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Bat Survey Report (update to preliminary day-time survey):

**Lake Hill,
Bolholt,
Walshaw,
Bury,
BL8 1PU**

OS grid reference:
SD 7821 1184

Commissioned-by:
Sarah Sikorski

Survey Date: 18/10/19

Previous surveys: 24/6/16 (day), 12/7/16 (dusk), 29/9/16 (dawn)

Report Date: 31/10/19

Previous reports: 22/7/16 (day and dusk), 7/10/16 (dawn)

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1. Summary.

(This summary should be read in conjunction with the conclusions and recommendations.)

I undertook survey work here previously in 2016, comprising of a day-time survey, dusk emergence survey and dawn return-to-roost survey. The proposal now, as then, is to redevelop a large single-storey extension to the northern elevation, to create a two storey structure, tied-in to the main house.

No roosting was confirmed in 2016, but a third bat activity survey (dusk emergence) was recommended during a subsequent maternity colony period (May to August inclusive).

Two bats were seen behaving in a manner suggesting that they may roost at times in or near the older house roof. The client was advised to seek further advice from the bat consultant if any work was needed to this roof. Unfortunately this advice was over-looked and the older part of the house has since been re-roofed. As bat roosts have legal protection even if bats are absent at the time, I now urge the client to compensate as well as possible for the loss of roosting potential by putting-up bat boxes in trees near the lake. **The advice of the bat consultant should be sought with respect to this.** Putting-up of bat boxes now, would also make provision for bats in advance of the proposed development, which will inevitably also reduce roosting potential.

The current roosting potential associated with the northern extension is at least moderate, possibly high, although some of the larger eaves gaps are more appropriate for use by birds. A bird was seen to enter one in 2016.

As the out-standing dusk emergence survey, recommended to be undertaken during the main maternity colony period of May to August inclusive, cannot now be undertaken until 2020 - 4 seasons after the previous survey work - it is debatable whether carrying-out a single survey is sufficient, after so long, to both complete *and* up-date the original bat activity survey work when the roosting potential is at least moderate. My professional opinion is that it isn't and there should be two more surveys undertaken.

The building should also be assessed for use by nesting birds, especially birds of conservation concern. In 2016 swifts were recorded on site and this species of conservation concern could make use of the verge defects in the northern extension.

As a horse chestnut tree discovered in 2016 to have a small cavity, is clearly deteriorating; if removal is planned, this must not be done without liaison with the bat consultant.

As roosting potential will inevitably be lost to the development, irrespective of the findings of future survey work; to accord with the biodiversity objectives of the National Planning Policy Framework, the opportunity should be taken to install integrated bat boxes in the new external structure. See Appendix 4. Swift boxes could also be installed. It is hoped the integrated bat boxes will already have been supplemented with bat boxes in trees.

Bear in mind that birds' nests are legally protected throughout the nesting process.

2. Introduction

I undertook survey work here previously in 2016. The Summary of the final survey report included:

"A dawn return-to-roost survey was carried-out further to day-time and dusk emergence surveys, at which no roosting was confirmed.

The dawn survey concentrated on the single-storey extension, which is to be made two-storey; and incidentally covered a nearby tree with a cavity.

No roosting was taking place but it was noticed that bats showed an interest in two parts of the older house roof.

There is still a low risk of encountering a maternity colony in association with the single-storey extension, so if work is not underway by May 2017 the dusk emergence survey should be repeated during the main maternity colony period of May to August inclusive.

Alternatively this could be deferred until the summer of a later year, if significant delays in the development commencing are anticipated.

Further recommendations may be made dependent on the findings. Also, it should be born in mind that the finding of a roost at a later date could require an European Protected Species Licence to be obtained, or any equivalent that may be put in place by Government following the exit from the European Union.

During the bird nesting season - generally considered to be 1st March to 31st July - this work should not be started unless it is certain no nesting by birds is taking place.

No remedial work should be undertaken to the main house roof, and the new two-storey roof should not be tied into it, without the advice of the bat consultant being sought first."

Incidentally, a bird was seen to enter a gap in the verge mortar-work of the extension at the dusk emergence survey.

