

Vyrnwy Reserve

Update Preliminary Ecological Appraisal



HABITAT WORKS

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Update Preliminary Ecological Appraisal

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Contents

EXECUTIVE SUMMARY	IV
1. INTRODUCTION.....	1
1.1 BACKGROUND.....	1
2. METHODOLOGY.....	2
2.1 DATA CONSULTATION.....	2
2.2 ECOLOGICAL WALKOVER SURVEY.....	2
2.3 PROTECTED AND KEY SPECIES.....	3
2.4 INVASIVE SPECIES.....	4
2.5 ASSUMPTIONS AND LIMITATIONS	4
3. FINDINGS AND EVALUATION	6
3.1 SITE DESCRIPTION.....	6
3.2 DESIGNATED SITES	6
3.3 HABITATS	6
3.4 SPECIES.....	8
3.5 INVASIVE SPECIES.....	12
4. IMPACT ASSESSMENT, MITIGATION AND ENHANCEMENTS.....	13
4.1 PROPOSALS.....	13
4.2 DESIGNATED SITES	13
4.3 HABITATS	14
4.4 PROTECTED SPECIES.....	14
5. REFERENCES.....	20
FIGURE 1. UK HABITAT CLASSIFICATION MAP	21
FIGURE 2. DESIGNATED SITES MAP.....	23
FIGURE 3. WATERBODIES WITHIN 500 M OF THE SITE	25
APPENDIX 1. TARGET NOTES	27
APPENDIX 2. BIRD SPECIES RECORDS SUMMARY	28

Executive Summary

Habitat Works Limited (Habitat Works) was commissioned by Canal & River Trust (hereafter referred to as 'The Trust') to undertake an Update Preliminary Ecological Appraisal (PEA) of the land at the plot of the proposed Vyrnwy Reserve, located near, Llanymynech, Powys, Wales SY22 6SY (central Ordnance Survey National Grid Reference (OS NGR) SJ 25850 19534), hereafter referred to as 'the Site' and as displayed in Figure 1.

An original PEA was undertaken by Habitat Works in 2023 '*Vyrnwy Reserve Site – Preliminary Ecological Appraisal Report*'. The requirement for the PEA was to inform proposals for the Site to be repurposed as a wetland habitat creation scheme.

Since the 2023 report, an additional 'Disposal Area' has been included within the proposals, which is proposed to be utilised for the disposal of sediments that would be created by the proposed excavation of parts of the Site to create the ditches/channels to create the wetland reserve (Figure 1).

Recommendations are made regarding impacts of the proposed development through habitat losses/potential gains on the Site post-development and the retention and protection of key ecological features. These include:

- Production of a Construction Environmental Management Plan (CEMP);
- Implementation of pollution prevention measures throughout the works;
- Implementation of Best Practice Measures (BPM) for:
 - Common amphibians,
 - Badgers,
 - Reptiles,
 - Otters
 - Hedgehogs;
- Removal of Invasive Non-Native Species (INNS) Himalayan balsam; and,
- Consideration of enhancement opportunities for local species, including:
 - Installation of bat and bird boxes
 - Construction of 'butterfly banks'
 - Installation of insect towers
 - Creation of log/brush piles

1. Introduction

1.1 Background

- 1.1.1 Habitat Works Limited (Habitat Works) was commissioned by Canal & River Trust (hereafter referred to as 'The Trust') to undertake an Update Preliminary Ecological Appraisal (PEA) of the land at the plot of the proposed Vyrnwy Reserve, located near, Llanymynech, Powys, Wales SY22 6SY (central Ordnance Survey National Grid Reference (OS NGR) SJ 25850 19534), hereafter referred to as 'the Site' and as displayed in Figure 1.
- 1.1.2 An original PEA was undertaken by Habitat Works in 2023 '*Vyrnwy Reserve Site – Preliminary Ecological Appraisal Report*'. The requirement for the PEA was to inform proposals for the Site to be repurposed as a wetland habitat creation scheme.
- 1.1.3 Since the 2023 report, an additional 'Disposal Area' has been included within the proposals, which is proposed to be utilised for the disposal of sediments that would be created by the proposed excavation of parts of the Site to create the ditches/channels to create the wetland reserve (Figure 1).
- 1.1.4 This report details the findings of a PEA, comprising information collated for the original 2023 Habitat Works PEA, in conjunction with an additional site visit undertaken in December 2024 to assess the proposed 'Disposal Area'. Methodologies employed during the surveys are described along with the survey findings, evaluation, assessment and recommendations for any further survey work and/or mitigation/enhancement as required.
- 1.1.5 Recommendations are made regarding impacts of the proposed development through habitat losses/potential gains on the Site post-development and the retention and protection of key ecological features. The provision of species-specific enhancements is outlined where appropriate.

2. Methodology

2.1 Data Consultation

2.1.1 Data consultation was undertaken by Habitat Works with the local records centre; Biodiversity Information Service for Powys & Brecon Beacons National Park (BIS) in October 2023 during the original PEA of the Site as part of the ecological appraisal process, to determine whether any ecological features of note had previously been recorded within 2 km of the Site. Data requested included:

- Records of protected species;
- Records of national or local Biodiversity Action Plan (BAP) species;
- Details of any statutory sites of ecological interest e.g. Sites of Special Scientific Interest (SSSI), Special Protection Area (SPA) etc.; and,
- Details of any non-statutory sites of ecological interest e.g. Local Wildlife Site (LWS).

2.1.2 The Multi-Agency Geographic Information for the Countryside (MAGIC) website (<http://www.magic.defra.gov.uk>) was consulted in February 2025 for information on statutory and non-statutory designated sites of conservation interest, and for the presence of European Protected Species (EPS) mitigation licences for great crested newt *Triturus cristatus* (GCN) and bats within 2 km of the Site. MAGIC was also used to search for information relating to GCN Class Survey Licence Returns and Great Crested Newt Pond Surveys 2017- 2019 within 500 m of the Site.

2.1.3 Information returned from MAGIC and BIS with relevant assessments will be incorporated into the report as appropriate. All records will be reviewed, however particular interest will be placed on records within the past 10 years, with records prior to these considered historic.

2.2 Ecological Walkover Survey

2.2.1 An ecological walkover survey was undertaken 5th December by Senior Ecologist Joe Travis BSc (Hons) MSc ACIEEM following best practice guidelines (UK Habitat Classification System (UKHab) (UKHab Working Group (UKHCWG) 2018)). This survey method aims to define habitats and vegetation types present and provide an indication of their relative abundance. This survey method aims to characterise habitats and communities present and is not intended to provide a complete list of all species occurring across the Site.

2.2.2 The UKHab survey covered land within the Site (as illustrated by the red line site boundary in Figure 1).

2.2.3 Habitats and vegetation types present inside the Site were recorded onto a field map and notable, rare or scarce plant species, including other features of ecological interest, were highlighted using Target Notes (TN). The current management of habitats and associated features were noted and assigned UKHab secondary codes where relevant.

2.2.4 Evidence of protected species or species of nature conservation importance were recorded where present at the time of survey. Habitats or species present that are listed under Section 41 of the NERC Act 2006 or the KBAP were also noted.

2.2.5 Survey findings are detailed in Section 3 and annotated on Figure 1, Target Notes are provided in Appendix 1.

2.2.6 Plant species recorded were classified according to the subjective method of DAFOR abundance ratings. The standardised terms are as follows:

- D Dominant
- A Abundant
- F Frequent
- O Occasional
- R Rare

2.3 Protected and Key Species

2.3.1 Any evidence of protected species or groups encountered during the survey was recorded. This included observations of field signs and an assessment of the suitability of the habitats present to support protected species. For full details of legislation relating to all habitats and species discussed within this report visit <http://www.legislation.gov.uk>.

Amphibians

2.3.2 The Site was assessed for its potential to support amphibians, including a detailed GCN assessment. A desk-based search for ponds within 500 m of the Site, which are not separated by a significant barrier to amphibian dispersal, was made using 1:10,000 OS mapping. Habitats within the Site were assessed for their suitability to support amphibians during their terrestrial and aquatic stages where applicable.

Badgers

- 2.3.3 Signs of badger *Meles meles* activity were sought within the Site and within 30m of the Site boundary, where possible.
- 2.3.4 The survey followed standard methodology detailed in 'Surveying Badgers' (Harris *et al.*, 1989) and the approach as described in 'The history, distribution, status and habitat requirements of the badger in Britain' (JNCC, 1990).
- 2.3.5 The survey focused on areas with topography and/or vegetation typically utilised for sett building, in addition to key habitats typically favoured for foraging such as woodland, hedgerows, ditches and banks.
- 2.3.6 The survey involved identifying any badger field signs including setts, latrine/dung pits, foraging marks, feeding signs (e.g. snuffle holes), footprints, badger hairs and worn pathways, specifically along linear features and boundaries in the Site.
- 2.3.7 In the event of identifying badger sett(s), these were examined with key details recorded, including the number of entrances and their status (e.g. active, partially used, and disused). Where present setts identified were categorised using nationally recognised sett classification (main sett, annexe sett, subsidiary sett, outlier sett) where possible (Harris *et al.*, 1989).

