C.B.E. Consulting

Protected Species Survey
Outbuilding at Manortoft
12 Main Street
Market Overton
Rutland
NGR SK88773 16416

Report prepared by:
Christopher Barker CEnv
Ecologist and Licensed Bat Consultant

smas worksafe consultant www.smasltd.com as recognised by SSIP Safety Schemes in Procurement	Report prepared by: C J Barker CEnv	Date Issued: 26 June 2020
	Reviewed by: KB	CBE Consulting, Highbank, 5 Grantham Road, Navenby, LN5 0JJ Tel: 01522 810086 Email: chris@cbeconsulting.co.uk
	Report ref: **P2010 / 0620 / 02 Version 2**	

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1. Introduction

1.1 Site Description, Location and Survey Background

The site surveyed comprises a large outbuilding situated in the garden of Manortoft, 12 Main Street, Market Overton, Rutland centred at NGR SK88773 16416. The location of the site is shown on the plan within **Figure 1** and an aerial photograph is provided to place the site into its environmental context in **Figure 2.**

Figure 1: Site Location

In order to facilitate an application to obtain permission to convert this building into holiday lets which will require significant work to the internal and external structures the Applicant has requested a protected species survey should be completed to assess the building. An inspection of the building and two others nearby was completed on 22nd January 2020. Subsequently, as a result of the findings of the inspection, dusk and dawn surveys were completed in May and June 2020. A photographic record of the building at the site is included within the report.

1.2 Neighbouring Land Uses

The defined survey area comprises a large two-story former storage building with a ground and first floor (building B1). The building faces an open courtyard garden on the opposite side of which are two other outbuildings which were also inspected during the survey as a precaution. The buildings are located in the centre of the village of Market Overton and have houses and garden surrounding to all sides.

The local landscape is predominantly arable in character but there is an airfield to the east and scattered woodland compartments and ponds in the nearby areas and the local area is considered to have high potential for foraging and commuting bats species. An aerial photograph has been provided below.

Figure 2: Site Contextual Aerial Photograph

2. Survey Context

This survey has been carried out to provide information in regard to the potential presence of protected species within the building.

2.1 Protected Species

The survey covers an existing residential house outbuilding used for general storage purposes. The building was probably one used for agricultural storage. Taking in account the issue of 'proportionality', as referenced in the 2016 Bat Survey Guidelines and Clause 4.1.2 of BS42020 wherein "*professionals should take a proportionate approach to ensure the provision of information within the (planning) application is appropriate to the level of environmental risk it presents*," it was considered appropriate to review records available on the National Biodiversity Network in the first instance. This data was reviewed to identify any published records of significant bat sightings within the vicinity.

Scientific Name	Common Name	Latest Year	Total Records
Pipistrellus pipistrellus	Common Pipistrelle	2015	1
Plecotus auritus	Brown Long-eared	2015	2
Nyctalus noctula	Noctule Bat	2012	1

The available records for bats indicate that there is bat activity in the area and at least one roost present within a suitable building in Market Overton. There appears to be no record of roosting activity associated with the building being assessed.

The potential for protected species to be present is assessed as follows:

Reptiles and Amphibians – The likelihood of reptiles and amphibians being present is considered to be negligible as the survey area comprises an existing outbuilding within a walled garden / courtyard area.

Mammals – there is potential for bats to be using the existing building if suitable structural features are present based on the presence of roosts and foraging bats in the local area. The potential for other significant mammals such as Badger, Water Vole and Otter as such species will not be present within the building.

Birds – Ground nesting is likely to be impacted by predation due to the cat population in this location but if there are any suitable features within the building structures that are accessible certain bird species may use these for nesting.

During the survey of the building observations and identification or signs of any species protected under the Habitat Regulations 2010 (originally Part 1 of the Wildlife and Countryside Act 1981) were noted. The objective of the survey is to identify and report any physical evidence of protected species, particularly bats or nesting birds using the building.

The inspector cannot be held responsible for any parts of the building structure that may have been inaccessible to the inspector due to services or structural restrictions, or any other restriction that could compromise the safety of the inspector or prevent unrestricted access. In this instance all parts of the building were accessed.

The client must accept that the inspector will remain impartial to all parties involved and the results of the survey may not be in the best interests of the client. The surveyor, Christopher Barker, is an experienced ecological surveyor and Licensed Bat Worker (Class 18 L2 Natural England License) and an active member of the Lincolnshire Bat Group (Class 15 License Natural England Roost Visitor).

2.2 Legal Constraints and Assessment Methodology

A methodical inspection of the site was carried out to identify the habitat(s) present and to look for any evidence of protected species using the site and to identify any features with potential to provide significant shelter or foraging opportunities for these. The survey was carried out by Christopher Barker, an experienced ecological consultant and Chartered Environmentalist holding Class Licenses issued by Natural England.

The Conservation of Habitats and Species Regulations 2010 consolidates the various amendments that have been made to the Regulations. The original (1994) Regulations transposed the EC Habitats Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Council Directive 92/43/EEC) into national law.

