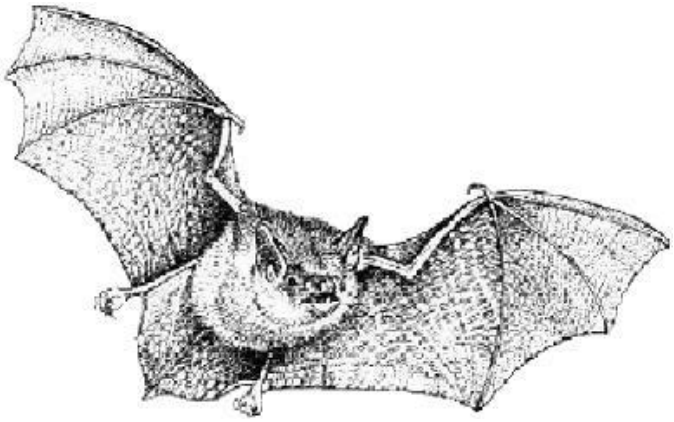
Avondale,
Sawley Road, Grindleton,
Clitheroe, Lancashire.
BB7 4QS

Preliminary Ecological Appraisal
in respect of Bat Species and Nesting Birds.

Surveyor- Mike Fisher
(Bat Survey Licence Level 2 Class Survey Licence WML CL18)
(Bat Roost Visitor Level 1 Class Survey Licence WML CL15)



Echo Calls Bat Surveys

3rd March 2025

1. Introduction.

1.1 Reason for Survey.

As part of the process to obtain planning permission to develop the site, a preliminary ecological appraisal, (PEA), including a daytime preliminary bat roosting assessment was undertaken. The purpose of the survey was to provide evidence on habitats, and protected/notable species, present within the site boundaries, as part of the Local Development Framework (UDP Policy EN9), and Core Strategy Policies, CG1 and CG3.

1.2 Survey Aims.

The aims of this preliminary ecological assessment were to:

- To provide clear advice to the client, and the Local Planning Authority, on the nature conservation value of the site, and surrounding area.
- To assess the site for the presence, or potential, for bats and other protected species within the proposed development site, by doing a detailed inspection of both the exterior and interior of any structures, to look for features that bats could use for entry/exit, and for roosting, and also to search for bats themselves.
- To enable the client to comply with legislation afforded to protected sites and species.
- To highlight the presence of any habitats or species of ecological importance, including Habitats and Species of Principal Importance (NERC Act, 2006).
- To identify any ecological constraints, on future development.
- To establish the need for any further surveys and assessments.
- To make nature conservation recommendations.

1.3 The Location.

The targeted site was a large, detached bungalow, included an integral garage and entrance porch, and an attached, hipped extension, all positioned within a large area consisting of a large patio, garden areas, an area of vehicle parking, and with a broad driveway connecting the site to the nearby Sawley Road, in the Grindleton area of Clitheroe in Lancashire. The land containing the targeted bungalow i= from now on is referred to as the “site”, at OS grid reference: SD 76040 45552, (refer to **Fig 1** - **The Site Location**).

1.4 The Site.

The site consisted of the hipped bungalow, with large areas of garden to both the north and south of it, containing some immature trees small shrubs and a length of hedgerow along the northern boundary, and where possible all of these were currently surveyed.

1.5 Surrounding Land.

The dwelling was positioned centrally within the overall site, and positioned in a north-east to south west orientation. To the immediate north of the dwelling, was an area of vehicle parking, some garden with a few shrubs and a line of hedgerow along the northern boundary, and a concreted driveway, connecting the site with the southern edge of Sawley Road that also ran in a north-east to south-westerly orientation.

Across the road to the north was a long line of stone-built houses, all two storied with heavily vegetated gardens, bordered by lengths of stone walls, with numerous similar buildings and

gardens stretching away to the north, together with large areas of open pasture bordered by hedgerow.

To the north-west of the site were a lot more dwellings of similar size and shape, with a large area of mixed woodland through which, ran the tree-lined Grindleton Brook which flowed in a southerly direction, lying approximately 0.24 km to the north-west of the targeted site at its nearest point. There was also a small ephemeral pond within the woodland, about 0.49 km to the north-west of the bungalow.

There were numerous buildings, to the west of the site along the southern edge of Sawley Road some, were a combination of dwellings, plus the Rum Fox public house, and a few farm buildings lying 0.34 km to the south-west, and with a mixture of open pasture and woodland further west.

There was a small ornamental garden pond in a neighbouring garden to the south-west of the bungalow, whilst beyond these were a large number of open fields, bordered by hedgerows and the odd semi-mature trees. At its nearest point approximately 0.55 km to the site, the River Ribble meandered from the south-west to north-east, and which had a few trees and shrubs, growing along its banks.

Immediately east of the site was more open pasture, with the buildings and grounds belonging to two churches adjacent to each other, Grindleton Church of England Voluntary about 0.16 km from the site, whilst St Ambrose Church of England Church lay 0.03 km to the east of the other church. Both of these were surrounded by graveyards and pathways with a number of mature trees growing close to them. In the surrounding area however, were a small number of isolated dwellings and the odd farming complex, but there were no large bodies of water or areas of woodland, in the close vicinity, (**refer to Fig 1 – The Site Location, Fig 2** – **Google Plan**, **Fig 3 – Main Plan showing the local area and habitats, Fig 4 – Plan of Photographs,** and **Fig 5 - Plan Showing Results of Preliminary Daylight Evidence and Opportunity Survey and Assessment).**

2. Methods.

2.1 Risk Assessment, Possible Hazards.

The required access to the site was easy, and the bungalow complex was fully heated and insulated and currently unoccupied. The bungalow was in excellent condition, with well-sealed walls, windows, doors, soffits and roof, and all of the various parts of the dwelling could be searched with ease.

The majority of trees, shrubs and other vegetation were growing mainly around the perimeter of the site, and proved easy to survey, however, there were no other hazards within the site, other than those normally associated with surveying these types of buildings and the surrounding site and gardens.

2.2 Methodology of Bat Surveys.

A number of factors are used for the survey methodology, which include:

- Knowledge of bat species relevant to the site location, and geographical range.
- Nature of the immediate, and surrounding habitat, in relation to foraging opportunity.
- Presence/absence of roost potential.
- Value of roost potential – if present.
- Condition of nearby trees, shrubs, and any water bodies.

2.3 Preliminary Ecological Appraisal.

The preliminary ecological appraisal (PEA) of the site took place on 14th February 2025, and was carried out in order to assess the site, and search for evidence of any bat occupation, (including recent and historic roosting), and if possible what species if any, of bat were present. The current survey was undertaken in accordance with the standard methods described in the 'Bat Worker's Manual' (JNCC 2004) and 'Bat Surveys for professional ecologists: Good Practice Guidelines (4th Edition) (BCT 2023). in order to assess the site to determine its suitability for bats.

It comprised a Daytime Bat Walkover (DBW), including a daylight evidence and opportunity survey and assessment on the targeted bungalow, and all parts of this were searched for evidence of bat occupation, (including recent and historic use), looking for either bats themselves, bat droppings, bat urine stains, remains of any invertebrate prey, or any grease marks from repeated contact, or passage by bats through narrow roost accesses, or any other signs of bat occupation.

Areas of the targeted buildings searched were

- Outside, all of the targeted dwelling, its hipped extension, the windows, doors, eaves, soffits, walls, and roofs, for signs of potential bat access holes, also upon the ground, around doorways and porches, and any other nearby surfaces such as areas of concrete paving, any tarmacked areas or similar, which occurred underneath the eaves, or around the perimeter of the building, all of which may catch bat droppings.

- Inside all parts of the building, within any roof voids, upon roof trusses, on the floors, door lintels, window ledges, or on furniture, pieces of equipment and stored materials, also looking in spiders' webs and other places where droppings or prey remains may collect. Noting any noises such as scratching and squeaking, which may be made by roosting bats.

The optimum time to investigate buildings for evidence of a bat roost, is between May and September, however, this can sometimes be earlier or later in the year, and is weather and temperature dependant.

However, preliminary evidence and opportunity surveys and assessments, may be conducted outside of this time, and can often provide conclusive results, which can save expense and time for Planning Applicants.

The habitats and any trees or shrubs surrounding the site, were assessed for their suitability for use by foraging and commuting bats.

All evidence of current or previous nesting bird species observed during the survey, was recorded.

All evidence of other notable/protected species was also noted.

2.4 Equipment.

Equipment used consisted of close-focus binoculars, cameras, endoscope, ladders, powerful hand-held torches, and a separate Darkbeam LED ultraviolet flashlight.