Bats

- 2.3.8 Trees and structures within and immediately adjacent the Site were subject to a ground-based assessment for their suitability to support roosting bats during the survey.
- 2.3.9 An individual structure may have several features of potential interest to roosting bats associated with it and it is not always possible to confirm usage of a feature by bats due to their transient nature. Consequently, it is customary when undertaking such surveys to assign each feature to a defined category of roosting potential as follows: negligible, low, moderate, high or confirmed (Collins, 2023).

2.3.10 Similar to structures, an individual tree may have several features of potential interest to roosting bats associated with it and it is not always possible to confirm usage of a feature by bats during a single daytime visit, given their highly transient natures. Consequently, it is customary when undertaking such surveys to assign each feature to a defined category of None, Further Assessment Required (FAR), Potential Roosting Feature – Individual (PRF – I) and Potential Roosting Feature – Multiple (PRF – M) (Collins, 2023).

2.3.11 The Site was also assessed for its suitability for foraging and commuting bats in accordance with good practice guidelines (Collins, 2023).

Birds

2.3.12 In 2021, a re-assessment of Birds of Conservation Concern (BoCC) was published by Stanbury et al. (2021), which defined rare and threatened bird species on two lists (Red and Amber) describing the level of threat to each species of concern. “Red” is the highest conservation priority, with species needing urgent action through to “Green”, indicating that the species are relatively unthreatened.

2.3.13 Data consultation data was filtered for WCA 1981 (as amended) Schedule 1 bird species and those species protected under Annex 1 of the EU Directive on the Conservation of Wild Birds, also known as the Birds Directive. Priority species (NERC Act 2006, LBAP) were likewise highlighted and the UK Red List for birds, also known as the BoCC as described above, was also referred to.

2.3.14 During the Site survey any species of birds encountered were recorded. Habitats were assessed for their potential value to nesting, wintering and foraging birds.

Invertebrates

2.3.15 The habitats present on the Site were assessed for their suitability to support invertebrates and incidental observations of invertebrates at and adjacent to the Site were noted.

Reptiles

2.3.16 The habitats present on Site were assessed for their suitability to support reptiles, particularly with reference to their connectivity with other areas of suitable habitat within the wider landscape.

Riparian Mammals and White-clawed Crayfish

2.3.17 A desk-based search for watercourses on or within 30 m of the Site, which are not separated by a significant barrier to dispersal, was undertaken using OS 1:10,000 mapping.

2.3.18 Where access was possible, watercourses were subsequently assessed for their suitability to support otter *Lutra lutra*, water vole *Arvicola amphibius* and white-clawed crayfish *Austropotamobius pallipes*.

Other Key and Notable Species

2.3.19 Whilst on Site habitats were assessed for their potential to support any other nationally, locally scarce or notable species, with particular reference to LBAP species.

2.4 Invasive Species

2.4.1 Invasive Non-Native Species (INNS) listed on Schedule 9 of the Wildlife and Countryside Act (1981) (as amended) and/or The Invasive Alien Species (Enforcement and Permitting) Order (2019) were recorded and mapped as seen during the survey.

2.5 Assumptions and Limitations

2.5.1 A UKHab survey is intended to provide a rapid assessment of habitats present within a site and is not

intended to replace detailed vegetation or targeted protected species surveys, where deemed necessary.

- 2.5.2 Due to the survey being undertaken outside of the optimal survey period, sufficient information to characterise the habitats present in order to assess their likely contribution to the biodiversity interest of the area is usually not possible for all habitats. However, due to the nature of the habitats present, in addition to the survey of the majority of the Site inside the peak botanical survey season, with reasonable assumptions it is considered that this is a valid and fair representation of the habitats present.
- 2.5.3 Data was requested from the local record centre Biodiversity Information Service for Powys & Brecon Beacons National Park (BIS) in October 2023 as part of the original PEA. Although this data is in excess of a year old, given the proposals for the Site to comprise the creation of a nature reserve, and the number of protected species surveys that have been undertaken on the Site and the adjacent Montgomery Canal by Habitat Works in the intervening period, it is not considered likely that an updated records search would provide any significance to the findings of this report, and the recommendations that have been made.

3. Findings and Evaluation

3.1 Site Description

- 3.1.1 The Site is located southwest of LLanymynech, Powys and is located between the western bank of the River Vyrnwy, and the eastern bank of the Montgomery Canal as detailed in Figure 1. The Site comprises pastoral fields which are regularly grazed by sheep and bounded mainly by native hedgerows.
- 3.1.2 The Site is mostly bounded by pastoral fields, with sections of hedgerow and pockets of woodland present across the wider landscape.

3.2 Designated Sites

- 3.2.1 A total of four statutory designated sites were identified using MAGIC within 2 km of the Site. These included Special Areas of Conservation (SAC), Sites of Special Scientific Interest (SSSI) and Local Nature Reserves (LNR).
- 3.2.2 BIS returned two non-statutory designated Sites within 2 km of the Site, one of which is a further designation for the Montgomery Canal
- 3.2.3 Table 1 below details the designated Sites within 2 km of the Site, with Figure 2 displaying their locations.

Table 1 - Designated Sites within 2 km of the Site

Designated Site	Description from Citation	Approx. Distance & Direction from Site
Statutory		
Montgomery Canal (SAC, SSSI, LWS)	Designated for aquatic botanical interest.	Adjacent southern boundary
Llanymynech Heritage Area (LNR)	Designated for botanical interest.	1.8 km north
Llanymynech and Llynclys Hills (SSSI)	Designated for botanical interest.	1.9 km north
Gweunydd Ty-Brith (Ty-Brith Meadows) (SSSI)	Designated for botanical interest.	1.9 km southwest
Non- Statutory		
Pont Llanymynech LWS	Roadside verge nature reserve.	1.5 km northeast

- 3.2.4 The designated sites are considered to be of importance to nature conservation at between the local and county level.

3.3 Habitats

- 3.3.1 Habitats recorded on the Site, their distribution and composition are discussed in order of dominance below. Habitat locations are annotated on Figure 1.

g3c Other neutral grassland (Secondary Code (SC): 16, 32, 504, 524)

- 3.3.2 Much of the northern section of the Site comprises a large flat area of Other neutral grassland. It is grass

dominated, with scattered tall herbs (SC: 16) throughout. Frequent grass species include cock's-foot *Dactylis glomerata*, perennial rye-grass *Lolium perenne*, creeping bent *Agrostis stolonifera*, soft brome *Bromus hordeaceus* and Yorkshire fog *Holcus lanatus*. With scattered Timothy *Phleum pratense*, common couch *Elymus repens*, false oat-grass *Arrhenatherum elatius*, common bent *Agrostis capillaris* and crested dog's-tail *Cynosurus cristatus*. Frequent herbs include creeping thistle *Cirsium arvensis*, creeping buttercup *Ranunculus repens*, broad-leaved dock *Rumex obtusifolius*, dandelion *Taraxacum officianalis* agg. and imperforate St. John's-wort *Hypericum maculatum*, with common mouse-ear *Cerastium fontanum*, common cat's-ear *Hypochaeris radicata*, tansy *Tanacetum vulgare*, red clover *Trifolium pratensis*, white clover *T. repens*, meadow buttercup *Ranunculus acris*, hogweed *Heracleum sphondylium*, nettle *Urtica dioica*, smooth hawk's-beard *Crepis capillaris* and meadowsweet *Filipendula ulmaria* occasional.

- 3.3.3 Invasive non-native Himalayan balsam *Impatiens glandulifera* (SC: 524) is locally dominant along the northern edge of the riverbank, which is likely subject to seasonal flooding, with abundant *Agrostis stolonifera*, *Holcus lanatus* and *Filipendula ulmaria* present in this area, and a small amount of marsh woundwort *Stachys palustris* and greater bird's-foot trefoil *Lotus pedunculatus*.
- 3.3.4 A small area of marshy grassland is located in the south-eastern corner of the field, which is in a hollow and waterlogged (SC: 504). This small area is enclosed by plantation along the southern edge, and a row of scrub along the northern and eastern edge. *Agrostis stolonifera*, *Urtica dioica* and *Ranunculus repens* are all abundant, with occasional soft rush *Juncus effusus*, *Holcus lanatus*, Great willowherb *Epilobium hirsutum*, hemlock water dropwort *Oenanthe crocata*, water forget-me-not *Myosotis scorpioides* and water pepper *Persicaria hydropiper*.
- 3.3.5 Several individual scattered trees (SC: 32) are present throughout the Site including a very mature *Quercus robur* in the northwest corner of the field (Figure 1, TN2) plus a total of four mature *Tilia* sp. of which two had been uprooted (Figure 1, TN1) in addition to a single mature London plane *Platanus x hispanica*.

g4 Modified grassland

- 3.3.6 The fields in the southern section of the Site, including the Disposal Area comprise Modified grassland. *Lolium perenne*, *Agrostis stolonifera* and *Holcus lanatus* are all locally abundant and frequent. The most abundant herbs are *Ranunculus repens*, *Trifolium repens*, *Cirsium arvense* and *Rumex obtusifolius*. Along the southern edge the field is bound by a tall hedgerow and the habitat is shaded and damp with occasional *Filipendula ulmaria*, marsh thistle *Cirsium palustre* and *Epilobium hirsutum* with dominant *Agrostis stolonifera* and *Ranunculus repens*.

