
From: Scott Jones <Scott@lapider.co.uk>
Sent: 27 December 2021 10:30
To: Owens, Rebecca
Subject: RE: P/21/0094 - Jah-Jireh
Attachments: P1689 Jah Jireh PEA and Bat Roost Assessment -17-12-2021.pdf

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Hi Rebecca,

Please find attached the revised information.

Kind Regards
Scott

Sent from [Mail](#) for Windows

From: Owens, Rebecca
Sent: Tuesday, December 14, 2021 3:38:34 PM
To: Scott Jones
Subject: RE: P/21/0094 - Jah-Jireh
Scott,

Many thanks for the amended details submitted in your email below. However, I note that there are still some issues which will need to be addressed.

The EclA submitted on 22 November seems to be missing section 5.4 – Sensitive lighting which was included in the previous report

2. In my email to you dated 4 November 2021, I noted that paragraph 5.5 of the EclA was vague with no indication of the number or position of bat boxes on the building and bullet point 2 referred to raised ridge tiles *if applicable to the construction material*. As the ecologist had indicated that he would be satisfied with two integrated bat boxes, <https://www.nhbs.com/habibat-bat-box-plain-for-rendering>, or similar (on the gable ends, either x2 on one gable end (facing north west or south east), or x1 on each gable end (whichever is easiest to ensure dark route(s)) and the two bat boxes proposed in the trees. It was suggested that the EclA was amended to reflect this. However, the EclA still refers to ridge access in the text (Section 5.5, Page 46). This reference will need to be removed. It also correctly specifies the 1FR bat boxes on either gable end of the building and the x2F boxes for erection on trees, however on the mitigation plan (plan 7) the 2F boxes appear to be shown on the building rather than in trees and this should also be amended. The mitigation plan must correspond with the recommendations in the report.

Given the requirement for the above amendments and the Christmas Holidays fast approaching I also seek to agree a further extension of time until January 30th 2022. I would be grateful if you could confirm this in writing.

Kind regards,
Rebecca.

From: Scott Jones
Sent: 22 November 2021 07:42
To: Owens, Rebecca ; whitcombe1403@gmail.com
Subject: P/21/0094 - Jah-Jireh

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Morning Rebecca,
Please find attached the revised PEA report and Landscaping drawing, now showing the revised information that you required.
Any queries please let us know.
Kind Regards
Scott



Scott Jones

Chartered Building Surveyors & Architectural Services

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CF47 8AN

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Jah Jireh Charity Homes
Merthyr Tydfil

Ecological Impact Assessment (EcIA)

December 2021

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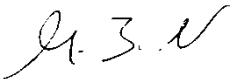
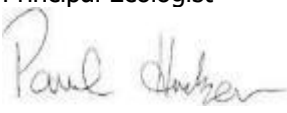
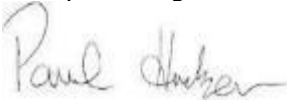
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Document Verification Table

Jah Jireh Charity Homes, Merthyr Tydfil Preliminary Ecological Appraisal				
Revision	Date	Prepared by	Checked by	Verified by
1.0	2 July 2020	Melissa Northam Ecologist 	Alastair Krzyzosiak Ecologist 	Paul Hudson MCIEEM Principal Ecologist 
4.0	17 December 2021	Ffion Jones Assistant Ecologist 	Paul Hudson MCIEEM Principal Ecologist 	Paul Hudson MCIEEM Principal Ecologist 

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Summary

Brief and Site Location	Acer Ecology Ltd was commissioned by Jah Jireh Charity Homes to conduct a preliminary ecological appraisal and preliminary roost assessment at the Jah Jireh site, Merthyr Tydfil, CF44 0LX, within the boundary of Merthyr Tydfil County Borough Council (Ordnance Survey Grid Reference centred at: SO 0053 0742).
Development Proposals	The planning application (reference: P/20/0094) is for a variation of condition 1 attached to planning permission P/15/0105 (for the erection of a two-storey building providing 17 two bedroom sheltered accommodation flats), to allow a further 5 years in which to commence development.
Statutory and Non-Statutory Nature Designations	There are seven statutory and non-statutory designated sites immediately adjacent or within 2km of the development site. The nearest site is Bryn-Du & Ty'n y Coedcau SINC, immediately adjacent. There are a further 13 Ancient Semi-Natural Woodlands in the surrounding area, the nearest of which lies approximately 0.9km to the south-west of the site. Given the nature of the proposed development, it is not anticipated to directly impact any statutory or non-statutory designated sites. However, the possibility of an increase in visitors resulting in negative impacts to Bryn-Du & Ty'n y Coedcau SINC by way of littering, disturbance to present fauna and trampling of flora cannot be ruled out. Impacts would be low-level and localised.
Impacts on Habitats of Value	No habitats on site are likely to be greater than local value. Whilst the loss of the on-site habitats would be unlikely to have a significant impact outside of the context of the site, it would nevertheless be desirable that the impacts be either minimised or appropriately mitigated where possible.
Impacts on Protected and Notable Species	The proposed development could potentially have adverse impacts of varying degrees on a range of legally protected species, including common reptiles and commuting/foraging bats. Further surveys are therefore required to establish presence/likely absence of reptiles, and mitigation, compensation and enhancement steps will be required with respect to foraging/commuting bats.
Invasive Non-native Species	A small stand of Himalayan balsam was noted on site immediately adjacent to the location of the proposed development.
Results of Preliminary Bat Roost Inspection	No signs of bats were found during the external inspection of all on-site buildings.
Suitability of the Buildings to Support Roosting Bats	The combined Residential unit and Kingdom Hall, the garages, the wooden storage shed, and the two staff bungalows were assessed as having moderate suitability to support roosting bats. The static caravan was assessed as having low suitability to support roosting bats. A conservative approach towards classification of suitability has been taken due to external only building inspections taking place. An internal inspection was not possible due to restrictions relating to Covid-19. The proposed development is a new build approximately 25 metres away from the nearest building. As such, it is not anticipated that the proposed works will directly impact any potential roosts potentially onsite within the existing buildings.

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	However, foraging and commuting bats may be disturbed by removal of habitat and any new lighting. As such, habitat recreation and a dark corridor have been included within the mitigation plan.
Requirements for Additional Survey	The habitats on the site are assessed as having 'moderate suitability' for bats and 'high suitability' for reptiles. However, the proposed development is small and the magnitude of potential development impacts are likely to be low. With proportionality in mind, the site should therefore be subject to a standard presence/absence reptile survey consisting of the placement of reptile refugia, allowing 2 weeks for said refugia to 'bed in', followed by 7 site visits to assess presence/absence of reptiles.
Licensing Requirements	A mitigation license, to carry out works which may affect protected reptiles, may be required following reptile survey results.
Recommendations	The following provisional recommendations have been developed based on the development proposals available at the time of writing: • Proposal design amendment; • Further surveys for reptiles; • Precautionary measures, including vegetation clearance, species deterrence measures and wildlife-friendly construction practices; • Compensatory and enhancement measures. It should be noted that these recommendations may be subject to change upon receipt of the final design. Full details of mitigation are also outlined in detail in Section 5.

1. Introduction

1.1. Brief

Acer Ecology Ltd was commissioned by Jah Jireh Charity Homes to conduct a preliminary ecological appraisal and roost assessment at the Jah Jireh site, Merthyr Tydfil, CF44 0LX, within the boundary of Merthyr Tydfil County Borough Council (Ordnance Survey Grid Reference centred at: SO 0053 0742). The purpose of the assessment was to document the baseline ecological condition of the survey area, which comprises the red line boundary shown in Plan 1. This included identification of any designated sites or habitats that could be affected by the proposed works, and identification of or potential for, protected and/or otherwise notable species of conservation interest that could be affected. Potential ecological constraints were identified, and subsequent recommendations developed.

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

1.2. Site Description

The site proposed for development measures approximately 3.06 hectares, and comprises semi-improved neutral grassland, amenity grassland, scrub, tall ruderal vegetation and scattered trees surrounding a residential building with place of worship, bungalows and hardstanding/car park. The proposed new build footprint measures approximately 0.1 hectares. The site is situated along the western boundary of Merthyr Tydfil County Borough Council, 1.7km from Clwydyfagwyr. Heads of the Valleys Road is immediately adjacent. The surrounding rural landscape comprises plantation woodlands, upland habitats and enclosed and unenclosed grazing land. To the north-west lies a gas works. The site's northern boundary lies approximately 362m above sea level, and slopes gently downwards to 360m as its southern boundary and 358m at its eastern boundary.

1.3. Proposed Works

The planning application (reference: P/20/0094) is for a variation of condition 1 attached to planning permission P/15/0105 (for the erection of a two-storey building providing 17 two bedroom sheltered accommodation flats), to allow a further 5 years in which to commence development. The proposed works are shown 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 environs;
- A Phase 1 Habitat Survey of the site, extended to search for evidence of, and potential for, protected fauna;
- Identification of potential ecological constraints to the proposed works at the site and assessments of impacts including appropriate mitigation measures where necessary; and
- The preliminary roost assessment (PRA) comprised a daytime external inspection of the buildings searching for signs of bats and nesting birds and assessing the potential for bats to roost on site.

1.5. Reporting

This report aims to:

- Outline the methodology used during the survey;
- Present the results of the survey;
- Provide an ecological evaluation of on-site habitats, including an assessment of the potential for protected species;
- Provide an assessment of the potential impacts of the development proposals on ecological receptors identified through the desk and field study;
- Provide an assessment of the potential ecological constraints to the proposals; and
- Provide recommendations for further survey, avoidance, mitigation and enhancement where appropriate.

2. Methods

The survey was undertaken following standard methods as described in the Chartered Institute of Ecology and Environmental Management (CIEEM) Preliminary Ecological Appraisal 2016 guidelines, and the Phase 1 Habitat Survey methodology (Joint Nature Conservation Committee, 2010). The methodology utilised for the survey work comprised a desk study, habitat survey and a survey of protected and notable species.

2.1. Desk Study

2.1.1 Protected Sites, Habitats and Species

Information on designated sites (Table 1) and protected species was obtained from the following sources. The legislation and policy relating to statutory and non-statutory designated sites can be found in Appendix 2. Plans 2 and 3 show the protected sites in relation to the proposed development site.

Table 1: Summary of Designated Sites and Other Abbreviations

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

Table 2: Sources of Data

Source	Data	Radius of Search
NRW Geographical Information Systems (GIS) Layers	Statutory and non-statutory nature conservation designated sites Historic Phase 1 Habitat Survey Data JNCC (1992 - 96) ASNW, RAWS and PAWS	Ramsar/SACs/SPAs/SSSIs/NNRs)/LNRs – 2km ¹ . SACs (designated for bats) - 10km. Site boundary. 2km.
SEWBRcC LERC Reference: 0201-124	Protected species records SINCs	1km. 1km.

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

¹ The citations of all the SSSIs and SACs within 2km of the site were consulted to determine if any of them had features or species which could be affected by the development proposals.

2.1.2 Landscape Context

The site and wider landscape were assessed and characterised using aerial images, Ordnance Survey maps and SEWBRc/NRW phase 1 habitat maps dating from the 1990s. 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 4 below.

2.1.3 Ancient Woodland

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

2.1.4 Planning Authority

The Merthyr Tydfil Council Planning Portal² was consulted to determine if any previous survey information was available for the site, or immediate surroundings.

2.2. Field Study

2.2.1 Personnel

The field survey was undertaken in good weather conditions on the 12th June 2020 by Melissa Northam.

2.2.2 Vegetation and Habitats

The vegetation and habitat types present within the survey area were categorised and mapped in accordance with the standard³ 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. 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 4).

No hedgerows were found within the survey area.

The presence of invasive plant species listed on Schedule 9⁴ 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[http:// publicaccess.merthyr.gov.uk/online-applications/](http://publicaccess.merthyr.gov.uk/online-applications/)

³ Some additional categories were also used if applicable e.g. hard standing and Japanese knotweed.

⁴ 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.

2.2.3 Protected and Notable Species

During the survey, emphasis was placed on searching for evidence of, and habitats with, potential to support protected or notable species, especially species meeting any of the following criteria:

- Listed under the and the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species and Planning (various amendments) (England and Wales) Regulations 2018, until and unless superseded by 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 Project⁵ reviews, in the Species of Conservation Concern Red, Amber or Near Threatened List⁶, Birds of Conservation Concern in Wales⁷, 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).

It should be noted that 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.

⁵ 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>).

⁶ 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.

⁷ 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 Features⁸ (PRF) and evidence of bats (i.e. droppings in, around or below a PRF; odour emanating from a PRF; audible squeaking at dusk or during warm weather; or staining below the PRF). A systematic inspection was carried out around all accessible aspects of the tree, from both close to the trunk and further away. The location of the trees is shown on Plan 4.

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

Buildings Assessment

Daytime Internal and External Building Inspection

A systematic search was made of the exterior of all buildings within the survey area, looking for features that bats could use for entry/exit and roosting⁹ and to search for the presence of bats or evidence of bat use, such as droppings, feeding remains, urine staining, scratch marks and the remains of dead bats. The survey was undertaken on the 12th June 2020 by Melissa Northam.

A high-powered torch (Clulite) and a ladder were used as appropriate during the survey.

The internal parts of the buildings were not surveyed due to restrictions relating to Covid-19.

The location of the buildings is shown on Plan 5.

Terrestrial Habitat Assessment

A preliminary assessment of the value of the site for bats (and any potential roost sites therein) was made in accordance with Table 4.1 of the Bat Surveys for Professional Ecologists (Collins, 2016) (see Appendices 5 and 6). 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.

⁸ 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.

⁹ Bats may utilise gaps as small as 8mm by 20mm (Bat Conservation Trust, Cluster flies leaflet)

Dormice

The survey area was assessed for its suitability to support dormice (*Muscardinus avellanarius*) with reference to guidance such as The Dormouse Conservation Handbook (Bright, Morris & Mitchell-Jones, 2006). The structure and composition of habitats within the site were assessed with respect to the presence of flower, fruit or nut-bearing food-plants such as hazel (*Corylus avellana*) (a favoured food-plant of dormice), oak (*Quercus* sp.), honeysuckle (*Lonicera periclymenum*), bramble (*Rubus fruticosus* agg.), sycamore (*Acer pseudoplatanus*), as well as other trees and shrubs listed in 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.

