe</i>	Wheatear	UKBA, WBA
<i>Pandion haliaetus</i>	Osprey	UKBA, WBA, WCA1.1
<i>Passer domesticus</i>	House Sparrow	BAP, S7, UKBR, WBA
<i>Passer montanus</i>	Tree Sparrow	BAP, S7, UKBR, WBR
<i>Periparus ater</i>	Coal Tit	Bern2, WBA
<i>Phalacrocorax carbo</i>	Cormorant	WBA

<i>Phoenicurus phoenicurus</i>	Redstart	Bern2, UKBA, WBA
<i>Phylloscopus trochilus</i>	Willow Warbler	UKBA, WBR
<i>Picus viridis</i>	Green Woodpecker	Bern2, WBA
<i>Poecile montanus</i>	Willow Tit	BAP, S7, UKBR, WBR
<i>Poecile palustris</i>	Marsh Tit	BAP, S7, UKBR, WBR
<i>Prunella modularis</i>	Dunnock	BAP, S7, UKBA
<i>Pyrrhula pyrrhula</i>	Bullfinch	BAP, S7, UKBA, WBR
<i>Oxyura jamaicensis</i>	Ruddy Duck	INNS, WCA9
<i>Rallus aquaticus</i>	Water Rail	BDir2.2,
<i>Regulus regulus</i>	Goldcrest	WBA
<i>Riparia riparia</i>	Sand Martin	WBA
<i>Scolopax rusticola</i>	Woodcock	BDir2.1, UKBR, WBA
<i>Spatula clypeata</i>	Shoveler	BDir2.1, UKBA, WBA
<i>Streptopelia decaocto</i>	Collared Dove	BDir2.2
<i>Strix aluco</i>	Tawny Owl	UKBA
<i>Sturnus vulgaris</i>	Starling	BAP, BDir2.2, S7, UKBR, WBR
<i>Sylvia borin</i>	Garden Warbler	WBA
<i>Tringa ochropus</i>	Green Sandpiper	UKBA, WCA1.1
<i>Troglodytes troglodytes</i>	Wren	BAP, UKBA
<i>Turdus iliacus</i>	Redwing	BDir2.2, UKBA, WBA, WCA1.1
<i>Turdus philomelos</i>	Song Thrush	BAP, BDir2.2, LBAP-W, S7, UKBA, WBA
<i>Turdus pilaris</i>	Fieldfare	BDir2.2, UKBR, WBA, WCA1.1
<i>Turdus viscivorus</i>	Mistle Thrush	BDir2.2, UKBR
<i>Tyto alba</i>	Barn Owl	LBAP-W, WBA, WCA1.1, WCA9
<i>Vanellus vanellus</i>	Lapwing	BAP, BDir2.2, S7, UKBR, WBR
Fish		
<i>Anguilla anguilla</i>	Eel	BAP, S7
<i>Salmo trutta</i>	Brown/Sea Trout	BAP, S7
Flowering Plant		
<i>Hyacinthoides non-scripta</i>	Bluebell	WCA8
<i>Crassula helmsii</i>	New Zealand Pygmyweed	INNS, WCA9
<i>Fallopia japonica</i>	Japanese Knotweed	INNS, WCA9
<i>Impatiens glandulifera</i>	Himalayan Balsam	INNS, WCA9
Mammals		
<i>Chiroptera</i>	Bat	HDir4, WCA5
<i>Erinaceus europaeus</i>	Hedgehog	BAP, S7
<i>Lepus europaeus</i>	Hare	BAP, S7
<i>Lutra lutra</i>	Otter	BAP, HDir2, LBAP-W, S7, WCA5,
<i>Meles meles</i>	Badger	LBAP-W, PBA
<i>Mustela putorius</i>	Polecat	BAP, S7
<i>Myotis</i>	Myotis Bat species	HDir4, WCA5
<i>Myotis brandtii</i>	Brandt's Bat	HDir4, WCA5
<i>Myotis daubentonii</i>	Daubenton's Bat	HDir4, WCA5
<i>Myotis mystacinus</i>	Whiskered Bat	HDir4, WCA5
<i>Myotis nattereri</i>	Natterer's Bat	HDir4, WCA5
<i>Neovison vison</i>	American Mink	INNS, WCA9
<i>Nyctalus noctula</i>	Noctule Bat	HDir4, WCA5
<i>Pipistrellus</i>	Pipistrelle Bat species	HDir4, WCA5, S7

<i>Pipistrellus pipistrellus</i>	Common Pipistrelle	HDir4, WCA5, S7
<i>Pipistrellus pipistrellus</i>	Pipistrelle	HDir4, WCA5, S7
<i>Pipistrellus pygmaeus</i>	Soprano Pipistrelle	HDir4, WCA5, S7
<i>Plecotus</i>	Long-eared Bat species	HDir4, WCA5, S7
<i>Plecotus auritus</i>	Brown Long-eared Bat	HDir4, WCA5, S7
<i>Rhinolophus hipposideros</i>	Lesser Horseshoe Bat	BAP, HDir2, HDir4, LBAP-W, S7, WCA5
Reptile		
<i>Natrix helvetica</i>	Grass Snake	BAP, S7, WCA5
<i>Zootoca vivipara</i>	Common Lizard	BAP, S7, WCA5

Note: All species names and designations provided by Record

Designations key:

BAP – UK Biodiversity Action Plan Species
 BDir1 - EU Birds Directive Annexe 1
 BDir2.1 - EU Birds Directive Annexe 2.1
 BDir2.2 - EU Birds Directive Annexe 2.2
 INNS - Invasive Non-native Species
 LBAP – Local Biodiversity Action Plan Species
 PBA – Protection of Badgers Act 1992
 RDS-NR-Red Data Book listing (not based on IUCN guidelines) - Nationally Rare
 RDS-NS - Red Data Book listing (not based on IUCN guidelines) - Nationally Scarce
 S7 - Environment (Wales) Act 2016 (Section 7)
 UKBA – Birds of Conservation Concern (RSPB) – Amber
 UKBR – Birds of Conservation Concern (RSPB) – Red
 WBA - RSPB/BTO Birds of Conservation Concern in Wales - Amber list
 WBR - RSPB/BTO Birds of Conservation Concern in Wales - Red list
 WCA1 – Wildlife & Countryside Act, 1981 – Schedule 1
 WCA5 – Wildlife & Countryside Act, 1981 – Schedule 5
 WCA9 - Wildlife & Countryside Act 1981 Schedule 9

4.10 The relevance of the above record returns is discussed in the species section of this report.

5.0 FIELD SURVEY RESULTS

- 5.1 The results of the field survey undertaken on 10th May 2023 are presented below and are discussed by habitat type. Habitat mapping is presented in Appendix B and photographic plates are presented in Appendix C.