“European protected species” are those which are present on Schedule 2 of the Conservation of Habitats and Species Regulations 2010. They are subject to the provisions of Regulation 41 of those Regulations. All European Protected Species are also protected under the Wildlife and Countryside Act 1981 (as amended). Taken together, these pieces of legislation make it an offence to:

a. Intentionally or deliberately capture, injure or kill any wild animal included amongst these species

b. Possess or control any live or dead specimens or any part of, or anything derived from these species

c. deliberately disturb wild animals of any such species

d. deliberately take or destroy the eggs of such an animal, or

e. intentionally, deliberately or recklessly damage or destroy a breeding site or resting place of such an animal, or obstruct access to such a place

For the purposes of paragraph (c), disturbance of animals includes in particular any disturbance which is likely—

a. to impair their ability—
i. to survive, to breed or reproduce, or to rear or nurture their young, or

ii. in the case of animals of a hibernating or migratory species, to hibernate or migrate; or,
b. to affect significantly the local distribution or abundance of the species to which they belong.

Although the law provides strict protection to these species, it also allows this protection to be set aside (derogation) through the issuing of licences. The licences in England are currently determined by Natural England (NE) for development works. In accordance with the requirements of the Regulations (2010), a licence can only be issued where the following requirements are satisfied:

i) The proposal is necessary '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'

ii) 'There is no satisfactory alternative'

iii|) The proposals 'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

General faunal activity, such as mammals or birds observed visually or by call during the course of the surveys was recorded. Specific attention was also paid to the potential presence of any protected, rare or notable species, and specific consideration was given to bats, birds, badgers, amphibians and reptiles as described below.

Breeding Birds: All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. The inspection of the site included a search of hedgerows, ground vegetation and tree canopies looking for evidence of active or former nests.

Bats: All species of Bat within the UK are protected under the Conservation of Habitat and Species Regulations 2010 (Habitat Regulations) that amended and incorporated the Wildlife and Countryside Act 1981. These regulations make it an offence to:

- Intentionally kill, injure or take a bat [WCA section 9(1)]
- Possess or control any live or dead specimen or anything derived from a bat [WCA section 9(2)]
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a bat [WCA section 9(4)(a)]
- Intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for that purpose [WCA section 9(4)(a)]

Any building or significant tree present within the survey area have been assessed for their suitability to support roosting bats based on the presence of features such as holes, crevices, cracks, splits or loose bark. Potential bat roost locations in relation to buildings are described within this report (taken from Bat Survey Guidelines 2016) as:

Confirmed Roost – a structure with physical evidence confirming the presence of bats or bats visibly seen.

High – a structure with one or more potential roost features that are obviously suitable for use by a large number of bats on a regular basis and which is situated in an area of continuous high-quality foraging habitat suitable for bats.
Moderate – a structure with one or more potential roost features that could be used by bats, but which is unlikely to support a roost of high conservation status and which is in an area of connected habitat suitable for foraging by bats.
Low – a structure with one or more potential roost features that could be used by individual bats opportunistically. However, these potential roost features do not provide sufficient potential to be used by a larger number of bats or on a regular basis and the surrounding habitat is not of high value to foraging bats.
Negligible – a structure with negligible habitat features which is in a poor location making it highly unlikely roosting bats will be present.

Common Reptiles: All species of British reptile are protected by the Wildlife and Countryside Act 1981 (as amended). The common species (adder, grass snake, slow worm and common lizard) are only protected against intentional killing and injuring (but not taking).

The survey included a search of all areas in the garden close to the building being assessed where suitable habitat for reptiles to shelter under or bask may be present, lifting rocks, bricks and other suitable features to search underneath. The surveyor also maintained a careful watch whilst moving across the garden to look for signs of reptiles moving to cover.

Great crested newts are afforded legal protection under European and UK law under the auspices of The Conservation (Natural Habitats &c.) (Amendment) Regulations which came into force on 21 August 2007, superseding the Habitat Regulations 1994. The 2007 amendments have increased the protection afforded to European Protected Species.

The law provides protection to adults, juveniles, efts (immature GCN) and eggs and it is an offence to intentionally or recklessly or as an incidental result of actions:

- Intentionally or deliberately capture, kill, or injure Great Crested Newts
- Intentionally or recklessly damage, destroy or obstruct access to any place used for shelter or protection (including resting or breeding places) whether occupied or not
- Deliberately, intentionally or recklessly disturb Great Crested Newts when in a place of shelter
- Possess a Great Crested Newt, or any part of it, unless acquired lawfully
- Sell, barter, exchange or transport or offer for sale Great Crested Newts or any part of them.

The survey included a search of the garden for ponds and sheltered damp areas where these features were present and accessible.

Badger: Badgers are protected under the Protection of Badgers Act 1992. This makes it an offence to willfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it. A badger sett is defined in the legislation as "*a structure or place, which displays signs indicating current use by a badger*".

The survey searching for evidence of badger activity comprised two main elements. The first element involved searching for evidence of Badger setts. For any setts that were encountered, each sett entrance was noted and mapped. The following information was recorded:

- Number and location of well used / active entrances; these are clear from any debris or vegetation and are obviously in regular use and may, or may not, have been excavated recently.

