



# Wild Service

## Hartpury Orchard Centre

### Construction Ecological Management Plan (CEMP)

On behalf of Mr Chapman

Project Ref. EP2021018Bv1

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	<b>Name</b>	<b>Date</b>
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# 1 Introduction

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## 1.1 Scope

1.1.1 Wild Service was commissioned by Mr Chapman to write a Construction Ecological Management Plan (CEMP) for two areas within the Hartpury Orchard Centre land, namely the display building, workshop and visitor information point at the end of the Orchard Centre carpark, and the carpark to be constructed next to Hartpury Church. (hereafter referred to as the 'Centre Site and Church Site respectively'). A Site Plan is provided in Appendix 1.

1.1.2 The CEMP has been written in accordance with BS42020 *Biodiversity – Code of Practice for Planning and Development* and covers the following details:

- Risk assessment of potentially damaging construction-type activities;
- Identification of “biodiversity protection zones”;
- Inclusion of or reference to details for implementation of method statements required to achieve specific biodiversity outcomes, and particularly mitigation measures;
- Identification of practical measures, both physical measures and sensitive working practices to avoid impacts during development, for protecting biodiversity through the control or regulation of construction-type activities;
- The location and timing of sensitive works to avoid harm to biodiversity features;
- Responsible persons and lines of communication;
- Defining and communicating the role and responsibilities on site of an Ecological Clerk of Works (ECoW) or appointed ecologist(s) responsible for managing biodiversity issues on site, and times and activities during construction or development implementation when they need to be present to oversee works; and
- Use of exclusion fences, protective barriers and warning signs.

1.1.3 The CEMP should be read in conjunction with the Hartpury Orchard Preliminary Ecological Appraisal (PEA) (Wild Service 2020).

## 1.2 Site Description

### *Centre Site*

1.2.1 The Site planned for the display building, workshop and visitor information point at the end of the Orchard Centre carpark comprises a small area (approx. 5m x 12m) of hard standing and a narrow strip of grass and tall herb along the wooden fence. Grid reference SO 7852 2541. Photograph of area is shown below, and a plan of the proposed works is included in Appendix 1. This area is directly bordered by mature native hedgerows to the north and west, Colliers Brook to the north and the Orchard Centre buildings and car park to the south and east (of which this area forms part of the car park).



### *Church Site*

1.2.2 The Site planned for the permanent carpark to be constructed next to Hartpury Church comprises a strip of hard standing bordered by closely mown amenity grassland. It is currently used as a temporary parking facility. Grid reference SO 7805 2365. Photograph of area is shown below, and a plan of the proposed works is included in Appendix 1. This area is directly bordered by mown grassland with scattered young fruit trees to the north-west, mature native hedgerow to the east, and the yew trees of the church to the south.



1.3 The surrounding landscape to both these Sites is a combination of arable and pastoral.

#### 1.4 **Legislation**

1.4.1 This report has been prepared in accordance with relevant legislation and policy. Further detail is provided in Appendix 4, however the following primary documents are of relevance:

- The Wildlife and Countryside Act 1981 (as amended) (WCA 1981);
- The Countryside and Rights of Way Act 2000 (as amended) (CRoW Act 2000);
- The Protection of Badgers Act 1992 (PBA 1992);
- The Natural Environment and Rural Communities Act 2006 (NERC Act 2006); and
- The Conservation of Habitats and Species Regulations 2017 (as amended) (CHS 2017).

1.4.2 No part of this report should be considered as legal advice and when dealing with individual cases, the client is advised to consult the full texts of the relevant legislation and obtain further legal advice.

## 2 Summary of Ecological Features

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### 2.1 Overview

2.1.1 Elizabeth Pimley of Wild Service visited the Centre Site and Church Site with Jim Chapman on 8<sup>th</sup> December 2021.

### 2.2 Habitats

2.2.1 The hard standing with narrow strip of grass and tall herb at the Centre Site was considered to be of very low ecological value. The strip of hard standing with strips of closely mown amenity grassland either side at the Church Site was considered to be of very low ecological value.

2.2.2 The root protection zones (RPZ) of mature native species hedgerows bordering both Sites, and the RPZ of the adjacent strip of mature yew trees bordering the Church Site are likely to overlap with the two areas proposed for construction. These features adjacent the areas comprising the Sites are of moderate ecological value.

### 2.3 Protected Species

#### Bats

2.3.1 Bats are likely to forage/commute along the hedgerows adjacent to both Sites. Bats are also likely to forage/commute along the line of yew trees at the Church Site. There were no features within the two Sites that could be used by roosting bats.

2.3.2 Bats and their resting places are protected under the WCA 1981 and the CHS Regs 2017.

#### Birds

2.3.3 The hedgerows adjacent to both Sites in addition to the line of yew trees at the Church site could be used by nesting birds. There was no nesting bird habitat within the two areas comprising the Site.

2.3.4 All birds are protected under Section 1 of the WCA 1981.

### Great Crested Newt and Other Amphibians

- 2.3.1 The hard standing at the Centre Site area does not provide suitable terrestrial habitat for amphibians, while the thin strip of tall herb and grassland is too small to provide useful habitat. It is possible that amphibians could shelter in the hedgerow directly adjacent the Centre Site and there are wetland areas within the land owned by the Orchard Centre.
- 2.3.2 The hard standing and closely mown grassland at the Church Site does not provide suitable terrestrial habitat for amphibians. It is possible that amphibians, such as common toad, could shelter in the adjacent hedgerow.
- 2.3.3 Great crested newts and their resting/breeding places are protected under the WCA 1981 and CHS Regs 2017. Common toad is listed as a Species of Principal Importance under the NERC Act 2006 and therefore receives some degree of protection.

### Hedgehog

- 2.3.4 The hard standing at the Church Site does not provide suitable terrestrial habitat for hedgehogs, while the thin strip of tall herb and grassland is too small to provide useful habitat. It is possible that hedgehogs could shelter in the hedgerow directly adjacent the Centre Site
- 2.3.5 The hard standing at the Church Site does not provide suitable terrestrial habitat for hedgehogs, although hedgehogs may forage across the amenity grassland. It is possible that hedgehogs could shelter in the adjacent hedgerow.
- 2.3.6 Hedgehogs are listed as a Species of Principal Importance under the NERC Act 2006 and therefore receive some degree of protection.