Very limited hazel (one tree) was present on site and therefore, it was not possible to undertake a comprehensive search for hazelnut shells to determine if they had been opened by dormice. Furthermore, no suitable woodland appeared on site and no records of dormice within 1km of the site were provided by SEWBRc. Therefore, no adverse impacts to this species are envisaged to occur. This species is therefore not mentioned further in this report.

Great Crested Newts

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

Ordnance Survey maps and aerial images of the land surrounding the site were consulted to determine if any water bodies were present within the site or within 0.5km of it. Several suitable water bodies were identified within the study area (see Plan 4 and Plan 6). The Habitat Suitability Index (HSI) (Oldham *et al.*, 2000) was applied to these water bodies (where access permitted). As part of the assessment, ponds are scored using 10 suitability indices¹⁰: Each of these features is awarded a score between 0 and 1, and a final score is calculated, also between 0 and 1 (a higher score representing more optimal conditions for great crested newts). This final score enables the pond to be ranked in terms of its suitability (poor, below average, average, good or excellent) and to estimate the likely presence of great crested newts within the water body.

The HSI assessment is not a substitute for undertaking great crested newt surveys but can be used to inform the assessed likelihood of presence or absence. It is not sufficiently precise to prove that a higher score confirms presence, or a lower score confirms absence.

Several ephemeral ditches to the west also offered potentially suitable water bodies. However, access was not possible as they were situated on private land. Ephemeral ditches to the south, again on private land, offered further potentially suitable water bodies. However, such waterbodies are separated from the survey

¹⁰ The 10 suitability indices are: location, pond area, pond drying, water quality, shade, waterfowl presence, fish presence, number of ponds in the local area, terrestrial habitat, and macrophyte cover.

site by a major highway (Heads of the Valleys Road). Such highways are considered to act as barriers to great crested newt migration (English Nature, 2001).

A full great crested newt survey was not undertaken, as this was beyond the scope of this assessment.

Otters and Water Voles

The nearest suitable water body for otters and water voles comprises Nant Ffrwd, which lies approximately 950m north-east of the proposed development site. The likelihood of otters being present within the site, therefore, is considered negligible and no field signs of their presence were observed during the survey visit. Furthermore, the small scale of the proposed development is not likely to result in detrimental impacts beyond the boundary of the development site.

Otters and water voles 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 badger (*Meles meles*). Where present on-site and within a 30m buffer adjacent to the 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.

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

Reptiles

Surveys were undertaken to establish the presence or likely absence of reptiles on the site. Surveys were undertaken in accordance with the guidance outlined in the Herpetofauna Workers' Manual (Gent and Gibson 2003), Advice Sheet 10 – Reptile Survey¹¹ (Froglife, 1999), the Handbook of Biodiversity Methods: Survey, Evaluation and Monitoring (Hill et al., 2005), Reptiles: surveys and mitigation for development projects (Natural England and DEFRA 2015), the Reptile Mitigation Guidelines (Natural England 2011) and Survey Protocols for the British Herpetofauna (Sewell et al., 2013). This involved seven return visits in suitable weather conditions on non-consecutive days during September and October.

The surveys were undertaken by Ffion Jones¹²,. Froglife's Advice Sheet 10: Reptile Survey (1999) recommends that around 10 artificial cover objects or artificial cover objects per hectare are used during reptile surveys¹³. The site is 3.06 ha in size. A total of 160 were placed across the site which equates to 52 artificial cover objects per hectare. This considerably exceeds the density of artificial cover objects recommended by Froglife. The artificial cover objects (comprising sections of bituminised roofing felt and

¹¹ The Froglife Guidance is aimed conservation volunteers and not professional survey work.

¹² Ffion graduated with a degree in Conservation and Ecology at the University of Exeter. As part of her degree, she undertook an Ecological Consultancy module where she learnt about reptile ecology and survey methods. Further details of her qualifications and experience can be found at <https://www.linkedin.com/in/ffion-jones-17ab63197>.

¹³ This guidance is primarily aimed at monitoring schemes rather than presence/likely absence surveys

corrugated bitumen-based roofing felt) measuring at least 0.5m by 0.5m in size (in accordance with guidance within the Design Manual for Roads and Bridges, 2005), were installed on the site on the 25th of August 2020, in areas considered to have habitat suitable for supporting reptiles. For example south-facing positions, preferably concealed in or adjacent to vegetation cover, areas of neutral semi-improved grassland, dense scrub, hedgerow, woodland edge and a pile of building materials such as leaning tiles and plastic piping toward the centre of the site which could potentially act as natural refugia for reptiles. They were checked on each visit to the site.

The whole site was systematically surveyed where possible. However, some of the habitat in the west of the site was considered unsuitable for reptiles due to the short nature of the grassland and areas of it were managed weekly with a mower, and so these areas were not surveyed as other areas were deemed more suitable.

The refuges were then left undisturbed on the site for two weeks prior to commencement of the survey, to allow the reptiles on the site sufficient time to find and start utilising them. Each refuge was then first checked for basking individuals from a distance before being slowly approached and searched for sheltering reptiles. Terrestrial habitat between artificial cover objects was also searched for reptile species on each visit. The location of each reptile sighting was then recorded to allow for analysis of population distributions across the site (see Plan 2).

The timing of survey visits were undertaken in accordance with the guidelines (Natural England, 2011); in early autumn, between 09:00 and 11:00 and 16:00 and 18:00 and in late autumn, during the middle hours of the day approximately between 11.00 and 15.00 and when the air temperature is between 9°C and 18°C¹⁴, which is considered the optimal time to survey for reptiles (Froglife, 1999). Heavy rain and wind are deemed unsuitable conditions for reptile surveys (Froglife, 1999). As reptile activity is heavily dependent on weather conditions the following parameters were recorded during each survey visit: air temperature¹⁵, wind levels, rain levels, and the cloud cover. As recommended in the guidance (Froglife, 1999) surveys were not undertaken on consecutive days.

Species and life stage and were also recorded, where animals were present, as well as environmental data. Non-target species, such as amphibians and small mammals, utilizing the artificial cover objects was also recorded during the surveys.

Marsh Fritillary & Small Pearl-Bordered Fritillary

The survey included a search for the larval food plant of the marsh fritillary butterfly (*Euphydryas aurinia*), devil's bit scabious (*Succisa pratensis*).

This involved looking for the presence of basal leaves of the larval food plant which may have been present at the time of the survey. The marsh fritillary emerges from mid-May and so a search for adults was also undertaken.

¹⁴ Natural England's Reptile Mitigation Guidelines recommend that the temperature is between 10-20°C.

¹⁵ Minimum and maximum temperature in the shade was measured during the survey using an ETI digital thermometer.

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The survey also included a search for the larval food plants of the small pearl-bordered fritillary butterfly (*Boloria selene*), common dog violet (*Viola riviniana*) and marsh violet (*Viola palustris*). The small pearl-bordered fritillary emerges from mid-May and so a search for adults was also undertaken.

Other Species

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

Assessment of Ecological Value

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

Constraints and Limitations

General Temporal Constraints

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

Incomplete Survey Information

Full surveys for the protected species listed previously have not yet been carried out. 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 5).

Restricted Access to Water Bodies Within 0.5km of Site

Not all ditches and watercourses within 0.5km of the site could be accessed. However, assessed waterbodies onsite did not score above 'below average' on the HSI assessment and given a lack of records returned by SEWBReC as part of the data search, this is not considered to be a significant survey constraint and it is considered unlikely to have altered the assessments made.

Restricted Access to Buildings

An internal inspection of the buildings was not undertaken due to restrictions surrounding Covid-19.

3. Results

3.1. Desk Study

Statutory Nature Conservation Designated Sites

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

There are no SACs or SSSIs which have been designated specifically for bats within 10km of the site.

SACs within 2km of Site

There are no SACs designated for their conservation value within a 2km search radius of the site.

SSSIs within 2km of Site

There are two SSSIs designated for their conservation value within a 2km search radius of the site:

- Bryncarnau Grasslands, LLwydcoed SSSI, located approximately 0.4km to the south-west of the proposed development site, is designated for its valuable grasslands and plant communities; and
- Tir Mawr a Dderi Hir, Llwydcoch SSSI, located approximately 2km to the south-west of the site, is designated for its 'species-rich neutral grassland and for its marshy grassland, some of which is heathy fen-meadow.'

NNRs and LNRs

No NNRs or LNRs are present within 2km of the site.

National Park

The Brecon Beacons National Park is located approximately 0.5km to the north of the site. National Parks are designated for their aesthetic and recreational value as opposed to wildlife value as well. However, they often contain habitats of high ecological value also. The Brecon Beacons National Park comprises a rich mosaic of upland habitats and rolling valleys.

Non-statutory Nature Conservation Designated Sites

SINCs

Four SINCs were recorded within 2km of the study area:

- Bryn-Du & Ty'n y Coedcau SINC lies directly adjacent to the site boundary on two sides. The SINC comprises 'extensive upland moorland area of mainly marshy grasslands with wet heathlands and smaller areas of blanket bog, acid flush, valley mire and unimproved acid grassland, forming a mosaic. The marshy grasslands are dominated by purple moor-grass and grade into wet heathland supporting abundant cross-leaved heath and deer-grass. The boggy habitats of the site support numerous species of interest, including round-leaved sundew, bog-

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bean, sneezewort, bog asphodel, narrow buckler-fern, lesser skullcap, ivy-leaved bellflower and hare's-tail cottongrass. Several uncommon dragonflies have been recorded along with grayling butterfly';

- Winchfawr West SINC lies immediately to the south of the development. The SINC comprises 'very extensive area of mostly upland habitats, comprising a complex mosaic of moorland and 'ffridd' habitats supporting many species of interest. Of particular note are the wet and dry heathlands, partly developed on old colliery spoil tips, which are the most extensive in the county borough. Other habitats of note include marshy and acid grasslands, acid flushes and grass-heaths. Numerous small pools are present, particularly in the north. These support a colony of great crested newt which extends over the hilltop into the adjacent Aberdare Mountain pSINC in Rhondda Cynon Taff County Borough. Several other amphibian species occur in the ponds, and common lizard is a characteristic species of the heathland areas. The ponds also support diverse dragonfly assemblages, including uncommon species such as black darter, scarce blue-tailed damselfly and emerald damselfly. A range of other localised invertebrate species has been recorded from the site, including dark green fritillary butterfly and a strong population of grayling butterfly. Other fauna species of interest include breeding skylark, which nests at a high density on the site, and brown hare. Plant species of interest include regionally scarce species such as shoreweed, alternate-leaved water milfoil, spiked water-milfoil, unbranched bur-reed and long-stalked yellow sedge. Other noteworthy plant species include saw-wort, ivy-leaved bellflower, flea sedge and white sedge. Several nationally scarce lichens have been recorded from the heathland areas';
- Cwm Ffrwd SINC, located approximately 0.4km to the north-east. The SINC comprises 'Valley habitats along the course of the Nant Ffrwd, which forms part of the boundary with the Brecon Beacons National Park. This is a large stream draining from the uplands in a largely unmodified course, passing through narrow gorges in places. Adjacent habitats include mainly broadleaved semi-natural woodlands with some marshy grasslands. The riverine woodland is dominated by ash, alder and hazel, giving way to sessile oak woodland on the valley sides. The woodlands have a rich ground flora supporting many ancient woodland indicator species, including wild garlic, sanicle, tutsan, sweet woodruff, hairy brome, giant fescue, wood melick and common cow-wheat, as well as regionally scarce species including beech fern, oak fern, toothwort and stone bramble. Several nationally scarce bryophytes and lichens have also been recorded. The site also includes a series of riverside fields between the river and the Heads of the Valleys Road. These support marshy grasslands, acid flushes, wet woodland and acid grasslands, with localised species including heath-spotted orchid and lousewort. Small pearl-bordered fritillary occurs on the site, and otter ranges along the river system'; and
- Coed Meurig Pastures SINC, located approximately 1km to the east. The SINC comprises 'Small group of horse-grazed fields supporting semi-improved acid grassland with areas of marshy

grassland. The marshy areas support sneezewort, bog asphodel, lousewort, cross-leaved heath and devil's-bit scabious. An area of fen meadow in the east of the site supports the regionally scarce fen bedstraw, as well as other localised species including meadow thistle and marsh valerian.'

Ancient Woodland

There are 13 areas of ASNW located within 2km of the proposed development site, the nearest of which lies approximately 0.9km to the south-west of the site. In addition, three Planted Areas on Ancient Woodland Sites (PAWS), two Restored Ancient Woodland Site (RAWS) and three ancient woodland sites of unknown category are present within the same search radius.

Designated and Non-designated Sites Summary

Connectivity between the development site and the two SSSIs is poor, owing to the presence of a busy highway (Heads of the Valleys Road). Connectivity between the development site and Brecon Beacons National Park is uninterrupted; however, the small scale of the proposed development is not likely to result in detrimental impacts beyond the boundary of the development site and will not impact connectivity between other sites of ecological value. Nor will there be impacts to ancient woodland sites. The proposed development is therefore not anticipated to have 'significant effects' (IPC, 2011) upon the aforementioned sites and they are not mentioned further in the report. There remains however some potential for low level localised impacts on SINCs. These are considered in more detail in Section 4.

3.2. Field Survey

Habitats and Vegetation

The results of the general survey of habitats and vegetation are shown on Plan 3. A botanical species list is provided in Appendix 3.

Summary of Habitats Present within the Site

The site consists of ten elements which are described in detail below. These comprise:

- Dense Scrub (A2.1);
- Scattered Mixed Trees (A3.3);
- Semi-Improved Neutral Grassland (B2.2);
- Tall Ruderal Vegetation (C3.1);
- Standing Water (G1);
- Amenity Grassland (J1.2);
- Fence (J2.4);
- Building (J3.6);
- Other Habitat (J5); and
- Hard Standing¹⁶.

¹⁶ Habitat not included within the Phase 1 Handbook (JNCC 2010), no alphanumeric code provided.

