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E - Preliminary Ecological Appraisal Report

REDSTART

GOAT MILL ROAD ENTERPRISE PARK
RIBA STAGE 2

PRELIMINARY ECOLOGICAL APPRAISAL (PEA) REPORT

APRIL 2024



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Goat Mill Road Enterprise Park, RIBA Stage 2 Preliminary Ecological Appraisal (PEA)

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Appendix B - Summary of Ecological Desk Study Data

Appendix C - Botanical List

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Non-Technical Summary

Site Location	Site Name: Goat Mill Road Enterprise Park. Central Grid Reference (CGR): S0 0617706853.
Proposed Development	Business Enterprise Park.
Purpose of survey/s	To identify any ecological constraints associated with the proposed development.
Dates of survey and names of surveyors	Extended Phase 1 habitat survey – 28 February 2024 – Trevor Fletcher (Senior Ecologist) and Tara Okon (Ecologist).
Overview of Results	• There were two Sites of Interest for Nature Conservation (SINCs) within 1km of the Site and one B-line encompassing the Site. • Phase 1 habitats included plantation woodland, continuous/ scattered scrub, scattered trees, semi-improved acid grassland, semi-improved neutral grassland, poor semi-improved grassland, semi-improved calcareous grassland, marsh/marshy grassland, standing water, running water, bare ground and hard standing. • Priority habitat open mosaic habitats on previously developed land was present on Site. • The Site was suitable for several priority and protected species including bats, great crested newt, birds, badger, small mammals, common reptiles, common amphibians and invertebrates. • Invasive non-native plant species Japanese knotweed and cotoneaster species were present on Site.
Recommendations for further survey	• Habitat quality and condition survey. • Bat tree inspection (If required-dependent on extent of vegetation clearance). • Emergence survey of culvert (if required- dependent on extent of vegetation clearance). • Night-time Bat walkover surveys. • Static bat detector surveys. • Great crested newt Habitat Suitability Index (HSI) survey. • Breeding bird survey. • Wintering bird survey. • Reptile survey.
Further report	An Ecological Assessment report based on results of the further surveys.
Mitigation	Ecological Method statement/ Construction and Ecological Management Plan (CEMP) - overarching document to include mitigation measures.
Enhancements	Landscape and Environmental Masterplan - to detail enhancement opportunities for the Site.

1. Introduction

Redstart was commissioned by Merthyr Tydfil County Borough Council (MTCBC) to carry out a Preliminary Ecological Appraisal (PEA)of an area of land adjacent to Goat Mill Road, Merthyr Tydfil (approximate central grid reference (CGR): SO 06177 06853).

The brief of the PEA commission was to:

- Provide a baseline of the ecological conditions at the site and surrounding study area with particular reference to whether legally protected sites and/or notable, Protected or Priority species or habitats are present or likely to be present.
- Provide recommendations to enable compliance with relevant nature conservation legislation and planning policy.
- If necessary, to identify the need for avoidance, mitigation, compensation or enhancement measures and/or further ecological surveys.

This report includes details of the survey methodologies, results and discussion and contains recommendations for further survey/mitigation where appropriate.

The area of proposed works is referred to as the ‘Site’, the wider area covered by the ecological survey (a 50m buffer around the Site) is the ‘Survey Area’.

The Site and Survey Area are shown on Figure 1.

1.1 Site Description

The Site is located in Pen-y-Darren, east of Merthyr Tydfil and is bound to the east by the A4060 and to the west and north by the A4102 Goat Mill Road which links to residential and industrial areas. Land to the east of the A4060 comprises open moorland and opencast mine workings.

The Site comprises an area of reclaimed land, formerly the location of Dowlais Great Tip which was associated with Dowlais ironworks. The Site is surrounded by plantation woodland with the central area comprising sparsely vegetated grassland with patches of bare ground and scattered trees.(. There are engineered watercourses within the Site.

The Site is frequently used by recreational walkers/ dog walkers and does not appear to be under any current management.

Figure 1: The Site outlined in red, and Survey Area highlighted in yellow. Adapted from Google Earth (Google Earth, 2024). Not to scale.



1.2 Proposed Works

This PEA has been completed in advance of enabling works on the Site, which will include vegetation clearance and ground investigation works. The vision for the Site is the development of an Enterprise Park, comprising mixed use commercial and industrial activities, with individual plots of land within the Site sold to developers by MTCBC.

1.3 Planning Policy and Legislation

The appraisal has been compiled with reference to the relevant nature conservation legislation, planning policy and the UK Biodiversity Framework from which the protection of sites, habitats and species is derived in Wales, as detailed in Appendix A. The context and applicability of each item is explained, as appropriate, in the relevant sections of the report and additional details are presented in Appendix A.

2. Methodology

2.1 Overview

This report has been prepared in accordance with best practice guidance as outlined in the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017).

This PEA is based on the following data sources:

- An ecological desk study;
- An Extended Phase 1 habitat survey;
- A daytime bat walkover; and
- A protected and/or notable species assessment.

2.2 Desk Study

A desk study was undertaken to identify ecological information relating to the Site and its surroundings. The following organisations/websites were consulted during February 2024:

A request to the South East Wales Biodiversity Records Centre (SEWBReC) was made for information on any ecologically designated sites, habitats and protected species or species of conservation concern within a 1km radius (5km for bats) of the CGR for the Site and within the last 10 years. This included a data request for priority habitats and species listed under Section 7 of the Environment (Wales) Act 2016. The results of this search are summarised in Appendix B.

The Multi-Agency Geographic Information for the Countryside (MAGIC) website (MAGIC, 2024) was accessed to search for additional statutory designated sites e.g., Special Areas of Conservation (SAC) sites specifically designated for bats within 5km.

Natural Resources Wales' (NRW) online designated site search was used to obtain citations for relevant statutory site designations identified [NRW, Accessed January 2024].

A previous ecological report relating to the Site was accessed to provide background to the proposed development and for any pertinent biological records/ survey outcomes (FPCR, 2021).

Aerial photographs and Ordnance Survey (OS) maps were reviewed to identify features with potential significance in relation to habitats and species on site. The NRW DataMap Wales website was accessed to identify any Ancient Woodland sites (NRWa, Accessed February 2024) and historic maps were reviewed to determine the status of woodland in the Survey Area (National Library of Scotland, 2024).

Where third party data is referred to, for example from online searches and Biodiversity Record Centre data, WSP cannot be held responsible for the accuracy of the information.

2.3 Field Survey

2.3.1 Extended Phase 1 Habitat Survey

Redstart ecologists Trevor Fletcher and Tara Okon conducted the survey based on Phase 1 habitat survey techniques (JNCC, 2010), on 28 February 2024. The survey consisted of a thorough walkover of the survey area, mapping the habitat types and listing floral species within each habitat. Invasive plant species were also noted but not fully mapped. The relative abundance of each vascular plant species was recorded using the Abundant, Common, Frequent, Occasional, Rare (ACFOR) scale. Dominant vascular plant species were noted, as were any uncommon species or species indicative of particular habitat types, but exhaustive species lists were not compiled. Survey photographs are provided in Appendix D.

Where appropriate, consideration was given to whether habitats qualify, or could qualify, as Priority Habitat under the Environment (Wales) Act (2016).

The survey was extended to include an assessment of the potential of the Site to support protected/notable species of plants and/or animals, and any incidental signs of protected/notable species were recorded.

2.4 Daytime Bat Walkover (DBW) Assessment of Trees, Structures and Habitat

Redstart ecologist Megan Watts carried out the DBW on 28 February 2024. Survey methodologies followed Bat Conservation Trust Good Practice Guidelines (4th Edition) (Collins, J. 2023) and Bat Tree Habitat Key (2018).

Trees and structures within the Site and Survey Area were externally assessed for their suitability to support bat roosts. Habitats were assessed for suitability for bats in regard to commuting, foraging, and swarming.

A visual inspection of trees and structures was carried out to search for external features which may provide roosting opportunities for bats. The buildings and trees were inspected for potential bat access/egress points, potential roosting sites and evidence of bat presence (e.g., scratch marks, urine staining and droppings), using binoculars and a torch where appropriate.

Structures and trees were assigned a level of potential roost features (PRFs) between ‘none’ and ‘high’ in line with the Bat Conservation Trust Good Practice Guidelines (4th Edition) (Collins, J. 2023). See Tables 1 and 2.

Structures and trees with no PRFs were not recorded.

Table 1: Bat Conservation Trust guidelines for assessing potential suitability of structures and habitats bats presence/use (Collins, J., 2023).

Potential suitability	Roosting habitats in structures	Potential flight-paths and foraging habitats
None	No habitat features on site likely to be used by any roosting bats at any time of the year (i.e. complete absence of crevices/suitable shelter at all ground/underground levels).	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e., no habitats that provide continuous shade/protection for flightlines or generate/shelter insect populations available for foraging bats).
Negligible	No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.	No obvious habitat features on site likely to be used as flightpaths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.

Potential suitability	Roosting habitats in structures	Potential flight-paths and foraging habitats
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e., unlikely to be suitable for maternity and not a classic cool/stable hibernation site but could be used by individual hibernating bats).	Habitats that could be used by small numbers of bats as flightpaths such as a gappy hedgerow or unvegetated stream, but isolated i.e., not very well connected to the surrounding landscape by other habitats. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure 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 (with respect to roost type only, such as maternity and hibernation – the categorisation described in this table is made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for flightpaths such as lines of trees and scrub linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland, or water.
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions, and surrounding habitat. These structures have the potential to support high conservation status roosts, e.g., maternity, or classic cool/stable hibernation site.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flightpaths 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.

Table 2: Bat Conservation Trust guidelines for assessing potential suitability of trees for roosting bats (Collins, J., 2023).

Suitability	Description
NONE	Either no PRFs in the tree or highly unlikely to be any
FAR	Further assessment required (FAR) to establish If PRFs are present in the tree
PRF	A tree with at least one PRF present

2.5 Survey Constraints

A small section of the Site could not be directly accessed as it was enclosed with Heras fencing at the time of survey. The area was viewed using binoculars and it was possible to accurately determine Phase 1 habitat type and likely potential for bats to roost within trees. It is therefore unlikely that the restricted access had any significant impact on the findings of this report.

Phase 1 habitat surveys can be carried out any time of year, but the optimal time is between May and October (during the main flowering season), in order to gain a more comprehensive species list for the habitats on site. It should be noted that the survey took place in late February and some plant species may not have been

detectable or verifiable during the survey but there were enough species recorded to accurately identify the Phase 1 habitat types and their extent within the Survey Area.

Any ecological survey can only identify what was present on site at the time it was conducted, and habitat use by species can change over time. The length of time survey data remains valid will depend on a case-by-case basis, but it is considered that if development or proposed works do not commence within two years of the date of the survey in this report an update may be required (CIEEM,2019). Survey results and desktop data presented in this report therefore remain valid until February 2026.

3. Results

3.1 Designated Sites

Designated sites identified during the desk study are detailed as follows and locations are illustrated on Drawing 70121691-RED-74-XX-M2-L-3002.