3. Results.

3.1 Daylight Survey.

3.1.1 Weather.

The weather conditions at the start of the survey on 14th February 2025, were reasonable, and at the time of the survey It was dry, with some cloud cover and bright sunny periods. As there was a

fresh breeze, (Beaufort Scale 5), and a temperature taken during the survey of 5°C and such conditions were acceptable for a survey of this type.

3.2 Possible Roost Sites.

3.2.1 The Bungalow.

The bungalow was a long, rectangular, hipped building positioned at the north-western end of the whole site, in an approximate north-east to south-western orientation. It was a single storied building, constructed from stone, with a pitched, hipped roof covered in underlined concrete tiles, and with a fully insulated roof void.

Although the building was currently unoccupied and was fully heated and insulated. All parts of the bungalow were structurally sound, being in excellent condition, well-sealed, and all of the windows, doors, gables, soffits and roof, were also well maintained, with little sign of deterioration, and therefore the dwelling was thought to offer low bat roosting suitability, (refer to **figs 3, 4,** and **5**, and **photos 1** to **22**).

There were potential bat access points however, and these were:

- Positioned low down and centrally in the bungalows eastern elevation, was a large central heating vent housing, which was covered in mesh, and contained a large vent fan. and this was surveyed both external and internally. Although the gaps between the metal mesh were quite large, no signs of bat droppings, either invertebrate or lepidopteran remains were seen, nor was any fur grease staining found on the mesh, which would have indicated the passage of a bat through the mesh, and also, where possible the vent interior was searched using both an endoscope, and also in the ultraviolet light from the Darkbeam LED flashlight, but no indication of any bat urine staining was found, and therefore the vent and its housing was deemed to offer very low bat suitability, (refer to **figs 3, 4,** and **5**, and **photos 8** and **9).**

- There were two small holes in the soffit boarding, the first at the north-western corner of the bungalow, whilst the second was situated at the south-eastern corner of the structure. Both of these holes, the areas around them, and the floor below them were inspected for signs of bat occupation, but no droppings, invertebrate prey remains, grease fur staining or urine staining were found, and therefore both holes were deemed to offer low bat roosting suitability, (refer to **figs 3, 4,** and **5**, and **photos 10** and **20).**

No evidence of either current or historical roosting bats was detected in, on, or around any part of the bungalow and extension, either internally or externally. Nor was there any evidence of previous use by roosting bats detected anywhere else within the surrounding site.

During the survey, no evidence was found to suggest that any part the complex, nor anywhere else within the nearby site, had been used either currently, or historically by any nesting birds. It was also surmised that due to the time of year, although most birds will have established territories, few will have started nest building for the upcoming 2025 bird nest season, (Refer to **Appendix 1**).

3.2.2 Trees and shrubs.

There were a number of small trees and shrubs at various locations around the site, together with the line of hedgerow along the northern and north-western border, and where possible these were all inspected for signs of potential bat roosting suitability. However, none were found to have any cracks, holes, any lifted bark or canker damage, suitable for roosting bats, and as such, all were judged to be Category 3 (of negligible value for roosting bats) in accordance with **Appendix 4.**

It was also thought likely that the overall complex and some of the nearby features, could be used by nesting birds during the nesting season, but at the time of the survey, although there was some bird activity in and around the site, no active nests were found amongst the vegetation, and it was

also surmised that due to the time of year, although some birds may have started setting up territories for the upcoming 2025 breeding season, none will have yet commenced breeding.

3.2.3 Foraging Potential and Alternative Bat Roost Potential.

The targeted complex was in an urban area, and contained a large, hipped bungalow, positioned within a large plot of land, together with areas of garden and vehicle parking, together with some immature trees, shrubs and some hedgerow, forming the boundaries of the site, connected by a driveway to Sawley Road to the north of the site and which ran in an east to west direction.

Across the road to the north was a long line of two-story stone houses, all with heavily vegetated gardens, and bordered by lengths of stone walls, with numerous similar buildings and gardens stretching away to the north, together with large areas of open pasture bordered by hedgerow. Whilst to the north-west of the site, there were other dwellings of similar size and shape, close to a large area of mixed woodland through which ran the tree-lined Grindleton Brook, flowing in a southerly direction,

There were numerous buildings, to the east of the site positioned along the southern edge of Sawley Road, with a mixture of open pasture and woodland further west.

There was a small ornamental garden pond in a neighbouring garden to the south-west of the bungalow, whilst beyond it was a large number of open fields bordered by hedgerows and the odd semi-mature trees. The River Ribble meandered from the south-west to north-east direction, some distance to the south of the bungalow, and which had a few trees and shrubs growing along its banks.

Immediately east of the site was more open pasture with the buildings, car parks and graveyards belonging to two large churches adjacent to each other, with a number of mature trees growing close to them.

Other than the river and nearby brook, there were no large bodies of water, or other areas of woodland, and all these features together offered, linear features, suitable for foraging bats such as Common Pipistrelle, *(Pipistrellus pipistrellus)*, and possibly other bat species, to help them navigate and commute, and to hunt along for their insect prey, (**paragraph 1.5**).

In accordance with the “Bat Survey, Good Practice Guidelines” (Bat Conservation Trust 2023), it says, “A structure with one or more potential roost sites that could be used by individual bats, opportunistically at any time of the year. However, these potential roost site do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger number of bats, (i.e. unlikely to be suitable for maternity and not a classic cool/stable hibernation site, but could be used by individual hibernating bats)”, they are of low bat roosting and foraging suitability”, (Refer to **Appendix 2**).

The hipped bungalow fitted these criteria, and as there were no really large areas of woodland, or large bodies of open water in the nearby vicinity, the local area was assessed to offer only low to moderate suitability for foraging bats, primarily pipistrelle species, but it was thought that small numbers of other species could be present.

It was considered that other buildings, especially other occupied dwellings in the surrounding area, could offer greater potential as bat roosts. Bats favour taller, occupied and heated buildings whilst breeding.

It was thought likely that the overall site could be used by nesting birds during the nesting season, and although there was some birds observed nearby, neither active or old nests were found during the survey. It was also concluded that due to the time of year, although some birds may have started setting up territories for the upcoming 2025 breeding season, none will have yet commenced breeding, (Refer to **Appendix 1**).

4. Conclusions.

4.1 In summary, during the preliminary assessment carried out on 14th February 2025, neither current, nor historic evidence of roosting bats were found in any part of the targeted bungalow, or anywhere else within the overall targeted site.

4.2 All parts of the dwelling and its extension were currently unoccupied, fully heated and insulated, and as the bungalow was currently structurally sound, in excellent condition, well-sealed and maintained, and all of the windows, doors, gables, soffits and roof, being also in good condition and well maintained, with little sign of deterioration. Also, a thorough search had discovered no bat droppings, or invertebrate prey remains, and neither grease fur or urine staining were seen anywhere, and therefore the bungalow complex was thought to offer very low bat roosting suitability, (refer to **Appendix 2**).

4.3 There were quite a lot of young trees and shrubs growing around the overall site boundaries and some within the site itself, but during the survey, none of these were found to have any cracks, canker damage, lifted bark or holes, that could be used by roosting bats of any species, and therefore they were all concluded to offer low bat roost suitability, (refer to **Appendix 4**).

4.4 The adjacent habitats had the potential to support low to moderate numbers of foraging common pipistrelles, but large numbers of other species of bats was unlikely. It is concluded that since there was currently no evidence of the presence of bat roosts within any part of the bungalow or its hipped extension, nor within any other part of the site, that any proposed modifications to the site, will not have significant implications on the population status of local bat species. There will not be requirement for an EPS mitigation licence (as issued by Natural England) but as a measure of best-practice, precautionary measures should be applied as described in section 5 below.

4.5 It was also concluded that since no evidence of roosting bats, or evidence of either recent or historic bat occupation, had been found during the surveys carried out on 14th February 2025, then a single visit to the site to carry out a preliminary ecological appraisal at this time of the year, was considered sufficient for an initial assessment of the site, (refer to the 'Bat Worker's Manual' (JNCC 2004) and 'Bat Surveys – Good Practice Guidelines' (BCT 2023),

4.6 Since bats, particularly Pipistrelles, are opportunistic, an absence of roost evidence within any of the targeted building, and anywhere else within the site, does not preclude the low possibility of small numbers of bats, using the site occasionally in the future, and/or at other times of year. It is considered that the likelihood of a significant roost (such as a maternity roost) being established was very unlikely, with lone and/or transient roosting likelihood also being negligible.