### Badger

- 2.3.7 The two Sites do not provide suitable habitat for badgers to forage in or excavate a sett. However, it is possible that badgers may commute across these areas.
- 2.3.8 Badgers and their active setts are protected under the PBA 1992.

### 3 Risk Assessment, Mitigation and Enhancements

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#### 3.1 Overview

- 3.1.1 The following construction activities have been identified as a risk to the ecological features on the Sites. Mitigation measures detailed in this CEMP will ensure that there are no ecological constraints to construction activities and will allow works to proceed with minimal impact to the local ecology.

#### 3.2 Habitats

##### *Risk Assessment*

- 3.2.1 All of the habitats within the two Sites were of low ecological value. As such, there is no potential for significant impacts with regards to habitats at the Sites above those described below for protected species. However, it is possible that the RPZ of the adjacent mature yew trees at the Church Site and the adjacent mature hedgerows and their RPZ at both Sites could be damaged during construction and landscaping if this is undertaken in a careless manner.

##### *Mitigation*

- 3.2.2 No mitigation for impacts on habitats at the Sites above that described for protected species is necessary. However, care needs to be taken to ensure that the RPZ of the adjacent mature yew trees at the Church Site and the adjacent mature hedgerows and their RPZ at both Sites are protected from damage during construction activities and landscaping. Tree protection fencing will be installed in accordance with British Standards BS5837 around the yew trees and hedgerows. Construction activities will be undertaken in a careful manner to avoid damaging tree/shrub roots following the advice of an arboriculturist.

##### *Enhancements*

- 3.2.3 The ecological value of the habitat around the car park at the Church Site will be enhanced by planting native species hedgerow, native trees and orchard trees as outlined in the landscaping and planting plan in Appendix 1.



- 3.2.4 At the Church Site, the amenity grassland bordering the proposed car park and forming the orchard area will be left to grow tall and cut down to approximately 10cm in late summer. Ideally the arisings will be removed to form compost heaps, thereby reducing the soil fertility over time, thus promoting the growth a diversity of native species of grasses and forbs.
- 3.2.5 It is also proposed to create a wildlife pond of approximate dimensions 2m x 3m adjacent the south-eastern corner of the Church Site, within a gap in the hedgerow. The hedgerow trees and shrubs in this area be trimmed back to allow sufficient light into the pond to facilitate aquatic plant growth. The wildlife pond will be constructed/planted up with native species of marginal and submerged plants in accordance with pond creation guidelines in Appendix 2.

### 3.3 Protected Species

#### Roosting Bats

##### *Risk Assessment*

- 3.3.1 There are no bat roosts/features that could be used by roosting bats within the two Sites, however, foraging bats could use the adjacent habitats (i.e. hedgerows, line of yew trees). As bats are nocturnal and therefore particularly sensitive to illumination, any lighting of these surrounding habitats could disturb the nocturnal activities of bats. Therefore, the construction of the display building, workshop and visitor information point at the end of the Orchard Centre carpark (Centre Site), and the carpark to be constructed next to Hartpury Church (Church Site) could have a negative impact on foraging/commuting bats if lighting is installed.

##### *Mitigation*

- 3.3.2 It is our understanding that construction activities will occur during the day and therefore it is not anticipated that there will be a need for any illumination during the construction phase. Should any evening/early morning work be deemed necessary then lighting should only be used during working hours when visibility is poor.

3.3.3 It is our understanding that no permanent external lighting will be required at either Site. However, should this situation change then any lighting will be kept to a minimum and avoid illuminating the bat foraging areas (i.e. hedgerows, lines of yew trees adjacent the areas comprising the Site). Lighting will be designed sensitively to minimise light spill and potential impacts on bats in accordance with best practice, as outlined in *Bats and Lighting in the UK* (Stone, 2013). Lighting recommendations include:

- All luminaires should lack UV elements when manufactured. Metal halide, fluorescent sources should not be used.
- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (ideally 550nm) should be adopted to reduce blue light component, as redder light is preferable for bats.
- Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
- Blue/white light should be avoided, or if mercury lamps are installed, these should be fitted with UV filters.
- Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill.
- Accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it below horizontal plane.
- The use of specialist bollard or low-level downward directional luminaires to retain darkness above can be considered.
- Column heights should be carefully considered to minimise light spill.
- Reducing the height of light units to keep the light as close to the ground as possible and reduce the volume of illuminated space.
- Only luminaires with an upward light ratio of 0% should be used.

- Luminaires should always be mounted on the horizontal, i.e. no upward tilt. Ideally the angle of the luminaire should be less than 70 degrees to avoid upward light spill.
- Any external security lighting should be set on people-activated motion-sensors and short (1min) timers.

### Birds

#### *Risk Assessment*

- 3.3.4 There is no nesting bird habitat within the Sites. However, the hedgerows adjacent the Sites plus the line of yew trees adjacent the Church Site, provide suitable habitat for nesting birds. Should these habitats be damaged during construction, then there is the potential risk of killing/injuring nesting birds and their young, particularly in the absence of any mitigation.

#### *Mitigation*

- 3.3.5 The adjacent hedgerows and yew trees will be protected with tree protection fencing (to BS5837 specifications) to avoid damaging this nesting bird habitat.

#### *Enhancement*

- 3.3.6 Two barn owl boxes will be installed at the Centre Site, one on the eastern gable of the new building and one on the tree adjacent the north-western corner of the area. Barn owl boxes should be installed at minimum heights of 3m and ideally face in north to south-east orientation. Locations are shown on the plan in Appendix 1 and barn owl and other bird boxes are shown in Appendix 2.

### Great Crested Newt (GCN) and Amphibians

#### *Risk Assessment*

- 3.3.7 Although it is considered unlikely for GCN to be present on the Sites, as they do not provide suitable terrestrial habitat for amphibians, the presence of great crested newts and other amphibians occurring in the area at the Centre Site cannot be entirely ruled out. This is due to a GCN record from the wider Orchard Centre estate and due to the presence of wetlands within the wider Orchard Centre estate, which are located 220m to the east of the Centre Site at their nearest point. However, it

should be noted that while GCN can be present up to 500m from their breeding ponds, radiotracking studies of GCN have shown that the majority of newts stay within the core habitat of 65m (Jehle 2000) and are therefore more likely to remain around their breeding ponds.

- 3.3.8 In the absence of any mitigation, there is a very small possibility that any amphibians could be killed or injured during site clearance/construction works at the Centre Site.