River (Plates 1 - 3)

- 5.2 The proposed working area primarily concerns approximately 160m of the river, at and around the weir closest to the A5152 entrance to the County Park. The weir was approximately 10m in length and constructed of concrete, with gabions along the bank walls either side of the weir.
- 5.3 The water levels were relatively shallow (approx. 30cm at the time of the survey) with a moderate flow rate. The water was clear with a riverbed of pebbles/sand. The banks were shallow, with areas of clear sloped sections into the river notably by the weir. Bank erosion was present immediately after the weir which created a wider section of the river. Both sides of the riverbanks and riparian zones were vegetated (see further details in the following sections).
- 5.4 Well-used public footpaths were present either side of the river. Dogs were observed entering the river along this section of the river throughout the survey. This part of the river is therefore regularly disturbed by human recreational activities.

Semi-improved grassland (Plate 4)

- 5.5 The western riparian zone (10m from the top of the bank) where the reprofiling and widening works are proposed comprised semi-improved grassland. The grassland area extended to the education centre to the east with a public footpath running from north to south through the area.
- 5.6 The sward was short at the time of the survey, however there was no recent evidence of mowing or other management. The species composition of the grassland was as follows: grasses consisted of an abundance of meadow foxtail (*Alopecurus pratensis*), with the occasional meadow-grass sp (*Poa* sp), cock's foot (*Dactylis glomerata*), Yorkshire fog (*Holcus latanus*), and false oat grass (*Arrhenatherum elatius*). Herbaceous species included the occasional germander speedwell (*Veronica chamaedrys*), yarrow (*Achillea millefolium*), meadow and creeping buttercup (*Ranunculus repens*, *Ranunculus acris*), common hogweed (*Heracleum sphondylium*), red campion (*Silene dioica*), pignut (*Conopodium majus*), ribwort plantain (*Plantago lanceolata*), common mouse-ear (*Cerastium fontanum*), vetch sp (*Ervilla* sp), red clover (*Trifolium pratense*), silverweed (*Potentilla anserine*), broad-leaved dock (*Rumex obtusifolius*) and spear thistle (*Cirsium vulgare*).
- 5.7 Additional species found closer to the riverbank included the occasional meadowsweet (*Filipendula ulmaria*), and rare hard rush (*Juncus inflexus*), horsetail (*Equisetum* spp.) and common sedge (*Carex nigra*).

- 5.8 The eastern riparian zone (south of the weir) consisted of semi-improved grassland with tall ruderal vegetation. The sward was tall and rank. The composition included abundant common hogweed, ground elder (*Aegopodium podagraria*), common nettle (*Urtica dioica*), bramble (*Rubus fruticosus*), Yorkshire fog, cock's foot, and crosswort (*Cruciata laevipes*) with the occasional cow parsley (*Anthriscus sylvestris*), red campion, cleavers (*Galium aparine*), willow (*Salix sp*) and elder (*Sambucus sp.*) scrub, hedge woundwort (*Stachys sylvatica*), broad-leaved dock. Other less frequent species included germander speedwell, creeping thistle (*Cirsium arvense*), dandelion (*Taraxacum agg*), yarrow, common sorrel (*Rumex acetosa*), meadowsweet, garlic mustard (*Alliaria petiolate*), forget-me-not sp (*Myosotis sp*), creeping buttercup, wood avens (*Geum urbanum*), white deadnettle (*Lamium album*), yellow archangel (*Lamium galeobdolon*), hybrid bluebell (*Hyacinthoides x massartiana*), ground ivy (*Glechoma hederacea*), and common knapweed (*Centaurea nigra*).

Scrub (Plate 5)

- 5.9 An area of dense scrub were present in the riparian zone on eastern side of the river to the north of the weir. The scrub succeeded into broadleaved woodland (which will not be impacted by the proposals).
- 5.10 The area was dense with bramble interspersed with the occasional common hogweed, creeping thistle, meadow grass sp, common nettle, common knapweed, willow sp., and hawthorn (*Crataegus monogyna*).

Broadleaved woodland (Plate 6)

- 5.11 Broadleaved woodland was present to the north, south and east of the proposed working area. Species recorded within the site included sycamore (*Acer pseudoplatanus*), alder (*Alnus glutinosa*), willow, and lime (*Tilia x europaea*).
- 5.12 Trees of significance to the proposed works and survey included a semi-mature sycamore, two early mature sycamores and several early mature willows. The understorey comprised sparse willows and alder and ground flora comprised the either semi-improved grassland species (as above) or bareground.

Habitats adjacent to the site

- 5.13 The surrounding habitat comprises parkland, with broad-leaved woodland including areas of ancient woodland, veteran trees and areas of semi-improved grassland.

Features of Ecological Interest

- 5.14 Features of interest recorded on the site during this survey are described in the Target Notes (TN) below. All numbered Target Notes correspond with the Habitats Map (Appendix B). Photographic plates are presented within Appendix C.

Target Notes

TN1 – Scrub – valuable habitat to provide shelter, nesting sites and food for birds, small mammals and invertebrates and potentially reptiles (Plate 5).

TN2 – Native trees with Low suitability for bats (Plate 6a)

TN3 – Broadleaved woodland – Priority habitat (Plate 4b)

TN4 – River – Priority habitat (Plates 1 – 3)

TN5 – Weir (to be removed) within the river (Plate 1)

5.15 The native trees on site offer suitable habitat for local fauna species including birds, bats and invertebrates. The proposals include the removal of several semi-mature alder, willow and sycamore trees and the potential removal of two early mature sycamore trees, which is essential to facilitate the widening and reprofiling of the river. To offset the impacts, additional tree planting has been proposed on the western bank.

5.16 Areas of scrub offers suitable habitat for wildlife in the local area including providing shelter, nesting and feeding opportunities for birds, small mammals, reptiles and invertebrates. Proposals indicate the removal of scrub along the eastern bank to facilitate the widening and reprofiling. Mitigation measures should be established to protect species such as nesting birds and reptiles which may be present within the scrub during the removal. These measures are discussed in further sections below.

Species Discussion

5.17 The habitat composition of the site has potential to support legally protected and Priority wildlife species. It was not within the scope of this survey to carry out detailed searches for protected species, although the potential for the site to support the following species pertinent to the proposals is discussed below:

- Badger
- Barn owl
- Bats
- Birds
- Fish
- Great crested newt & other amphibians
- Hedgehog
- Otter
- Reptile
- Invasive species

Badgers

5.18 Badgers and their setts are protected under the Protection of Badgers Act, 1992. Statutory guidance indicates that a licence may be required if potentially disturbing works are to take place within 30m of a badger sett.

5.19 There are several records of badger activity including setts within 2km of the site. The records mainly pertain to the Errdig Estate and associated woodland habitats.

- 5.20 No evidence of badgers, such as snuffle holes, dung pits, pathways, or setts were recorded within the site. A 30m buffer area around the proposed work area was surveyed, with no evidence of badger or setts found.
- 5.21 The surrounding woodland provides suitable habitat for badger with records within the area, however the proposed work focuses on the river and small area of riparian zone which is largely unsuitable for sett building. Furthermore, the area is frequently used by the public including dog walkers and is therefore subject to regular disturbance throughout the day and early evening. It is considered highly unlikely that badgers will create a sett within the area of work.
- 5.22 No further work or mitigation in regard to badger is required.
- 5.23 However, in the event that badger setts are found on site or within 30m of the site, a suitably experienced ecologist should be consulted immediately for advice.