4.7 It was thought probable that there would be some site clearance work carried out during the planned development, but actual details of what this would entail were not known at the time of the survey. It was hoped that this type of work will be kept to a minimum, and that the trees and shrubs growing both around the site boundaries and within the site itself, would be mostly unaffected by the work. Also, as bats use linear features such as lines of trees, hedgerows or walls, as foraging, navigating and commuting routes, it was concluded that any small loss of the habitats, and any future development works on the site, would not affect the overall foraging or commuting potential for bats in the area.

4.8 All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended) while they are breeding. There was potential for the trees, shrubs and hedgerows growing around the sites' perimeter to be used by birds for both roosting and nesting purposes, and the overall site itself to be used by ground nesting birds, but no active or historic nests had been found during the surveys. It was also surmised that due to the time of year, that the majority of birds will not yet have started to build nests, in preparation for the next nesting season (Refer to **Appendix 1**).

5. Recommendations.

5.1 The proposed changes to the site, as laid out in the planning application, can commence with minimal risk to roosting bats or nesting birds, if the following mitigation measures are adhered to.

5.2 The aim of mitigation is to ensure that any work is carried out in a manner that avoids harm, or significant disturbance to bats, and also to create new enhanced roosting opportunities for bats, both during and after the development. However, a key issue in successful mitigation measures, is the scheduled timing of the works. Ideally, all parts of the complex, (not considered suitable for hibernation), especially the roofs, should be worked on in winter, to avoid the possibility of bats moving in and using the building as a spring, summer, or autumn roost after the survey. The safest period will be from the first hard frosts, normally mid-December, until mid-March, although this could be earlier in a warm spring or later in a cold spring.

5.3 However, as it is likely that different parts of the complex and the surrounding site, may be worked on at separate times, it will be very unlikely that roosting bats will be disturbed. It is recommended though that work starts as soon as possible after this survey, and that if any roof sheeting or boarding over walls, is affected by the development, these should be carefully removed by hand, as these features, are the ones most likely to harbour potential for the support of roosting bats.

5.4 Although all parts of the bungalow and it's extension within the site, had low bat roosting suitability, in accordance with "Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition) Collins, J. (2023)". it is recommended that if building work is delayed until more than 12 months between these surveys and any commencement of any building work, then the surveys must be repeated, and these need to be carried out under weather conditions suitable for normal bat activity, (May to September), and must include both a daytime evidence and opportunity bat survey and assessment, and potentially at least one evening nocturnal bat activity and emergence survey.

5.5 As a measure of best practice and in accord with a key principle of National Planning Policy Framework (2012), it is recommended that the re-development scheme for this site, incorporates biodiversity enhancement measures, and an appropriate measure will be the installation of some Schwegler 1FD bat boxes. These will be attached to the planned and modified building after completion of the building works, and these are placed as close to the eaves, or a gable apex as possible. Others are to be erected upon the trees around the site, and all of these should be at least **4 metres** off the ground, and positioned away from windows or doors, and any climbing plants, to keep the inhabitants of the boxes safe from predators, and disturbance. Also, it is recommended that these measures are implemented to maximise the opportunities for wildlife at the site and obtain a nett gain in biodiversity, (refer to **Appendix 7** for details).

5.6 As there was some potential for both foraging bats, and also for roosting and nesting birds within he trees and hedgerow growing both within the site, around its boundaries, and the habitats beyond the site boundaries, it is recommended that where possible, these should mostly be left untouched, to encourage future bird nesting, and to maintain navigation, foraging and commuting routes for bat and to obtain further nett gains in biodiversity.

5.7 However, it must be remembered, that it is an offence to disturb active birds' nests. It is recommended therefore, that before any commencement of any tree or shrub clearance, any demolition or new building work, that a careful survey looking for any evidence of nesting birds, is carried out. If evidence of an active bird's nest is detected then the nest must be left undisturbed, until it is appropriately confirmed that the young birds have fledged. It is recommended therefore to reduce any nest disturbance so that no activity involving people, or their equipment is carried out within a 3m radius of active nests. If there is any doubt, please refer to the consultant. This guidance is applicable during the bird breeding season which typically extends from March to August inclusive.

5.8 It is also recommended that some wooden nest boxes are to be erected around the shrubbery and vegetation around the site, with some attached to various parts of all suitable buildings. These are to be erected to mitigate for potential loss of any unidentified nesting opportunities not found during the survey, and after the development. These will be a mixture of open fronted and hole fronted boxes, and are to encourage and enhance future colonisation and nesting by all bird species within the site and to enhance further biodiversity gains within the site, (refer to **Appendix 8** for details).

5.9 No hole or pit should be left uncovered over-night, to ensure that wildlife such as amphibians or hedgehogs are not trapped, and unable to escape. Alternatively, a broad wooden plank or similar can be placed in the excavation to allow animals to escape, a scaffolding board pitched at a maximum 45° angle would be ideal for this.

5.10 During the development, all excavations should be checked first thing each morning, prior to the start of works that day. Any animals found within excavations should be allowed to escape and move off, or are carefully removed and placed within suitable nearby habitat cover before site works commences for the day.

5.11 It is also recommended, that if any piles of building materials around the site are removed, or disturbed during building works, then this ideally should be undertaken outside the hedgehog hibernating months, November to mid-March. If this is not possible however, a suitably experienced ecologist must be present to oversee all removal, to ensure that no hedgehogs are disturbed or harmed, whilst either hibernating or daytime nesting, (Hedgehogs are a UK BAP Priority species).

5.12 Once all building work has been finally completed within the site, then a full careful search needs to be carried out, amongst any remaining piles of building equipment, or materials, to ensure that neither nesting birds, hedgehogs, or other animals, are disturbed or hurt. Once this has been carried out successfully, only then, can the removal of all materials from the site be carried out.

5.13 It is also recommended that at least one Eco-plate Hedgehog Box should be positioned in the site, in an appropriate location close to the southern site boundary, to maximise the opportunities for hedgehog within the site, (refer to **Appendix 9** for details).

5.14 Close boarded fences with concrete bases are barriers to animal movement, and It Is recommended, that any new perimeter fences along the boundaries are not to be sealed at their bases. Where possible, hedgerows are to be used instead, with timber post and wire fencing also serving to enforce boundary lines, without prohibiting wildlife movements. If any boarded or concrete fences are required, it is recommended that there is a 13 cm square gap between the wood and the ground, (greater in some locations. and less in others is not a problem), or if this is not possible, then “hedgehog highways” are to be placed within the overall boundary at regular intervals so that wildlife such as hedgehog and amphibians, can pass into and out of the garden, (refer to **Appendix 10** for details).

5.15 Outdoor lighting is typically a deterrent to wildlife, especially bats and nesting birds, it is therefore recommended, that any future outdoor lighting, installed during the proposed development, be screened, hooded or positioned low at bollard level so that it does not illuminate the roof or eaves, or nearby trees and shrubs in accordance with “Bats and Artificial Lighting at Night”, guidance which has been produced by the Institute of Lighting Professionals in conjunction with the Bat Conservation Trust, (refer to **Appendix 10** for details).

5.16 To enhance the site’s value for wildlife, it is recommended that trees be planted to replace any felled trees, and this is planned as part of the development, and that the trees used for re-planting are British native trees as far as is possible. These trees are more likely to attract insects and are therefore beneficial to foraging bats and other wildlife. Suitable species include: Hawthorn, Rowan, Wild Cherry, Guelder Rose and Crab Apple. These have been chosen for their attractive blossom and fruits. Oak, Ash and Willow species are recommended away from buildings and drains.

5.17 It should be remembered that bats are occasionally found in the most unexpected places. If any bats are found during unsupervised work, work must be stopped immediately, and either the consultant (07745 268815), or the Bat Conservation Trust (0345 1300 228), or Natural England (01270 754 00, should be notified, (refer to **Appendix 5** for details). **Failure to do so would be a criminal offence.**

6. References

Department for Communities and Local Government (March 2012). National Planning Policy Framework. London

Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition) Collins, J. (2023).

Bats and Artificial Lighting – Bat Conservation Trust (2018)

Bat Workers' Manual. 3rd Edition. Joint Nature Conservancy Committee. Peterborough. Mitchell-Jones A.J. and McLeish A.P. (Eds). (2004).
Bat Mitigation Guidelines. English Nature, Peterborough. Mitchell-Jones, A.J. (2004).

Designing for biodiversity - A technical guide for new and existing buildings' (RIBA Publishing 2013, 2nd edition)

Wildlife and Countryside Act (1981). H.M.S.O., London.

Habitat Management for Bats. (2001) JNCC. Entwistle, Abigail C. et al.

Bat Tree Habitat Key, 2nd Edition (Andrews, H (ed), (2013).