*Mitigation*

- 3.3.9 Prior to works, one log pile/hibernaculum, as per the diagram in Appendix 2, will be constructed in the Centre Site adjacent to the northern hedgerow. This will provide useful shelter and act as a receptor in the unlikely event that great crested newts or other amphibians (and reptiles) are found.

- 3.3.10 As a precautionary measure, site clearance at the Centre Site will be supervised by a great crested newt licensed ecologist/accredited agent, who will inspect the area for great crested newts (and other amphibians) prior to works commencing. Any animals found will be captured and placed in the pre-installed hibernaculum.

- 3.3.11 As an additional precautionary measure, all material will be kept on the truck they were transported to the Centre Site in or otherwise separated from the ground in order to eliminate any potential refuge for great crested newts/other amphibians. Aggregates will also be delivered in bags and stored in this way.

- 3.3.12 Any trenches built during construction at both Sites will be backfilled before nightfall, or otherwise equipped with a means of escape or covered to avoid amphibians and reptiles and other wildlife becoming trapped.

*Enhancement*

A log pile/hibernaculum will be constructed adjacent the hedgerow bordering the northern boundary of the Centre Site (see plan in Appendix 1 and hibernaculum design in Appendix 2). This will provide additional shelter for amphibians (and reptiles) that may use the area. Amphibians already have wetland areas in the wider area owned by the Orchard Centre.

The landscaping recommendations for the Church Site, namely planting of native hedgerow, native trees and orchard in addition to allowing the grassland to grow tall, will enhance this area for amphibians. Creation of a wildlife pond plus installation of a log pile adjacent the south-eastern corner of the Church Site will provide valuable aquatic habitat and shelter respectively for amphibians. Wildlife pond guidance is provided in Appendix 2.

### Hedgehog

#### *Risk Assessment*

- 3.3.13 Hedgehogs could commute across either Site and shelter in the hedgerows bordering each area. Hedgehogs could become trapped in trenches created as part of construction works, or their movement across the Sites could be restricted by new fencing or other obstacles.

#### *Mitigation*

- 3.3.14 Any trenches built during construction will be backfilled before nightfall, or otherwise equipped with a means of escape (e.g. ramp) or covered to avoid hedgehogs or other animals becoming trapped.
- 3.3.15 Any new or existing fencing will be made permeable to wildlife, such as hedgehogs, by leaving small gaps of 13x13cm at their base.
- 3.3.16 A hedgehog house or log/leaf pile will be placed within the hedgerow bordering the eastern edge of the Church Site to provide shelter for this species of conservation concern. Location of hedgehog house/log-leaf pile is shown on the plan in Appendix 1. Examples of hedgehog houses are provided in Appendix 2, and they can either be bought or constructed.

### Badger

#### *Risk Assessment*

- 3.3.17 Badgers could commute across either area although there are no setts on the Site. Badgers could become trapped in trenches created as part of construction works.

*Mitigation*

3.3.18 Any trenches built during construction will be backfilled before nightfall, or otherwise equipped with a means of escape (e.g. ramp) or covered to avoid badgers or other animals becoming trapped.

Other Protected Species

3.3.19 There appear to be no other obvious and immediate issues for this development with regard to any other species protected under the WCA 1981 and the CHS Regs 2017. However, in the unlikely event that any protected species listed in Section 2 are found on the Site during the works then all works will cease immediately, and the advice of the ECoW or other suitably qualified ecologist will be sought.

## 4 Ecological Clerk of Works

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### 4.1 Responsible Persons

4.1.1 **Elizabeth Pimley of Wild Service** are managing the ecological aspects of the project. Elizabeth (or if not Elizabeth, another member of the Wild Service team) will act as ECoW for the protected species mitigation. She will provide technical advice to the on-site contractors prior to/during works at both Sites (as required) to ensure that they are familiar with the ecological issues.

4.1.2 Mr Chapman will be responsible for the implementation of construction activities and management of site staff to ensure that all contractors are familiar with the recommendations outlined in this CEMP. Any ecological issues will be reported by the Mr Chapman to the ECoW.

### 4.2 Toolbox Talks

4.2.1 A toolbox talk will be given to the on-site contractors at the Centre Site by the ECoW to inform the contractors of the relevant wildlife legislation for the aforementioned protected species, and their responsibilities and duties whilst undertaking the construction works. This is important as the responsibility for biodiversity protection lies with everyone on Site.

### 4.3 The Role of the Ecological Clerk of Works

4.3.1 The ECoW for the Centre Site will be available to provide on-site monitoring and advice to all site staff during the toolbox talks and during construction activities.

4.3.2 All destructive searches at the Centre Site will be completed under the supervision of the ECoW, or other suitably qualified ecologist, including inspecting suitable habitat prior to and after removal.

## 5 References

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Bat Conservation Trust 2012. *Bats and Buildings*. Bats and the Built Environment Series. London.