Barn owl

- 5.24 Barn owls receive special protection under Schedule 1 of the Wildlife & Countryside Act, 1981 (as amended). In addition to the protection afforded to all wild birds under Section 1 of the Act, species listed on Schedule 1 receive special legal protection when breeding; making it an offence to intentionally or recklessly disturb any wild barn owl whilst it is at or near a nest containing eggs or young or disturb the dependent young of such a bird.
- 5.25 Barn owls' nest and roost in buildings and within deep cavities in trees and will readily utilise nest boxes where available.
- 5.26 There were limited records of barn owl which pertained from the southern area of Erddig Park.
- 5.27 The site offers predominantly sub-optimal foraging habitat for barn owl as it mainly consists of riverine habitat, however, the area of semi-improved grassland does provide suitable habitat for barn owl's prey, such as small mammals. The proposed work will only affect a small area (approx. 300m²) of the grassland close to the river with ample grassland and suitable foraging habitats for barn owl remaining in the surrounding area.
- 5.28 The site does not offer barn owl with any suitable roosting or nesting sites as no trees contained large cavities suitable for barn owls.
- 5.29 Barn owls are therefore considered unlikely to be affected by the works. No further survey in respect of barn owl is currently recommended.

Bats

- 5.30 All British species of bat and their roosts are protected under the provision of Section 9, Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) and Regulation 41(I), Schedule 2 of The Conservation of Habitats and Species Regulations 2017 (as amended).

- 5.31 Several records of bats were provided occurring within 1km of the site. The most relevant to the site was records from the Erddig Hall Country Park (approx. 980m south) where a transect survey was carried out every month from April to October in 2019. Species recorded included Brandt's, whiskered, brown long-eared, common pipistrelle, soprano pipistrelle, daubenton's, lesser horseshoe, Natterer's and noctule bats.
- 5.32 The site and adjacent surrounding area offer high quality foraging and commuting habitats with extensive areas of native broadleaved woodland, semi-improved and improved grasslands, and the river. These are similar to the habitats found around Erddig Hall and as such the species recorded in 2019 (from the records) are highly likely to utilise the site and surrounding area.
- 5.33 The site contained a low number of early mature trees, with proposals to remove a number of the trees to facilitate the widening and reprofiling of the river. All the trees within the site were surveyed from the ground, focusing on the trees proposed for felling. Most of the trees to be removed were willow and alder, which did not contain any suitable features for roosting bats. A single sycamore (to be felled) was present on the eastern bank close to the weir that contained superficial butt rot (Plate 6c). The feature was inspected with a high-powered torch and was found not contain a cavity. There were a further two early-mature sycamore trees (proposed for potential felling, if required) on the eastern bank further upstream. These were both ivy-clad, although the ivy was thin and sparse and was not considered a suitable feature, though the ivy may be covering suitable features higher up. However, inspection using binoculars and a high-powered torch, found the likelihood of further features unlikely. As a precaution, if these trees are to be removed, they should be done under the Reasonable Avoidance Measures (RAMs):
- 5.34 **The following Bat Reasonable Avoidance Measures (RAM) will be implemented during any disturbing works to trees with Low Bat Roost suitability:**
- Soft felling techniques should be implemented, in the presence of a licensed bat ecologist, acting as an ecological clerk of works. The clerk of works will brief the tree surgeons prior to tree works with an ecological tool-box-talk, highlighting features which have potential for roosting bats and the legal protection that they are afforded. Tree surgeons will be directed to check identified features prior to felling. If tree surgeons find features previously undiscovered which may be suitable for bats, then the clerk of works will advise on how to proceed.
 - As single or small numbers of bats can easily get tucked into relatively insignificant cracks and crevices, care should be taken when pruning/felling any of the trees on site.
 - Features that cannot be inspected at close quarters, but where bat roost potential has been identified, should be sectioned from the tree and lowered gently to the ground, to be inspected by the licensed bat ecologist prior to chipping and removal from site. If the tree cannot be sectioned then it should be felled with the branches intact, allowing them to cushion the fall so that features can be inspected once on the ground.

- d) Any features that cannot be fully inspected by the ecologist should be left on the ground for a period of 24 hours prior to them being chipped and/or removed from site.
- e) If any trees are found to contain bats or evidence of roosting bats, then work to that tree should stop and a licence must be obtained from Natural Resources Wales before the tree works can proceed.
- f) Ideally, work on likely bat trees should be carried out in the spring (late March, April, May) or the autumn (September, October, November). This avoids periods when bats are particularly vulnerable – during hibernation and when non-flying young are present.
- g) **The use of trees by nesting birds needs to be considered if removal takes place between March and August inclusive.**

5.35 The proposed works will be carried out in the daylight and as such no lighting during the 'construction period' should be used during hours of darkness. Given the type of works proposed, no lighting is required for the scheme post-development.

5.36 The impacts to bats from the proposed works are considered to be minimal to none. No further survey work is required; however, RAMs should be implemented for the removal of trees categorised as having Low suitability for bats.

Bluebells

5.37 The native bluebell is protected under Schedule 8 of the Wildlife and Countryside Act, 1981 (as amended) making it an offence to dig up or uproot the plants in the countryside with the intention to sell (refer to Appendix D). Cofnod provided details of native bluebell occurring within approximately 1km of the proposed development site since 2000. Records occur within the woodland in Erddig Estate WS with the closest approximately 90m to the north-east of the site.

5.38 The survey was carried out at the optimal period for flowering bluebells. A handful of individual hybrid bluebells were recorded within the bank vegetation on both sides of the river; the plants were sparsely distributed throughout these areas of vegetation. The surrounding woodland contained an abundance of bluebell plants that will not be impacted by the proposals. It is possible that a low number of hybrid bluebell plants may be damaged/removed during the vegetation removal for the widening and re-profiling. They will not purposely be uprooted or dug up with the intention to sell, therefore an offence is highly unlikely.

5.39 The loss of these individual plants within the proposed site will not have a detrimental effect on the bluebell population within the woodland habitat. Furthermore, once the works are complete bank vegetation will be suitable for bluebells to colonise again.

5.40 Given a number of factors including that low numbers of non-native bluebells species will be impacted and that the works will not impact the surrounding population of

bluebells, no further survey effort or mitigation in respect of this species is considered necessary.

Birds

- 5.41 All species of wild bird, their nest and eggs are protected under Section 1 of the Wildlife and Countryside Act, 1981 (as amended) and additional protection is afforded to species listed on Schedule 1 of the Act. Additionally, bird species listed on Section 41 of the NERC Act 2006 are Priority species of material consideration to planning.
- 5.42 Cofnod provided records for an extensive number of bird species under varying levels of conservation protection. Of note were several records within the Eddrig Estate of Schedule 1 WCA species including Kingfisher on the river downstream and brambling. Records of species within the site include dipper.
- 5.43 Kingfisher nest within the edges of brooks and rivers, where they excavate nest chambers within exposed earth banks. The river habitat is suitable to support Kingfisher with slow flowing water and vertical banks, however the banks are densely vegetated which may deter Kingfisher from excavating nest burrows along this section, as well as being partially engineered. The banks of the river were surveyed where access was available, and no nest burrows or individuals were observed. Furthermore, this section of river incurs high levels of human activity and disturbance from dogs entering the water. The Reasonable Avoidance Measures detailed in section 5.74 for otters will be appropriate for the unlikely event Kingfishers are observed during the works.
- 5.44 Brambling are usually found within woodlands, hedgerows and stubble fields, and there is therefore ample habitat for foraging birds on and surrounding the site. However, they are an overwintering bird that do not typically nest in the UK during the summer. The small loss of tree and scrub vegetation within the proposed work area will not have a negative impact on this species.
- 5.45 The site is generally of good suitability to support a number of common and widespread Priority bird species such as house sparrow, bullfinch, dunnock and starling, within the river, trees and scrub habitat.
- 5.46 Any removal of woody or scrubby vegetation and trees should be scheduled to take place outside of the 'core' bird nesting season, which generally encompasses the months of March to August. If this is not possible, then checks for active bird nests by a suitably experienced ecologist will first be required, with exclusion zones established around the active nests until nesting is complete.