I was asked to re-assess the importance of the same single-storey extension at this survey. As 3 years had passed since the previous survey work, the day-time survey was up-dated. This included the older parts of the main house which adjoin it or are in very close proximity. Incidentally I comment on any issues discovered with respect to other protected/priority/invasive species and species of conservation concern.

This is a large detached property with multiple extensions; one of which is to the northern elevation:



Front and rear elevations of northern, single-storey extension

A nearby horse chestnut tree contains a cavity, which was included in the previous bat activity survey work:



Cavity as seen in 2019, and tree as seen in 2016. Approximate location of cavity shown in red.

The property is in quite a rural, sub-urban location:



Fig. 1. Location of property indicated by red circle

There are numerous large trees in the garden and next to the lake.

There are many other ponds within 1 kilometre, including in the Kirklees Valley, where 8 species of bat have been recorded.

The pipistrelle bat (2 species: *Pipistrellus pipistrellus* - the common pipistrelle, and *Pipistrellus pygmaeus* - the soprano pipistrelle) is common and widespread in the area.

Roosts of these species can occur in any building that provides suitable roosting crevices, with the risk of bat presence increased by close proximity to good bat feeding habitat and commuting routes; for example tree-lines, hedges, woodland, scrub and water courses and bodies. The bats use different roosts at different times of year, sometimes singly and sometimes in large groups of females with dependent young. They can move frequently and unpredictably between the roost sites known to them. The majority of house-holders with a roost of this species are unaware of it.

In summer females gather together each with their single off-spring in, sometimes large, maternity colony groups. Disturbance can cause the abandonment of babies (pups). In autumn when the young are independent, females visit males to mate. In winter the bats hibernate and rousing from hibernation - a slow process - can result in a depletion of fat reserves that may compromise the bats' ability to survive the winter. Females become pregnant in spring when their food (insects) becomes available again.

I have recorded the Daubenton's (*Myotis daubentonii*) personally in the grounds of Lake Hill and collected a stranded juvenile of this species from less than 500m away. Other species likely to pass through the grounds of Lake Hill include the brown long-eared (*Plecotus auritus*) - the species most likely to leave evidence of roosting within barns and lofts, and whiskered (*Myotis mystacinus*) and/or Brandt's (*Myotis brandtii*).

Bats also roost in tree cavities, and individual bats may roost in minor defects including underneath raised bark and in dense ivy (1, 2).

Breeding birds.

Buildings generally can be used by birds of conservation concern (3), such as the house sparrow (*Passer domesticus*), house martin (*Delichon urbicum*), swift (*Apus apus*) and starling (*Sturnus vulgaris*). The house sparrow and starling are both listed in Section 41 of the Natural Environment and Rural Communities Act (NERC) as species "of principal importance for the purpose of conserving biodiversity".

3. Bats and the Law

All British bats and their roosts are legally protected under the Wildlife and Countryside Act of 1981 (as amended) and the EC Habitats Directive of 1994 as implemented by the Conservation of Habitats and Species Regulations 2017.

Where a development will destroy a bat roost, a Low Impact Class Licence or a European Protected Species Licence (Mitigation Licence) is required before the roost can

be interfered with in any way. The former applies in cases where only small numbers of common species of bat are using the building within certain parameters. It usually takes approximately 2 weeks for these licences to be issued, whereas the turn-around time for a full European Protected Species Licence is approximately 7 weeks once the application has been submitted. Any licence issued is a legally binding document.

Licences can only be issued providing planning permission has been granted, where applicable.

When a roost is found, both the bat consultant and the planners have to apply the "three tests" required by Natural England before issuing planning consent. Essentially these are:

- That the development is necessary for the purpose of "preserving public health or public safety or other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequence of primary importance for the environment";
- That there is "no satisfactory alternative";
- That the action authorised "will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range".

N.b. The way in which the necessity is assessed includes whether the client has an alternative that it would be reasonable to expect them to adopt.

Necessary mitigation and compensation measures to ensure the favourable conservation status of bats will be maintained, would include appropriate timing and methodology for the work, including details of how the bats will be provided-for in the long term.