G3c5 Arrhenatherum neutral grassland (SC: 16, 32, 524)

- 3.3.7 The Site is bounded by the River Vyrnwy along the northern edge, comprising a mix of vertical and steep banks with scattered trees (SC: 32) and shrubs and tall ruderal vegetation (SC: 524), including locally dominant *Impatiens glandulifera* (SC: 524) and occasional *Epilobium hirsutum*, *Urtica dioica*, *Cirsium arvense*, *Arrhenatherum elatius*, *Dactylis glomerata*, *Heracleum sphondylium*, bramble *Rubus fruticosus*, hedge bindweed *Calystegia sepium*, wild angelica *Angelica sylvestris*, *Filipendula ulmaria*, tufted hair-grass *Deschampsia cespitosa*, reed canary grass *Phalaris arundinacea*, redshank *Persicaria maculosa* and water pepper *Persicaria hydropiper*. Tree and shrub species are scattered and locally abundant including mainly willows *Salix* ssp., with locally occasional elder *Sambucus nigra*.

W1 Other broadleaved woodland (SC: 29)

- 3.3.8 In the eastern extent of the Site is a young plantation (SC: 29) with a mix of canopy species including poplar *Populus* sp. and aspen *Populus tremula*, *Fraxinus excelsior* and *Quercus* sp. with rare lime *Tilia* sp. and larch

Larix sp. There are two very mature English oak *Quercus robur* trees within the young plantation. The shrub layer comprises scattered *Crataegus monogyna*, *Sambucus nigra* and many saplings from all canopy tree species. *Rubus fruticosus* agg., *Urtica dioica*, *Geum urbanum*, *Geranium robertianum*, *Glechoma hederacea*, *Alliaria petiolata* and *Galium aparine* are frequent within the field layer with a small area of bluebells *Hyacinthoides* sp. At the time of survey it was not possible to tell whether these were native bluebell species.

w1d Wet woodland (SC: 524)

- 3.3.9 There is a gravel bed present that comprises wet woodland with an open channel of standing water. Bare gravel is abundant, with areas of frequent *Impatiens glandulifera* (SC: 524), *Persicaria hydropiper* and *Phalaris arundinacea*. The canopy comprises frequent *Salix cinerea* with rare crack willow *Salix fragilis*. Rare species include marsh horsetail *Equisetum palustris*, *Angelica sylvestris*, *Calystegia sepium* and *Urtica dioica*.

h3d Bramble scrub

- 3.3.10 Two small sections of dense bramble scrub are located in the southern sections of the Site. The bramble is dominant, with occasional common nettle and cleavers present around the edge of the scrub.

h2a5 Species rich hedgerow (SC: 11)

- 3.3.11 H1 is a small managed hedgerow enclosing a small off-site field. It is on average approximately 1.5m wide and high with no gaps. The dominant species are *Crataegus monogyna*, blackthorn *Prunus spinosa* and *Rubus fruticosus* agg. with occasional dog rose *Rosa canina*, ash *Fraxinus excelsior* and *Sambucus nigra*. The field layer includes locally frequent ivy *Heder helix* and ground ivy *Glechoma hederacea* with *Urtica dioica*, *Rumex obtusifolius* and *Cirsium arvense* along the adjacent metre strip.
- 3.3.12 H2 bounds the site along part of the southern edge. This hedge comprises a bank up to a path along the canal and is unmanaged with abundant trees (SC: 11). It is high and wide - over 4m on average. Moderately mature tree species are occasional *Fraxinus excelsior* and English oak *Quercus robur*. *Prunus spinosa*, *Rosa canina* and *Crataegus monogyna* are all locally abundant with scattered *Salix cinerea*, field rose *Rosa arvensis*, holly *Ilex aquifolium*, field maple *Acer campestre* and *Rubus fruticosus*. Black bryony *Tamus communis* is occasional. The field layer under the hedgerow includes locally frequent dog's mercury *Mercurialis perennis*, *Hedera helix*, *Glechoma hederacea*, cleavers *Galium aparine*, *Filipendula ulmaria*, common sorrel *Rumex acetosa*, *Cirsium palustre* and bush vetch *Vicia sepium*.

h2a6 Species poor hedgerow

- 3.3.13 H3 is a very gappy hedgerow along the eastern edge of the Site comprises mainly scattered 'leggy' *Crataegus monogyna* with occasional *Rosa canina* and *Rubus fruticosus* with rare *Sambucus nigra*.
- 3.3.14 H4 is a very short hedgerow in the western corner of the site with abundant *Crataegus monogyna* and occasional *Rosa canina*, *Ulmus glabra*, *Sambucus nigra* and *Rubus fruticosus* agg. The field layer comprises frequent/abundant *Cirsium arvense*, *Epilobium hirsutum*, *Urtica dioica* and occasional *Heracleum sphondylium*, *Stachys sylvatica* and *Galium aparine*.

3.4 Species

Amphibians

- 3.4.1 BIS provided a total of 11 records of amphibians for locations within 2 km of the Site. These records pertained to four different species, including seven records of great crested newts (GCN), two records of

common toad *Bufo bufo*, and a single record of both common frog *Rana temporaria* and smooth newt *Lissotriton vulgaris*. The most recent record pertains to a common frog that was recorded approximately 2 km southeast of the Site in 2022. The closest record to the Site pertains to a common toad that was recorded approximately 500 m west of the Site in 2022 on the Montgomery Canal. All records of GCN are outwith 1 km of the Site boundary.

- 3.4.2 No GCN EPS licence were identified within 2 km of the Site. A single GCN Class Survey Licence Returns was present approximately 1800 m northeast of the Site, which confirmed GCN presence in 2016.
- 3.4.3 A total of four waterbodies are present within 500 m of the Site from a search of OS Maps (See Figure 3). However, one of these is within 250 m of the Site which is separated from the Site by the Montgomery Canal (Figure 3, WB1). The Trust has undertaken GCN surveys of the Montgomery Canal in recent years, which has confirmed likely absence of GCN from the canal (in addition to WB3 and WB4). As such, it is considered that the canal is a barrier to dispersal for any potentially present GCN within WB1 onto the Site. As such, it is considered that GCN are not a constraint to the works, and will not be discussed further within this report.
- 3.4.4 No ponds or other water features were identified on the Site or in any of the industrial or residential gardens located immediately adjacent/neighbouring the Site. However, it should be noted that unidentified ponds/water features may exist in nearby gardens within the wider area (within 250m of the Site). In general, such water features are usually relatively small and are more likely to be used by common amphibians i.e. smooth newt, and/or palmate newt and/or common frog (albeit GCN and common toad may use them in certain circumstances; for example, if there is a larger waterbody close by that supports either of these species).
- 3.4.5 The terrestrial habitats on the Site offer some suitability for common amphibians, with longer-sward grassland offering some sheltering or foraging potential. Two fallen trees within the centre of the Site (Figure 1 - TN1) may offer some limited sheltering opportunities.
- 3.4.6 The presence of common amphibian species cannot be ruled out from the Site. Overall, the Site habitats are of no greater than site level value for common amphibians in their terrestrial stage. This is based on the availability of similar and higher quality habitat (including potentially more suitable aquatic habitat) in the wider area.

Badger

- 3.4.7 A total of 39 records of badger were returned by BIS for locations within 2 km of the Site. These records date between 1976 and 2018. The closest record to the Site pertains to a sett recorded approximately 600 m south of the Site in 2018.
- 3.4.8 Due to the persecution of badgers, Detailed information regarding this species is not provided within this report. Full details of survey and potential impacts to local badger populations can be found within the Habitat Works (2024) report 'Vyrnwy Reserve – Confidential Badger Report'.
- 3.4.9 Generalised Best Practice Measures (BPM) regarding badgers are provided within the assessment section of this report.

Bats

- 3.4.10 BIS returned a total of 73 records relating to bats for locations within 2 km of the Site, 13 of which relate to roosting bats. Roost records pertain to brown long-eared bats *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus*, greater horseshoe bat *Rhinolophus ferrumequinum*, lesser horseshoe bats

Rhinolophus hipposideros and soprano pipistrelle *Pipistrellus pygmaeus* in addition to unidentified *Pipistrellus* sp. and unidentified bats. The closest record to the Site relates to an unidentified bat roost located approximately 1100 m southeast of the Site in 2002.

