



**PROPOSED COMMERCIAL DEVELOPMENT:**  
**LAND AT PANT INDUSTRIAL ESTATE, DOWLAIS, MERTHYR**  
**TYDFIL**

**ECOLOGICAL ASSESSMENT**  
**ISSUE 1VD**

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MKR Property Ltd

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# Pant Industrial Estate, Dowlais, Merthyr Tydfil

## Proposed Commercial Development: Pant Industrial Estate

### Ecological Assessment

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## **NON-TECHNICAL SUMMARY**

An ecological assessment was undertaken of land on Pant Industrial Estate, Dowlais, Merthyr Tydfil, South Wales in support of a planning application to erect light industrial units and associated infrastructure.

The work involved a phase 1 habitat survey to categorise the habitats present, an assessment of the site's ability to provide suitable habitats for protected species and recommendations for further survey and actions if considered necessary.

The habitats on the site comprise of semi-improved grassland, isolated scrub, bare ground, brash piles and a dry ditch

No non-native invasive species were observed on or immediately adjacent to the site.

There were no waterbodies on or immediately adjacent to the site which could be suitable for use by breeding great crested newts (or other amphibians).

No evidence of badger activity was recorded within or immediately adjacent to the site boundary.

It should be assumed that all areas of scrub will be utilised by nesting birds during the breeding season. There is no habitat suitable for ground nesting species.

The site provides reptiles with some limited habitat for foraging, basking, sheltering and hibernation purposes.

It is considered that no further ecological surveys are necessary at this stage although this will need to be reviewed in light of the final design.

All site clearance works should be undertaken in accordance with a method statement to ensure that amphibians, breeding birds and reptiles are not harmed at any stage of the project.

## 1 INTRODUCTION

### 1.1 OBJECTIVE

The objectives of this report are to:

- identify the habitats present on the site;
- identify the potential for protected species to be present on site;
- using the information gathered to determine whether there may be any impacts (both positive and negative) on protected species present;
- provide recommendations for further survey as necessary; and
- suggest outline mitigation and enhancement ideas and principles

### 1.2 METHODOLOGY

To achieve the objectives set out above, the following actions were taken:

- Field based assessments in respect of
  1. Habitats;
  2. Protected species, primarily:
    - i. Bats;
    - ii. Dormice;
    - iii. Otters;
    - iv. Amphibians (particularly great crested newt);
    - v. Badgers
    - vi. Reptiles; and
    - vii. Breeding birds

The impact assessment has been undertaken by ecological feature rather than by section i.e. each subject is discussed and assessed separately and summarised in conjunction with the others.

### 1.3 SITE DESCRIPTION

The red line development site boundary encloses an area of approximately 0.5ha and is located to the north of the A465 on Pant Industrial Estate (centred on NGR ST18659604) (Figures 1 & 2).

The site is a brownfield site that was previously used by the ICI as a chemical plant, leaving numerous ground contaminants. There are a number of remnants of the former buildings below ground level, namely footings, concrete slabs and potentially basement voids (although this is yet to be confirmed).

The area of land subject to survey is comprised of semi-improved (poor) grassland and bare ground (a mosaic of concrete and soil). There are isolated areas of scattered scrub in the corners of the site; these are comprised of bramble (*Rubus fruticosus*) and grey willow (*Salix cinerea*) with occasional silver birch (*Betula pendula*). The grassland is rank as a result of a lack of management and is being encroached by tall ruderal species such as rosebay willow herb (*Chamerion angustifolium*) and spear thistle (*Cirsium vulgare*). The grassland is thick with springy turf moss (*Rhytidiadelphus squarrosus*).

There are a number of brash piles on the site created in 2018 when scrub was cleared from the site. The species appear to be predominately grey willow and hawthorn (*Crataegus monogyna*).

There is a very small area (less than 5m<sup>2</sup>) of marshy grassland towards the sites north eastern corner, the vegetation here was dominated by pond sedge (*Carex riparia* sp.).

The site is level, set down from the northern boundary by approximately 2m and is of entirely made ground; there is a dry ditch on the sites southern boundary formed as a result of the ground levels being raised up.

The site is set in a wholly urban location being surrounded by commercial and industrial units. There is an area to the east of the site that is comprised of bare ground under a sparse canopy of grey willow and silver birch. There is no understorey. The ground layer is dominated by semi improved poor grassland with areas of bare ground.

Species lists and Photographs are at **Appendix A**.

**Figure 1** – Detailed view of the site (site boxed red)



(Image courtesy of Google Earth)

**Figure 2** – Overview of the development site



## **1.4 PROPOSED DEVELOPMENT**

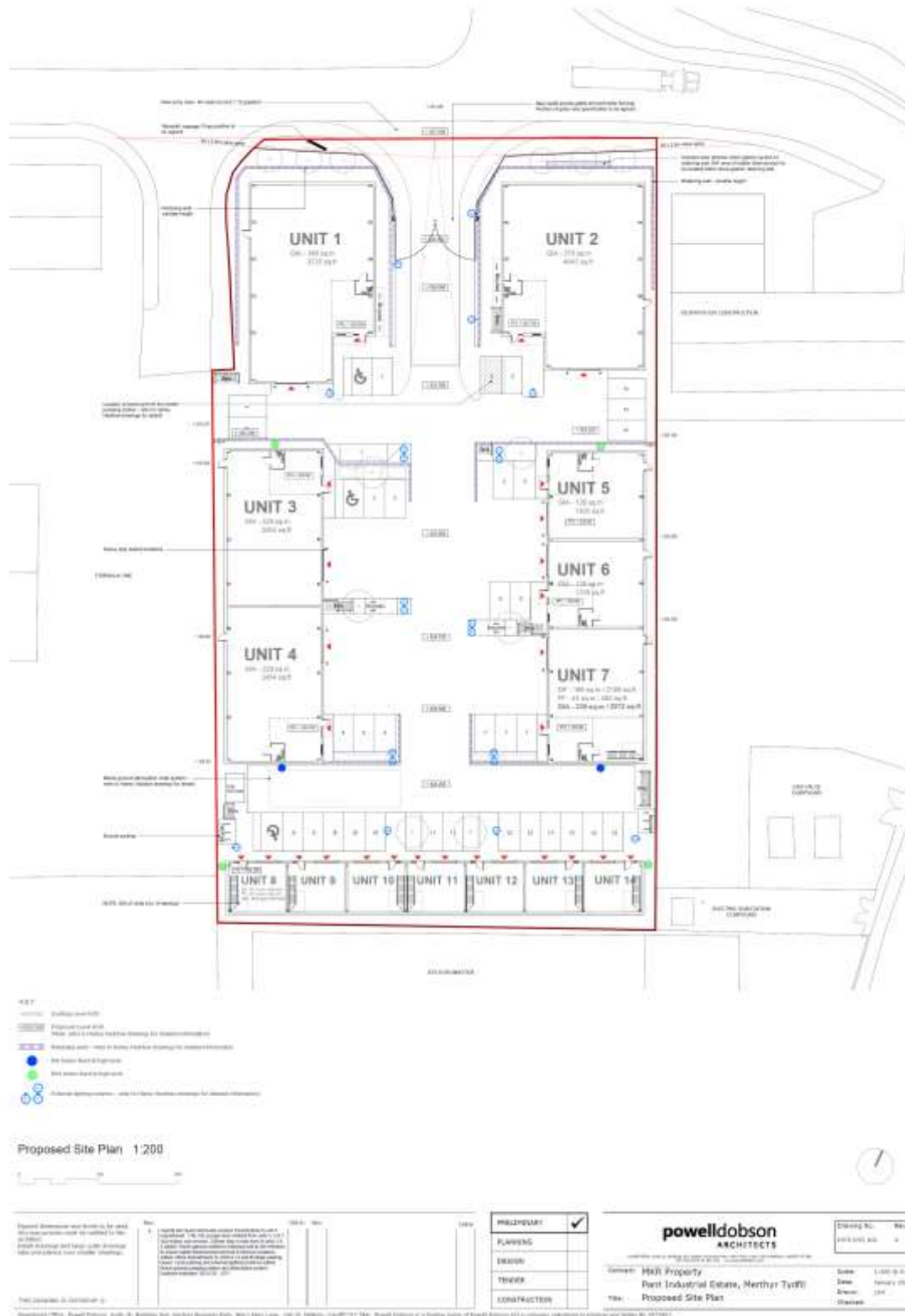
It is understood that the development proposal is for light industrial units (figure 3) with associated infrastructure (please see Feasibility Study, Powelldobson Architects, 2019 for further information).

## **1.5 STUDY AREA**

The field survey looked at the red line development area itself and up to 20m from the site boundaries wherever possible.

The biological records search covered a search radius of 2000m from the centre of the development site for protected sites (international, national and local), protected and priority species, other species of conservation concern and locally important species. A buffer of 2000m was applied to locally designated sites.

Figure 3: Proposed site layout (please note, works outside of the red line boundary are not covered by this report. Works outside the red line boundary are only potential if the site is re-developed at a later date (please see Feasibility Study, Powelldobson Architects, 2019 for further information).



## **2 REGULATORY FRAMEWORK**

### **2.1 INTERNATIONAL**

Prior to the 31<sup>st</sup> January 2020, European Union legislation required that member states designate sites for the protection of habitats and species included in the annexes of both Council Directive 92/43/EC on the Conservation of Natural Habitats and of Wild Flora and Fauna (the Habitats Directive) and Council Directive 79/409/EEC on the Conservation of Wild Birds (the Birds Directive). This legislation was implemented in the UK by the Conservation of Habitats and Species Regulations 2017 (“the Habitat Regulations”). This results in sites being designated as Special Areas of Conservation (SACs) and Special Protection Areas respectively (SPAs). Since the UKs exit from the European Union on 31<sup>st</sup> January 2020, the law responsible for continuing to implement this legislation through the transition period is The Conservation of Habitats and Species (Amendment) (EU EXIT) Regulations 2017. All legislation within the Conservation of Habitats and Species Regulation 2017 still apply within the UK under the amendment to the 2017 regulations until otherwise notified.

### **2.2 NATIONAL (UK)**

The Wildlife and Countryside Act 1981 (as amended) allows sites to be designated as Sites of Special Scientific Interest (SSSI) for one or all of the following categories:

- Flora;
- Fauna;
- Habitat; and
- Geological importance.

European designated sites are automatically designated as SSSIs prior to their designation.

Other relevant legislation includes:

- The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (as amended);
- The Wildlife and Countryside Act 1981 (as amended);
- Countryside and Rights of Way Act 2000;
- Environment (Wales) Act 2016
- Wild Mammals (Protection) Act 1996;
- The Protection of Badgers Act 1992; and
- The Hedgerow Regulations 1997.

Section 40 of the Natural Environment and Rural Communities Act 2006 (as amended) requires all public bodies to have regard wherever possible to conserving biodiversity. Section 42 of the Act requires that a list of habitats and species of Principle Importance for the Conservation of Biological Diversity in Wales be produced; however, this has been replaced by Section 7 of the Environment (Wales) Act 2016 Priority Habitats and Species lists.

The Environment (Wales) Act 2016 requires that all public authorities, when carrying out their functions in Wales, seek to “maintain and enhance biodiversity” where it is within the proper exercise of their functions. In doing so, public authorities must also seek to “promote the resilience of ecosystems”.

This ensures that biodiversity is an integral part of the decisions that public authorities take in relation to Wales. It also links biodiversity with the long-term health and functioning of our ecosystems, therefore helping to align the biodiversity duty with the framework for sustainable natural resource management provided in the Act.

In Wales, this legislation replaces and enhances the Natural Environment and Rural Communities Act (2006) which sought to raise the profile of biodiversity and to make sure that it is considered in all local

authority decisions by ensuring that “Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.”.

Other elements of NERC 2006 may still apply.

Biodiversity Action Plans (BAPs) are tools which are used to monitor, manage and enhance those habitats and species which are of significance to an area or organisation, The United Kingdom BAP lists a number of priority habitats and species which are of conservation concern.

## **2.3 NATIONAL (WALES)**

Planning Policy Wales (Welsh Government, 2018) and Planning Policy Wales Technical Advice Note 5: Nature Conservation and Planning (Welsh Assembly Government, September 2009) set out the protection given to wildlife (sites, habitats and species) by the planning system operational in Wales.

## **2.4 LOCAL AND REGIONAL**

The proposed development is wholly within the Merthyr Tydfil County Borough Council (CCBC) area of responsibility. Therefore, all policies adopted by that Planning Authority will apply, including policies which may not be specific to nature conservation or the natural environment but that may apply or be relevant and should be considered during the planning process.

There are a number of habitats and species which are of a high priority to MTCBC. These have been determined following examination of the UK BAP and the Environment (Wales) Act Section 7 list of Priority Species and Habitats and those habitats and species determined to be locally important by the Local Biodiversity Partnership.

## **2.5 PLANNING FRAMEWORK**

The proposed development will be undertaken wholly under the auspices of the Town and Country Planning Act 1990 (as amended).

## **2.6 PREVIOUS SURVEYS**

There are no known previous surveys of this site.

## **2.7 CONSTRAINTS**

The survey was undertaken at a time of year when the full botanical interest may not have been apparent.

### **3 DESK STUDY**

#### **3.1 SUMMARY**

There are no records of any priority or protected species, species of local conservation concern or other species of conservation concern from the site or immediately adjacent to it. The closest records are from 318m away.

There is one Site of Special Scientific Interest within 2000m of the proposed development site.

A single Local Nature Reserve was identified within 2000m of the site.

Eight statutorily designated sites, e.g. Sites of Importance for Nature Conservation, were identified within the data search.

#### **3.2 BACKGROUND**

A desk study provides background information on historical and current biological data which can identify ecological constraints, mitigation, and biodiversity enhancement opportunities.

#### **3.3 METHODOLOGY**

The South East Wales Biodiversity Records Centre (SEWBReC) was consulted in order to provide biological information on the presence of species and sites on or adjacent to the site (Reference number 0190-730).

A 2000m search buffer was applied to priority and protected species, species of local conservation concern and other species of conservation concern, statutorily designated sites (for nature conservation purposes) and 2000m locally designated sites.

The Multi-Agency Geographical Information System (MAGIC) website ([www.magic.gov.uk](http://www.magic.gov.uk)) and the Local Biodiversity Action Plan (LBAP) for MTCBC were also consulted.

#### **3.4 CONSTRAINTS**

There were no constraints to the data search

#### **3.5 RESULTS**

##### **3.5.1 Statutorily protected sites**

###### *3.5.1.1 European designated sites*

There are no European Designated Sites within 2000m of the development site.

###### *3.5.1.2 United Kingdom designated sites*

There is one Site of Special Scientific Interest (SSSI), Cwm Taff Fechan Woodlands, within the data search area, (details at **Table 2** below). The citation for this site is at **Appendix B**.

**Table 2** - UK designated sites within 2km of Frontier Medical Group development site

| Site                      | Designation | Grid reference | Area (ha) | Reason for designation                        |
|---------------------------|-------------|----------------|-----------|-----------------------------------------------|
| Cwm Taff Fechan Woodlands | SSSI        | SO 052101      | 69ha      | Woodland (please see Appendix B for citation) |

The site is at a far enough distance from the site to not be impacted by the proposed development. There are no habitats or features on the site that the SSSI has been designated for. This site will not be discussed further in this report.

### 3.5.2 Non-statutory designations

There are no Sites of Importance for Nature Conservation (SINCs) on the development site. However, the site is within 2000m of eight SINCs.

