



OUTBUILDINGS AT HOSELEY HOUSE, MARFORD

PRELIMINARY BAT ROOST ASSESSMENT AND EMERGENCE SURVEYS

DATE	ECOLOGIST	APPROVED	VERSION	COMMENTS
15/08/2018	Lucy Boyett	Rhian Hughes	1	
15/01/2019	Lucy Boyett	Rhian Hughes	2	Amendments to bat mitigation and recommendations (Section 8)

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1.0 Introduction

- 1.1 Enfys Ecology Limited were commissioned by Mr David Green to undertake a Preliminary Bat Roost Assessment (PRA) and subsequent dusk emergence surveys of the outbuildings at Hoseley House, Marford.
- 1.2 The proposed works comprise the conversion of the existing buildings, which are currently deteriorating, into ancillary accommodation.
- 1.3 The survey was commissioned to determine whether the proposed works would affect protected species: specifically bats and nesting birds. The PRA was undertaken on 30th April 2018 with subsequent emergence surveys on 24th May 2018 and 26th June 2018. This report is valid for a period of two years from this date in accordance with best practice.
- 1.4 All British bats (and roost sites) are protected under the Wildlife and Countryside Act (WCA) 1981 (as amended). In addition, all bats are classified as European Protected species by The Conservation of Habitats and Species Regulations 2017 (as amended). Under this legislation, it is an offence to kill, injure or disturb a bat, or to destroy any place used as a shelter by bats.
- 1.5 Should evidence of bats be found and it is deemed likely that they will be disturbed by the proposed works; a licence from Natural Resources Wales (NRW) must be obtained.

2.0 Site description

- 2.1 The outbuildings comprise a two storey building with an adjoining single storey garage, located to the north of the main house.
- 2.2 The buildings are located approx. 400m to the south east of the villages of Marford and Gresford in Wrexham, North Wales (approximate grid reference SJ 36653 54575) (Figures 2.1 and 2.2).
- 2.3 The property is located within a rural area with improved grassland fields lined with managed hedgerows and scattered broad-leaved trees along the field boundaries to the south and a large area of woodland across a small lane to the north and west. Park Lane, which runs directly adjacent to the outbuildings and along the woodland edge to the north, runs eastwards with a mature hedgerow and mature trees on both sides. Beyond the large woodland to the north and west, there are a number of smaller woodlands scattered within the surrounding areas linked by mature hedgerows and mature trees.
- 2.4 There are two statutory designated sites within a 1km radius of the property, though none of these are designated for bats. The Vicarage Moss Site of Special Scientific Interest (SSSI)

and Midland Meres and Mosses Phase 2 are both located 600 m south west of the site and have near identical boundaries.



FIGURE 2.1 AERIAL VIEW OF THE LOCATION AND SURROUNDINGS. THE SURVEYED BUILDINGS ARE SHOWN IN RED. © GOOGLE 2018



FIGURE 2.2 AERIAL VIEW OF THE LOCATION AND SURROUNDINGS. THE MAIN TWO STOREY SECTION IS SHOWN IN RED AND THE SINGLE STOREY GARAGE SECTION IS SHOWN IN BLUE. © GOOGLE 2018

3.0 Methodology

3.1 *Preliminary Bat Roost Assessment (PRA)*

- 3.1.1 The building was assessed for any signs of bats; these include droppings, feeding remains, and other indicative marks, plus features of potential use to bats such as crevices, cracks and other holes, and any potential access points into the building. High-powered torches were used to inspect any identified features, and an endoscope was used to investigate any gaps or crevices, where appropriate. Both the interior and exterior of the building was examined.
- 3.1.2 The building inspection was carried out on the 30th April 2018 by ecologists Lucy Boyett (accredited agent under NRW licence number 77581b:OTH:CSAB:2018) and Matt Moss (assistant under NRW licence number 77581b:OTH:CSAB:2018). Building and potential roost assessments were carried out following the guidelines set by the Bat Conservation Trust Good Practice Guidelines (Collins, 2016). Photographic evidence was taken where necessary.

