

Ecological Impact Assessment

Swansea Road, Merthyr Tydfil

June 2023

Ecology | Green Space | Community | GIS

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Report Produced for Merthyr Valley Homes

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SUMMARY

Purpose of the report	This report has been produced by Ethos Environmental Planning on behalf of Merthyr Valley Homes. It provides an assessment of the likely ecological effects associated with the proposed residential development of an area of land known as 'Swansea Road, Merthyr Tydfil'.
Description of the scheme	The development proposals for the site include plans for 39 residential dwellings with associated access.
Methodology	A desk study and detailed surveys for habitats, bats, reptiles, amphibians and invertebrates were undertaken during optimal survey periods in 2018. An updated UKHab survey has been undertaken in 2023.
Baseline ecological conditions	• The site was 1.5 Ha (Hectares) in size and comprised of neutral grassland, acid grassland, dwarf shrub heath, scattered scrub, bare ground and scattered trees. • The acid grassland and dwarf shrub heath were identified as a key habitat feature and NERC act habitats, these should both be maintained within the proposals; • Japanese knotweed was identified in the northwest of the site, a smaller stand of Japanese knotweed was found at the north of the site, these should be controlled and eradicated at the site to avoid the spread of invasive species; • The woodland and scrub were assessed as suitable habitat for nesting birds, bats, invertebrates and hedgehog.
Key impacts and mitigation	The development proposals will result in the loss of habitats and invertebrate species which are of County importance for nature conservation, thus requiring off site compensation measures. The development layout has been designed to avoid impacts on certain ecological features, namely the eastern boundary woodland and scrub. Mitigation measures are described to ensure compliance with protected species legislation for hedgehog, bats, birds, invertebrates and reptiles, details of which will be provided within a CEMP.
Conclusion	In order for the proposals to be compliant with local policy EnW1 on nature conservation, mitigation measures set out within this report comprising a CEMP, LEMP and lighting strategy will need to be secured by planning condition. In addition to this, an offsite compensation strategy for habitats and invertebrates will be required in agreement with the LPA and measures secured through appropriate planning obligations.

1.6 The aims of this EclA report are to:

- provide an assessment of the likely effects of the proposed development on ecological features on site;
- provide an assessment of the likely effects of the proposed development on designated nature conservation sites within 1km of the site;
- identify the measures required to mitigate impacts on important ecological features;
- identify opportunities to deliver ecological enhancements as part of the development proposals; and
- to enable the Local Planning Authority to assess whether the proposals comply with relevant planning policy or legislation.

1.7 This report has been produced following the approach set out in CIEEM's 'Guidelines for Ecological Report Writing' (CIEEM, 2017).

2 POLICY AND LEGISLATION

2.1 National Policy

- 2.1.1 **Planning Policy Wales (2021)** and **Future Wales: The National Plan 2040** set out the national planning policies for the Welsh Government, including policies of relevance to conserving and enhancing the natural environment. Objectives of relevance to the proposed development have been summarised below:

The planning system has a key role to play in helping to reverse the decline in biodiversity and increasing the resilience of ecosystems, at various scales, by ensuring appropriate mechanisms are in place to both protect against loss and to secure enhancement. Development plan strategies, policies and development proposals must consider the need to:

- *support the conservation of biodiversity, in particular the conservation of wildlife and habitats;*
- *ensure action in Wales contributes to meeting international responsibilities and obligations for biodiversity and habitats;*
- *ensure statutorily and non-statutorily designated sites are properly protected and managed;*
- *safeguard protected and priority species and existing biodiversity assets from impacts which directly affect their nature conservation interests and compromise the resilience of ecological networks and the components which underpin them, such as water and soil, including peat; and*
- *secure enhancement of and improvements to ecosystem resilience by improving diversity, condition, extent and connectivity of ecological networks.*

Planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. This means development should not cause any significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity. In doing so planning authorities must also take account of and promote the resilience of ecosystems, in particular the following aspects:

- *diversity between and within ecosystems;*
- *the connections between and within ecosystems;*
- *the scale of ecosystems;*
- *the condition of ecosystems including their structure and functioning; and*
- *the adaptability of ecosystems.*

Planning authorities must have regard to the relative significance of international, national and local designations in considering the weight to be attached to nature conservation interests.

2.2 Local Policy

- 2.2.1 Merthyr Tydfil County Borough Council adopted the **Replacement Local Development Plan (LDP) 2016-2031** in January 2020. It supersedes and replaces the adopted Merthyr Tydfil County Borough Council Local Development Plan (LDP) 2006-2021. The following policies relate to nature conservation and development:

Policy EnW1: Nature Conservation and Ecosystem Resilience

Development proposals will be required to promote the resilience of ecosystems. In particular, proposals will be required to maintain and enhance biodiversity interests unless it can be demonstrated that:

- 1) *The need for the development clearly outweighs the biodiversity value of the site; and*
- 2) *The impacts of the development can be satisfactorily mitigated and acceptably managed through future management regimes.*

Policy EnW2: Internationally and Nationally Protected Sites and Species

Development proposals likely to affect protected species will only be permitted where it is demonstrated that:

- 1) *The population size, range, distribution and long-term prospects of the species will not be significantly adversely impacted;*
- 2) *There is no suitable alternative to the proposed development;*
- 3) *The benefits of the development clearly outweigh the adverse impacts on the protected species; and*
- 4) *Appropriate, avoidance, minimisation, mitigation, compensation and enhancement measures are provided.*

Policy EnW3: Regionally Important Geological Sites, Sites of Importance for Nature Conservation, Local Nature Reserves and Priority Habitats and Species

Development proposals likely to have an adverse impact on Regionally Important Geological Sites, Sites of Importance for Nature Conservation, Local Nature Reserves, or Priority Habitats and Species will only be permitted where it can be demonstrated that:

- 1) *The need for the development clearly outweighs the conservation value of the site;*
- 2) *Adverse impacts on nature conservation features or geological features can be avoided;*
- 3) *Appropriate and proportionate mitigation and compensation measures can be provided; and*
- 4) *The development maintains and where possible enhances biodiversity and geodiversity interests.*

Policy EnW4: Environmental Protection

Development proposals will be required to demonstrate they will not result in an unacceptable impact on people, residential amenity, property and / or the natural environment from either:

- *Pollution of land, surface water, ground water and the air;*
- *Land contamination;*
- *Hazardous substances;*
- *Land stability;*
- *Noise, vibration, dust, odour nuisance and light pollution; or*
- *Any other identified risk to public health and safety.*

Where impacts are identified the Council will require applicants to demonstrate that appropriate measures have been incorporated to reduce, or minimise the impact identified to the lowest possible acceptable level. Planning conditions may be imposed or legal obligation entered into, to secure any necessary mitigation and monitoring processes.

- 2.2.2 The **Merthyr Tydfil County Borough Council Nature Recovery Action Plan (2019-2014)** replaces the previous Merthyr Tydfil Biodiversity Action Plan (2014-2019), and represents the S6 plan for Merthyr Tydfil County Borough, in accordance with Welsh Government Guidance: 'Environment (Wales) Act 2016 Part 1: Guidance for Section 6 – The Biodiversity and Resilience of Ecosystems Duty'. The objectives relating to development are as follows:

- 1) *Engage and support participation and understanding to embed biodiversity throughout decision-making at all levels.*
- 2) *Safeguard species and habitats of principal importance and improve their management.*
- 3) *Increase the resilience of our natural environment by restoring degraded habitats and habitat creation.*
- 4) *Tackle key pressures on species and habitats.*

2.3 Relevant Legislation

- 2.3.1 The following pieces of legislation have been considered within this assessment with an explanation of their relevance provided.

Legislation	Relevance
The Habitats Directive (together with the Birds Directive) forms the cornerstone of Europe's nature conservation policy. It is built around two pillars: the Natura 2000 network of protected sites and the strict system of species protection. All in all, the Directive protects over 1,000 animals and plant species and over 200 "habitat types" (e.g. special types of forests, meadows, wetlands, etc.), which are of European importance. The Habitats Directive	Presence of commuting/ foraging bats on site, utilising boundary lines of trees.

Legislation	Relevance
and parts of the Birds Directive are transposed into legislation by The Conservation of Species and Habitat Regulations 2017. Since the UK has left the EU, these regulations have been amended to retain the legal powers of the regulations to the UK and are now referenced as: Conservation of Habitat and Species Regulations (Amendment) (EU Exit) Regulations 2019.	
Wildlife and Countryside Act 1981 (as amended, including by the Countryside and Rights of Way Act 2000), which provides legislative protection for certain species. The Act also prohibits the spread of invasive plant species, as well as providing the mechanism for the designation and protection of Sites of Special Scientific Interest;	Potential for nesting birds in woodland and scattered scrub. Presence of reptiles on site.
The Environment (Wales) Act 2016 came into force in 2016 and puts into place the necessary legislation to enable the planning and management of the natural resources of Wales in a more sustainable, pro-active and joined-up way than was previously possible. Part 1 Section 7 requires Welsh Ministers to publish and maintain lists of species and habitats in Wales that are regarded as of 'principal importance' for the purpose of maintaining and enhancing biodiversity. This part of the Act replaces the duty outlined in Section 42 of the Natural Environment and Rural Communities Act 2006.	Enhancements for biodiversity. Presence of Habitats of Principal Importance. Potential presence of hedgehog.
The Hedgerows Regulations 1997 protect 'important hedgerows' from being removed (uprooted or destroyed). Hedgerows are protected if they are at least 30 years old and meet at least one of the criteria listed in part II of schedule 1.	Presence of tree lines on site boundaries.

3 METHODOLOGY

3.1 Scope of Assessment

3.1.1 This assessment has been undertaken following the approach set out in the 'Guidelines for Ecological Impact Assessment in the UK and Ireland' (CIEEM, 2018). The assessment has considered 'Important Ecological Features' that are present within the 'Zone of Influence' of the project. Important Ecological Features for this project comprise¹:

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

3.1.2 The Zone of Influence (Zoi) is the area over which the project could have an influence on ecological features. The Zoi is likely to vary for different features. However, in general terms the Zoi for this development proposal is considered to comprise the land within the red line boundary as well as immediate adjacent habitat features. It also includes designated nature conservation sites present on and around the site.

3.1.3 The scope of the assessment was informed by an 'ecological walkover' undertaken on 15th February 2018 and then updated in March 2023. The purpose of this was to identify the habitats on site, their potential for protected species and to establish the scope of surveys that would be required to inform a future planning application at the site.

3.2 Desk Study

3.2.1 A background data search was received from South East Wales Biodiversity Records Centre (SEWBReC) on 6th February 2023. The search included records of non-statutory designated sites and protected and notable species within 1km of the proposed development site. This was extended to 2km for wide-ranging species such as bats.

