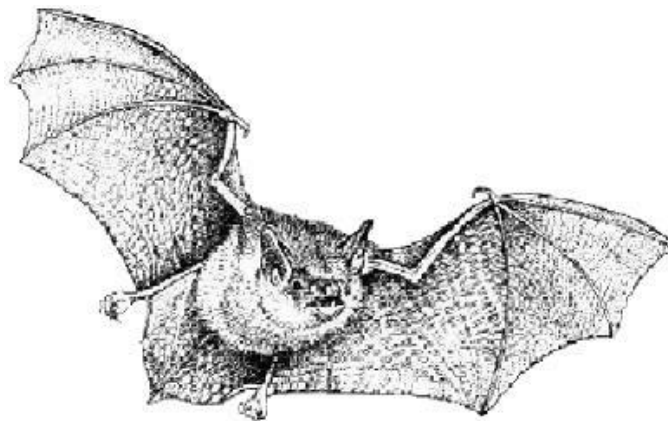


**Tame Farm Barn,
Newhey,
Rochdale,
Greater Manchester
OL16 3QJ**

**Preliminary Survey & Assessment
in Respect of Bat Species and Nesting Birds,
(including Barn Owl).**

**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

17th June 2023

1. Introduction.

1.1 Reason for Survey.

As part of the process to obtain planning permission to develop the site by refurbishing a large barn, a full preliminary ecological assessment of the site was carried out, including, a daytime evidence and opportunity bat survey and assessment, a separate evening bat emergence survey, and a current bird nesting survey. The purpose of these surveys was to provide evidence on habitats, and protected/notable species, within the site boundaries, as part of the Local Development Framework (UDP Policy EN9). Also, to establish whether conditions within the site had changed since the previous surveys undertaken by Angela Graham Bat Consultancy Service Ltd., 11th September 2021 and 6th October 2021, and to establish whether there was any evidence of any new bat activity around the site, or indications of new bat roost(s) being set up.

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 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, and identify any mitigation measures which may be required to increase overall biodiversity within the site.

1.3 The Location.

The targeted barn was part of a former farming complex, positioned at the end of a long farm track connecting the site to Woodside in the south, in the Hewhey area of Rochdale in Manchester. The barn and its surrounding land from now on are referred to as the “site” at OS grid reference: SD 94376 12313, (refer to **Fig 1 - The Site Location**).

1.4 The Site.

The site consisted of a barn connected externally to a farmhouse which was not included in the current application and therefore was not currently surveyed. There were several other buildings within the site but again as these were not part of the application, they were not currently surveyed. Also, since the 2021 surveys, several outhouses that had formally been attached to the barn, had been demolished, and only the building ruins and parts of the walls remained.

1.5 Surrounding Land.

The targeted barn was positioned at the southern end of the complex, which also contained other buildings, a large farmhouse to the north, and several other small buildings around the site perimeter, however as these were not included in the current application, they were not surveyed. The overall site sat on the summit of a small hill and was bordered by low walls, and which also contained a few small trees and shrubs.

The aforementioned farm track ran downhill from the north-eastern corner of the site, through areas of rough, open pasture and was bordered by low stone walls. Whilst approximately 0.16 km to the east of the site amongst the areas of pasture, were the buildings of several converted farm complexes, whose grounds and gardens contained the odd tree, and all were bordered by low stone walls.

To the north and west of the site, were other areas of rough pasture bordered by lines of stone walling, with another farm approximately 0.29 km to the west, and a further farm complex 0.42 km to the north.

Across the open fields to the south of the site, approximately 0.12 km away at their nearest point was a line of trees which at one point surrounded a disused quarry to the south-east, whilst nearly 0.25 km away to the south was a small wood, running in and east to west direction and the village of Norden beyond this to the south, through which ran a small brook.

The tree-lined banks of Ogden Reservoir lay 0.65 km to the east of the site, but there were no other areas of woodland, or any other large bodies of water, 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** **Fig 5 - Plan Showing Results of Preliminary Daylight Evidence and Opportunity Survey and Assessment**, and **Fig 6 – Plan Showing Results of Evening Bat Emergence Survey**).

2. Methods.

2.1 Risk Assessment, Possible Hazards.

The required access to the site was relatively easy, and the barn was in a reasonable condition, having fairly sound walls, roof, and soffits. However, although the barn was currently being used for the storage of equipment and other materials, there were no other hazards other than those normally associated with surveying these types of buildings and the surrounding site.

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 Daylight Evidence and Opportunity Survey and Assessment.

The preliminary daylight evidence and opportunity survey and assessment took place on 9th June 2023, and was carried out in order to assess the site to search for evidence of bat occupation, (including recent and historic use). It comprised a search for bats themselves, bat droppings, urine stains, remains of invertebrate prey, or grease marks from repeated contact, or passage by bats through narrow roost accesses, or against surfaces, and any other signs of bat occupation, and at the same time looking for evidence of either current or historical nesting birds, active nests and feathers.

Areas within the targeted building searched were:

- Inside all parts of the barn where bats could roost, in the walls, roof trusses, or upon furniture and equipment, also in spider webs and other places where droppings or prey remains may

collect. Likewise noting any noises such as scratching and squeaking which may be made by roosting bats.

- Outside the barn, the eaves, gables, soffits, and walls, for signs of potential bat access holes, also, the ground, and any other surfaces such as, shrubbery, or any piles of equipment and vehicles, which may occur underneath the eaves, and around the perimeter of the barns, any of which may catch bat droppings.

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 inspections 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 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.

2.4 Equipment.

Equipment used consisted of ladders, an endoscope, camera, close-focus binoculars, and a powerful hand-held torch.

2.5 Evening Bat Emergence Survey.

An evening bat emergence survey was carried out to further assess the site, by observing how bats utilise the site, and observe if any bats emerged from possible roosts identified within any part of the barn (including any potential roost opportunities observed during the previous survey carried out on 11th September 2021), or from any of the trees or other buildings within the overall surrounding area. This also took place on 9th June 2023, and was carried out by two surveyors, strategically positioned to ensure as good an observation as possible of the targeted buildings.

2.6 Equipment

The equipment used during the survey, consisted of close-focus binoculars, powerful hand-held torches, an Echo Meter Touch 2 real-time expansion detector for Android, a Bat Box 3D heterodyne bat detector, and a magenta heterodyne bat detector, both with earphones.

3. Results.

3.1 Daylight Survey.

3.1.1 Weather.

The weather conditions at the start of the survey on 9th June 2023, were reasonable. It was sunny and dry, with some cloud cover and a strong breeze, (Beaufort Scale 6), and with a temperature taken during the survey of 22°C, such conditions were optimal for a survey of this type.