3.2 *Dusk emergence surveys*

- 3.2.1 The first emergence survey was undertaken at the end of May and the second in June 2018, which is within the peak bat survey months of May to August (inclusive), with at least two weeks in-between each one.
- 3.2.2 During the first survey, the building was monitored by five surveyors and by three surveyors on the second survey, who focused on the potential roosting features identified during the PRA. Records were taken of any bats observed emerging from the buildings, and of any other bat activity taking place in the area during the survey. The surveyors used Pettersson D240x and Batbox Duet detectors and Anabat Express bat detectors were positioned around the buildings to record any bat calls for further analysis. During the second emergence survey, infra-red lamps were shone on the northern side of the building with a video camera (night mode) mode set up to record.
- 3.2.3 The two dusk emergence surveys began approximately 30 minutes before sunset and continued for approximately 90 minutes after sunset.
- 3.2.4 The first dusk emergence survey was carried out on 24th May 2018 by Rhian Hughes (NRW licence number 77581b:OTH:CSAB:2018), Lucy Boyett (accredited agent on NRW licence number 77581b:OTH:CSAB:2018), Amy Green (NRW licence number 73760:OTH:CSAB:2016) Rebecca Lloyd (assistant on NRW licence number 77581b:OTH:CSAB:2018) and Sophie Johnson (assistant on NRW licence number 77581b:OTH:CSAB:2018). The second dusk emergence survey was carried out on 28th June 2018 by Rhian Hughes, Lucy Boyett and Amy Green.

3.3 *Limitations*

- 3.3.1 Bats are a difficult group to survey, and as they are highly mobile animals, it is possible that they could move into a building after the survey has occurred. Therefore, it cannot be guaranteed that bats will not move into the building following the survey.
- 3.3.2 As the northern side of the building along Park Lane was surrounded by large mature trees, it became dark very quickly, making it hard to observe bats emerging from this side. A video camera and infra-red lamps were set up on the second emergence survey and the footage watched back to help to identify if any bats had emerged.

4.0 Building description

4.1 *External*

- 4.1.1 The outbuildings comprised a main two storey section with the roof line running east to west (Photo 4.1) and perpendicular to this was a single storey garage section with the roof line running in a north south direction (Photo 4.2). There was also a small lean-to on the eastern gable of the main section and also a small mono-pitched building on the southern gable of the garage section, which had no roof (Photo 4.3).



PHOTOS 4.1 & 4.2 MAIN TWO STOREY SECTION AND ADJOINED GARAGE SECTION.



PHOTOS 4.3 MONO-PITCHED BUILDING ON THE SOUTHERN SIDE OF THE GARAGE

- 4.1.2 The main building, lean-to and garage were all constructed of brick, which was rendered externally and the roofs were slated. On the southern side of the main building were two

windows (one glazed and one boarded), two hatches with wooden doors and a main entrance door. On the northern side, were two boarded hatches. The roof of the mono-pitched section adjoining the garage was severely damaged with only a small number of bare rafters remaining.

- 4.1.3 The northern side of the main building backed directly onto Park Lane, with a large area of broad-leaved woodland beyond (Photo 4.4).



PHOTO 4.4. NORTH SIDE OF THE MAIN SECTION ADJACENT TO PARK LANE.

4.2 *Internal*

- 4.2.1 The ground floor of the main building comprised one large room (approx. two thirds of the ground floor) on the eastern side, accessed through an external doorway and a smaller room to the west, accessed through the garage (Photo 4.5). The walls were bare painted brick and the ceiling joists were exposed. Both rooms were in use for storage. The first floor had an open roof with a height of approx. 2.5m (Photo 4.6). The roof timbers were exposed and the roof lined with bitumen felt. There was an internal wall, which corresponded with the ground floor dividing wall, however there was a large opening allowing for free movement between the two rooms.



PHOTO 4.5 & 4.6. GROUND FLOOR AND FIRST FLOOR OF THE MAIN BUILDING.

- 4.2.2 The garage section was split into two sections with the entrances comprising large sliding wooden doors. Internally both rooms were open to the roof with exposed timbers and were lined with bitumen felt (Photo 4.7). Both sections were used for storage and the southernmost section had plastic sheeting hanging from the joists covering approx. two thirds of the room.



PHOTO 4.7. ONE OF THE TWO GARAGE ROOMS.

5.0 Survey Results – Building Inspection

5.1 External

5.1.1 Externally the main building, garage section and lean-to were in relatively good condition with the render intact and only a small number of gaps under slates and areas of missing mortar under the slates at the gable ends.

