LAND AT HURST QUARRY, BIDDULPH, STAFFORDSHIRE -

DAYTIME BAT & DAWN RE-ENTRY SURVEYS

OCTOBER 2016

ces ecology
consultant ecologists

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1.0 INTRODUCTION

1.1 A daytime and dawn re-entry bat survey was commissioned to be conducted at Hurst Quarry, Hurst Road, Biddulph, Stoke-0n-Trent ST8 7 RU.

1.2 The Ordnance Survey grid reference for the site is SJ 90044 59415.

1.3 Plans have been proposed to demolish the buildings on site and develop the site for housing.

1.4 A preliminary Ecological Appraisal was conducted in September 2015 by Solum Environmental based in Knutsford, Cheshire.

Site Description

1.5 The site comprised a disused sand quarry and associated quarry processing buildings and work sheds.

1.6 The building numbers used below are the same as that used in a previous Solum Environmental ecological appraisal.

Building B01

1.7 This was a two-storey steel framed and corrugated sheet metal clad building. The ground floor was used as an open storage area. The first floor was enclosed with walls with the roof clad in corrugated metal sheets.

Building B02a

1.8 This building was a long steel framed single storey shed clad with corrugated metal sheets but open along its entire frontal elevation.

Building B02b

1.9 This building was a large single storey corrugated sheet metal clad shed.

Building B03

1.10 This was a steel framed single storey open fronted shed which had partially clad walls.

Building B04

1.11 This steel framed single storey shed was clad in corrugated sheet metal..

Building B05

1.12 This building was a small single storey block built pump house adjacent to a reservoir. It had a flat felt covered roof that was in a poor condition.

Building B06



1.13 These two small buildings were located on a small rise above the entrance to the site. These buildings had corrugated asbestos sheet roofs.

Building B07



1.14 This was a tall building built of stone which was in a poor state of repair.


1.15 There was a part corrugated sheet metal/corrugated sheet asbestos/tile roof and a loft floor in one area.




1.16 Only part of the building could be accessed due to the unsafe nature of the structure.

Building B08

1.17 This building comprised a number of large metal clad engineering sheds at the entrance to the site.



1.18 Internally the sheds were open from floor to roof and there were skylights in the roof. They were in use as an engineering works.




1.19 There were no roof voids but there was a mezzanine floor with former offices situated along one side.


Surrounding Habitat

1.20 The 13.6 hectare quarry site is a former sand quarry bounded by steep slopes to the south and farmland to the north. Hurst Road bounds the site to the south west and there are sheer cliffs along part of the western boundary.


1.21 Agricultural land surrounded the site to the north, east and west. Spring Wood and Biddulph Grange Country Park were located to the south of the site, on the far side of Hurst Road.

Aims of the Survey

1.23 To help assess the site and adjacent areas for the potential presence of bats.

1.24 To assess the impact the proposed development may have on any populations of bats that may be present within or near the site.

1.25 To recommend any actions that may be required resulting from the above.

Surveyor details

1.26 The survey was conducted by Mike Freeman. He is a professional wildlife consultant specialising in bats, badgers and birds. He has been a licensed bat worker since 1984, a licensed bat worker trainer since 1989 and a Registered Consultant with Natural England (RC057). He has been chairman of the Cheshire Bat Group since its formation in 1986 and is a voluntary Bat Warden for Natural England. He is an Associate member of the Chartered Institute of Ecology and Environmental Management (ACIEEM).

1.27 Assistance was given by Faye Davies BSc (Hons) MSc MCIEEM Consultancy Manager with CES and a licensed bat worker on the daytime survey.

1.28 Assistance was also given on the dawn re-entry survey by:

- Natasha Firth BSc (Hons) MSc Grad CIEEM, consultant ecologist with CES.
- Lindsay Overstall BSc (Hons) MSc Grad CIEEM, graduate ecologist with CES.
- Rose Billings, an experienced sub consultant bat worker.
- Dave Mort, a long standing member of Cheshire Bat Group and a licensed bat worker.
- Chris Ryan, an experienced bat worker trainee.

