Herberts Lodge, Drybrook

Preliminary Ecological Appraisal

On behalf of David Gardiner

Project Code: BB2023016Av1

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Contents

1 Introduction

1.1 Scope

1.1.1 Wild Service was commissioned by David Gardiner to undertake a Preliminary Ecological Appraisal at Herberts Lodge, Drybrook, GL17 9DG (hereafter referred to as the 'Site'). The survey was requested to inform plans to create holiday pods on the Site.

1.1.2 The Preliminary Ecological Appraisal comprised a Phase 1 Habitat Survey, desk study, and protected species survey assessment.

1.1.3 This report includes a description of methods used to identify habitats, results, and recommendations for mitigation.

1.2 Site Description

1.2.1 The Site is located within the grounds of Herberts Lodge, located approximately 2km south-west of Drybrook village in the Forest of Dean, Gloucestershire. The Site is bound by plantation woodland to the north and east, and commercial and farm buildings to the south and west (Figure 1).

1.2.2 The surrounding landscape consists of the large woodland areas of the Forest of Dean in all directions. The A4136 is located to the south, and the Site is accessed via an entrance track from this main road.

1.2.3 The central Ordnance Survey Grid Reference for the Site is SO 63371 15821.

1.3 Legislation

1.3.1 This report has been prepared in accordance with relevant legislation and policy. Further detail is provided in Appendix 1, 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 (CRoW Act), 2000 (as amended);
- The Natural Environment and Rural Communities Act (NERC Act), 2006;
- The Protection of Badgers Act 1992 (PBA 1992); and

- The Conservation of Habitats and Species Regulations 2017 (as amended) (CHS 2017).
- The Environment Act 2021 contains provisions for the protection and improvement of the environment, including introducing biodiversity net gain ("BNG").

1.3.2 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.

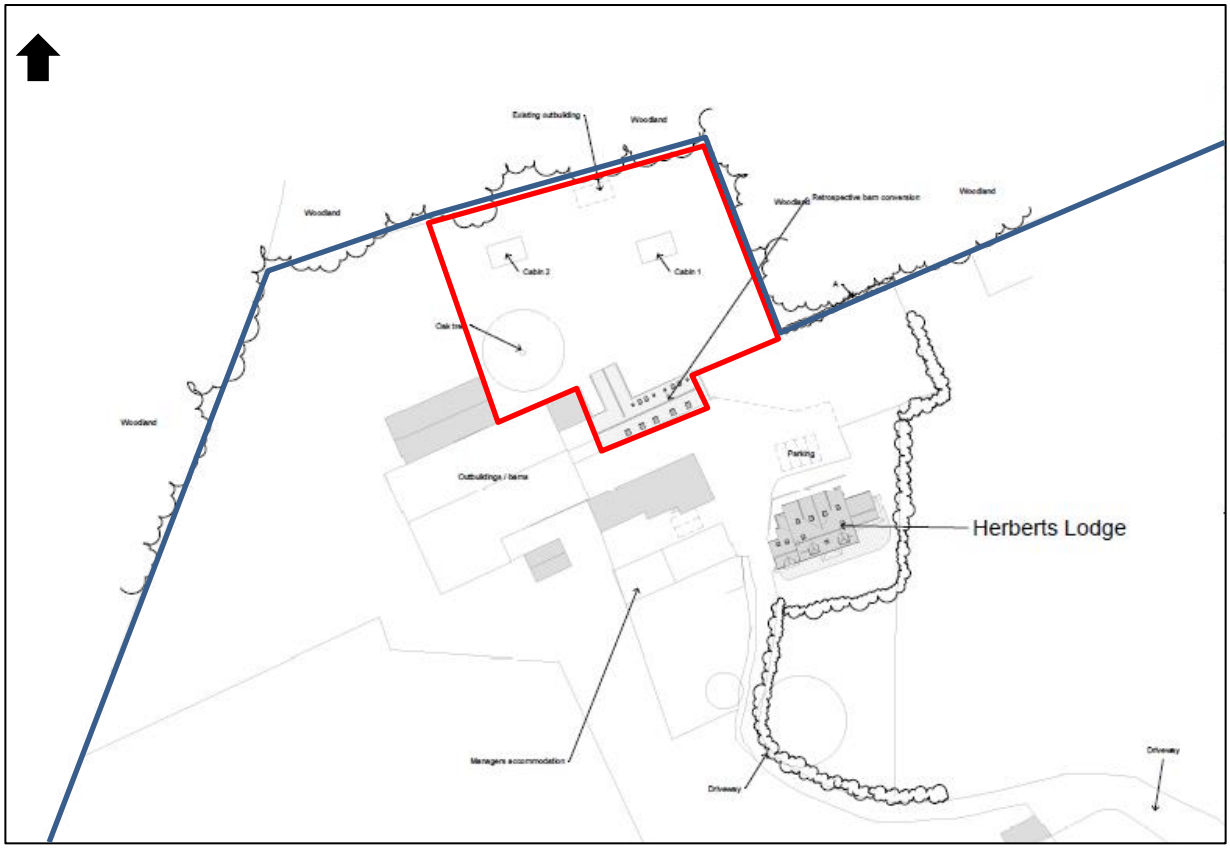

Figure 1. Site plan including Site boundary (red) and wider area in landowners control (blue)

2 Methods

2.1 Desk Study

2.1.1 The objectives of the desk study are to review the existing available information to identify the following:

- Statutory and non-statutory nature conservation sites within 1km of the Site (including an extended search of 5km for Special Protection Areas (SPAs), Special Areas of Conservation (SACs) & Ramsar sites;
- Records of protected and rare/notable species within 1km of the Site; and
- Records of bats within 2km of the Site.

2.1.2 Ecological data were provided by Gloucestershire Centre for Environmental Records (GCER) and sourced from the Multi-Agency Geographic Information for the Countryside (MAGIC) website (2023).

2.2 Phase 1 Habitat & Protected Species Survey

2.2.1 The methods used for the Phase 1 habitat and protected species surveys are outlined in Table 1.

2.2.2 Becca Brown, Senior Ecologist of Wild Service undertook the appraisal on 26th April 2023.

Table 1. Phase 1 Habitat & Protected Species Survey Methods	
Phase 1 habitat survey	The aim of the Phase 1 survey is to provide a description of the habitats on a particular site and is made in accordance with the JNCC Phase 1 Habitat Survey methodology (JNCC, 2010). The survey includes a detailed assessment of the land within the development boundary, including a description and mapping of all key features and habitat types. The survey has been carried out to identify the range of habitats within the site and the predominant and notable species of flora. Where necessary, the condition of habitat has been described. The appraisal also aims to identify invasive plants listed on Schedule 9 of the Wildlife & Countryside Act that could have implications for works on site. Where appropriate, maps are provided in other formats, such as annotated aerial photographs/site plans.
Badgers	The site is assessed for suitable habitats that may support badgers *Meles meles*. Where relevant habitat occurs, evidence of badgers including setts, latrines, tracks, snuffle holes, padding or guard hairs is recorded.
Bats	The Site is assessed for suitable habitats, generally buildings and trees, that may support roosting bats. For example, buildings are assessed for holes in soffits, missing tiles and gaps in the masonry whilst trees are assessed for features such as cracks, holes, flaky bark and established ivy cover. Where possible the interior of buildings are also inspected for suitable roosting features and any evidence of bats in the form of bats, droppings, urine staining and feeding remains are noted. Potential roosting features are classed as negligible, low, moderate, or high potential in (Collins, 2016). The suitability of the habitats for foraging bats is also assessed.
Birds	The site is assessed for suitable habitats that may support birds in terms of feeding, nesting and roosting. Where relevant habitat occurs, evidence identifying the presence of birds including nests, droppings, pellets and feathers is recorded.
Dormice	The site is assessed for suitable habitats that may support dormice *Muscardinus avellanarius* including woodland and hedgerows. Where relevant habitat occurs evidence of dormice including nests and gnawed nuts is recorded.
Great crested newts	During the site visit the potential of the site to support great-crested newts *Triturus cristatus* is assessed; this includes looking for potential breeding sites such as ponds, disused swimming pools and other water-bodies. The appraisal also focuses on the potential for this species to find refuge in places such as log piles, rubble and compost heaps. Where still water-bodies occur a Habitat Suitability Index (HSI) is calculated. This is a standard appraisal method developed specifically to evaluate the habitat suitability for great crested newts (Oldham *et al*. 2000). A series of factors must be considered. Each factor is assessed along suitability guidelines and allocated a value of between 0.1 (highly unsuitable) to 1.0 (highly suitable). The geometric mean of these values provides an overall suitability value for the site. Although this is no substitute for a dedicated survey the suitability value informs the decision on whether to undertake a dedicated survey.
Otters	The area under appraisal is searched for suitable habitat along water-bodies, recording where appropriate, evidence pertaining to the presence of otters *Lutra lutra* in the form of holts, spraints, anal jelly, tracks and feeding remains.
Reptiles	The site is assessed for suitable habitats that may support reptiles including slow-worms *Anguis* fragilis, common lizards *Zootoca vivipara* grass snakes *Natrix natrix* and adder *Vipera berus*. Where relevant habitat occurs, evidence identifying the presence of reptiles, particularly tracks and sloughed skin is recorded.
Water voles	The area under appraisal is searched for suitable habitat along water-bodies, recording where appropriate, evidence pertaining to the presence of water voles *Arvicola amphibius* in the form of burrows, latrines, runs, footprints and distinctive “feeding lawns”.
White-clawed crayfish	The area under appraisal is searched for suitable habitats that may support white-clawed crayfish *Austropotamobius pallipes*. This typically includes freshwater streams and rivers but may also include still water-bodies.

