Land at rear of 40 Victoria Road, Fleur-di-lis, Blackwood

Preliminary Ecological Appraisal

May 2023

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Land at rear of 40 Victoria Road, Fleur-di-lis, Blackwood, NP12 3UG Preliminary Ecological Appraisal and Preliminary Roost Assessment				
Revision	Date	Prepared by	Checked by	Verified by
1.0	19 May 2023	Daisy Smith Assistant Ecologist	Rebecca Corley Assistant Ecologist	Paul Hudson MCIEEM Principal Ecologist

Summary

Brief and Site Location	Acer Ecology Ltd. were instructed by Hannaby Planning Solutions Ltd to conduct a preliminary ecological appraisal and a preliminary roost assessment of land at the rear of 40 Victoria Road, Fleur-di-lis, Blackwood, NP12 3UG, within the boundary Caerphilly County Borough Council (Ordnance Survey Grid Reference centred at: ST 1548 9625).
Development Proposals	The proposed development works comprise the demolition of the existing buildings on site to make way for the construction of five new dwellings with associated parking. Proposals also comprise the construction of a road into the site. A planning application has not yet been submitted at the time of writing.
Impacts to Key Receptors	Further surveys are required to determine the impact of the development on protected species. Provided appropriate precautionary and mitigation measures detailed in Section 4 are implemented, the development is not anticipated to result in adverse impacts to any protected sites and habitats.
Further Surveys	Further surveys are recommended so that the potential for further impacts can be established.
Recommendations	The following provisional recommendations have been developed based on the development proposals available at the time of writing. Further Survey: CEMP, dusk emergence/dawn re-entry surveys for bats, reptile survey; Precautionary measures – timing of works for nesting birds, good construction practices for mammals, protective fencing, pollution prevention measures; Mitigation measures – grassland enhancement and bird boxes; Compensation and enhancement measures – landscaping and lighting strategy.
Licensing Requirements	A bat development licence may be required from NRW upon completion of further surveys.
Conclusions	The full extent of ecological impacts and potential constraints of the proposed development cannot be fully determined, based on the results of the preliminary ecological appraisal survey alone. Further survey work will be required before such assessments can be comprehensively made. At this stage, the site's ecological value is not considered to represent a fundamental in-principal constraint to the proposed development.

1. Introduction

1.1. Brief and Site Location

Acer Ecology Ltd. were instructed by Hannaby Planning Solutions Ltd to conduct a preliminary ecological appraisal and a preliminary roost assessment of land at the rear of 40 Victoria Road, Fleur-di-lis, Blackwood, NP12 3UG, within the boundary Caerphilly County Borough Council (Ordnance Survey Grid Reference centred at: ST 1548 9625)[1]. The assessment documents the baseline ecological condition of the survey area, which is shown by the red line boundary on Plan 1. Designated sites, habitats, protected and notable species of conservation interest that could be affected by the proposed works are identified, and subsequent recommendations provided.

This assessment will provide initial recommendations based on the development proposals available at the time of writing. They should be revised upon finalisation of the design.

1.2. Site Description

The site proposed for development measures approximately 0.74 ha, and comprises a residential dwelling with associated outbuildings. These are surrounded by grassland and bordered by woodland on the western boundary. The proposed development site is situated to the rear of 40 Victoria Road, approximately 9km north of the town of Caerphilly. The site is surrounded to the north, east and south by residential properties with the Rhymney River running adjacent to the western boundary.

1.3. Proposed Works

The proposed development works comprise the demolition of the existing buildings on site to make way for the construction of five new dwellings. Proposals also comprise the construction of a road into the site.

A planning application has not yet been submitted at the time of writing.

The proposed development plan is provided in r
Appendix 1.

1.4. Scope of the Study

The study comprised the following:

A desk study to identify existing information on statutory and non-statutory sites of nature conservation interest, and records of notable or protected habitats or species within the site and its environs;

A Phase 1 Habitat Survey of the site, extended to search for evidence of, and potential for, protected fauna; and

[1] Latitude and Longitude: 51.658674, -3.2231784 / what3words: unearthly.efficient.harsh

Identification of potential ecological constraints to the proposed works at the site and assessments of impacts including appropriate mitigation measures where necessary.

1.5. Reporting

This report aims to:

Outline the methodology used during the survey;

Present the baseline ecological information;

Provide an ecological evaluation of on-site habitats, including an assessment of the potential for protected species;

Assess the potential impacts of the development proposals on ecological receptors;

Assess the potential ecological constraints to the proposals; and

Provide recommendations for further survey, avoidance, mitigation and enhancement where appropriate.

2. Methods

The survey was undertaken following standard methods as derailed in the Chartered Institute of Ecology and Environmental Management (CIEEM) Preliminary Ecological Appraisal 2017 guidelines, and the Phase 1 Habitat Survey manual (Joint Nature Conservation Committee, 2010). The methodology utilised for the survey work comprised a desk study, habitat survey and a survey of protected and notable species.

2.1. Desk Study

2.1.1. Protected Sites, Habitats and Species

Information on designated sites and protected species was obtained from the sources detailed in Table 2. The legislation and policy relating to statutory and non-statutory designated sites can be found in Appendix 2. Plan 2 shows the protected sites in relation to the proposed development site.

Table 1: Summary of Designated Sites and Other Abbreviations

Abbreviations	
Special Areas of Conservation	SAC
Special Protected Area	SPA
Site of Special Scientific Interest	SSSI
National Nature Reserve	NNR
Local Nature Reserve	LNR
Site of Importance for Nature Conservation	SINC
Ancient Semi-Natural Woodland	ASNW
Restored Ancient Woodland Site	RAWS
Plantation on Ancient Woodland Site	PAWS
Ancient Woodland Site of Unknown Category	AWSUC
Natural Resources Wales	NRW
South East Wales Biological Records Centre	SEWBReC

Table 2: Sources of Data

Source	Data	Radius of Search
NRW Geographical Information Systems (GIS) Layers	Statutory and non-statutory nature conservation designated sites ASNW, RAWS and PAWS	Ramsar/SACs/SPAs/SSSIs/NNRs/LNRs – 2km[2] SACs (designated for bats) - 10km. 2km.
SEWBReC	Protected species records (SEWBReC unique reference: 0234-047) SINCs	1km. 1km.

All available records of bat roosts, badger, dormouse, amphibians and reptiles were considered. For other species, only records collected within the last 10 years were considered relevant.

[2] The citations of all the SSSIs and SACs within 2km of the site were consulted to determine if any of them had features or species which could be affected by the development proposals.

The protected species search of 1km is considered appropriate. Page 15 of CIEEM's Guidelines for Preliminary Ecological Appraisals states that 'Existing ecological information for the site and adjacent areas should extend to at least 1km from the site boundaries (or 0.5 km for sites of approximately 1 ha or less). The search for desk study information will need to extend further beyond the site boundaries to ensure that all information of relevance to the assessment has been collected. In this instance a 1km data search for protected species is considered appropriate.

2.1.2. Landscape Context

The site and wider landscape were assessed and characterised using aerial images, Ordnance Survey maps and SEWBReC data. The presence of off-site features and habitats, which add to the ecological value within the wider area (for example, ponds within 0.5km of the site) were identified. Where appropriate, such features were scoped into the detailed assessment of impacts presented in Section 3.

2.1.3. Ancient Woodland

Although ancient woodland is not a designated site as such, it is often listed as a designated site due to its ecological significance and associated protection. Ancient woodland has therefore been included within the non-statutory designated site section of this report.

2.1.4. Planning Authority

The Caerphilly County Borough Council Planning portal[3] was consulted to determine if any previous survey information was available for the site, or immediate surroundings.

2.2. Field Study

2.2.1. Personnel

The field survey was undertaken in fair weather on the 10th May 2023 by Paul Hudson MCIEEM[4] and Daisy Smith[5].

2.2.2. Vegetation and Habitats

The vegetation and habitat types present within the survey area were categorised and mapped in accordance with the standard[6] Phase 1 Habitat assessment methodology (Joint Nature Conservation Committee, 2010), dominant and conspicuous plant species were recorded for each habitat. Target notes were used to record information on features of ecological interest, such as evidence of, or habitats with potential to support protected species or where any features of interest too small to map were recorded.

[3] https://www.caerphilly.gov.uk/Services/Planning-and-building-control/Search,-track-and-comment-on-planning-applications

[4] Paul graduated with a degree in Environmental Biology from Reading University and a Postgraduate Diploma in Conservation Management from the University of East Anglia. He is experienced in undertaking preliminary ecological appraisals and has been involved in ecological survey work since 2001. He has undertaken extensive training in protected species assessment, phase 1 habitat surveys and botanical surveying. Further details of his qualifications and experience can be found at https://www.linkedin.com/in/batsurvey.

[5] Daisy graduated with a degree in Zoology from the University of Southampton. She is an Assistant Ecologist with Acer Ecology and has undergone training in botanical, habitat and protected species surveys.

[6] Some additional categories were also used if applicable e.g. hard standing and Japanese knotweed.

Following the completion of the survey, a colour-coded habitat plan was digitised using QGIS to show the extent and distribution of the different habitat types present within the site (see Plan 3).

Section 7 habitats (Environment Wales Act 2016) Priority Habitats of the UK Biodiversity Action Plan (BAP) (Biodiversity Reporting & Information Group, 2007) were identified and assessed to determine of the site meets the non-statutory designated site criteria (SINC).

Invasive plant species listed on Schedule 9[7] of the Wildlife and Countryside Act 1981 (as amended), such as Himalayan balsam (*Impatiens glandulifera*), giant hogweed (*Heracleum mantegazzianum*) and Japanese knotweed (*Fallopia japonica*) were also noted during the survey, if present.

2.2.3. Protected and Notable Species

Evidence of, and habitats with, potential to support protected or notable species were noted, especially species meeting any of the following criteria:

Listed under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species (Amendment) (EU Exit) ['CHSAEU'] Regulations 2019;

Listed under Section 7 of the Environment (Wales) Act 2016 as being of principal importance for maintaining and enhancing biodiversity in Wales;

Listed as a local priority for conservation, for example in the relevant Local Biodiversity Action Plan (LBAP);

Red Listed using International Union for the Conservation of Nature (IUCN) criteria (e.g. in one of the UK Species Status Project[8] reviews, in the Species of Conservation Concern Red, Amber or Near Threatened List[9], Birds of Conservation Concern in Wales[10], or, where a more recent assessment of the taxonomic group has not yet been undertaken, listed in a Red Data Book);

Listed as a Nationally Rare or Nationally Scarce species (e.g. in one of the Species Status Project reviews) or listed as a Nationally Notable species where a more recent assessment of the taxonomic group has not yet been undertaken; and/or

Endemic to a country or geographic location (it is appropriate to recognise endemic sub-species, phenotypes, or cultural behaviours of a population that are unique to a particular place).

Only those species with potential to be present on-site are mentioned within this report. The methodologies used were as follows:

Birds

[7] Schedule 9 species of plants and animals are ones that do not naturally occur in Great Britain but have become established in the wild and represent a threat to the natural fauna and flora.

[8] The Species Status project is the successor to the JNCC's Species Status Assessment project, providing up-to-date assessments of the threat status of various taxa using the internationally accepted Red List guidelines (http://jncc.defra.gov.uk/page-1773).

[9] Eaton *et al.* (2015) Birds of conservation concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. British Birds 108: 708-746.

[10] Johnstone, I. and Bladwell, S. (2016) Birds of Conservation Concern in Wales 3: the population status of birds in Wales. Birds in Wales 13 (1).

Any birds observed during the field survey were recorded, in addition to features capable of supporting nesting birds (e.g. trees, hedgerows, buildings, bramble, ruderal vegetation and rough grassland etc.). The site was also assessed for its actual and potential suitability to support Wildlife and Countryside Act 1981 (as amended) Schedule 1 species.

A comprehensive bird survey, such as a breeding bird survey, was not undertaken as this was beyond the scope of the assessment.

Bats

Preliminary Ground-level Roost Assessment

A preliminary ground-level roost assessment of the trees within the survey area was undertaken, looking for features that bats could use for roosting (Potential Roost Features[11] (PRF) and evidence of bats (i.e. droppings in, around or below a PRF; odour emanating from a PRF; audible squeaking at dusk or during warm weather; or staining below the PRF). A systematic inspection was carried out around all accessible aspects of the tree, from both close to the trunk and further away. The location of the trees is shown on Plan 5.

The trees were assessed for their suitability to support roosting and hibernating bats in accordance with Table 4.1 of the Bat Conservation Trusts Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016) (See Appendix 4). A high-powered torch (Clulite), an endoscope (Snake vision), binoculars and a ladder were used as appropriate during the survey.

Daytime Internal and External Building Inspection

A systematic search of the exterior and interior of the buildings was undertaken, looking for features that bats could use for entry/ exit and roosting[12] and to search for the presence of bats or evidence of bat use, such as droppings, feeding remains, urine staining, scratch marks and the remains of dead bats.

A high-powered torch (Clulite), an endoscope (Snake vision), binoculars and a ladder were used as appropriate during the survey.

The locations of the buildings are shown on Plan 5.

Terrestrial Habitat Assessment

A preliminary assessment of the value of the site for bats (and any potential roost sites therein) was made in accordance with Table 4.1 of the Bat Surveys for Professional Ecologists (Collins, 2016) (see Appendix 4). The assessment was based on the relative abundance and quality of habitat features within the site, and surrounding landscape, suitable for roosting, foraging and commuting bats.

[11] Potential Roost Features that bats may use identified by Andrews include: woodpecker-holes; squirrel-holes; knot-holes; pruning-cuts; tear-outs; wounds; cankers; compression-forks; butt-rots; lightning strikes; hazard-beams; subsidence-cracks; shearing cracks; transverse cracks; welds; lifting bark; frost-cracks; fluting and ivy.
[12] Bats may utilise gaps as small as 8mm by 20mm (Bat Conservation Trust, Cluster flies leaflet)

Dormice

The scrub and woodland on the western boundary were assessed for their suitability to support dormice (*Muscardinus avellanarius*). The structure and composition of these habitats within the site were assessed with respect to the presence of flower, fruit or nut-bearing food-plants such as hazel (*Corylus avellana*) (a favoured food-plant of dormice), oak (*Quercus* sp.), honeysuckle (*Lonicera periclymenum*), bramble (*Rubus fruticosus* agg.) and sycamore (*Acer pseudoplatanus*), as well as other trees and shrubs listed in the Dormouse Conservation Handbook (Bright, Morris & Mitchell-Jones, 2006) as being of value to dormice. In addition, connectivity to other areas of suitable habitat in the wider landscape, such as hedgerows and woodland, was assessed. No hazel was present on site and therefore it was not possible to undertake a search for hazelnut shells to determine if they had been opened by dormice.

A full nest tube/box/footprint tunnel survey was not undertaken as this was beyond the scope of the assessment.

Great Crested Newts

The survey area was appraised for its suitability to support great crested newts (*Triturus cristatus*) (GCN). The assessment was based on guidance outlined in the Herpetofauna Workers' Manual (Joint Nature Conservation Committee, 2003) and the Great Crested Newt Conservation Handbook (Langton, Beckett & Foster, 2001).

Ordnance Survey maps and aerial images of the land surrounding the site were consulted to determine if any water bodies were present within the site or within 0.5km of it. No additional suitable water bodies were recorded from within the study area. The River Rhymney lies directly adjacent to the western boundary of the site, however, fast flowing water is considered to act as a barrier to GCN migration (English Nature, 2001). This water body was therefore deemed unsuitable for supporting GCN.

SEWBReC returned three GCN records within 1km of the site. All records are found 0.2km to the south of the site, separated by hard barriers such as the B4252 and other residential developments. The likelihood of GCN being present on site is considered to be negligible. No adverse impacts to GCN are therefore anticipated and this species is not mentioned further in this report.

Otters

A preliminary assessment for signs of otter (*Lutra lutra*) was undertaken following the advice provided by Strachan & Jefferies (1996) and Chanin (2003). Where access was available, the banks of the River Rhymney were searched for evidence of otter activity within 10m of the bank. Field signs of otter were recorded if present including spraints (faeces showing food remains), footprints, feeding remains and couches (above ground resting sites normally in thick vegetation cover), as well as potential or actual breeding sites and resting places (i.e. holts or natal dens) which are usually found under roots of bank side trees or in rock piles.

A full otter survey was not undertaken as this was beyond the scope of the assessment.

Water Voles

An assessment of water body adjacent to the survey area was undertaken to determine its suitability for supporting water voles (*Arvicola amphibius*), following methods set out in the Water Vole Conservation Handbook (Strachan & Moorhouse, 2006). In addition, a search for evidence of activity was undertaken, including droppings, latrines, burrows, footprints and feeding lawns, of any areas considered suitable.

