

Phase 1
Preliminary Ecological Appraisal
Long Eaves Farm, Pinwall



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NE class license: Bats: survey (level 2)

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SUMMARY

The Phase 1 preliminary ecological appraisal is undertaken in order to identify key ecological constraints to the proposed development; inform planning to allow significant ecological effects to be avoided or minimized; identify any further ecological surveys needed to inform an ecological impact assessment and to support the development of mitigation of compensation measures.

Methodology

The survey was conducted by carrying out a systematic walkover of the site by Dr. Stefan Bodnar to record habitats, species, and any notable features of interest with regard to flora & Fauna. This is in accordance with standard Phase 1 survey techniques and is a methodology recommended by the Institute of Environmental Assessment (1995) and guidance from CIEEM (2012, 2018).

Key Issues & Conclusions

This Phase 1 Ecology Report confirms that the Construction Zone is of 'low to negligible ecological value' consisting primarily of existing building, surrounded by hardstanding though with higher value early mature trees that are to be retained and protected which are of higher value. No further surveys are recommended, however the precautions described in section 4, in relation to Great crested newts, reptiles and badgers should be followed.

The building and all trees are categorized as having negligible bat roost potential.

It is recommended that as many trees as possible be retained, and a tree protection area and root protection zone be established to avoid damage during the construction phase. All retained trees should be protected in accordance British Standard BS5837 (2012) Trees in Relation to Design, Demolition and Construction – Recommendations, to ensure require adequate root protection fencing. If any trees are to be lost within the scheme, these should be mitigated for by suitable 1:1 enhancement planting with native, nectar rich, berry bearing species.

Bats react adversely to intense lighting, to maintain the suitability of the site for roosting and foraging bats, external lighting provision within the development should be as minimal as possible. External lighting should be via directional downlighters, of low lux and where possible, on timers to ensure as little light spill as possible from the development.

Any woody vegetation clearance should take place outside of the bird breeding season. Bird breeding season is between mid March and mid July, although certain species can breed outside these months and if breeding birds are found then work should cease and the advice of an ecologist sought. If clearance is undertaken within the bird breeding season then all site features should preferably be checked immediately prior to clearance by a suitably qualified ecologist.

It is proposed to produce a biodiversity Net gain as part of the project, by planting of native woodland and creation of a wildlife pond in land to the south of the development.

There are no Statutory or Non-Statutory Designated Nature Conservation Sites within or adjacent to the site. There are no sites at further distances that will be impacted by this development.

1. INTRODUCTION

1.1. Background

At the request of the client, a Phase 1 Preliminary Ecological Appraisal was carried out at land at Long Eaves farm, Pinwall Lane, Pinwall, CV9 3ND to evaluate the habitats, describe any further surveys required and indicate the level of required mitigation/ compensation/ enhancement in relation to the proposed development of the site.

1.2. Site Location

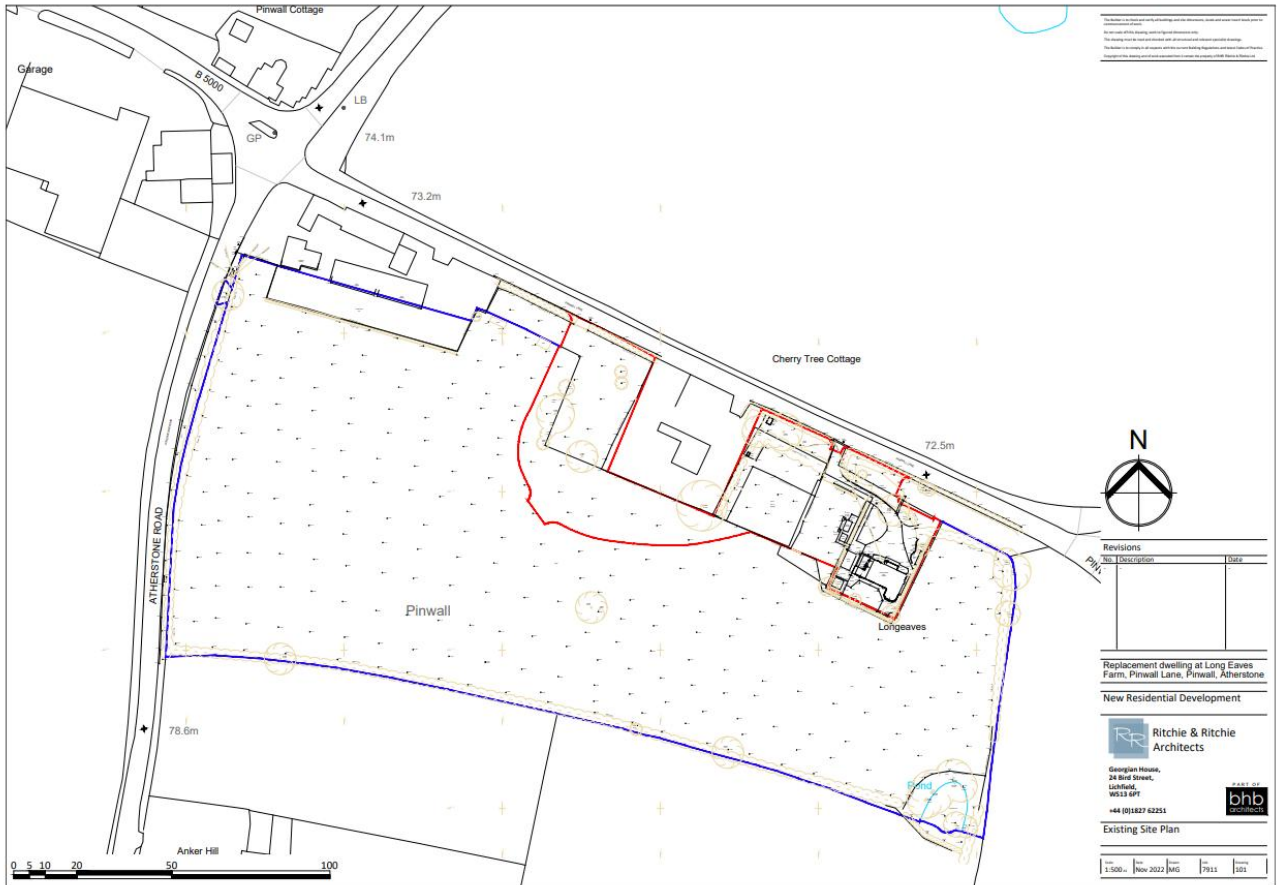
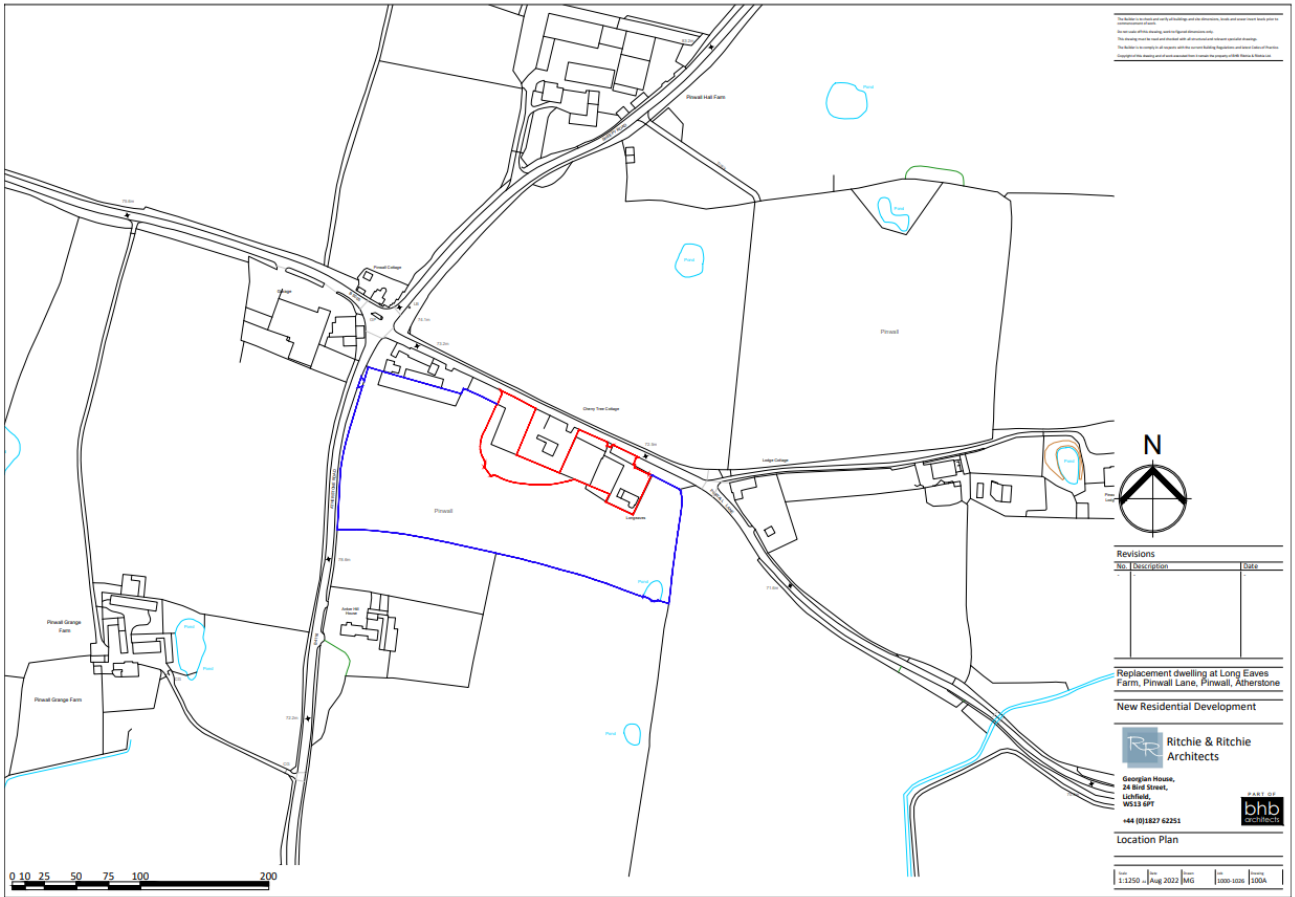
The site is located at Long Eaves farm, Pinwall Lane, Pinwall, CV9 3ND. A satellite image and Phase One diagram (see Appendices) also show the areas concerned.

Figure 1. Satellite image showing site location



Map data 2023© Google.

Figure 1a. Site Location Plan





Map data 2022© Google.