Fish

- 5.47 European eel and brown trout are a UK BAP Priority species and listed on Section 41 of the Natural Environment & Rural Communities Act, 2006.
- 5.48 Cofnod provided details of both eel and brown trout with the River Clywedog, approximately 500m downstream from the proposed area of work. The Welsh Dee Trust

conducted electrofishing surveys within the proposed area in September 2022. The survey confirmed the presence of brown trout with absence of salmon and bullhead.

- 5.49 To mitigate any negative impacts the proposed works may have on the trout population a fish embargo period has been placed on the river which incorporates 16th October to 15th May, when no work can take place within the river.
- 5.50 Further mitigation measures which will protect trout and eels, if present, are detailed in the Outline Method Statement (Dynamic Rivers, 2022).

Great crested newt and amphibians

- 5.51 GCN, their resting places and breeding sites are legally protected under the provision of Section 9, Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) and Regulation 41(I), Schedule 2 of The Conservation of Habitats and Species Regulations 2017 (as amended).
- 5.52 Adult GCN predominantly live terrestrially but utilise ponds for breeding purposes during the spring and summer months. Statutory guidance indicates that a survey may be necessary to check for the presence of GCN if background information on distribution suggests that they may be present. Detailed indicators include:
- Any historical records for GCN on the site, or in the general area
 - A pond on or near the site (within around 500m), even if it holds water only seasonally. Note that muddy, cattle-poached, heavily vegetated or shady ponds, ditches and temporary flooded hollows can be used by GCN
 - Sites with refuges (such as piles of logs or rubble), grassland, scrub, woodland, or hedgerows within 500m of a pond
- 5.53 However, the typical terrestrial range of individual GCN from their breeding sites is generally within 250m.
- 5.54 Cofnod provided a limited number of records of GCN and other amphibians within a 1km radius. GCN records pertain from the Erddig Den building pond approximately 950m south of the site. A couple of common toad records were also provided approximately 900m to the south of the site.
- 5.55 OS mapping does not indicate the presence of any ponds within 250m of the site. However, during the survey the surrounding areas was checked, and two ponds were observed, refer to Appendix A – Site location plan for locations of the ponds. These comprised an ornamental pond within the educational centres garden (P1) and a woodland pond (P2) to the east of the site.
- 5.56 The ornamental pond was located approximately 55m to the south-west of the site. It was approximately 5m by 5m, lined and planted with sparse vegetation such as lily (*Nymphaea sp*), water plantain (*Alisma plantago-aquatica*) and willowherb sp. The pond was surrounded by mown semi-improved grassland, a community garden and orchard.

During the survey approximately three male newts considered to be smooth newts were observed in the pond.

5.57 The woodland pond was located 24m to the north of the site. It was approximately 20m by 10m with relatively shallow banks. The pond contained several emergent plant species including marsh marigold (*Caltha palustris*), brooklime (*Veronica beccabunga*) and fool's watercress (*Helosciadium nodiflorum*) and was partly shaded by surrounding willow scrub. An egg search on an accessible edge was undertaken, however no newt eggs were found - this does not however confirm absence. The pond was considered to be suitable for amphibians including GCN.

5.58 The river habitat was considered to be generally unsuitable for GCN given its flow speed and presence of fish, which predate newts. However, the surrounding scrub, grassland and woodland (tree roots) offer good terrestrial habitat for sheltering and hibernating newts and amphibians. As such, there is a possibility that amphibian species may be associated with the terrestrial areas within the site.

5.59 The majority of the work will impact the river habitat, with a smaller area of terrestrial habitat being affected. It is considered that the works will not have a negative impact on amphibian including GCN populations due to abundance of good less-disturbed terrestrial habitat surrounding the site. However, amphibians may be present during the works. Therefore, to protect amphibian species including GCN during the works, the following Reasonable Avoidance Measures (RAMs) should be implemented and adhered to:

5.60 **GCN & Amphibian Reasonable Avoidance Measures**

- a. Prior to commencing works at the site, a suitably experienced and GCN licensed consultant ecologist should be appointed by the developer/contractor to ensure that the RAMs are successfully delivered.
- b. Prior to any works commencing at the site the developer/contractors should undergo a site induction/tool box talk where the implications arising from the potential presence of GCN and other amphibians within the local area and the need to implement the RAMs detailed in this report should be fully explained by the appointed ecologist. A newt identification sheet will be kept on site at all times and made available for workers to reference.
- c. As deemed appropriate by the appointed ecologist, items of potential refuge should be removed from the working area prior to initial vegetation clearance to prevent GCN/ amphibians from seeking shelter within the working area.
- d. All grassland areas should be maintained at a short sward height (approx. 5cm) prior to the reprofiling and widening.
- e. Where the sward is longer or scrub is present, the vegetation should be trimmed/mown using a two-cut technique – first cut to 10cm followed by a second cut to 5cm, leaving at least a few hours between cuts to allow any

wildlife to move from the area. The cut should ideally be carried out in the spring or autumn.

- f. The working area, together with any on-site storage/lay down areas, should be kept clear of debris and, where practicable, stored materials should be kept off the ground on stillages or pallets so as to prevent GCN/amphibians from seeking shelter or protection under/within them.
- g. Where materials need to be delivered to the site for immediate use and/or temporary storage directly on the ground, care should be taken not to cause unnecessary or inadvertent damage or disturbance to neighbouring habitat.
- h. The implementation of RAMs should be undertaken with due regard and consideration for the potential presence of other species within or adjacent to the working area.
- i. The RAMs **do not** allow GCN to be captured or removed from the site and released at another location. In the highly unlikely event that GCN are found within the working area, work must stop, and the appointed ecologist be contacted immediately for advice on how to proceed.

5.61 With adherence to the RAMS, no further survey works is regarded as necessary.

Hedgehog

5.62 Hedgehog is a Priority species listed on Section 41 of the Natural Environment & Rural Communities (NERC) Act, 2006, and is protected under certain provisions of Section 9, Schedule 6, of the Wildlife & Countryside Act 1981 (as amended).

5.63 Cofnod provided several records of hedgehogs primarily related to the residential areas around the site.

5.64 The site is generally unsuitable for hedgehogs, however the small area of scrub to be removed provides suitable sheltering habitat for hedgehogs. The GCN & Amphibian RAMs will also provide protection for hedgehogs, if present on site.