3.1.1 Statutory Designated Sites

No statutory designated sites (e.g Sites of Special Scientific Interest (SSSI) or Special Area of Conservation (SAC)) were identified within 2km of the CGR. No SAC with designation for bats were present within 10km of the CGR for the Site.

Statutory designated sites will not be discussed further within this report.

3.1.2 Non-Statutory Designated Sites

Eight non-statutory designated sites were located within 2km of the Site, comprising seven Sites of Importance for Nature Conservation (SINCs); and one B-Line. The most relevant to the Site are listed in Table 3.

Table 3: Non-statutory designated sites within 1km of the Site

Site Name	Reasons for Designation	Approximate distance and direction from the Site
B-Line	B-Lines are a series of 'insect pathways' running through countryside and towns, along which a series of wildflower-rich habitat stepping-stones which are being restored and created. They link existing wildlife areas together, creating a network, like a railway, that will weave across the British landscape (Buglife, 2022).	Encompasses the Site
Glynmil SINC	Mosaic of semi-upland 'ffridd' (valley side) habitats at the western edge of Merthyr Common, partly on old colliery spoil tips. Localised purple moor-grass pastures, with areas of acid flush and unimproved acid grassland, are present. Several ponds and numerous small streams run through the wooded areas.	790m south-southeast of southerly extent
Merthyr Common South SINC	Extensive upland / semi-upland common along the hill ridge between two major rivers. A mosaic of habitats occurs across the site, comprising mainly marshy grassland, acid grassland and wet heath to the north, and dry heath and bracken slopes to the south. Includes numerous ponds and streams (including a section of the Nant Bargod), extensive outcrops of rock and some disused quarries. Parts of the site are situated on old colliery spoil that have largely revegetated. Plant species of interest include the regionally scarce floating bur-reed (*Spargianum angustifolium*) and knotted pearlwort (*Sagina nodosa*). Ponds support a rich dragonfly and damselfly fauna, including scarce blue-tailed damselfly (*Ischnura pumilio*) and black darter (*Sympetrum danae).* The site is important for a range of ground-nesting birds, along with peregrine falcon (*Falco peregrinus*) on the high cliffs in the south.	820m south-east of the southerly extent

3.1.3 *Ancient Woodland (AW)*

Two parcels of AW were identified within 1km of the Site. See Table 4 and Figure 2 for details.

Table 4: Ancient Woodland within 1km of the CGR for the Site.

Name/ID	Approximate distance and direction from Site CGR
Restored ancient woodland - 22397	600m south
Ancient Semi Natural Woodland - 16790	660m south-southeast

Figure 2: AW sites within 1km of the CGR for the Site. Red line indicates the Site, green polygon indicates ancient semi-natural woodland, pink polygon indicates restored ancient woodland. Adapted from Google Earth (Google Earth, 2024). Not to scale.



3.2 Habitats

3.2.1 *Priority Habitat*

Priority habitats in Wales are of principal importance for the purpose of maintaining and enhancing biodiversity in Wales as listed under Section 7 of the Environment (Wales) Act 2016. This places a duty on Welsh Ministers to “take all reasonable steps to maintain and enhance the types of habitat included in any list published under this section and, encourage others to take such steps”.

Priority habitat open mosaic habitats on previously developed land (OMH) was present on the Site, predominantly located within the Phase 1 habitat type semi-improved calcareous grassland.

OMH is a feature of brownfield sites, key features of OMH were present on Site, including;

- Open mosaic habitat at least 0.25ha in size.
- Known history of disturbance at the site or evidence that soil has been removed or severely modified by previous use(s) of the site.

- Contains some vegetation usually early successional communities/stress-tolerant species (e.g. indicative of low nutrient status or drought) for example: ephemeral/short perennial, mosses/liverworts, lichens, ruderals, inundation species, open grassland, flower-rich grassland, or heathland.
- Contains unvegetated, loose bare substrate and pools present.
- Habitats form mosaic with each habitat type in the mosaic generally smaller than 0.25ha in size.
- Scattered scrub (up to 10–15% cover) present.

3.2.2 Phase 1 habitat

The survey identified the following Phase 1 habitats:

- Plantation woodland
- Continuous scrub
- Scattered scrub
- Scattered trees
- Semi-improved acid grassland
- Semi-improved neutral grassland
- Poor semi-improved grassland
- Semi-improved calcareous grassland
- Marsh/ marshy grassland
- Standing water
- Running water
- Bare ground

An additional category of 'Hardstanding' was added to show hard-surfaced areas of road/pavement.

A botanical species list is provided in Appendix C and nomenclature of vascular plants follows Stace (2019). Photographs are provided in Appendix D. The Phase 1 Habitat map is provided on Drawing 70121691-RED-74-XX-M2-L-3001 and Target Notes (TNs) are detailed in Appendix E.

3.2.3 Plantation woodland

Plantation woodland was abundantly present within the Survey Area, forming a near continuous boundary around the Site, likely planted in the post- coal mining era as OS maps to 1961 showed no evidence of any semi-natural woodland within the Survey Area (National Library of Scotland, 2024) and mining operations continued on the Site into the 1990s.

Plantation woodland to the west of the Site, where it was present on a steep east facing slope, appeared to be the most established and comprised mature species such as frequently occurring silver birch (*Betula pendula*), downy birch (*Betula pubescens*), alder (*Alnus glutinosa*), occasional oak species (*Quercus* sp.), larch (*larix decidua*) and pine species (*Pinus* sp.), see Photograph 1, Appendix D.

Low structurally diverse plantation woodland comprising abundant mature silver birch, with occasional poplar species, Italian alder, hawthorn (*Crataegus monogyna*) and willow species (*Salix* sp.) was present within the Survey boundary to the north of the Site where it formed a barrier between housing and grassland on the Site. Plantation woodland was present on both sides of the A4060 road in the east of the Survey Area where

it extended by several metres into the Site. The woodland in this area comprised frequently occurring Italian alder (*Alnus cordata*) with occasional larch, grey willow (*Salix cinerea*), Norway maple (*Acer platanoides*), Guelder rose (*Viburnum opulus*), elder (*Sambucus nigra*), European spindle (*Euonymous europaeus*) goat willow (*Salix caprea*), white poplar (*Populus alba*) and aspen (*Populus tremula*). Dogwood (*Cornus sanguinea*), hawthorn and wild privet (*Ligustrum vulgare*) were present as underwood and were more frequently recorded on the west side of the woodland, where there was gradation from woodland to scrub.

Plantation woodland was present in the south of the Survey Area where it formed plantation adjacent to road infrastructure. There was a distinct fenced area of relatively recently planted woodland (tree guards still present), comprising abundant semi-mature silver birch with occasional smaller oak species, hawthorn and poplar species (*Populus* sp.) located within the Site (Photograph 2).

Understory to plantation woodland areas was limited in species diversity and consistently comprised abundant bramble (*Rubus fruticosus* agg.) and common ivy (*Hedera helix*) with occasional other woodland species such as lords and ladies (*Arum maculatum*) and tufted hair grass (*Deschampsia cespitosa*).

3.2.4 Continuous scrub

Distinct stands of dense, continuous gorse (*Ulex europaeus*) were present (Photograph 3), predominantly in the central and eastern part of the Site.

3.2.5 Scattered scrub

Scattered scrub was present within an area with no direct access (enclosed by Heras fencing), in the south of the Site and comprised abundant bramble.

Scattered scrub was present within the central area of the Site and comprised willow species, butterfly-bush (*Buddleia davidii*), bramble and saplings of birch species (*Betula* sp.) and gorse.

3.2.6 Scattered trees

Scattered trees were present across the Site, predominantly distributed over the calcareous grassland in the central area of the Site. Tree species included abundant pioneer species such as silver birch and willow species. There were also scattered trees present in the north of the Survey area, just outside the Site boundary, forming and avenue of planted poplar species, with an understory of introduced shrub which included an abundant coralberry cultivar (*Symphoricarpos* sp.) and occasional honeysuckle species (*Lonicera* sp.) either side of a road on an industrial estate.

3.2.7 Semi-improved acid grassland

There were small, scattered areas of acid grassland present within the predominantly calcareous grassland, each area covered less than 5m^2 (e.g., TN1, Appendix E). The largest area, which was mapped, formed a strip of habitat with a total area of no more than 120m^2. The species present comprised commonly occurring tormentil (*Potentilla erecta*), common sorrel (*Rumex acetosa*) and red fescue (*Festuca rubra*). Creeping bent (*Agrostis capillaris*) was occasionally present as was soft rush (*Juncus effusus*) with blunt-flowered rush (*Juncus subnodulosus)* occurring in the wetter sections. Acid indicators heath bedstraw (*Galium saxatile*) and heather (*Calluna vulgaris*) were occasionally present.

3.2.8 Semi-improved neutral grassland

Semi- improved neutral grassland was present within the Site where it generally occurred around the margins, lying between woodland areas and calcareous grassland, interspersed with continuous scrub. The most extensive areas of this grassland habitat occurred on the sloping ground to the west of the Site

(Photograph 4). Species within the grassland included frequently occurring common bent (*Agrostis capillaris*), common knapweed (*Centaurea nigra*) cock's-foot (*Dactylis glomerata*), oxeye daisy (*Leucanthemum vulgare*), with occasional Yorkshire fog (*Holcus lanatus*) in damper areas, meadow buttercup (*Ranunculus acris*), red clover (*Trifolium pratense*), ribwort plantain (*Plantago lanceolata*) and dove's- foot cranesbill (*Geranium molle*).

Where semi-improved grassland was present along the woodland margins a moss (*Rhitidiadelphus squarrosus)* was locally abundant.

3.2.9 Poor semi-improved grassland

Poor semi-improved grassland was present within the Survey Area, exclusively as grass verges. The species included abundant common bent, creeping bent (*Agrostis stolonifera*), perennial ryegrass (*Lolium perenne*) with occasional fescue species (*Festuca* sp.), daisy (*Bellis perennis*) and ribwort plantain (*Plantago lanceolata*).

3.2.10 Semi-improved calcareous grassland

Semi-improved grassland, which consistently held species indicative of calcareous grassland, formed the majority of the Site area. The grassland was sparsely vegetated over the majority of the area and was frequently interspersed with patches of *Cladonia* lichens and some areas of almost bare ground where the stony base-rich substrate was evident (Photograph 5). Ground conditions varied from relatively free draining stony substrate to wetter areas on thin clay which occasionally held surface water.

Species present which were indicative of lowland calcareous grassland included abundant common bird's-foot-trefoil (*Lotus corniculatus*) and rough hawkbit (*Leontodon hispidus*) with frequently occurring mouse-ear hawkweed (*Pilosella officinarum*), occasionally the wiry stems from the previous year's growth of fairy flax (*Linum catharticum*) could be seen.

Other species present included commonly occurring glaucous sedge (*Carex flacca*), particularly in wetter areas. Occasionally grasses such as crested dog's tail (*Cynosaurus cristatus*), red fescue, sweet vernal grass (*Anthoxanthum odoratum*) were evident in the freer draining locations. Oxeye daisy was present across much of the grassland.

3.2.11 Marsh/ marshy grassland

The largest area of marshy grassland was located in the northwest corner of the Site, lying adjacent to a stream that ran into a ditch around the periphery of the Site (Photograph 6).

