



Elite Ecology

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**Unit 7, EFI Industrial Estate,
Merthyr Tydfil**



Preliminary Ecological Appraisal

June 2021



01782 308418



Part of Harmil Environmental Ltd.
Company Reg Number: 11310919
Company VAT Number: 320559225

admin@eliteecology.co.uk
www.eliteecology.co.uk



Wellesley House, Wellesley Street,
Stoke-on-Trent ST1 4NF



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Organisation	Elite Ecology		
Prepared For	Mr. Chris Marshall (Proprietor)		
Author	Miss. Rosanna Rapacchietta		
Approved (1 st Checker)	Mr. Marek Fraczek		
Approved (2 nd Checker)	Mr. Richard Millington		
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0. Executive Summary

This report has been prepared at the request of Mr. Chris Marshall (Proprietor). Elite Ecology was commissioned to undertake a Preliminary Ecological Appraisal at Unit 7, EFI industrial Estate, Brecon Road, Cyfarthfa, Merthyr Tydfil, CF47 8RB (Central OS Grid Reference: SO 03842 07124). This survey effort involved both a desktop study and field survey.

Under the current proposals, more units are to be built on the site.

The local records centre, South East Wales Biodiversity Records Centre, was commissioned to carry out an ecological data search of all protected species and sites recorded within a 2km radius of the site. This had not arrived at the time of writing this report.

The preliminary ecological appraisal survey revealed numerous habitats on site. The phase 1 habitat map, habitat codes and target notes for the site are located within **Appendix C**. The following habitats were recorded on site (in habitat code order):

- **A2.1** – Dense scrub
- **I2.2** - Rock Face
- **J2.3** – Scattered broadleaf trees
- **J2.4** – Fence
- **J4** - Bare Ground

No designated sites revealed from the ecological data set provided by SEWBRc were located on the site. However, the site is bordered by a Site of Importance to Nature Conservation (SINC). Due to this, a 10m buffer zone between the designated site and the development site is necessary. This will be best comprised of trees, scrub and wildflowers.

No habitats of conservation concern were located on the site itself. Therefore, the proposed scheme of works will not impact upon any rare or valuable habitats.

Hedgehogs:

As a purely precautionary measure, it is recommended that provisions are incorporated during the construction phase. This will be to create provisions for hedgehogs to escape in the form of creating slopes or the inclusion of ramps at the end of each working day from all trenches dug into the ground. Additionally, any pipework left on site that is greater than 150mm in diameter will need to be planked off. Should this information be strictly adhered to, then the development works will not negatively impact on the local mammal populations. Post development, one [Eco Hedgehog Nest Box](#) should be included into the site within an appropriate location. It is also recommended that small gaps are left within any boundary fencing (if used) to enable the specimens to continue to commute through the area. This will ensure that the local hedgehog populations do not become fragmented within the local landscape.

Biodiversity Net Gain:

Biodiversity Net Gain needs to be ensured within the scheme of works. The inclusion of some of the above measures may help achieve this. Once the scheme has been finalised, a calculation using a relevant metric system will be necessary.

Site enhancement: For the proposed site enhancements, please see **Section 5.5** of this report.

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1. Introduction

1.1 Report rationale

This report has been prepared at the request of Mr. Chris Marshall (Proprietor). Elite Ecology was commissioned to undertake a Preliminary Ecological Appraisal at Unit 7, EFI Industrial Estate, Brecon Road, Cyfarthfa, Merthyr Tydfil, CF47 8RB (Central OS Grid Reference: SO 03842 07124). This survey effort involved both a desktop study and field survey.

The main purpose of this assessment was to identify the broad habitats (as stated in the JNCC Phase 1 Handbook) and the flora species present within the survey area, with any further evidence of protected species usage and/or features of potential ecological interest also included. The field survey was carried out on Tuesday February 2nd 2021 by Mr. Matthew Hodgson, Ecologist.

1.2 Site description and works

The site is situated in a semi-rural setting in the settlement of Cyfarthfa in the county of Merthyr Tydfil, Wales.

The site contains numerous habitat types. These come in the form of bare ground, hedge and trees. Some of these habitats could be utilised by protected species. Photographs of the site are found within **Appendix D**.

Within the wider landscape, further habitats are present. These come in the form of agricultural land, hedgerows, residential structures (and their associated gardens/land) and woodland. The habitats that surround the site also have the potential to be utilised by a variety of protected species.

Under the current proposals, more units are to be built on the site. These works will result in both the permanent and temporary loss and/or alteration of some of the habitats located on the proposed re-development site.

Figure 1: An aerial map showing the location of the land proposed for re-development at Unit 7 EFI Industrial Estate, Merthyr Tydfil (yellow star) in relation to some of the local landscape.

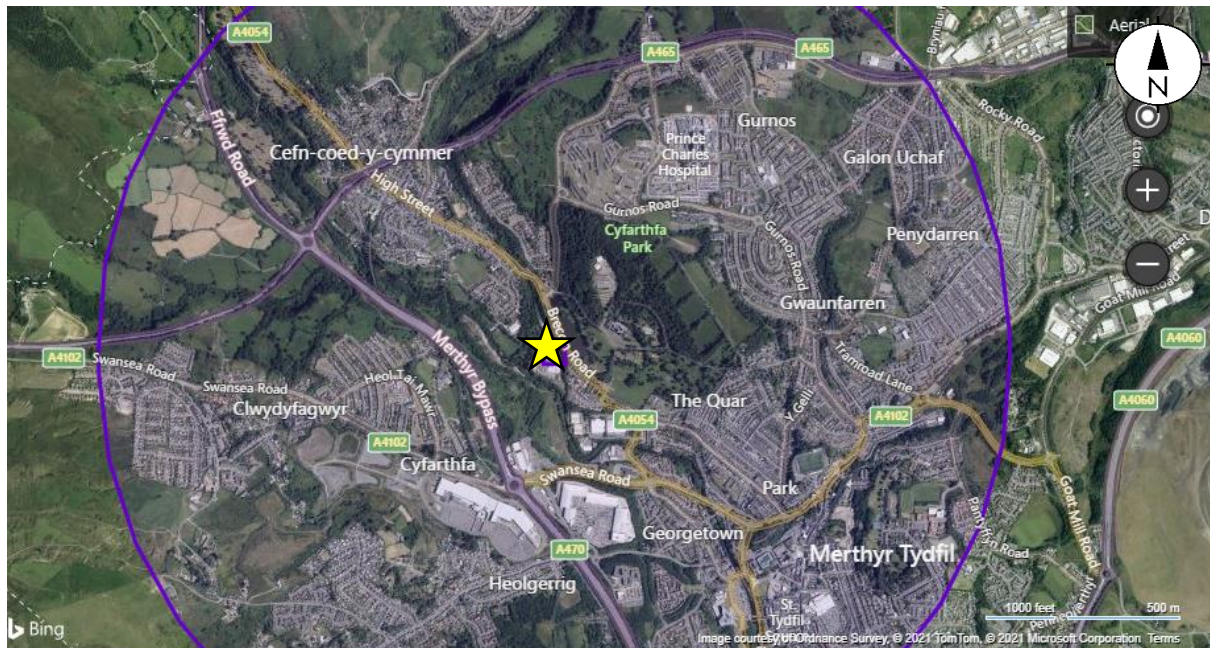


Figure 2: An OS map obtained from Bing showing the location of the survey site Unit 7 EFI Industrial Estate, Merthyr Tydfil (yellow star).



2. Survey Methodology

2.1 Desktop Survey

A variety of resources were independently consulted to assess the known local records within the nearby area and the importance of the site within the local landscape from an ecological perspective. The resources used were the Local Records Centre, www.naturalresources.wales, www.ordnancesurvey.co.uk, Google Maps, Google Earth and Bing Maps. A search of other relevant nature conservation information was made through the use of Multi-Agency Geographic Information for the Countryside (MAGIC) database.

The local records centre was contacted to provide data on all protected species and designated sites within a 2km radius of the proposed development site. South East Wales Biodiversity Records Centre (SEWBReC) was the relevant local record centre for this project.

2.2 Field Survey

A Preliminary Ecological Appraisal (previously referred to as an Extended Phase 1 Habitat Survey) was carried out using the method outlined in the JNCC Handbook for *Phase 1 Habitat Survey: a technique for environmental audit (2010)*. This method aims to map and describe the broad habitat types and notable features present on the surveyed site.

As part of the field survey, the floral species will be identified and noted down. This will consider the dominant, abundant, frequent, occasional and rare (DAFOR) species within each habitat on the survey site. The impacts of the proposed development scheme will be assessed by this report.

Each habitat will be assessed for the presence and/or the potential presence of protected species. The impacts of the proposed scheme of works on all potential protected species on site will be assessed. From this, either remedial action or recommended phase 2 presence/absence surveys will be devised.

Some of the classification codes and colours listed within the JNCC handbook may have been slightly modified for this project.

Habitat Surveys can be carried out at any time of the year, with the optimal time period falling between the months of April through until September. This survey was carried out on Tuesday February 2nd 2021, which is inside of the optimal time period for flora surveys. Elite Ecology feels confident that the majority of the floral species located on the site were competently identified during the survey effort. In addition to this, Elite Ecology feels confident that this report reflects an accurate representation of the sites suitability for protected species to be present.

All sites surveyed by Elite Ecology will be run against the relevant Local Wildlife Site Criteria to assess whether or not they meet the required standards.

3. Desktop Survey Results

3.1 Statutory Sites

The ecological data received from SEWBReC confirmed the presence of four statutory protected sites (e.g. LNR, SSSI, SPA, SAC or Ramsar) within the 2km search radius;

Site Name	Designation	Approx. Distance (m)
Cwm Glo A Glyndyrys	SSSI	1,126
Cwm Taf Fechan Woodlands	SSSI and LNR	333
1 NRW Priority Area (Heathland and Grassland)	SPA	965

3.2 Non-Statutory Sites

The ecological data received from SEWBReC revealed 19 non-statutory sites within the 2km search radius. These are as follows:

Site Name	Designation	Approx. Distance (m)
Afon Taf	Wildlife Site/SINC	473
Bryniau	Wildlife Site/SINC	1,749
Cwm Taf Fechan	Wildlife Site/SINC	2,896
Cyfarthfa Park	Wildlife Site/SINC	327
Cilsanws Common South	Wildlife Site/SINC	1,284
Coed Meirig Pastures	Wildlife Site/SINC	1,463
Cwm Ffrwd	Wildlife Site/SINC	852
Cwm Glo	Wildlife Site/SINC	1,005
Cwm Taf Fawr	Wildlife Site/SINC	98
Cwm Taf Fields & Cefn Coed Tip	Wildlife Site/SINC	86
Dan y Darren Wildlife Site	Wildlife Site/SINC	1,987
Gellideg North Fields	Wildlife Site/SINC	560
Gyrnos Wood	Wildlife Site/SINC	1,463
Rhydycar West	Wildlife Site/SINC	1,861
Winchfawr East & Clwydyfagwyr	Wildlife Site/SINC	1,135
Winchfawr West	Wildlife Site/SINC	1,630
Y Graig	Wildlife Site/SINC	576

3.3 **Woodland Sites**

The information provided by SEWBreC revealed 20 ancient natural or semi-natural woodland sites within the 2km search radius.

Site Name	Designation
7 Restored Ancient Woodland Sites	SPA
1 Ancient Woodland Site of Unknown Category	SPA
12 Ancient Semi-natural Woodland	SPA

3.4 **Regionally Important Geological Sites (RIGS)**

The information provided by SEWBreC revealed one RIGS within the 2km search radius.

Site Name	Designation	Approx. Distance (m)
Nant Ffrwyd	RIGS	869

3.5 **Species Records**

3.5.1 **Amphibians**

Within the ecological data search provided by SEWBreC, no records of amphibians were revealed by the search.

3.5.2 **Birds**

Within the ecological data search provided by SEWBreC, 78 bird species were detected within the 2km search radius. A table with the collated bird species can be found in **Appendix B**.

3.5.3 **Crustacean**

Within the ecological data search provided by SEWBreC, one crustacean species was revealed within the 2km search radius. This was white-clawed crayfish (*Austropotamobius pallipes*) located approximately 1.9km away from the development site.

3.5.4 **Fish**

Within the ecological data search provided by SEWBreC, three fish records were revealed within the 2km radius. These were of Atlantic Salmon (*Salmo salar*), Brown Trout (*Salmo trutta* subsp. *fario*) and Brown/Sea Trout (*Salmo trutta*).

3.5.5 **Flora**

Within the ecological data search provided by SEWBreC, 265 floral species were revealed within the search radius. These include one record of bluebell (*Hyacinthoides non-scripta*). A table with the collated flora species can be found in **Appendix B**.

3.5.6 Invertebrates

Within the ecological data search provided by SEWBRc, 170 invertebrate species were revealed within 2km of the site. These species include minor shoulder-knot (*Brachylomia viminalis*), small heath (*Coenonympha pamphilus*), wall brown (*Lasiommata megera*) and white-letter hairstreak (*Satyrion w-album*). A table with the collated invertebrate species can be found in **Appendix B**.