- Number and location of inactive entrances; these are not in regular use and have debris such as leaves and twigs in the entrance or have plants growing in or around the edge of the entrance.
- Number of disused entrances; these have not been in use for some time, are partly or completely blocked and cannot be used without considerable clearance. If the
- entrance has been disused for some time all that may be visible is a depression in the ground where the hole used to be and the remains of the spoil heap.

The second element of the survey involved searching for signs of Badger activity such as well-worn paths and push-throughs, snagged hair, footprints, latrines and foraging signs, so as to build up a picture of any use of the site by Badger.

Invasive Species: Attention was paid to the presence of any invasive species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). However, the detectability of such species varies due to a number of factors, e.g. time of year, site management, etc., and hence the absence of invasive species should not be assumed even if no such species were detected during the Phase 1 survey.

A range of invasive non-native plant species are listed in Schedule 9 (Part 2) of the Wildlife and Countryside Act 1981, which makes it an offence to plant or cause these introduced invasive plants to grow in the wild, effectively making it illegal to spread the plants during development operations.

3 Survey Methodology

The inspection of this property was completed on 22nd January 2020. The inspection of the building was completed outside the optimum survey season for bats and nesting birds. An experienced surveyor can make reliable judgements about the quality and composition of habitats and their potential suitability for protected species. Only an initial assessment of the site was made and no stage 2 surveys were carried out. As such, a lack of evidence of a protected species does not necessarily indicate an absence of these species.

During the inspection of the site notes were made on the suitability of habitats for protected species and any sightings or signs of protected species were recorded:

The desk study concluded that the most likely species to be present would be roosting bats and nesting birds based on the character and location of the area surveyed. The survey of the outbuilding included an inspection of the internal roof structures searching for evidence of bat activity and nesting birds. An initial appraisal of the external faces of the building was carried out using binoculars to assess potential features of interest. This was followed by a more detailed external and then internal inspection of the building.

The visual inspection initially comprised an assessment from all accessible sides using professional high-quality binoculars 10 x 25 magnification to establish if any access points for bats are present and identify any external indications such as stains, wearing around holes etc. that indicate the potential presence of these species. Floors, roof beam tops, doors, walls and the ground around the base of walls were inspected for signs of bat activity although evidence such as droppings may only be retained in covered and protected external areas.

If evidence of potential access points for bats has been identified, these features have been targeted for further detailed investigation at close quarters. Bats in particular may roost at any time of year in locations such as voids behind beams and tiles, fissures, knot holes, gaps between bricks, voids behind roofing felt etc.

A potential bat roost site is to be inspected for overt evidence of bat presence and occupation. This could present as:

- Staining around a cavity, fissure, void or split caused by oils secreted by the bat into its fur
- Scratching on timbers and joists caused by the bat in the act of take off and landing
- Bat droppings and feeding debris in and around the access point or below the feeding roost
- Urine stains below a possible entrance site or within the entrance to a cavity. The urine also smells heavily of ammonia which is distinctively identifiable at close quarters
- Possible audible noises during daylight of bats chattering especially in hot weather
- Flies around entrance of possible roost which may be attracted to bat guano
- The lack of cobwebs around a possible entrance site may also suggest occupation, but of course does not directly confirm bat presence.

Potential bat roost locations in relation to buildings are described within this report (taken from Bat Survey Guidelines 2016) as:

Confirmed Roost – a structure with physical evidence confirming the presence of bats or bats visibly seen.
High – a structure with one or more potential roost features that are obviously suitable for use by a large number of bats on a regular basis and which is situated in an area of continuous high-quality foraging habitat suitable for bats.
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Low – a structure with one or more potential roost features that could be used by individual bats opportunistically. However, these potential roost features do not provide sufficient potential to be used by a larger number of bats or on a regular basis and the surrounding habitat is not of high value to foraging bats.
Negligible – a structure with negligible habitat features which is in a poor location making it highly unlikely roosting bats will be present.

Any potential roost features with the evidence indicating the presence of bats that is not fully visible to the naked eye will then be subjected to a visual inspection using a torch or, if necessary, an Endoscopic Fiberscope with illumination as appropriate.