Invasive species

5.65 Cofnod provided details of wall cotoneaster, New Zealand pygmyweed, Japanese knotweed, Himalayan balsam and Rhododendron ponticum within a 1km radius of the site. There were records of New Zealand pygmyweed within ponds 50m from the site and records of Himalayan balsam further downstream.

5.66 During the survey no New Zealand pygmyweed was identified within the river habitat. A single Himalayan balsam plant was observed on the eastern bank of the river. No further invasive species were encountered during the survey.

- 5.67 Himalayan balsam is listed on Schedule 9 of the Wildlife and Countryside Act and Section 14 applies, which makes it an offence to cause this species to spread or grow in the wild. All waste containing this species also comes under the control of Part II of the Environmental Protection Act, 1990 (this can include moving contaminated soil from one place to another, or incorrectly handling and transporting contaminated material).
- 5.68 Himalayan balsam is a highly invasive exotic plant that out-competes flora leading to a reduction in diversity. It favours damp habitats, such as wet woodland, flushes and springs, and along the banks of watercourse. The plant has been recorded elsewhere along the river, and could therefore spread further into the area. The National Trust who owns the land carry out management of balsam throughout the season.
- 5.69 It has been recommended that the proposed area of work is well maintained to be free of balsam, through hand-pulling of any plants to appear within the area. This should occur at the appropriate time of year and not once the seed-heads have developed, as these explode once touched which may cause the species to spread further. The landowners should also target the works area for Himalayan balsam removal following the completion of works, as reprofiling of the banks will provide bare substrate into which this species can seed.
- 5.70 If any plants are on site during the vegetation removal then any removed plants and/or the affected soil must be disposed of appropriately, guidance can be found here: <https://www.gov.uk/guidance/prevent-the-spread-of-harmful-invasive-and-non-native-plants#EA>

Otter

- 5.71 Otters are protected under both European and British law and are a local and UK BAP Priority species. Otters inhabit a wide range of aquatic habitats including ditches, lakes, ponds, rivers and the coast. They shelter in areas of deep vegetation, beneath buildings and under exposed tree roosts that are close to/adjacent to aquatic habitats. Otter field signs include footprints, spraints and entrance holes to holts and other shelter sites.
- 5.72 Cofnod provided details of otter along the River Clywedog, with evidence of spraints under the bridge 180m upstream and a sighting of an adult further downstream 804m.
- 5.73 The river habitat and associated bank habitats within the site provide good habitat for otter, with records of presence up and downstream of the site. The river was surveyed for evidence of otter from the top of the bank, where possible, and no evidence such as spraints or holts were observed at the time of the survey. However, it is highly likely that otters move through this section of the river. However, the likelihood of otter residing in a holt within this section of the river is considered to be less likely due to the high levels of disturbance from dogs entering the water.
- 5.74 Given the presence of otter within the River Clywedog both up and downstream, the likelihood of this species moving through the site and the destructive nature of the works, it is recommended that an otter survey be carried out of the watercourse, including a 50m buffer both up and downstream of the site. Otter surveys can be carried out at any

time of year. The survey can be undertaken at any time of the year and will include a detailed search of the riverbanks from the river, if possible, to look for signs of otter within the site (specifically holts and/or couches) or in close proximity to the site.

Reptiles

- 5.75 All six species of British reptile are protected against intentional killing, injury or sale under Schedule 5 of the Wildlife and Countryside Act, 1981. The sand lizard and smooth snake are afforded a higher degree of protection under European law, which, amongst other things, makes it an offence to damage, destroy or obstruct their places of shelter or disturb these species in such a place. However, the distribution of these species is limited, and is largely restricted to a few southern counties in England, with the exception of some coastal sites in Merseyside and North Wales which support populations of sand lizard.
- 5.76 The distribution of the remaining 'common' species (i.e. adder, grass snake, slow worm and common lizard) is widespread. With some variation between species, reptiles prefer undisturbed habitats with open areas for basking and warmth, and more vegetated areas for shelter and feeding. They shelter and hibernate in crevices underground, such as within old mammal burrows, cracks within concrete bases and within spoil/rubble mounds.
- 5.77 Cofnod provided details of grass snake, and common lizard records within a 1km radius. One record of grass snake was returned approximately 77m north and another record 150m south basking on a tree trunk by the riverbank. The record of common lizard was from 2004 and located approximately 1km from the site. Given the proposed site has limited suitable habitat for common lizard, it has not been discussed below.
- 5.78 Grass snake can be found in a variety of habitat but are often found within wetland habitats or close to ponds. They predate amphibians, fish and small mammals and birds, and incubate their eggs in rotting vegetation. They hibernate within the winter months within sheltered areas.
- 5.79 The habitats on site and within the surrounding area provide good habitat for grass snake with an abundance of foraging (river and ponds) and shelter (rotting vegetation, tree roots, scrub). However, the small area of terrestrial habitat to be lost is unlikely to have a negative effect on the population, and works are likely to benefit grass snake in the long term.
- 5.80 Reasonable Avoidance Measures detailed in 5.59 in the GCN section should be implemented and adhered to protect any reptiles present on site. Point b which details a toolbox talk should also cover reptile. If these are followed no further survey work is required.

6.0 SUMMARY RECOMMENDATIONS TABLE

	Species potentially associated with the site?	Further survey effort required?	Survey timing	Recommendations
Badger	No	No	NA	-
Barn owl	No	No	NA	-
Bats	Unlikely	No	NA	Implement Bat Reasonable Avoidance Measures (RAMs) for any tree to be removed with Low suitability for roosting bats.
Birds	Yes	Potentially: Nesting bird surveys will be required <u>if</u> any shrubby vegetation is to be removed (e.g. widening of access points) during the breeding season	March August	- Schedule any consented removal of shrubby vegetation to occur outside of the nesting season, i.e. September to February.
Fish	Yes	No	-	Implement Dynamic River's Method Statement (2022).
Great crested newt	Potentially	No		Implement GCN RAMs - Disturbing works to the scrub areas be conducted under Ecological Watching Brief.
Hedgehog	Potentially	No	-	Protected via implementation of GCN RAMS.
Otter	Potentially	Yes: An otter survey is required of the site and upstream and downstream within 50m of the site.	Any time of the year, preferable when the water level is low.	Recommendations to be informed by the otter survey.
Invasive species	Potentially	No	-	Maintain the area free of Himalayan balsam through hand pulling.
Reptiles	Potentially	No	-	Implement GCN RAMs - Disturbing works to scrub areas be conducted under Ecological Watching Brief.