Figure 2. Satellite image of local area around the site.

1.3. Site Description

The development comprises a 1970s two storey detached house, with landscape trees around. The building has a linked clay tile pitched roof and replaced UPVC windows and doors Small retained roofspace. To the rear is an improved grass agricultural field. The site is located in Pinwall, near Atherstone. It is surrounded in all directions by arable land. (See Appendix 1b).

1.4. Brief Description of Project

The area is subject to a planning application for the demolition of the existing residential building and a new build with new access provision. See plans below and refer to planning application for detailed plans.



1.5. Purpose of the Preliminary Ecological Appraisal

The phase 1 preliminary ecological appraisal report identifies key ecological constraints to the proposed development; informs planning to allow significant ecological effects to be avoided or minimized; identifies any further ecological surveys needed to inform an ecological impact assessment and supports the development of mitigation of compensation measures.

It is composed of two parts. A site visit, during which a preliminary ecological appraisal of the site is carried out to identify the major habitat types, plant, bird, reptile, mammal and other species using the site. Also a desk study, which gathers ecological data on the site and its surrounding area, to identify protected species and statutory protected sites in the vicinity of the proposed development site, in order to produce recommendations on the key ecological constraints to the proposed development.

2. METHODOLOGY

2.1 Desk Study Methodology

Information was gathered from a number of web-based data sources, published ecological reports and where appropriate, the authors own records. The ecological data search covers the following areas:

- ☐ Species of particular note
- ☐ Local Nature Reserves
- ☐ Protected species (badger, grass snake, great crested newts, otter, water vole and bats)

2.2. Survey Methodology

The survey was conducted by carrying out a systematic walkover of the site by Dr. Stefan Bodnar to record habitats, species, and any notable features of interest with regard to flora & Fauna. This is in accordance with standard Phase 1 survey techniques and is a methodology recommended by the Institute of Environmental Assessment (1995) and guidance from CIEEM (2013, 2018).

During the survey, emphasis was placed on searching for evidence of and potential of habitats and features supporting protected or notable species, especially those listed under the Conservation of Habitats and Species Regulations 2010, updated in 2017, the Wildlife & Countryside Act 1981 (as amended),

The range of methods used were as follows:

Bats

The trees within the site were appraised for their potential suitability to support breeding, resting and hibernating bats in accordance with survey methods documented in the Bat Surveys: Good Practice Guidelines (Bat Conservation Trust 2012). Features of medium and high potential for bats were searched for signs of use by bats, such as droppings, urine staining and scratches around entrance holes etc.

A visual inspection of the trees from ground level with the aid of binoculars was undertaken to search for evidence of actual bats as well as signs of bats (droppings, feeding remains, urine staining, scratch marks, noise and the remains of dead bats etc.). In addition, the trees were assessed for the presence of features likely to be attractive to roosting bats, such as cavities or rot holes in the trunk or branches, splits in the timber, delaminating bark, deep bark crevices, dead branches and dense ivy cover etc.

In accordance with the methodology outlined in the Bat Conservation Trust's Bat Surveys: Good Practice Guidelines (2016) trees were assigned to the following categories:

- ☐ **Known or Confirmed Roost** - signs of bats (droppings, etc) or actual bats recorded; or previous records of bats in tree
 - ☐ **High (Category 1*)** – trees with multiple, highly suitable features capable of supporting large roosts
 - ☐ **Medium (Category 1)** – a tree with definite bat potential; fewer features than category 1* or potential for single bats
 - ☐ **Low (Category 2)** – No obvious potential, although tree of size and age that elevated surveys may result in cracks/crevices being found; or tree has some features which have limited potential to support bats
 - ☐ **Nil (Category 3)** – no potential to support bats
-
- ☐ The site was also assessed for potential bat foraging areas and commuting routes.
 - ☐ Features of medium and high potential for bats were searched for signs of use by bats, such as droppings, urine staining and scratches around entrance holes etc. The site was also assessed for actual and potential bat foraging areas and commuting routes. Buildings within the site were assessed in accordance with the methodology outlined in the Bat Conservation Trust's Bat Surveys: Good Practice Guidelines (2016)

Reptiles

The site was assessed for its suitability to support reptiles based upon the abundance of suitable habitats such as structurally diverse habitats, hedgerows, scrub, rough grassland, wood piles, rubble, banks and compost heaps etc. The site was assessed with respect to its potential for use for hibernation and spring/summer use based on guidance provided in the Herpetofauna Workers' Manual (Joint Nature Conservation Committee 2003) and the Reptile Management Handbook (Edgar, Foster & Baker 2011).

Badgers

The whole site was searched systematically, with particular attention being paid to features likely to support badger setts (e.g. earth embankments, wooded copses etc.). The location of all badger signs such as runs, dung pits, prints, hair, foraging snuffle holes found during the survey were mapped and all setts characterised as either main, annex, subsidiary or outliers in accordance with guidance given in Surveying Badgers (Harris, Cresswell & Jefferies, 1988).

Birds

All birds observed during the field survey were recorded, in addition to features capable of supporting nesting birds (e.g. trees, hedgerows, buildings, bramble beds, ruderal vegetation and rough grassland etc). The sites was also assessed for its actual and potential suitability to support Schedule 1 and Biodiversity Action Plan priority species.

Other Species

The site was also assessed for its actual and potential suitability to support other protected or notable fauna in accordance with the Guidelines for Preliminary Ecological Appraisal (Chartered Institute of Ecology and Environmental Management, 2013, 2018).

2.3. Site Location and Access

Long Eaves farm, Pinwall Lane, Pinwall, CV9 3ND

All areas of the site were available for access.

2.4. Date and Time of Survey

The site assessment was conducted on 20th December 2022

2.5. Weather Conditions

The weather conditions during the survey were cool and dry.

2.6. Survey Constraints

Owing to the time of year the initial survey took place it can be considered to provide a reasonable, though not exhaustive plant list. This survey noted the habitat types on the site, and the dominant vegetation at the time of the survey, which is likely to be constant and a fair reflection of the habitat quality present.

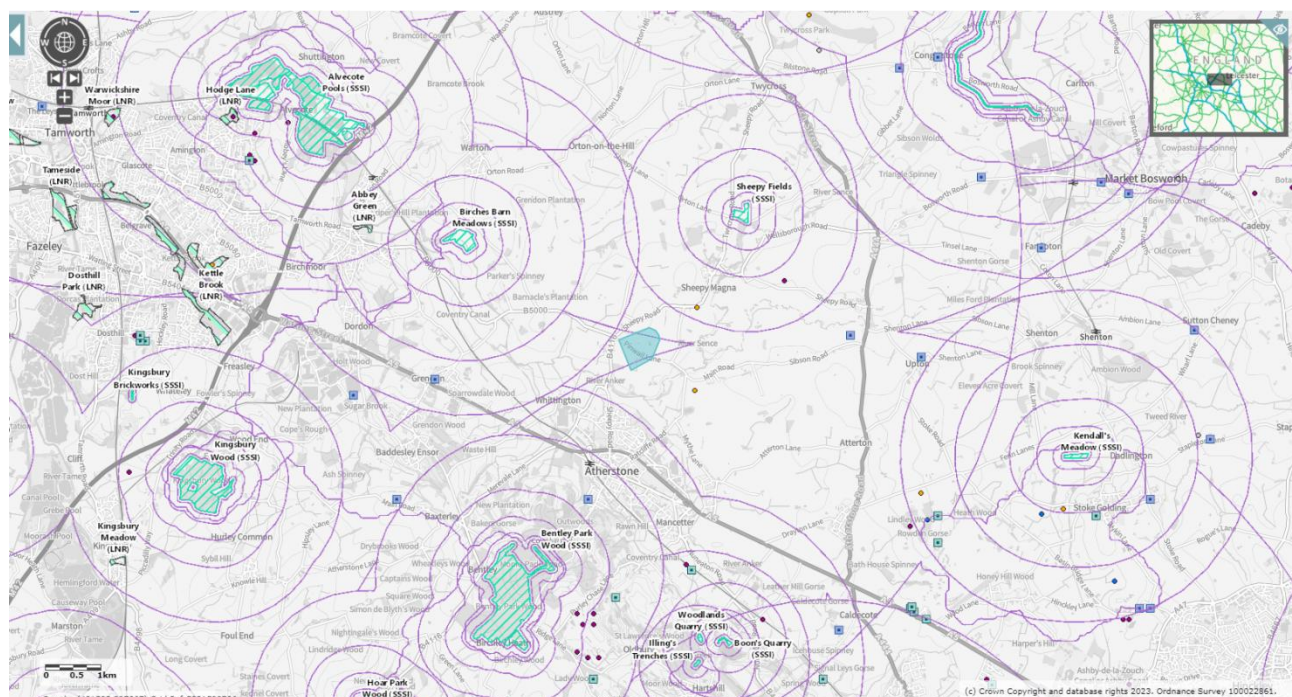
3. RESULTS

3.1 Desk Study Results

3.1a Statutory & Non Statutory Nature Conservation Sites

The maps below show all Statutory and Non Statutory Nature Conservation Sites (this includes Sites of Special Scientific Interest, Local Wildlife Sites, Local Nature Reserves, Special Areas of Concern) within 5km of the proposed development.

A Natural England 'Magic' data search (shown below) reveals that the site lies within the a Nitrate Vulnerable Zone for surface water. The closest nature conservation sites are 3 SSSIs which are located at around 6 km (Birches Barn Meadows, Bentley park wood and Sheepy Fields). These factors should be considered in relation to any construction operations.



