



**Hydrogen Facility,
Western Bio-Energy**

Preliminary Ecological Appraisal

May 2024

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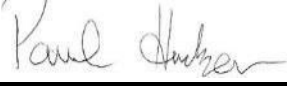
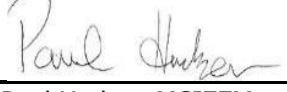
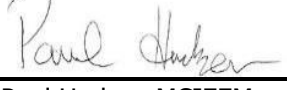
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Document Verification Table

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1.0	05 April 2024	Daisy Cadet Assistant Ecologist 	Isabel Humphries Assistant Ecologist 	Paul Hudson MCIEEM Principal Ecologist 
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Summary

Brief and Site Location	Acer Ecology Ltd. were instructed by Sirius Planning Ltd to conduct a preliminary ecological appraisal on a parcel of land at Western Bio-Energy Site, Longland Lane, SA13 2NR, within the administrative boundary of Neath Port Talbot County Borough Council (Ordnance Survey Grid Reference centred at: SS 7900 8621).
Development Proposals	The proposed development works comprise an electrolytic hydrogen production facility with associated compression and storage, a hydrogen tube-trailer filling station, installation of a private wire and provision of renewable electricity from the co-located biomass plant on an existing concrete pad which will be extended northwards by 3m at Western Bio-Energy Plant site.
Impacts to Key Receptors	The development may result in adverse impacts to the following protected sites, habitats and/or species: • The Junction 38 Wetland Complex SINC directly north of the site and NPT watercourses SINC; • The proposed development will involve the clearance of a section of broadleaved semi-natural woodland, a habitat listed under Section 7 of the Environment Wales Act 2016 as being of principal importance within Wales, and protected within Section 5.57 of the Local Development Plan. If this cannot be avoided, significant mitigation will be required to ensure that the loss of this habitat is compensated for; and • There is potential for impacts to nesting and foraging birds, reptiles, commuting and foraging bats and other mammals.
Required Actions	The following provisional recommendations have been developed based on the development proposals available at the time of writing. They may be subject to change upon receipt of the final design: • Further Work: • CEMP - This can be secured by a planning condition after planning consent has been granted; and • Precautionary measures – Pollution prevention measures; Timing of works for birds; Vegetation clearance – Reptiles, Dormice and Nesting Birds; Precautionary measures for otters and mammals; Good construction practices for mammals. • Mitigation measures – Sensitive lighting strategy for bats. and • Compensation and enhancement measures – Bird and bat boxes; Enhancement and Restoration of Woodland Ground Flora; Protective measures for retained habitats.
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 is required before to fully determine the ecological impacts of the proposed development. If development works do not begin within eighteen months to two years of the date of this report, an update survey is likely to be required in accordance with guidance from Natural Resources Wales (NRW), (CIEEM, 2019) and BS 42020:2013, to determine if conditions have changed since those described in this report.

1. Introduction

1.1. Brief and Site Location

Acer Ecology Ltd. were instructed by Sirius Planning Ltd to conduct a preliminary ecological appraisal of land at Western Bio-Energy Site, Longland Lane, SA13 2NR, within the administrative boundary of Neath Port Talbot County Borough Council (Ordnance Survey Grid Reference centred at: SS 7900 8621)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 proposed development site measures approximately 0.6ha, and mainly comprises concrete hard standing, and broadleaved woodland along the northern boundary. The site is situated within Western Bio-Plant, 4.3km south from the town of Port Talbot. The site is bordered with broadleaved woodland to the north, with tree-lined fields located east. Industrial estates border the site to the south with areas of grassland with scattered trees bordering the west. Tata Steel is located 0.5km west of the site.

The site is characterised by a flat topography and sits approximately 7m above sea level.

1.3. Proposed Works

The proposed development works comprise an electrolytic hydrogen production facility with associated compression and storage, a hydrogen tube-trailer filling station and provision of renewable electricity from the co-located biomass plant on an existing concrete pad which will be extended northwards by 3m at Western Bio-Energy site. Additionally, a new cabling route of approximately 250m to be laid through grassland habitats to the west and south of the site is proposed.

The proposed development plan is provided in 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 surrounding area;
- A Phase 1 Habitat Survey of the site, extended to search for evidence of, and potential for, protected fauna; and

¹ Latitude and Longitude: 51.561749 , -3.7469600 / what3words: working.bonus.sketching

- 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

2.1. Scope of Assessment

This assessment has been undertaken following the approach detailed in the Chartered Institute of Ecology and Environmental Management's 'Guidelines for Ecological Impact Assessment in the UK and Ireland' (CIEEM, 2018). The assessment has focussed on 'Important Ecological Features' that are present within the 'Zone of Influence' of the project. Important Ecological Features, as detailed in Box 14 of the CIEEM's Guidelines comprise:

- Habitats and Species of Principal Importance for the Conservation of Biodiversity in Wales;
- Legally protected species; and
- Red Listed or rare species (based on Red Data Book lists, Birds of Conservation Concern and species considered to be nationally rare/scarce).

The Zone of Influence (ZoI) is the area over which the development proposal could have an influence on ecological features. The ZoI will vary for different features, although the ZoI for this development proposal is considered to comprise the land within the red line boundary and immediately adjacent habitat features.

2.2. Desk Study

2.2.1. Protected Sites, Habitats and Species

Existing information on designated sites and protected species was obtained from the sources detailed in Table 1.

Table 1: Sources of Data

Source	Data	Radius of Search
Natural resources Wales (NRW) Geographical Information Systems (GIS) Layers	Statutory and non-statutory nature conservation designated sites	Ramsar/Special Area of Conservation (SACs)/Special Area of Protection (SPAs)/Site of Special Scientific Interest (SSSIs) National Nature Reserves (NNRs), Local Nature Reserves (/LNRs), Ancient Semi-Natural Woodland (ASNW), Restored Ancient Woodland Sites (RAWS) and Plantation on Ancient Woodland Sites (PAWS) - 2km ² SACs (designated for bats) - 10km
South East Wales Biological Records Centre (SEWBRc)	Protected species records (SEWBRc unique reference: 0234-880) Site of Importance for Nature Conservation (SINC)	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.

2.2.2. 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.

2.2.3. 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.

2.2.4. Planning Authority

The Neath Port Talbot County Borough Council Planning Portal² was consulted to determine if any previous survey information was available for the site, or immediate surroundings.

2.3. Field Study

2.3.1. Personnel

The field survey was undertaken in good weather on the 5th of March 2024 by Isabel Humphries³ and Daisy Cadet⁴.

2.3.2. Vegetation and Habitats

The vegetation and habitat types present within the survey area were categorised and mapped in accordance with the standard⁵ 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. 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 5).

Habitats of principal importance detailed within Section 7 of Environment Wales Act 2016 were identified and assessed to determine the ecological value of the features of the site.

² <https://planningonline.npt.gov.uk/online-applications/>

³ Isabel graduated in Chemistry from Cardiff University. She is currently receiving training from Acer Ecology, working as an Assistant Ecologist, gaining ecological surveying experience. Further details of Isabel's qualifications and experience can be found at: <https://www.linkedin.com/in/isabel-humphries-a182491b9>

⁴ Daisy graduated with a first-class degree in Natural History from the University of South Wales and is now working as an Assistant Ecologist and receiving training from Acer Ecology Ltd.

⁵ Some additional categories were also used if applicable e.g. hard standing and Japanese knotweed.

Invasive plant species listed on Schedule 9⁶ 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.

2.3.3. 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 Project⁷ reviews, in the Species of Conservation Concern Red, Amber or Near Threatened List⁸, Birds of Conservation Concern in Wales⁹, 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

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.

⁶ 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.

⁷ 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>).

⁸ 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.

⁹ 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).

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 Features¹⁰ (PRFs)) 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. A high-powered torch (Clulite), binoculars and a ladder were used as appropriate during the survey. 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 4.2 of the Bat Conservation Trusts Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2023) whereby trees were categorised into the following categories:

- None – Either no PRFs in the tree or highly unlikely to be any;
- FAR – Further assessment required to establish if PRF are present in the tree; or
- PRF – A tree with at least one PRF present.

The bat survey assessment was added into the table from the Tree Survey & Arboricultural Impact Assessment Report (TreeCare Consulting, 2024), detailed within Table 7 of this report.

Buildings Assessment

Two large metal containers are present within the east of the site and a concrete brick wall with gaps surrounds the hard standing on its north, east and western boundaries. Due to the large light ingress, lack of thermal stability and low height of the wall gaps, the containers and wall was considered wholly unsuitable for roosting bats. They are therefore not mentioned further in this report.

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, 2023) (see Appendix 7). 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.

Landscape features suitable for foraging and commuting bats include linear landscape features such as watercourses, transport corridors (e.g. roads, sunken lanes railways), walls, hedgerows, coppice, woodland fringe, tree lines, ditches and areas of scrub and pasture.

¹⁰ 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.

Dormice

The woodland on the northern boundary was assessed for its suitability to support dormice (*Muscardinus avellanarius*). The structure and composition of the woodland was 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 waterbodies or watercourses were present within the site or within 0.5km of it. One waterbody and one watercourse, the Upper Mother Ditch, were identified within the study area (see Plan 4). Access constraints meant it was not possible to undertake HSI assessments of these waterbodies due to their presence off-site within fenced-off areas of woodland.

No additional suitable waterbodies were recorded from within the study area.

The waterbodies to the north and west of the site experiences no such barriers to GCN migration as they located within and adjacent to the Junction 38 Wetland Complex with strong connectivity to the development site.

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

Otters

A preliminary assessment for signs of otter (*Lutra lutra*) was undertaken following the advice provided by Strachan & Jefferies (1996) and Chanin (2003). 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.

No access to the Upper Mother Ditch was possible upstream or downstream of the survey.

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

Water Voles

The nearest suitable water body for water voles is the Upper Mother Ditch which lies approximately 0.2km west of the proposed development site, however it was not surveyed due to access constraints. Water voles do not usually travel far from streams/ditches. Additionally, SEWBRc returned zero records of no water voles within 1km of the site, and the likelihood of water voles being present on site is considered to be negligible. They are therefore not mentioned further in this report.

White-Clawed Crayfish

The nearest suitable water body for white-clawed crayfish is the Upper Mother Ditch which lies approximately 0.2km west of the proposed development site, however, it was not surveyed due to access constraints. Due to the distance of the water body from the site and absence of records returned from SEWBRc of this species within 1km of the site, the likelihood of white-clawed crayfish being present within the site is considered to be negligible. They are therefore not mentioned further in this report.

Badgers

Earth embankments, wooded copses, hedgerows and dense bramble beds are habitat features that often contain evidence of badgers (*Meles meles*). Where present on-site, these and other suitable habitat features were searched for such evidence. Where present, the location of badger signs such as setts, runs, dung pits or latrines, prints, hair and foraging snuffle holes were recorded.

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.

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

Hedgehogs

The site's potential to support hedgehog was assessed using guidance on habitats of importance in Hedgehogs and Development (People's Trust for Endangered Species, 2022)¹¹ 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.

2.3.4. Assessment of Ecological Value

The value of the habitats and features of the site have been provisionally evaluated and graded in accordance with the 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.

Potential impacts on important ecological features are identified and assessed. Mitigation measures have been devised following the mitigation hierarchy and appropriate mechanisms for securing mitigation measures have been identified.

2.3.5. 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.

Seasonality of Survey

The present survey was undertaken outside of the optimal survey period for certain species of flora and fauna, with many species having died back or having become inconspicuous at the time of the survey. The survey can be considered as providing a reasonable, though not exhaustive or full, plant list. The survey noted the habitat types present on site and the dominant vegetation at the time of the survey, which is likely to be constant and a fair reflection of the habitat quality present.

Incomplete Survey Information

¹¹ <https://www.hedgehogstreet.org/wp-content/uploads/2022/08/PTES-BHPS-Hedgehogs-and-development-guide-2022.pdf>

Full surveys for the protected species listed previously have not yet been carried out. For some species of fauna for which evidence has been found or which are considered likely to occur on site, further targeted survey is advisable at a more appropriate time of year (see Section 4).

Restricted Access to Water Bodies Within 0.5km of Site

Access to all of the water bodies within 0.5km of the site was not possible as they are located within the Junction 38 Wetland Complex which could not be accessed from the development site.

This is a constraint because there are no hard barriers preventing GCN migrating onto the proposed development site from the ponds as the habitats between them are suitable for GCN to move between them.

