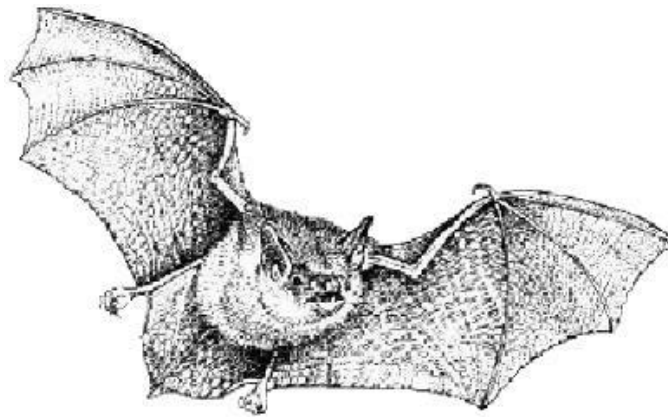


**Phoenix Works,
Brookes Street,
Middleton,
Manchester.
M24 2WL**

**Preliminary Survey & Assessment
in Respect of Bat Species, and Nesting Birds.**

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



Echo Calls Bat Surveys

29th October 2023

1. Introduction.

1.1 Reason for Survey.

As part of the process to obtain planning permission to develop the site, a preliminary daytime evidence and opportunity bat survey and assessment, a nocturnal evening bat emergence survey, and a post-nesting bird survey, were requested on the targeted buildings, and 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 22nd September 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 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 of protected species, within the proposed development site.
- To enable the client to comply with legislation afforded to protected sites and species.
- To highlight the presence of any habitats or species of ecological importance, including Habitats and Species of Principal Importance (NERC Act, 2006).
- To identify any ecological constraints, on future development.
- To establish the need for any further surveys and assessments.
- To make nature conservation recommendations.

1.3 The Site.

The four targeted buildings were part of a large former industrial plot, at the end of a drive connecting the site to Boarshaw Road in the Middleton area of Greater Manchester. The buildings and the surrounding area from now on are referred to as the “site”, at OS grid reference: SD 87735 06615., (refer to **Fig 1 - The Site Location**).

1.4 The Targeted Buildings.

There were four targeted buildings, all situated within a large former industrial complex.

1.5 Surrounding Land.

The targeted buildings were positioned in the eastern half of the overall site, and all were positioned upon a loading platform of concrete, surrounded by a mixture of overgrown concrete hardstanding. The buildings and site hadn't been used for some time and had been vandalized, and turned into a fly tipping area, upon which had been dumped, piles of building materials, old furniture and other debris, and the whole area was surrounded by a mixture of closely growing mature trees and shrubs, with a bramble “type” understory.

Beyond the site boundaries to the north, east and south, were a large number of dwellings, most with fenced off gardens containing mostly shrubbery, but with a few localized immature trees, and interspaced with a few small retail shops. Whilst immediately to the west, beyond the site boundary was a garage complex, and with a school within its own grounds and playing fields, approximately 0.19 km further west across Boarshaw Road.

Whilst further away to the south, lay numerous industrial buildings and their surrounding carparks, which were part of a larger industrial estate, the nearest of these buildings lay approximately 0.17 km to the south of the site.

There was a small lake lying 0.32 km to the north-west alongside of which, running from north of the site in a southerly direction, was White Brook, which had a few trees along its length. The Brook joined the River Irk approximately 0.72 km to the south-west of the site, and the river itself ran from west to east, and on whose banks grew a number of immature trees and shrubs.

Two large fishing lakes were located to the east of the site, both lying in a south-west to north-easterly orientation, and the nearest of which was approximately 0.34 km, away from the site. However, other than the above-mentioned habitats, there were no areas of woodland, or other large bodies of water, in the nearby vicinity, (refer to **Fig 1 – The Site Location**, **Fig 2 – Google Plan**, **Fig 3 – Area Plan**, **Fig 4 – Plan of Photographs**, **Fig 5 – Plan of Preliminary Evidence and Opportunity Survey and Assessment Results**, and **Fig 6 – Plan of Nocturnal Bat Emergence Survey Results**).

2. Methods.

2.1 Risk Assessment, Possible Hazards.

The required access to the site was possible, and although very cluttered with debris, equipment and furniture, most of the building's interiors could be generally searched with care. The buildings were in a very poor state of repair, but the north-eastern and northern elevations could not be searched externally due to the proximity of nearby trees and other foliage, and care was required when surveying the remainder of the exteriors, but there were no more hazards other than those normally associated with surveying these types of industrial buildings.

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:
- Condition of any buildings and structures:
- Presence/absence of roost potential:
- Value of roost potential – if present.

2.3 Preliminary Daylight Evidence and Opportunity Survey and Assessment.

A preliminary daylight evidence and opportunity survey and assessment took place on 6th September 2023, and was carried out in order to assess the site, and search for evidence of bat occupation (including recent and historic use), and also to ascertain if conditions within the site had changed since the previous surveys undertaken by Echo Calls Bat Surveys on 22nd September 2021,

It comprised a search for bats, bat droppings, remains of invertebrate prey, grease marks from repeated contact or passage, through potential narrow roost accesses, or against surfaces. Also, other signs of bat occupation, including bats themselves, were looked for, and at the same time looking for evidence of currently nesting wild birds, active nests and feathers.

Areas within the targeted buildings searched were:

- Outside the buildings, the eaves, and walls, for signs of potential bat access holes, the ground, windowsills, and any other surfaces, such as low roofs, or piles of materials, and pieces of equipment, which may occur around the perimeter of the buildings, upon which bat droppings or prey remains may collect.
- Inside the buildings, in any roof voids or roof trusses, on floors, storage tanks, furniture, piles of equipment, door lintels, also where possible in spider's webs, and other places where bat droppings or prey remains may collect.

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 nesting bird species, and evidence of nesting, observed during the survey were recorded, and also, all surrounding habitats were assessed for their value for use by nesting birds.

2.4 Equipment.

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

2.5 Nocturnal Bat Emergence Survey

A nocturnal 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 within any part of the targeted buildings, or from any of the trees, shrubs and other buildings, around the various parts of the overall site. This survey also took place on 6th September 2023, and it was carried out by two surveyors, strategically positioned to ensure maximum observation 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 Evidence and Opportunity Survey.

3.1.1 Weather.

The weather conditions on 6th September 2023 were good. It was sunny with some cloud cover and a light breeze, (Beaufort Scale 2/3), and as the temperature taken at the start of the survey of 25°C, it was very humid, however, such conditions were still suitable for a survey of this type.