3.3. Habitat Descriptions

Dense Scrub (A2.1)

Dense sprawling seral vegetation bordering sections of the central area and northern, eastern and western boundaries, with occasional woody shrubs, less than 5 metres tall. Dominant species comprise bramble with scattered Willow (*Salix* spp.) and dog-rose (*Rosa canina* agg.) (Photos 1 and 2). A single honeysuckle shrub was located to the rear of the garages/storage units in the north-west section.

Photo 1: view of the central area looking north-west



Photo 2: view along the northern boundary looking out from the survey area



Scattered Mixed Trees (A3.3)

Predominantly self-seeded willow, sycamore (*Acer pseudoplatanus*), beech (*Fagus sylvatica*), Common Alder (*Alnus glutinosa*) and pine (*Pinus* spp.) saplings and immature individuals form a scattered mixture of trees along an approximately 80m section of the eastern boundary fence and immediately adjacent to the existing car park (the proposed site for the residential block). Individual species such as horse chestnut (*Aesculus hippocastanum*) and oak (*Quercus* spp.) are also present, having been planted previously as landscaping (Photos 3 and 4). Scattered stands of sapling and immature willow were also present in the north-eastern compartment of the survey area and partially enclosed the gas tanks in-situ.

A small ornamental stand of oaks is also present adjacent to the path leading to the gas tanks (Photo 5).

Scattered trees form a windbreak along an approximately 45m section of the southern boundary fence and comprise oak, pine, dog-rose and rowan (*Sorbus aucuparia*) (Photo 6).

The understories comprise semi-improved neutral grassland, dense scrub and tall ruderal vegetation.

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Photo 3: the proposed sighting of the development showing the horse chestnut and self-seeded tress



Photo 4: further into the scattered trees along the eastern boundary showing the understorey



Photo 5: stand of oaks adjacent to the car park



Photo 6: windbreak trees along the southern boundary



Semi-Improved Neutral Grassland (B2.2)

This habitat had not been mown for several months, however, mowing takes place regularly throughout the year. This has resulted in a sward height of approximately 30-50cm. This habitat dominates throughout the survey area and runs along the south boundary (Photos 7-9) and central area (Photos 10-12). Collectively, species are indicative of a species-rich semi-improved neutral grassland.

Dominant grasses comprise Yorkshire fog (*Holcus lanatus*), annual meadow grass (*Poa annua*), false oat grass (*Arrhenatherum elatius*), cocks-foot (*Dactylis glomerata*) and smooth meadow grass (*Poa pratensis*). Abundant species comprise red fescue (*Festuca rubra*), crested dogs-tail (*Cynosurus cristatus*), perennial ryegrass (*Lolium perenne*). Sweet vernal grass (*Anthoxanthum odoratum*) was frequently present and creeping bent (*Agrostis stolonifera*) occasionally present.

No herb or forb species dominate, and distribution varies across the survey area. However, abundant species comprise common bird's-foot-trefoil (*Lotus corniculatus*), white clover (*Trifolium repens*), dandelion (*Taraxacum officinale* agg.), ribwort plantain (*Plantago lanceolata*), creeping buttercup (*Ranunculus repens*) and red clover (*Trifolium pratense*).

Frequent species comprise daisy (*Bellis perennis*), meadow buttercup (*Ranunculus acris*), self-heal (*Prunella vulgaris*), germander speedwell (*Veronica chamaedrys*), creeping cinquefoil (*Potentilla reptans*).

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Occasional species comprise ox-eye daisy (*Leucanthemum vulgare*), common ragwort (*Senecio jacobaea*), sticky mouse-ear (*Cerastium glomeratum*), common mouse-ear (*Cerastium fontanum*), common vetch (*Vicia sativa*), lesser trefoil (*Trifolium dubium*), meadow thistle (*Cirsium dissectum*), yarrow (*Achillea millefolium*), common knapweed (*Centaurea nigra*), common sorrel (*Rumex acetosa*), silverweed (*Potentilla anserina*), glaucous sedge (*Carex flacca*).

Rare/scarce species comprise garden columbine (*Aquilegia* sp.), cuckooflower (*Cardamine pratensis*), fox-and-cubs (*Pilosella aurantiaca*), Common Spotted Orchid (*Dactylorhiza fuchsii*) and Southern Marsh Orchid (*Dactylorhiza praetermissa*).

In places, drainage is impeded resulting in scattered soft rush (*Juncus effusus*) and hard rush (*Juncus inflexus*) (Photo 13). However, no standing water or inundated vegetation was seen on the grassland, suggesting that such features are ephemeral. In places, small areas of discarded rubble, building materials and piles of cut grass are present (Photo 14).

Photo 7: view to the east looking alongside the eastern boundary and car park



Photo 8: habitat between the eastern section of the car park and the windbreak trees along the southern boundary



Photo 9: habitat within the proposed development site along the eastern boundary



Photo 10: view towards the central area of the site



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Photo 11: view of the central area looking west



Photo 12: view of the central area looking east



Photo 13: area of rush species alongside scrub and scattered trees



Photo 14: building materials and debris left in the north-east section of the site



Tall Ruderal Vegetation (C3.1)

Often found on site alongside dense scrub, this habitat is present along the northern, eastern and western boundaries.

Some areas are locally dominated by willowherb species (*Epilobium* spp.) and common nettle (*Urtica dioica*) (Photos 15 and 16). However, distribution of species varies across the survey area. Abundant species comprise horsetail (*Equisetum arvense*), common ragwort, and curled dock (*Rumex crispus*) in addition to Yorkshire fog, cocks-foot and false oat grass.

Photo 15: Willowherb species along the northern boundary



Photo 16: nettles along the eastern boundary alongside scattered trees



Standing Water (G1)

A shallow small (approximately 2m x 2m) manmade pond is situated to the rear of the staff bungalows within an area of raised beds (Photo 17). The perimeter is constructed from wooden sleepers, which result in a raised border. A gravel substrate could be made out.

Water lilies (*Nymphaeaceae*) are present but no other floating/submergent vegetation and no fish. A small water fountain was in operation at the time of surveying. Residents of the staff bungalow advised that this pond has been in-situ for approximately 6 years.

A second shallow small pond (approximately 1m x 0.5m) was also present adjacent to the amenity grassland to the rear of the bungalows. This water body has a plastic membrane and no macrophytes or fish (Photo 18).

Further details with reference to great crested newt suitability are provided in Section 3.3.4.

Photo 17: Pond number 1 in the staff bungalow vegetable/herb garden



Photo 18: Pond number 2 adjacent to the amenity grassland to the rear of the staff bungalows



Amenity Grassland (J1.2)

Located to the rear of the bungalows (Photo 19) and adjacent to the Kingdom Hall (Photo 20), species are much more restricted than the unmown semi-improved neutral grassland areas, due to the mowing regime.

Grassland species, which dominate, are therefore harder to identify due to the nature of the mowing regime. However, identifiable species comprise Yorkshire fog, cocks-foot and perennial ryegrass.

Forb species do not dominate however, frequent species comprise, daisy, dandelion and plantain species. Occasional species comprise self-heal and rare/scarce species comprise common birds-foot-trefoil

Photo 19: amenity grassland to the rear of the staff bungalows



Photo 20: residents amenity grassland



Fence (J2.4)

A wire fence, varying in height from approximately 1m to 2m is present around the entire boundary (Photo 21). In other places, a wooden feather edge board fence is present, such as around the bungalow/garages (Photo 22).

Photo 21: wire mesh fencing which continues along the entire perimeter of the survey area



Photo 22: feather edge board fencing to the rear of the staff bungalows



Building (J3.6)

The main building on site houses the care home residential unit and Kingdom Hall and is situated in the south-west section of the survey area. Two partially joined staff bungalows, a wooden storage shed and garages/storage units are to the north-west of the survey area. A disused stand-alone static home is situated adjacent to the staff bungalows and is placed directly on the semi-improved neutral grassland

Detailed descriptions are provided in Section 3.3.2 below.

Other Habitat (J5)

Immediately against the residential unit, Kingdom Hall and in the courtyard lie landscaped gravel and shrub borders, approximately 1m to 2m in depth (Photo 23). Species comprise sprawling and upright conifer species and low growing shrubs.

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To the rear of the staff bungalows lies a small herb and vegetable garden with raised beds (Photo 24). The gravel/moss substrate is underlain by a semi-impermeable membrane.

Photo 23: landscaping along the residential units; south-west elevation



Photo 24: vegetable/herb garden to the rear of the staff bungalows



Hard Standing

Tarmac access roads and car parks are situated throughout and encircle the care home, residential unit and Kingdom Hall (Photo 25). A block paved courtyard lies within the residential unit and a further paved area is to the rear of the staff bungalows (Photos 26 and 27). A concrete hard standing area is also situated next to the staff bungalows and storage units

In the north-east section of the survey area lie four gas tanks which overlie a concrete surface (Photo 28).

Photo 25: car park looking from the south boundary; proposed location of the development to the right adjacent to the scattered trees shown



Photo 26: inner courtyard view looking to the north



Photo 27: hardstanding to the rear of the staff bungalows, looking north-east



Photo 28: gas tanks over hardstanding, looking north



Target Note

Within the eastern section of dense scrub and tall ruderal vegetation, immediately adjacent to the proposed site of the development, lies an area interspersed by Himalayan balsam (Photo 29). An isolated small cluster of yellow flag iris (*Iris pseudacorus*) is also present due to an isolated area with impeded drainage; no standing water was found.

Photo 29: Himalayan balsam



3.4. Protected and Notable Species

3.4.1. Notable Plant Species

Data Trawl Results

SEWBRc provided no records of protected plant species or species of principal importance listed under the Environment (Wales) Act 2016 from within 2km of the site proposed for development.

Field Survey Results

No nationally rare or scarce plant species were recorded on the site by the present survey. However, common spotted-orchid, southern marsh orchid and Meadow Thistle, species of local significance, were recorded within some sections of the semi-improved grassland.

3.4.2. Birds

Desk Study Results

SEWBReC provided numerous records for birds within 1km of the site. The following table shows nesting birds associated with the habitats present on-site and their conservation status:

Table 3: Records of Birds

Species		Schedule 1	Section 7 list – Environment Act Wales	UK BAP	Red list ¹⁷	Amber list ¹⁸
Bullfinch	<i>Pyrrhula pyrrhula</i>		Yes	Yes		
Cuckoo	<i>Cuculus canorus</i>		Yes	Yes	Yes	
Dunnock	<i>Prunella modularis</i>		Yes	Yes		Yes
Lesser redpoll	<i>Acanthis cabaret</i>				Yes	
Linnet	<i>Linaria cannabina</i>		Yes	Yes	Yes	
Song thrush	<i>Turdus philomelos</i>		Yes	Yes	Yes	
Skylark	<i>Alauda arvensis</i>					Yes
Tree pipit	<i>Anthus trivialis</i>		Yes	Yes	Yes	

Field Survey Results

A low number of birds were recorded on site as shown in Table 4:

Table 4: Records of Birds recorded on site

Species		Schedule 1	Section 7 list – Environment Act Wales	UK BAP	Red list ¹⁹	Amber list ²⁰
House sparrow	<i>Passer domesticus</i>		Yes	Yes	Yes	
House martin	<i>Delichon urbica</i>					Yes
Robin	<i>Erithacus rubecula</i>					

An active house sparrow nest was recorded in one of the bungalows (B2 on the habitat plan) whereby a male adult sparrow was seen entering a void in the barge boards with invertebrates held in its beak. It was then seen exiting the same void with no invertebrates in its beak.

¹⁷ Bird species of high conservation concern, such as those whose population or range is rapidly declining, recently or historically, and those of global conservation concern.

¹⁸ Bird species of medium conservation concern, such as those whose population is in moderate decline, rare breeders, internationally important and localised species and those of unfavourable conservation status in Europe.

¹⁹ Bird species of high conservation concern, such as those whose population or range is rapidly declining, recently or historically, and those of global conservation concern.

²⁰ Bird species of medium conservation concern, such as those whose population is in moderate decline, rare breeders, internationally important and localised species and those of unfavourable conservation status in Europe.

3.4.3. Bats

Desk Study Results

No bat roost records were received from within 1km of the development site boundary. SEWBRc returned two records of bats foraging or commuting within 1km of the site, which included common pipistrelle (*Pipistrellus pipistrellus*) and an unidentified *Myotis* bat species.

There were no records of bat surveys having been previously undertaken on within the same postcode on the Local Authority planning portal.

Field Survey Results

Trees

All trees were young in age, with no PRFs. They were therefore assessed as having negligible bat roost potential and were scoped out of the assessment. They are therefore not mentioned further in this context in the report.

Buildings and Other Structures

All buildings on site were assessed externally for their suitability to support roosting bats, as set out below.