2.3 Preliminary Roost Assessment

2.3.1 The building was evaluated for bat roosting potential both internally and externally by Becca Brown, under Natural England Class Level 1 bat Licence: 2020-45262-CLS-CLS. The survey was undertaken in accordance with best practice guidelines (based on Collins, 2016).

2.3.2 The buildings' exterior was observed from ground level using a high-powered torch and binoculars paying attention to potential roosting and access points for bats. Internal areas were also accessed. Areas of particular suitability include crevices in stonework, gaps beneath roof tiles, gaps above lintels and any dark spaces. Any suitable areas were searched thoroughly for evidence of use by bats. Signs of bats include live animals, corpses, droppings, urine staining, feeding remains (e.g. moth and butterfly wings) and scratches.

2.3.3 The criteria used to categorise the bat roost potential (BRP) of buildings and trees are summarised in Table 2 (based on Collins, 2016).

2.4 Limitations and Constraints

2.4.1 While every attempt has been made to collect accurate baseline data, all ecological surveys represent a 'snapshot' of activity. Ecological features are dynamic and often transient, and it is not possible to confirm the absence of a species through survey. It may be necessary to update the ecological surveys if sufficient time elapses since the surveys and data collection presented in this report were carried out.

Table 2. Bat Roost Potential

Category	Description
Known or confirmed bat roost	Bats or evidence of bats recorded, both of recent and/or historic activity. **Works affecting a roost are licensable. Further survey effort (e.g. dusk emergence/dawn re-entry survey(s) in accordance with best practice) is required to determine the bat species present, nature of roost and level of use before mitigation can be determined. Seasonal constraints may apply.**
High to moderate BRP Buildings/trees with features capable of supporting a bat roost.	Features include holes, cracks or crevices that extend or appear to extend back to cavities suitable for bats. In trees, examples include rot holes, woodpecker holes, splits and flaking or raised bark which could provide roosting opportunities. Any ivy cover is sufficiently well-established and matted so as to create potential crevices beneath. In buildings, features such as gaps beneath ridge and roof tiles, gaps beneath fascia and barge boards and access points into internal loft voids or cellars are all features of roosting potential for bats. **Further survey effort is required to determine whether or not bats are present and if so, the bat species present, nature of roost and level of use. Appropriate mitigation and potentially licensing requirements may then be determined. Seasonal constraints may apply.**
Low BRP	Buildings: The building may exhibit features that would have some limited bat roosting opportunities. **A further survey for emerging or re-entering bats is required to help confirm the building's low suitability, or to identify any roosting bats present.** Trees: From the ground, the tree appears to have features (e.g. holes, cavities or cracks) that may extend back into a cavity. However, owing to the characteristics of the feature, they are deemed to be sub-optimal for roosting bats. Alternatively, if no features are visible but owing to the size and age and structure, hidden features, sub-optimal for roosting bats, may occur that only an elevated inspection may reveal. **For trees, no further survey is required. Works may proceed using reasonable precautions (e.g. controlled working methods, usually the soft-felling of a tree under supervision of a bat worker. Seasonal constraints may apply).**
Negligible	An inspected building or tree that is considered not to have potential for roosting bats. **No further survey or mitigation required.**

3 Results

3.1 Desk Study

Statutory Nature Conservation Sites

3.1.1 There are no statutory nature conservation sites within a 1km radius of the Site.

Non-Statutory Nature Conservation Sites

3.1.2 There are four non-statutory nature conservation sites within a 1km radius of the Site. All four sites are designated as a Local Wildlife Site (LWS) and are located more than 250m from the proposed development site. The site names, reason for notification, and distance from the proposed development site, are detailed in Table 3 below.

Table 3: Non statutory designated sites

Site name	Reason for designation	Approximate distance from Site (m)
Cinderford Linear Park LWS	Ponds, watercourse, semi-natural grassland, marsh, bog, swamp, mire and tall herb fen with plant, invertebrate and vertebrate species interest	295
Hawkwell Inclosure (cpt 219a) LWS	Ancient semi-natural broad-leaved woodland site larger than 2 ha	400
Cinderford Linear Park (main) LWS	Ponds, watercourse, semi-natural grassland, marsh, bog, swamp, mire and tall herb fen with plant, invertebrate and vertebrate species interest	530
Serridge Green LWS	Marsh, bog, swamp, mire & tall herb fen	750

Extended 5km Search for SPA, SAC, and Ramsar Sites.

3.1.3 There are no Ramsar sites or SPA sites within 5km of the Site.

3.1.4 There are four SAC sites within 5km of the Site. Three of these are Wye Valley and Forest of Dean Bat Sites (SAC), and these are located approximately 2.75km to the east, 4km to the north-east, and 4km to the south-east. The Wye Valley & Forest of Dean Bat

Sites (SAC) are a complex of sites on the border between England and Wales which contains the greatest number of lesser horseshoe *Rhinolophus hipposideros* bats in the UK and supports greater horseshoe *R. ferrumequinum* maternity and hibernation roosts. The fourth SAC site is the River Wye SAC, which passes the site approximately 3.5km to the north-west at its closest point.

Biological Records

3.1.5 The biological data search yielded records of several protected species within 1km of the Site and several bat records within 2km of the Site. None of the records occurred within the Site boundary, and the data are summarised in Table 4.

3.2 Phase 1 Habitat & Protected Species Survey

3.2.1 The results of the Phase 1 Habitat & Protected Species Survey assessment are outlined in the Table 4 and Table 5. Reference should be made to the Site maps presented in Figure 1 and Figure 2, and photographs in Appendix 2.

3.3 Preliminary Roost Assessment

3.3.1 Results of the Preliminary Roost Assessment (PRA) are provided in Table 5 and summarised in Table 4. Reference should be made to the Phase 1 habitat map in Figure 2 and photographs in Appendix 2.