Landscape and urban design for bats and biodiversity. Bat Conservation Trust (2012)

Bats of Britain and Europe - Schober and Grimmberger. Hamlyn (1993)

The Population Status of Birds in the UK: Birds of conservation concern: 2002-2007. Anon. (2007)

8. Surveyors' Qualifications

The surveyor Mike Fisher is a holder of:

- Natural England Class Licence Registration Number: 2015-10595-CLS-CLS, this is the Bat Survey Level 2 Class Survey Licence WML CL18.

- Natural England Class Licence Registration Number: 2015-10592-CLS-CLS which is the Volunteer Bat Roost Visitor Level 1 Class Survey Licence WML CL15

- The surveyor also has a licence to disturb and take bats for scientific, educational, or conservational purposes by Countryside Council for Wales (Licence Number S085859/1)

7. Plans & Photographs

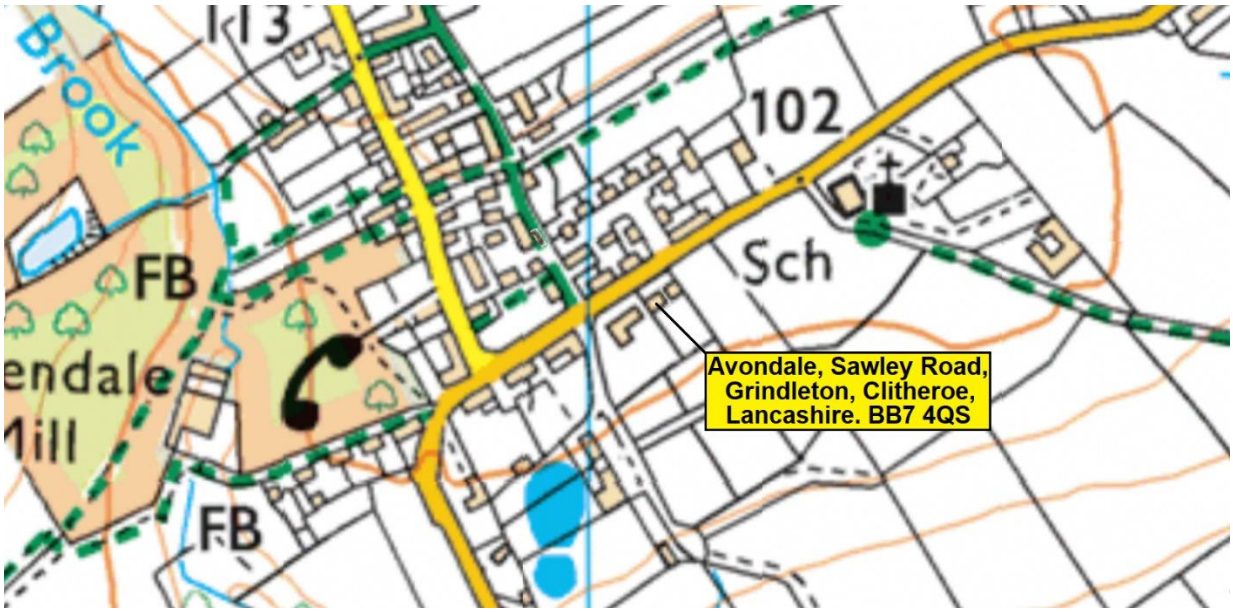


Fig 1 - The Site Location.

Fig 2 – Google Plan.

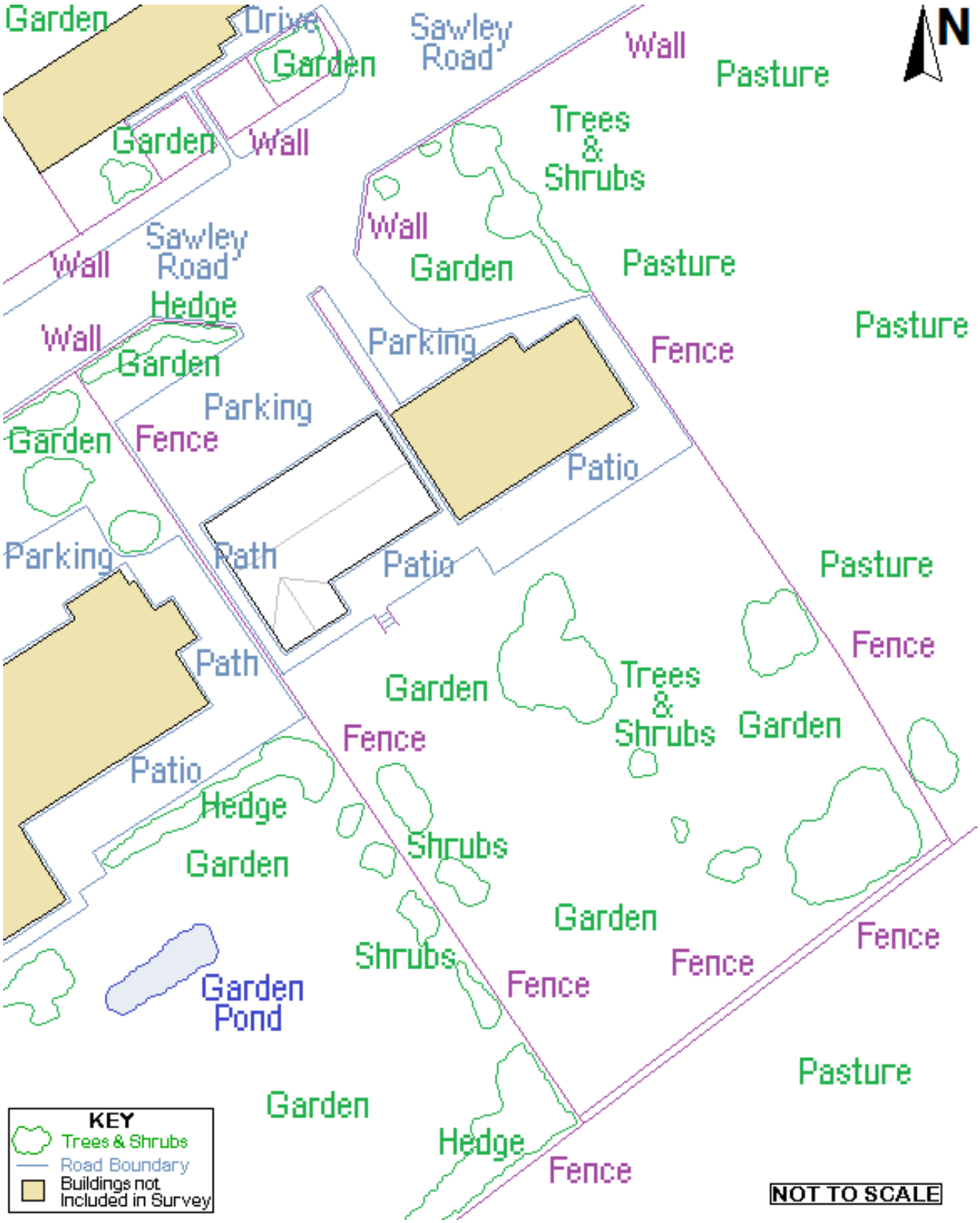


Fig 3 – Main Plan
Showing the Local Area and Habitats.

