

Ynysarwed Mine Water Treatment Scheme Ecological Constraints and Opportunities Report

The Coal Authority

Project number: 60624809

May 2021

Quality information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position
1	22/02/2021	Updated in line with Scope	UJ	UJ	Principal Ecologist
2	19/04/2021	Updated project description, red-line boundary and surveys results.	UJ	UJ	Principal Ecologist
3	06/05/2021	Minor updates following client review comments	UJ	UJ	Principal Ecologist

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1. Introduction

Introduction

AECOM was instructed by the Coal Authority to produce an Ecological Constraints and Opportunities Report for the Ynysarwed Mine Water Treatment Scheme (MWTS) High Density Sludge (HDS) treatment plant upgrade ('the proposed scheme').

The proposed scheme is comprised of two areas; a linear built area and areas of woodland in the north-east and a reedbed and access track in the south-west ('the Site'). A central grid reference between the two areas is SN 80638 01442 and the boundary of the Site is shown on Figure 1.

This Ecological Constraints and Opportunities Report was commissioned to compile the information from the suite of ecology surveys that have been undertaken to inform the proposed scheme.

The approach applied when undertaking this report pays due regard to the *Guidelines for Ecological Report Writing* published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017a). The Ecological Constraints and Opportunities Report addresses relevant wildlife legislation and planning policy as summarised in this report.

Previous ecological surveys were undertaken by RSK in 2018 and Middlemarch Environmental in 2019. It should be noted that the current proposed scheme Site boundary differs from the site boundaries used by RSK and Middlemarch Environmental. Additional ecological survey work has been undertaken by AECOM in 2020 and 2021 to ensure the proposed scheme Site boundary is fully surveyed and assessed.

It should be noted that the Proposed Scheme description in the Preliminary Ecological Appraisal report by RSK (2018) (Appendix B) is no longer valid and has been superseded by the Proposed Scheme description provided below.

Site Location and Description

The total area of the Site is approximately 4 ha. The northern area of the Site is located either side of the B4242 and adjacent to the Neath Canal. The reedbed and access track is between the A465 and River Neath to the south (see Figure 1).

The Site includes five buildings (including temporary structures) used as a mine water treatment facility and one disused structure along the access track. There is also an area of woodland adjacent to the B4242 and a reedbed of approximately 1.9 ha and access track included within the Site boundary. The Neath Canal runs to the south of the north-east section of the Site.

Proposed Scheme

Ynysarwed Mine Water Treatment Scheme ('existing scheme') was constructed in 1997 by the local authority following a mine water outbreak from the Ynysarwed adit associated with the former Blaenant and Ynysarwed mines.

Due to land constraints, the existing scheme was built in two distinct areas. The active portion of the scheme is located adjacent to the B4242 (SN808017) and the passive treatment element comprising reedbeds is located 1.2 km away.

The existing scheme has undergone modifications and additions since the time of construction. The design life of the existing scheme has expired, and it has been identified as having high annual operational costs as a result of frequent repairs. The existing scheme has therefore been identified as needing to be replaced.

The development proposals (hereafter referred to as the 'Proposed Scheme') are for the replacement of the existing mine water treatment facility and comprises the following principal operations:

- Construction of a new building to house a new active treatment scheme, and installation of the new treatment plant;
- Modifications to elements of the existing treatment scheme to allow continuous treatment during construction, and re-use of certain elements of the existing scheme;
- Decommissioning and removal of the existing plant within the existing building. The building will be retained;
- Works around the area of the existing active treatment site to improve landscape, accessibility and water management. This will include changes to surfaces and path levels and new soft landscape areas;
- Works to the existing reed beds to improve accessibility and water management. This will include construction of new pipework around the reed beds and improvements to the existing access track (infilling of potholes).

The access track improvement works are not subject to planning as they are limited to minor improvement works (pothole infilling) to aid access; however, for completeness, this scope of works has been included in the ecology reports (AECOM 2021a-f) and this Ecological Constraints and Opportunities Report.

It is uncertain whether trees with limbs overhanging the B4242 may require felling or limb removal, to allow for construction traffic and machinery. Tree removal from the Neath Canal Site of Importance for Nature Conservation (SINC) is required to facilitate construction (shown as Category C trees on Drawing Number MWTS-AEC-YN-XX-DR-C-2009). Further vegetation removal works may be required to facilitate a pipeline along the eastern and southern edges of the reedbed, which may impact upon the reedbed edges and areas of grassland verge adjacent to the public footpath and vehicular access. There is also potential for the reedbed to undergo works to improve accessibility, treatment capacity and water management, but plans are not confirmed at the time of writing and it is assumed for the purposes of this report that no major de-vegetation or de-sludging works are being undertaken within the reedbed.

The Proposed Scheme will be undertaken via permitted development and is due to commence in March/April 2022.

Existing Ecological Data

The following ecological reports have been completed to date and are used to inform this Ecological Constraints and Opportunities Report:

- Ynysarwed, Neath Preliminary Ecological Appraisal (RSK, 2018);
- Access Track Ecological File Note (AECOM, 2021a);
- Preliminary Bat Roost Assessment and Ground-level Tree Assessment Report (AECOM, 2021b);
- Pond GCN eDNA & Manual Survey File Note (AECOM, 2021c);
- Reedbed GCN eDNA & Manual Survey File Note (AECOM, 2021d);
- Reptile Mitigation Strategy (AECOM, 2021e); and,
- Otter and Water Vole Survey Report (AECOM, 2021f).

Objectives

The aims of this report are to:

- Compile information from existing reports in relation to the proposed scheme that identify relevant ecological features (i.e. designated sites, habitats, species or ecosystems) which may be affected;
- Provide an assessment of the potential impacts on ecological features as a result of the proposed scheme;
- Identify the requirement for further surveys; and,
- Make recommendations to avoid and mitigate ecological impacts as well as opportunities for biodiversity enhancements.

The purpose of this report is to inform the design of the proposed scheme to support the submission of information to the local authority in respect to the permitted development and information for potential contractors undertaking the proposed scheme works. The report identifies the scope of further work (where necessary) that would be

required. Recommendations are made on potential options for the avoidance, mitigation or compensation of the potential impacts of the proposed scheme (where known) on the identified ecological receptors, and of potential enhancements to the biodiversity and ecosystem services.

Wildlife Legislation and Planning Policy

Wildlife Legislation

There are several different acts of legislation and regulations which refer to the protection of wildlife. These are summarised in Appendix A. In particular, the legislation relating to possible protected species on site is outlined. This is a brief summary of the legislation and is not to be regarded as a definitive legal opinion. When dealing with individual cases, the client is advised to consult the full texts of the relevant legislation and obtain further legal advice.

The following wildlife legislation is relevant to the proposed scheme:

- The Wildlife and Countryside Act (WCA) 1981 (as amended);
- The Countryside and Rights of Way (CROW) Act 2000;
- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019;
- The Natural Environment and Rural Communities (NERC) Act 2006; and,
- Environment (Wales) Act 2016.

The above legislation has been considered when planning and undertaking this report, when identifying potential constraints to the proposed scheme, and when making recommendations for further survey, design options and mitigation. Compliance with legislation may require the attainment of relevant protected species licences prior to the implementation of the proposed scheme.

National Planning Policy

Planning Policy Wales (9th Ed. November 2016)

Planning Policy Wales (PPW) sets out the land use planning policies of Welsh Government.

Chapter 5, Conserving and Improving the Natural Heritage and the Coast, outlines Welsh Government's objectives for the conservation and improvement of natural heritage. The relevant measures in place to conserve landscape and biodiversity include:

- Statutory designations;
- Non-statutory designations;
- LANDMAP Information System (LANDMAP) describes and evaluates;
- aspects of the landscape and provides the basis of a consistent Wales-wide approach to landscape assessment);
- Development plans and the conservation and improvement of the natural heritage;
- Development management and the conservation and improvement of the natural heritage;
- Development management and statutory designations;
- Trees and woods; and,
- Protected species.

Paragraph 5.3.10 states that "potential SPAs and candidate SACs (included in the list sent to the European Commission) should be treated in the same way as classified SPAs and designated SACs. Sites which the UK and the European Commission have agreed as Sites of Community Importance and which are to be designated as SACs attract the same legal protection as if they had already been designated. The same considerations should, as a matter of policy, be applied to listed Ramsar sites".

Paragraph 5.2.9 states that "Local planning authorities should seek to protect trees, groups of trees and areas of woodland where they have natural heritage value or contribute to the character or amenity of a particular locality. Ancient and semi-natural woodlands are irreplaceable habitats of high biodiversity value which should be protected from development that would result in significant damage."

Paragraph 5.5.4 states that "For all planning applications likely to result in disturbance or harm to a protected species or likely to have a significant adverse effect on sites of more than local importance, or on a designated area, local planning authorities should seek the advice of Natural Resources Wales and should always consult them before granting permission".

Technical Advice Note 5 (TAN5) Nature Conservation and Planning (September 2009)

The Planning Policy Wales (PPW) is supplemented by a series of Technical Advice Notes. TAN 5 provides guidance on how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation. It provides advice on areas including the key principles of positive planning for nature conservation, nature conservation in Local Development Plans and development management procedures. It also provides advice on development affecting designated sites and habitats, in addition to protected or priority habitats and species.

Key Principles include that the town and country planning system in Wales should integrate nature conservation into all planning decisions; that the town and country planning system should look for development to provide a net benefit for biodiversity conservation with no significant loss of habitats or populations of species, locally or nationally and that they should ensure that the UK's international and national obligations for site, species and habitat protection are fully met in all planning decisions.

Local Planning Policy

Local Development Plans (LDPs) must be produced by every Local Planning Authority in Wales. Any development proposal will be tested against the policies within the LDP. The LDPs follow the planning guidance provide in PPW, including biodiversity and natural heritage policies. These include protecting designated sites and other areas of importance for biodiversity conservation; safeguarding protected species and priority species, including those listed in local biodiversity action plans and retaining, creating and enhancing features of importance for biodiversity conservation where appropriate.

Relevant local planning policies for Neath Port Talbot Council are detailed in the following document:

- Neath Port Talbot County Borough Council Local Development Plan 2011 – 2026. Adopted January 2016.

Relevant policies are set out in Appendix A.

Appendix A provides a summary of relevant local planning policies. For the precise wording of each specific policy please refer to the source document. This planning policy has been considered when assessing potential ecological constraints and opportunities identified by the desk study and field surveys; and, when assessing requirements for further survey, design options and ecological mitigation.

Quality Assurance

This survey and subsequent report were undertaken in line with AECOM's Integrated Management System (IMS). Our IMS places great emphasis on professionalism, technical excellence, quality, environmental and Health and Safety management. All staff members are committed to maintaining our certification to the international standards BS EN ISO 9001:2015 and 14001:2015 and BS ISO 45001 2018. In addition, our IMS requires careful selection and monitoring of the performance of all sub consultants and contractors.

All AECOM Ecologists who worked on this project are members of (at the appropriate level) the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow their code of professional conduct (CIEEM, 2019) when undertaking ecological work.

2. Methodology

Detailed methodologies for each task or survey are contained within the respective report (Appendix B); for the purposes of this report a summary is provided, and the report referenced.

Desk Study

A desk study was undertaken by RSK in December 2018 (RSK, 2019). The objectives of the desk study were to review the existing information available in the public domain concerning species and habitats to identify the following:

- Internationally and nationally designated sites, within 2 km of the Site; and,
- Protected, Priority and notable species records and records of locally designated sites within 1 km of the Site.