4. Survey Findings

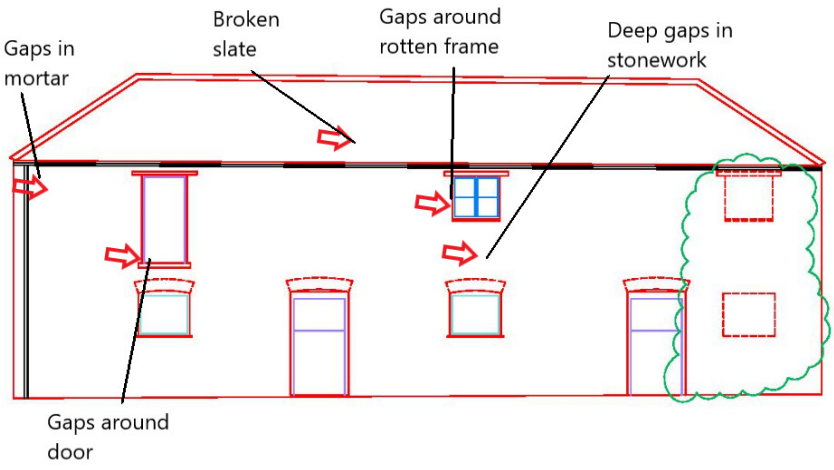
4.1 Inspection of the Buildings

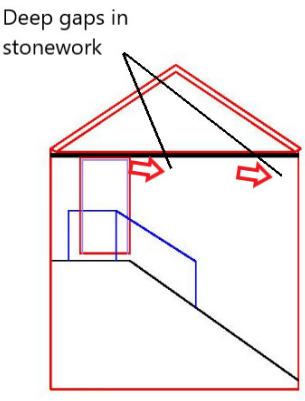
A plan showing the layout of the building (Building B1) and the position of two other nearby outbuildings (B2 and B3) which were also briefly inspected during the survey is provided above.

The building is a large two storey stone storage building situated on the northern edge of the courtyard garden area. It is constructed from two courses of cut and dressed stone with no obvious cavity in between. The stonework is in good repair but there are some significant cavities present, some at height, on the south and west facing sides of the building and these could potentially be of interest to roosting bats and small nesting birds. The locations of these holes and cavities are marked on the building elevation below.

There are timber doors and timber windows on the south side of the building providing access into the two ground floor rooms and light into the single top floor room. There is an access to the first-floor room via external stone steps affixed to the west gable of the building. The timber doors and windows are not tightly fixed and provide potential access points in the building interior. The separate room at the eastern end of the building has an access door on the south side at ground level and extends up to the roof with a mezzanine first floor storage area accessed via a ladder and hatch. The roof is open to the apex in this eastern end of the building.


25 droppings and feeding debris
B1 (f/floor)
B1 (g/floor)
B2
B3
First Floor
Ridge 147.41
Ridge 151.21
Eaves 144.99
Ridge 146.48
Eaves 147.64
Car Port
Ridge 147.13
Eaves 144.89
Eaves 145.27
Grass
Gravel
Eaves 144.57
Ridge 146.40
Ridge 152.04
Eaves 148.40
Planting
Tarmac
Tank
Gate
Kitchen
Restricted Access
Green House
Path


Gaps in mortar
Broken slate
Gaps around rotten frame
Deep gaps in stonework
Gaps around door


Deep gaps in stonework

The pitched roof comprises slates laid over timber joists and there is bituminous felt to the underside of the roof. The roof structure is open to the apex and there is no enclosed loft area in any part of the building, the first-floor room occupying the roof space of the building in the centre and western end. The roof appears in excellent condition but one broken tile was noted on the south face near the centre of the roof (marked on the elevation above). Where the roof edge could be easily accessed near the west gable there was no evidence of any sealing to the roof edge so bats and small birds can potential access the interior of the building via gaps between the roof edge and the top of the stone wall. The northern face of the building contains no windows or doors and the stonework is in good repair with no obvious gaps of cavities present. Similarly the eastern gable end external wall appears in excellent condition.

West gable and south west corner

Front of building

Close up of west side

Close up of east side

Door to room at eastern end of building

Window to first floor with gaps

Significant cavities – front of building

Significant cavities – south west corner.

Internally the building was inspected and ***physical evidence to indicate the presence of bats in the form of a cluster of droppings was found within the interior of the first floor of the building***. A total of 25 droppings, segmented and up to 10mm in length of mixed age were found at the directly under a horizontal roof truss on the first floor mixed in with a scatter of peacock and tortoiseshell wings. There was no scattering of droppings elsewhere in the loft area. DNA testing of these confirmed they are from Brown Long-eared bat (Plecotus auritus). The initial interpretation of this evidence is that is appears to be a feeding perch, probably for a solitary Brown Long-eared bats, but could be evidence of an occasional summer day roost.

Within the first-floor room there is artificial lighting but limited natural light except from a window at the centre of the south wall of the building. Since bat droppings are present it is assumed that this building is ***a confirmed roost*** but the type of roost and significance of this cannot be determined without ***further dusk and dawn activity surveys which are required*** in order to ascertain the number of bats and the type of roost that is present in compliance with the Bat Survey Guidelines 3rd Ed. The most likely access point into the building interior is via gaps around the door and windows to the front (south) and gable end (west) of the building.

There is a rook / pigeon nest present within the first-floor room at the west gable end behind a gap in cladding and also a swallow nest present affixed to one of the horizontal roof beams.

First floor room

Bat droppings scatted on table

Rook / Pigeon nest

swallow nest on horizontal beam.

The eastern end of the building has a ground floor and mezzanine first floor and no evidence of any bat droppings were found within this part of the building. The underside of the roof is open but lined with bituminous felt. The ground floor is used for general storage and no evidence of any bat activity was found here. One swallow nest was seen affixed to one of the ceiling joists.

Ground floor storage room

Swallow nest on ceiling joist.

First floor room east end

Underside of roof at eastern gable

There are significant gaps around the door edges and probably a gap between the roof edge and wall top the would allow bats to enter the interior of this part of the building.

As part of the assessment of the building the Surveyor also took the opportunity to enter two other nearby buildings (B2 and B3) to see if any evidence of bat activity was present in these but no evidence was found in any part of these buildings.