3.5.7 Mammals

Within the ecological data search provided by SEWBRc, 21 mammal species were detected within the 2km search radius of the site including a record of long-eared bat species (*Plecotus* sp.) located approximately 400m away. A table with the collated mammal species can be found in **Appendix B**.

3.5.8 Molluscs

Within the ecological data search provided by SEWBRc, no mollusc species were revealed within the 2km search radius.

3.5.9 Reptiles

Within the ecological data search provided by SEWBRc, seven reptile species were revealed within 2km of the site. A table with the collated reptile species can be found in **Appendix B**.

4. Field Survey

4.1 Habitats

The preliminary ecological appraisal revealed multiple habitats on site. The phase 1 habitat map, habitat codes and target notes for the site are located within **Appendix C**. The following habitats were recorded on site (in habitat code order):

4.1.1 A2.1 – Dense scrub

The site contains dense scrub, consisting of bracken (*Pteridium* sp.), bramble (*Rubus fruticosus*), ivy (*Hedera helix*), Japanese Knotweed (*Reynoutria japonica*), Plantain (*Plantago lanceolata*), silver birch (*Betula pendula*) and willow herb species (*Epilobium*). This habitat has **moderate** protected species potential.

4.1.2 A3.1 – Scattered trees

The site contains scattered trees, consisting mainly of silver birch (*Betula pendula*) and some beech (*Fagus sylvatica*). This habitat has **moderate** protected species potential.

4.1.2 I2.2 – Rock face

This habitat has **high** protected species potential and is heavily covered by ivy (*Hedera helix*). It can be used by nesting birds, bats will roost in potential crevices and a number of invertebrates will use it for basking and making a home in.

4.1.3 J2.4 - Fence

There was some fencing around the site boundary consisting of wooden and heras fencing but this habitat has **negligible** protected species potential.

4.1.4 J4 – Hard standing

There are large areas bare ground areas across the site. This habitat has **negligible** protected species potential.

4.2 Species

The preliminary ecological appraisal survey revealed that the habitats that have been outlined for the proposed development area do contain protected species potential. The following assessment has also considered the adjacent habitats and connectivity to the wider landscape for all protected and rare species.

4.2.1 Amphibians (including great crested newts)

The site itself does not have the potential to support amphibians. Therefore, no further action is required. This is due to a lack of suitable habitat on site. In addition to this, there is frequent anthropogenic disturbance on site and a lack of standing water within 500m of the site.

4.2.2 **Badgers**

During the field survey, no badger setts were found on the survey site or within the zone of influence from the proposed scheme of works. In addition to this, no evidence of badger presence was found.

4.2.3 **Bats**

Suitable roosting features for bats were identified around the trees and rock face. However, there is also a lot of artificial lighting around the survey site, with these features not proposed to be altered during the construction work. However, further action in relation to bats is required.

4.2.4 **Birds**

There are some suitable habitats for breeding birds including trees, scrub and hedgerows on site which could be affected by the proposed works. See recommendations in **Section 5.3**.

4.2.5 **Hazel Dormouse**

The habitats on site are not suitable for supporting any hazel dormouse specimens with the absence of any hedgerows.

4.2.5 **Hedgehogs**

The site itself contains suitable hibernation, commuting and foraging habitats for hedgehogs in the form of scattered trees and hedgerow. Therefore, precautionary measures are required for the site and are outlined in **Section 5.3**.

4.2.6 **Invertebrates**

The site is not deemed to be of moderate value to invertebrates. Therefore, further assessment is required.

4.2.7 **Reptiles**

The habitats on site do not have the potential to support reptiles due to the short grass length and frequent disturbance from anthropogenic sources. No further action is required.

4.3 **Potential impacts of the works**

Based upon the results from the desktop survey, field survey and using a degree of academic supposition, the uncompensated development impacts have been summarised as follows:

- Amphibians – **Negligible**
- Badgers – **Negligible**
- Bats – **Low**
- Birds – **Low**
- Flora – **Negligible**
- Hazel Dormouse – **Negligible**
- Hedgehogs – **Moderate**
- Invertebrates – **Moderate**
- Reptiles – **Negligible**

5. Recommendations

5.1 Designated Sites

No designated sites revealed from the ecological data set provided by SEWBRcC were located on the site. However, the site is bordered by a Site of Importance to Nature Conservation (SINC). Due to this, a 10m buffer zone between the designated site and the development site is necessary. This will be best comprised of trees, scrub and wildflowers.

5.2 Habitats

No habitats of conservation concern were located on the site itself. Therefore, the proposed scheme of works will not impact upon any rare or valuable habitats.

5.3 Species

The site was found to contain the potential to support protected and/or rare species. Therefore, the following recommendations are required for the site:

5.3.1 Tree Planting:

A single tree can support hundreds of different species of insect, in turn feeding birds, bats and other animals, which may also feast upon any nuts and berries produced.

It is often assumed that native trees support the most species, compared to exotics. It is true that some of our native trees, like silver birch and holly, are a perfect haven for birds and insects, but plenty of non-native and small-sized trees can also be invaluable for wildlife. If you want to attract birds, bees and butterflies, you would consider some of the trees on this list.

Silver birch (*Betula pendula*)

Silver birch hosts more than 300 insect species and is the best tree for moth larvae. The catkins provide food for birds, being especially liked by redpolls and tits, and woodpeckers like to nest in the trunk. Plenty of light reaches the ground through the airy canopy, allowing other plants to grow underneath. If you don't have space for a full size native birch, you could consider the shorter Young's weeping birch or the pyramid birch.

Hawthorn and thorn trees (*Crataegus*)

The native hawthorn (*Crataegus monogyna*) provides food for hundreds of insect species, including the hawthorn shield bug and the orchard ermine moth, while its dense foliage provides excellent habitat for birds. Dormice like to eat the May flowers, which also provide nectar for bees. Thrushes, finches, starlings and small mammals eat the haws in autumn.

Crab apple (*Malus sylvestris*)

The pretty spring blossom on crab apples is an irresistible draw for pollinators. Later on, the bright coloured fruits provide food for birds and mammals including voles and badgers. Many caterpillars eat its leaves, including those of the stunning hawk moth.

Rowan (*Sorbus aucuparia*)

Rowan berries make excellent autumn food for blackbirds, redstarts, fieldfares and plenty more. Go for the red-berried varieties – birds prefer them. In addition, the foliage is nice and airy, meaning light can filter through to the ground, where more wildlife friendly plants can grow.

Hazel (*Corylus avellana*)

Up to 106 insect species and 68 species of Lepidoptera (butterflies and moths) have been found to live on hazel. Moreover, the nuts are eaten by the likes of dormice, wood mice, jays, woodpeckers and others. If you have a shady spot to fill, hazel will happily take up residence and give you the delight of catkins in spring, heralding in the end of winter.

Cotoneaster cornubia

As a semi-evergreen, Cotoneaster cornubia will provide shelter at a time of year when many other branches are bare, while the bright red berries are a source of winter nutrition for many birds. A vigorous grower, this also makes an excellent screening tree.

Holly (*Ilex aquifolium*)

The insignificant spring flowers on holly draw in a wide range of insects, including the Holly Blue butterfly, which lays its eggs at the base of the flower buds. The caterpillars bulk up on holly leaves, usually high up on the plant, before turning into this pretty blue-winged insect. Holly also makes ideal shelter for small birds, offering them protection against predators. The mistle thrush is a great fan of the berries.

Butterfly bush (*Buddleja*)

If you want to attract lots of butterflies and perhaps even the exotic-looking hummingbird hawkmoth, Buddleja is a must. The panicles of nectar-rich flowers are magnets for numerous species of nectar-hungry Lepidoptera and bees. Buddleja can be very vigorous – just cut it back in late winter or early spring, down to a few inches from the base of the last year's growth. This framework will readily sprout new branches. And for most wildlife potential, leave some of the dead flowerheads on the bush so birds can eat the seeds.

Spindle (*Euonymus europaeus*)

The technicolour fruits of the spindle tree are highly nutritious for birds and the spectacular autumn colour is food for the soul. Grow as a tree or a bush, or make it an ingredient of your mixed hedge. Other brilliant choices for a wildlife hedge include elder (*Sambucus nigra*), wild privet (*Ligustrum vulgare*) and guelder rose (*Viburnum opulus*).

5.3.2 Hedgehogs:

As a purely precautionary measure, it is recommended that provisions are incorporated during the construction phase. This will be to create provisions for hedgehogs to escape in the form of creating slopes or the inclusion of ramps at the end of each working day from all trenches dug into the ground. Additionally, any pipework left on site that is greater than 150mm in diameter will need to be planked off. Should this information be strictly adhered to, then the development works will not negatively impact on the local mammal populations. Post development, one [Eco Hedgehog Nest Box](#) should be included into the site within an appropriate location. It is also recommended that small gaps are left within any boundary fencing (if used) to enable the specimens to continue to commute through the area. This will ensure that the local hedgehog populations do not become fragmented within the local landscape.

5.3.3 Bats:

No artificial lighting is to be shone on any scattered trees, shrubs, linear features, woodland or waterways. For the site itself, an artificial lighting plan is required. All lighting must avoid the features of interest for the local bat populations. This is required due to the habitats within the local landscape meaning there is likely to be foraging and commuting bats within the local landscape. For more information on bats and artificial lighting please see appendix F.

Habitat creation

Light barriers: vegetation can be planted (e.g. hedgerows or trees) to reduce light spill so acts as a light barrier. Careful consideration should be given to the minimum size of the habitat required to restrict any light trespass when used as a light barrier. The size and depth of the corridor will vary according to the distance from the light source, light intensity, light spread and light type. The effectiveness of using dark corridors as light barriers is therefore dependent upon comprehensive pre-development light surveys to understand the extent and level of light around the site.

Dark corridors: dark corridors can be created to encourage/guide bats away from lit areas or around lit obstacles (such as roads). Corridors should be placed with consideration for the use of the landscape as a whole in relation to key commuting routes, linking foraging sites and roosts. Therefore comprehensive optional pre-development bat surveys can determine the effectiveness of dark corridors as this information can be used to ensure they are well connected and functional. Corridors can be composed of man-made or natural materials (e.g. fences, brick walls, tree lines or hedges). Corridors with outgrown vegetation are preferable as they create dark fly ways sheltered from predators and the elements. Heavily clipped low hedges or tree-lines are less suitable.

5.3.4 **Japanese Knotweed:**

Non-weedkiller control

Digging out this deeply penetrating plant without professional help, even if feasible, creates problems over disposal as Japanese knotweed is classed as 'controlled waste' under the Environmental Protection Act 1990. This requires disposal at licensed landfill sites.

Specialist Japanese knotweed contractors must be registered waste carriers to safely remove the weed from site but check first before employing their services. Alternatively, it can be destroyed on site by allowing it to dry before burning.

IMPORTANT NOTE: On no account should Japanese knotweed be included with normal household waste or put out in green waste collection schemes.

Weedkiller control

It usually takes at least three to four seasons to eradicate Japanese knotweed using weedkiller. Professional contractors, however, will have access to more powerful weedkiller that may reduce this period by half.

When using weedkiller, always follow the instructions on the pack to make effective and economic use of the product while minimising risks to people and the environment.

For home gardeners, perhaps the most effective and simplest method to tackle Japanese knotweed is with a glyphosate-based weedkiller such as Roundup Tree Stump. This has label recommendation for controlling Japanese knotweed, instructing it to be applied to the cut canes or a foliar spray. SBM Job done Tough Weedkiller (soluble sachet only) and Roundup Ultra also have label control for this weed. Alternatively, try other tough formulations of glyphosate (e.g. SBM Job done Tough Tree Stump Killer (soluble sachet only), Doff Maxi Strength Glyphosate Weedkiller or Westland Resolva Pro Xtra Tough Concentrate).

Glyphosate-treated knotweed will often produce small-leaved, bushy regrowth 50-90cm (20in-3ft) in height the following spring. This is very different in appearance to the normal plant and it is essential that this regrowth is treated.

Bear in mind you will not get an insurance backed guarantee without using a professional company for the control of Japanese knotweed. This may be important if planning to sell your property in the near future or if a neighbour is threatening litigation from the spread of knotweed from your property.

Seeking help from the professionals

Professional companies offer Japanese knotweed removal. They can report on risk for mortgage purposes with suggested treatment plans and offer insurance-backed guarantees where required.

Royal Institution of Chartered Surveyors (RICS) has worked with the Property Care Association (PCA) to establish the PCA Invasive Weed Control Group (IWCG) trade body for Japanese knotweed specialists, which provides a register of vetted consultants and contractors.

5.4 **Site Enhancements**

For the proposed development works, the following site enhancement measures could be incorporated into the site post-development. These measures are optional but are bespoke to the site surveyed for the enhancement of biodiversity.

5.4.1 **Flora**

At present, the site is not considered to have a diverse range of flora. Therefore, it is recommended that a small section of the site is converted into a 'wild meadow' that uses native wildflower seed mixes. A variety of these can be found on the [Meadowmania](#) or [Wildflower Turf](#) webpages.