For the purposes of this report, AECOM conducted a search for the following between April 2020 and June 2020:

- Special Areas of Conservation (SAC) and Sites of Special Scientific Interest (SSSI) designated for bats within a 10 km radius of the Site in accordance with Bat Conservation Trust (Collins, 2016) recommendations;
- Ancient Semi-Natural Woodland (ASNW), Plantation on Ancient Woodland Site (PAWS), Restored Ancient Woodland Site (RAWS) or Ancient Woodland Site of Unknown category (AWSU) within or adjacent to the Site boundary using Forestry Commission Wales 2011 Ancient Woodland Inventory data set downloaded from the Lle website (NRW, 2018);
- Trees with a Tree Protection Orders (TPO) within or adjacent to the Site, from Neath Port Talbot Council; and,
- Aerial photographs and Ordnance Survey (OS) maps were reviewed to identify features of ecological interest surrounding the Site including ponds within 500 m, nearby areas of ecological interest and features connecting these habitats (hedgerows, watercourses, railway lines).

Field Survey Methods

Extended Phase 1 Habitat Survey

A Phase 1 Habitat Survey (JNCC, 2010) was undertaken by an RSK ecologist (MSc MCIEEM) on 30 November 2018 (RSK, 2019).

Due to a subsequent change in the Site boundary an AECOM ecologist (BSc MCIEEM) undertook a Phase 1 Habitat Survey (JNCC, 2010) on areas not captured by RSK on 25 February 2020 and 19 March 2020 during the Preliminary Roost Assessment (PRA) and Ground Level Tree Assessment (GLTA) (AECOM, 2021b). The RSK survey area and the Site boundary are shown on Figure 2.

The survey involved a site walkover and preliminary assessment of habitats, land use and ecological features. The main habitats present were recorded using standard Phase 1 Habitat Survey methodology as described in the Handbook for Phase 1 Habitat Survey: A technique for Environmental Audit (JNCC, 2010). The plant species defining the habitat types on Site were recorded. Evidence of any Invasive Non-Native Species (INNS) of plant subject to legal controls was recorded.

The Phase 1 Habitat Survey was 'Extended' by including a desk study, as described above, and an assessment of the potential for the Site to support Protected or Priority Species in order to identify potential ecological constraints and to guide recommendations for further surveys.

Great Crested Newt

Reedbed

The following surveys were conducted by AECOM to determine presence or likely absence of great crested newt *Triturus cristatus* in the reedbed in the south west of the Site (AECOM, 2021c):

- An HSI assessment (developed by Oldham et al., 2000) was undertaken in line with the approach outlined in Amphibian and Reptile Group (ARG) UK Advice Note 5, 2010. The HSI assessment was undertaken by experienced AECOM ecologists (BSc ACIEEM and MSc MCIEEM) on 22 April 2020.
- eDNA sampling of the reedbed was undertaken on 22 April 2020 by an experienced AECOM ecologist with a Natural Resources Wales (NRW) great crested newt survey licence. eDNA sampling was completed following the methodologies provided in Biggs et al (2014). The eDNA kit was purchased from ADAS; ADAS conducted the laboratory analysis of the sample.
- Manual surveys were undertaken by two ecologists (including an NRW licensed ecologist) on 22 April 2020 and 05 May 2020 following the conventional methodology current best practice (Natural England, 2013).

Pond

The following surveys were conducted by AECOM to determine presence or likely absence of great crested newt in the pond at Ynysarwed Farm (AECOM, 2021d):

- An HSI assessment (developed by Oldham et al., 2000) was undertaken in line with the approach outlined in Amphibian and Reptile Group (ARG) UK Advice Note 5, 2010. The HSI assessment was undertaken by experienced AECOM ecologists (BSc ACIEEM and MSc MCIEEM) on 19 June 2020.
- eDNA sampling of the reedbed was undertaken on 19 June 2020 by an experienced AECOM ecologist with a Natural Resources Wales (NRW) great crested newt survey licence. eDNA sampling was completed following the methodologies provided in Biggs et al (2014). The eDNA kit was purchased from ADAS; ADAS conducted the laboratory analysis of the sample.

Badgers

An RSK ecologist (MSc MCIEEM) conducted an initial assessment on 30 November 2018 to identify areas that might be used by badgers *Meles meles* for commuting, foraging and sett-building on the site and within 30 m of the site boundary (where access was possible). The survey areas were systematically searched for field signs including signs of foraging, well-used mammal paths, dung pits and latrines, hairs and footprints. (RSK, 2019).

Otter and Water Vole

Surveys for otter and water vole were conducted by an AECOM ecologist (BSc ACIEEM) and assistant on 28 May 2020 and 19 June 2020 under suitable weather conditions, with a further survey for water vole on 15 September 2020. A detailed visual search of the watercourses within the survey area was undertaken.

The survey area included the River Neath and Neath Canal as well as the surrounding vegetation and reedbeds and wet ditches. The Site boundary and 100 m buffer made up the 'survey area'.

Otter Survey

Searches for otter activity were undertaken following guidance provided in Monitoring the otter (Chanin and Smith, 2003). The survey methodology involved recording all evidence of otter activity, such as: holt entrances, couches, footprints, otter trails through vegetation, spraint, anal jelly, and other signs – for example, occasionally remains of dead otters can be seen on roads.

Water Vole Survey

The survey methodology used was in accordance with the Water Vole Mitigation Handbook (Dean *et al*, 2016). This consisted of identifying the extent and distribution of water vole through searches of both banks (where possible) of watercourses for field signs indicating recent activity (i.e. feeding stations and latrines), as well as signs of past and potentially present activity (i.e. burrows). Where conditions allowed, a surveyor walked in the watercourse channel to check for field signs along the water's edge.

The survey methodology involved recording all evidence of water vole activity, such as: faeces, latrines, feeding stations, burrows, lawns, nests, footprints, runways, and live observations.

Latrines are indicators of territorial behaviour, which in turn generally correlates with water vole breeding activity. For the presentation of water vole distribution data, sections of the ditch where latrines were identified would be illustrated as "Breeding Activity", and sections of the ditch where evidence other than latrines was identified would be illustrated as "Non-Breeding Activity".

The Water Vole Mitigation Handbook (Dean *et al*, 2016) recommends that two surveys are conducted throughout the year – once April – June, and another July – September, each separate by at least two months.

Assessment of Bat Habitat Suitability

Preliminary Roost Assessment (PRA) and Ground Level Tree Assessment (GLTA)

Where access allowed, trees and buildings throughout the Site were classified into categories dependent on the presence of features suitable as bat roost habitat. This was conducted via an external appraisal from the ground using binoculars where necessary. Table 2.1 provides descriptions of the categories for buildings and trees.

All buildings within the Site boundary were assessed by Middlemarch Environmental in October 2019 (Middlemarch Environmental, 2019). All trees throughout the Site were assessed by an appropriately experienced AECOM ecologist (BSc MCIEEM) and assistant (BSc) on 25 February 2020. An update survey of buildings and trees was completed on 06 April 2021 by an appropriately experienced AECOM ecologist (BSc MCIEEM) and assistant (BA MSc).

Table 2.1 Building and Tree Bat Roost Suitability Categories

Roost Suitability	Descriptions for Buildings	Descriptions for Trees
Known or Confirmed	Confirmed signs of bat presence/ occupation (droppings, oily staining around entry points, insect remains, odour, scratching) and actual bat presence.	Confirmed signs of bat presence/ occupation (droppings, oily staining around entry points, insect remains, odour, scratching) and actual bat presence.
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potential for longer periods of time due to their size, shelter, protection, conditions (e.g. temperature, humidity, height above ground level, light levels or levels of disturbance) and surrounding habitat. Can include structures with points of access to the interior of the building and poorly maintained fabric providing ready access points for bats into structures, but at the same time not draughty. Structures of traditional stone, brick or timber construction. Structures with large (>20cm) roof timbers with mortice joints, cracks and holes. Structures of pre or early 20 th century construction. Structures with large complicated and/or uncluttered roof spaces providing unobstructed flying spaces. Structures with weather boarding and/or hanging tiles with gaps. Structures with accessible south facing roofs. Structures with proximity to good foraging habitat such as woodland, wetland, water and /or good hedgerows.	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potential for longer periods of time due to their size, shelter, protection, conditions (e.g. temperature, humidity, height above ground level, light levels or levels of disturbance) and surrounding habitat.
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions (e.g. temperature, humidity, height above ground level, light levels or levels of disturbance) and surrounding habitat but unlikely to support a roost of high conservation status. Can include structures with some potential to support roosting bats, but fewer features than a high risk building. Features may include areas suitable for crevice dwelling and/or access points into structures. Some proximity to foraging habitat.	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter protection, appropriate conditions and/or suitable habitat to be used on a	Tree of sufficient size and age to contain potential roost features but with none seen from the

Roost Suitability	Descriptions for Buildings	Descriptions for Trees
	regular basis or by large numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).	ground or features seen have only very limited roosting potential.
Negligible	No features suitable for roosting bats. Can include structures constructed from unsuitable materials e.g. prefabricated with steel and sheet material. Structure is draughty, light and cool buildings with no roosting opportunities. High levels of regular disturbance including external and/or internal lighting. Building is isolated from areas of foraging habitat.	Trees with no potential to support bats.

Source: Category descriptions drawn from Collins, 2016 and Mitchell-Jones, 2004 to be applied using professional judgement

Commuting and Foraging Habitat Suitability Assessment

During the Phase 1 survey, habitats on Site were classified into categories dependent on the presence of features suitable for bats to commute and forage. Table 2.2 provides descriptions for commuting and foraging habitats.

RSK (2019) assessed the habitat suitability for foraging and commuting bats on 30 November 2018. During the Site visits conducted by AECOM in 2020 and 2021 it was concluded that the RSK (2019) assessment for foraging and commuting suitability remained valid.

Table 2.2 Commuting and Foraging Habitat Suitability Categories

Commuting and Foraging Suitability	Descriptions
High	Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small number of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Negligible	Negligible habitat features on site likely to be used by commuting or foraging bats.

Source: Category descriptions drawn from Collins, 2016 to be applied using professional judgement

PEA Report

The PEA report (RSK, 2019) identifies whether there are known or potential ecological receptors (nature conservation designations and protected and notable habitats and species) that may constrain or influence the design and implementation of the proposed scheme. The approach applied when undertaking the PEA paid due regard to the *Guidelines for Preliminary Ecological Appraisal* published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017).

Limitations

Biological records can be received from a wide variety of sources and may or may not be comprehensive and accurate. However, if assessed in conjunction with a Phase 1 Habitat survey, they can contribute to a robust ecological assessment of a site.

Where any conclusions and recommendations contained in this Report are based upon information provided by others, it has been assumed that all relevant information provided by those parties is accurate. Any such information obtained by AECOM has not been independently verified by AECOM, unless otherwise stated in the Report. AECOM accepts no liability for any inaccurate conclusions, assumptions or actions taken resulting from any inaccurate information supplied to AECOM from others.

The methodology adopted and the sources of information used by AECOM in providing its services are outlined in this Report. The work described in this Report was conducted between November 2018 and April 2021 and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances. AECOM disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to AECOM's attention after the date of the Report.

Great Crested Newt Survey

Reedbed

Dense scrub vegetation and very low water levels resulted in surveyors being unable to access approximately 90% of the reedbed perimeter for eDNA survey. It is estimated that 95% of the reedbed itself is very shallow (comprising entirely of dense *Phragmites australis* vegetation), due to its function as a filtration bed.