3.2 Possible Roost Sites.

3.2.1 The Buildings.

There were four buildings remaining within the site, and all were targeted and surveyed for this application, and as these were surveyed in a basically clockwise direction, they are described below in that format, and designated as Buildings 1 to 4 for descriptive purposes, and all were surveyed for signs of bat activity, as mentioned above (paragraph 1.3).

Building 1.

Building 1 was positioned at the north-western corner of the site, in a north-west to south-easterly orientation, and was attached to the other buildings within the complex. It was a tall rectangular building, constructed from a mixture of concrete block and brick and was covered in render, with a pitched roof covered in uninsulated slates, but with no roof void. The building had deteriorated since the previous survey, and was still in a poor condition, with neither heating nor insulation, and was cold, and very damp, and therefore the building was deemed unsuitable for either daytime roosting bats, or breeding bats. Also, as frost and bad weather was likely to penetrate the interior, the building did not offer the optimum humidity, and stable low temperatures that are required for hibernating bats, and therefore Building 1 was deemed to offer very low suitability for roosting bats, (refer to **figs 3, 4, and 5 and photos 1 to 4, 22, and 31**).

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

- There were two holes within the buildings' western elevation where pipework had been removed, and these holes were surveyed, as were the wall and floor beneath them, but neither droppings, prey remains, nor any form of staining were found, and it was deemed that bats have not used these holes for either roosting, or access purposes, (refer to **figs 3, 4 and 5 and photo 1**).
- The glass in two of the rooflights in the eastern part of the roof were missing, creating potential access points for bats, but no evidence of their use by bats, was found during the survey, (refer to **figs 3, 4 and 5 and photo 31**).

Building 2

Building 2 was positioned along the northern site boundary, and was connected to other buildings within the complex, both externally and internally, and was a large single storied building, built from a mixture of brick and concrete, with a flat concrete roof. Positioned on the roof, parallel to each other in a north-western to south-easterly orientation, were five lantern type rooflights, made from glass panels mounted within a steel framework, but with neither insulation or roof voids.

The building was structurally sound, but was unheated, uninsulated, and would be draughty and cold throughout most of the year, and therefore the building was deemed unsuitable for either daytime roosting bats, or breeding bats. It was also concluded that the building would be penetrated by frost and inclement weather in winter, thus making it unsuitable for hibernating bats, Building 2 therefore, was deemed to be of low roosting suitability (refer to **figs 3, 4 and 5 and photos 2, 5 to 8, 18 to 21, 23 to 27, and 31**).

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

- A large proportion of the glass within the majority of the rooflights was missing, resulting in large areas where cold and inclement weather could enter into the interior of Building 2, however, an internal search of the building beneath these rooflights, found neither droppings, nor any other evidence of either bat usage, or occupation. It was also thought that copious amounts of daylight would enter the building interior through the holes in the roof and the

rooflights, thus further reducing internal bat roosting potential, (refer to **figs 3, 4 and 5 and photos 20, 21 25 to 27 and 31**).

- There was a gap over the door lintel at the south-western corner of Building 2, but close inspection of the gap using the endoscope, found the gap to be full of cobwebs, and therefore offered negligible bat roosting potential, (refer to **figs 3, 4 and 5 and photo 5**).
- A dense mat of ivy (*Hedera helix*) was growing into the roof through a hole in the rooflight at the north-eastern corner of Building 2, and dense ivy is considered to have a low, but significant bat roost potential. Where possible therefore, a careful search between the various parts of the ivy plant, initially by hand, torch, or with the use of the endoscope, found no droppings, prey remains, urine staining, fur staining from continual passage between the leaves and plant stems, or bats themselves, nor was any evidence of past bird nesting found within the ivy, (refer to **figs 3, 4 and 5 and photos 27 and 31**).
- At the south-western end of the southern part of Building 2, was a large open doorway, but an examination of the doorway, the floor beneath it and the internal room beyond it, found neither bat droppings, invertebrate prey remains, nor any other evidence of the passage of bats through the doorway, (refer to **figs 3, 4 and 5 and photos 2, and 5 to 8**).

Building 3

Building 3 was positioned to the south of Building 2 and ran parallel to it, the building was also connected to the other targeted building, both internally and externally. The building was constructed from brick with a flat roof of concrete, and containing several small rectangular rooflights. Overall, the building was reasonably sound, and all parts were unheated, uninsulated, and would be draughty and cold throughout most of the year, and therefore it was deemed unsuitable for either daytime roosting bats, or breeding bats. It was also concluded that the building would be penetrated by frost and inclement weather in winter, thus making Building 3 of very low suitability for hibernating bats, (refer to **figs 3, 4 and 5 and photo 2, 5, 7, 8, 9, 17, 18, 28 and 31**).

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

- Some of the glass panels within the rooflights were missing, but again an examination around the openings, and on the floor and walls between them, found no evidence of any type of bat roosting behaviour, (refer to **figs 3, 4 and 5 and photos 28 and 31**).

Building 4.

There was a long rectangular, single-storied portal frame shed, constructed from concrete block, with a pitched roof of concrete panels mounted on steel joists and purlins, and covered in roofing felt, and with no roof void. This was Building 4 and it constituted the southernmost part of the complex, and was connected both externally and internally to Buildings 2 and 3. However, the building was in a reasonable condition and fairly well-sealed, but was also uninsulated, unheated and damp, and would be affected by inclement weather in the colder months, and was therefore deemed to offer low suitability for either daytime bat roosting, hibernating, or for breeding, (refer to **figs 3, 4 and 5 and photo 2, 7 to 17, and 29 to 31**).

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

- There was a hole in the blockwork, part way along the southern elevation of Building 4, and this was searched internally using an endoscope, and also the wall and floor beneath it were also surveyed, but no signs of bat usage of the hole was found, and therefore they were both deemed to have not been used by roosting bats, (refer to **figs 3, 4 and 5 and photo 12**).

- Positioned centrally within the northern part of Building 4's roof were rooflights, where the glass was missing, but the ground beneath them internally, and the rest of the inside of Building 4 was searched, and neither bat droppings, any prey remains, or any urine or fur staining was found, and it was concluded that Building 4 had not been used by bats for any type of either current or historical roosting behaviour. It was also thought that large amounts of daylight would enter the building interior through these rooflights, thus further reducing internal bat roosting potential, (refer to **figs 3, 4 and 5** and **photos 29 to 31**).

Neither current or historical evidence of roosting bats was detected in, on, or around, any part of the four targeted buildings, either internally or externally. Nor was there any evidence of previous use by roosting bats detected anywhere else within the site.

Although there was some bird activity during the survey, none were seen exhibiting any type of current nesting behaviour, nor was any evidence found, to suggest that any part the buildings, or anywhere else in the overall site, had been used historically by either nesting or roosting birds. It was also thought that due to time of year, most birds would have already ceased breeding and their young would have fledged and dispersed, (*Refer to **Appendix 1***).