**Table 3** - non-statutorily designated sites within 2km of the proposed development site:

| Site         | Designation | Grid reference | Area (ha) | Reason for designation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------|-------------|----------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bryniau      | SINC        | Unknown        | Unknown   | Complex semi-upland area of limestone-influenced habitats, partly derived from old limestone quarries (Morlais Quarries) and screes associated with the former Morlais Castle. Part of the site is currently in use as a golf course. Extensive calcareous grasslands and screes supporting numerous rare and characteristic species, including nationally scarce plants. Also includes areas of neutral grassland and some small areas of acid grassland. Other habitats include limestone outcrops with ledge communities, bracken stands, limestone scrub and a pond. |
| Gyrnos Wood  | SINC        | Unknown        | Unknown   | Small area of wet woodland and an adjacent field supporting marshy grassland, acid grassland and bracken stands immediately to the north of the Heads of the Valleys Road. There are also some gritstone outcrops and scattered mature trees. The regionally scarce climbing corydalis is present in the bracken stands                                                                                                                                                                                                                                                  |
| Morlais Hill | SINC        | Unknown        | Unknown   | Complex semi-upland area of limestone-influenced habitats, partly derived from old limestone quarries                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| Site         | Designation | Grid reference | Area (ha) | Reason for designation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------|-------------|----------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |             |                |           | (Morlais Quarries) and screes associated with the former Morlais Castle. Part of the site is currently in use as a golf course. Extensive calcareous grasslands and screes supporting numerous rare and characteristic species, including nationally scarce plants. Also includes areas of neutral grassland and some small areas of acid grassland. Other habitats include limestone outcrops with ledge communities, bracken stands, limestone scrub and a pond.                                                                                                                                                    |
| Cwm Tafechan | SINC        | Unknown        | Unknown   | The SINC contains Cwm Taf Fechan SSSI. The limestone geology gives rise to limestone woodlands, species-rich calcareous grasslands, species-rich neutral grasslands and calcareous scrub. Many species of interest have been recorded from the woodlands which are the designated feature of the SSSI. The neutral and calcareous grasslands of the valley slopes and bottom are typically species-rich. Otter ranges along the Afon Taf Fechan, which also supports a range of native fish species including salmon. Nationally rare and scarce invertebrate and bryophyte species have been recorded from the SSSI. |
| Blaenmorlais | SINC        | Unknown        | Unknown   | A large area supporting a mosaic of upland habitats at the western edge of Merthyr Common. Mainly acid grasslands with acidic flushes, grass-heaths, dry heathlands, marshy grasslands, bracken slopes and smaller areas of wet heathland and scrub. The site also contains small disused quarries (Garth Quarries) and acid screes. A section of the Nant Morlais within the site has steep valley sides with rocky outcrops. A large pond in the south of the site supports a                                                                                                                                       |

| Site                 | Designation | Grid reference | Area (ha) | Reason for designation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------|-------------|----------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      |             |                |           | regionally rare plant, and several uncommon dragonflies. To the north the site contains an area of limestone spoil tips supporting unimproved upland calcareous grassland, as well as some limestone outcrops and scree.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Merthyr Common North | SINC        | Unknown        | Unknown   | Very extensive area of upland common land supporting a mosaic of both wet and dry moorland habitats. These include extensive areas of unimproved acid grassland, marshy grassland, dry heathland and grass-heath, together with areas of wet heath, acid flush, bracken stands, scree and exposed gritstone bedrock. Tracts of modified blanket bog occur on the highest ground in the north-east of the site; these are often wet with abundant bog-mosses, although sometimes drier where drainage channels have been cut. Numerous small ponds and streams are present, including the headwaters of the Nant Morlais. Several ponds support floating bur-reed, a rare species in Glamorgan. In the north-west of the site, in contrast, there are areas of outcropping limestone, scree and extensive disused quarries (Twynau Gwynion) supporting calcicole grassland and ledge communities of very restricted occurrence in the County Borough. These areas are characteristically species rich, and support many regionally rare and scarce species. Numerous other localised plant species also occur in these habitats. |
| Taile Hydd           | SINC        | Unknown        | Unknown   | unknown                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Cyfarthfa Park       |             |                |           | Part of an area of mainly ornamental parkland within Merthyr Tydfil. The SINC includes semi-natural woodland and several                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| Site | Designation | Grid reference | Area (ha) | Reason for designation                                                                                                                                  |
|------|-------------|----------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |             |                |           | enclosures of neutral grassland in the eastern half of the park. Also includes small areas of plantation woodland and scrub and several woodland ponds. |

There are a number of SINC sites within 500m of the site; the site is isolated from all areas which might have any ecological value by commercial and industrial buildings, roads, housing and associated infrastructure. It is therefore considered highly unlikely that any development on the site will adversely impact any of the SINC sites, whether they be within 500m of 2000m, and that therefore they will not be considered further in this report.

### 3.5.3 Species: SEWBreC data search

There are no species records for the proposed development site or its immediate vicinity.

However, there are multiple records for protected species within 2000m of the site. A summary of the species found in the data search buffer and their legislative status is at **Appendix C**.

The records will be discussed through the relevant sections throughout this report.

## 3.6 PREVIOUS SURVEYS

None known.

## **4 PHASE 1 HABITAT SURVEY**

### **4.1 SUMMARY**

A number of habitats were recorded across and adjacent to the survey area. These included:

- Marshy grassland;
- Semi- improved grassland (poor);
- Isolated scrub;
- Bare ground
- Dry ditch; and
- Other

The potential for a number of protected species was recorded, including habitats suitable for:

- Bats;
- Badgers;
- Breeding birds;
- Reptiles
- Amphibians

The habitats are shown on **Figure 3** below.

### **4.2 BACKGROUND**

The Phase 1 habitat survey was carried out to assess the existing habitats, identify any protected habitats or species that may be present, determine the impact of the proposed works on them, and identify any mitigation measures that may be necessary. This was done by undertaking both a desk study and field survey.

The survey was undertaken on Wednesday 5<sup>th</sup> February 2020

Phase 1 habitat survey is a way of recording the basic habitat data to form a baseline level of knowledge of the ecology of a site and provide recommendations for future surveys if considered necessary.

### **4.3 METHODOLOGY**

#### **4.3.1 Desk study:**

A biological data search was undertaken. Refer to section 3 above.

#### **4.3.2 Field survey:**

Experienced surveyors from BE Ecological Ltd carried out a habitat assessment and mapping exercise in February 2020 using the Phase 1 habitat survey technique. Nomenclature follows Stace (1997)<sup>1</sup>.

The survey was undertaken by Beth Evans and Hugh Dixon. Beth is the owner of BE ECOLOGICAL LTD and has a postgraduate degree in Environmental Biology: Conservation & Resource Management, specialising in British bats. Beth has 11 years experience of undertaking ecological surveys in both a small scale and large multidisciplinary context. Clients range from national government, local

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<sup>1</sup> Stace, C (1997). *New Flora of the British Isles* (2nd Ed.). Cambridge University Press

government, commercial, private and third sector clients. Beth holds licences for bats in both Wales and England.

Hugh has over 20 years experience of ecological consultancy and countryside management gained in a variety of projects with clients ranging from national government, local government, commercial, private and third sector clients. Hugh has been a full member of CIEEM since 2006. Hugh has undertaken a wide range of surveys in respect of habitats and protected species throughout the UK. Hugh holds survey licences for bats, dormice and great crested newts in England and Wales and has held development licences for these groups.

Features of note are assigned Target Notes (TN) and referenced accordingly and described at **Appendix D**.

A full species list is at **Appendix E**.

#### **4.4 CONSTRAINTS**

There were no constraints.

#### **4.5 RESULTS**

##### **4.5.1 Habitats**

The following habitats were found on the site and are mapped on **Figure 3** below:

- Marshy grassland;
- Semi- improved grassland (poor);
- Isolated scrub;
- Bare ground
- Dry ditch; and
- Other

Photos are located at **Appendix A**.

Figure 3 – Phase 1 habitat survey results



#### 4.5.1.1 *Marshy grassland*

This habitat is found in the north east corner of the site. It is no more than 5m<sup>2</sup> in extent. It has resulted from a depression in the ground retaining water over time (please note, this is not a pond, just a wet area).

Marshy grassland is a priority habitat under the Environment Wales Act 2016. However, due to its small size and lack of species, it is unlikely to be of any significant value. As such this habitat will not be discussed further in this report.

#### 4.5.1.2 *Semi-improved grassland (poor)*

This habitat is found across the site. It is the dominant habitat on the site.

This habitat has a low local ecological interest as a result of the lack of diversity of herbs and grasses found within it and the previous land use of the site (chemical plant); however, its potential to provide protected species such as reptiles with suitable foraging and sheltering habitat raises its value. This habitat will be considered further in this report.

#### 4.5.1.3 *Dry Ditch*

This habitat is only present due to the difference in ground level between the made up ground of the site and the site next door. This habitat is found along the southern boundary.

The ditch is of negligible ecological value and will not be discussed further in this report.

#### 4.5.1.4 *Isolated Scrub*

This habitat is found in limited amounts along the peripheries of the site. It does not provide connections to the wider landscape.

This habitat is considered to be of moderate ecological value and will be discussed further in relation to invertebrates, birds and reptiles.

#### 4.5.1.5 *Bare ground*

There are a number of areas of bare ground comprised of mud and concrete

In itself, this habitat has no ecological interest; however, the interface between it and the adjoining grassland and scrub can provide optimal foraging, basking and sheltering habitat for reptiles.

This habitat will not be specifically considered further in this report, but will be included within other habitat and species assessments.

#### 4.5.1.6 *Other*

There are a number of brash piles scattered across the site where scrub has been removed in previous years.

These are of value to reptiles, breeding birds and invertebrates and will be discussed further in this report in relation to these species.

#### 4.5.1.7 *Non-native invasive plants*

There are records of Japanese knotweed from within 315m of the site; however, there is no evidence of invasive plants on the site.

This classification will, therefore, be considered further in this report.

### 4.5.2 **Protected species assessment**

#### 4.5.2.1 *Bats*

The closest record for members for this group is 142m from the centre of the proposed development site.

Above ground, there are no trees or buildings on the site that will support roosting bats. It cannot be ruled out until works commence whether basements are present on the site. However, the site has been exhausted for potential access points and none have been found to date.

It should be assumed that low numbers of bats are likely to forage occasionally over the site.

This group will be considered further in this report.

#### 4.5.2.2 *Amphibians & great crested newt*

There are no waterbodies on the development site which could be used by this group for breeding purposes. The terrestrial habitat on the site could provide amphibians with suitable foraging and sheltering habitat. However, the nearest record of members of this group is a record of a single adult great crested newt approximately 454m to the north east of the site. The site and the record are separated by a number of industrial units and public highways. It is considered unlikely that great crested newt would utilise these features to access a site that does not have suitable breeding habitat.

It is considered that amphibians are unlikely to pose an ecological constraint to the development and that only common species (frog and toad with the possibility of smooth and / or palmate newts) are likely to be present on the site. Therefore, it is considered that this group can be safely dealt with via a reasonable avoidance method statement to prevent harm to individuals during site clearance. A method statement is attached at **Appendix F**.

This group will not be considered further in this report.

#### 4.5.2.3 *Dormouse*

There are no records of this species within 2km of the development site.

There is some isolated scrub on the site that may be suitable for this species; however, the scrub is limited and not connected to the wider landscape in any shape or form. It is unlikely that the bramble would provide enough food for this species. Again it is unlikely that dormice would use the network of roads to areas of other suitable habitat to get to the development site because of the reasons outlined above. It is considered unlikely that dormice will be impacted by the proposed development.

Dormice will not be mentioned further in this report.

#### 4.5.2.4 Otters

There are a number of records for this species in the data search, with the closest being from within 1505m from the centre of the proposed development site.

There are no watercourses on the development site which could be used by this species on the site; There is no suitable lying up habitat. The isolated scrub is considered too sparse for this purpose.

This species will be considered further in this report.

#### 4.5.2.5 Badgers

There are a number of records for this species within the data search with the closest being a road casualty 1408m from the site.

No evidence of this species was recorded from the site or immediately adjacent land. There is not suitable sett excavation and foraging habitat present. It is possible that badger may pass through the site whilst looking for a food source. However, this is probably unlikely.

This species will not be considered further in this report.

#### 4.5.2.6 Breeding birds

There are multiple records for members of this group within the data search but none from the site.

The only nesting bird habitat on the site is in the brash piles and isolated scrub. It should be assumed these are used for nesting purposes during the breeding season.

The habitats on the site are not considered to be suitable for ground nesting birds given the small overlooked nature of the site, the high levels of disturbance on the site, and the availability of avian predator perches.

Scrub and tree nesting species will be considered further in this report.

#### 4.5.2.7 Reptiles

There are records of lizard and slow worm within 550m of the site.

At first glance, the site offers optimal habitat for this species for foraging, basking, sheltering and hibernation purposes. However, on closer inspection, the site is surrounded by roads and commercial infrastructure and highly disturbed. It is considered unlikely that the site is able to support large numbers of reptiles.

It should be assumed that low numbers of slow worm (*Anguis fragilis*) and common lizard (*Lacerta vivipara*) and grass snake (*Natrix natrix*) use the site. It is likely that the population densities of these species are at low levels given the amount of disturbance on the site.

This group will be considered further in this report.

### 4.5.3 Invertebrates

It is likely that common species of invertebrates will use the site. However, it is also likely that the site is contaminated. Where possible, enhancements for these species should be included within the final design. There are no food sources present on site that are suitable for rarer species of invertebrates.

This group will be considered further in this report.



## 5 PROTECTED SPECIES

### 5.1 BATS

#### 5.1.1 Summary

The closest record for members for this group is 142m from the centre of the proposed development site.

Above ground, there are no trees or buildings on the site that will support roosting bats. It is possible that there are basements beneath the ground level, however, it is not possible to confirm this until works commence. Secondary assessment failed to provide any suitable access points into the ground, so even if basements are present, it is extremely unlikely that bats will be able to access them.

It should be assumed that low numbers of bats are likely to forage occasionally over the site.

#### 5.1.2 Ecology

British bats are small flying nocturnal mammals that feed exclusively upon insects. There are 17 species resident in Britain, ranging in size from the smallest, soprano pipistrelle (*Pipistrellus pygmaeus*) up to the largest noctule (*Nyctalus noctula*), serotine (*Eptesicus serotinus*) and greater horseshoe bat (*Rhinolophus ferrumequinum*). Bats are active from April through to October and hibernate when insects are in short supply in the winter months. Bats emerge from hibernation in late March - early April and move into their transition / intermediary roosts. Female bats will move to maternity sites by the beginning of May and will give birth to a single baby between June and early July. The baby is reared solely by the mother and is weaned and independent by end of August. After breeding, bats move to transition / intermediary roosts and females will visit males at mating roosts. During the autumn, bats feed voraciously to gain weight for the hibernation ahead.

Although traditionally trees, caves and rock faces were used by roosting bats and are still used, many different structures are used nowadays by bats, which take advantage of readymade (man made) roosts. Structures used frequently include bridges, ice-houses, pill-boxes, disused railway tunnels, houses and barns etc. Bats have home ranges which vary from species to species; from just 3-4km from the roost for the smaller bats while the larger noctule may fly 20km or more. Threats to bats include habitat destruction and the severance of commuting routes, use of agricultural pesticides, intensification of farming methods and deliberate persecution by man. Bats have few natural predators; however, the domestic cat is probably the most efficient predator.

