Vyrnwy Reserve

Ecological Impact Assessment



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 South Pier Road

 Ellesmere Port

 Cheshire

 CH65 4FW

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Prepared by:

Joe Travis BSc (Hons), MSc, ACIEEM

Senior Ecologist

Date: 17.04.2025

Reviewed and Approved by:

Nick Birkinshaw BSc (Hons), MSc, ACIEEM Managing Director

Date: 17.04.2025

Prepared by:

Habitat Works, Suite 8, Westleigh House, Denby Dale, Huddersfield HD8 8QJ

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Executive Summary

Habitat Works Limited (Habitat Works) was commissioned by Canal & River Trust (hereafter referred to as 'The Trust') to undertake an Ecological Impact Assessment (EcIA) 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.

This EcIA report has been produced to assess the potential for likely significant effects of the development on the habitats and species present on sites and in the local area.

A Preliminary Ecological Appraisal (PEA) Report, in addition to a suite of further protected species survey reports, have been produced to inform the EcIA and identify any potential ecological constraints associated with the Site and its proposed development.

The requirement for the EcIA was to inform proposals for the Site to be repurposed as a wetland habitat creation scheme.

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:
 - o Common amphibians,
 - o Badgers,
 - o Reptiles,
 - o Otters
 - Hedgehogs;
- Removal of Invasive Non-Native Species (INNS) Himalayan balsam; and,
- Consideration of enhancement opportunities for local species, including:
 - o Installation of bat and bird boxes
 - Construction of 'butterfly banks'
 - o Installation of insect towers
 - Creation of log/brash 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 Ecological Impact Assessment (EcIA) 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 This report comprises a proportionate assessment of the ecological impacts of the proposed works and has been prepared in line with CIEEM '*Guidelines for Ecological Impact Assessment in the UK and Ireland*' (CIEEM, 2018).
- 1.1.3 The assessment is informed by the findings of multiple Habitat Works reports, including two Preliminary Ecological Appraisals (PEA) 'Vyrnwy Reserve Site Preliminary Ecological Appraisal Report' (Habitat Works, 2023); 'Vyrnwy Reserve Update Preliminary Ecological Appraisal V1.0' (Habitat Works, 2025a); in addition to a wide range of protected species surveys including 'CONFIDENTIAL Vyrnwy Reserve Badger Survey' (Habitat Works, 2024a); 'Vyrnwy Reserve Bat Tree Surveys Report V1.0' (Habitat Works, 2024b); 'Vyrnwy Reserve Bat Activity Surveys V1.0' (Habitat Works, 2025b); and 'Vyrnwy Reserve Further Protected Species Surveys V1.0' (Habitat Works, 2025c).

1.2 Proposals

- 1.2.1 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.
- 1.2.2 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.
- 1.2.3 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).
- 1.2.4 The proposals for the Site are detailed within the document '*Vyrnwy_Disposal_Oct 24*', received via email on 1st October 2024 from Sara James, Project Manager at the Trust.



2. Methodology

2.1 Study Area

2.1.1 The study area is the Site boundary as displayed within Figure 1. The study area was extended beyond the Site where appropriate to undertake necessary species-specific surveys as detailed below in line with the relevant good practice guidance. The study area and assessments were undertaken in line with accepted industry good practice guidance and CIEEM guidelines.

2.2 Data Consultation

- 2.2.1 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).
- 2.2.2 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 nonstatutory 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.
- 2.2.3 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.

2.3 Field Surveys

2.3.1 Initial field surveys were undertaken by Habitat Works in 2023 by Managing Director Nick Birkinshaw BSc (Hons) MSc ACIEEM and Senior Botanist Fiona Denham BSc (Hons) Field Identification Skills Certificate (FISC) Level 4. Additional surveys were undertaken based upon the findings of these surveys, as detailed in the relevant sections below.

Preliminary Ecological Walkover

- 2.3.2 An ecological walkover survey was undertaken 18th September 2023 by Managing Director Nick Birkinshaw BSc (Hons) MSc ACIEEM and Senior Botanist Fiona Denham BSc (Hons) Field Identification Skills Certificate (FISC) Level 4 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.
- 2.3.3 An update ecological walkover survey of the Site and the 'Disposal Area' 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.

- 2.3.4 The UKHab survey covered land within the Site (as illustrated by the red line site boundary in Figure 1).
- 2.3.5 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.
- 2.3.6 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 were also noted.
- 2.3.7 Survey findings are detailed in Section 3 and annotated on Figure 1, Target Notes are provided in Appendix1.
- 2.3.8 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

2.4 Protected and Key Species

2.4.1 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

2.4.2 The Site was assessed for its potential to support amphibians, including a detailed GCN assessment. A deskbased 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

- 2.4.3 Signs of badger *Meles meles* activity were sought within the Site and within 30m of the Site boundary, where possible.
- 2.4.4 Detailed badger survey was undertaken by Managing Director Nick Birkinshaw BSc (Hons) MSc ACIEEM in February 2024.
- 2.4.5 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).

- 2.4.6 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.
- 2.4.7 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.
- 2.4.8 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

Ground Level Tree Assessment (GLTA)

- 2.4.9 Trees within and immediately adjacent the Site were subject to a ground-based assessment for their suitability to support roosting bats during the survey.
- 2.4.10 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).