3.2 Possible Roost Sites.

3.2.1 The Buildings.

The former farming complex sat on a small rise within the overall nearby area, and the barn was the only part of the complex currently the subject of the planning application, and as such was the only building currently surveyed, as mentioned above (paragraph 1.3).

The Barn.

The barn was located at the southern end of the complex and was attached externally to the farmhouse, (not included in this survey), in a south-east to north-west orientation. It was a tall single storied building, constructed from well-dressed stone, with a pitched roof covered in underlined slates, which were attached to wooden purlins mounted upon timber trusses, but with no roof void. The barn itself was in good condition, with sound gables, soffits and roof.

Although the building was currently being used mainly for storage, it was unheated, uninsulated, damp, draughty and cold, and therefore were deemed unsuitable for either daytime roosting bats, or breeding bats. Also, as frost and inclement bad weather was very likely to penetrate the interior of the buildings in the colder months, both buildings did not offer the optimum humidity and constant low temperatures, that are required for hibernating bats, and therefore the barn was judged to be of low bat roost suitability, (refer to **figs 3, 4 and 5**, and **photos 1 to 21**).

There were some potential bat roosting opportunities however, and these were:

- Since the previous surveys carried out by Angela Graham Bat Consultancy Service Ltd., in 2021, the entrance porch within the eastern elevation had been completely removed, and there were two holes within the north-eastern elevation where the supporting beams for the removed entrance porch had once been. The southernmost one of these was found to be nearly full of bits of stone, whilst the other was heavily cobwebbed, and therefore both of these were thought to offer very low bat roost suitability, (refer to **figs 3, 4 and 5**, and **photos 1 to 3**).
- There was a gap between the barn door and the top of its frame, however, a survey of the gap using an endoscope and a visible search of the door and floor beneath it, both externally and internally, found neither bat droppings, any invertebrate prey remains or any staining of any kind, and therefore the gap was deemed not to have been used by bats, (refer to **figs 3, 4 and 5**, and **photos 3 and 4**).
- There was single swift (*Apus apus*), nesting box mounted just beneath the roofline of the eastern elevation. This had been put into position since the surveys of 2021 and a survey of this using close-focus binoculars, found neither bird splash nor any signs that would suggest that the nest had yet been used, (refer to **figs 3, 4 and 5**, and **photos 1, and 3 to 5**).
- During the 2021 surveys, there had been two outbuildings attached externally to the southern elevation, and another attached to south-western elevation, however the roofs, windows, doors, and some of the stone walls had since been removed resulting in ruined buildings, which offered negligible bat roosting suitability, (refer to **figs 3, 4 and 5**, and **photos 6 to 9**).
- There was a circular ventilation hole in the southern gable and another in the northern gable of the barn, and also three rectangular ventilation holes in the western elevations, however these were found not to pass completely through the walls, and therefore were of low bat roosting suitability, (refer to **figs 3, 4 and 5**, and **photos 6, 10, and 12 to 15**).

- At the south-western corner of the roof, a couple of the roof slates had lifted and there were also some gaps between the stones at the same location, however a close inspection of these holes and gaps, and the walls and floor beneath them, using close-focus binoculars, found neither bat droppings, nor any invertebrate prey remains. Also, the survey found no urine staining on the walls beneath the gaps and holes, nor any fur staining which would have proved the repeated passage of bats through them, (refer to **figs 3, 4 and 5, and photo 11**).
- Some of the mortar parging was missing at hole close the upper north-western corner of the northern elevation, and during the previous surveys carried out by survey Angela Graham Bat Consultancy Service Ltd., in 2021, it was thought likely that at least two bats were thought to have emerged from this hole. However, during the current survey, the gap was scrutinized using close focus binoculars, and the hole was found to have a lot of debris and cobwebs within it, which would suggest very little space for a bat roost. Also, the area around the gap, the roof adjacent to it, and also the walls and floor beneath it found neither bat droppings nor invertebrate remains, nor was there any fur staining found to suggest the repeated passage of bats through the gap. It was therefore thought not to have been used and to be of low bat suitability, (refer to **figs 3, 4 and 5, and photo 16**).

During the survey no evidence of either current or historical roosting bats was detected in, on, or around, any part of the barn, either internally or externally. Nor was there any evidence of previous use by roosting bats detected anywhere else within the surrounding site.

The search also found no evidence to suggest that any part the barn or the surrounding farmhouse complex, or anywhere in the overall site, had been used historically by neither nesting or roosting birds. It was also surmised that due to the time of year, most species of birds will have set up territories for the 2023 bird nesting season, and will be actively nesting, however no currently active nesting behaviour was observed, (Refer to **Appendix 1**).

3.2.2 Trees and shrubs.

There were a few mature trees growing around the site, and where possible, these were all inspected for signs of potential bat roosting suitability. However, none were found to have any lifted bark, canker damage, any cracks or holes, 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 thought likely that the barn and the remainder of the complex and some of the nearby habitats, could be used by nesting birds during the upcoming nesting season, but at the time of the survey, (9th June 2023), although there was some bird activity in and around the trees, hedgerows and neighbouring open pasture, neither active or old nests were found amongst the nearby vegetation, (Refer to **Appendix 1**).

3.2.3 Foraging Potential and Alternative Bat Roost Potential.

The site is in a rural area, and consisted of numerous buildings which constituted the former farming complex, however, only the barn was targeted for this survey.

The overall site was on the top of a rise, and was bordered by low walls, and contained a few small trees and shrubs. It lay amongst large areas of open rough pasture, the individual fields bordered by further lines of low stone walls.

There were several farming complexes within the surrounding area, but these were all some distance away from the barn. Also, across the open fields to the south of the site, was a line of trees which also surrounded a disused quarry to the south-east, and which formed the northern boundary of the village of Norden. More areas of woodland lay further south, and which had a small stream running through it.

All of these features, together with the lines of hedgerow along the driveway, offered some 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 2016), it says, “A structure with one or more potential roost sites that could be used opportunistically by individual bats, could be classed as roosting habitat. However, if these potential roost sites do not provide enough space, shelter, protection, appropriate conditions, and/or suitable surrounding habitat to be used on a regular basis, or by large numbers of bats (i.e., unlikely to be suitable for maternity or hibernation), then they are of low bat roost suitability”, (Refer to **Appendix 2**).

The barn certainly fitted these criteria, and as there were no areas of woodland, or large bodies of open water in the nearby vicinity, the local area surrounding the barn, 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 the farm buildings some distance away in the surrounding area, could offer greater potential as bat roosts. Bats favour tall, heated buildings whilst breeding.