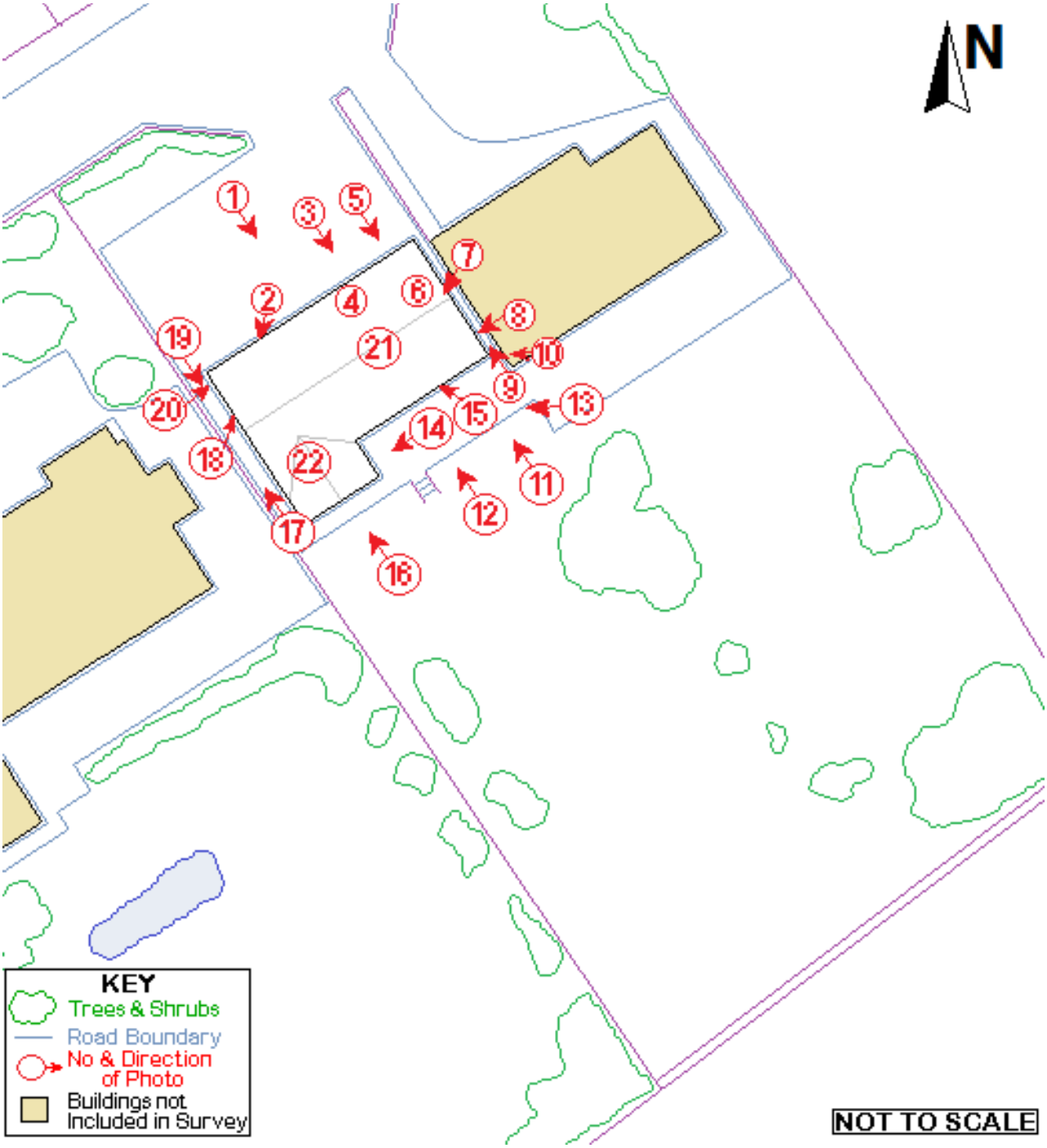


Fig 4 – Plan of Photographs.

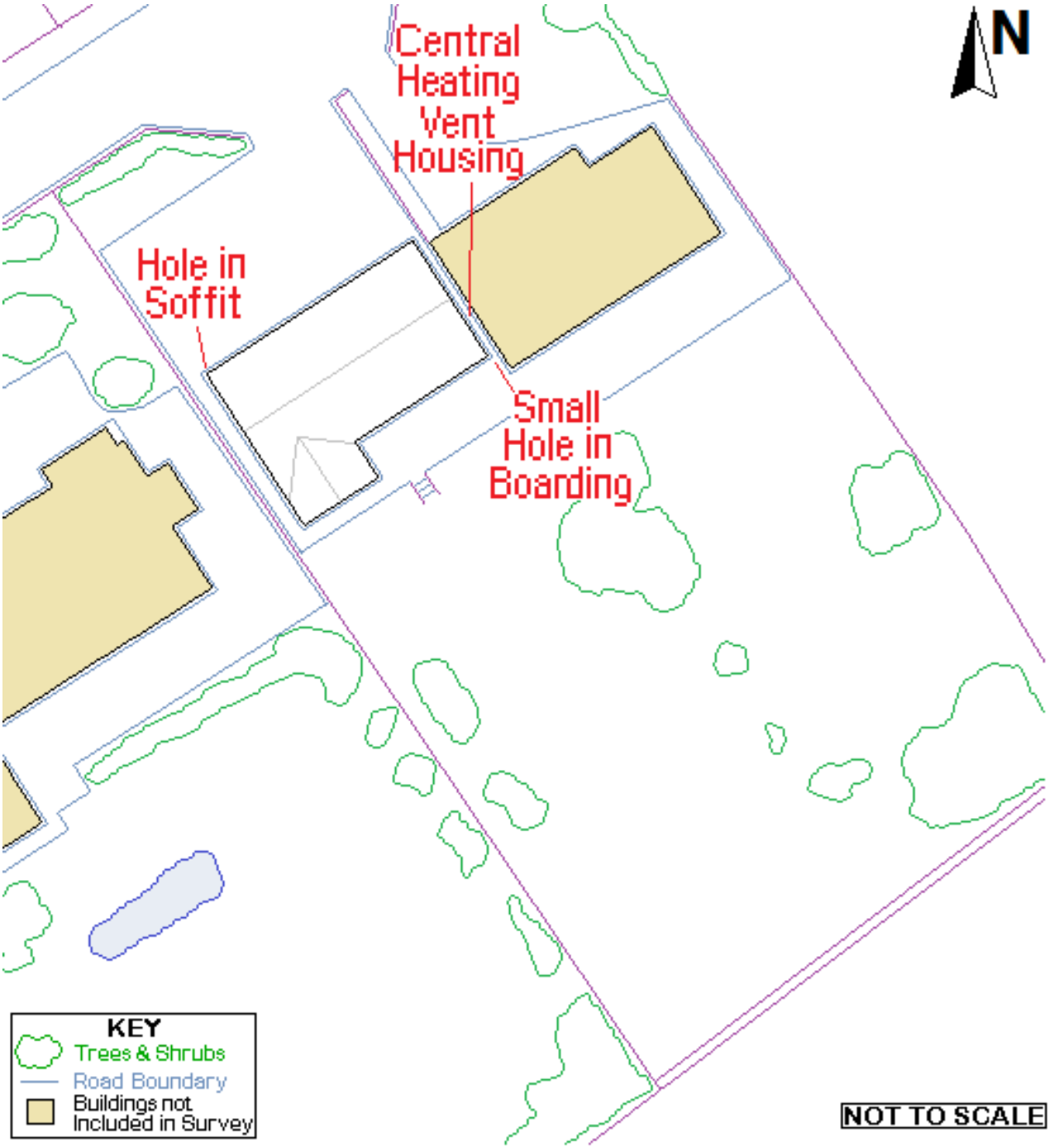


Fig 5 – Plan Showing Results of Preliminary Daylight Evidence and Opportunity Survey and Assessment.

PHOTO 1
Northern Elevation of Dwelling

PHOTO 2
Underside of Northern Soffit

PHOTO 3
Northern Elevation of Porch

PHOTO 4
Underside of Porch Roof

PHOTO 5
North-eastern Elevation of Dwelling

PHOTO 6
Underside of Integral Garage Roof

PHOTO 7
Underside of Eastern Soffit

PHOTO 8
Lower Eastern Elevation

PHOTO 9
South-eastern Corner

PHOTO 10
Underside of South-eastern Soffit

PHOTO 11
South-eastern Elevation

PHOTO 12
Southern Elevation

PHOTO 13
Eastern Elevation of Extension

PHOTO 14
Junction of Southern Elevation and Extension

PHOTO 15
Underside of Southern Extension Gable

PHOTO 16
Southern Elevation of Extension

PHOTO 17
Western Elevation of Extension

PHOTO 18
Underside of Western Soffit

PHOTO 19
Western Elevation of Dwelling

PHOTO 20
Underside of North-western Soffit

PHOTO 21
Underside of Main Roof

PHOTO 22
Underside of Extension Roof

3rd March 2025
Mike Fisher, Bat Worker
Holder of Natural England Bat Roost Licence

Disclaimer.

All reasonable effort has been made to ensure an accurate assessment of the birds and bats, at this site. The absence of recorded presence or sign should not be taken as an absolute guarantee that a site is not being used by a particular species. There is also no guarantee that any particular species will not use the site at any time in the future. Survey results for both bird and bat activity may be weather or seasonally dependent. Any interpretation of legislation is based on our understanding and experience of the law. The relevant statutory authority can provide a more definitive interpretation.

This report has been prepared by Echo Calls Bat Surveys with all reasonable skill, care and diligence, within the terms of the Contract with the Client.

APPENDIX 1: Synopsis of Relevant Legislation.

Bats and the Law

In Britain, all bat species and their roosts are legally protected, by both domestic and international legislation.

This means you will be committing a criminal offence if you:
Deliberately capture, injure or kill a bat.
Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats.
Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time)
Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat.
Intentionally or recklessly obstruct access to a bat roost.