2.0 LEGAL PROTECTION FOR BATS

2.1 All UK bats and their roosts are protected by law which gives strong legal protection to all bat species and their roosts. For all countries in the UK the legal protection may be **summarised** as follows:

You will be committing a criminal offence if you:

1. Deliberately* capture, injure or kill a bat
2. Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats
3. Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time)
4. Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat
5. Intentionally or recklessly obstruct access to a bat roost even if bats are not present at the time

**In a court, 'deliberately' will probably be interpreted as someone who, although not intending to capture/injure or kill a bat, performed the relevant action, being sufficiently informed and aware of the consequence his/her action would most likely have).*

Defences include:

1. Tending/caring for a bat solely for the purpose of restoring it to health and subsequent release.
2. 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 – the maximum fine is £5,000 per incident or per bat (some roosts contain several hundred bats), up to six months in prison, and forfeiture of items used to commit the offence, e.g. vehicles, plant, machinery.

NB. Whilst the protection afforded to bats is virtually the same in all UK countries please refer to the specific legislation for England and Wales, Scotland and Northern Ireland for the precise wording – the above is a brief summary only.

Licensing Procedures

Licences to permit illegal activities relating to bats and their roost sites can be issued for specific purposes by the relevant licensing authorities in each country. These are sometimes called 'derogation licences' or 'European Protected Species' licences. 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.

In the case of development works three tests must all be satisfied before the relevant licensing authority can issue a licence:

1. A licence MAY be granted *'to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment'.*
2. A licence may NOT be granted UNLESS the licensing authority is satisfied *'that there is no satisfactory alternative'.*
3. A licence CANNOT BE ISSUED unless the licensing authority is satisfied that the action proposed *'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range'.*

2.2 The following people need to take particular note of the legislation:

Property owners/householders who have a bat roost in their property;
Woodland owners/managers & owners of individual trees;
Arboriculturalists & foresters;
Pest controllers;
Planning officers;
Building surveyors;
Architects;
Property developers;
Demolition companies;
Builders;
Roofers;
Ecological consultants.

3.0 BATS IN BUILDINGS

3.1 Buildings provide a choice of safe, dry places made from materials like timbers, bricks, stone, tiles and slates.

3.2 Buildings present a whole range of potential roost sites for bats e.g.: -
In walls:

- Behind external hanging tiles or weatherboarding
- In cavity spaces
- At top of solid walls

In eaves:

- Above soffit, or behind fascia and barge boarding

In roofs:

- In tunnel under ridge tiles
- Between underfelt and tiles or slates
- In roof space along ridge beam and at timber joints, at gable end or around chimneybreast.

3.3 The most obvious use of buildings by bats is between May and August, when the pregnant females gather in maternity roosts to give birth and raise their young.

3.4 Females and young often remain in one site all summer or move about using several roosts.

3.5 Most summer colonies will have dispersed by the autumn, though brown long-eared (*Plecotus auritus*) bats often appear early in the year (early April) and leave later (October or later). These bats occasionally use the roost throughout the entire year.

3.6 Buildings may also be used as temporary or "transitional roosts" by small numbers of adult and immature bats of both sexes, particularly in spring and autumn.

3.7 Many outbuildings are attractive to bats for temporary night-time roosts or as sheltered feeding perches. The latter are indicated by the presence of a lot of insect remains, particularly of moths or large beetles and some droppings.

3.8 Cool, undisturbed, humid places are important as hibernation sites. Most species will tuck themselves into small crevices e.g. between bricks/stonework, and can easily pass the winter there unnoticed.