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 2: Statutory Sites Designated Within 2km

Site Name and Designation	Description	Distance and Direction from Development Site	Development Impacts
Eglwys Nunydd Reservoir SSSI ¹²	The largest sheet of fresh water in the county. On the site of Margam Moors which, before being reclaimed for the Abbey Steel Works, were a notable site for wildfowl. The reservoir attracts large numbers of wintering waterfowl and passage migrants. Notable species including great crested grebe (<i>Podiceps cristatus</i>) and little grebe (<i>Tachybaptus ruficollis</i>), mallard (<i>Anas platyrhynchos</i>), gadwall (<i>Mareca strepera</i>) and coot (<i>Fulica atra</i>) now breed.	0.6km south of the site	No adverse impacts are anticipated due to the small-scale nature of the development and distance from the statutory site.
Margam Country Park ¹³	Margam Country Park hosts fallow (<i>Dama dama</i>), red (<i>Cervus elaphus</i>) and pere david (<i>Elaphurus davidianus</i>) deer. Other species include badgers, foxes (<i>Vulpes vulpes</i>) and voles (<i>Microtus arvalis</i>).	0.7km east of the site	
Margam Moors SSSI ¹⁴	The last remaining example of the once extensive coastal levels in West Glamorgan. Bounded to the seaward by dunes and to landward by high ground, the meadows provide an agriculturally-managed freshwater	1km south-west of the site	

¹² https://naturalresources.wales/media/640641/SSSI_0331_Citation_EN001152a.pdf

¹³ <http://www.margamcountrypark.co.uk/>

¹⁴ https://naturalresources.wales/media/646757/SSSI_0584_Citation_EN0017eae.pdf

	habitat which hosts many species of plant on the edge of their geographical range, and nationally important invertebrates.		
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3.2. Non-statutory Nature Conservation Designated Sites

SINCs

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

Table 3: Non-Statutory Sites Designated Within 2km

Site Name	Description	Distance and Direction from Development Site	Development Impacts
NPT Watercourses SINC	No citation available.	The site is located within the SINC.	All watercourses within Neath Port Talbot are designated as a SINC, and therefore there is potential for adverse impacts through silt, run-off and/or pollutants entering the watercourse and wetland to the west of the site. Recommendations to avoid these adverse impacts are outlined in Section 4 of the report.
Junction 38 Wetland Complex SINC ¹⁵	Designated for its native semi-natural woodland with lowland fen, purple moor-grass and rush pastures. Known to host water vole, otter, grass snake and common lizard.	Located directly north of the site.	The Junction 38 Wetland Complex SINC lies directly north of the proposed site, therefore, silt, run-off and/or pollutants could feasibly find their way into this watercourse (both during construction and operational phases of the development). Site drainage, run-off and accidental pollution incidents (including litter) will need to be carefully considered as these inputs may move downstream and thus affect areas beyond the immediate zone of influence. Such impacts can be avoided by the implementation of pollution prevention measures. See recommendations detailed in Section 4.
NPT Areas of Semi-Natural Woodland SINC	No citation available.	0.3km north of the site.	No adverse impacts are anticipated due to the small-scale nature of the development and distance from the SINCs.
Eglwys Nunydd SINC ¹⁶	Designated for native woodland, scrub communities, lowland fen, reedbeds and eutrophic waters. Known to host barn owl and Cetti's warbler.	0.4km south of the site.	

¹⁵ <http://citations.lercwales.org.uk/sinc/npt/NPTSINC057.pdf>

¹⁶ <http://citations.lercwales.org.uk/sinc/npt/NPTSINC056.pdf>

Margam Country Park SINC ¹⁷	Designated for wood pasture and parkland, ponds and mosaic habitats. Home to lesser horseshoe, greater horseshoe, barbastelle, brown hare and adder.	0.7km east of the development site.	
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Ancient Woodland Sites

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

Table 4: Ancient Woodland Sites Within 2km

Ancient Woodland Site	Number within 2km of Site
Ancient Semi-Natural Woodland (ASNW)	13
Restored Ancient Woodland Sites (RAWS)	Nine
Plantations on Ancient Woodland Sites (PAWS)	Seven
Ancient Woodland Sites of Unknown Category	Six
Nearest Area of Ancient Woodland	An unnamed area of RAWS located 0.3km north of the development site
Development Impacts	None due to the distances between these woodlands and the proposed development site, together with the small scale of the works. They are therefore not mentioned further in this report.

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 5.

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

¹⁷ <http://citations.lercwales.org.uk/sinc/npt/NPTSINC081.pdf>

Table 5: Habitats Recorded on Site

Phase 1 Habitat	Description	Ecological Value	Development Impacts
Broadleaved Semi-Natural Woodland (A1.1.1)	A narrow stretch of broadleaved semi-natural woodland (Photo 1) is present along the northern boundary of the site. A variety of tree species and ages are present, ranging from young saplings to mature trees. Shallow puddles (<5cm in depth) are common throughout the habitat (Photo 2). Goat willow (<i>Salix caprea</i>) and sessile oak (<i>Quercus petraea</i>) are abundant, with occasional holly (<i>Ilex aquifolium</i>), common hawthorn (<i>Crataegus monogyna</i>) and rare silver birch (<i>Betula pendula</i>). The field layer is dominated by bramble (<i>Rubus fruticosus</i> agg.) with abundant ivy (<i>Hedera helix</i>) and common nettle (<i>Urtica dioica</i>), occasional rosebay willowherb (<i>Chamerion angustifolium</i>), cleavers (<i>Galium aparine</i>) and hemlock water-dropwort (<i>Oenanthe crocata</i>). Lords-and-ladies (<i>Arum maculatum</i>), marsh thistle (<i>Cirsium palustre</i>), scaly male-fern (<i>Dryopteris affinis</i> agg.), honeysuckle (<i>Lonicera periclymenum</i>), annual meadow-grass (<i>Poa annua</i>) and perennial sow-thistle (<i>Sonchus arvensis</i>) are also present, but rare. Detailed tree descriptions are provided in Section 3.5.3.	Listed under Section 7 of the Environment Wales Act 2016 as a priority habitat within Wales¹⁸. Local value.	The proposed development details plans to clear areas of scrub and vegetation within the ownership boundary, in addition to the possible pruning of trees T2 and T5 (see Section 3.5.3, Table 7). This may cause direct impacts to protected species through habitat loss and injury/death as a result of vegetation clearance. Additionally, there may be damage as a result of heavy plant movement over the root protection areas and accidental damage during construction activities. Recommendations to avoid and mitigate such impacts are presented in Section 4.
Wall (J2.5)	A temporary concrete wall (Photo 3) (2m in height; 1m in width) constructed of interlocking concrete blocks surrounds the hardstanding on its northern and eastern boundaries. Overall it is in good condition, however cracks and gaps are present in some areas where the bricks interlock.	Site value.	The wall will be removed as part of the development.
Fence (J3.4)	A metal wire mesh fence (~2.5m tall) (Photo 4) is located to the north of the site, separating the area of woodland from the bare ground and hardstanding. It is in good condition, however, TN3 shows a deformed section of the fence,	Negligible value.	The proposed development includes the positioning of the fence along the applicants land ownership boundary following the completion of the works.

¹⁸ Section 7 list available at <https://www.biodiversitywales.org.uk/environment-wales-act>

	possibly used by mammals for dispersal on/off site (Photo 5).		
Bare Ground (J.4)	An area of bare ground (Photo 6) is found in the north of the site, adjacent to the woodland and hardstanding. In some areas it is sparsely vegetated, however the majority of the ground is covered with bark and gravel with patches of rubble consisting of rock, brick and brash. Annual meadow-grass is abundant within the areas of sparse vegetation, with additional herbaceous species including occasional cleavers, bristly ox-tongue (<i>Helminthotheca echioides</i>), foxglove (<i>Digitalis purpurea</i>) and common chickweed (<i>Stellaria media</i>). Rosebay willowherb, herb-robert, wood avens (<i>Geum urbanum</i>), ivy, nipplewort, perennial rye-grass (<i>Lolium perenne</i>), hemlock water-dropwort, creeping buttercup, curled dock, perennial sow-thistle, dandelion and common nettle are also present, but rare. Areas with leaf litter, brash, rocks/bricks and felt provide potential reptile basking and refugia opportunities (Photo 7) (TN4).	Site value.	The proposed development will involve the loss of a part of this habitat as the hard standing is planned to be extended northwards by 3 metres. There is potential for adverse impacts to reptiles and small mammals. Recommendations to avoid and mitigate such impacts are presented in Section 4.
Hard Standing ¹³	Concrete hard standing is present on the majority of the site and is used to store miscellaneous containers, materials and equipment. It is in good condition, with no large cracks or damage. A log pile (TN2) (Photo 9) and two large logs (TN1) (Photo 10) are present towards the west of the hard standing and may be utilised by reptiles and mammals for refugia. Hard standing is present along the entire length of the proposed cabling route.	Negligible value.	The existing hard standing is to be retained as part of the development.

Run-off from the proposed development site into the adjacent wetland could have adverse effects due to increased sediment load and pollution entering the waterbodies.

Photo 1: Broadleaved semi-natural woodland



Photo 2: Example of a shallow puddle within the woodland



Photo 3: Concrete Wall with gaps (arrow)



Photo 4: Metal wire mesh fence



Photo 5: TN3 Hole underneath fence (circled)



Photo 6: Area of bare ground with bark, rocks and vegetation



Photo 7: TN4 Felt and brash within the area of bare ground



Photo 8: Hard standing covering the majority of the site



Photo 9: Log pile



Photo 10: Large logs



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. Protected and Notable Species

3.5.1. Notable Plant Species

Data Trawl Results

SEWBRc returned records of 37 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 cornflower (*Centaurea cyanus*).

However, bluebell is mainly protected from sale via its listing under Schedule 8 of the Wildlife and Countryside Act.

Seven plants listed as species of conservation concern were recorded within 1km of the site, namely: corn marigold (*Glebionis segetum*), charlock (*Sinapis arvensis*), arrowhead (*Sagittaria sagittifolia*), chives (*Allium schoenoprasum*), flowering-rush (*Butomus umbellatus*), *Calystegia sepium subsp. roseata*, and esthwaite waterweed (*Hydrilla verticillata*).

28 plant listed as locally important species were recorded within 1km of the site, namely: pyramidal orchid (*Anacamptis pyramidalis*), bugloss (*Anchusa arvensis*), viper's-bugloss (*Echium vulgare*), portland spurge (*Euphorbia portlandica*), stinking iris (*Iris foetidissima*), bee orchid (*Ophrys apifera*), hawkweed oxtongue (*Picris hieracioides*), burnet rose (*Rosa spinosissima*), green field-speedwell (*Veronica agrestis*), various-leaved water-starwort (*Callitriche platycarpa*), small pondweed (*Potamogeton berchtoldii*), ivy-leaved duckweed (*Lemna trisulca*), white water-lily (*Nymphaea alba*), blue water-speedwell (*Veronica anagallis-aquatica*), greater duckweed (*Spirodela polyrhiza*), cyperus sedge (*Carex pseudocyperus*), greater pond-sedge (*Carex riparia*), common calamint (*Clinopodium ascendens*), perennial wall-rocket (*Diplotaxis tenuifolia*), round-leaved crane's-bill (*Geranium rotundifolium*), fennel pondweed (*Potamogeton pectinatus*), wild mignonette (*Reseda lutea*), pink water-speedwell (*Veronica catenata*), corncockle (*Agrostemma githago*), perfoliate pondweed (*Potamogeton perfoliatus*), purple willow (*Salix purpurea*), lesser bulrush (*Typha angustifolia*), and small-leaved elm (*Ulmus minor subsp. minor*).

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.

3.5.2. Birds

Desk Study Results

SEWBRc returned records of 72 priority bird species within 1km of the site, namely: goshawk (*Accipiter gentilis*), skylark (*Alauda arvensis*), kingfisher (*Alcedo atthis*), tree pipit (*Anthus trivialis*), goldeneye (*Bucephala clangula*), Cetti's warbler (*Cettia cetti*), ringed plover (*Charadrius hiaticula*), black-headed gull (*Chroicocephalus ridibundus*), marsh harrier (*Circus aeruginosus*), cuckoo (*Cuculus canorus*), yellowhammer (*Emberiza citrinella*), reed bunting (*Emberiza schoeniclus*), peregrine (*Falco peregrinus*), hobby (*Falco subbuteo*), kestrel (*Falco tinnunculus*), pied flycatcher (*Ficedula hypoleuca*), brambling (*Fringilla montifringilla*), mediterranean gull (*Ichthyaeetus melanocephalus*), herring gull (*Larus argentatus*), linnet (*Linaria cannabina*), grasshopper warbler (*Locustella naevia*), common scoter (*Melanitta nigra*), red kite (*Milvus milvus*), yellow wagtail (*Motacilla flava*), curlew (*Numenius arquata*), osprey (*Pandion haliaetus*), house sparrow (*Passer domesticus*), golden plover (*Pluvialis apricaria*), marsh tit (*Poecile palustris*), dunnoek (*Prunella modularis*), chough (*Pyrrhocorax pyrrhocorax*), bullfinch (*Pyrrhula pyrrhula*), turtle dove (*Streptopelia turtur*), starling (*Sturnus vulgaris*), redwing (*Turdus iliacus*), song thrush (*Turdus philomelos*), fieldfare (*Turdus pilaris*), ring ouzel (*Turdus torquatus*), barn owl (*Tyto alba*), lapwing (*Vanellus vanellus*), lesser redpoll (*Acanthis cabaret*), hen harrier (*Circus cyaneus*), spotted flycatcher (*Muscicapa striata*), tree sparrow (*Passer montanus*), wood warbler (*Phylloscopus sibilatrix*), firecrest

(*Regulus ignicapilla*), lesser spotted woodpecker (*Dryobates minor*), merlin (*Falco columbarius*), greenshank (*Tringa nebularia*), pintail (*Anas acuta*), bittern (*Botaurus stellaris*), hawfinch (*Coccothraustes coccothraustes*), whooper swan (*Cygnus cygnus*), crossbill (*Loxia curvirostra*), willow tit (*Poecile montanus*), garganey (*Spatula querquedula*), little ringed plover (*Charadrius dubius*), white-fronted goose (*Anser albifrons*), scaup (*Aythya marila*), black tern (*Chlidonias niger*), long-tailed duck (*Clangula hyemalis*), great northern diver (*Gavia immer*), white-tailed eagle (*Haliaeetus albicilla*), leach's petrel (*Hydrobates leucorhous*), little gull (*Hydrocoloeus minutus*), velvet scoter (*Melanitta fusca*), red-necked phalarope (*Phalaropus lobatus*), slavic grebe (*Podiceps auritus*), black-necked grebe (*Podiceps nigricollis*), little tern (*Sternula albifrons*), purple heron (*Ardea purpurea*), and wood sandpiper (*Tringa glareola*).

