



Elite Ecology

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Cheshire Cheese, Penley



Preliminary Ecological Appraisal

January 2022



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0. Executive Summary

This report has been prepared at the request of Mr. Roy Eveson (R & C Homes Ltd) Elite Ecology were commissioned to undertake a Preliminary Ecological Appraisal at the site located at Cheshire Cheese, Lion Lane, Maelor South, Lightwood Green, Wrexham, Wales, LL13 0LY (Central OS Grid Reference: SJ 40362 40167). This survey effort involved a desktop study and being undertaken.

Under the current proposals, a new bridge is to be constructed over the stream on site. with a new access road to the A539.

North Wales Environmental Information Service (COFNOD) were the local records centre and they conducted a data search of all protected species and designated sites recorded within a 2km radius of the site.

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

- A3.1 – Broadleaved Scattered Trees
- B4 – Improved Grassland
- F2.1 – Marginal Vegetation
- G2 – Running Water
- J1.2 – Amenity Grassland
- J4 – Hardstanding

{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.}

Badgers: Although no badger setts were observed on or immediately offsite at the time of the survey, activity patterns of this species can change over a short time. It is therefore recommended that an update badger survey is undertaken if works do not commence within 6 months of the survey date (4th August 2021).

Badger surveys can be undertaken at any time of year and to allow sufficient time to obtain a Natural England badger mitigation licence (should a sett be discovered on or immediately offsite) the survey should be scheduled three months prior to the commencement of works.

Any development works needs to consider the potential presence of the specimens on site. All trenches dug into the ground make provisions for badgers (and any other mammals) to escape in the form of creating slopes or the inclusion of ramps at the end of each working day. 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.

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.

Birds: All Vegetation removal should be undertaken outside of the bird breeding season (the bird breeding season runs from March to August, inclusive). If vegetation and/or structures are required to be removed during the bird breeding season, then a further inspection by a suitably qualified ecologist is required no more than 24 hours before these are to be removed. This is to ensure that no active nest site is illegally destroyed, due to the protection afforded to all active bird nests under the Wildlife and Countryside Act 1981.

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, at least two Eco Hedgehog Nest Boxes 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.

Otters & Water Voles: It has been agreed that the bridge supports will be cited 5m from the banks of the identified hole within the bank. Therefore, impacts on these species will be minimal. It is recommended that prior to the commencement of works, including site preparation works and vegetation clearance, that an updated riparian mammal walkover survey should be conducted, to ensure no alterations in species composition or increase in populations.

Site Enhancements:

For the proposed site enhancements, please see section 5.4 of this report.

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1 Introduction

1.1 Report rationale

This report has been prepared at the request of Mr. Roy Eveson (R & C Homes). Elite Ecology were commissioned to undertake a Preliminary Ecological Appraisal at the site located at Cheshire Cheese, Lion Lane, Maelor South, Lightwood Green, Wrexham, Wales, LL13 0LY (Central OS Grid Reference: SJ 40362 40167). This survey effort involved a desktop study being undertaken.

The main purpose of this assessment was to identify the range of species (as stated in the JNCC Phase 1 Handbook) present within the survey area, with any further evidence of protected species usage and/or features of potential ecological interest also included. The survey was undertaken on the 4th August 2021 by Mr. Connor Wild (MSc, Ecologist) and Miss. Holly Lindley (BSc (Hons), Assistant Ecologist).

1.2 Site description and works

The site is situated within a rural setting, located approximately 1.3km to the east of the centre of Penley, Wales. Habitats on site included amenity grass, scattered trees, bare ground, marginal vegetation, running water and improved grassland.

Within the wider landscape, further habitats are present. These come in the form of woodland, hedgerows, pastureland, arable land, buildings, standing water and additional running water habitats. The habitats that surround the site also have the potential to be utilized by a variety of protected species.

Under the current proposals, a new bridge is to be constructed over the stream on site, with a new access road to the A539. These works will result in both the permanent and temporary loss and/or alteration of some of the habitats located on the proposed redevelopment site.

Figure 1: An aerial map showing the location of the survey site at Cheshire Cheese, Penley (yellow star) in relation to some of the local landscape.