The eDNA sample that was sent to the lab had a "high sediment" content (see full report (AECOM, 2020c) for reasons why sediment should be avoided in sample). Surveyors noted that the water contained orange sludge around the northern edge (filtration outflow area).

It was not possible to undertake bottle trapping, egg searching or netting during the manual surveys due to restricted access (dense vegetation) and very low water levels. As a result, only two manual surveys were undertaken. The justification as to why this is not considered a significant limitation is provided in Section 4.3 of this report, following the results of the surveys.

Pond

Due to vegetation cover and steep banks in some places, surveyors were unable to access 25% of the pond perimeter for eDNA survey. This is not considered a significant limitation as a representative sample of all the habitats present at the pond was able to be taken.

Dormouse Habitat Suitability Assessment

A dormouse Habitat Suitability Assessment (HSA) was undertaken by experienced AECOM ecologists including an NRW licensed dormouse ecologist on 05 May 2020. The criteria in Table 2.3 were used by AECOM to assess habitats.

Table 2.3 Dormouse Habitat Suitability Categories

Category	Description
Optimal	Continuous high quality habitat that is well connected to the wider landscape. Habitat that provides a range of food sources, summer nesting and hibernation sites i.e. suitable for dormouse all year round.
Sub Optimal	Habitat that is connected to the wider landscape but does not contain all the ecological requirements for dormouse. Has some features that could support dormouse but may have limited range of food sources and/or may lack the structural diversity that would be present in an Optimal habitat, may lack suitability for both breeding and hibernation.
Poor	Isolated habitat which is not well connected to surrounding landscape by other suitable habitat and does not contain all the ecological requirements for dormouse. May lack structural diversity that would be present in an Optimal or Sub Optimal habitat, may lack food resources, limited opportunities for breeding/hibernation. Existing disturbances are present (e.g. proximity to existing housing and predation by cats, current land management practices, dominance of non-native plant species)
Negligible	Negligible habitat features on site unlikely to be used by dormouse.

Category	Description
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	Isolated habitat not well connected to surrounding landscape by other habitat.
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Badger Survey

Although the RSK survey area for badgers encompassed a larger area than the Site., due to a subsequent change to the Site boundary the badger survey omitted the access track and a proportion of the woodland to the north of the B4242 and adjacent to the Neath Canal.

However, the badger survey is assumed to be an adequate assessment of badger activity as it is likely that if any badger were present in the omitted areas, evidence of badgers would be present in the survey area since the survey area is connected to the omitted areas. Furthermore, during the non-target surveys of the omitted areas, AECOM noted no evidence of badger activity. As such, this is not considered to be a significant limitation to this report.

Otter and Water Vole Survey

Access to the river was limited as not all the bank could be accessed directly. Binoculars were used to view opposite sides of bank and up and downstream where direct access was not possible. Direct access was available for approximately 30% of the river, 60% was able to be viewed from the opposite side of the riverbank and 10% was unable to be accessed due to thick vegetation obscuring the view of the riverbank (indicated on the map in Appendix A). This was not considered to present a significant constraint to the survey as the thick vegetation created darkly shaded areas which are unsuitable for water vole. It is possible that signs of otter could have been missed in the un-surveyed areas, and any works within 30 m of this area could potentially cause an offence in relation to otter if a holt/couch was present.

Access to the wet ditches on Ynysarwed Farm land was not possible at the time of the first survey on 28 May 2020 due to access not being granted. However, access was granted on 19 June 2020 and survey was completed. Immediately prior to the survey there was rain for a 24-hour period. This is a limitation as the water levels in the watercourses were higher than usual and, in combination with the rain could have washed away potential indicators of otter and water vole. However, other indicators such as holts, couches and burrows are not affected by the rain and would still be identifiable if present.

PRA and GLTA

During the Preliminary Roost Assessment (PRA) and Ground Level Tree Assessment (GLTA) survey in 2020, there were periods of heavy rain which made it difficult for the surveyors to observe all features on the described trees; however, sufficient time was spent at each tree to adequately assess for suitable features. Therefore, this is not considered a significant limitation to the assessment and report.

Access to the woodland north of the B4242 was limited by the presence of the B4242 and the steep slope of the hill which the trees were situated on. Trees on the northern side of the B4242 were therefore assessed from the footpath on the opposite side of the road and as such the northern face of these trees could not be observed. Trees considered likely to have potential features due to their size and structure were assigned a precautionary Low suitability categorisation; however, there is the potential for features with suitability to support roosting bats to have gone unrecorded. An arboricultural assessment is being undertaken on the trees in the woodland, and should any require works for health and safety reasons (i.e. should removal (total or limb) be required) then further assessment of the northern faces of the trees may be required with a road closure for health and safety reasons.

In the south-west of the Site, the woodland surrounding reedbed was not fully accessible due to high water levels and dense vegetation. There are three or four trees in this area which were considered to be of suitable size and structure to support roosting bats but could not be fully assessed for survey and as such were given a precautionary Low suitability categorisation. It is not yet clear whether these trees will be impacted by the Proposed Scheme.

During the PRA in 2021 it was not possible to enter all buildings to undertake an internal inspection due to health and safety reasons. However, as detailed in the PRA and GLTA report (AECOM, 2021b), this is not considered a significant limitation to the assessment and report. Access to the woodland north of the B4242 was limited by the

presence of the B4242 and the steep slope of the hill which the trees were situated on. Trees on the northern side of the B4242 were therefore assessed from the footpath on the opposite side of the road and as such the northern face of these trees could not be observed. There is the potential for features with suitability to support roosting bats to have gone unrecorded. It is not yet clear whether these trees will be impacted by the proposed scheme; should removal (total or limb) be required then further assessment of the northern faces of the trees may be required with a road closure for health and safety reasons.

There are deemed to be no significant limitations to the PRA and GLTA.

3. Baseline Conditions

A summary of the baseline conditions has been provided in the following sections. Detailed information such as survey data has been provided for each element in the respective report in Appendix B.

Desk Study Results

The designated habitats, sites and features within proximity to the site are listed in Table 3.1 below.

Table 3.1 Desk Study Results

Designation / Feature	Description
Internationally and Nationally Designated Sites Within 2 km	There are no statutory designated sites within 2 km of the Site boundary (RSK, 2019).
Locally Designated Sites Within 2 km	There are four Sites of Importance for Nature Conservation (SINCs) within 1 km of the Site boundary: • Neath Canal: Partially located within the Site boundary. Supports diverse aquatic and emergent flora along much of its length. The SINC is important for birds, dragonflies and damselflies; species include Cetti's warbler, kingfisher, reed bunting and emperor dragonfly. The SINC also supports adder, common lizard, grass snake and slow-worm, otter and water vole. • Neath Port Talbot Watercourses: Neath Port Talbot Watercourses SINC covers multiple watercourses in the county. There are two SINC watercourses (ditches) located approx. 15 m south east of the Site. The River Neath is located adjacent to the south of the Site. • Ancient Semi Natural Woodland: The Ancient Semi Natural Woodland SINC borders the Site boundary to the north. There is no information available on the SINC other than that it has been designated because of its ancient woodland. • Sarn Helen SINC. Located approx. 365 m north west. A large site covering six distinct areas spanning both sides of the Sarn Helen Roman Road. The SINC supports a range of habitats including native woodland, scrub, hedgerows, upland acid grassland, upland heathland and rush pasture, blanket bog and ffridd. (RSK, 2019)
Designated Sites Within 10 km Designated for Bats	There are no statutory sites designated for bats within 10 km of the Site boundary.
Protected and Priority Species Records from the within 1 km	The following species have been recorded within 1 km of the Site: • Reptiles: Grass snake <i>Natrix helvetica</i>. • Schedule 1 Birds: Goshawk <i>Accipiter gentilis</i>, kingfisher <i>Alcedo atthis</i>, hen harrier <i>Circus cyaneus</i>, peregrine <i>Falco peregrinus</i>, hobby <i>Falco subbuteo</i>, common crossbill <i>Loxia curvirostra</i>, red kite <i>Milvus milvus</i>, osprey <i>Pandion haliaetus</i>, honey buzzard <i>Pernis apivorus</i>, redwing <i>Turdus iliacus</i>. • Bats: Bats Chiroptera, a myotis bat <i>Myotis</i> sp., noctule bat <i>Nyctalus noctula</i>, a pipistrelle bat <i>Pipistrellus</i> sp., common pipistrelle <i>Pipistrellus pipistrellus</i>, soprano pipistrelle <i>Pipistrellus pygmaeus</i>. • Other Mammals: European otter <i>Lutra lutra</i>, Eurasian badger <i>Meles meles</i>. (RSK, 2019).
Priority Habitats and Species – Section 7 List	The full list of Section 7 Habitats and Species of Principle Importance in Wales has been reviewed. Those priority habitats present on site and priority species with potential to be on site are listed in Table 3.2 and Table 3.3 respectively.
Ancient Woodland	There is a 4.69 ha area of Ancient Semi Natural Woodland (ASNW) adjacent to the Site boundary to the north, this is a SINC. It is connected to a larger area of Plantation on Ancient Woodland Site.
Trees with a Tree Protection Order (TPO)	There are no TPOs within or adjacent to the Site boundary.

Designation / Feature	Description
Ponds within 500 m	There is one pond within 500 m of the Site boundary. Located approx. 150 m south east and approx. 500 m ² in area. The pond appears to have a ditch inflow and outflow and is heavily vegetated.

Extended Phase 1 Survey

Habitats

The habitats present within the Site boundary and their descriptions are shown in Table 3.2. A plan of the Site showing the location and distribution of these habitats is shown in Figure 2.

Table 3.2 Phase 1 Habitats and Descriptions

Habitat	Description	Section 7 Habitat
Broadleaved Semi-Natural Woodland	Secondary broadleaved woodland (some of which comprised wet woodland) occurs adjacent to the Neath Canal and around the swamp/reedbed in the southern area of the site. The woodland is dominated by ash <i>Fraxinus excelsior</i> , with occasional pedunculate oak <i>Quercus robur</i> , willow <i>Salix</i> spp. and silver birch <i>Betula pendula</i> . A sparse understorey layer is present containing frequent to occasional hawthorn <i>Crataegus monogyna</i> , blackthorn <i>Prunus spinosa</i> , willow <i>Salix</i> species, bramble <i>Rubus fruticosus</i> agg. and holly <i>Ilex aquifolium</i> . Additional areas of broadleaved semi-natural woodland were recorded either side of the existing track; with willow species <i>Salix</i> sp., pedunculate oak, ash, buddleia <i>Buddleja davidii</i> and sycamore <i>Acer pseudoplatanus</i> recorded.	Yes – Lowland mixed deciduous, and Wet woodland
Dense Scrub	Present either side of the existing track with European gorse <i>Ulex europaeus</i> , bramble <i>Rubus fruticosus</i> agg. and spindle <i>Euonymus europaea</i> recorded.	No
Semi-improved Neutral Grassland	A small strip of rough grassland is present along the southern edge of the Neath Canal, c.1 to 1.5 m wide. It contains a variety of grasses including, cock's-foot <i>Dactylis glomerata</i> , common bent <i>Agrostis capillaris</i> , creeping bent <i>Agrostis stolonifera</i> and annual meadow-grass <i>Poa annua</i> . Further areas recorded either side of and on the existing track, with common ivy <i>Hedera helix</i> , pond sedge <i>Carex acutiformis</i> , common nettle <i>Urtica dioica</i> , creeping buttercup <i>Ranunculus repens</i> , creeping bent grass <i>Agrostis stolonifera</i> recorded.	No
Species Poor Semi-Improved Grassland	Recorded on the existing track, with common ivy <i>Hedera helix</i> , pond sedge <i>Carex acutiformis</i> , common nettle <i>Urtica dioica</i> , creeping buttercup <i>Ranunculus repens</i> , creeping bent grass recorded.	No
Swamp	The southern area of the Site mostly comprises an area of swamp which functions as the passive treatment scheme of the Site. This habitat is dominated by common reed <i>Phragmites australis</i> and was observed to have fluctuating water levels including very low (likely dependent on precipitation and levels of processing activity at the MWTS).	Yes – Reedbeds
Standing Water	Two emergency overflow tanks are present in the north of the Site, adjacent to the active treatment facility. These did not contain any water during the time of survey. The access track was severely degraded in some places creating large potholes several metres in length and up to approximately 0.4 m in depth. Large areas of standing water were recorded on and adjacent to the access track although no aquatic vegetation was present. The pools are likely to be ephemeral in nature. Standing water on Site has no ecological value and will not be considered further in this report.	No
Running Water	The Neath Canal is partially within the Site. The majority of the canal supports floating sweet grass <i>Glyceria fluitans</i> , branched bur-reed <i>Sparganium erectum</i> , common duckweed <i>Lemna minor</i> and water figwort <i>Scrophularia auriculata</i> .	No