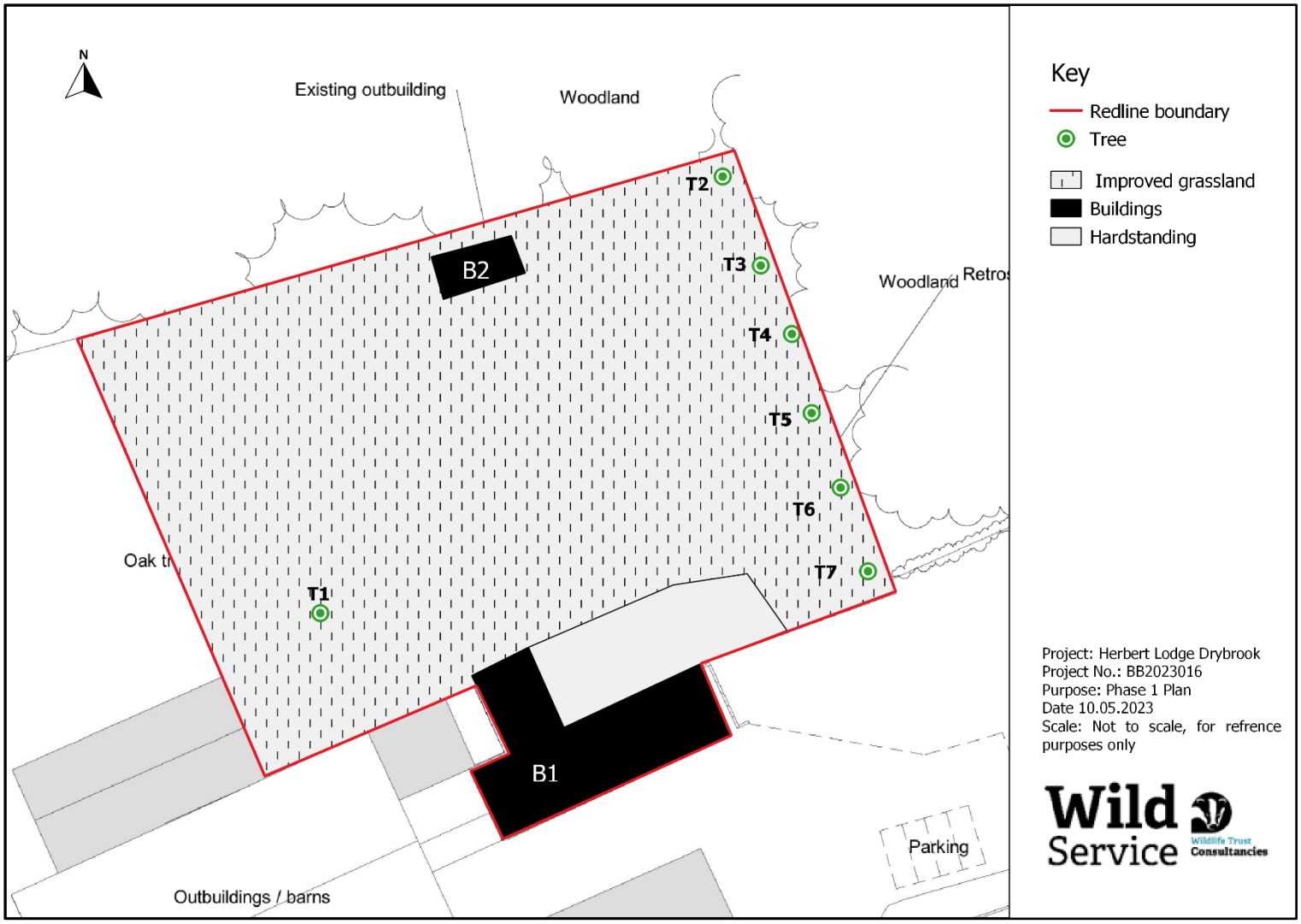

Figure 2. Phase 1 habitat map of Site

Table 4. Phase 1 Habitat Survey Results & Recommendations

Habitat/Feature	Description	NERC[1] habitat (Y/N)	Evaluation and potential impact	Recommendations Avoidance / mitigation / enhancement measures
BUILDINGS & HARDSTANDING	There are two buildings within the Site referred to as building B1 and building B2, and the location of each is provided in Figure 2. B1 was a small commercial building to the south of the Site which was in use and in good condition. Building B2 was a small outbuilding to the north of the Site, which was empty at the time of the survey, and likely used by horses for shelter. Full building descriptions are provided in Table 5. There was a small area of hardstanding to the south of the Site and comprised of a gravel substrate. This area was used as a footpath and as parking for the building.	N	The buildings and hardstanding are of negligible ecological value. The buildings and hardstanding are proposed as retained.	None. *See Bats and Birds section of Table 4 for protected species information.*
IMPROVED GRASSLAND	Most of the Site comprised of improved grassland. The grassland was heavily grazed by two horses, and the sward height was very short and uniform (<5cm). Species present included perennial rye grass *Lolium perenne*, cock's foot *Dactylis glomerata*, ribwort plantain *Plantago lanceolata*, broad-leaved dock *Rumex obtusifolius*, creeping buttercup *Ranunculus repens*, yarrow *Achillea millefolium,* daisy *Bellis perennis,* dandelion *Taraxacum officinale* agg*.,* chickweed *Stellaria media,* broadleaf plantain *Plantago major* and common nettle *Urtica dioica*.	N	Low ecological value. Small areas of this habitat may be lost to facilitate the proposed holiday pods.	Replacement planting with wildflower grassland is recommended where possible. See Ecological Enhancements Appendix for planting recommendations.

[1] Habitats of 'Principal Importance' under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006

Habitat/Feature	Description	NERC[1] habitat (Y/N)	Evaluation and potential impact	Recommendations Avoidance / mitigation / enhancement measures
SCATTERED TREES	There was a single large mature oak *Quercus robur* located to the southeast of the Site (T1, Figure 2) and six semi mature- mature beech *Fagus sylvatica* located along the eastern boundary of the Site (T2 – T7, Figure 2).	N	Moderate ecological value. It is understood that all existing trees are to be retained.	Protective fencing such as Heras fencing should be installed around tree root protection zones during the construction phase to ensure the trees are protected and to ensure construction materials or activities avoid potential harm to existing trees. Suitable signage should be attached to the protective fencing. *See Bats and Birds section of Table 4 for protected species information.*
WOODLAND (OFF-SITE)	Magic Maps identifies that Ancient Plantation Woodland (PAW) borders the northern and eastern boundary of the Site. The PAW was not included within the Phase 1 survey, is off-site and outside of the land owners control but included within the assessment due to it being a NERC habitat and directly bordering the site.	Y	The off-site woodland is a habitat of Principle importance and potential damage to trees is possible without suitable mitigation measures in place.	The woodland is off-site. Due to the proximity of the proposed holiday pods to the woodland, tree root protection measures should be implemented to ensure any potential harm to the woodland is avoided. It is recommended that no construction-related activities, including storage of materials and vehicles, take place near the woodland. Temporary fencing e.g. Heras fencing should be erected, taking into account root protection zones of the trees (input from Arboriculturist required), with clear signage attached to ensure no construction-related activities are to take place within the root protection zones.

Table 5. Protected Species Survey Results & Recommendations

Species	Habitats/features	Evidence	Data search	Likelihood of presence	Potential impact	Recommendations Further survey required? (Yes/No) / Avoidance / mitigation / enhancement measures
BADGERS	The site contained improved grassland and was directly surrounded by plantation woodland which could provide suitable foraging habitat for badgers, and it is likely badgers will commute through the Site. There was limited opportunity for sett excavation due to the lack of earth banks.	No evidence of badgers was recorded on site including setts, snuffle holes and latrines. The landowner confirmed badgers were present within the local area.	There was one badger record within 1km of the Site. This was a field observation (not a record of a badger sett) and the precise location was not provided.	Likely to be present, commuting through the Site.	None.	Badgers are offered full protection under the PBA 1992. **No further surveys required.** Should any trenches or pits need to be excavated, these should be covered at night or fitted with a ramp to enable any animals to escape.
BATS	*Roosting bats* Full PRA results of these trees are provided in Table 5 and summarised below. Both buildings (B1 and B2) had **negligible potential to support roosting bats**. The oak tree (T1) and two beech trees (T2 & T3) provided potential roost features (including holes, cracks, and splits) suitable for use by roosting bats and	None.	There were 159 records of bats within 2km of the Site. There were several records of bat roosts approximately 450m to the south-east of the Site, including several records of lesser horseshoe roosts, and a greater horseshoe roost. Other species	Roosting bats possibly present in trees T1, T2, T3 and T6 (Figure 2). The grassland habitat is unlikely to support a range of foraging and commuting bats, however the adjacent	High impact for any roosting bats in trees where potential roosts featured were identified if these trees are removed/pollarded respectively or where lighting impacts could occur without mitigation.	Bats and their resting places are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017. **Further surveys recommended.** *Roosting bats* It is our understanding the trees identified as having potential roosting features for bats (T1, T2, T3 and T6, Figure 2) will be retained. It is our understanding

Species	Habitats/features	Evidence	Data search	Likelihood of presence	Potential impact	Recommendations Further survey required? (Yes/No) / Avoidance / mitigation / enhancement measures
	were assessed as having **moderate potential to support roosting bats.** Beech tree (T6) was assessed as having **low potential to support roosting bats.** Beech trees T4, T5 and T7 had **negligible potential to support roosting bats.** <u>*Commuting/foraging bats*</u> The improved grassland being heavily grazed, offered sub-optimal habitat. The trees and adjacent plantation woodland bordering the Site provided suitable foraging habitat for bats.		recorded within 2km of the Site included western barbastelle *Barbastella barbastellus*, serotine *Eptesicus serotinus*, Whiskered bat *Myotis mystacinus*, Brandt's bat *M. brandtii*, Bechstein's bat *M. bechsteinii*, Daubenton's bat *M. daubentonii*, Natterer's bat *M. nattereri*, Leisler's bat *Nyctalus leisleri,* noctule *N. noctule*, common pipistrelle *Pipistrellus pipistrellus,* Nathusius's pipistrelle *P. nathusii*, soprano pipistrelle *P.*	off-site plantation woodland is optimal foraging and commuting habitat.	Moderate to high impact to foraging bats using off-site habitats if unsuitable artificial lighting is installed.	that no external lighting would be required, however it is not known what lighting outputs the holiday pods would have, if any on the trees. However, should any of the trees identified as supporting PRF's be impacts by lighting or need to be removed then it will be necessary to undertake further surveys to establish presence likely absence of bats or precautionary approach for trees that had low potential. <u>*Commuting/foraging bats*</u> The Site is located within the Zone of Influence for the Forest of Dean (FoD) Bat Special Area of Conservation (SAC). The FoD SAC interim guidelines identify that the Site is located within 1km of a known lesser horseshoe bat maternity roost and within a 3km buffer horseshoe hibernation site. In line with the guidelines the site falls within Zone A and this may result in bat activity transect surveys being requested by the