#### 5.1.3 Legislation

##### 5.1.3.1 Conservation of Habitats & Species Regulations 2017 (as amended)

The Conservation of Habitats and Species Regulations 2017 (as amended) provides safeguards for Protected Species (those listed under Annex IV Habitats Directive). With regards to bats, this makes it an offence to:

- Deliberately (or recklessly in Scotland) capture, injure or kill a bat
- Deliberately (or recklessly in Scotland) disturb a bat in a way that would (significantly in Scotland) affect its ability to survive, breed or rear young (or hibernate or migrate in England, Wales and Northern Ireland) or (significantly in England, Wales and Scotland) affect the local distribution or abundance of the species.
- Damage or destroy a roost (this is an 'absolute' offence)
- Possess, control, transport, sell, exchange or offer for sale/exchange any live or dead bat or any part of a bat

It is possible to undertake damaging activities under the auspices of a European Protected Species Licence issued by Natural Resources Wales which provides a derogation from the Regulations, meaning that an otherwise illegal operation carried out under licence is lawful.

#### 5.1.3.2 *Wildlife & Countryside Act 1981*

The Wildlife & Countryside Act 1981 (as amended) is the legislation for England and Wales for nature conservation, making it an offence to:

- Intentionally or recklessly disturb a bat in or at a roost;
- Intentionally or recklessly obstruct access to a roost;
- Intentionally destroy, damage or otherwise disturb a roost (whether bats are present or not); and
- Intentionally or recklessly kill, injure or take (capture) a bat.

#### 5.1.3.3 *The Environment (Wales) Act, 2016*

The Environment (Wales) Act 2016 requires that all public authorities, when carrying out their functions in Wales, seek to “maintain and enhance biodiversity” where it is within the proper exercise of their functions. In doing so, public authorities must also seek to “promote the resilience of ecosystems”.

This ensures that biodiversity is an integral part of the decisions that public authorities take in relation to Wales. It also links biodiversity with the long-term health and functioning of our ecosystems, therefore helping to align the biodiversity duty with the framework for sustainable natural resource management provided in the Act.

In Wales, this legislation replaces and enhances the Natural Environment and Rural Communities Act (2006) which sought to raise the profile of biodiversity and to make sure that it is considered in all local authority decisions by ensuring that “Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.”.

Other elements of NERC 2006 may still apply.

#### 5.1.4 **Bats – Results**

There are no trees or buildings on the site suitable for roosting bats. The trees on adjacent land, are thin, young and smooth barked and do not provide suitable habitat for bats either.

There are possibly basements beneath the ground level of the site but this is yet to be confirmed. There are no obvious access points into these areas and they are likely to be some distance beneath made up ground that is now covered in vegetation. Should basements ever be uncovered, works will not proceed until they have been checked by a suitably qualified ecologist for the presence of bats. Should bats be found, all works will cease and NRW consulted.

There is some limited foraging habitat available for bats, however, the site is not well connected to other, more suitable areas of foraging and commuting habitat.

**CONFIDENCE LEVEL: HIGH**

#### 5.1.5 **Bats – evaluation**

Due to the above, it is considered unlikely that bats will be impacted by the proposed development. The surrounding area is well lit already and it is likely that light tolerant species will continue to forage

over the site. It is thought unlikely that large numbers of bats will use the site for foraging due to a lack of connective habitat.

#### 5.1.5.1 Roost locations

Not applicable.

**CONFIDENCE LEVEL: HIGH**

#### 5.1.5.2 Incidental records

None.

### 5.1.6 Bats - impact characterisation

It is anticipated that there are no bat roosts on the site and that there will therefore be **no adverse impacts** on them as a result of the development.

It is likely that bat foraging habitat over the development site will be modified by the development. However, bats will be able to continue to forage over the site on completion of the development. It is unlikely that any lighting will impact bats due to the surrounding area already being disturbed and the subject of light pollution from street lights and adjacent buildings.

### 5.1.7 Bats - assessment without mitigation

It is considered that there will be **no adverse** impacts on bats as a result of the proposed development.

### 5.1.8 Bats - mitigation measures

Mitigation is not required unless it is found that bats use the basements that may or may not be present on the site. In this eventuality, the extent of mitigation will be determined by the classification of any roost found (e.g. maternity, day roost, night roost etc.), species and numbers of bats.

Protection and enhancement measures will include (but not be limited to):

- A check of the basements by a suitably qualified ecologist should they ever become accessible/exist
- Inclusion of suitable vegetation planting and management within the development proposals;
- Inclusion of bat boxes on new buildings within the new development.

It is recommended that enhancement features to benefit bats are included in the design for the development site. Such measures will include

- Inclusion of bat boxes within new buildings (two eco bat box/Schwegler 1FF as per landscape drawing;
- Inclusion of night flowering plants in the landscaping scheme to increase bat prey availability; and
- Sympathetic landscape planting to provide bats with foraging habitat.

#### 5.1.9 Bats - impact characterisation with mitigation

It is considered that there will be **no adverse** impacts on bats as a result of the development.

#### 5.1.10 Bats - significance of the impact

##### Without mitigation

It is considered that the significance of the impact is **slight**.

##### With mitigation

It is considered that the significance of the impact is **neutral**.

## 5.2 BREEDING BIRDS

### 5.2.1 Summary

A full breeding bird survey was not undertaken as it should be assumed that all the areas of scrub (both cut and retained) are likely to be used by birds for nesting.

It should be assumed that the isolated scrub and brash piles on the site is used by birds for breeding purposes during the nesting season.

The areas of grassland and bare ground are not considered to be suitable for ground nesting species for breeding purposes as they are small, overlooked and subject of regular disturbance.

### 5.2.2 Ecology

Most British avian species are found breeding during the spring and summer months, between April and August, although some, such as pigeons, and doves will frequently breed at all times of year, as they are not dependent on small, soft-bodied invertebrates to provide food for their chicks. Some other species, such as barn owl (*Tyto alba*) have also been recorded breeding in the winter months, in years when winters have been mild, and small mammal prey plentiful, although such breeding attempts are unusual, with chicks frequently failing to fledge. The breeding season can be extended for most species if the weather is mild, and food plentiful.

Contrary to common belief, whilst some bird species, such as crows and rooks, nest high in trees, often more than 10m high, the majority of British breeding birds will nest within 2m of the ground (or on the ground) within dense scrub or within holes and other natural and manmade cavities in rocks and walls.

Most bird species take considerably less than 60 days from egg-laying to chick fledging, whilst others, such as barn owl, can take more than 90 days. Many, but not all British species will make multiple breeding attempts if environmental conditions and food availability allow.

### 5.2.3 Legislation

In Britain, all naturally occurring avian species are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended). The legislation protects all birds, their nests and eggs, and it is an offence to:

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

In addition, birds listed on Schedule 1 of the Act, such as the Red Kite (*Milvus milvus*), are afforded further protection, and it is an offence to:

- Intentionally or recklessly disturb the bird whilst nest building or while at (or near) a nest with eggs or young; and
- Disturb the dependant young of such a bird.

### 5.2.4 Methodology

#### 5.2.4.1 Habitat assessment

Signs looked for included:

- Availability of nesting habitat;
- Availability of foraging habitat;
- Territorial displays by birds;
- Courtship displays;
- Territory establishment and holding behaviour;
- Nests;
- Food carrying;

#### 5.2.5 Constraints

There were no constraints to the assessment.

#### 5.2.6 Results

##### 5.2.6.1 Desk study

There were no record records of birds from the development site or immediately adjacent land, however, there were multiple records of birds from the data search, with the closest being of breeding mistle thrush and green finch at 937m and 1086m respectively.

##### 5.2.6.2 Habitat assessment

The site was comprised of a mosaic of habitats including scrub, grassland and bare ground.

All habitats on the site were suitable for foraging purposes, providing a variety of food sources. It should be assumed that scrub habitats are used for nesting purposes during the breeding season.

It is considered that the site does not provide suitable habitat for ground nesting species as the open areas are small, overlooked by numerous trees and buildings, all of which could be used by avian predators and subject of regular disturbance.

A single sparrow was noted in the scrub on the site.

#### 5.2.7 Breeding birds – evaluation

Birds should be considered to be of **high national** importance as a result of the legislation protecting them.

Within the context of the site, there is limited suitable habitat for the smaller and more common species to utilise for nesting and foraging. It is therefore considered that birds are of a **medium local (site)** ecological importance.

#### 5.2.8 Breeding birds - impact characterisation

It is anticipated that the main body of the site will be cleared in its entirety. Any removal of vegetation will result in the loss of bird breeding and foraging habitat.

#### 5.2.9 Breeding birds - impact assessment without mitigation

In the absence of mitigation, the removal of vegetation during the breeding season would result in the likely disturbance and destruction of nests and the disturbance, killing and injuring of birds (both adults and juveniles). This would constitute a **certain moderate medium term adverse** impact at a **local (site)** level.

#### 5.2.10 Breeding birds - mitigation measures

Mitigation will be required and will include (but not be limited to) the following measures:

- All vegetation and brash removal should be undertaken outwith the breeding season i.e. between mid-August / September and April inclusive;
- Any clearance close to the start and end of this period should only be undertaken following an assessment by a suitably experienced ecologist as the breeding season is not fixed and is subject to annual variation;
- Where clearance is required during the breeding season, all areas should be subject to an assessment no more than 48 hours in advance to check for the presence of breeding birds;
- Should evidence of breeding birds, in particularly nests, be recorded, no clearance may be undertaken within 15m of any nest site until such time as the nest is vacated naturally; and
- Any post-development landscaping plan should include the provision of scrub &/or tree habitats that can be utilised by breeding birds.
- Two Schwegler 1SP sparrow terraces/NHBS sparrow terrace will be installed as per the landscape plan for the site

#### 5.2.11 Breeding birds - impact characterisation with mitigation

It is considered that there will be a **possible minor short term adverse** impact at a **local (site)** level on breeding birds as a result of the proposed development.

#### 5.2.12 Breeding birds - significance of the impact

##### Without mitigation

It is considered that the significance of the impact is **slight**.

##### With mitigation

It is considered that the significance of the impact is **neutral**.

## 5.3 REPTILES

### 5.3.1 Summary

No reptile survey was undertaken on the site due to the time of year the visit was carried out; however, a habitat assessment indicated that the site provides optimal habitat for the most common reptile species. However, numbers on the site are likely to be reduced dramatically due to the isolated nature of the site.

A full trapping and translocation exercise is not considered necessary as long as clearance of the site is undertaken in strict adherence to a method statement designed to prevent harm to reptiles.

### 5.3.2 Ecology

Reptiles are ectothermic, meaning they have to rely on external heat sources to warm their blood sufficiently to allow foraging and other activity. During the winter they are in brumation (similar to hibernation), emerging in April (or when the temperatures are consistently warm enough). Males tend to emerge before females, to enable them to prepare for mating. Females emerge a few weeks later and mating takes place. Female reptiles in the UK generally breed every other year to allow them to build up sufficient energy reserves. Grass snakes are the UK's only egg-laying reptile, eggs are laid in summer in warm piles of decomposing vegetation (or similar) and left to develop and hatch on their own. Young reptiles are born/hatch in late summer/early autumn. Brumation (hibernation) starts again as temperatures fall in the autumn.

The four more commonly occurring species of reptile in the UK (adder (*Vipera berus*), grass snake (*Natrix natrix*) slow worm (*Anguis fragilis*) and common lizard (*Lacerta vivipara*) have different preferences for habitat and diet. Adders generally prey on small mammals in drier habitats, grass snakes primarily hunt amphibians in wetter areas and aquatic habitats, slow worms take small, slow-moving invertebrates and inhabit drier areas and common lizards prey on small, faster-moving invertebrates and tolerate both wet and dry habitats.

### 5.3.3 Legislation

The four common species listed above are protected by the Wildlife and Countryside Act 1981 (as amended) against killing, injury and sale.

Smooth snake (*Coronella austriaca*) and sand lizard (*Lacerta agilis*) are not found in this area, having very specific geographical distribution within Britain, and so will not be referred to in this report despite the higher legislative protection afforded to them.

### 5.3.4 Methodology

#### 5.3.4.1 Habitat assessment

The habitat assessment looked for features which would be attractive to reptiles such as:

- south facing banks;
- varied profile ground form;
- basking areas;
- vegetation cover;
- structurally diverse vegetation;
- potential hibernation sites; and

- evidence of suitable prey sources.

### 5.3.5 Results

#### 5.3.5.1 Desk study

There are records of lizard and slow worm within 550m of the site.

It should be assumed that low numbers of slow worm (*Anguis fragilis*) and common lizard (*Lacerta vivipara*) and possibly but a lot less likely grass snake (*Natrix natrix*) use the site. It is likely that the population densities of these species are at low levels given the amount of disturbance on the site along with its isolated nature.

This group will be considered further in this report.

#### 5.3.5.2 Habitat assessment

At first glance, the site offers optimal habitat for this species for foraging, basking, sheltering and hibernation purposes. However, on closer inspection, the site is surrounded by roads and commercial infrastructure and is highly disturbed. It is considered unlikely that the site is able to support large numbers of reptiles.

The grassland and brash piles are suitable for foraging and hibernating reptiles.

### 5.3.6 Reptiles – evaluation

Reptiles are protected by UK legislation and therefore they are of **medium to high national** ecological importance.

It should be assumed that slow worm and common lizard are likely to utilise the site. Due to the size of the site, it is uncertain as to whether a full refugia survey would provide any information other than presence or absence. Therefore, an assumption of presence and undertaking works accordingly is an effective protection measure.

Overall the site appears to be generally of **moderate local (site)** value to reptiles.

### 5.3.7 Reptiles - impact characterisation

It is anticipated that the site will be largely cleared of vegetation, thereby removing the majority of the suitable habitat for this group. In the absence of mitigation, reptiles are likely to be killed or injured during the clearance for the site.

### 5.3.8 Reptiles - impact assessment without mitigation

It is considered that in the absence of mitigation there would be a **probable minor short term adverse** impact at a **local (site)** level.

### 5.3.9 Reptiles - mitigation measures

As long as reptile presence is assumed and site clearance is undertaken in accordance with an appropriate method statement, it is considered that a full trapping and translocation exercise is not required, and that habitat manipulation and denial is an appropriate method of ensuring that reptiles are not harmed during the site clearance.

Therefore, the following mitigation will be adopted:

- Clearance will be conducted in accordance with a Method Statement (**Appendix F**) to ensure that should reptiles be found in the course of site clearance or any other development activity, they will not be harmed and can be adequately cared for;
- Clearance will only be undertaken during the reptile active season (April-October, inclusive);
- Clearance outwith this period is possible, but depends on weather and temperatures being suitable to ensure that reptiles are likely to be active;
- There will be no clearance of hibernation habitat outwith the active season or within the correct temperatures;
- Reptiles will be excluded from entering or re-entering the site during clearance/operational phase of works by ensuring that the site is kept as bare ground i.e. clear of any vegetation or other shelter; and with the use of fencing

#### 5.3.10 Reptiles - impact characterisation with mitigation

It is considered that there will be an **unlikely minor short term adverse** impact at a **local (site)** level as a result of the proposed development.

#### 5.3.11 Reptiles - significance of the impact

##### Without mitigation

It is considered that the significance of the impact is **slight**.

##### With mitigation

It is considered that the significance of the impact is **neutral**.

## **5.4 INVERTEBRATES**

### **5.4.1 Summary**

There are numerous records of invertebrate species within the records data search, due to the location of the site, it is considered that there will be a small number of common and widespread invertebrates present.