Habitat	Description	Section 7 Habitat
	A road ditch is present between the A465 and the access track. The presence of water is dependent on surface water runoff from the A465 and water quality will be poor due to fuel and oil contaminants.	
Buildings	Six buildings are present in the north area of the Site and one in the south area of the Site. These have no ecological value and are described fully in Table 3.5.	No
Hard Standing	Small areas of hard standing are present in the north area of the Site around the active treatment facility and adit. A footpath is also present along the Neath Canal on the northern Site boundary. The B4242 forms the northern boundary of the Site. An existing hard standing and gravel access track is present in the south area of the Site. It is in generally poor condition; with large stretches of rough grassland/mud and standing water within the track itself. Hard standing has no ecological value.	No

Protected and Priority Species

Details of Protected and Priority Species recorded on Site are listed in Table 3.3.

A plan of the Site showing the location and distribution of features with potential for Protected or Priority Species is shown in Figure 2.

Table 3.3 Protected and Priority Species Potential

Species/ Species Group	Description	Section 7 Species
Invertebrates	The Neath Canal and reedbeds provide suitable habitat for a wide variety of invertebrates (RSK, 2019). Surveys for invertebrates were not considered necessary by RSK (2019) and AECOM due to the proposed scheme works not being undertaken in habitat suitable for supporting invertebrates.	Yes – several considered to be likely present on Site.
Great crested newt	The desk study did not contain any records of great crested newt within 1 km of the Site. The woodland provides suitable terrestrial habitat for great crested newt. The pond outside of the Site boundary and reedbeds offer suitable breeding habitat for great crested newt. (RSK, 2019) Surveys for great crested newt were conducted on the reedbed and pond. The results of the survey of the reedbed are as follows: - The HSI assessment score was 0.67, which indicates the reedbed has an 'average' suitability for supporting great crested newt. HSI is a measure of habitat suitability for great crested newts. However, the system is not sufficiently precise to allow the conclusion that any particular water body with a high suitability score will support newts, or that any water body with a low suitability score will not do so. - The eDNA results were returned from the laboratory as 'indeterminate' from the sample submitted. There was evidence of degradation in the sample, consequently, the eDNA result does not confirm the presence or likely absence of great crested newt and has to be discounted. As the reedbed may contain suspended solids and metals, this is likely to make the reedbed unsuitable for great crested newt and successful great crested newt breeding. - No great crested newts were recorded during manual surveys. No other amphibians were observed within the reedbed. On visit one (and subsequently visit two), the waterbody did not contain enough water for robust bottle trapping or netting, the sludge substrate inhibited access for egg searching, and the turbidity limited the value of torch light surveys. The second survey was undertaken following the 'average' result of the HSI, and following a period of a few days of heavy rain, to assess if the water levels had increased; but they had not. Based on professional experience, if conditions are such, in addition to making a robust survey difficult, it also suggests that they would not be optimal for great crested newt.	Yes

Species/ Species Group	Description	Section 7 Species
	Following the second visit, taking all available information into account (eDNA, HSI, potential contamination, pond likely to be very low/dry out during breeding season, nil manual survey results, local desk study information) and the professional judgement of the surveying NRW great crested newt licenced ecologist, it was concluded that the reedbed was not capable of supporting great crested newt. Surveys were therefore stopped after two visits. (AECOM 2021c) The results of the survey of the pond are as follows: - The HSI assessment score was 0.65 and indicates the pond has an 'average' suitability for supporting great crested newt. HSI is a measure of habitat suitability for great crested newts. However, the system is not sufficiently precise to allow the conclusion that any particular water body with a high suitability score will support newts, or that any water body with a low suitability score will not do so. - The eDNA results were returned from the laboratory as 'negative' from the sample submitted. This supports the conclusion of likely absence of great crested newt from the pond. As there are also no connecting ponds in the area it is unlikely that there will be movement of great crested newt into the pond. Taking all available information into account (eDNA, HSI, local desk study information), it is concluded that the pond and surrounding terrestrial habitat are unlikely to support great crested newt. (AECOM 2021d).	
Common amphibians	The woodland on Site and the scrub, grassland and woodland adjacent to the access track provide suitable terrestrial habitat to support common amphibians, such as common toad <i>Bufo bufo</i> (AECOM, 2021a).	Yes
Reptiles	The background data search contained two records of grass snake within 100 m of the Site. The reedbeds are suitable for supporting grass snakes. (RSK, 2019). The scrub, grassland and woodland adjacent to the access track provide suitable habitat to support slow-worm <i>Anguis fragilis</i>, common lizard <i>Zootoca vivipara</i> and grass snake. Further surveys for reptiles were not considered necessary due to the proposed scheme works not being undertaken in habitat suitable for supporting reptiles (AECOM, 2021e).	Yes
Birds	The desk study returned ten records of Schedule 1 Protected Species within 1 km of the Site. The majority returned breed in the United Kingdom but are unlikely to breed on the Site as the Site does not contain suitable nesting sites for the listed residential Schedule 1 species (RSK, 2019). The Neath Canal and River Neath provide suitable habitat for nesting and foraging kingfisher (RSK, 2019) (a Schedule 1 species). AECOM identified the reedbeds as suitable for supporting Cetti's warbler (a Schedule 1 species), and although the species were not observed during non-target surveys at the reedbeds, the presence of Cetti's warbler cannot be ruled out. The Site offers nesting habitat suitable for a wide variety of non-Schedule 1 birds during the breeding season in reedbeds, scrub, trees and woodland, and these habitats also offer suitable foraging opportunities for birds (RSK, 2019). The buildings may also be suitable for nesting birds. Further surveys for breeding birds were not considered necessary due to the proposed scheme works not being undertaken in habitat suitable for supporting Schedule 1 species.	Yes
Dormouse	The desk study did not contain any records of dormouse <i>Muscardinus avellanarius</i> within 1 km of the Site. The ASNW to the north of the Site provides suitable habitat for dormouse (RSK, 2019). RSK identified the reedbeds as suitable for supporting dormouse. RSK identified the hedgerows and woodland along the Neath Canal and River Neath as providing continuous connectivity from the ASNW to the north of the Site to the habitats on Site (RSK, 2019). AECOM undertook a dormouse HSA of the Site following a survey for another species and concluded that the ASNW alone is suitable for supporting dormouse; there are no other habitats on Site suitable for supporting dormouse. Additionally, from publicly available online aerial photography it can be seen that the ASNW is not connected to the Site – the B4242 is located between the ASNW and the wet woodland on Site, and linear features to the south of the Neath Canal are not connected to the ASNW to the north due to the presence of the Neath Canal and B4242. Dormouse are considered absent from the Site and as such further surveys are not considered necessary.	Yes

Species/ Species Group	Description	Section 7 Species
Badger	The desk study returned two records of badgers within 1 km of the Site; the most recent of which was dated from 2006. Areas of woodland within the Site offer suitable habitat for foraging badgers and sett creation. However, no direct evidence of badger activity was found during the field survey. Several mammal paths were noted entering/exiting the Neath Canal on the northern boundary of the site. No badger setts, either active or disused, were recorded during the field survey. (RSK, 2019). Badger is considered likely absent from the Site and are not considered any further in this report.	No
Water vole	While no records of water vole were returned during the desk study, the Neath Canal, wet ditches to the south of the northern section of the Site and reedbed on the Site provide suitable habitat for water vole (RSK, 2019). The watercourses within the survey area are surrounded by vegetated banks which are suitable habitat for water vole. However, no evidence of water vole was found during the survey. Water vole are considered to be absent from the Site and the survey area given that access was possible to the majority of the watercourse and no evidence of presence was recorded in the survey or preceding desk study. (AECOM, 2021f).	Yes
Otter	The desk study returned 67 records of otter within 1 km of the Site, the most recent from 2017. The closest record was from within 100 m of the Site (RSK, 2019). Within the Site, the Neath Canal is known to support otter (see SINC designation above) and the reedbeds are suitable for supporting otter. Outside of the Site boundary the River Neath and wet ditches are suitable for supporting otter. These habitats are suitable for supporting holts/couches, commuting and foraging (RSK, 2019). Evidence of otter was recorded during the survey within the survey area. An active otter holt was recorded on the bank of the River Neath between two boulders. This holt showed clear evidence of use with several otter footprints and a spraint at the entrance to the cavity between two boulders. A further three spraints were identified in proximity to the holt within the survey area. The River Neath within the survey area was identified as suitable for otter with good foraging and commuting potential. Fish were recorded during the survey. The habitat immediately adjacent to the river provided suitable areas for otter to "rest up" including trees, thick scrub and reeds. The Neath Canal within the survey area was identified as suitable for otter with good foraging and commuting potential. At the time of the survey no evidence of otter was found adjacent to the canal, but it is likely to be used for commuting and foraging otter. The surrounding reedbed and wet ditches also provide potential habitat good for use by otter. However, no evidence of this was recorded during the survey. Otter are present and active within the survey area and surrounds, and are likely using the area within the Site in conjunction with wider territories on the River Neath. The holt is subject to high levels of noise and visual (human presence) disturbance through the presence of anglers on the banks of the River Neath opposite the holt location, the farm land behind, the Neath Canal used for recreation and the A465 dual carriageway 100 m north. The level of activity outside the holt (spraints and footprints) was not at the level indicative of breeding use; this evidence is typically at much higher instances at a breeding holt due to ongoing heavy use than were observed at the time of survey. Therefore, the holt is unlikely to be used for breeding. (AECOM, 2021f).	Yes
Bats	The desk study returned records of at least four different species of bat within 1 km of the Site (RSK, 2019). The Site offers suitable foraging habitat for a variety of bat species in the form of reedbeds, running water and woodland. The majority of these habitats as well as the woodland adjacent to the access track provide suitable commuting habitat within the Site boundaries given their linear nature and are well connected to the surrounding landscape by the Neath Canal and River Neath. Given the connectivity to the surrounding landscape and the presence of suitable foraging habitats the Site is considered to be of Moderate suitability (RSK, 2019). Activity surveys for bats were not considered necessary due to the proposed scheme works not being undertaken in habitat suitable for supporting foraging and commuting bats. An assessment for roosting suitability is provided in Table 3.5.	Yes

Invasive Non-Native Species Subject to Legal Controls

The following INNS plant species, identified on Site, are listed on Schedule 9 of the Wildlife and Countryside Act 1981 making it an offence to cause the spread of these species in the wild.