- 3.4.11 The remaining 60 records relate to bats in flight or grounded bats. These records include Brandt's bat *Myotis brandtii*, brown long-eared bat, common pipistrelle, Daubenton's bat *Myotis daubentonii*, greater horseshoe bat, lesser horseshoe, Natterer's bat *Myotis nattereri*, noctule *Nyctalus noctula*, soprano pipistrelle *Pipistrellus pygmaeus* and whiskered bat *Myotis mystacinus* in addition to unidentified *Pipistrellus* sp., unidentified *Plecotus* sp., unidentified *Myotis* Sp., and unidentified bats. The closest record to the Site pertains to an unidentified bat approximately 500 m west of the Site in 2009.
- 3.4.12 A single EPS licence relating to bats was identified using MAGIC within 2 km of the Site and relates to the destruction of a brown long-eared bat, common pipistrelle and soprano pipistrelle resting place. The record is located approximately 1400 m northeast of the Site and was active between 2016 and 2026 (2016-21833-EPS-MIT).
- 3.4.13 A single mature oak *Quercus robur* is present in the centre of the Site (Figure 1 – TN2). This oak was surveyed in the 2024 bat survey season, comprising a single emergence survey, and two aerial tree (close) inspection surveys. The methods and findings are detailed within the report by Habitat Works (2024) 'Vyrnwy Reserve – Bat Tree Surveys V1.0', that confirmed likely absence of roosting bats from the tree.
- 3.4.14 An additional mature tree is present within the 'Disposal Area' (Figure 1, TN3). The tree is a mature horse chestnut *Aesculus hippocastanum* with multiple Potential Roosting Features (PRFs) that are considered suitable to for multiple bats and therefore has potential to support a maternity colony (PRF-M). These include large trunk cavities; knotholes in limbs, branch tear outs and basal cavities. Additionally, the tree contains a range of PRFs suitable for individual bats (PRF-I), including peeling bark. Given the presence of these features, it is considered that the tree is classified as a PRF-M tree, as per good practice guidelines (Collins, 20230).
- 3.4.15 The itself Site offers limited potential for foraging and commuting bats, due to habitats on the Site comprising mainly grazed grassland. The boundaries of the Site however contribute to large, linear commuting corridors across the landscape in the form of the River Vyrnwy and the Montgomery Canal. As such, it is considered that the Site offers 'Moderate' suitability for commuting and foraging bats (Collins, 2023).
- 3.4.16 As such, further survey was undertaken during the 2024 bat activity season, comprising monthly static bat detectors and seasonal Nighttime Bat Walkover (NBW) surveys, as per good practice guidelines (Collins, 2023). The findings of these surveys are detailed within the Habitat Works (2025) report 'Vyrnwy Reserve – Bat Activity Surveys V1.0'.

Birds

- 3.4.17 BIS returned a total of 639 records comprising 87 bird species for locations within 2 km of the Site. Species returned included 12 Schedule 1 bird species, as listed within the Wildlife and Countryside Act 1981 (as amended) (WCA 1981), 22 Red, 27 Amber and 34 Green listed BoCC species. A total of two Schedule 9 bird species were also recorded. Bird species recorded within 2 km of the Site are summarised in Appendix 2.
- 3.4.18 The Site offers some opportunities for nesting birds, however these are limited to small areas of woodland, scrub and hedgerows present on the Site. These are extremely limited in size and scale in comparison to the common and widespread availability of nesting habitat in the wider local area. Additionally, it is not anticipated that any of these habitats will be impacted by the proposals.

- 3.4.19 The Site is not considered to offer suitability for nesting birds. The grassland is regularly grazed by flocks of sheep, and as such is regularly disturbed and subject to trampling. This is considered likely to deter ground nesting birds from the Site, and as such, they are not considered to be resident on the Site.
- 3.4.20 During the Site visit, a barn owl was observed associated with mature oak present in the northwest corner of the Site (T1). As such, it was considered that potential for barn owl to be nesting and/or roosting in the in the northwest of the Site. Additionally, the riverbanks of the River Vyrnwy comprise soft, bare earth in places which are considered suitable for kingfisher burrows.
- 3.4.21 Given the above, targeted barn owl and kingfisher surveys were undertaken by Habitat Works in 2024 as detailed in the Habitat Works (2025) report 'Vyrnwy Reserve – Further Protected Species Surveys V1.0', however, these surveys found no evidence of the species on the Site.
- 3.4.22 Overall, due to the nature habitats present on the Site, it is considered that the Site is of importance to breeding birds at no greater than the site level.

Invertebrates

- 3.4.23 BIS returned a total of 364 records comprising 100 insect species within 2 km of the Site. The closest record pertains to a common club-tail *Gomphus vulgatissimus*, recorded approximately 250 m west of the Site on the River Vyrnwy in 2021.
- 3.4.24 The habitats on the Site are unlikely to offer a range of opportunities for invertebrates, with the Site comprising mostly grazed grassland, therefore they are not considered to offer the variety in plant species, structural diversity and habitat interfaces that would be necessary to support diverse communities of terrestrial invertebrates. The variety of plant species and habitat structures present are of limited diversity and generally sub-optimal for invertebrates and considered unlikely to support notable species or large invertebrate populations but may contribute to foraging opportunities for common species.
- 3.4.25 Given the limited suitable habitat present on the Site, and the presence of more suitable habitat at a larger scale in the wider area, the Site is considered of importance to invertebrate species at no greater than the site level.

Reptiles

- 3.4.26 BIS returned a total of eight records of reptiles for locations within 2 km of the Site. The records included grass snake *Natrix helvetica*, common lizard *Zootoca vivipara* and slow worm *Anguis fragilis*. The closest of these records to the Site relate to a grass snake recorded approximately 300 m west of the Site on the Montgomery Canal in 2014.
- 3.4.27 Overall habitats on the Site currently offer some suitability for reptiles, with tussocky grasslands offering areas to bask, but also denser sections to the shelter within. Two fallen trees within the centre of the Site (Figure 1, TN1) also offer a good area with both basking and sheltering opportunities close together. The Site is regularly grazed, which may offer some level of disturbance for any potentially present reptiles, however, it is not considered significant enough to anticipate the likely absence of reptiles from the Site.
- 3.4.28 Reptile surveys were undertaken by Habitat Works in 2024 as detailed in the Habitat Works (2025) report 'Vyrnwy Reserve – Further Protected Species Surveys V1.0', however, these surveys found no evidence of reptiles.
- 3.4.29 Despite the results of the 2024 surveys, given the presence of records of reptiles on the Montgomery Canal adjacent to the Site, it is considered that there is a reasonable likelihood that reptiles may be present on

the Site on occasion as part of their wider territory. However, given the presence of higher quality habitats in the surrounding area, in particular habitats associated with the Montgomery Canal, it is considered that the Site is of importance to reptiles at no greater than the site level.

Riparian Mammals and White-clawed Crayfish

- 3.4.30 BIS returned a total of 20 records of European otter *Lutra lutra*, the closest being a field record approximately 200 m west of the Site in 2007 on the Montgomery Canal. Additional records are located on the River Vyrnwy, with the closest approximately 300 m northwest of the Site in 2002.
- 3.4.31 BIS returned a single record of European water vole *Arvicola amphibius* for locations within 2 km of the Site. The record was approximately 2,000 m northwest of the Site, recorded in 2005.
- 3.4.32 There were no records of white-clawed crayfish *Austropotamobius pallipes* for locations within 2 km of the Site.
- 3.4.33 No evidence of these species was recorded during the PEA, or a targeted survey undertaken by Habitat Works in 2024, as detailed within the Habitat Works (2025) report 'Vyrnwy Reserve – Further Protected Species Surveys V1.0'. However, the Site is positioned next to the River Vyrnwy and the Montgomery Canal, both of which have the potential to support these species, in particular otter which has been noted to be present on both the River Vyrnwy and the Montgomery Canal.

Other Notable and Key Species

Hedgehog

- 3.4.34 BIS returned total of seven record of a European hedgehog *Erinaceus europaeus* for locations within 2 km of the Site. The most recent record was returned in 2021, with the closest record to the Site located approximately 1,300 m north of the Site in 2019.
- 3.4.35 The Site offers suitability for hedgehog, with some foraging or commuting opportunities present in the edge of the grassland adjacent to the hedgerows that may be part of a wider foraging resource. Hedgehogs are highly mobile species, but it is unlikely that they would commute across the Site due to a lack of suitable neighbouring habitats.
- 3.4.36 Based on the relatively limited value of habitats on Site together with the availability of more suitable habitat associated in the wider area, Site habitats are considered unlikely to be of more than site level importance to hedgehogs.

3.5 Invasive Species

- 3.5.1 WYES returned 44 records of invasive plants for locations within 2 km of the Site. The records relate to 11 species of plants including *Cotoneaster* sp., Himalayan balsam *Impatiens glandulifera*, Himalayan cotoneaster *Cotoneaster simonsii*, Hjelmqvist's cotoneaster *Cotoneaster hjelmqvistii*, Japanese knotweed *Fallopia japonica*, *Lamium galeobdolon subsp. argentatum*, *Lamium galeobdolon subsp. montanum*, Montbretia *Crocasmia pottsii x aurea* = *C. x crocosmiiflora* parrot's feather *Myriophyllum aquaticum*, Virginia-creeper *Parthenocissus quinquefolia* and wall cotoneaster *Cotoneaster horizontalis*. The closest record pertains to Himalayan balsam last recorded in 2013, 600 m southwest of the Site.
- 3.5.2 Himalayan balsam was recorded throughout much of the riverbank of the River Vyrnwy on the northern boundary of the Site.