Licensing

Licenses to permit illegal activities relating to bats and their roost sites can be issued for specific purposes and by specific licensing authorities in each country. These are sometimes called 'derogation licenses' or 'European Protected Species' licenses and are issued under the Habitats Regulations. It is an offence not to comply with the terms and conditions of a derogation Licence. If you carry out work affecting bats or roosts without a Licence, you will be breaking the law.

Who needs to take particular note of the legislation?

Property owners/householders who have a bat roost in their property.
Woodland owners, arboriculturists and foresters.
Pest controllers.
Planning officers & building surveyors.
Architects, property developers, demolition companies, builders and roofers
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Which legislation is relevant for bats and roosts?

In England and Wales, the relevant legislation is the Wildlife and Countryside Act (1981) (as amended); the Countryside and Rights of Way Act, 2000; the Natural Environment and Rural Communities Act (NERC, 2006); and by the Conservation of Habitats and Species Regulations (2010).

In Scotland, the key legislation that applies is the Conservation (Natural Habitats &c.) Regulations 1994 (as amended).

In Northern Ireland bats are listed under Schedule 2 of the Conservation (Natural Habitats etc.) Regulations (Northern Ireland) 1995 and in the Republic of Ireland, under Schedule 5 of the Wildlife Act 1976 and Schedule 1 of the European Communities (Natural Habitats) Regulations 1997.

Defenses include:

Tending/caring for a bat solely for the purpose of restoring it to health and subsequent release
Mercy killing where there is no reasonable hope of recovery, (provided that person did not cause the injury in the first place - in which case the illegal act has already taken place).

Penalties on conviction –

People committing bat crimes can face six months' imprisonment and/or unlimited fines. Additionally, any profits made as a consequence of not following lawful process can be confiscated and items used to commit the offences such as vehicles, plant or machinery can be forfeited.

Under the National Planning Policy Framework (2012), it is recommended that the re-development scheme for any site, protected species such as bats, should be a material consideration in planning applications. This has implications for bat foraging areas as well as their roosts.

The National Planning Policy Framework (NPPF) places a clear responsibility on Local Planning Authorities to conserve and enhance biodiversity and to encourage on the consideration that should be given to Protected Species where development may affect them.

The Office of the Deputy Prime Minister (ODPM) Circular 06/2005 provides administrative guidance on the application of the law in relation to planning and nature conservation. This is supported by a guide to good practice entitled 'Planning for Biodiversity and Geological Conservation: Building in Biodiversity' in which paragraphs 5.34 and 5.35 identify that species such as bats are highly dependent upon built structures for survival and that roosts can be easily incorporated into existing and new developments/conversions to benefit these species.

Breeding Birds and the Law.

All wild birds are protected under the *Wildlife and Countryside Act 1981* (as amended), whilst they are actively nesting or roosting. Section 1 of this Act, makes it an offence to kill, injure or take any wild bird, and to intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built. It is also an offence to take or destroy any wild bird eggs.

Hedgehogs and the Law.

Hedgehogs are protected by British law under Schedule 6 of the Wildlife and Countryside Act 1981, making it illegal to kill or capture them using certain methods. Similar protection exists in Northern Ireland under Schedule 6 & 7 of the Wildlife Order 1985. They are also protected in Britain under the Wild Mammals Protection Act (1996), prohibiting cruelty and mistreatment.

They're listed as a Species of Principle Importance in England under the Natural Environment and Rural Communities (NERC) Act 2006 Section 41, in Wales under the Environment Act 2016, and in Scotland under the Nature Conservation Act 2004. Similarly, hedgehogs are on the Priority Species List for Northern Ireland.

These laws make hedgehogs a material consideration for Local Planning Authorities (LPAs) during the planning process.

Developments should also be consistent with Local Plans (LPs) and Neighbourhood Area Plans (NAPs), some of which may explicitly refer to hedgehog conservation and connectivity of the landscape.

APPENDIX 2: Bat Roost Suitability

Bat Conservation Trust

Table 4.1. Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, to be applied using professional judgement.

Potential suitability	Description	
	Roosting habitats in structures	**Potential flight-paths and foraging habitats**
None	No habitat features on site likely to be used by any roosting bats at any time of the year (i.e. a complete absence of crevices/suitable shelter at all ground/underground levels).	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitats that provide continuous lines of shade/protection for flight-lines, or generate/shelter insect populations available to foraging bats).
Negligible[a]	No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.	No obvious habitat features on site likely to be used as flight-paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions[b] and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity and not a classic cool/stable hibernation site, but could be used by individual hibernating bats[c]).	Habitat that could be used by small numbers of bats as flight-paths such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions[b] and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only, such as maternity and hibernation – the categorisation described in this table is made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for flight-paths such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions[b] and surrounding habitat. These structures have the potential to support high conservation status roosts, e.g. maternity or classic cool/stable hibernation site.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight-paths such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

a Negligible is defined as 'so small or unimportant as to be not worth considering, insignificant'. This category may be used where there are places that a bat could roost or forage (due to one attribute) but it is unlikely that they actually would (due to another attribute).

b For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.

c Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten *et al.*, 2016 and Jansen *et al.*, 2022). Common pipistrelle swarming has been observed in the UK (Bell, 2022 and Tomlinson, 2020) and winter hibernation of numbers of this species has been detected at Seaton Delaval Hall in Northumberland (National Trust, 2018). This phenomenon requires some research in the UK, but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in prominent buildings in the landscape, urban or otherwise.

In accordance with Table 4.1 of
Bat Surveys for Proffessional Ecologosts: Good Practice Guidelines (4th Edirition) Collins J. (ed 2023)

APPENDIX 3: Bat Survey Timings and Frequency.

Table 7.1. Recommended timings for presence/absence surveys to give confidence in a negative result for structures (also recommended for trees where other methods such as PRF inspection are not possible, but unlikely to give confidence in a negative result). To be used in tandem with Table 7.2.

Low roost suitability or PRF-I	Moderate roost suitability	High roost suitability or PRF-M
May to August (structures) No further surveys required (trees)	May to September[a], with at least one of surveys between May and August[b]	May to September[a], with at least two of surveys between May and August[b]

a September surveys are both weather- and location-dependent. Conditions may become more unsuitable in these months, particularly in more northerly latitudes, which may reduce the length of the survey season. September surveys are likely to miss maternity roosts due to dispersal before this time, but may pick up mating roosts.

b Multiple survey visits should be spread out to sample as much of the recommended survey period as possible; it is recommended that surveys are spaced at **least three weeks apart**, preferably more. Survey timings **should consider the prevailing conditions in the year of survey, which will vary geographically**. In years with a cold spring, the surveys should not be started in early May or all completed in May. The surveys should maximise the possibility of detecting maternity roosts, which can switch roosts between pregnancy and lactation, and the **optimum coverage includes the pre-parturition, post-parturition and mating periods**.

Table 7.2. Recommended minimum number of survey visits for presence/absence surveys to give confidence in a negative result for structures (also recommended for trees but unlikely to give confidence in a negative result).

Low roost suitability or PRF-I	Moderate roost suitability	High roost suitability or PRF-M
One survey visit. One dusk emergence survey[a] (structures). No further surveys required (trees).	Two separate dusk emergence survey visits[b].	Three separate dusk emergence survey visits[b].

a Structures that have been categorised as low potential can be problematic and the number of surveys required should be judged on a case-by-case basis (see para 5.2.44). In some cases, more than one survey may be needed, particularly where there are several buildings in this category.

b Multiple survey visits should be spread out to sample as much of the recommended survey period (see Table 7.1) as possible; it is recommended that surveys are spaced at least three weeks apart, preferably more.

In accordance with Tables 7.1 and 7.2 of
Bat Surveys for Porfessional Ecologists: Good Practice Guideline (4th Edition) (Collins. J. (ed) 2023).

APPENDIX 4: Bat Tree Assessment Criteria

Criteria for Assessment of Trees in accordance with Category 1 to 3 as defined in Table 8.4 of *Bat Surveys: Good Practice Guidelines 2nd Edition* (Hundt, L. 2012).

CATEGORY	DESCRIPTION	CRITERIA
Known or Confirmed	Confirmed roost	Confirmed roost Evidence found that indicates tree/tree features are being used by bats. Droppings found at the base of the tree, below a cavity. Bats heard 'chattering' inside a feature on a warm day or at dusk Bat(s) observed flying from or to a feature.
1*	Very high value	Trees with multiple, highly suitable features capable of supporting larger roosts. Features of particular significance, suitable for high priority roosts such as maternity roosts, used by large numbers of bats, offering conditions that are uncommon or rare in the local area. Features such as large cavities, extensive branch or trunk splits, also including multiple features in the same tree that offer a diversity of opportunities. Features may also include dense ivy.
1	High value	Trees with definite bat potential supporting fewer suitable features than category 1* trees or with potential for use by single bats. Features which provide a more secure form of roost for small groups of bats and individuals, but may still be quite common types of feature, such as small cavities, minor splits or sparse ivy cover.
2	Moderate value	Trees with no obvious potential, although the tree is of a size and age that elevated surveys may result in cracks or crevices being found; or the tree supports some features which may have limited potential to support bats. A tree which on close inspection the potential roost positions are in some way not ideal. They could be upward facing or holes very low down or cluttered by adjacent branches.
3	Low/Negligible value	Trees that have no features which could be used by bats for roosting (Usually young trees).