5.4.2 **Invertebrates**

At present, the site is not considered to be of any importance to local invertebrate populations. In conjunction with the wildflower planting, it is recommended that one [Bumblebee Box](#) are incorporated into the scheme, along with one [Bug Hotel](#). This will enhance the site for the local invertebrate populations, which will thus attract species further up in the trophic level.

5.4.3 **Hedgehogs**

The site could be enhanced for the local Hedgehog population by installing [Eco Hedgehog Nest Boxes](#) around this area. This will create more opportunities for hedgehogs within the local landscape.

5.4.4 **Reptiles**

The site could be enhanced for the local populations. This should come in the form of rough grassland and scrubland sections included around the re-developed site. Creating this habitat would enable connectivity to nearby reptile habitats. These should have interfaces between the scrubland and grassland as these transitional zones create a range of microhabitats and microclimates that are favoured by reptile species.

This habitat section will need to have the natural succession ceased to ensure that the habitats remain suitable to the local reptile populations. On this site, this should come in the form of mowing/strimming the habitats on site. This should be done over the winter months when reptiles will be hibernating. Mowing of the grassland should be undertaken every twelve months in November and February of every year. The cuttings from this mowing regime should be left on site in the least disturbed locations to act as potential grass snake (*Natrix natrix*) egg-laying features. These should measure at least 1m³ (the larger the better) and be situated in a sunny location.

Half of the scrubland habitat (and any natural regeneration of trees) should be cut back between mid-September and February once every two years, with the remaining half of this habitat being cut back the intersecting two years (cutting should continue on a rotational basis between these sections). If any reptiles are found during this management process, then Elite Ecology should be contacted immediately to deal with the impacts. It is imperative that the cutting regime is adhered to, as any deviation from the months may result in the direct killing of reptiles.

In this section of habitat, it is recommended that log piles and brash piles are left in scattered locations. These create cover, add structure to the habitats and enhance the availability of food to the reptiles. For this project, a minimum of two of these would be necessary.

Hibernacula should also be scattered though the habitats. The hibernacula can be made of cut timber, brash, inert hardcore, bricks, rubble, rocks, tree roots and building rubble. A minimum of one of these is advised for this project.

The key design features include:

- A sunny location.
- A well-drained section of the site.
- One of the long sides faces south.
- Access for reptiles through openings.
- Location within suitable habitat (rough grassland and scrubland in this scenario).
- Minimal anthropogenic disturbance.
- Measure at least 4m length x 2m width x 1m height, but the larger the better.

Incorporating the above site enhancement features would benefit the local herptile populations and improve their conservation status within the area.

5.5 Biodiversity Net Gain

Biodiversity Net Gain needs to be ensured within the scheme of works and this will be devised once the desktop study has arrived. This will allow measures to be targeted towards species known to be in the area.

6. References

- Bat Conservation Trust (2016). Bat Surveys – Good Practice Guidelines. 3rd Edition. Bat Conservation Trust: London.
- Berthinussen, A. & Altringham, J.D. (2012). The effect of a major road on bat activity and diversity. *Journal of Applied Ecology* 49: p.p. 82–89.
- Bickmore, C. J. (2002). *Hedgerow Survey Handbook*. London: DEFRA
- Biodiversity 2020: A strategy for England's wildlife and ecosystem services (2011).
- Circular 06/05 Biodiversity and Geological Conservation – Statutory Obligations and Their Impact System (2005).
- The Conservation of Habitats and Species Regulations 2017 (Amendment). SI 2017/1012.
- The Conservation (Natural Habitats, etc.) (Amendment) Regulations 2007. SI 2007/1843, London: HMSO.
- Countryside and Rights of Way Act 2000 (c.37). London: HMSO.
- Defra (2007a) *Securing a Healthy Natural Environment: an action plan for embedding an ecosystems approach*. PB12853. Defra London.
- Defra (2007b) *An Introductory Guide to Valuing Ecosystems Services*. PB12852. Defra London.
- Dietz, C., von Helversen, O. & Nill, D. (2009) *Bats of Britain, Europe and Northwest Africa*. London: A. C. Black.
- Hutson, A.M., Spitzenberger, F., Aulagnier, S., Coroiu, I., Karataş, A., Juste, J., Paunovic, M., Palmeirim, J. & Benda, P. (2008) *Pipistrellus pipistrellus*. In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.1.
- Institute of Ecology and Environmental Management, Professional Guidance Series.
- Institute of Ecology and Environmental Management (2006), *Guidelines for Ecological Impact Assessment in the United Kingdom*.
- Institute of Environmental Assessment (1995). *Guidance for Baseline Ecological Assessment*.
- Joint Nature Conservation Committee (2005). *The Marine Habitat Classification for Britain and Ireland, Version 04*.
- Joint Nature Conservation Committee (2010). *Handbook for Phase 1 Habitat Survey – a technique for environmental audit*.
- Millennium Ecosystem Assessment (2005).
- National Planning Policy Framework (2018).
- The natural choice: securing the value of nature (2011) (Natural Environment White Paper).
- Natural Environment and Rural Communities (NERC) Act 2006.
- RSPB (2002). *The Population Status of Birds in the UK*.
- RSBP (2009). *Birds of Conservation Concern 3*.
- Rydell J & Racey, P A (1993) *Street lamps and the feeding ecology of insectivorous bats*. Recent Advances in Bat Biology, Zool Soc Lond Symposium abstracts.
- UK Biodiversity Action Plan (2007). *UK List of Priority Species*. Joint Nature Conservation Committee.
- Wildlife and Countryside Act 1981 (and amendments) (c.69). London: HMSO.

7. Appendices

Appendix A: Site Plans

Appendix B: Ecological Data Search Species Lists

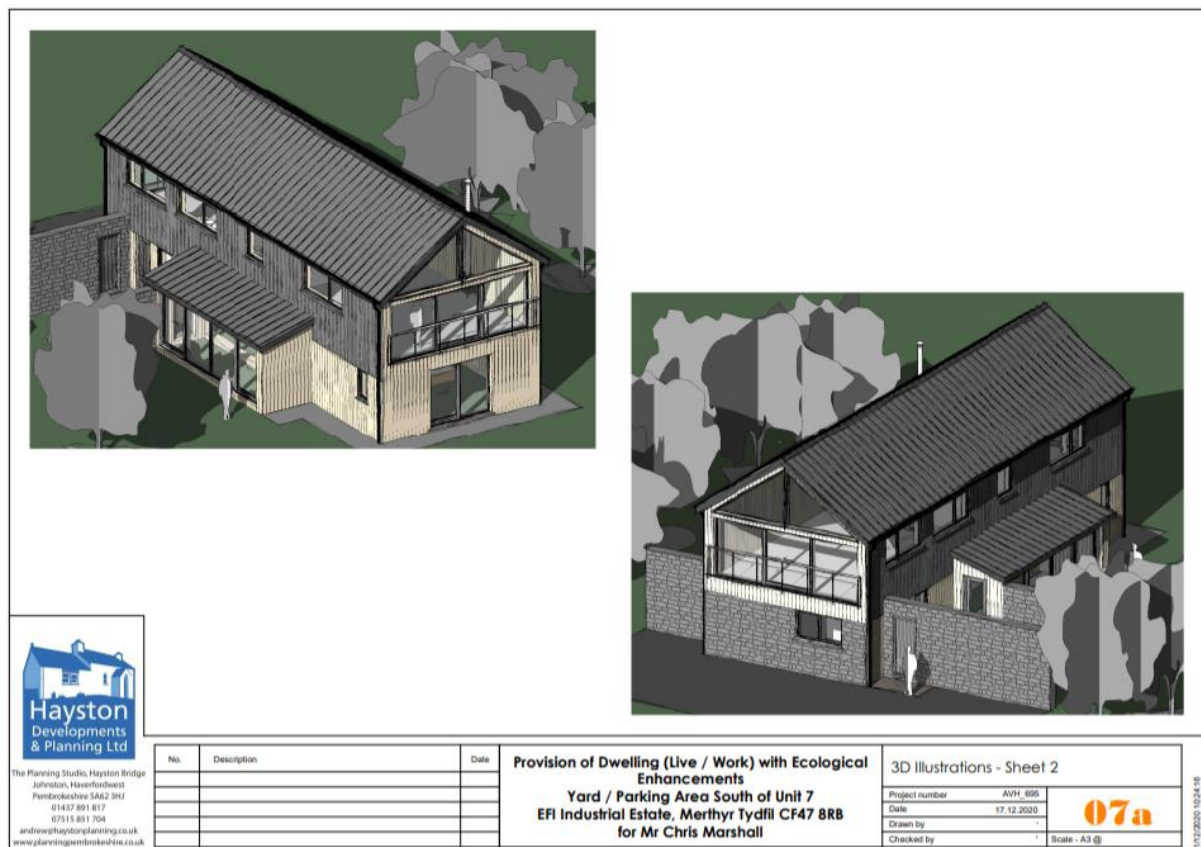
Appendix C: Phase 1 Habitat Map

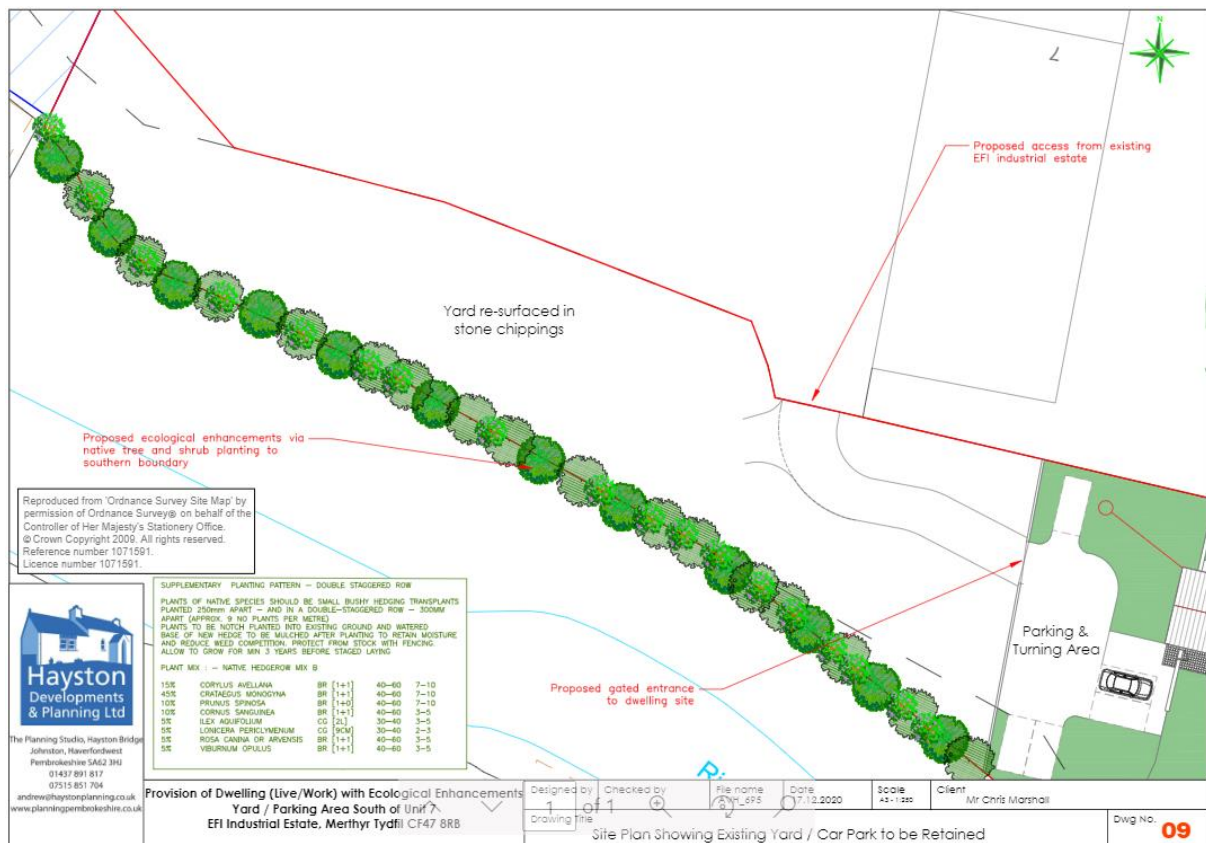
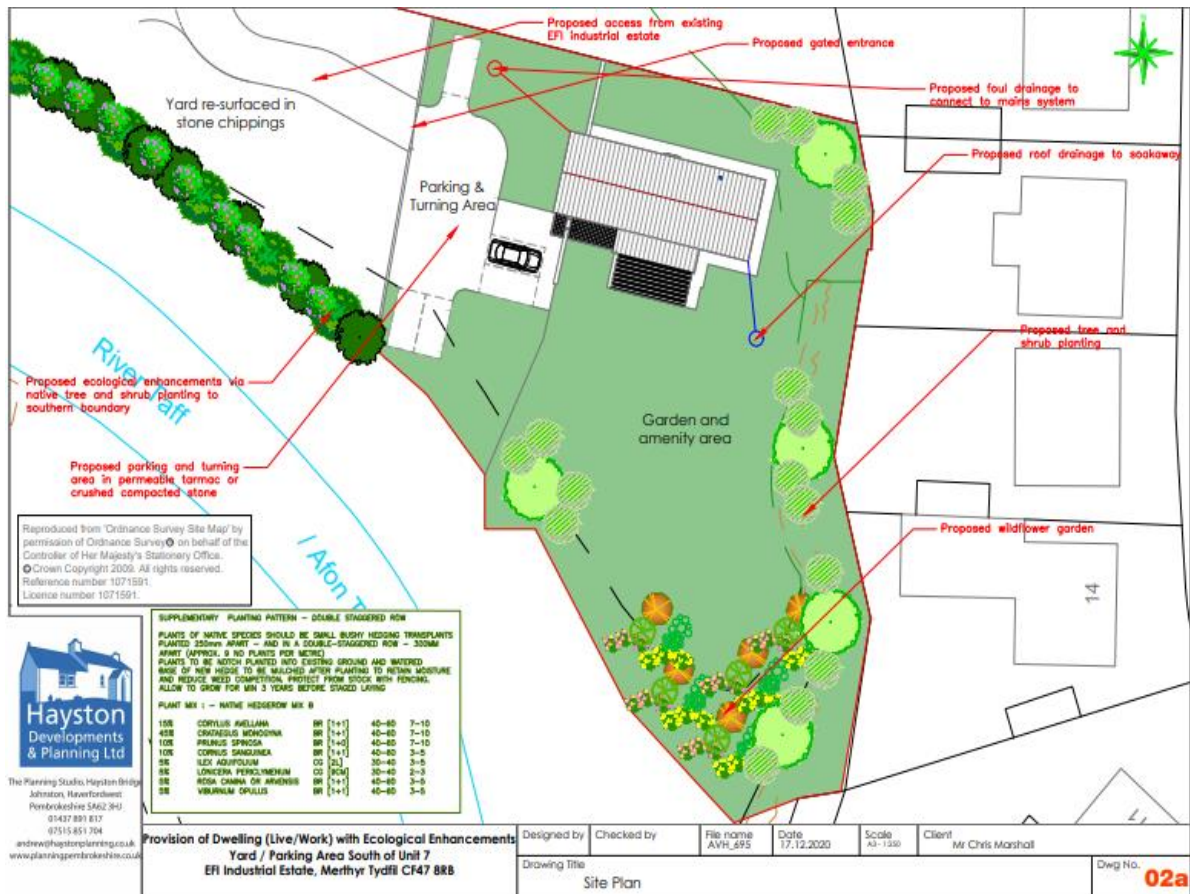
Appendix D: Site Photographs