Species	Habitats/features	Evidence	Data search	Likelihood of presence	Potential impact	Recommendations Further survey required? (Yes/No) / Avoidance / mitigation / enhancement measures
			pygmaeus, and brown long-eared bat *Plecotus auritus*.			Forest of Dean LPA. Due to the limited nature of the proposed works a pragmatic approach to activity surveys should be sought, for example a **minimum of three activity transect surveys over the spring and summer and deployment of one static detector for five nights on each survey visit.** However, this reduced survey effort would need agreement from the FoD District Council. Lighting recommendations to minimise impact on bats are provided in the discussion below.
BIRDS	The trees and buildings provided opportunities for nesting birds. The trees and offsite plantation woodland offered foraging opportunities for common and widespread bird species.	A partially attached, dilapidated, and weathered wooden barn owl *Tyto alba* box structure was historically present on B2. A barn owl box is present on T1. No evidence that either box was or had been used by	Biological records yielded 983 results of 58 bird species within 1km of the Site. The closest records to the Site included goshawk *Accipiter gentilis*, sparrowhawk *A. nisus*, woodcock *Scolopax rusticola*, nightjar	Opportunities to nest in the buildings and trees.	The buildings and trees are being retained therefore no impacts on nesting birds are currently anticipated. Should this change mitigation measures have been included.	All birds are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended). It is therefore generally unlawful to intentionally kill or injure a bird, damage or destroy an occupied nest or take or destroy eggs other than in exceptional prescribed circumstances. **No further surveys required.**

Species	Habitats/features	Evidence	Data search	Likelihood of presence	Potential impact	Recommendations Further survey required? (Yes/No) / Avoidance / mitigation / enhancement measures
		barn owl was recorded.	*Caprimulgus europaeus* and tawny owl *Strix aluco*.			It is our understanding that the buildings and trees are being retained. If plans change and works to the building or trees occur, development operations should take care to avoid the risk of harm to birds and their nests, especially during the nesting season (generally considered to be March to August). Any future works to the buildings or trees (e.g. structural works, tree pruning, tree removal) should be undertaken outside the main nesting season and where this is not possible a suitably qualified ecologist should be engaged to check for nesting birds and to provide advice on the most appropriate way to proceed.
DORMICE	The habitats within the Site boundary (improved grassland, scattered trees, building and hardstanding) were unsuitable to support dormice. The adjacent off-site woodland habitat may	None.	There was one record of a dormice within 1km of the Site. The record was in woodland approximately 465m south-east	Considered to be absent from the Site due to lack of suitable habitat, but dormice could be present	None.	Dormice and their resting places are protected under the WCA 1981 and the CHS Regs 2017. **No further surveys required.** As a precaution, no construction activities should take place within or near the off-site woodland, including storage of materials.

Species	Habitats/features	Evidence	Data search	Likelihood of presence	Potential impact	Recommendations Further survey required? (Yes/No) / Avoidance / mitigation / enhancement measures
	provide suitable habitat for dormice.		of the Site and separated from the Site by the A4136 road.	within the off-site woodland.		Protective fencing measures outlined in Table 3 will also protect dormice (if present), from any potential construction-related impacts.
GREAT CRESTED NEWTS (GCN)/ OTHER AMPHIBIANS	The Site contained predominantly heavily grazed grassland, hardstanding and buildings which does not provide suitable terrestrial habitat for great crested newt (GCN) or other common amphibians. There were no waterbodies within the Site boundary. Using MAGIC maps (2023) two ponds were identified within 500m of the Site. These are located approximately 180m southeast (P1) and separated by grazed grassland. The pond was connected to the surrounding woodland via hedgerows and 365m south of the Site (P2).	None.	GCER returned five great crested newts within 1km of the Site, and all occur 550-650m to the south-east of the Site. The closest record appears to relate to a pond approx. 560m south-east of the Site and separated by the A4136 road. There were also five records of palmate newt *Lissotriton helveticus*, five of smooth newt *L. vulgaris*, three common frog *Rana temporaria*, and	Likely to be absent on Site due to lack of suitable terrestrial habitat. However, GCN may be present within the surrounding area and the offsite woodland.	Limited impact to GCN due to lack of suitable terrestrial habitat on Site, and a lack of suitable waterbodies nearby for breeding GCN. Limited impact to other amphibians such as common toad (a Species of Principal Importance under Section 41 of The NERC Act 2006), as the habitats on Site are considered unsuitable for amphibians.	GCN and their resting/breeding places are protected under the WCA 1981 and CHS Regs 2017. **No further surveys required.** Due to the lack of suitable terrestrial habitat for GCN within the development site boundary and owing to the small-scale and limited nature of proposed works, it is considered highly unlikely GCN would be impacted by proposed works. Although there are records of GCN within 500m of the Site, these relate to a network of ponds to the south, which are separated from the Site by a busy main road (the A4136) which would act as a dispersal barrier to GCN. As a precautionary measure, no construction activities should take place within or near the off-site woodland, including storage of materials. Protective fencing

Species	Habitats/features	Evidence	Data search	Likelihood of presence	Potential impact	Recommendations Further survey required? (Yes/No) / Avoidance / mitigation / enhancement measures
	P2 is separated from the Site by the A4136 road which is considered a major barrier to dispersal.		two common toad *Bufo bufo,* all of which occurred >500m from the Site.			measures outlined in Table 3 will also protect great crested newts (if present) and other amphibians from any construction-related impacts.
OTTERS, WATER VOLES & WHITE-CLAWED CRAYFISH	There are no waterbodies on the Site to provide habitat for these species.	None.	There were no records of any of these species within 1km of the Site.	None.	No impact.	Otters, white-clawed crayfish and water voles plus water vole resting places are protected under the WCA 1981, and otters and their resting places are protected under the CHS Regs 2017. **No further surveys required.**
REPTILES	The Site contained predominantly heavily grazed grassland, hardstanding, and buildings all of which are unsuitable habitats for reptiles.	None.	There were four records of slow worm, the closest being approximately 600m south-east of the Site. There was one grass snake record, also 600m south-east of the Site. There was one record of a common lizard at	Likely absent within the site. Likely present within the wider landscape.	None.	Reptiles are protected under the Wildlife & Countryside Act 1981 (as amended). **No further surveys required.** Due to the lack of suitable habitat for reptiles within the development site boundary and owing to the small-scale and limited nature of proposed works, it is considered highly unlikely reptiles would be impacted by proposed works. As a precaution, no construction activities should take place within

Species	Habitats/features	Evidence	Data search	Likelihood of presence	Potential impact	Recommendations Further survey required? (Yes/No) / Avoidance / mitigation / enhancement measures
			the outer limit of the 1km search radius, and to the east.			or near the off-site woodland, including storage of materials. Protective fencing measures outlined in the tree section above will also protect reptiles (if present) from any construction-related impacts.
HEDGEHOGS	The Site contained predominantly heavily grazed grassland, hardstanding and buildings which were unsuitable habitats for hedgehog. The adjacent plantation woodland could provide foraging and sheltering opportunities for hedgehogs.	None.	There were seven hedgehog *Erinaceus europaeus* records within 1km of the Site. The closest record was approximately 350m from the Site.	Low likelihood of hedgehog being present on site but may occasionally cross the site. High likelihood of hedgehogs using the plantation woodland.	High impact for any hedgehogs that may be present, if discovered during the construction phase.	Hedgehogs are listed as a Priority Species under the NERC Act 2006. **No further surveys required.** As a precaution, no construction activities should take place within or near the off-site woodland, including storage of materials. Protective fencing measures outlined in the tree section above will also protect hedgehog (if present) from any construction-related impacts.