### **5.4.2 Ecology**

Invertebrates are animals without spines or an internal skeleton, relying on their bodies to give them structure. There are over 40000 species of invertebrate in the United Kingdom, distributed across all terrestrial, aquatic and marine ecosystems. Their lifestyles are superficially at least similar; however, each genus has distinguishing characteristics, with each species within each genus having subtle differences resulting in each species occupying its own ecological niche.

Adults lay eggs which then hatch into larvae. The larvae then develop into adults. The processes involved in these three life stages are different from genus to genus and species to species and can be incredibly intricate, with sometimes very specific requirements, any interruption to which can cause any of the life stages can fail.

Adult animals generally have very specific food requirements, favouring single plant species or food source. Larvae and adults can be either plant eating or carnivorous dependent on species. The food source is a good indicator of how widespread a species may be: the more specific a food source, the more prone to range restrictions it may be.

Animals will generally be active during the spring, summer and autumn months and overwinter as eggs or larvae; some adults do go into hibernation over winter.

### **5.4.3 Legislation**

No invertebrates are in receipt of international legal protection with the exception of the large blue (*Phengaris arion*) butterfly, protected by the Conservation of Habitats and Species Regulations 2017 (as amended) ; a number of other species are fully and partially protected by the Wildlife and Countryside Act 1981 (as amended). A number of species are listed on Section 42 of Species of Principal Importance to Wales and may, with others, be included within local planning authorities Biodiversity Action Plans (LBAPs).

### **5.4.4 Methodology**

#### **5.4.4.1 Habitat assessment**

The proposed development site was subject of a walkover to assess its potential to provide suitable habitat for invertebrates. The features looked for included:

- Presence of a mosaic of multiple habitats;
- Presence of structural diversity in the habitats present;
- Presence of bare ground;
- Presence of common and likely food plants;
- Site aspect; and
- Previous and current land use.

#### 5.4.5 Constraints

There were no constraints to the walkover.

#### 5.4.6 Results

##### 5.4.6.1 Habitat assessment

There is a varied mosaic of habitats on the site including bare ground, grassland and scrub. The habitats are relatively isolated from other habitats within the wider landscape.

#### 5.4.7 Invertebrates – evaluation

There is one species of plant present on the site (creeping cinquefoil) that is of importance to a priority species of invertebrate (grizzled skipper). This plant species is common and widespread, there are no records of grizzled skipper within 2km of the site and due to the isolated nature of the site, it is considered unlikely that this species will be present.

Species present are likely to be common and widespread only.

#### 5.4.8 Invertebrates - impact characterisation

It is considered that there will be a loss of scrub and grassland that may support common and widespread species.

#### 5.4.9 Invertebrates - impact assessment without mitigation

It is considered that there will be a ***possible minor short term*** adverse impact.

#### 5.4.10 Invertebrates - mitigation measures

The following measures will be implemented

- A green roof on a cycle shed with invertebrate friendly species planting
- Planters with invertebrate attracting plant species;
- Wildflower seed mixes will be used on the retained grassland to the east of the site

#### 5.4.11 Invertebrates - impact characterisation with mitigation

It is considered that there will be an ***unlikely short term minor adverse impact***.

#### 5.4.12 Invertebrates - significance of the impact

##### Without mitigation

It is considered that the significance will be ***slight***.

##### With mitigation

It is considered that the significance of the impact will be ***neutral***.

## **6 CONCLUSION AND RECOMMENDATIONS**

Overall the site is of a low to moderate ecological value at a local level due to the habitats present, and its isolated nature.

Breeding birds and reptiles should be assumed to be present on the site. Mitigation for these groups is therefore required. All site clearance should be undertaken under ecological supervision.

Site clearance in respect of reptiles should be undertaken in accordance with an appropriate method statement. This will also benefit other species (e.g. amphibians) which may otherwise be affected by site clearance.

Enhancements outlined for invertebrates will be incorporated into the final design.

It is recommended that the mitigation measures, outlined in the various sections above are incorporated as far as is possible into the design process for this development. and construction methodologies.

A compliance check will be required with e-mail confirmation to the LPA ecologist that all enhancement measures have been satisfactorily installed following the completion of the development.

It is recommended that consideration be given to the inclusion of enhancement features to benefit wildlife are included within the design of the industrial units and post-development landscaping scheme on the site.

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## APPENDIX A - PHOTOS

### PHASE 1 HABITAT SURVEY PHOTOS

Plate 1 – Photograph of isolated scrub in north east corner of the development site



Plate 2 – photograph of bare ground with moss



Plate 3 – photograph of eastern boundary



Plate 4 – Photograph looking north west



Plate 5 – Photograph of adjoining habitat to the east



Plate 6 – Photograph of marshy grassland in north eastern corner



Plate 7– photograph facing south east



Plate 8 – photograph of surrounding habitat



Plate 9- marshy grassland



## **APPENDIX B - DESIGNATED SITES: MEMORIAL PARK MEADOWS**

CYNGOR CEFN GWLAD CYMRU COUNTRYSIDE COUNCIL FOR WALES SITE OF  
SPECIAL SCIENTIFIC INTEREST CITATION MERTHYR TYDFIL CWM TAF  
FECHAN WOODLANDS

Date of Notification: 1972, 1985

National Grid Reference: SO 052101

O.S. Maps 1:50,000 Sheet number: 160 1:25,000

Sheet number: SO 00, 01, 10

Site Area: 60.9 ha Description:

Where the partially wooded valley of the Taf Fechan crosses the north crop Carboniferous Limestone. Mixed deciduous woodlands cover steep slopes and spoil from quarries with one of the few Glamorgan stations for *Gymnocarpium robertianum*. There are interesting plant communities in flushes around tufa springs and luxuriant growths of bryophytes in the splash zone of the river.

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## APPENDIX C - SEWBRcC DATA SEARCH SUMMARY

### PRIORITY AND PROTECTED SPECIES STATUS LISTS

| actual_nam                 | common_nam               | sup_group |
|----------------------------|--------------------------|-----------|
| Chara vulgaris             | Common Stonewort         | Algae     |
| Chara                      | Chara                    | Algae     |
| Acanthis cabaret           | Lesser Redpoll           | Birds     |
| Accipiter nisus            | Sparrowhawk              | Birds     |
| Acrocephalus schoenobaenus | Sedge Warbler            | Birds     |
| Acrocephalus scirpaceus    | Reed Warbler             | Birds     |
| Actitis hypoleucos         | Common Sandpiper         | Birds     |
| Aegithalos caudatus        | Long-tailed Tit          | Birds     |
| Alauda arvensis            | Skylark                  | Birds     |
| Alcedo atthis              | Kingfisher               | Birds     |
| Anas crecca                | Teal                     | Birds     |
| Anas penelope              | Wigeon                   | Birds     |
| Anas platyrhynchos         | Mallard                  | Birds     |
| Anthus pratensis           | Meadow Pipit             | Birds     |
| Anthus trivialis           | Tree Pipit               | Birds     |
| Apus apus subsp. apus      | Apus apus subsp. apus    | Birds     |
| Apus apus                  | Swift                    | Birds     |
| Ardea cinerea              | Grey Heron               | Birds     |
| Aythya fuligula            | Tufted Duck              | Birds     |
| Branta canadensis          | Canada Goose             | Birds     |
| Bucephala clangula         | Goldeneye                | Birds     |
| Buteo buteo                | Buzzard                  | Birds     |
| Carduelis carduelis        | Goldfinch                | Birds     |
| Certhia familiaris         | Treecreeper              | Birds     |
| Charadrius dubius          | Little Ringed Plover     | Birds     |
| Chloris chloris            | Greenfinch               | Birds     |
| Chroicocephalus ridibundus | Black-headed Gull        | Birds     |
| Cinclus cinclus            | Dipper                   | Birds     |
| Circus cyaneus             | Hen Harrier              | Birds     |
| Columba oenas              | Stock Dove               | Birds     |
| Corvus corax               | Raven                    | Birds     |
| Crex crex                  | Corncrake                | Birds     |
| Cuculus canorus            | Cuckoo                   | Birds     |
| Cyanistes caeruleus        | Blue Tit                 | Birds     |
| Cygnus columbianus         | Bewick's Swan            | Birds     |
| Cygnus cygnus              | Whooper Swan             | Birds     |
| Cygnus olor                | Mute Swan                | Birds     |
| Delichon urbicum           | House Martin             | Birds     |
| Dendrocopos major          | Great Spotted Woodpecker | Birds     |
| Emberiza schoeniclus       | Reed Bunting             | Birds     |
| Falco columbarius          | Merlin                   | Birds     |
| Falco peregrinus           | Peregrine                | Birds     |
| Falco tinnunculus          | Kestrel                  | Birds     |

|                                        |                          |       |
|----------------------------------------|--------------------------|-------|
| <i>Ficedula hypoleuca</i>              | Pied Flycatcher          | Birds |
| <i>Fulica atra</i>                     | Coot                     | Birds |
| <i>Gallinago gallinago</i>             | Snipe                    | Birds |
| <i>Hirundo rustica</i>                 | Swallow                  | Birds |
| <i>Lagopus lagopus</i>                 | Red Grouse               | Birds |
| <i>Larus argentatus</i>                | Herring Gull             | Birds |
| <i>Larus fuscus subsp. intermedius</i> | Black-Backed Gull        | Birds |
| <i>Larus fuscus</i>                    | Lesser Black-backed Gull | Birds |
| <i>Larus glaucoides</i>                | Iceland Gull             | Birds |
| <i>Larus hyperboreus</i>               | Glaucous Gull            | Birds |
| <i>Larus marinus</i>                   | Great Black-backed Gull  | Birds |
| <i>Linaria cannabina</i>               | Linnet                   | Birds |
| <i>Loxia curvirostra</i>               | Common Crossbill         | Birds |
| <i>Lullula arborea</i>                 | Woodlark                 | Birds |
| <i>Melanitta nigra</i>                 | Common Scoter            | Birds |
| <i>Mergus merganser</i>                | Goosander                | Birds |
| <i>Milvus milvus</i>                   | Red Kite                 | Birds |
| <i>Motacilla alba subsp. yarrellii</i> | Pied Wagtail             | Birds |
| <i>Motacilla alba</i>                  | Pied Wagtail             | Birds |
| <i>Motacilla cinerea</i>               | Grey Wagtail             | Birds |
| <i>Motacilla</i>                       | Motacilla                | Birds |
| <i>Muscicapa striata</i>               | Spotted Flycatcher       | Birds |
| <i>Numenius arquata</i>                | Curlew                   | Birds |
| <i>Oenanthe oenanthe</i>               | Wheatear                 | Birds |
| <i>Pandion haliaetus</i>               | Osprey                   | Birds |
| <i>Parus major</i>                     | Great Tit                | Birds |
| <i>Passer domesticus</i>               | House Sparrow            | Birds |
| <i>Perdix perdix</i>                   | Grey Partridge           | Birds |
| <i>Periparus ater</i>                  | Coal Tit                 | Birds |
| <i>Phalacrocorax carbo</i>             | Cormorant                | Birds |
| <i>Phoenicurus phoenicurus</i>         | Redstart                 | Birds |
| <i>Phylloscopus collybita</i>          | Chiffchaff               | Birds |
| <i>Phylloscopus sibilatrix</i>         | Wood Warbler             | Birds |
| <i>Phylloscopus trochilus</i>          | Willow Warbler           | Birds |
| <i>Picus viridis</i>                   | Green Woodpecker         | Birds |
| <i>Plectrophenax nivalis</i>           | Snow Bunting             | Birds |
| <i>Podiceps cristatus</i>              | Great Crested Grebe      | Birds |
| <i>Poecile montana</i>                 | Willow Tit               | Birds |
| <i>Poecile palustris</i>               | Marsh Tit                | Birds |
| <i>Prunella modularis</i>              | Dunnock                  | Birds |
| <i>Pyrrhula pyrrhula</i>               | Bullfinch                | Birds |
| <i>Recurvirostra avosetta</i>          | Avocet                   | Birds |
| <i>Regulus regulus</i>                 | Goldcrest                | Birds |
| <i>Riparia riparia</i>                 | Sand Martin              | Birds |
| <i>Saxicola rubetra</i>                | Whinchat                 | Birds |
| <i>Saxicola rubicola</i>               | Stonechat                | Birds |
| <i>Scolopax rusticola</i>              | Woodcock                 | Birds |
| <i>Sitta europaea</i>                  | Nuthatch                 | Birds |

|                                |                                |            |
|--------------------------------|--------------------------------|------------|
| Spinus spinus                  | Siskin                         | Birds      |
| Strix aluco                    | Tawny Owl                      | Birds      |
| Sturnus vulgaris               | Starling                       | Birds      |
| Sylvia atricapilla             | Blackcap                       | Birds      |
| Sylvia borin                   | Garden Warbler                 | Birds      |
| Sylvia communis                | Whitethroat                    | Birds      |
| Sylvia undata                  | Dartford Warbler               | Birds      |
| Tachybaptus ruficollis         | Little Grebe                   | Birds      |
| Tringa ochropus                | Green Sandpiper                | Birds      |
| Turdus iliacus                 | Redwing                        | Birds      |
| Turdus merula                  | Blackbird                      | Birds      |
| Turdus philomelos              | Song Thrush                    | Birds      |
| Turdus pilaris                 | Fieldfare                      | Birds      |
| Turdus torquatus               | Ring Ouzel                     | Birds      |
| Turdus viscivorus              | Mistle Thrush                  | Birds      |
| Tyto alba                      | Barn Owl                       | Birds      |
| Vanellus vanellus              | Lapwing                        | Birds      |
| Amblystegium confervoides      | Tiny Feather-moss              | Bryophytes |
| Amphidium mougeotii            | Mougeot's Yoke-moss            | Bryophytes |
| Andreaea rothii subsp. falcata | Andreaea rothii subsp. falcata | Bryophytes |
| Anoetangium aestivum           | Summer-moss                    | Bryophytes |
| Anomobryum concinnum           | Anomobryum concinnum           | Bryophytes |
| Anomodon viticulosus           | Rambling Tail-moss             | Bryophytes |
| Bartramia pomiformis           | Common Apple-moss              | Bryophytes |
| Brachythecium glareosum        | Streaky Feather-moss           | Bryophytes |
| Brachythecium salebrosum       | Smooth-stalk Feather-moss      | Bryophytes |
| Bryum algovicum                | Drooping Thread-moss           | Bryophytes |
| Bryum argenteum                | Silver-moss                    | Bryophytes |
| Bryum imbricatum               | Small-mouthed Thread-moss      | Bryophytes |
| Bryum pallens                  | Pale Thread-moss               | Bryophytes |
| Bryum pallescens               | Tall-clustered Thread-moss     | Bryophytes |
| Calliergonella lindbergii      | Lindberg's Plait-moss          | Bryophytes |
| Campyliadelphus chrysophyllus  | Golden Feather-moss            | Bryophytes |
| Campylium protensum            | Campylium protensum            | Bryophytes |
| Campylium stellatum            | Yellow Starry Feather-moss     | Bryophytes |
| Campylopus atrovirens          | Bristly Swan-neck Moss         | Bryophytes |
| Cephaloziella divaricata       | Common Threadwort              | Bryophytes |
| Cephaloziella hampeana         | Hampe's Threadwort             | Bryophytes |
| Climacium dendroides           | Tree-moss                      | Bryophytes |
| Cololejeunea calcarea          | Rock Pouncewort                | Bryophytes |
| Conocephalum salebrosum        | Conocephalum salebrosum        | Bryophytes |
| Ctenidium molluscum            | Chalk Comb-moss                | Bryophytes |
| Dichodontium flavescens        | Yellowish Fork-moss            | Bryophytes |
| Dichodontium palustre          | Marsh Forklet-moss             | Bryophytes |
| Dichodontium pellucidum        | Transparent Fork-moss          | Bryophytes |
| Dicranum fuscescens agg.       | Dicranum fuscescens agg.       | Bryophytes |
| Dicranum majus                 | Greater Fork-moss              | Bryophytes |
| Didymodon ferrugineus          | Rusty Beard-moss               | Bryophytes |