Planners are required by the Government to satisfy themselves before granting planning consent that it would be possible for a licence to be obtained if necessary. Accordingly they are obliged to apply the three tests before issuing consent. For this reason enough survey work has to have been undertaken that the planning authority can evaluate whether or not the three tests can be satisfied and what degree of compensation/enhancement is necessary. To avoid delays in obtaining consent it is in the client's best interest to find out sooner rather than later whether any bat roosting issues need to be addressed.

Natural England, the Government body responsible for administering the law relating to bats, have issued guidelines to planners on how to proceed with respect to bats.

Outside the planning system, the onus is on developers/members of the public, to have sufficient investigations undertaken to satisfy themselves (and the authorities in the event of a subsequent investigation), that their actions are unlikely to be in contravention of bat legislation.

N.b. It should always be remembered that bats often roost in places not anticipated by a lay person, such as modern buildings, trees with cavities, and bridges. Some leave no signs in lofts, as they roost underneath external features such as roof slates, ridges, weather-boarding and cladding.

In the case of a building, tree or other feature not already known to be a bat roost, if bats are found during the course of work, contractors are legally obliged to stop work and seek advice. This should be from an appropriately experienced and licenced bat ecologist.

Breeding birds.

The Wildlife and Countryside Act of 1981 gives protection to the nests of all wild birds whilst being built or in use, including by newly fledged birds that have not left the immediate vicinity of the nest. The bird nesting season is generally considered to be 1st

March to 31st July for most species but can extend a number of weeks either side of this depending on the species concerned and weather conditions in that particular year. Natural England cite the nesting season as being 1st March to 31st August.

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

Additional Relevant Legislation and Policy.

Between 1995 and 2010 certain more vulnerable habitats and species were the subject of National or Local Biodiversity Action Plans. This strategy for the protection of biodiversity has been superseded by UK post-2010 Biodiversity Framework, which is largely now implemented at county level. Internationally The Convention on Biodiversity produced a Strategic Plan for Biodiversity 2011-2020. Further to this the EU Biodiversity Strategy was launched in 2011.

Section 41 of the Natural Environment and Rural Communities Act 2006 lists species "of principal importance for the purpose of conserving biodiversity". The list was up-dated in 2014 and includes the brown long-eared bat (*Plecotus auritus*), noctule (*Nyctalus noctula*) soprano pipistrelle (*Pipistrellus pygmaeus*) and 4 other bat species.

The National Planning Policy Framework of 2012 states that "the planning system should contribute to and enhance the natural and local environment" by a number of means, including "minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks... ."

4. Survey

I made a daytime visit on **18/10/19** to update the preliminary survey of the northern extension and the parts of the older building adjoining it. The lofts were also inspected as far as health and safety restrictions allowed. I assessed the likely importance to bats in order to advise whether or not a precautionary approach or further survey work is needed. A tree with a cavity close to the extension was also re-inspected. Reference was made to works by Henry Andrews (1, 2).

Having been involved with bat survey work for 30 years and consultancy work for 20years, it is always my objective to carry-out my work in a manner consistent with accepted Good Practice Guidelines (4) and consistent with the code of practice of the CIEEM. I hold Natural England Class Licences CL21 (Annex B), 18 and 16. Amongst other things these cover me to apply for Low Impact Licences for clients and undertake bat survey work. I have a supplementary licence to photograph bats in roosts and a CL29 Barn Owl Class Licence. My credentials are expanded-upon in Appendix 1.

As far as possible, I surveyed the building inside and out with the aid of surveyor's ladders, 2 million candle-power torch, camera with 6x optical zoom and binoculars (8x42). Head-torch, 10x 50 binoculars, fibrescope (6 and 13mm heads, extendable to 2m), camera with 18x zoom and mirrors were also available if needed.

I was looking for access to potential roosting places and evidence of their use, such as droppings and staining.

I also take into consideration the surrounding habitat and the range of bat species it appears likely to support, along with the quality of the habitat linkages with the wider area.

Incidentally I comment on any relevant issues discovered with respect to bat feeding habitat and commuting routes, possibly including likely roosting sites nearby, as well as any relevant findings with respect to other protected/invasive species, biodiversity priority species and species of conservation concern.

5. Limitations of the survey

This was an update to the preliminary survey of 2016, to discover whether there are obvious signs of use by bats and to re-assess potential for use. If potential exists, usually follow-up work is required at dusk or dawn, possibly at a more appropriate time of year. See Appendix 3.