3.2.2 A search for other developments within 1km of the site was carried out using the Merthyr Tydfil County Borough Council planning portal to assess the potential cumulative impacts of this development.

3.3 National Vegetation Classification (NVC) Survey

3.3.1 A National Vegetation Classification (NVC) survey was carried out on 10th July 2018. Different kinds of broad vegetation type were identified by their floristic and structural signatures and the extent of each was mapped as accurately as possible. Within each type, all species of higher and lower plant (mosses, liverworts and hornworts) were

¹ Box 14 in CIEEM's ECiA Guidelines (2018)

identified and accorded a measure of abundance in relation to other species within the same kind of vegetation (DAFOR scale²). Detailed sampling of vegetation to characterise different National Vegetation Classification (NVC) types was not undertaken but where a community was distinctive enough to refer it to a likely NVC type, this was noted.

- 3.3.2 Populations of any plants listed on Schedule 8 of the Wildlife & Countryside Act (W&CA) 1981 (as amended) or species of significant conservation importance (Appendix I) were georeferenced using a GPS/GLONASS receiver³. This was also used to map any populations of invasive plants listed on Schedule 9 of the W&CA 1981.
- 3.3.3 Botanical nomenclature used in this report follows Stace (2010) for vascular plants and Hill *et al.* (2008) for mosses and liverworts.
- 3.3.4 Any changes to the NVC survey were assessed in the updated UKHab survey (see below).

3.4 UKHab Survey

- 3.4.1 A UKHab survey was undertaken on 6th June 2023. The surveys incorporated detailed assessment of the land within the development boundary, including a description and mapping of all key features and habitat types. The surveys were carried out to identify the range of habitats within the site and the predominant and notable species of flora. Both surveys were informed by the UKHab classification User's Manual (Butcher *et al.*, 2020).

3.5 Section 7 Species

- 3.5.1 The survey included an assessment of the habitats on site for their potential to support Environment (Wales) Act Section 7 species such as hedgehog (*Erinaceus europaeus*), polecat (*Mustela putorius*), harvest mouse (*Micromys minutus*) and brown hare (*Lepus europaeus*). This included a search for nests, runs, latrines, paw prints and live specimens.

3.6 Badger

- 3.6.1 The survey for badger (*Meles meles*) included a search of the development site for any evidence of badgers, including setts, foraging signs (snuffle holes), runs and latrines. The suitable habitats were systematically surveyed for evidence of badgers in the form of:

² Dominant; Abundant; Frequent; Occasional; Rare. A Local (L) prefix indicates a patchy or localised distribution.

³ Garmin model GPSMAP 64S. This receiver connects to both GPS and GLONASS satellite networks to give a typical combined positioning accuracy of 2-5m, even in difficult/wooded terrain.

- Faeces (dung pits): badgers usually deposit faeces in characteristic excavated pits, concentrations of which (latrine sites) are typically found at home-range boundaries;
- setts: comprising either single isolated holes or a series of holes likely to be interconnected underground;
- paths between setts or leading to feeding areas;
- scratching posts at the base of tree trunks;
- hair traces;
- snuffle holes (foraging), formed during foraging and comprising characteristically disturbed ground vegetation; and,
- footprints.

3.7 Hazel Dormouse

- 3.7.1 The survey included an assessment of the potential of the site for hazel dormouse (*Muscardinus avellanarius*), focusing on the connectivity and suitability of the habitat on site.

3.8 Riparian Mammals

- 3.8.1 The survey included an assessment of the potential of the site to support riparian mammals such as otter (*Lutra lutra*) and water vole (*Arvicola amphibius*). The principal survey technique employed was a search for field signs including holts/burrows, couches, feeding sites, spraints/latrines, and tracks.

3.9 Bats

- 3.9.1 The methodology for the bat survey has been informed by the Bat Conservation Trust 'Bat Surveys Good Practice Guidelines' (Collins, 2016).

Habitats

- 3.9.2 The habitats on site were assessed for their suitability to support foraging and commuting bats. This assessment was also contextualised through examination of suitable habitat and features in the wider landscape and possible flight-lines across the proposed site following natural linear features such as hedgerows.

3.10 Birds

- 3.10.1 The bird survey included an assessment of the habitats on site for their potential to support protected and notable species of bird as well as their potential to support breeding birds.

3.11 Reptiles

- 3.11.1 The potential presence of reptiles on site was assessed considering the habitats present (availability of refugia and basking areas) and suitability of surrounding environment.
- 3.11.2 Artificial refugia were deployed in suitable habitat throughout the site (Figure 4) using 80 artificial refugia as heat traps, spread across the site in suitable habitat areas. The mats were deployed on 18th June 2018 and a total of seven checks were undertaken at the site, under suitable weather conditions. Where possible, attempts to confirm reptile presence on site were made following Froglife Advice Sheet 10 – Surveying for Reptiles through direct observation in reptile “hotspots” and checking of any existing refugia.



Figure 2 Reptile mat locations

3.12 Amphibians

Habitat Assessment

- 3.12.1 The habitats on site were assessed for their potential to support amphibian species, including great crested newt (*Triturus cristatus*) (GCN). This included an examination of suitable waterbodies and for breeding terrestrial habitat and terrestrial habitats which

may provide sufficient structured vegetation in which amphibians may forage or hibernate.

3.13 Invertebrates

3.13.1 The site was assessed as providing suitable habitat to support a variety of invertebrate species, including those which may be notable or of conservation importance. As such, targeted invertebrate surveys were commissioned by Ethos. These were carried out by Christian Owen of Christian Owen Bio-Surveys (see appendix 6).

3.13.2 Due to the many invertebrate taxonomic groups that exist, the often-large differences in invertebrate diversity between habitats and the many survey techniques available, invertebrate surveys are highly specific to individual sites. Therefore, an assessment of the potential site for invertebrates was undertaken, including the need for targeted surveys.

3.14 Invasive Species

3.14.1 A visual search of the habitats on site was undertaken in 2018 and 2023 to determine if any Schedule 9 invasive plant species were present.

3.15 Limitations

3.15.1 The EcIA draws on some data which is from 2018 which could be considered out of date, however, as the baseline habitat conditions between 2018 and 2023 have not changed, it is considered that the information available to complete the impact assessment is appropriate.

3.16 Evaluation of Ecological Features

3.16.1 In line with CIEEM's guidelines on EcIA, this assessment has focused on relevant Important Ecological Features. The scale of importance of these features has been determined based on available contextual information. The potential scales of importance include:

- **International** – of international importance and protected through international legislation;
- **National** – of importance in Wales and protected through national legislation;
- **County** – of importance to the county (Merthyr Tydfil County Borough) but not sufficiently important to warrant 'National' scale of importance; and
- **Local** – of importance to the local area (Merthyr Tydfil), but not sufficiently important to warrant County scale of importance.

3.16.2 Potential impacts on Important Ecological Features are identified and assessed; likely significant effects are those likely to result in a change to the conservation status of a habitat or species population or undermine/support nature conservation policy.

Mitigation measures have been devised following the mitigation hierarchy; appropriate mechanisms for securing mitigation measures have been identified.

3.17 Personnel

3.17.1 The 2023 site surveyors and report authors/reviewers have been detailed below in Table 1.

Table 1 Site surveyors and report authors/reviewers from 2023 work

Ecologist	Position	Qualification/Licence	Experience	Role in Assessment
Jim Philips	Managing Director	MSc BSc (Hons), MCIEEM Class 2 Bat Licence Class 1 GCN Licence	Jim's experience in ecology covers a wide range of projects and clients and his focus is on interpreting relevant policy and legislation to ensure projects are delivered efficiently and meet the needs of the client. He holds survey licences for bats and GCN in England and Wales and is a registered consultant on Natural England's Bat Low Impact Class License (BLICL).	Approved final report
Kane Burchill	Senior Ecologist	Level 2 Certificate and Diploma in Work-based Environmental Conservation Tree Climbing and Rescue, City and Guilds NPTC Level 2 Award (206 and 306) ACIEEM Class 1 Bat Licence (NE) Class 1 Hazel Dormouse Licence (NE) Class 1 GCN Licence (NE)	Kane has over eight years' experience in ecological field survey and consultancy. As an Senior Ecologist with Ethos; Kane is responsible for leading and undertaking comprehensive habitat assessments protected species surveys and is a licenced bat and dormouse worker.	Report author
Ellie Shearn	Ecologist	BSc (Hons), Qualifying CIEEM	Ellie is an ecologist at Ethos with relevant experience in ecological field survey. Ellie assists senior ecologists on site with protected species surveys including bat surveys and assessment.	Reptile survey, report author

3.17.2 The following details the personnel who undertook the site surveys in 2018 and their qualifications at the time: All surveys were led by Rachel Godden, BSc (Hons) ACIEEM who was assisted by George Clutterbuck. Rachel is a qualified ecologist with five years' experience of practical field ecology and George is an assistant ecologist with 3 years' experience of field ecology. The reptile surveys were carried out by Sian Musgrave, MCIEEM and a detailed NVC survey was carried out by Sharon Pilkington MSc, CEnv, MCIEEM who is a botanist, bryologist and vegetation ecologist at Vegetation Survey & Assessment Ltd with 17 years' experience. The survey team have worked together on numerous similar projects and have a complimentary range of skills and experience which are considered to have provided a robust ecological appraisal of the site.

4 BASELINE ECOLOGICAL CONDITIONS

4.1 Designated Sites

Statutory Designated Sites

- 4.1.1 The site was located 1.26km from the Cwn Glo A Glyndyrys Site of Special Scientific Interest (SSSI) and 1.15km from the Cwn Taf Fechan Woodlands Local Nature Reserve (LNR). The site was located 6km from Cwn Cadlan SSSI and Special Area for Conservation (SAC). These sites are considered to be of a sufficient distance to be impacted by the development, therefore, they are not considered further in this assessment.