|                                         |                                         |            |
|-----------------------------------------|-----------------------------------------|------------|
| Didymodon icmadophilus                  | Slender Beard-moss                      | Bryophytes |
| Didymodon spadiceus                     | Brown Beard-moss                        | Bryophytes |
| Distichium capillaceum                  | Fine Distichium                         | Bryophytes |
| Distichium inclinatum                   | Inclined Distichium                     | Bryophytes |
| Ditrichum flexicaule agg.               | Ditrichum flexicaule agg.               | Bryophytes |
| Ditrichum flexicaule                    | Bendy Ditrichum                         | Bryophytes |
| Ditrichum gracile                       | Slender Ditrichum                       | Bryophytes |
| Encalypta vulgaris                      | Common Extinguisher-moss                | Bryophytes |
| Entosthodon fascicularis                | Hasselquist's Hyssop                    | Bryophytes |
| Entosthodon obtusus                     | Blunt Cord-moss                         | Bryophytes |
| Eucladium verticillatum                 | Whorled Tufa-moss                       | Bryophytes |
| Fissidens crispus                       | Herzog's Pocket-moss                    | Bryophytes |
| Fissidens incurvus                      | Short-leaved Pocket-moss                | Bryophytes |
| Fissidens osmundoides                   | Purple-stalked Pocket-moss              | Bryophytes |
| Fissidens rufulus                       | Beck Pocket-moss                        | Bryophytes |
| Frullania teneriffae                    | Sea Scalewort                           | Bryophytes |
| Grimmia orbicularis                     | Round-fruited Grimmia                   | Bryophytes |
| Gymnostomum aeruginosum                 | Verdigris Tufa-moss                     | Bryophytes |
| Gymnostomum calcareum                   | Blunt-leaf Tufa-moss                    | Bryophytes |
| Habrodon perpusillus                    | Lesser Squirrel-tail Moss               | Bryophytes |
| Hedwigia ciliata                        | Fringed Hoar-moss                       | Bryophytes |
| Hennediella heimii                      | Heim's Pottia                           | Bryophytes |
| Homalothecium lutescens                 | Yellow Feather-moss                     | Bryophytes |
| Hygroamblystegium fluviatile            | Brook-side Feather-moss                 | Bryophytes |
| Hygroamblystegium tenax                 | Fountain Feather-moss                   | Bryophytes |
| Hygrohypnum luridum var. luridum        | Hygrohypnum luridum var. luridum        | Bryophytes |
| Hygrohypnum ochraceum                   | Claw Brook-moss                         | Bryophytes |
| Hymenostylium recurvirostrum            | Hook-beak Tufa-moss                     | Bryophytes |
| Hypnum cupressiforme var. lacunosum     | Roof Plait-moss                         | Bryophytes |
| Jungermannia atrovirens                 | Dark-green Flapwort                     | Bryophytes |
| Kindbergia praelonga                    | Common Feather-moss                     | Bryophytes |
| Leiocolea badensis                      | Scarce Notchwort                        | Bryophytes |
| Leiocolea bantriensis                   | Bantry Notchwort                        | Bryophytes |
| Leiocolea turbinata                     | Top Notchwort                           | Bryophytes |
| Lejeunea cavifolia                      | Micheli's Least Pouncewort              | Bryophytes |
| Loeskeobryum brevirostre                | Short-beaked Wood-moss                  | Bryophytes |
| Marchantia polymorpha subsp. polymorpha | Marchantia polymorpha subsp. polymorpha | Bryophytes |
| Microbryum davallianum                  | Smallest Pottia                         | Bryophytes |
| Mnium marginatum var. marginatum        | Mnium marginatum var. marginatum        | Bryophytes |
| Mnium marginatum                        | Bordered Thyme-moss                     | Bryophytes |
| Mnium stellare                          | Starry Thyme-moss                       | Bryophytes |
| Neckera crispa                          | Crisped Neckera                         | Bryophytes |
| Nowellia curvifolia                     | Wood-rust                               | Bryophytes |
| Orthothecium intricatum                 | Fine-leaved Leskea                      | Bryophytes |
| Orthotrichum cupulatum                  | Hooded Bristle-moss                     | Bryophytes |
| Orthotrichum pulchellum                 | Elegant Bristle-moss                    | Bryophytes |
| Orthotrichum stramineum                 | Straw Bristle-moss                      | Bryophytes |

|                                      |                                      |            |
|--------------------------------------|--------------------------------------|------------|
| Orthotrichum tenellum                | Slender Bristle-moss                 | Bryophytes |
| Oxyrrhynchium pumilum                | Dwarf Feather-moss                   | Bryophytes |
| Palustriella commutata               | Curled Hook-moss                     | Bryophytes |
| Palustriella falcata                 | Palustriella falcata                 | Bryophytes |
| Pellia neesiana                      | Nees' Pellia                         | Bryophytes |
| Plagiochila britannica               | British Featherwort                  | Bryophytes |
| Plagiomnium cuspidatum               | Woodsy Thyme-moss                    | Bryophytes |
| Platydictya jungermannioides         | Spruce's Leskea                      | Bryophytes |
| Pleuridium subulatum                 | Awl-leaved Earth-moss                | Bryophytes |
| Pohlia wahlenbergii                  | Pale Glaucous Thread-moss            | Bryophytes |
| Polytrichastrum alpinum              | Alpine Haircap                       | Bryophytes |
| Polytrichum strictum                 | Strict Haircap                       | Bryophytes |
| Porella platyphylla                  | Wall Scalewort                       | Bryophytes |
| Preissia quadrata                    | Narrow Mushroom-headed Liverwort     | Bryophytes |
| Ptilidium ciliare                    | Ciliated Fringewort                  | Bryophytes |
| Racomitrium canescens agg.           | Racomitrium canescens agg.           | Bryophytes |
| Racomitrium ericoides                | Dense Fringe-moss                    | Bryophytes |
| Racomitrium fasciculare              | Green Mountain Fringe-moss           | Bryophytes |
| Reboulia hemisphaerica               | Hemisphaeric Liverwort               | Bryophytes |
| Rhizomnium pseudopunctatum           | Felted Thyme-moss                    | Bryophytes |
| Rhynchostegiella teneriffae          | Teesdale Feather-moss                | Bryophytes |
| Rhynchostegium murale                | Wall Feather-moss                    | Bryophytes |
| Riccardia palmata                    | Palmate Germanderwort                | Bryophytes |
| Riccia beyrichiana                   | Purple Crystalwort                   | Bryophytes |
| Riccia subbifurca                    | Least Crystalwort                    | Bryophytes |
| Sanionia uncinata                    | Sickle-leaved Hook-moss              | Bryophytes |
| Sarmentypnum exannulatum             | Ringless Hook-moss                   | Bryophytes |
| Scapania aspera                      | Rough Earwort                        | Bryophytes |
| Scapania nemorea                     | Grove Earwort                        | Bryophytes |
| Schistidium rivulare                 | River Grimmia                        | Bryophytes |
| Sciuro-hypnum populeum               | Matted Feather-moss                  | Bryophytes |
| Scorpidium cossonii                  | Intermediate Hook-moss               | Bryophytes |
| Scorpiurium circinatum               | Curving Feather-moss                 | Bryophytes |
| Seligeria acutifolia                 | Sharp Rock-bristle                   | Bryophytes |
| Seligeria pusilla                    | Dwarf Rock-bristle                   | Bryophytes |
| Solenostoma paroicum                 | Shining Flapwort                     | Bryophytes |
| Syntrichia ruralis var. ruraliformis | Sand-hill Screw-moss                 | Bryophytes |
| Taxiphyllum wissgrillii              | Depressed Feather-moss               | Bryophytes |
| Thamnobryum alopecurum               | Fox-tail Feather-moss                | Bryophytes |
| Thuidium assimile                    | Philibert's Tamarisk-moss            | Bryophytes |
| Tortella nitida                      | Neat Crisp-moss                      | Bryophytes |
| Tortella tortuosa                    | Frizzled Crisp-moss                  | Bryophytes |
| Tortula modica                       | Blunt-fruited Pottia                 | Bryophytes |
| Tortula subulata                     | Awl-leaved Screw-moss                | Bryophytes |
| Weissia controversa var. controversa | Weissia controversa var. controversa | Bryophytes |
| Weissia controversa var. crispata    | Weissia controversa var. crispata    | Bryophytes |
| Weissia controversa                  | Green-tufted Stubble-moss            | Bryophytes |
| Zygodon conoideus                    | Lesser Yoke-moss                     | Bryophytes |

|                                              |                                |                 |
|----------------------------------------------|--------------------------------|-----------------|
| Cottus gobio                                 | Bullhead                       | Fish            |
| Salmo salar                                  | Atlantic Salmon                | Fish            |
| Salmo trutta subsp. fario                    | Brown Trout                    | Fish            |
| Salmo trutta                                 | Brown/Sea Trout                | Fish            |
| Clavulinopsis laeticolor                     | Handsome Club                  | Fungi and Slimy |
| Gliophorus laetus                            | Heath Waxcap                   | Fungi and Slimy |
| Gliophorus psittacinus                       | Parrot Wax-Cap                 | Fungi and Slimy |
| Hygrocybe calciphila                         | Limestone Waxcap               | Fungi and Slimy |
| Hygrocybe calyptriformis var. calyptriformis | Pink meadow cap                | Fungi and Slimy |
| Hygrocybe ceracea                            | Butter Waxcap                  | Fungi and Slimy |
| Hygrocybe chlorophana                        | Golden Waxcap                  | Fungi and Slimy |
| Hygrocybe coccinea                           | Scarlet Hood                   | Fungi and Slimy |
| Hygrocybe colemanniana                       | Toasted Waxcap                 | Fungi and Slimy |
| Hygrocybe conica                             | Blackening Wax-Cap             | Fungi and Slimy |
| Hygrocybe fornicata                          | Hygrocybe fornicata            | Fungi and Slimy |
| Hygrocybe helobia                            | Garlic Waxcap                  | Fungi and Slimy |
| Hygrocybe insipida                           | Spangle Waxcap                 | Fungi and Slimy |
| Hygrocybe intermedia                         | Fibrous Waxcap                 | Fungi and Slimy |
| Hygrocybe miniata                            | Vermilion Waxcap               | Fungi and Slimy |
| Hygrocybe mucronella                         | Bitter Waxcap                  | Fungi and Slimy |
| Hygrocybe pratensis var. pallida             | Pale Waxcap                    | Fungi and Slimy |
| Hygrocybe pratensis var. pratensis           | Meadow Wax-Cap                 | Fungi and Slimy |
| Hygrocybe reidii                             | Honey Waxcap                   | Fungi and Slimy |
| Hygrocybe russocoriacea                      | Cedarwood Waxcap               | Fungi and Slimy |
| Hygrocybe virginea var. virginea             | Snowy Wax-Cap                  | Fungi and Slimy |
| Microglossum olivaceum                       | Earth Tongue                   | Fungi and Slimy |
| Abraxas sylvata                              | Clouded Magpie                 | Invertebrates   |
| Abrostola tripartita                         | Spectacle                      | Invertebrates   |
| Abrostola triplasia                          | Dark Spectacle                 | Invertebrates   |
| Acasis viretata                              | Yellow-barred Brindle          | Invertebrates   |
| Acronicta menyanthidis                       | Light Knot Grass               | Invertebrates   |
| Acronicta rumicis                            | Knot Grass                     | Invertebrates   |
| Aeshna cyanea                                | Southern Hawker                | Invertebrates   |
| Aeshna juncea                                | Common Hawker                  | Invertebrates   |
| Aeshna mixta                                 | Migrant Hawker                 | Invertebrates   |
| Agriphila latistria                          | White-streak Grass-veneer      | Invertebrates   |
| Agrochola helvola                            | Flounced Chestnut              | Invertebrates   |
| Agrotis cinerea                              | Light Feathered Rustic         | Invertebrates   |
| Allophytes oxyacanthae                       | Green-brindled Crescent        | Invertebrates   |
| Amblyptilia acanthadactyla                   | Beautiful Plume                | Invertebrates   |
| Amphipoea lucens                             | Large Ear                      | Invertebrates   |
| Anax imperator                               | Emperor Dragonfly              | Invertebrates   |
| Apamea furva                                 | Confused                       | Invertebrates   |
| Apamea remissa                               | Dusky Brocade                  | Invertebrates   |
| Apamea unanimitis                            | Small Clouded Brindle          | Invertebrates   |
| Argynnis paphia                              | Silver-washed Fritillary       | Invertebrates   |
| Autographa bractea                           | Gold Spangle                   | Invertebrates   |
| Beris fuscipes                               | Short-horned Black Legionnaire | Invertebrates   |

|                                             |                                 |               |
|---------------------------------------------|---------------------------------|---------------|
| Boloria euphrosyne                          | Pearl-bordered Fritillary       | Invertebrates |
| Boloria selene                              | Small Pearl-bordered Fritillary | Invertebrates |
| Bombus hortorum                             | Small Garden Bumblebee          | Invertebrates |
| Bombus lapidarius                           | Large Red Tailed Bumblebee      | Invertebrates |
| Bombus lucorum                              | White-Tailed Bumblebee          | Invertebrates |
| Bombus monticola                            | Bilberry (Blaeberry) Bumblebee  | Invertebrates |
| Bombus pascuorum                            | Common Carder Bee               | Invertebrates |
| Bombus pratorum                             | Early Bumblebee                 | Invertebrates |
| Bombus terrestris                           | Buff-Tailed Bumblebee           | Invertebrates |
| Bombus                                      | Bumblebee                       | Invertebrates |
| Callophrys rubi                             | Green Hairstreak                | Invertebrates |
| Catoptria margaritella                      | Silver-stripe Grass-veneer      | Invertebrates |
| Catoptria pinella                           | Pearl Grass-veneer              | Invertebrates |
| Celastrina argiolus                         | Holly Blue                      | Invertebrates |
| Ceramica pisi                               | Broom Moth                      | Invertebrates |
| Charissa obscurata                          | Annulet                         | Invertebrates |
| Coenagrion puella                           | Azure Damselfly                 | Invertebrates |
| Coenonympha pamphilus                       | Small Heath                     | Invertebrates |
| Cordulegaster boltonii                      | Golden-ringed Dragonfly         | Invertebrates |
| Craniophora ligustri                        | Coronet                         | Invertebrates |
| Crossocerus binotatus                       | Crossocerus binotatus           | Invertebrates |
| Cupido minimus                              | Small Blue                      | Invertebrates |
| Cyaniris semiargus                          | Mazarine Blue                   | Invertebrates |
| Deileptenia ribeata                         | Satin Beauty                    | Invertebrates |
| Diarsia rubi                                | Small Square-spot               | Invertebrates |
| Ecliptopera silaceata                       | Small Phoenix                   | Invertebrates |
| Elodes minuta                               | Elodes minuta                   | Invertebrates |
| Enallagma cyathigerum                       | Common Blue Damselfly           | Invertebrates |
| Entephria caesiata                          | Grey Mountain Carpet            | Invertebrates |
| Epirrhoe galiata                            | Galium Carpet                   | Invertebrates |
| Ernodes articularis                         | Ernodes articularis             | Invertebrates |
| Erynnis tages tages                         | Dingy Skipper                   | Invertebrates |
| Erynnis tages                               | Dingy Skipper                   | Invertebrates |
| Euchoeca nebulata                           | Dingy Shell                     | Invertebrates |
| Eugnorisma glareosa                         | Autumnal Rustic                 | Invertebrates |
| Eupithecia distinctaria subsp. constrictata | Thyme Pug                       | Invertebrates |
| Eupithecia innotata form fraxinata          | Ash Pug                         | Invertebrates |
| Eupithecia inturbata                        | Maple Pug                       | Invertebrates |
| Eupithecia virgaureata                      | Golden-rod Pug                  | Invertebrates |
| Gonomyia conoviensis                        | Gonomyia conoviensis            | Invertebrates |
| Grammoptera ruficornis                      | Grammoptera ruficornis          | Invertebrates |
| Harmonia axyridis                           | Harlequin Ladybird              | Invertebrates |
| Hipparchia semele                           | Grayling                        | Invertebrates |
| Hoplodrina blanda                           | Rustic                          | Invertebrates |
| Hydria undulata                             | Scallop Shell                   | Invertebrates |
| Hypenodes humidalis                         | Marsh Oblique-barred            | Invertebrates |
| Ischnura elegans                            | Blue-tailed Damselfly           | Invertebrates |
| Ischnura pumilio                            | Scarce Blue-tailed Damselfly    | Invertebrates |