A full water vole survey was not undertaken as this was beyond the scope of this assessment.

White-Clawed Crayfish

An assessment of the water body within the survey area was undertaken to determine its suitability to support white-clawed crayfish (*Austropotamobius pallipes*) (WCC), based on the habitat requirements set out in the Ecology of the White-Clawed Crayfish Handbook (Holdich, 2003). Specifically, the presence of undermined/overhanging banks, soft banks for burrows, cobble and rock substrate, submerged refugia and macrophytes.

A full WCC survey was not undertaken as this was beyond the scope of this assessment.

The Caerphilly Local Biodiversity Action plan[13] states that there are no recent records of white-clawed crayfish within Caerphilly County Borough. In addition to this, SEWBReC did not return any records of WCC from within 1km of the site. The likelihood of WCC being present within this water body is therefore considered negligible, and they are not mentioned further in this report.

Reptiles

An assessment of the suitability of on-site habitats to support reptiles was made. Reptiles require a diverse range of habitats to meet their needs such as hedgerows, scrub, rough grassland, woodpiles, rubble, banks and compost heaps. The potential of the site to provide hibernation opportunities and spring/ summer/autumn habitat was also assessed, with reference to guidance provided in the Herpetofauna Workers' Manual (Joint Nature Conservation Committee, 2003), the Reptile Management Handbook (Edgar, Foster & Baker, 2011) and the Reptile Mitigation Guidelines Technical Note TIN 102 (Natural England, 2013). The following factors were considered: vegetation type and structure; insolation (sun exposure); slope aspect; topography; surface geology; habitat connectivity; habitat size; prey abundance; refuge opportunity; hibernation opportunity; egg-laying potential for grass snake (*Natrix helvetica*); public pressure; percentage of shade; levels of disturbance and management regime.

[13] https://www.caerphilly.gov.uk/CaerphillyDocs/Planning/Biodiversity-Action-Plan-Caerphilly-County-Borough.aspx

A targeted presence/likely absence reptile survey was not undertaken as it was beyond the scope of this assessment.

Hedgehogs

The sites potential to support hedgehog was assessed using guidance on habitats of importance in Hedgehogs and Development (Peoples Trust for Endangered Species, 2022)14 with the following habitats particularly favoured: dense scrub to build hibernation nests in during the winter; short grass to forage in for invertebrate prey; longer grass to forage in and to make nests in during the summer; areas of leaf litter to collect and use for hibernation nests; log piles and decaying vegetation to forage in and hibernate in; and hedgerows and boundary vegetation that are important corridors for travel and nesting sites.

Other Species

General habitat suitability and incidental sightings of other animal species were also noted.

2.2.4. Assessment of Ecological Value

The value of the habitats and features of the site have been provisionally evaluated and graded in accordance with a geographical frame of reference as detailed in Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland (CIEEM, 2018). The level of value of specific ecological receptors is assigned using a geographic frame of reference, i.e. international value being most important, then national, regional, county, district, local and, lastly, within the immediate zone of influence of the site only. Brief descriptions of how Acer Ecology interprets these categories are set out in Appendix 4.

2.2.5. Limitations

General Temporal Limitations

Any ecological survey can only identify what was present on-site at the time the survey was conducted and habitat usage by species can change over time.

Incomplete Survey Information

Full surveys for the protected species listed previously have not yet been carried out. Recommendations are outlined in Section 4.

14 https://www.hedgehogstreet.org/wp-content/uploads/2022/08/PTES-BHPS-Hedgehogs-and-development-guide-2022.pdf

3. Baseline Ecological Conditions, Evaluation and Development Impacts

The baseline conditions and evaluation of the *in-situ* habitats and the actual/ potential presence of protected species are discussed in this section. Potential impacts on protected sites, *in-situ* habitats and protected or notable species arising from the proposed development are identified, including both direct and indirect impacts, and those associated with construction and operational stages.

A summary of relevant legislation and planning policies relating to protected sites, habitats and species is provided in Appendices 2 and 3.

3.1. Statutory Nature Conservation Designated Sites

Statutory Sites (SACs or SSSIs) Designated for Bats within 10km of Site

No SACs or SSSIs specially designated for bats lie within 10km of the site.

SSSIs and Country Parks within 2km of Site

The proposed development site lies within 2km of the following statutory sites:

Table 3: Statutory Sites Designated Within 2km

Site Name	Description	Distance and Direction from Development Site	Development Impacts
Penllywn Grasslands SSSI[15]	This site is comprised of a mosaic of habitats including wet acid grassland, woodland, scrub, tall herb vegetation and species-rich Molinia grassland. This complex range of habitats supports a diversity of macro-invertebrate communities. More than 12 species of butterfly and 90 species of macro-moths have been recorded for this site including colonies of the rare marsh fritillary (*Eurodryas aurinia*).	1km to the east of the site.	Due to the distance between the SSSI and proposed development, no adverse impacts are anticipated.
Coetir Bargoed Country Park[16]	Coetir Bargoed Country Park has walks stretching the Rhymney River. It hosts ancient woodland with diverse fauna.	1.3km to the north of the site.	Due to the distance between the SSSI and proposed development, no adverse impacts are anticipated.
Parc Penallta Country Park[17]	Parc Penallta is found at a former coal tip. Containing various walks and trails, it is home to diverse fauna including the green woodpecker (*Picus viridis*).	1.6km to the south-west of the site.	Due to the distance between the SSSI and proposed development, no adverse impacts are anticipated.

[15] https://naturalresources.wales/media/649636/SSSI_0702_Citation_EN001603e.pdf
[16] https://caerphilly.gov.uk/caerphillydocs/things-to-do/countryside/parccoetirbargod.aspx
[17] https://greenspacescaerphilly.co.uk/parc-penallta/

3.2. Non-statutory Nature Conservation Designated Sites

SINCs

The proposed development site lies within 2km of the following non-statutory sites:

Table 4: Non-Statutory Sites Designated Within 2km

Site Name	Description	Distance and Direction from Development Site	Development Impacts
River Rhymney[18]	Designated for its resident populations of bullhead (*Ameiurus melas*) and brown trout (*Salmo trutta*). Watercourses are used as migratory routes and it is a known area for otters (*Lutra lutra*).	Directly west of the site.	A construction and environmental management plan and pollution prevention measures will need to be drawn up and implemented to ensure that there are no detrimental impacts to the River Rhymney. Potential adverse impacts also include light spill, precautionary measures are outlined in Section 4.
Victoria Road Slopes, Fleur De Lys[19]	Designated for its broadleaved woodland with an assemblage of semi-natural indicator species. It is also noted as a potential breeding habitat for otters and dormice.	0.2km south-east of the site	The proposed construction and environmental management plan and pollution prevention measures should ensure that there are no detrimental impacts to the Victoria Road Slopes.
Bryn Ysafan Meadow, Fleur De Lys[20]	Designated for its semi-improved neutral grasslands, hedgerow and scrub. Plants include common knapweed (*Centaurea nigra*) and ox-eye daisy (*Leucanthemum vulgare*).	0.5km south-east of the site	Due to the distance between the sites and the nature of the development no adverse impacts
Cefn Hengoed	Designated for its semi-natural	0.5km west of the	

[18] http://citations.lercwales.org.uk/sinc/cly/SINC197.pdf
[19] http://citations.lercwales.org.uk/sinc/cly/SINC086.pdf
[20] http://citations.lercwales.org.uk/sinc/cly/SINC085.pdf

Grasslands, North of Hengoed[21]	woodland and semi-improved neutral grassland with an assemblage of indicator species. Noted as providing foraging and roosting opportunities for bats.	site	are anticipated.
Upper Trelyn Woodland, South of Pengam[22]	Designated for its semi-natural sessile oak (*Quercus petraea*) woodlands and scrub. The area is likely used by bats and reptiles.	0.6km north-east of the site	
Trelyn Woodland and Meadow, Pontllanfraith[23]	Designated for its semi-natural woodland and neutral grassland. Also noted to contain dingy skipper butterfly (*Erynnis tages*) and is seen to provide foraging and roosting opportunities for bats.	0.7km to the east of the site	
Tir Jack Slopes, East of Penpedairheol[24]	Designated for marshy and neutral grasslands. Noted as likely to be used by foraging bats and the potential to support reptiles.	0.8km north-west of the site	
Cefn Fforest Eco Park, Blackwood[25]	Designated for its heath/acid grassland, scrub woodland, pond and small streams. Reptiles are predicted to be in the area alongside bats and invertebrates such as the marsh fritillary.	0.9km to the north-east of the site	
Crown Estate Meadows, Pontllanfraith[26]	Designated for its esmi-improved neutrall grassland and marshy grassland. Contains a network of mature hedges, with potential to support bats, reptiles, dormice and many invertibrates.	0.9km to the south-east	
Pottery Road Slopes, East of Gelligaer[27]	Designated for its marshy grassland, neutral grassland, and broad-leaved woodland. Noted to provide many commuting, foraging and roosting habitats for bats.	0.9km north-west of the site	

Ancient Woodland Sites

The following table shows the ancient woodland sites within 2km of the site:

Table 5: Ancient Woodland Sites Within 2km

Ancient Woodland Site	Number within 2km of Site
Ancient Semi-Natural Woodland (ASNW)[73]	42
Restored Ancient Woodland Sites (RAWS)[74]	Two
Plantations on Ancient Woodland Sites (PAWS)[75]	Two

[21] http://citations.lercwales.org.uk/sinc/cly/SINC052.pdf
[22] http://citations.lercwales.org.uk/sinc/cly/SINC087.pdf
[23] http://citations.lercwales.org.uk/sinc/cly/SINC083.pdf
[24] http://citations.lercwales.org.uk/sinc/cly/SINC050.pdf
[25] http://citations.lercwales.org.uk/sinc/cly/SINC187.pdf
[26] http://citations.lercwales.org.uk/sinc/cly/SINC082.pdf
[27] http://citations.lercwales.org.uk/sinc/cly/SINC051.pdf

Ancient Woodland Sites of Unknown Category[76]	Six
Nearest Area of Ancient Woodland	An unnamed area of ASNW located less than 20m to the west of the site

3.3. Habitats and Vegetation

The results of the general survey of habitats and vegetation are shown on Plan 5. A botanical species list is provided in Appendix 4.

The site consists of following elements which are described in detail overleaf. These comprise:

Table 6: Habitats Recorded on Site

Phase 1 Habitat	UK Habs Habitat	NVC Habitat	Description	Ecological Value	Development Impacts
Broadleaved Semi-Natural Woodland (A1.1.1)	Woodland and forest - Lowland mixed deciduous woodland (w1)	W10	Broadleaved woodland is present in the north westernmost part of site. The majority of the trees in this area are medium-mature in size. Species present within the woodland include hawthorn (*Crataegus monogyna*), aspen (*Populus tremula*), ash (*Fraxinus excelsior*) and silver birch (*Betula pendula*). There is a fairly dense understorey; bramble (*Rubus fruticosus agg)* is frequent throughout the area, with other species present including nettle (*Urtica dioica*), cleavers (*Galium aparine*), daffodil (*Narcissus* sp), meadow buttercup (*Ranunculus acris*) and yellow pimpernel (*Lysimachia nemorum*).	This is a Section 7 habitat under the Environment Wales Act 2016. District Value. UK Habs high distinctiveness	The woodland is proposed for retention and no direct impact is anticipated. However, inadvertent damage to the woodland to the west could potentially occur during the construction phase of the development. Trees within the western band of woodland could be subject to root damage as a result of heavy plant movement over the root protection area, or accidental damage during general construction activities. Recommendations to avoid and mitigate such impacts are presented in Section 4. Ash trees may also need to be felled or reduced due to the presence of ash dieback (*Hymenoscyphus fraxineus*). See section 4.6.3.
Dense Scrub (A2.1) and	Heathland and shrub - Mixed		Dense scrub is present to the south east of the site. Dominant species include bramble, nettle and cotoneaster (*Cotoneaster* sp).	Site value UK Habs	The scrub to the south-east is currently

Scattered scrub (A2.2)	scrub (h3)		Other species include holly (*Ilex aquifolium*), broad buckler-fern (*Dryopteris dilatata*), chickweed, scaly male-fern (*Dryopteris affinis* agg), soft rush (*Juncus effusus*), foxglove (D*igitalis purpurea*), lady-fern (*Athyrium filix-femina*), raspberry (*Rubus idaeus*), hart's-tongue fern (*Asplenium scolopendrium*), wild cherry (*Prunus avium*), rosebay willowherb (*Epilobium angustifolium*), ivy (*Glechoma hederacea*) and primrose (*Oenothera biennis*). Bramble scrub is also present to the rear of B4 on the eastern boundary of the site and surrounding T3.	medium distinctiveness	proposed for retention. Precautionary measures are outlined in Section 4 in the event of scrub clearance.
Scattered Parkland Broadleaved and Coniferous Trees (A3.1 and A3.2)	Woodland and forest - Wood-pasture and parkland		Scattered broadleaved and coniferous trees are present on the site. Species include a red maple (*Acer sp.)* to the centre of the site, an oak (*Quercus* sp) and silver birch to the south-west of site and a leyland cypress (*Cuppressocyparis leylandii*) to the south-east of the site. Areas of scrub are present around the Leyland cypress.	UK Habs medium distinctiveness	The scattered trees on site are proposed for retention. However, inadvertent damage to the trees could potentially occur during the construction phase of the development. Trees could be subject to root damage as a result of heavy plant movement over the root protection area, or accidental damage during general construction activities. Recommendations to avoid and mitigate such impacts are presented in Section 4.
Former Planter	U1a Open Mosaic Habitats on Previously Developed Land		The former planter to the south of B4 has become overgrown. Dandelion (*Taraxacum officinale* agg.) is dominant, other species present include cleavers, herb-robert (*Geranium robertianum*), rosemary (*Rosmarinus*), nettle, busch-vetch (*Vicia sepium*) and mustard (*Brassica juncea*).	Site value UK Habs low distinctiveness	This habitat will be permanently lost to the development.
Amenity Grassland	g4 Modified grassland	MG6	The majority of the site is comprised of amenity grassland. Species present include St John's wort (*Hypericum*), primrose, cock's-foot	Site value UK Habs low	A large area of this habitat will be lost to

(J1.2)			(*Dactylis glomerata*), sweet vernal-grass (*Anthoxanthum odoratum*), germander speedwell (*Veronica chamaedrys*), creeping buttercup (*Ranunculus repens*), white clover (*Trifolium repens*), creeping bent (*Agrostis stolonifera*), red clover (*Trifolium pratense*), red fescue (*Festuca rubra*), perennial rye-grass (*Lolium perenne*), dandelion, yarrow (*Achillea millefolium*), common cat's-ear (*Hypochaeris radicata*), hawkweed (*Hieracium* sp), ragwort (*Senecio jacobaea*), self-heal (*Prunella vulgaris*), lesser stitchwort (*Stellaria graminea*) and field wood-rush (*Luzula campestris*). To the south of the site an area of the lawn is dominant with spongy turf moss (*Rhytidiadelphus squarrosus*), other present species include thyme-leaved speedwell, common knapweed and common sorrel.	distinctiveness	the development. Compensatory measures are recommended in Section 4.
Fence (J3.4)	Urban-Built Linear Features Very Low Distinctiveness		There is a fence present at the eastern front of the site, leading toward B1 and running along the eastern edge of the site.	Negligible value UK Hab Low Distinctiveness	No adverse impacts are anticipated.
Wall	Urban-Built Linear Features Very Low Distinctiveness		There is a stone wall at the north-east of the property covering the lower third of the hedge, and a stone wall to the rear of B3. The wall is colonised by spleenwort (*Asplenium* sp) and ivy.	Negligible value	The wall contains suitable crevices for roosting bats. Further work is recommended in Section 4.
Intact Species Poor Hedgerow (J2.1.1)	H2a hedgerow		A privet (*Ligustrum* sp.) hedge is present on the north eastern boundary of the site overhanging the wall. Other species here include ivy and maidenhair spleenwort (*Asplenium trichomanes*).	Local Value	Precautionary measures such as timing of works for nesting bird are outlined in Section 4 of the report. Compensatory measures are also outlined in Section 4.
Buildings (J.3.6)	Urban - Developed land; sealed surface (u1b)		Detailed building descriptions are provided in Section 3.5.3 below. B3 is colonised by spleenwort and ivy.	Site value UK Habs very low	All buildings on site will be permanently cleared to facilitate the development. Further

				distinctiveness.	work and precautionary measures are outlined in Section 4.
Hard Standing[13]	Urban - Developed land; sealed surface (u1b)		Areas of hard standing are colonised by cleavers, dandelion, ribwort plantain, nettle, and herb-robert.	Negligible value. UK Habs very low distinctiveness.	Permanent loss to the development. No negative impacts are anticipated.