Table 6: Preliminary Roost Assessment Results

Feature	Description
Building 1 (B1) - Commercial building	*Exterior* Building 1 (B1) was a relatively new construction in good condition. The building was of brick construction, with wooden cladding on the gable end. The building had a pitched roof with interlocking clay tiles, and skylights were present. The roof was very well sealed, and no obvious gaps were seen which could be used by crevice-dwelling species of bats. The soffit boards were well maintained and no gaps were identified. *Interior* Internally B1 was split into different commercial rooms across multiple levels, utilising the natural gradient of the land in a maisonette style layout. A small loft void was present along the length of the building. The height of the loft space was approximately 1m from rafters to peak. The loft was dark and well-sealed with light cobwebbing. Bitumen roofing sheets were present above the rafters. No evidence of roosting bats was identified within the loft and no obvious entrance holes were identified externally. Due to a lack of potential roost features, the building is assessed as having **negligible potential to support roosting bats**. This building is to be retained and no works are being undertaken on the roof or loft space. **No further surveys required.**
Building 2 (B2) - Outbuilding	*Exterior* Building 2 (b2) was a small outbuilding constructed from breeze blocks, with a pitched roof and interlocking clay tiles. The building was open fronted. The external roof tiles were covered in moss and some gaps were present. A hay loft door and wooden cladding was present on the eastern elevation. *Interior* Internally the building was empty, and exposed beams and tiles were present. There was no roof void or insulation internally. Due to a lack of potential roost features, B2 was assessed as having **negligible potential to support roosting bats.** This building is to be retained. **No further surveys required.**

Trees	All trees within the Site boundary were assessed for potential to support roosting bats. The results are provided below, and reference should be made to Figure 2 and photographs in Appendix 2. **<u>Single, mature oak tree (T1)</u>** The oak tree (T1, Figure 2) was a mature tree with rotting exposed heartwood from a cut limb. A small hole was also present at the base of the stem. Due to these features, the tree was assessed as having **moderate potential to support roosting bats**. This tree is to be protected and retained from the development. Therefore, no further surveys are required. **<u>Row of beech trees along the eastern Site boundary (T2 – T7)</u>** • T2 and T3 (Figure 2) were assessed as having moderate potential due to presence of various rot holes on limbs and trunk; • T6 was assessed as having low potential, due to presence of a cracked hole on limb, this tree also had superficial holes that did not create a cavity or extend into the tree; and • T4, T5 and T7 were assessed as having negligible potential. All existing trees (T1 – T7) are to be retained and tree protection measures are outlined in Table 3. **Therefore, no further surveys are required.** However, mitigation including sensitive lighting during the construction and operational phases should be followed. There are a large number of bat records returned from the data search including light sensitive species. The closest records are of greater horseshoe, lesser horseshoe, barbastelle, serotine, Brandt's, Daubenton's, Leisler, common pipistrelle and brown long-eared bats located approximately 500m south. No records were returned from the adjacent plantation woodland. Lesser and greater horseshoe bats are likely to be present within the wider landscape. The B1 does not support suitable features for use by roosting horseshoe bats. Although B2 is accessible to horseshoes bats with some suitable perches there is no evidence of night roosting and no opportunities for day roosting and that as it is being retained, remains accessible for bat use in the future.

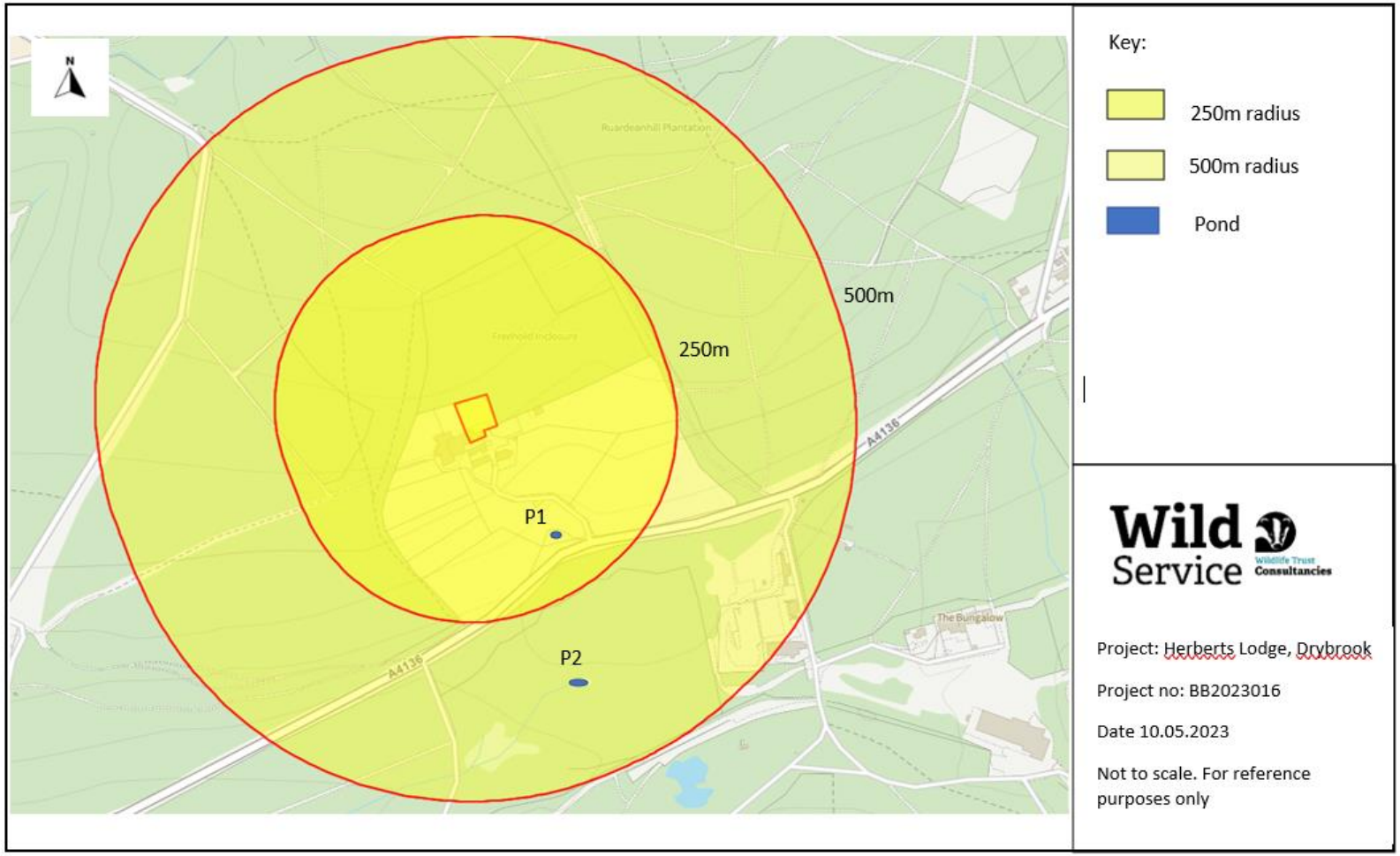

Figure 3: Pond Location Plan

4 Discussion

4.1 Nature Conservation Sites

4.1.1 Due to the nature and small scale of the proposed development (holiday pods) no effect on the ecological value of these designated sites is anticipated.

4.2 Habitats

4.2.1 The habitats that need consideration in relation to this development are mentioned below with detailed enhancement measures.

Mitigation

Scattered Trees

4.2.2 Scattered trees were present within the Site boundary. It is our understanding that all existing trees are to be retained. Protective fencing such as Heras fencing should be installed around Tree Root Protection Zones (TRPZ) during the construction phase to ensure the trees are protected and no construction materials or activities take place near the trees. Suitable signage should be attached to the the fencing. TRPZ should be identified and undertaken inline with inout from an Arboriculturalist.

Plantation Ancient Woodland (Offiste)

4.2.3 Plantation Ancient Woodlands (PAWs) are a Priority Habitat under the NERC Act 2006. The PAWs is offsite and is being retained. However, it is recommended that no construction related activities including storage of materials and vehicles takes place near the PAW. Temporary fencing e.g. Heras fencing could be erected, taking into account root protection zones of the trees with clear signage attached to ensure no construction-related activities are to take place beyond the fence line.