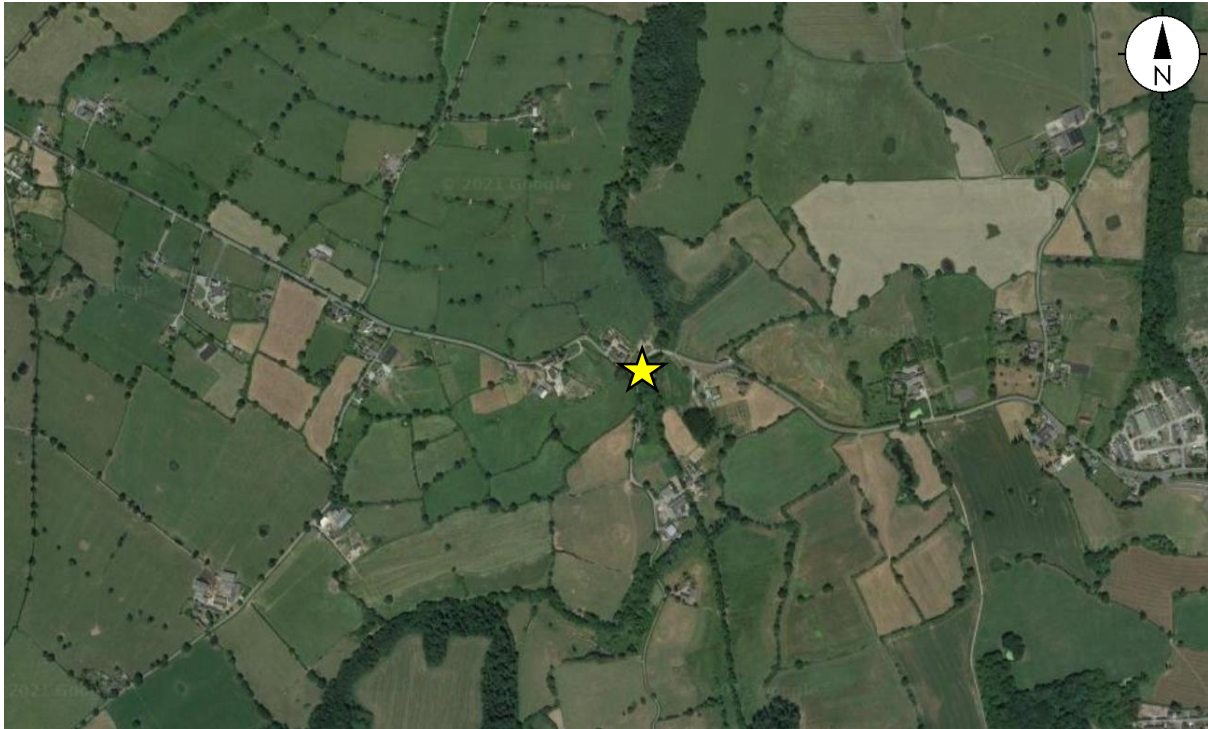
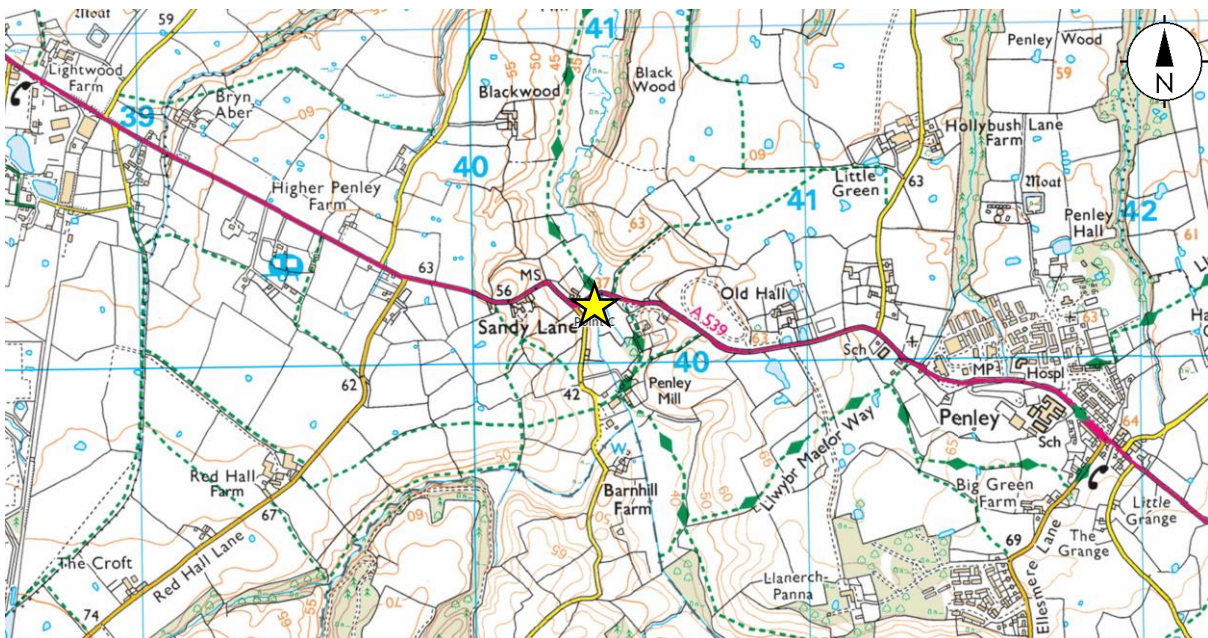


Figure 2: An OS map obtained from the Ordnance Survey website showing the location of the survey site at Cheshire Cheese, Penley (yellow star).