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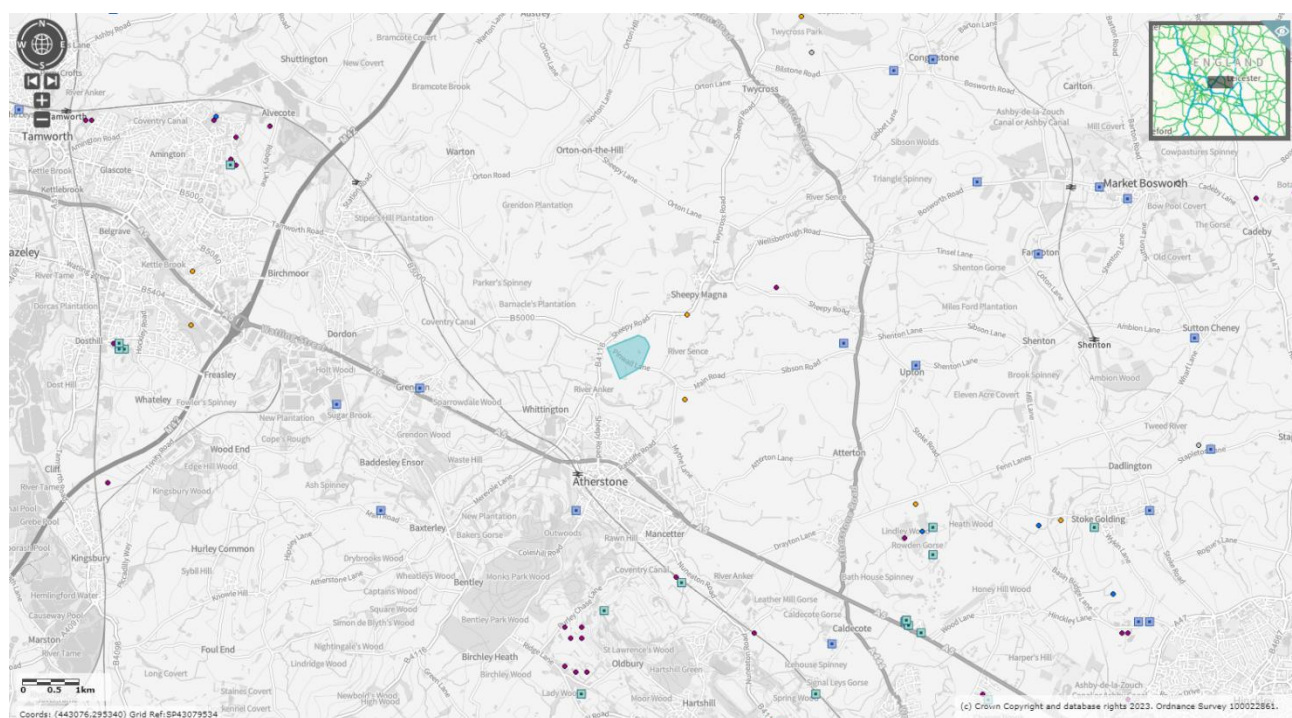
3.1b. Protected & Notable Species Records

In relation to protected and notable species, the following were recorded from a variety of online web based resources, and in places, the authors own records, presented here with the approximate distances of the nearest record. In addition, a number of ecological survey reports within the area have been interrogated for protected species records. All records are post-2010 unless otherwise stated.

Protected Bat Species Occurrence Table

Species (Latin Name)	Common Name	Approximate distance of nearest record from the survey site (km)
<i>Pipistrellus pipistrellus</i>	Common Pipistrelle	Within 5 km
<i>Pipistrellus pygmaeus</i>	Soprano pipstrelle	Within 5 km
<i>Myotis nattereri</i>	Natterer's bat	Within 2 km

Data on European Protected Species Licenses in the local area, reveals that five species of bat are known to roost within 3 km of the site, with Great Crested Newts within 3.5 km of the site, Barn Owl is present within 3 km.



Protected & Notable Species Occurrence Table

Species (Latin Name)	Common Name	Approximate distance of nearest record from the survey site (km)
<i>Erinaceus europaeus</i>	Hedgehog	Within 2 km
<i>Triturus cristatus</i>	Great Crested Newt	Within 3.5 km
<i>Meles meles</i>	Badger	Within 3 km
<i>Tyto alba</i>	Barn owl	Within 3 km

Interpretation of Available Biological Data

There are no designated sites on or adjacent to the site. The development will have no impact on those at further distances.

In terms of protected species, 3 bat species are recorded within 5 km of the survey site, with Great Crested Newt at 3.5 km, and Badger at 3 km.

3.2 Survey Results

3.2.1. Habitat Types Present & Baseline Ecological Conditions

The development comprises a 1970s two storey detached house, with landscape trees around. The building has a linked clay tile pitched roof and replaced UPVC windows and doors. Small retained roofspace. To the rear is an improved grass agricultural field. The site is located in Pinwall, near Atherstone. It is surrounded in all directions by arable land. (See Appendix 1b).

Habitats Present:

1. Hard standing

A large hardstanding driveway, providing vehicular and pedestrian access to on-site buildings.

2. Buildings

1970s 2 storey detached house, Brick, with linked concrete tiles. Large dormer (flat roofed) to rear, mineral felt roof. Windows, door and soffits replaced or clad UPVC, the dormer is clad UPVC. Filled cavity wall. Roof has plastic end caps sealing the mortar ends. Roof and all brickwork intact. UPVC cladding tightly fitting.

Loft space (storage) with some insulation and boarding, to 1.7m. Lining Bitumen felt. Rat and mouse droppings apparent.

3. **Garden area: improved grass** (dominated by Perennial ryegrass and Creeping buttercup and landscape trees, habitats shown below. Beech and hawthorn hedge to Eastern boundary, Early mature coppiced oak on frontage, landscape trees include silver birch, pollarded ash, coppiced hazel, Leyland Cypress hedge to Western house garden boundary. Group of silver birch and an EM Weeping willow near to the proposed access driveway. The remainder of the land to the south is a recently seeded improved grass pasture.

Aerial photographs, appendix 1a & b, shows the area in context and Photographs (Appendix 2). A full species list of vascular plants is included at the end of this report (Appendix 3). Appendix 1e shows the Phase 1 habitat map.

3.2.2. Protected and Notable Species on Site

Bats:

There are 18 species of bat found in the UK, 17 of which are known to breed in the UK. All are small, nocturnal, flying, insectivorous mammals that are under considerable conservation threat and many having undergone severe population declines over the last century. Some species, such as pipistrelle bats (*Pipistrellus* sp) still remain relatively common and widespread in the UK, while others, such as greater horseshoe bats (*Rhinolophus ferrumequinum*), have an extremely restricted distribution. All species of bats and their roosting sites are afforded full protection under both UK and European legislation and are designated as 'European protected species'.

The site has low to moderate suitability for bat commuting and foraging, being mainly an existing building and is surrounded by intensive agricultural land with low to moderate suitability for bat foraging.

The trees do not have potential for bat roosting as they are not of sufficient age to have developed features which bats could utilise.

Bat Assessment of Buildings:

For the building, it is structurally intact. There are no signs of bats, no droppings, no scratching or staining. There are signs of use by other mammals, particularly rats and mice. .

Categorized as Negligible in respect of bat roost potential.

Bat Assessment of Trees:

The trees do not have potential for bat roosting as they are not of sufficient age to have developed features which bats could utilise.

Badgers

Badgers (*Meles meles*) are protected in England and Wales under the Protection of Badgers Act 1992. Protection applies both to the animal itself and to its nesting burrows (setts), and current interpretation of the Act also confers some protection to key foraging areas. Badgers remain comparatively widespread and common throughout the UK.

There is no suitable habitat on site for badger and there are no signs of badger activity (snuffle holes, latrines or trackways) on the survey site. It can be confirmed that at the time of survey there are no setts either within the proposed development sites or within 30m of these site boundaries. Badgers are present within 3 km of the site and the surrounding habitat is of low to moderate suitability for the species. No further surveys are recommended for this species. However, the presence of foraging Badgers or other foraging mammals, cannot be ruled out, so deep excavations should be covered nightly or wooden planks used to provide escape routes, and checked prior to the days' work.

Other mammals

The presence of other specially protected mammals, such as otter, or water vole, was assessed as extremely unlikely, due to the lack of suitable habitat on the site for these species.

Birds

The Wildlife and Countryside Act 1981 (as amended) makes it an offence (with certain limited exceptions) to intentionally kill, injure or take any wild bird, or to damage, take or destroy the nest of any wild bird whilst that nest is being built or in use, or to take or destroy its eggs. Furthermore, the Act affords additional protection to specific species of birds listed in Schedule 1 of the Act. In respect of these species, it is unlawful to intentionally or recklessly disturb such a bird whilst it is nest-building or is in, on or near a nest containing eggs or young; or to disturb their dependent young. Following recent revisions, fifty-nine species are listed on the UKBAP.

The following species was recorded on-site during the visit:

Bird Species:	Latin name:
Goldfinch	<i>Carduelis carduelis</i>
House sparrow	<i>Passer domesticus</i>

The birds listed above were actually recorded on the site itself. The trees within the survey site could also provide suitable for nesting habitat for a number of other common woodland bird species. Therefore, it is recommended that any site clearance involving woody vegetation (if required) is undertaken outside of the bird breeding season (mid March to mid August). If site clearance is undertaken during these months, a suitably qualified and experienced ecologist should be employed to ascertain the presence of any breeding birds within the site..

Great Crested Newt

The Great Crested Newt (*Triturus cristatus*) is one of the two rarest amphibian species in Britain. It is primarily a terrestrial animal, spending much of its life on land, but returning to the water to breed. Great crested newts will often return to breed in the same waterbody where they were spawned. In addition, they are highly opportunistic and will also colonise suitable new waterbodies rapidly. Great Crested Newt is a 'European protected species' afforded full protection under both UK and European legislation. This protection extends to the habitats which support it. The habitats within 500m of a breeding pond are generally considered to be protected by the legislation. The Great Crested Newt is a priority species and subject to its own Biodiversity Action Plan.

There are no waterbodies on the site, Great Crested Newts are recorded within 3.5 km of the site.

It is unlikely that Great Crested Newts are on site, therefore further surveys are not justified, instead a series of precautions, designed to protect all amphibians are recommended. The following non-licensed avoidance measures are recommended to ensure against committing an offence with respect to individual Great Crested Newts. It should be noted that failure to follow these procedures may significantly increase the likelihood of causing an offence. It should also be taken into account that if newts are discovered in the working area at any stage during the works, works may have to be halted and a Natural England mitigation licence obtained. This may incur considerable delays and costs.

1. Ensure all workers whose operations may affect Great Crested Newts are familiar with the legislation as detailed at the start of this section. At site induction talks all workers must agree to work in accordance with and fully follow these Reasonable Avoidance Measures. It is recommended that the owner / developer or their agent keep a record of the details of workers who have been inducted onto the site.
2. All workers should be informed that newts spend much of the year out of ponds in areas that provide shelter such as tall vegetation, piles of rubble and wood etc., cracks and cavities in the ground and under paving slabs. Newts may also bury into soft earth. Not only are the newts themselves protected by legislation, but their terrestrial resting places and aquatic breeding habitats are protected as well.
3. Information on what to look for and identifying newts should be made available to all site staff.