Enhancements

4.2.4 The ecological value of the site can be enhanced through planting native species and/or those of value to wildlife, i.e. producing fruits, seeds, nuts or single-flowering varieties. Leaving patches of unmown grass and tall herb as well as creating compost heaps/log piles creates valuable wildlife habitat, particularly for invertebrates, reptiles,

amphibians and small mammals including hedgehogs[2]. Ideally only pesticides branded as 'wildlife friendly' should be used. Wildlife planting tips and advice can be found here: https://www.gloucestershirewildlifetrust.co.uk/wildlife/wildlife-gardening. Further information is provided in the Ecological Enhancements Appendix below.

4.3 Protected Species

4.3.1 The protected species and their mitigation that need consideration in relation to this development are mentioned below.

4.4 Bats

Mitigation

4.4.1 Bats and their resting places are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017.

Roosting Bats - Buildings

4.4.2 It is our understanding that no works are proposed to the loft or roof of Building 1 and/or Building 2 and both buildings are to be retained under proposed plans. As both building had negligible potential to support roosting bats, and both are to be retained, no further bat surveys are required.

Roosting Bats - Trees

4.4.3 The trees within the development Site boundary are to be retained under proposed plans. Further information detailing the holiday pods are required to assess lighting impact on the trees, should lighting from the holiday pods impact the trees or where impacts cannot be ruled out or should any future tree surgery be required, further surveys and/or mitigation measures will be required for any trees identified as having potential roost features for bats.

4.4.4 Further surveys may include endoscope survey and/or emergence/re-entry surveys of the trees. If bats are found to be roosting, a Natural England European Protected Species (EPS) mitgation licence application will needed prior to works commencing.

[2] The State of Britain's Hedgehogs 2015, publicised at a special UK summit on hedgehogs: since 2000, records of the species have declined by half in rural areas and by a third in urban ones. Hedgehogs are also a species of 'Principal Importance' under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and therefore need to be taken into consideration by a public body when performing any of its functions with a view to conservation

Commuting/Foraging Bats

4.4.5 The habitats within the development Site boundary provide some limited opportunties for foraging bats and bats are likley to commute through the site. The adjacent plantation woodland could also be used by a variety of bat species for forgaing and commuting. The Site also lies within 1km of a known lesser horseshoe maternity site and a 3km buffer horseshoe bat hibernation site, and the Site is surrounded by plantation woodland and farmland.

4.4.6 It is considered likely that the Forest of Dean (FoD) District Council planning authority will expect bat activity surveys to be undertaken in line with Wye Valley and Forest of Dean Bat Special Area of Conservation (SAC) guidelines for sites recognised as being highly sensitive for lesser horseshoe bat (i.e. in Zone A; https://fdean.gov.uk/media/q1jnfo54/wv-fod-bat-sac-development-management-survey-and-assessment-guidance-vr-july-2021.pdf). The FoD guidelines are as follows:

- During the bat 'active' season (April – October inclusive), a minimum of 35 days surveying is required. Surveying should be spread throughout the spring/summer/autumn to gain an understanding of how bats use a site throughout the season. A minimum of 10 days of surveying should take place during the spring (April-May), 15 days during the summer (June–August) and 10 days during the autumn (September-October).
- Recent research in the Forest of Dean has shown that bats are frequently active during the winter (November–March inclusive). Winter surveys are therefore generally required in Band A unless otherwise robustly justified with evidence. Automated detectors should be deployed in similar locations as above between November and March for 5 consecutive days in at least 3 of the 5 winter months (3 months x 5 days = 15 days total). Alternatively, detectors could be deployed for 10 days within two of the winter months (2 months x 10 days = 20 days total).

4.4.7 **Due to the limited nature of the proposed works, it is not anticipated that activity surveys are required, however should the Forest of Dean request activity surveys a pragmatic approach is suggested, with a minimum of three activity transect surveys over the spring and summer and deployment of one static detector for five nights on each survey visit** to obtain an idea of bat usage of the Site. However, this reduced

survey effort would need agreement from the FoD Council to ensure that they accept the bat survey report for planning purposes.

4.4.8 Due to the nature of the proposals (holiday pods), impacts to commuting and foraging bats, including horseshoe bats (known to be light sensitive species) is considered to be low. A sensitive lighting strategy can be implemented to reduce impacts further, and this may avoid the need for bat activity surveys. It is recommended that any additional lighting be designed sensitively to avoid illuminating the adjacent woodland.

4.4.9 Any lighting that is required should be designed to have minimal light spill, low level, and be installed with off timers or motion activated to minimise the length of time they are on.

4.4.10 Low UV lighting should be used and the colour temperature should be 'warm' i.e. around 2700K or less for all lights. Illumination of the adjacent woodland should be kept to no more than 1 lux due to barbastelle, greater and lesser horseshoe bats (particularly light adverse species) which may be present, using the wider landscape.

4.4.11 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. Accessories such as baffles, hoods or louvres should 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 should be considered. Column heights should be carefully considered to minimise light spill. 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. Internal luminaires should be recessed where installed in proximity to windows to reduce glare and light spill.

Enhancements

4.4.12 Bat roosting boxes could be installed on existing retained buildings or retained trees within the wider site under control by the client as enhancements. Retained trees with PRFs should not be used as enhancment sites. Further recommendations for bat roosting features are provided in the Ecological Enhancements Appendix below.

4.5 **Birds**

Mitigation

4.5.1 All birds are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended). It is therefore generally unlawful to intentionally kill or injure a bird, damage or destroy an occupied nest or take or destroy eggs other than in exceptional prescribed circumstances. Therefore, development operations should take care to avoid the risk of harm to birds and their nests, especially during the nesting season (generally considered to be March to August). The existing trees are due to be retained. However, should removal of trees or any tree surgery be requried this is to be undertaken outside the main nesting season where possible, or a suitably qualified ecologist should be engaged to check for nesting birds (including check of the exisitng barn owl box with should be checked by a licenced ecologist) and to provide advice on the most appropriate way to proceed.

Enhancements

4.5.2 Nesting opportunities for house sparrows *Passer domesticus* and swifts *Apus apus* can be fitted onto external walls, swift boxes can be fitted externally. House martins *Delichon urbicum* can be provided with nesting provision in the form of house martin cups, which can be fitted on the exterior walls of a building. Barns, carports and open fronted porches or large overhanging eaves are suitable locations for swallow cups to provide nesting features for swallows *Hirundo rustica*. All these species have undergone a decline in recent years. These nesting features should be installed under the eaves of a building at minimum heights of 2-2.5m and face in a north to south-east direction. In addition, hole-fronted and open-fronted bird boxes can be installed on medium-large trees at similar heights and directions to attract other species of birds. Examples are provided in the Ecological Enhancements Appendix below. A replacement barn owl box could be installed on the side of the B2 to replace the old fallen barn owl box.

4.6 **Dormice**

Mitigation

4.6.1 Dormice and their resting places are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017. The habitats wihtin the development boundary are unsuitable for dormice. However, the adjacent offsite woodland could provide suitable dormouse habitat. As a precaution, no construction activities should take place within or near the off-site woodland, including storage of materials. Protective fencing measures outlined in Table 3 will also protect dormice (if present) from any construction-related impacts.

4.6.2 As dormice are nocturnal and are therefore sensitive to light pollution, the recommended sensitive lighting scheme will also benefit dormice, if present in the adjacent woodland.

4.7 Great Crested Newts

Mitigation

4.7.1 GCN and their resting/breeding places are protected under the WCA 1981 and CHS Regs 2017. Due to the lack of suitable terrestrial habitat for GCN within the development site boundary and owing to the small-scale and limited nature of proposed works, it is considered highly unlikely GCN would be impacted by proposed works. Although there are records of GCN within 500m of the Site, these relate to a network of ponds to the south, which are separated from the Site by a busy main road (the A4136) which would act as a dispersal barrier to GCN. As a precautionary measure, no construction activities should take place within or near the off-site woodland, including storage of materials. Protective fencing measures outlined in Table 3 will also protect great crested newts (if present) and other amphibians from any construction-related impacts.

4.8 Reptiles

Mitigation

4.8.1 Due to the lack of suitable habitat for reptiles within the development site boundary and owing to the small-scale and limited nature of proposed works, it is considered highly unlikely reptiles would be impacted by proposed works. As a precaution, no construction activities should take place within or near the off-site woodland, including

storage of materials. Protective fencing measures outlined in the tree section above will also protect reptiles (if present) from any construction-related impacts.

Enhancements

4.8.2 As enhancment construction of one reptile/amphibian hibernacula as per the diagram in the Ecological Enhancements Section below will provide useful shelter. Areas of longer/tussocky grassland could be allowed to develop around Site boundaries to provide suitable habitat for reptiles.