A full survey for INNS was not conducted and it is highly likely that additional INNS are present in other locations on Site.

Table 3.4 Invasive Non Native Species Subject to Legal Controls

Species	Description
Japanese knotweed <i>Reynoutria japonica</i>	Main Site Several large stands of Japanese knotweed were identified on the banks of the Neath Canal during the Phase 1 survey (RSK, 2019) and during non-target surveys undertaken by AECOM in 2020. Access Track 2 x 2m mature stand with winter canes and new growth recorded at SN 80842 01408 on the edge of woodland. 3 x 2m stand recorded at SN 80802 01398 on the edge of woodland. 4 x 2m mature stand on riverbank recorded at SN 80619 01321 in an area of bramble scrub. (AECOM, 2020b).
Himalayan balsam <i>Impatiens glandulifera</i>	Access Track Seedlings recorded extensively within and surrounding the existing track, including in leaf litter. Evidence of mature growth from previous season. Very dense stands recorded near layby on entrance to A465. (AECOM, 2020b).

Bat Roost Assessment

Features suitable for supporting roosting bats were assessed during the Site visit undertaken by Middlemarch Environmental in 2019 (Middlemarch Environmental, 2019) and AECOM in 2020 and 2021 (AECOM, 2021b) and are listed in Table 3.5. The locations of suitable roost features are shown on Figure 3.

All buildings within the Site boundary were assessed by Middlemarch Environmental in October 2019 (Middlemarch Environmental, 2019) and AECOM in 2021 (AECOM, 2021b).

Table 3.5 Features Assessed as Having Suitability to Support Roosting Bats

Feature	Description	Bat Roost Suitability Category
Building 1	A temporary, metal container in good condition with no potential bat entrance points or roosting opportunities. There is evidence of old bird nests in the south east facing corners.	Negligible
Building 2	Identified in 2019 (Middlemarch Environmental, 2019) as a temporary, metal container in excellent condition immediately adjacent to Building 1 with no potential bat entrance points or roosting opportunities. Building was not present in 2021.	n/a
Building 3	A large, metal building with a pitched, corrugated metal roof. The interior of the building is also metal, in good condition and subject to high light levels. No potential roosting opportunities recorded.	Negligible
Building 4	A large, concrete structure with no roof; houses mine water treatment equipment. No suitable roost features identified.	Negligible
Building 5	A temporary, metal container in excellent condition with no potential bat entrance points or suitable roost features identified.	Negligible
Building 6	A concrete building with no roof and no potential roosting features.	Negligible
Building 7	Old metal structure in turning area on access track – no roof, no cavities.	Negligible
Tree 1	A sycamore (<i>Acer pseudoplatanus</i>) on the opposite side of the B4242 (Neath Road) to the western most corner of the Site, just within the woodland boundary. There is one knothole on the southwest face at approximately 10 m from the ground.	Low
Tree 2	An oak (<i>Quercus</i> sp.) on the opposite side of the B4242 (Neath Road) to the Site, just within the woodland boundary. There is a small woodpecker hole on the southeast face approximately 3 m from the ground.	Low
Tree 3	A dead silver birch (<i>Betula pendula</i>) on the opposite side of the B4242 (Neath Road) to the Site, just within the woodland boundary. T03 is adjacent to T04. There is a broken branch on the west face, with the potential for a cavity, at approximately 7 m from the ground. There is a dense covering of ivy, especially as the base, which may be obscuring additional cavities or form a suitable a feature itself.	Moderate
Tree 4	An oak tree on the opposite side of the B4242 (Neath Road) to the Site, just within the woodland boundary. T04 is adjacent to T03. There is a dense covering of ivy at the base that may be hiding cavities or be a feature itself.	Low
Tree 5	An oak tree on the opposite side of the B4242 (Neath Road) to the Site, just within the woodland boundary. At the base of the tree, under the roots, are rocks with crevices, but it is unclear whether the feature is deep enough so as to provide protection against predation or if fly-in access is possible due the location of the road and height of the feature. A small branch which may support a cavity is located on the northwest face approx. 5 m above the ground.	Low
Tree 6	An oak tree on the opposite side of the B4242 (Neath Road) to the Site, just within the woodland boundary. There is a missing branch and a small hole possibly leading to a cavity or crevice on the east face approximately 2 m from the ground.	Low
Tree 7	An oak tree on the opposite side of the B4242 (Neath Road) to the Site, just within the woodland boundary. There is a missing branch with hole on the south face that is creating a void/crevice. A pair of blue tits (<i>Cyanistes caeruleus</i>) were observed using the hole for nesting, as such, it is not likely to be in current use by roosting bats.	Low

Feature	Description	Bat Roost Suitability Category
Tree 8	An oak tree across the Neath Canal from the eastern most corner of the Site . There is one hole where a branch has been removed on the north side of the trunk 5 m from the ground. This hole may extend into a crevice and as such has been classified as Low precautionarily.	Low
Tree 9	A willow tree (<i>Salix</i> sp.) across the Neath Canal from the eastern most corner of the Site. There is a small stem with a downward facing hole approximately 3 m off the ground facing northwest. The hole is sheltered and may not accumulate water so it is possibly suitable for bats.	Low
Tree 10	An oak tree on south facing bank of Neath Canal. It has a large split on the north side of the trunk which likely leads into a cavity in the tree. This extends upwards from 1 m from the ground. There is also a knot hole 3 m from the ground on the north side with a gap under which may provide another entrance for bats.	Moderate
Tree 11	A downy birch (<i>Betula pubescens</i>) tree with two holes on the north side of trunk where branches have been removed 4 m from the ground. These holes extend into cavities in the tree and could provide shelter for several bats.	Moderate
Tree 12	An ash tree with a rotten branch 5 m from the ground. There are several plates of bark on the outside of this branch with the potential to support roosting bats, but the interior appears damp and perhaps too rotten. The Low classification is therefore precautionary.	Low
Tree 13	A birch (<i>Betula</i> sp.) tree with a split in the trunk less than 1 m from ground level. This extends upwards at least 10 cm but is likely to be too exposed to support roosting bats This has been classified as Low precautionarily.	Low
Tree 14	An oak tree with two splits in the bark on the north side which may provide space for roosting bats.	Low
Tree 15	A willow tree with a knot hole 2 m from the ground on the east side which likely extends into a crevice in the tree.	Low
Tree 16	A willow tree with a fallen branch at 3 m on the south side of the trunk. This is unlikely to extend into a cavity in the tree, but this could not be fully accessed due to the steepness of the bank and has therefore been classified precautionarily.	Low
Tree 17	An alder (<i>Alnus glutinosa</i>) tree with a knot hole 4 m from the ground on the north-west side. This may extend upwards into a crevice in the tree.	Low
Tree 18	This is a group of three alder trees adjacent to the reedbed with heavy ivy cover.	Low

4. Ecological Constraints and Potential Impacts

It is anticipated that all works will be undertaken on existing hard standing areas and within footprints of the existing buildings, with possibly the requirement to temporarily remove overhanging or edge vegetation to facilitate access.

The potential impacts of the proposed scheme on habitats and Protected Species are detailed below.

There are no detailed plans for the proposed scheme at this stage; however, an assessment using the summary of the proposed scheme below has been undertaken. Detailed plans will be produced once a contractor is instructed. Following detailed design, the impact assessment will be revisited, and this Ecological Constraints and Opportunities Report will be updated accordingly.

Designated Nation Conservation Sites

Local Nature Conservation Sites

Neath Canal SINC

The current plans show some tree removal within Neath Canal SINC.

There is potential for sediment runoff and/or pollution from oil or fuel generated during construction and operation to enter the Neath Canal SINC. This has the potential to degrade the aquatic habitat, damage or destroy terrestrial habitats adjacent to the canal, and injure or kill species supported by the canal.

Increases in hardstanding adjacent to the canal has the potential to generate greater volumes of surface water entering the canal, thereby changing the water levels in the canal; due to the small sizes of the hardstanding proposed by the scheme this is likely to be restricted to localised changes only.

Lighting may be required for some of the proposed scheme elements in the north of the Site during construction (for security, not night time working) and operation, and there is a potential for disturbance from lighting on species using the Neath Canal.

Neath Watercourses SINC

There is potential for sediment runoff and/or pollution from oil or fuel generated during construction and operation to enter the River Neath and Neath Canal. This has the potential to degrade the aquatic habitat, damage or destroy terrestrial habitats adjacent to the river, and injure or kill species supported by the canal.

Lighting may be required for some of the proposed scheme elements in the north of the Site during construction (for security, not night time working) and operation; this has the potential to cause lighting disturbance on species using the Neath Canal.

Lighting is not required during construction or operation as part of the pipeline installation or access track remedial works; there will be no impacts of lighting disturbance on species using the River Neath.

Impacts on the ditches to the south of the Neath Canal are not anticipated due to a lack of hydrological connectivity and the distance between the location of the proposed scheme works within the Site and the ditches.

Ancient Semi Natural Woodland SINC

Works within 15 m of the Ancient Semi Natural Woodland SINC has the potential to cause root damage which has the potential to injure or kill trees. The B4242 is approximate 15 m in width, no works are anticipated on the B4242, as such root damage is not anticipated.

Tall machinery moving or working in the vicinity of the SINC has the potential to cause direct damage to overhanging branches of trees rooted within the SINC.

Lighting may be required for some of the proposed scheme elements in the north of the Site during construction (for security, not night time working) and operation, and there is a potential for disturbance from lighting on species using the SINC.

Helen Sarn SINC

Due to the distance between the Site and Helen Sarn SINC and the nature of the scheme (no gaseous emissions or hydrological discharges to the SINC or habitats connected to the SINC), there will be no potential impacts on the SINC.

Habitats

Broadleaved Semi-Natural Woodland

Any loss of woodland (includes trees, and the scrub and ground flora under the trees) will constitute a net loss of Priority habitat.

It is not anticipated that the proposed scheme will require the permanent removal of woodland habitat in the north of the Site.

The works around the reedbed installing the pipeline may require a small amount of removal of vegetation from the edge of the woodland to facilitate access on the existing gravel footpath for the pipe installation. The removal will be temporary, and the habitats reinstated following completion of the works. Due to the likely small amount of temporary habitat removal the impact is considered to be negligible.

Any works within 15 m of retained woodland has the potential to damage or destroy the habitat through increased foot traffic, trampling and/or tracking over, or storage of materials, waste or Site compounds. Tall machinery moving or working in the vicinity of woodland has the potential to cause direct damage to trunks or branches of trees.

There is potential for sediment runoff and/or pollution from oil or fuel generated during construction and operation to enter woodland. This has the potential to damage or destroy the habitat and injure or kill species supported by the woodland.

Lighting may be required for some of the proposed scheme elements in the north of the Site during construction (for security, not night time working) and operation; this has the potential to cause lighting disturbance on species using the woodland.

Semi-Improved Neutral Grassland

Works are not anticipated in the area or vicinity of the semi-improved neutral grassland. There will be no impacts on this habitat as a result of the proposed scheme.