3.9 Bats are usually concealed in crevices, behind roofing felt, in cavity walls, behind soffits and barge boards, in old timber joints or under ridge tiles and are only occasionally seen out in the open in lofts. Consequently, the key identification feature is the presence of droppings. Sometimes droppings may be found on the outside of buildings e.g. on windows, walls or windowsills. On other occasion's droppings found in loft spaces beneath ridge-boards and around chimneys or gable ends is also typical of bats. Hibernating bats leave little or no field signs.

3.10 Bats are sometimes drawn to open water tanks in lofts in search of a drink. They fall into the tank, cannot get out and eventually drown. Dead bats are often found in these 'open' tanks in roof spaces where bats habituate.

3.11 Another clue to the presence of bats is a characteristic odour. A polished or clean surface near a place where light enters may also indicate habitual usage by bats. Sometimes bats can be heard "chittering" but this is usually in warm summer weather or when they are about to leave the roost to forage at dusk.

3.12 The species most commonly occurring in buildings (usually modern houses in summer) are two of the pipistrelle species (*Pipistrellus pipistrellus, Pipistrellus pygmaeus*). These highly gregarious small bats use buildings for breeding during the summer and, in general, the bats disperse during the autumn. They often roost behind soffits, in cavity walls or behind external cladding. In such cases droppings are often found on external surfaces below the roost entrance/exit. The most likely place to find droppings in the roof void are at the gable end wall and along the eaves. In some cases, the bats may roost beneath ridge tiles, on top of the ridge beam or under insulation close to the eaves. Pipistrelles are frequently found overwintering deep in the cracks, crevices and cavities of usually uninhabited buildings (e.g. barns) and in such cases they leave little or no field signs.

3.13 The brown long-eared bat is one of the most common species in Britain and is the one most likely to be encountered in roof voids and may occasionally be seen clinging on to timbers near the apex of the roof. Like the pipistrelle, highest numbers may be seen on hot days between June and September when breeding colonies may be present. During the autumn and in cool weather, bats remain concealed in crevices or hollow walls but may appear on mild days or if disturbed. Brown long-eared bats tend to fly around in the open roof void and hang from the ridge during the night, so droppings are usually found scattered over the floor or concentrated in piles beneath favoured roosting areas, typically beneath the ridge beam. In hipped roofs, piles of droppings may also be found in the junction between two hips.

3.14 A number of other species - serotine (*Eptesicus serotinus*), greater horseshoe bat (*Rhinolophus ferrumequinum*) and lesser horseshoe (*Rhinolophus hipposideros*) are dependent on roofs but are not found locally in the area, though there has been the occasional record of serotine in the North West.

3.15 Whiskered (*Myotis mystacinus*), Brandt's (*Myotis brandtii*), Natterer's (*Myotis nattereri)* and Daubenton's (*Myotis daubentonii*) bats may be present in the area and may be found in roofs but they are not particularly common in such sites. Roosting position is variable but they will be found in the same sorts of places as other species.

3.16 There are six different types of bat roost (A M HUTSON 1993)

(i) Spring gathering roosts
(ii) Maternity roosts
(iii) Mating roosts
(iv) Night roosts and feeding roosts
(v) Prehibernal roosts
(vi) Hibernation roosts

Bats regularly move from site to site even within the above categories.

4.0 METHODOLOGY

Daytime Survey

4.1 The buildings were searched internally and externally for evidence of bat usage as detailed in Section 3.0 above.

4.2 Ladders, a powerful hand lamp and a fibre optic endoscope were used as aids.

Dawn Re-entry Survey

4.3 Five surveyors were strategically placed around the on-site buildings considered to have the most potential to attract roosting bats.

4.4 Observations concentrated on locating any bats that were re-entering into any of the structures being surveyed.

4.5 Contacts with bats flying within the site generally were also documented to give a fuller picture of bat activity in the vicinity of the buildings.

4.6 The dawn survey commenced at (2 hours before sunrise) and continued until sunrise.

4.7 All surveyors were equipped with a portable tuneable heterodyne bat detector as a means of locating and identifying (where possible) any emerging bats.