4.9 Hedgehogs

Mitigation

4.9.1 Hedgehogs are listed as a Priority Species under the NERC Act 2006. As a precaution, no construction activities should take place within or near the off-site woodland, including storage of materials. Protective fencing measures outlined in Table 3 above will also protect hedgehog (if present) from any construction-related impacts.

Enhancements

4.9.2 Construction of two log and leaf piles to act as hedgehog shelters (in addition to reptile hibernacula) is recommneded. Any fencing can be made more permeable to wildlife, such as hedgehogs, by leaving small gaps of 13x13cm under fences.

4.10 General Protected Species

4.10.1 There appear to be no other obvious and immediate issues for this development with regard to any other species protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 and no further dedicated surveys for any other species are recommended. However, in the unlikely event that any protected species listed in Section 2 are found on the site during the works then all works must cease immediately and the advice of a suitably qualified ecologist must be sought.

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Appendix 1: Policy and Legal Considerations

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[3] 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**[4]. 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.

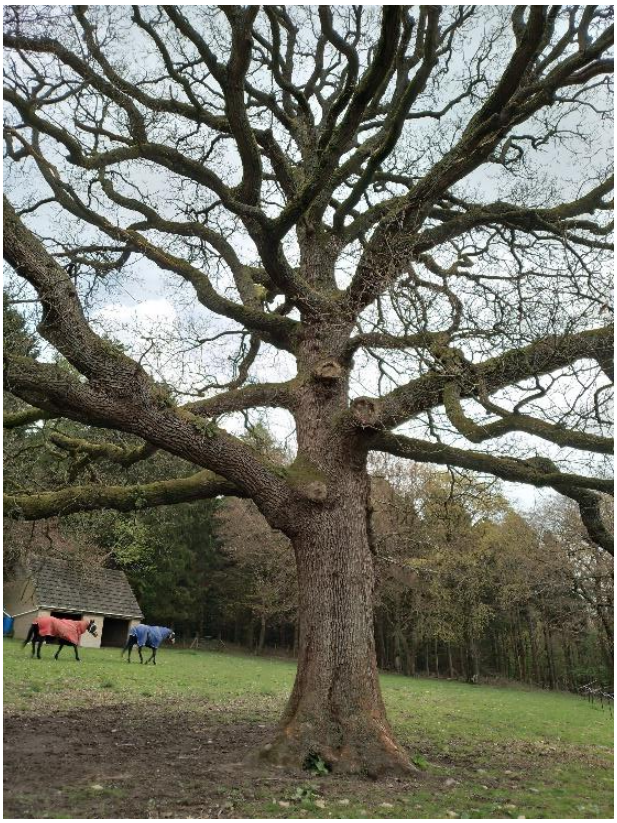
The **National Planning Policy Framework 2021[5]** states that the planning system should minimise impacts on biodiversity, providing net gains in biodiversity, wherever possible. Section 15 states that when determining planning applications, local planning authorities should apply the following principles:

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[6] and a suitable compensation strategy exists; and
d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

[3]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.
[4]**The NERC Act** refers to "*species of principle importance for the conservation of biodiversity*", which translates to BAP habitats and species occurring in England.
[5] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf
[6] 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.

Appendix 2: Photographs

No	Photo	Description
1		View of heavily horse grazed improved grassland looking west
2		External view of building 2 (B2)

No	Photo	Description
3		**Internal view of Building 2 (B2)**
5		**View of Oak tree (T1)**

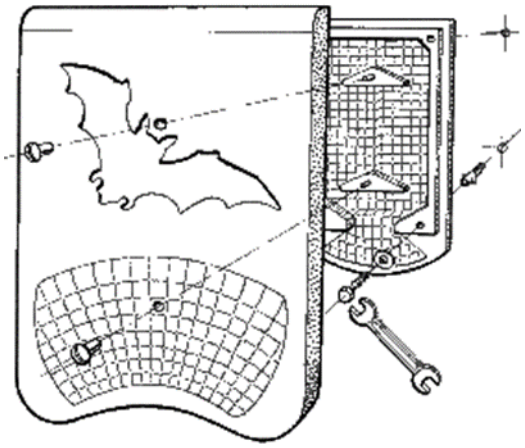
No	Photo	Description
6		**T1 showing PRF feature**
6		**View of T2 and location of PRF features**

No	Photo	Description
7		**View of T3 showing location of PRF feature**
8		**View of T6 and location of PRF feature (red arrow)**

No	Photo	Description
9		**View of hardstanding and Building 1 (B1) looking east**
9		**Internal view of loft space in B1**
10		External view of B1 looking north

Appendix 3: Ecological Enhancements

BAT ROOSTING FEATURES	
Schwegler 1FF Bat Box	
	
Schwegler 1WQ Summer & Winter Bat Box	

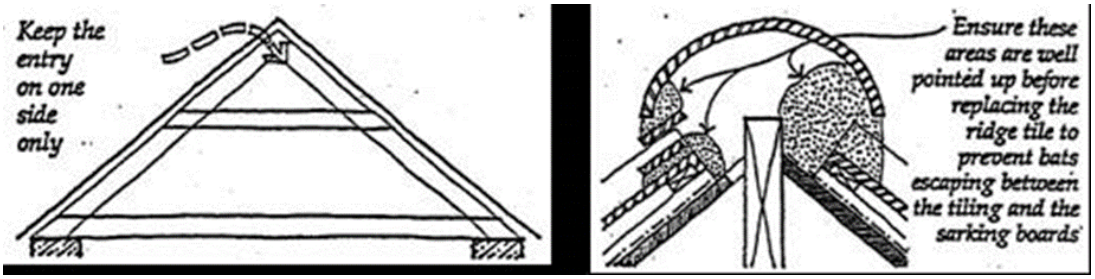


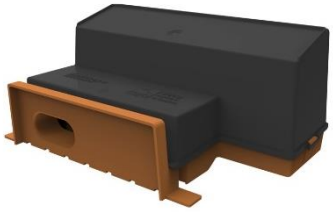
Habibat 001 Bat Box – integral bat box, fitted into wall

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.