During the survey, although numerous birds were observed around the site, none were seen showing any potential nesting behaviour, nor were any nests found, either currently active or of historical use, and it was also surmised that due to the time of year, although birds may have already set up territories for the 2023 nesting season, and will have started to breed, (Refer to **Appendix 1**).

Although there was good potential for barn owl to forage in the nearby vicinity, it was felt that the targeted barn and the other buildings within the complex, offered negligible potential for either roosting, nesting or breeding.

3.3 The Evening Bat Emergence Survey.

An evening bat emergence survey was carried out in order to further assess the site, and observe if any bats emerged from roosts within any of the targeted buildings, or from any of the nearby trees and shrubs, or from any other building close by (not surveyed at this time). This survey also took place on 9th June 2023.

3.3.1 Weather

The weather conditions at the start of the survey on 9th June 2023, were reasonable. It was sunny and dry, with some cloud cover and a strong breeze, (Beaufort Scale 6), and with a temperature taken during the survey of 22°C, such conditions were good for a survey of this type.

3.3.2 The First Survey

Sunset on the 9th June 2023 was 21.38 hrs, and the survey started 15 minutes before sunset at 21.23 hrs, and ended when it was too dark to observe the bats well.

The first bat recorded was a common pipistrelle (*Pipistrellus pipistrellus*), and this was heard but not seen, commuting over the pasture beyond the site’s southern boundary, at 22.01 hrs. However, it was thought that as the barn stood on the crest of a hill, this bat activity was below the eyeline of the surveyors, (refer to **pink arrow 1** on **fig 6**).

Shortly afterwards, at 22.08 hrs, a pipistrelle was heard but not seen some distance away to the south-east of the site. This bat was thought to be the same bat heard earlier in the survey. During

the remainder of the survey, the bat was heard sounding intermittently, together with a few feeding buzzes, (refer to **pink arrow 2** on **fig 6**).

Beginning at 22.28 hrs and continuing for the duration of the survey, a pipistrelle foraged some distance away to the south-west of the site, over the pasture and the nearby trees. Although at no time was the bat actually seen, numerous feeding buzzes were heard during this time, (refer to **pink arrow 3** on **fig 6**).

No other bat activity was observed around the site, and at no time were bats seen to have emerged from any part of the barn or from any other buildings within the overall complex, nor from any of the odd tree and shrub around the site.

During the survey, although some birds were observed around the site, none were seen exhibiting any type of nesting behaviour.

4. Conclusions.

4.1 In summary, during the previous surveys undertaken by Angela Graham Bat Consultancy Service Ltd., on 11th September 2021 and 6th October 2021, it was concluded in Table 1 of the report, that *“At 19.04.48 the surveyor to the south of the barn saw three bats simultaneously, one from near the gable apex, one from lower down the roof on the eastern side and another flying east across the gable end. These were not recorded by other surveyors or detectors. Two of them are likely to have emerged from defects in association with the roof.* However, during either the preliminary survey and assessment undertaken on 9th June 2023, neither current or historic evidence of roosting bats was found in any part of the barn, nor were any bats seen to have emerge from it, or from any other building within the complex.

4.2 The barn was in a reasonably sound condition, being both unheated, uninsulated, damp, draughty and cold, and therefore were deemed unsuitable for either daytime roosting bats, or breeding bats. Also, as frost and inclement bad weather was very likely to penetrate the interior of the barn in the colder months, the building did not offer the optimum humidity, and constant low temperatures that are required for hibernating bats, and consequently the barn was judged to be of low bat roost suitability, (Refer to **Appendix 2**).

4.3 None of the trees and shrubbery, growing within the site boundaries, offered 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, and large numbers of other species of bats was unlikely. It is concluded that since there is currently no evidence of the presence of bat roosts within any part of the barn, the overall farm complex, 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 a bat 'low impact' licence (CL21) (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 9th June 2023, then a single visit to the site to carry out a daylight evidence and opportunity bat survey and assessment, and a single bat emergence survey, was considered sufficient for a preliminary ecological assessment of the site, (refer to the 'Bat Worker's Manual' (JNCC 2004) and 'Bat Surveys – Good Practice Guidelines' (BCT 2016), paragraph 8.3.4).

4.6 Since bats, particularly Pipistrelles, are opportunistic, an absence of roost evidence 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 is very unlikely, with lone and/or transient roosting likelihood being negligible.

4.7 It was thought possible that there may be some site clearance work carried out during the planned development, but it was thought that this would be kept to a minimum. As bats use linear features such as lines of trees, hedgerows or walls, as foraging, navigating and commuting routes, the planned development includes the planting of trees and shrubs around the complex perimeter, and this would enhance 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 shrubbery both within, and along the eastern site boundary, to be used by birds for both roosting and nesting purposes, and although most species could be currently breeding, neither current nor historic nests were found during the surveys. It was also surmised that the planting of trees and shrubs during the planned development would be beneficial to birds of all species, (Refer to **Appendix 1**).

4.9 As no evidence of roosting barn owls was observed in any part of the site, it was concluded that barn owls do not use the site, either as a regular nesting roost, overnight roost, or breeding roost, but occasional foraging could not be ruled out.

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, 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 barn, (not considered suitable for hibernation), especially its roof, 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 As it is probable that the barn will be worked on at other times of the year, 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 any tiles and sheeting, over the roofs, walls and gables affected by the development, 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 the whole complex has low bat roosting suitability, it is recommended that if the building work is delayed until the latter part of 2023 or beyond, then further surveys may be required, including a suitable number of evening bat emergence surveys and a possible dawn re-entry survey. Also, if more than 12 months' elapses between this survey, and any commencement of building work, then the surveys must be repeated, and these need to be carried out under weather conditions suitable for normal bat activity, and when bats are fully active (May to September but is weather dependent).

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 can be attached to both the barn, the existing dwelling and the planned new extensions after completion of the planned works.

5.6 It is also recommended that further bat boxes are also attached to the existing house, at a minimum height of 4m off the ground, and that these measures are implemented as soon as possible after this survey, to maximise the opportunities for wildlife at the site, and thus achieving a biodiversity net gain, (refer to **Appendix 7** for details).

5.7 As there was some potential for roosting and nesting birds in the few trees both within the site, and amongst the line of hedgerow along the farm track, it is recommended that where possible, these should be left untouched, to encourage future bird nesting, and to maintain navigation, foraging and commuting routes for bats.

5.8 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 further demolition, or any 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, that no activity involving people, or their equipment is carried out within a 4m 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.