3.2.2 Trees and Shrubs.

There were numerous mature and immature trees with a "bramble type" understory, growing around the site boundaries, however the trees and shrubs growing within neighbouring gardens close to both the north-eastern corner of Building 2, and along its northern elevations, could not be surveyed. Elsewhere however, the remainder of the trees were carefully searched, and 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, and 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 ceased to breed.

3.2.3 Foraging Potential and Alternative Bat Roost Potential.

The site was in a suburban area, and the nearby habitat consisted mainly of housing with their own gardens containing some shrubbery and a few isolated trees, with a few industrial buildings, and a nearby school positioned further away.

There were a few small lakes in the surrounding area, along with White Brook and the River Irk, both of which had some trees and shrubs growing along their banks, as mentioned above, (refer to paragraph 1.5), all of which 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 also to hunt along for their insect prey.

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 four targeted buildings fit these criteria, and as there were no really large areas of woodland, or other 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 dwellings, in the surrounding area could offer greater potential as bat roosts, as bats favour heated taller building whilst breeding.

During the survey, although a few birds were observed around the site, none were seen showing any current roosting or nesting behaviour, and it was also thought that most birds will have ceased breeding for the 2023 nesting season, and their young will have fledged and dispersed.

3.3 The Nocturnal Bat Emergence Survey.

A nocturnal 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 other buildings beyond the site's boundaries, or from the trees, shrubs and other vegetation nearby. This survey also took place on 6th September 2023.

3.3.1 Weather

The weather conditions at the start of the evening survey on the 6th September 2023 were good, and although there was some cloud cover and a light breeze, (Beaufort Scale 2/3), a temperature at the start of the survey of 23°C, meant that although it was still humid, such conditions were optimum for a survey of this type.

3.3.2 The Survey

The sunset on the 6th September 2023 was 19.40 hrs, and the survey started 16 minutes before the sunset at 19.24 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 at 20.01 hrs amongst the trees to the north of the site. It was thought that this was a commuting bat, (refer to **pink arrow 1** on **fig 6**).

At 20.06 hrs a soprano pipistrelle (*Pipistrellus pygmaeus*), was observed commuting from the trees to the north of the site, across the hardstanding to the west of the complex, before flying away from the site in a south-westerly direction, (refer to **pink arrow 2** on **fig 6**).

At 20.07 hrs, two common pipistrelles were seen chasing each other across the hardstanding to the west of Building 1, before flying away from the site, in a north-easterly direction, (refer to **pink arrow 3** on **fig 6**).

Beginning at 20.10 hrs, another common pipistrelle foraged in a large continuous loop over the hardstanding and scrub, to the west of Building 4, and this behaviour continued until the end of the survey, during which time numerous feeding buzzes were heard, (refer to **pink arrow 4** on **fig 6**).

Another common pipistrelle was heard but not seen at 20.13 hrs amongst the trees beyond the eastern border of the site. The bat was heard several times during the survey, but at no time was the bat actually seen, (refer to **pink arrow 5** on **fig 6**).

A soprano pipistrelle was heard but not seen at 20.16 hrs foraging amongst the trees beyond the southern site border, and it was assumed that this siting was probably of a bat seen commuting earlier in the survey, and this was the northern end of a foraging loop, as the bat was heard several times again at this location before the survey ended, (refer to **pink arrow 6** on **fig 6**).

Between 20.18 hrs and the survey end, a common pipistrelle was repeatedly seen as it foraged successfully over the drive and shrubbery close the north-western end of the overall site. Once again feeding calls were heard during this time, (refer to **pink arrow 7** on **fig 6**).

From 20.28 and throughout the rest of the survey, a soprano pipistrelle foraged over the trees and gardens to the north of the site, and during which time numerous feeding buzzes were heard, (refer

to pink arrow 8 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 targeted buildings, nor from any of the trees, shrubs or buildings in the surrounding area.

4. Conclusions.

4.1 In summary, during either of the current surveys undertaken on 6th September 2023, nor during the previous surveys undertaken by Echo Calls Bat Surveys on 22nd September 2021, were any current or historic evidence of roosting bats found in any part of four buildings, or elsewhere within the overall site. Therefore, overall site conditions were deemed not have changed during the interim period.

4.2 All four of the buildings surveyed were in a poor, rundown condition, they were no longer in use, and had not been used for some time. As such, they were all unheated, uninsulated and very damp and draughty, and thus all the buildings were deemed to be unsuitable for breeding bats. Also, as frost and bad weather was likely to penetrate the interior of the buildings in the colder months, it was felt that none of the buildings offered the optimum humidity, and stable low temperatures that are required for hibernating bats. It was also thought that large areas of the missing roofs, would allow copious amounts of daylight to enter the interior of three of the buildings, thus further reducing daytime roosting opportunities. Therefore, it was concluded that all four of the targeted buildings were deemed to be of low bat roosting suitability, (refer to **Appendix 2**).

4.3 None of the trees and shrubs growing close to the buildings, or around the site perimeter, 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 2** and **4**).

4.4 The adjacent habitats had the potential to support only low to moderate numbers of foraging common pipistrelles, but large numbers of other species of bats was unlikely. It was concluded that since there is currently *no evidence* of the presence of bat roosts within any part of the site, that the proposed demolition of all four buildings, and the subsequent development of the site, will not have significant implications on the population status of local bat species. There will not be requirement for an EPS mitigation licence (as issued by Natural England) but as a measure of best-practice, precautionary measures should be applied as described in section 5 below.

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

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 6th September 2023, plus the knowledge that conditions within the site had not changed since the previous surveys carried out on 22nd September 2021, then a preliminary daylight evidence and opportunity bat survey and assessment, and a single nocturnal evening bat emergence survey, on 6th September 2023, were 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 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 tree lines, hedgerows and site boundaries, would probably be mostly unaffected by the work. Also, as the planned development does not drastically alter the footprint of the site, 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 on the site, would not affect the overall foraging or commuting potential for bats in the area.

4.8 All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended) while they are breeding. There was potential for the shrubbery and hedgerows around the sites' perimeter, to be used by birds for both roosting and nesting purposes, but no evidence of nesting activities were found, and it was also thought that due to time of year, most birds would have already ceased breeding and their young would have fledged and dispersed, (Refer to **Appendix 1**).

5. Recommendations.

5.1 The proposed changes to the site as laid out in the planning application can commence 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 four buildings, (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 stables as spring, summer and/or autumn roosts 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 really warm spring, or later in a cold spring.