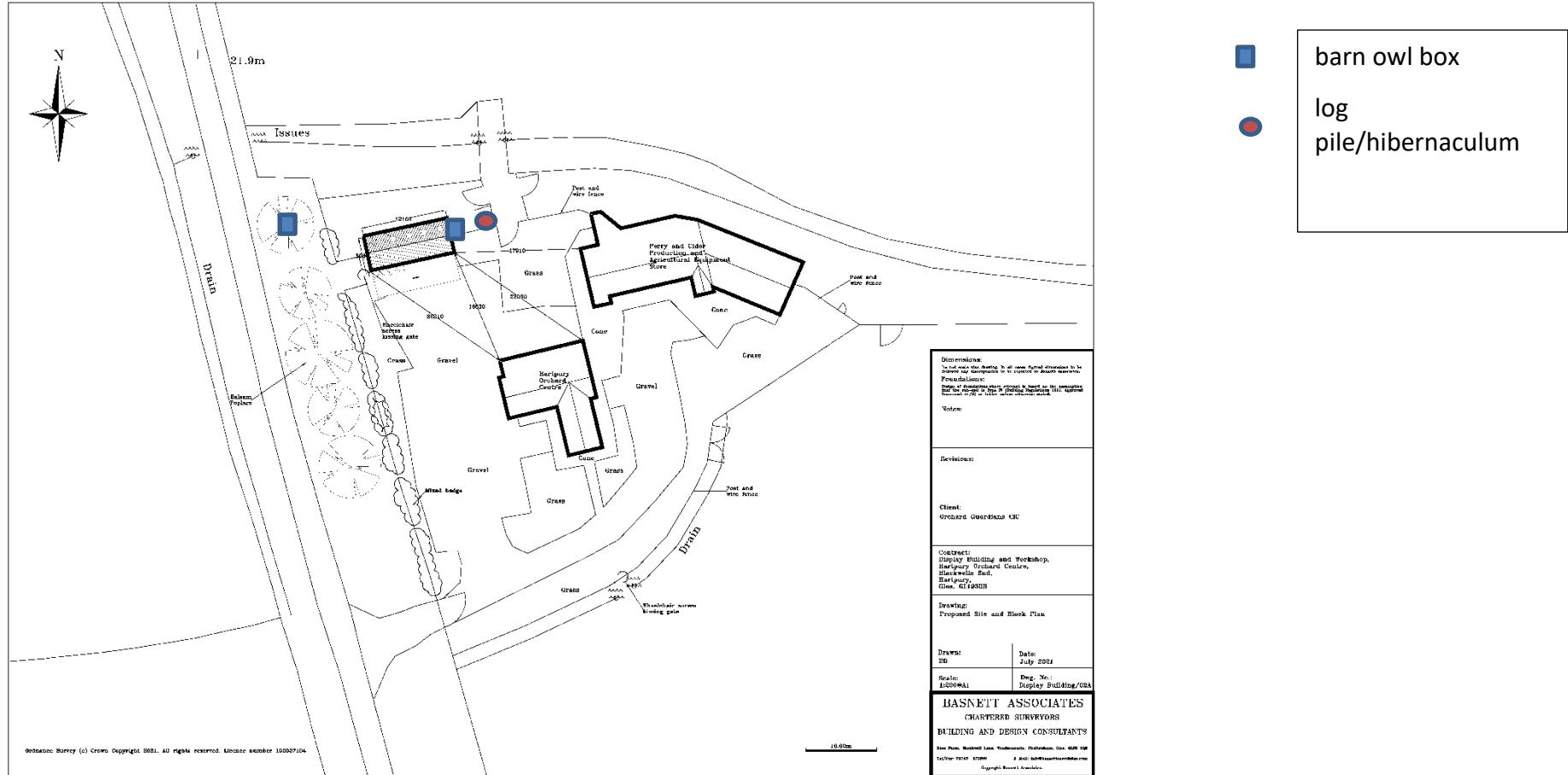
Jehle, R. 2000. The terrestrial summer habitat of radio-tracked great crested newts (*Triturus cristatus*) and marbled newts (*Triturus marmoratus*). The Herpetological Journal Vol. 10, No. 4. British Herpetological Society, London.

Stone, E.L. 2013. *Bats and Lighting: Overview of Current Evidence and Mitigation Guidance*. University of Bristol.

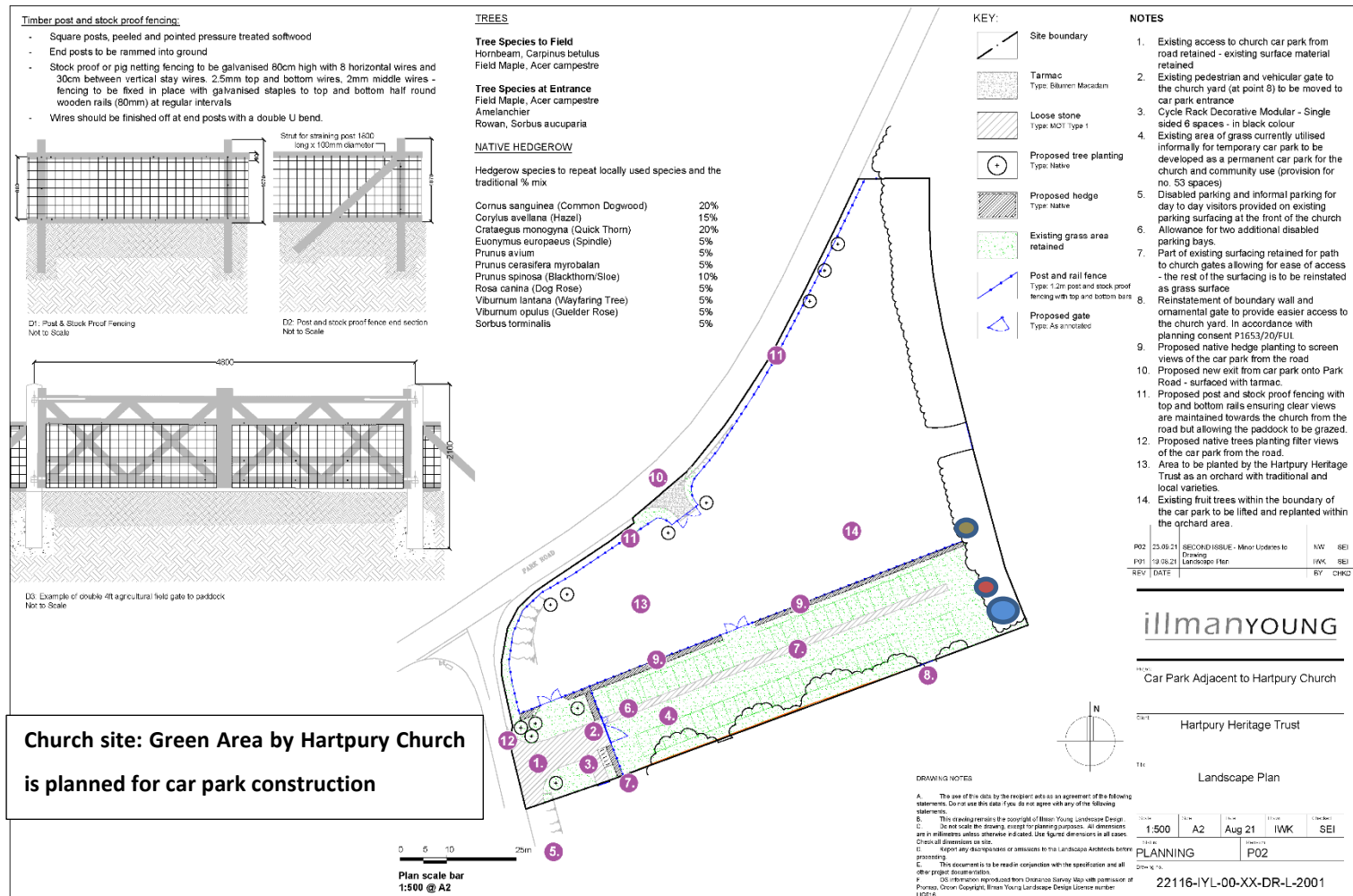
Wild Service 2021. *Hartpury Orchard, Churchdown Preliminary Ecological Appraisal*. Project Ref: EP2021018Av1.