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.naturalengland.org.uk, 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 the 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 2km of the proposed development site. North Wales Environmental Information Service (COFNOD) was the relevant local record centre for this project.

2.2 Field Survey

A 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.

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 in August 2021 which is within the optimal time period for flora surveys. Elite Ecology feels confident that this report reflects an accurate representation of the site's 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 COFNOD confirmed the presence of no statutory protected sites (e.g. LNR, SSSI, SPA, SAC or Ramsar) within 2km of the site.

3.2 Non-Statutory Sites

The ecological data received from COFNOD confirmed the presence of no non-statutory protected sites within 2km of the site.

3.3 Woodland Sites

The information provided by COFNOD revealed 32 designated Ancient, Semi-natural Woodlands or Ancient Replanted Woodland sites within the 2km search radius. The closest of these is located approximately 488m to the east of the site.

3.4 Regionally Important Geological Sites (RIGS)

The information provided by COFNOD revealed no RIGS within the 2km search radius.

3.5 Species Records

3.5.1 Amphibians

Within the ecological data search provided by COFNOD, 179 records of amphibians were detected within the 2km search radius, belonging to five species, including 107 records of Great Crested Newt (*Triturus cristatus*). A table with the collated amphibian species recorded can be found within Appendix B. The closest of these was of Common Toad (*Bufo bufo*) located on the surveyed site. The closest record of Great Crested Newt was located approximately 340m to the south.

3.5.2 Birds

Within the ecological data search provided by COFNOD, 27 bird species were detected within the 2km search radius. A table with the collated bird species recorded can be found within Appendix B. The closest of these was of Kestrel (*Falco tinnunculus*) located approximately 190m to the southeast.

3.5.3 Crustacean

The ecological data search provided by COFNOD revealed records of no crustaceans within 2km of the survey site.

3.5.4 Fish

The ecological data search provided by COFNOD revealed records of no fish within 2km of the survey site.

3.5.5 Flora

Within the ecological data search provided by COFNOD, 48 floral species have been revealed in the search radius. A table with the collated flora species recorded can be found within Appendix B. The closest to the site was of Cowbane (*Cicuta virosa*) located approximately 79m to the south of the site.

3.5.6 Invertebrates

The ecological data search provided by COFNOD revealed three invertebrate species within the 2km search radius. A table with the collated invertebrate species recorded can be found within Appendix B. The closest to the site was of Emerald Damselfly (*Lestes sponsa*) located approximately 226m to the west of the site.

3.5.7 Mammals

Within the ecological data search provided by COFNOD, there were nine mammal species detected within the 2km search radius. Three of these are bat species. A table with the collated mammal species recorded can be found within Appendix B. The closest recorded mammal was of badger (*Meles meles*) located approximately 106m to the south.

3.5.8 Molluscs

The ecological data search revealed records of no mollusc records within 2km of the site.

3.5.9 Reptiles

The ecological data search revealed no records of reptiles within 2km of the site.

4 Field Survey

4.1 Habitats

The preliminary ecological appraisal survey revealed four habitats on site. The phase 1 habitat map, habitat codes and target notes for the site are located within Appendix D. It should be noted at this point that due to the time of year that the survey was undertaken, it is highly possible that some plant species may have been missed. The following habitats were recorded on site (in habitat code order):

4.1.1 A3.1 Broadleaved Scattered Trees

Broadleaved scattered trees can be found on site as part of the bank top vegetation. Species, in order of dominance, included alder (*Alnus glutinosa*), Sycamore (*Acer pseudoplatanus*), wild cherry (*Prunus avium*), silver birch (*Betula pendula*), Sweet chestnut (*Castanea sativa*) and Willow (*Salix sp.*). Ivy (*Hedera sp.*) occurs on some specimens. Some trees along the western bank top within the amenity grassland are to be removed. The trees on the west bank and northern boundary are to be retained.

4.1.2 B4 Improved grassland

Improved grassland is located to the east of the stream. This grassland had a short sward at the time of the survey therefore species could not be identified.

4.1.3 F2.1 Marginal vegetation

Dense marginal vegetation can be found on either side of the bank. This vegetation is made up of the following species, in order of dominance; common nettle (*Urtica dioica*), rosebay willowherb (*Chamaenerion angustifolium*), hogweed (*Heracleum sphondylium*), cow's parsley (*Anthriscus sylvestris*), bindweed (*Calystegia sepium*), field thistle (*Cirsium arvense*), foxglove (*Digitalis sp.*), giant hogweed (*Heracleum mantegazzianum*), dock (*Rumex obtusifolius*), bramble (*Rubus sp.*). This habitat has the potential to support a number of protected species such as reptiles and invertebrates. A small section of this habitat is to be removed to make way for the new bridge with the majority of the habitat remaining.