4. All workers must be made aware that if GCN are found, works should be halted and there is a correct procedure in place to follow, and failure to halt works may result in committing an offence under the Habitats Regulations 2010, revised 2017.
5. At no point should any worker handle a Great Crested Newt or suspected Great Crested Newt. Unlicensed handling is illegal and untrained handling may cause the newt unnecessary stress and injury.
6. In the unlikely event that newts are found at any time during works at the site, if possible replace the covering without damaging the newt and halt ground-level works immediately. A suitably experienced ecologist should then be contacted for advice. A Natural England development license may be required before works can continue. This may entail considerable delays and costs.
7. If site operatives can confidently identify that the newt found is not a Great Crested Newt, the newt can be carefully moved out of the area of works and placed in nearby habitat similar to that in which it was found. A newt found on land should not be placed into a pond or other water body.
8. Ideally, the remainder of the site clearance and ground works which include (but are not limited to), digging and constructing footings, excavation of service conduits, drainage works etc. should be restricted to the winter period (October – through January) to avoid impact on terrestrial newts. Ideally, keep the period of groundworks as short as possible.
9. Backfill any trenches or other excavations the same day before nightfall and only carry out ground works during daylight hours.
10. Keep all new construction materials raised off the floor on pallets etc. to prevent their use as a refuge.

General Advice Regarding Amphibians and reptiles

- ☐ Site staff should be made aware that all snakes, slow worms and other common reptiles species are protected from deliberate killing under the Wildlife and Countryside Act 1981 (as amended).
- ☐ If any amphibians (other than Great Crested Newt) or reptiles are found within the working area they should be removed to an area outside of the working zone (preferably in dense vegetation, a rubble pile, or under lying wood).
- ☐ Amphibians should be picked up by placing the fingers under the body and lifting, not by grasping any part of them. They can be held still by placing a thumb gently on top of them, if necessary.
- ☐ Handling should be kept to a minimum and latex gloves should be avoided. Vinyl, Nitrile and other non-latex gloves are ok and should be used where possible.

- If the amphibians/reptiles found are hibernating then they should be collected up and placed in a covered box or bucket while a suitable shelter / hibernaculum is prepared for them. Advice on which should be sought from an ecologist.
- Avoid burning or machine removal of any potential hibernacula (wood piles, debris etc.) without a thorough hand search for amphibians, reptiles and hedgehogs.

Reptiles

There are four widespread species of British reptile comprising grass snake (*Natrix natrix*), slow-worm (*Anguis fragilis*), adder (*Vipera berus*) and common lizard (*Zootoca vivipara*). These animals are protected under the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way Act 2000. They are given so called 'partial protection', which prohibits the deliberate killing or injury of individuals. The habitats of common reptiles are not specifically protected.

The site is of low suitability for reptiles and the surrounding habitat is of poor suitability for reptiles, being intensive agricultural land. There are no local records of reptiles, therefore it is considered unlikely that reptile species are present and there are no requirements for further surveys. However, to ensure no reptiles are harmed as a result of the proposed development it is recommended appropriate precautions should be taken during development, including where possible undertaking ground-works along field boundaries when reptiles are active (March to October) and ensuring storage of piles of materials and excavated earth on the site should be kept to a minimum and away from the field boundaries to deter reptiles from using them for temporary cover.

4.0. DISCUSSION

It is important that this proposed development should demonstrate no net loss of biodiversity from the site. This is a duty placed on Local Authorities in the Natural Environment and Rural Communities Act 2006, Section 40. There are requirements noted for this under The National Planning Policy Framework (2021) which refers to compensation/ mitigation. It is confirmed that the enhancement, mitigation and compensation within this section will comply with all the relevant UK and EU legislation relating to protection and enhancement of ecology.

4.1. Ecological Constraints

The value of the site, in terms of ecological value to wildlife, is extremely low, with the exception of the early mature trees, that the development aims to retain and integrate with the new build. During site works, the root protection zones of all retained trees must be protected in accordance with BS5837:2012 guidelines.

If trees are unavoidably lost to accommodate the scheme, they should be replaced with minimum 1:1 compensation planting, (ideally 1:2 in order to accommodate the high failure rate of young trees) to preserve the ecological value of the site.

The habitats present within the area consists of the following elements (see Phase 1 Habitat Map in Appendix 1d).

- Buildings & Hard-standing
- Native hedge (species poor)
- Non native hedge
- Landscape trees

4.2. Additional Ecological Surveys Recommended

- No further surveys recommended

4.3. Minimising Ecological Impact

This section states how the negative impacts of the development can be addressed.

4.3a. Protecting the Ecological Value of the Site

The site has trees worthy of retention.

The trees have high suitability for breeding birds and potentially could have a number of nests during the breeding season. Ensuring the access to the proposed development and the development itself, do not affect any trees on site in terms of both root protection zones and tree removal, will protect the ecological value of the site. If any trees are unavoidably lost to accommodate the development should be replaced with appropriate compensation planting of the same number of trees.

As bats may use the site as part of commuting and foraging the on-site lighting should be carefully chosen to ensure it is low lux, cowled (directed downwards to prevent light splay), and used on timers or motion sensors to minimize the impact on local bat populations.

4.3b. Precautionary Measures during Development

The actual site no trees worthy of retention.

The trees and hedges are moderately suitable for breeding birds and potentially will have a number of nests during the breeding season. If small areas of vegetation are to be removed then it is recommended that all clearance should ideally take place outside of the bird breeding season. Bird breeding season is between mid March and mid August, although certain species can breed outside these months and if breeding birds are found then work should cease and the advice of an ecologist sought. If clearance or demolition is undertaken within the bird breeding season then all site features should preferably be checked immediately prior to clearance by a suitably qualified ecologist.

The trees to be retained should be treated in accordance British Standard BS5837 (2012) Trees in Relation to Design, Demolition and Construction – Recommendations, to ensure require adequate root protection fencing where necessary.

Following the advice below will help developers to avoid committing offences. In accordance with the Protection of Badgers Act (1992) precautionary measures that should be taken to minimise disturbance and interference with badgers include:

- Ensure that all those in work are aware of the potential for setts or badgers to be encountered, and the actions to be taken if these are discovered at anytime.
- Trenches and excavations are to be covered at the end of each working day, or include ramps as a means of escape for any animal falling in.
- Any temporary exposed open pipe system should be capped to prevent badgers gaining access.

To ensure no newts or other amphibians are harmed during the construction;

- All site staff involved with site clearance and construction works are to be made aware of the potential for encountering Great Crested Newts through a tool kit talk and the appropriate measures to be taken if Great Crested Newts are encountered.
- Keep duration of groundworks as short as possible.
- Undertake during the day works that might only affect newts above ground.
- Backfill trenches and other excavations before nightfall, or leave a ramp to allow newts to easily exit.
- Raise stored materials (that might act as temporary resting places) off the ground, e.g. on pallets.
- Ensuring storage of piles of materials and excavated earth on the site should be kept to a minimum.
- Storing piles of materials and excavated earth away from the field boundaries to deter reptiles from using them for temporary cover.

Lighting:

Lighting is to be in accordance with BCT current guidance (see Artificial Lighting and Bats, BCT Guidance note, 2018), also refer to generic guidance (BCT) Appendix 1, at end of this document.

- There is to be no lighting columns within the development
- Lighting restricted to low bollards and individual lights near doorways (on PIRs)

4.4 Opportunities for Biodiversity Gain

Following the works, there will be opportunities for enhancement of the site's ecological value by on site landscaping measures designed to encourage wildlife into the site, including native planting, bird and bat boxes on built structures. Species should be selected, that are both native and wildlife friendly, focusing on measures to encourage birds and foraging bats, wherever possible. See appendices 4 - 8 for detailed information.

The opportunities for enhancement lie in the following main areas:

1. Planting with native nectar rich and berry bearing tree, shrub and plant species.
2. Introduction of bat and bird friendly native planting schemes, bat hibernacula, and wildflower hedgerow edge mix seeding.
3. Bird and bat boxes incorporated within or on the new buildings or other built fabric, in particular should be included.

It is proposed to produce a biodiversity Net gain as part of the project, by planting of semi improved species rich meadows, species rich native hedgerows, native woodland and creation of a wildlife pond in land to the south of the development. See plans below. This will ensure a substantive net biodiversity gain to the project.



5. CONCLUSION

This Phase 1 Ecology Report confirms that the Construction Zone is of 'low to negligible ecological value' consisting primarily of existing building, surrounded by hardstanding though with higher value early mature trees that are to be retained and protected which are of higher value. No further surveys are recommended, however the precautions described in section 4, in relation to Great crested newts, reptiles and badgers should be followed.

The building and all trees are categorized as having negligible bat roost potential.

It is recommended that as many trees as possible be retained, and a tree protection area and root protection zone be established to avoid damage during the construction phase. All retained trees should be protected in accordance British Standard BS5837 (2012) Trees in Relation to Design, Demolition and Construction – Recommendations, to ensure require adequate root protection fencing. If any trees are to be lost within the scheme, these should be mitigated for by suitable 1:1 enhancement planting with native, nectar rich, berry bearing species.

Bats react adversely to intense lighting, to maintain the suitability of the site for roosting and foraging bats, external lighting provision within the development should be as minimal as possible. External lighting should be via directional downlighters, of low lux and where possible, on timers to ensure as little light spill as possible from the development.