4.2 Activity Surveys

Prior to the first dusk activity survey the exterior of the building was re-inspected and the first-floor room where bat droppings were found was searched for new evidence of bat activity such as dropping, stains or feeding debris. Fresh droppings were found within the first-floor room but no other evidence of bat activity was found elsewhere in or around the building.

The details of the two surveys completed survey are provided in the tables within **Appendix 4**. The time and conditions of the survey are summarised in the table below.

Date of Survey	Survey Time	Temperature and weather	Survey conditions
Friday 15 May 2020	20.45 – 22.30	15 degrees C at 8.45pm and clear falling to 13 degrees during the survey period. Humidity 43% at 1022mb. Breeze 11mph from the west.	Excellent surveying conditions suitable for bat foraging. Sunset 8.51pm. Dusk due to overcast at 9.40pm. Fully dark by 10.10pm .
Thursday 25 June 2020	02.45 – 04.30	15 degrees C at 2.45am and clear falling to 14 degrees during the survey period. Humidity 77% at 1019mb. Breeze 4mph from the south east.	Excellent surveying conditions suitable for bat foraging and returning to roost. Sunrise 04.39am.

The weather during May and early June was warm but a number of fronts crossed the country bring periodic rain towards the end of the month and into early June. April and early May 2020 was one of the driest Spring periods on record with warmer than average temperatures during the night-time periods and significant bat activity was being recorded during these months.

The dusk and dawn surveys were completed by two surveyors using social distancing methodology in accordance with Covid-19 protection measures applicable at the time. The surveillance methodology was as follows:

Surveyor 1 was positioned on the south western corner of the building close to the gable end to watch this particularly closely and keep watch over the eastern side of the building generally. Surveyor 1 took the opportunity to enter the building during both surveys at optimum moments when bat activity within the building was anticipated.

Surveyor 2 was positioned on the south eastern side of the building to watch the south eastern face and eastern gable of the building closely.

The position of the two surveyors for the dusk and dawn surveys is shown in **Figure 4** below. The dusk survey was carried out in good conditions with mild weather within the optimum survey season for roosting bats. The surveyors used 2 No. Echo-meter detectors (capable of HD and FD detection displaying real time sonograph and peak frequency identification) to help identify bat activity in the vicinity of the site.

The dusk **activity survey on 15 May 2020** provided the following data:

Surveyor	Activity
Surveyor 1	8 bat passes were recorded. **One Pipistrelle left a roost** on the south western corner of the building. **One BLE was seen flying in the building**. Individual Common Pipistrelle foraging within the garden frequently doing a circuit of the enclosed garden area. No more than one bat was ever seen at one time.
Surveyor 2	60 bat passes were recorded. One solitary Common Pipistrelle foraging around the garden area is responsible for the vast majority of the records. The BLE seen by S1 was seen to leave the first-floor window at the front of the building.

The dawn **activity survey on 25 June 2020** provided the following data:

Surveyor	Activity
Surveyor 1	46 bat passes were recorded with the majority of these being a solitary Pipistrelle doing circuits before entering a roost. **One Pipistrelle returned to roost** on the south western corner of the building at 03.35. **One BLE was seen flying in the building and entering a roost** in the ridge at 03.31.
Surveyor 2	44 bat passes were recorded with the majority of these being **a solitary Pipistrelle doing circuits before entering a roost. A solitary BLE** circled the edge of the eastern gable for approximately 60 seconds emitting very little echolocation call which then **entered at the roof edge** into the building interior. S1 entered the building just in time to watch the bat go to its roosting position in the interior.