4.1.4 G2 Running water

A stream can be found within the middle of the site. This stream runs northward at a steady rate with clear water with the bed visible. No submerged or emergent vegetation is present. No artificial features such as refuse are present.

4.1.5 J1.2 Amenity Grassland

Amenity grassland is the dominant habitats to the west of the stream. This grassland is nominated by perennial ryegrass (*Lolium perenne*), with abundance of clover (*Trifolium sp.*) and frequencies of dandelion (*Taraxacum*). This habitat is not thought of to generally support protected species.

4.1.6 J2.2.2 Specie-poor defunct Hedge

A species poor defunct hedge can be found on the north-east boundary of the site. This hedge is dominated by bramble and one specimen of Hawthorne (*Crataegus monogyna*). A small section of this hedge is to be removed to make way for the access track. Due to its isolation this habitat is likely to be underutilised by protected species but may provide nesting for birds.

4.1.7 J2.4 Fence

Two fences can be found on site. A post and rail fence along the northern boundary and a post and wire fence separating the improved grassland and marginal vegetation. Neither fence is of ecological importance and neither fence impedes the movement of protected species through the site.

4.1.8 J4 Bare ground

A section of bare ground can be found leading to the where the proposed bridge will be constructed. This habitat is of no ecological concern.

4.2 Species

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

The following assessment has also taken into account the adjacent habitats and connectivity to the wider landscape for all protected and rare species.

4.2.1 Amphibians

Some suitable habitat for amphibians can be found on site in the form of the marginal vegetation around the bank tops. However, this habitat is isolated with amenity grass and improved grass on either side. There are 2 ponds within 500m of the site. due to the scale of the works it has been deem disproportionate to carry out further survey works.

4.2.2 Badgers

During the field survey, no evidence of badger (*Meles meles*) presence was found on the survey site or within the zone of influence from the proposed scheme of works. However, as badger movements change over time further precautionary measures are required for the survey site (please see **Section 5.3**).

4.2.3 Bats

Potential roosting features have been identified on site, within some of the trees and under a nearby bridge however, these will not be affected by the proposals. Trees that are to be removed show no obvious potential roosting features, one tree does have ivy however, it is not dense enough to be used by bats. If artificial lighting is to be used the further precautionary measures are required for the survey site (please see **Section 5.3**).

4.2.4 Birds

Potential Nesting features have been identified on site, within some of the trees. As trees along the western bank top within the amenity grassland are to be removed further action is required (please see **Section 5.3**).

4.2.5 Hedgehogs

The site provides suitable habitat for hedgehogs (*Erinaceus europaeus*) evidence (scat) has been found on site suggesting that hedgehogs are on site or at the very least, commute through the development site. Therefore, further precautionary measures are required for the survey site (please see **Section 5.3**).

4.2.6 Invertebrates

The survey site is only likely to support common invertebrate assemblages. This is due to the floristic diversity of the site being poor. Therefore, no further survey effort or assessment is required.

4.2.6 Otter and water vole

The stream on site provides potential otter (*Lutra lutra*) and water vole (*Arvicola amphibius*) habitat, holes have also been noted in the bankside that may belong to water vole. Therefore, further precautionary measures are to be applied – please see **Section 5.3**.

4.2.5 Reptiles

No evidence of reptiles was found from the ecological data search. However, the adjacent land could be utilised by reptiles for basking, but their presence cannot be assumed. Therefore, no further precautions are required during the works. Some suitable habitat for amphibians can be found on site in the form of the marginal vegetation around the bank tops. However, this habitat is isolated with amenity grass and improved grass on either side. 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 impacts of the works have been summarised as follows:

- Amphibians – **Negligible**
- Badgers – **moderate**
- Bats – **Negligible**
- Birds – **Negligible**
- Flora – **Negligible**
- Hedgehogs – **Moderate**
- Invertebrates – **Negligible**
- Otters – **Unknown**
- Reptiles – **Negligible**
- Water Voles – **Unknown**

5 Recommendations

5.1 Designated Sites

No designated sites that were revealed by the ecological data search provided by COFNOD fell on the proposed re-development site itself. Therefore, the proposed re-development will have no impact upon any local designated sites as the works are due to remain within the site boundary.

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.

It is highly recommended that no trees are removed from the bank tops of the stream. The western bank is significantly lower than the eastern bank and the removal of vegetation could cause potential flood risks.

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 Badgers

Although no badger setts were observed on or immediately offsite at the time of the survey, activity patterns of this species can change over a short time. It is therefore recommended that an update badger survey is undertaken if works do not commence within 6 months of the survey date (4th August 2021).

Badger surveys can be undertaken at any time of year and to allow sufficient time to obtain a Natural England badger mitigation licence (should a sett be discovered on or immediately offsite) the survey should be scheduled three months prior to the commencement of works.