Table 5: External Building Assessment

Building Number	Description	Evidence Of Bats	Potential for Bats
1	Combined Residential Unit and Kingdom Hall - Brick construction with single-, two- and three-storey sections (Photos 30 to 32). Pitched roofing is of concrete roof and ridge tiles which are generally well aligned; a slipped roof tile and missing ridge tile were sighted on the eastern elevation of the Kingdom Hall (Photo 33 and 34). An area of flat roofing is also present (Photo 35). Gable ends are plastic trim capped with small gaps at the ends. Roofing is not cluttered and free of overhanging trees. Gaps in lead flashing around the dormer windows are present but roof valley lead flashing appears well sealed. The plastic soffit has missing or damaged boards in the courtyard along the north-west elevation (Photos 36 and 37) creating voids of approximately 40cm x 20cm and 5cm respectively. Vents have insect guards fitted with no suitable gaps around/under them (Photo 38). All conservatory, window and door seams and fittings appear secure (Photo 39 and 40). Security and motion sensor lighting is present surrounding the building and projecting onto the car park.	Nil	Moderate
2	Staff bungalow – Single storey brick construction (Photos 41 to 43) with slate tile and concrete ridge tile pitched roof. A broken tile on the northern elevation (Photo 44) and a slipped tile further up are present. Roofing is not cluttered and is free of overhanging trees. The soffit is warped in places resulting in voids of approximately 2-3cm wide (Photo 45) and a void is present in the barge boards (Photo 46 and 47). The windows and doors have UPVC frames	Nil	Moderate

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Building Number	Description	Evidence Of Bats	Potential for Bats
	with all seams and fittings appearing secure (Photo 48). Security lighting is present by way of wall fitted lights on the north-west and south-east elevation.		
3	Staff bungalow – Single storey brick construction building (Photos 49 to 51) with a section of pitched UPVC/plastic roofing to the west elevation with UPVC window and door frames. All seams and fittings appear secure. Pitched roofing is of slate tiles and concrete ridge tiles with a broken tile on the north-west elevation above the window (Photo 52). Roofing is not cluttered and is free of overhanging trees. Lead flashing appears well sealed with no lifted areas suitable for roosting bats. The soffit is warped in places creating voids approximately 2-3cm wide on the south-west elevation (Photo 53). The windows and doors have UPVC frames with seams and fittings appear secure. Security lighting is present by way of wall fitted lights on the elevation	Nil	Moderate
4	Static Home – Plastic and metal panel construction (Photos 54 and 55) with plastic panel convex roof with no missing panels noted. Roofing is not cluttered and free of overhanging trees. Eaves and soffits are well sealed, however, there are missing or damaged lower side panels (Photo 56). These create voids of up to 10cm and allow access into the insulation cavity. Voids are in close proximity to the ground (approximately 1m). Narrow vents cut directly into the side panels are present but do not show any signs of bat access (Photo 57). Windows and doors have aluminium frames, with seams and fittings appearing secure (Photo 58).	Nil	Low
5	Garages – Single storey metal sheeting storage units/garages (Photos 59 to 61). The roof is pitched and constructed from corrugated sheet metal. Sheets are generally well aligned, with no missing sheets noted (Photo 64). Gable ends are capped with metal trim with small gaps running along the length of it due to the corrugated sheeting (Photo 63). Roofing is not cluttered and free of overhanging trees. Eaves have voids of approximately 10cm behind fascia boards, created by the corrugated shape of the metal panels (Photo 64). Roller shutter doors and wooden doors are on the north-east and north-west elevations (Photos 65 and 66). Roller shutters are not rigid, and voids are present along all perimeters. The wooden doors are secure.	Nil	Moderate
6	Wooden Storage shed – Single storey wood and wood panelling construction (Photos 67 to 69) with pitched sheet metal roofing. Sheets are generally well aligned, with no missing sheets noted. A section of the south-east elevation has wide (approximately 10 cm) ventilation gaps (Photo 69) however, the voids are covered in a fine wire mesh which would prevent access by bats. Uncapped gable ends show small gaps owing to the shape of the corrugated sheeting (Photo 70). Roofing is not cluttered and free of overhanging trees. Eaves are well sealed with no visible voids. Doors and windows are wooden (Photos 71 and 72) and appear secure and well-sealed.	Nil	Moderate

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Photos Showing Building 1 and its Features

Photo 30: residential units; south-east elevation



Photo 31: inner courtyard looking north



Photo 32: Kingdom Hall; north-east elevation



Photo 33: slipped tile; north-east elevation



Photo 34: missing ridge tile; north-east elevation



Photo 35: flat-roof extension; north-west elevation



Photo 36: missing soffit boards in the inner courtyard; north-west elevation



Photo 37: voids along soffit boards in the inner courtyard; north-west elevation



Photo 38: vent with intact insect mesh; south-east elevation



Photo 39: conservatory; south-east elevation



Photo 40: UPVC windows typical of building 1; south-east elevation



Photos Showing Building 2 and its Features

Photo 41: Building 2 (right); south-east elevation



Photo 42: north-east and north-west elevations



Photo 43: south-west elevation



Photo 44: north-west section of roofing



Photo 45: warped soffit board; north-east elevation



Photo 46: barge boards; south-east elevation



Photo 47: void in barge boards; south-east elevation



Photo 48: windows typical of building 2; north-west elevation



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Photos Showing Building 3 and its Features

Photo 49: north-west elevation



Photo 50: south-west elevation showing uPVC/plastic roofing section



Photo 51: eastern corner showing north-east and



Photo 52: missing roof tile; north-east elevation



Photo 53: warped soffit boards; south-west elevation



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Photos Showing Building 4 and its Features

Photo 54: eastern corner showing the north-east and north-west elevations



Photo 55: north-west elevation



Photo 56: south-west elevation showing missing metal sheeting



Photo 57: metal vents; south-west elevation



Photo 58: aluminium window typical of the static home; south-west elevation



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Photos Showing Building 5 and its Features

Photo 59: south-west elevation showing building materials and rubble



Photo 60: south-west elevation showing building materials and rubble



Photo 61: courtyard showing garage doors



Photo 62: corrugated sheet roofing; north-east elevation



Photo 63: south-east elevation



Photo 64: Wooden fascia boards providing voids



Photo 65: wooden door and roller shutter doors



Photo 66: wooden door; north-west elevation



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Photos Showing Building 6 and its Features

Photo 67: north-west elevation



Photo 68: south-east elevation



Photo 69: south-east elevation showing ventilation boards with wire meshing



Photo 70: uncapped gable ends showing voids between roofing sheets and fascia boards; south-east elevation



Photo 71: wooden window and door; south-east elevation



Photo 72: wooden window; north-east elevation



On-site Bat Habitat Suitability

The site is collectively considered to provide moderate quality foraging and commuting habitat for bats. There are lines and clusters of trees that form a semi-continuous habitat on the site that is connected to the wider landscape that could be used by bats for commuting. Extensive grassland coverage provides good quality foraging habitat and provides connection to the wider landscape and woodland border immediately adjacent to the site on the western border.

Great Crested

Desk Study Results

SEWBReC did not return any records of great crested newt from within 1km of the site, though there are records of other amphibians, comprising five records of common toad (*Bufo bufo*) and one record of palmate newt (*Lissotriton helveticus*). The nearest record was made approximately 0.62km to the north-west in 2017.

Field Survey Results

No incidental observations of great crested newts, or any of the aforementioned amphibians, occurred during the survey. One staff member did confirm that they have seen unidentified frogs (*Anura*) and newts (*Pleurodelinae*) within the two ponds to the rear of the bungalows.

HSI of ponds on-site

The HSI assessments of the suitable water bodies within 0.5km of the site are displayed in the following Table. The location of all water bodies is shown in Plan 6 and the location of the surveyed waterbodies is shown in Plan 4.

Table 6: HSI Scores

Pond Reference	Water Body 1	Water Body 2
SI1 Field location	0.5	0.5
SI2 Pond area	0.05	0.05
SI3 Pond drying	1.0	0.5
SI4 Water quality	0.33	0.33
SI5 Shade	1	0.6
SI6 Fowl	1	1
SI7 Fish	1	1
SI8 Ponds	0.65	0.65
SI9 Terrestrial habitat	0.67	0.67
SI10 Macrophytes	0.6	0.3
HSI SCORE:	0.54	0.45
Pond Suitability:	Below Average	Poor

The results of the Habitat Suitability Index indicate the water bodies have lower than average potential to support breeding great crested newts. This is due to the pond sizes, water quality and low percentage cover of macrophytes (plants). The suitability of surrounding habitats is also taken into consideration.

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Photo 73: pond 1 in the vegetable/herb garden to the rear of the staff bungalows.



Photo 74: pond 2 to the rear of the staff bungalows, adjacent to the amenity grassland



Terrestrial Habitats

The survey area offers a moderate potential suitability of habitat for the terrestrial and hibernation phases of great crested newts and amphibians due to the presence of scrub, grassland and areas of scattered trees with scrub and/or ruderal understories offering damp locations. However, there is little connectivity between the site and known off-site colonies due to the presence of main highways, namely Heads of the Valleys Road.

Furthermore, the small scale of the proposed development is not likely to result in detrimental impacts beyond the boundary of the development site.

Great crested newt are therefore not mentioned further in this report.

3.4.4. Badgers

Desk Study Results

The data search returned one badger record within 1km of the site (SEWBRc data 2020), made in 2016 approximately 0.67km to the west of the site.

Field Survey Results

No incidental observations of badgers occurred during the survey. The survey area offers a moderate potential suitability of habitat for foraging due to the presence of unmown grassland in addition to fruit bearing species within scrub such as bramble and hawthorn along the northern and eastern boundaries. Connectivity between the site and the surrounds may be restricted in places due to the presence of a wired fence around the site, which may prevent badgers from crossing unhindered into the site to forage. However, not all sections of the fence could be viewed due to the presence of dense scrub and vegetation, and as such, badger access onto the site cannot be ruled out. However, no setts or other evidence of badgers was recorded. Therefore, no impacts on badgers will occur and they are not mentioned further in the report.

3.4.5. Reptiles

Desk Study Results

The data search returned six records of reptiles within 1km of the site (SEWBRc data 2020), all common lizard (*Zootoca vivipara*), the nearest of which was made in 2017 approximately 0.59km to the north-west.

Field Survey Results

The survey area offers a high potential suitability of habitat for reptiles, including egg-laying and hibernation, due to the presence of grassland of varying sward heights, supporting invertebrate species, and areas suitable for basking and refugia, namely patches of gravel, rubble and piles of grass cuttings situated along grassland-scrub eco-tones. All such features are of a southern aspect due to the relatively level nature of the survey area but are also in close proximity to scattered trees and ruderal vegetation. Such arrangement affords the site a mix of full sun, dappled shade and full shade areas.

The survey results and weather conditions of each survey are summarised below:

Table 7: Survey Weather Conditions

Survey	Date	Start Time	Air Temperature (Min and Max °C)	Rain	Wind Speed (Beaufort)	Cloud Cover (Oktas)
1	9/9/2020	18:00	13	0	2	0/8
2	17/9/2020	10:00	15	0	1	0/8
3	19/9/2020	11:00	15	0	2	2/8
4	25/9/2020	12:30	12	0	3	2/8
5	27/9/2020	14:00	14	0	0	0/8
6	29/9/2020	11:30	14	0	1	3/8
7	14/10/2020	11:15	12	0	3	5/8

Table 8: Survey Results

Survey	Date	Records		
		Species	Adults	Juveniles
1	9/9/2020	Common Lizard	4	1
2	17/9/2020	Common Lizard	9	0
3	19/9/2020	Common Lizard	13	11
4	25/9/2020	Common Lizard	6	2
5	27/9/2020	NA	0	0
6	29/9/2020	Common Lizard	3	0
7	14/10/2020	NA	0	0

The common lizards were recorded mainly in the north and north-east of the site. Toads (*Bufo bufo*) (a priority species) and wood mice (*Apodemus sylvaticus*) were also recorded during the surveys.

3.4.6. Marsh Fritillary and Small Pearl-Bordered Fritillary

Desk Study Results

SEWBRc did not return any records of fritillary from within 1km of the site.

Field Survey Results

No incidental sightings of Marsh Fritillary or Small Pearl-Bordered Fritillary occurred during the survey period.

No habitats directly within the development site were deemed to be suitable and no suitable food/larval plants were found. However, adjacent habitats (damp grasslands) are suitable. As such, these species may forage on-site due to good connectivity to surrounding habitats via scrub and ruderal species.

Whilst none of these species were found to be on site, biodiversity enhancements are being recommended (Section 5) which will support these species and therefore, these species are not specifically mentioned again in the report.

3.4.7. Other Mammals

Desk Study Results

SEWBRc did not return any records of other mammal species from within 1km of the site.

Field Survey Results

No sightings of any mammals occurred during the survey period. However, there is a high suitability of habitat within the survey area for foraging and nesting due to the presence of grassland of varying sward heights, scrub and ruderal vegetation in addition to trees offering further shelter. In addition, there is good connectivity to surrounding habitats via scrub and ruderal species which may afford access to/from woodlands to the north-west. As such, mammals, such as hedgehogs, may have been present but not sighted during the survey visit. However, recommendations for reptiles will ensure that impacts to mammals are avoided and biodiversity enhancements are also recommended. Therefore, mammals are not specifically mentioned again in the report. Other mitigation is considered to be sufficient to prevent negative impacts.

3.4.8. Invertebrates

Desk Study Results

The data search returned a low number of notable invertebrate records from within the study area, comprising dingy skipper (*Erynnis tages*) and small heath (*Coenonympha pamphilus*).

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Field Survey Results

A low number of incidental observations of invertebrates occurred during the survey. These included small tortoiseshells (*Aglais urticae*), Cinnabar moths (*Tyria jacobaeae*) and bumble bees (*Bombus*). There is a high suitability of habitat within the survey area for foraging, overwintering and egg-laying due to the presence of grassland of varying sward heights, scrub and ruderal vegetation in addition to trees offering further shelter. In addition, there is good connectivity to surrounding habitats via scrub and ruderal species which may afford access to/from woodlands to the north-west. No notable invertebrate species were sighted, and biodiversity enhancements are being recommended (Section 5) which will support these species. Therefore, invertebrates are not specifically mentioned again in the report.

4. Ecological Evaluation, Legislation and Impact Assessment

The ecological value of the *in-situ* habitats and the potential/actual presence of protected species are discussed in this section, along with a summary of relevant legislation and planning policies relating to habitats and species. 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.

4.1. Non-Statutory Designated Sites

Assessment of Ecological Value

All SINCs are considered to be of at least county or district value.

The adjacent SINCs host uncommon invertebrate species, plants and habitats of interest, including wet and dry heathlands. However, given the nature of the proposed development, it is not anticipated to directly impact any non-statutory designated sites.

Bryn-Du & Ty'n y Coedcau SINC and Winchfawr West SINC

The proposed development site lies immediately adjacent to the SINC and connectivity between the two is good. Ecological linkages are uninterrupted, allowing fauna to migrate between the two freely. The small scale of the proposed development (assuming the ability to connect to existing waste/water lines on site and use existing access roads) is not likely to result in detrimental impacts beyond the boundary of the development site and will not impact connectivity between other sites of ecological value. However, the proposed development may see an increase in visitors to Jah Jireh, who may gain access into the SINC. Whilst such access may be curtailed by the presence of the perimeter fence, dense scrub and main highway, the negative impacts to the surrounding SINC by way of littering, disturbance to present fauna and trampling of flora cannot be ruled out entirely. However, the proposed development, assuming the ability to connect to existing waste/water lines on site and use existing access roads, is not anticipated to have 'significant effects' (IPC, 2011) upon these SINC.

