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**Bat Survey Report (preliminary day-time survey):
2 Water Meadows,
Longridge,
PR3 3BW**

OS grid reference:
SD 6019 3611

Commissioned-by:
Angela Potter

Survey Date: 28/11/23

Report Date: 4/12/23

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1. Summary.

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

This modern detached house with a detached garage is to be extended, linking the house and garage together.

Although the housing estate the property is located on isn't well-provided-for in terms of mature gardens and deciduous trees, and it is directly across a relatively busy road from a reservoir with intensively mown embankments; otherwise the area does appear to provide good quality feeding habitat for bats. This assessment is supported by a recorded roost of pipistrelle bat in a neighbouring street, and noctule in flight at Alston wetlands.

Although the roosting potential of the property is limited, with only one particularly favourable opportunity discovered, plus two or three less favourable options, it has to be considered that bats might roost here at times.

The mortar-work at the southern end of the west-facing eaves of the property almost appeared to have been worn away, but there was no staining evident to suggest bats have been using the opening intensively to cause wear. The gap doesn't seem large enough for use by birds, except perhaps the blue-tit, but there was no whitewash present to suggest such use.

The extension will involve this end of the property. Although it will be taking place on the north side of the house; as I understand it there will be a need to tie the new roof to the existing roof. As there is a possible access gap in that vicinity too, I think it is necessary to carry-out at least one bat activity survey to investigate the situation better. The other opportunities are associated with the garage.

Good Practice Guidelines suggest even low risk buildings should have a bat activity survey (emergence at dusk or to return-to-roost at dawn) when the findings of the initial survey were negative.

A bat activity survey should be undertaken in the first half of the main bat activity survey season of May to August inclusive. Further recommendations will be made based on the findings.

Although the available gap at the northern end of the west-facing eaves may be lost in the course of the work, there should be no need to eliminate the higher-risk gap at the southern end. Every effort should be made to retain this.

The roosting potential associated with the garage is relatively low risk, but its loss can easily be compensated-for by means of integrated bat boxes in the new build. This would accord with the biodiversity objectives of the National Planning Policy Framework.

As two, possibly three potential bat access places will be lost to the development, there should be an integrated bat box in each gable end of the new extension.

Irrespective of the findings of future survey work, because individuals and small numbers of bats change roost frequently so could have been missed at the time of bat activity survey work, the construction should be done by contractors who are familiar-with and sympathetic-to the law relating to bats. They should be aware of the roosting

behaviour of the common/soprano pipistrelle bat and be competent to recognise bat droppings if present. If there is any doubt about their expertise with respect to bats, the bat consultant must provide a tool-box-talk before work commences and may need to be present in case a bat is found.

Contractors must understand that if at any time a bat or droppings that may have come from a bat are found work **must stop immediately**. They have a legal obligation to do this. As far as practicable the feature that was sheltering the bat/s should be replaced. Further advice **must** then be sought from the bat consultant before work continues, even if the bat has flown off or droppings appear old.

Care should be taken when planning any lighting on the site, to ensure any potential roosting features retained/provided are appropriately shielded.