Any development works needs to consider the potential presence of the specimens on site. All trenches dug into the ground make provisions for badgers (and any other mammals) to escape in the form of creating slopes or the inclusion of ramps at the end of each working day. 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.

5.3.2 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.

5.3.3 Birds

All vegetation removal should be undertaken outside of the bird breeding season (the bird breeding season runs from March to August, inclusive). If vegetation and/or structures are required to be removed during the bird breeding season, then a further inspection by a suitably qualified ecologist is required no more than 24 hours before these are to be removed. This is to ensure that no active nest site is illegally destroyed, due to the protection afforded to all active bird nests under the Wildlife and Countryside Act 1981.

5.3.4 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, at least two [Eco Hedgehog Nest Boxes](#) 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 (an example can be found within **Figure 3**). This will ensure that the local hedgehog populations do not become fragmented within the local landscape.

Figure 3: An image of an example hedgehog tunnel (obtained from RSPB).



5.3.5 Otters & Water Voles

It has been agreed that the bridge supports will be cited 5m from the banks of the identified hole within the bank. Therefore, impacts on these species will be minimal. It is recommended that prior to the commencement of works, including site preparation works and vegetation clearance, that an updated riparian mammal walkover survey should be conducted, to ensure no alterations in species composition or increase in populations.

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 Bats

As bats could be within the area, it is recommended that some bat features are included into the proposed development. Elite Ecology recommend the incorporation of bat boxes around the new development, with particular reference to the south-eastern and south-western elevations. These could include [Integrated Eco Bat Boxes](#) or [Eco Bat Boxes](#) on the new structures. These features should avoid direct artificial lighting.

It is recommended that upon completion of the works, the soft landscaping of the site should include bat friendly planting schemes. Some potential plants to be planted are visible within the table below:

Flowers for borders	Trees, shrubs & climbers
Aubretia	Bramble
Candytuft	Buddleia
Cherry pie	Common alder
Corncockle	Dogrose
Corn marigold	Elder
Corn poppy	English oak
Echniacea	Gorse
English bluebell	Guelder rose
Evening primrose	Hawthorn
Field poppies	Hazel
Honesty	Honeysuckle (native)
Ice plant 'pink lady'	Hornbeam
Knapweed	Ivy
Mallow	Jasmine
Mexican aster	Pussy willow
Michaelmas daisy	Rowan
Night-scented stock	Silver birch
Ox-eye daisy	Wild flowers for pond edges & marshy areas
Phacelia	Bog bean
Poached egg plant	Bugle
Primrose	Creeping Jenny
Red campion	Flag Iris
Red valerian	Hemp agrimony
Scabious	Lady's smock
St. John's Wort	Marsh mallow
Sweet William	Marsh marigold
Tobacco plant	Marsh woundwort
Verbena	Meadowsweet
Wallflowers	Purple loosestrife
Wood forget-me-not	Water avens
Yarrow	Wood forge-me-not
Herbs	Water mint
Angelica	
Bergamot	
Borage	
Coriander	
English marigolds	
Fennel	
Feverfew	
Hyssop	
Lavenders	
Lemon balm	
Marjoram	
Rosemary	
Sweet Cicely	
Thyme	

5.4.2 Birds

A variety of [bird boxes](#) should be installed around the site to enhance the nesting opportunities for a variety of species within the local landscape.

5.4.3 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.

5.4.4 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.

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7 Appendices

Appendix A: Site Plans

Appendix B: Desktop Study Table

Appendix C: Desktop Study Map

Appendix D: Phase 1 Habitat Map

Appendix E: Site Photographs

Appendix F: Biodiversity Legislation and Policy

Appendix G: Bats and Artificial Lighting

Appendix A: Site Plans.



Appendix B: The Ecological Data Tables

Amphibians	
Common Name	Latin Name
Common Frog	<i>Rana temporaria</i>
Common Toad	<i>Bufo bufo</i>
Great Crested Newt	<i>Triturus cristatus</i>
Palmate Newt	<i>Lissotriton helveticus</i>
Smooth Newt	<i>Lissotriton vulgaris</i>
Birds	
Common Name	Latin Name
Barn Owl	<i>Tyto alba</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>
Curlew	<i>Numenius arquata</i>
Dunnock	<i>Prunella modularis</i>
Fieldfare	<i>Turdus pilaris</i>
Goldcrest	<i>Regulus regulus</i>
Herring Gull	<i>Larus argentatus</i>
Hobby	<i>Falco subbuteo</i>
House Sparrow	<i>Passer domesticus</i>
Kestrel	<i>Falco tinnunculus</i>
Lapwing	<i>Vanellus vanellus</i>
Long-tailed Tit	<i>Aegithalos caudatus</i>
Mallard	<i>Anas platyrhynchos</i>
Marsh Tit	<i>Poecile palustris</i>
Redwing	<i>Turdus iliacus</i>
Reed Bunting	<i>Emberiza schoeniclus</i>
Snipe	<i>Gallinago gallinago</i>
Song Thrush	<i>Turdus philomelos</i>
Starling	<i>Sturnus vulgaris</i>
Swallow	<i>Hirundo rustica</i>
Swift	<i>Apus apus</i>
Tree Sparrow	<i>Passer montanus</i>
Woodcock	<i>Scolopax rusticola</i>
Flora	
Common Name	Latin Name