Further Bat Tree Surveys

2.4.11 Following the GLTA, a single mature oak tree (Figure 1, T1) was considered to contain multiple PRF-M features that are suitable for multiple bats and therefore may be used by a maternity colony. In these circumstances good practice guidelines (Collins, 2023) requires that further survey be undertaken prior to removal of the tree. This was done as a combination of aerial (close) inspection surveys and nocturnal emergence surveys.

Nocturnal Bat Surveys

- 2.4.12 A single nocturnal survey was undertaken on 1st August 2024 following good practice guidelines to confirm the presence/likely absence of roosting bats form the tree (Collins, 2023). The delivery of the surveys was managed and undertaken by experienced bat surveyors positioned to ensure coverage of all features of the tree which displayed suitability for roosting bats.
- 2.4.13 Surveyors used a combination of visual assessment and ultrasonic detection using industry-standard recordable bat detectors and night vision aids (NVAs) including NightFox NVA which have inbuilt infrared lighting. Surveyors recorded the species and number of bats using any roost features within the tree (where present) and recorded incidental bat activity observed in the locality during the survey period. The dusk emergence surveys commenced 15 minutes prior to sunset and finished 1.5 hours after sunset. The surveys were conducted during a period where the weather conditions were predominantly dry, with relatively low winds and temperatures in excess of 10°C.
- 2.4.14 The nocturnal surveys were digitally recorded to allow bat echolocation calls to be analysed using Kaleidoscope sound analysis software, with species identification confirmed with reference to bat call parameters presented in '*British Bat Calls: A Guide to Species Identification*' (Russ, 2021). Video recordings were also taken to give greater confidence in the results of the surveys, allowing the option to review in the event surveyors were unsure about the findings on the day due to the diminishing natural light. Darkest



point photographs of the NVAs are provided within Appendix 1 as per good practice guidelines.

2.4.15 Survey details are shown in Table 1 below, with surveyor locations and bat activity findings illustrated in Figure 2.

Date/Time	Surveyors	Air Temp (°C)	General Conditions	Detector Type
01.08.2024	JT , CB	Start: 20	Dry, 0% cloud cover, very light breeze (Beaufort Scale	Echo Meter Touch 2 Pro
20:50 – 22:35 hrs		End: 18	(BS): 0)	
Sunset: 21:05 hrs				

Table 1 – Nocturnal Bat Survey Details

*Surveyors (Licenced bat surveyors in bold): JT – Joe Travis ACIEEM (Bat Licence Ref. S094584/1); CB – Chris Birkinshaw.

Aerial (Close) Inspection Surveys

- 2.4.16 Aerial (close) inspection survey was undertaken on two separate visits by Senior Ecologist Joe Travis BSc (Hons) MSc ACIEEM (Welsh Bat Survey Licence Ref: S094584/1) and Greg Parrot in line with industry good practice guidance (Collins, 2023). These surveys were separated by a minimum of three weeks, where possible, and were undertaken on 22nd August 2024 and 19th September 2024.
- 2.4.17 T1 was subject to detailed survey, including endoscopic inspection to identify the potential for the features to support roosting bats.

Bat Activity Surveys

2.4.18 The Site was also assessed for its suitability for foraging and commuting bats in accordance with good practice guidelines (Collins, 2023). Following this assessment, the Site was considered to be of moderate suitability for foraging and commuting bats, as such, appropriate Nighttime Bat Walkover (NBW) surveys and Automated Static Monitoring Surveys were undertaken throughout 2024 in line with good practice guidelines (Collins, 2023).

Nighttime Bat Walkover Surveys

- 2.4.19 The Site is considered to be of Moderate suitability for foraging and commuting bats, based upon good practice guidance (Collins, 2023).
- 2.4.20 As per good practice guidance, a total of three NBW surveys were undertaken across the survey period comprising one spring survey (April/May), one summer survey (June/July/August) and one autumn survey (September/October) (Collins, 2023). These surveys were separated by a minimum of three weeks where possible.
- 2.4.21 Following the published survey methodology (Collins, 2023) each NBW was undertaken by a pair of suitably experienced bat surveyors using handheld bad detectors to record bat calls. The number, species, behaviour and location of any bats encountered was recorded onto a survey sheet and field map. This also included observation of any foraging or commuting flight lines.
- 2.4.22 The NBW comprised a predetermined route which was designed to incorporate all areas and habitats within the Site, including the grassland and hedgerow boundaries. The NBWs commenced at sunset and continued for a minimum of two hours.
- 2.4.23 The NBW was walked at a consistent pace and incorporated 12 Point Counts (PCs). The NBW route was alternated between survey visits and was either walked in a clockwise or anti-clockwise direction, in addition to differing the starting PCs for each survey. These actions ensures that each part of the Site was

surveyed at different times during the survey period (i.e. zero to two hours after sunset) to help identify usage of the Site by bats at different times of the evening. Surveyors remained at the starting point for a minimum of 30 minutes after sunset in attempt to locate any nearby roosts, before completing the predetermined route, stopping at each PC for three minutes.

2.4.24 NBWs were undertaken during appropriate weather conditions for bats, with temperatures above 10°C, generally low wind speeds and predominantly dry conditions. Details of the survey dates, timings and weather conditions are detailed in Table 1 below. Results of the NBW surveys are displayed in Figures 3.1 to 3.3.