5.3 As it is likely that parts of the individual buildings, may be worked on at different times, it will be very unlikely though, that roosting bats will be disturbed. It is recommended that work starts as soon as possible after this survey, and that any remaining ridge tiles, slates or sheeting over walls, 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 If more than 12 months' elapses between this survey, and any commencement of building work, then the surveys must be repeated. 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 any new buildings within the proposed complex, or to any surrounding suitable trees. In connection with the future development proposals, it is recommended that these measures are implemented as soon as possible after the survey, to maximise the opportunities for wildlife at the site and obtain net gains in biodiversity, (refer to **Appendix 7** for details).

5.6 There was potential for both roosting and nesting birds around the site perimeter, and although there was some bird activity noticed, there were no current signs of nesting behaviour observed during the surveys. It is therefore recommended that where possible, the perimeter trees and shrubs be left untouched to encourage future nesting. and to maintain navigation, foraging and commuting routes for bats, and this would also increase net biodiversity in the overall site.

5.7 It must be remembered however that it is an offence to disturb active birds' nests. It is recommended therefore, that before any commencement of building or demolition 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 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.

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

5.9 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.

5.10 It is recommended that before any shrub or hedgerow, or excess building materials are pruned, disturbed, or removed from site, during building works, then this should be undertaken outside the hedgehog hibernating months, November to mid-March. If this is not possible, then a suitably experienced ecologist must be present to oversee all vegetation removal, to ensure that no hedgehogs (*Erinaceus europaeus*) are disturbed whilst hibernating (Hedgehogs are a UK BAP Priority species).

5.11 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, (refer to **Appendix 9** for details).

5.12 No outside hole or pit should be left uncovered over-night, to ensure that wildlife such as amphibians or hedgehogs are not trapped, and unable to escape. Alternatively, a broad wooden plank or similar can be placed in the excavation to allow animals to escape. A scaffolding board pitched at a maximum 45° angle would be ideal. Additionally, any pipework left on site that is greater than 150mm in diameter should to be planked off at the ends.

5.13 During the development, all excavations, and piles of pipework and similar, should be checked first thing each morning, prior to the start of works that day. Any animals found during these inspections, should be allowed to escape, and move off, or be carefully removed, and placed within suitable habitat cover before site works commence for the day.

5.14 Close boarded fences with concrete bases, or brick walls, are barriers to animal movement, and It is recommended, that any new perimeter fences installed 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 – 5cm 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.

5.16 To enhance the site's value for wildlife and general biodiversity, it is recommended that tree planting is planned as part of the development, and the trees used are British native trees as far as is possible. These trees are more likely to attract insects and are therefore beneficial to foraging bats and other wildlife. Suitable species include: Hawthorn, Rowan, Wild Cherry, Guelder

Rose and Crab Apple. These have been chosen for their attractive blossom and fruits. Oak, Ash and Willow species are recommended away from buildings and drains.

5.17 It should be remembered that bats are occasionally found in the most unexpected places. If any bats are found during unsupervised work, work must be stopped immediately, and either the

consultant (07745 268815), or the Bat Conservation Trust (0345 1300 228), or Natural England (01270 754 00, should be notified, (refer to **Appendix 5** for details). **Failure to do so would be a criminal offence.**

6. References.

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

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

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

8. Plans & Photographs.

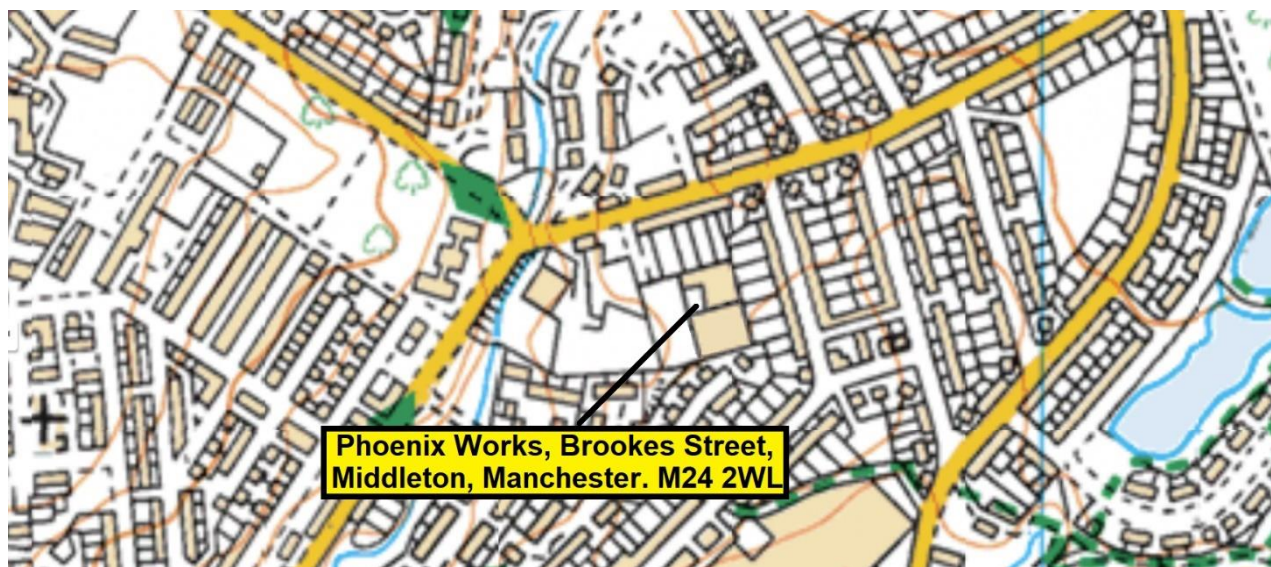


Fig 1 - The Site Location.



Fig 2 – Google Plan.