49 birds listed as species of conservation concern were recorded within 1km of the site, namely: common sandpiper (*Actitis hypoleucos*), long-tailed tit (*Aegithalos caudatus*), teal (*Anas crecca*), mallard (*Anas platyrhynchos*), meadow pipit (*Anthus pratensis*), swift (*Apus apus*), grey heron (*Ardea cinerea*), short-eared owl (*Asio flammeus*), dunlin (*Calidris alpina*), greenfinch (*Chloris chloris*), dipper (*Cinclus cinclus*), whitethroat (*Curruca communis*), snipe (*Gallinago gallinago*), oystercatcher (*Haematopus ostralegus*), swallow (*Hirundo rustica*), common gull (*Larus canus*), lesser black-backed gull (*Larus fuscus*), great black-backed gull (*Larus marinus*), jack snipe (*Lymnocyptes minimus*), wigeon (*Mareca penelope*), grey wagtail (*Motacilla cinerea*), wheatear (*Oenanthe oenanthe*), cormorant (*Phalacrocorax carbo*), willow warbler (*Phylloscopus trochilus*), green woodpecker (*Picus viridis*), manx shearwater (*Puffinus puffinus*), goldcrest (*Regulus regulus*), whinchat (*Saxicola rubetra*), woodcock (*Scolopax rusticola*), shelduck (*Tadorna tadorna*), sandwich tern (*Thalasseus sandvicensis*), redshank (*Tringa totanus*), mistle thrush (*Turdus viscivorus*), common guillemot (*Uria aalge*), coot (*Fulica atra*), redstart (*Phoenicurus phoenicurus*), sand martin (*Riparia riparia*), pochard (*Aythya ferina*), tufted duck (*Aythya fuligula*), shoveler (*Spatula clypeata*), curlew sandpiper (*Calidris ferruginea*), black-throated diver (*Gavia arctica*), shag (*Gulosus aristotelis*), smew (*Mergellus albellus*), red-breasted merganser (*Mergus serrator*), red-necked grebe (*Podiceps grisegena*), common tern (*Sterna hirundo*), arctic tern (*Sterna paradisaea*), and spotted redshank (*Tringa erythropus*).

SEWBRc also returned four birds listed as locally important species within 1km of the site, namely: water pipit (*Anthus spinoletta*), barnacle goose (*Branta leucopsis*), taiga/tundra bean goose (*Anser fabialis/serrirostris*), and Siberian chiffchaff (*Phylloscopus collybita tristis*).

Seven birds listed as other bird species (i.e. invasive species) were recorded within 1km of the site, namely: Canada goose (*Branta canadensis*), black swan (*Cygnus atratus*), ruddy duck (*Oxyura jamaicensis*), Mandarin duck (*Aix galericulata*), wood duck (*Aix sponsa*), snow goose (*Anser caerulescens*), and red-crested pochard (*Netta rufina*).

Field Survey Results

A low number of birds were recorded on site, including: coal tit (*Parus ater*) and house sparrow (*Passer domesticus*). A common buzzard (*Buteo buteo*) was observed in flight above the woodland adjacent to the north of the site.

Evaluation of Ecological Value of Site for Birds

The trees and scrub understorey within the broadleaved woodland on site provides good nesting and foraging opportunities for a range of tree and scrub nesting bird species, potentially including a range of Section 7 Species of Principal Importance within Wales and Red List¹⁹ species including greenfinch and willow warbler, which were noted within the data trawl results. The woodland has good ecological connectivity to the wider landscape, in particular the woodland to the north and wetland to the west which are of high ecological value to birds. The bare ground is highly unlikely to be suitable for ground nesting birds due to the sparsity of the vegetation, however may provide some foraging opportunities.

Impact Assessment of Proposed Development on Birds

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

- Death or injury to adults or destruction of nests during vegetation clearance of woodland to facilitate the development. However, such impacts can be avoided by timing works so that they occur outside of the nesting bird season (September to February inclusive), and by adopting sensitive working practices detailed in Section 4; and
- Permanent nesting habitat loss. Compensatory measures to mitigate against these losses are provided in Section 4.

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

- Habitat degradation; and
- Increases in disturbance levels.

3.5.3. 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 6: Bat Roost Records

Species	Total Number of Records	Distance to Nearest Record	Most Recent Record	Maximum Count
Whiskered/Brandt's bats (<i>Myotis mystacinus</i> / <i>Myotis brandtii</i>)	One	0.8km	23/6/2020	One
Common pipistrelle (<i>Pipistrellus pipistrellus</i>)	One	0.8km	2020	30
Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>)	One	0.9km	2020	450
Brown long-eared (<i>Plecotus auritus</i>)	One	0.9km	23/6/2020	One

¹⁹ <https://www.bto.org/sites/default/files/publications/bocc-5-a5-4pp-single-pages.pdf>

In addition to the roost records, SEWBReC returned many records of bats foraging or commuting within 1km of the site. These included: soprano pipistrelle, common pipistrelle, noctule (*Nyctalus noctula*), and *Myotis sp.*

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

Trees

All of the trees within the survey area were assessed for their suitability to support roosting bats. The majority of scattered trees were mature in age with low numbers of PRFs. These have been described in detail in the table below and numbered on Plan 5, which should be read in conjunction with this section of the report.

Table 7: Trees Assessed for Bat Potential

Tree ID	Species and Description	Stems	Quality	PRF	Suitability for Roosting Bats (Collins 2023)	Management Recommendation (TreeCare Consulting, 2024)
T1	Mature sessile oak (Photo 12). Height of 14m and DBH of 550mm.	1	Moderate	No discernible PRFs.	None	May require pruning
T2	Mature sessile oak (Photo 13). Height of 12m and a DBH of 460mm. Moderately dense ivy coverage.	1	Low	Dense ivy coverage, obstructing the view of PRFs beneath.	FAR-U	May require pruning
T3	Mature hawthorn (Photo 14). Height of 5m, DHB of 300mm. Dense ivy coverage.	1	Low	No discernible PRFs.	None	Coppice tree
T4	Mature sessile oak (Photo 15). Height of 12m, DBH of 650mm.	1	Low	No discernible PRFs.	None	Crown reduce and remove side stubs
T5	Mature sessile oak (Photo 16). Height on 8m and DBH of 650mm. Moderately dense ivy coverage.	1	Low	Dense ivy coverage, obstructing the view of PRFs beneath.	FAR-U	May require pruning
T6	Mature goat willow (Photo 17). Height of 8m and a DBH of 350mm.	1	Low	No discernible PRFs.	None	Retain as habitat tree/feature
T7	Mature birch (Photo 18). Height of 12m and a DBH of 450mm.	2	Low	No discernible PRFs.	None	None
T8	Mature sessile oak (Photo 19). Height of 14m and a DBH of 330mm. Moderately dense ivy coverage on main trunk.	1	Low	Dense ivy coverage, obstructing the view of PRFs beneath.	FAR-U	None

Tree ID	Species and Description	Stems	Quality	PRF	Suitability for Roosting Bats (Collins 2023)	Management Recommendation (TreeCare Consulting, 2024)
T9	Mature goat willow. Height of 12m and a DBH of 650mm.	4	Moderate	No discernible PRFs.	None	None
T10	Mature sessile oak. Height of 14m and a DBH of 650mm.	1	Good	Unknown – outside the red line boundary and so was not assessed at the time of the survey.	FAR-U	None
T11	Mature sessile oak. Height of 12m and a DBH of 600mm.	3	Moderate	Unknown – outside the red line boundary and so was not assessed at the time of the survey.	FAR-U	Lift canopy of tree to 2m above proposed fence
G1	Mixed broadleaf species and ages, with an average height of 12m.	N/A	Low	No discernible PRFs.	None	Clear group
G2	Mixed broadleaf species and ages, with an average height of 12m.	N/A	Low	No discernible PRFs.	None	Clear group
G3	Mixed broadleaf species and ages, with an average height of 12m.	N/A	Low	No discernible PRFs.	None	None
Key: Green (None) – No further work required for the tree; Red (FAR-U) – Further work required for the tree. Red text – Action proposed.						

Photo 12: T1 Sessile oak



Photo 13: T2 Sessile oak with dense ivy



Photo 14: T3 Hawthorn



Photo 15: T4 Sessile oak



Photo 16: T5 Sessile oak



Photo 17: T6 Goat willow



Photo 18: T7 Silver birch



Photo 19: T8 Sessile oak with dense ivy



T2, T5, T8, T10 and T11 have been assessed as FAR (further assessment is required).

Potential Foraging and Commuting Habitat

The site is collectively considered to provide high-quality foraging and commuting habitat for bats due to the broadleaved woodland within and directly north of the site. The areas of broadleaved trees and grassland to the east and west also provide foraging and commuting opportunities for bats. These habitats form a continuous habitat corridor and connect the site to the wider landscape.

Impact Assessment of Proposed Development on Bats

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

- Areas of broadleaf woodland (approximately 72m²) on site will be lost to facilitate the proposed development. This may result in the direct impact of a loss of foraging habitats for bats; and
- Pruning of features with PRFs within T2 and T5 may therefore result in the death, injury, or disturbance to any bats present at the time of works, or the loss of the roost. Supervised pruning is outlined in Section 4 of the report.

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

- Trees with PRFs (T8, T10 and T11) to be retained within the broadleaf woodland may be subject to root damage as a result of heavy plant movement over the root protection area, or accidental damage during general construction activities. Protective barriers will therefore be installed prior to any site work, to ensure that no such inadvertent impacts occur (see Section 4). These will be established in line with the tree root protection zones detailed in the arboriculture report that has been produced for the site.

3.5.4. Dormice

Desk Study Results

SEWBRc did not return any published records of dormice from 1km of the site.

Field Survey Results

No dormice or evidence of their presence, such as nuts with teeth-markings characteristic of having been opened by dormice, were noted on the site during the survey.

Evaluation of Ecological Value of Site for Dormice

The woodland habitat on site contains a variety of fruiting and flowering species which may provide suitable food sources for dormice. These include: bramble, common hawthorn, sessile oak, honeysuckle and ash. However, hazel, the favoured foodplant, was not present within the woodland on site. The site has good ecological connectivity to the woodland to the north, which is likely to contain a wide variety of foodplants including hazel, and therefore the likelihood of dormice being present on site cannot be ruled out completely.

Impact Assessment of Proposed Development on Dormice

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

- Death or injury during vegetation clearance; and
- Habitat loss/ direct disturbance;

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

- Habitat degradation;
- Disturbance during construction – main impacts are noise, accidental damage etc.;
- Lighting, either during construction or operational phase; and
- Human disturbance during operational phase.

Clearance of areas of broadleaved woodland vegetation in the north of the development site will result in some loss of habitat suitable for supporting dormice. Clearance of the vegetation may also result in the accidental killing or injuring of dormice. Recommendations to avoid and mitigate adverse impacts are outlined in Section 4.

3.5.5. Great Crested Newt

Desk Study Results

SEWBRc returned one GCN record within 1km of the site. This record was made in 2005, 0.8km west of the site comprising of one male and one female newt.

There are records of other amphibians, comprising one records of common frog (*Rana temporaria*), and one records of common toad (*Bufo bufo*).

Ponds Within 500m of Site

There is one pond located 450m to the north of the site.

Field Survey Results

No direct observation or evidence of GCN was recorded on site although a targeted survey was not undertaken for this species.

Evaluation of Ecological Value of Site and Impact Assessment on Great Crested Newt

Aquatic Habitat

No ponds or other areas of standing water were recorded within the site boundary. One pond located 450m north of the development site, however, as a general rule, suitable habitats within 250m of a breeding pond are likely to be used most frequently²⁰ and long-distance movement of GCN is rare (Jehle et al. 2011). Therefore the likelihood of GCN commuting onto the site is considered to be very low.

Terrestrial Habitats

The site holds suitable terrestrial habitats for GCN as the broadleaved woodland on site provides opportunities for foraging and shelter. Refugia and hibernacula opportunities are also found on site in the form of rubble piles; however, due to the absence of ponds within 250m of the site, the likelihood of GCN on site is considered to be negligible.

They are therefore not mentioned further in this report.

3.5.6. Otter

Desk Study Results

SEWBRc returned a total of one otter record within 1km of the site. The record was made in 2010, approximately 0.6km away to the south-east of the site.

Field Survey Results

No direct evidence of otters on the site was recorded.

Evaluation of Ecological Value of Site and Impact Assessment for Otters

The majority of the site is considered to be wholly unsuitable and inaccessible due to the site being fenced-off, however due to the good ecological connectivity to the Upper Mother Ditch, it remains possible that otters may venture onto the woodland within the site. Precautionary measures and good construction

²⁰ 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).

practices for otters are outlined in Section 4 to ensure no otters potentially moving through the site are injured during the construction phase of the development.

3.5.7. Badgers

Desk Study Results

SEWBRc returned eight badger records within 1km of the site. All eight records are of dead individuals along the A48/M4.

Field Survey Results

No setts were recorded on site. A hole underneath the metal wire mesh fence on the northern boundary was recorded and may be used by commuting badgers.

Evaluation of Ecological Value of Site for Badgers

The site contains foraging opportunities for badgers due to the presence of the woodland and bare ground habitats, and there is considered to be some potential for them to venture onto the site from the surrounding landscape to forage sporadically. However, there is little potential for the site to be used for sett building due to the absence of banks within the woodland.

Impact Assessment of Proposed Development on Badgers

The likelihood of badgers sett building on site is considered to be low and no evidence was found in the areas directly affected by the development. Consequently, no adverse impacts are anticipated. However, the presence of badgers foraging or commuting across the site cannot be ruled out completely. Precautionary measures are outlined in Section 4.

3.5.8. Reptiles

Desk Study Results

SEWBRc returned 61 records of reptiles within 1km of the site. These included: 18 records of slow-worm (*Anguis fragilis*), 30 common lizard (*Zootoca vivipara*), 12 grass snake, and one adder (*Vipera berus*).

Field Survey Results

No direct evidence of reptiles was recorded on site.

Evaluation of Ecological Value of Site for Reptiles

The site includes a variety of habitats and features required to support reptile species. The bare ground-woodland interface in the north of the site provides a range of microhabitats and microclimates favoured by reptiles, in addition to foraging opportunities. Loose stone and rubble comprising rocks, bricks, bark chippings, brash and felt lining present within the areas of bare ground provides multiple refugia and basking opportunities for reptiles. Additionally, it is likely that reptiles disperse onto the site as the site has

good ecological connectivity to the woodland and wetland habitats in the wider landscape which are of high ecological value to reptiles.