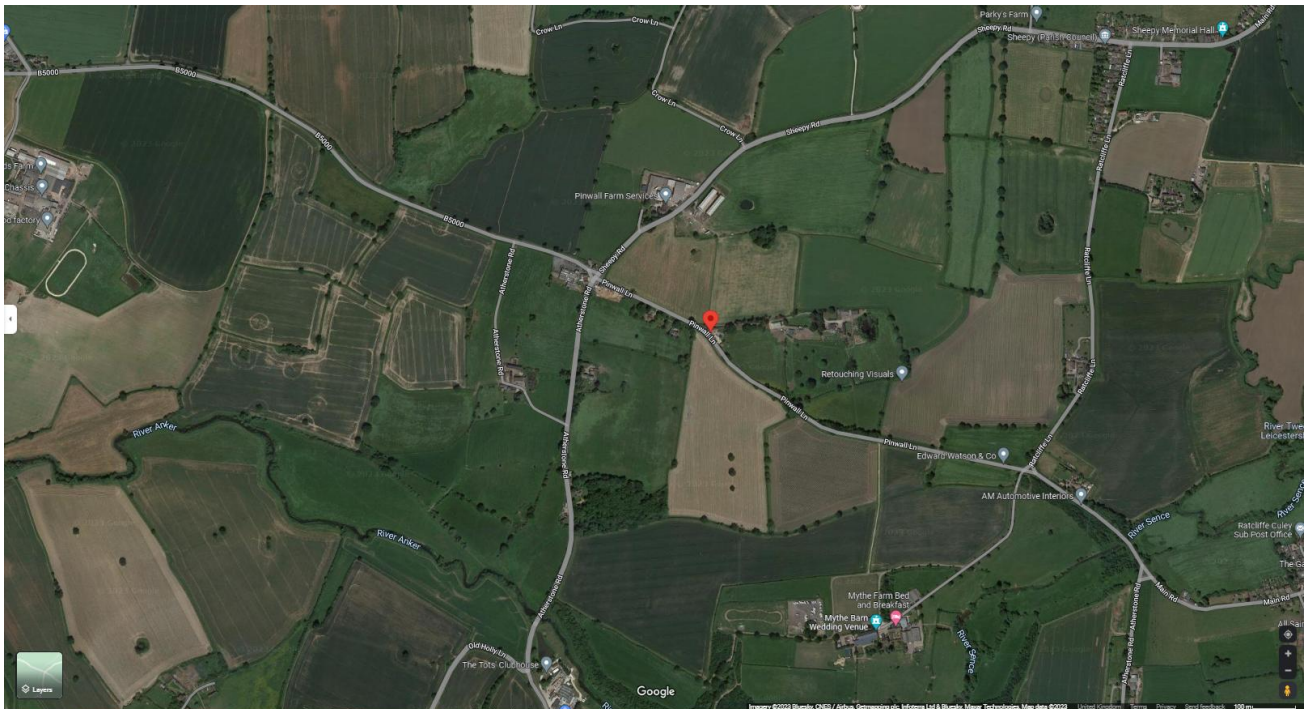
Any woody vegetation clearance should take place outside of the bird breeding season. Bird breeding season is between mid March and mid July, although certain species can breed outside these months and if breeding birds are found then work should cease and the advice of an ecologist sought. If clearance is undertaken within the bird breeding season then all site features should preferably be checked immediately prior to clearance by a suitably qualified ecologist.

It is proposed to produce a biodiversity Net gain as part of the project, by planting of native woodland and creation of a wildlife pond in land to the south of the development.

There are no Statutory or Non-Statutory Designated Nature Conservation Sites within or adjacent to the site. There are no sites at further distances that will be impacted by this development.

Date	Prepared by	Checked and Verified by
12 th January 2023	Dr Louise Sutherland MIALE Ecologist	Dr Stefan Bodnar MCIEEM Principal Ecologist

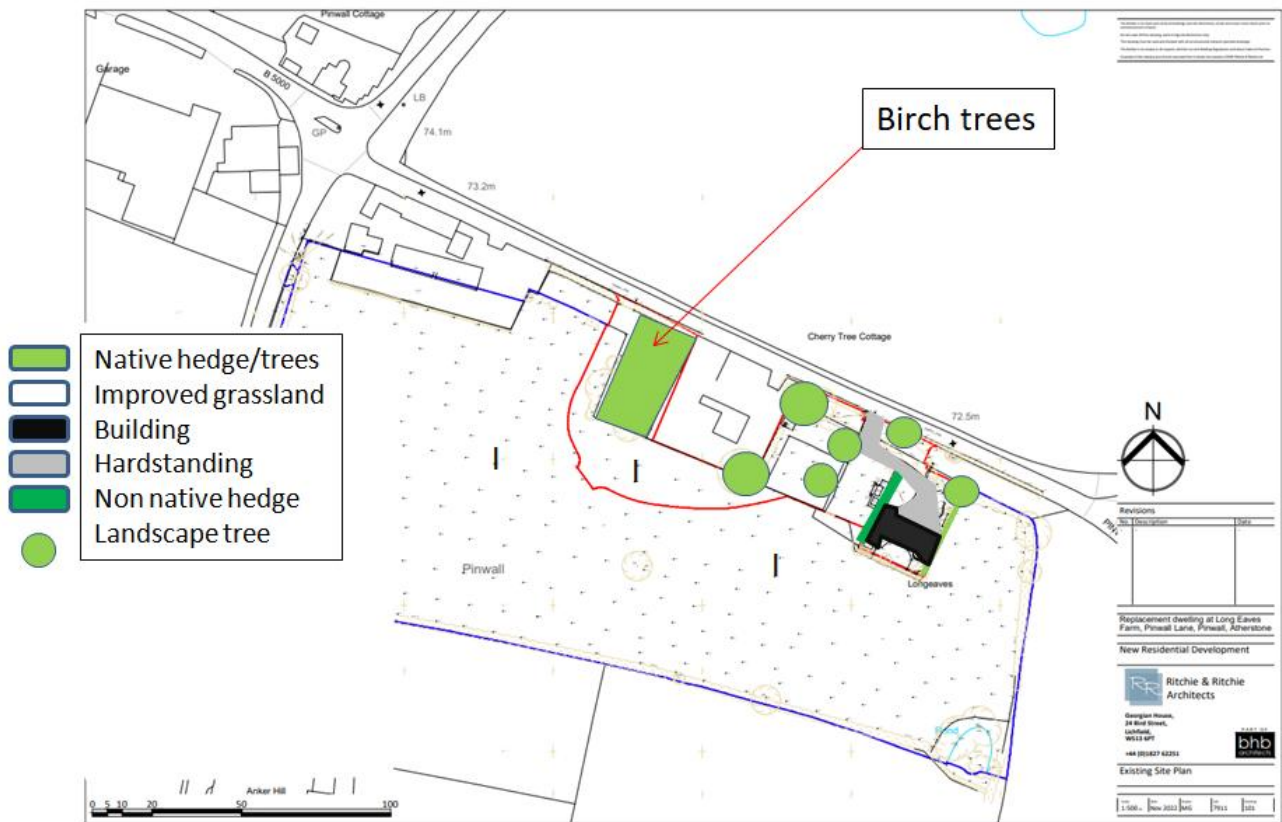
Appendix 1a & 1b. Satellite images showing landscape context



Map data 2023© Google.



Appendix 1d Phase 1 Habitat Map



Appendix 2 Photographs

































Appendix 3 Species lists

Flora Species List (Woody)

Common name	Scientific name
Hazel	<i>Corylus avellana</i>
Silver birch	<i>Betula pendula</i>
Hawthorn	<i>Crateagus monogyna</i>
Beech	<i>Fagus excelsior</i>
Weeping Willow	<i>Salix babylonica</i>
English oak	<i>Quercus robur</i>
Ash	<i>Fraxinus excelsior</i>
Goat Willow	<i>Salix caprea</i>
Scots Pine	<i>Pinus sylvestris</i>
Leyland cypress	<i>Cupressus × leylandii</i>
Apple	<i>Malus domestica</i>
Holly	<i>Ilex aquifolium</i>

Flora Species List (non-woody)

Common name	Scientific name
Creeping Buttercup	<i>Ranunculus repens</i>
Creeping thistle	<i>Cirsium arvense</i> ,
Ivy	<i>Hedera helix</i>
Perennial ryegrass	<i>Lolium perenne</i>
Red campion	<i>Silene dioica</i>
Smooth sow thistle	<i>Sonchus oleraceus</i>
Spear Thistle	<i>Cirsium vulgare</i>
Stinging nettle	<i>Urtica dioica</i>
Cleavers	<i>Galium aparine</i>
Cow parsley	<i>Anthriscus sylvestris</i>

Appendix 4: Specifications for Biodiversity Gain

Appendix 4a: British Native Trees to Attract Wildlife

Species	Average mature / ultimate height			Growth rate			Soil/ground conditions					Tolerant of sites that are				Valuable for	
	0.5-5m	6m-15m	16m+	Fast	Medium	Slow	Wet ground	Light sandy soils	Heavy soils	acid	alkaline	Shaded	Polluted	Coastal	Exposed	Birds	Insects
Alder		•		•			■		•		•	•	•		•		•
Ash			•		•		▲	•	•		•	•	•	•	•		
Aspen		•		•					•	•	•		•	•	•		•
Beech			•			•		•			•	•					•
Birch, Downy		•		•			▲			•			•		•		•
Birch, Silver		•		•				•		•			•		•		•
Blackthorn	•			•				•	•	•	•			•	•	•	•
Broom	•				•			•		•	•	•	•	•			•
Buckthorn, Alder	•					•	▲			•							
Cherry, Wild		•			•			•	•		•		•				
Cherry, Bird		•			•			•	•	•	•	•				•	•
Crabapple		•				•		•	•	•	•	•				•	•
Elder		•		•				•	•	•	•	•	•	•	•		•
Elm, Wych		•			•				•	•	•	•	•	•	•		•
Gorse	•				•			•		•	•					•	•
Hawthorn	•				•			•	•	•	•		•	•	•	•	•
Hazel		•		•					•		•	•					•
Holly		•				•		•	•	•	•	•	•	•	•	•	
Lime, small-leaved			•		•				•	•	•	•					•
Maple, Field		•			•				•		•	•	•				
Oak, Pedunculate			•			•			•		•				•	•	•
Oak, Sessile			•			•	▲	•	•	•	•	•			•	•	•
Pine, Scots			•		•			•		•					•		•
Poplar, Black			•	•			▲	•	•		•						•
Rose, Dog	•				•			•	•	•	•	•	•		•		•
Rose, Guelder	•				•		▲		•		•	•					•
Rowan		•		•				•		•			•	•	•	•	
Spindle	•				•				•		•	•					
Whitebeam, Common		•			•			•	•		•						•
Wild Service	•					•			•		•	•		•		•	
Willow, Crack		•		•			■				•		•	•	•	•	•
Willow, Goat		•		•	•		■		•		•	•	•	•	•	•	•
Willow, White			•	•			■				•		•	•	•	•	•
Yew		•				•		•			•	•			•	•	

■ Only species to survive waterlogged sites with anaerobic conditions.

▲ Will tolerate wet ground if there is some seasonality of "flushing (water movement) within the soil.

Appendix 4b: Non-native plants to attract wildlife

Buddleja X weyeriana cultivars

You can plant the orange-flowered B. X weyeriana hybrids with a clear conscience as they don't appear to produce viable seed, they also attract a broad spectrum of insects including both butterflies and bees, and they flower late into the season when nectar is scarce. The beautiful B. x fallowiana 'Lochin' with silver leaves is attractive to butterflies and is also said not to produce seeds. The orange ball Buddleja (B. globosa) from South America seems to attract bees rather than butterflies.