2. Introduction

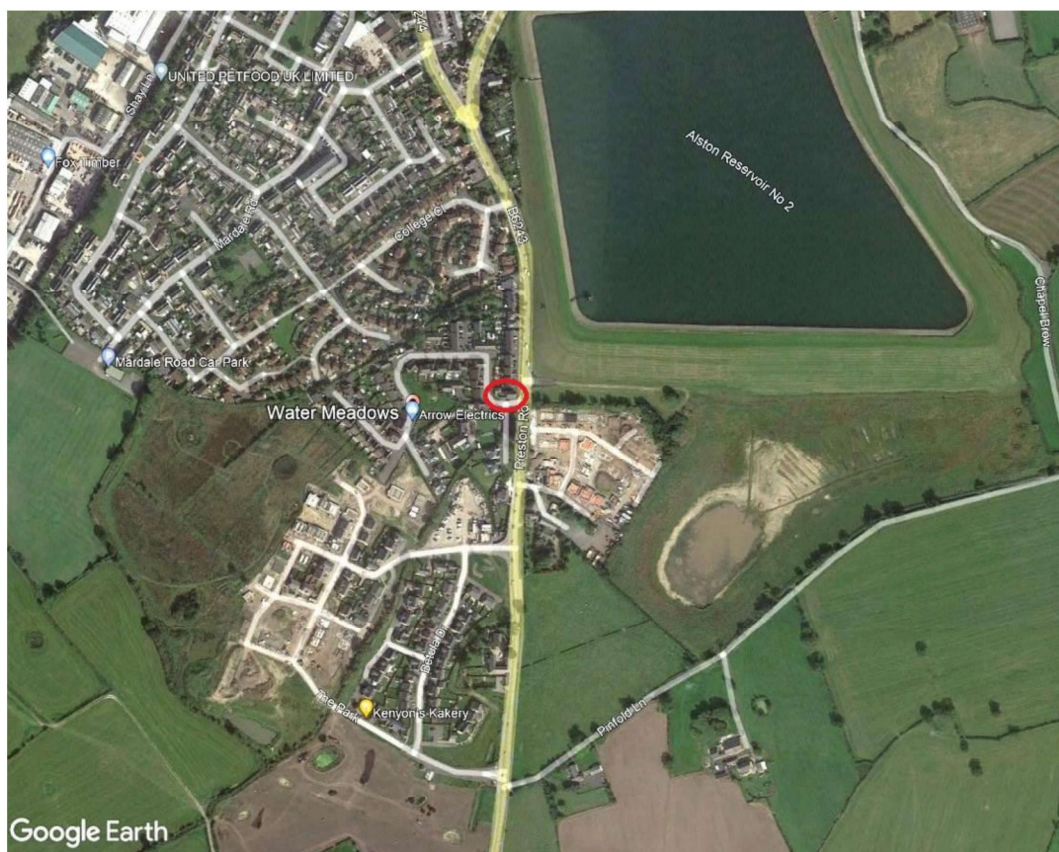
I was asked to assess the importance of this property to bats as part of the planning process, prior to extension works involving the house and detached garage. Incidentally I comment on any issues discovered with respect to other protected/priority/invasive species and species of conservation concern.

This is a detached house about 10 years old:



East/north and western elevations

It is on the edge of modern housing developments, in a sub-urban/rural location. It is about 100m west of a reservoir with Alston Wetlands adjacent to the south. It is about 150m east of what appears to be an area of semi-natural grassland, with pastureland bounded by hedgerows beyond:



Location of property indicated by red circle

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.

Pipistrelle bats in particular are extremely small, weighing about 5g (the weight of a 2p coin) so need only the smallest of gaps in order to enter to roost; often making use of external features and wall cavities without leaving signs in the loft/interior.

A search of DEFRA's Magic database discovered that two bat European Protected Species licences have been granted for developments between 1 and 2 kms away – one for common pipistrelle and the other for soprano pipistrelle.

A data search from the National Biodiversity Network discovered records of common pipistrelle and noctule (*Nyctalus noctula*) within 500m but none within 100m. The pipistrelle record was of a roost in a dwelling in 2018, made by Lorna Bennett and supplied by the Bat Conservation Trust. From the 8-figure grid reference this appears to have been in a neighbouring street, in a similar type of property.

The noctule record was made by Thomas Galvin in 2021 at Alston Wetlands as part of the National Mammal Atlas Project. The noctule doesn't typically roost in buildings. No other bat species were recorded within 1km. Within 2kms were brown long-eared (*Plecotus auritus*) and Daubenton's (*Myotis daubentonii*).

Other bat species likely to occur within 2 kilometres include the whiskered (*Myotis mystacinus*)/Brandt's (*Myotis brandtii*), which are hard to separate without dna analysis and Natterer's (*Myotis nattereri*).

Breeding birds.