Impact Assessment of Proposed Development on Reptiles

The proposed works will result in the loss of potential reptile habitat. Clearance of the vegetation may also result in the accidental killing or injury of reptiles. Precautionary measures to avoid such impacts are detailed in Section 4.

3.5.9. Other Mammals

Desk Study Results

SEWBRc returned 12 records of other mammals within 1km of the site, comprising: Four common hedgehog (*Erinaceus europaeus*), two brown hare (*Lepus europaeus*), four polecat (*Mustela putorius*), and two weasel (*Mustella nivalis*).

Field Survey Results

No direct evidence of other mammals was recorded on site.

Evaluation of Ecological Value of Site for Other Mammals

The habitats within the site provide optimal and sub-optimal foraging and refugia opportunities for mammals. Due to the good ecological connectivity of the site to the wider landscape, it is highly likely that other mammals venture onto the site to forage sporadically. The adjacent habitats are highly suitable for other mammals, including harvest mice.

Impact Assessment of Proposed Development on Other Mammals

The presence of other mammals cannot be ruled out completely. The clearance of vegetation within the broadleaf woodland may lead to death and/or injury to any mammals present. Mitigation measures to avoid such impacts are detailed in Section 4.

3.5.10. Invertebrates

Desk Study Results

SEWBRc returned records of 80 notable invertebrate species from within the study area, comprising:

48 priority invertebrate species were recorded within 1km of the site, namely: grey dagger (*Acronicta psi*), knot grass (*Acronicta rumicis*), green-brindled crescent (*Allophyas oxyacanthae*), ear moth (*Amphipoea oculatea*), dusky brocade (*Apamea remissa*), garden tiger (*Arctia caja*), brown-banded carder bee (*Bombus humilis*), moss carder bee (*Bombus muscorum*), minor shoulder-knot (*Brachylomia viminalis*), mottled rustic (*Caradrina morpheus*), broom moth (*Ceramica pis*), small heath (*Coenonympha pamphilus*), small blue (*Cupido minimus*), small square-spot (*Diarsia rubi*), September thorn (*Ennomos erosaria*), dusky thorn (*Ennomos fuscantaria*), dingy skipper (*Erynnis tages*), autumnal rustic (*Eugnorisma glareosa*), white-line

dart (*Euxoa tritici*), ghost moth (*Hepialus humuli*), grayling (*Hipparchia semele*), rosy rustic (*Hydraecia micacea*), wall (*Lasiommata megera*), shoulder-striped wainscot (*Leucania comma*), lackey (*Malacosoma neustria*), dot moth (*Melanchra persicariae*), black oil-beetle (*Meloe proscarabaeus*), white ermine (*Spilosoma lubricipeda*), buff ermine (*Spilosoma lutea*), feathered gothic (*Tholera decimalis*), blood-vein (*Timandra comae*), cinnabar (*Tyria jacobaeae*), shrill carder bee (*Bombus sylvarum*), streak (*Chesias legatella*), latticed heath (*Chiasmia clathrata*), small phoenix (*Ecliptopera silaceata*), august thorn (*Ennomos quercinaria*), garden dart (*Euxoa nigricans*), dark brocade (*Mniotype adusta*), oblique carpet (*Orthonama vittata*), shaded broad-bar (*Scotopteryx chenopodiata*), hedge rustic (*Tholera cespitis*), oak hook-tip (*Watsonalla binaria*), goat moth (*Cossus cossus*), neglected rustic (*Xestia castanea*), galium carpet (*Epirrhoe galiata*), dark spinach (*Pelurga comitata*), and pale shining brown (*Polia bombycina*).

11 invertebrates listed as species of conservation concern were recorded within 1km of the site, namely: pied grey (*Eudonia delunella*), *Lipara rufitarsis*, *Pherbellia griseola*, *Protapion dissimile*, *Psacadina verbekei*, *Tetanocera punctifrons*, big-headed mining bee (*Andrena bucephala*), *Coenosia atra*, pantaloone bee (*Dasygaster hirtipes*), lesne's earwig (*Forficula lesnei*), and little yellow-face bee (*Hylaeus pictipes*).

21 invertebrate listed as locally important species were recorded within 1km of the site, namely: beautiful demoiselle (*Calopteryx virgo*), speckled bush-cricket (*Leptophyes punctatissima*), hairy dragonfly (*Brachytron pratense*), banded demoiselle (*Calopteryx splendens*), holly blue (*Celastrina argiolus britanna*), red-eyed damselfly (*Erythromma najas*), emerald damselfly (*Lestes sponsa*), black-tailed skimmer (*Orthetrum cancellatum*), ruddy darter (*Sympetrum sanguineum*), slender ground-hopper (*Tetrix subulata*), golden-ringed dragonfly (*Cordulegaster boltonii*), Portland moth (*Actebia praecox*), white-streak grass-veneer (*Agriphila latistria*), sand dart (*Agrotis ripae*), crescent dart (*Agrotis trux*), wormwood (*Cucullia absinthii*), star-wort (*Cucullia asteris*), Devon carpet (*Lampropteryx otregiata*), oblique striped (*Phibalapteryx virgata*), white colon (*Sideridis turbida*), and great green bush cricket (*Tettigonia viridissima*).

Field Survey Results

No incidental observations of invertebrates were recorded during the survey.

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 using the site for habitat are unlikely to solely rely on the site for their continued survival. Grassland enhancement outlined in Section 4 is recommended to increase the suitability of the site for invertebrates.

4. Required Actions and Conclusions

The following recommendations have been developed based on the development proposals available at the time of writing. The implementation of these recommendations will ensure compliance with the Planning Policy Wales version 12 (Welsh Government, 2024)²¹, 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 Neath Port Talbot 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 12 - 7th Feb 2024, 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 Neath Port Talbot Local Development Plan²².

The process has been followed on site:

Avoidance – Avoidance of the pruning/felling of trees T2 and T5.

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

Compensation on-site – Robust and comprehensive compensation measures are provided below.

4.2. Biodiversity and Ecosystem Enhancement Scheme/Green Infrastructural Plan

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 grown in the UK will be used for any new planting on the site. A soft and hard landscaping plan will need to be provided which includes:

- Detailed planting/sowing specifications including species, size, density spacing, cultivation protection (fencing, staking, guards) and methods of weed control; and

²¹ 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.

²² <https://beta.npt.gov.uk/planning-and-building-control/planning-policy/replacement-local-development-plan-rldp-2023-2038/>

- Details of surfacing, boundary treatments and landscaping structures including design, location, hedgehog accessibility, size, colour, materials and openings.

A Biodiversity and ecosystem enhancement scheme such as the incorporation of permanent bat roosting feature(s), hedgehog homes and nesting opportunities for birds will need to be provided.

4.3. Proposal Design Amendment (Avoidance)

The currently proposed plans detail that trees T2 and T5 may require pruning. This could result in direct adverse impacts to bats if features such as dead or hollow limbs which may have PRFs are pruned. It is recommended that this is avoided. If this is possible, supervised pruning for bats will not be required T2 and T5. However, if avoidance is not possible, further work is outlined below that can help to prevent adverse impacts to these species.

4.4. Further Work

It will not be possible to determine the planning application until the further work outlined below has been carried out.

4.4.1. Construction Environmental Management Plan (CEMP)

A Construction Environmental Management Plan (CEMP) is a document that outlines the environmental management processes, procedures and systems that will be implemented on a construction project. It outlines the project's environmental goals and objectives, identifies potential environmental issues, outlines measures to address any issues and identifies ways to monitor, review and report on progress.

4.5. Precautionary Measures

Full details of precautionary measures will be devised after completion of the further surveys detailed above.

4.5.1. Pollution Prevention Measures

Care will be taken to avoid pollution and excess sedimentation of the Junction 38 Wetland Complex, both during construction and post construction phase. Current Environment Agency best practice guidance should be observed. It is recommended that surface water/pollutant run-off is avoided during site preparation and construction phases and the measures recommended for achieving this outlined in the Environment Agencies guidance document Working at construction and demolition sites: PPG6 Pollution Prevention Guidelines are implemented. Full pollution prevention measures will be devised and detailed in the required CEMP (Section 4.4.2.).

4.5.2. Supervision of Tree Pruning

Trees T2 and T5 may have potential to support roosting bats due to the presence of dense ivy obstructing the view of potential PRFs underneath. Therefore, 'soft felling' of limbs and supervision by an appropriately qualified and licensed ecologist is required. 'Soft felling', is a generic term used to describe more cautious

felling approaches, using lowering and cushioning techniques to reduce the impact of felling limbs which may have PRFs and roosting bats.

- Tree surgeons undertaking pruning works will be warned of the possible presence of roosting bats (and/or nesting birds), and of their protected status. It will be clearly understood that in the event of any bats (or occupied birds' nests) being found the contractor must halt works in the area surrounding the roost (i.e. at least 15m from the identified roost) and advice sought from Acer Ecology Ltd;
- Any limbs with cavities will be severed above and below the cavity, taking care not to cut through any potential cavities or hollows, and lowered to the ground with minimal force using rope slings. This technique will be employed if the trees are subsequently found to have large cavities or splits within limbs; and
- Any removed hollow sections which cannot be fully examined for bats will be removed to a shaded location and left undisturbed on the ground in a safe condition for 24 hours. This will allow any bats present to rouse themselves and fly off after nightfall. The sections will be positioned on the ground so that access to the cavities is unobstructed, but so that the cavities will not become filled with rainwater.

4.5.3. Timing of Works for Birds

To avoid adversely impacting nesting birds, any clearance of the broadleaf woodland vegetation on site should 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 between 5-10m, until the nesting is complete and the young have fledged.

4.5.4. Vegetation Clearance – Reptiles, Dormice and Nesting Birds

Due to the clearance of habitat suitable for dormice and reptiles, the approach outlined below must first be discussed and agreed with by the county ecologist.

Site Induction/Toolbox Talk

Clearance and construction personnel will be briefed on the possible presence of reptiles and dormice on the site and the necessary course of action if any are encountered i.e. stopping clearance works and allow the reptile or dormouse to migrate voluntarily away into the retained habitat. An ecologist from Acer Ecology will be on call at all points during all clearance works, and will be available for advice at any other time a reptile or dormouse is unexpectedly found on site.

Timing of Clearance

In order to ensure that no dormice or reptiles are harmed during the clearance of the woodland scrub to the north of the site, clearance works will ideally be undertaken from the 1st April to the 31st May. If possible, removal of vegetation will be avoided in the period between the 1st June and 30th September to minimise the possibility of disturbing dormice breeding nests. The period from 1st October until the 30th March will also be avoided so that hibernating mammals are not disturbed. This phased approach is aimed at avoiding disruptive works when these animals are hibernating at ground level and are less able to rouse themselves and escape the area of works.

Vegetation Clearance

In order to ensure that no reptiles, dormice or nesting birds are harmed during the removal of the scrub and areas of broadleaved woodland, a two-stage approach should be implemented. Trees and shrubs scheduled for clearance will be checked by an ecologist for the presence of reptiles, dormice or nesting birds. If any active bird nests are found these will be protected, along with an appropriate buffer zone of between 5-10m, until the nesting is complete, and the young have fledged.

Vegetation should be strimmed or brush cut to a height of approximately 300mm during this period, to make the area less suitable for reptiles and dormice. Arisings should be removed immediately from site. This will be left for at least 48 hours and then cut down to near ground level and left for another 48 hours prior to works commencing. This should make the areas unattractive to reptiles and mammals prior to development, and thus encourage them to leave the area. Mechanical clearance methods (e.g. gang-mowing, flail-cutting etc.) will not be used.

Works should commence in a piecemeal fashion, commencing at the east of the site and progressing westwards.

Potential refugia such as logs, discarded timber, sheet metal, carpets and large rocks etc. will be carefully lifted by hand and removed from the area to be cleared. Any animals beneath these areas will be captured and moved to a part of the site away from works or kept in a temporary holding container and released once works have been completed.

The services of an appropriately experienced ecologist will be kept available on an 'on call' basis throughout the remainder of the construction period to deal promptly with any unexpected emergencies involving reptiles or dormice which may arise.

4.5.5. Precautionary Measures for Otters and Mammals

No direct mitigation is likely to be required; however, the following sensitive working practices should be implemented in order to minimise disturbance:

- There will be no night-time working;
- All materials will be stored within a secure otter proof fenced compound; and
- An appropriately experienced ecologist will be "on call" for the duration of the project in the unlikely event that an otter is found on site, in which case the relevant work will cease immediately, NRW

will be contacted. A development licence may be required prior to any further work being carried out. No further work will be undertaken without the approval of NRW.

4.5.6. Good Construction Practices for Mammals

In line with good practice, any open trenches and excavations associated with the development will either be closed at night, or a means of escape provided (e.g. a wide plank at no greater angle than 45°) to help any badgers, hedgehogs or other trapped animals escape. Additionally, it is recommended that any security fencing erected on site is permeable to wildlife movement. A gap of at least 15cm should be left at regular intervals along the bottom of the fence under which a badger could pass. This will also make the site permeable to other species such as hedgehog.

4.6. Mitigation Measures

Full details of mitigation measures will be devised after completion of the further surveys detailed above and the finalisation of development proposals.

4.6.1. Sensitive Lighting Strategy for Bats

Proposed lighting comprises external low-level lighting will be implemented above the access doors to the ISO containers.

A sensitive lighting strategy is recommended throughout the construction and operational phases. This will mitigate against any light disturbance to species such as commuting/foraging bats using the broadleaf woodland to the north of the site. Any unnecessary lighting of these habitats which could be used by commuting/foraging bats will be avoided, thus creating a 'dark corridor' (see Plan 6 – proposed dark corridor) to avoid causing disturbance. In addition, no works will be undertaken at night.