4. Impact Assessment, Mitigation and Enhancements

4.1 *Proposals*

- 4.1.1 The requirement for the PEA was to inform proposals for the Site to be repurposed as a wetland habitat creation scheme. This will see the partial loss of grassland on the Site, to allow for the creation of an open water channel. Additional planting will be included as per the proposals, with the creation of meadows and hedgerows included in the proposals.
- 4.1.2 The proposals will create a diverse range of habitats on the Site, which will likely benefit a range of protected species. The Site will also be managed in the long-term for the purpose of wildlife conservation, and therefore provide valuable habitats for the foreseeable future.
- 4.1.3 Since the 2023 report, an additional 'Disposal Area' has been included within the proposals, which is proposed to be utilised for the disposal of sediments that would be created by the proposed excavation of parts of the Site to create the ditches/channels to create the wetland reserve (Figure 1).

4.2 *Designated Sites*

- 4.2.1 There are no statutory or non-statutory sites of conservation importance within the boundary of the proposed reserve site.
- 4.2.2 The Montgomery Canal SAC SSSI LWS is immediately adjacent to the Site and forms the southern boundary. The canal is elevated above the Site on an embankment and has an overflow from the canal that passes through the Site and connects to the River Vyrnwy. The purpose of the proposed scheme is to help mitigate/compensate for potential impact of the restoration of the Montgomery Canal on *Luronium natans* and the associated aquatic macrophyte community and as such it is an integral part of the planning process and associated Habitat Regulations Assessment.
- 4.2.3 Whilst no direct impacts to the canal are anticipated as part of this concept design there is some risk that construction works associated with the proposed development could result in pollution to the Canal for example from a water or dust pollution event should the site activity not be properly controlled.
- 4.2.4 There is a non-statutory road verge site designated for its botanical interest approximately 1.2km to the east of the site. Considering the scale and nature of the proposals this local wildlife site identified in the data consultation response is considered beyond the potential zone of influence. No mechanism by which the development could impact this site has been identified and as such it is not considered any further in this report.
- 4.2.5 It is recommended that a Construction Environmental Management Plan (CEMP) relating to Biodiversity be produced in consultation with The Powys Council Biodiversity Officer that details working methods to avoid construction related impacts.
- 4.2.6 BS42020:2013 details the requirements of CEMP (Biodiversity) and recommends that whilst the format may vary it should be proportionate and tailored to the specific needs of the project and the biodiversity elements should all have common structure. Typical contents would include:
 - Defined roles and responsibilities in the project/construction team,
 - site induction (to include biodiversity),
 - timing of works,

- dust screening,
- silt interceptor fencing,
- defined working hours outwith main periods of otter and bat activity,
- biosecurity, and
- pollution prevention measures.

4.2.7 All other sites identified in the data consultation are considered to distant from the site to represent a constraint to development and a precaution, following measure set out in the CEMP (Biodiversity) would act to protect these sites.

4.3 Habitats

4.3.1 Given that the habitats present on the Site are common and widespread in the local landscape, it is anticipated that the partial loss of habitat at the Site is of importance to nature conservation at no greater than the site level. It is considered that the creation of the ponds on the Site will enhance the Site's importance for nature conservation, with the variance in habitats that are proposed would create a range of ecological niches that would provide a net benefit for local wildlife.

4.3.2 The Site is located adjacent the River Vyrnwy and the Montgomery Canal. Although the river or the canal is not subject to the proposals, there is the risk that the river and canal could be subject to indirect impacts associated with the development. As such, general principles of pollution prevention should be adhered to as detailed within the Guidance for Pollution Prevention (GPP) documents produced by Natural Resources Wales (NRW), Northern Ireland Environment Agency (NIEA) and Scottish Environment Protection Agency (SEPA). These include:

- GPP5 – works and maintenance in or near water (NRW, NIEA and SEPA, 2018);
- GPP21 – pollution incident response planning (NRW, NIEA and SEPA, 2017); and,
- GPP22 – dealing with spills (NRW, NIEA and SEPA, 2018).

4.3.3 Pollution Prevention Guidelines 1 (NRW, NIEA and SEPA, 2013), is now withdrawn but provides a general overview for good practice environmental measures in construction and where followed will assist with protection of the River Colne:

- Materials shall not be stored within 10 m of any running water or ditch habitat; and,
- Details of the Environment Agency should be stored in the Site office during construction works so that swift contact can be made should any pollution incident occur which may impact watercourses.

4.4 Protected Species

Amphibians

4.4.1 Common amphibians are protected under the WCA 1981 (as amended) against sale, barter or exchange of captive animals.

4.4.2 As the presence of common amphibians on the Site cannot be ruled out, it is recommended that Best Practice Measures (BPM) are implemented during the proposed development works. The fallen trees in

the centre of the Site (TN1) should be removed with care (if necessary), with contractors operating with vigilance for any potentially present common amphibians to minimise the potential for harm to common amphibians should they be sheltering within such features. If common amphibians i.e. smooth newt or palmate newt, common frog or common toad are encountered on Site during the works they should be allowed to move away of their own volition. If in immediate danger of injury, they should be carefully moved in gloved hands to an area of safe shelter away from the footprint of works.

- 4.4.3 In the extremely unlikely event of discovering a GCN on the Site during works, works should cease immediately, and an ecologist should be contacted for further advice.
- 4.4.4 Brash/wood piles could be installed which would provide sheltering opportunities for amphibians. These could be created from the wood that would be available from the removal of the fallen trees in the centre of the Site (TN1), should their removal be required.

Badger

- 4.4.5 Badgers and their setts are protected under the Protection of Badgers Act 1992. It is an offence under the act to kill, injure or take a badger. It is also an offence to destroy, damage or obstruct a currently active badger sett, or to disturb animals within the sett.
- 4.4.6 The proposals at the Site will enhance the Site for badgers, with the proposed areas of meadow and hedgerow increasing the Site's suitability for foraging, commuting and sett building.
- 4.4.7 Given the records of badgers in the local area provided by BIS, it is recommended that, BPM be implemented throughout the works to protect badgers, should they subsequently pass through these areas of the Site. The BPM should include:
- Any excavations deeper than 1 m required during the works should be covered overnight. Shallow excavations less than 1 m should have a roughened scaffold board or equivalent placed in them overnight to allow any animals which may become trapped to exit. Trenches will also be inspected each morning to ensure that no animals have become trapped overnight;
 - Food/litter will not be left on Site;
 - If in the unlikely event that badgers are encountered during works, then works will cease temporarily and the animal allowed to move away off its own volition. The ecologist will be contacted for advice; and,
 - If badgers are suspected to be associated with the Site once works have commenced, including a suspected badger sett found on or within 30 m of the Site during the works by a contractor, works should cease and an appropriately experienced ecologist should be contacted for advice before continuing.

- 4.4.8 Additionally, any lighting implemented during the construction stage and upon completion of the development should be directed away from retained vegetated habitats, particularly off-site treelines to allow badgers to continue to use such habitats for foraging and commuting where present locally.

Bats

- 4.4.9 All species of bat occurring within the UK are included in Schedule 2 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Under regulation 41 bats are protected from deliberate capture, injury or killing, from deliberate disturbance and from deliberate damage or destruction of a breeding site or resting place (roost).
- 4.4.10 All UK bats are also included on Schedule 5 of the WCA 1981 (as amended). However, their protection is

limited to certain offences. Under the 1981 Act (as amended) it is an offence to intentionally or recklessly disturb bats while they are occupying a structure or place used for shelter or protection, or to obstruct access to any such place.

- 4.4.11 Barbastelle *Barbastella barbastellus*, Bechstein's *Myotis bechsteinii*, brown long-eared bat, greater horseshoe, lesser horseshoe, noctule and soprano pipistrelle bats are included as priority species under Section 41 of the NERC Act 2006.

Roosting Bats

- 4.4.12 As detailed in the Habitat Works (2024) report 'Vyrnwy Reserve – Bat Tree Surveys V1.0', the mature oak with potential for roosting bats is to be retained as per the proposals and is also considered likely absent of roosting bats following surveys in the 2024 season.
- 4.4.13 The mature horse chestnut in the disposal area is considered to contain PRF-M features, and as such, further survey would be required in the 2025 bat survey season, in the event the tree was to be impacted. It is not anticipated that this tree will be impacted by the proposals, and as such, it is not considered that further surveys are required at this stage. If these proposals were to change and the tree is to be impacted, further survey should be undertaken comprising three aerial inspections between May and August, as per good practice guidance (Collins, 2023).
- 4.4.14 Bats are highly transient and may use any crack or crevice for roosting or shelter from time to time and as such, may roost at any suitable PRF at any time. As such, and as per the proposals, it is recommended that the trees are retained throughout the works. Works should be planned to minimise disturbance caused to the tree, such as not implementing artificial lighting throughout the construction or operational phases. It is recommended, that where possible, the proposals are undertaken at a significant buffer from the trees (minimum 5 m) to limit the indirect disturbance which may be caused throughout the works (e.g. vibrations from excavation of nearby ground to create ponds/footpaths/deposition of sediment).
- 4.4.15 As an enhancement for the Site, it is recommended that tree-mounted bat boxes should be installed onto mature trees on the River Vyrnwy and/or Montgomery Canal corridors. These boxes should be suitable for crevice dwelling bat species such as the Schwegler 2FN Bat Box. The bat boxes should be placed at a minimum height of 4 m facing southern aspects to maximise chances of occupation.