It should be noted that droppings are the sign most frequently found, but they are often deposited in areas that cannot be easily visualised, if at all, and they can turn to powder quite quickly. They are usually soon washed and blown away from exposed external surfaces so evidence of use often doesn't last long and pipistrelle bats in particular can change roosts frequently. However an assessment has been made of potential bat roosting places associated with the exterior of the building.

The survey was carried-out after a period of rainy weather increasing the likelihood of droppings having been washed or blown from external surfaces.

6. Findings

Figure 2 below shows the building and the areas surveyed, though incidentally the exterior of other adjacent elements were inspected. Before entering the loft of the older house, I was informed it had been re-roofed since my last survey:



Fig. 2. Northern extension shown in red; older house shown in orange

The summary of the day-time survey in 2016 report included:

"Overall, in the absence of re-roofing and roof repairs to the older part of the building, the risk [from developing the northern extension] to any bats roosting in that area should be minimal."

Bat roosts are legally protected from destruction even if bats aren't there at the time, unless an appropriate licence has been obtained from Natural England.

The loft was found to contain much more debris than before, which had fallen through gaps in the sarking boards at the time of re-roofing:



It was not possible to be certain this debris did not contain disintegrated bat droppings, which contain finely ground insect remains with a shiny quality.

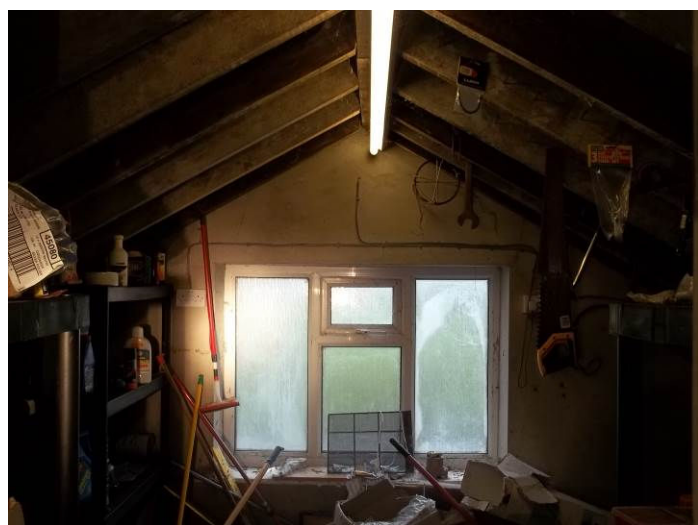
The sarking boards are close fitting, but bats often roost between layers of roofing material. There was some evidence at the dawn survey in 2016 to suggest roosting may have taken place in association with the roof. It would be unsurprising to find bats roosting beneath uneven roof slates in this sort of location. In 2016, where sarking boards were absent, bat access was possible, but at the time there was no evidence to suggest bats had roosted within the loft:



2016, prior to re-roofing

The older house has a cellar at the northern end, adjacent to the extension. There was no obvious bat access available and conditions were dry, making it apparently unsuitable for use by bats for hibernating in winter.

The loft of the northern extension is in two halves. One has walk in access and is used for storage:



The roof is lined with bitumastic felt. No obvious bat access was possible.

The other was unsuitable for use by bats in 2016 and hasn't changed much since. It is low in height, very light and has a small apex void which was inaccessible:



There are additional panels over-lying the wooden panelling:



Externally the panels are over-lain with roof-tiles:



To the rear elevation is a blue-tit box and there is a gap in the brickwork at the eaves:



There are gaps in verge mortarwork:



The remainder of the extension roof is of tile and there are gaps in the verge at both gable ends:



There is a gap at the western soffit:



There are similar gaps in verges to the eastern elevation:



There are also gaps at soffits:



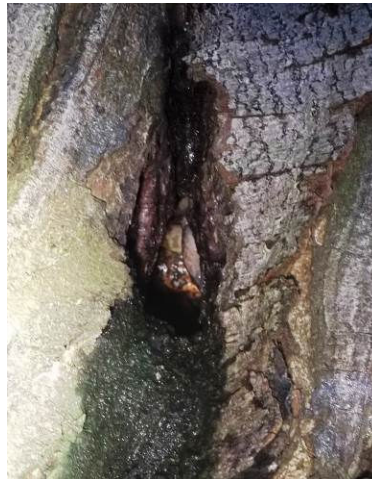
There are also a range of potential roosting places available to bats associated with smaller elements of the older house on its western side, at the northern end, for example roof-slates and fascias:



The horse chestnut tree on the northern boundary, close to the northern extension, is clearly under fungal attack and additional defects are starting to form:



The cavity identified in 2016 is currently occupied by slugs:



7. Conclusions/Discussion

Appendix 2 gives an outline of the criteria used in assessing the level of risk of use by bats.

On studying the findings of the dawn survey in 2016, it seems one bat showed an interest around the gutter area on the northern side of the older house, where there is no gap at the soffit, and another was seen flying around a chimney towards the southern side of the house. There is an air vent near eaves level on the northern side of the older house, though not quite where the bat was seen:



In either case the bat could have been considering to roost under an adjacent raised roof-slate. Bat roosts are legally protected from destruction even if absent at the time.

The loft inspection of the older house in 2016 revealed no obvious signs of use by a maternity colony of Daubenton's bats for example, but any raised slate or similar crevice in this sort of location is likely to be used by individual bats at times, if only occasionally.

It was inappropriate to re-roof the older part of the house without first seeking advice with respect to bats. In addition, any bat that may enter to roost under a raised slate in future, is at risk of becoming entangled in the fibres of the breathable membrane used to line the roof. This material is not suitable for use in association with bat roosts.

Looking back to the photographs from 2016 it appears the number of raised slates was relatively low. Irrespective of that, every effort should be made now to ensure the re-roofing did not reduce the availability of roosting sites for bats, without compensatory provision being made. The client is urged to put-up bat boxes in trees near the lake as a matter of urgency, under the guidance of the bat consultant. This would also make provision for bats, in advance of the proposed development, which will inevitably reduce roosting potential further.

The roosting potential associated with the northern extension is at least moderate, possibly high, although some of the larger eaves gaps are more appropriate for use by birds; and a bird was seen to enter one in 2016.

In 2016, after the dusk emergence survey the following comment was made with respect to the northern extension:

"[It] has a degree of roosting potential and is at moderate risk of some use by bats - possibly high risk, given the extent of the feeding activity taking place next to the building."

As the out-standing dusk emergence survey, recommended to be undertaken during the main maternity colony period of May to August inclusive, cannot now be undertaken until 2020 - 4 seasons after the previous survey work - it is debatable whether carrying-out a single survey is sufficient after so long, to both complete and up-date the

original bat activity survey work, when the roosting potential is at least moderate. My professional opinion is that it isn't and there should be two more surveys undertaken.

As bats use buildings in different ways over the course of the season, often changing roost; if more than one survey is necessary it is my usual practice to undertake one in both the first and second half of the accepted bat survey period and to separate them by at least a month. This also reduces the chance of missing pipistrelle mating roosts, if present, in the later part of the summer.

The building should also be assessed for use by nesting birds, especially birds of conservation concern. In 2016 swifts were recorded and this species of conservation concern could make use of the verge defects in the northern extension.

As the horse chestnut tree with the defect is clearly deteriorating, if removal is planned this must not be done without liaison with the bat consultant.

As roosting potential will inevitably be lost to the development, irrespective of the findings of future survey work, to accord with the biodiversity objectives of the National Planning Policy Framework, the opportunity should be taken to install integrated bat boxes in the external structure. See Appendix 4. These provide long-term roosting potential with better thermal stability than boxes attached to trees or walls.

Bear in mind that birds' nests are legally protected throughout the nesting process.

8. Recommendations

These recommendations should be read in conjunction with the conclusions above.

Put-up bat boxes in the trees by the lake, in liaison with the bat consultant, as a matter of urgency.

Have two bat activity surveys undertaken (one emergence-at dusk and one return-to-roost-at-dawn). There should be one in each half of the accepted May to September inclusive survey period. They should cover the northern extension and any structures or tree with bat roosting potential, situated close enough to potentially be disturbed during the development.

No tree surgery or felling should be done without prior involvement of the bat consultant.