The lighting design for the site will be of a 'bat-friendly' specification, complying with the Institute for Lighting Professional's and Bat Conservation Trust's guidance (2023) and kept to the minimum level which meets the needs of security and health and safety.

External lighting will be minimised and 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. The lighting source will not be visible. Any security lights used will operate on 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 lights will either have an integrated LED light source or use LED bulbs. They will be low intensity (i.e., circa 11 watts) and have a warm white colour temperature of 3000K or less (ideally 2700K if commercially available). White, blue, and green 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. Examples of suitable light fittings are provided within Appendix 11.

4.7. Compensation and Enhancement Measures

4.8. Enhancement Measures and Biodiversity Net Gain

Full details of compensation and enhancement measures will be devised after completion of the further surveys detailed above and the finalisation of development proposals.

4.8.1. Bird and Bat Boxes

Bird nesting and bat roosting opportunities should be enhanced through the provision of artificial bat and bird boxes. A variety of durable, Woodcrete bat boxes, including maintenance-free boxes suitable for buildings and trees and are available from NHBS²³ (see Appendices 9 and 10). One bat box and one bird box will be installed upon the tree under ownership of WBE (T1) within the woodland to allow for uninterrupted dispersal to local foraging habitats. The bat box will be placed in positions where the entrance is not artificially illuminated at night (enabled by the provision of the 'dark corridor' outlined in Section 4.6.1.). Boxes will be positioned a minimum of 3m from the ground.

The bird box will also be located in secluded positions, ideally within dense cover and at a minimum height of 3 metres from ground level. Specialised boxes that cater for specific bird species:

- Open fronted – Open fronted nest boxes cater for a range of bird species, including robin, dunnock, wren, pied wagtail, redstart and flycatcher. 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.
- Standard nest boxes – An entrance hole of 32mm will attract species such as great, blue and coal tits, along with nuthatch, flycatchers and sparrows.

Plan 7 illustrates the suitable location for the bird and bat boxes.

4.8.2. Enhancement and Restoration of Woodland Ground Flora

The areas of land within the ownership boundary and infiltration structure as part of the proposed drainage will be enhanced post-development by planting with woodland flower seed mix.

Management Prescription 2: Sowing Woodland Wildflowers

The areas of topsoil installed on the drainage infiltration solution on the northern boundary will be sown with Emorsgate EW1²⁴ (or suitable alternative), a woodland flower mix suitable for shaded areas. The Emorsgate EW1 mix is composed of 20% native wildflowers and 80% slow growing grasses (by weight). The flowers EW1 is a very good mixture of woodland wildflowers and grasses that will bloom in spring and early summer.

The following species will be incorporated into the woodland wildflower species mix as indicated below:

²³ <https://www.nhbs.com/browse/subject/421/bat-boxes>

²⁴ <https://wildseed.co.uk/product/mixtures/complete-mixtures/special-habitat-mixtures/woodland-mixture/>

Species	Latin Name	%
Broadleaved Herbs		
Garlic Mustard	<i>Alliaria petiolata</i>	3
Ramsons	<i>Allium ursinum</i>	1
Betony	<i>Betonica officinalis</i> - (<i>Stachys officinalis</i>)	1.2
Foxglove	<i>Digitalis purpurea</i>	1
Meadowsweet	<i>Filipendula ulmaria</i>	2
Hedge Bedstraw	<i>Galium album</i> - (<i>Galium mollugo</i>)	1
Wood Avens	<i>Geum urbanum</i>	3
Bluebell	<i>Hyacinthoides non-scripta</i>	2.6
Hairy St John's-wort	<i>Hypericum hirsutum</i>	0.4
Primrose	<i>Primula vulgaris</i>	0.2
Selfheal	<i>Prunella vulgaris</i>	1
Red Campion	<i>Silene dioica</i>	1.4
Ragged Robin	<i>Silene flos-cuculi</i> - (<i>Lychnis flos-cuculi</i>)	0.2
Hedge Woundwort	<i>Stachys sylvatica</i>	1
Wood Sage	<i>Teucrium scorodonia</i>	1
		20
Grasses		
Common Bent (w)	<i>Agrostis capillaris</i>	10
Sweet Vernal-grass (w)	<i>Anthoxanthum odoratum</i>	2
False Brome (w)	<i>Brachypodium sylvaticum</i>	7
Crested Dog's-tail	<i>Cynosurus cristatus</i>	28
Tufted Hair-grass (w)	<i>Deschampsia cespitosa</i>	1
Slender-creeping Red-fescue	<i>Festuca rubra</i>	20
Wood Meadow-grass	<i>Poa nemoralis</i>	12
		80
Sowing Rates: 40 kg/hectare, 16kg/acre, 4g/m²		

Ground Preparation

All unwanted vegetation should be removed from the areas to be sown. Care should be taken to ensure that the area is not excavated too deep as this could result in damage to the roots of trees and shrubs.

The ground will need to be scarified and scraped back prior to planting.

Sowing

Seed is best sown in the autumn or early spring. The seed must be surface sown and can be applied by machine or broadcast by hand. In this situation it is assumed that the seed will be hand sown.

Aftercare

Established woodland that has been under-sown with a woodland mixture requires little management during establishment. In the long-term, ground flora will benefit from good tree and coppice management, but this is unlikely to be needed within the sown areas over the next twenty years.

Open woodland with higher light levels will produce more growth and grasses will be more prominent. In these conditions an annual trim mid-summer may be worthwhile for a more managed appearance and to keep weeds of semi-shade such as nettles and brambles in check.

4.8.3. Protective Measures for Retained Habitats

To prevent accidental damage, the broadleaf woodland adjacent to the northern boundary will be securely fenced-off with appropriate temporary fencing (e.g. Herra's fencing) and treated in accordance with British Standard BS5837 (2012) *Trees in Relation to Design, Demolition and Construction – Recommendations*. Fences will be erected prior to the commencement of works and will be left in place until development completion. They will create an ecological buffer that will negate adverse impacts to the adjacent watercourse, while also providing a degree of ecological enhancement to the site. 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 surveys.

4.9. Longevity of Report

If development works do not begin within eighteen months to two years of the date of this report, an update survey is likely to be required in accordance with guidance from NRW²⁵, CIEEM (2019) and BS 42020:2013²⁶, to determine if conditions have changed since those described in this report.

4.10. Conclusions

Currently, the site's ecological value is not considered to represent a fundamental in-principal constraint to the proposed development, although the measures outlined above will be required. Provided the measures detailed in Section 4 are implemented, the development is not anticipated to result in adverse impacts to any protected sites, habitats, or species.

²⁵ 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.

²⁶ 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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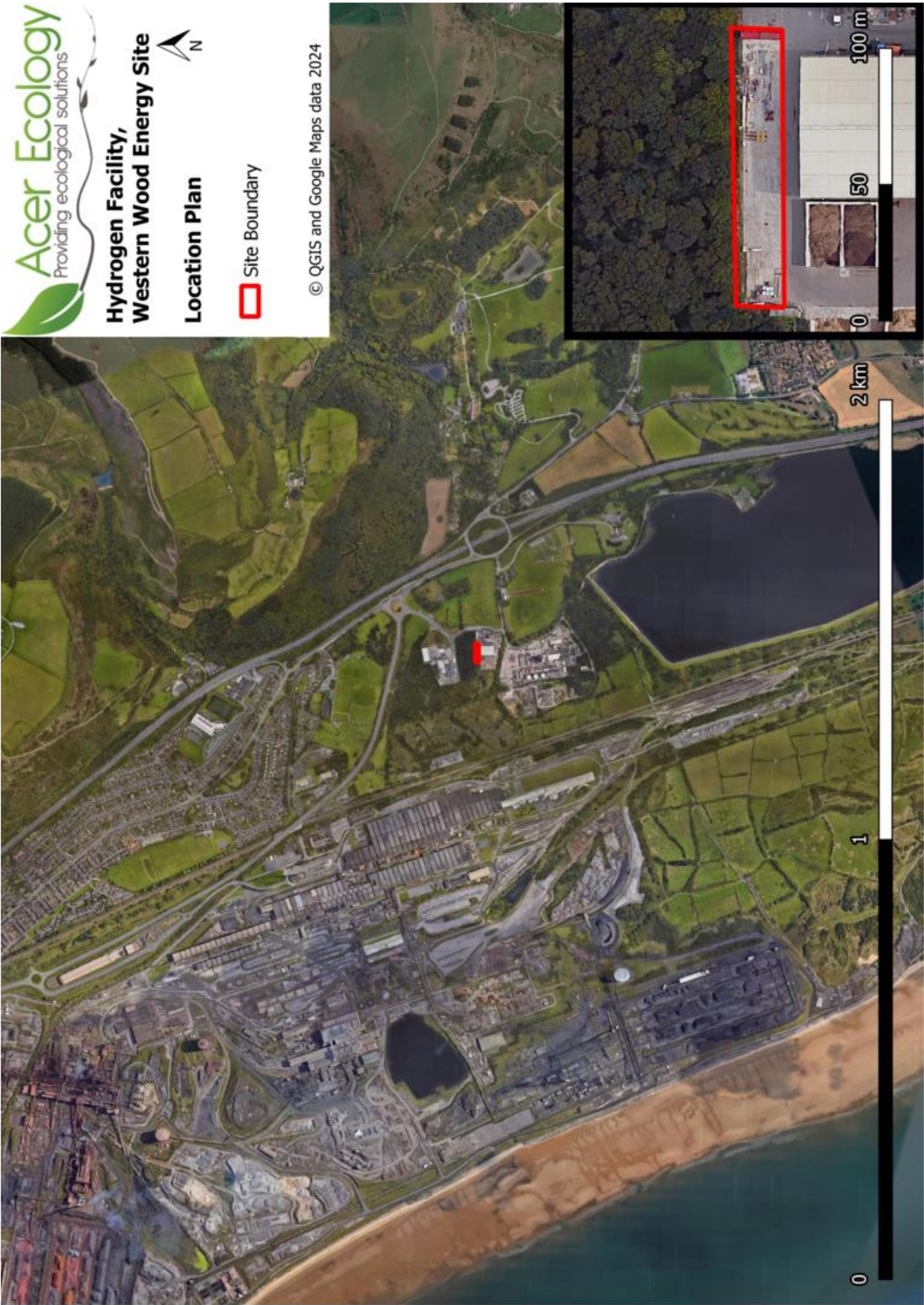
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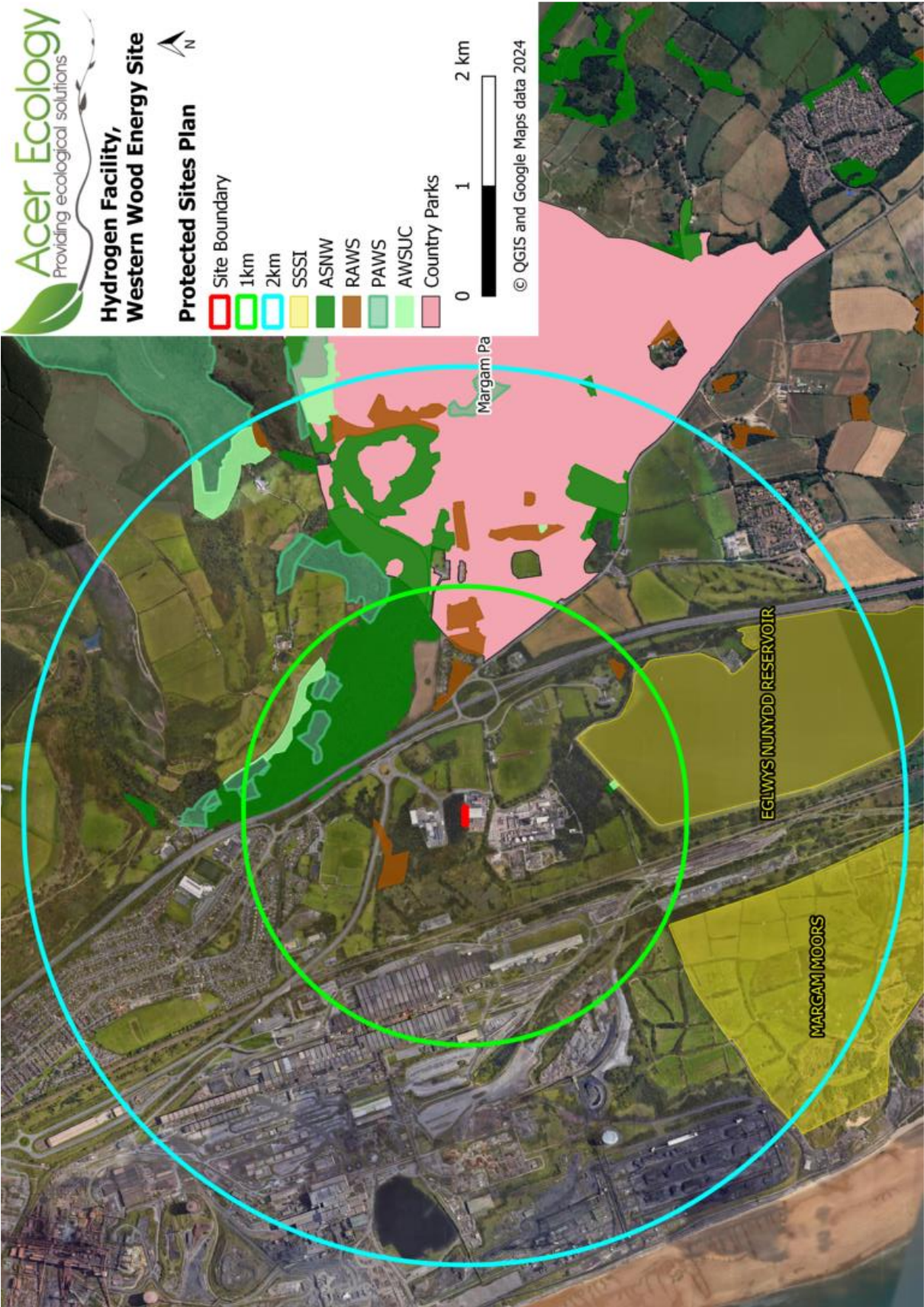
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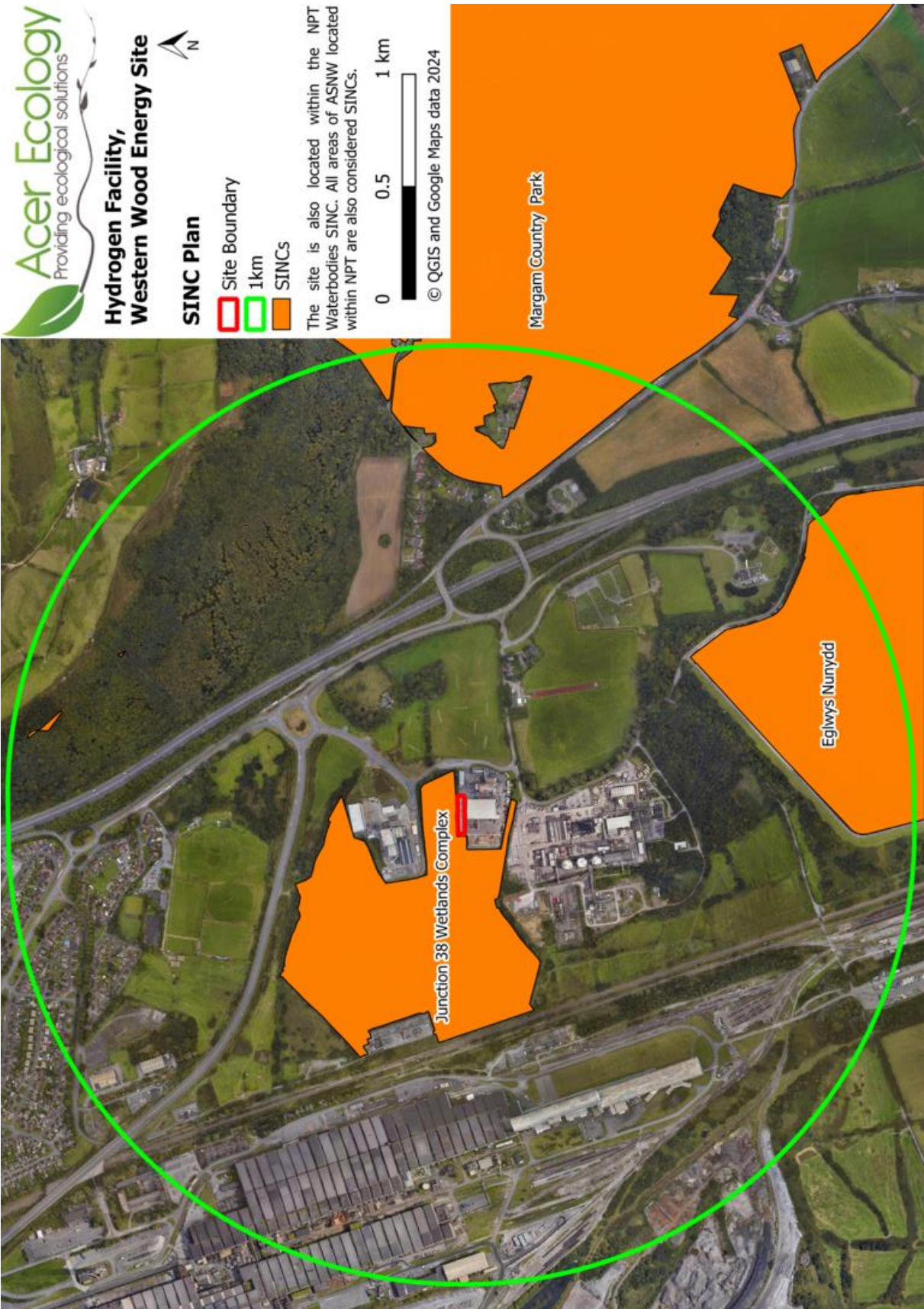
Plan 1: Site Location