Foraging and Commuting Bats

- 4.4.16 As detailed in the Habitat Works (2025) report 'Vyrnwy Reserve – Bat Activity Surveys V1.0', it is considered that the proposals will result in minimal impacts to foraging and commuting bats at the Site.
- 4.4.17 The proposed development is anticipated to result in the partial loss of the habitats in the centre of the Site, to create a series of backwater excavations that will be flooded by the River Vyrnwy. Habitats on the boundaries of the Site recorded higher levels of activity, which are to be retained as per the proposals. It is considered that the creation of the backwater ponds post-development will improve the foraging value to bats, which will likely see an increase in invertebrates associated with the central areas of the Site.

Birds

- 4.4.18 All wild birds, their nests and eggs are protected under the WCA 1981 (as amended) while a nest is in use or occupied. The nesting bird season is typically considered to fall between March and August (inclusive). Species listed under Schedule 1 of the Act receive additional protection against disturbance whilst occupying a nest site.

- 4.4.19 The habitats on Site were of no more than site level importance to local bird populations given the quality of habitat recorded on the Site and the extensive availability of similar to higher quality habitat for nesting birds in the wider area.
- 4.4.20 The creation of the reserve will benefit local bird populations, with the newly created waterbodies, hedgerows and vegetated islands creating a variety of habitats that do not currently exist on the Site. This habitat diversity will benefit local bird populations, and will create a range of new nesting and foraging habitats on the Site.
- 4.4.21 There is potential to improve the Site for potentially present kingfisher and barn owl, through the provision of suitable nesting habitats. It is recommended that earth banks are created around the newly created waterbodies which would allow suitable burrowing habitats for local kingfishers. The installation of a barn owl box onto a mature tree on the Site or adjacent Montgomery Canal / River Vyrnwy corridor will provide additional nesting habitats for the species in the local area.
- 4.4.22 As a further enhancement for the Site, it is recommended that tree-mounted bird boxes should be installed onto mature trees on the River Vyrnwy and/or Montgomery Canal corridors. These boxes should be suitable for crevice dwelling bat species such as the Schwegler 1B Nest Box. The bird boxes should be placed at a minimum height of 3 m facing different aspects to maximise chances of occupation. Full south aspects present a risk of overheating and should therefore be avoided.

Invertebrates

- 4.4.23 Many invertebrate species are listed under Section 41 of NERC act (2006) designating them as Species of Principal Importance in England.
- 4.4.24 Several species of invertebrate and their habitat are afforded full protection under Schedule 5 (Section 9) of the WCA 1981 (as amended). Several species are also EPS. These are afforded strict protection under the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019 under Schedule 2.
- 4.4.25 The partial loss of the grassland on the Site is not considered likely to impact any notable populations of invertebrates. Habitats on Site are considered of no more than site level importance for invertebrates and impacts from proposals are therefore likely to be insignificant to invertebrate's resident in the local area, especially given that the vast majority of the habitat present on the Site will be retained.
- 4.4.26 The creation of the ponds on the Site will provide additional aquatic habitats on the Site, which will provide a range of habitats and ecological niches that will likely lead to an increase in the number of species and the populations of invertebrates on the Site.
- 4.4.27 It is recommended that 'butterfly banks' are created in the deposition area with the excavation material from the creation of the ponds on the reserve. This material should be created to form 'butterfly banks' that are approximately 1-2 m in height and width. It is recommended that these are creating in the shape of an 'E' or an 'S' as this helps to provide a range of microclimates for invertebrate species which will increase the number of areas that are habitable for the species in extreme weather periods. These should be seeded with a range of native wildflower species to provide a food source for a range of invertebrates.
- 4.4.28 Further enhancements for the Site with regards to invertebrates would be to incorporate insect towers into the Site.

Reptiles

- 4.4.29 Common reptile species including grass snake, common lizard and slow worm are protected under Schedule

5 of the WCA 1981 (as amended) against intentional killing or injury.

4.4.30 Overall, the Site habitats were considered unlikely to support more than individual reptiles, such as grass snake, due to the limited size and scale of suitable habitats present across the Site. Therefore the loss of habitats is considered unlikely to impact reptiles at greater than the site level.

4.4.31 The following BPM are recommended with regards to reptiles (these will also help to protect common amphibians):

- All Site personnel to keep a high level of vigilance for reptiles (and amphibians) during works;
- Good general housekeeping of the Site will be employed. All materials (construction materials/arising) on Site will be stored in a suitable location at least 5 m away from suitable reptile habitat, e.g woodland edge habitats, ideally risen off the ground (e.g. on pallets) or on hard stand/bare ground away from vegetation. Materials arising from the works should be removed from the Site as quickly as possible or placed in a skip or other sealed container immediately if stored on Site. This will avoid colonisation by reptiles and other wildlife and will ensure there is no build-up of debris or other waste which may create suitable habitats for protected species that then has to be removed at a later date; and,
- Should reptiles be encountered works in the area will cease and an ecologist contacted immediately for advice.

4.4.32 It is recommended that rock piles are created from materials excavated during the construction of the ponds to create sheltering and basking areas. These should be created close to the ponds and on the 'butterfly banks', which would create sheltering, basking and foraging areas all in close proximities to one other.

4.4.33 Brash/wood piles could also be installed which would provide sheltering and hibernation opportunities for reptiles. These could be created from the wood that would be available from the removal of the fallen trees in the centre of the Site (TN1), should their removal be required.

Riparian Mammals

Otter

4.4.34 Otters within the UK are included in Schedule 2 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Under regulation 41 otters are protected from deliberate capture, injury or killing, from deliberate disturbance and from deliberate damage or destruction of a breeding site or resting place.

4.4.35 Otters are also included on Schedule 5 of the WCA 1981 (as amended). However, their protection is limited to certain offences. Under the 1981 Act (as amended) it is an offence to disturb otters while they occupy a structure or place used for shelter or protect; or obstruct access to a place of shelter or protection.

4.4.36 Otters are not considered to be resident on the Site; however, they are highly mobile species and have the potential to disperse on to areas of the Site and into working areas from known populations on the River Vyrnwy and the Montgomery Canal. As such it is recommended that, BPM outlined above for badgers should be implemented which would offer protection for otters, should they subsequently pass through these areas of the Site. Pollution Prevention Measures outlined above will also help to prevent indirect impact to the otter's habitat within the River Vyrnwy and the Montgomery Canal.

Other Notable and Priority Species

Hedgehog

- 4.4.37 Hedgehog are included as a species of principal importance under Section 41 of the NERC Act. Whilst not afforded a high level of protection, hedgehogs have experienced significant declines in the UK population. Taking a best practice approach, avoiding harm to hedgehogs should be taken into consideration during works.
- 4.4.38 The loss of grassland habitats is not considered to significantly impact upon hedgehog of more than site level importance.
- 4.4.39 Hedgehogs are a highly mobile species and have the potential to disperse on to the Site from suitable habitats. BPM should be followed:
- Maintaining vigilance for hedgehogs at all times during the works;
 - Allow any hedgehogs to move away from the Site of their own volition. Should a hedgehog be in immediate danger, they should be picked up by gloved hand and placed in an area of suitable shelter and safety away from the proposed works;
 - If any excavations are to be left uncovered overnight, a suitable escape ramp (e.g. a long scaffolding board) should be placed within the excavation to allow a hedgehog to escape in the event an individual should fall in;
 - If hedgehog is encountered between November and March or juveniles are encountered the ecologist should be contact for advice immediately as these are periods when individuals are at most risk to disturbance; and,
 - Safeguards outlined for amphibians and badgers will further help to safeguard small mammals, including hedgehogs in the event that they are present during Site clearance works.