There were areas of shallow standing water present within the dense vegetative cover which included great willowherb (*Epilobium hirsutum*), hard rush (*Juncus inflexus*), soft rush, blunt- flowered rush, glaucous sedge and common sedge (*Carex nigra*). Bulrush (*Typha latifolia*) was frequently present as was lesser spearwort (*Ranunculus flammula*). Marsh thistle (*Cirsium palustre*) and water mint (*Mentha aquatica*) grew in the wetter areas.

Further to the east, adjacent to a drainage channel, there was a localised patch of marshy grassland which was dominated by common sedge (TN2).

An area of marsh/ marshy grassland was also present in the south of the Site, lying adjacent to an area of woodland. The area held dense stands of lesser pond sedge (*Carex acutiformis*).

3.2.12 *Standing water*

Standing water was present in an engineered drainage channel which was present along the eastern boundary of the Site. The water was generally less than 20cm deep. Plant species that had colonised the ditch included abundant fool's watercress (*Helosciadium nodiflorum)* occasional bulrush, soft rush, willow species and glaucous sedge (Photograph 7).

3.2.13 *Running water*

Running water was present in an engineered stream which flowed through a stone channel from the north of the Site, under a concrete bridge and continued around the western boundary of the Site where it ran through plantation woodland and exited the Site under the A4060 via a culvert.

Another engineered stream ran down a steep west facing slope in the south of the Site (Photograph 8) where it passed under a concrete bridge and flowed out of the Site, presumably via a culvert which was not located. Willow and butterfly-bush were growing out of the steep section of the channel and where the flow rate reduced just west of the bridge the bankside was dominated by an extensive stand of Japanese knotweed (*Fallopia japonica*).

3.2.14 *Introduced shrub*

There were areas of introduced shrub outside the Site but within the Survey Area, all associated with planting on verges around the industrial area to the north. Plant species included abundant coralberry (*Symphoricarpus orbiculatus*) and honeysuckle species *(Lonicera* sp.).

3.2.15 *Bare ground*

Bare ground was present in the north of the Site. There was what appeared to be recently created bare ground within a fenced area of land, likely have been created as an access track.

Further east there was an extensive area of bare ground possibly created when levelling an area of ground.

At the southern extent of the Site there was an area of bare ground at the base of a short embankment.

3.2.16 *Hardstanding*

Hardstanding was present in the form of roads and pavement; this included an access point to the Site at the north of the Site (layby). At the time of survey this was frequently used as a parking spot for recreational walkers/ dogwalkers accessing the Site.

3.3 Protected and Priority Species

The potential for the Survey Area to support legally protected species and/or notable species was assessed using the results of the desk study and observations made during the Phase 1 habitat survey. A full list of protected or priority species and species of conservation concern within a 1km radius (5km for bats) of the Scheme, and submitted within the last 10 years, is provided in Appendix B.

3.3.1 *European Protected Species*

Bats

A total of 1734 records for bats were returned from the data search, comprising nine distinct species, four categories for bats identified to genus level and one category for unidentified bats. The most commonly recorded species was common pipistrelle (*Pipistrellus pipistrellus)* for which 635 records were returned.

The closest record was for a pipistrelle bat species *(Pipistrellus* sp.*)* located approximately 220m west of the Site, at Newland Park, Merthyr. The closest bat roost record was for 27 common pipistrelle located approximately 760m south of the Site in a property at Mountain Hare, Merthyr.

Habitat within the Survey Area such as the plantation woodland corridors were considered to offer high potential for foraging and commuting bat species. Bats are discussed further in section 3.4.

Otter

No records for otter *(Lutra lutra)* were returned from the data searches.

Habitat in the Survey Area was considered unsuitable for otter. Running water was limited to narrow streams unlikely to support significant food resources or act as commuting corridors as there were no larger streams or waterbodies in the area likely to provide habitat suitable for otter. No sites suitable for the establishment of holts were noted within the Survey Area. The Site was bound by a network of roads which were also likely to inhibit otter from entering the Site, and culverts were covered with trash barriers which would also inhibit otter should they attempt to enter the Site. It is unlikely that otter would be present within the Survey Area, and the species will not be discussed further within this report.

Hazel Dormouse

No records for hazel dormouse (*Muscardinus avellanarius*) were returned from data searches.

The habitat on Site was sub-optimal for the presence of dormouse. The plantation woodland lacked successional food resources and the understory was sparse with very few locations, such as parcels of dense bramble, with suitability for nesting. The Site was isolated from the wider area by a network of roads formed by the A4060/A465 and Goat Mill Road (A4102), furthermore the wider area of residential, industrial and open moorland lacked habitat suitable for dormouse.

A combination of past heavy industry, which cleared any woodland that may have provided habitat suitable for dormouse, and the current isolated nature of the Site with low suitability woodland makes it highly unlikely that dormouse is present. Dormouse will not be discussed further in this report.

Great Crested Newt (GCN)

No records for great crested newt (*Triturus cristatus*) were returned by SEWBReC.

A previous eDNA survey of waterbodies on the Site (FPCR, 2021) found no evidence of GCN, however one waterbody had consistently inconclusive results, attributed to unusual water chemistry.

Standing water present in drainage ditches around the perimeter of the Site may provide some breeding habitat for GCN, although none appeared to offer optimal conditions as were either fed by flowing water or lacked areas of open water preferred by the species during courtship and breeding. The area of marshy grassland at the north of the Site had areas of open water that could provide some potential for GCN to breed.

Terrestrial habitat such as woodland, grassland and marsh/ marshy grassland, suitable for GCN to forage and commute, was extensively recorded on Site.

3.3.2 *UK Protected Species*

Badger

One record for badger *(Meles meles)* was returned from data searches. The record was for a road casualty on the northbound carriageway of the A4060 Dowlais Top approximately 90m east of the Site.

Habitats within the Survey Area, such as grassland and woodland, were considered to offer some potential to support commuting and foraging badger. No evidence of badger activity or setts was observed during the survey.

If badger is present on Site it is likely to be occasionally, with the Site used for foraging.

Other Mammals (excluding bats, otter, hazel dormouse and badger)

A total of 21 records for two different species of small mammal; polecat *(Mustela putorius)* and West European hedgehog *(Erinaceus europaeus)* were returned from the SEWBReC data.

The closest record was for West European hedgehog located approximately 300m north of the Site at Glanmor Gardens, Merthyr Tydfil.

Habitats within the Survey Area, such as the unmanaged semi-improved grassland which held some deep litter structure, offered potential for small mammals such as field vole (*Microtus agrestis*) to be present. The area of semi-improved grassland adjacent to marshy habitat in the north of the Site had evidence of small mammal presence (burrows in litter and feeding signs).

Evidence for the presence of fox (*Vulpes vulpes*) was recorded at TN3, where scat was noted and the denser grassland areas had numerous mammal runs, likely attributable to fox.

Signs of the presence of rabbit (droppings and digging) were noted in the calcareous grassland areas, with runs extending into dense gorse scrub where burrows may be present.

Habitat on Site was suitable for West European hedgehog to forage, shelter and hibernate.

Birds

A total of 586 records for 31 species of protected and priority birds were returned from the SEWBReC data, including 13 Wildlife and Countryside Act (1981) Schedule 1 (WCA1) species.

Schedule 1 species included barn owl *(Tyto alba),* red kite *(Milvus milvus),* goshawk *(Accipiter gentilis),* and kingfisher *(Alcedo atthis).* The closest record was for a red kite flying over woodland and grassland within the Site.

Environment (Wales) Act 2016 Section 7 (S7) listed priority species included bullfinch (*Pyrrhula pyrrhula*), house sparrow (*Passer domesticus*), spotted flycatcher (*Muscicapa striata*), and starling (*Sturnus vulgaris*). The closest S7 record was for a skylark *(Alauda arvensis)* within the Site.

A total of 20 commonly occurring bird species were recorded during the survey, including herring gull (*Larus argentatus*), lesser black-backed gull (*Larus fuscus*), song thrush (*Turdus Philomelos*) dunnock (*Prunella modularis*) and skylark (*Alauda arvensis*), all S7 priority species for conserving biodiversity in Wales. Goldcrest

(*Regulus regulus*), a species of high conservation concern, listed on the most recent Birds of Conservation Concern Red list for Wales (BoCCW, 2021), was recorded singing within the Site.

A small flock of WCA1 species redwing (*Turdus Iliacus*) was recorded briefly resting in plantation woodland within the Site before flying east.

Habitats within the Survey Area, such as woodland, scrub, and grassland were suitable for a range of resident and migrant species to shelter, feed and nest. The areas of unmanaged semi-improved grassland with a dense litter layer are likely to provide good hunting habitat for barn owl.

Reptiles

One record for a reptile species, slow worm *(Anguis fragilis),* was returned within 2km of the Site. The record comprised a dead individual found on Mitchell Crescent, Merthyr Tydfil, approximately 1.3km north-northwest of the Site.

A presence/ absence survey of the Site, conducted in 2020 produced no evidence for the presence of reptiles (FPCR, 2021).

Grassland and woodland edge habitats within the Survey Area offered good suitability for the presence of reptiles such as common lizard (*Zootoca vivipara*) and slow worm (*Anguis fragilis).* The marshy grassland and streams provided good habitat for grass snake (*Natrix helvetica helvetica*).

Amphibians (excluding great crested newt)

Twenty-one records for three different common amphibian species, common toad (*Bufo bufo*), common frog *(Rana temporaria),* and palmate newt *(Lissotriton helveticus),* were returned from the data searches. All three species had been recorded on the Site.

The ditch at the north end of the Site (TN 4) held frog spawn, tadpoles and a dead common frog *(Rana temporaria)* was recorded in a ditch nearby. Frogspawn was also noted at TN5. The marshy grassland areas in particular are likely to provide feeding and shelter sites for the species. Terrestrial (marshy grassland, woodland) and aquatic habitat (ephemeral pools within marshy grassland) on Site was also suitable for common toad (*Bufo bufo*). The slow flowing waterbodies and areas of standing water are likely to offer suitable aquatic habitat for common newt species such as palmate newt (*Lissotriton helvetica*).

Invertebrates

A total of 76 records for protected and priority invertebrates were returned from the SEWBReC data search. Records comprised four butterfly species; one wasp species, shimmering ruby-tail *(Chrysis fulgida);* and 25 moth S7 moth species. Moth species included cinnabar *(Tyria jacobaeae),* garden tiger *(Arctia caja),* grass rivulet *(Perizoma albulata),* and white ermine *(Spilosoma lubricipeda).* The closest records were for small heath *(Coenonympha pamphilus),* grayling *(Hipparchia semele),* and dingy skipper *(Erynnis tages)* butterfly all recorded on the Site.

Terrestrial and aquatic habitats within the Survey Area were considered suitable to support a wide range of invertebrate species.

A previous invertebrate survey report (D.C. Boyce, 2020) which was appended to the previous ecological appraisal of the Site (FPCR, 2021) recorded the invertebrate assemblage as of Local to County importance.

Habitats within the Survey Area were considered suitable to support a range of terrestrial and aquatic invertebrate species. Terrestrial habitat in the grassland areas forming priority habitat OMH, due to its diversity of micro-habitats, will provide particularly good habitat for invertebrates.