5.9 To complement the swift box which has already been erected high up on the eastern elevation of the barn, it is recommended that some Schwegler No 10 woodcrete swallow nests be put up. This type of nesting box is widely available, and should be erected as soon as possible to the existing buildings or within the existing outhouses. This is to encourage and enhance future colonisation and nesting by this species and to increase the overall biodiversity of the site, (refer to **Appendix 8** for details).

5.10 It is also recommended that some wooden nest boxes are erected around the site, amongst the shrubbery and attached to building walls, and these will be a mixture of open fronted and hole fronted boxes, and are to be erected to mitigate for potential loss of nesting opportunities, during, and after the development, to encourage and enhance future colonisation and nesting by bird species and to achieve an overall net gain in biodiversity, (refer to **Appendix 8** for details).

5.11 During the development, 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. As such, 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 carefully removed and placed within suitable habitat cover before site works commences for the day. 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.

5.12 It is recommended that, if any tree, shrub, or hedgerow around the site perimeter is removed, pruned or disturbed during building works, all clearance and disturbance should be undertaken outside the hedgehog hibernating months, November to mid-March. If this is not possible, a suitably experienced ecologist must be present, to oversee all vegetation removal, to ensure that no hedgehogs are disturbed whilst hibernating (Hedgehogs are a UK BAP Priority species).

5.13 It is also recommended that an Eco-plate Hedgehog Box should be positioned within the site, in an appropriate location. This is 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, existing hedgerows are to be kept, or new hedgerow planted used instead, with timber post and wire fencing also serving to enforce boundary lines, without prohibiting wildlife movements. If any boarded fences are required, it is recommended that there is a 3 – 5 cm gap between the wood and the ground, (greater in some locations and less in others is not a problem) so that wildlife such as hedgehog and amphibians can pass into and out of the garden.

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, (refer to **Appendix 10** for details).

5.16 It should be remembered that bats are occasionally found in the most unexpected places. If any bats are found during unsupervised work, the consultant (07745 268815) or the Bat Conservation Trust (0345 1300 228), should be notified and work stopped immediately.
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 - good practice guidelines 2nd Edition. Bat Conservation Trust. London. Hundt (2012).

Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition) Collins, J. (2016).

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).

Barn Owl Conservation Handbook: A Comprehensive Guide for Ecologists, Surveyors, Land Managers and Ornithologists (Conservation Handbooks) – The Barn Owl Trust (2012).

Owen, James (2018). Spotlight Hedgehogs - RSPB

7. 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
- Countryside Council for Wales, licence to disturb and take bats for scientific, educational, or conservational purposes by (Licence Number S085859/1).

He was accompanied and assisted on the surveys by Dylan Platt who is experienced in the use of heterodyne bat detectors and bat surveys.

8. Plans & Photographs.

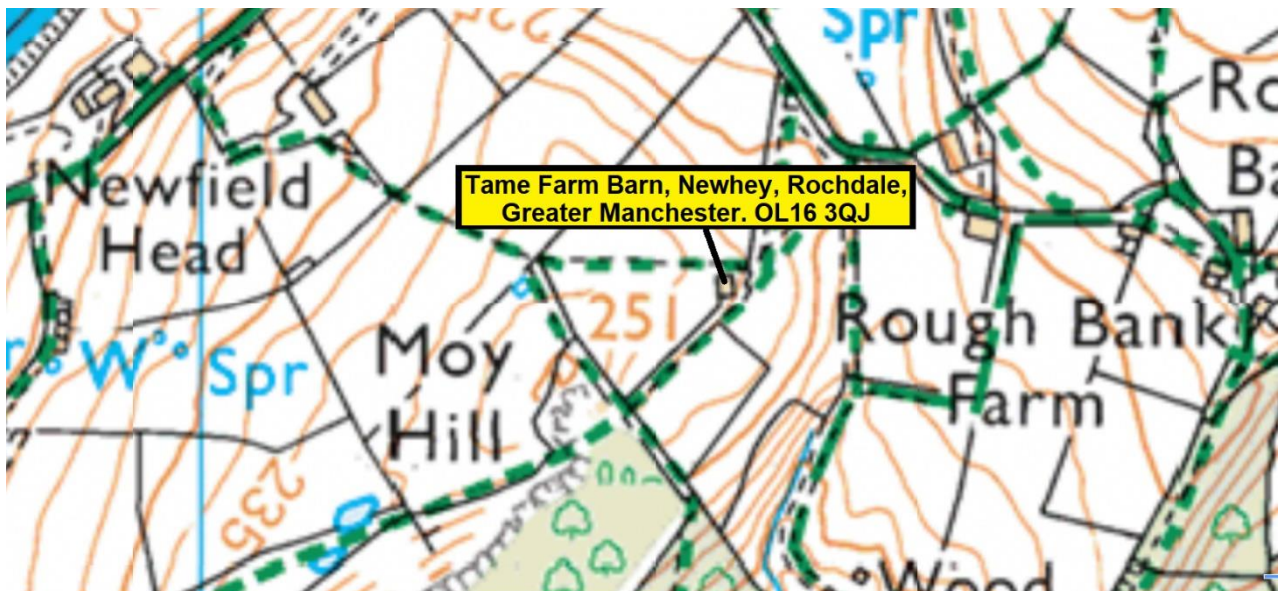


Fig 1 - The Site Location.



Fig 2 – Google Plan.