Preliminary Ecological Appraisal

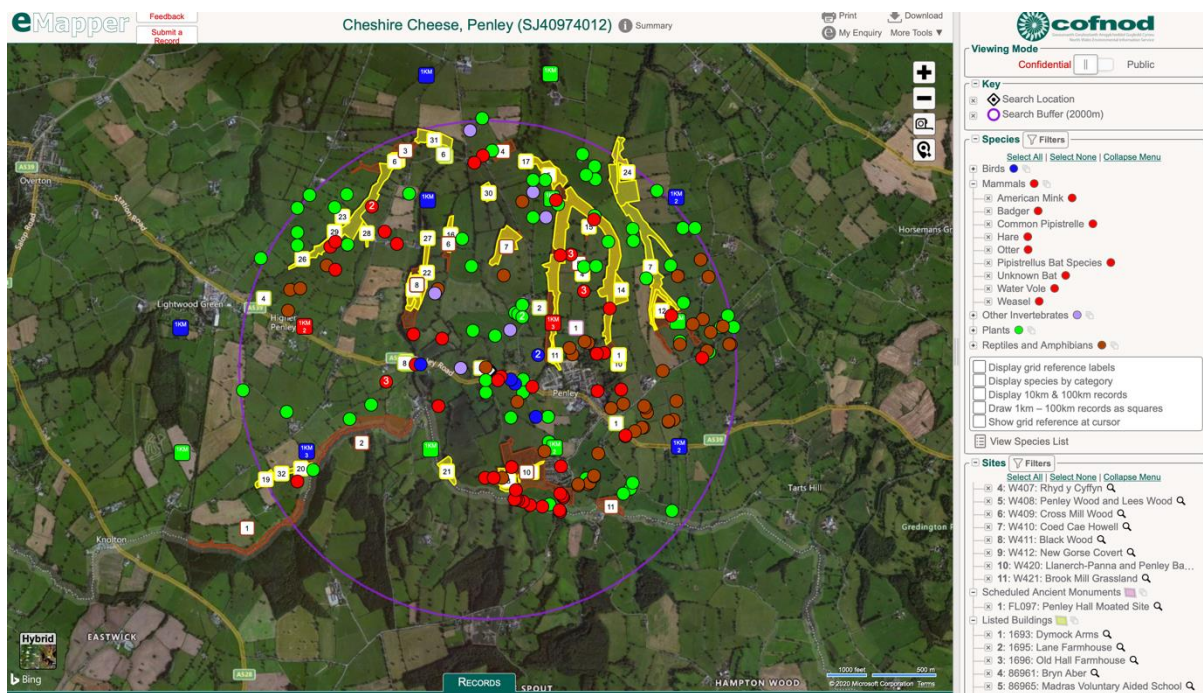
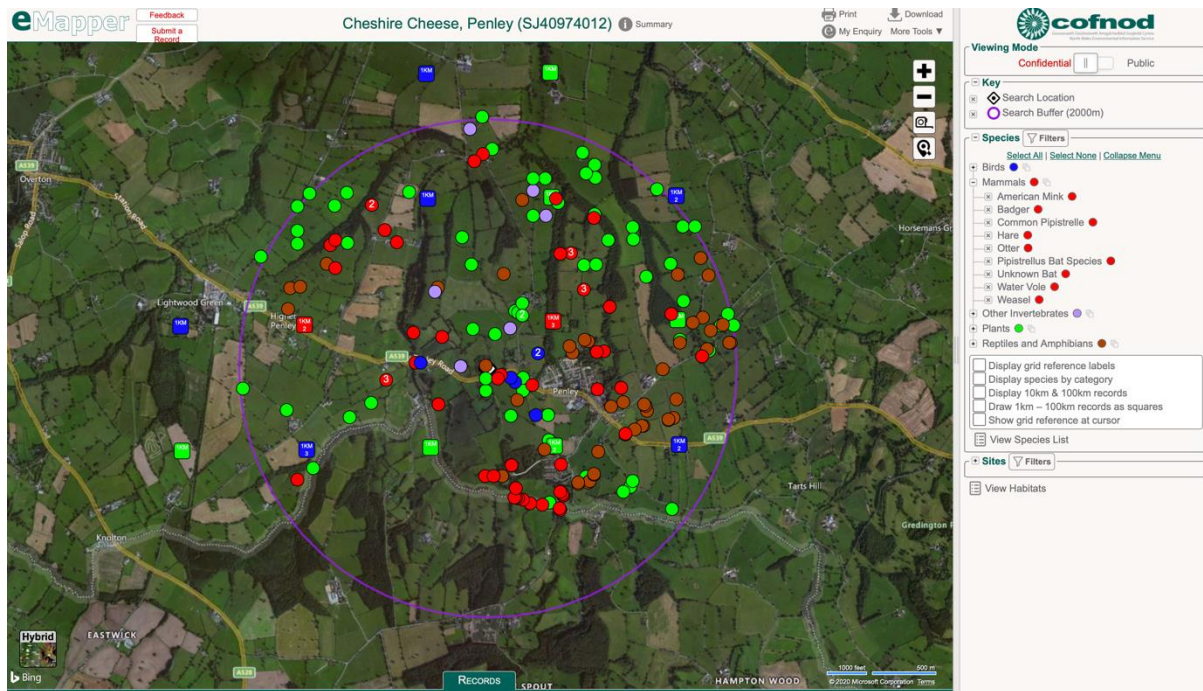
	<i>Populus nigra</i> agg.
	<i>Rhododendron ponticum</i>
Alternate Water-milfoil	<i>Myriophyllum alterniflorum</i>
Bladder-sedge	<i>Carex vesicaria</i>
Blue Water-Speedwell	<i>Veronica anagallis-aquatica</i>
Bluebell	<i>Hyacinthoides non-scripta</i>
Broad-leaved Osier	<i>Salix viminalis</i> x <i>caprea</i> = <i>S. x smithiana</i>
Canadian Waterweed	<i>Elodea canadensis</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Cowbane	<i>Cicuta virosa</i>
Elecampane	<i>Inula helenium</i>
Fat Duckweed	<i>Lemna gibba</i>
Fig-leaved Goosefoot	<i>Chenopodium ficifolium</i>
Floating Water-plantain	<i>Luronium natans</i>
Greater Pond-sedge	<i>Carex riparia</i>
Grey Club-rush	<i>Schoenoplectus tabernaemontani</i>
Himalayan Cotoneaster	<i>Cotoneaster simonsii</i>
Himalayan Honeysuckle	<i>Leycesteria formosa</i>
Horned Pondweed	<i>Zannichellia palustris</i>
Hybrid Sweet-grass	<i>Glyceria fluitans</i> x <i>notata</i> = <i>G. x pedicellata</i>
Japanese Knotweed	<i>Fallopia japonica</i>
Large-leaved Lime	<i>Tilia platyphyllos</i>
Least Duckweed	<i>Lemna minuta</i>
Lesser Pondweed	<i>Potamogeton pusillus</i>