Appendix E: Biodiversity Legislation and Policy

Appendix F: Bats and Artificial Light

Appendix A: Site Plans





Appendix B: Ecological Data Search Species Lists

Birds

Common Name	Latin Name
Barn Owl	<i>Tyto alba</i>
Bewick's Swan	<i>Cygnus columbianus</i>
Black Grouse	<i>Tetrao tetrix</i>
Black-headed Gull	<i>Chroicocephalus ridibundus</i>
Brambling	<i>Fringilla montifringilla</i>
Bullfinch	<i>Pyrrhula pyrrhula</i>
Canada Goose	<i>Branta canadensis</i>
Coal Tit	<i>Periparus ater</i>
Common Crossbill	<i>Loxia curvirostra</i>
Common Gull	<i>Larus canus</i>
Common Sandpiper	<i>Actitis hypoleucos</i>
Cormorant	<i>Phalacrocorax carbo</i>
Corncrake	<i>Crex crex</i>
Cuckoo	<i>Cuculus canorus</i>
Curlew	<i>Numenius arquata</i>
Dipper	<i>Cinclus cinclus</i>
Dotterel	<i>Charadrius morinellus</i>
Dunnock	<i>Prunella modularis</i>
Fieldfare	<i>Turdus pilaris</i>
Garden Warbler	<i>Sylvia borin</i>
Goldcrest	<i>Regulus regulus</i>
Goldeneye	<i>Bucephala clangula</i>
Goshawk	<i>Accipiter gentilis</i>
Grasshopper Warbler	<i>Locustella naevia</i>
Green Sandpiper	<i>Tringa ochropus</i>
Green Woodpecker	<i>Picus viridis</i>
Greenfinch	<i>Chloris chloris</i>
Grey Heron	<i>Ardea cinerea</i>
Hen Harrier	<i>Circus cyaneus</i>
Herring Gull	<i>Larus argentatus</i>
Hobby	<i>Falco subbuteo</i>
Hoopoe	<i>Upupa epops</i>
House Martin	<i>Delichon urbicum</i>
House Sparrow	<i>Passer domesticus</i>
Kestrel	<i>Falco tinnunculus</i>
Kingfisher	<i>Alcedo atthis</i>
Lesser Black-backed Gull	<i>Larus fuscus</i>
Lesser Redpoll	<i>Acanthis cabaret</i>

Common Name	Latin Name
Lesser Spotted Woodpecker	<i>Dendrocopos minor</i>
Linnet	<i>Linaria cannabina</i>
Little Grebe	<i>Tachybaptus ruficollis</i>
Long-tailed Tit	<i>Aegithalos caudatus</i>
Mallard	<i>Anas platyrhynchos</i>
Marsh Tit	<i>Poecile palustris</i>
Meadow Pipit	<i>Anthus pratensis</i>
Merlin	<i>Falco columbarius</i>
Mistle Thrush	<i>Turdus viscivorus</i>
Mute Swan	<i>Cygnus olor</i>
Nightingale	<i>Luscinia megarhynchos</i>
Nightjar	<i>Caprimulgus europaeus</i>
Peregrine	<i>Falco peregrinus</i>
Pied Flycatcher	<i>Ficedula hypoleuca</i>
Raven	<i>Corvus corax</i>
Red Kite	<i>Milvus milvus</i>
Redstart	<i>Phoenicurus phoenicurus</i>
Redwing	<i>Turdus iliacus</i>
Reed Bunting	<i>Emberiza schoeniclus</i>
Ring Ouzel	<i>Turdus torquatus</i>
Ringed Plover	<i>Charadrius hiaticula</i>
Sand Martin	<i>Riparia riparia</i>
Shelduck	<i>Tadorna tadorna</i>
Short-eared Owl	<i>Asio flammeus</i>
Skylark	<i>Alauda arvensis</i>
Snipe	<i>Gallinago gallinago</i>
Snow Bunting	<i>Plectrophenax nivalis</i>
Song Thrush	<i>Turdus philomelos</i>
Spotted Flycatcher	<i>Muscicapa striata</i>
Starling	<i>Sturnus vulgaris</i>
Swallow	<i>Hirundo rustica</i>
Swift	<i>Apus apus</i>
Tree Pipit	<i>Anthus trivialis</i>
Tufted Duck	<i>Aythya fuligula</i>
Wheatear	<i>Oenanthe oenanthe</i>
Whinchat	<i>Saxicola rubetra</i>
Whitethroat	<i>Sylvia communis</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Wood Warbler	<i>Phylloscopus sibilatrix</i>
Woodcock	<i>Scolopax rusticola</i>

Flora

Common Name	Latin Name
Adder's-tongue	<i>Ophioglossum vulgatum</i>
Agrimony	<i>Agrimonia eupatoria</i>
Agrimony	<i>Agrimonia</i>
Alder Buckthorn	<i>Frangula alnus</i>
Alternate Water-milfoil	<i>Myriophyllum alterniflorum</i>
Alternate-leaved Golden-saxifrage	<i>Chrysosplenium alternifolium</i>
Aspen	<i>Populus tremula</i>
Awl-leaved Screw-moss	<i>Tortula subulata</i>
Bantry Notchwort	<i>Leiocolea bantriensis</i>
Bearded Couch	<i>Elymus caninus</i>
Beck Pocket-moss	<i>Fissidens rufulus</i>
Bee Orchid	<i>Ophrys apifera</i>
Beech Fern	<i>Phegopteris connectilis</i>
Bendy Ditrichum	<i>Ditrichum flexicaule</i>
Betony	<i>Stachys officinalis</i>
Bilberry	<i>Vaccinium myrtillus</i>
Bird Cherry	<i>Prunus padus</i>
Bird's-nest Orchid	<i>Neottia nidus-avis</i>
Black-poplar	<i>Populus nigra</i>
Bladder Campion	<i>Silene vulgaris</i> subsp. <i>vulgaris</i>
Bladder Campion	<i>Silene vulgaris</i>
Bladder-sedge	<i>Carex vesicaria</i>
Blinks	<i>Montia fontana</i> subsp. <i>amporitana</i>
Blue Fleabane	<i>Erigeron acris</i>
Bluebell	<i>Hyacinthoides non-scripta</i> x <i>hispanica</i> = <i>H. x massartiana</i>
Bluebell	<i>Hyacinthoides non-scripta</i>
Blunt-leaf Tufa-moss	<i>Gymnostomum calcareum</i>
Bog Asphodel	<i>Narthecium ossifragum</i>
Bog Earwort	<i>Scapania paludicola</i>
Bog Pimpernel	<i>Anagallis tenella</i>
Bog Pondweed	<i>Potamogeton polygonifolius</i>
Bordered Thyme-moss	<i>Mnium marginatum</i>
Box	<i>Buxus sempervirens</i>
Bristly Swan-neck Moss	<i>Campylopus atrovirens</i>
Brittle Bladder-fern	<i>Cystopteris fragilis</i>
Brook-side Feather-moss	<i>Hygroamblystegium fluviatile</i>
Brown Bent	<i>Agrostis vinealis</i>
Buckthorn	<i>Rhamnus cathartica</i>
Burnet-saxifrage	<i>Pimpinella saxifraga</i>
Butterbur	<i>Petasites hybridus</i>

Campylium protensum	<i>Campylium protensum</i>
Canadian Waterweed	<i>Elodea canadensis</i>
Capitate Notchwort	<i>Lophozia excisa</i>
Carnation Sedge	<i>Carex panicea</i>
Celery-leaved Buttercup	<i>Ranunculus sceleratus</i>
Changing Forget-me-not	<i>Myosotis discolor</i>
Charlock	<i>Sinapis arvensis</i>
Cherry Laurel	<i>Prunus laurocerasus</i>
Ciliated Fringewort	<i>Ptilidium ciliare</i>
Claw Brook-moss	<i>Hygrohypnum ochraceum</i>
Climbing Corydalis	<i>Ceratocarpus claviculata</i>
Common Apple-moss	<i>Bartramia pomiformis</i>
Common Butterwort	<i>Pinguicula vulgaris</i>
Common Cottongrass	<i>Eriophorum angustifolium</i>
Common Cow-wheat	<i>Melampyrum pratense</i>
Common Extinguisher-moss	<i>Encalypta vulgaris</i>
Common Feather-moss	<i>Kindbergia praelonga</i>
Common Fleabane	<i>Pulicaria dysenterica</i>
Common Milkwort	<i>Polygala vulgaris</i>
Common Restharrow	<i>Ononis repens</i>
Common Rock-rose	<i>Helianthemum nummularium</i>
Common Threadwort	<i>Cephalozia divaricata</i>
Common Water-crowfoot	<i>Ranunculus aquatilis</i>
Conocephalum salebrosum	<i>Conocephalum salebrosum</i>
Corn Mint	<i>Mentha arvensis</i>
Creeping Willow	<i>Salix repens</i>
Crisped Neckera	<i>Neckera crispa</i>
Cross-leaved Heath	<i>Erica tetralix</i>
Curled Hook-moss	<i>Palustriella commutata</i>
Curled Pondweed	<i>Potamogeton crispus</i>
Curving Feather-moss	<i>Scorpiurium circinatum</i>
Daffodil	<i>Narcissus pseudonarcissus subsp. pseudonarcissus</i>
Dark-green Flapwort	<i>Jungermannia atrovirens</i>
Deergrass	<i>Trichophorum caespitosum</i>
Deergrass	<i>Trichophorum germanicum</i>
Delicate Tamarisk-moss	<i>Thuidium delicatulum</i>
Dense Fringe-moss	<i>Racomitrium ericoides</i>
Des Etangs' St John's-wort	<i>Hypericum perforatum x maculatum = H. x desetangsii</i>
Devil's-bit Scabious	<i>Succisa pratensis</i>
Dicranum fuscescens agg.	<i>Dicranum fuscescens agg.</i>
Ditrichum flexicaule agg.	<i>Ditrichum flexicaule agg.</i>
Dogwood	<i>Cornus sanguinea</i>
Downy Oat-grass	<i>Helictotrichon pubescens</i>