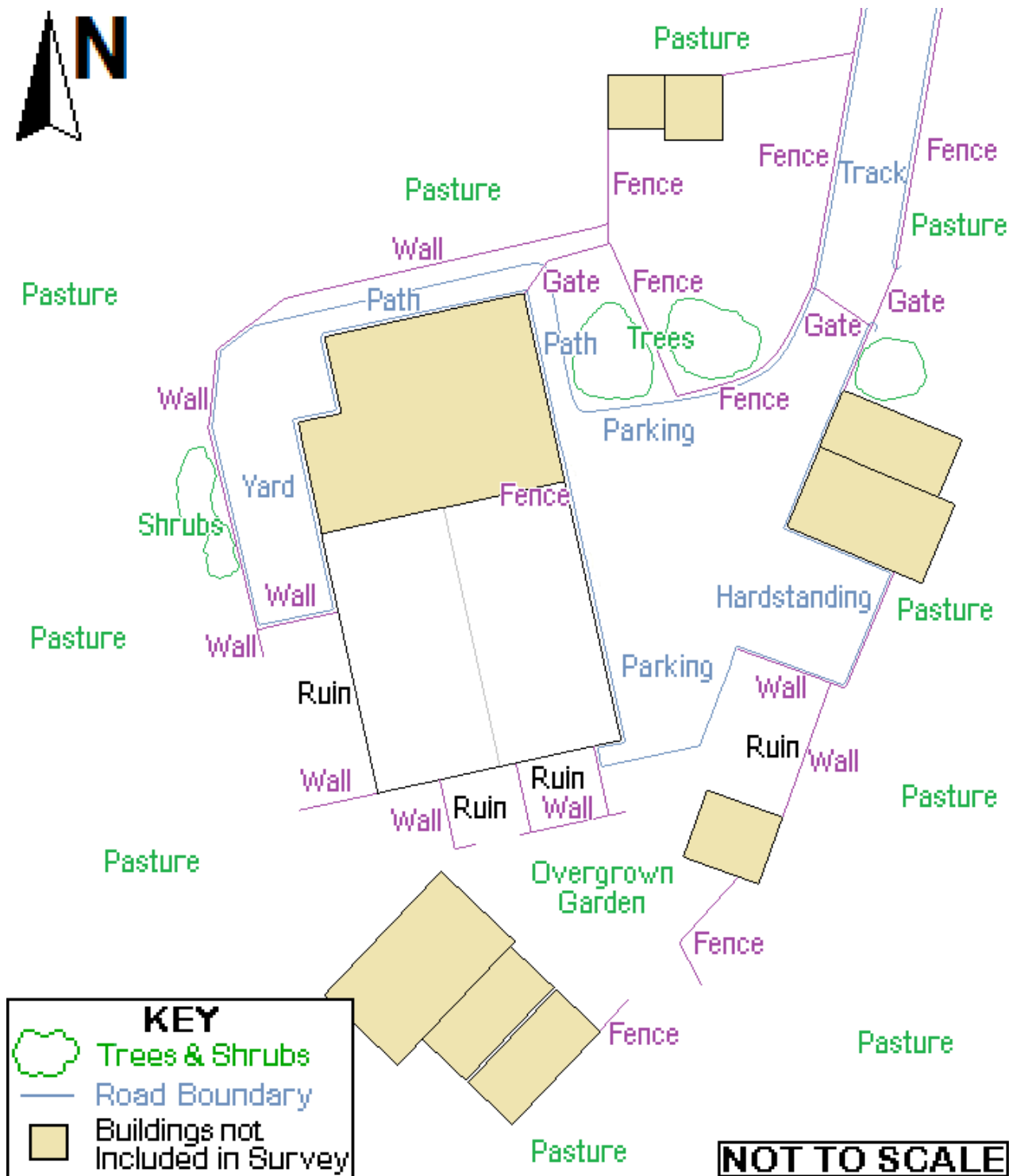


Fig 3 – Main Plan
Showing the local area and habitats.

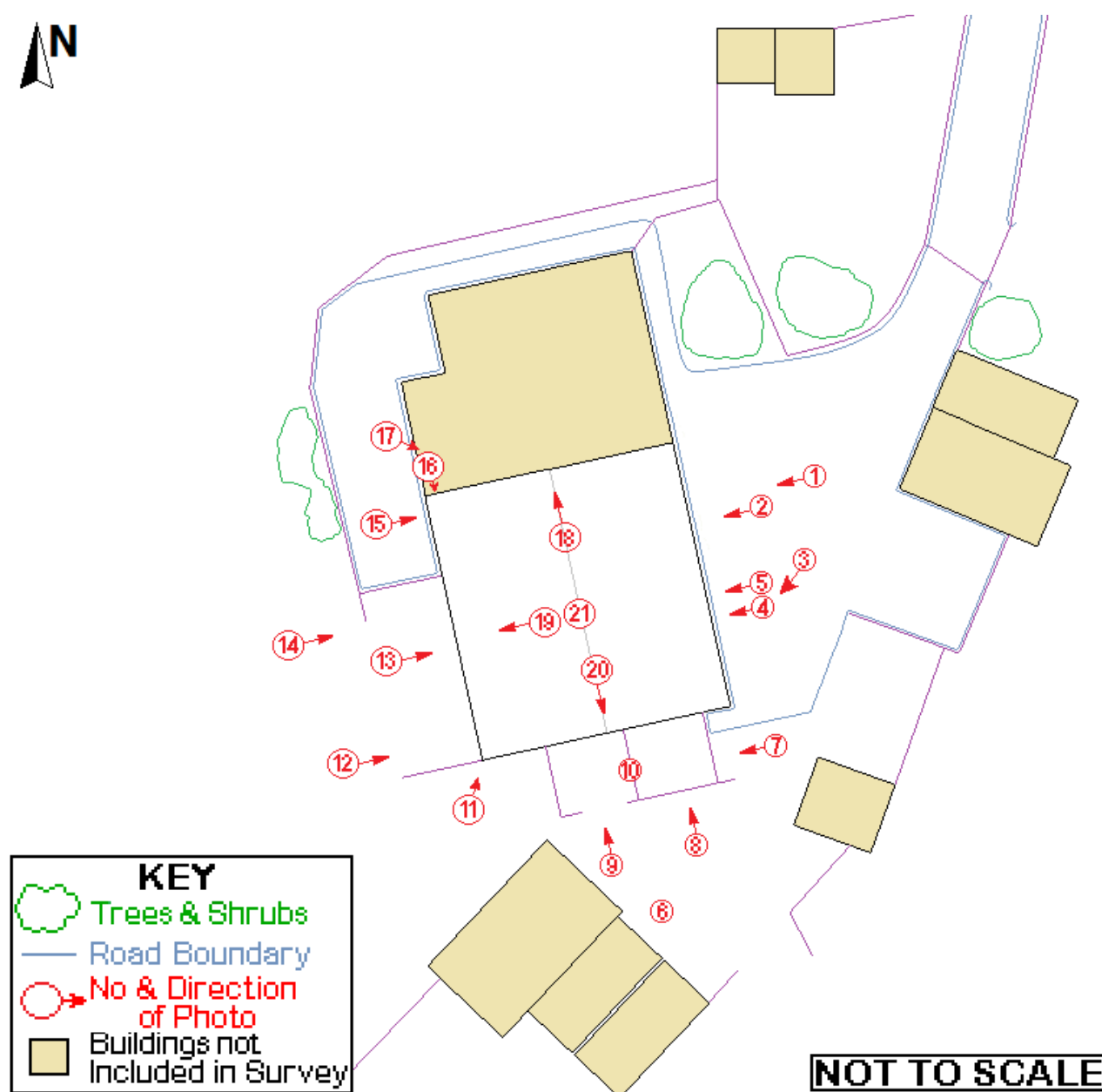


Fig 4 - Plan of Photographs.