Lesser Water-plantain	<i>Baldellia ranunculoides</i>
Many-seeded Goosefoot	<i>Chenopodium polyspermum</i>
Montbretia	<i>Crocasmia pottsii</i> x <i>aurea</i> = <i>C. x crocosmiiflora</i>
New Zealand Pigmyweed	<i>Crassula helmsii</i>
Nuttall's Waterweed	<i>Elodea nuttallii</i>
Pepper-saxifrage	<i>Silaum silaus</i>
Pill Bryum	<i>Bryum violaceum</i>
Pink Water-Speedwell	<i>Veronica catenata</i>
Red Pondweed	<i>Potamogeton alpinus</i>
Sedge	<i>Carex otrubae</i> x <i>remota</i> = <i>C. x pseudoaxillaris</i>
Shiny-leaved Willow	<i>Salix pentandra</i> x <i>euxina</i> x <i>alba</i> = <i>S. x meyeriana</i>
Shore Horsetail	<i>Equisetum fluviatile</i> x <i>arvense</i> = <i>E. x litorale</i>
Spiny Restharrow	<i>Ononis spinosa</i>
Sweet-briar	<i>Rosa rubiginosa</i>
Tasteless Water-pepper	<i>Persicaria mitis</i>
Thin-spiked Wood-sedge	<i>Carex strigosa</i>
Thread-leaved Water-crowfoot	<i>Ranunculus trichophyllus</i>
Variegated Yellow Archangel	<i>Lamium galeobdolon</i> subsp. <i>argentatum</i>
Water Dock	<i>Rumex hydrolapathum</i>
Water Fern	<i>Azolla filiculoides</i>
Water-violet	<i>Hottonia palustris</i>
Welsh Poppy	<i>Meconopsis cambrica</i>
Wild Service-tree	<i>Sorbus torminalis</i>