Drooping Thread-moss	<i>Bryum algovicum</i>
Dwarf Elder	<i>Sambucus ebulus</i>
Dwarf Feather-moss	<i>Oxyrrhynchium pumilum</i>
Dwarf Flapwort	<i>Jungermannia pumila</i>
Dwarf Rock-bristle	<i>Seligeria pusilla</i>
Dwarf Thistle	<i>Cirsium acaule</i>
Early Dog-violet	<i>Viola reichenbachiana</i>
English Elm	<i>Ulmus procera</i>
Entire-leaved Cotoneaster	<i>Cotoneaster integrifolius</i>
Eyebright	<i>Euphrasia confusa</i>
Eyebright	<i>Euphrasia nemorosa</i>
Eyebright	<i>Euphrasia officinalis subsp. pratensis</i>
Eyebright agg.	<i>Euphrasia officinalis agg.</i>
Fairy Flax	<i>Linum catharticum</i>
Fen Bedstraw	<i>Galium uliginosum</i>
Fern-grass	<i>Catapodium rigidum</i>
Field Madder	<i>Sherardia arvensis</i>
Field Maple	<i>Acer campestre</i>
Field Scabious	<i>Knautia arvensis</i>
Fine Distichium	<i>Distichium capillaceum</i>
Fingered Cowlwort	<i>Colura calyptrifolia</i>
Flea Sedge	<i>Carex pulicaris</i>
Fool's Parsley	<i>Aethusa cynapium</i>
Fountain Feather-moss	<i>Hygroamblystegium tenax</i>
Fragrant Agrimony	<i>Agrimonia procera</i>
Fragrant Orchid	<i>Gymnadenia conopsea</i>
Fringed Hoar-moss	<i>Hedwigia ciliata</i>
Fritillary	<i>Fritillaria meleagris</i>
Frizzled Crisp-moss	<i>Tortella tortuosa</i>
Giant Knotweed	<i>Fallopia sachalinensis</i>
Glaucous Sedge	<i>Carex flacca</i>
Globeflower	<i>Trollius europaeus</i>
Goat's-beard	<i>Tragopogon pratensis</i>
Goldenrod	<i>Solidago virgaurea</i>
Grass Vetchling	<i>Lathyrus nissolia</i>
Great Burnet	<i>Sanguisorba officinalis</i>
Great Horsetail	<i>Equisetum telmateia</i>
Great Wood-rush	<i>Luzula sylvatica</i>
Greater Burnet-saxifrage	<i>Pimpinella major</i>
Greater Butterfly-orchid	<i>Platanthera chlorantha</i>
Greater Fork-moss	<i>Dicranum majus</i>
Greater Knapweed	<i>Centaurea scabiosa</i>

Greater Pond-sedge	<i>Carex riparia</i>
Greater Tussock-sedge	<i>Carex paniculata</i>
Green Field-speedwell	<i>Veronica agrestis</i>
Green Mountain Fringe-moss	<i>Racomitrium fasciculare</i>
Green Spleenwort	<i>Asplenium viride</i>
Grey Willow	<i>Salix cinerea</i> subsp. <i>cinerea</i>
Grey-leaved Whitebeam	<i>Sorbus porrigentifomis</i>
Grove Earwort	<i>Scapania nemorea</i>
Guelder-rose	<i>Viburnum opulus</i>
Hair-pointed Grimmia	<i>Grimmia trichophylla</i>
Hairy Rock-cress	<i>Arabis hirsuta</i>
Hairy Violet	<i>Viola hirta</i>
Hairy Wood-rush	<i>Luzula pilosa</i>
Hairy-brome	<i>Bromopsis ramosa</i>
Hampe's Threadwort	<i>Cephaloziella hampeana</i>
Hard Rush	<i>Juncus inflexus</i>
Hard Shield-fern	<i>Polystichum aculeatum</i>
Hare's-tail Cottongrass	<i>Eriophorum vaginatum</i>
Hasselquist's Hyssop	<i>Entosthodon fascicularis</i>
Hawkweed	<i>Hieracium umbellatum</i> subsp. <i>umbellatum</i>
Hawkweed	<i>Hieracium umbellatum</i>
Heath Dog-violet	<i>Viola canina</i>
Heath False-brome	<i>Brachypodium pinnatum</i>
Heath Milkwort	<i>Polygala serpyllifolia</i>
Heath Speedwell	<i>Veronica officinalis</i>
Heath Spotted-orchid	<i>Dactylorhiza maculata</i>
Heath Wood-Rush	<i>Luzula multiflora</i> subsp. <i>congesta</i>
Heath Wood-Rush	<i>Luzula multiflora</i> subsp. <i>multiflora</i>
Heath Wood-rush	<i>Luzula multiflora</i>
Heath-grass	<i>Danthonia decumbens</i>
Hedge Bedstraw	<i>Galium mollugo</i>
Heim's Pottia	<i>Hennediella heimii</i>
Hemisphaeric Liverwort	<i>Reboulia hemisphaerica</i>
Herb-paris	<i>Paris quadrifolia</i>
Herzog's Pocket-moss	<i>Fissidens crispus</i>
Himalayan Balsam	<i>Impatiens glandulifera</i>
Himalayan Cotoneaster	<i>Cotoneaster simonsii</i>
Himalayan Honeysuckle	<i>Leycesteria formosa</i>
Himalayan Knotweed	<i>Persicaria wallichii</i>
Hollyberry Cotoneaster	<i>Cotoneaster bullatus</i>
Hooded Bristle-moss	<i>Orthotrichum cupulatum</i>
Hook-beak Tufa-moss	<i>Hymenostylium recurvirostrum</i>

Hop Trefoil	<i>Trifolium campestre</i>
Hybrid Avens	<i>Geum rivale x urbanum = G. x intermedium</i>
Hybrid Monkeyflower	<i>Mimulus guttatus x luteus = M. x robertsii</i>
Hygrohypnum luridum var. luridum	<i>Hygrohypnum luridum var. luridum</i>
Inclined Distichium	<i>Distichium inclinatum</i>
Intermediate Lady's-mantle	<i>Alchemilla xanthochlora</i>
Intermediate Polypody	<i>Polypodium interjectum</i>
Intermediate Water-starwort	<i>Callitriche hamulata</i>
Japanese Knotweed	<i>Fallopia japonica</i>
Kidney Vetch	<i>Anthyllis vulneraria</i>
Knapweed	<i>Centaurea</i>
Knotted Clover	<i>Trifolium striatum</i>
Knotted Hedge-parsley	<i>Torilis nodosa</i>
Lady's Bedstraw	<i>Galium verum</i>
Lady's-Mantle	<i>Alchemilla filicaulis subsp. vestita</i>
Lady's-Mantle agg.	<i>Alchemilla vulgaris agg.</i>
Large-leaved Lime	<i>Tilia platyphyllos</i>
Lemon-scented Fern	<i>Oreopteris limbosperma</i>
Lesser Bulrush	<i>Typha angustifolia</i>
Lesser Butterfly-orchid	<i>Platanthera bifolia</i>
Lesser Hairy-brome	<i>Bromopsis benekenii</i>
Lesser Hawkbit	<i>Leontodon saxatilis</i>
Lesser Meadow-rue	<i>Thalictrum minus</i>
Lesser Skullcap	<i>Scutellaria minor</i>
Lesser Squirrel-tail Moss	<i>Habrodon perpusillus</i>
Lesser Water-parsnip	<i>Berula erecta</i>
Ley's Whitebeam	<i>Sorbus leyana</i>
Limestone Bedstraw	<i>Galium sternerii</i>
Limestone Fern	<i>Gymnocarpium robertianum</i>
Lindberg's Plait-moss	<i>Calliergonella lindbergii</i>
Long-stalked Yellow-sedge	<i>Carex viridula subsp. brachyrrhyncha</i>
Lousewort	<i>Pedicularis sylvatica</i>
Marsh Arrowgrass	<i>Triglochin palustre</i>
Marsh Pennywort	<i>Hydrocotyle vulgaris</i>
Marsh Speedwell	<i>Veronica scutellata</i>
Marsh Valerian	<i>Valeriana dioica</i>
Marsh Violet	<i>Viola palustris</i>
Marsh Woundwort	<i>Stachys palustris</i>
Meadow Saxifrage	<i>Saxifraga granulata</i>
Micheli's Least Pouncewort	<i>Lejeunea cavifolia</i>
Monkeyflower	<i>Mimulus guttatus</i>
Montbretia	<i>Crocsmia pottsii x aurea = C. x crocosmiiflora</i>
Moonwort	<i>Botrychium lunaria</i>

Moschatel	<i>Adoxa moschatellina</i>
Mossy Saxifrage	<i>Saxifraga hypnoides</i>
Mougeot's Yoke-moss	<i>Amphidium mougeotii</i>
Musk Thistle	<i>Carduus nutans</i>
Narrow Mushroom-headed Liverwort	<i>Preissia quadrata</i>
Narrow-leaved Bitter-cress	<i>Cardamine impatiens</i>
Narrow-leaved Fringe-moss	<i>Racomitrium aquaticum</i>
Narrow-leaved Water-plantain	<i>Alisma lanceolatum</i>
Neat Crisp-moss	<i>Tortella nitida</i>
Neat Silk-moss	<i>Isopterygiopsis pulchella</i>
New Zealand Willowherb	<i>Epilobium brunnescens</i>
Nicholson's Beard-moss	<i>Didymodon nicholsonii</i>
Nut-moss	<i>Diphyscium foliosum</i>
Nuttall's Waterweed	<i>Elodea nuttallii</i>
Oak Fern	<i>Gymnocarpium dryopteris</i>
Pale Persicaria	<i>Persicaria lapathifolia</i>
Pale Sedge	<i>Carex pallescens</i>
Pale Thread-moss	<i>Bryum pallens</i>
Palmate Germanderwort	<i>Riccardia palmata</i>
Palustriella falcata	<i>Palustriella falcata</i>
Pampas-grass	<i>Cortaderia selloana</i>
Parsley-piert	<i>Aphanes arvensis</i>
Philibert's Tamarisk-moss	<i>Thuidium assimile</i>
Pignut	<i>Conopodium majus</i>
Pill Sedge	<i>Carex pilulifera</i>
Pink Water-Speedwell	<i>Veronica catenata</i>
Purple Crystalwort	<i>Riccia beyrichiana</i>
Purple-loosestrife	<i>Lythrum salicaria</i>
Pyramidal Orchid	<i>Anacamptis pyramidalis</i>
Quaking-grass	<i>Briza media</i>
Racomitrium canescens agg.	<i>Racomitrium canescens agg.</i>
Ragged-Robin	<i>Silene flos-cuculi</i>
Rambling Tail-moss	<i>Anomodon viticulosus</i>
Ramsons	<i>Allium ursinum</i>
Red Bartsia	<i>Odontites vernus</i>
Rhododendron ponticum	<i>Rhododendron ponticum</i>
Ringless Hook-moss	<i>Sarmentypnum exannulatum</i>
Rock Pouncewort	<i>Cololejeunea calcarea</i>
Rock Stonecrop	<i>Sedum forsterianum</i>
Rock Whitebeam	<i>Sorbus rupicola</i>
Roof Plait-moss	<i>Hypnum cupressiforme var. lacunosum</i>
Rose	<i>Rosa canina x obtusifolia = R. x dumetorum</i>
Rough Hawkbit	<i>Leontodon hispidus</i>

Round-leaved Crowfoot	<i>Ranunculus omiophyllus</i>
Royal Fern	<i>Osmunda regalis</i>
Rue-leaved Saxifrage	<i>Saxifraga tridactylites</i>
Rusty Beard-moss	<i>Didymodon ferrugineus</i>
Rustyback	<i>Ceterach officinarum</i>
Sand-hill Screw-moss	<i>Syntrichia ruralis</i> var. <i>ruraliformis</i>
Sanicle	<i>Sanicula europaea</i>
Scented Mayweed	<i>Matricaria chamomilla</i>
Scentless Mayweed	<i>Tripleurospermum inodorum</i>
Sea Scalewort	<i>Frullania teneriffae</i>
Sheep's-bit	<i>Jasione montana</i>
Shining Flapwort	<i>Solenostoma paroicum</i>
Silver Hair-grass	<i>Aira caryophyllea</i>
Slender Beard-moss	<i>Didymodon icmadophilus</i>
Slender Bristle-moss	<i>Orthotrichum tenellum</i>
Slender Ditrichum	<i>Ditrichum gracile</i>
Slender Parsley-piert	<i>Aphanes australis</i>
Slender Sandwort	<i>Arenaria serpyllifolia</i> subsp. <i>leptoclados</i>
Slender St John's-wort	<i>Hypericum pulchrum</i>
Slender Trefoil	<i>Trifolium micranthum</i>
Small Cudweed	<i>Filago minima</i>
Small Pondweed	<i>Potamogeton berchtoldii</i>
Smallest Pottia	<i>Microbryum davallianum</i>
Small-flowered Sticky Eyebright	<i>Euphrasia officinalis</i> subsp. <i>anglica</i>
Small-leaved Cotoneaster	<i>Cotoneaster microphyllus</i>
Small-leaved Lime	<i>Tilia cordata</i>
Small-mouthed Thread-moss	<i>Bryum imbricatum</i>
Small-white Orchid	<i>Pseudorchis albida</i>
Smooth Brome	<i>Bromus racemosus</i>
Smooth Lady's-mantle	<i>Alchemilla glabra</i>
Smooth-stalked Sedge	<i>Carex laevigata</i>
Sneezewort	<i>Achillea ptarmica</i>
Soft Shield-fern	<i>Polystichum setiferum</i>
Soft-leaved Sedge	<i>Carex montana</i>
Spanish Bluebell	<i>Hyacinthoides hispanica</i>
Spanish Daffodil	<i>Narcissus pseudonarcissus</i> subsp. <i>major</i>
Spiked Sedge	<i>Carex spicata</i>
Spindle	<i>Euonymus europaeus</i>
Spleenwort	<i>Asplenium trichomanes</i> subsp. <i>trichomanes</i>
Spring-sedge	<i>Carex caryophyllea</i>
Square-stalked Willowherb	<i>Epilobium tetragonum</i>
Stag's-horn Clubmoss	<i>Lycopodium clavatum</i>
Straggling Pouchwort	<i>Saccogyna viticulosa</i>