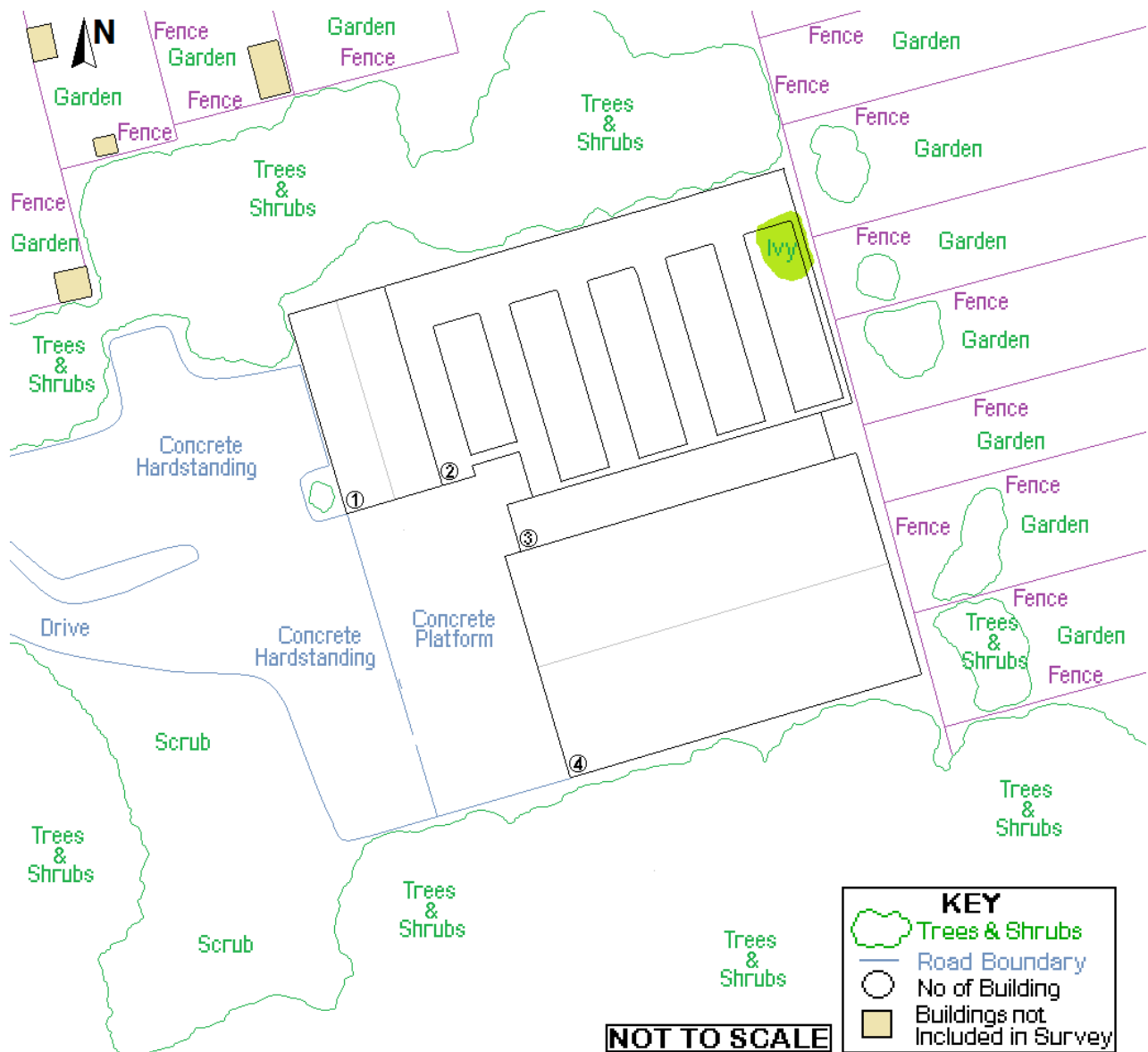


Fig 3 – Main Area Plan.

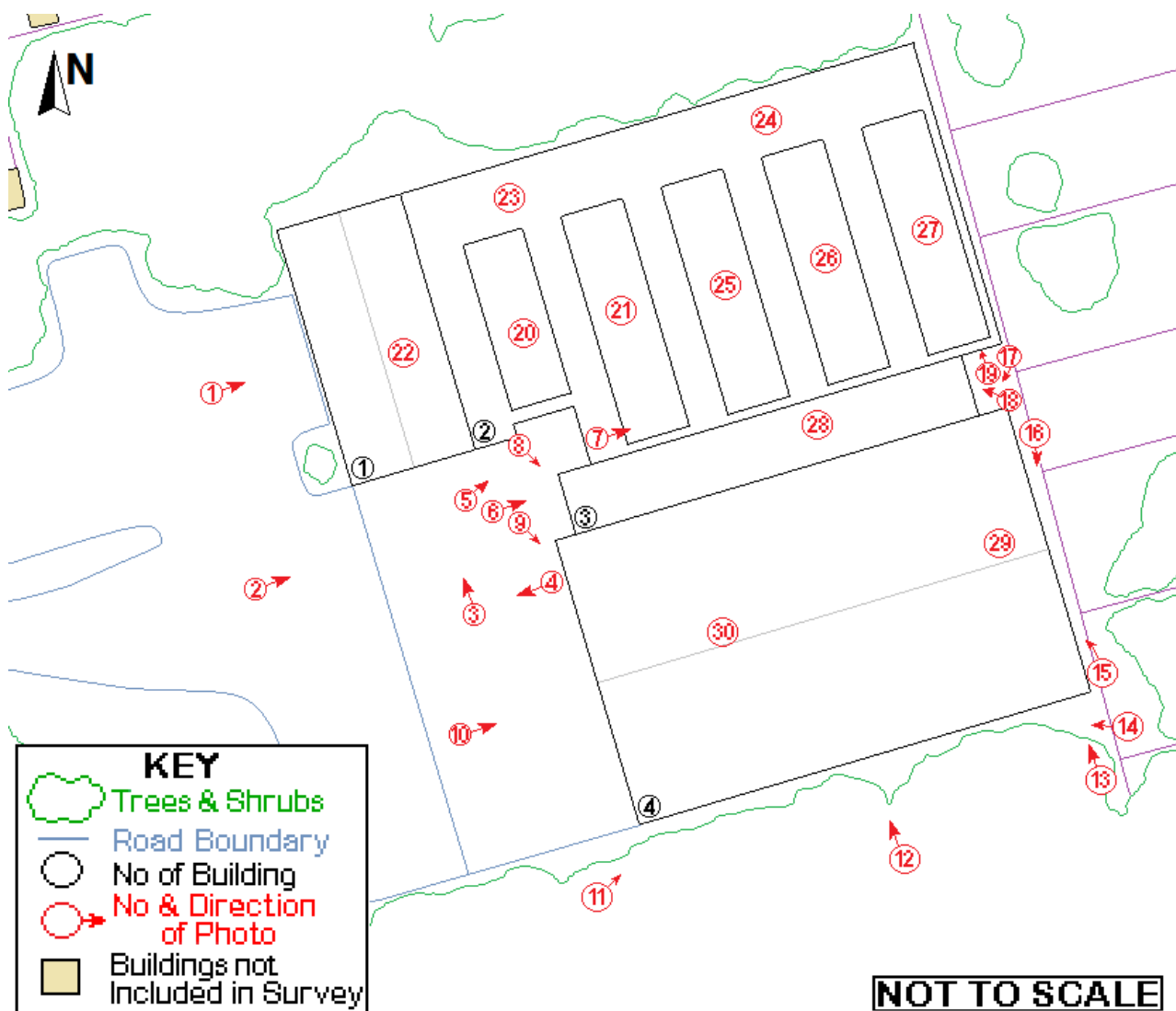


Fig 4 – Plan of Photographs.