# Appendix 1: Site Plan to show Ecological Mitigation and Enhancement



Centre Site: Shaded Area by Hartpury Orchard Centre is planned for construction of display building, workshop and visitor information point



- log pile
- leaf & log pile/ hedgehog box
- pond

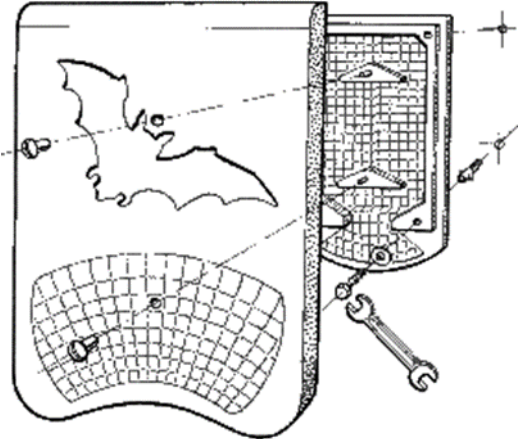
# Appendix 2: Ecological Enhancements

## BAT ROOSTING FEATURES

Schwegler 1FF bat box



Schwegler 1WQ Summer & Winter bat



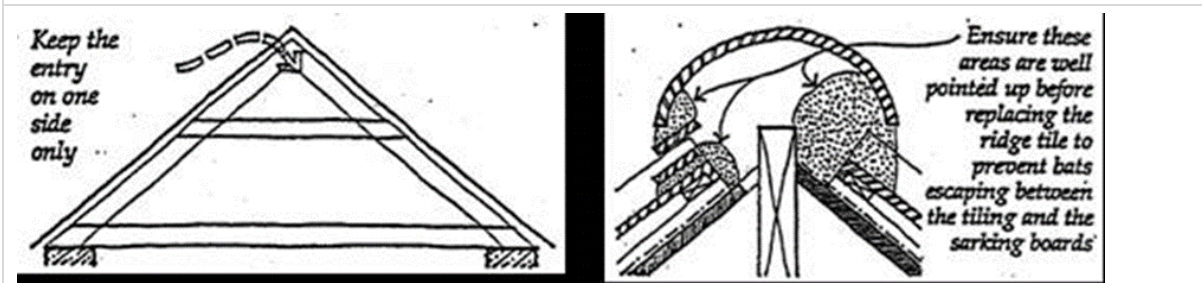
**Habibat 001 Bat Box – integral bat box, fitted into wall**



**Schwegler 2FN bat box for installation in trees**



**Diagrammatic view of ridge tile and cross section through ridge tile** showing access point (taken from Scottish Natural Heritage 1996). Bitumastic lining must be used near/on the ridge beam to ensure bats can only have contact with this type of membrane to avoid any possible entanglement with a breathable membrane.



**BIRD BOXES**

**Various designs of swift boxes**



**House Sparrow terrace box**



**Swallow Cup**



**Hole-fronted bird box (for trees)**



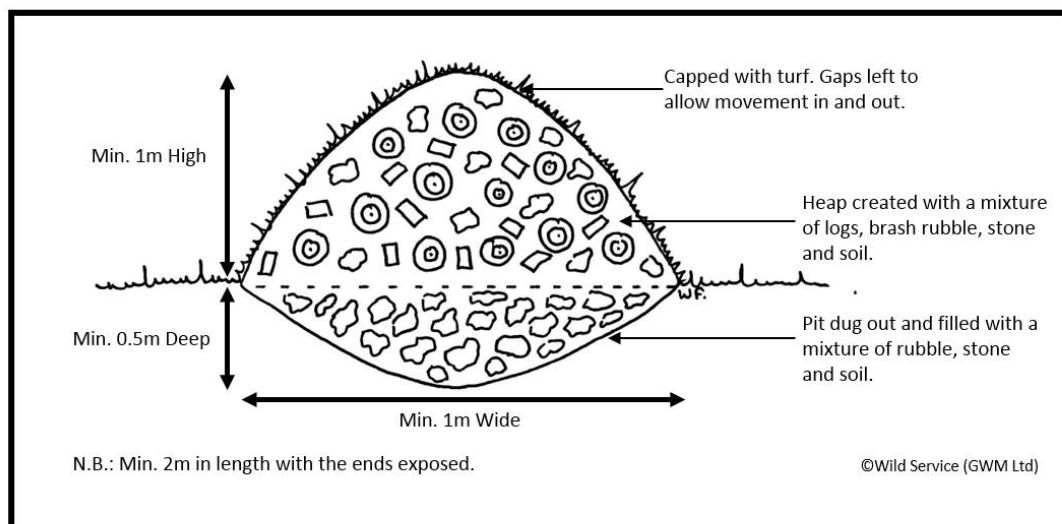
**Open-fronted bird box (for trees)**



**Barn owl box**



**AMPHIBIAN AND REPTILE HIBERNACULUM**



HEDGEHOG HOUSES

# Make a deluxe hedgehog house



**You will need**

- 20mm FSC plywood boards cut to the sizes shown
- Hammer and nails
- 2 metal hinges
- Soil
- Dry leaves
- Straw or dry grass
- Newspapers
- Polythene sheeting

*Birch is ideal*

**1** Construct the hedgehog house from the following diagram and dimensions.

**2** Put the newspaper and straw or dry grass inside, cover the house with polythene sheeting, then pack soil and dead leaves around the outside.

Do not creosote or treat the wood

Make sure the entrance tunnel faces south, and is kept clear at all times

The roof is hinged so you can clean the box in future

raised up on feet

[www.wildlifewatch.org.uk](http://www.wildlifewatch.org.uk)



## Wildlife Pond Creation

The illustration below shows an ideal profile for a wildlife pond.