5.1.2 The mono-pitched adjacent to the southern end of the garage was in a poor condition with no roof and there were large cracks in the brickwork.

5.1.3 No evidence of bats was seen externally.

5.2 Internal

5.2.1 The main doorway into ground floor of the main section had come away from the wall, which left a large gap along the top leading into the eastern most room. The western most room was accessible through the garage which also had gaps above the doors.

5.2.2 There was access from the ground floor up to the first floor through the open loft hatch and there were also a number of small areas of the ceiling, which were missing creating further access. On the first floor, there were a number of large gaps at the eaves, particularly on the northern side (Photo 5.1). The boarded hatches on both the northern and southern sides had gaps around the sides (Photo 5.2). The bitumen felt was in poor condition, however no light was visible between the slates above.



PHOTO 5.1 & 5.2. GAPS AT EAVES AND AROUND BOARDING

5.2.3 There was a large gap along the top of the sliding garage doors, which led directly into the garage spaces. There was a large crevice in the internal brick work of the garage and also gaps where the gable end rafters met the walls. The bitumen was in a poor condition, however there were no obvious light gaps from the slates.

5.2.4 The brick walls of the mono-pitched section had large cracks in them creating a number of gaps.

- 5.2.5 Droppings consistent with brown long-eared bats were found in all rooms inspected, with a greater concentration found on the first floor of the main section. They were mainly found beneath the ridge boards but were also scattered on the floor throughout and in cobwebs on the walls. The droppings were sent for DNA analysis, which confirmed the species to be brown long-eared.
- 5.2.6 In the western most ground floor room of the main section, there were urine streaks on a mirror which had been propped up against the wall.
- 5.2.7 Three tortoiseshell butterfly wings were found scattered on the first floor.
- 5.2.8 Old birds' nests were seen within two of the large gaps at the eaves.

6.0 Survey Results – Dusk Emergence Surveys

- 6.1 *Dusk Emergence Survey – 24th May 2018*
 - 6.1.1 Sunset was at 21:16 and monitoring commenced at 20:46. The conditions during the survey were mild, 10% cloud, calm and the temperature was 18°C at the beginning of the survey, dropping to 15°C at the end.
 - 6.1.2 The first bat to be seen was at 21:31, when a soprano pipistrelle (*Pipistrellus pygmaeus*) flew along Park Lane in an easterly direction.
 - 6.1.3 During the survey a total of thirteen brown long-eared bats (BLE) emerged from the buildings. Table 6.1 shows the times and locations of these emergences. Nine flew out from the door on the southern side of the main building, which was open at the time of the survey, one from a gap at the top of one of the garage doors and three from the eaves on the north side of the building. These bats all then flew directly towards the woodland and along Park Lane.

TABLE 6.1. TIMES AND LOCATIONS OF BAT EMERGENCES ON 24TH MAY 2018

No.	Time	Species	Location
9	21:36, 21:45, 21:46, 21:49, 21:59, 22:02, 22:03(x2) & 22:07	Brown long-eared	 PHOTO 6.1. LOCATION OF BLE EMERGENCE. *PLEASE NOTE AT THE TIME OF THE SURVEY, THE DOOR HAD COME OFF ITS HINGES AND SO THE DOORWAY WAS OPEN
1	21:54	Brown long-eared	 PHOTO 6.2. LOCATION OF BLE EMERGENCE FROM GAP ABOVE GARAGE DOOR
3	21:34, 21:47 & 21:57	Brown long-eared	 PHOTO 6.3. LOCATION OF BLE EMERGENCE FROM THE EAVES ON THE NORTHERN SIDE OF THE BUILDING

- 6.1.4 A high level of bat activity was recorded in the immediate area during the survey with fairly constant commuting and foraging by common and soprano pipistrelles along the woodland edge along Park Lane. Brown long-eared were also recorded foraging along the lane intermittently during the survey. Noctules were briefly recorded on the anabat express detectors at 21:33, 21:34, 22:18 and 22:25, 22:45 and 22:48. A single call by a *Myotis* species was recorded by an anabat express detector at 21:57, but was not seen or heard by a surveyor.