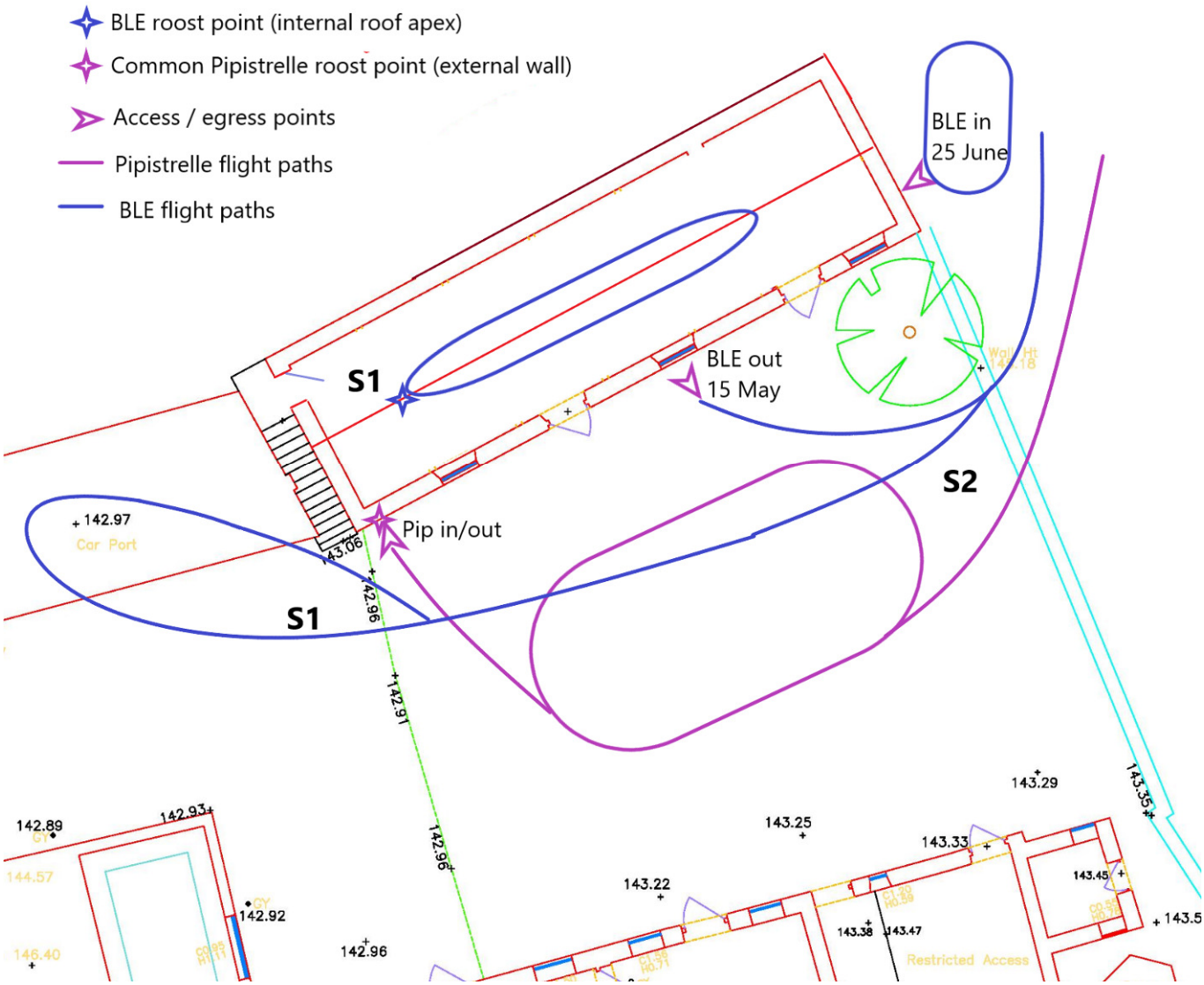
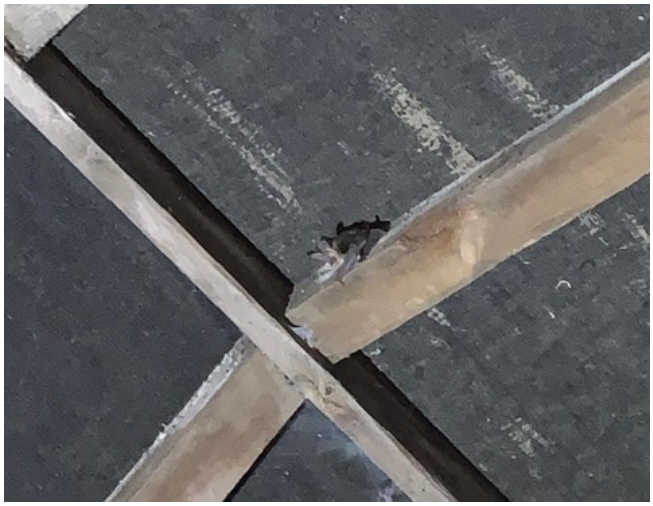


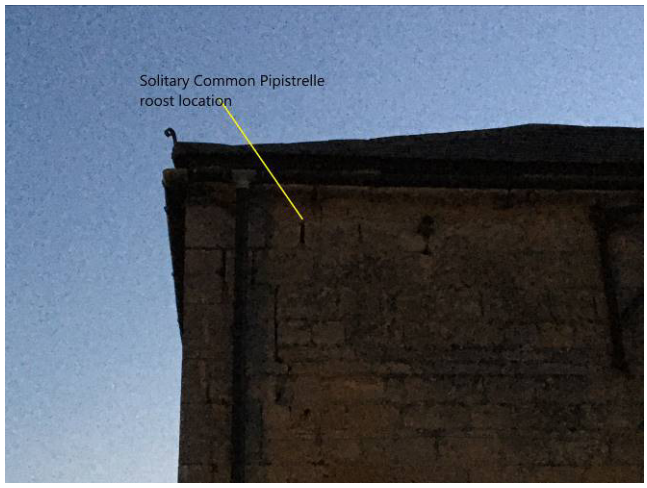
Figure 5: Bat Activity Plan

Dusk Survey Photographs



BLE within building interior

Dawn Survey Photographs



5. Conclusion and Recommendations

Having completed an inspection of the outbuilding at Manortoft, 12 Main Street, Market Overton and completed both dusk and dawn surveys during the optimum survey period the following conclusions are reached:

1. The outbuilding is a large two storey stone building situated near the centre of the village in a relatively sheltered location with good access to the village margins and surrounding agricultural land and it is in an area of moderate potential value to foraging and commuting bats.