Buildings generally can be used by birds of conservation concern (1), 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. 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 5 (2021)” 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 (2) 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 **28/11/23** to undertake a preliminary survey of the building, assess its likely importance to bats and advise whether or not a precautionary approach or further survey work is needed.

Having been involved with bat survey work for 35 years and consultancy work for 26 years, it is always my objective to carry-out my work in a manner consistent with accepted Good Practice Guidelines (3) and consistent with the code of practice of the CIEEM. I hold Natural England Class Licences CL21 (Annex B) and 18. Amongst other things these cover me to apply for Low Impact Licences for clients and undertake bat survey work. I also have a CL29 Barn Owl Class Licence. My credentials are expanded-upon in Appendix 1. The basic criteria I use for assessing the level of risk of roosting are given in Appendix 2.

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.

The survey was conducted with the needs of different species of bat over the seasons in mind.

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 a preliminary survey to discover whether there are obvious signs of use by bats and to 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.

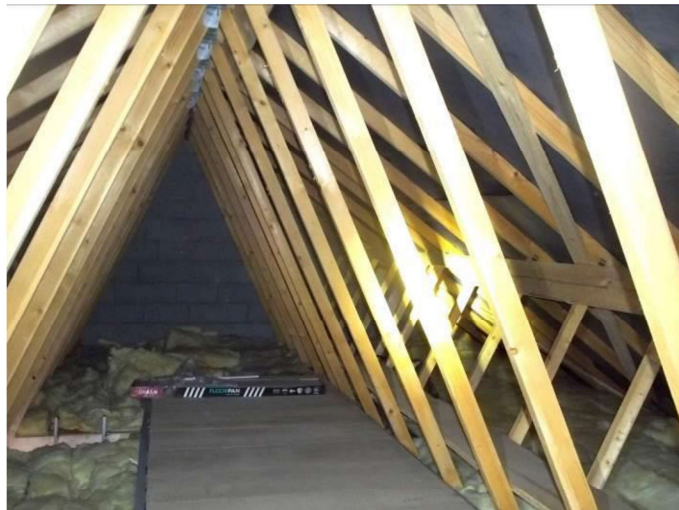
It should be noted that droppings are the sign most frequently found, but they are often deposited in areas that cannot be easily visualised, if at all, and they can turn to powder quite quickly. They are usually soon washed and blown away from exposed external surfaces so evidence of use often doesn't 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.

There are additional limitations to undertaking a bat survey in winter, when bats are hibernating and largely inactive. Droppings from the summer may no longer be evident.

As bats often roost in crevices in winter, and are particularly hard to locate when hibernating, the report will highlight any areas that could be used by bats in winter without their presence necessarily being obvious.

6. Findings

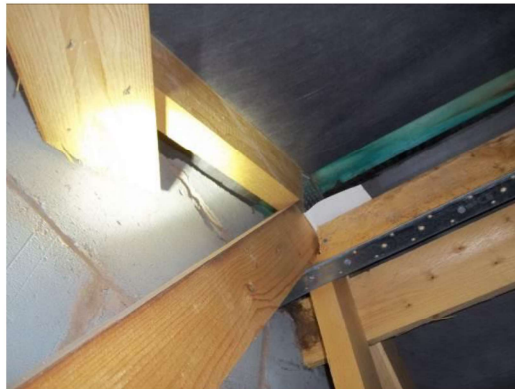
The house has a single, large loft with a modern, trussed roof:



The roof is lined with breathable membrane and there is a thick layer of insulating material at floor level:



While it appeared bats could gain access over the gable wall-heads, there was no evidence to suggest they'd been present at either gable end, or elsewhere:



Daylight could be seen at the side eaves, but this stems only from the ventilation grilles incorporated into the soffit boards:



The eaves are sealed except at the western gable end, where eroded mortar-work between bricks at the eaves allows potential bat access:



There's a smaller gap at the other end of this soffit, but probably also large enough for bat access:

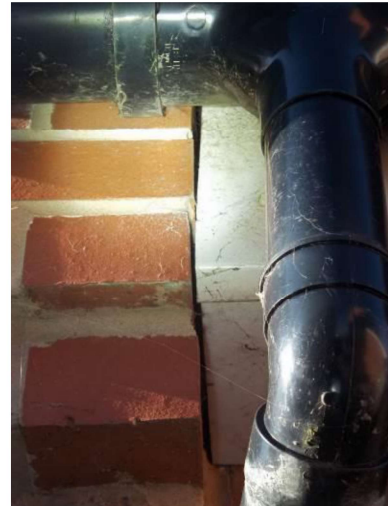


The garage has an enclosed loft, roof lined with breathable membrane and a boarded floor:



There was no evidence to suggest bats had been present.

Externally, bat access is possible:



There is no bat access available under roof tiles on the house or garage:



7. Conclusions/Discussion

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

Although the estate the property is located on isn't well-provided-for in terms of mature gardens and deciduous trees, and it is directly across a relatively busy road from a reservoir with intensively mown embankments; otherwise the area does appear to provide good quality feeding habitat for bats. This assessment is supported by the recorded roost of pipistrelle bat in a neighbouring street.

Although the roosting potential is limited, with only one particularly favourable opportunity discovered, plus two or three less favourable options, it has to be considered that bats might roost here at times.

The mortar-work at the southern end of the west-facing eaves of the property almost appeared to have been worn away, but there was no staining evident to suggest bats have been using the opening intensively to cause any wear. The gap doesn't seem large enough for use by birds, except perhaps the blue-tit, but there was no whitewash present to suggest such use.

The extension will involve this end of the property. Although it will be taking place on the north side of the house there will be a need to tie the two roofs together. As there is a possible access gap in that vicinity too, I think it is necessary to carry-out at least one bat activity survey to investigate the situation better.

Good Practice Guidelines suggest even low risk buildings should have a bat activity survey (emergence at dusk or to return-to-roost at dawn) when the findings of the initial survey were negative. Those at moderate risk should have two. See Appendix 3.

Although the available gap at the northern end of the west-facing eaves may be lost in the course of the work, there should be no need to eliminate the higher-risk gap at the southern end.

The roosting potential associated with the garage is relatively low risk, but its loss can easily be compensated-for by means of integrated bat boxes in the new build. See Appendix 4. This would accord with the biodiversity objectives of the National Planning Policy Framework.

Irrespective of the findings of future survey work, because individuals and small numbers of bats change roost frequently so could have been missed at the time of bat activity survey work, the construction should be done by contractors who are familiar-with and sympathetic-to the law relating to bats. They should be aware of the roosting behaviour of the common/soprano pipistrelle bat and be competent to recognise bat droppings if present. If there is any doubt about their expertise with respect to bats, the bat consultant must provide a tool-box-talk before work commences and may need to be present in case a bat is found.

Contractors must understand that if at any time a bat or droppings that may have come from a bat are found work **must stop immediately**. They have a legal obligation to do this. As far as practicable the feature that was sheltering the bat/s should be replaced.

Further advice **must** then be sought from the bat consultant before work continues, even if the bat has flown off or droppings appear old.

Care should be taken when planning any lighting on the site, to ensure any potential roosting features retained/provided are appropriately shielded. (4)

8. Recommendations

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

Have a bat activity survey in the first half of the main bat activity survey season of May to August inclusive. Further recommendations will be made based on the findings.

Irrespective of the findings of future work, there will be a need for contractors to work with appropriate care in the vicinity of potential bat roosts

They must understand that if at any time a bat or droppings that may have come from a bat are found work **must stop immediately**. They have a legal obligation to do this. As far as practicable the feature that was sheltering the bat/s should be replaced. Further advice **must** then be sought from the bat consultant before work continues, even if the bat has flown off or droppings appear old.

As two, possibly three, potential bat access places will be lost to the development, there should be an integrated bat box in each gable end of the new extension.

The potential impact of any proposed external lighting on bats should be given due consideration.