Fungi

Three S7 fungi records for three different species were returned via data searches. The closest record was for nail fungus *(Poronia punctata)* recorded on alder within the Survey Area.

Priority and protected/notable flora

Three records for the protected/Priority plant species bluebell (*Hyacinthoides non-scripta*) were returned via data searches within 2km. The closest record was located approximately 1.8km west of the Site.

No protected/Priority plant species were recorded within the Survey Area.

Invasive non-native species

A total of 96 records were returned for invasive non-native species, comprising one bird species, two invertebrate species, one mammal, and 14 plant species.

Invasive non-native plants recorded within 2km of the Scheme included five Wildlife and Countryside Act (1981) Schedule 9 (WCA9) species, hollyberry cotoneaster *(Cotoneaster bullatus),* Japanese knotweed (*Fallopia japonica*), Japanese rose *(Rosa rugosa),* montbretia *(Crocosmia pottsii x aurea = C. x crocosmiiflora),* and rhododendron *(Rhododendron ponticum).*

The closest record for a WCA9 plant species was for Japanese knotweed located approximately 900m west of the Site at St Tydfil's Hospital demolition site (Merthyr Tydfil).

Schedule 9 invasive non-native species Japanese knotweed was recorded within the Site (TN6) where it was present along an easterly flowing engineered watercourse.

Cotoneaster species (*Cotoneaster* sp.), some of which are listed on WCA9, were recorded scattered across the Site (e.g., TN7). None were attributed to species level due to a lack of the full suite of features required for positive identification (flowers, fruits and leaves).

Butterfly-bush (*Buddleia davidii*) and cherry laurel (*Prunus laurocerasus),* considered to be invasive but not listed on Schedule 9, were recorded on Site.

3.4 Daytime Bat Walkover (DBW) Assessment Results

3.4.1 Trees

The vast majority of trees within the Survey Area had no roosting features for bats (classified as NONE, see Table 2).

A partially fallen tree at the south of the Site (TN8) had some rot holes and a disused woodpecker nest hole, both features with potential to support roosting bats, and were classified as PRF (see Table 2 for definition).

Some trees within the Site had ivy cover and limited areas of lifted bark but these features were not considered to be substantial enough to support roosting bats.

3.4.2 Structures

A culvert at TN9 was considered to have **low** potential to support roosting bats (see Table 1 for definition) due to the presence of minor gaps in joints between stonework.

There were no buildings within the Site, however, residential housing in the south of the Survey Area may have features suitable to support roosting bats.

3.4.3 Habitat

Habitat on the Site and in the wider Survey Area was classified as having **high** potential to support bat flight-paths and foraging habitat.

The linear areas of plantation woodland bounding the Site provided ideal commuting corridors for bats. The woodland on the western boundary of the Site links to a network of trees and open grassland which would provide further foraging and commuting habitat.

The streams, marshy grassland and OMH on Site are highly likely to support a diversity of invertebrates, providing abundant food resources for bats.

Residential areas surrounding the Site are likely to provide suitable roost sites for bats.

4. Evaluation of Ecological Features and Potential Impacts

4.1 Designated sites

4.1.1 Non-Statutory Sites

As a B-line encompasses the Site there is potential for the development to adversely impact this 'insect pathway' through permanent loss of suitable invertebrate habitat and /or fragmentation of habitat that is suitable for invertebrates to thrive (e.g. grassland and wildflowers).

As the Glanmil SINC and Merthyr Commons South SINC lay approximately 800m from the Site, are not connected to the Site via surface hydrology, are separated from the Site by the A4060 and lie at greater elevation, there is unlikely to be any impact on the SINC habitats as a result of the proposed development.

4.1.2 Ancient woodland (AW)

There are two parcels of AW lying between 600m and 650m from the Site, both separated by the A4060 lying at greater elevation and not connected by surface hydrology.

It is unlikely that any AW will be impacted by the proposed development.

4.2 Habitats

4.2.1 Priority habitat

There will be direct impact on OMH, including permanent loss, to facilitate construction.

There was no evidence for active management of OMH on Site and semi-improved neutral grassland and dense scrub / scattered trees were encroaching on the more diverse areas of the habitat in the central area and this would be likely to continue in the absence of active management.

4.2.2 Other habitat

There is potential for damage and/ or loss of habitat on Site that has suitability for bats, badger, small mammals, reptiles/ amphibians, birds and invertebrates.

Habitats may be impacted, for example through pollution of watercourses and vegetation/ tree removal/ damage during pre-construction activities. There will be permanent loss and fragmentation of habitat to facilitate construction of the proposed development.

4.3 Protected and Priority Species

4.3.1 Bats

Although there were few opportunities for bats to roost within the Site the linear habitat corridors provided by plantation woodland and the grassland habitats were of high value for commuting and foraging.

There is potential for the development to adversely impact bats through loss of suitable foraging habitat and fragmentation / loss of commuting routes. Additional lighting in the construction and operational phase could impact more light averse species.

4.3.2 Great crested newt

Terrestrial habitat on Site had suitability for GCN and waterbodies within the Site are likely to have some suitability for the species to breed. A previous report (FPCR,2021) indicated that two waterbodies on Site had suitability for the species and subsequent eDNA analysis was negative for one waterbody and inconclusive for another.

There is some potential for GCN to be present and adverse impact may result from pollution of waterbodies during pre-construction and construction activity. Direct harm through inadvertent killing/ injury may result from vegetation clearance in the pre-construction phase and earthworks during construction.

GCN could be adversely impacted through loss of suitable terrestrial habitat, reducing opportunities to move between potential breeding sites and feeding areas.

4.3.3 Badger

Habitats within the survey area had some suitability for badger to forage and commute and potentially establish setts. As there was no evidence of badger activity on Site, and the Site is enclosed by roads the species is unlikely to be any more than occasionally present and therefore the standard mitigation measures outlined in Section 6 will likely be sufficient to ensure no harm to the species as a result of the development.

4.3.4 Other mammals

As vegetation clearance will be required to facilitate the works, there is potential for other mammals, such as vole species, fox and rabbit, to be killed or harmed through crushing/asphyxiation and/or habitat destruction.

Site clearance work, including de-vegetation and earth moving activities are highly likely to have adverse impact on burrowing mammal species on site.

Mammals are protected by the Wild Mammals (Protection) Act 1996 which makes it an offence to intentionally cause mammals unnecessary suffering, including by crushing and asphyxiation, which could occur during site clearance.

4.3.5 Birds

Habitats within Site and in the wider Survey Area are likely to support a wide range of nesting bird species. Habitats are also likely to provide shelter and food resources all year around for bird species.

If vegetation/tree clearance is required, there is potential to cause disturbance to nesting birds/ destruction of active nest sites if undertaken during the breeding season (March to August inclusive).

The development has the potential for permanent loss of suitable feeding, sheltering and nesting habitat, including habitat suitable for S7 priority and species of high conservation concern (e.g., Birds of Conservation Concern (BoCC) Red listed species).

Under the Wildlife and Countryside Act 1981 (as amended) all wild birds are protected from killing and injury, and their nests and eggs protected from taking, damage and destruction whilst in use. Additional protection is extended to species listed under Schedule 1 of the Act, meaning it is also an offence to disturb these species at or near the nest, or whilst they have dependent young.

4.3.6 Reptiles

Habitats such as extensive areas of grassland within the Site were considered to offer suitability for common reptile species.

There is potential for reptiles to be negatively impacted through crushing/ asphyxiation and/or habitat destruction during any clearance works to facilitate access to the Site. Habitat with suitability for common reptiles may be permanently lost to the development.

Common reptiles are protected against intentional killing and injury under the Wildlife and Countryside Act 1981 (as amended).

4.3.7 Amphibians (excluding Great Crested Newt)

There is potential for common amphibian species such as common frog and common toad (*Bufo bufo*) to be harmed during vegetation clearance to facilitate works and for habitat suitable for amphibians to be permanently lost to development.

Amphibians (other than great crested newt, which is offered much higher levels of protection) are only protected from unlawful sale under the WCA 1981 however, common toad is also listed under Section 7 of the Environment (Wales) Act 2016 as a species of principal importance for conserving biodiversity in Wales. Public bodies have an obligation to have regard for these species when carrying out their functions.

4.3.8 Invertebrates

Habitats within the Site were suitable to support a diverse range of terrestrial and aquatic invertebrate species and previous survey (D.C. Boyce, 2020) indicated the Site to be of between Local, and County level importance for invertebrates. The areas of OMH are likely to offer the structural diversity required for a wide range of invertebrate species to thrive.

There is potential for the development to cause permanent loss of habitat which is highly suitable for invertebrates, including S7 species.

4.3.9 Invasive non-native plants (INNS)

The Schedule 9 invasive non-native plant species Japanese knotweed was present on Site along a watercourse in the South of the Site (TN6). There is potential for habitat clearance and subsequent development to cause the spread of this species into unaffected areas, either through movement of contaminated soil on Site or by allowing fragments of the plant to enter the watercourse and be carried off site via the stream.

Cotoneaster species (some of which may be Schedule 9 species) were also recorded scattered across the Site.

There is potential for invasive species to be spread during clearance and construction works.

It is an offence to cause the unlawful spread of any invasive species as listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

5. Conclusion

It is likely that the proposed development will have adverse impact on invertebrate species within a B-line but no impact on any SINC or AW site is anticipated.

It is highly likely, in the absence of mitigation, that priority habitat OMH will be lost to the development.

There is potential for protected and Priority species such as bats, GCN, badger, small mammals, breeding birds, reptiles and amphibians and priority invertebrates to be present within the Site and wider Survey Area. In the absence of mitigation, the proposed development has potential to impact upon these species through pollution and damage/destruction/ fragmentation of habitats. Loss of bird nesting sites and bat and bird roosting sites may occur; and disturbance through increased human activity and additional lighting is likely.

The recommendations provided in Section 6 should be followed to ensure that the proposed works adhere to best practice guidelines and are compliant with current wildlife legislation.

6. Recommendations

6.1 Further Survey

6.1.1 Habitat quality and condition survey

Further detailed habitat survey should be carried out on Site to determine habitat condition and relative floristic diversity. The survey should be carried out between May and July and include a quantification of the extent of the Priority OMH within the Site.

Determining the extent of OMH and which areas have most botanical diversity will enable mitigation measures to be designed (i.e., which areas should be retained or re-used).

6.1.2 Bat tree inspection

An inspection of the PRFs in the tree at TN8 may be required. An inspection will only be necessary if woodland on the eastern side of the Site is likely to be impacted (either directly by loss of woodland or indirectly through light spill), otherwise it is considered that the location will be suitably buffered from the development for there to be no likely impact on bats potentially using the features.

6.1.3 Bat emergence survey

As the culvert at TN9 was classified as having low potential to support roosting bats a single dusk emergence survey is recommended. This is only necessary if woodland on the eastern side of the Site is likely to be impacted, otherwise it is considered that the location will be suitably buffered from the development for there to be no likely impact on bats potentially using the culvert to roost.