7.0 REFERENCES

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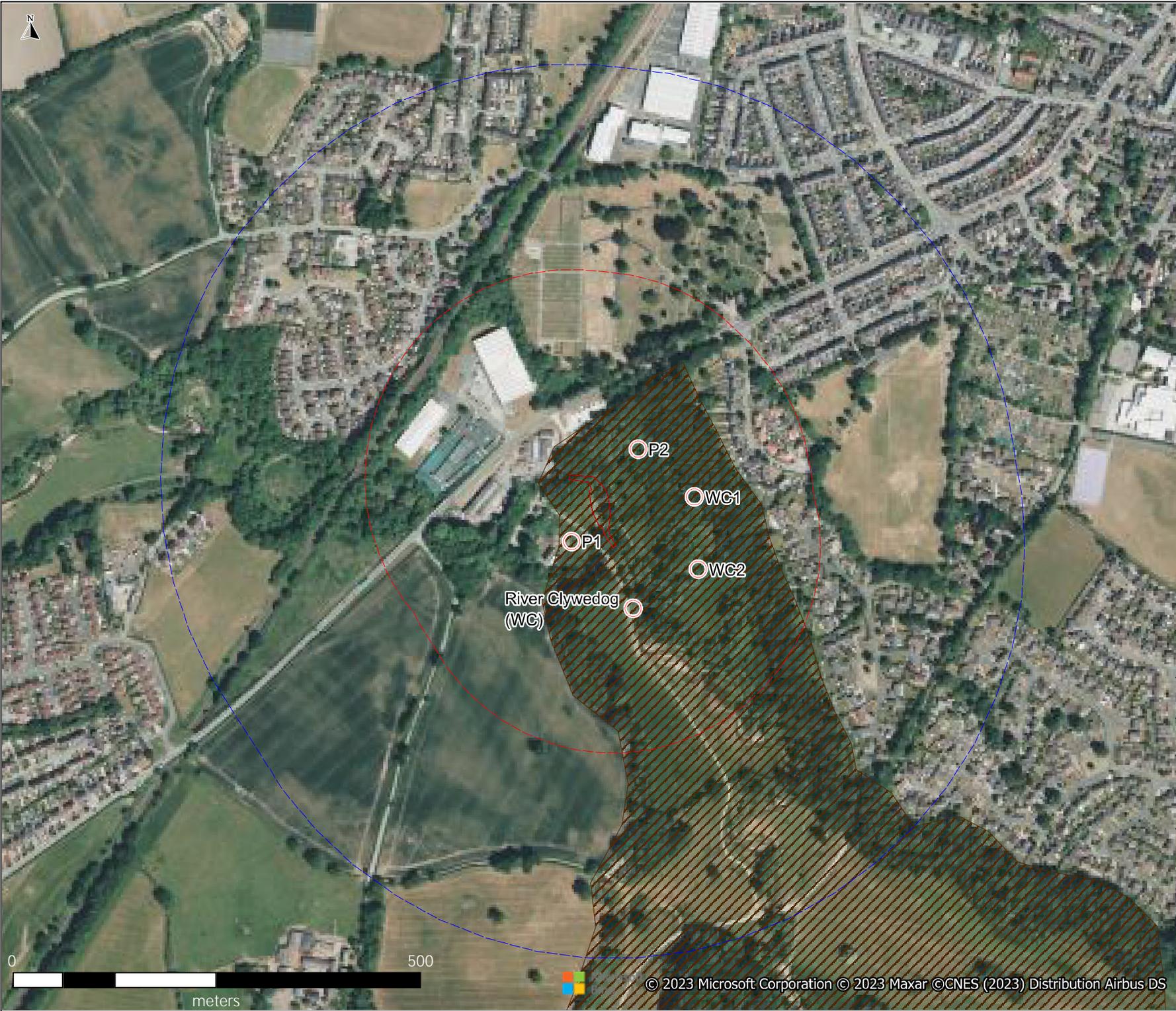
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Shawyer, C. R. (2011). Barn Owl (*Tyto alba*) Survey Methodology and Techniques for use in Ecological Assessment: Developing Best Practice in Survey and Reporting. IEEM, Winchester.

Stace, C. (2019). New Flora of the British Isles. Fourth Edition. Cambridge.

Appendices

Appendix A: Site Location Plan



Legend

-  Indicative site boundary
-  250m buffer
-  500m buffer
-  Ponds (P) / watercourses (WC)

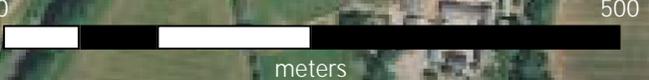
Wildlife Sites (WS)

-  Erddig Country Park

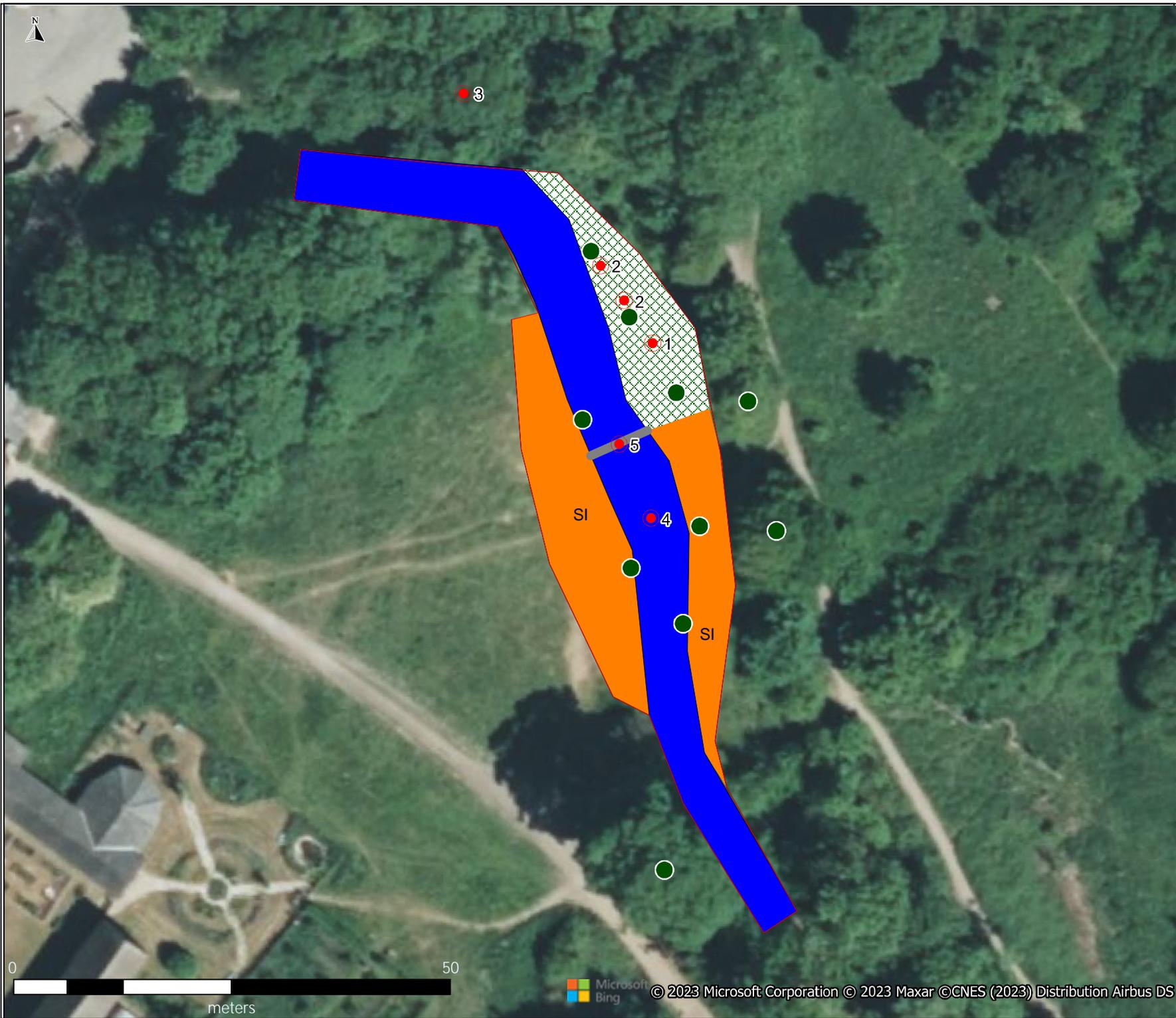
Project:	Clywedog Weir, Felin Puleston, Wrexham
Map:	Site Location Plan
CES Ref:	CES:750.165/05-23/SW
Scale:	Not to scale / indicative
Date	May 2023