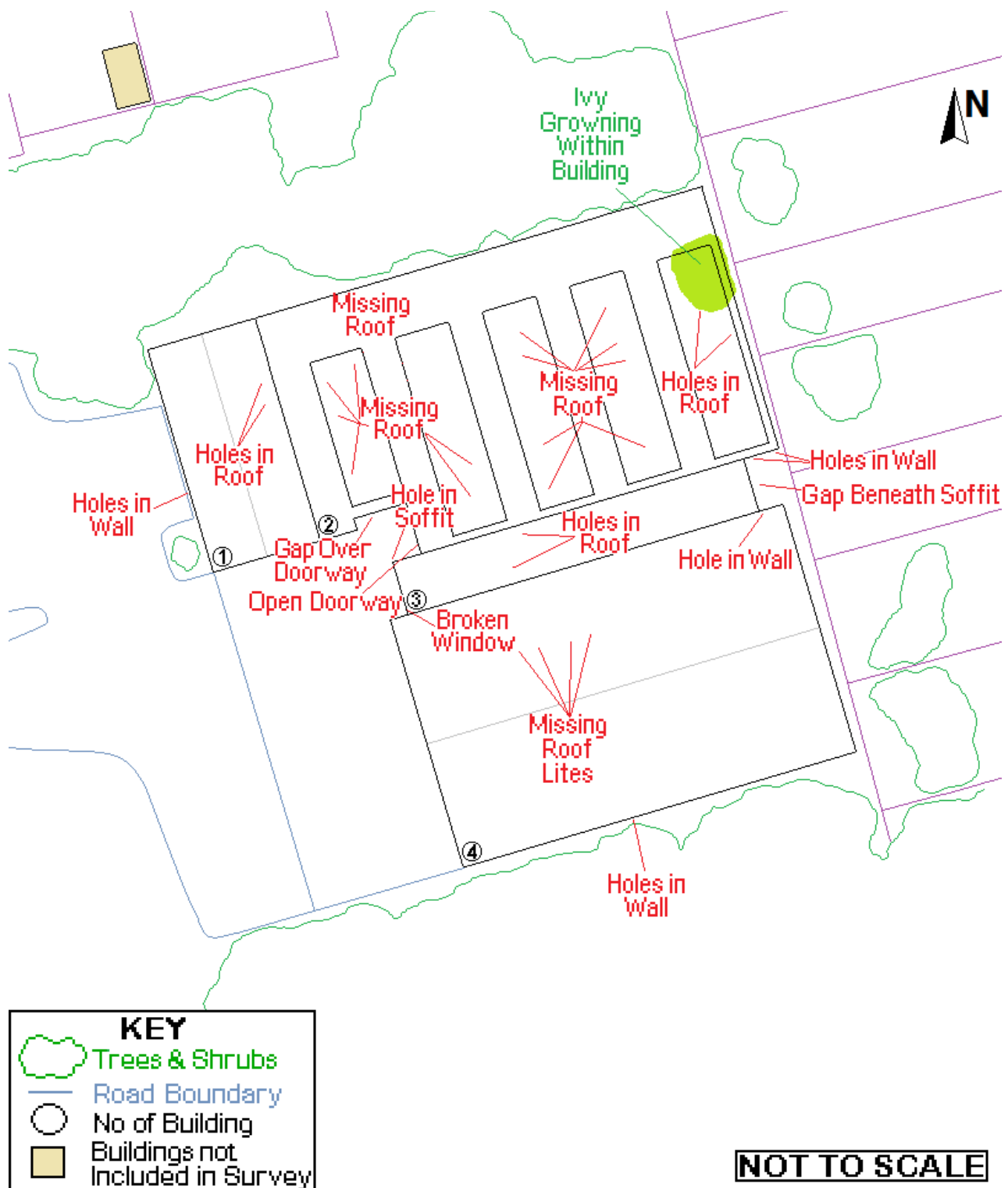


Fig 5 – Plan of Preliminary Evidence and Opportunity Survey and Assessment Results.