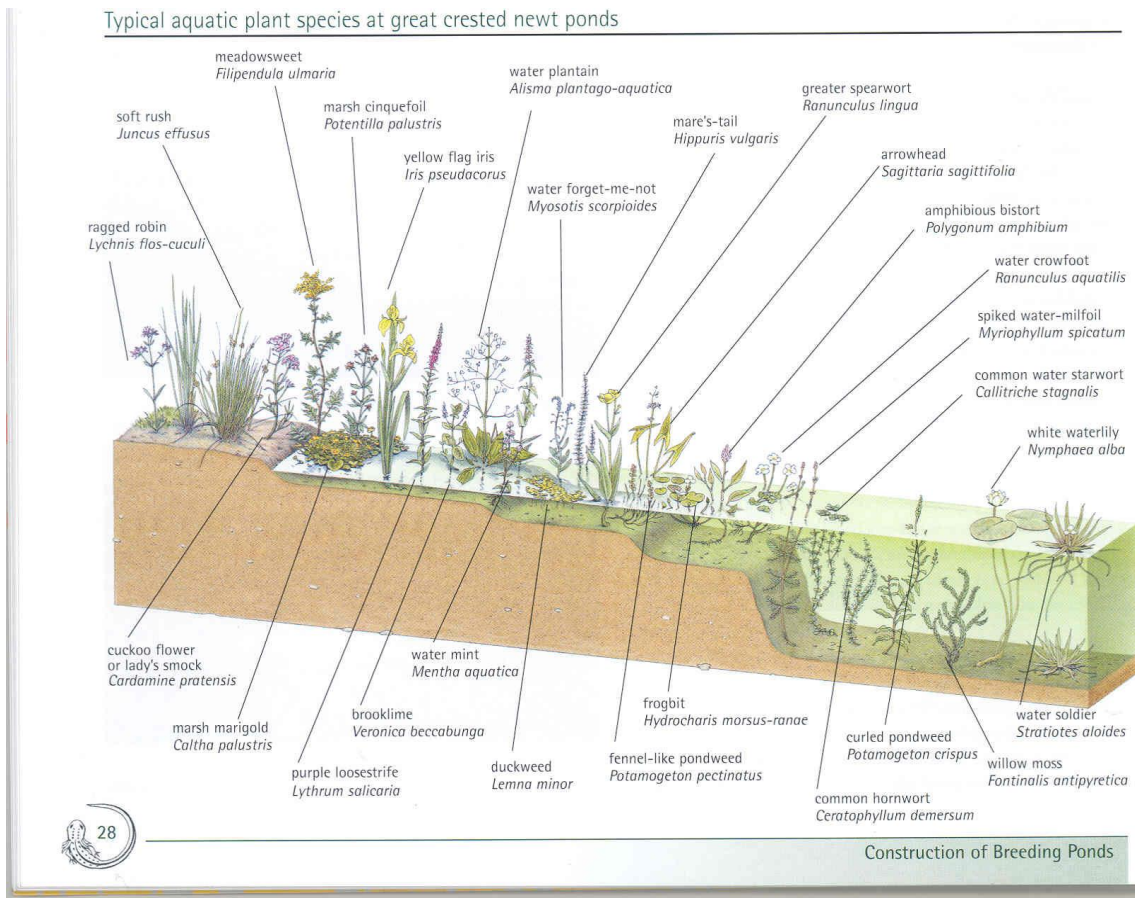


Illustration taken from *The Great Crested Newt Conservation Handbook* © Froglife 2001.

As is clear from the illustration, an ideal pond profile has gently shelving banks, leading from shallow, marshy levels to deep water. This enables plants with differing requirements to flourish while aiding amphibians to access the water more easily. Invertebrates such as dragonflies are able to use the taller vegetation when emerging as larvae while other insects use the flowers as a nectar source or as food plants.

Gently shelving banks are also safer, particularly where children may fall into ponds and they are more resistant to erosion from wave action.

Plants will colonise more readily where the bank profile provides suitable niches for their varying requirements. The following is a list of plants suitable for planting in new wildlife ponds.



**Submerged Plants**

<b>Scientific Name</b>	<b>Common Name</b>
<i>Ceratophyllum demersum</i>	Rigid hornwort
<i>Hippuris vulgaris</i>	Mare's-tail
<i>Potamogeton berchtoldii</i>	Small pondweed
<i>Potamogeton crispus</i>	Curled pondweed
<i>Potamogeton natans</i>	Broad-leaved pondweed
<i>Potamogeton pectinatus</i>	Fennel pondweed

**Grasses**

<b>Scientific Name</b>	<b>Common Name</b>
<i>Agrostis stolonifera</i>	Creeping bent
<i>Alepocurus geniculatus</i>	Marsh foxtail
<i>Alepocurus pratensis</i>	Meadow foxtail
<i>Festuca arundinacea.</i>	Tall fescue
<i>Festuca pratensis</i>	Meadow fescue
<i>Glyceria maxima</i>	Reed sweet-grass
<i>Poa annua</i>	Annual meadow-grass

**Marginal and Surrounding Grassland Plants**

<b>Scientific Name</b>	<b>Common Name</b>
<i>Acorus calamus</i>	Sweet flag
<i>Alisma plantago-aquatica</i>	Water plantain
<i>Butomus umbellatus</i>	Flowering rush
<i>Caltha palustris</i>	Marsh marigold
<i>Cardamine pratensis</i>	Cuckoo flower
<i>Carex paniculata</i>	Greater tussock-sedge
<i>Carex pseudocyperus</i>	Cyperus sedge
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Iris pseudacorus</i>	Yellow flag
<i>Lychnis flos-cuculi</i>	Ragged robin
<i>Lycopus europaeus</i>	Gypsywort
<i>Lysimachia nummularia</i>	Creeping jenny
<i>Lythrum salicaria</i>	Purple loosestrife
<i>Mentha aquatica</i>	Water mint
<i>Menyanthes trifoliata</i>	Bogbean
<i>Myosotis scorpiodes</i>	Water forget-me-not
<i>Ranunculus lingua</i>	Greater spearwort
<i>Sagittaria sagittifolia</i>	Arrowhead
<i>Scrophularia auriculata</i>	Water figwort
<i>Veronica beccabunga</i>	Brooklime
<i>Vicia cracca</i>	Tufted vetch

The following are invasive exotic plants and must not be introduced

Scientific Name	Common Name
<i>Azolla filiculoides</i>	Water fern
<i>Crassula helmsii/ Tilia recurva</i>	New Zealand pygmyweed, Australian swamp stonecrop, New Zealand water stonecrop
<i>Elodea nuttallii</i>	Nuttall's pondweed
<i>Hydrocotyle ranunculoides</i>	Alien marsh pennywort
<i>Largariosyphon major</i>	Curly pondweed
<i>Myriophyllum aquaticum</i>	Parrot's feather



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## Planting for Wildlife

Many wildlife species benefit greatly from considerate planting choices that still meet our practical and aesthetic needs. Plants and trees provide food for wildlife as well as places to nest and rest. Vegetation providing a variety of these functions creates an environment more beneficial for wildlife.