6.1.4 Night-time bat walkover (NBW) surveys

Night-time bat walkover surveys should be carried out to determine which bat species use the Site, how they are using it and levels of activity. One survey visit per season, covering all habitats represented in the survey area, is recommended (Collins, 2023). Surveys to be conducted in spring (April/ May), Summer (June/ July / August) and autumn (September/ October).

6.1.5 Automated/ static bat detector survey

Static bat detectors should be deployed across a representative sample of the habitats on Site, with locations and number of detectors deployed determined by the outcome of the first NBW. Detectors should be deployed in spring, summer and autumn with data collected over a minimum of five consecutive nights per season.

6.1.6 GCN - Habitat Suitability Index survey (HSI)

A HSI survey to assess the suitability of all waterbodies within 500m of the Site to support GCN should be carried out following standard HSI methodology (Oldham *et al.,* 2000).

The results of the HSI will determine which ponds will require further survey.

6.1.7 Breeding bird survey

A breeding bird survey should be carried out following best practice guidelines (Bird Survey and Assessment Steering Group, 2023). A total of six separate surveys should be conducted, spread evenly between late March and early July in order to ensure that the surveys cover resident breeders which start breeding early, as well

as migrant breeders which arrive later. The survey will provide information as to the conservation value of the Site for breeding birds and will inform mitigation design.

6.1.8 Wintering bird survey

A wintering bird survey should be carried out to determine Site use by birds, including ducks, geese, birds of prey and gulls, outside of the breeding season. As there are no major waterbodies on Site likely to support significant numbers of wildfowl or geese, it is recommended that two survey visits are carried out between November and February, ideally in late December and late January. This survey effort will be sufficient to provide a clear view as to Site use by birds in winter.

6.1.9 Reptile survey

A reptile survey should be carried out on the Site, following best practice methodology to determine species presence/ absence and a population size estimate. Data obtained will inform appropriate mitigation and development design to minimise impact on reptiles, should they be present.

6.1.10 Invertebrate survey

An invertebrate survey should be carried out to determine the overall importance of the invertebrate assemblage on the Site and provide indication as to which areas/ habitats on Site have most importance for invertebrates, thus guiding appropriate mitigation measures.

6.1.11 Invasive non-native species (INNS) plant survey

Prior to any Site clearance of vegetation, a survey should be carried out to map all locations and extent of WCA9 species. This will inform the subsequent preparation of an appropriate INNS method statement, produced by the contractor, to ensure WCA9 species are not spread. The survey is best conducted between May and September when species and their extent on Site will be fully detectable.

6.1.12 Ecological Impact Assessment (EcIA)

Following completion of all recommended ecological surveys an EcIA should be produced, incorporating all the data obtained from the surveys, thus enabling an overall ecological baseline for the Site to be established.

6.2 Mitigation

Mitigation will be required for the initial phase of works, covering Site clearance operations, ground investigation operations and construction of essential infrastructure such as access routes and permanent lighting within the Site.

6.2.1 Ecological Method statement/ Construction and Ecological Management Plan (CEMP)

The results of further habitat and species surveys will inform the full suite of mitigation measures that will be needed to fully meet legal and planning policy requirements. These measures should be included in an Ecological Method Statement /CEMP.

These documents should detail measures to prevent harm to protected species during construction, and include habitat protection, mitigation, compensation and biodiversity enhancements.

An INNS method statement, incorporated in the CEMP should also be prepared by the appointed contractor, prior to any vegetation / ground clearance works on the Site, to minimise the potential for the spread of any WCA9 species.

6.3 Enhancement Opportunities

Biodiversity measures are required for the development to comply with The Environment (Wales) Act 2016 and Planning Policy Wales (12th Ed. 2024).

In order for appropriate and proportionate enhancement recommendations to be made it is pertinent for the results of the recommended further surveys to be assessed. The assessment will enable ecological enhancement opportunities to be documented in an overarching Landscape and Ecological Masterplan for the Site.

7. References

- Andrews, H., (2018) Bat Roosts in Trees: A guide to identification an assessment for tree care and ecology professionals. Pelagic Publishing.
- Bird Survey & Assessment Steering Group. (2023). Bird Survey Guidelines for assessing ecological impacts, v.1.1.1. https://birdsurveyguidelines.org [accessed 03/03/2024]
- CIEEM (2019) Advice note on the lifespan of ecological reports and surveys. Chartered Institute of Ecology and Environmental Management, Winchester.
- CIEEM (2017) *Guidelines for Preliminary Ecological Appraisal, 2nd edition.* Chartered Institute of Ecology and Environmental Management, Winchester.
- Collins, J. (ed.) (2023) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn)*. The Bat Conservation Trust, London.
- Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019
- Environment (Wales) Act, 2016.
- FPCR, Sirius Planning (2021) Ecological Appraisal-Land off Goat Mill Road, Merthyr Tydfil.
- Google Earth (2024).
- Joint Nature Conservation Committee (2010). *Handbook for Phase 1 habitat survey. A technique for environmental audit.* Joint Nature Conservation Committee, Peterborough, England.
- Mitchell-Jones AJ and McLeish AP (2004). *The Bat Workers' Manual 3rd Ed.,* JNCC, Peterborough.
- Multi-Agency Geographic Information System (MAGIC, 2023).
- National Library of Scotland (2024) http://maps.nls.uk OS one inch 7th Series , 1955-61 [Accessed online 03/03/2024]
- Natural Resources Wales (NRW) https://naturalresources.wales [Accessed February 2024]
- Natural Resources Wales (NRWa) https://datamap.gov.wales/ [Accessed February 2024]
- South East Wales Biodiversity Records Centre (SEWBReC) (2024) Goat Mill Road, Merthyr [LERC Reference:0234-889].
- Stace, C. A. (2019). *(4th Edition) New Flora of the British Isles*. Cambridge University Press
- Welsh Government (2024). Planning Policy Wales. Edition 12. [Online]. [Accessed February 11/ 2024]. Available at: https://www.gov.wales/planning-policy-wales
- Wild Mammals (Protection) Act 1996
- Wildlife and Countryside Act (1981) (as amended).

Drawings

- 70121691-RED-74-XX-M2-L-3001 – Phase 1 Habitat Map
- 70121691-RED-74-XX-M2-L-3002 – Designated Sites Map

Key:

- Site
- 50m Survey Area
- Broadleaved scattered trees
- Running Water
- Broadleaved woodland - plantation
- Scrub - dense/continuous
- Scrub - scattered
- Acid grassland - semi-improved
- Neutral grassland - semi-improved
- Calcareous grassland - semi-improved
- Marsh/marshy grassland
- Poor semi-improved grassland
- Standing water
- Introduced shrub
- Bare ground
- Hardstanding
- Not Accessed
- Target Notes

0 100 200 m

P01	NP	TF	GP	First Issue	03/04/2024

Purpose of issue

S2 - Issued for Information

Classification

Public

Client

Merthyr Tydfil County Borough Council

Project

Goat Mill Road

Drawing Title

Phase 1 Habitat Map

Drawn NP Checked TF Approved GP

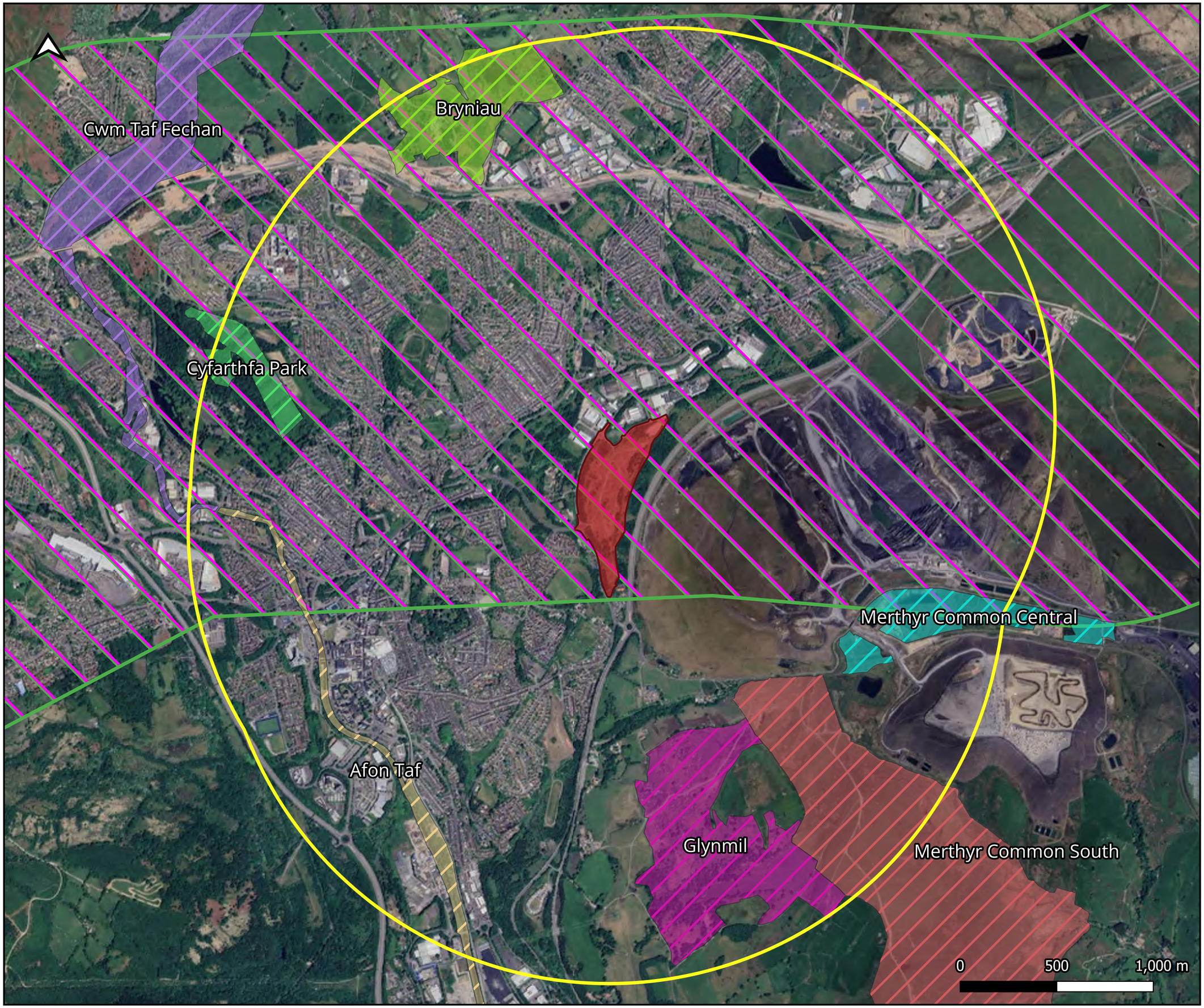
Project No	Date	Scale	Size
70121691	April 2024	1:1,500	A1

Drawing identifier Revision: P01

70121691-RED-74-XX-M2-L-3001

REDSTART
Quest House, St Mellons Business Park, Fortran Road, Cardiff, CF3 0EY
www.redstartwales.com

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Key:

- Site Area
- 2km

SINC Sites:

- Afon Taf
- Bryniau
- Cwm Taf Fechan
- Cyfarthfa Park
- Glynmil
- Merthyr Common Central
- Merthyr Common South
- B-Lines

P01 NP TF GP First Issue. 03/04/2024

Purpose of issue
S2 - Issued for Information

Classification
Public

Client
Merthyr Tydfil County Borough Council

Project
Goat Mill Road

Drawing Title
Designated Sites Map

Drawn NP Checked TO Approved GP

Project No	Date	Scale	Size
70121691	March 2024	1:18,000	A3

Drawing identifier Revision: P01
70121691-RED-74-XX-M2-L-3002

REDSTART
Quest House, St Mellons Business Park, Fortran Rd, St. Mellons, Cardiff, CF3 0EY
www.redstartwales.com

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Appendix A

Relevant Legislation and Planning Policy

European Protected Species

European Protected Species are those species listed on Schedule 2 of The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. The list includes all species of bats, dormouse, great crested newt and otter. The species listed on Schedule 2 are afforded protection against:

- deliberate capture, injury or killing;
- deliberate disturbance;
- deliberate taking or destruction of the eggs; and
- damage or destruction of a breeding site or resting place of such an animal.