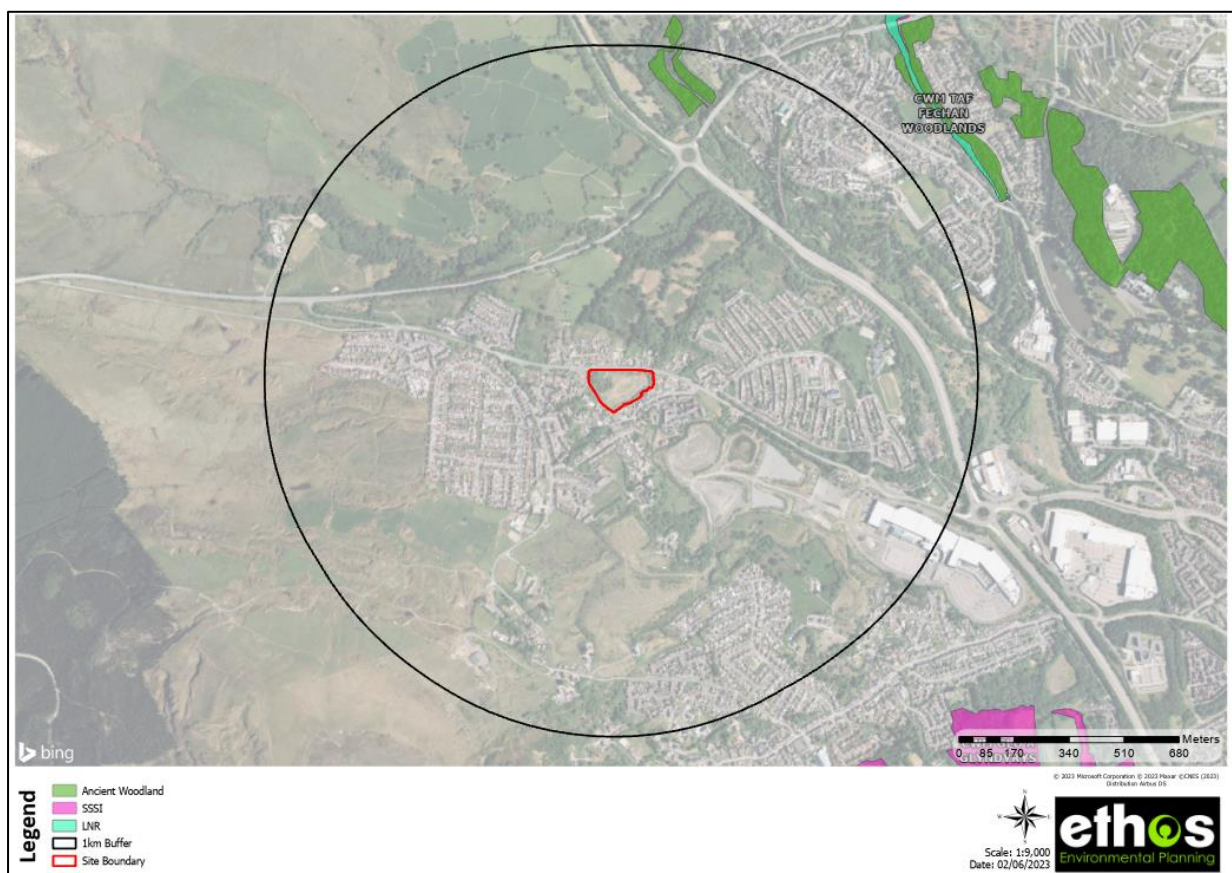


Figure 3 Statutory designated sites

Non-Statutory Designated Sites

- 4.1.2 There were eight non-statutory designated sites within 1km of the site comprising seven Sites of Importance for Nature Conservation (SINC), one Regionally Important Geodiversity Site (RIGS) and one B-Lines site. The non-statutory designated sites are shown in Figure 4 and described in Table 2.

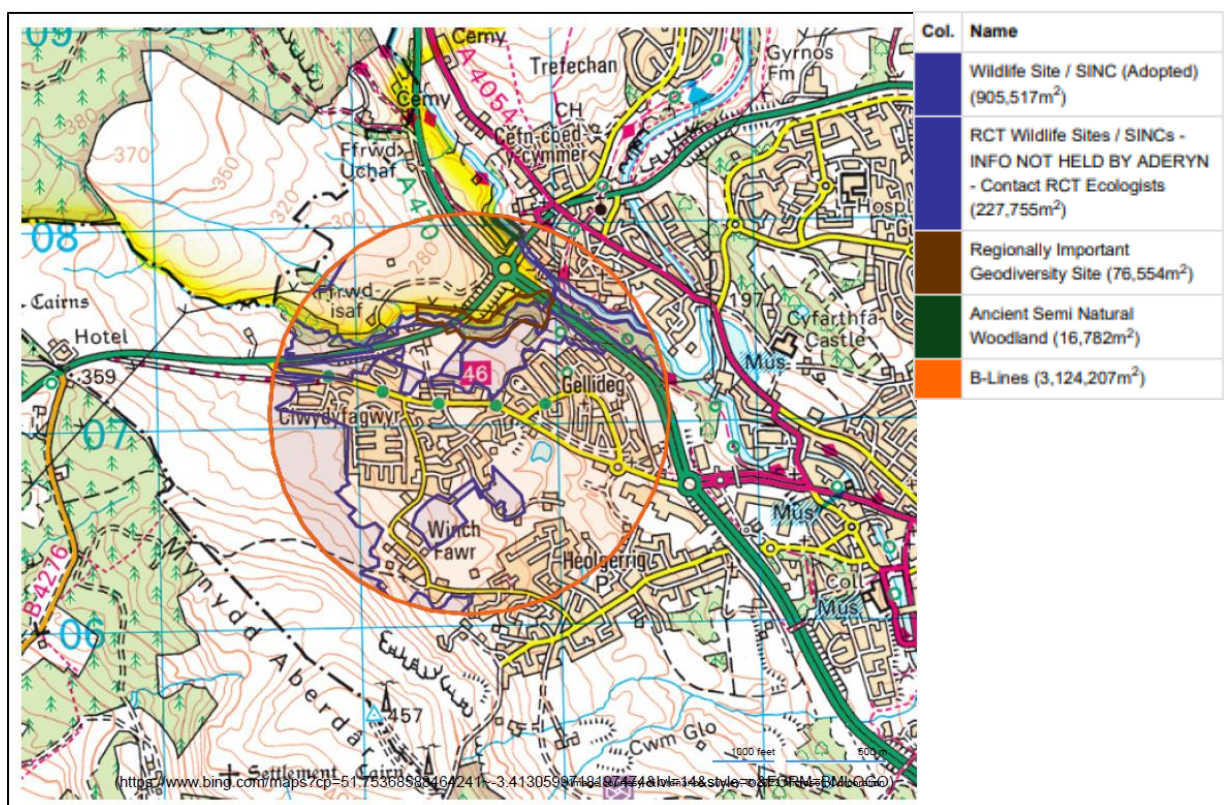


Figure 4 Non-statutory designated sites within 1km (SEWBReC)

Table 2 Non-statutory designated sites within 1km

Site name	Designation	Description	Distance and direction from site
Coed Meirig Pastures	SINC	Small group of horse-grazed fields supporting a mosaic of marshy grassland and semi-improved acid grassland. The marshy areas are mostly species-rich with bordering rush pastures. An area of fen meadow in the east of the site supports the regionally scarce plants. There are also small areas of species-rich neutral grassland and bramble scrub. Mature broadleaved trees are present along field boundaries and several small streams cross the site.	150m West
Gellideg North Fields	SINC	Series of fields containing species-rich rhos pastures, acid grasslands, marshy grasslands, neutral grasslands and areas of bracken, together with scattered mature trees and sections of dry acid oak woodland and wet alder woodland alongside a small stream. The grasslands support a wide range of regionally scarce insect species.	60m north
Cwm Ffrwd	SINC	Valley habitats along the Nant Ffrwd, a large stream draining from the uplands in a largely unmodified course, passing through narrow	170m north

Site name	Designation	Description	Distance and direction from site
		gorges in places. The woodlands have a rich ground flora supporting many ancient woodland indicator species. Regionally rare plant species frequent the steep woodlands, several nationally scarce bryophytes and lichens have also been recorded.	
Winchfawr West	SINC	Extensive area of mostly upland habitats, comprising a complex mosaic of moorland and ffridd habitats on the eastern slopes of the Bryn y Gwyddel/Bryn y Badell/Mynydd Aberdar hill system. The wet and dry heathlands are partly developed on old colliery spoil tips and are the most extensive heathlands in the County Borough. Other habitats of note include marshy grasslands and unimproved acid grasslands, acid flushes and grass heaths. Outlying areas support semi-improved acid and neutral grasslands and scrub. Numerous ponds are present supporting a small population of Great Crested Newts, along with small streams and some sections of outcropping sandstone. Extremely diverse series of habitats supporting many species of interest.	500m west
Winchfawr East & Clwydyfagwyr	SINC	Semi-upland area of spoil mounds supporting a mosaic of dry heathland and acid grassland, along with marshy grassland and acid flushes in depressions and areas of neutral grassland. The eastern part of the site supports areas of species-rich marshy grassland and wet heath, along with a series of ponds along a small stream and areas of scrub.	250m south
Cwm Taf Fields & Cefn Coed Tip	SINC	Linear series of fields between the Afon Taf Fawr and the A470, also containing areas of semi-natural woodland and a re-vegetated limestone slag tip from the former Cyfarthfa Ironworks as well as smaller areas of semi-improved acid grassland, scrub, bracken slopes and dry heathland. The fields are a mosaic of damp and dry neutral grasslands with species-rich areas. The woodlands are variable in character, including areas of wet willow woodland, acid oak woodland and some base-rich ash woodland near the calcareous tip. The thin soils on the tip plateau support a unique type of calcareous grassland.	650m north-east
Cwm Taf Fawr	SINC	Section of major river tributary of the Afon Taf. The river extends into Brecon Beacons National Park to the north. Includes adjacent woodlands,	700m north

Site name	Designation	Description	Distance and direction from site
		which are relatively undisturbed in the upper reaches and more urban in character further downstream. The upper reaches are of high ecological value, comprising limestone gorge woodland with a rich ground flora. Numerous rare plant species occur here. Further south the riverside woodland is more acid in character, but nevertheless supports a relatively diverse ground. The site also includes some adjacent areas of species-rich calcareous, neutral and acid grasslands. The calcareous grasslands support numerous species which are scarce in the County Borough. Otter ranges along the Afon Taf Fechan, which also supports a range of native fish species including salmon.	
Nant Ffrwyd	RIGS	This site forms a unique landscape feature in a tributary of the Taff valley which may have been initiated with the fluctuating climate during the Late Glacial Interglacial Transition at the end of the last (Devensian) Ice Age and has continued to develop during the Holocene.	350m north

- 4.1.3 All non-statutory designated sites were assessed to be of **County importance** for nature conservation. Coed Meirig Pastures, Gellideg North Fields and Cwm Ffrwd are considered to be in close enough proximity to be considered further in this assessment.
- 4.1.4 The remaining SINC's are considered to be disconnected from the site and unlikely to be impacted by the development and are therefore not considered further in this assessment. The development is not expected to impact the geological features present at Nant Ffrwyd so this has also been scoped out of the assessment.
- 4.1.5 The site is located within the Buglife B-Line Network, that are designated as 'insect pathways' which are prioritised for restoring and creating a series of wildflower-rich habitat steppingstones. They link existing wildlife areas together, creating a network that will weave across the UK landscape.