Photo 1: Broadleaved Woodland to the North of Site

Photo 2: Broadleaved Woodland to the South of Site with Scattered Broadleaved Trees

Photo 3: Broadleaved Woodland to the South of Site

Photo 4: Scrub to the East of the Site

Photo 5: Former Planter

Photo 6: Colonised Wall

Photo 7: Fence

Photo 8: Amenity Grassland and Fence at the Eastern Front of the Site

Photo 9: Example of Colonised Hard Standing

3.4. Invasive Plant Species

No invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were recorded during the site visit.

3.5. Assessment of Ecological Value of Off-site Habitats

Survey Results

The river Rhymney and woodland directly to the west of the site are considered to be potentially of value to bats, nesting birds, otters and water voles.

Assessment of Development Impacts

The woodland habitat to the western boundary of the site offers high-quality habitat for a number of species. As the woodland including ash trees are currently proposed for retention and the woodland is within a designated dark corridor during both the construction and operation phase of the development, we do not consider it to be proportionate to undertake further surveys for bats in relation to the woodland. Protective fencing and pollution prevention measures are outlined in Section 4.

3.6. Protected and Notable Species

3.6.1. Notable Plant Species

Data Trawl Results

SEWBReC returned records of 40 rare and/ or 'notable' plants (including species regarded as 'Locally Important', LBAP species and UK Red Data Book-listed species).
Two priority plant species were recorded within 1km of the site, namely: bluebell (*Hyacinthoides non-scripta*) and wood bitter-vetch (*Vicia orobus*). However, bluebell is mainly protected from sale via its listing under Schedule 8 of the Wildlife and Countryside Act.

One plant listed as species of conservation concern were recorded within 1km of the site, namely the welsh poppy (*Meconopsis cambrica*).

21 plant listed as locally important species were recorded within 1km of the site, namely: stinking iris (*Iris foetidissima*), hoary plantain (*Plantago media*), heath dog-violet (*Viola canina*), smooth lady's-mantle (*Alchemilla glabra*), blunt-fruited water-starwort (*Callitriche obtusangula*), various-leaved water-starwort (*Callitriche platycarpa*), thin-spiked wood-sedge (*Carex strigosa*), southern marsh-orchid (*Dactylorhiza praetermissa*), ficaria verna var. bulbifer (*Ficaria verna var. bulbifer*), alder buckthorn (*Frangula alnus*), smith's pepperwort (*Lepidium heterophyllum*), odontites vernus subsp. serotinus (*Odontites vernus subsp. serotinus*), cowslip (*Primula veris*), bird cherry (*Prunus padus*), yellow-rattle (*Rhinanthus minor*), soft downy-rose (*Rosa mollis*), heath pearlwort (*Sagina subulata*), unbranched bur-reed (*Sparganium emersum*), hybrid woundwort (*Stachys sylvatica x palustris = S. x ambigua*), lesser bulrush (*Typha angustifolia*) and grey field-speedwell (*Veronica polita*).

16 plant listed as other plant species (i.e. invasive species) were recorded within 1km of the site, namely: butterfly-bush (*Buddleja davidii*), wall cotoneaster (*Cotoneaster horizontalis*), himalayan cotoneaster (*Cotoneaster simonsii*), montbretia (*Crocosmia pottsii x aurea = C. x crocosmiiflora*), bluebell (*Hyacinthoides non-scripta x hispanica = H. x massartiana*), lamiastrum galeobdolon subsp. argentatum (*Lamiastrum galeobdolon subsp. argentatum*), wilson's honeysuckle (*Lonicera nitida*), cherry laurel (*Prunus laurocerasus*), pink purslane (*Claytonia sibirica*), nuttall's waterweed (*Elodea nuttallii*), japanese knotweed (*Fallopia japonica*), spanish bluebell (*Hyacinthoides hispanica*), himalayan balsam (*Impatiens glandulifera*), himalayan honeysuckle (*Leycesteria formosa*), monkeyflower (*Mimulus guttatus*) and snowberry (*Symphoricarpos albus*).

Nine records of bluebell (*Hyacinthoides non-scripta*) were found within 1km of the development footprint comprising:

bluebell (*Hyacinthoides non-scripta*) found 476m to the south-west of the site in 1978;

bluebell (*Hyacinthoides non-scripta*) found 529m to the south-west of the site in 2007;

bluebell (*Hyacinthoides non-scripta*) found 570m to the south-east of the site in 2007;

bluebell (*Hyacinthoides non-scripta*) found 766m to the south of the site in 2018;

bluebell (*H. x massartiana*) found 776m to the south of the site in 2018;

bluebell (*Hyacinthoides non-scripta*) found 820m to the north-east of the site in 2007;

bluebell (*Hyacinthoides non-scripta*) found 875m to the east of the site in 2007;

bluebell (*Hyacinthoides non-scripta*) found 975m to the east of the site in 1978; and

bluebell (*Hyacinthoides non-scripta*) found 997m to the north-west of the site in 2007.

However, none of the records provided relate to the proposed development site.

Field Survey Results

No plant species, which individually are considered to be of either of national, regional or local significance were recorded on the site.

3.6.2. Birds

Desk Study Results

SEWBReC returned records of 28 priority bird species within 1kn of the site, namely: kingfisher (*Alcedo atthis*), tree pipit (*Anthus trivialis*), goldeneye (*Bucephala clangula*), black-headed gull (*Chroicocephalus ridibundus*), cuckoo (*Cuculus canorus*), yellowhammer (*Emberiza citrinella*), reed bunting (*Emberiza schoeniclus*), peregrine (*Falco peregrinus*), hobby (*Falco subbuteo*), kestrel (*Falco tinnunculus*), brambling (*Fringilla montifringilla*), herring gull (*Larus argentatus*), linnet (*Linaria cannabina*), red kite (*Milvus milvus*), house sparrow (*Passer domesticus*), dunnock (*Prunella modularis*), bullfinch (*Pyrrhula pyrrhula*), starling (*Sturnus vulgaris*), redwing (*Turdus iliacus*), song thrush (*Turdus philomelos*), fieldfare (*Turdus pilaris*), barn owl (*Tyto alba*), lesser redpoll (*Acanthis cabaret*), bittern (*Botaurus stellaris*), spotted flycatcher (*Muscicapa striata*), tree sparrow (*Passer montanus*), wood warbler (*Phylloscopus sibilatrix*), and willow tit (*Poecile montanus*).

20 birds listed as species of conservation concern were recorded within 1km of the site, namely: long-tailed tit (*Aegithalos caudatus*), mallard (*Anas platyrhynchos*), meadow pipit (*Anthus pratensis*), swift (*Apus apus*), grey heron (*Ardea cinerea*), greenfinch (*Chloris chloris*), dipper (*Cinclus cinclus*), whitethroat (*Curruca communis*), snipe (*Gallinago gallinago*), swallow (*Hirundo rustica*), common gull (*Larus canus*), lesser black-backed gull (*Larus fuscus*), grey wagtail (*Motacilla cinerea*), cormorant (*Phalacrocorax carbo*), willow warbler (*Phylloscopus trochilus*), green woodpecker (*Picus viridis*), manx shearwater (*Puffinus puffinus*), goldcrest (*Regulus regulus*), mistle thrush (*Turdus viscivorus*), and sand martin (*Riparia riparia*).

SEWBReC also returned three birds listed as locally important species within 1km of the site, namely: little owl (*Athene noctua*), buzzard (*Buteo buteo*) and british dipper (*Cinclus cinclus gularis*).

Two birds listed as other bird species (i.e. invasive species) were recorded within 1km of the site, namely: canada goose (*Branta canadensis*), and ring-necked parakeet (*Psittacula krameri*).

Field Survey Results

A moderate number of birds were recorded on site, including: blackbird (*Turdus merula*), carrion crow (*Corvus corone*), feral pigeon (*Columba livia*), house sparrow (*Passer domesticus*), jackdaw (*Corvus monedula*), magpie (*Pica pica*) and robin (*Erithacus rubecula*).

Evaluation of Ecological Value of Site for Birds

As a whole, the site is considered to be of site value to birds. It contains numerous features that offer suitable habitats for birds, but all these features are widespread in the surrounding landscape. The areas of scrub and scattered broadleaved and coniferous trees provide nesting and foraging opportunities for a range of tree and scrub-nesting birds species. The amenity grassland offers little nesting value for ground-nesting species due to its short sward height.

Impact Assessment of Proposed Development on Birds

The areas of woodland surrounding the site and scattered broadleaved trees will be retained. The presence of nesting birds within the scrub cannot be ruled out.

The following direct impacts to nesting birds may occur as a result of the development:

Death of injury to adults or destruction of nests during any potential vegetation clearance. However, such impacts can be avoided by timing of works so that they occur outside of the nesting bird season (September to February inclusive), and by adopting sensitive working practices as detailed in Section 4; and

Permanent small-scale nesting habitat loss.

The following indirect impacts to nesting birds may occur as a result of the development:

Habitat degradation; and

Increases in disturbance levels.

3.6.3. Bats

Desk Study Results

SEWBReC returned a total of four records of bat roosts within 1km of the site. The roost records are summarised in the table below.

Table 7: Bat Roost Records

Species	Total Number of Records	Distance to Nearest Record	Most Recent Record	Maximum Count
Common pipistrelle (*Pipistrellus pipistrellus*)	1	0.6km to the south of the site	2009	5

Unidentified bats	3	0.7km to the west of the site	2006	N/A

In addition to the roost records, SEWBReC returned many records of bats foraging or commuting within 1km of the site. These included: Noctule (*Nyctalus noctula*), Natterer's bat (*Myotis nattereri*), soprano pipistrelle (*Pipistrellus pygmaeus*), common pipistrelle and unidentified pipistrelle (*Pipistrellus* sp.).

Field Survey Results and Evaluation of Ecological Value of Site for Bats and Evaluation of Ecological Value of Site for Bats

Trees

No evidence of roosting bats was found in the inspected trees. All of the trees within the site are considered to have negligible potential for supporting roosting bats when assessed against Professional Ecologists guidelines (Collins, 2016). The trees within the site lack suitable roosting features such as holes, cracks, crevices and holes. It is, therefore, highly unlikely that bats would roost in these trees even on a casual or adventitious basis, and there is negligible potential for the trees to be used regularly by roosting bats. In addition to this, all of the trees within the site boundary are proposed for retention.

Photo 10: T1 Red Maple at the Centre of the Site

Photo 11: T2 Leyland Cypress to the East of the Site

Photo 12: T3 and T4 Silver Birch and Oak at the South of the Site

Buildings and Other Structures

The six buildings on site were assessed externally and internally for its suitability to support roosting bats, as set out in the table below:

Table 8: Buildings Assessed for Bat Potential

Building Number	Description and PRF	Evidence of Bats	Roosting Potential
B1	Building 1 is two-storey residential dwelling (Photos 13 – 16). There are two single-storey extensions; one to the western rear and one to the northern side (Photo 14), in addition to a porch adjoining the eastern front (Photo 13). The main roof is dual pitched and constructed of clay interlocking tiles. Both the roof tiles and ridge tiles are composed of clay. Roof tiles are raised at the lower end of all roof pitches, in addition to others on both roof pitches (Photo 25). Edge tiles are capped with uPVC with no gaps suitable for roosting bats (Photo 19). The roof of the eastern porch is constructed of plastic corrugated sheeting (Photo 13). A small vent is present on the northern single-storey extension (Photo 24) with lead flashing at the base which is well sealed. Windows on the eastern and western side of the building sit in wooden frames, these sit flush to external walls. There is a hole present within the frame of a window on the eastern front (Photo 17). The window on the northern single-storey extension sits in a metal frame, a gap is present between the frame and the external walls which could potentially be utilised as a roosting feature for bats (Photo 18). Bargeboards, soffit's and fascias are composed of wood and sit flush to the external walls, with the exception of a broken soffit on the southern side.	None	Moderate

	The loft void is approximately 1.5m high, approximately 6m long and 8m wide (Photo 22). The roof is lined with breathable membrane, no light ingress was visible from inside the void (Photo 23). Fiberglass insulation was also present within the void.			
B2	B2 is a single-storey structure comprised of wood and corrugated metal sheeting (Photo 27 and 28). There are gaps present between the wooden cladded external walls leading into the interior (Photo 29 and 30). The roofs are comprised of both bitumen felt and corrugated metal sheeting (Photo 29). There are numerous gaps present between adjacent metal sheets. There are numerous windows and doors present on each elevation, these sit in wooden frames (Photo 27 and 28). Multiple window panes are missing on the southern and western side. The interior of B2 is relatively light inside, with no dedicated loft void. The roof of B2 is not lined (Photo 31).	None	Moderate	
B3	B3 is a single-storey outbuilding comprised of stone (Photo 32). The southern front is rendered. There are numerous gaps within the stone exterior walls which could be utilised by roosting bats (Photo 32). There is a large gap in the wall of the western side, allowing access into the interior. There is a wooden door on the southern front, which sits in a wooden frame, a large gap is present between the frame and external walls. The external walls are colonised by ivy which has formed thick mats which could be utilised by roosting bats.	None	Moderate	
B4	B4 adjoins B3 by a stone wall. B4 is a single-storey structure comprised of corrugated metal sheeting and wooden cladding (Photos 34 and 35). Multiple windows are present on the south and western side, these along with the doors sit in wooden frames (Photos 34 and 35). There a large gaps present between the wooden doors and external walls that could feasibly be utilised by roosting bats (Photo 37). The interior is relatively light. Gaps are present between adjacent metal sheets, which could be utilised by bats into the interior.	None	Low	
B5	B6 is a single-storey structure composed of corrugated plastic sheeting. B6 was previously used as a greenhouse (Photos 38 and 39). The structure is supported internally by wooden beams. Sections of the western exterior walls are broken leading to access to the interior.	None	Negligible	Negligible
B6	B6 is a single-storey structure comprised of wood and reinforced by steel (Photos 40 – 42). The roof is lined with bitumen felt, which is well sealed. There are numerous gaps present between adjacent wooden boards, these could be utilised by bats to gain access into the interior. There are 4 vents present on the external walls, two on both the northern and southern side - an unidentified bird was observed entering through these (Photo 41).	None	Moderate	Negligble

Photo 13: Eastern Front – B1

Photo 14: Western Rear – B1

Photo 15: Northern Side – B1

Photo 16: View of the Roof – B1

Photo 17: Hole within Wooden Window Frame – B1

Photo 18: Gap Present Surrounding Metal Window Fixtures – B1

Photo 19: Capped End Tiles and Wooden Bargeboard – B1

Photo 20: View of Bargeboard – B1

Photo 21: View of Eastern Porch – B1

Photo 22: Loft Void – B1

Photo 23: Fiberglass Insulation Present Inside the Void – B1

Photo 24: Vent with Lead Flashing at the Base – B1

Photo 25: Example of Raised Tiles – B1

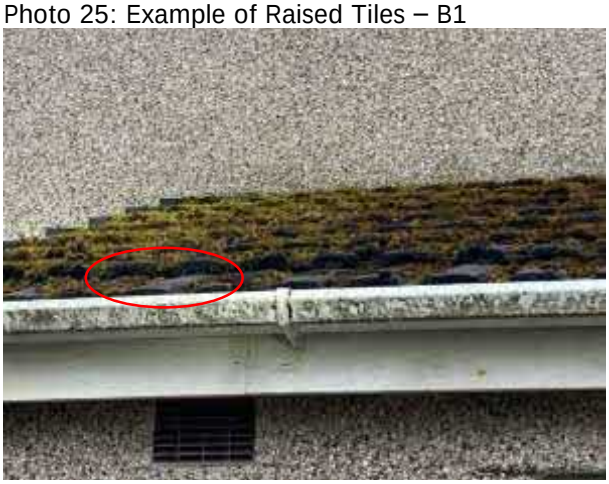

Photo 26: Broken Soffit Box – B1

Photo 27: Southern Side – B2

Photo 28: Northern Side – B2

Photo 29: Example of Roof Lining and External Walls – B2

Photo 30: Interior View - B2

Photo 31: Interior View – B2

Photo 32: Southern Front – B3

Photo 33: Western Side – B3

Photo 34: South-Western View – B4

Photo 35: North-Western View – B4

Photo 36: Interior View – B4

Photo 37: External Walls – B4

Photo 38: Western Side – B5

Photo 39: Northern Rear – B5

Photo 40: Southern Side – B6

Photo 41: Western Side – B6

Photo 42: Northern Side – B6

Potential Foraging and Commuting Habitat

The site is collectively considered to provide high quality foraging and commuting habitat for bats due to the close proximity of woodland and Rhymney River located directly on the western boundary of site. These habitats form a continuous habitat corridor and connect the site to the wider landscape.