Straight-leaved Apple-moss	<i>Bartramia ithyphylla</i>
Straw Bristle-moss	<i>Orthotrichum stramineum</i>
Straw Spear-moss	<i>Straminergon stramineum</i>
Summer-moss	<i>Anoetangium aestivum</i>
Sweet Violet	<i>Viola odorata</i>
Sweet-briar	<i>Rosa rubiginosa</i>
Syntrichia laevipila var. laevipilaeformis	<i>Syntrichia laevipila</i> var. <i>laevipilaeformis</i>
Tansy	<i>Tanacetum vulgare</i>
Tawny Sedge	<i>Carex hostiana</i>
Thick-nerved Apple-moss	<i>Philonotis calcarea</i>
Three-nerved Sandwort	<i>Moehringia trinervia</i>
Thyme-leaved Sandwort	<i>Arenaria serpyllifolia</i> subsp. <i>serpyllifolia</i>
Thyme-Leaved Sandwort	<i>Arenaria serpyllifolia</i>
Thyme-Leaved Sandwort agg.	<i>Arenaria serpyllifolia</i> agg.
Toothwort	<i>Lathraea squamaria</i>
Transparent Fork-moss	<i>Dichodontium pellucidum</i>
Unbranched Bur-reed	<i>Sparganium emersum</i>
Upland Enchanter's-nightshade	<i>Circaea lutetiana</i> x <i>alpina</i> = <i>C. x intermedia</i>
Upright Brome	<i>Bromopsis erecta</i>
Upright Hedge Bedstraw	<i>Galium mollugo</i> subsp. <i>erectum</i>
Variegated Yellow Archangel	<i>Lamiastrum galeobdolon</i> subsp. <i>argentatum</i>
Verdigris Tufa-moss	<i>Gymnostomum aeruginosum</i>
Viper's-bugloss	<i>Echium vulgare</i>
Wall Cotoneaster	<i>Cotoneaster horizontalis</i>
Wall Feather-moss	<i>Rhynchostegium murale</i>
Wall Lettuce	<i>Mycelis muralis</i>
Wall Scalewort	<i>Porella platyphylla</i>
Water Avens	<i>Geum rivale</i>
Water Figwort	<i>Scrophularia auriculata</i>
Water-purslane	<i>Lythrum portula</i>
Wayfaring-tree	<i>Viburnum lantana</i>
Weld	<i>Reseda luteola</i>
Welsh Pocket-moss	<i>Fissidens celticus</i>
Welsh Poppy	<i>Meconopsis cambrica</i>
Wetted Thistle	<i>Carduus crispus</i>
Western Earwort	<i>Scapania gracilis</i>
Western Gorse	<i>Ulex gallii</i>
Whip Fork-moss	<i>Dicranum flagellare</i>
White Stonecrop	<i>Sedum album</i>
White Willow	<i>Salix alba</i>
Whorled Caraway	<i>Carum verticillatum</i>
Whorled Mint	<i>Mentha arvensis</i> x <i>aquatica</i> = <i>M. x verticillata</i>
Whorled Tufa-moss	<i>Eucladium verticillatum</i>

Wild Basil	<i>Clinopodium vulgare</i>
Wild Marjoram	<i>Origanum vulgare</i>
Wild Teasel	<i>Dipsacus fullonum</i>
Winter-cress	<i>Barbarea vulgaris</i>
Wood Anemone	<i>Anemone nemorosa</i>
Wood Horsetail	<i>Equisetum sylvaticum</i>
Wood Melick	<i>Melica uniflora</i>
Wood Speedwell	<i>Veronica montana</i>
Wood Spurge	<i>Euphorbia amygdaloides</i>
Woodruff	<i>Galium odoratum</i>
Wood-rust	<i>Nowellia curvifolia</i>
Wood-sedge	<i>Carex sylvatica</i>
Wood-sorrel	<i>Oxalis acetosella</i>
Woodsy Thyme-moss	<i>Plagiomnium cuspidatum</i>
Wormwood	<i>Artemisia absinthium</i>
Yellow Archangel	<i>Lamium galeobdolon subsp. montanum</i>
Yellow Feather-moss	<i>Homalothecium lutescens</i>
Yellow Oat-grass	<i>Trisetum flavescens</i>
Yellow Pimpernel	<i>Lysimachia nemorum</i>
Yellow Starry Feather-moss	<i>Campylium stellatum</i>
Yellow Water-lily	<i>Nuphar lutea</i>
Yellowish Fork-moss	<i>Dichodontium flavescens</i>
Zigzag Clover	<i>Trifolium medium</i>

Invertebrates

Common Name	Latin Name
Anomalous	<i>Stilbia anomala</i>
Autumnal Rustic	<i>Eugnorisma glareosa</i>
Azure Damselfly	<i>Coenagrion puella</i>
Banded Demoiselle	<i>Calopteryx splendens</i>
Banded General	<i>Stratiomys potamida</i>
Beaded Chestnut	<i>Agrochola lychnidis</i>
Beautiful Carpet	<i>Mesoleuca albicillata</i>
Beautiful Plume	<i>Amblyptilia acanthadactyla</i>
Beautiful Snout	<i>Hypena crassalis</i>
Bilberry (Blaeberry) Bumblebee	<i>Bombus monticola</i>
Birch Conch	<i>Cochylis nana</i>
Black Darter	<i>Sympetrum danae</i>
Black-headed Cardinal Beetle	<i>Pyrochroa coccinea</i>
Blomer's Rivulet	<i>Venusia blomeri</i>
Blood-vein	<i>Timandra comae</i>
Bluebell Conch	<i>Hysterophora maculosana</i>
Blue-tailed Damselfly	<i>Ischnura elegans</i>

Bright Four-spined Legionnaire	<i>Chorisops nagatomii</i>
Brindled Beauty	<i>Lycia hirtaria</i>
Brindled Plume	<i>Amblyptilia punctidactyla</i>
Broad-bodied Chaser	<i>Libellula depressa</i>
Broken-barred Roller	<i>Ancylis unguicella</i>
Broom Moth	<i>Ceramica pisi</i>
Brown Alder Bell	<i>Epinotia sordidana</i>
Brown Plume	<i>Stenoptilia pterodactyla</i>
Brown-spot Pinion	<i>Agrochola litura</i>
Buff Ermine	<i>Spilosoma lutea</i>
Buff-Tailed Bumblebee	<i>Bombus terrestris</i>
Buff-tailed Mining Bee	<i>Andrena humilis</i>
Bumblebee	<i>Bombus</i>
Caledonian Button	<i>Acleris caledoniana</i>
Cantharis thoracica	<i>Cantharis thoracica</i>
Chimney Sweeper	<i>Odezia atrata</i>
Cinnabar	<i>Tyria jacobaeae</i>
Clouded Buff	<i>Diacrisia sannio</i>
Clouded Cosmet	<i>Mompha langiella</i>
Clouded Magpie	<i>Abraxas sylvata</i>
Common Blue Damselfly	<i>Enallagma cyathigerum</i>
Common Carder Bee	<i>Bombus pascuorum</i>
Common Darter	<i>Sympetrum striolatum</i>
Common Hawker	<i>Aeshna juncea</i>
Common Purple & Gold	<i>Pyrausta purpuralis</i>
Coronet	<i>Craniophora ligustri</i>
Ctenicera pectinicornis	<i>Ctenicera pectinicornis</i>
Ctenophora pectinicornis	<i>Ctenophora pectinicornis</i>
Dark Brocade	<i>Mniotype adusta</i>
Dark Green Fritillary	<i>Argynnis aglaja</i>
Dark Spectacle	<i>Abrostola triplasia</i>
Dark Spinach	<i>Pelurga comitata</i>
Dark-barred Twin-spot Carpet	<i>Xanthorhoe ferrugata</i>
Devon Carpet	<i>Lampropteryx otregiata</i>
Dingy Skipper	<i>Erynnis tages</i>
Dingy Skipper	<i>Erynnis tages tages</i>
Dot Moth	<i>Melanchra persicariae</i>
Double Dart	<i>Graphiphora augur</i>
Double Line	<i>Mythimna turca</i>
Drab Oak Piercer	<i>Pammene splendidulana</i>
Dusky Brocade	<i>Apamea remissa</i>
Dusky Dart	<i>Euxoa tritici</i>

Early Bumblebee	<i>Bombus pratorum</i>
Emerald Damselfly	<i>Lestes sponsa</i>
Emperor Dragonfly	<i>Anax imperator</i>
Enchanters Cosmet	<i>Mompha terminella</i>
Feathered Gothic	<i>Tholera decimalis</i>
Flounced Chestnut	<i>Agrochola helvola</i>
Forest Cuckoo Bee	<i>Bombus sylvestris</i>
Four-spotted Chaser	<i>Libellula quadrimaculata</i>
Galium Carpet	<i>Epirrhoe galiata</i>
Garden Tiger	<i>Arctia caja</i>
Ghost Moth	<i>Hepialus humuli</i>
Goat Moth	<i>Cossus cossus</i>
Gold Spangle	<i>Autographa bractea</i>
Golden-ringed Dragonfly	<i>Cordulegaster boltonii</i>
Grass Rivulet	<i>Perizoma albulata albulata</i>
Grayling	<i>Hipparchia semele</i>
Green Hairstreak	<i>Callophrys rubi</i>
Green-brindled Crescent	<i>Allophyes oxyacanthae</i>
Grey Dagger	<i>Acronicta psi</i>
Grey Shoulder-knot	<i>Lithophane ornitopus lactipennis</i>
Ground-moss Grey	<i>Eudonia truncicolella</i>
Gyrinus natator	<i>Gyrinus natator</i>
Harlequin Ladybird	<i>Harmonia axyridis</i>
Hedge Rustic	<i>Tholera cespitis</i>
Hill Soldier	<i>Oxycera pardalina</i>
Holly Blue	<i>Celastrina argiolus</i>
Keeled Skimmer	<i>Orthetrum coerulescens</i>
Knot Grass	<i>Acronicta rumicis</i>
Large Birch Purple	<i>Eriocrania sangii</i>
Large Red Damselfly	<i>Pyrrhosoma nymphula</i>
Large Red Tailed Bumblebee	<i>Bombus lapidarius</i>
Lithobius (Lithobius) pilicornis	<i>Lithobius (Lithobius) pilicornis</i>
Lophosia fasciata	<i>Lophosia fasciata</i>
Magdalis cerasi	<i>Magdalis cerasi</i>
Marsh Fritillary	<i>Euphydryas aurinia</i>
Marsh Pug	<i>Eupithecia pygmaeata</i>
Migrant Hawker	<i>Aeshna mixta</i>
Minor Shoulder-knot	<i>Brachylomia viminalis</i>
Mouse Moth	<i>Amphipyra tragopoginis</i>
Narrow-bordered Bee Hawk-moth	<i>Hemaris tityus</i>
Neat Cosmet	<i>Mompha divisella</i>
Neglected Rustic	<i>Xestia castanea</i>
Norellia spinipes	<i>Norellia spinipes</i>