4.2 Habitats

General Site Description – 2018 Surveys

- 4.2.1 Species-poor neutral grassland occupies the upper, undulating plateau of the site, giving way to a thicket of mature scrub and Japanese Knotweed *Fallopia japonica* in the north-western corner. To the south, the tip falls away steeply to houses and gardens below. There is also a substantial area of actively eroding colliery spoil on this face.

- 4.2.2 To the north, the tip slopes down toward a road and this area supports a form of dry mature heathland with scattered trees and scrub. Acid grassland occupies the remainder of the slope where it has an easterly aspect. The site was previously a landfill site which has now grown over and is largely used by dog walkers and for horse grazing. Signs of a small recent fire were seen during the fieldwork on top of the tip.
- 4.2.3 The site is located west of Merthyr Tydfil, surrounded by a semi-urban combination of residential dwellings, agricultural fields and hedgerows. The wider environment included the town of Merthyr Tydfil to the east and the Brecon Beacons National Park.

NVC Survey - 2018

- 4.2.4 Figure 5 shows the key habitats classified by the botanical NVC survey. Descriptions of the habitats are provided in the following section. The NVC species lists can be found in Appendix 1.
- 4.2.5 The updated 2023 UKHab habitat parcel labels have been added onto the 2018 survey labels to allow cross-identification of habitats.

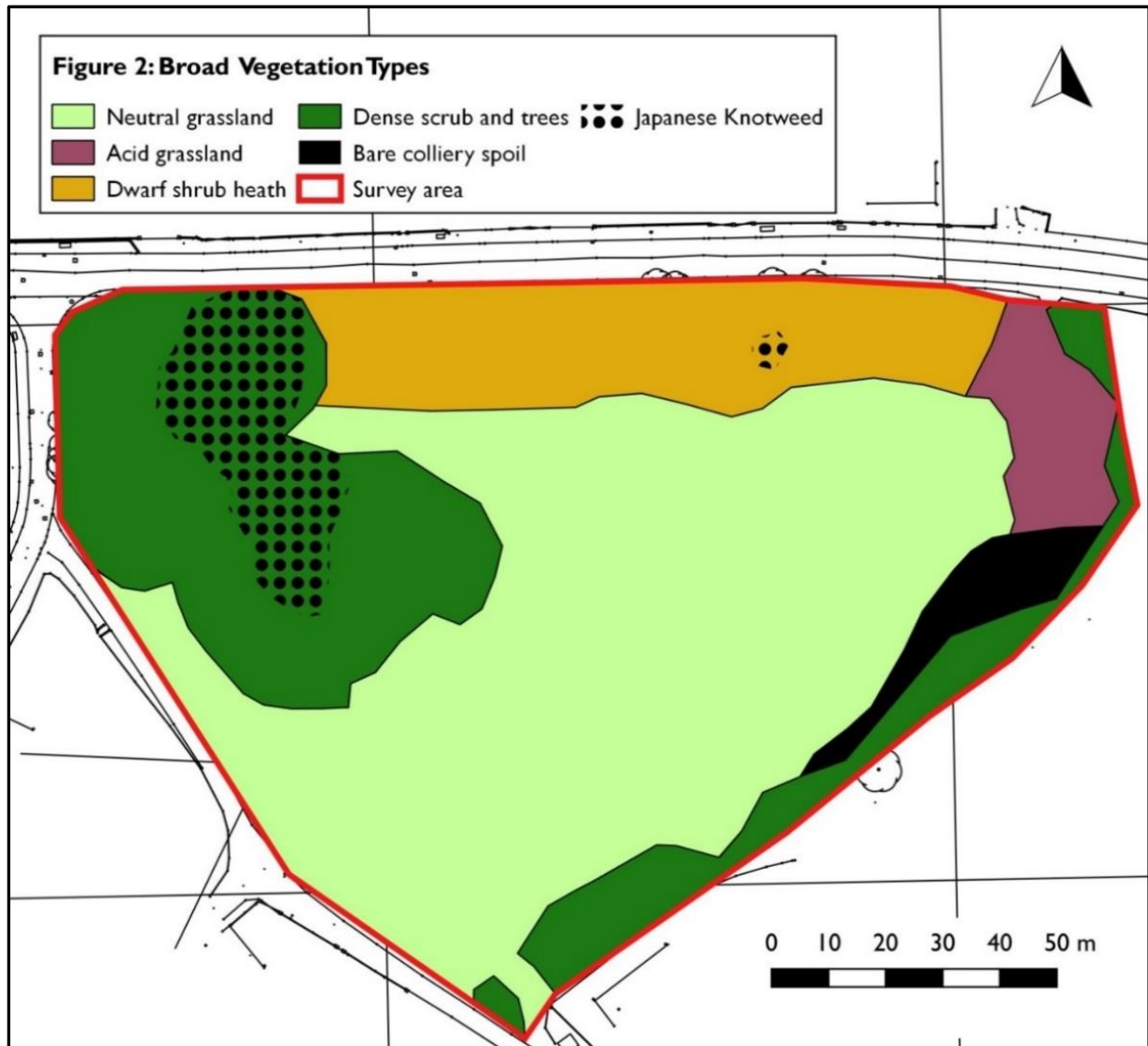


Figure 5 NVC Habitat survey - 2018

Neutral grassland (Other neutral grassland)

- 4.2.6 A poor form of neutral grassland occupies the top of the tip, where there is undulating ground criss-crossed by a number of informal walker's paths. Where soils are sufficiently deep and fertile, the grassland is characterised by high combined cover of false oat grass (*Arrhenatherum elatius*), red fescue (*Festuca rubra*) and Yorkshire fog (*Holcus lanatus*). Forbs are limited in number although common knapweed (*Centaurea nigra*), ribwort plantain (*Plantago lanceolata*) and birds foot trefoil (*Lotus corniculatus*) are occasional.
- 4.2.7 In other parts of the plateau the grassland is dominated by populations of crested dog's tail (*Cynosurus cristatus*), perennial rye grass (*Lolium perenne*) and spreading meadow grass (*Poa humilis*).
- 4.2.8 The grassland has the appearance of having been sown originally onto a soil cap and currently has floristic affinities to both MG6 *Lolium perenne* – *Cynosurus cristatus*

grassland and MG1 *Arrhenatherum elatius* grassland NVC types. It supports no species of recognised conservation importance and is of low intrinsic botanical value.



Photo 1: Neutral grassland



Photo 2: Neutral grassland



Photo 3: Neutral grassland



Photo 4: Neutral grassland

Scattered scrub (Mixed scrub)

- 4.2.9 Scattered scrub was present to the west and south of the site. The habitat had low botanical diversity, being dominated by bramble (*Rubus fruticosus*), rose (*rosa spp.*), common nettle (*Urtica dioica*), willowherb (*Epilobium spp.*) and umbellifer species. Large areas of the scrub at the west of the site was dominated by Japanese knotweed.



Photo 5: Scattered scrub



Photo 6: Scattered scrub



Photo 7: Scattered scrub



Photo 8: Scattered scrub

Acid grassland (Lowland dry acid grassland)

- 4.2.10 Acid grassland occupies the steeply sloping eastern face of the tip. Generally, the vegetation is relatively sparse with plenty of bare ground although in places large *Pleurocarpus* mosses have high cover. Sheep's-fescue (*Festuca ovina*), mouse-ear hawkweed (*Hieracium pilosella*), Sheep's sorrel (*Rumex acetosella*), early hair-grass (*Aira praecox*) and cats ear (*Hypochaeris radicata*) are all prominent, together with *Hieracium argillaceum* – a hawkweed species. Sprawling mats of moss include *Rhytidiadelphus squarrosus*, *Pleurozium schreberi*, *Dicranum scoparium*, *Hypnum lacunosum* and *Hylocomium splendens*.
- 4.2.11 This grassland has clear floristic affinities with U1 *Festuca ovina* – *Agrostis capillaris* – *Rumex acetosella* grassland (a widespread form of lowland acid grassland). It can be regarded as a NERC Act 2006 Section 42 habitat of principle importance for the purpose of conserving biodiversity in Wales (Lowland acid grassland).



Photo 9: Bryophyte-rich acid grassland

Colliery spoil (Inland rock outcrop and scree habitats)

- 4.2.12 The south-east of the site is actively eroding, exposing the colliery spoil. This area is bare of any vegetation growth. The area slopes down steeply to houses and gardens below.



Photo 10: Exposed colliery spoil

Dwarf shrub heath (Lowland heath)

- 4.2.13 Dry heathland has developed on the northern face of the tip. Mature to degenerate stage heather (*Calluna vulgaris*) is common, alongside locally abundant bilberry (*Vaccinium myrtillus*). Neither species forms continuous cover and there are grassier patches with wavy hair grass (*Deschampsia flexuosa*), sheep's fescue (*Festuca ovina*) and common bent (*Agrostis capillaris*). Mosses are very common and prominent species include *Rhytidiadelphus squarrosus*, *Pleurozium schreberi* and *Hylocomium splendens*. The common montane moss *Racomitrium lanuginosum* is frequent at the eastern end of the slope.
- 4.2.14 The floristic composition of the heath indicates it is likely to be a form of H12 *Calluna vulgaris* – *Vaccinium myrtillus* heath, a relatively common kind of dry dwarf shrub heath in sub-montane areas. This is a NERC Act Section 42 habitat (Upland heathland)

and therefore is of conservation importance. It is apparently unmanaged and only in fair condition; a recent burn has damaged a small area, it is suffering from scrub and sapling encroachment and is also threatened by the spread of Japanese knotweed from the west.



Photo 11: Dwarf shrub heath, note burnt ground on upper slope.

Parkland/scattered trees – broadleaved (Other woodland; broadleaved)

- 4.2.15 Broadleaved trees were scattered across the centre and north of the site. The majority of the trees along the northern boundary were self-seeded saplings, dominated by silver birch (*Betula pendula*). A mature selection of trees was present to the west of the site with species such as blackthorn (*Prunus spinosa*), willow (*Salix*), aspen (*Populus tremula*) and further silver birch.



Photo 12: Scattered trees



Photo 13: Scattered trees

Parkland/scattered trees – Mixed (Other woodland; mixed)

- 4.2.16 A section of scattered trees was present on the west boundary. The section contained a mix of coniferous and deciduous trees comprised of Leyland cypress (*Cupressus × leylandii*), blackthorn, willow, aspen and Bay (*Laurus nobilis*).