APPENDIX 5: Planning Considerations

When considering each planning application, the presence of protected species, such as those listed above, is a material consideration which must be fully considered by the Local Authority when granting planning permission. If a licence from Natural England is required, then prior to issuing any planning consent, the local planning authority will need to be satisfied that there is no reason why such a licence would not be issued. Therefore, in reaching the planning decision the local planning authority will need to have regard to the requirements of the Conservation of habitats and Species Regulations 2010.

The three licensing tests given in the Regulations must be considered. In summary, these are that:

1. The development is required for the purpose of:

- preserving public health or public safety,
- for other imperative reasons of over-riding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment.
- to prevent serious damage to property.

2. There is no satisfactory alternative.

3. The proposal will not be detrimental to the maintenance of the population of the species at a favourable conservation status.

All necessary information would need to be provided to the planning authority as part of the planning application in order to address the above tests.

The Natural Environment and Communities Act (NERC Act) 2006 extended the biodiversity duty set out in the Countryside and Rights of Way (CROW) Act to public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity. The Duty is set out in Section 40 of the Act, and states that:

"Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity".

The Duty applies to all local authorities, community, parish and town councils, police, fire and health authorities and utility companies. Section 41 (S41) of this Act (the 'England Biodiversity List') also requires the Secretary of State to publish a list of habitats and species that are of principal importance for the conservation of biodiversity in England. This list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40(1) of the Act.

Also, Local Authorities must follow the National Planning Policy Framework (NPPF) which provides guidance on the interpretation of the law in relation to wildlife issues and development. For each development proposal considered by the Local Planning Authority the NPPF states that the authority must aim to conserve and enhance biodiversity. If significant harm 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.

APPENDIX 6: Bats: What to do, should bats be found during building work.

All of the UK's bats and their roosts, are protected by law, (see Appendix 1), so it is important to understand these laws, if you are planning any building or remedial work that may affect or disturb a bat roost. The relevant statutory authority should be initially contacted for advice.

Having bats roosting within a building does not necessarily mean that work cannot be carried out. What it does mean is that the work will need careful consideration, especially in terms of time and materials, so that the area can continue to be used by both bats and people. Therefore, the earlier in the process. the bats are taken into account, the less disruption to building plans there will be.

If at any point during either new building work, renovation work, or demolition, one or more bats are found, then all work being undertaken by contractors should stop immediately. All working machinery and contractors should be removed from the area where the bats have been found, and advice sought immediately from one of the following, on how to proceed while causing minimal disturbance to bats.

Advice can either be provided by a professional licensed ecological consultant - Echo Calls Bat Surveys on 07745 268815, the Bat Conservation Trust on 0345 1300 228, or from your Statutory Nature Conservation Organisation (SNCO) , or from Natural England on 01270 754 000.

Depending on the advice given, a licensed bat worker, or suitably qualified Natural England approved representative, will then be sent to site to liaise with the site manager, and Natural England itself. Depending on the advice given, actions will be recommended that may include the safe removal of the bat by the nominated person, only where written or verbal permission has been gained by Natural England.

Works will recommence when Natural England are satisfied that the risk to bats has been removed. If, however, it is determined that the proposed work on site contains more risk to bats than was originally thought, then it is probable that further work will only proceed under a Natural England Development Licence.

If a bat is found under a tile, slate, flashing or any other covering material, work must stop immediately. If the bat does not fly out immediately, then the area around the roost must be carefully covered over, to protect the bat from the elements and further disturbance, leaving a small gap for bats to escape voluntarily. At this point, advice must be sought as mentioned above. The materials used to cover the occupied bat roost must be free from liquid, oil, grease, and other contaminants.

It is recommended that the handling of bats be avoided wherever possible, but if it absolutely necessary, then to avoid a bat being harmed, gloves must be worn whilst handling the bat. It should be carefully caught, placed in a cardboard box with air holes in the lid, and a small container containing water. The box should then be kept in a very quiet, dark area, away from further disturbance, whilst awaiting the arrival of the licensed bat worker, or Natural England approved representative.

Failure to do any part of this could result in a criminal offence.

APPENDIX 7: Bats: Types of Bat Box.

The aim of any mitigation is to ensure that any work is carried out in a manner that avoids harm or significant disturbance to bats, and also to create new roosting opportunities for bats both during and after the development.

Schwegler 1FD boxes are to be erected to larger trees located along the edges of the site. This type of bat box is a “general all-rounder” and is suitable for all types of bats.

These boxes are to be erected as recommended by the Bat Conservation Trust guidelines which state that

- Ideally, erect the boxes facing so they face in different directions, to provide a range of temperature conditions. For example, boxes facing from south-east to south-west allow the sun to fall on each box for part of the day. During very hot days a south-facing box may overheat, but the other boxes should have some shade during the day.
- Bat boxes should be located close to a linear vegetation feature such as a tree line or hedgerow or to lines of buildings. Some bat species use these features for navigation between their roosting site and feeding ground and to avoid flying in open and exposed areas.
- Ensure that tree branches or other items will not impede the bats’ approach to the box – clear away underneath the box so the bats can land easily before crawling into the box.
- Boxes should be erected at a height of approximately 4m above ground level.

Schwegler 1FD Bat Box

This Schwegler 1FD bat box has been developed specifically for smaller bats. The interior and the type and size of the entrance hole match the requirements of smaller species. It features a special layout inside the domed roof, an increased interior height, and two grooved internal wooden front panels with precise spacing between them.

This model has proved highly effective as a nursing area.

Occupants: Small bats such as the Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Daubenton`s Bat (Myotis daubentonii) and Common Long-eared bat (Plecotus auritus).

APPENDIX 8: Nesting Birds: Mitigation and Compensation Measures.

Birds are declining throughout the country due to loss of roost and nesting places, and as the development may disturb nesting potential on the site, artificial nests are to be erected to compensate for this possible loss. The erection of artificial nests around the complex, will provide alternative sites for all three species of bird, and make a positive contribution to their conservation.

Making a nestbox suitable for robins and other box builders

What you need

Natural nest holes do not come in standard sizes, so use these dimensions only as a guide. Any plank or sheet of about 15 mm thick weatherproof timber is suitable. However, do not use CCA pressure-treated timber, since the leachates may harm birds. Cut each section as per our plan, which you can download by clicking on the link to the right.

Dimensions

The plan gives measurements for both a small and a large box. Use only the first or the second figure throughout. For starlings and great spotted woodpeckers, use the dimensions for the large box; all the others need the small one.

The bottom of the entrance hole must be at least 125 mm from the floor of the nestbox. If it's less, young birds might fall out or be scooped out by a cat. The inside wall below the entrance hole should be rough to help the young birds to clamber up when it's time for them to leave.

Putting it together

Drill drainage holes to the base of the box, and use galvanised nails or screws to assemble. It's always best to leave the box untreated. As it weathers, it will blend into its surroundings. Softwood boxes can be treated with selected water-based preservatives, which are known to be safe for animals, such as Sadolin. Apply it only to the outside of the box, and not around the entrance hole. Make sure the box dries and airs thoroughly before you put it up.