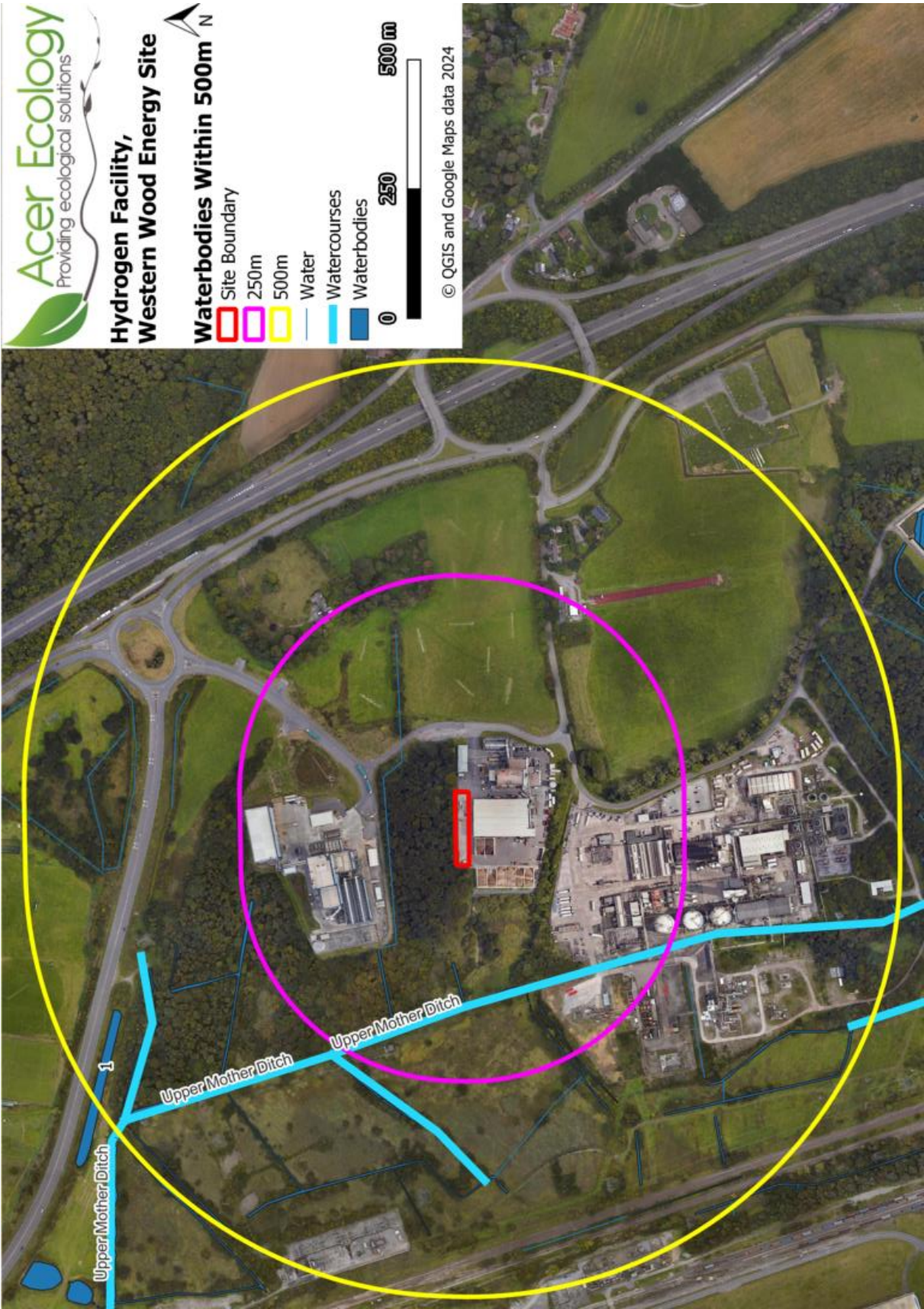
Plan 2: Site Location and Protected Sites Within 2km



Plan 3: Site Location and SINCS (0.5km Buffer)



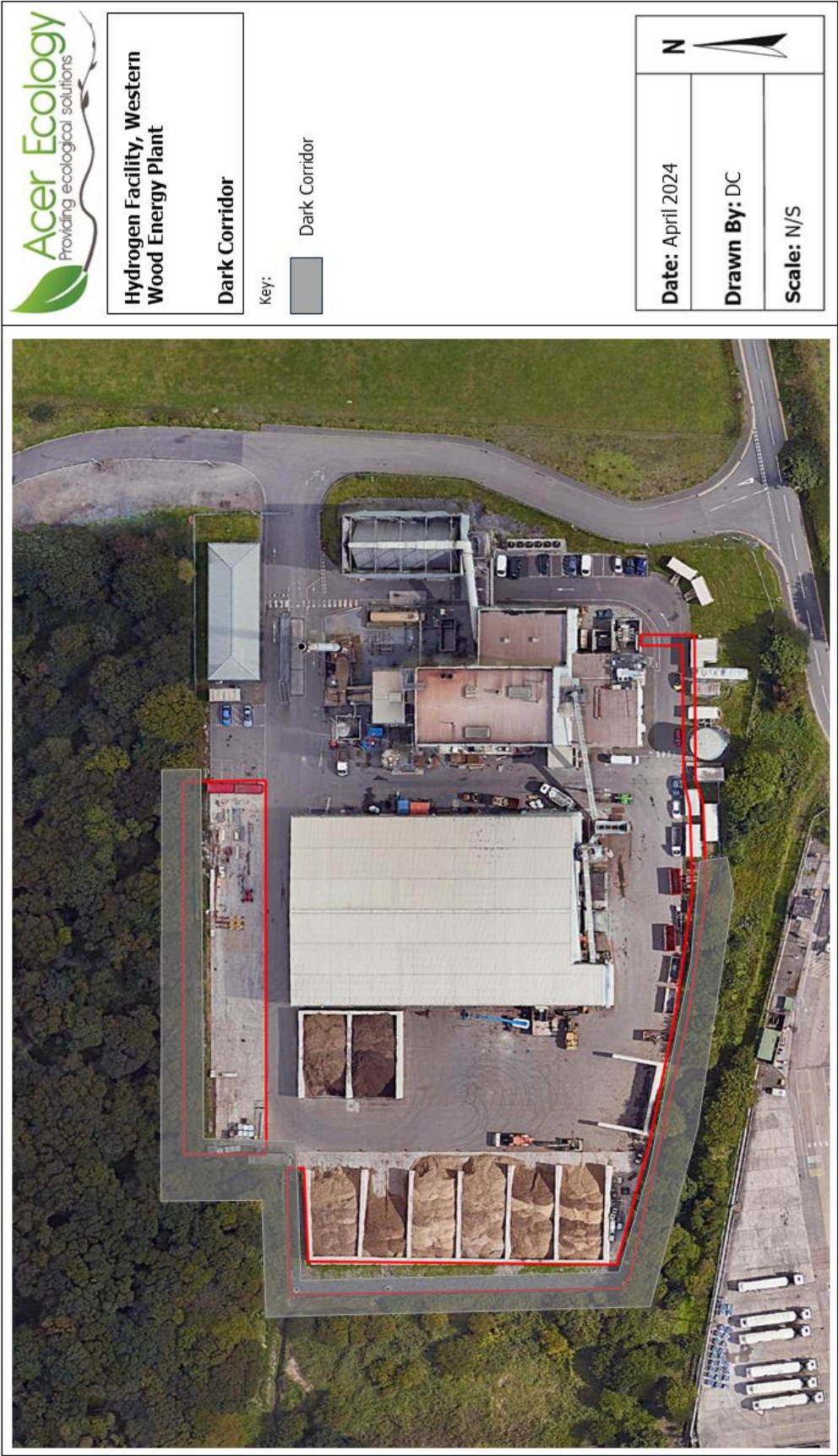
Plan 4: Location of Water Bodies within 0.5km of Site



