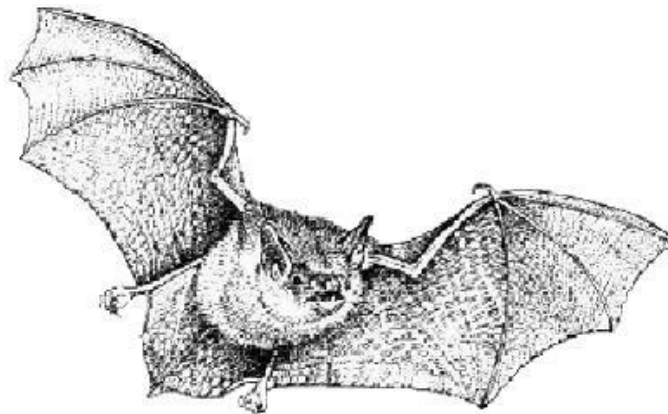


**Waterside Farm,
Bodkin Lane, Out Rawcliffe,
Preston, Lancashire
PR3 6TL**

**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

6th February 2024

1. Introduction.

1.1 Reason for Survey.

As part of the process to obtain planning permission to develop the site by demolishing a farmhouse and the construction of a dwelling elsewhere in the overall site, a preliminary daytime evidence and opportunity bat survey and assessment, and also a current nesting bird survey, (including barn owl), were requested, on the targeted building complex, together with any trees, shrubs, and hedgerows, both within and around the site boundaries. The purpose of these surveys was to provide up-to-date evidence on habitats and protected 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 Echo Calls Bat Surveys on 11th February 2021, and to establish whether there was any evidence of any new bat activity, or indications of new bat roost(s) being set up.

1.2 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 its 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 in relation to the proposed project, and any future development in the site.
- To establish the need for any further surveys and assessments.
- To make nature conservation recommendations, and identify opportunities for ecological enhancement and gain within the proposals.

1.3 The Site.

The targeted farmhouse, its extensions and attached conservatory, were part of a large farming complex, which was situated at the end of a long farm track leading into the site from Bodkin Lane some distance away to the west, in the Out Rawcliffe area of Preston in Lancashire, and was positioned centrally within the overall site, close to the southern boundary of the farm. The land and farmhouse complex from now on are referred to as the “site”, at OS grid reference: SD 39403 40898. There were other buildings within the surrounding farming complex, but as these were not included in the application they were not surveyed at this time, (refer to **Fig 1 - The Site Location**).

1.4 The Buildings.

There was a large, detached farmhouse with attached extensions and conservatory, all situated within a large farming complex.

1.5 Surrounding Land.

Immediately to the south and west of the farmhouse was an area of well-kept garden, bordered by fragmented hedgerow and some immature trees and shrubs. Whilst to the immediate north and east of the building were the remainder of the buildings within the farming complex (not included in

the survey), together with their expanses of concrete hardstanding, bordered by lengths of either hedgerow, or fencing. There was also a large area where old tyres were stacked, to the north of the farmhouse at a distance of 0.04 km away.

There were large areas of open pasture surrounding the farming complex on all sides, bordered by lines of fragmented hedgerow, together with some immature trees and shrubs, and containing a few ephemeral ponds, the nearest of which was approximately 0.12 km to the north-west of the farmhouse.

The nearest buildings belonged to another farm lay amongst some trees and shrubs, approximately 0.55 km to the north-west of the complex, and other farms were located a similar distance away to the north and north-east of the farmhouse.

There was a large expanse of salt marsh lying 0.10 km to the south of the , stretching away to both the east and west, and this bordered the River Wyre approximately 0.33 km to the south at its nearest point. Although the river meandered about, it ran in a roughly north-east to south-westerly direction, however, other than the above-mentioned habitats, there were no large areas of woodland, nor other large bodies of water, in the nearby vicinity, (**refer to Fig 1 – The Site Location, Fig 2 – Google Plan and Fig 3 – Area Plan**).

2. Methods.

2.1 Risk Assessment, Possible Hazards.

The required access to the site was relatively easy, and the perimeters of the farmhouse and its extensions, could be searched with care. All parts of the complex were in excellent condition, and the gardens were well maintained without obstacles, and as such, there were no more hazards, other than those normally associated with surveying both the inside and outside, of this type of buildings and garden.

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.
- Condition of trees, shrubs, and any water bodies.
- Presence/absence of roost potential.
- Value of roost potential – if present.

2.3 Daylight Evidence and Opportunity Survey.

The current preliminary daylight evidence and opportunity survey and assessment took place on 30th January 2024, and was carried out in order to further assess the site, and search for evidence of bat occupation, (including recent and historic use). It comprised a search for bats, bat droppings, remains of invertebrate prey, grease marks from repeated contact, or passage through narrow roost accesses, or against surfaces, and any other signs of bat occupation, whilst at the same time looking for evidence of either currently or historic nesting birds, nests, feathers and other evidence of birds, in particular the barn owl.

Areas within the targeted building searched was:

- Outside the building, the eaves and walls for signs of potential bat access holes, the ground, windowsills, and any other surfaces, such as low roofs or refuse bins, which may occur underneath the eaves, and around the perimeter of the buildings, which may catch bat droppings or prey remains.
- Inside all parts of the farmhouse, its extensions, and conservatory, and any roof voids, also on floors, roof trusses, door lintels, window ledges, or on pieces of furniture, and inside chimneys where possible, also in spider's webs and other places where droppings or prey remains may collect. Also, 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 August, however, this can sometimes be earlier or later in the year, and is weather and temperature dependant.

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 surrounding the site, were assessed for their suitability for use by foraging and commuting bats.