Impact Assessment of Proposed Development on Bats

Modifications to buildings B1, B2, B3, B4 and B6 may result in the potential loss of roosting sites for bats. Any works therefore may result in the death, injury, or disturbance to any bats present at the time of works, or the loss of the roost. Further survey will therefore be required on B1, B2, B3, B4 and B6, as detailed in section 4.

Additionally, indirect impacts to bats may occur as a result of the development due to potential increases in artificial lighting levels may be significant, both during the construction phase and the operational phase of the development. If this lighting envelops the retained trees and vegetation of the site, it could adversely affect foraging and commuting bats. A lighting strategy is outlined in Section 4.

3.6.4. Dormice

Desk Study Results

SEWBReC returned a total of one dormice records within 1km of the site, located in Cefn Hengoed Hillside, North of Hengoed, 0.5km to the west of the site dating from 2000.

Field Survey Results and Evaluation of Ecological Value of Site for Dormice

No evidence of dormouse was found on site during the survey. The majority of the site lacks the vegetation to provide dormice with protective cover or foraging opportunities and are considered to be wholly unsuitable for dormice. However, the woodland to the western site boundary is structurally suitable and contains a few food plants known to form part of the dormice diet.

Impact Assessment of Proposed Development on Dormice

The presence of dormice within the western woodland cannot be ruled out completely. Therefore, dormice may indirectly be affected as a result of the development through increases in artificial lighting. Precautionary measures are outlined in Section 4.

3.6.5. Otter

Desk Study Results

SEWBReC did not return any records of otter from within 1km of the site.

Field Survey Results and Evaluation of Ecological Value of Site for Otters

No evidence of otter was identified from the Rhymney River adjacent to the site. However, it remains highly likely that otters forage and commute along this watercourse, at least periodically/on occasions or may do so in the future. The banks of the watercourse are well vegetated and some exposed tree roots are present, which could potentially be used by otters as resting places (i.e. couches or holts).

Impact Assessment of Proposed Development on Otter

Otters are very sensitive to disturbance and the proposed works may result in negative impacts through

noise, accidental damage, human disturbance and lighting. Furthermore, any works which may cause increased sedimentation and/or water inputs into the Rhymney River may indirectly affect otters and other aquatic animals, including otter prey such as eels. Further work and precautionary measures are outlined in Section 4.

3.6.6. Water Vole

Desk Study Results

SEWBReC did not return any records of water vole from within 1km of the site.

Field Survey Results and Evaluation of Ecological Value of Site for Water Voles

The banks are superficially suitable for burrowing by this species, although no such evidence was recorded during the survey.

Impact Assessment of Proposed Development on Water Voles

The presence of water voles along the western watercourse cannot be ruled out completely. Although no work is proposed in this area potential adverse impacts to water voles could occur through degradation via increased sedimentation and/or water inputs into the watercourse. Recommendations to avoid such impacts are outlined in Section 4.

3.6.7. [redacted]

[redacted]

3.6.8. Reptiles

Desk Study Results

SEWBReC returned four records of reptiles within 1km of the site, all four records were slow-worm (*Anguis fragilis*).

Field Survey Results and Evaluation of Ecological Value of Site for Reptiles

No direct evidence of reptiles was recorded on site. The survey area contains a range of optimal and sub-optimal habitats for reptiles. More suitable areas include the interfaces between habitats. These transitional zones, or ecotones, generally contains a greater diversity of plant species and habitat structures, and hence a range of microhabitats favoured by reptiles and many other species. Example of these habitats recorded include:

Grassland-scrub interfaces;

Interfaces within grasslands of varying sward heights; and

Bramble junctions.

Impact Assessment of Proposed Development on Reptiles

The works could result in the loss of potential reptile habitat. Clearance of the vegetation may also have resulted in the accidental killing or injury of reptiles. Recommendations for further surveys to determine if reptiles are present on site, and if so to determine the population size of the various species are outlined in Section 4.

3.6.9. Other Mammals

Desk Study Results

SEWBReC returned 16 records of other mammals within 1km of the site, comprising: nine common hedgehog (*Erinaceus europaeus*), one American mink (*Neovison vison*), six eastern grey squirrel (*Sciurus carolinensis*) and one polecat (*Mustela putorius*).

Field Survey Results and Assessment of Ecological Value of Site for Mammals

No evidence of hedgehog was recorded during the current survey. Multiple molehills (*Talpa europaea*) were present in the grassland to the south of the site.

The woodland to the west of site is suitable to support a range of other mammals including shrews, voles and moles, either occurring as a resident species or whilst foraging and/or commuting.

Impact Assessment of Proposed Development on Other Mammals

No works are proposed to woodland adjacent to the site. However, works could potentially kill or injure commuting or foraging small mammals, if present on site. Recommendations are made in Section 4 with regards to certain vegetation clearance methods that should be used to avoid impacts to small mammals.

Furthermore, additional landscaping and planting can potentially increase the availability of prey (invertebrates, plants etc.) and may increase the suitability of the site for mammals in the long-term.

3.6.10. Invertebrates

Desk Study Results

SEWBReC returned 46 notable invertebrate records from within the study area, comprising:
31 priority invertebrate species were recorded within 1km of the site, namely: grey dagger (*Acronicta psi*), knot grass (*Acronicta rumicis*), ear moth (*Amphipoea oculea*), mouse moth (*Amphipyra tragopoginis*), dusky brocade (*Apamea remissa*), small pearl-bordered fritillary (*Boloria selene*), broom moth (*Ceramica pisi*), small heath (*Coenonympha pamphilus*), small square-spot (*Diarsia rubi*), september thorn (*Ennomos erosaria*), dingy skipper (*Erynnis tages*), autumnal rustic (*Eugnorisma glareosa*), grayling (*Hipparchia semele*), rustic (*Hoplodrina blanda*), wall (*Lasiommata megera*), shoulder-striped wainscot (*Leucania comma*), rosy minor (*Litoligia literosa*), dot moth (*Melanchra persicariae*), white ermine (*Spilosoma lubricipeda*), cinnabar (*Tyria jacobaeae*), white-spotted sable (*Anania funebris*), flounced chestnut (*Anchoscelis helvola*), latticed heath (*Chiasmia clathrata*), sallow (*Cirrhia icteritia*), small phoenix (*Ecliptopera silaceata*), marsh fritillary (*Euphydryas aurinia*), narrow-bordered bee hawk-moth (*Hemaris tityus*), grass rivulet (*Perizoma albulata*), oak hook-tip (*Watsonalla binaria*), dark-barred twin-spot carpet (*Xanthorhoe ferrugata*), and neglected rustic (*Xestia castanea*).

Three invertebrate listed as species of conservation concern were recorded within 1km of the site, namely: cheilosia mutabilis (*Cheilosia mutabilis*), translucent pearl (*Paratalanta hyalinalis*), and greater semi-slug (*Phenacolimax major*).

12 invertebrate listed as locally important species were recorded within 1km of the site, namely:

Field Survey Results

Two cabbage whites (*Pieris rapae*) and one gatekeeper (*Pyronia Tithonus*) were recorded during the site visit.

Evaluation of Ecological Value of Site for Invertebrates

Due to the habitats present it is assumed the site will support an assemblage of invertebrates but is unlikely to support notable or rare species.

Impact Assessment of Proposed Development on Invertebrates

The invertebrates likely to be present on the site are likely to be relatively common, and unlikely to rely solely on the site for their continued survival. While some habitat loss will occur across several of the on-site habitats, this can be more than offset by providing a range of new habitats within the development that will benefit invertebrates.

4. Recommendations and Conclusions

The following recommendations are likely to be secured through planning conditions. They have been developed based on the development proposals available at the time of writing. It should be noted that they may be subject to change upon receipt of the final design. The implementation of these recommendations will ensure compliance with the Planning Policy Wales version 11 (Welsh Government, 2021)[28], TAN 5 *Nature Conservation and Planning* (2009), Section 6 and 7 of the Environment Wales Act, 2016, the Conservation of Habitats and Species Regulations 2017 which has been updated by the Conservation of Habitats and Species (Amendment) (EU Exit) ['CHSAEU'] Regulations 2019 and the Caerphilly Council Local Development Plan.

The recommendations aim to avoid or minimise adverse impacts on the environment and protected species, mitigate and compensate for losses where damage is unavoidable and promote opportunities to enhance biodiversity. There is a requirement that developments must provide net benefit for biodiversity.

4.1. Stepwise Approach to Maintaining Biodiversity

As part of the Future Wales: The National Plan 2040 and Planning Policy Wales (PPW) Edition 11 - 24th Feb 2021, planning authorities must follow a stepwise approach to maintain and enhance biodiversity and resilient ecological networks by ensuring that any adverse environmental effects are firstly avoided, then minimized, mitigated, and as a last resort compensated for; enhancement must be secured wherever possible. The first priority for planning authorities is to avoid damage to biodiversity and ecosystem functioning. Where there may be harmful environmental effects, planning authorities will need to be satisfied that any reasonable alternative sites that would result in less harm, no harm or gain have been fully considered. This policy is mirrored within the Caerphilly Council Local Development Plan.

The process has been followed on site:

Avoidance – Avoidance has not been possible on site, as the site owners do not own any alternative sites suitable for such a development.

Mitigation – A comprehensive set of mitigation measures are provided below.

Compensation – Robust and comprehensive compensation measures are provided below.

4.2. Biodiversity Enhancement

Local Authorities have a duty (known as the Biodiversity and resilience of ecosystems duty) under the Environment (Wales) Act 2016 to seek to maintain and enhance biodiversity in the exercise of their functions. Where possible the existing on-site habitat will be retained to ensure that species are not adversely affected by the development. Native species of local provenance and grown in the UK will be used for any new planting on the site.

[28] Planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions ... and in so doing promote the resilience of ecosystems. Development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity.

4.3. Further Work

It will not be possible to determine the planning application until the surveys outlines below have been carried out. Results from these surveys will inform and allow for targeted recommendations for the avoidance (timing of works), future mitigation and compensation measures required as part of the development, and determine if any protected species derogation licences are required.

4.3.1. CEMP

Due to the proximity of the Rhymney River, a Construction Environmental Management Plan (CEMP), will be produced prior to commencement of the proposed development works. Pollution prevention measures required are detailed within Section 4.3.1 but these will be built and expanded upon within the CEMP.

4.3.2. Bats

Works should not commence until further surveys have been carried out. This will enable the likely impacts of the proposals on bats to be assessed, determine if a bat development licence will be required, inform the avoidance measures (timing of works), and determine the requirement for mitigation (retention of roosts and access points) and/or compensation measures (creation of new replacement/additional bat roosts).

Current best practice guidelines (Collins, 2016) state that two separate survey visits should be undertaken on buildings with moderate roost suitability comprising one dusk emergence and a separate dawn re-entry survey[29]. One survey visit should be undertaken on buildings with low roost suitability comprising one dusk survey. The surveys should be undertaken from May to September, with at least one of the surveys between May and August and will be supplemented by use of night vision aids. To ensure that all potential bat access/roosting features are covered, the surveys will required the following surveyor numbers.

Table 9: Surveyor Numbers for Further Surveys - Bats

Building Number	Roost Potential	Surveyor Number
B1	Moderate	3
B2	Moderate	4
B3	Moderate	2
B4	Low	1
B6	Moderate	2

Surveys should be timed to sample as much of the survey period as possible, undertaken at intervals of at least two weeks apart, or preferably more (Collins, 2016). This increases the possibility of encountering bats that may only use the building for short periods throughout the summer. Ideally, at least one survey should be undertaken in the core maternity period of mid-June to mid-July.

[29] See exceptions in Interim Guidance Note: Use of Night Vision Aids for Bat Emergence Surveys and Further Comment on Dawn Surveys (Bat Conservation Trust, 2022) (https://cdn.bats.org.uk/uploads/pdf/Interim-guidance-note-on-NVAs-May-2022-FINAL.pdf?v=1653399882)

4.3.3. Reptile Survey

Works in parts of the site that could affect reptiles should not commence until further surveys have been carried out to assess the potential impact to common reptiles in the lower sward areas of amenity grassland and scrub on site.

Surveys to determine the presence/likely absence of reptiles should be carried out between April and September – ideally in the months of April, May, June or September (Natural England Technical Information Note TIN 102[1]). The survey will need to follow the advice provided by the Herpetofauna Workers' Manual[2] (Gent and Gibson, 2003), and comprise a 'direct search' and the monitoring of artificial and naturally occurring refugia placed in areas of the site assessed as being most attractive to reptiles (e.g. longer grass, scrub margins etc.).

A variety of different types of refugia should be used. Approximately 80 refugia are required to be set across the whole site, including within the grassland and scrub margins. Refugia will comprise primarily of squares of roofing felt, carpet tiles, corrugated metal tins and corrugated bitumen-based roofing felt of varying sizes but at least 60cm x 60cm in size. Naturally occurring refugia including discarded logs, timber and large rocks etc. will also be checked. Where possible, artificial refugia should be laid in south-facing positions in areas deemed least likely to attract human interference. Refugia will be left undisturbed on site for two weeks, prior to commencement of the survey to allow the reptiles on the site sufficient time to find and start utilising them. The refugia will then be checked on at least seven separate occasions, non-consecutively, in suitable weather conditions (warm, overcast periods with low wind speeds) to record any reptile species beneath or basking upon them.

The survey results will determine whether reptiles are present on the site, and if so will provide the basis for designing and implementing a reptile mitigation strategy prior to the start of the development.

4.4. Precautionary Measures

4.4.1. Pollution Prevention Measures

Appropriate pollution control measures, both during construction and post construction, will be employed to protect the water quality of the Rhymney River at the western site boundary. Surface water/pollutant run-off from the construction site into the Rhymney River will be avoided during site preparation and construction phases. Current Natural Resources Wales best practice guidance will be observed. The measures to be implemented are party outlined in the Environment Agencies guidance document 'Working at construction and demolition sites: PPG6 Pollution Prevention Guidelines' and 'Guidance for Pollution Prevention Works and maintenance in or near water: GPP 5'. In addition, the following measures have been adapted from the best practice guidelines for pollution prevention (GPP) full list 1/2.

<u>Contingency Measures</u>

Contingency measures for unforeseen incidents such as spillages will be set in place prior to commencement of construction works. Such procedures and measures will cover atmospheric, aquatic or land pollution and procedures in the event of fire. Contingencies to control and contain hydrocarbon spillages from, for example parked vehicles, once the area is developed will also be implemented. Plan ahead for intense and prolonged wet weather and consider all relevant pollution mitigation measures including:

Minimise the amount of time stripped ground and soil stockpiles are exposed;

Only remove vegetation from the area that needs to be exposed in the near future; and

Seed or cover stockpiles.

Spill Response

If an accidental spill does occur on site, a quick response is needed to contain the spilled material (e.g. fuel, hazardous material etc.). Spill kits and a staff induction will be provided prior to the start of works to enable a quick response.

Deliveries

Deliveries to site can be a common cause of pollution. Vehicles can cause water, noise and dust pollution as they enter and exit the site, for example by spreading mud or contaminated material on neighbouring roads. Pollution can also be caused at the point of delivery, especially with fuels, oils and hazardous materials; for example, a fuel hose not correctly connected. Measures to prevent pollution caused by deliveries include:

Ensure all deliveries are made as far away from watercourses and drains as possible (i.e. at the north of the site);

Define times for deliveries to site and communicate these to suppliers and those working on site. Make sure these delivery times are suitable for neighbours, i.e. after 9am;

Ensure any tanks, drums or containers coming to site are in a satisfactory condition. These will be regularly checked for damage or leaks;

Clearly define delivery and material storage areas;

Make sure that deliveries of polluting materials are delivered directly to a safe storage area, and not left anywhere else on site; a safe storage area may need secondary containment depending on the material to be stored e.g. oil and hazardous chemicals; and

Ensure that all material deliveries will be supervised, especially hazardous materials.

Hard Surfaces

Any footpaths and hard surfaces will utilise infiltration systems as far as practicable, for example, by utilising porous paving solutions.

Duty of Care for Waste

The developer must comply with the Duty of Care Regulations and has a legal responsibility to ensure controlled waste is produced, stored, transported and disposed of without harming the environment. This involves:

Accurately describing waste, including any hazardous properties;

Safe and secure storage of waste;

Segregation of recyclable waste;

Segregation of hazardous/special waste; and

The use of a registered waste carrier to remove waste from your site.