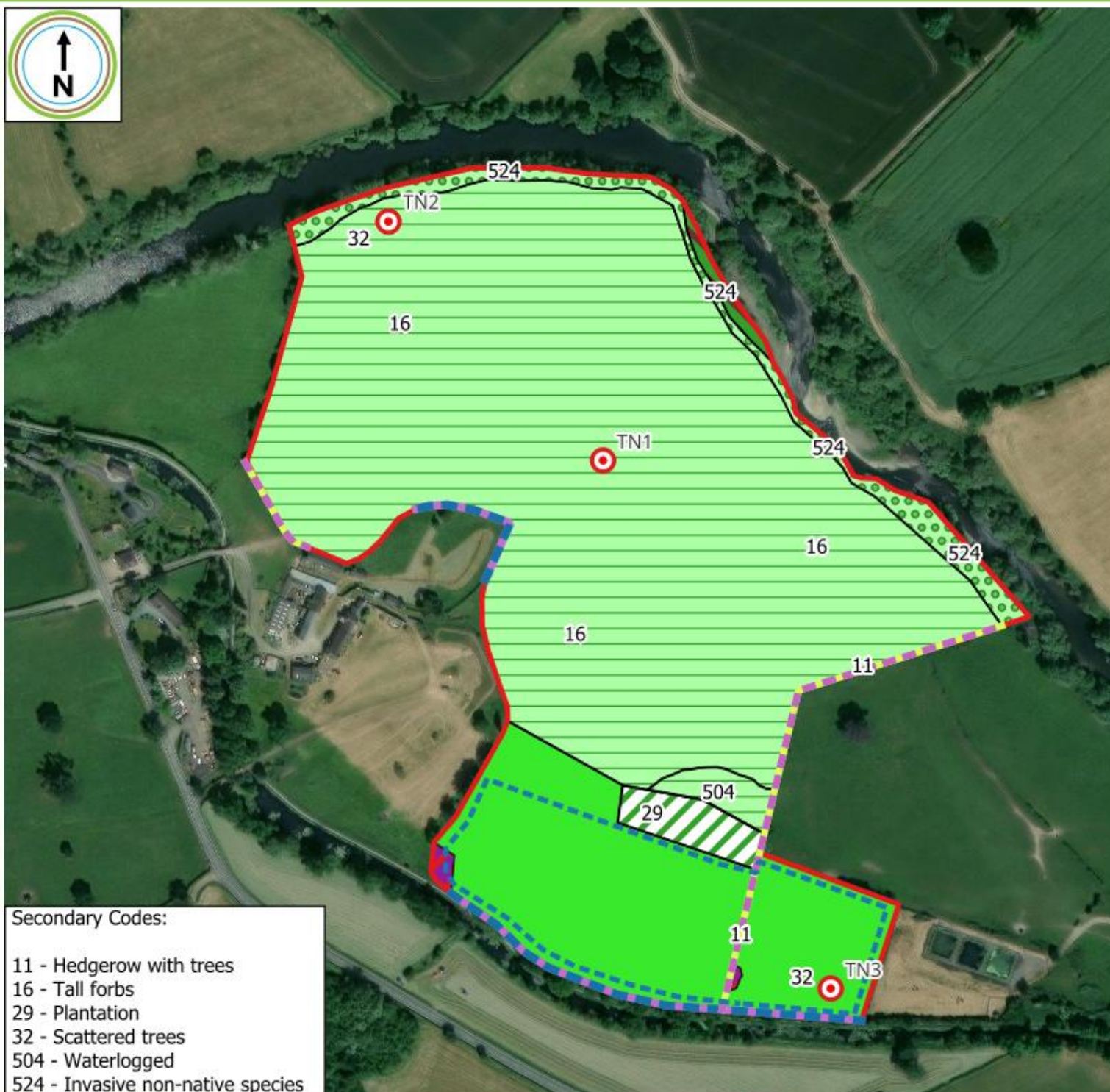
Invasive species

- 4.4.40 Himalayan balsam was abundant along the northern edge of the site between the field edge and the River Vyrnwy. It is recommended that this species be removed from the zone of influence prior to any works taking place to prevent further spreading. Methods for removal could include hand pulling and should be detailed in the CEMP. The CEMP should include a biosecurity risk assessment, in addition to a Method Statement (MS) for undertaking the removal of Himalayan balsam in line with the biosecurity risk assessment.

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Figure 1. UK Habitat Classification Map



Secondary Codes:

- 11 - Hedgerow with trees
- 16 - Tall forbs
- 29 - Plantation
- 32 - Scattered trees
- 504 - Waterlogged
- 524 - Invasive non-native species

Legend

Reserve Boundary

Disposal Area

Target Notes

UKHab Habitats

g3c Other neutral grassland

g3c5 Arrhenatherum neutral grassland

g4 Modified grassland

h3d Bramble scrub

w1 Broadleaved mixed and yew woodland

w1d Wet woodland

h2a5 Species rich hedgerow

h2a6 Species poor gedgerow

0 50 100 150 200 m

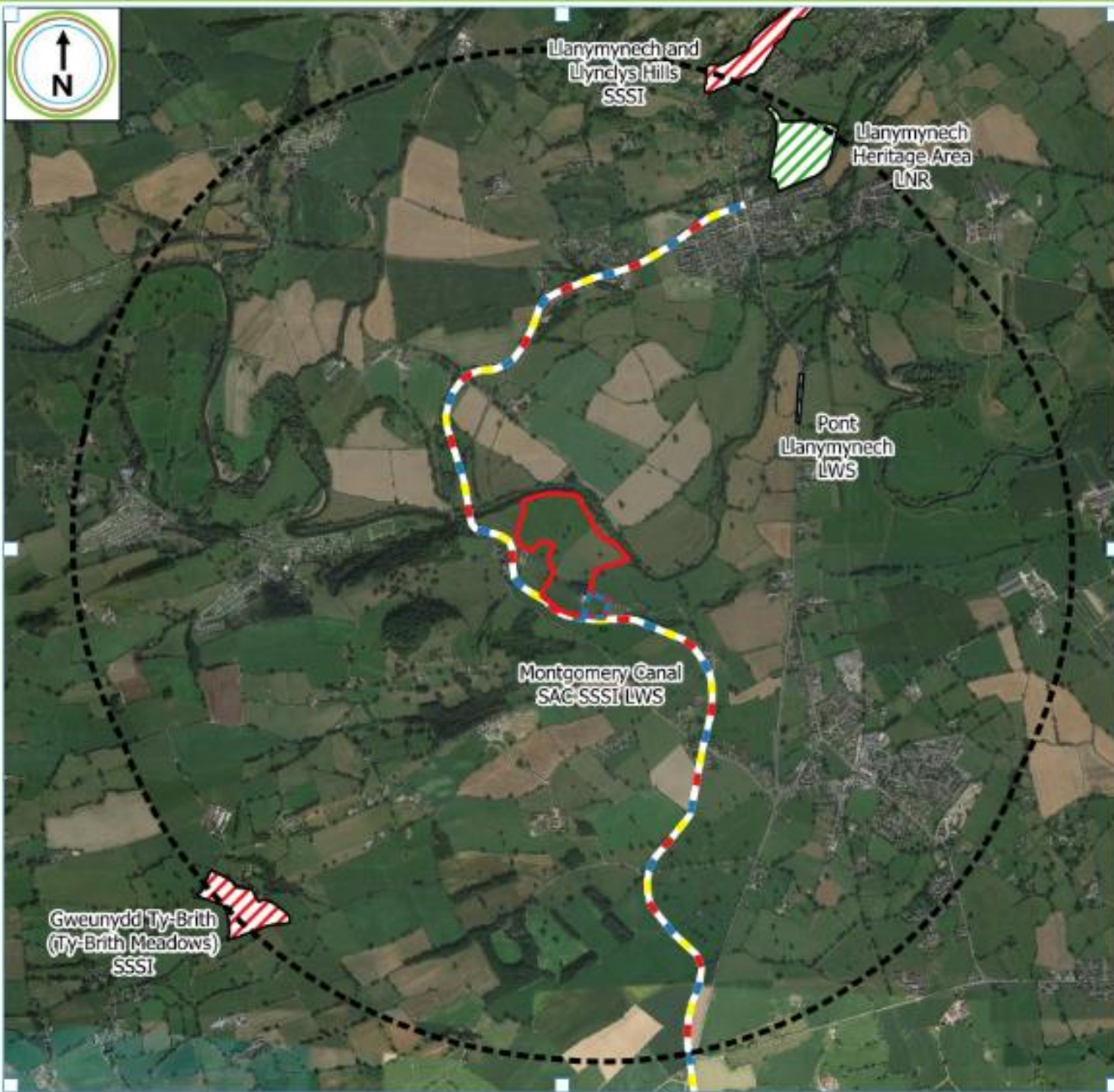


HABITAT WORKS

The Canal & River Trust

Vyrnwy Reserve
Update Preliminary Ecological Appraisal
Figure 1
UKHab Habitats Map

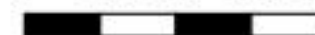
Figure 2. Designated Sites Map



Legend

- Reserve Boundary
- Disposal Area
- 2 km Site Buffer
- Designated Sites**
- Local Nature Reserve (LNR)
- Local Wildlife Site (LWS)
- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)