Survey Date	Timings	Surveyors	Weather Conditions	Bat Detector
30.05.2024	Sunset: 21:25 hrs Start: 21:20 hrs End: 23:40 hrs	NB, SS	15°C, Beaufort Scale (BS) 2 wind speed, 80% cloud cover, dry	Echometer Touch 2 Pro
29.08.2024	Sunset: 20:06 hrs Start: 20:06 hrs End: 22:06 hrs	NB, EC	14°C, BS 1 wind speed, 0% cloud cover, dry	Echometer Touch 2 Pro
16.09.2024	Sunset: 19:24 hrs Start: 19:24 hrs End: 21:24 hrs	CB, EC	14°C, BS 1 wind speed, 10% cloud cover, dry	Echometer Touch 2 Pro

Table 2 – Nighttime Bat Walkover Survey Details

*Surveyors: NB - Nick Birkinshaw ACIEEM; SS - Stuart Silver MCIEEM; CB – Chris Birkinshaw; EC – Eleanor Collier.

Automated Static Monitoring Surveys

- 2.4.25 As the Site displayed Moderate suitability for foraging and commuting bats, the NBWs were accompanied by the monthly deployment of two static bat detectors: an Anabat Chorus detector with an omnidirectional microphone, in accord with good practice guidance (Collins, 2023). The static bat detectors were attached to the trunks of trees, with the microphone facing outwards i.e. into the Site, so as to record bat activity from within the proximity of their location.
- 2.4.26 Static bat detectors were deployed and left in-situ over a minimum of five consecutive nights in suitable weather conditions. Static bat detectors were set to record echolocation calls continuously between 30 minutes before sunset and 30 minutes after sunrise during this time period. Weather conditions for each survey period are provided in Appendix 1.
- 2.4.27 A total of 12 static bat detectors were utilised across the Site during the survey period (Figure 3). This comprised two detectors deployed monthly in order to collect additional bat activity data to inform the understanding of the use of the Site by bats. The statics were placed upon the northern and southern boundaries of the Site, adjacent to the River Vyrnwy and the Montgomery Canal respectively. These locations were chosen as they were considered the habitats of greater quality for bat activity, as both offer a dark commuting corridor for bats to utilise.



Static Data Analysis

- 2.4.28 Analysis of sound files collected during the NBW surveys and static monitoring survey period was undertaking using Kaleidoscope Pro software with bat calls determined to species level or genus, where appropriate (Russ, 2021). The Auto ID feature of the Kaleidoscope Pro software was utilised in the first stage of analysis. The Auto ID was then verified manually, with the following parameters used for the number of files checked:
 - Pipistrelle files: 10% of total files checked
 - No ID files: 10% of total files checked
 - Noise files: 10% of total files checked
 - All other bat Auto ID: 100% of total files checked
- 2.4.29 The files selected for the manual check was formed by random number generators to remove potential bias from the selection.
- 2.4.30 Ordinarily, Ecobat would have been utilised to compare the bat activity recorded on the Site with those expected in the local area, and as such offer a quantifiable comparison between the activity levels and therefore the likely significance of the Site for local bat species. However, Ecobat is currently offline for essential maintenance at the time of witing, and as such cannot be utilised.
- 2.4.31 As Ecobat was not available, to aid comparison between data collected during different survey periods, Bat Activity Indices (BAI) values were calculated using the formulas below:
 - BAI (per night) = Bat sound files / total nights detector deployed
 - BAI (per hour) = Bat sound files / total survey night hours
- 2.4.32 The BAI (per night) measures the mean nightly rate of sound files that were recorded during the survey period. The BAI (per hour) measures the mean hourly rate of sound files that were recorded during the survey period. Analysis of the sound file data allowed the determination of how many bat sound files there were over the five-night period (abundance) and the regularity of the sound files.
- 2.4.33 BAI categories are based on the professional judgement in the absence of published guidance. For this assessment, BAI (per hour) was categorised as:
 - Low 0-14 bat sound files per hour
 - Medium 15-29 bat sound files per hour
 - High 30-60 bat sound files per hour
 - Very high 60+ bat sound files per hour

Birds

- 2.4.34 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.
- 2.4.35 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.
- 2.4.36 During the Site survey any species of birds encountered were recorded. Habitats were assessed for their potential value to nesting, wintering and foraging birds.



- 2.4.37 Following the sighting of a barn owl during the initial PEA visit on 18th September 2023, it was considered that there was potential for barn owl to be nesting and/or roosting in the mature oak present (T1) in the northwest of the Site (Figure 1). As such, survey for barn owl was undertaken as described above in the 'Further Bat Tree Surveys' section'.
- 2.4.38 Both the River Vyrnwy and The Montgomery Canal were assessed for their potential to support kingfisher, with a detailed survey being undertaken on 8th May 2024.
- 2.4.39 The survey was undertaken by Senior Ecologist Joe Travis BSc (Hons) MSc ACIEEM and Assistant Field Ecologist Chris Birkinshaw and included a detailed search of both banks of the River Vyrnwy and the Montgomery Canal. The survey targeted soft banks in the watercourses that had the potential to support kingfisher burrows. The survey was undertaken within 250 m up and downstream of the Site. The survey was undertaken from the banks of the watercourses, both in their typical baseline flow conditions and with no limitations to access (Figure 4).