4.4.2. Protective Measures for Adjacent Woodland

The western woodland will be protected and securely fenced-off with appropriate temporary fencing (e.g. 'Heras' fencing) and treated in accordance with British Standard BS5837(2012) Trees in Relation to Design, Demolition and Construction – Recommendations. The retained fenceline will be 2m for the centreline of the woodland. Fences will be erected prior to the commencement of construction work and will left in place until development completion. These protective measures will prevent any accidental damage to the woodland and mitigate potential direct impacts to any protected or priority species that may be utilising the habitat, including dormice, nesting birds, reptiles and hedgehogs.

Any future developments will avoid clearance or breaching of the woodland. This will help to maintain the biodiversity value and ecological connectivity of the site and reduce the potential requirements for further protected species or breeding bird surveys.

The fencing will be installed under supervision of an ecologist to ensure that a suitable buffer is retained around the woodland habitats. Placement of rear gardens butting onto principle hedgerows is not good practice as the woodland are then vulnerable to residents undertaking clearance/ thinning to allow more light and reduce perceived risk of branch drop. A wide margin should be provided between principle hedgerows and domestic curtilages with houses fronting onto them.

4.4.3. Protective Measures for Retained Trees

Retained trees will be securely fenced-off to prevent accidental damage, prior to the commencement of construction work and treated in accordance with British Standard BS5837 (2012) *Trees in Relation to Design, Demolition and Construction – Recommendations*. Where possible, any future developments will avoid felling of trees. This will help to maintain the ecological connectivity of the site, maintain its biodiversity value and reduce the potential requirements for further protected species or breeding bird surveys.

4.4.4. Timing of Vegetation Clearance for Birds

To avoid adverse impacts to nesting birds, the clearance of vegetation including scrub and hedgerow will be undertaken from September to February outside of the bird breeding season (March to August inclusive). Alternatively, any works undertaken from March to August will be subject to a check for

nesting birds by a suitably qualified ecologist immediately prior to removal of such habitats. If any active nests are found these will be protected, along with an appropriate buffer zone of 10m, until the nesting is complete, and the young have fledged[1].

4.4.5. Good Construction Practices for Badgers and Hedgehogs

Any open trenches, steep sided holes and excavations associated with the development will either be closed and covered at night or a means of escape provided (e.g. plank or reinforced plywood board over 60cm wide at no greater angle than 30º or gently graded site wall of the same angle or equivalent) to prevent any badgers, hedgehogs or other animals falling in and becoming trapped). Any exposed pipes and trenches must be checked for trapped wildlife each morning before starting construction activities.

4.5. Mitigation Measures

A comprehensive list of mitigation measures will be formulated after the further surveys have taken place.

4.5.1. Grassland Mitigation Measures

A designated area surrounding the proposed development will be subject to a grassland management plan in order to re-establish a low growing species rich neutral grassland. This area of enhanced grassland will serve to offset wider losses to the areas of amenity grassland which will be lost to the development.

The grassland habitat will be mown in September as this allows plants time to flower and set seed not only increasing the floristic diversity of the site, but also benefitting invertebrates requiring nectar sources and roosting locations during the spring and summer. Ideally, the sward should be cut to a height of about 9 to 10cm. The grassland will be divided into two areas. The areas will be mown on rotation every second year in late summer (September), by hand or with a small-scale mowing machine. The uncut areas will be cut the following year so that the entire grassland area is cut once every two years. Arisings should be collected and removed from site.

The use of herbicides, pesticides and artificial fertilisers on site should be avoided, although permicious weeds may need to be spot-treated with herbicide. Appropriate semi-improved wildflower seed mixes will be sown to enhance the floristic diversity of the habitat. These will provide a source of food and shelter for a host of insects, which in turn benefit species higher up in the food chain.

<u>Seed Mix Selection</u>

The LWM4 Loam and Alluvial soils species mix provided by Landlife Wildflowers is recommended. This mix contains mainly perennial species to create and enhance a permanent wildflower meadow which establishes in the first year and flowers from the second year onwards- therefore ensuring the long-term productivity of the habitat. LWM4 supports bees, butterflies and other pollinators, as 77% of the

wildflowers included in this mixture are recommended by the Royal Horticultural Society (RHS) as 'perfect for pollinators'.

It contains 23 UK Native wildflower and grass species. Species include: Tufted vetch 0.8%, Black medick 1.2%, Meadow Buttercup 1.0%, White campion 0.8%, Wild Clary 1.0%, Cowslip 0.2%, Goat's-beard 1.4%, Greater Knapweed 1.4%, Common Knapweed 1.0%, Lady's bedstraw 1.0%, Rough hawkbit 0.2%, Meadow Vetchling 0.6%, Oxeye daisy 0.6%, Field Scabious 0.2%, Hoary plantain 0.4%, Ribwort plantain 0.8%, Ragged robin 0.4%, Salad burnet 2.0%, Selfheal 1.2%, Common Sorrel 1.2%, Wild Carrot 0.8%, Yarrow 0.6%, Yellow-rattle 1.2%, Slender creeping red fescue 16.0%, Chewing's fescue 17.6%, Common bent 4.0%, Smooth-stalked meadow grass 5.6%, Rough-stalked meadow grass 4.0%, Smaller cat's tail 8.0%,Creeping bent 3.2%, Crested dog's tail 17.6%, Meadow Foxtail 4.0%.

Ground Preparation

Ground preparation is essential for success, so aim to control weeds and produce a good seed bed before sowing. Soil from the existing grassland will be utilised. To prepare a seed bed, first remove weeds using repeated cultivation. Then cultivate to bury the surface vegetation and harrow/rake to produce a medium tilth. Cultivate the soil to sufficient depth to bury remaining debris and to alleviate compaction, then rake or harrow and roll to produce a fairly fine, firm surface. The finished seedbed should be firm enough to walk on without leaving impressions. The finished surface should be free of obstructions such as large stones or bricks, and free of deep ruts or ridges. It should be noted that soil cultivation around establish trees and hedges can be very damaging to tree and shrub roots – only surface treatments are safe here.

Sowing

Sowing on ground prone to winter flooding should be undertaken either in autumn. Most plants need time to grow mature enough to withstand flooding. The seed must be surface sown and can be broadcast by hand. To get an even distribution and to avoid running out, divide the seed into two or more parts and sow in overlapping sections. Sowing into existing grassland works best in autumn.

Management of the Site

The long-term management of the site is relatively straight forward and low-cost process that will be undertaken by a contractor of the owner's choosing, or by the owner themselves. It is considered that there is no need to specify the identity of any particular contractor as the work is not specialist. Monitoring of the management objectives will be undertaken over the course of 5 years during the main flowering season from mid-June to mid-September. The management of the grassland aims to result in the enhancement of the site for invertebrates and compensate for the loss of habitat caused by the development.

4.6. Compensation and Enhancement Measures

4.6.1. Sustainable Urban Drainage Systems (SuDs)

As of 7th January 2019, all new developments of more than one dwelling house or where the construction area is 100m² or more are required to have SuDS to manage on-site surface water (whether they require planning permission or not). These SuDS must be designed and constructed in accordance with the Welsh Government Standards for Sustainable Drainage[30].

4.6.2. Landscaping

Plants included in the landscaping will be those which provide a rich source of nectar. A range of plants will be used that provide year-round flowering. Plants with double or multi-petalled flowers will be avoided. Plants within the RHS Plants for pollinators: Garden Plants and British Wildflowers and Plants of the World will be used. All native species used will be of UK provenance.

Any landscaping in the properties gardens will use native shrubs and trees which are of UK provenance. Berry and nut producing species should also be used which will increase foraging opportunities for numerous animal species. Shrub species recommended include: common hawthorn, blackthorn, hazel, guelder rose, rowan, bird cherry and holly.

Plant species that provide a rich source of nectar could be used. Suitable species include flowering herbs such as lavender (*Lavandula* spp.) and violets (*Viola* spp.), and shrubs such as flowering currant (*Ribes sanguineum*), privet (*Ligustrum vulgare*), forsythia (*Forsythia* spp.), dogwood (*Cornus sanguinea*), berberis (*Berberis* spp.), pyracantha (*Pyracantha* sp.) and ceanothus (*Ceanothus* sp.).

4.6.3. Bird Boxes

To compensate for the loss of bird nesting habitat, bird nesting opportunities will be provided by installing three artificial bird boxes. A variety of durable, Woodcrete bird boxes, including maintenance free boxes suitable for trees are available from Schwegler.

Bird boxes can be installed on trees of buildings around the site. They should be located in secluded positions, ideally within dense cover and at a minimum height of 3m from the ground level and ideally orientated so that they face north or east. The bird boxes will be positioned away from horizontal branches directly below or above which could be easily accessed by cats. Ash trees should be avoided due to future problems with Chalara or ash dieback.

Specialised boxes that cater for specific bird species could be deployed as detailed below:

Open fronted – Open fronted nest boxes cater for a range of bird species, including robin, dunnock, wren, (*Troglodytes troglodytes*), pied wagtail (*Motacilla alba*) and redstart (*Phoenicurus phoenicurus*). Due to the more exposed nature of these nest boxes, it is especially important to ensure that they are located in dense cover in order to avoid the attention of potential predators. Suitable locations could be within ivy coverage on trees; and

Standard nest boxes – An entrance hole of 32mm will attract species such as great, blue and coal tits, along with nuthatch (*Sitta europaea*), flycatchers (*Muscicapa striata* and *Ficedula hypoleuca*)

[30] https://gov.wales/sites/default/files/publications/2019-06/statutory-guidance.pdf

and sparrows. These nest boxes can be sited in a wide range of locations throughout the site. Typical places would be on trees within the areas of scrub and woodland. Alternatively, boxes could be placed externally on building walls.

Appendices 10 and 11 outlines suitable bird boxes further.

4.6.4. Sensitive Lighting Strategy

The lighting design for the site will be of a bat and dormice 'friendly' specification and kept to the minimum level which meets the needs of security and health and safety. The unnecessary lighting of habitats which could potentially be used by foraging bats and dormice within the adjacent woodland such as nearby trees, hedgerows etc. will be avoided. External lighting will be installed at low-level only (i.e. no higher than eaves level and lower than 2.4m) and directed downward (i.e. below the horizontal plane with no upward tilt). Fully shielded lights with front and side hoods/shields or cowls will be installed to prevent upwards and horizontal light spill.

Lighting will not be located in the vicinity of, or shine towards the possible/actual commuting routes and flight lines or suitable dormice habitat, so that a 'dark corridor' is maintained and disturbance to dormice and roosting bats avoided/minimised. Any security lights used will operate off a passive infrared (PIR) motion sensor sensitive to large objects only, to avoid constant triggers by bat passes and with timers set on a short duration (i.e. a maximum 'on' time of one minute)] to reduce the amount of 'lit time'. The bulbs in the lights will ideally be low intensity (i.e. circa 11 watts), and red, amber or warm light (<2700Kelvin[16]) LED bulbs. The bulbs will feature peak wavelengths 550nm or greater. White, blue and green[17] lighting sources including mercury or metal halide, CPO and CDO (ceramic discharge metal-halide) bulbs which have a significant effect on bats will be avoided.

See Plan 7 for the Proposed Dark Corridor; and Appendix 9 for Specification of Recommended External Light Fittings.

4.7. Licensing

It has not been possible to determine whether a Protected Species mitigation licence with respect to bats will be required. This will be determined after the further targeted surveys detailed above have been completed.

4.8. Longevity of Report

If development works do not begin within eighteen months to two years of the date of this report of this report, an update survey is likely to be required in accordance with guidance from NRW[31], (CIEEM, 2019) and BS 42020:2013[32], to determine if conditions have changed since those described in this report.

[31] As set out in Point 5 of the NRW *Bat Surveys - Frequently Asked Questions* and Point 4 of the guidance included within the NRW European Protected Species Development Application Form.

4.9. Conclusions

The full extent of ecological impacts and potential constraints of the proposed development cannot be fully determined, based on the results of the preliminary ecological appraisal survey alone. Further survey work will be required before such assessments can be comprehensively made, as detailed in Section 4.2.

Notwithstanding, the further surveys required, as detailed above, at this stage, the site's ecological value is not considered to represent a fundamental in-principal constraint to the proposed development.

[32] As set out in Section 6.2.1, point 7 which states that ecological information should not normally be more than two/three years old, or as stipulated in good practice guidance).