All currently nesting bird species observed during the survey were recorded.

The search also included a search for evidence of barn owl use such as pellets, faecal splashes and feathers.

All surrounding habitats were assessed for their value for use by nesting birds, particularly barn owls.

2.4 Equipment.

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

3. Results.

3.1 Daylight Evidence and Opportunity Survey.

3.1.1 Weather.

The weather conditions on 30th January 2024, at the start of the survey were good. It was sunny with a gentle breeze, (Beaufort Scale 3/4), and some cloud cover. Although the temperature taken at the start of the survey was 7°C, such conditions were suitable for a survey of this type.

3.2 Possible Roost Sites.

3.2.1 The Buildings.

There were a number of buildings of various sizes and shapes that constituted the Waterside Farm complex, but as only the farmhouse, its extensions and conservatory had been surveyed in the previous surveys (11th February 2021), the same buildings were targeted and surveyed during the current surveys.

The Farmhouse.

The farmhouse was positioned close to the southern boundary of a farmyard, and was a two-storied, rectangular building, running in an east to west orientation, together with a two-story extension and a further single-story lean-to both attached to the eastern elevation, another single story extension positioned along the northern elevation, a conservatory attached to the north-western corner, and two further single story extensions abutting the western elevation.

The main part of the farmhouse was positioned centrally within the complex and was two storied, constructed from brick, and all parts were covered in a coating of render. It had a pitched roof covered in underlined slates, however, the ceilings of the first floor rooms followed the various contours of the roof, and therefore there was no searchable roof voids. However, the ground floor, north-eastern corner of the building was being used as a barn, for the storage of materials and tools, (refer to **fig 3, 4 and 5**, and **photos 2, 3, 10 to 16, 18 to 20, 22 to 26 and 28 to 30**).

Attached externally to the eastern end of the main building, was a two story extension whose first floor was linked internally to the first floor of the main building, whilst the ground floor had been used as a barn and was unheated. Attached to the barn's eastern elevation was a single storied outbuilding, again built from brick with an uninsulated, sloping roof, covered in slate with no roof void. This building was unheated and uninsulated, and was deemed to be of low bat roosting suitability, (refer to **fig 3, 4 and 5**, and **photos 1 to 6**, and **24 to 27**).

Attached to the northern elevation of the main building, and connected to it both internally and externally, was a single-storied extension. It was constructed from render coated brick, with a sloping roof covered in slate and no roof void, whilst a conservatory was attached both externally and internally to the north-western corner of both the extension and the main building. The conservatory was a single-storied building with partial walls constructed from render coated brick, and the upper part of the walls were of glass panels, mounted in a metal frame, and with a flat roof covered in roofing felt, with no roof void. Both of these buildings however were judged to be of sound construction and of low bat roosting suitability, (refer to **fig 3, 4 and 5**, and **photos 10 to 18**).

There were two brick built, lean-to extensions attached externally to the western elevation of the main building. These were of different sizes with sloping roofs, the larger north-western one was covered in uninsulated roofing tiles, whilst the smaller south-western one was covered in corrugated sheeting. Neither lean-to were heated or insulated, and therefore were judged to be of low roosting suitability, (refer to **fig 3, 4 and 5**, and **photos 16**, and **18 to 22**).

The main part of the farmhouse, the northern extension, the conservatory, and the first floor of the barn, were fully occupied, and were all insulated and heated. They were also in good condition, with well-maintained, sound soffits and gables, and were designated to be of low bat roosting suitability, (refer to **fig 3, 4 and 5**, and **photos 1 to 4, 7, 8, 10 to 19, 22 to 26 and 28 to 30**).

The ground floor of the barn, and the three lean-tos were all cold, draughty, unheated, uninsulated, and damp, and as such, were deemed unsuitable for breeding bats. Also, as frost and bad weather was likely to penetrate the interior of these buildings in the colder months, they did not offer the optimum humidity, and stable low temperatures that are suitable for hibernating bats, and the resulting conclusion was that these buildings were deemed to offer extremely low suitability for roosting bats, (refer to **fig 3, 4 and 5**, and **photos 2 to 11, 16, 18 to 22 and 24 to 27**).

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

- There was a hole in the soffit at the south-eastern corner of the eastern extension, and this hadn't been there during the 2022 survey, However, an inspection of the hole using an endoscope, and a visible search of both the wall and roof around it, and the floor beneath it, found neither bat droppings, any invertebrate prey remains, or neither urine or fur grease staining, and therefore the hole was thought to be of low bat roosting suitability refer to **fig 3, 4 and 5**, and **photo 1**).

- There were ventilation holes in both the northern and southern elevations of the eastern extension, also there were gaps in an open louvre panel in the northern elevation of the barn, and a gap over the entrance door, also more ventilation holes in the northern elevation of the barn, however, close inspection of all these holes and the walls, doors near them, and the floor beneath them, using close-focus binoculars and also by sight, found them all to be either internally meshed, cobwebbed, full of debris, or of insufficient depth to offer any bat roosting potential, nor were there any signs of bat droppings, or remains of invertebrate prey, nor any grease marks from repeated contact, or passage through the holes and gaps on the walls and floor beneath, and it was deemed therefore, that bats had not used any of the holes for roosting or access purposes and were of low roosting suitability, (refer to **fig 3, 4 and 5** and **photos 4, 5, 7, 8, 26 and 27**).
- Part way along the ridge of the main farmhouse roof, some of the mortar parging beneath the tiles had become dislodged, leaving potential gaps beneath the tiles, however a close inspection of the gaps using close-focus binoculars, and also the roof beneath them found no evidence to suggest that bats have used these gaps, for either roosting or entrance purposes, and therefore they were deemed to be of low roosting potential, (refer to **fig 3, 4 and 5**, and **photo 23**).
- A single swallow nest was found attached to a beam in the eastern extension. It was surmised that this nest had been used continually during each nesting season since it was first observed (11th February 202), and that this nesting opportunity would be lost when the building is demolished, (refer to **figs 3, 4 and 5**, and **photo 6**).