Cwm Ffrwd SINC

The SINC of Cwm Ffrwd is designated for regionally scarce species including beech fern, oak fern, toothwort and stone bramble and several nationally scarce bryophytes and lichens. Small pearl-bordered fritillary occurs on the site, and otters range along the river system. The SINC lies approximately 0.4km away from the proposed development site (at its closest point) and the connectivity between the two is good. Ecological linkages are uninterrupted, allowing fauna to migrate between the two freely. However, the small scale of the proposed development is not likely to result in detrimental impacts beyond the boundary of the development site and will not impact connectivity between other sites of ecological value. The proposed development is therefore not anticipated to have 'significant effects' (IPC, 2011) upon Cwm Ffrwd SINC.

Coed Meurig Pastures SINC

The SINC of Coed Meurig Pastures is designated for its semi-improved acid grassland with areas of marshy grassland and fen meadow. The SINC lies approximately 1km away from the proposed development site (at its closest point) and connectivity between the two is poor due to the presence of main highways which impact fauna migration. Furthermore, the small scale of the proposed development is not likely to result in detrimental impacts beyond the boundary of the development site and will not impact connectivity between other sites of ecological value. The proposed development is therefore not anticipated to impact Coed Meurig Pastures SINC.

4.2. Assessment of Ecological Value of On-site Section 7, LBAP and SINC Habitats

No habitats within the site boundary are currently considered to be Priority Habitats of the UK Biodiversity Action Plan (Biodiversity Reporting & Information Group, 2007) or listed in Section 7 as a 'habitats of principal importance for conservation of biological diversity in Wales' (Environment Wales Act 2016; Wales Biodiversity Partnership, 2016).

4.3. Assessment of Ecological Value of On-site Habitats Which Do Not Qualify as Section 7 LBAP and SINC Habitat

Table 9: Ecological Value of non- Section 7, LBAP and SINC Habitat

On-site Habitat	Assessment of Ecological Value	Assessment of Potential Development Impacts
Dense Scrub (A2.1)	This habitat may provide nesting, foraging, breeding and hibernation habitat for species of bird, mammals and reptiles however, due to it being a common habitat in the local area and being relatively species-poor it has been evaluated as being of site value for ecology.	Given the size and location of the proposed development, an area approximately 60m x 10m is anticipated to be removed. The impacts will be of a low magnitude at a landscape scale but negative and permanent and may impact the aforementioned fauna. As such, mitigation is provided in Section 5, to include allowing new growth to develop under newly planted trees.
Scattered Mixed Trees (A3.3)	This habitat has been evaluated as being of site value for ecology due to it being a common habitat in the local area and being relatively species poor with no veteran trees/features. Whilst no PRF's were sighted, trees may offer nesting potential for birds and habitats for invertebrates.	Given the size and location of the proposed development, scattered trees adjacent to the car park in the eastern section of the site will need to be removed. An area approximately 60m x 20m is anticipated to be affected, resulting in the loss of primarily willow saplings. Several immature and one mature tree will be affected, being a mix of both broadleaved and deciduous. The impacts will be of a low magnitude and not result in the loss of any veteran trees but will be negative and permanent and may impact invertebrates, along with birds and bats which feed upon them, in addition to reducing nesting potential. As such, mitigation is provided in Section 5, to include any remaining scattered tree habitat to be extended by the planting of further trees in order to compensate for the loss of trees as a result of this development.

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On-site Habitat	Assessment of Ecological Value	Assessment of Potential Development Impacts
Semi-Improved Neutral Grassland (B2.2)	This habitat has been evaluated as being of local value for ecology due to the presence of species of local significance. It also contains species indicative of a species-rich habitat and therefore may provide a locally important habitat for protected species of bird, reptiles and mammals. Whilst ground nesting opportunities might be limited due to mowing regime, it cannot be ruled out.	Given the size and location of the proposed development, an area approximately 60m x 20m is anticipated to be affected. This habitat is extensive throughout the survey area and as such, only a small percentage (approximately 7%) of the entire habitat is expected to be lost. The grassland area within the footprint of the proposed development was found to be of a lower species richness than other sections, and locally significant species were not found to be present. Whilst the impacts will be of a low extent and will not affect locally significant flora species, impacts will be negative and permanent and result in the reduction in habitat for fauna species. As such, mitigation is provided in Section 5, to include an area of reduced mowing within the remaining grassland in order to create new habitat and compensate for the loss of habitat.
Tall Ruderal Vegetation (C3.1)	The tall ruderal vegetation within the site has been evaluated as being of site value for ecology due to it being a common habitat in the local area.	Given the size and location of the proposed development, an area approximately 60m x 10m is anticipated to be affected. The impacts will be of a low extent but negative and permanent and may impact foraging, nesting and hibernation opportunities. As such, mitigation is provided in Section 5, to include allowing new growth to develop under newly planted trees.
All Other Habitats	All other habitats within the survey area have been evaluated as being of site value for ecology due to them being common habitats in the local area.	Given the size and location of the proposed development, there are no anticipated development impacts on these habitats.

4.4. Assessment of Impacts of Invasive Species

Assessment of Potential Development Impacts

Himalayan balsam was sighted on site amongst the tall ruderal habitat along the eastern border. While only a small area of Himalayan balsam was recorded on the site, it is highly likely that the Himalayan balsam will become more widespread, and it will undoubtedly continue to spread if left unchecked.

Legislation

Himalayan balsam is listed under Schedule 9 of the Wildlife and Countryside Act (1981), as amended. This act specifically prohibits the reckless or deliberate spreading of this species.

Impact Assessment of Proposed Development

Several key observations are made:

- If left unmanaged, the Himalayan balsam will continue to spread across the site, resulting in a reduction in species richness and biodiversity;
- If not managed correctly, the proposed development may result in the further spread of Himalayan balsam, either through the accidental distribution of soils containing seeds during earthworks and haulage etc., or simply via careless work practices which can accidentally result in spreading of the seeds. Seeds can be easily spread by simply brushing against the plants, triggering the explosive seed pods to eject their seeds;
- It is possible that visitors to the site would (either accidentally or deliberately, although unknowingly) spread the seeds of plants that were in accessible areas of the site. This would make management action more difficult in the long-term;
- The immediate spread of this species must be prevented through the implementation of appropriate mitigation measures; and
- The long-term eradication of Himalayan balsam from the site and ongoing management is essential to preserve the sites biodiversity. While the complete eradication of Himalayan balsam may not be possible, there must be ongoing management action so that plants do not recolonise too much of the site.

4.5. Protected and Notable Species

4.5.1. Birds

Assessment of Ecological Value of Site for Birds

During the visit, the nest of a house sparrow (a Section 7, UK BAP and Red List species) was identified within Building 2. In addition, house martins were spotted foraging overhead (Amber List species) and skylarks (Amber List species) could be heard in the adjacent upland habitat. As such, we can confidently say that, whilst potentially in low numbers, protected birds do make use of the site both for foraging and in some cases, nesting.

The mix of broadleaved, deciduous and sapling through to mature trees on site do provide ample opportunity for tree nesting birds. Habitat on site however, may be restricted for ground nesting birds (skylark etc.) due to regular access/possible disturbance by staff members/residents. In addition, the semi-improved neutral grassland is mown regularly resulting in reduced nesting habitats at times. Existing buildings do offer good nesting opportunities due to the condition of some tiles/soffits/bargeboards. The site is also well connected to adjacent habitats suitable for foraging and nesting by many other protected species, as evidenced by records returned by SeWBREC (see Section 3.4.2).

Legislation

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.

Impact Assessment of Proposed Development on Birds

Given the size and location of the proposed development, there will be anticipated development impacts on these species. Whilst no existing buildings will be affected by the proposed works, trees and grassland, which may offer nesting potential, will be removed in addition to foraging habitat.

The impacts will be of a low extent but negative and permanent. As such, mitigation is provided in Section 5, to include compensatory measures of planting new trees and enhancement of existing grassland in order to replace lost potential nesting habitat.

4.5.2. Bats

The preliminary roost assessment found no evidence of bats roosting within the buildings and no incidental sightings occurred. A summary of the assessment is provided in Table 8. Bats often roost in inaccessible parts of a building (e.g. inside walls/hidden within roof structures) and therefore, an absence of direct evidence of bats does not assume bats²¹, or their roosts to be absent.

Table 10: Preliminary Roost Assessment Summary

Number	Building	Potential Roost Features	Roost Suitability
1	Combined residential unit and Kingdom Hall	A slipped roof tile, missing ridge tile, warped/missing soffit boards and small voids at the end of plastic trims, offering roosting potential and access points, were present.	Moderate
2	Staff bungalow	Broken and slipped tiles, warped soffit boards and a void in the barge boards present roost and access opportunities.	Moderate
3	Staff bungalow	A broken tile and warped soffit boards may provide suitable roost features and access points.	Moderate
4	Static Home	Low suitability is provided by way of visible voids found only in close proximity to the ground (approximately 1m).	Low
5	Garages	Small gaps running behind the fascia boards and metal trim along the full length may provide roost features and access points.	Moderate
6	Wooden Storage shed	Access points and roost opportunities are provided by way of small gaps running along the length of the gable ends	Moderate

²¹ There is limited research on where pipistrelle bats hibernate but current evidence suggests that they may hibernate adjacent to their breeding roosts in secure locations such as cavity walls that have relatively stable temperatures. Other individuals disperse to roost in small numbers in more exposed locations such as around window frames. In exposed locations pipistrelle bats typically hibernate as one or two individuals. Often there are often no obvious external signs of their presence (JNCC, 2004). Because of the highly-exposed location of hibernation sites used by some individuals, it is therefore very difficult to completely rule out hibernation use by this species in almost any building that has some very shallow crevices, openings or gaps.

Assessment of Ecological Value of Site for Bats

Habitats may provide moderate potential suitability and moderate value for use by foraging and commuting bats due to the presence of scattered trees, tall ruderal vegetation, scrub and semi-improved neutral grassland all of which support invertebrates and contribute to connectivity between the survey area and the woodland adjacent to the western boundary. No trees have been assessed as having potential to support roosting bats.

Legislation

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 and Planning (various amendments) (England and Wales) Regulations 2018. 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.

All bat species occurring in Merthyr Tydfil County Borough Council are also included in the Merthyr Tydfil County Borough Council LBAP, with suitable habitat creation for these species a priority.

In addition, the Merthyr Tydfil LBAP aims to "encourage 'bat friendly' additions to new developments, such as bat bricks and boxes, and to include foraging habitat and connectivity within landscaping projects. Examples of such actions include; creation of new roosting opportunities, maintain dark areas and install bat boxes".

Impact Assessment of Proposed Development on Bats

Given the size and location of the proposed development, whilst no existing buildings will be affected by the proposed works, there is an anticipated development impact on these species. The primary impact will be possible disturbance to commuting and/or foraging bats due to the removal of a relatively small area of semi-improved neutral grassland, scattered trees and tall ruderal vegetation which might provide habitat for invertebrates. All such habitats are present throughout the survey area. The impacts will be of a low extent but negative and permanent. As such, mitigation is provided in Section 5, to include incorporation of bat bricks into the proposed building and enhancement of existing grassland to improve habitat for invertebrates.

4.5.3. Reptiles

Assessment of Ecological Value of Site for Reptiles

After the completion of reptile surveys on site there was evidence of a medium population of common lizards on site. They were recorded to the north and north-east of the site, these areas of the site are connected to surrounding habitat, on the northern, western and eastern boundaries, providing good connectivity for the reptile population to a broader highly suitable habitat.

Legislation

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

Impact Assessment of Proposed Development on Reptiles

Given the size and location of the proposed development, there is an anticipated development impact on this species. There will be possible disturbance to foraging, basking, egg-laying and hibernation opportunities due to the removal of a relatively small area of semi-improved neutral grassland, scattered trees and tall ruderal vegetation. Clearance of such vegetation may also result in the accidental killing or injury of reptiles. There were no recordings of reptiles in the majority of the development footprint, this is considered to be due to the shaded nature of the south eastern area of the site.

The impacts will equate to a medium negative impact and will be permanent. The site was assessed to be in use by a medium/good population of common reptiles, with a combination of both adults and juveniles found. No other reptiles were found on site. The proposed works, in the absence of mitigation, will remove reptile suitable habitat and potentially injure/kill reptiles on site. Therefore, there would be a medium negative impact on the population. As such, mitigation is provided in Section 5, to include enhancement of existing grassland to improve habitat for reptiles.

Table 11: Impact level of proposed development on reptiles

Impact on Population	Typical Effects on Reptiles and Their Habitats
Negatively: Negligible	• Minor disturbance to individual reptiles • Minor loss or damage to broad habitat
Negative: low	• Killing of small proportion of population • Fragmentation minimally affecting dispersal • Moderate damage of broad habitat • Introduction of minimal decline factors
Negative: medium	• Killing of a moderate proportion of population • Fragmentation moderately affecting dispersal

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	• Minor damage to key habitat feature • Moderate loss of broad habitat • Introduction of moderate decline factor
Negative: high	• Killing of high proportion of population • Fragmentation seriously affecting dispersal • Loss of key habitat feature • Major loss of broad habitat • Introduction of serious decline factor

5. Required Actions

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 Environment (Wales) Act 2016, Planning Policy Wales version 10 (Welsh Government, 2018²², 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 and help 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. The Environment (Wales) Act 2016, Planning Policy Wales version 10 (Welsh Government, 2018) stipulate that developments must provide net benefit for Biodiversity.

5.1. Additional Information to be Dealt with as Planning Conditions

The following information will be required, but it has been agreed that this information will be made a condition of planning if granted.

- A 5-year Landscape and Ecology Management Plan based on the mitigation, compensation and enhancement measures as set out within the report will be required to be submitted and approved in writing by the LPA ecologist and landscape architect.
- A specialist INNS (Invasive Non-Native Species) contractor will be commissioned to provide a method statement and management plan dealing with the onsite Himalayan Balsam. This document will be submitted and approved in writing by the LPA landscape architect.