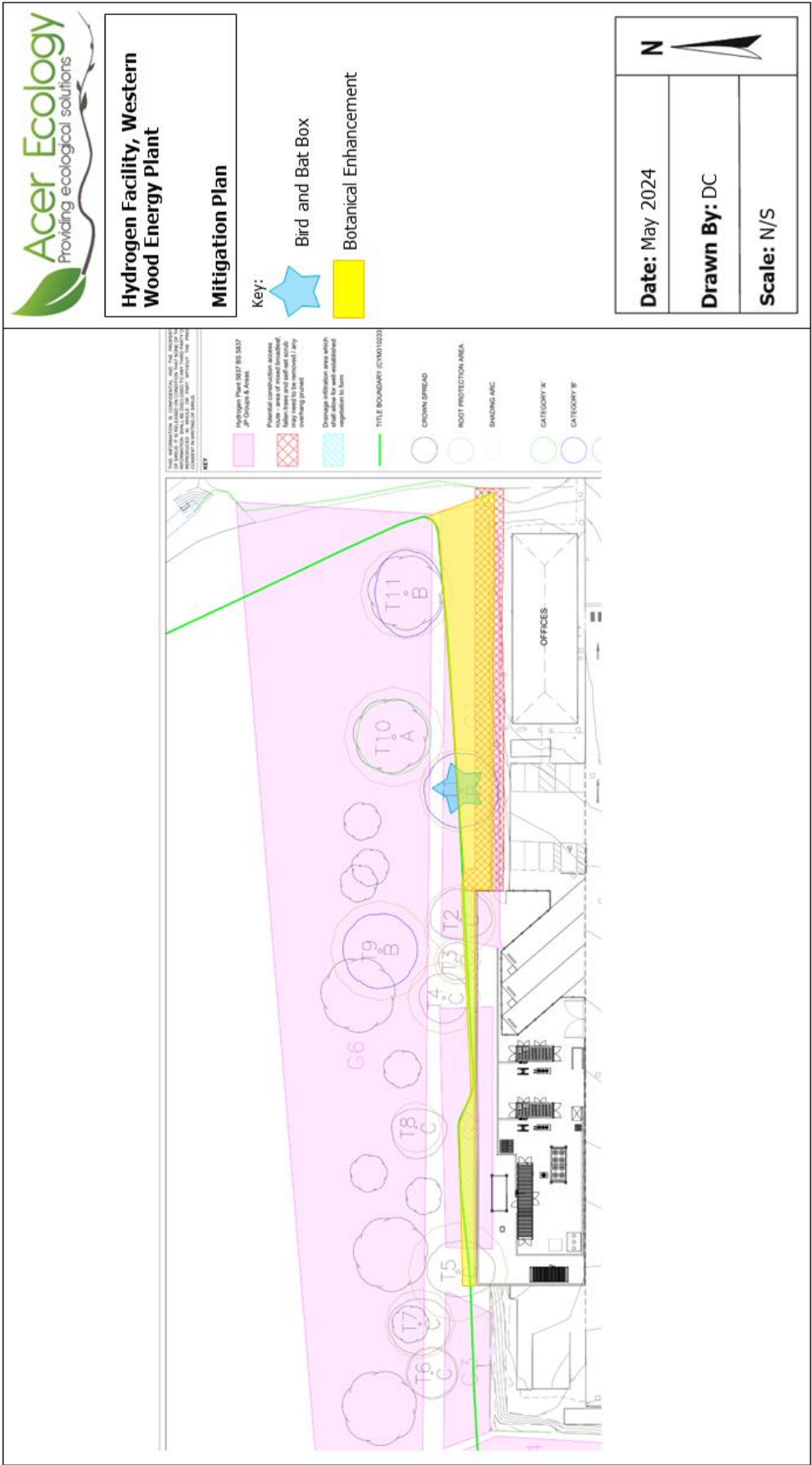
Plan 5: Habitats and Vegetation



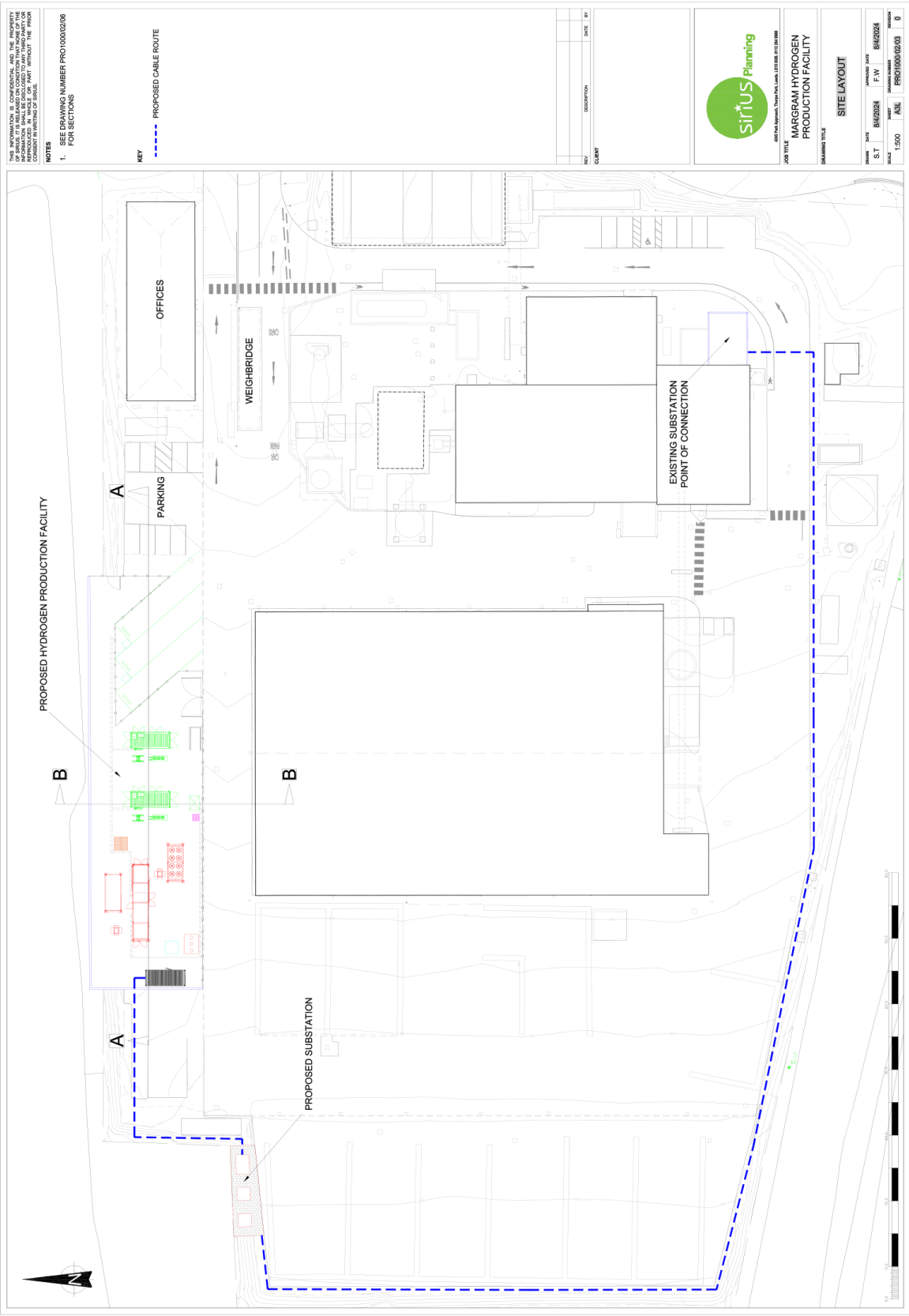
Plan 6: Dark Corridor



Plan 7: Mitigation Plan



Appendix 1: Proposed Development Works



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

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*²⁷.

In Neath Port Talbot, SINCs are also afforded protection under Policy EN6 of the Adopted Neath Port Talbot County Borough Local Development Plan⁶⁷. Policy EN6 states that 'Development proposals that would affect Regionally Important Geodiversity Sites (RIGS), Local Nature Reserves (LNRs), Sites of Interest for Nature Conservation (SINCs), sites meeting SINC criteria or sites supporting Local Biodiversity Action Plan (LBAP) or S42 habitats or species will only be permitted where:

1. They conserve and where possible enhance the natural heritage importance of the site; or
2. The development could not reasonably be located elsewhere, and the benefits of the development outweigh the natural heritage importance of the site.

Mitigation and/or compensation measures will need to be agreed where adverse effects are unavoidable.'

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.

Future Wales - the National Plan 2040

²⁷

<https://webarchive.nationalarchives.gov.uk/ukgwa/20111108175609/http://archive.defra.gov.uk/rural/documents/protected/localsites.pdf>

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 (2024)

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 12 - 7th Feb 2024 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.

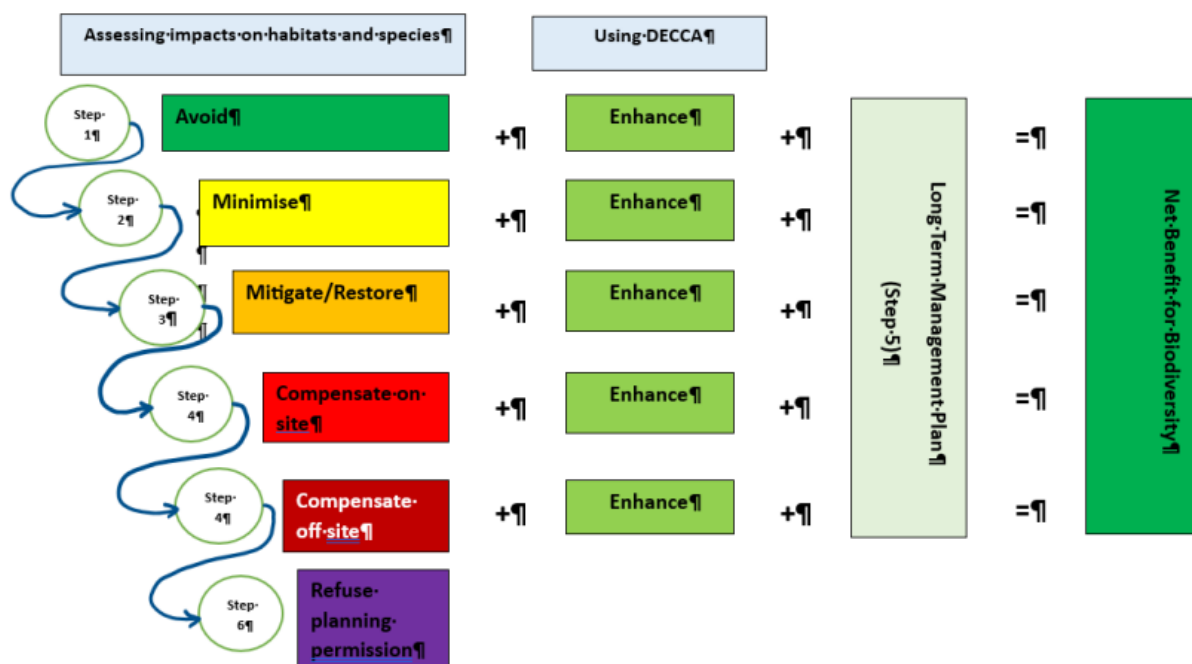
Changes to Next Iteration of Planning Policy Wales

As of the 7th February 2024 Julie James MS Minister for Climate Change concluded the policy amendments for incorporation into the latest release of Planning Policy Wales (version 12). The main changes to policy can be summarised as follows:

Green Infrastructure: stronger emphasis on taking a proactive approach to green infrastructure covering cross boundary considerations, identifying key outputs of green infrastructure assessments, the submission of proportionate green infrastructure statements with planning applications and signposting Building with Nature standards.

Net Benefit for Biodiversity and the Step-wise Approach: further clarity is provided on securing net benefit for biodiversity through the application of the step-wise approach, including the acknowledgement of off-site compensation measures as a last resort, and, the need to consider enhancement and long-term management at each step.

The use of the green infrastructure statement as a means of demonstrating the stepwise approach is made explicit. The importance of strategic collaboration to identify and capture larger scale opportunities for securing a net benefit for biodiversity is recognised.



Protection for Sites of Special Scientific Interest: strengthened approach to the protection of SSSIs, with increased clarity on the position for site management and exemptions for minor development necessary to maintain a 'living landscape'. Other development is considered unacceptable as a matter of principle.

Trees and Woodlands: closer alignment with the stepwise approach, along with promoting new planting as part of development based on securing the right tree in the right place.

Neath Port Talbot Local Development Plan

Biodiversity net-gain policy is not specifically mentioned however policy EN 6 states that development must '*conserve and where possible enhance the natural heritage importance of the site or mitigation measures will need to be agreed*'. The Local Biodiversity Action Plan (2014) focuses to '*achieve no net loss of listed habit and species, and a gain in the (perceived or actual) extent / population of listed habitats and species*' (pg.15).

Relevant ecological policies include:

- SP15 Biodiversity and Geodiversity;
- SP16 Environmental Protection; and
- EN7 Important Natural Features.

Biodiversity Net Gain

Planning Policy Wales (PPW) 12 states 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" (NBB) (para 6.4.5 refers). This policy and subsequent policies in Chapter 6 of PPW 12 respond to the Section 6 Duty of the Environment (Wales) Act 2016.

DECCA is the framework that Natural Resources Wales (NRW) has developed for evaluating ecosystem resilience to demonstrate a net benefit for biodiversity (NBB)²⁸. This is based on the following attributes:

- Diversity, extent, condition and connectivity;
- Adaptability, recovery and resistance; and
- Aspects of ecosystem resilience.

To comply with these requirements the main ecosystems on site and within the zone of influence need to be identified and set out how the diversity, extent, connectivity and condition of those ecosystems will be maintained and enhanced post-development. Recent changes to Planning Policy Wales²⁹ mean that some additional guidance will be required.

²⁸<https://cdn.cyfoethnaturiol.cymru/media/693356/resilient-ecological-networks-practitioner-guide.pdf?mode=pad&rnd=132612537900000000>

²⁹ <https://www.gov.wales/addressing-nature-emergency-through-planning-system-update-chapter-6-planning-policy-wales>

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.

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 0.5km³⁰ 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:

³⁰ 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).

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.

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 places³¹ 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

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.

Badgers

Badgers are protected under the Protection of Badgers Act 1992. Protection applies both to the animal itself and to its nesting burrows (setts), and current interpretation of the Act also confers some protection to key foraging areas.

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

³¹ Resting places are defined as 'areas that are essential to sustain an animal or group of animals when they are not active' (Anon 2007).

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 biodiversity³². In effect, ‘conserving biodiversity’ includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat.

³² Biodiversity conservation in respect to hedgehogs is interpreted as a commitment to restoring or enhancing their population.

Appendix 4: 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.