Where a European protected species is present, a development may only proceed, under a licence issued by the relevant governing body i.e. Natural Resources Wales.

Birds Directive (Directive 2009/147/EC)

Annex 1 of the Birds Directive lists species and sub-species which are:

- in danger of extinction;
- vulnerable to specific changes in their habitat;
- considered rare because of small populations or restricted local distribution;
- requiring particular attention for reasons of the specific nature of habitat.

For these species Member States must conserve their most suitable territories in number and size as Special Protection Areas (SPAs). Species listed on Annex 1 of the Birds Directive include kingfisher and red kite.

Wildlife and Countryside Act 1981 (As Amended)

Schedule 1

All naturally occurring British bird species are protected under the Wildlife and Countryside Act 1981 (as amended). The legislation protects all birds, their nests and eggs and it is an offence to:

- intentionally kill, injure and take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; or
- intentionally take or destroy the egg of any wild bird.

Birds listed on Schedule 1 of the above legislation (e.g., kingfisher and red kite) are afforded further protection and it is an offence to:

- intentionally or recklessly disturb the bird while nest building or while at (or near) a nest with eggs or young; or
- disturb the dependent young of such a bird.

Schedule 5

Section 9 of the Wildlife and Countryside Act 1981 (as amended) offers varying degrees of protection to species including otter, bats, dormice, amphibians and reptiles. Animals listed on Schedule 5 of the Act are protected against one or more of the following:

- intentional killing, injuring or taking (not applicable to bats);
- intentional or reckless damage or destruction, or obstruction of access to any structure or place which any wild animal included in Schedule 5 uses for shelter or protection;
- disturbance of any such animal while it is occupying a structure or place which it uses for that purpose;
- sell, offer or exposes for sale, or has in his possession or transports for the purpose of sale, any live or dead wild animal included in schedule 5, or any part of, or anything derived from such an animal.

Schedule 8

Plant species listed on Schedule 8 are protected under Section 13 of the Wildlife and Countryside Act 1981 (as amended). Section 13 protects plants from:

- intentional picking, uprooting or destruction;
- selling, offering for sale, possessing or transporting for the purpose of sale (live or dead, part or derivative);
- advertising (any of these) for buying or selling.

Schedule 9

Section 14 of the Wildlife and Countryside Act 1981 (as amended) makes it an offence to “plant or otherwise cause to grow in the wild any plant which is included in Part II of Schedule 9”.

Wild Mammals (Protection) Act 1996

Provides protection for wild mammals against certain acts of deliberate harm including crushing and asphyxiation.

Wild mammal means any mammal which is not a ‘protected animal’ within the meaning of the Animal Welfare Act 2006 (Schedule 3, Section 13). Hedgehog would be included under this definition.

Environment (Wales) Act 2016

Section 7 of the Environment (Wales) Act has replaced the Section 42 of the NERC Act 2006 in Wales. Section 7 lists the living organisms and types of habitat in Wales which are considered to be of key significance to sustain and improve biodiversity in relation to Wales.

The Act states that Welsh Ministers must take all reasonable steps to maintain and enhance the living organisms and types of habitat included in any list published under this section and encourage others to take such steps.

UK Bap

UK BAP priority species are those that have been identified as being the most threatened and requiring conservation action. This includes (but is not limited to) species such as common toad, otter, great crested newt, slow worm, common lizard, brown long-eared bat, noctule and soprano pipistrelle.

Red and Amber Lists

Red-listed bird species are those which:

- Are globally threatened;
- Have suffered a historical population decline in the UK during 1800–1995;
- Have suffered a severe (at least 50%) decline in the UK breeding population over the last 25 years, or longer-term period (the entire period used for assessments since the first review, starting in 1969);
- Have suffered a severe (at least 50%) contraction of the UK breeding range over the last 25 years, or the longer-term period;

Amber-listed bird species are those which:

- Have unfavourable conservation status in Europe (SPEC = Species of European Conservation Concern)
- Have suffered a historical population decline during 1800–1995, but recovering; population size has more than doubled over last 25 years
- Have suffered a moderate (25-49%) decline in the UK breeding population over the last 25 years, or the longer-term period
- Have suffered a moderate (25-49%) contraction of the UK breeding range over last 25 years, or the longer-term period
- Have suffered a moderate (25-49%) decline in the UK non-breeding population over last 25 years, or the longer-term period
- Are rare breeders; 1–300 breeding pairs in UK
- Are rare non-breeders; less than 900 individuals
- Are localised; at least 50% of the UK breeding or non-breeding population in 10 or fewer sites, but not applied to rare breeders or non-breeders
- Are internationally important; at least 20% of European breeding or non-breeding population in UK (NW European and East Atlantic Flyway populations used for non-breeding wildfowl and waders respectively).

Nationally Scarce

These are species occurring in 16-100 hectares in Great Britain.

Invasive Non-Native Species

Any non-native animal or plant that has the ability to spread causing damage to the environment, the economy, our health and the way we live.

Appendix B

Summary of Ecological Desk Study Data

Protected/priority/invasive non-native species records returned from SEWBReC within the last 10 years and within 1km of the Site (5km for bats) are provided in the following tables .

Bats Within 5 km of the Site

Common Name	Scientific Name	Legislation / Conservation Status	No. of Records	Most Recent Record
Bat (species unknown)	*Chiroptera*	EPS, WCA5, LBAP (RCT)	14	March 2022
Brown long-eared bat	*Plecotus auritus*	EPS, HDir, WCA5, S7, Bern, RDB2 (UK)	141	February 2022
Common pipistrelle	*Pipistrellus pipistrellus*	EPS, HDir, WCA5, S7, Bern, RDB2 (UK)	635	August 2022
Daubenton's bat	*Myotis daubentonii*	EPS, HDir, WCA5, Bern, RDB2 (UK)	4	July 2023
Greater horseshoe bat	*Rhinolophus ferrumequinum*	EPS, HDir, WCA5, S7, Bern, RDB2 (UK)	16	August 2021
Lesser horseshoe bat	*Rhinolophus hipposideros*	EPS, HDir, WCA5, S7, Bern, RDB2 (UK)	117	July 2023
Long-eared bat species	*Plecotus*	EPS, HDir, WCA5, Bern	3	January 2019
Myotis bat species	*Myotis*	EPS, HDir, WCA5, Bern	316	October 2021
Natterer's bat	*Myotis nattereri*	EPS, HDir, WCA5, Bern, RDB2 (UK)	2	July 2023
Noctule bat	*Nyctalus noctula*	EPS, HDir, WCA5, S7, Bern, RDB2 (UK)	82	October 2021
Nyctalus bat species	*Nyctalus*	EPS, HDir, WCA5, S7, Bern, RDB2 (UK)	43	October 2021
Pipistrelle bat species	*Pipistrellus*	EPS, WCA5	266	October 2021
Serotine	*Eptesicus serotinus*	EPS, HDir, WCA5, Bern, RDB2 (UK)	5	July 2021
Soprano pipistrelle	*Pipistrellus pygmaeus*	EPS, HDir, WCA5, S7, Bern, RDB2 (UK)	90	May 2022

Protected and Priority Species within 2km of the Site (excluding bats)

Common Name	Scientific Name	Legislation / Conservation Status	No. of Records	Most Recent Record
Amphibians				
Common frog	*Rana temporaria*	HDir, WCA5, Bern	7	2019
Common toad	*Bufo bufo*	WCA5, S7, Bern	10	June 2020
Palmate newt	*Lissotriton helveticus*	WCA5, Bern	4	August 2022
Birds				
Barn owl	*Tyto alba*	WCA1.1, WCA9, Bern, CITES	2	February 2021
Black-headed gull	*Chroicocephalus ridibundus*	BDir22, S7, WBR(RSPB), LBAP (GWY, VOG), UKBAm(RSPB)	13	November 2021
Bullfinch	*Pyrrhula pyrrhula*	S7, WBR(RSPB), UKBAm(RSPB)	25	2021
Cuckoo	*Cuculus canorus*	S7, WBR(RSPB), UKBR(RSPB)	9	May 2019
Curlew	*Numenius arquata*	BDir22, S7, WBR(RSPB)	5	2019
Dunnock	*Prunella modularis*	S7, Bern, UKBAm(RSPB)	61	2021
Fieldfare	*Turdus pilaris*	BDir22, WCA1.1, WBAm(RSPB), UKBR(RSPB)	1	November 2016
Goldeneye	*Bucephala clangula*	BDir22, WCA1.2, UKBAm(RSPB)	2	2019
Goshawk	*Accipiter gentilis*	WCA1.1, WCA9, CITES	3	September 2016
Greenshank	*Accipiter gentilis*	WCA1.1, WCA9, CITES	1	August 2016
Hen harrier	*Circus cyaneus*	BDir1, WCA1.1, S7, CITES, WBR(RSPB)	1	September 2015