2. The building displays a number of features that could be of interest to roosting bats on the exterior, particularly significant gaps in the south and west gable end of the building where mortar is missing from stone joints and a gap in the slate tiles on the south face of the roof. Internal access to the building is easily obtained via significant gaps around doors and windows and the probability of a gap between the roof edge and the top of the supporting wall.

3. During the initial stage 1 inspection ***a number of Brown Long-eared bat droppings were found*** all lying in a cluster with some butterfly and moth wings under a horizontal roof support beam on the first floor of the building. Taking into consideration the presence of these droppings it is clear that there is bat activity associated with this building. No evidence of bat activity was found in any other part of the building interior.

4. The dusk activity survey completed in May 2020 confirmed that ***a solitary Brown Long-eared bat is roosting within the first-floor internal roof apex***. This bat emerged within the building and flew around inside for a while before leaving via a gap in the first-floor front window.

5. In addition, the dusk survey identified ***a solitary Common Pipistrelle leaving a roost situated on the exterior of the building near the top of the south western corner of the building***. This bat is roosting behind one of the corner stones on the building where there is a significant open joint.

6. The dawn survey in June 2020 identified the same solitary Brown Long-eared bat returning to roost within the building interior but the bat entered the building via a gap along the roof edge on the eastern gable end quite close to the south eastern corner. This bat was seen to fly for a short period inside the first floor of the building and then roost behind felting at the ridge apex.

7. The Common Pipistrelle bat also returned to roost on the building exterior at the same location on the south western corner behind a corner stone close to the top of the wall.

8. No other bats were seen to return to roost at this building or show any interest in the building during either of the surveys completed.

9. ***It is concluded that the building supports a seasonal day roost for a solitary Brown Long-eared bat which is within the building interior and a seasonal day roost for a solitary Common Pipistrelle bat which is on the building exterior.***

Following the survey it is evident that the proposed conversion of the building will have an impact on roosting bats. The proposed conversion of the building potentially will result in the loss of the Brown Long-eared bat day roost as the first floor of the building, currently used for general storage, will become living spaces from which the individual bat will have to be excluded. Therefore any work approved will have to take place under the auspices of a **European Protected Species License with suitable mitigation in place**.

In terms of mitigation, since the roost access (and potential egress) is via the roof edge joint on the eastern gable, this part of the roof interior could potentially be left undisturbed and a suitable enclosed area within the roof space retained for use by this bat. This would only require a small space to be excluded from the living area in this part of the building into which one or more suitable features could be created to provide safe places to roost. This small roof enclosure would have no natural light sources to disturb the bat. Work would have to be carried out within the building interior outside of the bat activity season when the Brown Long-eared bat is not present.

In regard to the Common Pipistrelle roost, provided the open joint and corner stone are not disturbed and no lighting is fitted which will alter the characteristics of this roost entrance, there is no reason to anticipate that the work will disturb this roost. Any pointing carried out the front and gable end of the building must avoid the particular corner stone identified where roosting is taking place and such work should not be completed during the bat activity season.

In addition to the provision of a small enclosed roof are at the eastern gable end of the building, it would be beneficial to incorporate at least one Bat roost tube onto the south face of the building to provide additional roosting positions for bats in the future and artificial swallow nests should be fitted in suitable sheltered positions to replace the nests lost within the building interior.

Christopher Barker CEnv ACIEEM. Class 15 and Class18 Bat License

Appendix 1 – Surescreen Scientifics DNA test

SureScreen Scientifics

Report No: 1
Order No: CBP 2010/0120/01
Client: CBE CONSULTING
Contact: Chris Barker
Contact Details: chris.barker62@yahoo.co.uk, chris@cbeconsulting.co.uk
Date: 07/02/2020

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA FOR THE DETECTION OF BAT SPECIES

Date sample received at Laboratory: 03/02/2020
Date Reported: 07/02/2020
Matters Affecting Results: None

RESULTS

Lab Sample ID.	Site Name	O/S Reference	Genetic Sequence	Common Name	Result	Sequence Simliarity
E6555	Manortoft, Main Street	-	TATCNNNCGGAGGCTTCGGGAACT GATTGGTGCCACTAATAATTGGAGC CCCTGATATAGCTTTTCCCCGAATA AATAACATAAGCTTCTGACTGCTTCC CCCATCTTTTCTACTACTTTTAGCTT CGTCTGCAGTAGAGGCTGGAGCAGG TACCGGTTGAACAGTCTATCCTCCT TTAGCGGGAAACCTAGCCCAC	Brown long-eared bat	Plecotus auritus	98.39%

METHODOLOGY

First, the DNA from a single bat dropping is extracted and purified. Then, a short fragment of a mitochondrial gene is amplified using polymerase chain reaction (PCR). If the analysis is unassigned the first time, the reaction is performed with different primer. The amplified product is analysed on a gel to confirm that the expected product size was amplified. It then goes through one more purification step before being Sanger sequenced. The sequence results are aligned against a library of known bat reference sequences using bioinformatics software, and we are able to confirm that the dropping sample came from a certain bat species with the reported percent sequence similarity.