SURVEYOR NAME	BAT DETECTOR USED
Mike Freeman	Elekon Batscanner
Lindsay Overstall	Batbox Duet
Dave Mort	AnaBat SD1 + PDA & Pettersson D200
Chris Ryan	AnaBat SD2 + PDA
Natasha Firth	Batbox Duet
Rose Billings	Pettersson D200

5.0 TIMING OF THE SURVEY

5.1 The daytime survey was conducted on the 2nd June 2016.

5.2 The weather during the survey was sunny, dry and warm. The temperature was 20°C.

5.3 The dawn re-entry survey was conducted between 04.10hrs and 06.20hrs on the 1st September 2016. Sunrise was at 06.19hrs.

5.4 The weather was dry and calm with cloud cover of 0% at the start and 10% at the end. The temperature at 04.10hrs was 11° C and at 06.20hrs was 10° C.

6.0 LIMITATIONS OF THE SURVEY

6.1 This was a single daytime and dawn re-entry survey and can only give a “snap shot” of activity at that time of year under those weather conditions.

6.2 Most of the buildings were unsafe to enter and only limited inspections could be made. The daytime survey should only be seen as a general assessment of the potential for these buildings to attract roosting bats.

7.0 RESULTS

Daytime Survey

7.1 No evidence of bat roosting was found in any of the buildings that could be safely entered and searched safely.

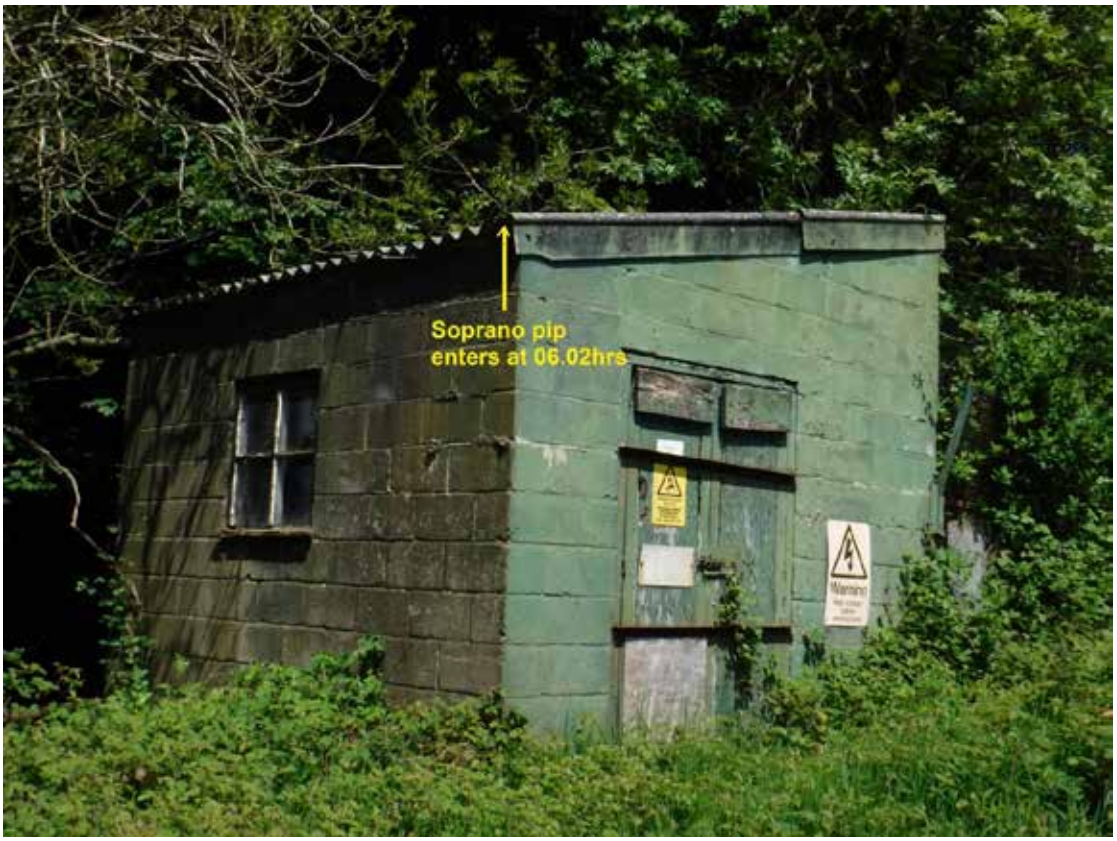
7.2 Moreover, the design of most of the buildings, i.e. corrugated sheet metal sheds, some of which were open fronted/sided, is not conducive to significant bat roosting.