6.2 Dusk Emergence Survey – 28th June 2018

- 6.2.1 Sunset was at 21:43 and monitoring commenced at 21:13. The conditions during the survey were dry with a clear sky, calm and the temperature was 22°C at the beginning of the survey falling to 19°C at the end.
- 6.2.2 The first bat to be seen was at 21:59 when a BLE emerged from the door on the southern side of the main building.
- 6.2.3 During the survey a total of thirteen brown long-eared bats emerged from the buildings, with twelve emerging from the open door on the southern side of the main building and one from the gap at the top of the garage door. Table 6.2 shows the times and locations of these emergences.

TABLE 6.1. TIMES AND LOCATIONS OF BAT EMERGENCES ON 28TH JUNE 2018

No.	Time	Species	Location
12	21:59, 22:04, 22:07, 22:11, 22:19, 22:20, 22:22, 22:24, 22:26, 22:28, 22:31 & 22:36	Brown long-eared	 PHOTO 6.3. LOCATION OF BLE EMERGENCE. *PLEASE NOTE AT THE TIME OF THE SURVEY, THE DOOR HAD COME OFF ITS HINGES AND SO THE DOORWAY WAS OPEN
1	22:15	Brown long-eared	 PHOTO 6.4. LOCATION OF BLE EMERGENCE FROM GAP ABOVE GARAGE DOOR

- 6.2.4 There was again a high level of bat activity along Park Lane with constant commuting and foraging by common and soprano pipistrelles throughout the survey. Brown long-eared were also recorded foraging along the lane intermittently during the survey. Noctules were again briefly recorded on the anabat express detectors at 22:14, 22:17, 22:40 and 22:53. Brief calls from *Myotis* species were recorded at 22:15, 22:58, 23:06 and 23:08.

7.0 Conclusions

- 7.1 The surrounding area provided highly suitable habitat for commuting and foraging bats with good connectivity to further suitable habitat areas. This was shown during both emergence surveys, with brown long-eared commuting straight from the building into the woodland to the east and common and soprano pipistrelles consistently using the woodland edge to the east for commuting and foraging.
- 7.2 During both emergence surveys, thirteen brown long-eared bats were seen to emerge predominantly from the open doorway on the southern side of the main building but also from the eaves on the eastern side of the building and from the garage.
- 7.3 The building is therefore a known roost for a medium sized population of brown long-eared bats, which could potentially be a maternity roost. Although unlikely, the building also has the potential to be used as a hibernation roost for brown long eared bats.
- 7.4 The proposed works are to convert the main building, garage section, lean-to and mono-pitched section into ancillary accommodation.
- 7.5 Although brown long-eared droppings were found in all rooms of the buildings, it is thought that they mostly used the first floor of the main building and opportunistically used the open door for emerging. The conversion of the buildings will result in the destruction of a brown long-eared bat roost and the works, particularly to the first floor of the main building will cause disturbance if the bats are present. As this is the case a licence will be required from NRW before any works to the outbuildings can commence.
- 7.6 The bat mitigation guidelines state that the roost status of a maternity site of common species is considered to be of moderate significance and the scale of impact of the destruction of a maternity roost is high (Mitchell-Jones. A.J, 2004). To reduce the scale of this impact, mitigation, compensation and enhancement measures, as discussed in section 8.0, will be implemented.
- 7.7 **No works to the outbuilding must commence until a licence has been obtained from NRW. A licence can only be applied for following the granting of planning permission and the discharge of any ecology related conditions. Once submitted the licence application takes 30 working days to be processed (or more if any there are any queries).**

8.0 Mitigation and Recommendations

8.1 Mitigation measures and recommendations will be included in the licence application, and are also included below.

8.2 *Mitigation - destructive works*

- Any removal of fascias/soffits or works to re-roof or secure the existing roof, windows, doors and other gaps and cracks, which may allow bats access into the building, must be completed before internal works can proceed. This will be undertaken between 1st September and 30th April, when it is least likely for bats to be present. Within this timeframe, it is preferable for the works to be undertaken in September or April so if any bats are found they will not be in hibernation but they will have finished breeding.
- Prior to the start of works, a toolbox talk will be given to everyone involved in the project and a log of this will be kept.
- Any works to the roof including the removal of slates, fascias and soffits will be supervised by a suitably qualified ecologist. At this time, a bat box will be available and if a bat is found during works, the box will be erected for the bat to be placed in. If carried out over winter and a hibernating bat is found, work must stop until the bats have dispersed naturally if possible. If this is not possible then the bat must be placed in a hibernation box erected on the property.
- A section of the main building (first floor), connecting to an extension built above the lean-to, will provide a replacement roost and will be completed to the specifications detailed in point 5.3 by 30th April and so will be available for when bats return.