Preliminary Ecological Appraisal

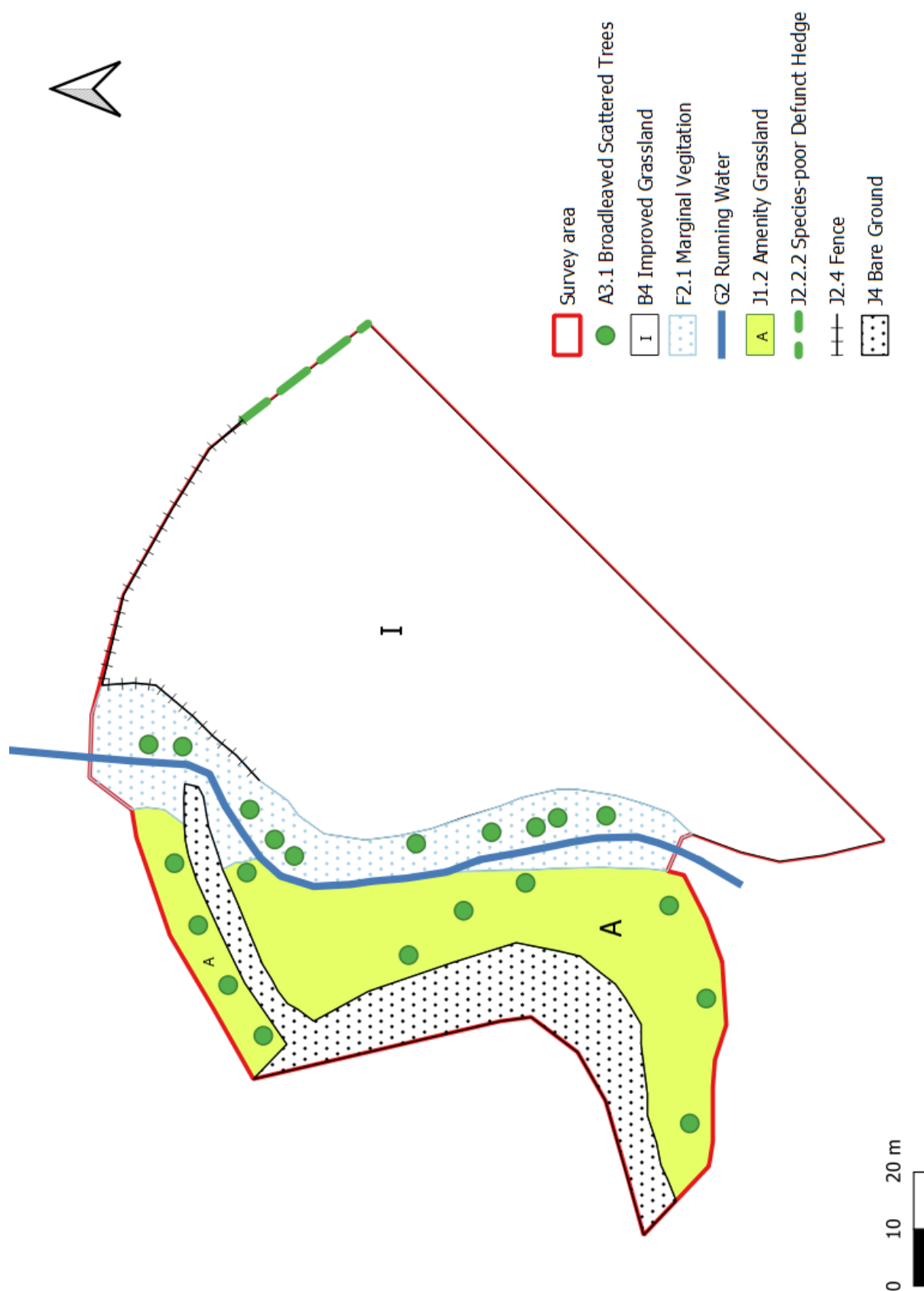
Wood Club-rush	<i>Scirpus sylvaticus</i>
Invertebrates	
Common Name	Latin Name
Lesser Silver Water Beetle	<i>Hydrochara caraboides</i>
Emerald Damselfly	<i>Lestes sponsa</i>
Ruddy Darter	<i>Sympetrum sanguineum</i>
Mammals	
Common Name	Latin Name
American Mink	<i>Neovison vison</i>
Badger	<i>Meles meles</i>
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>
Hare	<i>Lepus europaeus</i>
Otter	<i>Lutra lutra</i>
Pipistrellus Bat Species	<i>Pipistrellus</i>
Unknown Bat	<i>Chiroptera</i>
Water Vole	<i>Arvicola amphibius</i>
Weasel	<i>Mustela nivalis</i>

Appendix C: The Ecological Data Search Maps

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Appendix D: Phase 1 Habitat Map

Appendix E: Site Photographs

Plate1: Dense Marginal vegetation and stream



Plate2: Bare ground leading to access



Plate3: photo looking down stream (north), marginal vegetation to the east, scattered trees and amenity grass to the west.



Plate 4: Improved Grassland



Plate 4: Stream



Appendix F: 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.

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 2019 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.

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.

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 G: 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 cats 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.