Invertebrates

2.4.40 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

- 2.4.41 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.
- 2.4.42 Additional survey comprised a total of seven reptile surveys undertaken across 2023 and 2024, as per Froglife 2016 '*Surveying for Reptiles*' guidance (see Table 3 below). The surveys were undertaken by suitably qualified and experienced ecologists.

Date	Surveyor	Visit	Weather Conditions
2023			
18 th September	Chris Birkinshaw	Reptile refugia deployment	N/A
9 th October 2023	Chris Birkinshaw	Visit 1	14°C, 3 mph wind, sunny
13 th October 2023	Chris Birkinshaw	Visit 2	11°C, 10 mph wind, scattered clouds
8 th November 2023	Chris Birkinshaw	Visit 3 & reptile refugia collect	11°C, 16 mph wind, partly sunny
2024			
23 rd April 2024	Chris Birkinshaw	Reptile refugia deployment	N/A
8 th May 2024	Chris Birkinshaw	Visit 4	13°C, 6 mph wind, sunny
31 st May 2024	Joe Travis	Visit 5	14°C, 12 mph wind, scattered clouds
5 th June 2024	Chris Birkinshaw	Visit 6	9°C, 7 mph wind, sunny
12 th June 2024	Chris Birkinshaw	Visit 7 & reptile refugia collect	9°C, 3 mph wind, sunny

Table 3 – Reptile survey dates

*Surveyors: JT – Joe Travis ACIEEM; CB – Chris Birkinshaw.

2.4.43 As per guidance, a minimum of 10 refugia per hectare of suitable habitat was deployed ahead each survey, and given a period to establish within the vegetation. This amounted to a total of 68 reptile refugia across the Site, mostly around field edges which provide a greater variability of habitats that reptiles typically prefer (Figure 4).



2.4.44 Each survey was undertaken within the reptile survey season of March to October, in conditions >9°C with sunny spells. The surveys were undertaken avoiding the midday period where reptiles are less active, and undertaken either between 08:30 and 11:00 hrs, or 16:00 and 18:30 hrs.

Riparian Mammals and White-clawed Crayfish

- 2.4.45 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.
- 2.4.46 Both the River Vyrnwy and The Montgomery Canal were assessed for their potential to support otter *Lutra lutra* and water vole *Arvicola amphibius*, with a detailed survey being undertaken on 8th May 2024. The survey was undertaken by Senior Ecologist Joe Travis BSc (Hons) MSc ACIEEM and Assistant Field Ecologist Chris Birkinshaw and included a detailed search of both banks of the River Vyrnwy and the Montgomery Canal. Evidence of otter and water vole presence was sought, including burrows/holts, latrines/spraints, feeding remains, footprints and runs.
- 2.4.47 The survey was undertaken within 250 m up and downstream of the Site. The survey was undertaken from the banks of the watercourses, both in their typical baseline flow conditions and with no limitations to access (Figure 4).

Other Key and Notable Species

2.4.48 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.

2.5 Invasive Species

2.5.1 Invasive Non-Native Species (INNS) listed on Schedule 9 of the Wildlife and Countryside Act (1981) (as amended) were recorded and mapped as seen during the survey.

2.6 Assumptions and Limitations

- 2.6.1 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.
- 2.6.2 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.
- 2.6.3 Data was requested from the local record centre Powys Biological Records Centre (PBRC) 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.
- 2.6.4 While the badger survey was undertaken at an optimal time when vegetation was low, much of the Site had been subject to recent flooding from the adjacent River Vyrnwy and whilst there is a high degree of confidence that all significant badger setts were found, it is possible that some signs such as older footprints/latrines, foraging activity or less well used setts may have been missed.



- 2.6.5 Although not strictly in line with good practice guidelines (Collins, 2023) it was considered appropriate to employ a combination of aerial (close) inspection surveys in addition to a nocturnal emergence survey, rather than undertaking three nocturnal surveys. This was concluded as the tree will be retained as per the proposals, and the surveys were undertaken to inform proposals and understand the level of disturbance of the proposals may have on local bats utilising the tree not just for roosting, but also as a foraging resource. As such, it was deemed appropriate to include a nocturnal survey in place of an aerial (close) inspection survey to provide additional information.
- 2.6.6 The detection range of a bat detector can be affected by atmospheric factors (including ambient temperature, relative humidity and air pressure), habitat factors (as a result of sound absorption and bat/habitat interactions) and the bat species being recorded. Bats with high frequency, quiet or directional calls, such as brown long-eared bats *Plecotus auritus*, may sometimes only recorded at distances less than 5 metres (m), whereas bats with low frequency and loud calls such as noctule *Nyctalus noctula*, may be detected form over 100 m away. This creates an element of bias within the data between bat species and their apparent level of activity on or near the Site.
- 2.6.7 Identification of bat calls to species level is not always be possible, as calls may be faint, of poor quality or contain sound elements (including echoes or ambient noise) which distort the recording. Additionally, it is frequently difficult to differentiate calls of different bat species within the same genus due to overlapping bat call parameters. In particular, there is considerable overlap between the echolocation calls of species within the *Myotis* genus. As such, in instances where it has been possible to confidently ID a particular *Myotis* to species level, the species has been added to the Site's species list, and the AutoID for that species is used to calculate the number of passes for that particular species. In the instance where the AutoID states a species that has not been confidently identified, these have just been classified within the results as *Myotis* sp..
- 2.6.8 During the July static monitoring period, both static bat detectors failed and recorded no data. Given the amount of data recorded over the other five monitoring periods, it is considered that information can be extrapolated from this information, and provide a robust understanding of the importance of the Site to local bat populations and how the proposals may impact the importance of the Site post-development.
- 2.6.9 Due to poor weather conditions, the beginning of the May static surveys were delayed, meaning that the full five-day monitoring period was not wholly in May, and instead extended into June. Although this is not in line with good practice guidance, it is considered that this would provide a better understanding of the Site than only taken the data from the three days at the end of May that the statics were recording in appropriate weather conditions.