No current evidence of roosting bats was detected in, on, or around either any part of the farmhouse its extensions, or conservatory, either internally or externally. Nor was there any evidence of previous use by roosting bats detected anywhere within the site.

The search also found no evidence to suggest that any of the buildings were being used by any other nesting or roosting birds, including barn owl.

3.2.2 Trees and Shrubs.

There were both mature and immature trees, hedgerow, and some shrubbery, along both the southern and eastern boundaries of the site, and all of these that were within the site boundary were carefully searched, however, the majority of these were growing beyond the site boundaries, and these were not as carefully searched, but 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 some of the trees and shrubbery around the site, could be used by nesting birds, during the nesting season, although there was some bird activity in and around the site, no active nests were found, and it was also surmised that due to the time of year, most birds will have not yet have started to breed, but a few may be beginning to set up territories.

3.2.3 Foraging Potential and Alternative Bat Roost Potential

The site was in a rural area, and beyond the farming complex, (which contained the targeted farmhouse, extensions and conservatory), the nearby habitat consisted mainly of large areas of open pasture, hedge-lined tracks and roads, and with a few ephemeral ponds within nearby fields, and also the areas of salt marsh and the River Wyre to the south of the farm.

All these features together with the lines of trees and nearby buildings, 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**).

However, 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**).

All parts of the targeted dwelling complex 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 overall, 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 occupied dwellings, in the surrounding area could offer greater potential as bat roosts, as bats favour heated, taller buildings whilst breeding.

It was thought likely that the overall area, could be used by nesting birds during the nesting season, and although there was some bird observed nearby, it was concluded however, that due to the time of year, most birds will not yet have started to prepare for the 2024 nesting season, (Refer to **Appendix 1**).

It was thought likely that the overall area, could be used by nesting birds during the upcoming nesting season, and although there was some bird observed nearby, but at the time of the survey, other than the currently empty, single swallow nests found in barn, no other active nests were found, and it was also concluded that due to the time of year, most birds will not have started to prepare for the 2024 nesting season, (Refer to **Appendix 1**).

4. Conclusions

4.1 In summary, during either the current survey undertaken on (30th January 2024), nor during the previous surveys undertaken by Echo Calls Bat Surveys on 11th February 2021, were any current or historic evidence of roosting bats found in any part of the targeted buildings, or elsewhere within the overall site. Therefore, overall site conditions were deemed not have changed during the interim period between the two surveys.

4.2 The majority of the farmhouse, its northern extension and its conservatory were currently occupied, fully heated, fully insulated, and were reasonably well-sealed and maintained, and as such, were assessed to have negligible potential to support daytime roosting bats, and assessed to have very low suitability for other use, (refer to **Appendix 2**).

4.3 The remainder of the building, the lean-to's, and the ground floor barn were all draughty, unheated, uninsulated, and damp, and as such, were deemed unsuitable for breeding bats. Also, as frost and bad weather was likely to penetrate the interiors in the colder months, these buildings did not offer the optimum humidity, and stable low temperatures that are suitable for hibernating bats, and the resulting conclusion was that the buildings were deemed to offer extremely low suitability for roosting bats, (refer to **Appendix 2**).

4.4 None of the trees and hedgerows growing close to the farmhouse, offered any lifted bark, canker damage, cracks, or holes suitable as roosting opportunities for bats of any species, and therefore, all of these were concluded to offer negligible suitability as possible bat roosts, (refer to **Appendix 4**).

4.5 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 is currently no evidence of the presence of bat roosts within any part of the site, that any proposed modifications to the farmhouse complex, 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.

4.6 It was also concluded that since no current evidence of roosting bats, had been found during the preliminary survey and assessment carried out on 30th January 2024, plus the knowledge that conditions within the site had not changed since the previous surveys carried out on 11th February 2021, then a preliminary daylight evidence and opportunity bat survey and assessment, was considered sufficient to assess the site, (refer to the 'Bat Worker's Manual' (JNCC 2004) and 'Bat Surveys – Good Practice Guidelines' (BCT 2016), paragraph 8.3.4).

4.7 Since bats, particularly Pipistrelles, are opportunistic, an absence of roost evidence elsewhere 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 as very unlikely, and the likelihood of lone and/or transient roosting being negligible.

4.8 It was understood that there may be some site clearance work carried out during the planned development, but that this will be kept to a minimum, and that the majority of trees, shrubs and hedgerows growing around the site will be unaffected by the work, and as bats use linear features such as lines of trees or walls, as foraging, navigating and commuting routes, it was concluded that any small loss of the habitats, and any future development works 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.

4.9 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 other vegetation outside the site perimeter, to be used by birds for both roosting and nesting purposes, but other than the previously used swallow nest (mentioned above), no other active or historic nests were found. It was also concluded that birds will have not started breeding yet for the 2024 season but may be about to start setting up territories, (Refer to **Appendices 1**).

4.10 During the survey of the site, no owl pellets, faecal splashes, feathers, or prey remains, were found to suggest that any part of the targeted building, its extensions or conservatory, had been used by barn owl, either currently or historically. It was also deemed unlikely that any of the buildings within the surrounding complex would be used by barn owl for roosting purposes, as the interiors offered limited internal perching potential. and most were being continual used by both humans and animals.