9. References

1. Eaton, M. A. et al. (2015). Birds of Conservation Concern 5: the status of all regularly occurring birds in the UK, Channel Islands and Isle of Man. British Birds 114: 723-747.
2. Department for Communities and Local Government (2012). National Planning Policy Framework.
3. Ed. by Collins, J. (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines - Third Edition. Bat Conservation Trust.
4. Bat Conservation Trust (2018). Guidance Note 8/18: Bats and Artificial Lighting in the UK.

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Appendix 1 - Angela Graham's Experience.

- I hold Natural England Class Licences CL21 (Annex B) - Registered Consultant 163 - and CL18 (CL18 (2015 11871 - CLS-CLS). 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. I have a supplementary licence to 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 over 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 has been 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 27 years I have done increasing numbers of bat surveys on a consultancy basis, firstly part-time then full time from December 2003.
- My experience in applying-for European Protected Species Licences with respect to bats spans over 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.

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.
- 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 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. An internet search for "integrated bat boxes" will bring up types and suppliers of these boxes but advice from the bat consultant should be sought before they are ordered.

EcoSurv Habitat

<http://www.habibat.co.uk/category/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 un-pointed."



Example of Habitat boxes Can also be faced with stone.

Ibstock Ecozone

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





Above: typical unit in situ. Photo © Angela Graham

Green and Blue Bat Block/Brick

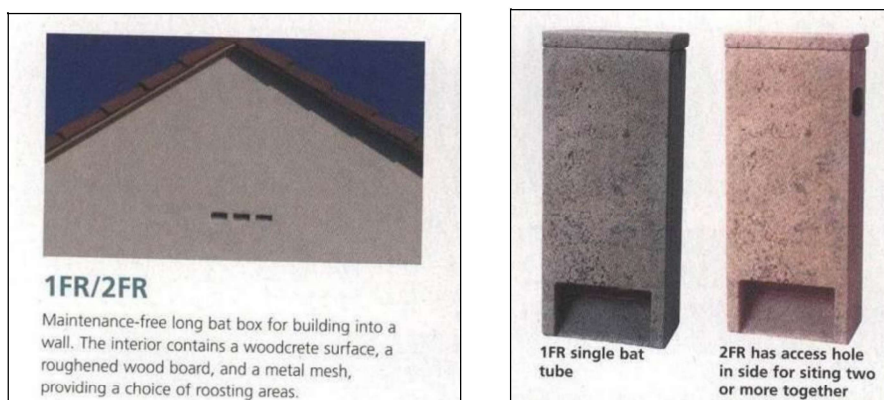
<https://www.greenandblue.co.uk/products/bat-block-bat-brick>



Green and Blue Bat Block/Brick in situ

Schwegler 1FR/2FR

An internet search for Schwegler bat boxes will readily bring up suppliers of these boxes



Schwegler 1FR/2FR

Forticrete

Available from building-supply merchants



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



Example of Forticrete boxes in situ

A similar box is available from Habibat. See above listing.

Appendix 5 - Natural England requirements for roof lining materials

Condition 39 of the CL21 Bat Mitigation Class Licence (Low Impact) documentation reads:

“Should this licence require the use of roof membranes, Bitumen type 1F felt with a hessian matrix, or a non-bitumen coated roofing membrane (NBCRM) with a test certificate approved by Natural England, must be used.”

If it is proposed to use NBCRM in areas where it may come into contact with roosting bats the licence applicant must state the intention to use NBCRM.

A certificate must be included that proves the roofing membrane has passed a 'snagging propensity test'.

A snagging propensity test checks that the membrane can stand the repeated snagging actions of roosting bats.

To pass, a membrane must show no change in the average number of loops per cm² as rotations are increased from 0 to 1000.

The certificate must state the following information:

- The organisation that has carried out the snagging propensity test (this must be an independent body to the manufacturer of the NBCRM itself).
- Declaration that the snagging propensity test followed the correct testing protocol.
- Declaration that the snagging test has been passed.

No certificate is needed for bitumen 1F felt that has a non-woven, short fibre construction."