|                                   |                           |               |
|-----------------------------------|---------------------------|---------------|
| Lasiommata megera                 | Wall                      | Invertebrates |
| Leopoldius signatus               | Leopoldius signatus       | Invertebrates |
| Lestes sponsa                     | Emerald Damselfly         | Invertebrates |
| Leucania comma                    | Shoulder-striped Wainscot | Invertebrates |
| Libellula depressa                | Broad-bodied Chaser       | Invertebrates |
| Libellula quadrimaculata          | Four-spotted Chaser       | Invertebrates |
| Limnophora nigripes               | Limnophora nigripes       | Invertebrates |
| Lipsothrix errans                 | Northern Yellow Splinter  | Invertebrates |
| Lipsothrix nervosa                | Southern Yellow Splinter  | Invertebrates |
| Lithophane ornitopus lactipennis  | Grey Shoulder-knot        | Invertebrates |
| Lithophane socia                  | Pale Pinion               | Invertebrates |
| Litoligia literosa                | Rosy Minor                | Invertebrates |
| Lycia hirtaria                    | Brindled Beauty           | Invertebrates |
| Lymantria monacha                 | Black Arches              | Invertebrates |
| Melanargia galathea               | Marbled White             | Invertebrates |
| Melanchra persicariae             | Dot Moth                  | Invertebrates |
| Mesoleuca albicillata             | Beautiful Carpet          | Invertebrates |
| Mniotype adusta                   | Dark Brocade              | Invertebrates |
| Mompha terminella                 | Enchanters Cosmet         | Invertebrates |
| Mythimna turca                    | Double Line               | Invertebrates |
| Nebula salicata subsp. latentaria | Striped Twin-spot Carpet  | Invertebrates |
| Olindia schumacherana             | White-barred Twist        | Invertebrates |
| Orchesia micans                   | Orchesia micans           | Invertebrates |
| Orthetrum cancellatum             | Black-tailed Skimmer      | Invertebrates |
| Orthetrum coerulescens            | Keeled Skimmer            | Invertebrates |
| Orthosia gracilis                 | Powdered Quaker           | Invertebrates |
| Oxycera pygmaea                   | Pygmy Soldier             | Invertebrates |
| Panemeria tenebrata               | Small Yellow Underwing    | Invertebrates |
| Papestra biren                    | Glaucous Shears           | Invertebrates |
| Plectrocnemia brevis              | Plectrocnemia brevis      | Invertebrates |
| Polyploca ridens                  | Frosted Green             | Invertebrates |
| Pyrausta purpuralis               | Common Purple & Gold      | Invertebrates |
| Pyrrosoma nymphula                | Large Red Damselfly       | Invertebrates |
| Rhagium mordax                    | Rhagium mordax            | Invertebrates |
| Scotopteryx chenopodiata          | Shaded Broad-bar          | Invertebrates |
| Selenia lunularia                 | Lunar Thorn               | Invertebrates |
| Spania nigra                      | Liverwort Snipefly        | Invertebrates |
| Spilosoma lubricipeda             | White Ermine              | Invertebrates |
| Spilosoma lutea                   | Buff Ermine               | Invertebrates |
| Standfussiana lucerneae           | Northern Rustic           | Invertebrates |
| Stilbia anomala                   | Anomalous                 | Invertebrates |
| Stratiomys potamida               | Banded General            | Invertebrates |
| Sympetrum danae                   | Black Darter              | Invertebrates |
| Sympetrum striolatum              | Common Darter             | Invertebrates |
| Syngrapha interrogationis         | Scarce Silver Y           | Invertebrates |
| Tetheella fluctuosa               | Satin Lutestring          | Invertebrates |
| Thaumastoptera calceata           | Thaumastoptera calceata   | Invertebrates |
| Thecophora fulvipes               | Thecophora fulvipes       | Invertebrates |

|                                       |                                       |                         |
|---------------------------------------|---------------------------------------|-------------------------|
| Tiliacea aurago                       | Barred Sallow                         | Invertebrates           |
| Tinodes dives                         | Tinodes dives                         | Invertebrates           |
| Tinodes unicolor                      | Tinodes unicolor                      | Invertebrates           |
| Triphosa dubitata                     | Tissue                                | Invertebrates           |
| Tyria jacobaeae                       | Cinnabar                              | Invertebrates           |
| Venusia blomeri                       | Blomer's Rivulet                      | Invertebrates           |
| Xanthorhoe ferrugata                  | Dark-barred Twin-spot Carpet          | Invertebrates           |
| Xestia castanea                       | Neglected Rustic                      | Invertebrates           |
| Austropotamobius pallipes             | White-clawed Freshwater Crayfish      | freshwater)             |
| Porrhomma rosenhaueri                 | Porrhomma rosenhaueri                 | Invertebrates           |
| Sabacon viscayanum subsp. ramblaianum | Sabacon viscayanum subsp. ramblaianum | Invertebrates           |
| Dermatocarpon miniatum                | Dermatocarpon miniatum                | Lichens                 |
| Melanohalea laciniatula               | Melanohalea laciniatula               | Lichens                 |
| Peltigera canina                      | Peltigera canina                      | Lichens                 |
| Peltigera leucophlebia                | Peltigera leucophlebia                | Lichens                 |
| Solorina saccata                      | Solorina saccata                      | Lichens                 |
| Verrucaria caerulea                   | Verrucaria caerulea                   | Lichens                 |
| Chiroptera                            | Unknown Bat                           | Mammals (terrestrial)   |
| Dama dama                             | Fallow Deer                           | Mammals (terrestrial)   |
| Eptesicus serotinus                   | Serotine                              | Mammals (terrestrial)   |
| Erinaceus europaeus                   | Hedgehog                              | Mammals (terrestrial)   |
| Lutra lutra                           | Otter                                 | Mammals (terrestrial)   |
| Meles meles                           | Badger                                | Mammals (terrestrial)   |
| Mustela nivalis                       | Weasel                                | Mammals (terrestrial)   |
| Myotis daubentonii                    | Daubenton's Bat                       | Mammals (terrestrial)   |
| Myotis nattereri                      | Natterer's Bat                        | Mammals (terrestrial)   |
| Myotis                                | Myotis Bat Species                    | Mammals (terrestrial)   |
| Neovison vison                        | American Mink                         | Mammals (terrestrial)   |
| Nyctalus noctula                      | Noctule Bat                           | Mammals (terrestrial)   |
| Pipistrellus pipistrellus agg.        | Pipistrelle agg.                      | Mammals (terrestrial)   |
| Pipistrellus pipistrellus             | Common Pipistrelle                    | Mammals (terrestrial)   |
| Pipistrellus pygmaeus                 | Soprano Pipistrelle                   | Mammals (terrestrial)   |
| Pipistrellus                          | Pipistrellus Bat Species              | Mammals (terrestrial)   |
| Plecotus auritus                      | Brown Long-eared Bat                  | Mammals (terrestrial)   |
| Plecotus                              | Long-eared Bat Species                | Mammals (terrestrial)   |
| Rhinolophus hipposideros              | Lesser Horseshoe Bat                  | Mammals (terrestrial)   |
| Sciurus carolinensis                  | Grey Squirrel                         | Mammals (terrestrial)   |
| Sciurus vulgaris                      | Red Squirrel                          | Mammals (terrestrial)   |
| Sorex araneus                         | Common Shrew                          | Mammals (terrestrial)   |
| Anguis fragilis                       | Slow-worm                             | Reptiles and Amphibians |
| Bufo bufo                             | Common Toad                           | Reptiles and Amphibians |
| Lissotriton helveticus                | Palmate Newt                          | Reptiles and Amphibians |
| Rana temporaria                       | Common Frog                           | Reptiles and Amphibians |
| Triturus cristatus                    | Great Crested Newt                    | Reptiles and Amphibians |
| Zootoca vivipara                      | Common Lizard                         | Reptiles and Amphibians |
| Acer campestre                        | Field Maple                           | Vascular Plants         |
| Aconitum napellus agg.                | Monk's-Hood agg.                      | Vascular Plants         |

|                                           |                             |                |
|-------------------------------------------|-----------------------------|----------------|
| Aconitum napellus                         | Monk's-hood                 | Vascular Plant |
| Adoxa moschatellina                       | Moschatel                   | Vascular Plant |
| Agrimonia eupatoria                       | Agrimony                    | Vascular Plant |
| Agrostis vinealis                         | Brown Bent                  | Vascular Plant |
| Aira caryophyllea                         | Silver Hair-grass           | Vascular Plant |
| Alchemilla filicaulis subsp. vestita      | Lady's-Mantle               | Vascular Plant |
| Alchemilla glabra                         | Smooth Lady's-mantle        | Vascular Plant |
| Alchemilla vulgaris agg.                  | Lady's-Mantle agg.          | Vascular Plant |
| Alchemilla xanthochlora                   | Intermediate Lady's-mantle  | Vascular Plant |
| Allium ursinum                            | Ramsons                     | Vascular Plant |
| Anagallis tenella                         | Bog Pimpernel               | Vascular Plant |
| Anemone nemorosa                          | Wood Anemone                | Vascular Plant |
| Anthyllis vulneraria                      | Kidney Vetch                | Vascular Plant |
| Aphanes arvensis                          | Parsley-piert               | Vascular Plant |
| Arabis hirsuta                            | Hairy Rock-cress            | Vascular Plant |
| Arenaria serpyllifolia agg.               | Thyme-Leaved Sandwort agg.  | Vascular Plant |
| Arenaria serpyllifolia subsp. leptoclados | Slender Sandwort            | Vascular Plant |
| Arenaria serpyllifolia                    | Thyme-Leaved Sandwort       | Vascular Plant |
| Asplenium trichomanes subsp. trichomanes  | Spleenwort                  | Vascular Plant |
| Asplenium viride                          | Green Spleenwort            | Vascular Plant |
| Botrychium lunaria                        | Moonwort                    | Vascular Plant |
| Briza media                               | Quaking-grass               | Vascular Plant |
| Bromopsis erecta                          | Upright Brome               | Vascular Plant |
| Bromopsis ramosa                          | Hairy-brome                 | Vascular Plant |
| Buxus sempervirens                        | Box                         | Vascular Plant |
| Callitriche hamulata                      | Intermediate Water-starwort | Vascular Plant |
| Calystegia pulchra                        | Hairy Bindweed              | Vascular Plant |
| Carduus nutans                            | Musk Thistle                | Vascular Plant |
| Carex caryophyllea                        | Spring-sedge                | Vascular Plant |
| Carex flacca                              | Glaucous Sedge              | Vascular Plant |
| Carex hostiana                            | Tawny Sedge                 | Vascular Plant |
| Carex laevigata                           | Smooth-stalked Sedge        | Vascular Plant |
| Carex montana                             | Soft-leaved Sedge           | Vascular Plant |
| Carex otrubae                             | False Fox-sedge             | Vascular Plant |
| Carex panicea                             | Carnation Sedge             | Vascular Plant |
| Carex paniculata                          | Greater Tussock-sedge       | Vascular Plant |
| Carex pilulifera                          | Pill Sedge                  | Vascular Plant |
| Carex pulicaris                           | Flea Sedge                  | Vascular Plant |
| Carex rostrata                            | Bottle Sedge                | Vascular Plant |
| Carex spicata                             | Spiked Sedge                | Vascular Plant |
| Carex sylvatica                           | Wood-sedge                  | Vascular Plant |
| Carex viridula subsp. brachyrrhyncha      | Long-stalked Yellow-sedge   | Vascular Plant |
| Carex viridula subsp. oedocarpa           | Common Yellow-sedge         | Vascular Plant |
| Catapodium rigidum                        | Fern-grass                  | Vascular Plant |
| Centaurea scabiosa                        | Greater Knapweed            | Vascular Plant |
| Ceratocarpus claviculata                  | Climbing Corydalis          | Vascular Plant |
| Ceratophyllum demersum                    | Rigid Hornwort              | Vascular Plant |
| Ceterach officinarum                      | Rustyback                   | Vascular Plant |