Bickley Hall Farm
Bickley
Malpas
Cheshire
SY14 8EF



Appendix B: Extended Phase I Habitats Map



Legend

- Indicative site boundary
- A1.1 Dense scrub
- A3.1 Scattered trees, broad-leaved
- B2.2 Neutral grassland, semi-improved
- G2 Running water
- Location of weir

Target notes

- 1 - Dense scrub good habitat for wildlife on site
- 2 - Native tree species with Low suitability for roosting bats
- 3 - Priority habitat - broadleaved woodland
- 4 - Priority habitat - river (River Clywedog)
- 5 - Location of weir to be removed



Project:	Clywedog Weir, Felin Puleston, Wrexham
Map:	Extended Phase 1 Habitat Plan
CES Ref:	CES:750.165/05-23/SW
Scale:	Not to scale / indicative
Date	May 2023



Bickley Hall Farm
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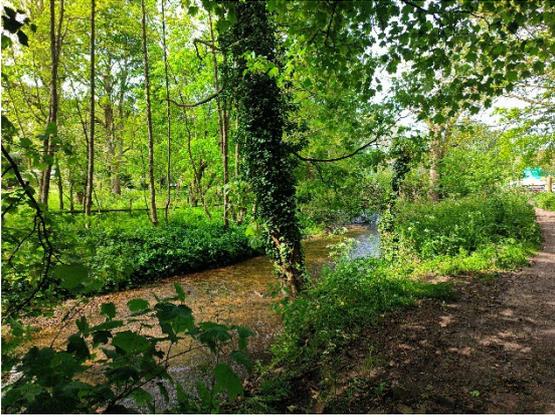
Appendix C: Photographic Plates



Plates 1a-1c: Proposed section of river for weir removal, showing weir to be removed (1a - top left), view of the west bank looking south (1b - top right) and view looking north (1c - bottom).



Plates 2a-2b: Proposed section of the river downstream (south) of the weir.



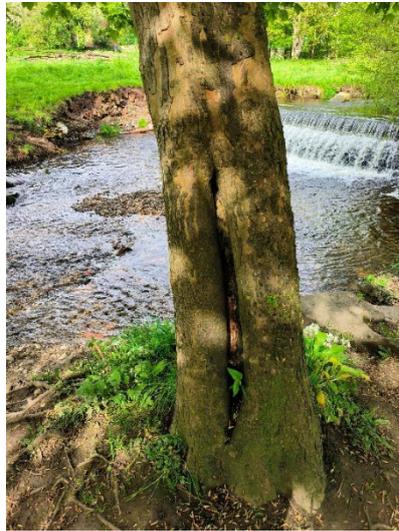
Plates 3a-3b: Proposed section of the river upstream (north) of the weir.



Plate 4a-4b: Area of semi-improved grassland - view of the grassland to be impacted (1a - left), overall view of the grassland from the education centre to the river, with woodland in the distance (1b – right).



Plate 5: Area of dense scrub in the eastern riparian zone.



Plates 6a-6c: View of trees to be or potentially removed within the site. Two sycamore (potential removal) (6a – top left), sycamore and willow trees to be removed (6b – top right), superficial feature in sycamore (6c – bottom).



Plates 7a-7b: View of the pond within the education centre (7a – left), woodland pond (7b – right).

Appendix D: Legislation

Species/Habitat	Protected by:	UK BAP	Local BAP
Badger	<i>Protection of Badgers Act, 1992</i>	No	Yes
Barn owl	Schedule 1, Part 1 of the <i>Wildlife and Countryside Act, 1981</i>	No	Yes
Bats	Regulation 42 of <i>The Conservation of Habitats and Species Regulations, 2017</i> Section 9 of the <i>Wildlife and Countryside Act, 1981</i> (as amended) Section 7 of the <i>Environment (Wales) Act 2016</i>	Dependent on species	Dependent on species
Bluebell	Schedule 8 of the <i>Wildlife and Countryside Act, 1981</i> (as amended)	No	Yes
Common frog	Provision 5 of Section 9 of the <i>Wildlife and Countryside Act, 1981</i> (as amended)	No	No
Common toad	Provision 5 of Section 9 of the <i>Wildlife and Countryside Act, 1981</i> (as amended) Section 7 of the <i>Environment (Wales) Act 2016</i>	Yes	Yes
Great crested newt	Regulation 42 of <i>The Conservation of Habitats and Species (Amendment) Regulations, 2017</i> Section 9 of the <i>Wildlife and Countryside Act, 1981</i> (as amended) Section 7 of the <i>Environment (Wales) Act 2016</i>	Yes	Yes
Hedgehogs	Section 7 of the <i>Environment (Wales) Act 2016</i>	Yes	No
Invasive species	Section 9 of the <i>Wildlife and Countryside Act, 1981</i> (as amended)	No	No
Invertebrates	Section 7 of the <i>Environment (Wales) Act 2016</i>	Dependent on species	Dependent on species
Kingfisher	Schedule 1, Part 1 of the <i>Wildlife and Countryside Act, 1981</i>	No	No
Nesting birds	Section 1 of the <i>Wildlife and Countryside Act, 1981</i>	Dependent on species	Dependent on species
Otters	Regulation 41 of <i>The Conservation of Habitats and Species Regulations, 2017</i> Section 5 of the <i>Wildlife and Countryside Act, 1981</i>	Yes	Yes
'Widespread' reptiles	Provisions 1 and 5 of Section 9 of the <i>Wildlife and Countryside Act, 1981</i> (as amended) Section 7 of the <i>Environment (Wales) Act 2016</i>	Yes	Dependent on species

The Conservation of Habitats and Species Regulations, 2017

European protected species are listed on Schedule 2 of the *Conservation of Habitats and Species Regulations 2010*. Those species listed on Schedule 2 are protected under Regulation 41, which refers to the protection of wild animals of a European Protected Species. The

following is a summary of the offences listed under Regulation 41, however, the *Conservation Regulations* should always be referred to for the exact and current wording:

Under Regulation 41 of the *Conservation of Habitats and Species Regulations, 2010* it is an offence to –

- deliberately capture or kill a wild animal of a European protected species;
- deliberately disturb wild animals, in particular any disturbance which is likely:
 - to impair their ability to survive, to breed or reproduce, or to rear or nurture their young; or
 - to impair their ability, in the case of animals of a hibernating or migratory species, to hibernate or migrate;
 - to affect significantly the local distribution or abundance of the species to which they belong
- deliberately take or destroy the eggs of such an animal; or
- damage or destroy a breeding site or resting place of such an animal.
- keep, transport, sell or exchange, or offer for sale or exchange, any live or dead wild animal of a European protected species, or any part of, or anything derived from, such an animal.