INTERPRETATION

Degradation: Samples are extracted following protocol. If DNA is unsuccessfully amplified with SFF primers, specific to bat genome, the reserve samples are then extracted following protocol yet this time with a restorase enzyme which helps repair degraded DNA. If the reserve samples are amplified unsuccessfully, then the sample is amplified with universal 16S primers, these universal primers will amplify the most prolific DNA in the sample so will detect Bat mitochondrial DNA if it is there, or mouse DNA or bacterial DNA. If bacterial DNA is found this is an indicator that the sample has degraded to such an extend that the SFF primers can no longer detect Bat DNA. If no DNA is amplified whatsoever then the sample has long been degraded as the technique is ultra sensitive. We get few samples with DNA degradation. DNA degrades with time and expedited with the environmental conditions it is exposed to such as sunlight and temperature and moisture, therefore we recommend samples are taken out of direct sunlight, away from moisture and away from warmth where possible. If the sample with the freshest appearance, on top of the surface, is collected taking in to account these environmental parameters then it is likely that the sample has degraded due to the sample being there a long time and Bats may no longer be present. We analyse a sample up to three times to achieve a result. If no DNA is detected after three times, we are confident, there is no longer any DNA in the sample to detect.

Appendix 2: Survey Record

Date of Survey	Survey Time	Temperature and weather	Comments
Friday 15 May 2020	20.45 – 22.30	15 degrees C at 8.45pm and clear falling to 13 degrees during the survey period. Humidity 43% at 1022mb. Breeze 11mph from the west.	Excellent surveying conditions suitable for bat foraging. Sunset 8.51pm. Dusk due to overcast at 9.40pm. Fully dark by 10.10pm .

Flight / Forage activity: Detectors and visual sighting confirmed presence of a solitary Common Pipistrelle and solitary Brown Long-eared bat using the building under surveillance for roosting purposes and foraging in the vicinity. Passes by Noctule, Brandt's and Leisler's bat were also picked up on detectors. Bat activity commenced at 9.10pm with a Common Pipistrelle seen dropping out behind a gap on the corner stone of the building. Inspection of the building interior where droppings were identified at 9.25pm identified a solitary BLE flying inside the building, leaving from an open window at 9.32pm.

Species	S1 bat passes	S2 bat passes	
Common Pipistrelle	3	57	
Leisler	1	0	
Noctule	2	2	
Brown Long-eared	1 (inside)	1 (seen)	
Brandt's	1	1	
Total	8	60	

Comments
No swarming activity or significant number / concentration of bats was seen in any location during the survey period but one solitary Common Pipistrelle and one solitary Brown Long-eared bat were confirmed to be using the building for roosting purposes.

Surveyor S1 noted individual Common Pipistrelle foraging within the garden frequently doing a circuit of the enclosed garden area with solitary BLE and Myotid passing and Noctule / Leislers picked up at distance. No more than one bat was ever seen at one time. One Pipistrelle left a roost on the south western corner of the building. One BLE was seen flying in the building.

Surveyor S2 noted activity by solitary Common Pipistrelle foraging around the garden area and the passing of a solitary Myotid. A Noctule was heard but not seen. The BLE was seen to leave the first-floor window at the front of the building.

Date of Survey	Survey Time	Temperature and weather	Comments
Thursday 25 June 2020	02.45 – 04.30	15 degrees C at 2.45am and clear falling to 14 degrees during the survey period. Humidity 77% at 1019mb. Breeze 4mph from the south east.	Excellent surveying conditions suitable for bat foraging and returning to roost. Sunrise 04.39am.

Flight / Forage activity: Detectors and visual sighting confirmed presence of a solitary Common Pipistrelle and solitary Brown Long-eared bat using the building under surveillance for roosting purposes and foraging in the vicinity. During the survey occasional passes by Common Pipistrelle through the garden were noted until 03.35 when a solitary Pip circled the garden foraging before entering the wall of the building. Last bat pass was a Common Pipistrelle heading south at 03.56. A solitary BLE was seen flying circles around the northern gable roof edge at 03.31 and this bat entered the building. S1 quickly entered the building to watch the bat fly inside briefly before entering a roost location in the ridge behind felting.

Species	S1 bat passes	S2 bat passes	
Common Pipistrelle	44	42	
Leisler	0	0	
Noctule	0	0	
Brown Long-eared	2	1	
Brandt's	0	0	
Totals	46	43	

Comments
No swarming activity or significant number / concentration of bats was seen in any location during the survey period but one solitary Common Pipistrelle and one solitary Brown Long-eared bat were confirmed to be using the building for roosting purposes.

Surveyor S1 noted individual Common Pipistrelle foraging within the garden frequently doing a circuit of the enclosed garden area before entering the external wall to roost in the south eastern corner of the building near the roof at 03.50am. One BLE seen circling the north gable end roof and then entering the roof edge at 03.31am. No more than one bat was ever seen at one time during the survey.

Surveyor S2 noted individual Common Pipistrelle foraging within the garden frequently doing a circuit of the enclosed garden area before entering the external wall to roost in the south eastern corner of the building near the roof at 03.50am. Entering the building S2 noted the BLE inside the roof near the southern gable and roosting at the roof apex near the south gable end in the building interior at 03.32.