Species Poor Semi-Improved Grassland

Minor remedial works to the access track surface are likely to damage or destroy some of the species poor semi-improved grassland. This habitat consists of small sporadic areas and is of low ecological value. As such, the effect of any damage or loss is considered to be negligible.

Swamp

There will be no works in the swamp (reedbeds). Works adjacent to the swamp (reedbeds) have the potential to generate sediment runoff and/or pollution from oil or fuel generated during construction and operation that could enter the swamp. This has the potential to damage or destroy the habitat and injure or kill species supported by the swamp.

Running Water

The potential impacts on the Neath Canal, River Neath and nearby ditches have been assessed under the Designated Sites section.

Protected or Notable Species

Invertebrates

A loss of habitats on Site will not be at a level as to impact the local invertebrate population due to the abundance of similar habitats of equal or great value in the immediate vicinity.

There is potential for sediment runoff and/or pollution from oil or fuel generated during construction and operation to enter habitats suitable for supporting invertebrates. This has the potential to degrade the habitats and injure or kill species invertebrates.

Great Crested Newt

The A465 road presents a barrier to movement for great crested newt. The two waterbodies on Site (reedbed and pond) (and their associated terrestrial habitats suitable for supporting great crested newt) are separated by the A465.

Great crested newt surveys in 2020 (AECOM, 2021c and d) confirmed likely absence of these species from the reedbed and pond; as such, there are no impacts predicted on great crested newts as a result of the proposed scheme.

Common Toad

Any loss of vegetated habitats on Site will not be at a level as to impact the local common toad population due to the abundance of similar habitats of equal or great value in the immediate vicinity.

Any works in vegetated habitat has the potential to injure or kill a common toad through trampling and/or tracking over, storage of materials, waste or Site compounds, removal of vegetation, or pollution and/or runoff.

Reptiles

It is not anticipated that the proposed scheme will require the removal of any vegetation either side of the access track. There is the potential for injury or killing of reptiles should vehicles or people track over the retained habitat adjacent to the access track.

Given the proximity of the woodland to the reedbed it is considered that any woodland removal adjacent to the reedbed or tracking of vehicles or people over the woodland habitat has the potential to injure or kill grass snake.

There is potential for sediment runoff and/or pollution from oil or fuel generated during construction and operation to enter the habitats suitable for supporting reptiles. This has the potential to degrade the habitats and injure or kill reptiles.

Breeding Birds

Schedule 1 Species

The proposed scheme does not require the removal of habitats with the potential to support Schedule 1 breeding birds.

The reedbed has the potential to support breeding Cetti's warbler. Any Cetti's warbler nesting within 10 m of the proposed scheme construction works has the potential to be disturbed during works and abandon their nest. However, it is considered unlikely (but not impossible) for the species to nest in the reedbed within 10 m of the footpath surrounding the reedbed due to existing disturbance caused by recreational users.

Lighting is not required during construction or operation as part of the pipeline installation or access track remedial works. There will be no impacts of lighting disturbance on Schedule 1 birds.

Non-Schedule 1 Species

Any woodland, tree, scrub or building removal during breeding bird season (March to August inclusive) has the potential to cause damage or destruction of an active bird nest.

Lighting is not required during construction or operation as part of the pipeline installation or access track remedial works. Lighting may be required for some of the proposed scheme elements in the north of the Site during construction (for security, not night-time working) and operation, and there is a potential for impact from lighting disturbance on non-Schedule 1 birds.

Otter

The otter holt is considered to be used by non-breeding otter due to the existing levels of noise disturbance and visual disturbance from human presence.

The holt is located 31.42 m from the proposed scheme on the opposite riverbank. Research by Bureau Veritas has identified that most construction activities involving ground penetration or noise (i.e. excluding percussive activities such as impact piling) would not result in disturbance (i.e. noise levels above 50 dB (*Lutra lutra*)) if undertaken over 30 m from their resting locations (holts and couches).

Therefore, given the existing levels of noise disturbance and visual disturbance from human presence the construction works are unlikely to cause disturbance to otters using the holt outside of peak use (i.e. outside of the period one hour either side of dusk and dawn).

Otter activity is unknown in one area of the River Neath due to dense vegetation preventing access to and visual observation of the riverbanks. At its closest point the unsurveyed stretch of river is 35 m from the access track. Works on the access track will be limited to infilling of potholes with gravel or asphalt and use of a whacker plate to flatten. Works will be undertaken during daylight hours, avoiding one hour either side of dusk and dawn. Existing noise levels generated by the A465 that, if present, otter in this area would be habituated to. The works are unlikely to generate noise that would be above background levels over 35 m. The dense vegetation between the access track and river forms a visual barrier. Therefore, there are no potential impacts on otter as a result of access track improvement works.

Lighting is not required during construction or operation in the as part of the pipeline installation or access track improvement works. There will be no impacts of lighting disturbance on otter.

Please see the Otter and Water Vole Survey Report for further information (AECOM, 2021f).

Water Vole

Water vole are considered absent from the Site and the immediate surrounds. There will be no impacts on water vole.

Roosting Bats

No buildings are suitable for supporting roosting bats within the Site.

There are 20 trees with suitability to support roosting bats within the Site – three Moderate and 17 Low. All but three are located in the woodland in the northern section of the Site, three are located in the woodland adjacent to the north of the reedbed.

It is uncertain whether trees with limbs overhanging the B4242 may require felling or limb removal, to allow for construction traffic and machinery. There is the potential for damage or destruction of a bat roost or disturbance, injury or killing of a roosting bat during any tree removal or tree limb removal in the woodland to the north of the B4242.

Lighting is not required during construction or operation as part of the pipeline installation or access track remedial works; there will be no impacts of lighting disturbance on roosting bats in this area. Lighting may be required for some of the proposed scheme elements in the north of the Site during construction (for security, not night-time working) and operation, and there is a potential for disturbance from lighting on roosting bats in this area.

Please see the Preliminary Bat Roost Assessment and Ground-level Tree Assessment Report for further information (AECOM, 2021b).

Foraging and Commuting Bats

There will be severance of suitable foraging or commuting habitats for bats as a result of the proposed scheme. The removal of the trees from the Neath Canal SINC may reduce the value of bat commuting habitat along the Neath Canal.

Lighting is not required during construction or operation as part of the pipeline installation or access track remedial works; there will be no impacts of lighting disturbance on foraging or commuting bats in this area. Lighting may be required for some of the proposed scheme elements in the north of the Site during construction (for security, not night-time working) and operation, and there is a potential for disturbance from lighting on foraging or commuting bats in this area.

Invasive Non-Native Species

Japanese knotweed and Himalayan balsam are known to be present on Site. A full survey for the species has not been undertaken and as such there are additional areas where INNS could be present as well as additional species of INNS. During construction works and operational works there is the potential to cause the spread of INNS around and off Site through groundbreaking works, people and vehicles tracking over and near to infestations, and clearance of vegetation.

5. Recommendations

There are no detailed plans for the proposed scheme at this stage. The detailed design may change the recommended mitigation.

If the following mitigation measures are implemented then there it is considered there will be no adverse impacts on biodiversity in the long term, assuming the detailed design does not require a change to the mitigation measures.

Recommendations for Mitigation

The mitigation hierarchy has been considered and implemented when designing the proposed scheme. The ecological constraints at the Site have been considered at an early stage and much of the mitigation has been included by design. A summary is provided below.

Mitigation Hierarchy:

1. Avoidance – Seek options that avoid harm to ecological features (for example, by locating on an alternative site or use of technology, or timing to eliminate impact);
2. Mitigation – Negative effects should be avoided or minimised through mitigation measures, either through the design of the project or subsequent measures that can be guaranteed – for example, through a condition or planning obligation;
3. Compensation – Used as last resort to offset impacts; and,
4. Enhancement – Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation.

Designated Sites

It is recommended that the trees proposed for removal within Neath Canal SINC are retained and afforded an appropriate buffer in line with BS 5837:201. If removal is unavoidable, permission will need to be sought from the County Ecologist, with a robust justification provided as to why the trees cannot be retained along with a detailed mitigation plan to compensate for the loss.

Pollution Control During Construction

Pollution control measures are required; Guidance for Pollution Prevention (GPPs) and where these have not been replaced the Environment Agencies Pollution Prevention Guidelines (PPGs) will be implemented in order to avoid and minimise adverse effects of pollution and runoff on the pond and surrounding environment. This will be implemented via a Site Construction Management Plan (CMP).

As of the 17 December 2015 all Pollution Prevention Guidance Documents published by the UK environment agencies were withdrawn. Although they provide useful advice on the management of construction to avoid, minimise and reduce environmental impacts, they should not be relied upon to provide accurate details of the current legal and regulatory requirements and processes. They are referred to in this document alongside other current guidance and in the context of scheme and site-specific mitigation measures.

Measures will be employed to ensure that dust is minimised during the construction works. Measures will be in place in order to deal with pollution incidents efficiently.

In order to avoid potential pollution effects to the site and surrounding habitats during construction, all refuelling and servicing of vehicles will be carried out within a designated area with an impermeable base. To prevent spillages, refuelling will be carried out by pumping through a trigger delivery nozzle. Fuel, oil and other potential contaminants will be stored within bunded tanks to 110% of the volume stored and only the minimum quantity required will be stored on site. The designated area will be maintained in a secure and clean manner. An adequate quantity of oil absorbent material will be stored on site and spillages cleared up immediately. All construction equipment will be maintained in good working order and checked regularly for spillages/leaks.

Concrete will either be imported from a local batching plant or a concrete batching plant will be established on Site. The final choice will depend on the chosen contractor, the availability of local supply and the time of year. If concrete is to be batched on site, appropriate containment and clean-up measures and procedures will be put in place that are in accordance with industry standards. Particular care will be taken when pouring concrete at foundations, following specific method statements to ensure there is no spillage risk or contamination of soils and vegetation.

Control of Surface Water during Operation

The areas of new hard standing on Site must be designed using SUDS to control the rate and quality of surface water runoff. Consideration should be given for a soakaway system to capture and treat surface water on Site without the need to discharge to watercourses.

Lighting Mitigation – Operation and Construction

Once developed, the lighting design should be reviewed by a suitably experienced ecologist. Through consultation with the lighting engineer and following the recommendations below, the light spill can be controlled to minimise impacts on habitats and wildlife (including Protected and Priority Species). There are British Standards that relate to various components of lighting and there are also guidelines that relate to crime prevention, prevention of vehicular accidents and amenity use (ILP, 2018). There is no legislation requiring an area or road to be lit (ILP, 2018). However, there is legislation requiring bats are protected against disturbance, which includes light disturbance.

The following recommendations in line with best practice guidance should be incorporated into any new lighting scheme at the Site and also for security lighting in place during construction:

- In the first instance, external lighting must be designed to avoid light spill onto vegetated and aquatic habitats, and trees with suitability to support roosting bats, and avoid spilling beyond the Site boundary; and,
- Light spill onto sensitive areas should be limited to levels of 0.5 lux or less.