Orthochaetes setiger	<i>Orthochaetes setiger</i>
Pale Pinion	<i>Lithophane socia</i>
Parasyrphus nigritarsis	<i>Parasyrphus nigritarsis</i>
Pearl Grass-veneer	<i>Catoptria pinella</i>
Pearl-bordered Fritillary	<i>Boloria euphrosyne</i>
Plain Wave	<i>Idaea straminata</i>
Polydrusus formosus	<i>Polydrusus formosus</i>
Powdered Quaker	<i>Orthosia gracilis</i>
Quedius auricomus	<i>Quedius auricomus</i>
Ragwort Bell	<i>Epiblema costipunctana</i>
Red Sword-grass	<i>Xylena vetusta</i>
Red-fringed Conch	<i>Falseuncaria ruficiliana</i>
Red-necked Footman	<i>Atolmis rubricollis</i>
Red-shanked Carder-bee	<i>Bombus rudarius</i>
Regal Piercer	<i>Pammene regiana</i>
Rhagium bifasciatum	<i>Rhagium bifasciatum</i>
Rhagium mordax	<i>Rhagium mordax</i>
Rosy Minor	<i>Litoligia literosa</i>
Rosy Rustic	<i>Hydraecia micacea</i>
Ruddy Highflyer	<i>Hydriomena ruberata</i>
Rustic	<i>Hoplodrina blanda</i>
Sallow	<i>Cirrhia icteritia</i>
Satin Beauty	<i>Deileptenia ribeata</i>
Satin Lutestring	<i>Tetheella fluctuosa</i>
Scallop Shell	<i>Hydria undulata</i>
Scarce Blue-tailed Damselfly	<i>Ischnura pumilio</i>
Scarce Grass-veneer	<i>Crambus pratella</i>
Scarce Vapourer	<i>Orgyia recens</i>
Shaded Broad-bar	<i>Scotopteryx chenopodiata</i>
Shimmering Ruby-tail	<i>Chrysis fulgida</i>
Shoulder-striped Wainscot	<i>Leucania comma</i>
Silver-barred Sable	<i>Pyrausta cingulata</i>
Silver-stripe Grass-veneer	<i>Catoptria margaritella</i>
Silver-washed Fritillary	<i>Argynnis paphia</i>
Six-belted Clearwing	<i>Bembecia ichneumoniformis</i>
Small Blue	<i>Cupido minimus</i>
Small Clouded Brindle	<i>Apamea unanimitis</i>
Small Garden Bumblebee	<i>Bombus hortorum</i>
Small Heath	<i>Coenonympha pamphilus</i>
Small Pearl-bordered Fritillary	<i>Boloria selene</i>
Small Phoenix	<i>Ecliptopera silaceata</i>
Small Square-spot	<i>Diarsia rubi</i>
Smoky Wave	<i>Scopula ternata</i>

Southern Hawker	<i>Aeshna cyanea</i>
Spectacle	<i>Abrostola tripartita</i>
Spike-marked Drill	<i>Dichrorampha montanana</i>
Square-spot Bell	<i>Notocelia tetragonana</i>
Star-wort	<i>Cucullia asteris</i>
Striped Twin-spot Carpet	<i>Nebula salicata subsp. latentaria</i>
Sword-grass	<i>Xylena exsoleta</i>
Tanyptera atrata	<i>Tanyptera atrata</i>
Thaumastoptera calceata	<i>Thaumastoptera calceata</i>
Tormentil Mining Bee	<i>Andrena tarsata</i>
Triangle Plume	<i>Platyptilia gonodactyla</i>
Triple-blotched Bell	<i>Notocelia trimaculana</i>
Vetch Piercer	<i>Grapholita jungiella</i>
Viburnum Button	<i>Acleris schalleriana</i>
Violet Oil-beetle	<i>Meloe violaceus</i>
V-Moth	<i>Macaria wauaria</i>
Wall	<i>Lasiommata megera</i>
Waved Carpet	<i>Hydrelia sylvata</i>
Welsh Wave	<i>Venusia cambrica</i>
Western Bee-fly	<i>Bombylius canescens</i>
White Ermine	<i>Spilosoma lubricipeda</i>
White-letter Hairstreak	<i>Satyrium w-album</i>
White-spot Purple	<i>Eriocrania unimaculella</i>
White-Tailed Bumblebee	<i>Bombus lucorum</i>

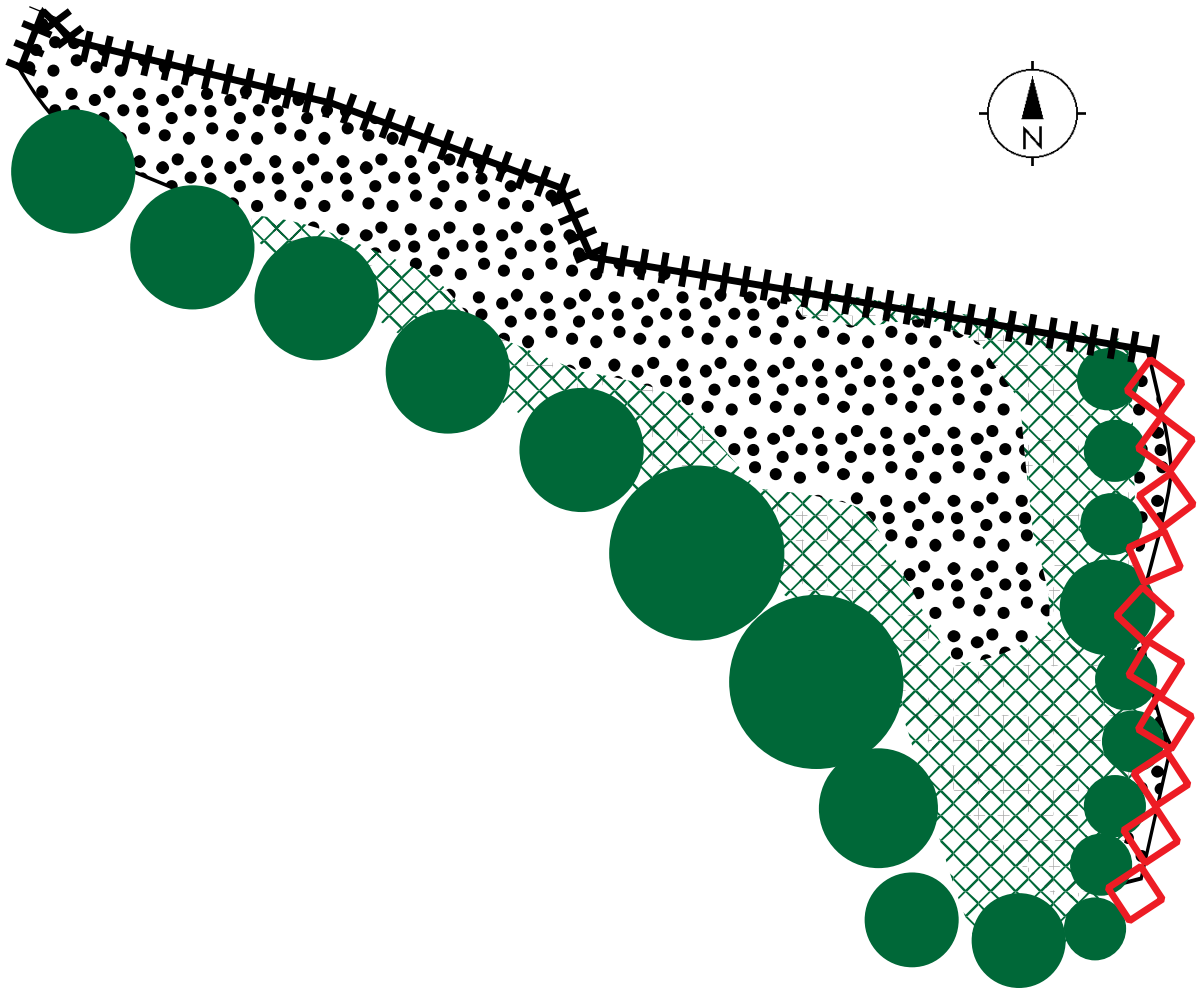
Mammals

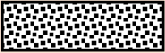
Common Name	Latin Name
American Mink	<i>Neovison vison</i>
Badger	<i>Meles meles</i>
Brown Long-eared Bat	<i>Plecotus auritus</i>
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>
Daubenton's Bat	<i>Myotis daubentonii</i>
Grey Squirrel	<i>Sciurus carolinensis</i>
Hedgehog	<i>Erinaceus europaeus</i>
Lesser Horseshoe Bat	<i>Rhinolophus hipposideros</i>
Long-eared Bat Species	<i>Plecotus</i>
Myotis Bat Species	<i>Myotis</i>
Natterer's Bat	<i>Myotis nattereri</i>
Noctule Bat	<i>Nyctalus noctula</i>
Otter	<i>Lutra lutra</i>
Pipistrelle agg.	<i>Pipistrellus pipistrellus agg.</i>
Pipistrellus Bat Species	<i>Pipistrellus</i>
Red Squirrel	<i>Sciurus vulgaris</i>
Serotine	<i>Eptesicus serotinus</i>
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>
Unknown Bat	<i>Chiroptera</i>
Water Vole	<i>Arvicola amphibius</i>
Weasel	<i>Mustela nivalis</i>

Reptiles

Common Name	Latin Name
Common Frog	<i>Rana temporaria</i>
Common Lizard	<i>Zootoca vivipara</i>
Common Toad	<i>Bufo bufo</i>
Grass Snake	<i>Natrix helvetica</i>
Great Crested Newt	<i>Triturus cristatus</i>
Palmate Newt	<i>Lissotriton helveticus</i>
Slow-worm	<i>Anguis fragilis</i>

Appendix C: Phase 1 Habitat Map



KEY	
	Survey Site Boundary
	A2.1 – Dense scrub
	A3.1 – Scattered broadleaf trees
	I1.2 – Inland cliff
	J2.3.4 – Fence
	J4- Bare Ground

Appendix D: Site Photographs

Plate 1: View of the surveyed area, including bare ground



Plate 2: View of fencing on site



Plate 3: View of the rock face in background surrounded by scattered trees



Plate 4: Japanese Knotweed dead specimens



Plate 5: Buddleia



Plate 6: Trees and scrub



Appendix E: Biodiversity Legislation and Policy

General Legislation and Policy:

The framework of legislation and policy which underpins nature conservation in England. This is a material consideration in the planning process in England.

Conservation of Habitats and Species Regulations 2017 (Habitats Regulations 2010 as amended)

The Conservation of Habitats and Species Regulations 2017 consolidate and update the Conservation Regulations 1994 and the conservation of habitats and species regulations 2010 (and all their amendments). The Conservation of Habitats and Species Regulations 2017 are the principal means by which the EEC Council Directive 92/43 (The Habitats Directive) as amended is transposed into English and Welsh law.

The Conservation of Habitats and Species Regulations 2017 place duty upon the relevant authority of government to identify sites which are of importance to the habitats and species listed in Annexes I and II of the Habitats Directive. Those sites which meet the criteria are, in conjunction with the European Commission, designated as Sites of Community Importance, which are subsequently identified as Special Areas of Conservation (SAC) by the European Union member states. The regulations also place a duty upon the government to maintain a register of European protected sites designated as a result of EC Directive 79/409/EEC on the Conservation of Wild Birds (The Birds Directive). These sites are termed Special Protection Areas (SPA) and, in conjunction with SACs, form a network of sites known as Natura 2000. The Habitats Directive introduces for the first time for protected areas, the precautionary principle; that is that projects can only be permitted having ascertained no adverse effect on the integrity of the site. Projects may still be permitted if there are no alternatives, and there are imperative reasons of overriding public interest.

The Conservation of Habitats and Species Regulations 2017 also provide for the protection of individual species of fauna and flora of European conservation concern listed in Schedules 2 and 5 respectively. Schedule 2 includes species such as otter and great crested newt for which the UK population represents a significant proportion of the total European population. It is an offence to deliberately kill, injure, disturb or trade these species. Schedule 5 plant species are protected from unlawful destruction, uprooting or trade under the regulations.

The Wildlife and Countryside Act (WCA) 1981 (As amended)

The WCA, as amended, consolidates and amends pre-existing national wildlife legislation in order to implement the Bern Convention and the Birds Directive. It complements the Conservation (Natural Habitats. & c.) Regulations 1994 (as amended), offering protection to a wider range of species. The Act also provides for the designation and protection of national conservation sites of value for their floral, faunal or geological features, termed Sites of Special Scientific Interest (SSSIs).

Schedules of the act provide lists of protected species, both flora and fauna, and detail the possible offences that apply to these species.

The Countryside and Rights of Way (CROW) Act 2000

The CROW Act, introduced in England and Wales in 2000, amends and strengthens existing wildlife legislation detailed in the WCA. It places a duty on government departments and the National Assembly for Wales to have regard for biodiversity, and provides increased powers for the protection and maintenance of SSSIs.

The Act also contains lists of habitats and species (Section 74) for which conservation measures should be promoted, in accordance with the recommendations of the Convention on Biological Diversity (Rio Earth Summit) 1992.

The Natural Environment and Rural Communities (NERC) Act 2006

Section 40 of the NERC Act places a duty upon all local authorities and public bodies in England and Wales to promote and enhance biodiversity in all of their functions. Sections 41 (England) and 42 (Wales) list habitats and species of principal importance to the conservation of biodiversity. These lists supersede Section 74 of the CRoW Act 2000. These species and habitats are a material consideration in the planning process.

The Hedgerow Regulations 1997

The Hedgerow Regulations make provision for the identification of important hedgerows which may not be removed without permission from the Local Planning Authority.