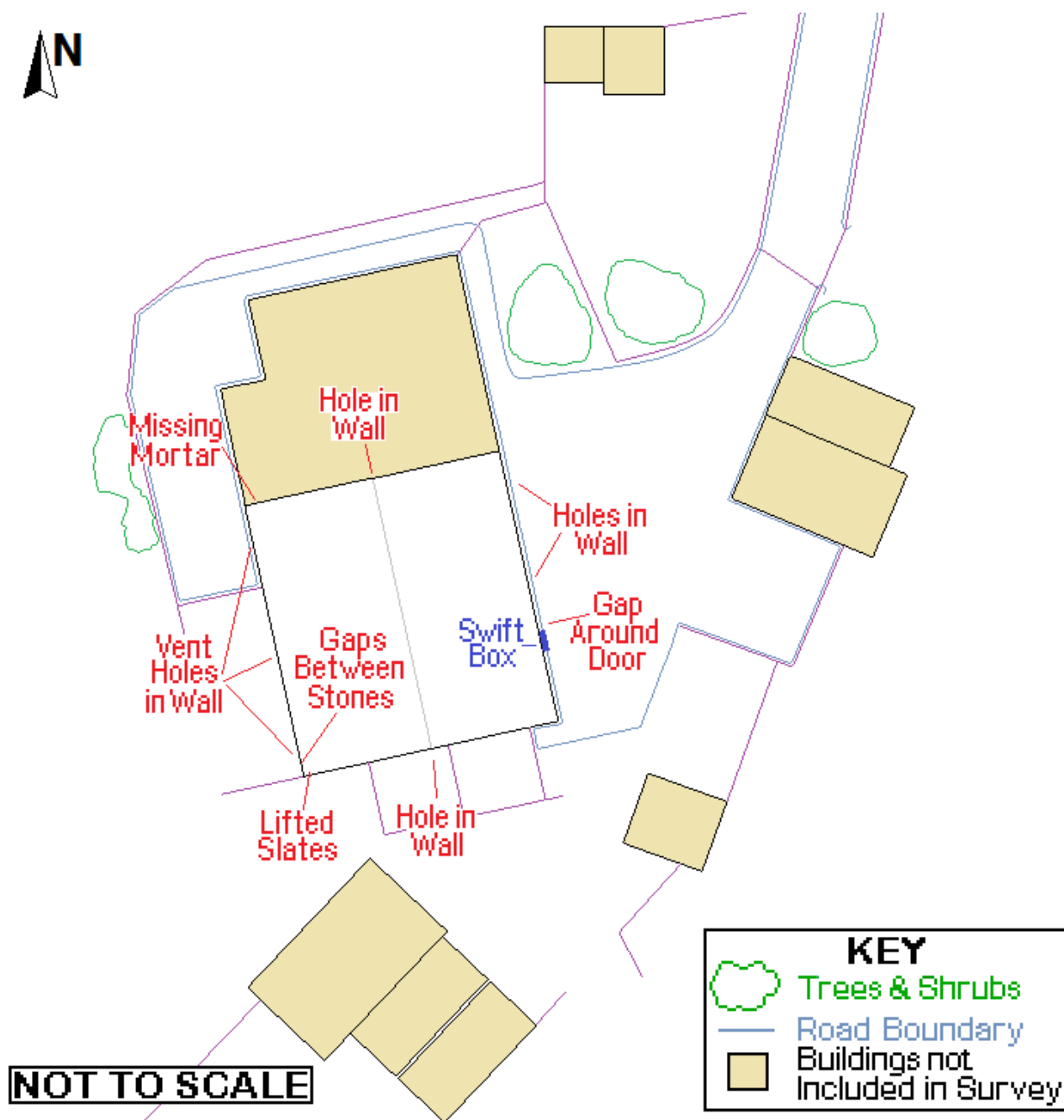


Fig 5 – Plan Showing Results of Preliminary Daylight Evidence and Opportunity Survey and Assessment.