Photo 14: Scattered trees



Photo 15: Scattered trees



Photo 16: Scattered trees



Photo 17: Scattered trees

Japanese knotweed

- 4.2.17 Two distinct areas of Japanese knotweed were present at the site. The first was on the north boundary within scrub habitat, with a smaller stand within the dwarf shrub at the north of the site. The knotweed had appeared to have been treated, however fresh growth was still present.



Photo 18: Japanese knotweed

2023 UKHab Survey

- 4.2.18 An updated UKHab survey has been undertaken in 2023 and determined that the habitats on site are the same as when they were surveyed in 2018. The map below demonstrates the habitats present on site. The updated UKHab habitat names are referenced above.
- 4.2.19 Large stands of Japanese knotweed are present on the site in the woodland along the western boundary of the site.



Figure 6 Updated UKHab map

4.3 Section 7 species

- 4.3.1 The background data search returned eight records of hedgehog recorded between 2001 and 2020. The exact locations of several of the records were not provided, but the closest known record was located 300m to the south of the site.
- 4.3.2 The data search returned one record of brown hare within 1km of the site. This was recorded in 2007 and was located 900m south-west of the site. There was a significant amount of unsuitable brown hare habitat between the site and the record, so it was not considered to be suitably connected to the site.

- 4.3.3 The site was dominated by a variety of species-rich grasslands and areas of woodland and scrub which provide good potential foraging habitats and cover opportunities for hedgehog. It is also connected to the wider network of valuable foraging habitats to the north. Overall, it was considered that the site is utilised for hedgehog foraging, commuting and potentially nesting.
- 4.3.4 Whilst hedgehog is listed as a Species of Principal Importance for the conservation of biodiversity in Wales, the site is not considered to be of significant importance to the species and they are therefore only considered further on a precautionary basis during construction.
- 4.3.5 The site was considered unsuitable for harvest mouse, brown hare and polecat due to a lack of suitable habitat and the proximity of the site to urban development. These species are therefore considered likely absent from the site and are not considered further in this assessment.

4.4 Badger

- 4.4.1 Two records of badger from 2022 were returned by the data search, located 550m north of the site.
- 4.4.2 No evidence of badger was identified on site during the surveys.
- 4.4.3 The site contained a variety of grasslands which were heavily grazed, reducing the value of the habitat for badger. The site was also bordered on three sides by residential dwellings. Given the abundance of more valuable badger habitats in the wider environment to the north, and the lack of evidence of badger on site, it is considered that they are likely absent and are not considered further in this assessment.

4.5 Hazel Dormouse

- 4.5.1 No records of hazel dormouse within 1km of the site were returned by the data search.
- 4.5.2 The boundary woodland and scrub did not contain a suitable range of species to support hazel dormouse and the connectivity of the site with the wider environment was limited for this species. It was therefore assessed that hazel dormouse are likely absent from the site and are not considered further in this assessment.

4.6 Riparian Mammals

- 4.6.1 Twelve records of otter were identified in the data search. These records were returned between 1988 and 2021 along the River Taff around 750m to the north-east of the site. One record of water vole was identified in the data search from 2002 at Pen-yr-heolgerrig.

- 4.6.2 The site contained no ponds or riparian habitat. Pwll Annie, a tributary of the River Taf was recorded as being located 200m west of the site, and another one located 50m east of the site. Whilst otters are known to be a far-ranging species, the site was bordered on all boundaries by urban development and a road, therefore providing limited foraging opportunities on site. The site did not form a terrestrial link between other water bodies in the wider environment. Given the abundance of more valuable foraging habitats available offsite, it is considered that otter are likely absent from the site and are not considered further in this assessment.
- 4.6.3 Due to the lack of suitable habitat on site for water vole, lack of evidence of the species on site and lack of desk study records, water vole are considered likely absent from the site and are not considered further in this assessment.

4.7 Bats

Data Search

- 4.7.1 Fifty-one records of bats were identified by the data search between 2002 and 2022. Species recorded included common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), Daubenton's bat (*Myotis daubentonii*), unidentified myotis bat, unidentified pipistrelle bat, brown long-eared bat (*Plecotus auritus*), greater horseshoe bat (*Rhinolophus ferrumequinum*) and lesser horseshoe bat (*Rhinolophus hipposideros*), the latter of which is an Annex II species. The majority of the lesser horseshoe bat records were located approximately 900m to the north-east of the site. Three of the records were of bat roosts, with the most recent dating from 2021.

Habitats and Site Context

- 4.7.2 The habitats on site were dominated by species-rich grasslands and boundary woodland and scrub which provides valuable foraging and commuting opportunities for bats.
- 4.7.3 Whilst the site is surrounded on three sides by urban development, and road on the other, it is also located close to several SINC's. These SINC's form a network of ecologically valuable habitats, as shown in Figure 5, which are likely to provide commuting corridors for bats. In particular, there is woodland directly to the north-east of the site which provides connectivity with Nant Ffrwd stream. This is likely to be a valuable commuting corridor for bats.
- 4.7.4 Overall, considering the urban context, habitats present and links to wider habitats, it was assessed that the site provided 'moderate potential' for bats in line with BCT survey guidelines: "*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.*"

Trees for Bats

- 4.7.5 A survey of the trees in site for potential roosting features was undertaken during the 2018 surveys. During the preliminary ground level assessment, it was considered that all the trees provided 'negligible' potential.
- 4.7.6 Therefore, no trees offering roosting potential for bats were present on site, therefore roosting bats in trees are not considered further in this assessment.
- 4.7.7 Given the foraging and commuting opportunities present on site and the proximity to other valuable habitats within the wider landscape, it is considered that the site supports an assemblage of bats which are of Local importance for nature conservation.

4.8 Birds

- 4.8.1 Two hundred and four bird records were returned by the data search. The exact locations of most of the records were withheld, but several were located within Coed Meirig pastures within which the site is included. The species record within the pastures were greenfinch (*Chloris chloris*), meadow pipit (*Anthus pratensis*), song thrush (*Turdus philomelos*) and swallow (*Hirundo rustica*). Greenfinch and mistle thrush are species on the Royal Society of the Protection of Birds' (RSPB) red list of Birds of Conservation Concern and meadow pipit, redstart and song thrush are on the amber list of Birds of Conservation Concern.
- 4.8.2 Records of species listed within Schedule 1 of the Wildlife and Countryside Act 1981 included corncrake (*Crex crex*), fieldfare (*Turdus pilaris*), hen harrier (*Circus cyaneus*), kingfisher (*Alcedo atthis*), peregrine (*Falco peregrinus*), red kite (*Milvus milvus*), redwing (*Turdus iliacus*) and barn owl (*Tyto alba*).
- 4.8.3 The site contained a variety of species-rich grasslands which were grazed by horses, and poached by dog walkers, which significantly limited opportunities for ground nesting birds, considering this disturbance and the lack of evidence of ground nesting birds observed during site visits, it is assessed that ground nesting birds are absent.
- 4.8.4 The areas of woodland and scrub could provide potential breeding habitats for common and widespread species of birds.
- 4.8.5 Whilst the data search returned several notable species of bird within the Coed Meirig pastures SINC in which the site is located, the section of the SINC present on site is heavily disturbed and only provides nesting potential for the more common species. It is therefore considered that the assemblage of birds present on site is not of significant importance for nature conservation and will only be considered further on a precautionary basis.

4.9 Reptiles

- 4.9.1 One slow worm (*Anguis fragilis*) record was returned in 2016 and one common lizard (*Zootoca vivipara*) record was returned with two records attached, recorded between 1977 and 2012. The slow worm record was located 800m northeast of the site and the common lizard record did not have a precise location.
- 4.9.2 The site was dominated by a variety of grassland communities, which can provide good foraging habitat for reptiles, however this was reduced because of the presence of grazing horses. The key features on site were assessed as the more tussocky areas of grassland and the scrub. The site was not well connected to suitable reptile habitat in the wider environment given the residential development and road surrounding the site.
- 4.9.3 Presence / absence surveys were undertaken at the site in 2018 to identify use of the site by reptiles. The targeted surveys returned a nil result for reptiles, and as such they were likely absent from the site or else present in such low numbers that they would not be impacted by the proposed development; however, as these surveys were undertaken in 2018 and the site has been determined to provide suitable reptile habitat, they have been included within the assessment on a precautionary basis. The reptile results are shown in table 2 below:

Table 3 2018 Reptile survey results

Visit no.	Date	Weather	Temperature (C°)	Time	Reptile encounters
1	28.6.18	Sunny with breeze.	23	10:00am	Nil
2	3.7.18	Sunny with breeze	21	10:00m	Nil
3	6.7.18	Sunny with cool breeze	18	9:00am	Nil
4	17.7.18	Cloudy with breeze after recent rain	16	9:30am	Nil
5	20.7.18	Cloudy with sunny intervals	16	9:00am	Nil
6	30.7.18	Cloudy with intermittent showers during day	17	9:30am	Nil
7	7.8.18	Cloudy with breeze	16	10:30am	Nil

4.10 Amphibians

Data Search

- 4.10.1 The data search returned twenty-five records of GCN, five records of common frog (*Rana temporaria*) and three records of common toad (*Bufo bufo*) from between 1994 and 2011. The GCN records with exact locations provided were all located to the south-west of the site and were separated from the site by urban development.

Habitat Assessment

- 4.10.2 The site consisted of a mosaic of grasslands and woodland and scrub. Although the habitats were heavily disturbed due to horse-grazing which reduces the suitability of terrestrial habitats for amphibians, the scrub and areas of tussocky grass provided some cover opportunities for amphibians. The key features on site were therefore assessed to be the areas of tussocky grassland and scrub which provide suitable cover and foraging opportunities for amphibians.
- 4.10.3 Overall connectivity of suitable GCN habitat in the local area was poor. Urban development was present to the east, south and west of the site, which would be unlikely to contain suitable habitat for GCN. The land to the north of the site was separated from the wider environment due to the presence of a main road, the A4102, which is considered to be a significant barrier to amphibian movement.
- 4.10.4 A search for ponds within 500m identified four ponds within 500m of the site (Figure 8), however they were determined to not be connected to the site, as an A road or residential development separates the site from the ponds, and these are considered barriers to movement for amphibians and therefore there is no suitable wet habitat on site. Amphibians are therefore not considered further in this assessment.