7.3 In view of this all the buildings, bar one, are categorised as having low potential as described in Collins, J (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn.) The Bat Conservation Trust, London. These guidelines are accepted as the industry standard in the UK.

7.4 The only building of a traditional construction was B07. This was made of stone with a corrugated sheet metal roof. However given the state of disrepair, this building is considered to only have moderate potential which is largely due to the number of cracks and crevices in the stonework which may offer hibernation opportunities.

Dawn Re-entry Survey

7.5 The only bat seen to enter any of the buildings on site during this dawn survey was a soprano pipistrelle that entered one of the buildings of B06 at 06.02hrs as depicted in the annotated photograph below.



7.6 This building is an electrical sub-station (or similar) and could not be entered.

7.7 No other bats were seen to enter any of the other buildings under observation. However, a number of species were recorded as flying around or close to the buildings.

Species	**Frequency**
Common pipistrelle	Frequently
Soprano pipistrelle	Frequently
Brown long-eared	Occasionally
Myotid sp.	Frequently

7.8 Daubenton's bat, a myotid species, was identified to species level on occasions, particularly by social calls when flying around some areas in proximity of the observers.

8.0 DISCUSSION

8.1 Only a single soprano pipistrelle was seen to enter one of the buildings (the electricity building) at B06. This building is not typical of a bat roost site but any machinery inside may have made the building particularly warm. It is considered likely to be used only occasionally.

8.2 Whilst the buildings are considered to have, in the main, low potential for bat roosting due to their construction, the habitat within the site is likely to attract foraging and commuting bats of the more common species e.g. common and soprano pipistrelles, brown long-eared. Buildings other than that at B06 may, therefore, also be used by single or small number of bats in an occasional way.

8.3 The vegetation within the site is mainly regenerated birch scrub and this will have limited attraction for foraging, though the areas of open water on site may be more productive and attract species like soprano pipistrelles and Daubenton's.

8.4 There is much more attractive habitat close by (e.g. Biddulph Grange Country Park) which is likely to be used significantly more by foraging bats.

8.5 There do not appear to be any historical records of bats on or near the site held by the Local Biological Record Centre. This may be due to the fact that the quarry has, until recently, been an active sand processing site.

9.0 IMPLICATIONS AND RECOMMENDATIONS

9.1 Whilst most of the buildings on site are considered to have **low** potential this categorisation does not mean they have **no** potential.

9.2 During the dawn re-entry survey a single soprano pipistrelle was seen to enter the electricity building at B06. Whilst this is an unlikely site for significant roosting it does show that this and other buildings could provide day roost sites for individual or low numbers of bats.

9.3 Bat activity surveys around the site are already being conducted to determine the nature of general bat usage (foraging and commuting) around the whole site.

10.0 CONCLUSION

10.1 The full use of the buildings by bats could not be fully determined by a single daytime visit due to restrictions of access to the structures, nor a single pre-dawn to sunrise survey. Only one bat was seen to enter any of the buildings on the dawn survey.

10.2 However, it is expected that, due to their construction, the potential for bat roosting in these buildings is generally considered as **low**.

10.3 Results of this survey and the activity survey will help inform any proposals for bat licensing that may be required and/or changes to layout and design of the proposal to accommodate future use by bats.

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