Suggestions for mitigating external lighting and achieving the lighting recommendations above are outlined in the ILP Bats and Lighting Guidance Note (ILP, 2018) and best practice guidance (BCT 2014 and Gunnell et. al., 2012). These include:

- Only light areas which need to be lit, and use the minimal level of lighting required to comply with guidance such as Institute of Lighting Engineers Guidance Notes for the Reduction of Obtrusive Light (2005);
- Avoid aesthetic lighting which has no other function, and up lighting of trees and buildings;
- Use the lowest level of illumination required for purpose;
- Where lighting is proposed, use lighting modelling programs to indicate where the light spill will occur;
- LED luminaires should be used where possible due to their sharp cut off, low intensity, good colour rendition and dimming capability;
- A warm white spectrum (ideally <2700Kelvin) should be adopted to reduce blue light component; Avoid neutral white, cool white and blue spectrums of light;
- All luminaires should lack or have negligible UV elements. Avoid white and blue spectrums of light;
- Eliminate bare lamps and any upward pointing light;
- Luminaires should be mounted on the horizontal, i.e. no upward tilt. The spread of light should be at or near the horizontal. Flat cut off lanterns are best. Only luminaires with an upward light ratio of 0% and with good optical control should be used – See ILP Guidance for the Reduction of Obtrusive Light;
- Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012);
- Where lighting columns are in proximity (adjacent to) vegetated and aquatic habitats and trees and bridge with suitability to support roosting bats and where light spill onto these features is predicted by the lighting models, the luminaires must be moved or fitted with light control systems to reduce light spill onto these features;
- Any external security lighting should be set to motion sensors and short (1 min) timers;

- Limit the times that the lights are on to provide some dark periods; and/or dimming of lights during certain periods; the proposed new lighting could be turned off or dimmed by 75% from 22:00 until 06:00 daily; Avoid using reflective surfaces under lights; and,
- Do not use a lamp greater than 150W for security lighting.

This will maintain the value of the Site and adjacent habitats for a number of other nocturnal species.

Habitat Mitigation

Where possible, habitats should be retained to provide continued connectivity to the wider landscape.

Retained habitats should be protected during construction to prevent damage. Retained habitats should be fenced off to avoid and reduce the impacts of direct damage or trampling and root compaction during construction by vehicles and people. Tracking of vehicles over retained habitats should be avoided. Where possible, vehicles and storage areas should be kept on existing hardstanding.

Works within root protection zones will employ special measures to avoid damage, for example, through the use of bog mats to limit the impacts of soil compaction.

Details of habitat protection measures will be included in a CMP.

Loss of Priority Habitat

The woodland on Site is Priority habitat and, as such, removal of the woodland (includes trees and the scrub and ground flora under the trees) should be avoided in the first instance. Where removal cannot be avoided then the loss of Priority Habitats must be compensated for. Preference is for on-Site compensation; however, this is unlikely to be achievable on this Site and as such an off-Site area must be identified that:

1. is not a Priority habitat (e.g. amenity/improved/semi-improved poor grassland, hard standing, or similar negligible value habitat);
2. is suitable for creation of the habitat which it is replacing (e.g. if wet woodland must be an area that can support a wet habitat, i.e. a low water table);
3. is able to be connected to existing areas of similar suitable habitat (i.e. is not an 'island' of vegetation surrounded by habitat with no ecological value); and,
4. can be managed in the long-term to maintain and enhance biodiversity.

It is recommended that the County Ecologist is consulted to discuss potential options for mitigation for the loss of Priority Habitat should this be required. A Phase 2 floristic survey (such as National Vegetation Classification) of the Priority woodland habitat to be removed should be undertaken to inform the species composition at the off-Site compensation area.

Species Mitigation

Bats (Roosting)

Buildings

The refurbished mine water treatment facility is expected to be within the same footprint of the existing facility. As the buildings were recorded to have Negligible suitability for roosting bats, removal of buildings will not impact roosting bats.

Trees

There is the potential that one lane of the B4242 will require closure during the works to allow access for construction vehicles and continued use of the road. To accommodate construction traffic, there is a potential requirement for removal of tree limbs overhanging the B4242. Seven trees adjacent to the B4242 road were recorded to have potential suitability for roosting bats; six were classified as Low suitability and one as Moderate suitability. As trees were only viewed from the southern side across the road, there is potential that additional roosting features were unrecorded on the northern face.

There is the potential for damage or destruction of a bat roost or disturbance, injury or killing of a roosting bat during any tree removal or tree limb removal in the woodland to the north of the B4242.

Should the arboricultural survey identify trees with suitability to support roosting bats that require total or limb removal for health and safety reasons then further survey of the trees will be required to determine usage by bats. If bats are confirmed as present a European Protected Species Licence from NRW will be required prior to removal, and compensatory roosts will be required as part of the mitigation.

Any temporary lighting during construction or new lighting during operation has the potential to cause disturbance to roosting bats in the trees to the north of the B4242, and trees adjacent to the Neath Canal, and foraging and commuting bats along the Neath Canal and adjacent woodland habitats.

Please see the Preliminary Bat Roost Assessment and Ground-level Tree Assessment Report for further information (AECOM, 2021b).

Reptiles and Common Toad

A Reptile Method Statement (AECOM, 2021e) has been produced detailing the precautionary methods to follow to minimise any impacts upon reptiles. The methods focus on the use of habitat manipulation to encourage reptiles safely out of the development footprint and into retained habitats adjacent to the Site. These working methods will also mitigate impacts on common toad.

Schedule 1 Breeding Birds

Pre-construction check for breeding Cetti's warbler should be undertaken prior to works in the months April – July (when Cetti's warbler are most likely to breed). Should any breeding territories (determined by the presence of singing males or alarm calling adults) be identified during the pre-construction surveys then an appropriate buffer where works will be restricted will be implemented by the supervising ecologist.

Non-Schedule 1 Breeding Birds

To protect breeding birds all demolition works on all buildings and clearance of any woodland, scrub or tree vegetation should be undertaken outside of the breeding bird season (works completed between 1 September and end February).

If works must be undertaken during the breeding bird season and cannot be avoided, an ecologist must be consulted, a nesting bird check must be undertaken a maximum of 48 hrs prior to works commencing. If breeding birds are present, then a species-appropriate buffer must be applied around the nest site and left undisturbed until chicks have fledged. This can take up to eight weeks.

Otter

Two weeks prior to construction commencing a pre-construction check should be undertaken to confirm that the non-breeding status of the holt has not changed and that no new otter holts/couches have arisen. It is considered extremely unlikely that it will change given the current level of disturbance in the vicinity of the holt.

Works on the access track must not be undertaken during the period one hour either side of dusk and dawn.

Works including access to the pipeline installation must not be undertaken during the period one hour either side of dusk and dawn.

Water Vole

Two weeks prior to construction commencing a pre-construction check should be undertaken to check for any new water vole burrows that may have been created since the last survey.

Invasive Non-Native Species

An invasive non-native species management plan must be produced and implemented to control the spread of invasive non-native species off-Site during construction and any operational activities. It is recommended that the management plan is implemented prior to construction commencing and forms part of the CMP.

At a minimum it should include:

- up to date survey data for species and locations;

- biosecurity measures to be implemented during access to the Site (during construction and operation);
- recommendations for control and removal if required during construction; and,
- ongoing long-term control actions to control extent on Site and prevent spread off Site.

Indicative Recommendations for Enhancement

The National Planning Policy Framework (February 2019) and The Environment (Wales) Act 2016, requires that developments enhance biodiversity, as well as just mitigating impacts.

There are no detailed plans for the proposed scheme at this stage; however, some indicative recommendations have been made to benefit biodiversity on Site. These can be refined, amended or added to once the detailed design has been developed.

Habitats

To enhance the Site for local wildlife such as invertebrates, birds, bats, amphibians, reptiles and mammals landscaping could include:

- Native species of trees and grassland seed mixes of local provenance;
- Diverse seed mixes; and,
- Management to encourage a diverse flora.

The use of fertiliser should be avoided. If necessary, only non-residual herbicides should be used.

A habitat management plan should be developed and implemented to help maintain the habitats in good condition during operation.

Species

Bird Boxes

Bird boxes could be installed on trees along the boundaries or included within the new building design as an additional biodiversity enhancement measure.

A range of boxes for passerine species would be suitable to use on trees including small boxes, large boxes, boxes with hole entrances or open fronted boxes.

Bird boxes should be appropriately located at least 4 m above ground level, and out of reach of predators. Bird boxes should not be positioned to face south in order to avoid hot sun.

Bird boxes are not currently shown in the landscape plan.

Bat Roost Boxes

Bat boxes could be included in the development design.

Roost space could be provided by fitting pre-made bat boxes to the external face of the new buildings or on trees. The choice of bat box should be suitable for crevice dwelling species.

All new roost provision should be situated away from light spill, with clear flight paths towards corridors and foraging suitable to be used by bats. Advice from a suitable qualified ecologist should be sought when drawing up the specifications for bat roosts and locations. Bat boxes should be positioned at least 4 m above ground level to protect any resident bats from disturbance or predation by domestic pets. Each box can be positioned with a different orientation between south east and south west to provide a range of microclimate options.

Dormouse Nest Boxes

A series of dormouse nest boxes could be installed in the suitable Ancient Semi Natural Woodland to the north of the B4242, which provides suitable habitat for this species. This would require consultation with a suitably

experienced ecologist and permission from the landowner. Engaging with the local dormouse / mammal group to arrange long-term monitoring of the boxes would be an added benefit.

Invasive Non-Native Species Control

A long-term management plan for the control and removal of the invasive non-native species from Site would benefit floristic diversity and a number of species.

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Figure 1: Site Location

Figure 2: Site Boundary, RSK Survey Area and Phase 1 Habitat Map

Figure 3: Ecological Constraints Plan

Appendix A Wildlife Legislation and Local Planning Policy

Legislation – Habitats

A variety of sites are designated in the UK, under Conventions, Directives and Regulations for their nature conservation importance and interest. The general aim of these designations is to conserve and protect ecological resources, as well as raising awareness and understanding. Other non-statutory sites are afforded some protection through local plans. The following outlines the most common statutory and non-statutory designations:

Designation	Brief Description
Special Areas of Conservation (SAC)	SACs are sites selected to conserve the natural habitat types and species of wild flora and fauna as stated in the Conservation of Habitats and Species Regulations. They are the best areas to represent the range and variety of habitats and species. These sites in the UK no longer form part of the EU's Natura 2000 ecological network. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 have created a national site network on land and at sea, including both the inshore and offshore marine areas in the UK
Special Protection Area (SPA)	SPAs are strictly protected sites for the most important habitats for rare and migratory birds within the EU.
Ramsar Sites	Ramsar Sites are wetlands of international importance. Ramsar Sites are protected, through the planning system, under the Wildlife and Countryside Act 1981 (as amended), and the Countryside and Rights of Way Act 2000 through their notification as SSSIs and through other regulatory systems addressing water, soil and air quality.
National Nature Reserve (NNR)	NNRs are nationally important areas of wildlife habitat and geological formations in Britain. NNRs are designated and protected under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981 (as amended). They receive additional protection under the Countryside and Rights of Way Act 2000. They are managed for the benefit of nature conservation.
Site of Special Scientific Interest (SSSI)	A SSSI is a site of at least national importance for nature conservation designated under the Wildlife and Countryside Act 1981 (as amended) due to its special interest in terms of flora, fauna or geological or physiographical features. Protection afforded to SSSI's was strengthened by the Countryside and Rights of Way Act 2000. It should be noted that under the Countryside and Rights of Way Act 2000 owners of SSSIs must give Natural Resources Wales (NRW) written notice before they begin any of the operations listed in the notification as likely to damage the special interest features, or if they allow others to carry out these activities. None of the listed operations can be carried out without NRW's consent.
County Wildlife Site (Local site)	A County Wildlife Site is a non-statutory site designated by a local authority as being of local nature conservation value.
Ancient Woodland Inventory	Ancient Woodland is a term applied to woodlands which have existed from at least Medieval times to the present without ever having been cleared for uses other than wood or timber production. A convenient date used to separate ancient and secondary woodland is about the year 1600. In special circumstances semi-natural woods of post-1600 but pre-1900 origin are also included.
Wildlife Trust Reserve	These non-statutory sites are managed by the Wildlife Trusts with the purpose of conserving wildlife.