5.2. Sustainable Drainage Systems (SuDS)

As of 7th January 2019, all construction work in Wales with drainage implications, of 100m² or more, is now required to have Sustainable Drainage Systems (SuDS) to manage on-site surface water (whether they require planning permission or not). These SuDS must be designed and constructed in accordance with the Welsh Government Standards for Sustainable Drainage.

5.3. Reptiles

Details of a reptile mitigation strategy are included within Appendix 7.

5.4. Sensitive Lighting strategy

It is currently unknown whether additional external lighting is to be provided post-development. Nevertheless, external lighting will be absent from the northern direction and elevation of

²² 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.

the proposed new block thus creating a 'dark corridor' to avoid causing disturbance to roosting bats that commute to and from the building. The exact models of lighting are yet to be finalised.

The lighting design for the site will be of a 'bat-friendly' specification, comply with the Institute for Lighting Processional's and Bat Conservation Trust's guidance (2018) and kept to the minimum level which meets the needs of security and health and safety. The unnecessary lighting of habitats which could potentially be used by foraging bats such as nearby trees, hedgerows etc. will be avoided.

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. Lighting will not be located in the vicinity of, or shine towards, the bat access points or possible/actual commuting routes and flight lines, thus maintaining a 'dark corridor' and avoiding/minimising disturbance to roosting bats. Security lights used will operate off a passive infrared (PIR) motion sensor sensitive to large objects only, to avoid constant triggers by bat passes and with timers set on a short duration (i.e. a maximum 'on' time of one minute) to reduce the amount of 'lit time'. The 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 green² 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 approved lighting will be shown in Appendix 8 and 9.

Internal Lighting

Ideally, internal lights installed in proximity to windows will be recessed (as opposed to pedant fittings) to reduce glare and light spill. Lights should be installed above the window head height where possible and luminaires should be set back further into the room.

5.5. Compensation and Enhancement Measures

A mitigation plan is shown in Plan 7.

On completion of the reptile survey, more specific biodiversity enhancements can be finalised, including:

- Bird and bat boxes to be incorporated into the building. One house sparrow terrace will be fitted onto the building's exterior walls on the northern gable end of the proposed building (location shown in plan 7 and specification within Appendix 10);
- The installation of one Schwegler 1FR bat box on each gable end of the building or two on one gable end (see Plan 7 and appendix 12). Additionally, two 2F Schwegler bat boxes fitted onto the retained trees behind the proposed development (location shown in plan 7 and specification within Appendix 11);

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- Incorporation of a native species-rich hedgerow, including species such as hawthorn (*Crataegus monogyna*), running along the southern elevations of the new build and perhaps joining up to the existing windbreak trees and shrubs adjacent to the car park. In addition to creating a new habitat in its own right, a fruiting hedgerow would provide autumn/winter food for frugivorous birds and mammals;
- An area of scattered trees, dense scrub and tall ruderal vegetation is set for clearance for the proposed development. As such, it is suggested that an area of broadleaved trees to the east and north/east of the proposed development either be left in-situ where possible or replaced with new trees. In addition, allowing decaying wood/logs, scrub and tall vegetation to develop within the understorey would allow for a habitat for foraging, breeding and hibernating mammals, reptiles and birds. It is suggested that the decaying wood/logs be provided by the trees that are set to be cut down to make way for the proposed development;
- At present, the proposed building plans do not impact the grassland in the centre of the site (where the static home currently resides). It is therefore suggested that a section be left as a restricted mowing area whereby current vegetation is mown only once or twice annually, after flowering, with cuttings taken off-site in order to reduce nutrient levels, with no application of fertiliser/herbicides/insecticides etc. This may create a meadow habitat and allow for a wildlife 'haven' area in-situ and reduce the impact upon species which might currently use the grassland set for clearance for the proposed development. A mown pathway through the grassland will help to achieve a well-kept appearance and also provide a pleasant route for residents and staff to enjoy; and
- Being fortunate to have a sizeable area of land, the creation of a new wildlife friendly pond, with a sloped bank to allow easy access/exit for fauna, may be feasible and will not only serve to create a new habitat for amphibians and invertebrates but will also create a new focal point for residents and staff. One suitable site may be to the north of the existing stand of trees adjacent to the car park, as this will aid access by fauna from the surrounding habitats. Given the proximity to the home, safety fencing around the pond may also be an option.

Enhancement Measure Schedule (Combined Annual and Five-Year Plan)

Due to the relative simplicity of works proposed on the site the annual and five year plans have been combined.

Enhancements	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Enhancement Measure 1: Bird and Bat boxes												
Installation of bird and bat boxes (Year 1)	<i>Can be done at any time during the construction phase</i>											
Monitoring of Bird and Bat boxes (annually)	<i>Monitoring can take place all year round ²³</i>											

²³ Bat boxes should not physically be checked by non-licensed personnel

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Management of bird and bat boxes (annually)	Monitored and replaced (if necessary)	Monitored but only replaced (if required) outside of bird breeding season / active bat season.	Monitored and replaced (if necessary)
Enhancement Measure 2: Hedgerow creation and establishment			
Planting of New Hedgerow (Year 1)			
Trimming of Hedgerow (Year 1)			
Cutting of Hedgerow (Year 2 and 3)		No cutting during nesting bird season	
Planting (if required) in gaps of hedgerow (every 2-3 years)			
Enhancement Measure 3: Pond Management			
Monitoring of pond for a range of features (Habitat Suitability, Index Assessment, presence of invasive, alien species (for example levels of silt, vegetation cover, fish presence, water retention) (Years 1-5)			
Removal of emergent vegetation ¹ (Years 1 to 5 as required, likely to be required 1 year in 4/5)			
Repair to pond liner ² (Years 1-5 as required)		Works from the period February to July inclusive will be avoided. If the pond has completely dried up works could be carried out during the spring/summer.	
Enhancement Measure 4: Pond Creation			
Pond creation (Year 1)			
Installation of butyl liner if required (Year 2)			
Planting of Aquatic Plants (Year 5 if required)			

Enhancement Measure 5: Creation of Hibernacula			
Creation of hibernacula (Year 1)			
Repairs to hibernacula as required (Years 2-5)			
Replacement of hibernacula (Year 5 if required)			
Enhancement Measure 6: Monitoring			
Monitoring of Pond Conditions and Implemented Works (Year 1,3 and 5)			

5.6. Longevity of Report

If development works do not begin within eighteen months of the date of this report, an update survey is likely to be required in accordance with guidance from BS 42020:2013²⁴, to determine if conditions have changed since those described in this report.

²⁴ 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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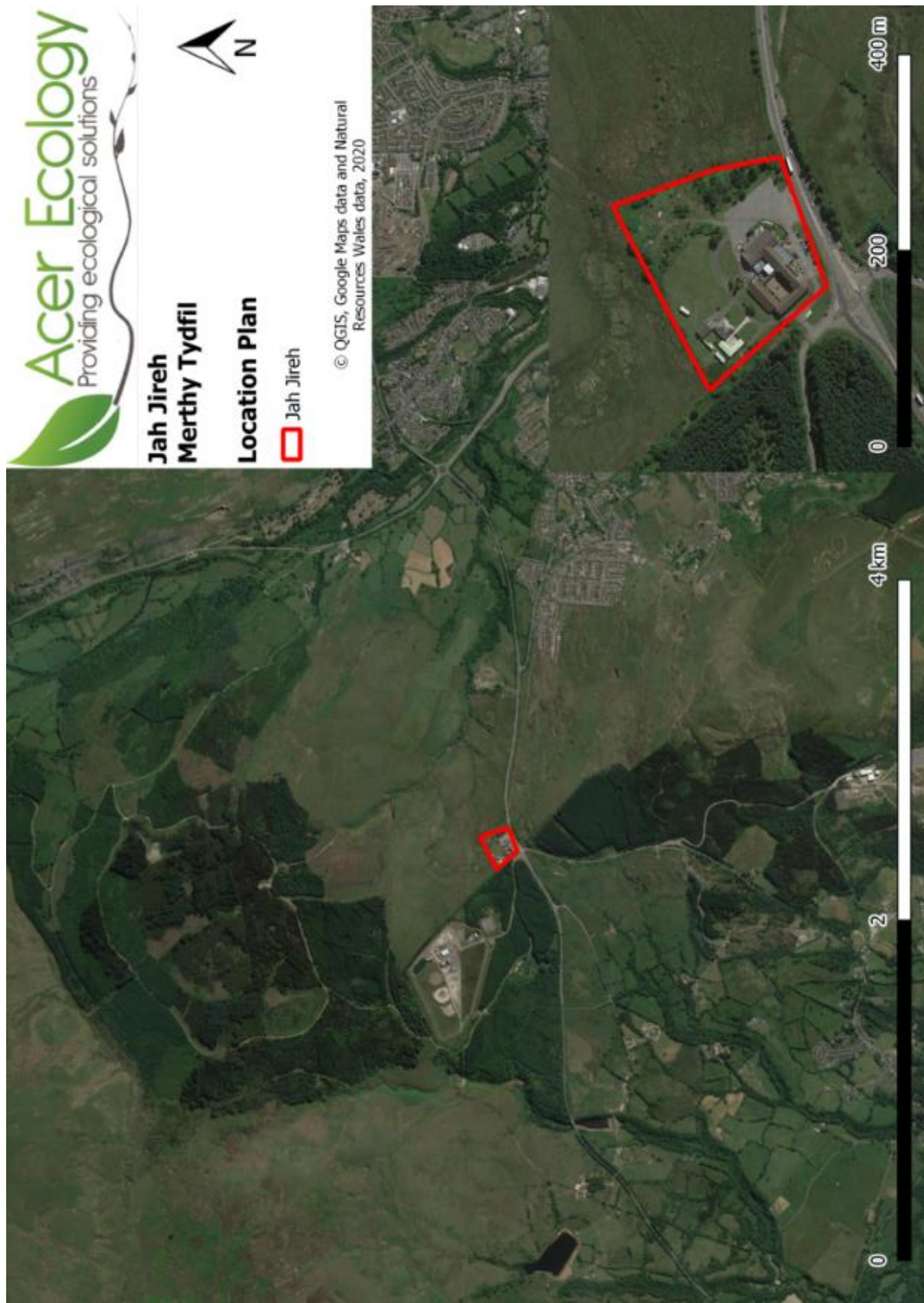
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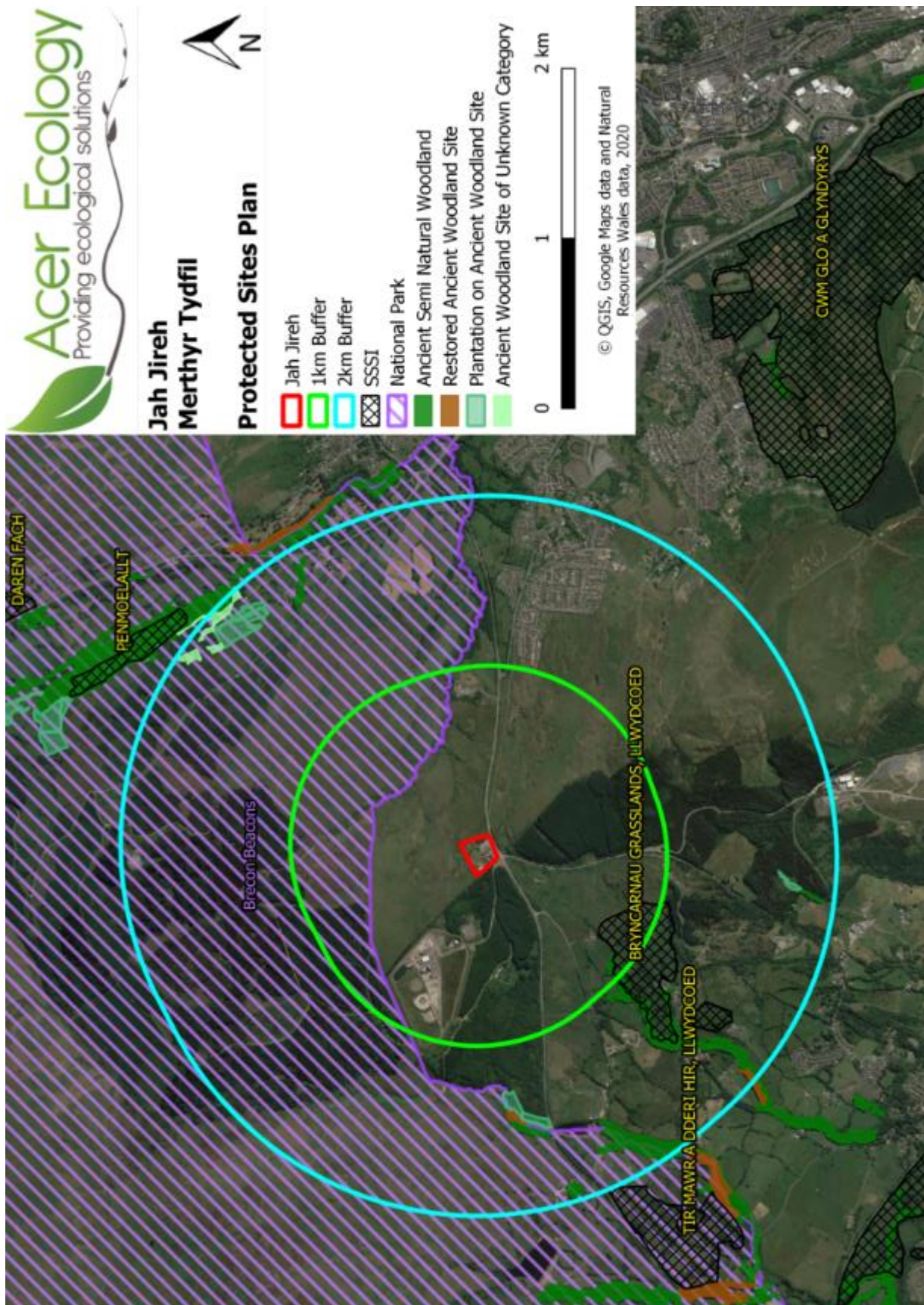
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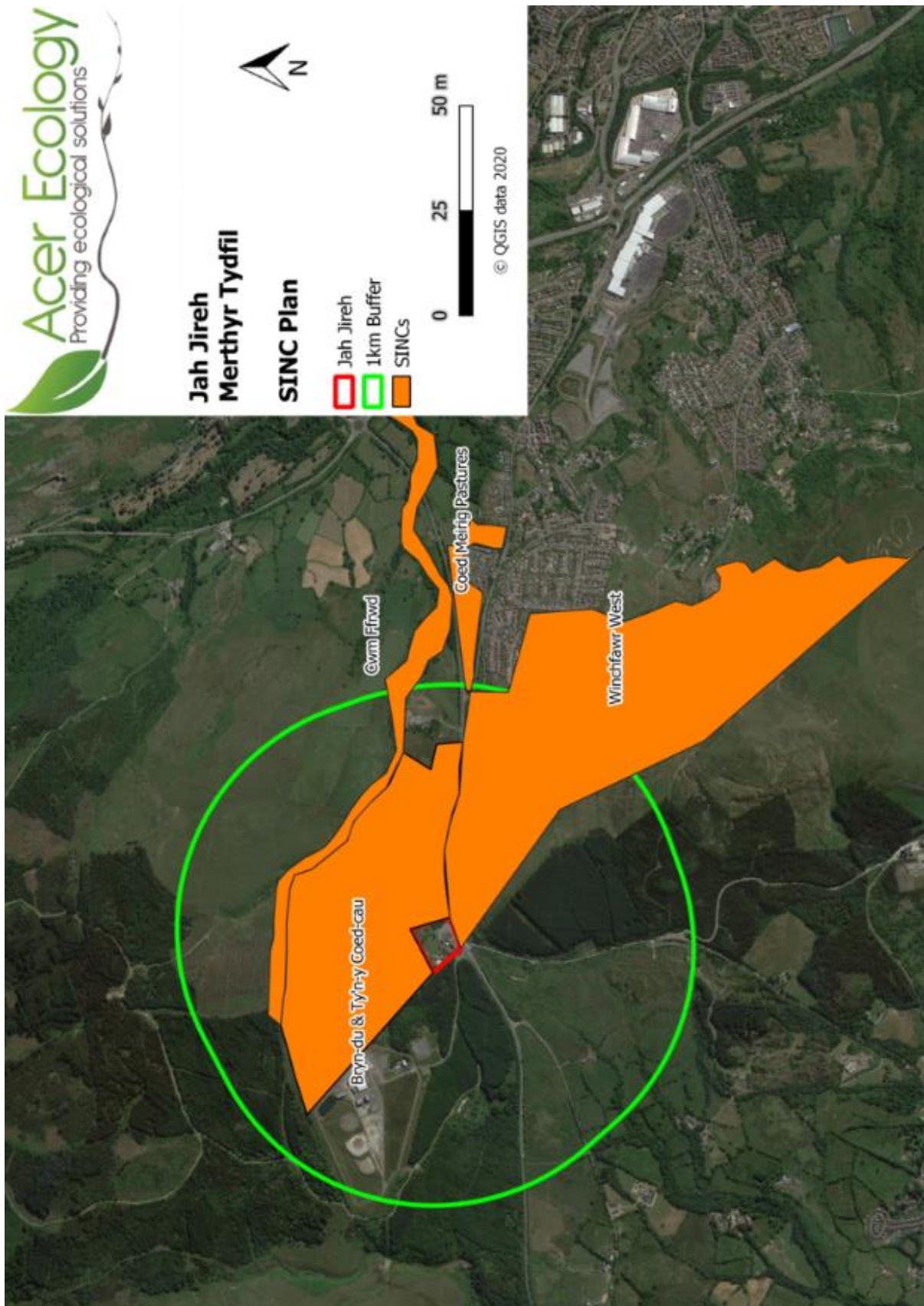
Plan 1: Location Plan