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 4 below details the designated Sites within 2 km of the Site, with Figure 5 displaying their locations.

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		

Table 4 - Designated Sites within 2 km of the Site

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, Hercleum 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 aquefolium*, 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 6). However, one of these is within 250 m of the Site which is separated from the Site by the Montgomery Canal (Figure 6, WB1). The Trust has undertaken GCN surveys of the Montgomery Canal in recent years, which has confirmed likely absence of GCN from the canal. 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 A total of five badger setts were located on or adjacent to the Site during the survey. These are described below in Table 5, with greater detail provided in the Habitat Works (2024a) report '*CONFIDENTIAL Vyrnwy Reserve Badger Survey*'.

Sett	Photographic Plate Reference (Appendix 2)	Description
Sett 1	Plate 1 - 3	Main Breeding Sett - Nine entrance tunnels was found in woodland on an embankment raised above the main flood plain to the southeast of the site close to the southern boundary and adjacent to a barn. The majority of the holes appeared to be in active use, or had been recently active with well-worn entrances, entrances with fresh spoil (Plate 1) and paths between setts and

Table 5 – Badger setts found on or adjacent to the Site



	leading away from the main sett to nearby pasture. One of the	
	sett entrances contained spoli with recent bedding (plate 2).	
	Several dung pits containing fresh dung were recorded adjacent	
	to the active holes (Plate 3).	
	Annexe Sett – Three-hole sett that could potentially be part of the	
Diato 1 E	main sett, but is considered unlikely to be directly connected. The	
Pidle 4 - 5	sett was active during the survey with the three holes containing	
	freshly excavated spoil (Plates 4 and 5).	
	Outlier Sett – Two-hole outlier sett located in the roots of a fallen	
	London plane tree (Plate 6) in open pasture towards the centre of	
Plate 6	the Site, with the sett entrances looking well used but known to	
	have been flooded in recent weeks and at other times during the	
	winter.	
Plate 7	Outlier Sett – Two-hole outlier sett located in the roots of a	
	second fallen London plane tree adjacent to but unconnected to	
	Sett 3. The sett has two-entrance holes (Plate 7) that showed	
	signs of being well used but similarly to Sett 3. this area of land	
	has been subject to winter flooding	
	Outlier Satt – Single hole outlier sett lessted in the portheastern	
	outlier Sett – Single-Hole outlier Sett located in the Hol theastern	
	corner of the Site located in a raised area of riverbank (Plate 8).	
Plate 8	The sett appeared inactive at the time of the assessment;	
	however, fresh foraging activity was observed in the tunnel	
	entrance where ground had been scraped and footprints	
	recorded.	
	Plate 4 - 5 Plate 6 Plate 7 Plate 8	

- 3.4.9 A total of five setts were identified during the survey with extensive signs of activity including foraging areas and latrines, along with a number of well-worn badger paths linking between the setts. Additional paths were noted heading to the Site boundaries and off-site locations to the south, southwest and eastern boundaries, in addition to access into bramble scrub along the adjacent Montgomery Canal embankment. The main area of activity was focussed around the main sett and immediately adjacent annex sett, with extensive foraging activity on bare ground along the crest of the riverbank, where fresh footprints were observed.
- 3.4.10 It is highly likely that the badger clan will have additional setts within the wider area surrounding the Site within the adjacent woodlands, pastures and wider green spaces present within the local area. The badger main sett is likely to have been on the Site for a number of years within the less managed and more natural woodland belt with badgers expanding across the Site in more recent times.

Bats

- 3.4.11 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.
- 3.4.12 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 horshoe 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.

- 3.4.13 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).
- 3.4.14 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 (2024b) 'Vyrnwy Reserve Bat Tree Surveys V1.0', that confirmed likely absence of roosting bats from the tree.
- 3.4.15 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, 2023).
- 3.4.16 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).
- 3.4.17 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 (2025b) report '*Vyrnwy Reserve Bat Activity Surveys V1.0*'.

Birds

- 3.4.18 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 3.
- 3.4.19 The Site offers extremely limited opportunities for nesting birds, limited to small areas of woodland, scrub and hedgerows present on the Site. it is not anticipated that any of these habitats will be impacted by the proposals.
- 3.4.20 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.
- 3.4.21 The detailed surveys of T1 found no evident of roosting or nesting barn owl. T1 contains several large trunk cavities which offer suitability for roosting and/or nesting barn owl, however no evidence of the species presence was recorded. The cavities are enclosed, creating a ledge that is preferred for barn owl when selecting nesting locations in order to reduce the likelihood of chicks falling from the nest.