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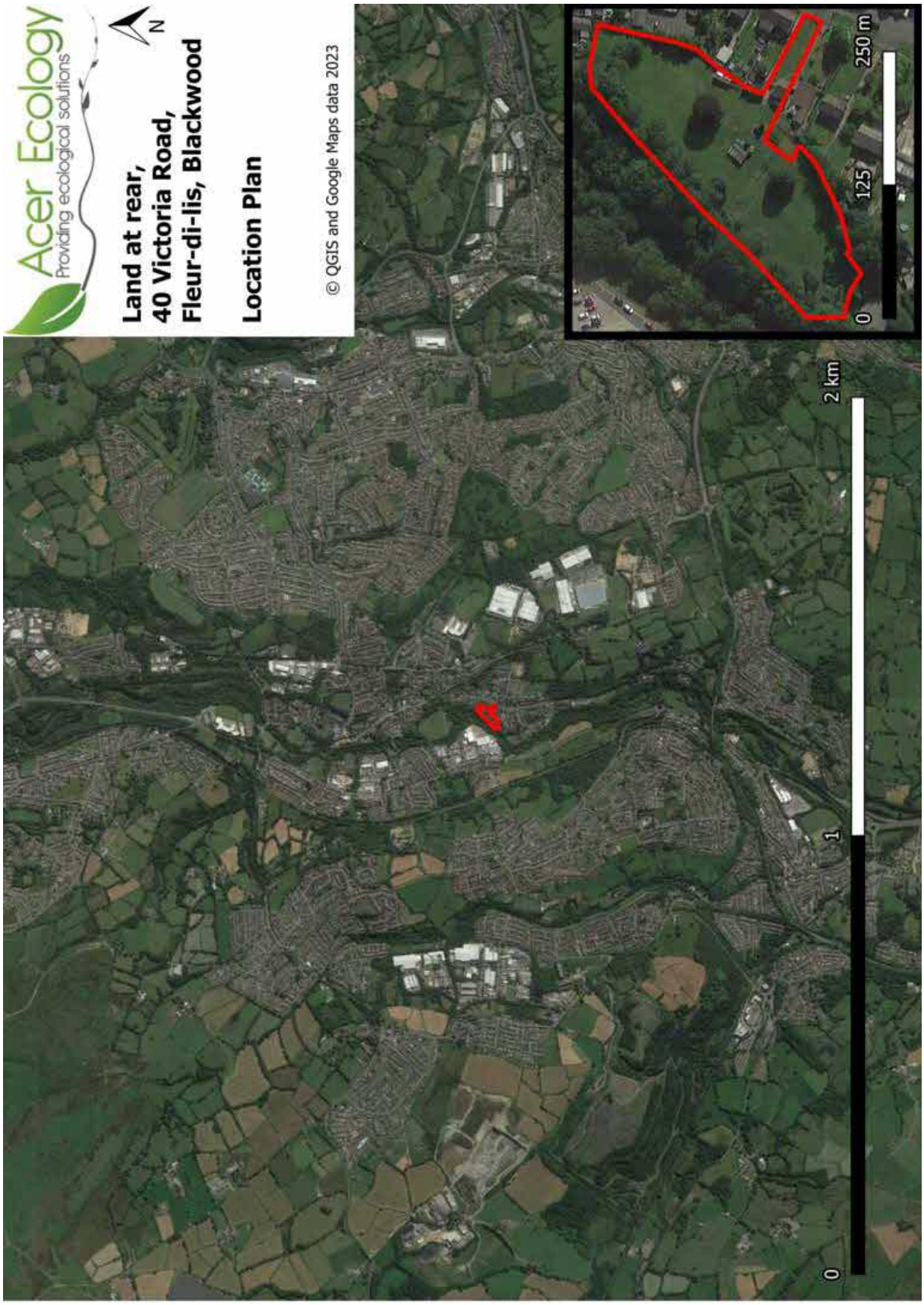
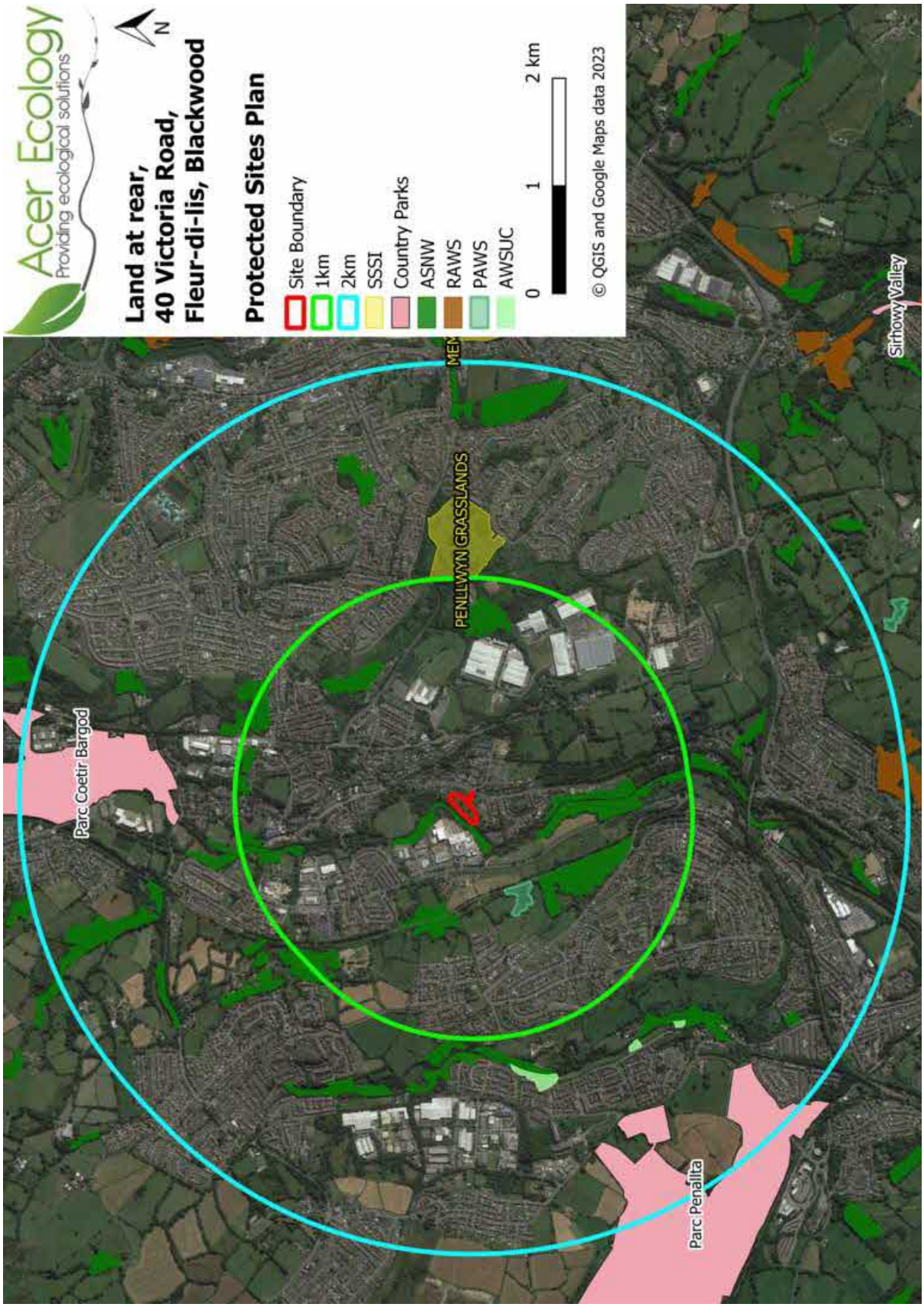
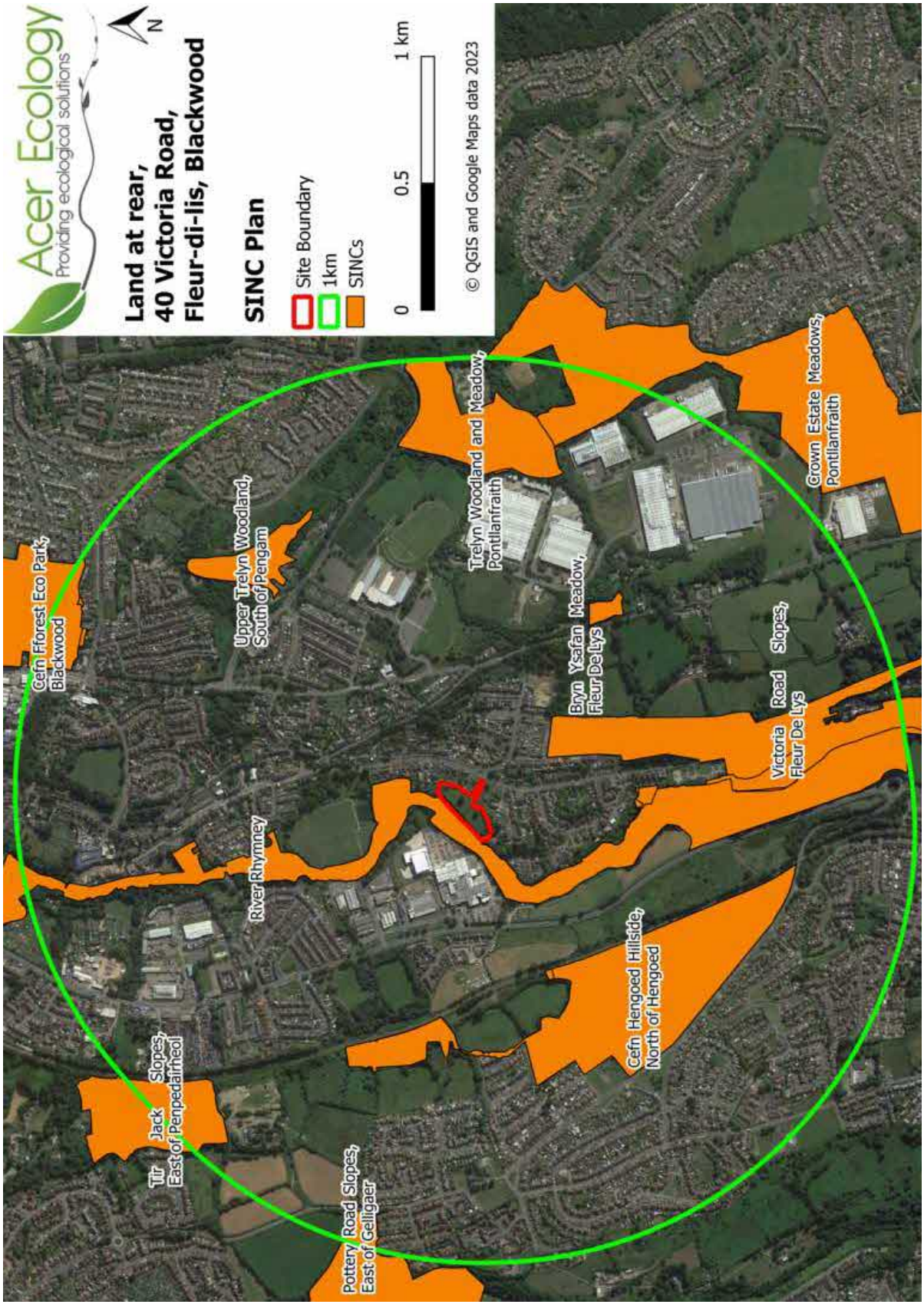
Plan 1: Site Location



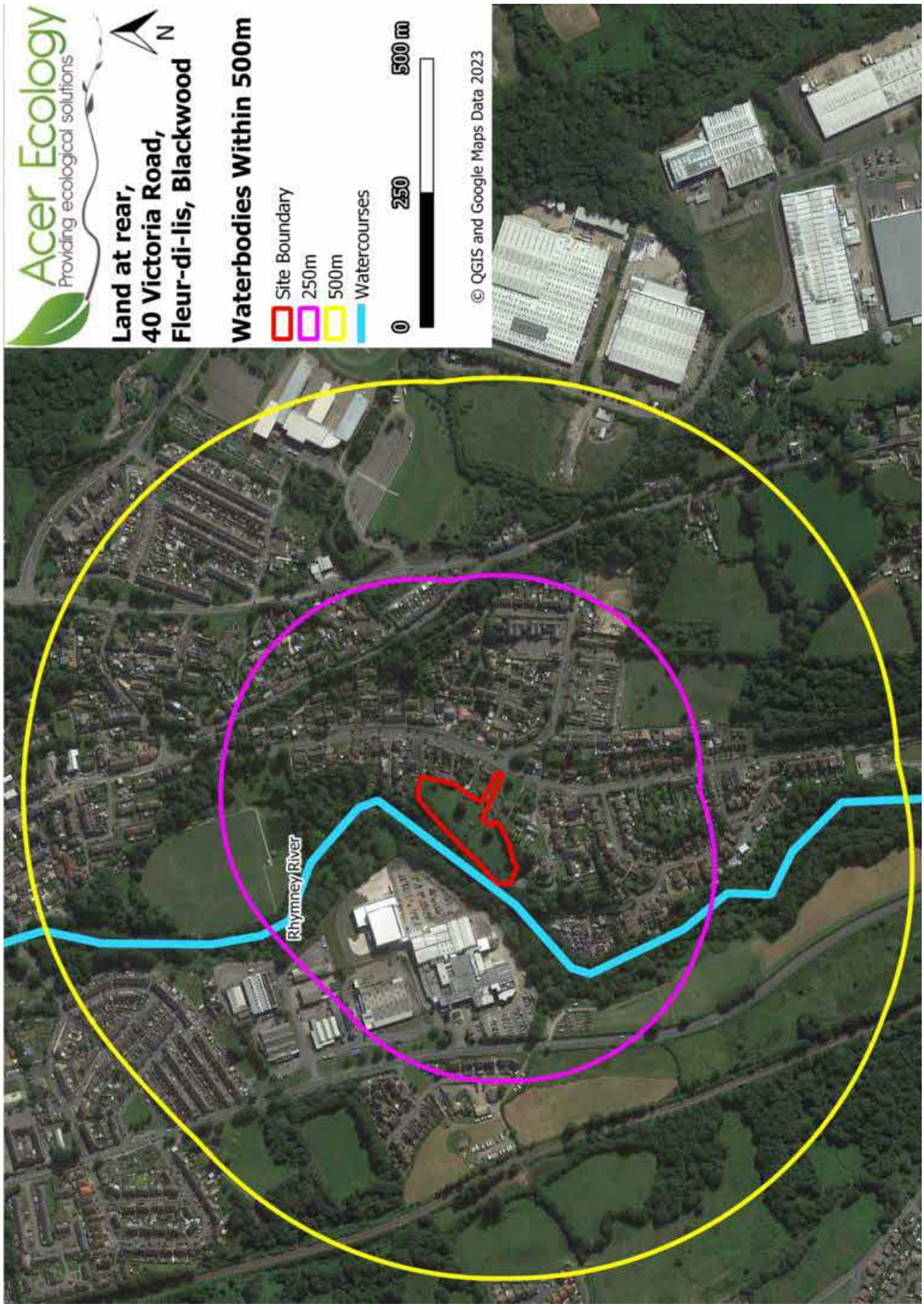
Plan 2: Site Location and Protected Sites Within 2km



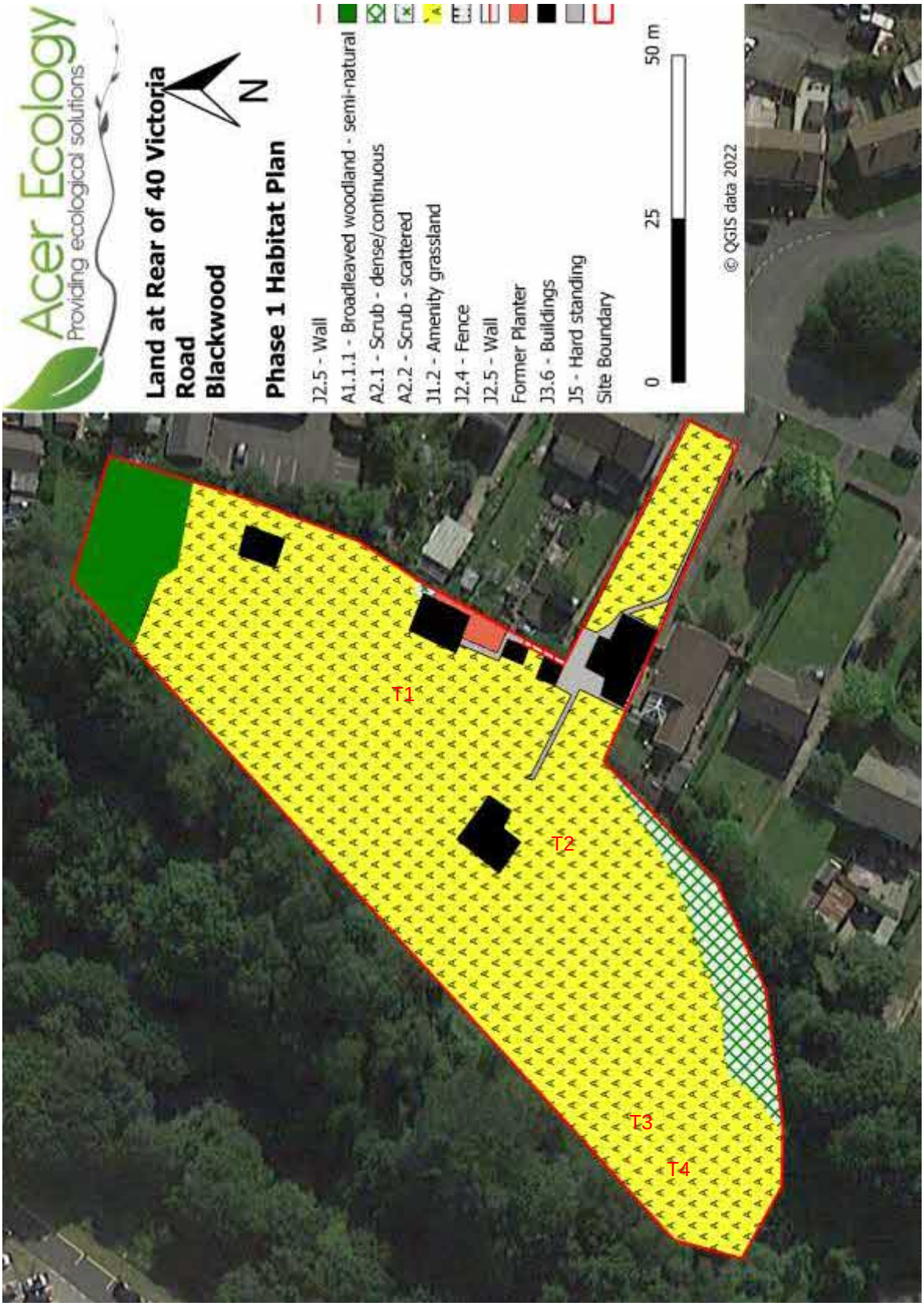
Plan 3: Site Location and SINCS



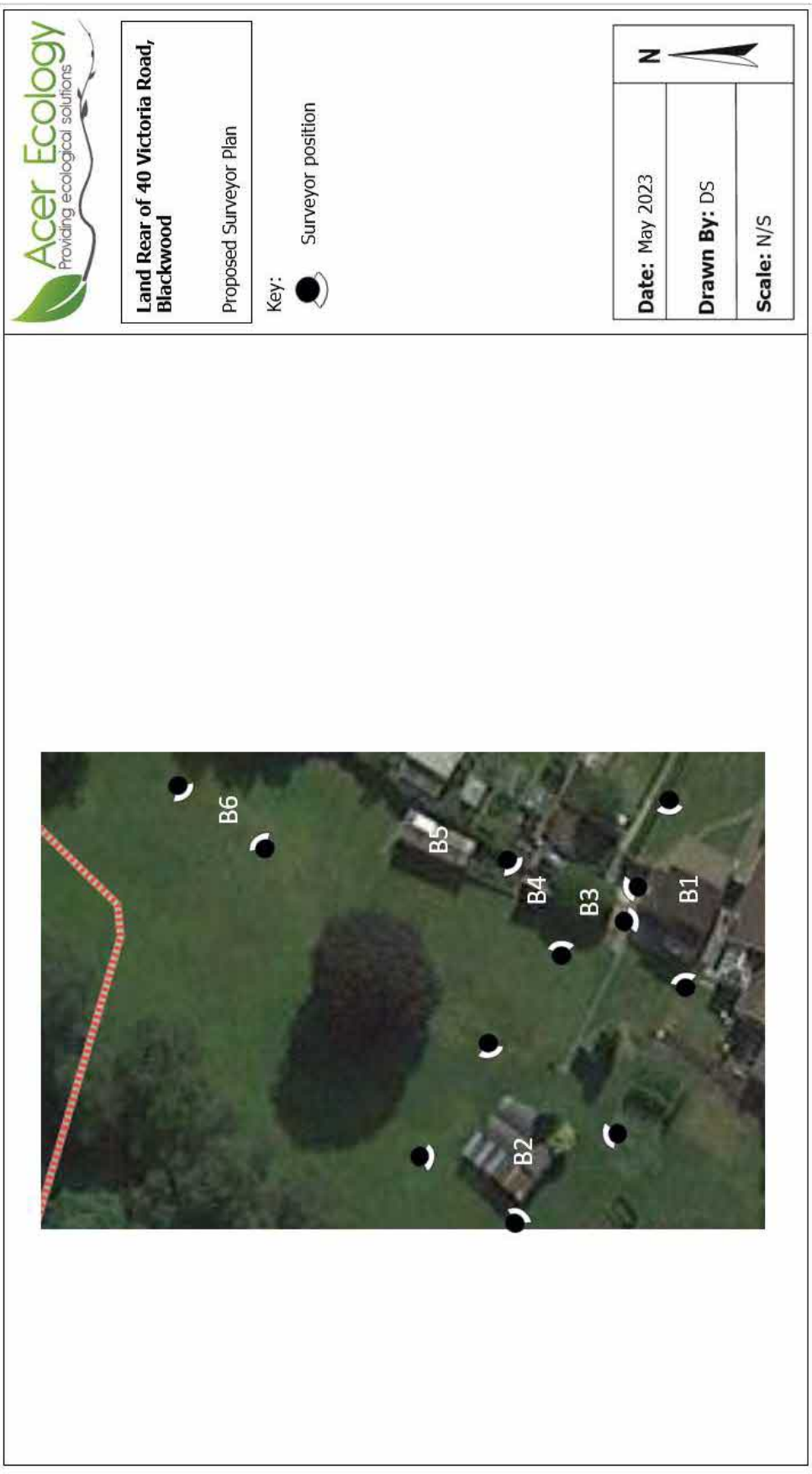
Plan 4: Location of Water Bodies within 0.5km of Site