5. Recommendations

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

5.2 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, 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, the farmhouse and its extensions, (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 buildings 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, even if the buildings are worked on at other times, it will be very unlikely that roosting bats will be disturbed, but it is recommended that work starts as soon as possible after this

survey, and that any ridge tiles, slates or sheeting over walls and gables, be carefully removed by hand, (the ridge and edge tiles, and copingstones, are the features 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 and development work is delayed until the middle part of 2024, 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 the new dwelling after completion of the planned works, and also to any surrounding suitable trees or buildings, at a minimum height of 4m off the ground. It is therefore recommended that these measures are implemented to maximise the opportunities for wildlife at the site, and that they are implemented as soon as possible after the survey, to obtain net gains in biodiversity, (refer to **Appendix 8** for details).

5.6 There was potential for both roosting and nesting birds in some of the other buildings within the farming complex, and amongst the trees and hedgerows around both the perimeter of the site, and within the site itself, and for ground nesting birds within the shrubbery and surrounding pasture close to the site, as such it must be remembered that it is an offence to disturb active birds' nests. It is recommended therefore that before the commencement of any 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 that to reduce any actual nest disturbance, then no activity involving people, or their equipment, is to be 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.

5.7 This is particularly important in relation to the swallow nest, found in the barn during the survey undertaken on 11th February 2021. Also, during the current survey carried out on 30th January 2024, it was noticed that the nest was still there, and although it was not currently occupied, it was thought to have been used during the 2023 nesting season. It was concluded, that this future nesting opportunity would be lost during the planned schedule for modernisation, it is recommended therefore, that some No 10 Schwegler swallow nests, and also a mixture of open fronted and hole fronted boxes, are to be erected amongst the neighbouring buildings and the surrounding foliage, to mitigate for potential loss of these nesting opportunities, both during and after the development, to encourage and enhance future colonisation and nesting by bird species, and obtain a further net gain in biodiversity, (refer to **Appendix 8** for details).

5.8 Any future vegetation clearance should only be carried out between September and February inclusive, (i.e., outside the bird nesting season), unless it is confirmed by a suitably experienced ecologist that no active nests are present. If, however, should the removal of any of the hedgerows and trees around the boundaries take place during the early part of the nesting season, then the shrubbery should be removed from the site immediately following the felling. Failure to do so could provide potential nest sites, if left in place throughout the rest of the bird breeding season.

5.9 It is also recommended that if any tree, shrub, or hedgerow around the site is removed, pruned or disturbed during building works, all clearance and disturbance should be undertaken outside the hedgehog (*Erinaceus europaeus*), 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).

5.10 It is also recommended that at least one Eco-plate Hedgehog Box should be positioned in the site, in an appropriate location, to maximise the opportunities for hedgehog within the site and get further gains in biodiversity, (refer to **Appendix 9** for details).

5.11 No outside hole or pit should be left uncovered overnight, 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. Additionally, any pipework left on site that is greater than 150 mm in diameter should be planked off at the ends whilst being stored on site.

5.12 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 carefully removed and placed within suitable habitat cover before site works commence for the day.

5.13 To further 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.

5.14 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 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, 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.**

7. References

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8. Surveyors Qualification

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 Number S085859/1), this is a licence to disturb and take bats for scientific, educational, or conservational purposes.

9. Plans & Photographs

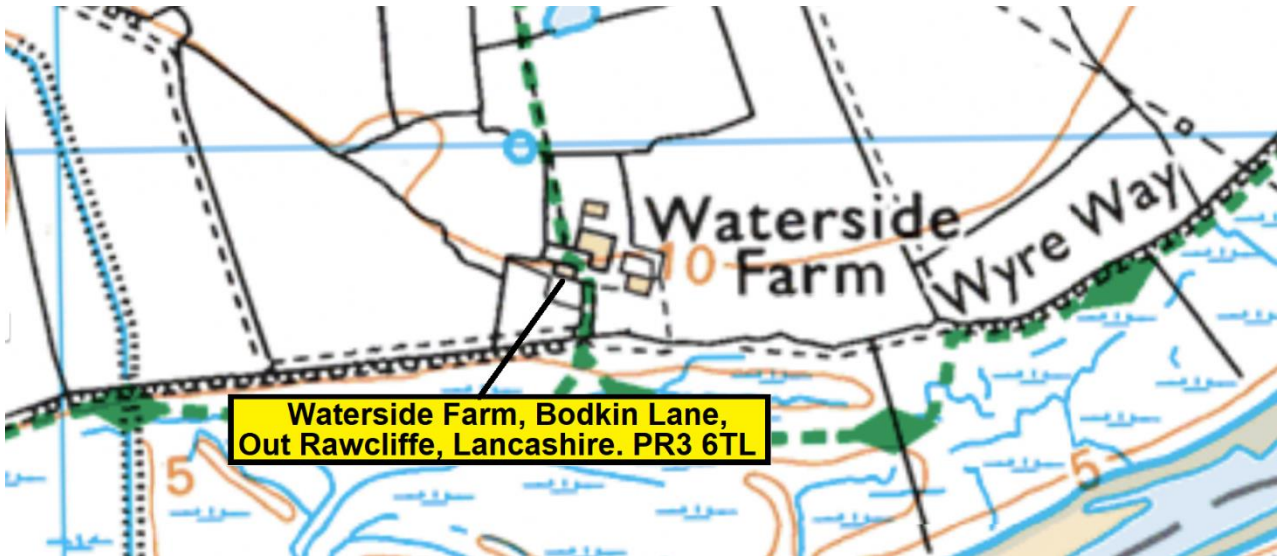


Fig 1 - The Site Location.



Fig 2 – Google Plan.