Ensure alternative provision for bats is made in the course of the development via the use of integrated bat boxes. This would accord with the biodiversity objectives of the National Planning Policy Framework.

Have survey work during the bird nesting season to assess what species, if any, nests in the northern extension. If a species of conservation concern is identified, compensatory provision for the loss of a nesting site should be made.

9. References

1. Andrews, H. (2018). Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-Care and Ecological Professionals. Pelagic Publishing.
2. Eaton, M. A. et al (2015). Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. British Birds 108: 708-746.
3. Andrews H et al. (2013.) Bat Tree Habitat Key. AEcol, Bridgwater.
4. Ed. by Collins, J. (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines - Third Edition. Bat Conservation Trust.

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Appendix 1 - Angela Graham's Experience.

- I hold Natural England Class Licences CL21 (Annex B) - Registered Consultant 163 - CL18 and CL16. CL21 covers me to apply for Low Impact Class Licences for clients - a more stream-lined system for quickly obtaining a licence from Natural England when a roost of a small number of common bat species will be impacted-upon by the development. CL18 covers me for survey/consultancy/scientific work. CL16 allows me to do voluntary work with house-holders at domestic properties in certain circumstances, on behalf of Natural England, and to train new volunteers. I have a supplementary licence to use flash photography in bat roosts (2014/SC1/0160), possess up to 10 live/dead bat specimens (20123429). I have a CL29 licence to disturb barn owls.
- I'm a member of The Chartered Institute of Ecology and Environmental Management.
- I undertake my work in accordance with the principles outlined in the Bat Conservation Trust's "Good Practice Guidelines".
- I have been involved in bat conservation for 30 years, initially as a member of the South Lancashire Bat Group from its inception in 1987 and as a volunteer with the Nature Conservancy Council (NCC) - first licenced in 1989. Later, and for many years, I was Co-ordinator/Chair and Trainer for the South Lancashire Bat Group. I trained the people who currently run the group, one of whom is a Trustee for the Bat Conservation Trust. I was a founder member of the Greater Manchester Bat Group in 2002 and ran the group for 4 years.
- Over the last 23 years I have done increasing numbers of bat surveys on a consultancy basis, firstly part-time, then full time from December 2003.
- My experience at applying-for European Protected Species Licences with respect to bats spans approximately 20 years.
- From 2003 to 2008 I represented the bat groups of the north-west region at national bat worker meetings, hosted by the Bat Conservation Trust.
- I regularly communicate with the Ecologists who advise local authority planners, especially the Greater Manchester Ecology Unit and West Yorkshire Ecology raising concerns about practice and protocols.

Other experience includes:

- Attending bat-worker conferences every year since 1988 (mainly England, some in Wales) plus additional symposia on specific topics such as mitigation and woodland bats.
- Helping with winter surveys of underground hibernation sites in Clwyd and north Lancashire..
- Participating in "Bat Detector Workshops" during the 1990s in different areas of the country, concerned with locating bat roosts and feeding sites/commuting routes.
- Sitting on local council "Wildlife Advisory Groups" (WAGs) in the Greater Manchester area from the early 1990s until around 2005.
- Helping local authorities and the Greater Manchester Ecology Unit formulate their Biodiversity Action Plans for bats.
- Administering the bat casework for English Nature (now Natural England) in the South Lancashire and Greater Manchester areas over 1998-2000.
- Assisting with research involving mist netting, harp trapping and radio-tracking.

- Continuing to attend courses run by recognised experts to ensure I stay up-to date both with respect to bat survey-work and conservation, and issues such as health and safety.
- Re-passing the Construction Site (CITB) Operatives test in June 2017 and last updating my confined spaces training in 2006.
- Contributing to the Bat Conservation Trust's survey standards guidelines.

Other ecological experience includes:

- Bird watching for fun since 1982 with a general interest in wildlife, ecology and conservation for a similar period.
- Attending short courses and field training with respect to grasses, flowering plants, British mammals including water voles, reptiles and amphibians, non-native invasive plant species, Extended Phase 1 Habitat Surveying, National Vegetation Classification, Environmental Impact Assessment and use of GIS.
- Taking part in British Trust for Ornithology breeding bird and associated butterfly surveys annually.
- A year-long sandwich placement assisting with badger research, including radio-tracking.
- Short periods of voluntary work with the Lancashire Wildlife Trust and Royal Society for Protection of Birds.