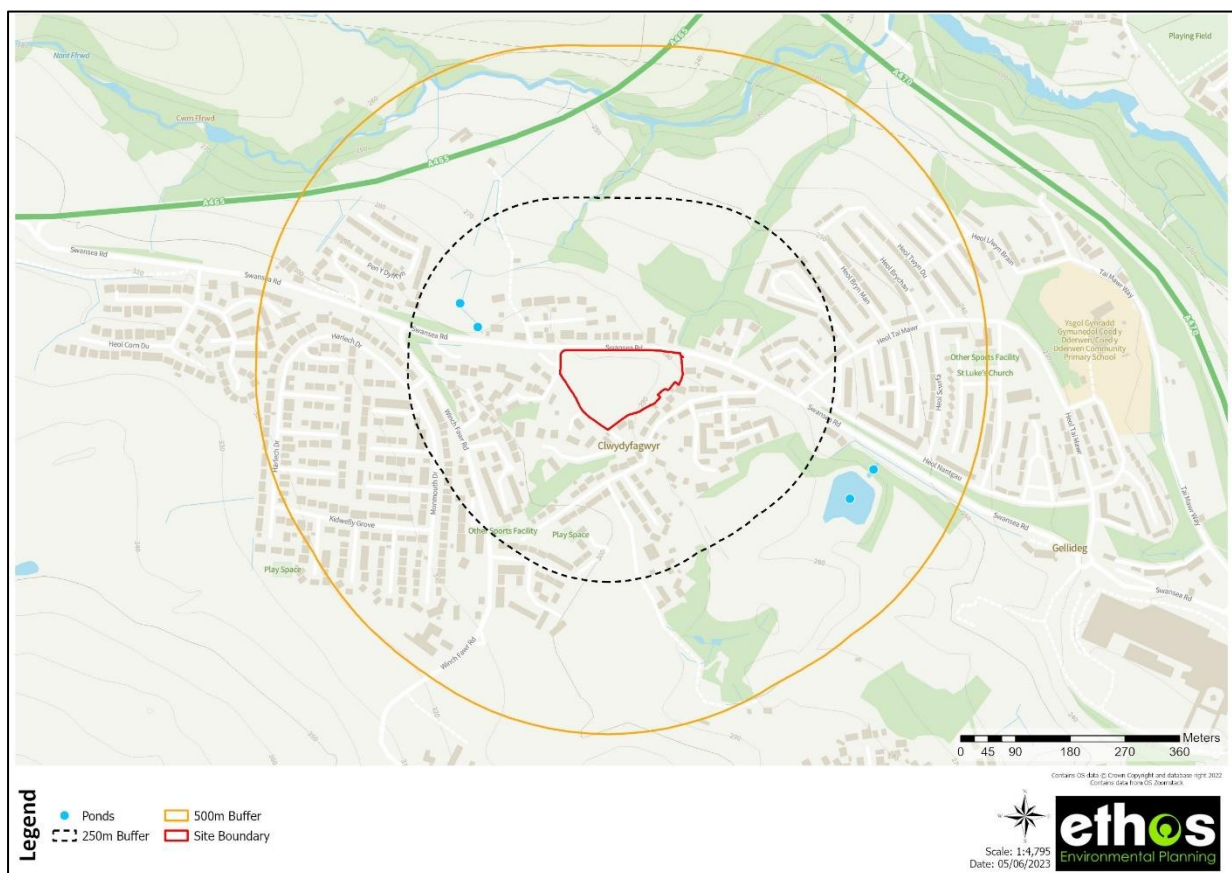


Figure 7 Ponds within 500m of the site

4.11 Invertebrates

- 4.11.1 One hundred and eight invertebrate records were returned by the data search which included moths, butterflies, dragonflies, beetles, bees and true flies. There were several records of species listed under Section 7 of the Environment (Wales) Act 2016 as 'species of principal importance for conservation of biological diversity in Wales', such as dark brocade (*Mniotype adusta*), small pearl-bordered fritillary (*Boloria selene*), small heath (*Coenonympha pamphilus*), cinnabar (*Tyria jacobaeae*), grayling (*Hipparchia Semele*) and broom moth (*Ceramica pisi*).
- 4.11.2 The site comprised a mosaic of acid grassland, dwarf shrub, bramble, areas of woodland and neutral grassland. Habitat mosaics are important for invertebrates as many require two or more habitats to complete their lifecycle. The variety of habitats present therefore allows the site to support a wide range of invertebrate groups. However, the habitats that are being removed due to the proposed development are not of significant importance to invertebrates, and therefore will not cause a significant issue.
- 4.11.3 The key habitats for reptiles, the acidic grassland and heathland, are largely being retained as part of the development proposals, however, the presence of invertebrates is considered further on a precautionary basis.

4.12 Invasive Species

- 4.12.1 Forty-eight records of plant species listed in Schedule 9 of the Wildlife and Countryside Act 1981 and invasive, non-native species were returned by the data search. The species recorded included cotoneaster (*Cotoneaster sp.*), Japanese knotweed (*Fallopia japonica*), Himalayan balsam (*Impatiens glandulifera*) and montbretia (*Crocasmia x crocosmiiflora*). The closest record was located on site.
- 4.12.2 Large stands of Japanese knotweed have been recorded on site and will need to be removed by professionals.

4.13 Summary

4.13.1 The important ecological features of relevance to this assessment and their importance are summarised in Table 4.

Table 4 Summary of important ecological features

Important Ecological Features	Scale of Importance
Designated nature conservation sites - Coed Meirig Pastures - Gellideg North Fields - Cwm Ffrwd	County
Acid grassland/Lowland dry acid grassland	County
Dwarf shrub heath/Lowland heathland	County
Woodland/Other woodland; broadleaved and mixed	Local
Section 7 Species - Hedgehog	Precautionary
Birds	Precautionary
Bats	Local
Invertebrates	Precautionary
Reptiles	Precautionary

5 DESCRIPTION OF THE PROPOSED DEVELOPMENT

- 5.1 The development proposals comprise the construction of 39 residential dwellings with associated access, as shown in Figure 9. The total size of the redline of the site is 1.5 ha.
- 5.2 The site is located within close proximity to several SINC's, including Coed Meirig Pastures, Gellideg North Fields and Cwm Ffwd.
- 5.3 The layout of the development has incorporated measures to avoid impacts on certain ecological features, where feasible as follows:
- Retention of the acidic grassland and lowland heath along the north and eastern boundaries of the site.
 - Implementation of hedgerows around the proposed development.
 - Implementation of urban street trees within the proposed development.
 - Removal of the Japanese knotweed on site.

Figure 8 Development proposals (Drawing number 230216 Landscape csketch)



6 ASSESSMENT OF IMPACTS AND MITIGATION MEASURES

6.1 Designated Nature Conservation Sites

Coed Meirig Pastures

- 6.1.1 The site is located within 150m of the Coed Meirig Pastures SINC, however the site is not open and accessible to the public, and therefore the development will not create any significant impact on the SINC as a result of construction or operational impacts.

Gellideg North Fields

- 6.1.2 This SINC is located to the north of the site, separated by Swansea Road, the A4102. Impacts from construction are considered to be minimal as damage or pollution can be avoided through construction fencing on site and through the implementation of an effective Construction and Environmental Management Plan (CEMP) to be secured by planning condition.
- 6.1.3 This SINC has no footpaths or public access, therefore recreational impacts are also considered unlikely. It is therefore considered that there will be no significant effect on this SINC as a result of the construction or operational impacts of the proposed development.

Cwm Ffrwd

- 6.1.4 The Cwm Ffrwd SINC is located along the Nant Ffrwd stream located to the east and north of the site. Potential impacts from construction could occur from water run off or pollution during construction activities. Impacts can be avoided through standard good practice pollution management during construction, specific details of this will need to be set out within the CEMP.
- 6.1.5 This SINC has no footpaths or public access, therefore recreational impacts are also considered unlikely. It is therefore considered that there will be no significant effect on this SINC as a result of the construction or operational impacts of the proposed development.

6.2 Acid Grassland (Lowland Dry Acid Grassland)

Construction phase

- 6.2.1 All areas acid grassland within the mosaic on site will be retained within the proposed development layout.
- 6.2.2 Potential construction pollution impacts could include damage to this retained grassland from construction machinery. Mitigation measures to avoid impacts on this habitat will be set out within the CEMP.

Operational phase

- 6.2.3 The retained acid grassland will be in close proximity to several residential gardens, however a hedgerow and fencing will be in place to deter residence from entering this area, however it will be accessible from the adjacent road along the northern boundary. In the absence of mitigation, this habitat may experience damage from fly-tipping. Management and maintenance of the grassland to prevent such damage will be set out within the LEMP.

6.3 Dwarf Shrub Heath (Lowland Heathland)

Construction phase

- 6.3.1 A small area of the heathland within the mosaic on site will be lost to allow development. This habitat loss will be permanent and is unavoidable to facilitate the proposed development. It will therefore not be possible to mitigate for this during the construction phase.
- 6.3.2 Potential construction pollution impacts could include damage to the retained areas of heath and from construction machinery. Mitigation measures to avoid impacts on this habitat will be set out within the CEMP.

Operational phase

- 6.3.3 The retained heathland will be in close proximity to several residential gardens, however a hedgerow and fencing will be in place to deter residence from entering this area, however it will be accessible from the adjacent road along the northern boundary. In the absence of mitigation, this habitat may experience damage from fly-tipping. Management and maintenance of the grassland to prevent such damage will be set out within the LEMP.

Compensation

- 6.3.4 Overall, the proposed development will result in a permanent adverse effect on a very small area of the heathland on site due to its removal. It will not be possible to compensate for this loss within the development footprint.

6.4 Woodland (Other Woodland; Broadleaved and Mixed)

Construction phase

- 6.4.1 The development proposals include the retention of some of the woodland and scrub along the eastern boundaries. The woodland and scrub areas along the western boundary will be entirely lost for the proposed development and its access road. The western parcels of the woodland will incur permanent, negative impacts as all of these areas are to be removed. The eastern parcel of woodland will lose a small amount of

woodland in the southern section of the site, this will also cause significant, permanent, negative impacts.

- 6.4.2 In the absence of mitigation, the retained areas of woodland may incur negative, short-term impacts. Sensitive construction practices and tree protection fencing will be required during construction. These mitigation measures will be detailed within the CEMP.

Operational phase

- 6.4.3 Potential operational impacts on the retained woodland and scrub include excessive removal of vegetation by residents. Hedgerows and fencing have been implemented within the designs to ensure residents do not access this area, however it will be accessible from the road on the northern boundary of the site, therefore mitigation will be required. Woodland and scrub adjacent to residential gardens will be managed according to the regime set out within the LEMP.

Compensation

- 6.4.4 The woodland areas to be lost on site are small and have large stands of Japanese knotweed within them; given this, and the local abundance of woodland in better condition, it has been determined that the loss of woodland on site will not have a significant, negative ecological impact at a local area, and therefore will not require compensation.
- 6.4.5 Two areas of Japanese knotweed were identified at the site within the wooded areas. Knotweed is an invasive weed which is listed on schedule 9 of the Wildlife and Countryside Act for which it is an offence to allow the spread of this plant. Recommendations for the management and eradication of the Japanese knotweed at the site is made in section 9.