Common Name	Scientific Name	Legislation / Conservation Status	No. of Records	Most Recent Record
Herring gull	*Larus argentatus*	BDir22, S7, WBR(RSPB), UKBR(RSPB)	73	2021
Hobby	*Falco subbuteo*	WCA1.1, Bern, CITES	1	August 2018
House sparrow	*Passer domesticus*	S7, WBAm(RSPB), UKBR(RSPB)	57	July 2021
Kestrel	*Falco tinnunculus*	S7, Bern, CITES, WBR(RSPB), UKBAm(RSPB	45	May 2021
Kingfisher	*Alcedo atthis*	BDir1, WCA1.1, Bern, WBAm(RSPB), UKBAm(RSPB)	6	September 2022
Lapwing	*Vanellus vanellus*	BDir22, S7, WBR(RSPB)	33	2021
Linnet	*Linaria cannabina*	S7, Bern, WBR(RSPB), UKBR(RSPB)	17	2021
Little ringed plover	*Charadrius dubius*	WCA1.1, Bern	6	2019
Merlin	*Falco columbarius*	BDir1, WCA1.1, Bern, CITES, WBR(RSPB), UKBR(RSPB)	1	March 2020
Peregrine	*Falco peregrinus*	BDir1, WCA1.1, Bern, CITES	5	June 2017
Red kite	*Milvus milvus*	BDir1, WCA1.1, WCA9, CITES, WBAm(RSPB)	75	December 2022
Redwing	*Turdus iliacus*	BDir22, WCA1.1, WBAm(RSPB), UKBR(RSPB)	1	October 2015
Reed bunting	*Emberiza schoeniclus*	S7, Bern, WBAm(RSPB), UKBAm(RSPB),	32	May 2020
Skylark	*Alauda arvensis*	BDir22, S7, Bern, WBAm	44	February 2020
Song thrush	*Turdus philomelos*	BDir22, S7, Bern, WBAm	46	2021
Spotted flycatcher	*Muscicapa striata*	S7, Bern, WBR(RSPB), UKBR(RSPB)	1	May 2016
Starling	*Sturnus vulgaris*	BDir22, S7, Bern, WBR(RSPB), UKBR(RSPB)	15	2021
Tree pipit	*Anthus trivialis*	S7, Bern, WBAm(RSPB), UKBR(RSPB)	3	2017
Whimbrel	*Numenius phaeopus*	BDir22, WCA1.1, WBAm(RSPB), UKBR(RSPB)	1	April 2019
Wood warbler	*Phylloscopus sibilatrix*	S7, WBR(RSPB), UKBR(RSPB)	1	May 2018
Fungi				
Dark-purple earthtongue	*Geoglossum atropurpureum*	S7, LI(BIS)	1	November 2020
Date waxcap	*Hygrocybe spadicea*	S7	1	October 2019
Nail fungus	*Poronia punctata*	S7	1	June 2019
Invertebrates				
Autumnal rustic	*Eugnorisma glareosa*	S7	1	September 2015
Blood-vein	*Timandra comae*	S7	2	August 2021
Brindled beauty	*Lycia hirtaria*	S7	3	2023
Broom moth	*Ceramica pisi*	S7	2	August 2022
Buff ermine	*Spilosoma lutea*	S7	6	2023
Cinnabar	*Tyria jacobaeae*	S7	9	August 2022
Dark-barred twin-spot carpet	*Xanthorhoe ferrugata*	S7	3	June 2021
Dingy skipper	*Erynnis tages*	S7, RDB1 (UK) - VU, LI(SEWBReC),	3	June 2021
Dot moth	*Melanchra persicariae*	S7	1	July 2023
Dusky brocade	*Apamea remissa*	S7	1	June 2015
Dusky thorn	*Ennomos fuscantaria*	S7	2	August 2022
Ear moth	*Amphipoea oculea*	S7	1	August 2015
Flounced chestnut	*Anchoscelis helvola*	S7	1	September 2015
Garden tiger	*Arctia caja*	S7	2	2023
Ghost moth	*Hepialus humuli*	S7	1	June 2021
Grass rivulet	*Perizoma albulata*	S7	4	June 2023
Grayling	*Hipparchia semele*	S7, RDB1 (UK) - VU, LI(SEWBReC)	3	July 2022

Common Name	Scientific Name	Legislation / Conservation Status	No. of Records	Most Recent Record
Green-brindled crescent	*Allophyes oxyacanthae*	S7	2	October 2023
Knot grass	*Acronicta rumicis*	S7	1	June 2015
Marsh fritillary	*Euphydryas aurinia*	HDir, WCA5, S7, Bern, RDB1 (UK) - VU	1	August 2021
Mottled rustic	*Caradrina morpheus*	S7	1	June 2015
Neglected rustic	*Xestia castanea*	S7	1	August 2015
Rustic	*Hoplodrina blanda*	S7	1	July 2023
Sallow	*Cirrhia icteritia*	S7	2	September 2021
Shimmering ruby-tail	*Chrysis fulgida*	S7	1	June 2019
Shoulder-striped wainscot	*Leucania comma*	S7	2	June 2022
Small heath	*Coenonympha pamphilus*	S7, RDB1 (UK) - NT	15	July 2023
Small phoenix	*Ecliptopera silaceata*	S7	2	2023
Small square-spot	*Diarsia rubi*	S7	1	June 2015
White ermine	*Spilosoma lubricipeda*	S7	1	June 2015
Mammals				
Eurasian badger	*Meles meles*	BA, Bern	1	October 2020
Polecat	*Mustela putorius*	HDir, S7, Bern, RDB2 (UK)	1	June 2019
West European hedgehog	*Erinaceus europaeus*	S7, Bern	20	December 2022
Plants				
Bluebell	*Hyacinthoides non-scripta*	WCA8	3	2017
Reptiles				
Slow-worm	*Anguis fragilis*	WCA5, S7, Bern	1	May 2018

Species of Conservation Concern within 2km of the Site

Common Name	Scientific Name	Legislation / Conservation Status	No. of Records	Most Recent Record
Birds				
Common gull	*Larus canus*	BDir22, WBR(RSPB), UKBAm(RSPB)	4	April 2022
Common sandpiper	*Actitis hypoleucos*	WBR(RSPB), UKBAm(RSPB)	2	2019
Coot	*Fulica atra*	BDir21, LBAP (BRG), WBAm(RSPB)	48	2021
Cormorant	*Phalacrocorax carbo*	WBAm(RSPB)	12	March 2021
Dipper	*Cinclus cinclus*	Bern, LBAP (MTR) WBAm(RSPB), UKBAm(RSPB)	26	February 2023
Dunlin	*Calidris alpina*	Bern, WBR(RSPB), UKBAm(RSPB)	1	May 2019
Goldcrest	*Regulus regulus*	Bern, WBAm(RSPB)	24	July 2021
Great black-backed gull	*Larus marinus*	BDir22, WBR(RSPB), UKBAm(RSPB)	2	July 2019
Green woodpecker	*Picus viridis*	Bern, WBAm(RSPB)	19	2021
Greenfinch	*Chloris chloris*	Bern, WBAm(RSPB)	9	March 2021
Grey heron	*Ardea cinerea*	LBAP (RCT), WBAm(RSPB)	24	April 2021
Grey wagtail	*Motacilla cinerea*	Bern, WBAm(RSPB), UKBR(RSPB)	24	2021
Lesser black-backed gull	*Larus fuscus*	BDir22, WBAm(RSPB), UKBAm(RSPB)	49	2021
Long-tailed tit	*Aegithalos caudatus*	WBAm(RSPB)	56	January 2022
Mallard	*Anas platyrhynchos*	BDir21, WBAm(RSPB), UKBAm(RSPB)	107	2022
Meadow pipit	*Anthus pratensis*	Bern, WBAm(RSPB), UKBAm(RSPB)	75	2021
Mistle thrush	*Phoenicurus phoenicurus*	Bern, WBAm(RSPB), UKBAm(RSPB)	33	2021
Oystercatcher	*Haematopus ostralegus*	BDir22, WBAm(RSPB), UKBAm(RSPB)	1	October 2016

Common Name	Scientific Name	Legislation / Conservation Status	No. of Records	Most Recent Record
Redshank	*Tringa totanus*	BDir22, WBAm(RSPB), UKBAm(RSPB)	1	July 2019
Redstart	*Phoenicurus phoenicurus*	Bern, WBAm(RSPB), UKBAm(RSPB)	5	April 2018
Sand martin	*Riparia riparia*	Bern, WBAm(RSPB)	8	May 2021
Short-eared owl	*Asio flammeus*	BDir1, Bern, CITES, WBR(RSPB), UKBAm(RSPB),	2	February 2019
Shoveler	*Spatula clypeata*	BDir21, CITES, WBAm(RSPB), UKBAm(RSPB),	2	July 2021
Snipe	*Gallinago gallinago*	BDir21, WBAm(RSPB), UKBAm(RSPB)	4	March 2021
Southern cormorant	*Phalacrocorax carbo sinensis*	WBAm(RSPB)	2	2019
Swallow	*Hirundo rustica*	Bern, WBAm(RSPB)	36	2021
Swift	*Apus apus*	LBAP (RCT), WBAm(RSPB), UKBAm(RSPB)	30	June 2021
Teal	*Anas crecca*	BDir21, CITES, WBAm(RSPB), UKBAm(RSPB)	2	January 2016
Tufted duck	*Aythya fuligula*	BDir21, WBAm(RSPB)	8	June 2020
Wheatear	*Oenanthe oenanthe*	Bern, WBAm(RSPB)	38	June 2021
Whinchat	*Saxicola rubetra*	Bern, WBR(RSPB), UKBR(RSPB)	1	September 2018
Whitethroat	*Curruca communis*	WBR(RSPB)	8	June 2021
Wigeon	*Mareca penelope*	BDir21, CITES, WBAm(RSPB), UKBAm(RSPB)	7	2019
Willow warbler	*Phylloscopus trochilus*	WBR(RSPB), UKBAm(RSPB)	44	2021
Fungi				
Illosporiopsis christiansenii	*Illosporiopsis christiansenii*	RDB2 (UK) - S	1	January 2022
Invertebrates				
Beet moth	*Scrobipalpa ocellatella*	RDB2 (UK) - N	1	August 2022
Norellia spinipes	*Norellia spinipes*	RDB2 (UK) - N	1	April 2023
Northern grey	*Scoparia ancipitella*	RDB2 (UK) - NB	1	June 2022
Pied grey	*Eudonia delunella*	RDB2 (UK) - NB	2	2023
Saldula orthochila	*Saldula orthochila*	RDB2 (UK) - S	1	August 2022
Scarce grass-veneer	*Crambus pratella*	RDB2 (UK) - NB	2	July 2022
Tetanocera punctifrons	*Tetanocera punctifrons*	RDB2 (UK) - N	1	August 2022
Plants				
Good-King-Henry	*Chenopodium bonus-henricus*	RDB1 (UK) - VU, LI(SEWBReC)	2	October 2022

Invasive species within 2km of the Site

Common Name	Scientific Name	Legislation / Conservation Status	No. of Records	Most Recent Record
Birds				
Canada goose	*Branta canadensis*	BDir21, WCA9, INNS	38	September 2022
Invertebrates				
Harlequin ladybird	*Harmonia axyridis*	INNS	6	September 2023
Signal crayfish	*Pacifastacus leniusculus*	WCA9, INNS	1	July 2022
Mammals				
Eastern grey squirrel	*Sciurus carolinensis*	WCA9, INNS	3	August 2015
Plants				
Bluebell (Spanish)	*Hyacinthoides non-scripta x hispanica = H. x massartiana*	INNS	1	June 2019
Butterfly-bush	*Buddleja davidii*	INNS	6	May 2020
Canadian waterweed	*Elodea canadensis*	INNS	1	August 2015
Cherry laurel	*Prunus laurocerasus*	INNS	6	2018

Common Name	Scientific Name	Legislation / Conservation Status	No. of Records	Most Recent Record
Heath star moss	*Campylopus introflexus*	INNS	5	October 2019
Himalayan honeysuckle	*Leycesteria formosa*	INNS	1	June 2019
Hollyberry cotoneaster	*Cotoneaster bullatus*	WCA9, INNS	1	August 2015
Japanese knotweed	*Fallopia japonica*	WCA9, INNS	15	May 2022
Japanese rose	*Rosa rugosa*	WCA9, INNS	2	May 2020
Montbretia	*Crocosmia pottsii x aurea = C. x crocosmiiflora*	WCA9, INNS	4	June 2019
Pampas-grass	*Cortaderia selloana*	INNS	1	June 2019
Rhododendron	*Rhododendron ponticum*	WCA9, INNS	2	August 2015
Snowberry	*Symphoricarpos albus*	INNS	2	June 2019
Wilson's honeysuckle	*Lonicera nitida*	INNS	1	August 2015