Plan 2: Protected Sites Plan



Plan 3: Site Location and SINCS (2km Buffer)



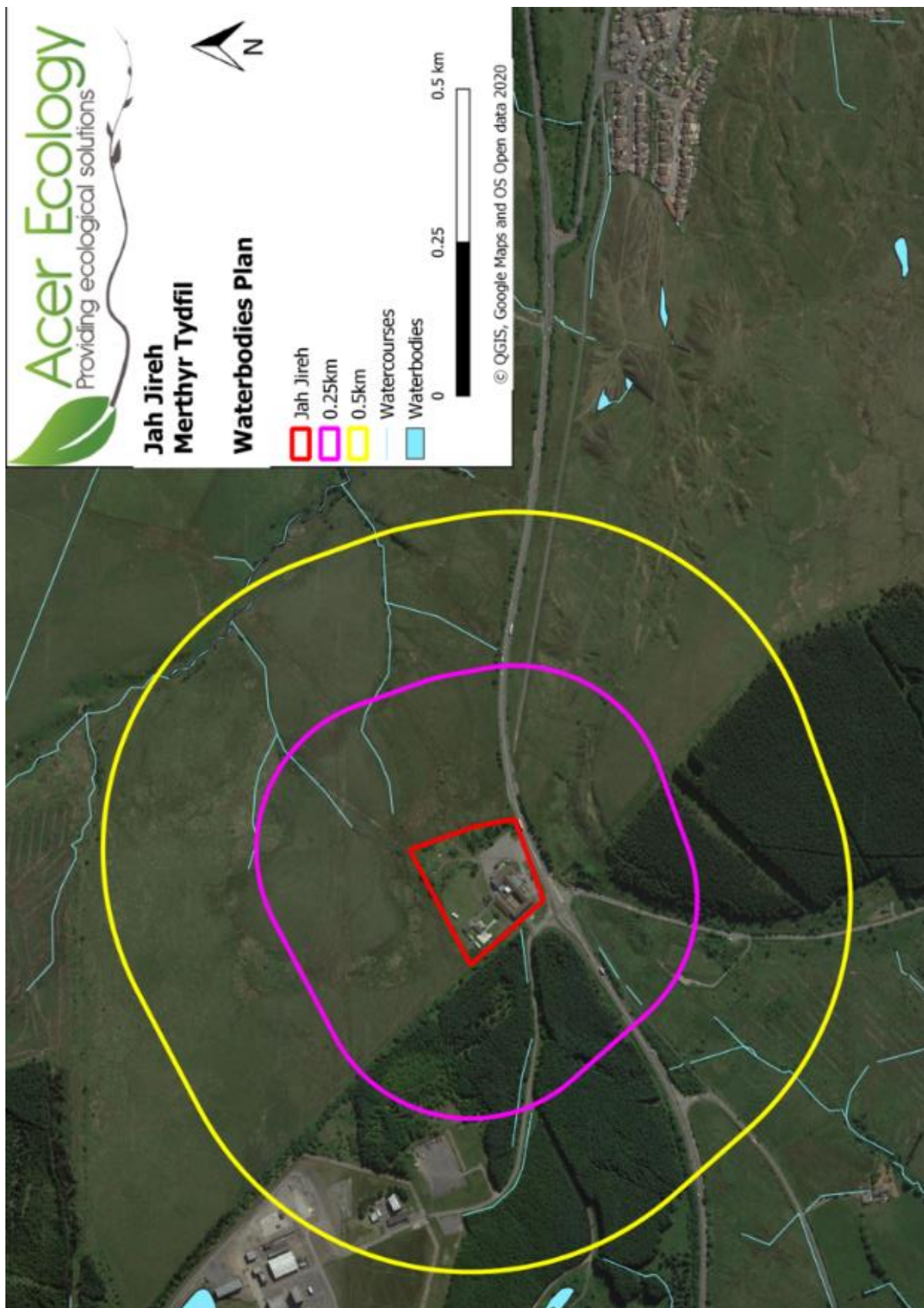
Plan 3: Habitats and Vegetation



Plan 4: Location of Buildings



Plan 5: Location of Water Bodies within 0.5km of Site



Plan 7: Mitigation Plan



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

SSSIs

SSSIs are important as they support plants and animals that find it difficult to survive elsewhere in the countryside, and they represent the country's best wildlife and geological sites. SSSIs are legally protected under the Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act 2000 and the Natural Environment and Rural Communities Act 2006, and are of national (second tier) biodiversity significance and form the essential building blocks of the United Kingdom's protected areas for nature conservation. Many are also designated as Natura sites i.e. internationally (first tier) designated sites. It is an offence for any person to intentionally or recklessly damage the protected natural features of a SSSI.

National Parks

National Parks are designated for their aesthetic and recreational value as opposed to wildlife value, however, they often contain habitats of high ecological value also. The site lies adjacent to the Brecon Beacons National Park. The proposed development is considered unlikely to adversely impact the the national park.

SINCs

SINCs are one of 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* (2016) and *Technical Advice Note (Wales) 5: Nature Conservation & Planning*.

In Merthyr Tydfil County Borough, SINCs are also afforded protection under Policy BW5 & AS6 of the Merthyr Tydfil Local Development Plan.

ASNW and Woodland

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

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The Welsh Assembly has recognised that areas of ancient woodland are declining and becoming increasingly fragmented and emphasises the importance of conserving ancient woodland and its value as a biodiversity resource through the publication of Planning Policy Wales (2016). Furthermore, the UK Biodiversity Action Plan (UKBAP) includes objectives to conserve, and, where practicable, enhance: the quality and range of wildlife habitats and ecosystems; the overall populations and natural ranges of native species; internationally important and threatened species, habitats and ecosystems; species, habitats and natural and managed ecosystems characteristic of local areas; and biodiversity of natural and semi-natural habitats where this has been diminished over recent decades.

Paragraph 5.2.9: "Trees, woodlands and hedgerows are of great importance, both as wildlife habitats and in terms of their contribution to landscape character and beauty. They also play a role in tackling climate change by trapping carbon and can provide a sustainable energy source. Local planning authorities should seek to protect trees, groups of trees and areas of woodland where they have natural heritage value or contribute to the character or amenity of a particular locality. Ancient and semi-natural woodlands are irreplaceable habitats of high biodiversity value which should be protected from development that would result in significant damage."

Paragraph 5.2.10: "Local planning authorities should, as appropriate, make full use of their powers to protect and plant trees to maintain and improve the appearance of the countryside and built up areas."

Environment (Wales) Act 2016

The Environment (Wales) Act 2016 dictates that Local authorities have a duty to have regard to the conservation of biodiversity in exercising their functions. The duty affects all public authorities and aims to raise the profile and visibility of biodiversity, to clarify existing commitments relating to biodiversity, and to make it a natural and integral part of policy and decision making. Part 1 Section 7 of the Act provides a list of the living organisms of principal importance for maintaining and enhancing biodiversity in Wales.

National Planning Policy Wales (2018)

<https://gov.wales/sites/default/files/publications/2018-12/planning-policy-wales-edition-10.pdf>

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Appendix 3: Species Recorded

All species recorded by Acer Ecology, 2020

Species	Common name	W	LM	CG	LDA	PMR	PIL	TF	Status
Herbaceous plants									
<i>Achillea millefolium</i>	Yarrow								
<i>Agrostis stolonifera</i>	Creeping bent								
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass								
<i>Aquilegia</i> sp.	Garden columbine								
<i>Arrhenatherum elatius</i>	False oat-grass								
<i>Bellis perennis</i>	Daisy								
<i>Cardamine pratensis</i>	Cuckooflower		LM			PMR			
<i>Carex flacca</i>	Glaucous sedge		LM	CG		PMR			
<i>Centaurea nigra</i>	Common knapweed		LM	CG					
<i>Cerastium fontanum</i>	Common mouse-ear								
<i>Cerastium glomeratum</i>	Sticky mouse-ear								
<i>Cirsium dissectum</i>	Meadow thistle		LM		LDA	PMR			
<i>Cynosurus cristatus</i>	Crested dog's-tail								
<i>Dactylis glomerata</i>	Cock's-foot								
<i>Dactylorhiza fuchsii</i>	Common spotted-orchid		LM			PMR			
<i>Dactylorhiza praetermissa</i>	Southern marsh orchid		LM			PMR			
<i>Epilobium</i> sp.	Willowherb species								
<i>Equisetum arvense</i>	Field horsetail								
<i>Festuca rubra</i>	Red fescue								
<i>Impatiens glandulifera</i>	Himalayan balsam								Alien
<i>Iris pseudacorus</i>	Yellow flag-iris					PMR			
<i>Juncus effusus</i>	Soft rush								
<i>Juncus inflexus</i>	Hard rush								
<i>Leucanthemum vulgare</i>	Ox-eye daisy		LM						
<i>Lolium perenne</i>	Perennial rye-grass								
<i>Lotus corniculatus</i>	Common bird's-foot-trefoil		LM	CG			PIL		
<i>Pilosella aurantiaca</i>	fox-and-cubs								
<i>Plantago lanceolata</i>	Ribwort plantain								
<i>Poa annua</i>	Annual meadow-grass								
<i>Poa pratensis</i>	Smooth meadow-grass								
<i>Potentilla anserina</i>	Silverweed								
<i>Potentilla reptans</i>	Creeping cinquefoil								
<i>Prunella vulgaris</i>	Self-heal								
<i>Ranunculus acris</i>	Meadow buttercup								
<i>Ranunculus repens</i>	Creeping buttercup								

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<i>Rumex acetosa</i>	Common sorrel						PIL		
<i>Rumex crispus</i>	Curled dock								
<i>Senecio jacobaea</i>	Common ragwort								
<i>Taraxacum officinale</i> agg.	Dandelion								
<i>Trifolium dubium</i>	Lesser trefoil								
<i>Trifolium pratense</i>	Red clover		LM						
<i>Trifolium repens</i>	White clover								
<i>Urtica dioica</i>	Common nettle								
<i>Veronica arvensis</i>	Wall speedwell			CG					
<i>Veronica chamaedrys</i>	Germander speedwell								
<i>Vicia sativa</i>	Common vetch								
Trees and Shrubs									
<i>Acer pseudoplatanus</i>	Sycamore								Alien
<i>Aesculus hippocastanum</i>	Horse chestnut								Alien
<i>Alnus glutinosa</i>	Common alder								
<i>Fagus sylvatica</i>	Beech								
<i>Lonicera maigræna</i>	Honesysuckle								
<i>Pinus</i> sp	Pine sp								
<i>Rosa canina</i> agg	Dog-rose								
<i>Salix</i> spp.	Willow sp								
'Habitat Indicator Species' Totals (Wales Biodiversity Partnership 2008²⁵)		0	9	4	1	6	2	0	
		W	LM	CG	LDA	PMR	PIL	TF	

Key to Indicator Species (Wales Biodiversity Partnership 2008²⁶)

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 grasslands, 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.