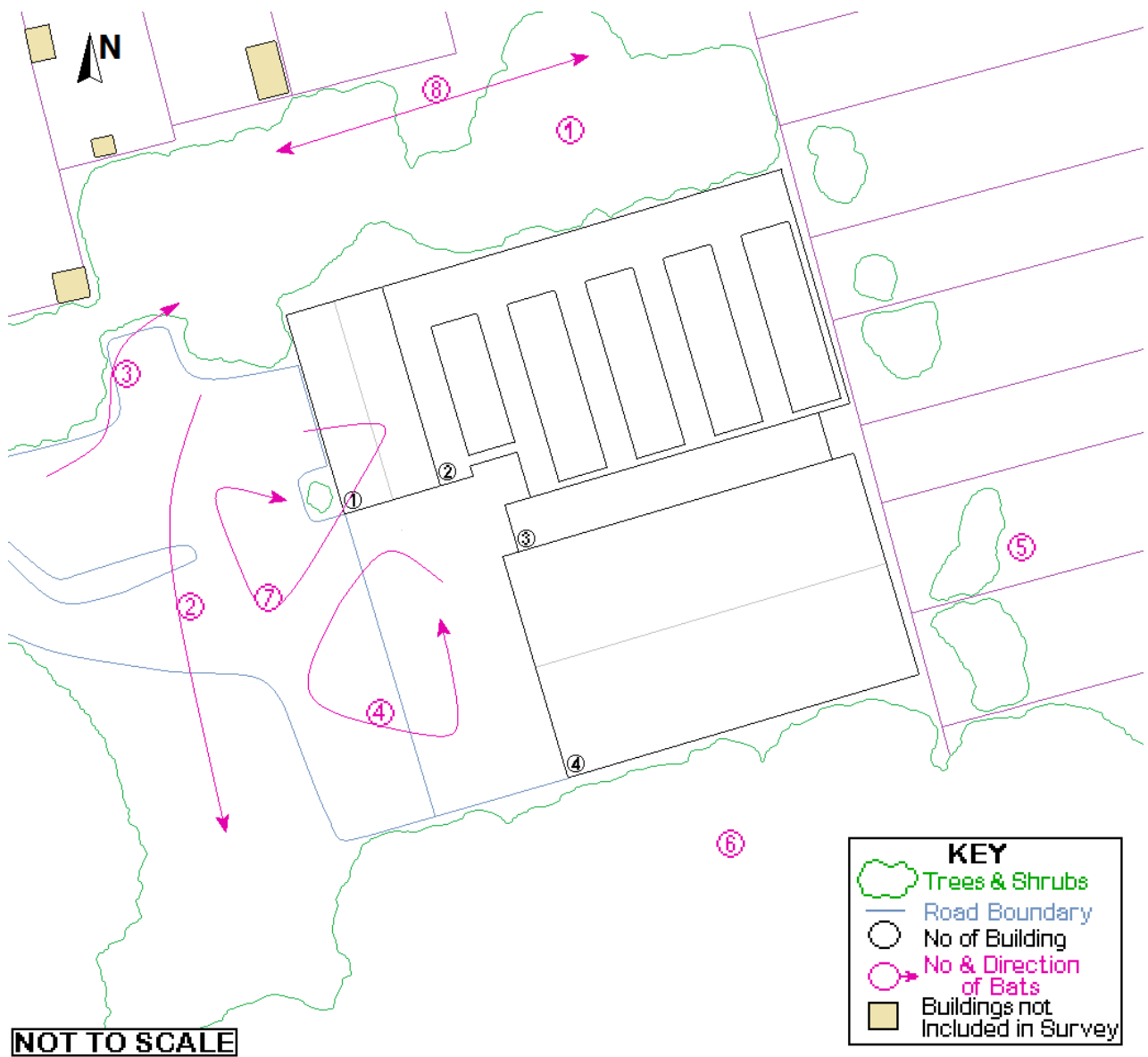


Fig 6 – Plan of Nocturnal Bat Emergence Survey Results.