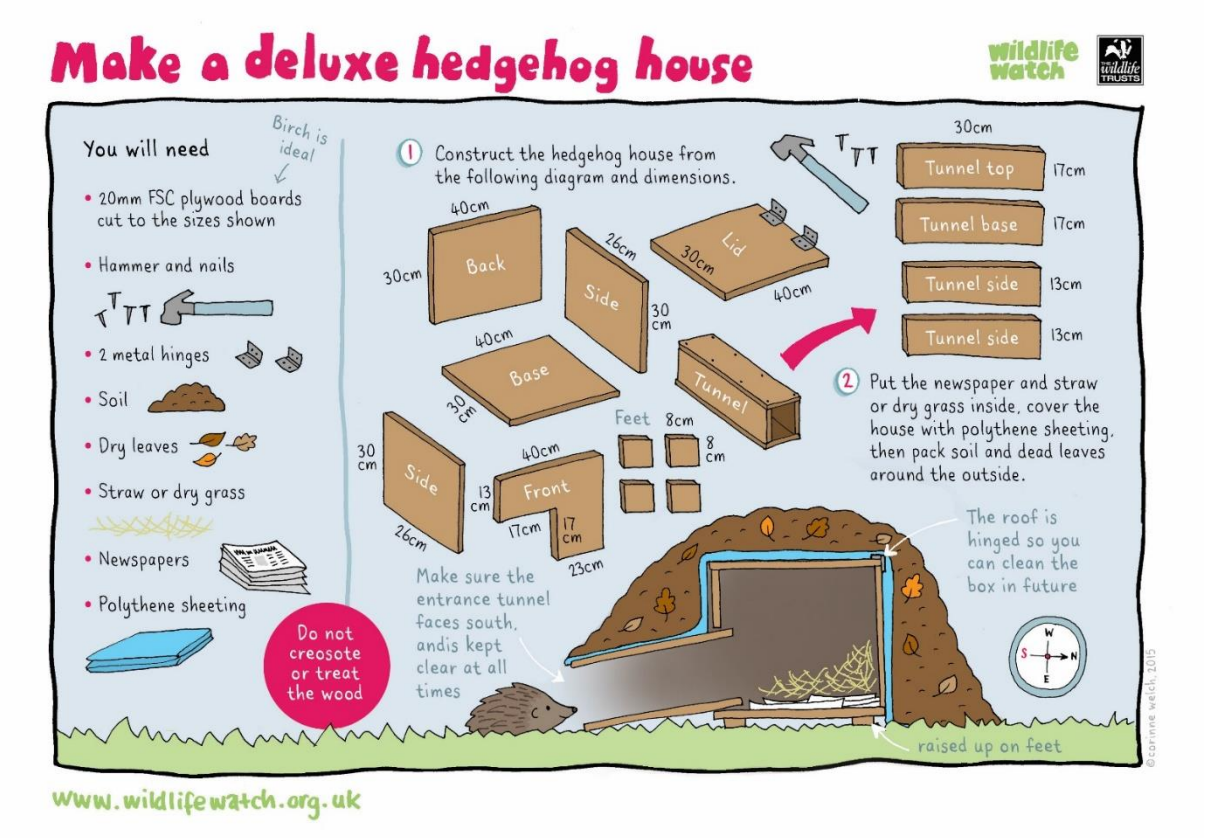


BIRD BOXES	
Various designs of swift boxes	
	
Swift Brick	**Swallow Cup**
	
Hole-fronted bird box (for trees)	**Open-fronted bird box (for trees)**

House Martin Terrace Box

HEDGEHOG NEST BOX

HEDGEHOG HOUSE

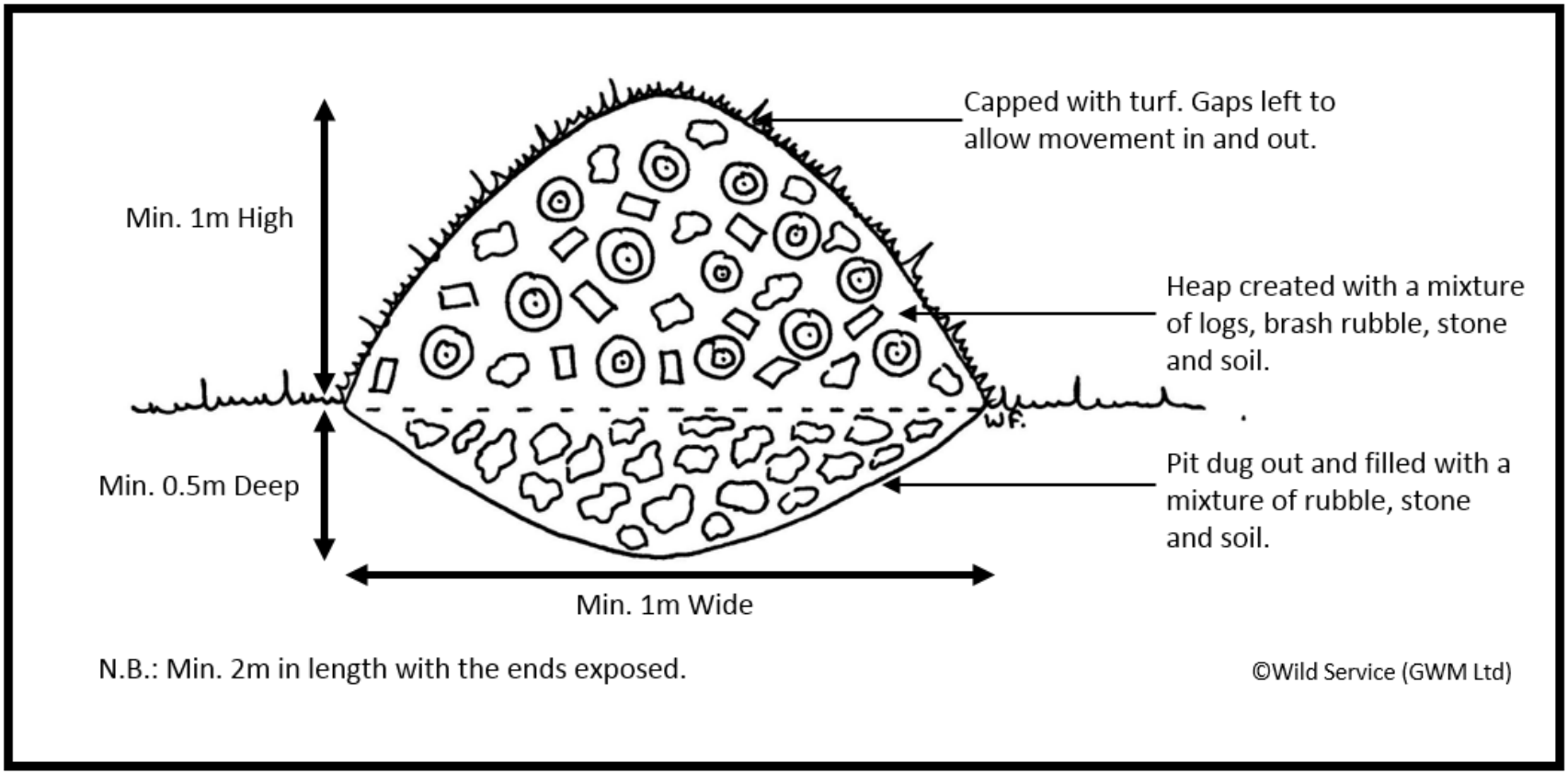


INVERTEBRATES

BEE BRICK	
SCHWEGLER INSECT NESTING AID	

INVERTEBRATES

AMPHIBIAN/REPTILE HIBERNACULUM



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

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 *Lamiastrum 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 pseudonarcissus*

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 scorpoides*
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 4: Ecological Experience

Becca Brown: Senior Ecologist, BSc (Hons) ACIEEM

Becca has been working in ecological consultancy since 2016 and has been involved in a wide range of surveys including Extended Phase 1 Habitat surveys and a variety of protected species surveys including bats, badger *Meles meles,* barn owl *Tyto alba,* great crested newt *Triturus cristatus,* hazel dormouse *Muscardinus avellanarius,* reptiles, otter *Lutra lutra* and water vole *Arvicola amphibius*. She has experience in writing technical reports, including Preliminary Ecological Appraisals (PEAs), Ecological Impact Assessments (EcIAs) and preparation of European Protected Species (EPS) licence applications as well as experience undertaking Conditioned Assessments and Biodiversity Net Gain (BNG) calculations. She has extensive experience as an Ecological Clark of Works (ECoW) for a variety of projects. Becca Holds Natural England Class Licences for bats (level 1), barn owl and great crested newt. She also holds a valid CSCS card, is mental health first aider and is an Associate member of the Chartered Institute of Ecology and Environmental Management (ACIEEM).

Julia Morrison: Ecologist, BSc (Hons) MSc

Julia has worked with Wild Service for several years and has recently gained her MSc in Applied Ecology from the University of Gloucestershire. Julia's dissertation project involved large-scale data analysis of biometric bird ringing data to assess biometric changes in UK wintering waterbirds. Julia has a keen interest in bat ecology and in addition to undertaking professional bat surveys and assessments, she has also studied bats in Ghana, West Africa. She is experienced in a range of ecological surveys including Phase 1 habitat assessments, protected species surveys, reptile surveys and translocations, great crested newt and dormouse surveys. Julia's additional skills include advanced data analysis and GIS mapping using various software packages including QGIS and ArcGIS. In addition to project delivery, she also assists with the management of Wild Service projects. Julia has also spent time volunteering on conservation projects with the Gloucestershire Bat Group and the

Gloucestershire Wildlife Trust. Julia is a Qualifying member of CIEEM and holds a CSCS card. She is currently working towards her Natural England bat and great crested newt licences.

Gemma Waters: Associate Ecologist BSc (Hons) MCIEEM

Gemma has 15 years' experience in ecological consultancy with a focus on bat and bird ecology and surveying. She is also an experienced environmental educator. She has worked on a wide range of consultancy projects from residential developments, renewable energy projects and cultural heritage work. Gemma has undertaken many internal inspections of different man-made structures, trees, and other natural features to assess their potential to support roosting bats. She is also very experienced at planning and undertaking emergence and dawn re-entry surveys for bats alongside activity transects to determine bat use over the wider landscape.

She has also been a bat warden for Natural England since 2006, providing surveys and advice for householders with bats. Gemma is a Natural England licence holder for bats (Licence number: 2015- 1560-CLS-CLS, WML CL18: Bat Survey Level 2) and is also a volunteer bat roost visitor (2015-10271-CLS-CLS). Gemma is experienced in providing EPS mitigation on a variety of projects, including cultural heritage projects for the National Trust and the Wye Valley AONB and a wide range of development projects.

Gemma has undertaken voluntary research with Gloucestershire Bat Group (GBG) and Dr Roger Ransome, assisting in research of greater horseshoe, Bechstein's and barbastelle bats. With GBG, Gemma has also led bat walks and talks for the public. Gemma has over a decade of teaching experience; from primary students, up to University level.