Appendix 2 - Personally-devised criteria used in assessing risk of roosting (in the absence of obvious evidence at the preliminary survey).

Risk of roosting	Definition	Suggested Action
Nil	Whole of structure/tree can be seen well enough to be sure there are no roosting opportunities.	No need to consider bats further unless development is delayed and potential roosting places might develop in time.
Minimal/negligible	All or most of structure/tree can be seen well enough to suggest there are few, if any, places suitable for roosting and the location does not provide easy access to potential feeding grounds.	Although roosting is thought to be unlikely and therefore the development is unlikely to impact on the favourable conservation status of bats, a precautionary approach should be taken in relevant areas at the time of the work. Further survey work needed only if development delayed.
Low	Whole of structure/tree can be seen well enough to know there are no more than a few openings that could be used by an individual bat or two and/or these provide access to the sorts of features that are likely to be suboptimal due to materials and/or conditions within (eg unstable temperature); and/or the location provides limited access to potential feeding grounds.	Although regular roosting is thought to be relatively unlikely and the development is unlikely to impact on the favourable conservation status of bats, a single survey at dusk or dawn in favourable weather conditions would be appropriate to accord with good practice. This would reduce the extent to which the judgement is based on speculation. If the findings were ambiguous e.g. possible bat emergence and/or considerable bat activity around the building, the survey would need repeating.
Moderate/medium	A small number of openings are present in an area of reasonable habitat, and at least some seem likely to provide access to good conditions for roosting bats, and/or a loft/hay-loft is present that appears to have good qualities for roosting but there were limitations to access or no evidence of bats was found at the time. Cellars may be assessed as potentially being suitable for hibernation in winter,	Further work is needed to better assess the abundance of bat activity in the vicinity and whether or not bats seem to make use of the roosting potential available. To accord with good practice a dusk emergence survey and a dawn return-to-roost survey will be necessary. A second inspection of the interior may also be necessary - if the survey was undertaken in winter for example. As the absence of bats on two occasions wouldn't guarantee absence at other

	but the conditions and/or location aren't optimal.	times, possibly including winter, some precautions would be needed at the time of the work and some roosting potential should be retained/re-created. In the case of cellars and equivalent, inspection in winter is necessary. Some work, for example pointing old stone walls, should be avoided in winter.
High	There is at least one feature that is typical of those favoured by bats for regular roosting and it/they provide access to abundant insect food on-site and/or via good links with the wider natural environment. The feature/s could be suitable for use by a maternity colony, either as a main or satellite roost, or by a territorial male in autumn in the case of pipistrelles, or by individuals or small numbers of bats at any time of year, including winter when hibernating.	The extent to which bats of different species make use of the potential available needs to be investigated by carrying-out at least 3 surveys at dusk and/or dawn spaced over the months of May to September inclusive, possibly extending into April or October if weather conditions are favourable. (Air temperature above 8°C and not more than light rain and/or gentle breeze. I generally plan to do surveys only when the forecast is for 10°C or above.) Maternity colonies have largely disbanded by September, but territorial male pipistrelles may be missed without a survey in September and a lot of smaller roosts are discovered at this time of year. As bats could hibernate unseen in winter and/or roost at other times not covered by the survey work, appropriate precautions would be needed at the time of the work along with maintenance of appropriate potential roosting places.
High - hibernation only	Cave-like places with stable conditions and high humidity, such as cellars can be used for hibernation in winter.	High-risk potential hibernation sites need at least 3 inspections spaced over the winter months as bats will move between sites depending on the weather conditions.

Appendix 3 - Recommendations for further survey work when the findings of the preliminary survey were negative.

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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 the 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 surveys are spaced at least two weeks apart, preferably more. A dawn survey immediately after a dusk one is considered only one visit.

Taken from "Bat Surveys for Professional Ecologists: Good Practice Guidelines", 3rd Edition (2)

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

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.

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.