Appendix 4: Definitions of Site Value

²⁵ Wales Biodiversity Partnership (2008) Wildlife Sites Guidance Wales: A Guide to Develop Local Wildlife Systems in Wales. Wales Biodiversity Partnership/Welsh Assembly Government.

International Value

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

National Value

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

Regional Value

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

County Value/District Value

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

High Local

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

Local Value

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

Site Value (within the immediate zone of influence)

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

Negligible

No apparent nature conservation value.

Appendix 5: Guidelines for Assessing Potential Suitability of Building and Proposed Development Site for Bats

Suitability	Description of Roosting Habitat	Commuting and Foraging Habitat
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting and foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection appropriate conditions²⁷ and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity) or hibernation²⁸. A tree of sufficient size and age to contain PRFs but with none seen from the ground²⁹.	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only) the assessments in this table are made irrespective of conservation status, which is established after presence is confirmed.	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

²⁷ For example, in terms of temperature, humidity, height above ground levels, light levels or levels of disturbance.

²⁸ Evidence from the Netherlands, shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten *et al.*, 2015). This phenomenon requires some research in the UK but ecologists should be aware of the potential for large numbers of this species to be present during the autumn and winter in large buildings in highly urbanised environments.

²⁹ This system of categorisation aligns with BS 8596:2015 Surveying for bats in trees and woodland (BSI, 2015).

Appendix 6: Bat Survey Protocol for Trees Affected by Arboricultural Work

The trees were assigned to the following categories:

Suitability	Commuting and Foraging Habitat
Negligible	Negligible habitat features on-site likely to be used by commuting and foraging bats.
Low	<u>Commuting Habitat</u> Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. <u>Foraging Habitat</u> 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	<u>Commuting Habitat</u> Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. <u>Foraging Habitat</u> Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	<u>Commuting Habitat</u> Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. <u>Foraging Habitat</u> 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. <u>Proximity to Known Bat Roosts</u> Site is close to and connected to known roosts.
Suitability	Description of Roosting Habitat
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection appropriate conditions ³⁰ and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity) or hibernation ³¹ .
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status ³² (with respect to roost type only) the assessments in this table are made irrespective of conservation status, which is established after presence is confirmed.
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 and surrounding habitat.

³⁰ For example, in terms of temperature, humidity, height above ground levels, light levels or levels of disturbance.

³¹ Evidence from the Netherlands, shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten *et al.*, 2015). This phenomenon requires some research in the UK but ecologists should be aware of the potential for large numbers of this species to be present during the autumn and winter in large buildings in highly urbanised environments.

³² 'High roost status' is not defined within Collins, 2016. Acer Ecology Ltd. interpret maternity, hibernation, swarming sites, mating sites, and satellite roosts as being of 'high roost status' and exclude day roosts, night roosts, feeding roosts, transitional/occasional roosts from this definition.

Appendix 7: Mitigation Measures for Reptiles

Species Deterrence and Displacement Measures

Timing of Works

The grassland within the development footprint will be cleared during the active reptile season (i.e. between March to October inclusive, when reptiles are not in hibernation during the winter months).

Site Induction/Toolbox Talk

Clearance and construction personnel will be briefed by the suitably qualified ecologist about the confirmed presence of reptiles on the site and the necessary course of action if any reptile is encountered.

Vegetation Clearance Within the Development Footprint

Clearance and construction personnel will be briefed as to the possible presence of reptiles on the site and the necessary course of action if any reptile is encountered i.e. stopping clearance works and allowing the reptile to migrate voluntarily away into the retained habitat. An appropriately qualified ecologist will be present on site to supervise the clearance works.

Clearance of vegetation will involve species deterrence and displacement measures ahead of other site work. This will be undertaken to encourage and compel individual reptiles that may be present in the works area to migrate away voluntarily from the works area and into the adjoining areas not subject to the works. Appropriate measures will include the following:

- Clearance of the site will be undertaken in a piecemeal fashion, the main clearance of site will commence from the west (directly adjacent to the carpark) and proceed eastwards, slowly working across the development footprint (i.e. clearance will occur towards the retained areas of habitat). Clearance will be spread over several hours to allow reptiles time to disperse out of the immediate works area into safe habitats at the site periphery;
- Taller vegetation in the areas to be cleared will initially be strimmed or brush cut to a height of no less than 15cm and raked away so as to reduce its attractiveness for amphibians and other wildlife and as to not act as a refuge within the development footprint. This will be undertaken 24 hours in advance of the clearance work. Strimmed vegetation will be raked to the edge of the works area. Any reptiles (or other wildlife encountered) will be allowed to vacate the works area voluntarily, or will be carefully collected and removed to safety;
- Immediately prior to the commencement of other site works (i.e. 24-48 hours ahead), the area to be cleared will be strimmed a second time, cutting the vegetation to 5cm with the cut vegetation again being raked away. A suitably qualified ecologist will supervise the second cut before works can commence;

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- Raked or cut vegetation will either be removed entirely from the site or piled in areas which will not be affected, i.e. the retained habitat, as the piles may otherwise act as a focus for refuge by displaced fauna; and
- The services of an appropriately qualified reptile consultant will be available on an 'on-call' basis at all stages of the future works to deal with any unexpected encounters with reptiles or other wildlife.

Building Compounds and Storage Areas

Building compounds and storage areas will not be sited on areas of habitat which are to be retained. Similarly, no equipment, machinery or materials will be brought into the areas of retained habitat. Building compounds and storage areas will be sited on existing areas of hard standing.

Habitat Enhancement of the Remaining Site

An area on the site will be set aside and continually managed as reptile habitat. This area is shown on Plan 2, where the majority of the most optimal reptile habitat is situated. The area is already well connected to the surrounding countryside, and therefore suited to encouraging continued reptile migration to and from the site. As this area already contains a moderate reptile population, no significant changes in management are recommended. However, further recommendations are set out below.

Grassland Management

The areas semi-improved grassland (see Acer Ecology's PEA report for the site) will be mown in autumn, as this timing allows plants to flower and set seed which will not only increase the floristic diversity of the site, but will also benefit invertebrates that require nectar sources and roosting locations during spring and summer. Ideally, the sward will be cut to a height of about 8 to 10cm.

The majority of the semi-improved grassland on the site will be mown once or twice annually, after flowering, with cuttings taken off-site in order to reduce nutrient levels, with no application of fertiliser/herbicides/insecticides etc. This will create a meadow and reduce the impact upon species which might currently use the grassland set for clearance for the proposed development.

Artificial Hibernacula

Four artificial hibernacula will be created within the retained habitats, in parts of the site which are most attractive to reptiles. The hibernacula will be created prior to the clearance works.

The hibernacula will measure approximately 4m in length, 2m in width and 1m in height. They will comprise bricks, stone and/or timber. The banks will run from east to west. The southern side of the banks will be finished with topsoil and left to re-seed naturally. The northern side will be left with the rubble exposed to allow reptiles to enter cavities within the bank. The artificial bank should be situated to maintain connectivity between habitats that remain on site. This enhancement measure will be implemented within the proposed enhancement site prior to the commencement of the development and will be suitably checked by an

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ecologist to ensure the quality and installation of the hibernacula are suitable. Confirmation that the hibernacula were installed correctly on site will be forwarded to the Local Planning Authority ecologist.

Future Development

Ideally, the remaining habitat outside of the current development footprint will not be subject to further development. Any future development proposals will need to be very carefully considered with regards to reptiles, to update the population size estimate, and to inform a suitable mitigation strategy.

Appendix 8: 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.kichler.com/kichler/products/outdoor-lighting/outdoor-wall-lights/outdoor-wall-lights-no-arms/outdoor-wall-1lt-led-azt/
	Lighting sourced from https://www.kichler.com/kichler/products/outdoor-lighting/outdoor-wall-lights/outdoor-wall-lights-no-arms/3000-k-led-outdoor-lantern-bkt/
	Light fitting sourced from https://hammertonstudio.com/products/arch-sconce-24-h/
	Lighting sourced from https://www.darksky.org/our-work/lighting/lighting-for-industry/fsa/fsa-products/#!/Aged-Bronze-Bell-Shaped-Dark-Sky-Outdoor-Wall-Lantern/p/116556105/category=12541418
	Lighting sourced from https://www.homedepot.com/p/Home-Decorators-Collection-1-Light-Champagne-Silver-Outdoor-Wall-Mount-Barn-Lantern-Sconce-22999/302006431
	Lighting sourced from https://www.darksky.org/our-work/lighting/lighting-for-industry/fsa/fsa-products/#!/Bronze-Outdoor-LED-Wall-Lantern-Sconce/p/50117847/category=12541418
	Lighting sourced from http://www.theopenboxshop.com/hampton-bay-lexington-collection-outdoor-rustic-bronze-led-medium-wall-lantern/

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

Appendix 9: Examples of Suitable Bollard Lighting

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

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	BEGA	77237	Cast aluminium, LED 300k, directs beam downwards. For more details, visit: https://www.bega.com/en/products/led-garden-and-pathway-luminaires-for-the-private-sector-77237/
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A tool for finding 'bat-friendly' lighting is available at
<https://www.darksky.org/our-work/lighting/lighting-for-industry/fsa/fsa-products/>

Appendix 10: House Sparrow Nest Box

Schwegler 1SP Sparrow Terrace

Sparrows are gregarious and prefer to nest close to each other, so this triple-nest box provides room for three families under one roof. It's made from long-lasting, breathable woodcrete to provide the optimum environment for sparrows to nest and rear their chicks.



Positioning: On buildings of all kinds in typical habitats including industrial buildings and barns at a height of at least 2m (e.g. under eaves).

Suitable for: House and tree sparrows and individual redstarts

Material: Woodcrete PLUS

Height: 240mm

Width: 430mm

Depth: 220mm

Weight: 15kg

Brood chamber dimensions: Height: 16cm, Width: 10.5cm, Depth: 15cm,

External dimensions: Height: 24.5cm, Width: 43cm, Depth: 20cm, Weight: 15kg

Habibat Terraced Sparrow Box



Colour: Unfaced or rendered

Dimensions: 440mm x 215mm x 150mm

The Habibat Terraced Sparrow Box is a solid box made of insulating concrete which provides an internal roost space, and can be seamlessly integrated into the fabric of a building as it is built or renovated. The access hole is specifically design to accommodate sparrows.

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The Habibat Terraced Sparrow Box can be faced with a number of products to suit the design build. This includes, brick, block, stone, wood or a rendered finish, ensuring the box is unobtrusive and aesthetically pleasing.

Appendix 11: Schwegler 2F Bat Box



Schwegler 2F General Bat Box

The Schwegler 2F General Bat Box is the standard and most popular bat box. Ideal for summer roosts and is constructed of woodcrete, providing a breathable, stable temperature within and is suitable for long-term mitigation projects.

Position: Ideal for trees, should be mounted on tree trunks at a height of 3m – 6m. Can be positioned in clusters of three, with each box facing west through a south-eastern aspect to provide a variety of micro habitats.

Height: 33cm.

Diameter: 16cm.

Weight: 4kg.

Selection of Trees

Selected trees should ideally be a minimum of 500mm diameter at the height of fixing. Trees should not be obviously unstable or badly rotted. The timber and bark at the point of fixing should be sound.

Position of Boxes on Trees

Boxes should be mounted on tree trunks, rather than on boughs or branches. The mounting location should not be heavily shaded. Boxes should be mounted vertically on the tree.

Bat boxes should be mounted a minimum of 3m from the ground, and ideally placed in clusters of three.

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The entrance to the box should be clear of obstructions and obstacles in the flight-path towards it. An 'open airspace' of about 3m square should be preserved in front of and below the entrance, and elsewhere any overhanging branches should be at least 1m away.

The mounting location should be readily and safely accessible by ladder, but not accessible by someone climbing up the trunk or onto an adjacent tree or wall etc.

Some lower branches may need to be trimmed below the box to remove ready handholds or footholds for would-be tree-climbers (as well as any small branches crowding the entrance).

As far as possible, boxes should be placed in locations which are not conspicuous from the ground, so as not to attract unwanted attention from passers-by. This objective is assisted by selecting locations which are not visible/accessible from public footpaths, byways etc.

Double Roost Panel

An internal double front panel creates roosting opportunities for crevice-inhabiting bats such as common and soprano pipistrelles.



Bat Box Availability

The 2F bat box is available from a number of suppliers including Jacobi Jayne (www.jacobijayne.com), NHBS (www.nhbs.com) where it retails at approximately £35.95+VAT.

Appendix 12: Schwegler 1FR Bat Tube



Woodcrete Bat Tubes

These are a well-known brand that have a low visual impact on the development because they can be built into the exterior wall and then rendered or painted.

How Many to Install

Typically, one tube is recommended on sites where there are low numbers of bats and multiple groups of tubes are recommended on sites of high ecological significance.

Installation

The tubes should be built into the exterior wall of the building, typically at the gable apex. The tubes should be installed flush with the surrounding wall and can then be rendered or painted with breathable paint if required.

Schwegler 1FR and 2FR

These are two similar designs. The 1FR is designed to be used singularly (shown here) whereas the 2FR has transverse connecting holes that allow tubes to be collected together or lead into the cavity wall.

Specifications

Height	47.5cm
Width	20cm
Depth	12.5cm
Weight	9.8kg

Location

The tubes should be positioned at least 0.5m below the eave or gable apex to prevent predation by domestic cats. It is also recommended that where practical, the tubes are not positioned above windows or doors.



Tube not rendered



Tube rendered over