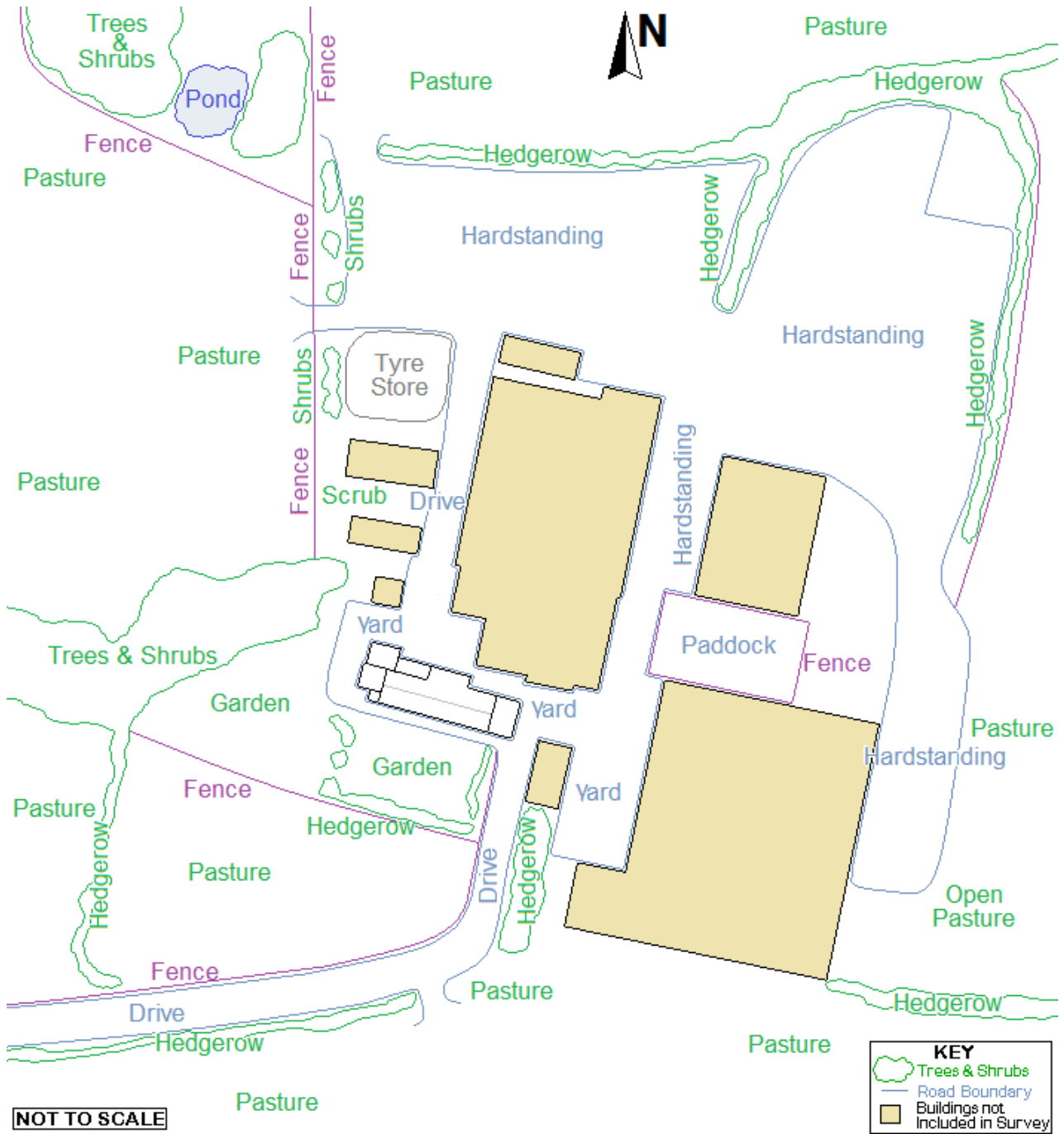


Fig 3 – Main Plan.