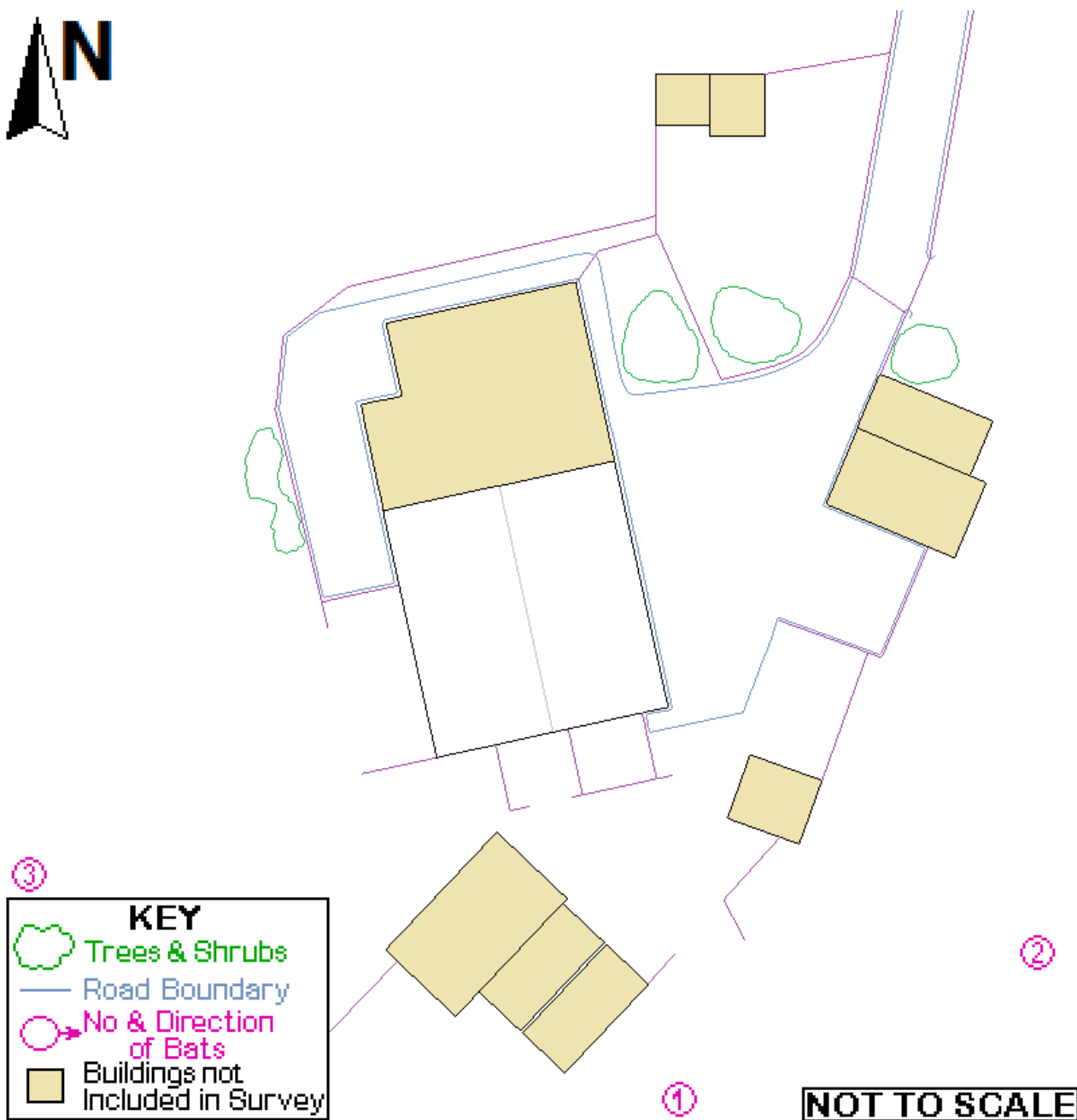


Fig 6 – Plan Showing Results of Evening Bat Emergence Survey.



PHOTO 1
North-eastern Corner

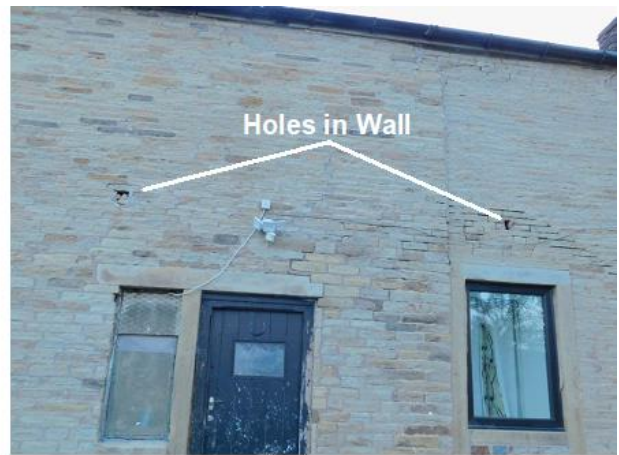


PHOTO 2
Eastern Elevation



PHOTO 3
South-eastern Corner



PHOTO 4
Underside of Porch



PHOTO 5
View of Swift Nest Box



PHOTO 6
Southern Elevation



PHOTO 7
Eastern Elevation of Former Extension



PHOTO 8
South-eastern Elevation of Former Extension



PHOTO 9
South-western Elevation of Former Extension



PHOTO 10
Southern Gable End

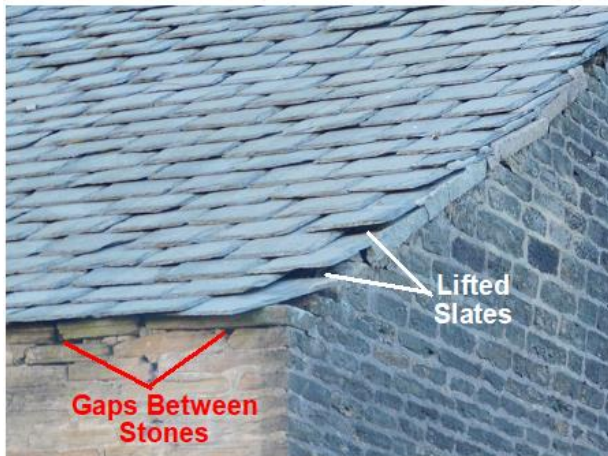


PHOTO 11
South-western Corner of Roof



PHOTO 12
South-western Elevation

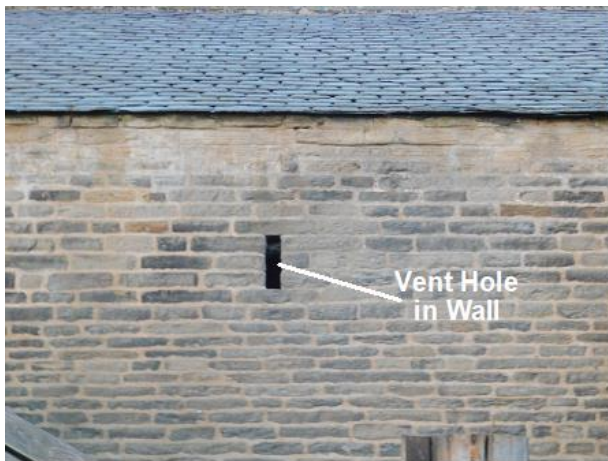


PHOTO 13
Upper South-western Elevation



PHOTO 14
Western Elevation



PHOTO 15
North-western Corner



PHOTO 16
Upper North-western Corner



PHOTO 17
Northern Elevation



PHOTO 18
Inside View of Northern Elevation



PHOTO 19
Inside View of Western Elevation



PHOTO 20
Inside View of Southern Elevation



PHOTO 21
Underside of Roof

7th June 2023

Mike Fisher, Bat Worker

Holder of Natural England Bat Roost Licence

Disclaimer.

All reasonable effort has been taken 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.

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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, arboriculturalists and foresters.

Pest controllers.

Planning officers & building surveyors

Architects, property developers, demolition companies, builders, and roofers.

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.

Defences 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.

Barn Owl and the Law.

Barn owls are listed on Schedule 1 of the *Wildlife and Countryside Act 1981* which gives them special protection.

It is an offence, with certain exceptions, to:

- Intentionally kill, injure, or take (handle) any wild barn owl.
- Intentionally take, damage, or destroy any wild barn owl nest whilst in use or being 'built' (barn owls do not 'build' a nest but may make a nest scrape.
- Intentionally take or destroy a wild barn owl egg.
- Have in one's possession or control a wild barn owl (dead or alive), or egg, (unless one can show that it was obtained legally).
- Intentionally or recklessly disturb any wild barn owl whilst 'building' a nest or whilst in, on, or near a nest containing eggs or young.
- Intentionally or recklessly disturb any dependent young of wild barn owls.

Hedgehogs.

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.

Additionally, hedgehogs are on the Scottish Biodiversity list as 'Watching Brief Only' requiring monitoring to prevent decline.

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

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.

Suitability	Description Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions 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 or hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.^c	Habitat that could be used by small numbers of commuting bats 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 or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are 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 commuting 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 or tree 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 ^a and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats 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.