PHOTO 1
Western Elevation of Building 1



PHOTO 2
Western Elevations of Buildings 3 and 4



PHOTO 3
Southern Elevation of Building 1



PHOTO 4
Western View across Concrete Hardstanding

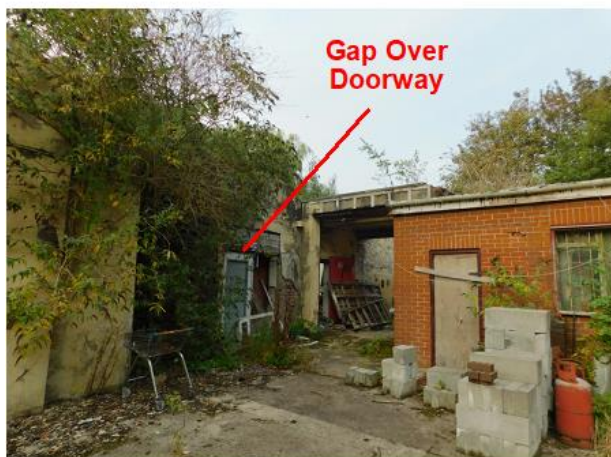


PHOTO 5
South-western Corner of Building 2



PHOTO 6
View Along Building 2 Passageway



PHOTO 7
North-western Corner of Building 3



PHOTO 8
View along Western Elevation of Building 3



PHOTO 9
View Along Western Elevations



PHOTO 10
Western Elevation of Building 4



PHOTO 11
South-western Corner of Building 4



PHOTO 12
Southern Elevation of Building 4



PHOTO 13
South-eastern Elevation of Building 4



PHOTO 14
South-eastern Corner of Building 4



PHOTO 15
View along Eastern Elevation of Building 4



PHOTO 16
Eastern Elevation of Building 4

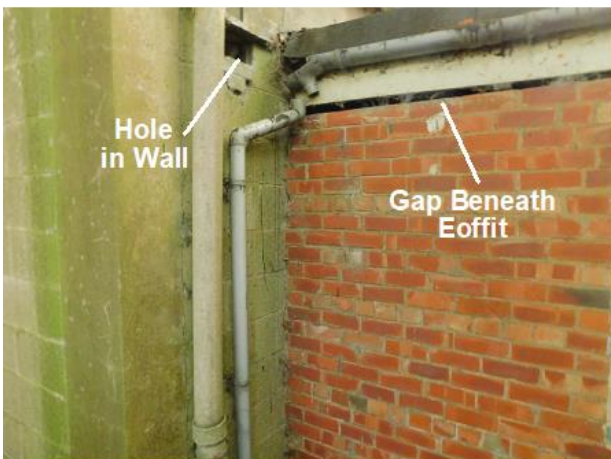


PHOTO 17
Junction of Buildings 3 and 4



PHOTO 18
Junction of Buildings 2 and 3



PHOTO 19
South-eastern Corner of Building 2



PHOTO 20
Missing Western Part of Building 2 Roof



PHOTO 21
Missing Central Part of Building 2 Roof



PHOTO 22
Underside of Building 1 Roof



PHOTO 23
Underside of Building 2 South-western Roof



PHOTO 24
Underside of Building 2 Northern Roof



PHOTO 25
Missing Western Part of Building 2 Roof



PHOTO 26
Missing Central Building 2 Roof



PHOTO 27
Underside of Eastern Part of Building 2 Roof



PHOTO 28
Underside of Building 3 Eastern Roof

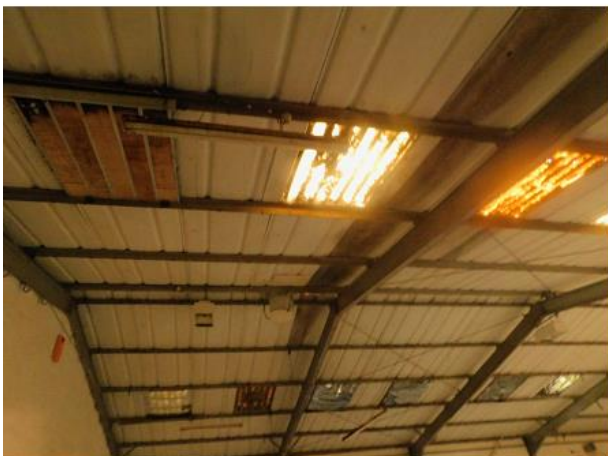


PHOTO 29
Underside of Central Roof of Building 4



PHOTO 30
Underside of Western Roof of Building 4

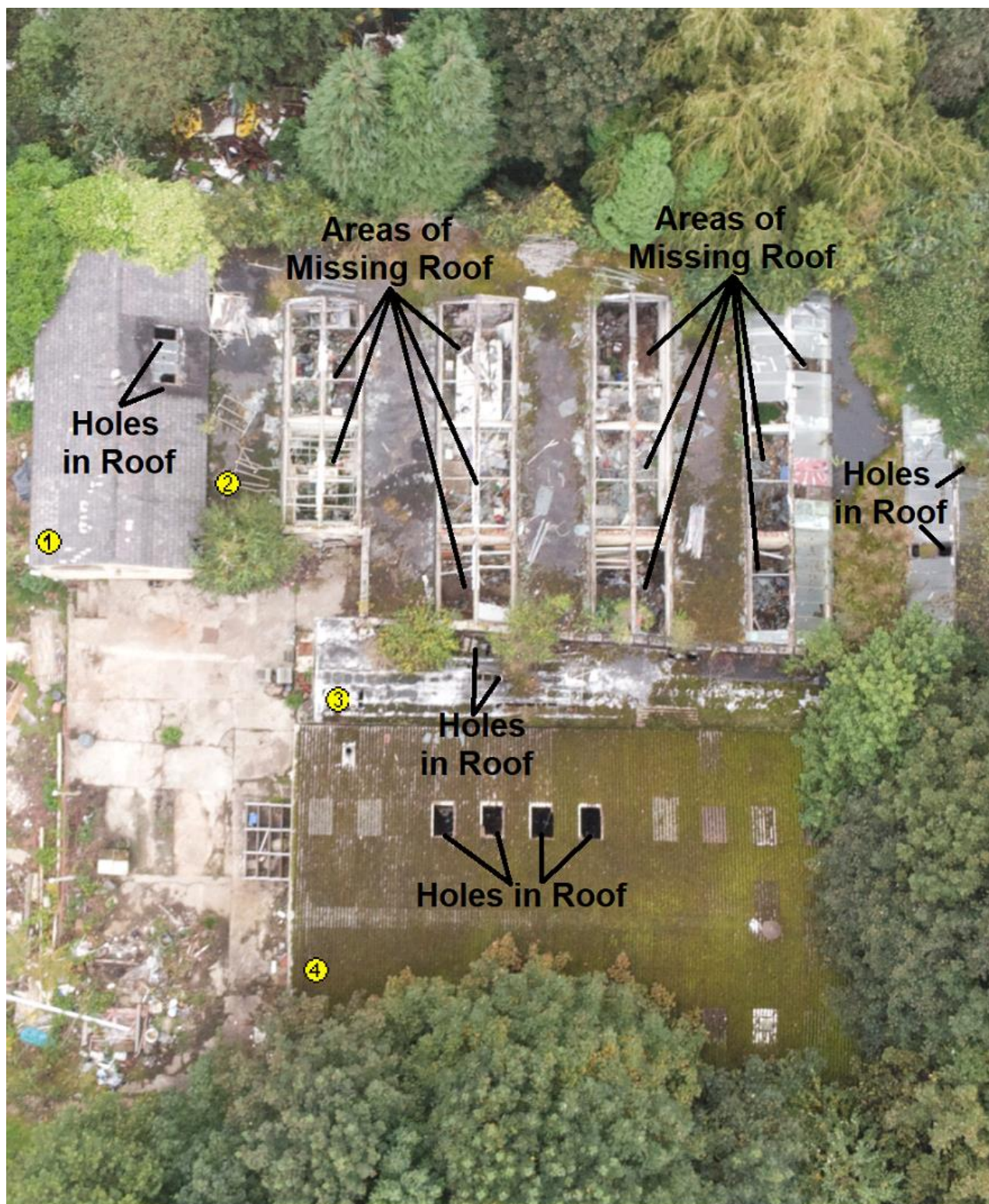


PHOTO 31
Ariel Plan of Site (Courtesy of Ariel Imagery by Daniel Godfrey).

29th September 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.

No part of this document may be reproduced without the prior written approval of Echo Calls Bat Surveys.

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

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.

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 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 building work.

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

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

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

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

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

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

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

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

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

APPENDIX 7: Bats: Types of Bat Box.

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

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

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

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



Schwegler 1FD Bat Box

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

This model has proved highly effective as a nursing area.

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

APPENDIX 8: Nesting Birds: Mitigation and Compensation Measures.

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

Making a nestbox suitable for robins and other box builders

What you need

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

Dimensions

The plan gives measurements for 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.

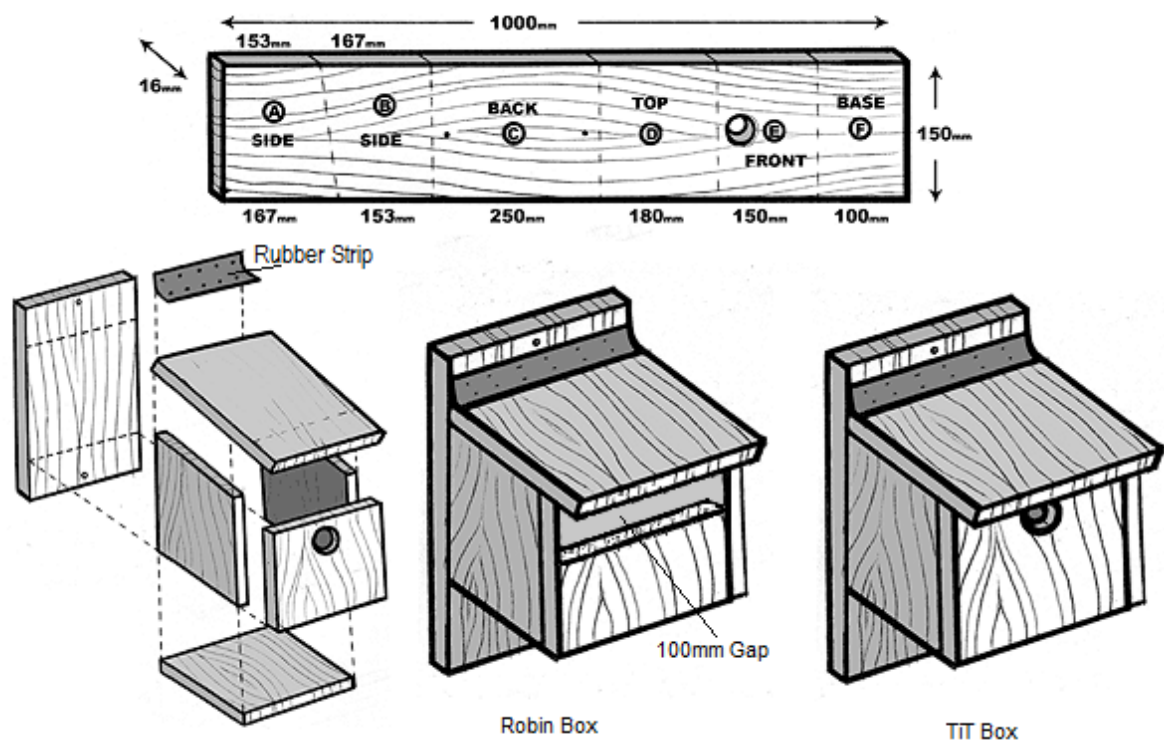
Do not nail down the lid since you will need to clean out the box in the autumn. Attach the lid with a brass or a plastic hinge that will not rust, or hinge it with a strip of leather or rubber (an old piece of bicycle inner tube will do). Fasten it down with a good catch.

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.