- 3.4.22 Although these cavities offer suitable nesting and roosting locations, no evidence of recent use by barn owls was found (e.g. pellets, feathers, nesting materials etc). As such, it is considered that T1 is likely absent of roosting and/or nesting barn owl.
- 3.4.23 The Site itself offers little suitability for nesting kingfisher. However, along the northern boundary of the Site is the River Vyrnwy with soft, earth banks in places which are suitable for kingfisher to create burrows.
- 3.4.24 Survey found no evidence of kingfisher burrows within the earth banks on the River Vyrnwy, however given that the species is highly mobile, there is potential for kingfisher to create nesting burrows in any suitable habitat between now and the commencement of works. The proposals include connecting the river to the new wetland area to create the wetland channel and ponds on the proposed reserve site, and as such, kingfisher have potential to be impacted by the proposals.
- 3.4.25 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

- 3.4.26 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.
- 3.4.27 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.
- 3.4.28 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

- 3.4.29 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.
- 3.4.30 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.
- 3.4.31 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.
- 3.4.32 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

- 3.4.33 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.
- 3.4.34 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.
- 3.4.35 There were no records of white-clawed *crayfish Austropotamobius pallipes* for locations within 2 km of the Site.
- 3.4.36 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

- 3.4.37 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.
- 3.4.38 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.
- 3.4.39 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 hjemlqvistii*, Japanese knotweed *Fallopia japonica*, *Lamiastrum galeobdolon subsp. argentatum*, *Lamiastrum galeobdolon subsp. montanum*, Montbretia *Crocosmia 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 A '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).
- 4.1.3 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.

4.2 *Designated Sites*

Potential Impacts

- 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.

Mitigation Measures

- 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 The Site is located adjacent the Montgomery Canal (and River Vyrnwy). 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).
- 4.2.8 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.

Enhancement

4.2.9 No enhancement is considered the be required at this stage.

Monitoring

4.2.10 No monitoring is considered to be required at this stage.

Significance

4.2.11 Assuming that the BPM outlined above are followed throughout the works, it is not considered that the proposals would impact any designated sites.

4.3 Habitats

Potential Impacts

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.

Mitigation Measures



4.3.2 No mitigation measures are considered to be required at this stage.

Enhancement

4.3.3 No enhancement is considered to be required at this stage.

Monitoring

4.3.4 No monitoring is considered to be required at this stage.

Significance

- 4.3.5 Given the limited partial loss of the grassland habitat on the Site, which is common and widespread on the Site as well as in the local area, it is not considered tat the habitats present on the Site will be significantly impacted by the proposals.
- 4.3.6 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.

4.4 Protected Species

Amphibians

Potential Impacts

- 4.4.1 Common amphibians are protected under the WCA 1981 (as amended) against sale, barter or exchange of captive animals.
- 4.4.2 Great crested newt are considered absent from the Site and as such would not be impacted by the proposals. The habitats present surrounding the Site offer some suitability for common amphibian species i.e. smooth newt or palmate newt, common frog or common toad, and as such, could be impacted by the proposals.

Mitigation Measures

- 4.4.3 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.
- 4.4.4 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.

Enhancement

- 4.4.5 It is recommended that rock piles are created from materials excavated during the construction of the ponds to create sheltering and foraging areas. These should be created close to the ponds and on the 'butterfly banks', which would create sheltering and foraging areas all in close proximities to suitable aquatic habitats.
- 4.4.6 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.

Monitoring

4.4.7 No monitoring is considered to be required at this stage.

Significance

- 4.4.8 Assuming that the BPM outlined above are followed throughout the works, it is not considered that the proposals would adversely affect common amphibians present locally.
- 4.4.9 The creation of the ponds will create a range of suitable aquatic habitats for local amphibian populations. The creation 'butterfly banks' will improve foraging and sheltering opportunities that will combine to provide a range of habitats and ecological niches that will improve the suitability for the Site to support amphibian populations.

Badger

Potential Impacts

- 4.4.10 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.
- 4.4.11 It is not anticipated that the main breeding sett will be disturbed and the draft plans indicate the main works fall outside the potential area of disturbance for the active main sett. Furthermore, it is anticipated that reserve layout can be designed to avoid direct impact to existing badger setts.

Mitigation Measures

- 4.4.12 It is anticipated that the existing setts on the Site will not be impacted by the proposals, and as such, the requirement for sett exclusion is not deemed necessary.
- 4.4.13 It is recommended that an update badger walkover survey is undertaken within three months of the beginning of the programme of works, to ensure that there has been no newly created setts that would be directly impacted by the proposals. In the event that new setts that will be disturbed are encountered, works should not take place until a NRW development licence has been obtained for the site. Works to exclude badger setts can only typically be undertaken between the 1st July and the 30th November.
- 4.4.14 Where outlier setts cannot be reasonably avoided as part of the design process landtake of habitats has potential to destroy a number of outlier badger setts and without impact avoidance measures and/or mitigation, the development has the potential to kill, injure or disturb badgers.
- 4.4.15 In this instance in order to allow the development to proceed without significant impact upon the resident badger clan, any setts located within the development footprint will need to be excluded and closed under a NRW licence prior to the development works.
- 4.4.16 To mitigate for the loss of the badger setts, replacement artificial badger sett may need to be provided elsewhere on site to ensure badgers have sufficient sett provision in the long term and access will need to be maintained to existing off-site foraging areas.
- 4.4.17 Any new artificial badger sett would need to be built within an area of retained ground ideally a minimum of 30 m from the nearest construction works to ensure it is not unduly disturbed during the ongoing construction phase. Any new sett will need to placed outside the flood zone and be screened with suitable



planting to form a buffer and provide secure and vegetated corridors linking the sett to retained habitats and existing pathways.