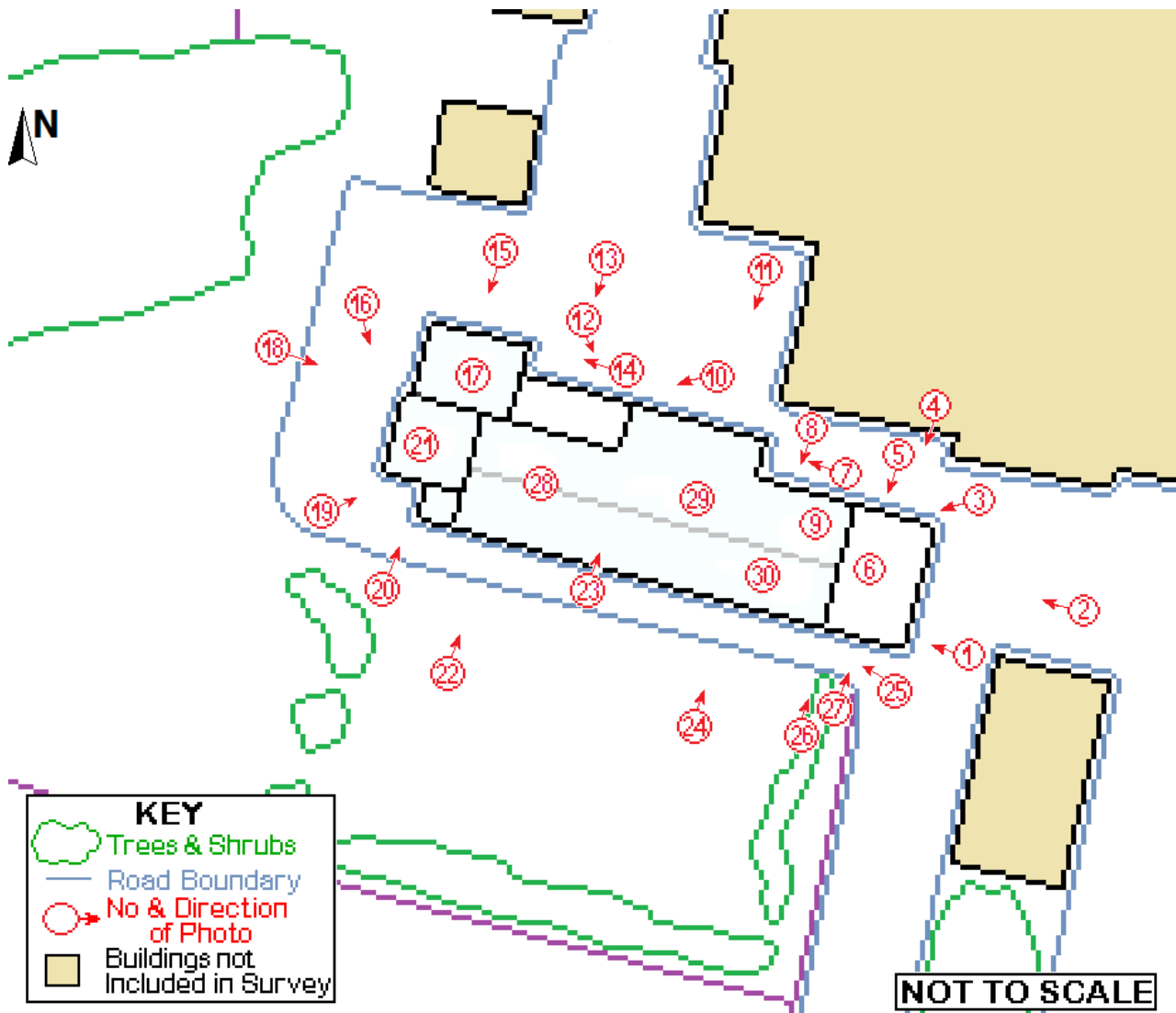


Fig 4 – Plan of Photographs.

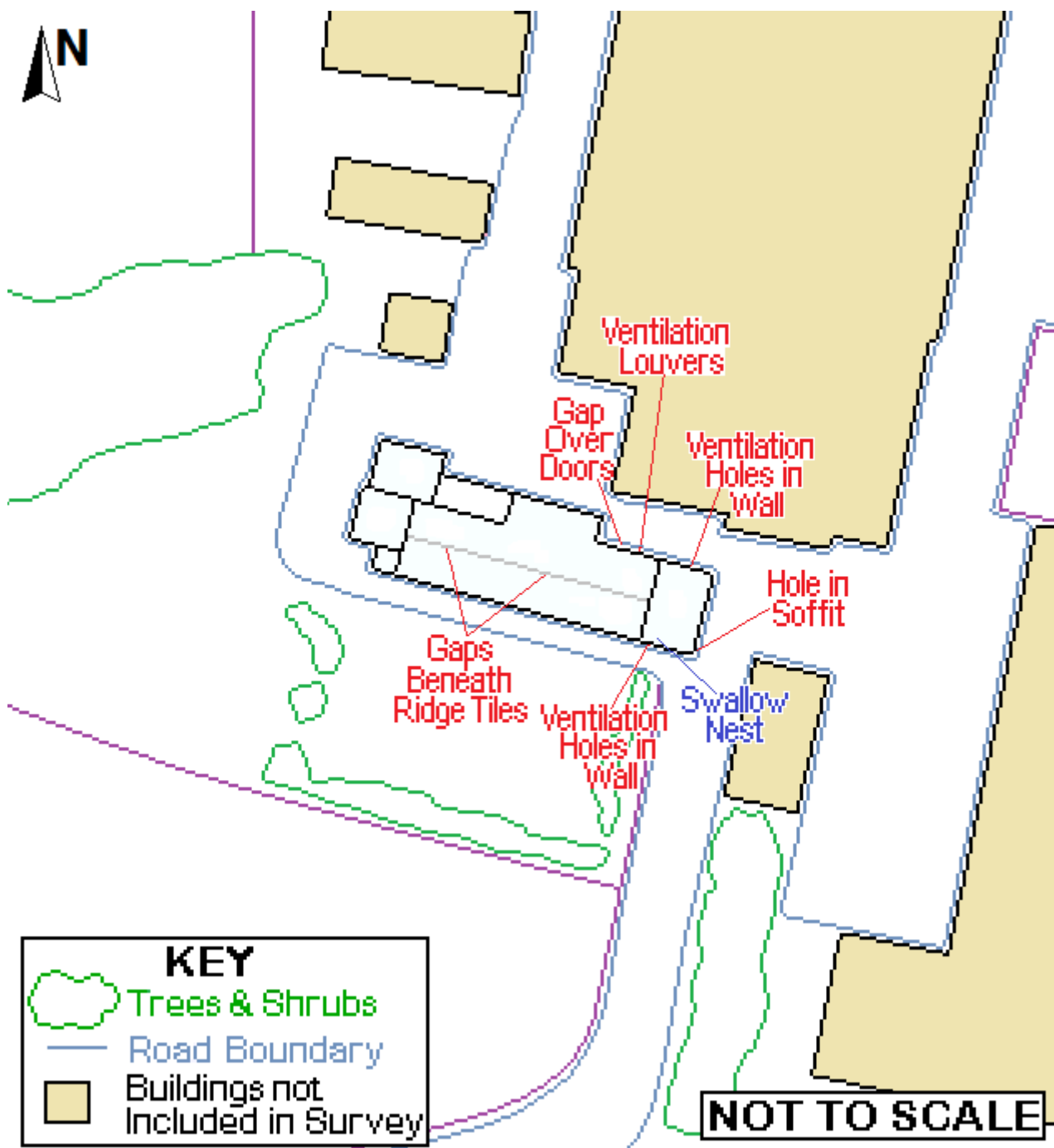


Fig 5 – Plan of Results.