**In accordance with Table 4.1 of
Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition) (Collins. J. (ed) 2016)**

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 but unlikely to give confidence in a negative result).

Low roost suitability	Moderate roost suitability	High roost suitability
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.

^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 two weeks apart, preferably more, unless there are specific ecological reasons for the surveys to be closer together (for example, a more accurate count of a maternity colony is required but it is likely that the colony will soon disperse). If there is potential for a maternity colony then consideration should be given to detectability. A survey on 31 August followed by a mid-September survey is unlikely to pick up a maternity colony. An ecologist should use their professional judgement to design the most appropriate survey regime.

Table 7.2 Recommended timings for presence/absence surveys.

Survey type	Start time	End time
Dusk emergence	15 minutes before sunset ^a	1.5–2 hours after sunset ^b
Dawn re-entry	1.5–2 hours before sunrise ^b	15 minutes after sunrise ^c

^a Survey start time should be adjusted on subsequent surveys if bats are recorded already in flight at 15 minutes before sunset on the first survey (or, if only one survey had been planned, this survey may then need to be repeated).

^b The possibility of late-emerging and early-returning species should be considered in setting times for surveys (see Section 3.5).

^c If bats are still in flight 15 minutes after sunrise then ecologists should remain in position until all the bats have entered their roosts.

Table 7.3 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	Moderate roost suitability	High roost suitability
One survey visit. One dusk emergence or dawn re-entry survey ^a (structures). No further surveys required (trees).	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey. ^b	Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either dusk or dawn. ^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 Section 5.2.9). If there is a possibility that quiet calling, late-emerging species are present then a dawn survey may be more appropriate, providing weather conditions are suitable. 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 two weeks apart, preferably more. A dawn survey immediately after a dusk one is considered only one visit.

**In accordance with Tables 7.1, 7.2 and 7.3 of
Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition) (Collins. J. (ed) 2016)**

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.

INSTALLATION OF ARTIFICIAL SWALLOW NESTS.

Swallows sometimes use natural nest sites, such as caves and cliffs, but more often use manmade structures allowing them to become more widespread.

Swallows return to ancestral nesting sites in April and May, males arriving before the females, claiming, and defending the nest sites. They are monogamous and may return for up to three years. Swallows normally raise two or maybe even three broods depending on the weather. The young of the first will help to raise the succeeding broods.

Nests are normally built inside a building, on a beam or ledge, and they are often not much higher than head height. The nest, built by both birds, is a deep bowl of mud with grass and other fibrous material incorporated to strengthen it and lined with feathers. They require cover above the nest, keeping it dry and relatively secure. They have been recorded using a wide range of different sites including mine shafts, under bridges and even within construction sites. Single nests are common, but swallows often breed in small colonies of four or five pairs.

It is increasingly difficult for swallows to find suitable nest-building materials and the mud they do find, if any, is often of poor quality. In addition, the walls of buildings are nowadays often very smooth, so 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.

Swallows need mud to construct their nests. This can be in short supply, particularly during a dry spring. Providing a muddy area close to the nest site will further encourage swallows to nest nearby. Simply choose an area of soil safe for swallows - watering it in the morning and roughing it up a bit will suffice.

To enhance the area and to establish successful breeding colonies, artificial Schwegler No 10 Swallow Nests, are to be erected at locations within the site. These are designed to be mounted under the eaves of roofs, beneath canopies and porches, or within out-buildings or open portal garages/buildings.

Schwegler No 10 Swallow Nest.



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 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:

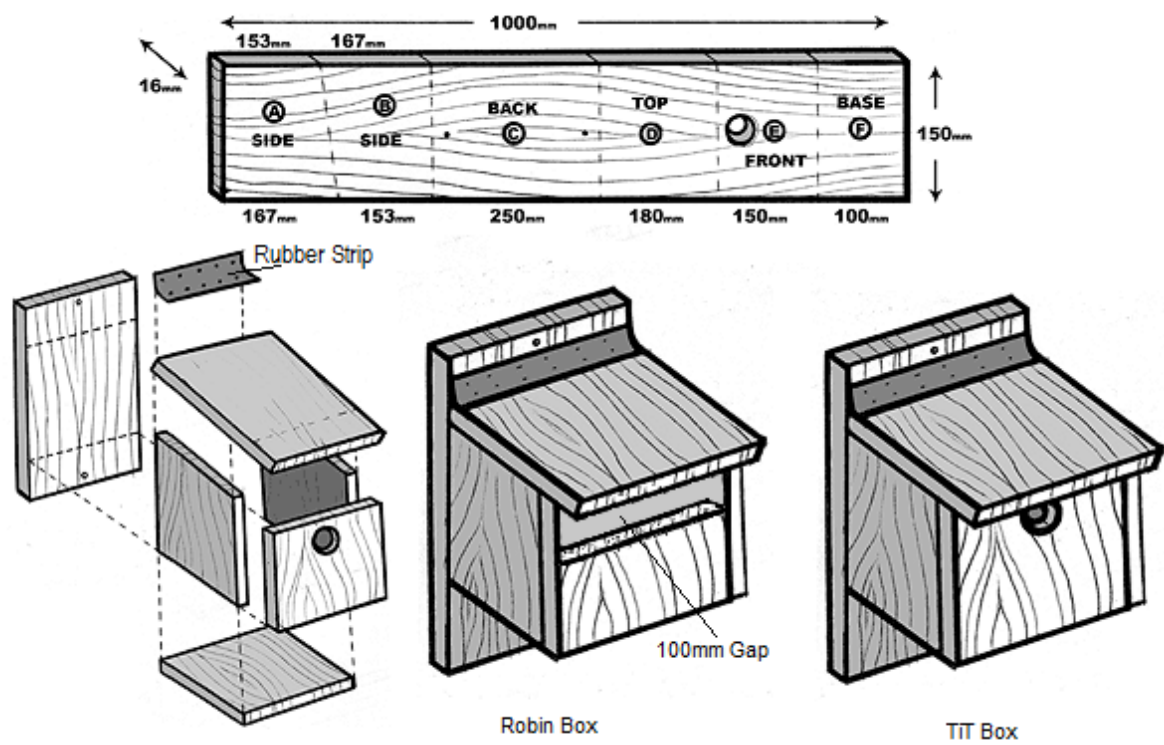
25 mm for blue, coal and marsh tits

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.



Eco-plate Hedgehog House



Eco-plate Hedgehog House



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: Bats and Lighting.

The detailed lighting plan on-Site should be functional and directional and in line with current guidance (BCT and ILP, 2018). 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.