Bupleurum fruticosum ('Shrubby Hare's Ear')

A shrubby evergreen umbellifer from Southern Europe, where it is often cultivated. It has leathery aromatic foliage and umbels of yellowish flowers, a bit like those of Fennel, that are very attractive to hoverflies and other small insects. Well worth growing for this reason.

Ceanothus X 'Gloire de Versailles'

Ceanothus come from the Western United States. Most Ceanothus have bunches of very small flowers that don't seem very attractive to insects. 'Gloire de Versailles' however is a hybrid with loose bunches of pale blue tubular flowers that are very attractive to butterflies and bees.

Caryopteris X clandonensis 'Kew Blue'

A deciduous shrub from China for a sunny position, has small tubular blue flowers attractive to insects.

Clethra alnifolia ('Sweet Pepper Bush')

A deciduous shrub from the Eastern United States that likes damp, acid or woodland soil. Has spikes of small scented white flowers attractive to moths and butterflies.

Hebe X 'Great Orme' and H. X 'Midsummer Beauty'

Hebes are close relatives of the herbaceous genus Veronica, and come from New Zealand. Some are much more attractive to insects than others. 'Great Orme' is a medium-sized hybrid with pale pink flowers that are attractive to butterflies. It is a distinctive cultivar and available true to name in the nursery trade.

'Midsummer Beauty' seems to be more of a generic name for a series of large shrubs with blue or grey-blue flowers in long spikes, attractive to both bees and butterflies. There are a number of other blue and white flowered Hebes that seem very popular with bumblebees.

Myrtus communis ('European Myrtle')

An attractive evergreen shrub from the South of France and Spain with small evergreen aromatic leaves. It has been grown in our gardens for centuries, but is susceptible to hard frost and prefers a site against a warm sunny wall. Fluffy white flowers in early summer are bumblebees' heaven. Purplish berries follow later which are stripped by blackbirds in January.

Amelanchier species ('Shad Bush')

Shrubs with white cherry-like blossoms early in the year, followed by blackish berries in late summer. Valuable for the berries as a source of food for berry-eating birds when most other berries are not yet ripe.

***Erica terminalis* ('Corsican Heath')**

A shrubby heather-like plant popular with bumblebees. The Cornish Heath, *Erica vagans*, from the Atlantic fringes of Europe is also a good bee plant. *Erica manipuliflora*, from Southern Europe, and its hybrid *Erica X griffithii* have fragrant flowers that attract butterflies.

Eupatorium ligustrinum

A late-flowering evergreen bush that looks very like a privet, but has bunches of white fluffy flowers in September and October. These flowers seem very attractive to range of insects, especially hoverflies.

***Ribes sanguineum* (Flowering Currant)**

It is a very good early flower for bumblebees, as indeed are the flowers of the closely related blackcurrants and gooseberries.

Appendix 4c: Plants good for moths, with species of moth they encourage beside

Plant	Moths
Bird's Foot Trefoil (<i>lotus corniculatus</i>)	<i>Burnet, Belted Beauty, Chalk Carpet, Latticed Heather</i>
Bladder Campion (<i>silene vulgaris</i>)	<i>Campion, Marbled Coronet, Nettle Pug, Marbled Clover, Dark Brocade, Sandy Carpet</i>
Borage (<i>borago officinalis</i>)	<i>Crimson Speckled</i>
Wild Clary (<i>salvia horminoides</i>)	<i>Twin-spot Carpet</i>
Biting Stonecrop (<i>sedum acre</i>)	<i>Yellow Ringed Carpet, Northern Rustic</i>
Cowslip (<i>primula veris</i>)	<i>Plain Clary, Northern Rustic</i>
Dropwort (<i>filipendula hexapetala</i>)	<i>Satyr Pug</i>
Evening Primrose (<i>oenothera biennis</i>)	<i>Elephant Hawk</i>
Field Scabious (<i>kanutia arvensis</i>)	<i>Marsh Fritillary, Narrow Bordered Bee Hawk, Lime Speck Pug, Shaded Pug</i>
Foxglove (<i>digitalis purpurea</i>)	<i>Lesser Yellow Underwing, Foxglove Pug</i>
Golden Rod (<i>solidago</i>)	<i>Lime Speck Pug, Bleached Pug, Golden Rod, Wormwood Pug, V Pug</i>
Greater Stitchwort (<i>stellaria holostea</i>)	<i>Dart, Yellow Underwing, Marsh Pug, Plain Clary</i>
Hedge Bedstraw (<i>gallium mollugo</i>)	<i>Ruddy Carpet, Royal Mantle, Common Carpet, Wood Carpet, Water Carpet, Beech Green Carpet, Mottled Grey, Green Carpet</i>
Hedge Woundwort (<i>stachys sylvatica</i>)	<i>Rosy Rustic, Plain Golden Y, Sub-angled Wave</i>
Hemp Agrimony (<i>eupatorium cannabinum</i>)	<i>Wormwood Pug, V Pug, Lime Speck Pug, Marsh Pug, Gem, Scarce Burnished</i>
Herb Bennet (<i>geum urbanum</i>)	<i>Riband Wave</i>
Herb Robert (<i>geranium robertianum</i>)	<i>Barred Carpet</i>
Hollyhock (<i>althaea rosea</i>)	<i>Mallow</i>
Kidney Vetch (<i>anthyllis vulneraria</i>)	<i>6-belted Clearwing</i>
Lady's Bedstraw (<i>gallium verum</i>)	<i>Hummingbird Hawk, Small Elephant Hawk, Gallium Carpet, Plain Wave, Riband Wave, Bedstraw Hawk, Archer's Dart, Red Chestnut, Ruddy Carpet, Royal Mantle, Common Carpet, Water Carpet, Beech Green Carpet, Red Twin Spot Carpet, Wood Carpet, Mottled Grey, Green Carpet</i>
Lady's Mantle (<i>alchemilla mollis</i>)	<i>Red Carpet</i>
Lesser Knapweed (<i>centaurea nigra</i>)	<i>Silver Y, Lime Speck Pug, Satyr Pug</i>

Lesser Meadow Rue	<i>Marsh Carpet</i>
Maiden Pink (<i>dianthus deltoides</i>)	<i>Marbled Coronet</i>
Marjoram (<i>majorana origanum</i>)	<i>Sub-angled Wave, Lace Border</i>
Marshmallow (<i>althea officinalis</i>)	<i>Marshmallow</i>
Meadow Clary (<i>salvia pratensis</i>)	<i>Brown Spot Pinion, Hebrew Character, Powdered Quaker, Emperor</i>
Mullein	<i>Mullein, Striped Lychnis</i>
Navelwort (<i>umbilicus rupestris</i>)	<i>Weaver's Wave</i>
Pink	<i>Hawk</i>
Primrose (<i>primula vulgaris</i>)	<i>Pearl Bordered Yellow Underwing, Double Square Spot, Green Arches, Triple Spotted Clary, Ingrained Clary, Silver Ground Carpet</i>
Purple Loosestrife (<i>lythrum salicaria</i>)	<i>Emperor, Small Elephant Hawk, Powdered Quake</i>
Ragged Robin (<i>lychnis flos cuculi</i>)	<i>Campion, Lychnis, Twin-spot Carpet, Marbled Clover</i>
Red Campion (<i>melandrium rubrum</i>)	<i>Rivulet, Campion, Lychnis, Twin-spot Carpet, Sandy Carpet, Marbled Clover</i>
Red Clover (<i>trifolium pratense</i>)	<i>Latticed Heath, Chalk Carpet, Belted Beauty, Mother Skipton, Shaded Broad Bar, Narrow-bordered 5-spot Burnet</i>
Red Valerian (<i>centranthus ruber</i>)	<i>Elephant Hawk</i>
Rock Rose (<i>helianthemum mummularium</i>)	<i>Amulet, Cistus Forester, Silky Wave, Ashworth's Rustic, Argus, Wood Tiger, Northern Brown</i>
Rosebay Willowherb	<i>Twin-spot Carpet, Small Phoenix, White Banded Carpet</i>
Small Scabious (<i>scabiosa columbaria</i>)	<i>Lime Speck Pug, Shaded Pug</i>
Soapwort (<i>saponaria officinalis</i>)	<i>Marbled Clover</i>
St John's Wort	<i>Treble Bar</i>
Sweet Violet (<i>viola odorata</i>)	<i>Broad Bordered Yellow Underwing, Lesser Broad Bordered Yellow Underwing</i>
Tansy (<i>tanacetum vulgare</i>)	<i>Essex Emerald</i>
Thrift (<i>armeria maritima</i>)	<i>Amulet, Feathered Ranunculus, Thrift Clearwing, Black Banded</i>
Thyme	<i>Thyme Pug, Satyr Pug, Lace Border</i>
Toadflax (<i>linaria vulgaris</i>)	<i>Toadflax Pug, Marbled Clover</i>
Valerian (<i>valeriana officinalis</i>)	<i>Valerian Pug, Lesser Cream Wave</i>
White Campion (<i>silene latifolia alba</i>)	<i>Marbled Coronet, Marbled Clover, Sandy Carpet</i>

Wild Clematis (<i>clematis vitalnba</i>)	<i>Lime Speck Pug, Haworth's Pug, Small Emerald, The Fern, Pretty Chalk Carpet, Least Carpet, Pug, Chalk Carpet, Small Waved Umber</i>
White Clover (<i>trifolium repens</i>)	<i>Cloudy Wing Skipper, Orange, Clouded Sulphur</i>
Wild Pansy (<i>viola tricolor</i>)	<i>Pluvia</i>
Wild Strawberry (<i>fragaria vesca</i>)	<i>Amulet, Yellow Shell, Beautiful Carpet, Dark Marbled Carpet</i>
Wild Wallflower	<i>Flame Carpet</i>
Wormwood (<i>artemesia absinthium</i>)	<i>Wormwood Pug</i>
Yarrow (<i>achillea millefolium</i>)	<i>Essex Emerald, Lime Speck Pug, Straw Belle, Wormwood Pug, Ruby Tiger, Yarrow Pug, V Pug, Sussex Emerald, Grey Pug, Tawny Speckled Pug, Common Pug, Mullein Wave</i>
Yellow Flag Iris (<i>iris pseudacorus</i>)	<i>Belted Beauty, Water Ermine</i>
Barberry	<i>Scarce Tissue, Wheat</i>
Blackthorn/Sloe	<i>March, Common Emerald, Little Emerald, Mottled Pug, Feathered Thorn, Orange, Scalloped Hazel, Scalloped Oak, August Thorn, Brimstone, Early Thorn, Pale Brindled Beauty, Blue Bordered Carpet, Broken Barred Carpet, November, Pale November, Winter, Sloe Pug, Green Pug, Sharp Angled Peacock, The Magpie</i>
Broom	<i>Grass Emerald, The Streak, Broom-tip, Lead Belle, Spanish Carpet, Frosted Yellow</i>
Dog Rose	<i>V Pug, Little Thorn, Shoulder Stripe, Barred Yellow, Streamer</i>
Hawthorn	<i>March, Common Emerald, Little Emerald, November, Pale November, Winter, Mottled Pug, Pinion Spotted Pug, Common Pug, Grey Pug, Peppered, Brindled Beauty, Pale Brindled Beauty, Feathered Thorn, Scalloped Hazel, The Magpie, Scalloped Oak, Large Thorn, Early Thorn, Oak Tree Pug, Broken Barred Carpet</i>
Hazel	<i>Oak Beauty, Small White Wave, The Magpie, Clouded Border, Barred Umber, Winter, Pale November</i>
Oak	<i>Brindled Pug, Oak Tree Pug, Spring Usher, Peppered, Oak Beauty, Brindled Beauty, Pale Brindled Beauty, Small Brindled Beauty, Feathered Thorn, Orange, Lunar Thorn, Purple Thorn, Scalloped Hazel, Scalloped Oak, Scorched Wing, Large Thorn, August Thorn, November, September Thorn, Pale November,</i>