Hole in Soffit

PHOTO 1

South-eastern Corner of Eastern Extension



PHOTO 2

Eastern Elevation of Eastern Extension



PHOTO 3

North-eastern Corner of Eastern Extension



PHOTO 4

Northern Elevation of Eastern Extension



Ventilation Holes
in Walls

PHOTO 5

Upper Northern Elevation of Eastern Extension



Swallow Nest

PHOTO 6

Underside of Eastern Extension Roof



PHOTO 7
View Along Northern Barn Elevation



PHOTO 8
Part Northern Elevation of Barn

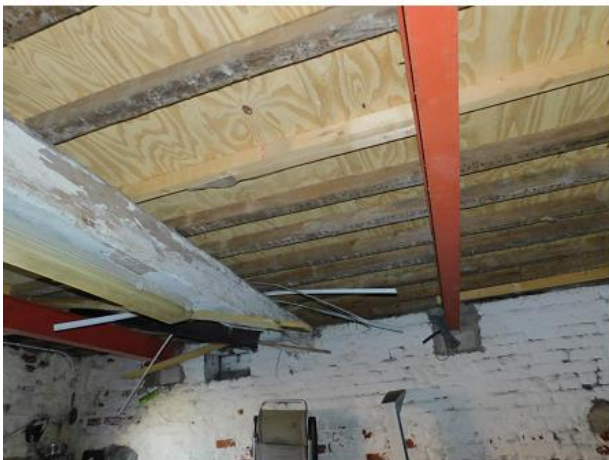


PHOTO 9
Underside of Barn Roof



PHOTO 10
North-eastern Corner of Main Building



PHOTO 11
Northern Elevation of Main Building



PHOTO 12
North-Western View of Main House



PHOTO 13
Northern View Of Main House and Conservatory



PHOTO 14
Eastern Elevation of Conservatory



PHOTO 15
Northern Elevation of Conservatory



PHOTO 16
Western Elevation of Conservatory

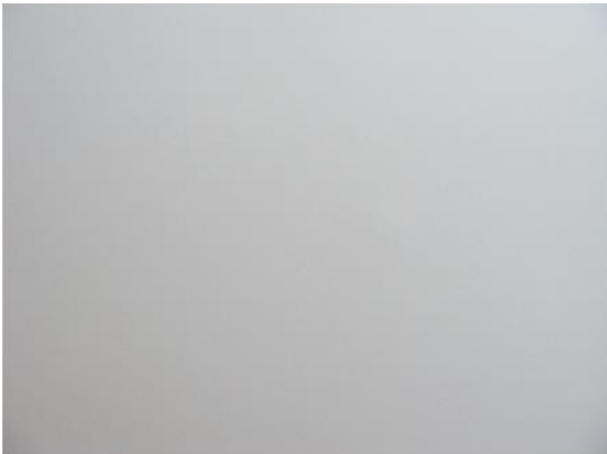


PHOTO 17
Underside of Conservatory Roof



PHOTO 18
Eastern Elevation of House and Outbuildings



PHOTO 19
South-western Elevation



PHOTO 20
Southern Elevation of Outbuildings



PHOTO 21
Underside of Sloping Roof of Outbuilding



PHOTO 22
South-western Corner of Main Building

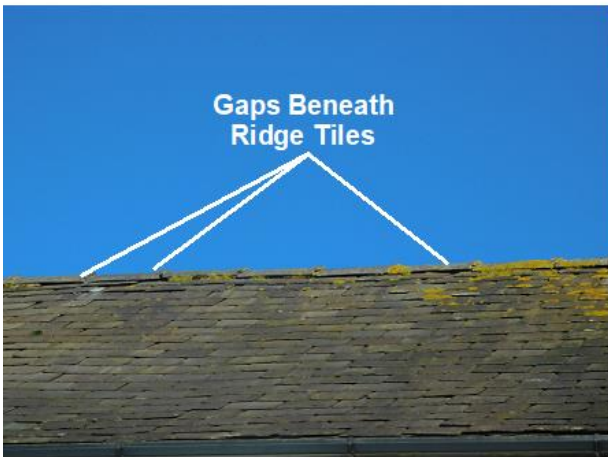


PHOTO 23
Part of Southern Main Building Roof



PHOTO 24
South-eastern Corner of Main Building



PHOTO 25
View Along Southern Elevation of Main House



PHOTO 26
Southern Elevation of Eastern Extension

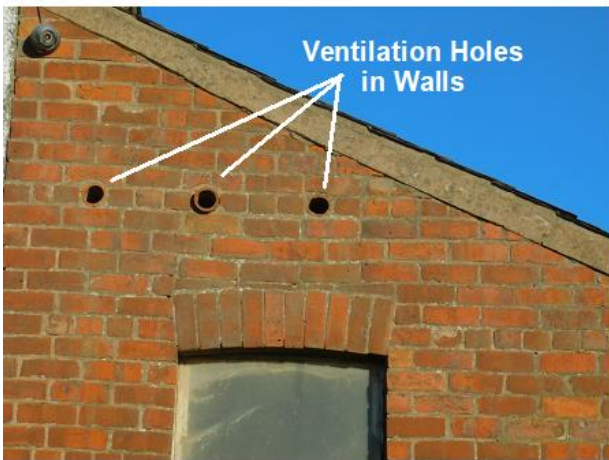


PHOTO 27
Upper Southern Elevation of Eastern Extension



PHOTO 28
Underside of Northern Main Building Roof



PHOTO 29
Underside of Central Main Building Roof



PHOTO 30
Underside of Southern Main Building Roof

6th February 2024
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.