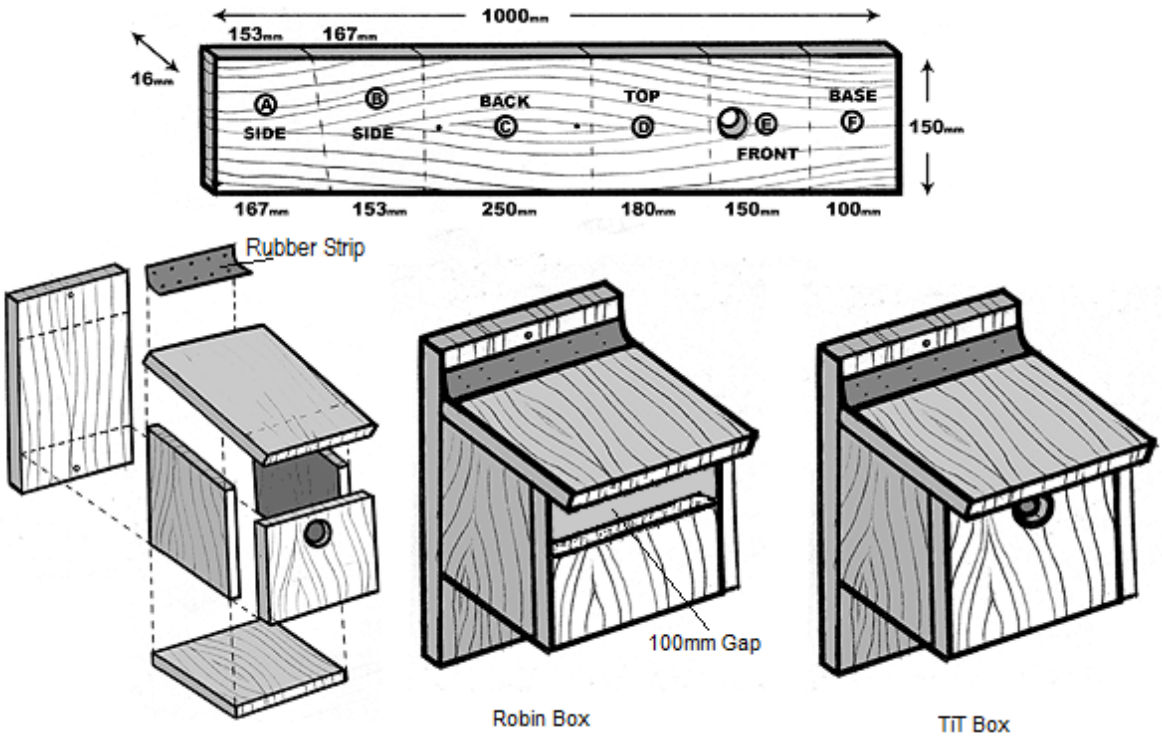
A woodpecker box should be filled with a block of balsa wood, rotting log or wood chips – woodpeckers like to excavate their own nesting cavities.

Do not nail down the lid since you will need to clean out the box in the autumn. Attach the lid with a brass or a plastic hinge that will not rust, or hinge it with a strip of leather or rubber (an old piece of bicycle inner tube will do). Fasten it down with a good catch.

How big does the hole need to be?

The entrance hole size depends on the species you hope to attract:
25 mm for blue, coal and marsh tits.
28 mm for great tits, tree sparrows and pied flycatchers.
32 mm for house sparrows and nuthatches.
45 mm for starlings.

The small box with a 100 mm high open front may attract robins, or pied wagtails. A wren would need a 140 mm high front panel, while spotted flycatchers and blackbirds prefer a low 60 mm front to the box.


1000mm
153mm
167mm
16mm
A
SIDE
B
SIDE
BACK
C
TOP
D
E
FRONT
BASE
F
150mm
167mm
153mm
250mm
180mm
150mm
100mm
Rubber Strip
100mm Gap
Robin Box
TIT Box

APPENDIX 9: Hedgehog – Eco-plate Hedgehog House.

Eco-plate Hedgehog House

Eco-plate Hedgehog House

pitchcare.com ecology

Specifications			
Width (cm)	Height (cm)	Length (cm)	Tunnel Length (cm)
60	35	46	36

Hedgehogs were once commonly seen in most UK gardens; now however a loss of hedgerows and agricultural intensification has resulted in a 30% reduction in populations in the last ten years. Hedgehogs are an important indicator species, and a decline in their numbers is often symptomatic of a far bigger problem with ecosystem health.

There are many ways that you can help support this species including providing them a home which is predator proof, secure home.

This hedgehog box was designed in collaboration with the Egelstichting (the Dutch Hedgehog protection society). This box is made of Eco-plate, a material similar in density to plywood, but produced from recycled car seats sourced from reputable suppliers, and grown from native stock.

This environmentally friendly material is weather resistant and very durable. The entrance tunnel is hidden inside the house to make it more difficult for predators to reach hedgehogs inside the house.

To make it habitable, part-fill the nest chamber with dried leaves. Place the box in a secluded corner and cover with soil or leaves to boost the chances of the box being used.

It would give a hedgehog daytime shelter between April and October, and will also allow them the space to hibernate during harsh winter months between November and mid-March.

The lid can be easily removed for cleaning, however, do not disturb the box while it is occupied.

APPENDIX 10: Hedgehog Highway.

Why do hedgehogs need holes in fences?

Hedgehogs travel around one mile every night through our parks and gardens in their quest to find enough food and a mate.

One of the main reasons hedgehogs are struggling in Britain is because our fences and walls are becoming more and more secure, reducing the amount of land available to them.
We can make their life a little easier by removing the barriers within our control hedgehogs can travel 2km (one mile) in a single night as they search for food and shelter, but sadly our garden fences and walls limit their movement.

Making small 13cm **hedgehog highways** through fences and walls, would allow hedgehogs to safely pass through into our gardens, and are a vital way to safeguard the future of the species.

Hedgehog Highways

A 13cm by 13cm square hole is sufficient for any hedgehog to pass through, no matter what the wall or fence is made from. This will be too small for pets and dogs to pass through to pursue hedgehogs.

- Remove a brick from the bottom of the wall.
- Cut a small hole in your fence if there are no gaps.
- Dig a channel underneath your wall, fence or gate, to obtain enough depth.

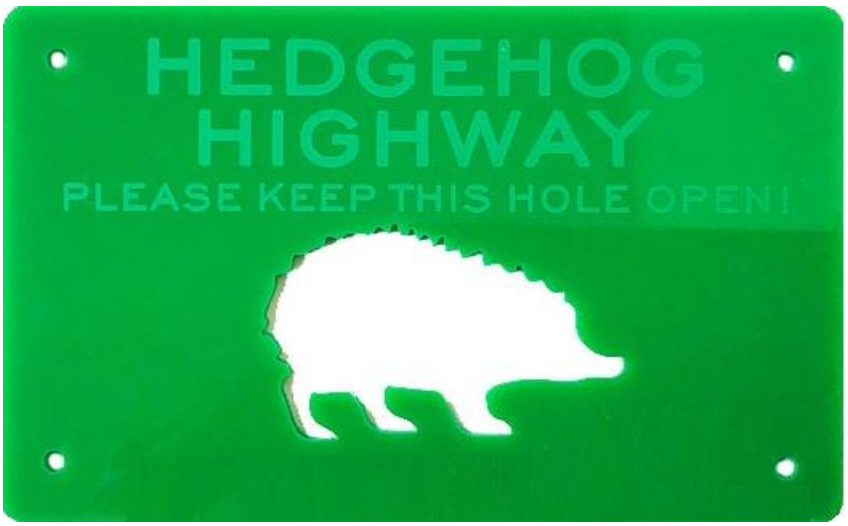
- A 13 cm diameter circular hole through brickwork creates a tunnel.

- Similarly, a 13cm diameter drain pipe would suffice through vertical fencing

If you are feeling particularly ambitious then the ideal option would be to swap your walls and fences for hedges. This would provide shelter, food and a route into an out of your garden, not to mention the benefits it would bring to other wildlife such as birds and bees.

Label your Hedgehog Highway

A “hedgehog Highway” label cut from recycled plastic, can be pinned above your hedgehog hole to ensure it is not blocked by anyone accidentally.



APPENDIX 11: Bats and Lighting.

The detailed lighting plan on-Site should be functional and directional and in line with current guidance (Bats and Artificial Lighting at Night, August 2023). Habitat retained, enhanced or planted for roosting, foraging and/or commuting bats will need to be considered within a suitable lighting plan in order to be used by bats. Where designing with bats in mind:

- Light emitting diodes (LED) should be used, as these typically feature no UV component and as a result are less attractive to invertebrates and less disturbing to bats;
- Only luminaires with 0 % upward light ratio should be used and fitted on the horizontal to avoid excessive up-lighting, back lighting and light spill onto boundary hedgerows and trees;
- A warm white spectrum (ideally under 2700 Kelvin) should be used in order to reduce blue light component, therefore reducing the number of invertebrates attracted to the lights;
- Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill;
- The use of specialist bollard or low-level downward directional luminaires to retain darkness above can be considered, although this has certain drawbacks and should only be used as directed by a lighting professional;
- Column heights should be carefully considered to minimise light spill;
- Any external security lighting should be set on motion-sensors and short (e.g., 1 minute) timers;
- Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats;
- As a last resort, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed;
- Where habitat needs to be unlit (e.g., important foraging and commuting corridors/roost sites), illuminance should be below 0.2 lux on the horizontal plane and below 0.4 lux on the vertical plane.