8.3 *Compensation and enhancement - Reinstatement of Roost*

8.3.1 To compensate for the loss of the roost used by up to thirteen brown long-eared bats, a replacement bat roost will be created partly within the existing building and partly within a new extension above the lean-to, which will be connected.

8.3.2 To create the new roost, an extension will be built above the lean-to (proposed bike store) and will connect to the eastern most section of the main building (first floor), to create one space. The dimensions of the roost will be 3.78m x 2.69m, with a floor to roof apex height of 2.3m. The plan of the proposed roost is shown in Figure 8.1 below.

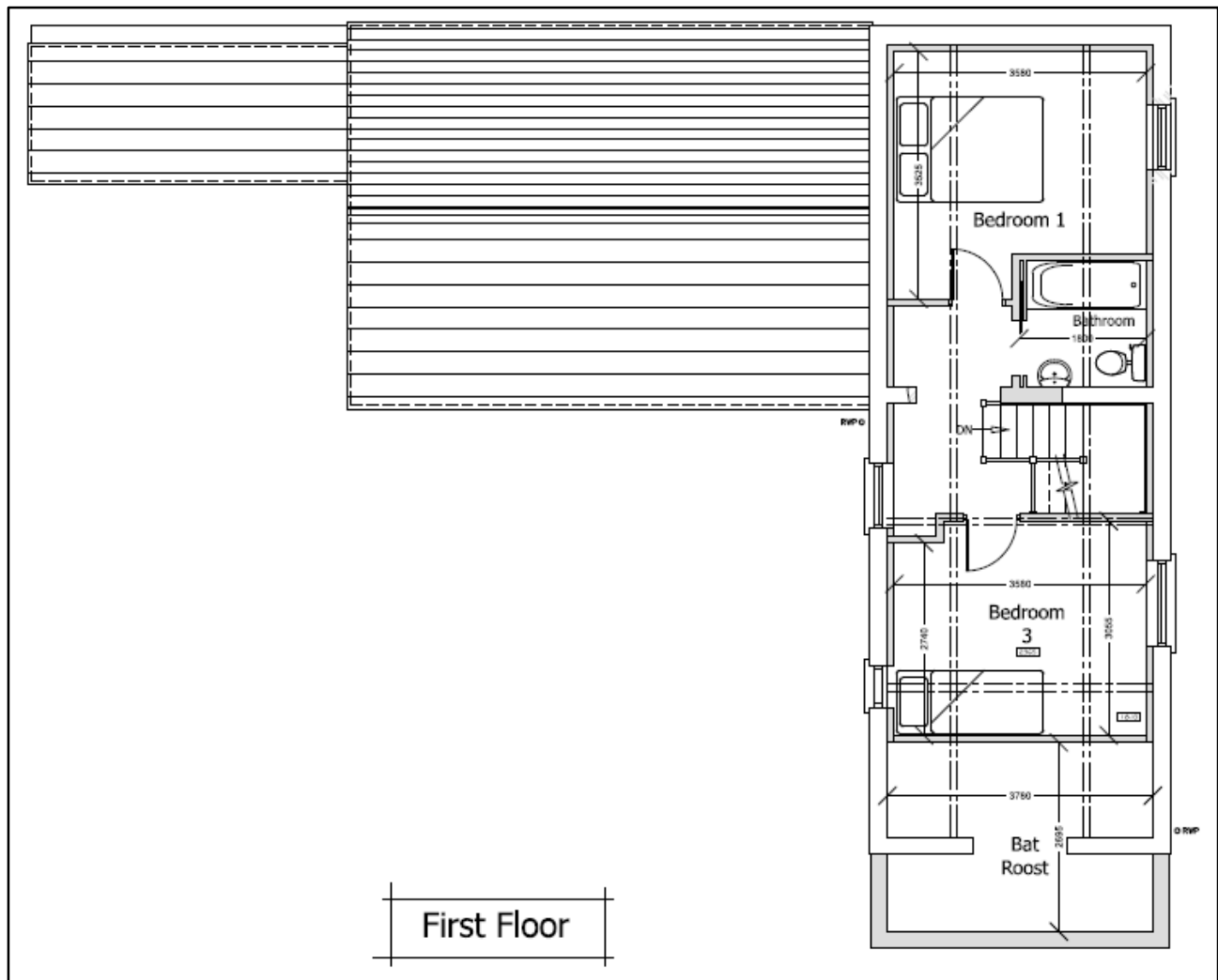


FIGURE 8.1. PLAN SHOWING PROPOSED LOCATION OF THE NEW BAT ROOST (DRAWING NUMBER A_247_15)

- 8.3.3 The new bat roost will not be used for any other purpose and will only be accessible through a lockable hatch for bat licensed individuals.
- 8.3.4 The bat roost will be built to the specifications detailed in the points below.
1. The roost will be 3.78m x 2.69m, with a floor to roof apex height of 2.3m, as shown on the proposed plan.
 2. The extension, like the main building section, will have a slated pitched roof on a timber frame (30mm).
 3. Only timber treatments listed on Natural England Technical Information Note TIN092 will be used on the timbers.

4. The new timber roof frame will be of appropriate design to provide an as open and unimpeded loft void space as possible, to allow free movement and flight by bats inside the loft.
5. In the roof there will be double ridge boards, both consisting of rough-sawn and untreated timber, set 20mm, which will offer bats enhanced roosting opportunities.
6. The roof will be underlined with bituminous felt only (no breathable membrane can be used).
7. Two bat access points will be created at the eaves on the northern side of the building, leading directly to the road and woodland edge. These will be provided by two 100mm x 20mm slots cut through the eaves boards. Internally, baffles will be created to prevent light and draughts into the main roosting area.
8. An additional access point will be created through an integrated bat brick, built into the gable end, approx. 0.5m below the apex (such as <https://www.nhbs.com/bat-brick> or similar). Again a baffle will be created to prevent light and draughts into the main roosting area.