Wildlife and Countryside Act, 1981 (as amended)

British protected species of animal are listed on Schedule 5 of the *Wildlife and Countryside Act, 1981* (as amended). Those species listed on Schedule 5 are protected under Part 1, Section 9, which refers to the protection of certain wild animals. The following is a summary of the offences listed under Section 9; however the Act should always be referred to for the exact and current wording:

Under Section 9 of the *Wildlife and Countryside Act, 1981* (as amended) if any person –

- intentionally kills, injures or takes any wild animal included in Schedule 5;
- has in his possession or control any live or dead wild animal included in Schedule 5 or any part of, or anything derived from such an animal;
- intentionally or recklessly damages or destroys, or obstructs access to, any structure or place which any wild animal included in Schedule 5 uses for shelter or protection;
- disturbs any such animal included in Schedule 5 while it is occupying a structure or place which it uses for that purpose;
- sells, offers or exposes for sale, or has in his possession or transports for the purpose of sale, any live or dead wild animal included in Schedule 5, or any part of, or anything derived from, such an animal; or,
- publishes or causes to be published any advertisement likely to be understood as conveying that he buys or sells, or intends to buy or sell, any of those things, he shall be guilty of an offence.

Wildlife and Countryside Act, 1981 (as amended) - Birds

All species of wild bird, their nests and eggs are protected under Section 1 of the *Wildlife and Countryside Act, 1981* (as amended); therefore surveys are required to check for their presence where they are likely to be disturbed for any reason.

The following is a summary of the offences listed under Section 1; however the Act should always be referred to for the exact and current wording:

Under Section 1 of the *Wildlife and Countryside Act*, 1981 (as amended), if any person:

- Intentionally kills, injures or takes any wild bird;
- Intentionally takes, damages or destroys the nest of any wild bird while that nest is in use or being built;
- Intentionally takes or destroys an egg or any wild bird, he shall be guilty of an offence;
- Has in his possession or control any live or dead wild bird or any part of, or anything derived from, such a bird; or
- Has in his possession or control an egg of any wild bird or any part of such an egg, he shall be guilty of an offence.

Schedule 1 (Part 1 and Part 2) of the *Wildlife and Countryside Act*, 1981 (as amended) lists bird species that receive special attention under Section 1. Any person convicted of an offence listed above, in respect of a bird included in Schedule 1 or any part of, or anything derived from, such a bird; the nest of such a bird; or an egg of such a bird or any part of such an egg, shall be liable to a special penalty.

Also, if any person intentionally or recklessly disturbs any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or disturbs dependent young of such a bird, he shall be guilty of an offence and liable to a special penalty.

Schedules 1, 2, 3 and 4 of the *Wildlife and Countryside Act*, 1981 (as amended) list different species of bird and different Parts of Section 1 of the Act refer to different offences which may be committed in relation to the varying Schedules. The following is a summary of the type of protection offered to species of wild bird listed on each of the Schedules, however the Act itself should always be referred to for the exact and current wording and full species lists:

Schedule 1: Birds which are protected by special penalties:

Part 1: At all times.

Part 2: During the close season.

Schedule 2: Birds which may be killed or taken:

Part 1: Outside the close season.

Part 2: By authorised persons at all times.

Schedule 3: Birds which may be sold:

Part 1: Alive at all times if ringed and bred in captivity.

Part 2: Dead at all times.

Part 3: Dead from 1st September to 28th February.

Schedule 4: Birds which must be registered and ringed if kept in captivity.

The Environment (Wales) Act, 2016

Section 7 of the *Environment (Wales) Act*, 2016 replaces the duty in Section 42 of the *Natural Environment and Rural Communities (NERC) Act*, 2006 (as amended). Section 7 comprises a list of species and habitats of principle importance which is the same as the list under the superseded Section 42 of the *NERC Act*, 2006. The *Environment (Wales) Act* itself should be referred to for the exact and current wording however a summary is detailed below:

- The Welsh Ministers will publish, review and revise lists of living organisms and types of habitat in Wales, which they consider are of key significance to sustain and improve biodiversity in relation to Wales;

- They must therefore consider any appropriate evidence, for example as provided in the State of Natural Resources Report, and also engage with any relevant stakeholders;
- The Welsh Ministers must also take all reasonable steps to maintain and enhance the living organisms and types of habitat included in any list published under this section, and encourage others to take such steps.

The Protection of Badgers Act, 1992

The following is a summary of the offences contained in the Act; however the *Protection of Badgers Act, 1992* itself should always be referred to for the exact and current wording.

Under the *Protection of Badgers Act, 1992* a person is guilty of an offence if, except as permitted by or under this Act he:

- wilfully kills, injures or takes, or attempts to kill, injure or take, a badger;
- has in his possession or under his control any dead badger or any part of, or anything derived from, a dead badger;
- cruelly ill-treats a badger;
- uses badger tongs in the course of killing or taking, or attempting to kill or take, a badger;
- digs for a badger; or,
- sells a live badger or offers one for sale or has a live badger in his possession or control.

A person is also guilty of committing an offence under the *Protection of Badgers Act, 1992* if he intentionally or recklessly interferes with a badger sett by doing any of the following things:

- damaging a badger sett or any part of it;
- destroying a badger sett;
- obstructing access to, or any entrance of, a badger sett;
- causing a dog to enter a badger sett; or,
- disturbing a badger when it is occupying a badger sett,

The definition of a badger sett within the meaning of the 1992 Act is given as “any structure or place, which displays signs indicating current use by a badger”. ‘Current’ is not defined in the Act, and may be open to interpretation. Natural England indicates that a sett is in ‘current’ use if it has been occupied at all over the previous 12 months. Whatever the interpretation of ‘current use’ however, it is important to note that a sett is protected whether or not there is a badger actually in residence at the time of inspection.

Natural England Guidelines (which is also referred to in Wales) state that work that disturbs badgers or their setts is illegal if not carried out under licence. Badgers could be disturbed by work near their sett even if there is no direct interference or damage to the sett itself, for example, using very heavy machinery within 30 metres of an active sett. Lighter machinery (particularly for any digging operation) within 20 metres, or light work such as hand digging or scrub clearance within 10 metres of an active sett, all require a licence. There are some activities which can cause disturbance at a far greater distance (such as using explosives or pile driving) and should therefore be given individual consideration. Certain criteria must be met before a licence can be issued to enable otherwise prohibited works to proceed. Such criteria may be subject to change without notice.

Timing of operations should also be considered. If required, site-specific badger disturbance licences are normally only issued between the months of July and October so as to avoid the

badger's breeding season. This aspect should be borne in mind when assessing any possible constraints upon the development timetable.



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