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 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

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.

A consortium of organisations, via their report on "The population status of birds in the UK: Birds of Conservation Concern 4 (2015)" (2) have listed species according to their conservation need based on red, amber, green basis, where red is of the highest conservation concern.

Barn Owl

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.

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	<p>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).</p> <p>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</p>	<p>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.</p> <p>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.</p>
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).	<p>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.</p> <p>Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.</p>
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.	<p>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.</p> <p>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.</p> <p>Site is close to and connected to known roosts.</p>

**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.
 - for preventing 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 construction, or renovation.

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 both robin, swallow and wren 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.

The robin, with its signature red breast and tuneful song, is one of the UK's best-loved birds. Often seen perched on fence posts or spade handles, these birds are far from shy and are regular visitors to British gardens. They are also fiercely territorial, guarding their patches all year round and singing loudly to proclaim their area.

Robins are famous for nesting almost anywhere. but usually nest, on or close to the ground, in log piles, hollows in tree trunks, hedges and any other tight spaces they come across. They favour quiet areas where they are not likely to be disturbed. Nests are built by the female robin, using grass, dead leaves and moss. The nests are often lined with hair.

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 as the box will require cleaning out 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:

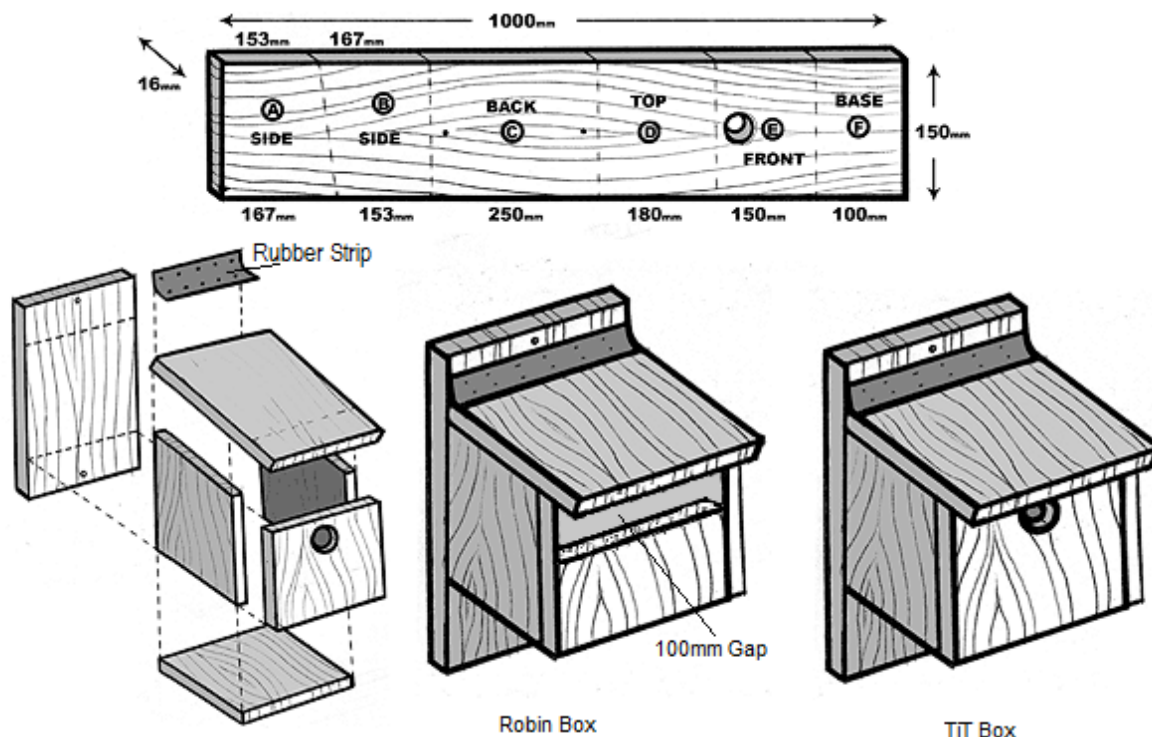
25 mm for blue, coal and marsh tits

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 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.



INSTALLATION OF ARTIFICIAL SWALLOW NESTS.

Swallows breed all around the northern hemisphere: in North America, Europe and Asia. They 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.

Swallows leave the UK in September and October, sometimes travelling in flocks, over-wintering in South Africa, feeding on the way. This makes them vulnerable to food shortages on their migration routes.

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.

8.1 Schwegler No 10 Swallow Nest.



Ideally, the Swallow Nest should be placed inside outbuildings such as sheds, barns or stables, however, there should always be unrestricted access for the birds through an open window or skylight. Swallows are sociable birds, but multiple nests should not be placed at less than 1m intervals.

These Woodcrete nest boxes are famous for their durability - lasting for at least 20-25 years. Woodcrete is a blend of wood, concrete and clay which will not rot, leak, crack or warp. They are backed by leading ornithologists, nature conservation organisations, government agencies and forestry experts. Schwegler boxes have the highest occupation rates of all nest boxes and are carefully designed to mimic natural nest sites and provide a stable environment for chick rearing and winter roosting.

Height 11cm x length 25cm x depth 14cm.

Droppings may cause a nuisance, but by fixing a black plastic bag or a board beneath each nest to catch droppings, can alleviate this problem. These can be disposed of later.

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.