9. A panel box will be created and mounted on the western wall providing additional roosting space. This will comprise a piece of plywood board fitted to 1inch x 1inch timbers with a gap on the underside only so bats can access the space from underneath.
10. Sound insulation will be laid on the floor and the wall adjoining the proposed bedroom, to prevent disturbance from the ancillary accommodation.
11. There will be a small loft access hatch installed in the floor of the bat loft approximately 0.45m x 0.45m, allowing access for the bat ecologist to inspect if required, but preventing access to store items. The loft hatch will be closed and locked with a combination padlock to prevent unauthorised access. This will be offset slightly so it isn't directly under the apex.

8.3.5 To reduce the potential impact of additional lighting, which may be installed, the following measures should be considered.

Any additional lighting installed will be low level, and there will be no artificial illumination of the eaves, gables or the hedgerow and mature trees to the north.

Light sources

- Narrow Spectrum Lights with no UV content including low pressure sodium or warm white LED lights should be used.
- Directional down lights which illuminate below the horizontal plane should be used.
- LED units can be used to direct the light into small target areas.

Reducing Light Spillage

- Light should be directed to where it is needed using accessories such as hoods, cowls, louvres and shields to direct the light away from sensitive areas.
- Lights should be placed as far apart as possible to minimise the illuminated area.

Timing of Lighting

- Where appropriate, lights should be fitted with movement sensors which turn the light on when the sensor is triggered.
- The times during which the lighting is on should be limited to provide some dark periods during the night.

8.4 *Monitoring*

- 8.4.1 An emergence survey to monitor the brown-eared roost will take place during the summer after the works have been completed and again in year two. If there is a decrease in the numbers recorded, the mitigation measures will be reviewed.

9.0 References and useful Information Sources

Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust, London. ISBN-13 978-1-872745-96-1

Mitchell-Jones, A. J. & McLeish, A. P. (1999). *The Bat Workers' Manual (2nd Ed.)*. JNCC, Peterborough. ISBN 1-86107-462-X. [3rd edition in 2004].

Mitchell-Jones, A. J. (2004). *Bat Mitigation Guidelines (1st Ed.)*. JNCC, Peterborough. ISBN 1 85716 781 3