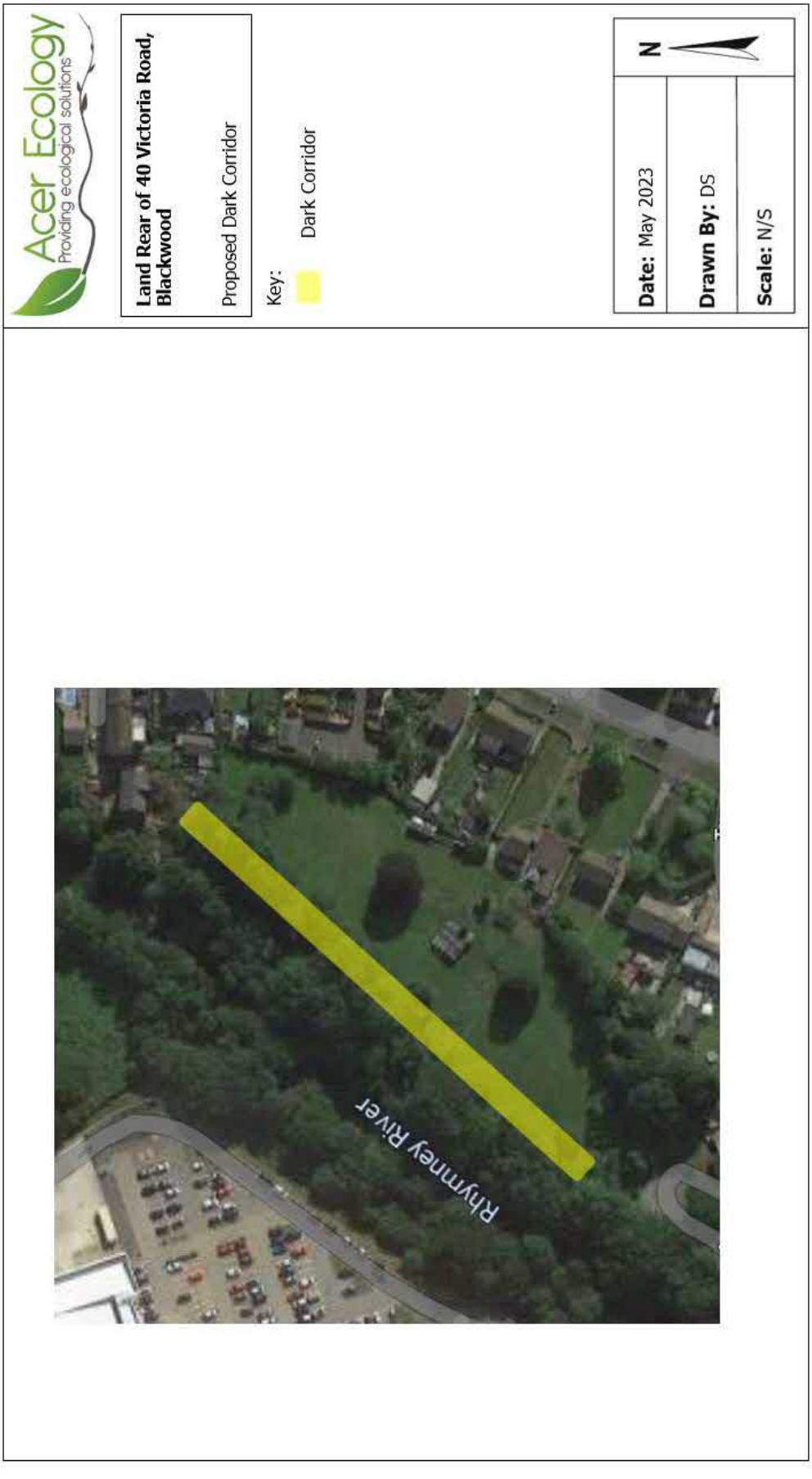
Plan 5: Habitats and Vegetation



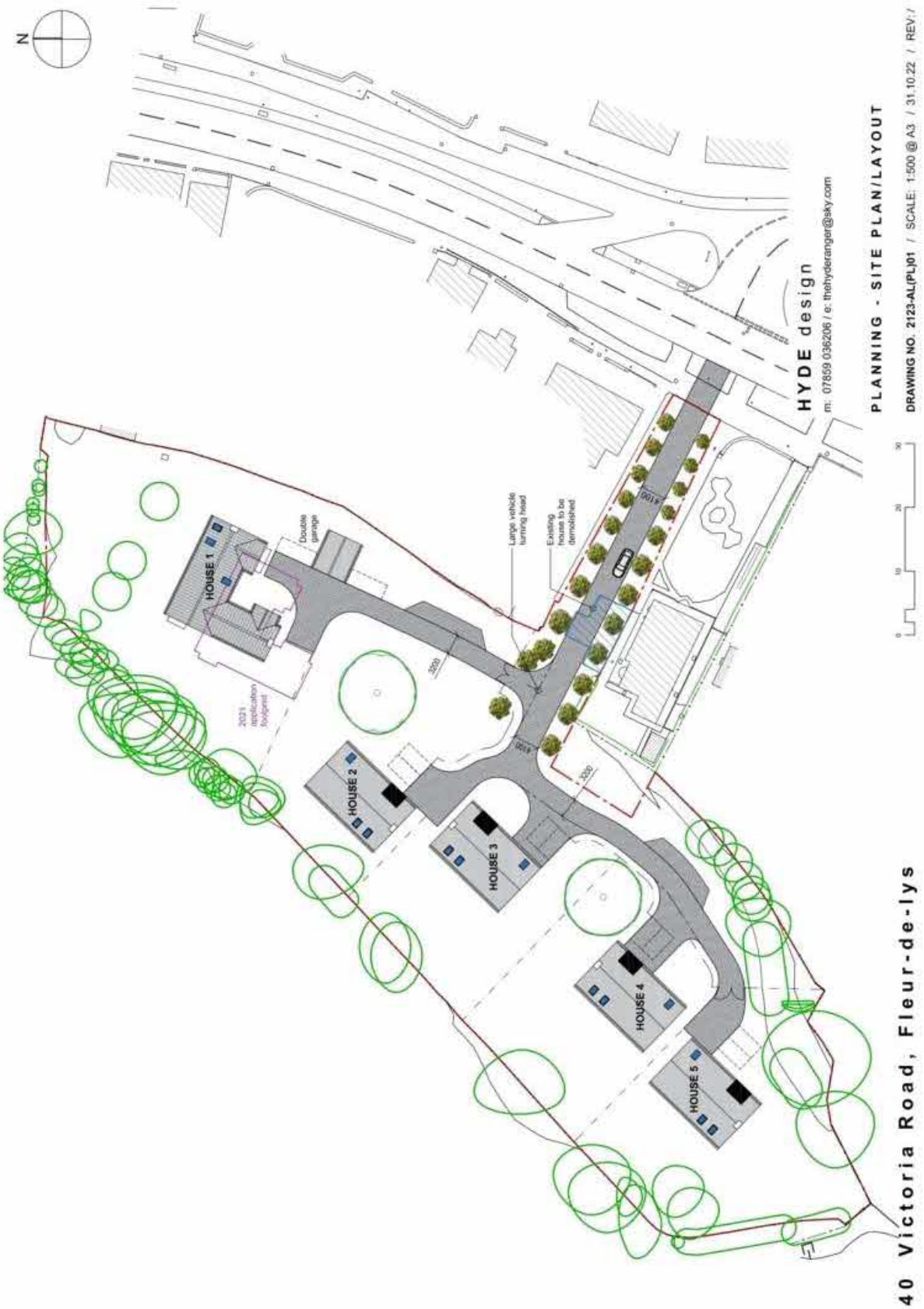
Plan 6: Recommended Surveyor Positions



Plan 7: Proposed Dark Corridor



Appendix 1: Proposed Development Works



Appendix 2: Legislation and Policy Relating to Statutory and Non-Statutory Designated Sites and Planning Policy Relevant to Site

SACs

SACs are strictly protected sites designated under the EC Habitats Directive. Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended). The listed habitat types and species are those considered to be most in need of conservation at a European level (excluding birds). Of the Annex I habitat types, 78 are believed to occur in the UK. Of the Annex II species, 43 are native to, and normally resident in, the UK.

Development proposals within 10km of an SAC must be subject to Habitats Regulations Assessment's (HRA). If the LPA determine that a significant effect is likely, then it will be necessary to undertake an Appropriate Assessment[33].

SSSIs

SSSIs are important as they support habitats and/or species of national importance. SSSIs are legally protected under the Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act 2000 and the Natural Environment and Rural Communities Act 2006, and are of national (second tier) biodiversity significance and form the essential building blocks of the United Kingdom's protected areas for nature conservation. Many are also designated as Natura sites i.e. internationally (first tier) designated sites. It is an offence for any person to intentionally or recklessly damage the protected natural features of a SSSI.

SINCs

SINCs are a class of nature conservation designations collectively referred to as 'Wildlife Sites'. Wildlife Sites are so-called 'third tier' sites, generally ranked below sites which are of international (first tier) or national (second tier) biodiversity significance, but which are considered to have *'substantive nature conservation value'* at the regional or district level. They are usually designated at the county or county borough level by the relevant local planning authority, and are recognised as a planning constraint in the relevant statutory development plan.

The framework for the identification and designation of 'Wildlife Sites' is set out in various Government documents, and is referred to in *Planning Policy Wales* (2021) *and Technical Advice Note (Wales)* 5: *Nature Conservation & Planning*. Defra published *Local Sites: Guidance on their identification, selection and management in 2006*[34].

[33] For more information, consult 'Assessing Projects Under the Habitats Directive' David Tyldesley (2011) for CCW

[34] https://webarchive.nationalarchives.gov.uk/ukgwa/20111108175609/http://archive.defra.gov.uk/rural/documents/protected/localsites.pdf

ASNW and Woodland

The UK is a sparsely wooded country: 11.5% of Great Britain is covered with trees. Only 1.2% of the UK is ancient semi-natural woodland, a valuable and irreplaceable natural resource. Ancient semi-natural woodland, and plantations on ancient woodland sites, are a priority for conservation (JNCC).

The Welsh Assembly has recognised that areas of ancient woodland are declining and becoming increasingly fragmented and emphasises the importance of conserving ancient woodland and its value as a biodiversity resource through the publication of Planning Policy Wales (2021).
Paragraph 180 of the National Planning Policy Framework (2021). States that development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons, and a suitable compensation strategy exist.

Paragraph 170b of the National Planning Policy Framework (2021) states that planning policies and decisions should contribute to and enhance the natural and local environment by recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of trees and woodland.
Paragraph 174 of the National Planning Policy Framework (2021) states that Planning policies and decisions should contribute to and enhance the natural and local environment by: a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan); b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland; c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate; d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures; e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

Environment (Wales) Act 2016

The Environment (Wales) Act Section 6 duty, or the Biodiversity Duty, requires public authorities to seek to maintain and enhance biodiversity and in so doing promote the resilience of ecosystems. In fulfilling this duty, planning authorities must have regard to the list of habitats and species of principal importance for Wales, published under Section 7 of the Environment (Wales) Act 2016.

The Section 6 duty requires that developments should not be permitted which result in net loss of value to biodiversity, and must seek to achieve biodiversity net gain. Where net loss cannot be achieved through avoidance or mitigation, compensation is required but it should be noted that ancient woodland cannot be compensated for.

Future Wales - the National Plan 2040

Future Wales is the national development framework, setting the direction for development in Wales to 2040. It is a development plan with a strategy for addressing key national priorities through the planning system, including sustaining, and developing a vibrant economy, achieving decarbonisation and climate-resilience, developing strong ecosystems and improving the health and well-being of our communities. Future Wales - the national plan 2040 is the national development framework and it is the highest tier plan, setting the direction for development in Wales to 2040. It is a framework which will be built on by Strategic Development Plans at a regional level and Local Development Plans. Planning decisions at every level of the planning system in Wales must be taken in accordance with the development plan as a whole.

National Planning Policy Wales (2021)

The primary objective of PPW is to ensure the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation.

Planning Policy Wales (PPW) Edition 11 - 24th Feb 2021 states that planning authorities must follow a stepwise approach to maintain and enhance biodiversity and build resilient ecological networks by ensuring that any adverse environmental effects are firstly avoided, then minimized, mitigated, and as a last resort compensated for; enhancement must be secured wherever possible. The first priority for planning authorities is to avoid damage to biodiversity and ecosystem functioning. Where there may be harmful environmental effects, planning authorities will need to be satisfied that any reasonable alternative sites that would result in less harm, no harm or gain have been fully considered.

Caerphilly Council Local Development Plan

Caerphilly County Borough Local Development Plan 2021[35] was adopted in 2010. The LDP ensured the protection of the '*environment as a whole whilst balancing the need for development with the need to conserve valuable resources'* (pg.20).

The report does not include biodiversity net-gain guidance, however, key objective 12 of the council is to '*identify, protect and enhance sites of nature conservation and earth science interest and ensure the biodiversity of the County Borough is enhanced' pg.21.*

Biodiversity Net Gain

[35] https://www.caerphilly.gov.uk/CaerphillyDocs/LDP/written-statement.aspx

Net benefit for biodiversity Planning Policy Wales (PPW) 11 sets out that "*planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. This means that development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity*" (para 6.4.5 refers). This policy and subsequent policies in Chapter 6 of PPW 11 respond to the Section 6 Duty of the Environment (Wales) Act 2016.

Appendix 3: Protected Species Legislation Relevant to Site

Birds

All wild British birds (while nesting, building nests and sitting on eggs), their nests and eggs (with certain limited exceptions) are protected by law under Section 1 of the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way Act 2000. Included in this protection are all nests (at whatever stage of construction or use) and all dependent young until the nest is abandoned and the young have fledged and become independent. Particularly rare species such as barn owl (*Tyto alba*) are listed on Schedule 1 which gives them additional protection from disturbance whilst nest building, whilst near a nest with eggs or young, or from disturbing the dependent young.

Section 10.8 of the Conservation of Habitats and Species Regulations 2017 state that Local authorities must use all reasonable endeavours to avoid any deterioration of habitats of wild birds.

Bats

All species of bats and their roosting sites are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 which continues to apply in UK law through the Conservation of Habitats and Species (Amendment) (EU Exit) ['CHSAEU'] Regulations 2019.