|                                                 |                                   |                |
|-------------------------------------------------|-----------------------------------|----------------|
| Chaenorhinum minus                              | Small Toadflax                    | Vascular Plant |
| Chenopodium rubrum                              | Red Goosefoot                     | Vascular Plant |
| Chrysosplenium alternifolium                    | Alternate-leaved Golden-saxifrage | Vascular Plant |
| Circaea lutetiana x alpina = C. x intermedia    | Upland Enchanter's-nightshade     | Vascular Plant |
| Cirsium acaule                                  | Dwarf Thistle                     | Vascular Plant |
| Conopodium majus                                | Pignut                            | Vascular Plant |
| Cornus sanguinea                                | Dogwood                           | Vascular Plant |
| Cotoneaster horizontalis                        | Wall Cotoneaster                  | Vascular Plant |
| Cotoneaster microphyllus                        | Small-leaved Cotoneaster          | Vascular Plant |
| Cotoneaster simonsii                            | Himalayan Cotoneaster             | Vascular Plant |
| Crassula helmsii                                | New Zealand Pigmyweed             | Vascular Plant |
| Crocosmia pottsii x aurea = C. x crocosmiiflora | Montbretia                        | Vascular Plant |
| Cruciata laevipes                               | Crosswort                         | Vascular Plant |
| Cystopteris fragilis                            | Brittle Bladder-fern              | Vascular Plant |
| Dactylorhiza fuchsii                            | Common Spotted-orchid             | Vascular Plant |
| Dactylorhiza maculata                           | Heath Spotted-orchid              | Vascular Plant |
| Dactylorhiza praetermissa                       | Southern Marsh-orchid             | Vascular Plant |
| Danthonia decumbens                             | Heath-grass                       | Vascular Plant |
| Dipsacus fullonum                               | Wild Teasel                       | Vascular Plant |
| Drosera rotundifolia                            | Round-leaved Sundew               | Vascular Plant |
| Dryopteris carthusiana                          | Narrow Buckler-fern               | Vascular Plant |
| Eleocharis quinqueflora                         | Few-flowered Spike-rush           | Vascular Plant |
| Elodea canadensis                               | Canadian Waterweed                | Vascular Plant |
| Elymus caninus                                  | Bearded Couch                     | Vascular Plant |
| Empetrum nigrum                                 | Crowberry agg.                    | Vascular Plant |
| Epilobium brunnescens                           | New Zealand Willowherb            | Vascular Plant |
| Epilobium tetragonum                            | Square-stalked Willowherb         | Vascular Plant |
| Epipactis helleborine                           | Broad-leaved Helleborine          | Vascular Plant |
| Equisetum sylvaticum                            | Wood Horsetail                    | Vascular Plant |
| Equisetum telmateia                             | Great Horsetail                   | Vascular Plant |
| Erica cinerea                                   | Bell Heather                      | Vascular Plant |
| Erica tetralix                                  | Cross-leaved Heath                | Vascular Plant |
| Erigeron acris                                  | Blue Fleabane                     | Vascular Plant |
| Eriophorum angustifolium                        | Common Cottongrass                | Vascular Plant |
| Eriophorum latifolium                           | Broad-leaved Cottongrass          | Vascular Plant |
| Eriophorum vaginatum                            | Hare's-tail Cottongrass           | Vascular Plant |
| Erodium cicutarium                              | Common Stork's-bill               | Vascular Plant |
| Erophila glabrescens                            | Glabrous Whitlowgrass             | Vascular Plant |
| Euphorbia amygdaloides                          | Wood Spurge                       | Vascular Plant |
| Euphrasia nemorosa x confusa                    | Eyebright                         | Vascular Plant |
| Euphrasia nemorosa                              | Eyebright                         | Vascular Plant |
| Euphrasia officinalis agg.                      | Eyebright agg.                    | Vascular Plant |
| Euphrasia officinalis subsp. pratensis          | Eyebright                         | Vascular Plant |
| Fallopia japonica                               | Japanese Knotweed                 | Vascular Plant |
| Fallopia sachalinensis                          | Giant Knotweed                    | Vascular Plant |
| Filago minima                                   | Small Cudweed                     | Vascular Plant |
| Filago vulgaris                                 | Common Cudweed                    | Vascular Plant |
| Frangula alnus                                  | Alder Buckthorn                   | Vascular Plant |

|                                                          |                        |                |
|----------------------------------------------------------|------------------------|----------------|
| Galium mollugo subsp. erectum                            | Upright Hedge Bedstraw | Vascular Plant |
| Galium mollugo                                           | Hedge Bedstraw         | Vascular Plant |
| Galium odoratum                                          | Woodruff               | Vascular Plant |
| Galium sternerii                                         | Limestone Bedstraw     | Vascular Plant |
| Galium verum                                             | Lady's Bedstraw        | Vascular Plant |
| Geum rivale x urbanum = G. x intermedium                 | Hybrid Avens           | Vascular Plant |
| Geum rivale                                              | Water Avens            | Vascular Plant |
| Gymnadenia conopsea subsp. conopsea                      | Fragrant Orchid        | Vascular Plant |
| Gymnadenia conopsea                                      | Fragrant Orchid        | Vascular Plant |
| Gymnocarpium robertianum                                 | Limestone Fern         | Vascular Plant |
| Helianthemum nummularium                                 | Common Rock-rose       | Vascular Plant |
| Helictotrichon pubescens                                 | Downy Oat-grass        | Vascular Plant |
| Helleborus viridis                                       | Green Hellebore        | Vascular Plant |
| Hippophae rhamnoides                                     | Sea-buckthorn          | Vascular Plant |
| Huperzia selago                                          | Fir Clubmoss           | Vascular Plant |
| Hyacinthoides non-scripta x hispanica = H. x massartiana | Bluebell               | Vascular Plant |
| Hyacinthoides non-scripta                                | Bluebell               | Vascular Plant |
| Hydrocotyle vulgaris                                     | Marsh Pennywort        | Vascular Plant |
| Hypericum pulchrum                                       | Slender St John's-wort | Vascular Plant |
| Inula conyzae                                            | Ploughman's-spikenard  | Vascular Plant |
| Jasione montana                                          | Sheep's-bit            | Vascular Plant |
| Juncus inflexus                                          | Hard Rush              | Vascular Plant |
| Knautia arvensis                                         | Field Scabious         | Vascular Plant |
| Lagarosiphon major                                       | Curly Waterweed        | Vascular Plant |
| Lamiastrum galeobdolon subsp. montanum                   | Yellow Archangel       | Vascular Plant |
| Lathraea squamaria                                       | Toothwort              | Vascular Plant |
| Lathyrus linifolius                                      | Bitter-vetch           | Vascular Plant |
| Lemna trisulca                                           | Ivy-leaved Duckweed    | Vascular Plant |
| Leontodon hispidus                                       | Rough Hawkbit          | Vascular Plant |
| Leontodon saxatilis                                      | Lesser Hawkbit         | Vascular Plant |
| Linum catharticum                                        | Fairy Flax             | Vascular Plant |
| Luzula multiflora                                        | Heath Wood-rush        | Vascular Plant |
| Luzula pilosa                                            | Hairy Wood-rush        | Vascular Plant |
| Luzula sylvatica                                         | Great Wood-rush        | Vascular Plant |
| Lysimachia nemorum                                       | Yellow Pimpernel       | Vascular Plant |
| Lysimachia nummularia                                    | Creeping-Jenny         | Vascular Plant |
| Lysimachia vulgaris                                      | Yellow Loosestrife     | Vascular Plant |
| Lythrum portula                                          | Water-purslane         | Vascular Plant |
| Meconopsis cambrica                                      | Welsh Poppy            | Vascular Plant |
| Melica nutans                                            | Mountain Melick        | Vascular Plant |
| Melica uniflora                                          | Wood Melick            | Vascular Plant |
| Mentha aquatica                                          | Water Mint             | Vascular Plant |
| Mentha arvensis x aquatica = M. x verticillata           | Whorled Mint           | Vascular Plant |
| Mimulus guttatus                                         | Monkeyflower           | Vascular Plant |
| Moehringia trinervia                                     | Three-nerved Sandwort  | Vascular Plant |
| Montia fontana subsp. amporitana                         | Blinks                 | Vascular Plant |
| Mycelis muralis                                          | Wall Lettuce           | Vascular Plant |

|                                                  |                         |                |
|--------------------------------------------------|-------------------------|----------------|
| Myosotis discolor                                | Changing Forget-me-not  | Vascular Plant |
| Myosotis laxa                                    | Tufted Forget-me-not    | Vascular Plant |
| Myosotis secunda                                 | Creeping Forget-me-not  | Vascular Plant |
| Narcissus pseudonarcissus subsp. major           | Spanish Daffodil        | Vascular Plant |
| Narcissus pseudonarcissus subsp. pseudonarcissus | Daffodil                | Vascular Plant |
| Narthecium ossifragum                            | Bog Asphodel            | Vascular Plant |
| Neottia ovata                                    | Common Twayblade        | Vascular Plant |
| Nuphar lutea                                     | Yellow Water-lily       | Vascular Plant |
| Odontites vernus                                 | Red Bartsia             | Vascular Plant |
| Ononis repens                                    | Common Restharrow       | Vascular Plant |
| Ophrys apifera                                   | Bee Orchid              | Vascular Plant |
| Orchis mascula                                   | Early-purple Orchid     | Vascular Plant |
| Oreopteris limbosperma                           | Lemon-scented Fern      | Vascular Plant |
| Osmunda regalis                                  | Royal Fern              | Vascular Plant |
| Oxalis acetosella                                | Wood-sorrel             | Vascular Plant |
| Paris quadrifolia                                | Herb-paris              | Vascular Plant |
| Pedicularis sylvatica                            | Lousewort               | Vascular Plant |
| Persicaria bistorta                              | Common Bistort          | Vascular Plant |
| Persicaria lapathifolia                          | Pale Persicaria         | Vascular Plant |
| Persicaria minor                                 | Small Water-pepper      | Vascular Plant |
| Petasites hybridus                               | Butterbur               | Vascular Plant |
| Phegopteris connectilis                          | Beech Fern              | Vascular Plant |
| Phragmites australis                             | Common Reed             | Vascular Plant |
| Picris hieracioides                              | Hawkweed Oxtongue       | Vascular Plant |
| Pimpinella saxifraga                             | Burnet-saxifrage        | Vascular Plant |
| Pinguicula vulgaris                              | Common Butterwort       | Vascular Plant |
| Plantago media                                   | Hoary Plantain          | Vascular Plant |
| Platanthera bifolia                              | Lesser Butterfly-orchid | Vascular Plant |
| Platanthera                                      | Platanthera             | Vascular Plant |
| Poa compressa                                    | Flattened Meadow-grass  | Vascular Plant |
| Polygala serpyllifolia                           | Heath Milkwort          | Vascular Plant |
| Polygala vulgaris                                | Common Milkwort         | Vascular Plant |
| Polypodium interjectum                           | Intermediate Polypody   | Vascular Plant |
| Polystichum aculeatum                            | Hard Shield-fern        | Vascular Plant |
| Polystichum setiferum                            | Soft Shield-fern        | Vascular Plant |
| Populus tremula                                  | Aspen                   | Vascular Plant |
| Potamogeton crispus                              | Curled Pondweed         | Vascular Plant |
| Potamogeton polygonifolius                       | Bog Pondweed            | Vascular Plant |
| Poterium sanguisorba subsp. sanguisorba          | Salad Burnet            | Vascular Plant |
| Primula veris x vulgaris = P. x polyantha        | False Oxlip             | Vascular Plant |
| Primula veris                                    | Cowslip                 | Vascular Plant |
| Prunus laurocerasus                              | Cherry Laurel           | Vascular Plant |
| Prunus padus                                     | Bird Cherry             | Vascular Plant |
| Pseudorchis albida                               | Small-white Orchid      | Vascular Plant |
| Pulicaria dysenterica                            | Common Fleabane         | Vascular Plant |
| Ranunculus aquatilis                             | Common Water-crowfoot   | Vascular Plant |
| Ranunculus ficaria subsp. bulbilifer             | Lesser Celandine        | Vascular Plant |
| Ranunculus omiophyllus                           | Round-leaved Crowfoot   | Vascular Plant |

|                                                            |                       |                |
|------------------------------------------------------------|-----------------------|----------------|
| Reseda luteola                                             | Weld                  | Vascular Plant |
| Rhamnus cathartica                                         | Buckthorn             | Vascular Plant |
| Rhinanthus minor                                           | Yellow-rattle         | Vascular Plant |
| Rhododendron ponticum                                      | Rhododendron ponticum | Vascular Plant |
| Rorippa nasturtium-aquaticum x microphylla = R. x sterilis | Hybrid Water-cress    | Vascular Plant |
| Rosa caesia subsp. caesia                                  | Hairy Dog-rose        | Vascular Plant |
| Rosa caesia subsp. vosagiaca                               | Glaucous Dog-rose     | Vascular Plant |
| Rosa rugosa                                                | Japanese Rose         | Vascular Plant |
| Rubus saxatilis                                            | Stone Bramble         | Vascular Plant |
| Salix alba                                                 | White Willow          | Vascular Plant |
| Salix purpurea                                             | Purple Willow         | Vascular Plant |
| Salix repens                                               | Creeping Willow       | Vascular Plant |
| Sanguisorba officinalis                                    | Great Burnet          | Vascular Plant |
| Sanicula europaea                                          | Sanicle               | Vascular Plant |
| Saxifraga granulata                                        | Meadow Saxifrage      | Vascular Plant |
| Saxifraga hypnoides                                        | Mossy Saxifrage       | Vascular Plant |
| Saxifraga tridactylites                                    | Rue-leaved Saxifrage  | Vascular Plant |
| Scrophularia auriculata                                    | Water Figwort         | Vascular Plant |
| Scutellaria minor                                          | Lesser Skullcap       | Vascular Plant |
| Sedum forsterianum                                         | Rock Stonecrop        | Vascular Plant |
| Senecio erucifolius                                        | Hoary Ragwort         | Vascular Plant |
| Serratula tinctoria                                        | Saw-wort              | Vascular Plant |
| Sherardia arvensis                                         | Field Madder          | Vascular Plant |
| Silene flos-cuculi                                         | Ragged-Robin          | Vascular Plant |
| Sinapis arvensis                                           | Charlock              | Vascular Plant |
| Solidago virgaurea                                         | Goldenrod             | Vascular Plant |
| Sorbus aria                                                | Common Whitebeam      | Vascular Plant |
| Sparganium angustifolium                                   | Floating Bur-reed     | Vascular Plant |
| Spergularia rubra                                          | Sand Spurrey          | Vascular Plant |
| Stachys officinalis                                        | Betony                | Vascular Plant |
| Stachys palustris                                          | Marsh Woundwort       | Vascular Plant |
| Succisa pratensis                                          | Devil's-bit Scabious  | Vascular Plant |
| Tilia cordata                                              | Small-leaved Lime     | Vascular Plant |
| Torilis nodosa                                             | Knotted Hedge-parsley | Vascular Plant |
| Tragopogon pratensis                                       | Goat's-beard          | Vascular Plant |
| Trichophorum caespitosum                                   | Deergrass             | Vascular Plant |
| Trichophorum germanicum                                    | Deergrass             | Vascular Plant |
| Trifolium campestre                                        | Hop Trefoil           | Vascular Plant |
| Trifolium medium                                           | Zigzag Clover         | Vascular Plant |
| Triglochin palustre                                        | Marsh Arrowgrass      | Vascular Plant |
| Tripleurospermum inodorum                                  | Scentless Mayweed     | Vascular Plant |
| Trisetum flavescens                                        | Yellow Oat-grass      | Vascular Plant |
| Trollius europaeus                                         | Globeflower           | Vascular Plant |
| Ulex gallii                                                | Western Gorse         | Vascular Plant |
| Vaccinium myrtillus                                        | Bilberry              | Vascular Plant |
| Valeriana dioica                                           | Marsh Valerian        | Vascular Plant |
| Veronica catenata                                          | Pink Water-Speedwell  | Vascular Plant |

|                                  |                       |                |
|----------------------------------|-----------------------|----------------|
| Veronica montana                 | Wood Speedwell        | Vascular Plant |
| Veronica officinalis             | Heath Speedwell       | Vascular Plant |
| Veronica polita                  | Grey Field-speedwell  | Vascular Plant |
| Veronica scutellata              | Marsh Speedwell       | Vascular Plant |
| Viburnum lantana                 | Wayfaring-tree        | Vascular Plant |
| Viburnum opulus                  | Guelder-rose          | Vascular Plant |
| Vicia tetrasperma                | Smooth Tare           | Vascular Plant |
| Viola canina                     | Heath Dog-violet      | Vascular Plant |
| Viola palustris subsp. palustris | Marsh Violet          | Vascular Plant |
| Viola palustris                  | Marsh Violet          | Vascular Plant |
| Viola reichenbachiana            | Early Dog-violet      | Vascular Plant |
| Vulpia myuros                    | Rat's-tail Fescue     | Vascular Plant |
| Wahlenbergia hederacea           | Ivy-leaved Bellflower | Vascular Plant |

## APPENDIX D - TARGET NOTES

| Target note number | Description      |
|--------------------|------------------|
| TN 1               | Brash Piles      |
| TN 2               | Marshy grassland |
|                    |                  |

## **APPENDIX E - SPECIES LIST**

### **Semi Improved grassland**

Bramble, rosebay willow herb, creeping bent, timothy, cocksfoot, ribwort plantain, scaly male fern, springy turf moss, curled dock, spear thistle, common bent, common sorrel, self heal, foxglove, creeping cinquefoil, bittercress sp. , nettle, wild raddish, common sorell, hard rush and soft rush

### **Marshy grassland**

Pond sedge, bramble, rosebay willow herb, creeping bent, timothy, cocksfoot, common bent, creeping cinquefoil, bittercress sp. , nettle, hard rush and soft rush

### **Scrub**

Blackthorn, Bramble, Dogwood, grey willow, butterfly bush and silver birch

## APPENDIX F - SITE CLEARANCE METHOD STATEMENT (REPTILES)

1. Following a reptile habitat assessment, it was considered that the site has the potential to support a population of slow worm (*Anguis fragilis*), common lizard (*Lacerta vivipara*) and possibly grass snake (*Natrix natrix*). The presence of reptiles should therefore be assumed, hence the need for a Method Statement to ensure that works are carried out in such a way as to avoid harm to reptiles. Receptor site

2. A nearby receptor site to accommodate any translocated reptiles has been agreed with MTCBC. The receptor site is found within one of MTCBC's Open Spaces (Pant Hollow – Natural/Seminatural Greenspace). This area of land is found c.275m to the east of the development site

Prior to the start of the onsite vegetation management the receptor site will be enhanced by the addition of a reptile hibernaculum. Brash from the proposed development site can be used in this process.