- 4.4.18 The mitigation approach will need to be agreed with NRW via a licence application process and the works completed under an appropriate development licence.
- 4.4.19 If required, any replacement badger sett will be constructed following best practice and will comprise a minimum six chambers. Any new artificial badger sett should ideally be constructed in advance of the existing sett closure works so the additional sett provision is available to any badgers excluded from their setts. The works will be carried out by an experienced and licensed consultant with experience of constructing artificial setts.
- 4.4.20 Any badger setts exclusion required to facilitate the development would be undertaken by covering the sett and surrounding ground with badger proof mesh with entrances fitted with metal one-way badger gates allowing badgers to exit the sett but not re-enter.
- 4.4.21 In accordance with the standard licence conditions, the sett would be regularly monitored with intervals between visits not exceeding 3 days by the licenced ecologist or their agent for a period no shorter than 21 days after any signs of badger activity.
- 4.4.22 Following the sett exclusion works, the closed and excluded badger setts would be carefully dug out and destroyed under the supervision of the licensed ecologist.
- 4.4.23 On completion of the licensed exclusion works, the development would be delivered in accordance with best precautionary working practices to safeguard badgers from the development.
- 4.4.24 Given the known presence badgers in the local area, 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.
- 4.4.25 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.

Enhancement

4.4.26 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. It is also recommended that the deposition of the excavated materials be used to create 'butterfly banks' which would enhance



the Site for a wide variety of species, including badgers. The creation of these banks would further increase suitable sett building habitats on the Site for local badgers.

Monitoring

4.4.27 No monitoring is considered to be required at this stage. In the event that additional badger setts are encountered and have to be closed, monitoring will be required as detailed above throughout the sett closure works.

Significance

4.4.28 Assuming that the measures outlined above are followed throughout the works, it is not considered that the proposals would adversely affect badgers present locally.

Bats

Potential Impacts

- 4.4.29 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).
- 4.4.30 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.
- 4.4.31 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.
- 4.4.32 The Site has two mature trees that have suitability for roosting bats. These trees are anticipated to be retained throughout the works, however in the event they were to be removed, there is the potential for the disturbance of bat roosts in these features.
- 4.4.33 The Site is considered to have 'Moderate' suitability for foraging and commuting bats, being situated between two major commuting corridors in the local area; the River Vyrnwy and the Montgomery Canal. Without appropriate measures, there is the potential for these habitats to be disturbed, and the wider foraging and commuting habitats of local bat species to be fragmented.

Mitigation Measures

- 4.4.34 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.
- 4.4.35 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).



- 4.4.36 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).
- 4.4.37 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. As such, specific mitigation measures regarding foraging and commuting bats will not be necessary.

Enhancement

4.4.38 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.

Monitoring

4.4.39 No monitoring is considered to be required at this stage.

Significance

- 4.4.40 Given that the proposals include the retention of all roosting features on the Site, it is not anticipated that any potentially present roosting bats will be impacted by the proposals. The local area will be enhanced for roosting bats with the provision of tree-mounted bat boxes, offering a range of further PRF types and locations around the Site.
- 4.4.41 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 bat activity, which are to be retained as per the proposals. It is considered that the creation of the backwater ponds post-development will represent will improve the foraging value to bats, which will likely see an increase in invertebrates associated with the central areas of the Site.
- 4.4.42 As such, it is not considered that the proposals will significantly impact local bat populations.

Birds

Potential Impacts

- 4.4.43 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.
- 4.4.44 The Site itself offers suitability for nesting birds in the form of mature trees and pockets of dense scrub, however, it is not considered that these areas will be impacted by the proposals which are confined to the central grassland areas of the Site which offer extremely limited suitability for nesting birds.

Mitigation Measures



4.4.45 It is not considered that suitable areas of nesting habitat for birds will be impacted by the proposals (i.e. trees and scrub). In the event that vegetation clearance is required, then a nesting bird check (to be undertaken by a suitably experienced ecologist) will be required within 48 hours of any vegetated habitat removal. If an active nest is found during a nesting bird check, there will be a requirement to establish an exclusion zone around the nest (in consultation with the ecologist) which should be maintained until it has been demonstrated that all fledglings have left the nest and the nest is no longer active. This may require monitoring for periods of at least up to a month dependent on nesting stage. Repeat visits will be required if vegetation removal is not completed within the 48-hour timeframe after the initial nesting bird check.

Enhancement

- 4.4.46 As an 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 a range of bird 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.
- 4.4.47 There is potential to enhance 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.

Monitoring

4.4.48 No monitoring is considered to be required at this stage.

Significance

- 4.4.9 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.
- 4.4.50 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.

Invertebrates

Potential Impacts

- 4.4.51 Many invertebrate species are listed under Section 41 of NERC act (2006) designating them as Species of Principal Importance in England.
- 4.4.52 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.

Mitigation Measures

4.4.53 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.

Enhancement

- 4.4.54 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.
- 4.4.55 Further enhancements for the Site with regards to invertebrates would be to incorporate insect towers into the Site.

Monitoring

4.4.56 No monitoring is considered to be required at this stage.

Significance

- 4.4.57 The habitats on Site were of no more than site level importance to local invertebrate populations given the quality of habitat recorded on the Site and the extensive availability of similar to higher quality habitat for invertebrates in the wider area.
- 4.4.58 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.