### Non native species

Native species provide the best habitat for UK wildlife but there are also many non-native species, which are single flowering and/or provide fruits/nuts/seeds that can be used as food sources for insects, birds and small mammals. When using these non-native species in planting schemes, care should be taken to avoid invasive species such as Cotoneaster and Rhododendron. This is especially important when sites are adjacent to open countryside particularly nature reserves.



Butterfly bush

### Uses of Wildlife Planting

Wildlife value can be easily incorporated into visually pleasing and useful green areas and amenity spaces, such as borders, grass verges and tree screens.

**Attractive Borders:** Well selected decorative borders can be valuable for many insects and birds. Native plants can be mixed with single flowering ornamental species to add aesthetic interest and increase the flowering period of a planting scheme.

**Shrubs and hedges:** Native spiky species like blackthorn and hawthorn are effective barriers when used in hedges. They also provide an attractive feature at all times of year especially when in blossom and fruit. Bushy areas of foliage provide useful nesting and feeding areas for birds and small mammals, as well as foraging/commuting corridors for bats.

**Grasses mixes and verges:** Leaving uncut areas of suitable grasses provides great wildlife value and is economical to manage. Diverse grassy areas and verges also create an attractive human environment with different flowers and colours. There are a range of native grass and flower mixes for various soil types available on the market.



Wild flower grass mix



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## Selecting Suitable Species

There are wildlife friendly species suitable for all situations, from fields, verges, shady corners or small gardens. Listed below are native wildlife friendly plant species organised by type and suitability for different locations.

### Large Trees

Ash *Fraxinus excelsior*  
 Beech *Fagus sylvatica*  
 English Elm *Ulmus procera*  
 Oak *Quercus robur* or *Q. petraea*  
 Small-leaved lime *Tilia cordata*  
 White willow *Salix alba*  
 Wild cherry *Prunus avium*



White willow

### Medium/small trees

Alder *Alnus glutinosa*  
 Aspen *Populus tremula*  
 Crab apple *Malus sylvestris*  
 Field maple *Acer campestre*  
 Holly *Ilex aquifolium*  
 Rowan *Sorbus aucuparia*  
 Silver birch *Betula pendula*  
 Yew *Taxus baccata*



Tussocky grassland

### Native shrubs

Blackthorn *Prunus spinosa*  
 Dogwood *Cornus sanguinea*  
 Elder *Sambucus nigra*  
 Guelder rose *Viburnum opulus*  
 Hawthorn *Crataegus monogyna*  
 Hazel *Corylus avellana*



Blackthorn

### Plants for shady areas

Archangel *Lamium galeobdolon*  
 Betony *Stachys officinalis*  
 Bluebell *Hyacinthoides non-scriptus*  
 Bugle *Ajuga reptans*  
 Foxglove *Digitalis purpurea*  
 Ground ivy *Glechoma hederacea*  
 Lily of the valley *Convallaria majalis*  
 Lords-and-ladies/cuckoopint *Arum maculatum*  
 Nettle-leaved bellflower *Campanula trachelium*  
 Primrose *Primula vulgaris*  
 Sweet violet *Viola odorata*  
 Wild daffodil *Narcissus pseudo-narcissus*

### Plants for marshy areas & pond edges

Bugle *Ajuga reptans*  
 Hemp agrimony *Eupatorium cannabinum*  
 Marsh marigold *Caltha palustris*  
 Marsh woundwort *Stachys palustris*  
 Meadowsweet *Filipendula ulmaria*  
 Purple loosestrife *Lythrum salicaria*  
 Ragged robin *Lychnis flos-cuculi*  
 Water avens *Geum rivale*  
 Water forget-me-not *Myosotis scorpioides*  
 Water mint *Mentha aquatica*  
 Water violet *Hottonia palustris*  
 Yellow flag *Iris pseudacorus*

**Beneficial cultivated plants  
(generally non-natives)**

Grecian windflower *Anemone blanda*  
 Angelica *Angelica archangelica*  
 Aubretia *Aubretia deltoidea*  
 California poppy *Eschscholtzia californica*  
 Candytuft *Iberis sempervirens*  
 Christmas rose *Helleborus niger*  
 Cosmos *Cosmos bipinnatus*  
 Evening primrose *Oenothera biennis*  
 Fleabane *Erigeron spp.*  
 Forget-me-not *Myosotis spp.*  
 French marigold *Tagetes patula*  
 Globe thistle *Echinops ritro*  
 Grape hyacinth *Muscari botryodes*  
 Hollyhock *Althaea rosea*  
 Honesty *Lunaria rediviva*  
 Ice plant *Sedum spectabile*  
 Lenten rose *Helleborus orientalis*  
 Tree mallow *Lavatera spp.*  
 Michaelmas daisy *Aster nova-belgii*  
 Mint *Mentha x rotundifolia*  
 Perennial cornflower *Centaurea montana*  
 Perennial sunflower *Helianthus decapetalus*  
 Phlox *Phlox paniculata*  
 Poached-egg plant *Limnanthes douglasii*  
 Red valerian *Centranthus ruber*  
 Snapdragon *Antirrhinum majus*  
 Spring crocus *Crocus chrysanthus* and hybrids  
 Sweet alyssum *Lobularia maritima*  
 Sweet bergamot *Monarda didyma*  
 Sweet William *Dianthus barbatus*  
 Tobacco plant *Nicotiana affinis*  
 Wallflower *Cheiranthus cheiri*  
 Alpine rock-cress *Arabis alpina*  
 Winter aconite *Eranthis hyemalis*  
 Yellow alyssum *Alyssum saxatile*