Legislation: Abbreviations and descriptions			
BAP	UK Biodiversity Action Plan	UKBA	RSPB UK Birds Amber List (not based on IUCN criteria)
BDir1	EU Birds Directive Annexe 1	UKBR	RSPB UK Birds Red List (not based on IUCN criteria)
BDir2.1	EU Birds Directive Annexe 2.1	WBA	RSPB Welsh Birds Amber List (not based on IUCN criteria)
BDir2.2	EU Birds Directive Annexe 2.2	WBR	RSPB Welsh Birds Red List (not based on IUCN criteria)
Bern	Bern Convention on the Conservation of European Wildlife and Natural Habitats	WCA1.1	Wildlife & Countryside Act 1981 Schedule 1.1 (Birds which are protected at all times)
Bonn	Bonn Convention on the Conservation of Migratory Species of Wild Animals	WCA1.2	Wildlife & Countryside Act 1981 Schedule 1.2 (Birds which are protected at certain times)
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora	WCA5	Wildlife & Countryside Act 1981 Schedule 5 (Animals which are protected from killing and taking, possession, disturbance and sale)
EPS	European Protected Species	WCA8	Wildlife & Countryside Act 1981 Schedule 8 (Plants which are protected)
HDir	EU Habitats Directive	WCA9	Wildlife & Countryside Act 1981 Schedule 9 (Non-native animals and plants which are established in the wild)
INNS	Invasive Non-native Species	WVP	IUCN Threat Listing of Welsh Vascular Plants
LBAP	Local Biodiversity Action Plan species for the listed area	LI	Locally Important within the listed area
LBAP [BRG]	Bridgend County Borough Council Local Biodiversity Action Plan	LI (SEWBReC)	Locally Important Species (as identified by local specialists) in SEWBReC area.
NRW	Natural Resources Wales Priority Species	LI (VC##)	Locally Important Species (as identified by local specialists) in Vice County ##
PBA	Protection of Badgers Act 1992	LI (VC##, LS)	Locally Scarce in Vice County ##
RD1(UK)	Red Data Book listing for the UK based on IUCN guidelines (CE= Critically Endangered, EN= Endangered, VU= Vulnerable, NT= Near Threatened, LC=Least Concern)	LI (VC##, LR)	Locally Rare in Vice County ##
RD1 (Wales)	Red Data Book listing for Wales based on IUCN guidelines	LI (VC##, EX)	Extinct in Vice County ##
RD2(UK)	Red Data Book listing for the UK not based on IUCN guidelines	LI (VC##, UR)	Under Recorded in Vice County ##
S7	Environment (Wales) Act 2016 (Section 7)	##	Vice County number. For more information on Vice Counties visit: https://www.ukbutterflies.co.uk/webpage.php?name=site_terms

Appendix C - Botanical List

Botanical List. Species abundance classified under ACFOR scale (A-Abundant; C-Common; F – Frequent; O-Occasional; R-Rare). L preceding abundance indicates Locally.

Common Name	Scientific Name	ACFOR
Plantation woodland		
Silver birch	*Betula pendula*	A
Dogwood	*Cornus sanguinea*	C
Italian alder	*Alnus cordata*	F
Downy birch	*Betula pubescens*	F
Willow species	*Salix* sp.	F
Goat willow	*Salix caprea*	F
Grey willow	*Salix cineria*	F
Gorse	*Ulex europaeus*	O
Oak species	*Quercus* sp.	O
Larch species	*Larix* sp.	O
Pine species	*Pinus* sp.	O
Alder	*Alnus glutinosa*	O
Norway maple	*Acer platinoides*	O
Aspen	*Populus tremula*	O
White poplar	*Populus alba*	O
Hawthorn	*Cretaegus monogyna*	O
Guelder rose	*Viburnum opulus*	O
European Spindle	*Euonymous europaeus*	R
Wild privet	*Ligustrum vulgare*	R
Elder	*Sambucus nigra*	R
Woodland understorey species		
Bramble	*Rubus fruticosus* agg.	A
Common ivy	*Hedera helix*	A
Wavy hairgrass	*Deschampsia cespitosa*	C
Lords and ladies	*Arum maculatum*	O
Continuous scrub		
Gorse	*Ulex europaeus*	A
Bramble	*Rubus fruticosus* agg.	A
Japanese knotweed	*Fallopia japonica*	O
Scattered scrub		
Willow species	*Salix* sp.	A
Butterfly-bush	*Buddleia davidii*	A
Bramble	*Rubus fruticosus* agg.	A
Birch species (saplings)	*Betula* sp.	A
Gorse	*Ulex europaeus*	F
Cotoneaster species	*Cotoneaster* sp.	O
Scattered trees		
Silver birch	*Betula pendula*	A
Willow species	*Salix* sp.	C
Poplar species	*Populus* sp.	O
Semi-improved acid grassland		
Red fescue	*Festuca rubra*	C

Common Name	Scientific Name	ACFOR
Tormentil	*Potentilla erecta*	C
Creeping bent	*Agrostis stolonifera*	C
Common sorrel	*Rumex acetosa*	C
Soft rush	*Juncus effusus*	O
Blunt -flowered rush	*Juncus subnodulosus*	O
Heath bedstraw	*Galium saxatile*	O
Heather	*Calluna vulgaris*	O
Semi-improved neutral grassland		
Common bent	*Agrostis capillaris*	C
Cock's foot	*Dactylis glomerata*	F
Common knapweed	*Centaurea nigra*	F
Oxeye daisy	*Leucanthemum vulgare*	F
Meadow buttercup	*Ranunculus acris*	O
Yorkshire fog	*Holcus lanatus*	O/LA
Red clover	*Trifolium pratense*	O
Ribwort plantain	*Plantago lanceolata*	O
Dove's- foot cranesbill	*Geranium molle*	O
Daisy	*Bellis perennis*	O
Dandelion species	*Taraxacum* sp.	O
A moss	*Rhitidiadelphus squarrosus*	O/LA
Poor semi-improved grassland		
Common bent	*Agrostis capillaris*	A
Creeping bent	*Agrostis stolonifera*	C
Fescue species	*Festuca* sp.	C
Perennial ryegrass	*Lolium perenne*	C
Daisy	*Bellis perennis*	O
Ribwort plantain	*Plantago lanceolata*	O
Semi-improved calcareous grassland		
common bird's-foot-trefoil	*Lotus corniculatus*	A
rough hawkbit	*Leontodon hispidus*	A
mouse-ear hawkweed	*Pilosella officinarum*	F
Lichen species	*Cladonia* sp.	F
Glaucous sedge	*Carex flacca*	F
Oxeye daisy	*Leucanthemum vulgare*	F
crested dog's tail	*Cynosaurus cristatus*	O
Red fescue	*Festuca rubra*	O
Sweet vernal grass	*Anthoxanthum odoratum*	O
Fairy flax	*Linum catharticum*	O
Common catsear	*Hypochaeris radicata*	O
Black medic	*Medicago lupulina*	O
Marsh/ marshy grassland		
Soft rush	*Juncus effusus*	F
Rosebay willowherb	*Chamerion angustifolium*	F
Great willowherb	*Epilobium hirsutum*	F
Blunt-flowered rush	*Juncus subnodulosus*	F
Glaucous sedge	*Carex flacca*	F
Common sedge	*Carex nigra*	F

Common Name	Scientific Name	ACFOR
Bulrush	*Typha latifolia*	O
Lesser spearwort	*Ranunculus flammula*	O
Marsh thistle	*Cirsium palustre*	O
Water mint	*Mentha aquatica*	O
Lesser pond sedge	*Carex acutiformis*	O/LA
Hard rush	*Juncus inflexus*	O
Compact rush	*Juncus conglomeratus*	O
Standing water		
Fool's watercress	*Helosciadium nodiflorum*	A
Glaucous sedge	*Carex flacca*	F
Common sedge	*Carex nigra*	F
Bulrush	*Typha latifolia*	O
Willow species	*Salix* sp.	O
Introduced shrub		
Coralberry	*Symphiocarpus orbiculatus*	A
Honeysuckle species	*Lonicera* sp.	C

Appendix D – Photographs

Photograph 1: Mature plantation woodland (rear of image) on western boundary of Survey Area. Image taken looking east.	**Photograph 2:** Relatively recent plantation woodland in the north of the Site. Image taken looking west.
	
Photograph 3: Dense gorse scrub within the Site.	**Photograph 4:** Semi-improved neutral grassland (foreground) extensively present around the margins of the Site. Image taken looking south.
	

Photograph 5: Open mosaic habitats on previously developed land. Extensively present within calcareous grassland areas. Note lichen (*cladonia* species) in foreground, sparse grassland and areas of bare stony ground with occasional standing water. Image taken looking southwest.



Photograph 6: Marsh/ marshy grassland area with areas of standing water at the north of the Site. Image taken looking west towards Goat Mill Rd.



Photograph 7: Standing water in engineered ditch at the north end of the Site. Image taken looking east.



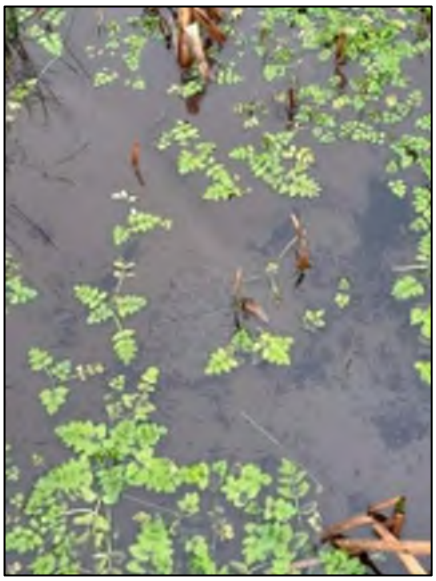
Photograph 8: Running water in engineered ditch at the south end of the Site. Image taken looking west.



Appendix E – Target Notes

Target Note description (locations illustrated on Drawings 70117825-RED-74-XX-M2-L-3001-3002).

Target Note No.	Description	Photograph
1	Small area of acid grassland intergrading with the predominantly calcareous grassland areas of the Site. Species included glaucous sedge, red fescue, tormentil and heath bedstraw. *Cladonia* lichens abundant.	
2	Area of marshy grassland dominated by common sedge. May indicate presence of a rising spring.	
3	Fox scat.	

Target Note No.	Description	Photograph
4	Frogspawn and frog tadpoles in standing water.	
5	Frogspawn.	No image
6	Japanese knotweed growing along margins of engineered watercourse.	
7	Cotoneaster species close to engineered channel. Cotoneaster species were scattered across the Site.	

Target Note No.	Description	Photograph
8	Fallen tree (hung up in other trees) with features with potential to support roosting bats (woodpecker hole and rot holes)	
9	Culvert with low potential to support roosting bats	

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