3. Following enhancement of the receptor site, the vegetation on the proposed development site will be cut in three phases. The first phase will reduce the vegetation height to 75mm; the second will reduce it to ~30mm; the third phase will reduce the height to as close to ground level as possible. There will be a time delay of 48 hours between cuts. These will be directional cuts starting from the northwest corner and proceeding in a south easterly direction (see red arrows in Figure 5).

4. All cuts will be made by operatives using strimmers and /or brushcutters. No tractor towed flails and mowers will be used.

5. All arisings will be raked off and spread (creating habitat piles) on unaffected land or removed from site for disposal.

6. Potential hibernacula will only be cleared while day time temperatures are consistently over 12°C for a period of at least seven days prior as otherwise reptiles may be killed or injured as a result of inconsistent (low) temperatures (during the day and night) and/or low prey availability. Potential hibernacula will only be dismantled by hand unless the supervising ecologist gives the approval for machine dismantling.

7. If habitats suitable for nesting birds are to be removed (e.g., scrub / brash piles), then any vegetation clearance will take place outside of the bird nesting season. In the event that clearance work has to be undertaken during the nesting season (generally from 1st March until 31st August, although birds are known to nest outside of these dates in suitable conditions), a breeding bird survey will be required and must be carried out by a suitably qualified person. Any active nests identified should be protected until the young have fledged.

### Reptile fencing

8. 10% of the site (in the south eastern corner) will remain uncut and temporarily retained as suitable habitat for reptiles (see yellow box in Figure 5). The directional cuts detailed above are designed to encourage reptiles into this area. Following phase 3 of the cutting process, the retained 10% will be fenced off with appropriate reptile-proof fencing.

9. NB the cut areas will be maintained as close to ground level as possible through regular cutting until completion of construction.

### Translocation

10. Artificial refugia will then be deployed within the retained, fenced-off 10%. This will allow any reptiles present to be captured and translocated the receptor site.

11. There will be 2x visits per day by an experience ecologist under suitable weather conditions. When there are three days where no reptiles are encountered under the refugia, the refugia will be removed and a fingertip search will be undertaken of the habitat to ensure no reptiles have been missed.

12. Following the fingertip search, when the ecologist is confident there are no remaining reptiles the reptile-proof fencing will be removed and the retained 10% will then be cut to facilitate the development.

General

13. All stages of the process will be supervised by a suitably experienced ecologist.

14. The design of the hibernaculum can be found in the attached appendices

Figure 5: Orientation of cutting



Figure 6- Identified receptor site (approximate location outlined red)



Figure 7- Receptor site in relation to the development site (development site arrowed red, receptor site arrowed yellow)





The site plan illustrates the layout of the proposed development. Units 1 through 14 are arranged in a grid-like fashion, with Units 1 and 2 at the top, followed by Units 3 through 14. The plan includes various infrastructure elements such as footpaths, an existing grass verge, a galvanised palisade fence, and a gas valve compound. Surrounding areas include Formula One, Iswynn Park, and undeveloped scrub land. A scale bar (0m to 30m) and a north arrow are provided for reference.

[illegible]

## APPENDIX H – PLANTING PLAN

### MKR : PANT INDUSTRIAL ESTATE : PLANTING SCHEDULE

08/07/2020 rev 21 July 2020

| TREES                       |      |                     |                                                                |        |
|-----------------------------|------|---------------------|----------------------------------------------------------------|--------|
| Carpinus betulus Fastigiata |      | Fastigate Hornbeam  | All trees are to be rootballed<br>14-16cm Extra Heavy Standard | 6 No   |
| Crataegus mongyna           |      | Hawthorn            | 12-14cm Heavy Standard                                         | 4 No   |
| Malus sylvestris            |      | Crabapple           | 12-14cm Heavy Standard                                         | 2 No   |
| TOTAL                       |      |                     |                                                                | 12 No  |
| PLANTING BEDS 1-10          |      |                     |                                                                |        |
|                             |      | Bark Mulch to beds  |                                                                | 131 m2 |
| Crataegus mongyna           | Cm   | Hawthorn            | 60-80cm 1 + 1 Bareroot                                         | 51 No  |
| Cornus sanguinea            | Cs   | Dogwood             | 60-80cm 1 + 1 Bareroot                                         | 35 No  |
| Hedera helix                | HH   | Ivy                 | 60-90cm 2Lpot                                                  | 420 No |
| Ilex aquifolium             | la   | Holly               | 30-45cm 3Lpot                                                  | 102 No |
| Polystichum setiferum       | Poly | Evergreen Fern      | 2Lpot                                                          | 12 No  |
| Viburnum opulus             | Vo   | Guelder Rose        | 60-80cm 1 + 1 Bareroot                                         | 15 No  |
| TOTAL                       |      |                     |                                                                | 635 No |
| WILDFLOWER PLUGS            |      |                     |                                                                |        |
| Geranium pratense           | Gp   | Cranesbill          | 65cc Jumbo Plug                                                | 119 No |
| Potentilla reptans          | Pr   | Creeping cinquefoil | 65cc Jumbo plug                                                | 86 No  |
| TOTAL                       |      |                     |                                                                | 205 No |

### Lindum Green Roof Wildflower Turf : Roof of Cycle Shelter

| Latin name              | Common name        |
|-------------------------|--------------------|
| Daucus carota           | Wild Carrot        |
| Achillea Millefolium    | Yarrow             |
| Galium mollugo          | Hedge Bedstraw     |
| Knaulia arvensis        | Field Scabious     |
| Leucanthemum vulgare    | Oxeye Daisy        |
| Origanum vulgare        | Wild Majoram       |
| Plantago media          | Hoary Plantain     |
| Primula veris           | Cowslip            |
| Rhinanthus minor        | Yellow Rattle      |
| Silene flos-cuculi      | Pink Ragged Robin  |
| Echium vulgare          | Vipers Bugloss     |
| Veronica spicata        | Spiked Speedwell   |
| Thymus vulgare          | Common Thyme       |
| Silene flos-cuculi      | White Ragged Robin |
| Centaurea scabiosa      | Greater Knapweed   |
| Filipendula ulmaria     | Meadowsweet        |
| Galium verum            | Ladys Bedstraw     |
| Leontodon hispidus      | Rough Hawkbit      |
| Lotus corniculatus      | Birdsfoot trefoil  |
| Plantago lanceolata     | Ribwort Plantain   |
| Sanguisorba minor       | Salad Burnett      |
| Prunella vulgaris       | Self Heal          |
| Silene dioca            | Red Campion        |
| Silene vulgaris         | Bladder campion    |
| Allium schoenoprasum    | Chives             |
| Linaria vulgaris        | Toadflax           |
| Dianthus carthusianorum | Carthusian Pink    |

### Germinal WFG Eco Species rich Lawn Mix

76 m2

| Latin name              | Common name                 |        |
|-------------------------|-----------------------------|--------|
| Festuca rubra litoralis | Slender Creeping Red Fescue | 12.5 % |
| Festuca longifolia      | Hard Fescue                 | 10 %   |
| Festuca ovina           | Sheep's Fescue              | 10 %   |
| Pheleum bertolonii      | Small leaved Timothy        | 2.5 %  |
| Centaurea nigra         | Common Knapweed             | 2 %    |
| Plantago lanceolata     | Ribwort Plantain            | 1 %    |
| Prunella vulgaris       | Self Heal                   | 1 %    |
| Ranunculus acris        | Meadow buttercup            | 2 %    |
| Lotus corniculatus      | Birdsfoot trefoil           | 0.5 %  |
| Festuca rubra rubra     | Strong Creeping Red Fescue  | 15 %   |
| Festuca rubra commutata | Chewings Fescue             | 10 %   |
| Poa pratensis           | Smooth stalked Meadow Grass | 5 %    |
| Poa trivialis           | Rough Stalked Meadow Grass  | 5 %    |
| Agrostis capillaris     | Browntop Bent               | 5 %    |
| Agrostis stolonifera    | Creeping Bent               | 2.5 %  |
| Lolium perenne          | Lolium perenne              | 2.5 %  |
| Ranunculus repens       | Creeping Buttercup          | 2.3 %  |

|                                    |                  |         |
|------------------------------------|------------------|---------|
| Galium verum                       | Ladys Bedstraw   | 1.25 %  |
| Trifolium pratense                 | Red Clover       | 2 %     |
| Trifolium repens                   | White Clover     | 2 %     |
| Rumex acetosa                      | Common Sorrel    | 0.5 %   |
| Scabiosa columbaria                | Small Scabious   | 0.2 %   |
| Taraxacum officinale               | Dandelion        | 0.3 %   |
| Medicago lupulina                  | Black Medick     | 1 %     |
| Linum usitatissimum                | Flax             | 1 %     |
| Cerastium fontanum                 | Common Mouse Ear | 0.2 %   |
| Primula veris                      | Cowslip          | 0.1 %   |
| Hypochaeris radicata               | Cats Ear         | 0.2 %   |
| Leontodon hispidus                 | Rough Hawkbit    | 0.5 %   |
| Leontodon autumnalis               | Autumn Hawkbit   | 0.5 %   |
| Rhinanthus minor                   | Yellow Rattle    | 0.2 %   |
| Teucrium scordonia                 | Wood Sage        | 0.5 %   |
| Daucus carota                      | Wild Carrot      | 0.25 %  |
| Achillea Millefolium               | Yarrow           | 0.5 %   |
|                                    |                  | 100.0 % |
| Sow at rate of 10 gms per sq metre |                  |         |

## APPENDIX I – PLANTING DETAIL



MRK - PANT INDUSTRIAL ESTATE: PLANTING SCHEDULE

08/07/2020 Rev 21 July 2020

| TREES                             |                    |                                |                        |        |
|-----------------------------------|--------------------|--------------------------------|------------------------|--------|
| <i>Carpinus betulus</i> Fastigate | Fastigate Hornbeam | All trees are to be rootrolled | 6 No                   |        |
|                                   |                    | 16-18cm Extra Heavy Standard   |                        |        |
| <i>Carpinus moenchii</i>          | Hawthorn           | 12-14cm Heavy Standard         | 4 No                   |        |
| <i>Ilex coccinea</i>              | Cotoneaster        | 12-14cm Heavy Standard         | 2 No                   |        |
| TOTAL                             |                    |                                | 12 No                  |        |
| PLANTING MIXES 1-10               |                    | Back Match to beds             |                        |        |
| <i>Carpinus moenchii</i>          | Can                | Hornbeam                       | 80-90cm 1 + 1 Bareroot | 131 No |
| <i>Cornus sanguinea</i>           | Ca                 | Dogwood                        | 80-90cm 1 + 1 Bareroot | 31 No  |
| <i>Hedera helix</i>               | HH                 | Ivy                            | 65-80cm 2, pot         | 420 No |
| <i>Ilex aquifolium</i>            | Ia                 | Holly                          | 30-45cm 3, pot         | 152 No |
| <i>Polystichum wilsonii</i>       | Pw                 | European Fern                  | 3, pot                 | 12 No  |
| <i>Valeriana officinalis</i>      | Va                 | Guelder Rose                   | 80-90cm 1 + 1 Bareroot | 16 No  |
| TOTAL                             |                    |                                |                        | 630 No |
| WILDFLOWER PLUGS                  |                    |                                |                        |        |
| <i>Geranium pratense</i>          | Gp                 | Cornflower                     | 90cm Jumbo Plug        | 110 No |
| <i>Plantago lanceolata</i>        | Pl                 | Chrysanthemum                  | 60cm Jumbo Plug        | 30 No  |
| TOTAL                             |                    |                                |                        | 305 No |

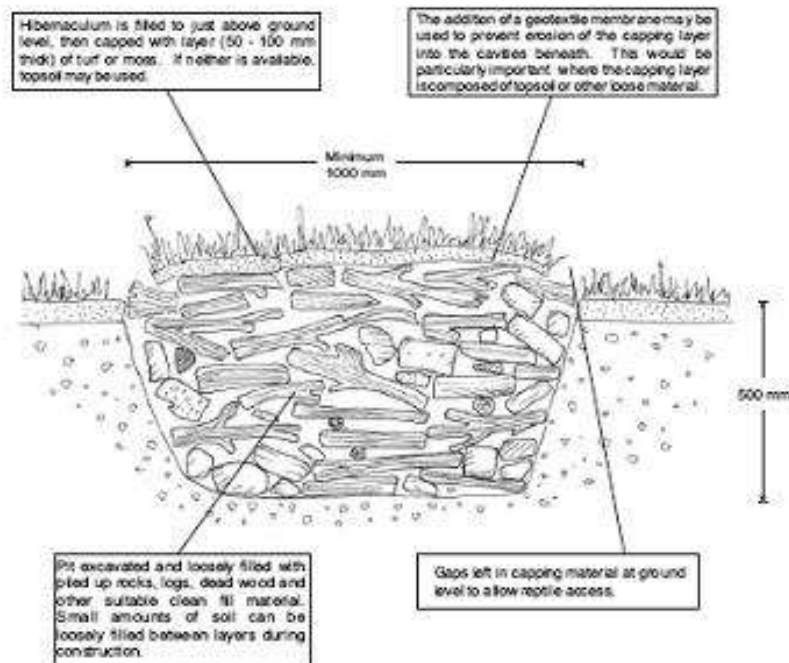
CA 1018-46 Rev A  
21 July 2020  
Revised Planting

MRK PROPERTY  
PANT INDUSTRIAL  
ESTATE  
WERTHYR TYDFIL  
Drawing No:  
LANDSCAPE PLANTING  
DETAILS  
Date:  
12/07/2020  
Rev:  
1  
CA 1018-46 Rev A

## APPENDIX J – PLANTING DETAIL

### Hibernaculum on free-draining ground

Where ground conditions allow, the hibernaculum should be incorporated into a shallow pit. This design is more likely to remain frost-free, and will be less obtrusive and thus unlikely to be subject to interference.



### Hibernaculum on impermeable ground

Where ground conditions are impermeable, then an 'above-ground' or mounded design should be utilised in order to prevent the hibernaculum from flooding. This design should also be used if it is not possible to excavate a pit for any other reason.