Summary

- 6.4.6 Although approximately 0.34ha of the woodland and scrub on site will be lost to allow development, the remaining areas will be retained and buffered and as such, no significant effects are predicted on the woodland and scrub as a result of the development.

6.5 Section 7 Species – Hedgehog

Construction phase

- 6.5.1 The development proposals include the removal of and impacts on Section 7 species, specifically hedgehogs. Mitigation will be required to ensure that no harm is incurred to any potential individuals utilising the site.

- 6.5.2 It is recommended that habitat clearance is undertaken in accordance with a precautionary working method statement and this will be detailed within a CEMP to be secured by planning condition.
- 6.5.3 To mitigate potential impacts to hedgehog on the construction site, it is recommended that general safe working practices are followed to prevent the construction site from becoming suitable for nesting and hibernating hedgehog. These will be detailed in the CEMP.

Operational phase

- 6.5.4 To ensure the site remains permeable to hedgehog post-construction, any non-permeable fencing used (e.g. close-boarded fencing between residential gardens) will contain suitable holes at the base to ensure hedgehog can continue to commute and forage across the site. This will be detailed in a LEMP to be secured by planning condition.

6.6 Birds

- 6.6.1 The proposed development will require the removal of areas of breeding bird habitat on site, and therefore will require mitigation and compensation.

Construction phase

- 6.6.2 Nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended), so it will be necessary to avoid damage to, or destruction of, nests, or disturbance of nesting birds, during the construction phase.
- 6.6.3 In order to mitigate impacts to breeding birds, any clearance of suitable habitat (e.g. woodland and scrub) will either be undertaken outside of the nesting season (March to August inclusive) or be subject to a pre-works check by a suitably qualified ecologist. The method statement for ensuring the protection of nesting birds will be detailed within the CEMP.

Operational phase

- 6.6.4 To ensure the site remains suitable for breeding birds post-construction, bird boxes should be installed on new residential housing or remaining trees to ensure potential for breeding birds is retained. This will be detailed in a LEMP to be secured by planning condition.

6.7 Bats

Construction phase

- 6.7.1 There is potential for disruption to foraging and commuting bats from construction lighting, particularly for potential Annex II species utilising the site which are light-sensitive species, namely lesser and greater horseshoe bats.
- 6.7.2 Therefore, it is recommended that lighting during construction is turned off at night and any essential security lighting be set on a timer to prevent disturbance to nocturnal mammals. This can be detailed in the CEMP.

Operational phase

- 6.7.3 There is potential for disturbance to foraging and commuting bats from light spill from the new residential dwellings. Ecological buffers have been proposed along the site boundaries to maintain commuting and foraging corridors for bats during the operational phase along the north and eastern boundaries of the site.
- 6.7.4 A detailed lighting plan will need to be secured by condition to demonstrate that these buffered boundaries, and the north-east corner of the site, where there is a potential commuting corridor with the woodland immediately located to the north east of the site. This will allow any potential light-sensitive Annex II species utilising the site to continue foraging on-site.

Summary

- 6.7.5 Overall, with the mitigation measures outlined for the construction phase and the provision of ecological buffers, no significant effects on the site's assemblage of commuting and foraging bats are predicted as a result of the development.

6.8 Invertebrates

Construction phase

- 6.8.1 The retained areas of suitable invertebrate habitats namely the acid grassland and heathland will be protected during the construction phase through the use of protective fencing and pollution control measures to be detailed with the CEMP.

Operational phase

- 6.8.2 It is expected that invertebrates will continue to utilise the retained acid grassland and heathland during the operational phase of the development. This grassland will be in close proximity to residential gardens and may experience artificial light spill from the dwelling. Potential impacts on invertebrates during the operational phase include disruption to the natural light/dark rhythms on which many invertebrates depend.

Increased artificial lighting can also attract higher numbers of invertebrates and pollinators to concentrated areas, increasing their risk of predation (Bruce-White and Shardlow, 2011). A detailed lighting plan will need to be secured by condition to demonstrate that the retained grassland and heathland will not suffer excessive light spill.

Compensation

- 6.8.3 It will not be possible to compensate for the minor loss of the mosaic of habitats which support the site's assemblage of invertebrates on site.

6.9 Reptiles

Construction phase

- 6.9.1 The reptile surveys identified no reptile communities on site, however the site does hold some reptile potential given the habitats present. Some of the woodland and grassland edges will be retained and buffered, however the larger woodland and scrub parcel on the western boundary of the site will be removed to allow development. This vegetation removal has the potential to result in the accidental killing or injuring of reptiles.
- 6.9.2 To mitigate potential impacts on reptiles during the construction phase, removal of suitable habitat (e.g. scrub, tussocky grassland) will be undertaken sensitively using precautionary measures, which can be set out within the CEMP. In particular, habitat removal will utilise a directional approach, namely from south to north, to encourage any reptiles present on the site to disperse into other suitable off-site habitat to the north.

Operational phase

- 6.9.3 The development proposals include the provision of ecological buffers along the north and eastern site boundaries. Despite the western boundary woodland and scrub being a key feature for reptiles, and the development proposals include the provision of an ecological buffer along the east of the site, therefore any potential reptiles on site will be able to relocate to the retained areas. This will allow any reptiles present within proximity of the site to continue commuting within the wider environment during the operational phase.

Compensation

- 6.9.4 Development will result in a permanent reduction in available reptile habitat within the local area and it will not be possible to compensate for this loss. However, the site will retain its limited connectivity with the wider environment allowing the local population of reptiles continued access to other suitable habitats to the north of the site.

Summary

6.9.5 Overall, with the implementation of precautionary habitat removal during construction and the provision of ecological buffers to retain the limited connectivity of the site with other suitable reptile habitats, **no significant effects** on reptiles are predicted as a result of the development.

Table 5 Summary of residual effects and mitigation/compensation

Ecological feature	Mitigation/compensation	Mechanism for securing delivery	Residual effects
Acid grassland (Lowland dry acid grassland)	- Retention of acid grassland. - Precautionary construction measures. - Management measures to reduce residential pressures.	CEMP secured by condition LEMP secured by condition	Minor adverse
Dwarf shrub heath (Lowland heathland)	- Retention of most of the heathland. - Precautionary construction measures. - Management measures to reduce residential pressures.	CEMP secured by condition LEMP secured by condition	Minor adverse
Woodland (Other woodland; broadleaved and mixed)	- Provision of protective tree fencing during construction. - Management of retained woodland and scrub. - Provision of ecological buffers.	CEMP secured by condition LEMP secured by condition	Minor adverse
Section 7 species - Hedgehog	- Precautionary working method statement during site clearance. - General safe working construction measures. - Measures to ensure site remains permeable post-construction.	CEMP secured by condition LEMP secured by condition	None
Breeding birds	- Precautionary working method statement during vegetation clearance. - Compensation measures in the form of bird boxes installed post-construction	CEMP secured by condition LEMP secured by condition	None
Bats	- Sensitive lighting during construction. - Sensitive lighting design adjacent to site boundaries. - Provision of ecological buffers.	CEMP secured by condition Lighting strategy secured by condition	None
Invertebrates	Sensitive lighting design adjacent to site boundaries.	Lighting strategy secured by condition	Minor adverse

Ecological feature	Mitigation/compensation	Mechanism for securing delivery	Residual effects
Reptiles	• Precautionary construction measures. • Provision of ecological buffers.	CEMP secured by condition	None

6.10 Cumulative Effects

6.10.1 The desk study identified several small-scale developments within 1km of the site, such as single storey side extensions, which are expected to have negligible impacts on wildlife. It is therefore considered that there will be no cumulative effects on the important ecological features identified within this assessment as a result of the development.

7 ENHANCEMENTS

7.1 The proposals will include several enhancements for biodiversity which are as follows:

- New tree planting throughout the development to provide habitat for species such as invertebrates and birds.
- Bat boxes on the mature trees within the retained woodland and scrub on site. Bat provisions will be suitable for crevice-dwelling species such as pipistrelle bats.
- Bird boxes to be installed within the retained boundary woodland and scrub, suitable for a variety of common/garden bird species.
- Bee bricks on new residential properties and two insect hotels within the development footprint.
- Addition of deadwood within the woodland and scrub along the eastern boundary which will provide valuable habitat for a range of invertebrate species.

8 MONITORING

- 8.1 The mitigation measures set out in Section 6 which will be supervised by an Ecological Clerk of Works (ECoW) will be recorded as a 'site note' by the ECoW, and if required made available to the LPA.
- 8.2 The provision of the ecological enhancements as set out in Section 7 will be subject to an ecological compliance report undertaken by the ECoW.

9 CONCLUSIONS

- 9.1 The proposed development has sought to avoid impacts on important ecological features through the retention of key habitat features within the proposals. There is however, a small loss of an area of heathland which is not feasible to retain on site.
- 9.2 The retained habitat features comprising the acid grassland and heathland will be protected during the construction phase of the development with details to be set out within a CEMP.
- 9.3 The same habitats will be brought into active management for conservation overseen by MVH with details to be provided within a LEMP.
- 9.4 The proposals provide opportunity for ecological enhancements through the provision of integrated bird and bat boxes, and additional native planting.
- 9.5 The development layout has provided a habitat buffer along the retained boundary eastern woodland and scrub with an aim to minimise impacts on commuting and foraging bats from the wider area.
- 9.6 Mitigation measures for protected species including bats, reptiles, hedgehog and birds have been provided, which are focused on avoiding impacts during the construction phase.
- 9.7 The mitigation and enhancement measures described could be secured by way of appropriately worded planning conditions.
- 9.8 There are two large stands of Japanese knotweed on site that will need to be appropriately managed and removed by suitably qualified professionals.