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Appendix 5: Species Recorded

All species recorded by Acer Ecology, 2024

Taxonomic Name	Common Name	W	LM	CG	LDA	PMG	PIL	TF	Status
Trees and Shrubs									
<i>Betula pendula</i>	Silver birch								
<i>Crataegus monogyna</i>	Common hawthorn								
<i>Ilex aquifolium</i>	Holly								
<i>Lonicera periclymenum</i>	Honeysuckle								
<i>Quercus petraea</i>	Sessile oak	W							
<i>Rubus fruticosus agg.</i>	Bramble								
<i>Salix caprea</i>	Goat willow								
Herbaceous Plants									
<i>Arum maculatum</i>	Lords-and-ladies								
<i>Bellis perennis</i>	Daisy								
<i>Epilobium angustifolium</i>	Rosebay willowherb								
<i>Digitalis purpurea</i>	Foxglove								
<i>Cirsium palustre</i>	Marsh thistle								
<i>Dryopteris affinis agg.</i>	Scaly male-fern	W							
<i>Dryopteris filix-mas</i>	Male-fern								
<i>Galium aparine</i>	Cleavers								
<i>Geranium robertianum</i>	Herb-robert								
<i>Geum urbanum</i>	Wood avens								
<i>Hedera helix</i>	Ivy								
<i>Lapsana communis</i>	Nipplewort								
<i>Lolium perenne</i>	Perennial rye-grass								
<i>Oenanthe crocata</i>	Hemlock water-dropwort					PMR			
<i>Asplenium scolopendrium</i>	Hart's-tongue fern								
<i>Helminthotheca echinoides</i>	Bristly oxtongue						PIL		
<i>Poa annua</i>	Annual meadow-grass								
<i>Ranunculus repens</i>	Creeping buttercup								
<i>Rumex crispus</i>	Curled dock								
<i>Stellaria media</i>	Common chickweed								
<i>Sonchus arvensis</i>	Perennial sow-thistle								
<i>Taraxacum officinale agg.</i>	Dandelion								
<i>Urtica dioica</i>	Common nettle								
<i>Vicia sepium</i>	Bush vetch								
'Habitat Indicator Species' Totals (Wales Biodiversity Partnership 2008³³)		2				2	1		
		W	LM	CG	LDA	PMR	PIL	TF	

³³ Wales Biodiversity Partnership (2008) Wildlife Sites Guidance Wales: A Guide to Develop Local Wildlife Systems in Wales. Wales Biodiversity Partnership/Welsh Assembly Government.

Acer Ecology

'Primary' and 'Contributory' Totals (Wales Biodiversity Partnership 2008)			
		Primary Species	Contributory Species

Key to Indicator Species (Wales Biodiversity Partnership 2008³⁴)

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

PS – Primary Species, CS – Contributory Species

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 6: Guidelines for Assessing the Suitability of Trees on Proposed Development Site for Bats

2023 Guidelines – Based upon Table 6.2 from Collins (2023)

Suitability	Description
None (T1, T3, T4, T6, T7, T9, G1, G2, G3)	Either no PRFs in the tree or highly unlikely to be any.
FAR	Further assessment required to establish if PRFs are present in the tree.
PRF	A tree with at least one PRF present.

PRFs can be further categorised according to the below:

Suitability	Description
PRF-I	PRF is only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats
PRF-M	PRF is suitable for multiple bats and may therefore be used by a maternity colony
PRF-U (T2, T5, T8, T10, T11)	Unknown if PRF could only be used by individuals or could be used by multiple bats and therefore used as a maternity roost.

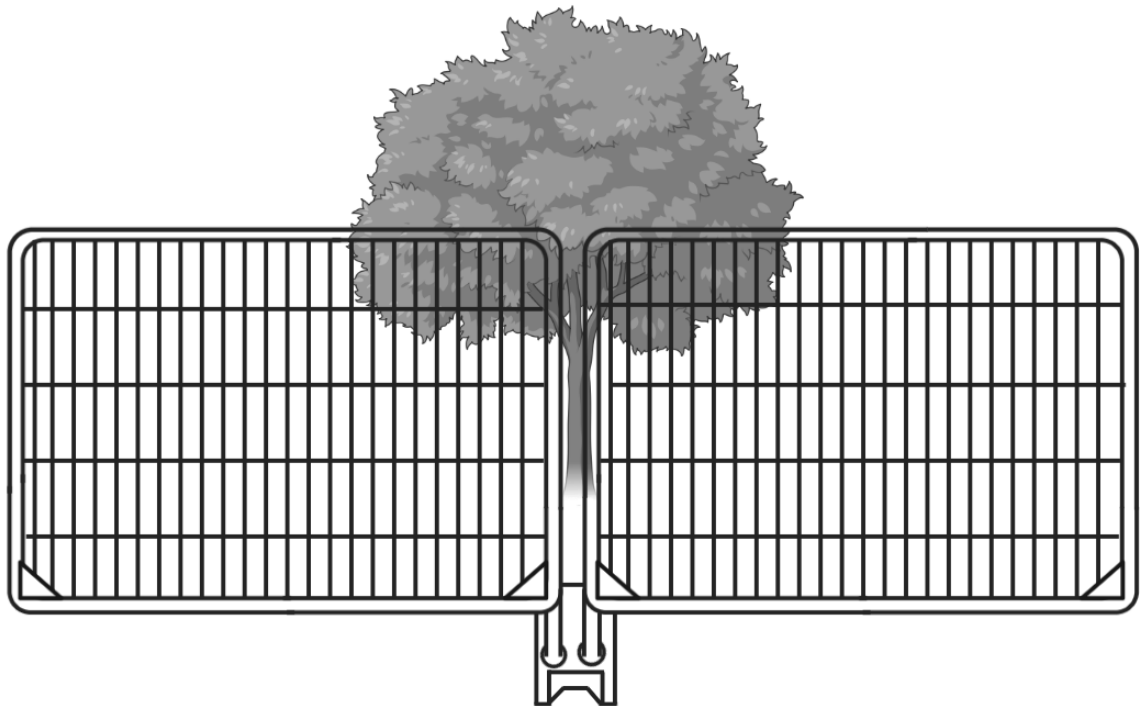
Appendix 7: Guidelines for Assessing Potential Suitability of Proposed Development Site for Bats

Table 4.1. Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, to be applied using professional judgement.

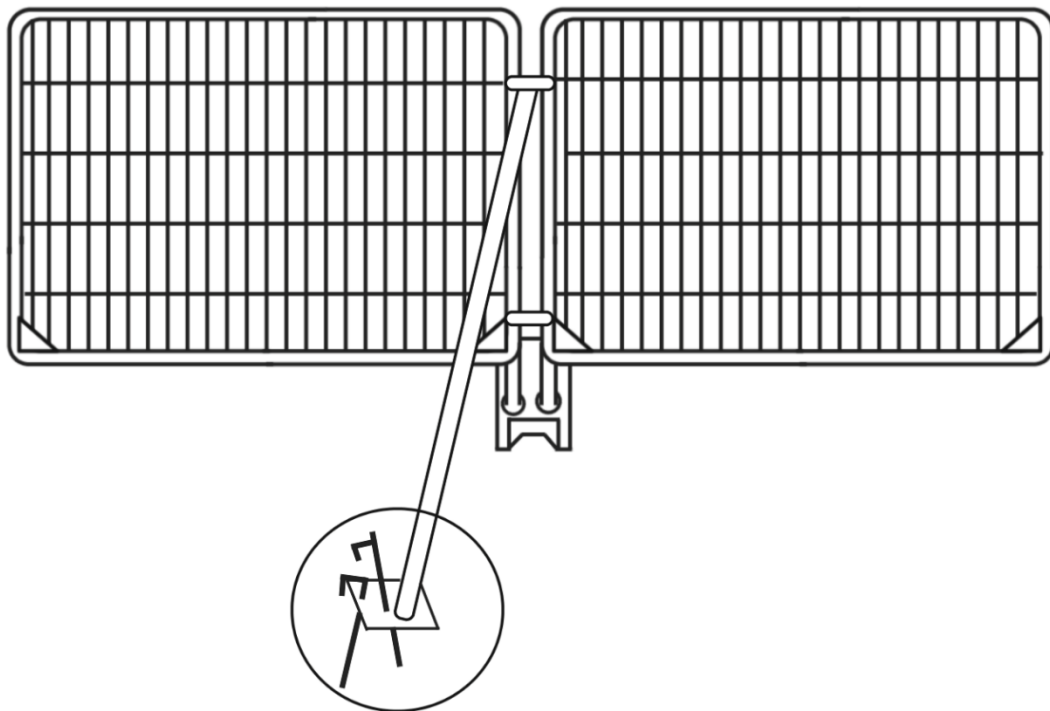
Potential suitability	Description	
	Roosting habitats in structures	Potential flight-paths and foraging habitats
None	No habitat features on site likely to be used by any roosting bats at any time of the year (i.e. a complete absence of crevices/suitable shelter at all ground/underground levels).	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitats that provide continuous lines of shade/protection for flight-lines, or generate/shelter insect populations available to foraging bats).
Negligible ^a	No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.	No obvious habitat features on site likely to be used as flight-paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions ^b and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity and not a classic cool/stable hibernation site, but could be used by individual hibernating bats ^c).	Habitat that could be used by small numbers of bats as flight-paths 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 with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions ^b and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only, such as maternity and hibernation – the categorisation described in this table is made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for flight-paths 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 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 ^b and surrounding habitat. These structures have the potential to support high conservation status roosts, e.g. maternity or classic cool/stable hibernation site.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight-paths 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.

- a** Negligible is defined as 'so small or unimportant as to be not worth considering, insignificant'. This category may be used where there are places that a bat could roost or forage (due to one attribute) but it is unlikely that they actually would (due to another attribute).
- b** For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.
- c** 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.*, 2016 and Jansen *et al.*, 2022). Common pipistrelle swarming has been observed in the UK (Bell, 2022 and Tomlinson, 2020) and winter hibernation of numbers of this species has been detected at Seaton Delaval Hall in Northumberland (National Trust, 2018). This phenomenon requires some research in the UK, but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in prominent buildings in the landscape, urban or otherwise.

Appendix 8: Protective Barriers



Wildlife barrier surrounding tree



Stabilizer strut with base plate secured with ground pins

Redrawn by Acer Ecology Ltd after BS 5837:2012 Figure 1

Appendix 9: Vivara Pro Woodstone Bat Box



The Vivara Pro WoodStone Bat Box is a hard-wearing bat box. It is made from WoodStone, a mixture of wood fibres from fully certified FSC wood sources and concrete, and it is designed to last for years.

It is breathable so there will be no problems with condensation and WoodStone maintains a consistent temperature inside, providing excellent insulation for roosting bats. WoodStone also provides a rough surface which the bats can easily cling to and move around the box. The Vivara Pro WoodStone Bat Box is black with a grey front panel.

Siting - The box can be attached to either a wall or a tree and should be sited at a height of at least 3 m from the ground. Bats prefer to change roosts to benefit from varying ambient temperatures, so bat boxes should ideally be clustered in small groups.

Dimensions - (H) 250 x (W) 190 x (D) 165 mm, weight: 4.5 kg.

Bat Box Availability

The bat box is available from NHBS (www.nhbs.com) where it retails at approximately £20.99 including VAT plus postage costs.

No aluminum nails or screws are provided to attach the bat box to a tree.

Appendix 10: Vivara Barcelona WoodStone Open Nest Box



These attractive nestboxes are manufactured from WoodStone which is a mix of concrete and FSC certified wood fibres. Unlike a traditional wooden nest box, these boxes will not rot away or deteriorate and are guaranteed for 10 years. This robust material safeguards against attacks from predators such as woodpeckers, cats and squirrels, whilst also providing a well-insulated interior with a more consistent internal temperature than an ordinary wooden box. This is especially important during the breeding season and ensures that young birds have a greater chance of survival. Nesting sites have become rare for cavity nesting birds due to changes in woodland management practices, so you can provide much-needed space for rearing chicks and birds that are roosting overwinter with these durable, long-lasting nest boxes.

These open nest boxes are suitable for wrens, robins, spotted flycatchers, pied and grey wagtails, song thrushes and blackbirds, and they are available in brown, green or grey to complement both natural woodland and garden settings.

The best height for your nest box is between 1.5m and 3m high, and open nest boxes should be sited in undergrowth such as ivy to provide cover for the nest.

These nest boxes have a removable front panel for easy cleaning. Although birds will clean their own nest boxes before each breeding season, cleaning the boxes out at the end of each breeding season may encourage them to be used again in future years, as it reduces parasites. The nesting time of birds varies from species to species so we suggest you wait until October when the last of the birds will have left before cleaning. The nest may come out easily but if there are any deposits scrape them out. We recommend using hot water rather than chemicals to remove any parasites that remain.

Specification:

- * Width: 19cm
- * Height: 24cm
- * Length: 17.5cm

* Entrance hole: Open

Purchase source: <https://www.nhbs.com/vivara-pro-barcelonawoodstone-open-nest-box>

Appendix 11: Example of Suitable Wall Light Fittings

	Description
	Light fitting sourced from http://www.energylightbulbs.co.uk/products/single-outdoor-wall-with-pir-movement-sensor-stainless-steel?gclid=CLuf2c63hM4CFYVAGwod0sYPvg
	Light fitting sourced from https://www.screwfix.com/p/lap-bronx-outdoor-wall-light-black/7323r
	Lighting sourced from https://energylightbulbs.co.uk/outdoor-lighting/single-wall-lights/black-single-wall-lights/single-outdoor-wall-light-black-stainless-sh https://www.darksky.org/our-work/lighting/lighting-for-industry/fsa/fsa-products/#!/Bronze-Outdoor-LED-Wall-Lantern-Sconce/p/50117847/category=12541418 teel-ip65-zlc076b
	Light fitting sourced from https://energylightbulbs.co.uk/outdoor-lighting/single-wall-lights/black-single-wall-lights/cone-shape-outdoor-wall-light-stainless-steel-black-finish-exterior-single-downlight-zlc068b
	Lighting sourced from https://www.dunelm.com/product/houston-outdoor-wall-light-1000189390?defaultSkuId=30730458
	Lighting sourced from https://www.lights.co.uk/lindby-jarte-led-outdoor-wall-light-23-9-cm-down.html?gclid=Cj0KCQiAys2MBhDOARIsAFf1D1cN-g6FdvDbjkJcq57t5Ym6RuP5BjinsVPsMI465W2D8SILoTRmA5kaAkHZEALw_wcB&gclid=c=aw.ds
	No longer available from previous stockist
	No longer available from previous stockist
	Lighting sourced from http://www.theopenboxshop.com/hampton-bay-lexington-collection-outdoor-rustic-bronze-led-medium-wall-lantern/ <u>Note: bulb is in unit above glass casing.</u>
A tool for finding 'bat-friendly' lighting is available at https://www.darksky.org/our-work/lighting/lighting-for-industry/fsa/fsa-products/ although the majority of suppliers are based in America	

Acer Ecology