All species of UK bats are designated as 'European protected species'. Seven species of bat (soprano pipistrelle (*Pipistrellus pygmaeus*), barbastelle (*Barbastella barbastellus*), Bechstein's (*Myotis bechsteinii*), noctule (*Nyctalus noctula*), brown long-eared (*Plecotus auritus*), lesser horseshoe (*Rhinolophus hipposideros*) and greater horseshoe bats (*Rhinolophus ferrumequinum*)) are listed under Section 7 of the Environment (Wales) Act 2016 as being of principal importance for maintaining and enhancing biodiversity in Wales.

Regulation 55(2) of the Conservation of Habitats and Species Regulations 2017 defines the circumstances where derogation is allowed for an affected EPS and a license could be issued by Natural Resources Wales. All three test are to be met by the proposals prior to planning permission being allowed which include:

1. The first test set out in Regulation 55(2)(e) deems that the need for the development should be in the interests of public health, public safety and an imperative reason of overriding public interest, which includes beneficial consequences of primary importance for the environment;
2. The second test set out in Regulation 55(9)(a) deems that there should be and 'no satisfactory alternative';
3. The third test set out in Regulation 55(9)(b) deems that the development should have no detrimental effect on the favourable conservation status of an EPS.

Great Crested Newt

GCN is a 'European protected species' afforded full protection under UK legislation. This protection extends to the habitats which support GCN and it is generally assumed that the species might be present in terrestrial habitats up to 0.5km[36] of a breeding pond, depending on habitat quality, connectivity and population size. The GCN newt is a priority species in Wales under Section 7 of the Environment (Wales) Act 2016.

Regulation 55(2) of the Conservation of Habitats and Species Regulations 2017 defines the circumstances where derogation is allowed for an affected EPS and a licence could be issued by Natural England. All three test are to be met by the proposals prior to planning permission being allowed which include:

1. The first test set out in Regulation 55(2)(e) deems that the need for the development should be in the interests of public health, public safety and an imperative reason of overriding public interest, which includes beneficial consequences of primary importance for the environment;
2. The second test set out in Regulation 55(9)(a) deems that there should be and 'no satisfactory alternative';
3. The third test set out in Regulation 55(9)(b) deems that the development should have no detrimental effect on the favourable conservation status of an EPS.

The GCN district licensing scheme can be used instead of making a GCN licence development application to Natural England.

Dormice

Dormice are a 'European protected species' and afforded full protection under UK legislation. Dormice are listed under section 7 of the Environment (Wales) Act 2016 as being of principal importance for maintaining and enhancing biodiversity in Wales. Since 2000, the UK population has declined by over a half (51%), decreasing on average by 3.8% per year (PTES, 2019).

Otters

Otters are a 'European Protected Species'. Their breeding sites or resting places[37] are fully protected under UK legislation. Otter is a priority species in Wales Under Section 7 of the Environment (Wales) Act 2016.

Works affecting otter are subject to licensing procedures by NRW.

Water Voles

[36] Great Crested Newts have been recorded travelling long distances: 1.3km within a 7-week period by an immature individual GCN (Kupfer 1998, detailed in Jehle et al 2011); 250m in a study by Beebee and Griffiths (2000) and 120-360m in a study by Arntzen and Tenuis (1993). In addition, a study by Duff (1989) found that over half of a population overwintered in an area more than 120m away from the main breeding pond. However, long-distance movement of GCN is rare and most studies indicate that much shorter distances are typical (Jehle et al 2011). As a general rule, suitable habitats within 250m of a breeding pond are likely to be used most frequently (English Nature 2001).

[37] Resting places are defined as 'areas that are essential to sustain an animal or group of animals when they are not active' (Anon 2007).

Water voles are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) which prohibits the deliberate killing or injury of individuals, damaging, destroying or blocking access to their places of protection (either intentionally or through ignorance), disturbing them in a place of shelter, or possessing them. The habitats of common water voles are not specifically protected. Water voles are listed as a priority species in Wales under Section 7 of the Environment (Wales) Act 2016.

White-clawed Crayfish

White-clawed crayfish are listed in the Habitat's and Species Directive (Annex 2 non-priority species) and are listed in Wales under Schedule 5 of the Wildlife and Countryside Act (1981). They are also listed as priority species in Wales under Section 7 of the Environment (Wales) Act 2016.

[redacted]

Reptiles

With the exception of smooth snake (*Coronella austriaca*) and sand lizard (*Lacerta agilis*) (which are afforded greater protection), common reptiles are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). They are given so-called 'partial protection', which prohibits the deliberate killing or injury of individuals. The habitats of common reptiles are not specifically protected. These species are listed as priority species in Wales under Section 7 of the Environment (Wales) Act 2016.

Hedgehogs

Hedgehogs are listed as a Red List mammal species in Britain and are protected under Schedule 6 of the Wildlife and Countryside Act (1981). They are "protected from being killed or taken by certain methods under Section 11(1) of the Wildlife and Countryside Act 1981. The methods listed are: self-locking snares, bows, crossbows, explosives (other than ammunition for a firearm), or live decoys. The species listed are also protected from the following activities: trap, snare or net, electrical device for killing or stunning, poisonous, poisoned or stupefying substances or any other gas or smoke, automatic or semi-automatic weapon, device for illuminating a target or sighting device for night shooting, artificial light, mirror or other dazzling device, sound recording, and mechanically propelled vehicle in immediate pursuit. They are also listed as priority species under Section 7 of the Environment (Wales) Act 2016.

The legislation afforded to hedgehogs in Section 7 of the Environment (Wales) Act 2016 means that every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity[38]. In effect, 'conserving

[38] Biodiversity conservation in respect to hedgehogs is interpreted as a commitment to restoring or enhancing their population.

biodiversity' includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat.

Appendix 4: Species Recorded

All species recorded by Acer Ecology, 2023

Taxonomic Name	Common Name	W	LM	CG	LDA	PMG	PIL	TF	Status
Trees and Shrubs									
Ligustrum ovalifolium	Garden privet								
Rubus fruticosus agg.	Bramble								
Herbaceous Plants									
Achillea millefolium	Yarrow								
Agrostis stolonifera	Creeping bent								
Anthoxanthum odoratum	Sweet vernal-grass								
Asplenium trichomanes	Maidenhair spleenwort								
Centaurea nigra	Common knapweed		LM	CG					
Dactylis glomerata	Cock's-foot								
Festuca rubra	Red fescue								
Galium aparine	Cleavers								
Geranium robertianum	Herb-robert								
Glechoma hederacea	Ground-ivy								
Holcus lanatus	Yorkshire fog								
Hypericum maculatum	Imperforate st john's-wort		LM						
Hypochaeris radicata	Common cat′s-ear		LM						
Leucanthemum vulgare	Ox-eye daisy		LM						
Lolium perenne	Perennial rye-grass								
Oenothera biennis	Common evening-primrose								
Pilosella officinarum	Mouse-ear hawkweed		LM	CG	LDA		PIL		
Plantago lanceolata	Ribwort plantain								
Poa annua	Annual meadow-grass								
Prunella vulgaris	Self-heal								
Ranunculus repens	Creeping buttercup								
Rumex acetosa	Common sorrel						PIL		
Senecio jacobaea	Common ragwort								
Sinapis alba	White mustard								
Stellaria graminea	Lesser stitchwort		LM						
Taraxacum officinale agg.	Dandelion								
Trifolium pratense	Red clover		LM						
Trifolium repens	White clover								
Urtica dioica	Common nettle								
Veronica chamaedrys	Germander speedwell								
Veronica serpyllifolia	Thyme-leaved speedwell								
Vicia sepium	Bush vetch								

'Habitat Indicator Species' Totals (Wales Biodiversity Partnership 2008[39])		0	7	2	1	0	2	0	
		W	LM	CG	LDA	PMR	PIL	TF	
'Primary' and 'Contributory' Totals (Wales Biodiversity Partnership 2008)		0				0			
		Primary Species				Contributory Species			

TF

[39] Wales Biodiversity Partnership (2008) Wildlife Sites Guidance Wales: A Guide to Develop Local Wildlife Systems in Wales. Wales Biodiversity Partnership/Welsh Assembly Government.

Key to Indicator Species (Wales Biodiversity Partnership 2008[40])

W - Woodland, LM – Lowland meadow, CG - Calcareous Grassland, LDA – Lowland Dry Acid Grassland, PMR Purple moor-grass and rush pasture, PIL – Post Industrial Land, TF Species-rich Tillage Fields and Margins

SINC Selection

Sites which support one primary species or five contributory species; or habitats which support eight lowland meadow, eight calcareous grassland, seven lowland dry acid grassland, twelve purple moor-grass and rush pasture or eight tillage field and margins indicator species, should be considered for SINC selection. Post-industrial sites supporting 20 or more indicator species from the combined post-industrial land, acid, neutral, calcareous and marshy grassland lists should be also considered for selection.

WCA 5 – Species protected under Schedule 5 of the Wildlife and Countryside Act

WCA 9 – Species listed under Schedule 9 of the Wildlife and Countryside Act

Appendix 5: Definitions of Site Value

International Value

Internationally designated or proposed sites such as Ramsar Sites, Special Protection Areas, Biosphere Reserves and Special Areas of Conservation, or non-designated sites meeting criteria for international designation. Sites supporting populations of internationally important species or habitats.

National Value

Nationally designated sites such as Sites of Special Scientific Interest (SSSIs), or non-designated sites meeting SSSI selection criteria (NCC 1989), National Nature Reserves (NNRs) or Nature Conservancy Review (NCR) Grade 1 sites, viable areas of key habitats within the UK Biodiversity Action Plan. Sites supporting viable breeding populations of Red Data Book (RDB) species (excluding scarce species), or supplying critical elements of their habitat requirements.

Regional Value

Sites containing viable areas of threatened habitats listed in a regional Biodiversity Action Plan, comfortably exceeding Site of Importance for Nature Conservation (SINC) criteria, but not meeting SSSI selection criteria. Sites supporting regionally significant areas of BAP habitats or large and viable populations Nationally Scarce species, or those included in the Regional Biodiversity Action Plan on account of their rarity, or supplying critical elements of their habitat requirements.

County Value/District Value

Site identified as a Site of Importance to Nature Conservation (SINC) at the district level; meeting South Wales Wildlife Sites Partnership (SWWSP) 2004 published designation criteria, but falling short of SSSI designation criteria, whether designated as a SINC or not. Ancient woodlands and sites supporting regionally significant areas of UK BAP habitat. Large scale examples of BAP habitats or areas supporting small populations of protected, UK BAP/ LBAP or threatened species (other than badger).

High Local

Habitats which just fail to meet Regional value criteria, but which appreciably enrich the ecological resource of the locality. Sites supporting species which are notable or uncommon in the county; or species which are uncommon, local or habitat-restricted nationally, and which might not otherwise be present in the area. Moderate scale examples of BAP habitats or areas supporting small populations of protected, UK BAP/LBAP or threatened species.

Local Value

Old hedges, woodlands, ponds, significant areas of species-rich grassland, small scale examples of BAP habitats or areas supporting small populations of protected, UK BAP/LBAP or threatened species. Undesignated sites or features which appreciably enrich the habitat resource in the context of their immediate surroundings, parish or neighbourhood (e.g. a species-rich hedgerow). Rare or uncommon species may occur but are not restricted to the site or critically dependent upon it for their survival in the area.

Site Value (within the immediate zone of influence)

Low-grade and widespread habitats. Woodland plantations, structured planting, small areas of species-rich grassland and other species-rich habitats not included in the UK or Local BAP.

Negligible

No apparent nature conservation value.

Appendix 6: Guidelines for Assessing Potential Suitability of Proposed Development Site for Bats [41]

Suitability	Description of Roosting Habitat	Commuting and Foraging Habitat
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting and foraging bats.
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[42] 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) or hibernation[43]. A tree of sufficient size and age to contain PRFs but with none seen from the ground[44].	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated 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 numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or 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 (with respect to roost type only) the assessments in this table are made irrespective of conservation status, which is established after presence is confirmed.	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or 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 potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	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.

[41] Table 4.1 in Collins (2016)

[42] For example, in terms of temperature, humidity, height above ground levels, light levels or levels of disturbance.

[43] Evidence from the Netherlands, shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten *et al.*, 2015). This phenomenon requires some research in the UK but ecologists should be aware of the potential for large numbers of this species to be present during the autumn and winter in large buildings in highly urbanised environments.

[44] This system of categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015).

Appendix 7: Bat Survey Protocol for Trees Affected by Arboricultural Work

The trees were assigned to the following categories:

Suitability	Description of Roosting Habitat	Commuting and Foraging Habitat
Negligible		Negligible habitat features on site likely to be used by commuting and foraging bats.
Low	A tree of sufficient size and age to contain PRFs but with none seen from the ground[45].	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated 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 numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	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 (with respect to roost type only) the assessments in this table are made irrespective of conservation status, which is established after presence is confirmed.	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	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 potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	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.

[45] This system of categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015).

Appendix 8: Minimum Number of Dusk Emergence and Dawn Re-entry Surveys Required [46]

High Roost Suitability	Moderate Roost Suitability	Low Roost Suitability
Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either dusk or dawn. Surveys should be undertaken from May to September with at least two of the surveys from May to August.	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey[47]. Surveys should be undertaken from May to September with at least one of the survey between May and August.	One survey visit. One dusk emergence or dawn re-entry survey (Survey period is from May to August).

Note: Table is reproduced from Collins 2016

[46] Multiple survey should be spread out to sample as much of the survey period as possible; It is recommended that surveys are spaced at least two weeks apart, preferably more. A dawn survey immediately after a dusk survey is considered only one visit.

Appendix 9: Suitable Bollard Lighting

	Manufacturer	Model	Description
	DW Windsor	Pharola DS	Specifically designed as a 'dark sky compliant' light, this bollard produces zero light above the horizontal plane, and is available with 3000K warm white lighting. For more details, visit: https://www.dwwindsor.com/products/pharola/pharola-ds/
	GHM-Eclatec	Trek	Lighting head and module in die-cast aluminium; polyester powder coating, any colour available. Available in 3000k. For more details, visit: https://www.ghm-eclatec.com/products/lighting/bollards/trek-bollard
	GHM-Eclatec	Taiga	Lighting head and module in die-cast aluminium; polyester powder coating, any colour available. Available in 3000k. For more details, visit: https://www.ghm-eclatec.com/products/lighting/bollards/taiga-led-bollard
	BEGA	77237	Cast aluminium, LED 300k, directs beam downwards. For more details, visit: https://www.bega.com/en/products/led-garden-and-pathway-luminaires-for-the-private-sector-77237/

A tool for finding ' bat-friendly' lighting is available at https://www.darksky.org/our-work/lighting/lighting-for-industry/fsa/fsa-products/

Appendix 10: Schwegler 1B General Small Bird Box, 26mm Entrance Hole

The Schwegler 1B Woodcrete nest box is available with different entrance hole sizes to attract a wide range of species and prevent competition between birds. The nest box can be attached to the tree or wall using an aluminium nail or by hanging over a branch. The nest box has removable front panel to aid inspection and cleaning.

Entrance hole sizes:

Entrance hole sizes:

32mm entrance hole will attract great, blue, marsh, coal and crested tit, redstart, nuthatch, collared and pied flycatcher, wryneck, tree and house sparrow and bats.

26mm entrance hole suits blue, marsh, coal and crested tit and possibly wren. All other species are prevented from using the nest box due to the smaller entrance hole.

Oval entrance hole (29 x 55mm) suits redstarts because more light enters the brood chamber. It is also suitable for all other species which nest in the 32mm boxes

The Schwegler 1B general small bird box will be preferably mounted on a stable tree trunk, rather than on branches which will sway. The mounting location will not be heavily shaded. Boxes should be mounted vertically on the tree.

Boxes will be mounted a minimum of 2m, and preferably 3m, above the ground, and as far as possible placed on the SE- or SW-facing surfaces of the tree trunks.

Appendix 11 – Schwegler Close and Open Fronted Nest Boxes

Schwegler Bird Home 1MR

This nest box is for installation on external walls of buildings (including sheds and garages) and is suitable for a range of bird species. With a 32mm hole it allows entry to species such as coal tit, blue tit, great tit, redstart, nuthatch, house sparrow, tree sparrow and other species. The recommended height is between 1.5m and 5m above ground with a south-east to south-west orientation. Cleaning after the breeding season (wait until October) is advised to provide a clean nest for the following year, or utilisation by non-migratory birds for winter roosting.

Schwegler 2H Half Box

These should never be hung on trees or bushes as this could allow small predators to access the interior and predate nesting birds.

This nest box should always be installed on the external walls of houses, barns, garden sheds etc. It is designed to be hung so that the entrance is to one side (90° angle to wall).

Correctly positioned it can attract species such as pied wagtail, , a robin and wren.

The front panel is easily removed to facilitate cleaning.