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APPENDIX 1 2018 NVC SPECIES LIST

Neutral Grassland

Species	Common name	Abundance (DAFOR)
<i>Agrostis capillaris</i>	Common Bent	F
<i>Alchemilla mollis</i>	Soft Lady's-mantle	R
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	O
<i>Arrhenatherum elatius</i>	False Oat -grass	A
<i>Calluna vulgaris</i>	Heather	R
<i>Carex flacca</i>	Glaucous Sedge	R
<i>Carex hirta</i>	Hairy Sedge	O
<i>Centaurea nigra</i>	Common Knapweed	O
<i>Chamerion angustifolium</i>	Rosebay Willowherb	O
<i>Cirsium arvense</i>	Creeping Thistle	R
<i>Cirsium palustre</i>	Marsh Thistle	R
<i>Conopodium majus</i>	Pignut	R
<i>Crataegus monogyna</i>	Hawthorn	O
<i>Cynosurus cristatus</i>	Crested Dog's-tail	F
<i>Dactylis glomerata</i>	Cock's-foot	F
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	O
<i>Dicranum scoparium</i>	a moss	R
<i>Epilobium hirsutum</i>	Great Willowherb	R
<i>Epilobium montanum</i>	Broad-leaved Willowherb	R
<i>Festuca ovina</i>	Sheep's-fescue	O
<i>Festuca rubra</i>	Red Fescue	F
<i>Holcus lanatus</i>	Yorkshire-fog	A
<i>Hypochaeris radicata</i>	Cat's-ear	R
<i>Juncus effusus</i>	Soft-rush	R
<i>Juncus tenuis</i>	Slender Rush	R
<i>Lolium perenne</i>	Perennial Rye-grass	LA
<i>Lonicera nitida</i>	Wilson's Honeysuckle	R
<i>Lotus corniculatus</i>	Common Bird's-foot-trefoil	F
<i>Ononis repens</i>	Common Restharrow	R
<i>Plantago lanceolata</i>	Ribwort Plantain	F
<i>Poa humilis</i>	Spreading Meadow-grass	F
<i>Poa pratensis/trivialis</i>	Smooth/Rough Meadow-grass	O
<i>Potentilla reptans</i>	Creeping Cinquefoil	R
<i>Rhytiadelphus squarrosus</i>	a moss	A
<i>Rubus idaeus</i>	Raspberry	R
<i>Rumex acetosa</i>	Common Sorrel	R
<i>Rumex obtusifolius</i>	Broad-leaved Dock	R
<i>Senecio jacobaea</i>	Common Ragwort	O
<i>Sonchus asper</i>	Prickly Sowthistle	R
<i>Vicia hirsuta</i>	Hairy Tare	R
<i>Vicia sativa</i>	Common Vetch	O

Acid Grassland

Species	Common name	Abundance (DAFOR)
<i>Agrostis capillaris</i>	Common Bent	F
<i>Aira praecox</i>	Early Hair-grass	F
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	O
<i>Arrhenatherum elatius</i>	False Oat -grass	R
<i>Calluna vulgaris</i>	Heather	O
<i>Centaurea nigra</i>	Common Knapweed	O
<i>Corylus avellana</i>	Hazel	R
<i>Dactylis glomerata</i>	Cock's-foot	R
<i>Deschampsia flexuosa</i>	Wavy Hair-grass	O
<i>Dicranum scoparium</i>	a moss	F
<i>Digitalis purpurea</i>	Foxglove	R
<i>Festuca ovina</i>	Sheep's-fescue	A
<i>Galium saxatile</i>	Heath Bedstraw	R
<i>Hedera hibernica</i>	Atlantic Ivy	R
<i>Hieracium argillaceum</i>	a hawkweed	A
<i>Holcus lanatus</i>	Yorkshire-fog	R
<i>Hylocomium splendens</i>	a moss	A
<i>Hypnum cupressiforme</i> var.	a moss	F
<i>lacunosum</i>		
<i>Hypnum jutlandicum</i>	a moss	O
<i>Hypochaeris radicata</i>	Cat's-ear	F
<i>Lotus corniculatus</i>	Common Bird's-foot-trefoil	O
<i>Malus pumila</i>	Apple	R
<i>Ononis repens</i>	Common Restharrow	R
<i>Pilosella officinarum</i>	Mouse-ear Hawkweed	A
<i>Plantago lanceolata</i>	Ribwort Plantain	O
<i>Pleurozium schreberi</i>	a moss	A
<i>Poa humilis</i>	Spreading Meadow-grass	O
<i>Polytrichum piliferum</i>	a moss	O
<i>Potentilla erecta</i>	Tormentil	R
<i>Pseudoscleropodium purum</i>	a moss	R
<i>Ptilidium ciliare</i>	a liverwort	O
<i>Quercus robur</i>	Pedunculate Oak	R
<i>Racomitrium ericoides</i>	a moss	O
<i>Racomitrium lanuginosum</i>	a moss	O
<i>Rhytidiadelphus squarrosus</i>	a moss	A
<i>Rosa canina</i>	Dog Rose	R
<i>Rumex acetosella</i>	Sheep's Sorrel	F
<i>Senecio jacobaea</i>	Common Ragwort	R
<i>Sorbus aucuparia</i>	Rowan	O

Dwarf Shrub Heath

Species	Common name	Abundance (DAFOR)
<i>Agrostis capillaris</i>	Common Bent	A
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	O
<i>Arrhenatherum elatius</i>	False Oat -grass	R
<i>Calluna vulgaris</i>	Heather	A
<i>Campylopus introflexus</i>	a moss	R
<i>Centaurea nigra</i>	Common Knapweed	O
<i>Chamerion angustifolium</i>	Rosebay Willowherb	O
<i>Corylus avellana</i>	Hazel	R
<i>Crataegus monogyna</i>	Hawthorn	O
<i>Deschampsia flexuosa</i>	Wavy Hair-grass	A
<i>Dicranum scoparium</i>	a moss	F
<i>Digitalis purpurea</i>	Foxglove	R
<i>Diplophyllum albicans</i>	a liverwort	R
<i>Fallopia japonica</i>	Japanese Knotweed	R
<i>Festuca ovina</i>	Sheep's-fescue	A
<i>Galium saxatile</i>	Heath Bedstraw	R
<i>Hieracium argillaceum</i>	a hawkweed	LA
<i>Holcus lanatus</i>	Yorkshire-fog	O
<i>Hylocomium splendens</i>	a moss	A
<i>Hypnum jutlandicum</i>	a moss	O
<i>Lotus corniculatus</i>	Common Bird's-foot-trefoil	O
<i>Pilosella officinarum</i>	Mouse-ear Hawkweed	R
<i>Plantago lanceolata</i>	Ribwort Plantain	O
<i>Pleurozium schreberi</i>	a moss	A
<i>Polypodium vulgare</i>	Polypody	R
<i>Polytrichastrum formosum</i>	a moss	R
<i>Polytrichum piliferum</i>	a moss	O
<i>Potentilla erecta</i>	Tormentil	F
<i>Ptilidium ciliare</i>	a liverwort	R
<i>Quercus robur</i>	Pedunculate Oak	R
<i>Racomitrium lanuginosum</i>	a moss	LF
<i>Rhytidiadelphus squarrosus</i>	a moss	A
<i>Rosa canina</i>	Dog Rose	R
<i>Rubus fruticosus</i> agg.	Bramble	R
<i>Rumex acetosa</i>	Common Sorrel	R
<i>Rumex acetosella</i>	Sheep's Sorrel	R
<i>Sorbus aucuparia</i>	Rowan	O
<i>Trifolium medium</i>	Zigzag Clover	R
<i>Vaccinium myrtillus</i>	Bilberry	LA

Dense Scrub and Trees

Species	Common name	Abundance (DAFOR)
<i>Acer pseudoplatanus</i>	Sycamore	R
<i>Agrostis capillaris</i>	Common Bent	R
<i>Arrhenatherum elatius</i>	False Oat -grass	F
<i>Atrichum undulatum</i>	a moss	R
<i>Betula pubescens</i>	Downy Birch	O
<i>Brachythecium rutabulum</i>	a moss	O
<i>Buddleja davidii</i>	Butterfly-bush	R
<i>Carex flacca</i>	Glaucous Sedge	O
<i>Carex hirta</i>	Hairy Sedge	R
<i>Centaurea nigra</i>	Common Knapweed	R
<i>Chamaecyparis lawsoniana</i>	Lawson's Cypress	R
<i>Chamerion angustifolium</i>	Rosebay Willowherb	O
<i>Cirsium arvense</i>	Creeping Thistle	R
<i>Cololejeunea minutissima</i>	a liverwort	R
<i>Corylus avellana</i>	Hazel	O
<i>Cotoneaster</i> sp.	a cotoneaster	R
<i>Crataegus monogyna</i>	Hawthorn	F
<i>Cryphaea heteromalla</i>	a moss	R
<i>Dactylis glomerata</i>	Cock's-foot	O
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	R
<i>Dryopteris filix-mas</i>	Male-fern	R
<i>Epilobium hirsutum</i>	Great Willowherb	O
<i>Epilobium montanum</i>	Broad-leaved Willowherb	O
<i>Equisetum arvense</i>	Field Horsetail	R
<i>Eurhynchium striatum</i>	a moss	R
<i>Fallopia japonica</i>	Japanese Knotweed	LA
<i>Fraxinus excelsior</i>	Ash	F
<i>Frullania dilatata</i>	a liverwort	O
<i>Hedera helix</i>	Common Ivy	R
<i>Holcus lanatus</i>	Yorkshire-fog	O
<i>Homalothecium sericeum</i>	a moss	R
<i>Hypnum cupressiforme</i> agg.	a moss	O
<i>Isoetecium myosuroides</i>	a moss	R
<i>Juncus effusus</i>	Soft-rush	R
<i>Kindbergia praelonga</i>	a moss	O
<i>Lonicera nitida</i>	Wilson's Honeysuckle	R
<i>Lonicera periclymenum</i>	Wild Honeysuckle	R
<i>Metzgeria consanguinea</i>	a liverwort	O
<i>Metzgeria furcata</i>	a liverwort	R
<i>Orthotrichum affine</i>	a moss	R
<i>Orthotrichum lyellii</i>	a moss	R
<i>Orthotrichum pulchellum</i>	a moss	O
<i>Orthotrichum striatum</i>	a moss	R
<i>Poa trivialis</i>	Rough Meadow-grass	O
<i>Potentilla reptans</i>	Creeping Cinquefoil	R
<i>Prunus spinosa</i>	Blackthorn	R
<i>Quercus robur</i>	Pedunculate Oak	R
<i>Radula complanata</i>	a liverwort	R
<i>Ranunculus repens</i>	Creeping Buttercup	R

Species	Common name	Abundance (DAFOR)
Rubus fruticosus agg.	Bramble	A
Rubus idaeus	Raspberry	R
Rumex crispus	Curled Dock	R
Salix caprea	Goat Willow	R
Salix cinerea subsp. oleifolia	Grey Willow	F
Sciuro-hypnum populeum	a moss	R
Senecio erucifolius	Hoary Ragwort	R
Sorbus aucuparia	Rowan	O
Thamnobryum alopecurum	a moss	R
Trifolium pratense	Red Clover	R
Trifolium repens	White Clover	R
Ulota bruchii	a moss	R
Ulota phyllantha	a moss	R
Urtica dioica	Common Nettle	A