Reptiles

Potential Impacts

- 4.4.59 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.
- 4.4.60 Reptile surveys undertaken by Habitat Works found the likely absence of reptiles from the Site.
- 4.4.61 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.

Mitigation Measures

- 4.4.62 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/arisings) 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.

Enhancement

- 4.4.63 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.
- 4.4.64 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 in fact be required.

Monitoring

4.4.65 No monitoring is considered to be required at this stage.

Significance

- 4.4.66 The habitats on Site were of no more than site level importance to local reptile populations given the quality of habitat recorded on the Site and the extensive availability of similar to higher quality habitat for reptiles in the wider area, in addition to the findings of likely absence of reptiles on the Site following targeted survey.
- 4.4.67 The creation of the ponds on the Site will provide additional aquatic habitats on the Site, while 'butterfly banks' will improve basking and sheltering opportunities that will combine to provide a range of habitats and ecological niches that will improve the suitability for the Site to support reptile populations.

Riparian Mammals

Potential Impacts

- 4.4.68 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.
- 4.4.69 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.
- 4.4.70 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.

Mitigation Measures

4.4.71 Given the potential for otter to be present on the Site as part of their wider territories, 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.

Enhancement



4.4.72 No enhancement is considered to be required at this stage.

Monitoring

4.4.73 No monitoring is considered to be required at this stage.

Significance

- 4.4.74 Otters are not considered the be resident on the Site, however the Site may form part of their wider territories. Given the scale of the works, it is not considered that local otter populations will be significantly impacted by the proposals.
- 4.4.75 The creation of the ponds will create further suitable aquatic habitats for the species, which will provide further opportunities for otter populations in the local area.

Invasive species

Potential Impacts

4.4.76 Himalayan balsam was abundant along the northern edge of the site between the field edge and the River Vyrnwy. The species is listed on the Wildlife and Countryside Act 1981 Schedule 9 invasive species list. The plant is fast growing, spreads quickly and outcompetes native flora due to the species' tendency to grow in tall, thick patches.

Mitigation Measures

4.4.77 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.

Enhancement

4.4.78 No enhancement is considered to be required at this stage.

Monitoring

4.4.79 Monitoring should be undertaken the summer following the removal of Himalayan balsam from the northern boundary of the Site. The extent of the species should be mapped, and used to inform the requirement for further removal of the species to eradicate from the Site.

Significance

4.4.80 The removal of Himalayan balsam from the Site will allow native flora to colonise the riverbank of the River Vyrnwy. This will create a wider range of ecological niches and resources for local wildlife, in particular invertebrate species which will ultimately provide greater foraging opportunities for other local fauna.



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Figure 1. UK Habitat Classification Map







The Canal & River Trust Vyrnwy Reserve Ecological Impact Assessment Figure 1 UKHab Habitats Map

Drawing Reference: 250417/F1/JT



Figure 2. Nocturnal Bat Survey Results of T1



Legend

Tree 1 Location

(XX) Surveyor Location and Initials

No bats were observed in flight by the surveyors during the survey

0 10 20 30 40 m



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Vyrnwy Reserve Ecological Impact Assessment Figure Nocturnal Bat Survey Results of T1

Basemap: Copyright Google 2025



Figure 3.1-3.3. Nighttime Bat Walkover (NBW) Survey Results



Legend







HABITAT WORKS

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Vyrnwy Reserve Ecological Impact Assessment Figure 3.1 Spring Nighttime Bat Walkover Results







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Vyrnwy Reserve Ecological Impact Assessment Figure 3.2 Summer Nighttime Bat Walkover Results

Basemap: Copyright Google 2025









HABITAT WORKS

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Vyrnwy Reserve Ecological impact Assessment Figure 3.3 Autumn Nighttime Bat Walkover Results



Figure 4. Further Protected Species Survey Map



Legend

Reserve Boundary Disposal Area

Tree 1 (T1)

Reptile Refugia Locations Kingfisher, Otter and Water Vole Survey Areas

100 150 200 m 50



HABITAT WORKS

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Vyrnwy Reserve Ecological Impact Assessment Figure 4 Further Protected Species Survey Map

Basemap: Copyright Google 2025



Figure 5. Designated Sites Map



Basemap: Copyright Google 2025



Figure 6. Waterbodies within 500 m of the Site



Legend

Reserve Boundary
 Disposal Area
 250 m Buffer
 500 m Buffer
 Waterbodies





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Vyrnwy Reserve Ecological Impact Assessment Figure 6 Waterbodies within 500 m of the Site

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Appendix 1. Target Notes

- TN1 Fallen trees
- TN2 Mature oak
- TN3 Mature horse chestnut



Appendix 2. Badger Photographs





Legend:

Plate 7: Sett 4

Plate 8: Sett 5

Plate 9: Foraging activity observed along banks of River Vyrnwy

Plate 10: Footprint adjacent to the foraging activity in fresh earth on the banks of River Vyrnwy



The Canal & River Trust

Vyrnwy Reserve

Ecological Impact Assessment

Appendix 2

Confidential Badger Photos (2/2)



Appendix 3. Darkest Point Photographs of Night Vision Aids (NVAs) during Survey of T1



01/08/2024 - JT Location



Appendix 4. Bird Species Records Summary

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



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