	<i>Winter, March, Blotched Emerald, Common Emerald, Little Emerald, False Mocha, Maiden's Blush, Marbled ug, Red-green Carpet, Broken Barred Carpet</i>
Rowan	<i>Orange Underwing, Welsh Wave, Mottled Pug, Red-green Carpet</i>
Wild Privet	<i>Lilac Beauty, Barred Toothed Striped, Yellow Barred Brindle,</i>

Appendix 4d: Plants and Habitats to attract Bats

1. Flower Borders and Lawns

Larvae and adults of many insects will be catered for by introducing a wide range of food, in the form of nectar, seeds and fruit as well as vegetation.

- Grow night scented flowers. These attract moths and other night flying insects of particular importance to bats.
- Plant herbs and old fashioned cottage-garden annuals attractive to insects.
- Leave part of your lawn un-mown from about mid-May to encourage insect larvae which feed on grass. Allow to seed before cutting, and rake up the hay afterwards.
- Sow wild flower seed collections in your borders.

2. Trees and Shrubs

At woodland edges space and sunshine combine with the trees to give shelter and warmth, and insects will concentrate there. So even in the smallest garden try to have at least one tree or shrub. Native trees are more attractive to insects than foreign species.

If space is limited, silver birch and goat willow are quick growing and are host to many insect visitors. With a little more space, try to make a bank of vegetation to give your garden a woodland edge structure.

3. Shelter Belts

Rows of bushes or trees can be created or improved, encouraging concentrations of insects and providing a feeding area for bats,

- Plant up gaps in natural hedges,
- A row of fast-growing cypress can be valuable.
- Train climbers using battens against a wall or fence, to provide possible roosting sites.
- Create a sheltered corner by using any combination of walls, fences, hedges or woodland edge at two angles.

Scented herbs

Chives, Borage, Lemon balm, Marjoram, Mint - many varieties

Night scented flowers for the border (in approximate order of flowering)

Bedding Plants

Nottingham catchfly	<i>Silene nutans</i>
Night-scented catchfly	<i>S. noctiflora</i>
Bladder campion	<i>S. vulgaris</i>
Night-scented stock	<i>Matthiola bicornis</i>
Sweet rocket	<i>Hesperis matronalis</i>
Evening primrose	<i>Oenothera biennis</i>
Tobacco plant	<i>Nicotiana affinis</i>
Cherry pie	<i>Heliotropium x hybridum</i>
Soapwort	<i>Saponaria officinalis</i>

Climbers

European honeysuckle	<i>Lonicera caprifolium</i>	July-November
Italian honeysuckle	<i>L. etrusca superba</i>	July-August
Japanese honeysuckle	<i>L. japonica halliana</i>	August-October
Honeysuckle (native)	<i>L. periclymenum...</i>	July-August
White jasmine	<i>Jasminum officinale</i>	
Dogrose	<i>Rosa canina</i>	
Sweetbriar	<i>R. rubiginosa</i>	
Fieldrose	<i>R. arvensis</i>	
Ivy	<i>Hedera helix</i>	
Bramble - many species		

Large trees, small trees and shrubs

Oak	<i>Quercus robur</i> & <i>Q. petraea</i>
Ash	<i>Fraxinus excelsior</i>
Silver birch	<i>Betula pendula</i>
Field maple	<i>Acer campestre</i>
Hawthorn	<i>Crataegus monogyna</i>
Alder	<i>Alnus glutinosa</i>
Goat willow	<i>Salix caprea</i>
Guelder rose	<i>Viburnum opulus</i>
Hazel	<i>Coryllus avellana</i>
Blackthorn	<i>Prunus spinosa</i>
Elder	<i>Sambucus nigra</i>

Buddleia davidii

Rock plants for walls

Ivy-leaved toadflax

Cymbana muralis

Wall pennywort

Umbilicus rupestris

Appendix 4e: Plants and Habitats to Attract Birds

Plants to Feed Birds.

Many shrubs, climbers, trees, garden and 'wild' plants provide food, directly or indirectly, through berries, seeds or the insects they attract.

Berry or fruit bearing trees and shrubs will attract members of the Thrush family, Blackbird, Fieldfare, Mistle and song Thrush, Redwing and Robin. Also Starlings and, in some winters, Waxwing and even some Warblers, e.g., Blackcaps who eat berries in the early autumn before they migrate. Unless mentioned, the berries attract all the above birds plus others as specified.

Shrubs with Berries.

- Aronia arbutifolia (Red Chokeberry) : bright red fruits
- Berberis: most forms have black/purple berries, especially loved by Blackbirds.
- Callicarpa 'Profusion': bright violet coloured berries.
- Cornus (Dogwood): blue tinted white berries (not C.Mas).
- Cotoneaster : prolific red, orange or yellow berries - birds often choose red first, through orange to yellow last. (Note berries are poisonous to humans).
- Euonymus europaeus (spindleberry: large bright red fruits which open to emit orange red seeds.(Note berries are poisonous to humans).
- Ilex (Holy): red, orange or yellow berries - red berries preferred (need partner to fruit).(Note berries are poisonous to humans).
- Mahonia: decorative black berries.
- Rosa rugosa : large red hips, particularly attractive to Greenfinches which pick out the seeds.
- Sambucus (Elder): red or black berries - over 32 species reported eating them, especially Blackcap and, occasionally, Collar Doves.
- Viburnum opulus (Guelder Rose) : translucent berries
- Viscum album (Mistletoe): familiar white globular berries of this parasite that grows in trees, especially apple, are a good food source for Blackbirds.

Climbers with Berries.

- Chaenomeles (Flowering Quince/Cydonia): Autumn Quinces.
- Hedera (Ivy) : shiny black berries
- Lonicera (Honeysuckle: red or black berries attract Thrushes plus Bullfinches and Marsh and Willow Tits. (Note berries are poisonous to humans).
- Pyracantha (Firethorn) :red, orange or yellow berries - choose red for the birds to eat before Christmas usually with orange or yellow to follow in a hard winter.
- Clematis vitalba (Old Man's Beard): seed heads are enjoyed by many birds.

Trees with Berries or Fruits.

- Crataegus monogyna (Hawthorn : red berries.
- Malus (Crab Apple: red fruited varieties are best for birds.
- Prunus (Cherries): fruits quickly picked off.
- Sorbus aucuparia (Mountain Ash/Rowan) :red, orange or pink flushed white berries. The darker the fruits the more attractive they are to birds. Occasionally bring Spotted Flycatchers to the garden.
- Taxus (Yew): sparse red berries attract a wide range of birds. Attractive also to Badgers.(Note berries are poisonous to humans).

Trees with Seed Cones.

- Alnus glutinosa (Alder), and Betula (Birch): seeds from cones enjoyed by Goldfinches, Greenfinches, Redpolls, Siskins and Tits.
- Pinus sylvestris (Scots pine) : pine cones from which Crossbills and Great Spotted Woodpeckers prise seed.

Trees with Blossom.

- Although not always welcome, Bullfinches strip the buds of fruit trees in late winter and early spring.

Garden Plants.

- Crocus: yellow and orange flowers are attractive to Sparrows because they contain yellow pigment carotene to brighten up their plumage for the breeding season.
- Echinops ritro (Globe Thistle: seed heads are eaten by Goldfinches and flower heads attract insects.

- Helianthus (Sunflower): seed heads are eaten by Greenfinches. The nectar attracts a wide range of insects.
- Lavandula (Lavender): flowers going to seed are attractive to Goldfinches.
- Primula (Polyanthus/Primrose): yellow and orange flowers are attractive to Sparrows.

Wild Plants.

You can provide a haven for wild plants to exist in their own right recreating a wild meadow to attract insects which, in turn, attract birds and other wildlife. We sell nursery grown 'wild' plants throughout the year so that you can go wild in a corner of your garden.

- Betony.
- Bird's Foot Trefoil.
- Common Poppy - seeds are favourite food of Finches.
- Field Scabious.
- Greater Knapweed.
- Meadow Cranesbill.
- Musk Mallow.
- Ox Eye Daisy.
- Oxlip.
- Primrose.
- Rough Hawkbit.
- Self Heal.
- Teasel - seed heads are a favourite food of Goldfinches.
- Wild Strawberry

The Lawn.

This is one of the principal sources of food for birds who enjoy feeding on insects including:-Ants eaten by Green Woodpeckers; Leatherjackets by Starlings; Snails by Song thrushes; Slugs by Toads and Worms by Blackbirds, Robins and Thrushes.

Cover and Protection.

By surrounding your garden by thick and often prickly hedging and dotting suitable shrubs around, you can provide safe nesting havens that are protected from marauding cats and even the unwelcome attention of unfriendly humans.

The most successful shrubs and trees for this purpose include:-

- Conifers especially chamaecyparis, Taxus (Yew) and Thuja Placata.
- Crataegus.
- Eleagnus.
- Hedera (Ivy) up a tree.
- Ligustrum (Privet) especially for Blackbirds.
- Lonicera (Honeysuckle).
- Pittosporum.
- Salix caprea (Weeping Kilmarnock Willow).