Legislation – Protected Species

In addition to habitats, a number of species have been afforded protection through international/European and national law. Other species are considered to contribute to our 'quality of life'. Although these species do not benefit from legal protection, they can be material considerations in the planning process. The table below outlines the key forms of protection afforded to species. The Countryside and Rights of Way Act, the Wildlife and Countryside Act 1981 (as amended), The Protection of Badgers Act 1992 and the Conservation of Habitats and Species Regulations 2017 (as amended) are the main legislative framework for protection of wild animals in the UK. Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) covers birds, Schedule 5 covers other animals and Schedule 8 covers plants.

Species including bats, otters and great crested newts are listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2017. Badgers are protected under their own Act: The Protection of Badgers Act 1992. Activities affecting protected species must usually be conducted under licence obtained from the appropriate body (in Wales, this is Natural Resources Wales).

Developers must be able to show that all reasonable measures have been taken to ensure that protected species are not subject to disturbance. The habitats which regularly support the Conservation of Habitats and Species Regulations 2017 Schedule 2 species, the Wildlife and Countryside Act 1981 (as amended) Schedule 1 species and some Wildlife and Countryside Act 1981 (as amended) Schedule 5 species are also protected from disturbance and destruction. Again, all reasonable precautions should be taken to ensure that this does not happen. The Countryside and Rights of Way Act 2000 has strengthened enforcement powers and introduced a new offence of "reckless disturbance" that applies to both protected sites and species. The table below provides a summary of the relevant legislation with regards to protected and priority species.

Designation	Brief Description
The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019	The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 protects habitat sites supporting vulnerable and protected species. The need for an assessment of impacts on sites within the national site network, including SPAs and SACs); and provides a framework for the protection, management and control of all species of naturally occurring wild birds.
Wildlife and Countryside Act (1981) (as amended)	The Wildlife and Countryside Act 1981 (as amended) is the principal mechanism for the legislative protection of wildlife in Great Britain. This legislation is the means by which the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and (partially) the Birds Directive and the Habitats Directive are implemented in the UK. The Countryside and Rights of Way Act 2000 has strengthened this legal protection (see below). A small number of plant species are listed under Schedule 9 of the Wildlife and Countryside Act 1981, as amended, which includes species such as Japanese knotweed (<i>Reynoutria japonica</i>), Himalayan balsam (<i>Impatiens glandulifera</i>), montbretia (<i>Crocsmia x crocosmiiflora</i>), giant hogweed (<i>Heracleum mantegazzianum</i>) and some cotoneaster species (<i>Cotoneaster</i> sp.). It is illegal to plant or to cause these plants to grow in the wild, and legal disposal methods for vegetation and soil subject to disturbance or clearance from a site must be used.
Convention on Biological Diversity and the Countryside and Rights of Way Act 2000	The Countryside and Rights of Way Act 2000 provides a statutory framework for biodiversity conservation. The Act places a duty on Government Departments and the National Assembly for Wales to have regard for the conservation of biodiversity and maintain lists of species and habitats for which conservation steps should be taken or promoted, in accordance with the Convention on Biological Diversity. Schedule 9 of the Act amends SSSI provisions of the Wildlife and Countryside Act 1981, including provisions to change SSSIs and providing increased powers for their protection and management. The provisions extend powers for entering into management agreements; place a duty on public bodies to further the conservation and enhancement of SSSIs; increases penalties on conviction where the provisions are breached; and introduce a new offence whereby third parties can be convicted for damaging SSSIs. Schedule 12 of the Act amends the species provisions of the Wildlife and Countryside Act 1981, strengthening the legal protection for threatened species. The provisions make certain offences 'arrestable' and create a new offence of reckless disturbance. The UK Biodiversity Action Plan (BAP) was published in 1994, and was the UK Government's response to the Convention on Biological Diversity (CBD), which the UK signed up to in 1992.

Designation	Brief Description
	It provides the framework for fulfilling the UK's responsibilities towards the Convention on Biological Diversity. Conservation of biodiversity (the variety of life on earth) is an essential element of sustainable development.
Environment (Wales) Act 2016	The Environment (Wales) Act puts in place the legislation needed to plan and manage Wales' natural resources in a more proactive, sustainable and joined-up way. Part 1 relates to the sustainable management of natural resources. This ensures that the way in which the use of and the impacts on natural resources do not result in long term decline. The aim is to sustainably manage natural resources in a way and rate that meets the needs of present and current generations without compromising the needs of future generations. The Act also contains at section 7, a duty for the Welsh Ministers prepare and publish a list of the living organisms and types of habitat which in their opinion are of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales. This section replaces the duty in section 42 of the NERC Act 2006.
Protection of Badgers Act 1992	The Protection of Badgers Act 1992 makes it an offence to wilfully take, kill, injure or ill-treat a badger, possess a dead badger or any part of a badger. Sett interference includes damaging or destroying a sett, obstructing access to a sett, and disturbing a badger whilst it is occupying a sett. The Act defines a badger sett as 'any structure or place, which displays signs indicating the current use by a badger' and Natural England takes this definition to include seasonally used setts. Work that may disturb badgers or their setts is illegal without a development licence from the relevant statutory body (in this case Natural Resources Wales).
The Hedgerow Regulations 1997	The Hedgerow Regulations (1997) make provision for the protection of important hedgerows in England and Wales. The regulations affect hedgerows which are 20m or more in length, or connected at both ends to another hedgerow of any length. They relate to hedgerows which are on, or adjoining land used for the following purposes: agriculture or forestry; the breeding or keeping of horses, ponies or donkeys; common land; village greens; and SSSIs (They do not include hedges that are attached to, or marking the boundaries of a private house. It is an offence to intentionally or recklessly remove or cause or permit another person to remove a hedgerow or intentionally or recklessly remove, or cause or permit another person to remove, a hedgerow which is the subject of a hedgerow retention notice.

Local Planning Policy

The table below provides a summary of relevant local planning policies found in the Neath Port Talbot County Borough Council Local Development Plan 2011 – 2026 (adopted January 2016). For the precise wording of each specific policy please refer back to the source document (NPTCBC, 2016).

Planning Policy	Purpose / Relevant Sections
SP1 Climate Change	Likely increased flood risk will be taken into account and addressed by ensuring that there is greater resilience by avoiding development on land that is at risk from flooding in the first instance in accordance with the sequential approach set out in national guidance or in locations that could increase the risk of flooding elsewhere. The fragmentation of habitats will be minimised and opportunities made for habitat and species change and migration where possible.
SC1 Settlement Limits	Development within settlement limits that is proportionate in scale and form to the role and function of the settlement as set out in the Settlement Hierarchy will be acceptable in principle.
SC 2 Protection of Existing Community Facilities	Any proposals which would result in the loss of an important existing community facility will only be permitted where it can be demonstrated that: 1. The facility is surplus to requirements; or 2. The existing use is no longer viable.
SP14 The Countryside and the Undeveloped Coast	The countryside and undeveloped coast, including landscapes, seascapes and agricultural land, will be protected and where feasible enhanced through the following measures: 1. The protection of the open countryside through the control of inappropriate development outside settlement limits; 2. The protection of the undeveloped coast through the control of inappropriate development;

Planning Policy

Purpose / Relevant Sections

	3. The designation and protection of Special Landscape Areas; 4. The designation and protection of Green Wedges.
SP15 Biodiversity and Geodiversity	Important habitats, species and sites of geological interest will be protected, conserved, enhanced and managed through the following measures: 1. The identification of the following Internationally and Nationally designated sites within the County Borough to enable their protection: (a) Special Areas of Conservation (SACs) and Ramsar Sites; (b) Sites of Special Scientific Interest (SSSIs); (c) National Nature Reserves (NNRs). 2. The identification and protection of sites of regional and local importance; 3. The protection of important natural heritage features.
EN6 Important Biodiversity and Geodiversity Sites	Development proposals that would affect Regionally Important Geodiversity Sites (RIGS), Local Nature Reserves (LNRs), Sites of Interest for Nature Conservation (SINCs), sites meeting SINC criteria or sites supporting Local Biodiversity Action Plan (LBAP) or S42 habitats or species will only be permitted where: 1. They conserve and where possible enhance the natural heritage importance of the site; or 2. The development could not reasonably be located elsewhere, and the benefits of the development outweigh the natural heritage importance of the site. Mitigation and/or compensation measures will need to be agreed where adverse effects are unavoidable.
EN7 Important Natural Features	Development proposals that would adversely affect ecologically or visually important natural features such as trees, woodlands, hedgerows / field boundaries, watercourses or ponds will only be permitted where: 1. Full account has been taken of the relevant features in the design of the development, with measures put in place to ensure that they are retained and protected wherever possible; or 2. The biodiversity value and role of the relevant feature has been taken into account and where removal is unavoidable, mitigation measures are agreed.
SP16 Environmental Protection	Air, water and ground quality and the environment generally will be protected and where feasible improved through the following measures: 1. Ensuring that proposals have no significant adverse effects on water, ground or air quality and do not significantly increase pollution levels; 2. Giving preference to the development of brownfield sites over greenfield sites where appropriate and deliverable; 3. Ensuring that developments do not increase the number of people exposed to significant levels of pollution.
EN8 Pollution and Land Stability	Proposals which would be likely to have an unacceptable adverse effect on health, biodiversity and/or local amenity or would expose people to unacceptable risk due to the following will not be permitted: • Air pollution; • Noise pollution; • Light pollution; • Contamination; • Land instability; • Water (including groundwater) pollution. Proposals which would create new problems or exacerbate existing problems detailed above will not be acceptable unless mitigation measures are included to reduce the risk of harm to public health, biodiversity and/or local amenity to an acceptable level.
W3 Waste Management in New Development	Proposals for new built development will need to demonstrate that provision is made for the design, layout, storage and management of the waste generated by the development both during the construction phase and occupation. The following proposals will be required to produce Site Waste Management Plans: (a) Residential development for 50 or more dwellings; (b) Industrial or commercial development that would generate in excess of 1,000 tonnes of waste per annum; (c) Development that would generate hazardous waste.

Appendix B Ecological Reports

- RSK (2019). Ynysarwed, Neath Preliminary Ecological Appraisal. January 2019.
- AECOM (2021a) Ynysarwed Mine Water Treatment Works Access Track Ecological File Note. April 2021.
- AECOM (2021b) Ynysarwed Mine Water Treatment Scheme Preliminary Bat Roost Assessment and Ground-level Tree Assessment. April 2021.
- AECOM (2021c) Ynysarwed Mine Water Treatment Works Reedbed GCN eDNA & Manual Survey File Note. April 2021.
- AECOM (2021d) Ynysarwed Mine Water Treatment Works Pond GCN eDNA & Manual Survey File Note. April 2021.
- AECOM (2021e) Ynysarwed Mine Water Treatment Scheme Reptile Mitigation Strategy. April 2021.
- AECOM (2021f) Ynysarwed Mine Water Treatment Scheme Otter and Water Vole Survey Report. April 2021.