Taken from "Bat Surveys for Professional Ecologists: Good Practice Guidelines", 3rd Edition (2)

Appendix 4 – examples of available integrated bat boxes

N.b. Other boxes are available but the advice of the bat consultant should be sought before selecting one of these.

EcoSurv Habibat

<http://www.ecosurv.co.uk/product/habibat-bat-boxes>

“Designed to be built into an exterior wall and is available in a variety of faces to match the building. Standard facings of red or blue brick - ideal for new builds - are normally available from stock, or boxes can be made to your specific requirements with a face of brick, stone, timber, or plain (for rendering). Supplied unpointed.”



Brick example of Ecosurv Habibat. Can also be faced with stone.

Ibstock Ecozone

<http://www.ibstock.com/sustainability-ecozone.asp>



Enclosed Bat Box B

- Designed specifically for the pipistrelle bat
- Available in all brick types
- Discrete home for bats
- Various sizes
- Several roosting zones are created inside the box
- Bats are contained within the bat box itself
- Maintenance free with entrance at the base
- Ideal for new build & conservation work



Enclosed Bat Box C with engraved motif

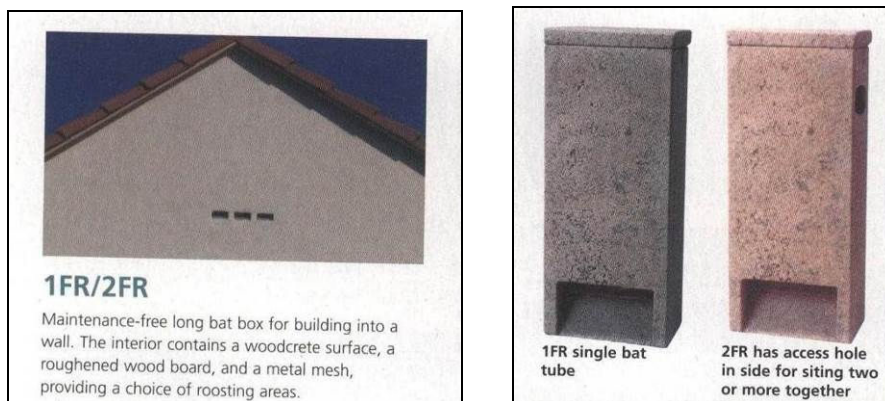
- Designed specifically for the pipistrelle bat
- Available in smooth blue, smooth gold & smooth red
- Attractive "bat" motif
- Discrete home for bats
- Various sizes
- Several roosting zones are created inside the box
- Bats are contained within the bat box itself
- Maintenance free with entrance at the base
- Ideal for new build & conservation work

	Sizes	Durability
Eco Habitats for Bats - Technical Data: A	215mm x 65mm	F2 S2 - Fully Frost Resistant
Eco Habitats for Bats - Technical Data: B	215mm x 215mm or 215mm x 290mm	F2 S2 - Fully Frost Resistant
Eco Habitats for Bats - Technical Data: C	215mm x 215mm or 215mm x 290mm	F2 S2 - Fully Frost Resistant



Above: typical unit in situ. Photo © Angela Graham

Schwegler 1FR/2FR



Forticrete

<http://www.forticrete.co.uk/products/184/bat-boxes.html>.



Above and below - standard colours available. Others available to order





Example of Forticrete boxes in situ

Photos above © Angela Graham

“Forticrete's boxes have been designed to be fitted to your property easily. Suitable for new build construction or renovation work where there is a requirement to provide a habitat for Pipistrelle bats.”

Bat and Bird Box Suppliers

Schwegler woodcrete:

NHBS: 01803 865913

http://www.nhbs.com/bat_boxes_eqcat_421.html

Envisage Wildcare. 01793 724848:

[http://www.wildcareshop.com/Products_Results.php?pageNum_WADAProducts=0&totalRows_WADAProducts=25&Search=1&ProductCategoryID\[\]=5](http://www.wildcareshop.com/Products_Results.php?pageNum_WADAProducts=0&totalRows_WADAProducts=25&Search=1&ProductCategoryID[]=5)

Nature Counters. 07917 340114

<http://www.naturecounters.com/catalog/index.php?cPath=36>

Jacobi Jayne: <http://www.livingwithbirds.com/nest-boxes-by-species/bats/>