Appendix 4f: Plants and Habitats to attract Bees

Native Plants for Bees

Native plants should be your first choice to help our native bees. Listed below are some plants that are good sources of nectar or pollen for bees. Both the common and Latin names of the plant genus are given. This list is not exhaustive; there are many other plants good for bees. Individual species have not been included because we hope the list will be useful across the U.S. Not all of these genera will have species in your local area, but they do represent plants that will grow in a variety of environments. Use a wildflower guide or contact local nurseries to find your local species.

- Aster *Aster*
- Black-eyed Susan *Rudbeckia*
- Caltrop *Kallstroemia*
- Creosote bush *Larrea*
- Currant *Ribes*
- Elder *Sambucus*
- Goldenrod *Solidago*
- Huckleberry *Vaccinium*
- Joe-pye weed *Eupatorium*
- Lupine *Lupinus*
- Oregon grape *Berberis*
- Penstemon *Penstemon*
- Purple coneflower *Echinacea*
- Rabbit-brush *Chrysothamnus*
- Rhododendron *Rhododendron*
- Sage *Salvia*
- Scorpion-weed *Phacelia*
- Snowberry *Symphoricarpos*
- Stonecrop *Sedum*
- Sunflower *Helianthus*
- Wild buckwheat *Eriogonum*
- Wild-lilac *Ceanothus*
- Willow *Salix*

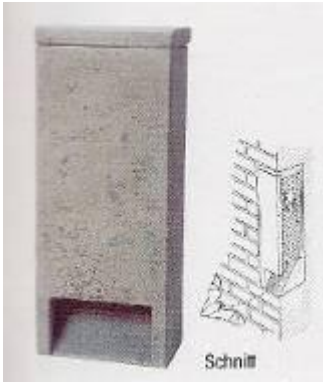
Garden plants for bees

Flower beds in gardens, business campuses, and parks are great places to have bee-friendly plants. Native plants will create a beautiful garden but some people prefer "garden" plants. Many garden plants are varieties of native plants, so this list only includes plants from other countries--"exotic" plants--and should be used as a supplement to the native plant list.

As with the native plants, this list is not exhaustive.

- Basil *Ocimum*
- Cotoneaster *Cotoneaster*
- English lavender *Lavandula*
- Giant hyssop *Agastache*
- Globe thistle *Echinops*
- Hyssop *Hyssopus*
- Marjoram *Origanum*
- Rosemary *Rosmarinus*
- Wallflower *Erysimum*
- Zinnia *Zinnia*

Appendix 5: Bat Boxes and Bat Brick Specifications to Provide Bat Habitat on Buildings



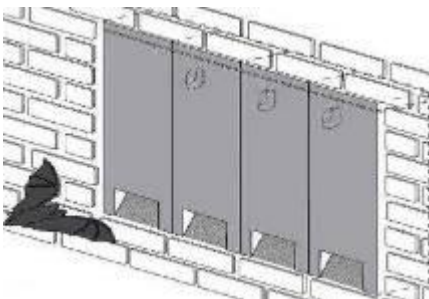
Schwegler 1FR can be installed within brick masonry just leaving the entrance and can be rendered over.



Ibstock Enclosed Bat Box B is designed specifically for the pipistrelle bat.



Schwegler WI integral Summer & Winter Bat Box.



Schwegler 2FR Bat Tube is the same design as the 1FR but with holes in the sides. Multiple tubes to be placed next to each other to form a much larger roost.



Schwegler 27 wall can be installed within brick masonry. It can be rendered over.



Schwegler 1FQ wall-mounted bat box.



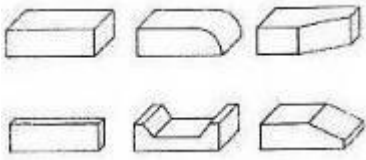
Schwegler 1FE Bat Access Panel can be surface-mounted or integrated. The open back enables bats access through exterior walls.



Ibstock Bat Box with Engraved Motif C is designed specifically for the pipistrelle bat and is available in all brick colours.



Ibstock Free Access Bat Box allows bats to access the cavity wall of the building.



Modified bricks for creating bat access points. A standard brick is shown top left. Purpose made bat bricks can also be used.



Norfolk Bat Brick allows bats to access the cavity wall of the building. The slits are the perfect size for Natterer's bat, Daubenton's bat, Brandt's bat and Brown long-eared.



Marshall's Bat Access Brick (*Also available in stone*) allows bats access into the cavity wall of the building.

APPENDIX 6: Insect Box Specifications

A variety of insect boxes is recommended to encourage a diversity of insect species and encourage bats.

Wooden Insect House

A general insect habitat for beneficial insects in summer and, later in the year, over wintering ladybirds and lacewings. Locate in a sheltered place near nectar or pollen plants or by a pond. Durable and strong construction in acacia, oak or larch with no maintenance necessary.

Dimensions: 22 × 13.5 × 13.5cm.



Woodcrete Insect House

An insect nest made from long-lasting, insulating, woodcrete, with holes of different sizes providing homes for a variety of beneficial insects such as bees and solitary wasps. Dimensions: 14 × 8 × 26cm; Weight: 3.65kg



Insect House with Inspection Tubes

This nesting and hibernation box for insects has a woodcrete exterior with a wooden front panel which can be removed for observation. Through the transparent tubes you can see the usually hidden lifecycle of many solitary types of bees and hymenoptera including egg-laying, development of larvae and sealing of brood chambers. Typical inhabitants are wild bees and thread-waisted wasps. All the species attracted to this box are harmless non-aggressive pollinating insects.

Dimensions: 33 × 21 × 51 cm; Weight: 7.1kg.



Appendix 7. Bird Box Specifications

Schwegler boxes have the highest occupation rates of all box types. They are carefully designed to mimic natural nest sites and provide a stable environment for chick rearing and winter roosting. They can be expected to last 25 years or more without maintenance.

2. Schwegler No 11 House Martin Nest (Code: 002097D)



It is increasingly difficult for swallows and house martins to find suitable nest-building material. The mud they do find, if any, is often poor quality. In addition, the walls of buildings are nowadays often very smooth. As a result, nests tend to fall down, sometimes with the nestlings inside. In many places, the vibration caused by heavy vehicles shakes the nests loose. This nest has been developed to enable House Martins to breed successfully on external facades without overhanging eaves and has proved highly successful.

3. Schwegler No 16 Swift Box (Code: 002087D)

The design of this box mimics bell tower louvres. It has a removable panel for easy inspection of the nest chamber.



4. 2H Robin Box (Code: 002015D)



This box is attractive to robins, pied wagtails, spotted flycatcher, wrens and black redstarts. Best sited on the walls of buildings with the entrance on one side.

5. Sparrow Terrace



House sparrows are gregarious and prefer to nest close to each other, so this woodcrete box provides room for three families under one roof. Made from long-lasting, breathable woodcrete. No maintenance required. Designed for fixing to walls (not suitable for fences or sheds due to the weight of the box). Available in choice of stone colour (pictured) or brown.

6. Schwegler 1B Bird Box

The most popular box for garden birds, the 1B appeals to a wide range of species, and is the official nest box of National Nest Box Week. The box can be nailed to the trunk of a tree, or hung from branch. Woodcrete, 23cm high x 16cm diameter. Available in choice of four colours - brown, green, red or white. Available with 32mm entrance hole (standard) or with 26mm hole



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7. **Schwegler Built-in Multi-System Main Cavity Bird Box (Code: 002101D)**



The multi-system has exchangeable front panels for kestrels, jackdaws or swifts. The system can be installed in all types of buildings, whether constructed of concrete, brick or timber. To meet the needs of various species of bird, different types of front panel are available for use with the main cavity. The main cavity is supplied without a front panel which should be ordered separately. **Positioning:** At heights of 5m or more on a sheltered external wall. **Suitable for:** Dependant on the type of front panel chosen. **Material:** Woodcrete

Height:415mm **Width:** 445mm **Depth:**415mm **Weight:**2.8Kg

Appendix 8: Measures specifically for hedgehogs

Bats and External lighting (general guidance)

MITIGATION OF LIGHTING IMPACTS ON BATS

- **FORAGING AND COMMUTING Type of lamp (light source)** The impact on bats can be minimised by the use of low pressure sodium lamps or high pressure sodium instead of mercury or metal halide lamps where glass glazing is preferred due to its uv filtration characteristics.
- **Luminaire and light spill accessories** Lighting should be directed to where it is needed and light spillage avoided. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvres and shields to direct the light to the intended area only. Planting can also be used as a barrier or manmade features that are required within the build can be positioned so as to form a barrier. **Suitable examples shown below:**

Double Asymmetric Luminaire



Simple Hood



- **Lighting column** The height of lighting columns in general should be as short as is possible as light at a low level reduces the ecological impact. However, there are cases where a taller column will enable light to be directed downwards at a more acute angle and thereby reduce horizontal spill. For pedestrian lighting this can take the form of low level lighting that is as directional as possible and below 3 lux at ground level. **Aim for Lighting column of 5m or less, hooded and cowed to prevent light spill, for main lighting columns**
- **Light levels** The light should be as low as guidelines permit. If lighting is not needed, don't light. **Timing of lighting** The times during which the lighting is on should be limited to provide some dark periods. Roads or trackways in areas important for foraging bats should contain stretches left unlit to avoid isolation of bat colonies. These unlit stretches should be 10 metres in length either side of commuting route. **Direct lighting so that the hedgerow dark corridors to the edge of the site remain unlit. So the lighting to be restricted to the roadways in and out, and parking areas only. Parking areas angle lighting inwards.**
- **SECURITY LIGHTING Power** It is rarely necessary to use a lamp of greater than 2000 lumens (150 W) in security lights. The use of a higher power is not as effective for the intended function and will be more disturbing for bats.
- **Movement sensors** Many security lights are fitted with movement sensors which, if well installed and aimed, will reduce the amount of time a light is on each night. This is more easily achieved in a system where the light unit and the movement sensor are able to be separately aimed. **Timers** If the light is fitted with a timer this should be adjusted to the minimum to reduce the amount of 'lit time'.
- **Aim of light** The light should be aimed to illuminate only the immediate area required by using as sharp a downward angle as possible. This lit area must avoid being directed at, or close to, any bats' roost access points or flight paths from the roost. A shield or hood can be used to control or restrict the area to be lit. Avoid

illuminating at a wider angle as this will be more disturbing to foraging and commuting bats as well as people and other wildlife.

- Suitable types shown below (note that these are wall mounted and directed downwards)

Circular Louvre



Cowl & Louvre



Cowl (or Hood)



References: Bats and lighting BCT guidance and Guidance notes for the reduction of obtrusive lighting.

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