UK Biodiversity Action Plan

The United Kingdom Biodiversity Action Plan (UKBAP), first published in 1994 and updated in 2007, is a government initiative designed to implement the requirements of the Convention of Biological Diversity to conserve and enhance species and habitats. The UKBAP contains a list of priority habitats and species of conservation concern in the UK, and outlines biodiversity initiatives designed to enhance their conservation status. Lists of Broad and Local habitats are also included. The priority habitats and species correlate with those listed on Section 41 and 42 of the NERC Act.

The UKBAP requires that conservation of biodiversity is addressed at a County level through the production of Local BAPs. These are complementary to the UKBAP, however are targeted towards species of conservation concern characteristic of each area. In addition, a number of local authorities and large organisations have produced their own BAPs. UKBAP and Local BAP targets with regard to species and habitats are a material consideration in the planning process.

Planning Policy (England) and National Planning Policy Framework

In early 2012, the National Planning Policy Framework (NPPF) replaced much previous planning policy guidance, including Planning Policy Statement 9: Biological and Geological Conservation. The government circular 06/05: Biodiversity and Geological Conservation - Statutory Obligations and Their Impact within the Planning System, which accompanied PPS9, still remains valid. A presumption towards sustainable development is at the heart of the NPPF. This presumption does not apply however where developments require appropriate assessment under the Birds or Habitats Directives. The latest National Planning Policy Framework was updated in February 2019, with the section in relation to conserving the natural environment being located within section 15.

Section 15, on conserving and enhancing the natural environment, sets out how the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and, where possible, provide net gains in biodiversity. Opportunities to incorporate biodiversity gains into a development should be encouraged.

If a proposed development would result in significant harm to the natural environment which cannot be avoided (through the use of an alternative site with less harmful impacts), mitigated or compensated for (as a last resort) then planning permission should be refused.

Species Specific Legislation

This section contains a summary of legislation with relation to the species present or potentially present in the survey area. The reader should refer to the original legislation for definitive interpretation.

Nesting and Nest Building Birds

Nesting and nest building birds are protected under the Wildlife and Countryside Act WCA 1981 (as amended). Some species (listed in Schedule 1 of the WCA) are protected by special penalties.

Subject to the provisions of the act, if any person intentionally:

- kills, injures or takes any wild bird;
- takes, damages or destroys the nest of any wild bird while that nest is in use or being built; or
- takes or destroys an egg of any wild bird, he shall be guilty of an offence.

'Reckless' offences with regard to the disturbance of nesting wild birds included in Schedule 1 of the Wildlife and Countryside Act were added by the Countryside and Rights of Way Act 2000.

The Natural Environment and Rural Communities (NERC) Act 2006 places a duty on Government Departments to have regard for the conservation of biodiversity and maintains lists of species and habitats which are of principal importance for the purposes of conserving biodiversity in England and Wales. These lists include a number of bird species.

The reader is referred to the original legislation for the definitive interpretation.

Badger

The main legislation protecting badgers in England and Wales is the Protection of Badgers Act 1992 (the 1992 Act). Under the 1992 Act it is an offence to:

- wilfully kill, injure, take or attempt to kill, injure or take a badger;
- possess a dead badger or any part of a badger;
- cruelly ill-treat a badger;
- use badger tongs in the course of killing, taking or attempting to kill a badger;
- dig for a badger;
- sell or offer for sale or control any live badger;
- mark, tag or ring a badger; and
- interfere with a badger sett by:
 - damaging a sett or any part thereof;
 - destroying a sett;
 - obstructing access to a sett;
 - causing a dog to enter a sett; and
 - disturbing a badger while occupying a sett.

The 1992 Act defines a badger sett as: "any structure or place which displays signs indicating current use by a badger".

Bats

All species of bat are fully protected under a variety of domestic, European and international legislation and conventions. These include:

- Bern Convention (Appendix II)
- Bonn Convention (Appendix II)
- Conservation Regulations (Northern Ireland) 1995
- Conservation of Habitats and Species Regulations 2010
- Countryside Rights of Way Act 2000
- Eurobats Agreement
- Habitats Directive (Annexes IV and II)
- Habitats Regulations 1994 (as amended) Scotland
- NERC Act 2006
- Wildlife and Countryside Act 1981 (as amended)
- Wild Mammals Protection Act

In addition to this, some species have additional protection by being listed on the UK Biodiversity Action Plan (UKBAP).

The legislation afforded to bats makes it illegal to possess or control any live or dead specimens, to damage, destroy or obstruct access to any structure or place used for shelter, protection or breeding, and to intentionally disturb a bat while it is occupying a structure or place which it uses for that purpose.

All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended), which protects birds, nests, eggs and nestlings from harm. In addition to this, some rarer species, such as barn owls are afforded extra protection.

National Planning Policy Framework, Section 15:

The published framework in 2018 replaces the previous Planning Policy Statement 9 and National Planning Policy (dated 2012).

Section 15: Conserving and enhancing the natural environment reaffirms the government's commitment to maintaining green belt protections and preventing urban sprawl, retains the protection of designated sites and preserves wildlife. It also aims to improve the quality of the natural environment and halt declines in species and habitats, protects and enhances biodiversity and promotes wildlife corridors.

Biodiversity 2020:

This sets out to halt overall biodiversity loss and support healthy well-functioning ecosystems by establishing coherent ecological networks, with more and better places for nature, to the benefit of wildlife and people. The government's policy is aimed at individuals, communities, local authorities, charities, business and government, which all have a role to play in delivering Biodiversity 2020.

Freshwater White-clawed Crayfish

The white-clawed crayfish is partially protected under Wildlife and Countryside Act 1981 (as amended). It is listed on schedule 5 and therefore afforded protection under Section 9 (1 and 5). Therefore, it is an offence to take white-clawed crayfish and to sell, or attempt to sell, any part of the species, alive or dead, or intend to buy or sell.

Great Crested Newt

The great crested newt (*Triturus cristatus*) is fully protected under a variety of legislation and conventions. These include:

- Bern Convention (Appendix II)
- Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)
- Conservation of Habitats and Species Regulations 2010
- EU Habitats Directive (Annex II and IV)
- Nature Conservation (Scotland) Act 2004
- NERC Act 2006 (Section 41 England; Section 42 Wales)
- Wildlife and Countryside Act 1981 (as amended)

In addition to this, the great crested newt has been listed as a priority species on the UK Biodiversity Action Plan (UKBAP).

This legislation covers all aspects of newt life stages (eggs, efts and adult newts) and makes it illegal to damage, destroy or obstruct access to any structure or place used for shelter, protection or breeding, and to intentionally disturb a great crested newt while it is occupying a structure or place which it uses for that purpose.

Licenses can be obtained from Natural England (DEFRA) under the Conservation (Natural Habitats etc.) Regulations 1994, to permit activities for the purposes of:

- Regulation 44(2)(e): Preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment, or
- Regulation 44(2)(f): Preventing the spread of disease
- Regulation 44(2)(g): Preventing serious damage to any form of property or fisheries

Or

- If there is no satisfactory alternative.

The above regulations allow people to carry out activities which would otherwise be illegal.

Hazel Dormouse

Hazel Dormouse and their habitats are protected by:

- Wildlife and Countryside Act 1981 (as amended)
- Countryside Rights of Way (CROW) 2000
- The Natural Environment and Rural Communities Act 2006
- Conservation of Habitat and Species Regulations 2010

These make it an offence to:

- Capture, injure or kill a Hazel Dormouse
- Disturb a Hazel Dormouse
- Damage or destroy breeding or nesting sites in use by Hazel Dormice
- Disturb a Dormouse whilst it is occupying a structure or place that they use for shelter or protection
- Obstruct access to any structure or place that the Dormouse uses for shelter and protection.
- To possess or control any live or dead specimens.

Otter

Otters are fully protected by the European Habitats Directive (92/43/EEC) by being incorporated in annex II of the legislation. In addition to this, otters are listed on schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to:

- To intentionally kill, injure or take an otter.
- To possess or control any live or dead specimens.
- To intentionally or recklessly damage, destroy or obstruct access to any structure, feature or place of shelter in use by otters.
- To intentionally or recklessly disturb an otter whilst it is in occupation of a feature or structure.
- To sell, possess or transport for the purpose of sale or publicly declare the desire to buy or sell otters.

Reptiles

All six native reptiles within Great Britain are legally protected, with the extent of protection varying dependent upon their rarity and conservation importance.

Those that receive full protection under the Wildlife and Countryside Act 1981 (as amended) are the rare sand lizard and smooth snake. These species also receive protection under the Conservation (Natural Habitats &c.) Regulations 1994 (also referred to as the Habitats Directive). This means that they are protected from deliberate disturbance, killing, injury or capture and the habitat in which they live is also fully protected against damage or destruction. Any activity involving disturbance or damage to habitats utilised by sand lizards or smooth snakes would require a licence issued by the Department of the Environment, Food and Rural Affairs (DEFRA) following consultation with the statutory nature conservation organisation (Natural England).

The remaining four reptile species are 'partially protected' under the Wildlife and Countryside Act 1981 (as amended), with these species being slow-worm, common lizard, grass snake and adder. This means that these species are protected against intentional killing, injuring and against sale, but their habitat is not protected. In planning terms this means that the presence of these species is a material consideration and there is a requirement to ensure that any reptile interest is safeguarded. If a proposed development is likely to have an impact on these reptiles, then the statutory nature conservation organisation must be notified, particularly if capture and translocation is being proposed. In some parts of the UK, sites that support common reptile species such as common lizards and slow-worms can qualify as County Wildlife Sites. Sites of this designation may receive protection in planning policy.

Water Voles

Water Voles are fully protected under the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to:

- To intentionally kill, injure or take a water vole.
- To possess or control any live or dead specimens.
- To intentionally or recklessly damage, destroy or obstruct access to any structure, feature or place of shelter in use by water voles.
- To intentionally or recklessly disturb a water vole whilst it is in occupation of a feature or structure.
- To sell, possess or transport for the purpose of sale or publicly declare the desire to buy or sell water voles.

Non-Native Floral Species

It is an offence under schedule 9 of the Wildlife and Countryside Act 1981 (as amended) to plant or otherwise cause non-native flora to grow in the wild. This includes the transportation of earth that has previously had non-native species growing and includes the spread of the species.

All stands of non-native floral species need to be disposed of safely at a licenced landfill site according to the Environmental Protection Act (Duty of Care) Regulations 1991.

Appendix F: Bats and Artificial Light

Artificial lighting is known to affect bat's roosting and foraging behaviour, with lighting resulting in a range of impacts that includes roost desertion (BCT, 2009), delayed emergence of roosting bats (Downs et al., 2003), increased activity of some bat species and decreased activity by others (Stone et al., 2012).

An experimental approach using LED units, demonstrated that relatively fast-flying bat species, including the common pipistrelle, showed no significant impacts as a result of new artificial lighting, even when lighting was set at relatively high levels close to 50 lux.

In contrast, slow flying bats such as the myotis bats (*Myotis* spp.) showed sharp reductions in presence, even at low light levels of 3.6 lux (Stone et al., 2012).

Current recommendations for all bat species specifies that no bat roost should be directly illuminated.

Due to the impacts of lighting, mitigation and sensitive lighting design schemes are required for projects where bats are present. These should include bat friendly lighting plans that should aim to avoid lighting wherever possible. If this is not possible, then the minimisation of any lighting impacts is required by adopting the following measures:

➤ **To introduce lighting curfews or use of PIR sensors.**

Lighting curfews can be an effective way of avoiding impacts on bats. These curfews may involve either turning off lighting or dimming light units at specific times of the night, dimming units at key times of the year, providing the luminaire allows for this option via a control unit. Lighting to be triggered by PIR sensors can be expected to be illuminated only when required and for a low proportion of time.

➤ **To consider no lighting solutions where possible.**

Options such as white lining, good signage and LED cat's eyes should be considered as preferable. Reflective fittings may help make use of headlights to provide any necessary illumination in some areas.

➤ **To use only high pressure sodium or warm white LED lamps where possible.**

High pressure sodium and warm white LED lamps emit lower proportions of insect attracting UV light than mercury, metal halide lamps and white LED lighting. Generally, lamps should have a lower proportion of white or blue wavelengths, with a colour temperature <4200 kelvin recommended (BCT, 2014).

➤ **To minimise the spread of light.**

The light spread should be kept at or near horizontal to ensure that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required. Baffles, hoods, louvres and shields should be used where necessary to reduce light spill.

➤ **To consider the height of the lighting column.**

While downward facing bollard lighting is often preferable, it should be noted that a lower mounting height does not automatically reduce impacts to bats as bollard lighting can often be designed to provide up-lighting. Where bollard lighting is considered to be the most appropriate system, bollard spacing or unit density should be kept to a minimum and units should be fitted with the appropriate hoods/deflectors to reduce any up-lighting.

➤ **To avoid reflective surfaces below lights.**

The polarisation of light by shiny surfaces attracts insects increasing bat activity (BCT, 2012). Consequently, surface materials around lighting require consideration.

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No reliance should be made on any such comments in relation to the structural integrity of the features located on the surveyed site. All information within the report is based solely on evidence that has been found on site during the service provided. No individual opinion or inference will be made other than that of the suitably qualified ecologist appointed to the project.