0 250 500 750 1,000 m

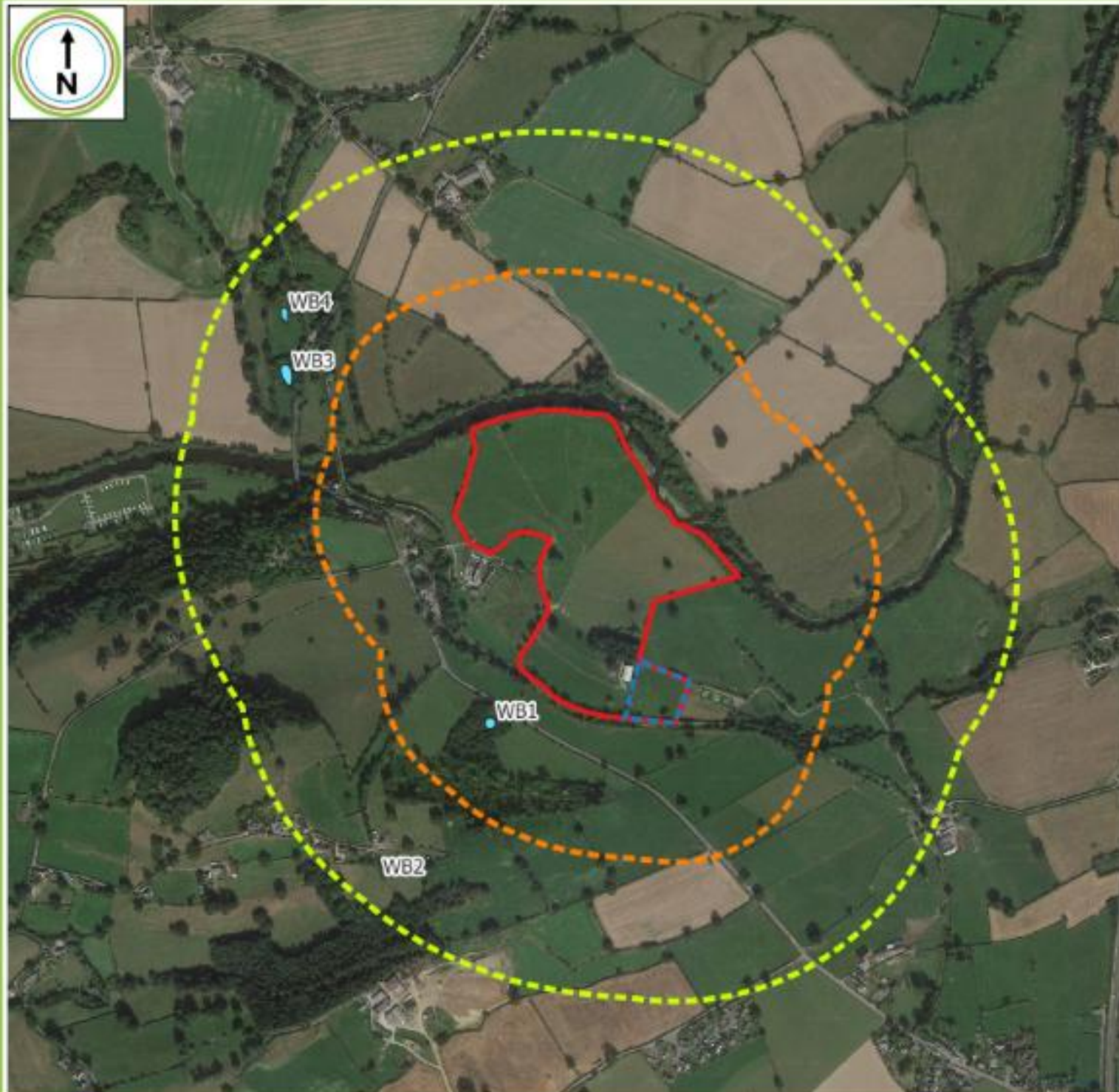


HABITAT WORKS

The Canal & River Trust

Vyrnwy Reserve
Update Preliminary Ecological Appraisal
Figure 2
Designated Sites Map

Figure 3. Waterbodies within 500 m of the Site



Legend

- Reserve Boundary
- Disposal Area
- 250 m Buffer
- 500 m Buffer
- Waterbodies

0 100 200 300 400 m



HABITAT WORKS

The Canal & River Trust

Vyrnwy Reserve
Update Preliminary Ecological Appraisal
Figure 3
Waterbodies within 500 m of the Site

Appendix 1. Target Notes

TN1 – Fallen trees

TN2 – Mature oak

TN3 – Mature horse chestnut

Appendix 2. Bird Species Records Summary

Common Name	Scientific Name	BoCC Status
Bewick's Swan	<i>Cygnus columbianus</i>	Schedule 1, Red
Corncrake	<i>Crex crex</i>	Schedule 1, Red
Fieldfare	<i>Turdus pilaris</i>	Schedule 1, Red
Green Sandpiper	<i>Tringa ochropus</i>	Schedule 1, Amber
Quail	<i>Coturnix coturnix</i>	Schedule 1, Amber
Redwing	<i>Turdus iliacus</i>	Schedule 1, Amber
Barn Owl	<i>Tyto alba</i>	Schedule 1, Green
Brambling	<i>Fringilla montifringilla</i>	Schedule 1, Green
Hobby	<i>Falco subbuteo</i>	Schedule 1, Green
Kingfisher	<i>Alcedo atthis</i>	Schedule 1, Green
Peregrine	<i>Falco peregrinus</i>	Schedule 1, Green
Red Kite	<i>Milvus milvus</i>	Schedule 1, Green
Cuckoo	<i>Cuculus canorus</i>	Red
Curlew	<i>Numenius arquata</i>	Red
Grasshopper Warbler	<i>Locustella naevia</i>	Red
Greenfinch	<i>Chloris chloris</i>	Red
House Martin	<i>Delichon urbicum</i>	Red
House Sparrow	<i>Passer domesticus</i>	Red
Lapwing	<i>Vanellus vanellus</i>	Red
Lesser Redpoll	<i>Acanthis cabaret</i>	Red
Linnet	<i>Linaria cannabina</i>	Red
Mistle Thrush	<i>Turdus viscivorus</i>	Red
Shag	<i>Gulosus aristotelis</i>	Red
Skylark	<i>Alauda arvensis</i>	Red
Spotted Flycatcher	<i>Muscicapa striata</i>	Red
Starling	<i>Sturnus vulgaris</i>	Red
Swift	<i>Apus apus</i>	Red
Tree Sparrow	<i>Passer montanus</i>	Red
Woodcock	<i>Scolopax rusticola</i>	Red
Yellow Wagtail	<i>Motacilla flava</i>	Red
Yellowhammer	<i>Emberiza citrinella</i>	Red
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Amber
Bullfinch	<i>Pyrrhula pyrrhula</i>	Amber
Common Sandpiper	<i>Actitis hypoleucos</i>	Amber
Coot	<i>Fulica atra</i>	Amber
Curlew Sandpiper	<i>Calidris ferruginea</i>	Amber
Dunnock	<i>Prunella modularis</i>	Amber
Great White Egret	<i>Ardea alba</i>	Amber
Grey Wagtail	<i>Motacilla cinerea</i>	Amber
Kestrel	<i>Falco tinnunculus</i>	Amber
Lesser Black-backed Gull	<i>Larus fuscus</i>	Amber

Mallard	<i>Anas platyrhynchos</i>	Amber
Meadow Pipit	<i>Anthus pratensis</i>	Amber
Oystercatcher	<i>Haematopus ostralegus</i>	Amber
Reed Bunting	<i>Emberiza schoeniclus</i>	Amber
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>	Amber
Snipe	<i>Gallinago gallinago</i>	Amber
Song Thrush	<i>Turdus philomelos</i>	Amber
Sparrowhawk	<i>Accipiter nisus</i>	Amber
Tawny Owl	<i>Strix aluco</i>	Amber
Teal	<i>Anas crecca</i>	Amber
Wheatear	<i>Oenanthe oenanthe</i>	Amber
Whitethroat	<i>Curruca communis</i>	Amber
Wigeon	<i>Mareca penelope</i>	Amber
Willow Warbler	<i>Phylloscopus trochilus</i>	Amber
Blackcap	<i>Sylvia atricapilla</i>	Green
Blue Tit	<i>Cyanistes caeruleus</i>	Green
Buzzard	<i>Buteo buteo</i>	Green
Chiffchaff	<i>Phylloscopus collybita</i>	Green
Coal Tit	<i>Parus ater</i>	Green
Cormorant	<i>Phalacrocorax carbo</i>	Green
Garden Warbler	<i>Sylvia borin</i>	Green
Goldcrest	<i>Regulus regulus</i>	Green
Goldfinch	<i>Carduelis carduelis</i>	Green
Goosander	<i>Mergus merganser</i>	Green
Great Spotted Woodpecker	<i>Dendrocopos major</i>	Green
Great Tit	<i>Parus major</i>	Green
Green Woodpecker	<i>Picus viridis</i>	Green
Grey Heron	<i>Ardea cinerea</i>	Green
Lesser Whitethroat	<i>Curruca curruca</i>	Green
Little Grebe	<i>Tachybaptus ruficollis</i>	Green
Long-tailed Tit	<i>Aegithalos caudatus</i>	Green
Mute Swan	<i>Cygnus olor</i>	Green
Nuthatch	<i>Sitta europaea</i>	Green
Pied Wagtail	<i>Motacilla alba</i>	Green
Raven	<i>Corvus corax</i>	Green
Reed Warbler	<i>Acrocephalus scirpaceus</i>	Green
Sand Martin	<i>Riparia riparia</i>	Green
Siskin	<i>Spinus spinus</i>	Green
Stonechat	<i>Saxicola rubicola</i>	Green
Swallow	<i>Hirundo rustica</i>	Green
Treecreeper	<i>Certhia familiaris</i>	Green
Water Rail	<i>Rallus aquaticus</i>	Green
Redstart	<i>Phoenicurus phoenicurus</i>	Not Assessed
Canada Goose	<i>Branta canadensis</i>	Schedule 9
Mandarin Duck	<i>Aix galericulata</i>	Schedule 9