**Native wildflowers for borders**

Agrimony *Agrimonia eupatoria*  
 Betony *Stachys officinalis*  
 Bluebell *Hyacinthoides non-scriptus*  
 Chicory *Cichorium intybus*  
 Chives *Allium schoenoprasum*  
 Common poppy *Papaver rhoeas*  
 Corncockle *Agrostemma githago*  
 Cornflower *Centaurea cyanus*  
 Corn marigold *Chrysanthemum segetum*  
 Cowslip *Primula veris*  
 Cuckooflower *Cardamine pratensis*  
 Dame's-violet *Hesperis matronalis*  
 Devil's-bit scabious *Succisa pratensis*  
 Field scabious *Knautia arvensis*  
 Foxglove *Digitalis purpurea*  
 Goldenrod *Solidago virgaurea*  
 Great mullein *Verbascum thapsus*  
 Greater knapweed *Centaurea scabiosa*  
 Harebell *Campanula rotundifolia*  
 Herb-robert *Geranium robertianum*  
 Lady's bedstraw *Galium verum*  
 Marjoram *Origanum vulgare*  
 Meadow cranesbill *Geranium pratense*  
 Common mallow *Malva sylvestris*  
 Oxeye daisy *Leucanthemum vulgare*  
 Primrose *Primula vulgaris*  
 Red campion *Silene dioica*  
 Snowdrop *Galanthus nivalis*  
 Spiked speedwell *Veronica spicata*  
 Tansy *Tanacetum vulgare*  
 Teasel *Dipsacus fullonum*  
 Toadflax *Linaria vulgaris*  
 White campion *Silene alba*  
 Wild thyme *Thymus drucei*  
 Yellow loosestrife *Lysimachia vulgaris*



Marjoram



Cornflower



Perennial sunflower

## Appendix 3: Ecological Experience

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**Elizabeth Pimley:** Head of Ecology & Principal Ecologist, BSc (Hons) PhD, CEnv MCIEEM

Elizabeth has worked in both the academic and consultancy ecology sectors since 2000 with a focus on mammalian ecology, particularly badgers, dormice, bats, water voles and otters. Elizabeth manages the Consultancy as well as being involved in project delivery. She has managed ecological projects, ranging in size and type, both in the UK and abroad. She regularly advises clients on the planning process in relation to Ecology. Elizabeth has expertise in a wide variety of ecological survey techniques including Preliminary Ecological Appraisals/Phase 1 habitat assessments and a variety of protected species surveys (e.g. the aforementioned mammal species as well as reptiles and great crested newts).

Elizabeth also devises ecological mitigation schemes, both as part of protected species mitigation licences (e.g. bats, great crested newts, badgers, dormice, water voles, otters) and for projects not requiring licensing (e.g. reptiles). She has produced a wide variety of preliminary ecological appraisals, BREEAM/CSH Ecology Assessments, mitigation licences for protected species (including Bat Mitigation Class Licences), Ecological Impact Assessments (EclIA), Construction Ecological Management plans, Habitat Regulations Assessments, Biodiversity Net Gain assessments, Biodiversity Enhancement Schemes, Ecological Design Strategies as well as writing for scientific journals, books and magazines. As a Building with Nature Assessor, Elizabeth also has expertise in providing green infrastructure advice to projects.

Elizabeth offers a scientific approach to projects with additional skills in radiotracking, bat call analysis, statistical analysis, home range and compositional habitat analysis and Geographical Information Systems (GIS) mapping. Elizabeth holds Natural England and Natural Resources Wales licences for bats and dormice as well as Natural England licences for great crested newts and water voles. She is also a Registered Consultant of the Bat Mitigation Class Licence (BMCL) and holds a CSCS card.

## Appendix 4: Legislation

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Statutory nature conservation sites and protected species are a ‘material consideration’ in the UK planning process (DCLG, March 2012). Where planning permission is not required, for example on proposals for external repair to structures, consideration of protected species remains necessary given their protection under UK law.

The **Conservation of Habitats and Species Regulations 2017** transpose the requirements of European Directives such as the Habitats Directive and Birds Directive<sup>1</sup> into UK law, enabling the designation of protected sites and species at a European level.

The **Wildlife and Countryside Act 1981** (as amended) forms the key piece of UK legislation relating to the protection of habitats and species. The **Countryside and Rights of Way Act 2000** provides additional support to the 1981 Act, for example, increasing the protection of certain reptile species. Specific protection for badger is provided by the **Protection of Badger Act 1992**. The **Wild Mammals (Protection) Act 1996** sets out the welfare framework with respect to wild mammals prohibiting a range of activities which may cause unnecessary suffering.

The Government has a duty to ensure that parties take reasonable practicable steps to further the conservation of habitats and species of Principal Importance for Conservation in England listed under Section 41 of the **Natural Environment and Rural Communities Bill 2006**<sup>2</sup>. In addition, the 2006 Act places a Biodiversity Duty on public authorities who ‘must, in exercising [their] functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity’ (Section 40 (1)). Criteria for selection of priority habitats and species include, for example, international threat (such that species may be protected in their strong holds) and marked national decline.

The **National Planning Policy Framework 2019** states that the planning system should minimise impacts on biodiversity, providing net gains in biodiversity, wherever possible. Section 15 states that when determining planning applications, local planning authorities should apply the following principles:

- a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
- c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons<sup>3</sup> and a suitable compensation strategy exists; and
- d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

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<sup>1</sup>Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, and Council Directive 79/409/EEC on the Conservation of Wild Birds, respectively.

<sup>2</sup>The **NERC Act** refers to “*species of principle importance for the conservation of biodiversity*”, which translates to BAP habitats and species occurring in England.

<sup>3</sup> For example, infrastructure projects (including nationally significant infrastructure projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat.





# Wild Service

ECOLOGICAL SERVICES

MITIGATION

CONSERVATION

- We provide ecological surveys and assessments, mitigation, advice and guidance regarding wildlife, plants and habitats for both development and conservation projects throughout the UK.
- Wild Service is the Ecological Consultancy for Gloucestershire Wildlife Trust. As such, the company reinvests its profits into local conservation work.
- We are also part of a wider network of Wildlife Trust Consultancies enabling us to offer national delivery with local expertise.
- We offer the following types of service to clients:

**Ecological Surveys**  
**Protected Species Licences**  
**Ecological Management Plans**  
**Biodiversity Net Gain**  
**Ecological Impact Assessments (EcIA)**  
**BREEAM Assessments**  
**Mitigation and Enhancement**  
**Arboricultural Surveys**  
**Landscape Consultancy Services**  
**Green Infrastructure Planning (Building with Nature)**

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