



Bat Activity Surveys Trunce Farm, Green Moor

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Written by	Lorna Griffiths MRes BSc (Hons) ACIEEM Senior Ecologist
Checked by	Sally Clague BSc (Hons) Ecologist
Approved by	Jessica Eades BSc (hons), MCIEEM Technical Director

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Peak Ecology Limited
Arden House
Deepdale Business Park
Bakewell
Derbyshire
DE45 1GT
01629 812511



www.peakecology.co.uk

EXECUTIVE SUMMARY

Overview

This report has been prepared by Peak Ecology Ltd on behalf the Mr Mark Barton. It provides the results of Bat Activity Surveys associated with the redevelopment of the buildings at Trunce Farm, Green Moor in South Yorkshire.

A Preliminary Ecological Appraisal (PEA) was carried out by Whitcher Wildlife Ltd in June 2020 (Whitcher Wildlife, 2020). As part of the PEA, the nine buildings on site were assessed for their potential to support roosting bats. Four of the buildings were considered to have potential to support roosting bats, Building 1: **moderate**, Building 2: **moderate**, Building 3: **high** and Building 4: **low** potential to support roosting bats.

In line with best practice guidelines (Collins (ed), 2016), nocturnal bat activity surveys were undertaken on the four buildings. During the surveys, no bats were found to be roosting in Building 2, Building 3, or Building 4. However, Building 1 (the main farmhouse) was confirmed as supporting six separate day bat roosts of common and soprano pipistrelles, of no more than two bats in any one roost.

A European Protected Species (EPS) licence will be required from Natural England before renovation works can commence. This can only be applied for once any relevant permissions are in place (such as planning consent or listed building consent) and any conditions related to bats have been discharged, where possible to do so in advance of applying for a license.

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1 **INTRODUCTION**

1.1 **Site Background**

This report has been prepared by Peak Ecology Ltd on behalf Mr Mark Barton. It provides the results of Bat Activity Surveys associated with the redevelopment of the buildings at Trunce Farm, Green Moor in South Yorkshire.

A Preliminary Ecological Appraisal (PEA) was carried out by Whitcher Wildlife Ltd in June 2020 (Whitcher Wildlife, 2020). As part of the PEA, the nine buildings on site were assessed for their potential to support roosting bats. A summary of the findings of the Whitcher Wildlife report have been provided in the table below.

Table 1: Summary of bat roosting potential for buildings & trees (Whitcher Wildlife, 2020)

Building/ Trees	Potential for Roosting Bats	Evidence	Activity survey Recommendations
B1	Moderate	No evidence of bats found. Numerous features suitable for roosting bats with a few gaps in the exterior walls, slipped roof slates and gaps under the fascia boards.	Two bat activity surveys
B2	Moderate	No evidence of bats found. Cracks and gaps in the walls and slipped and broken stone roof slates.	Two bat activity surveys
B3	High	Two concentrations of bat droppings were found on the first floor of the building. Numerous features suitable for roosting bats with cracks and gaps in the interior and exterior walls and gaps between roof beams internally.	Three bat activity surveys
B4	Low	No evidence of bats found. Numerous features suitable for roosting bats with cracks and gaps in the walls and slipped and broken stone roof slates.	One bat activity
B5	Negligible	No evidence of bats found. Small wooden buildings of an unsuitable construction for roosting bats.	No
B6	Negligible	No evidence of bats found. Small wooden buildings of an unsuitable construction for roosting bats.	No
B7	Negligible	No evidence of bats found. Small wooden buildings of an unsuitable construction for roosting bats.	No

Building/ Trees	Potential for Roosting Bats	Evidence	Activity survey Recommendations
B8	Negligible	No evidence of bats found. Small wooden buildings of an unsuitable construction for roosting bats.	No
B9	Negligible	No evidence of bats found. A greenhouse of an unsuitable construction for roosting bats.	No
Trees			
The trees within the survey area have no features suitable for roosting bats.			No. Activity around trees recorded as part of main building surveys.

As per best practice guidelines (Collins, (ed), 2016), Peak Ecology undertook three nocturnal bat activity surveys between July 2020 and September 2020 on Buildings 1, 2 and 3, and a single bat activity survey was carried out on Building 4 in July 2020.

Building 1 was assessed as having **moderate** potential, and therefore was subject to the required two nocturnal surveys. However, during the second survey, bats were seen to enter at different roosting locations on the structure, and consequently, a third survey was undertaken in line with best practice guidelines (Collins (ed), 2016).

The purpose of this report is to:

- Confirm the presence/likely absence of roosting bats within the buildings;
- Where bats are present, determine the status of bat roosts, including confirming the species present, the number of bats and the type of roost;
- Provide recommendations for mitigation and/or avoidance measures;
- Highlight any requirements where a Natural England mitigation licence may be required prior to works; and
- Highlight opportunities for ecological enhancement where appropriate.

In relation to planning and development, this report should be read in conjunction with any other ecological survey reports relevant to the site.

1.2 Planning / Legislative Context

All British bat species are European Protected Species (EPS) under The Conservation of Habitats and Species Regulations 2017. They are also listed on Schedule 5 of the Wildlife and

Countryside Act 1981 (as amended) and are protected by Parts 4(b), 4(c) and 5 of Section 9 of that Act.

In net effect, it is an offence to:

- Deliberately capture, injure or kill bats;
- Intentionally or recklessly disturb bats in a place of shelter (roost);
- Intentionally or recklessly damage, destroy or obscure access to a breeding site or resting place (roost); and/or
- Possess, control, transport, sell or exchange a bat or any part of a bat, unless acquired legally.

NB. Because bats use roosts at different times of year and typically return to the same roosts annually, it is a legal opinion that a roost is protected whether bats are in occupancy at the time or not.

Under the National Planning Policy Framework (NPPF) 2018 the presence of a European Protected Species such as bats is a material planning consideration. When assessing a planning application, in order to satisfy the three Habitats Directive tests the Local Planning Authority (LPA) requires sufficient information about impacts on the species that are likely to result from the proposals as well as any necessary mitigation or compensatory measures. The test relevant to this report is that which relates to the Favourable Conservation Status of the species.

In addition to this, county and borough/district councils typically have biodiversity policies within their Local Development Frameworks that they must also comply with.

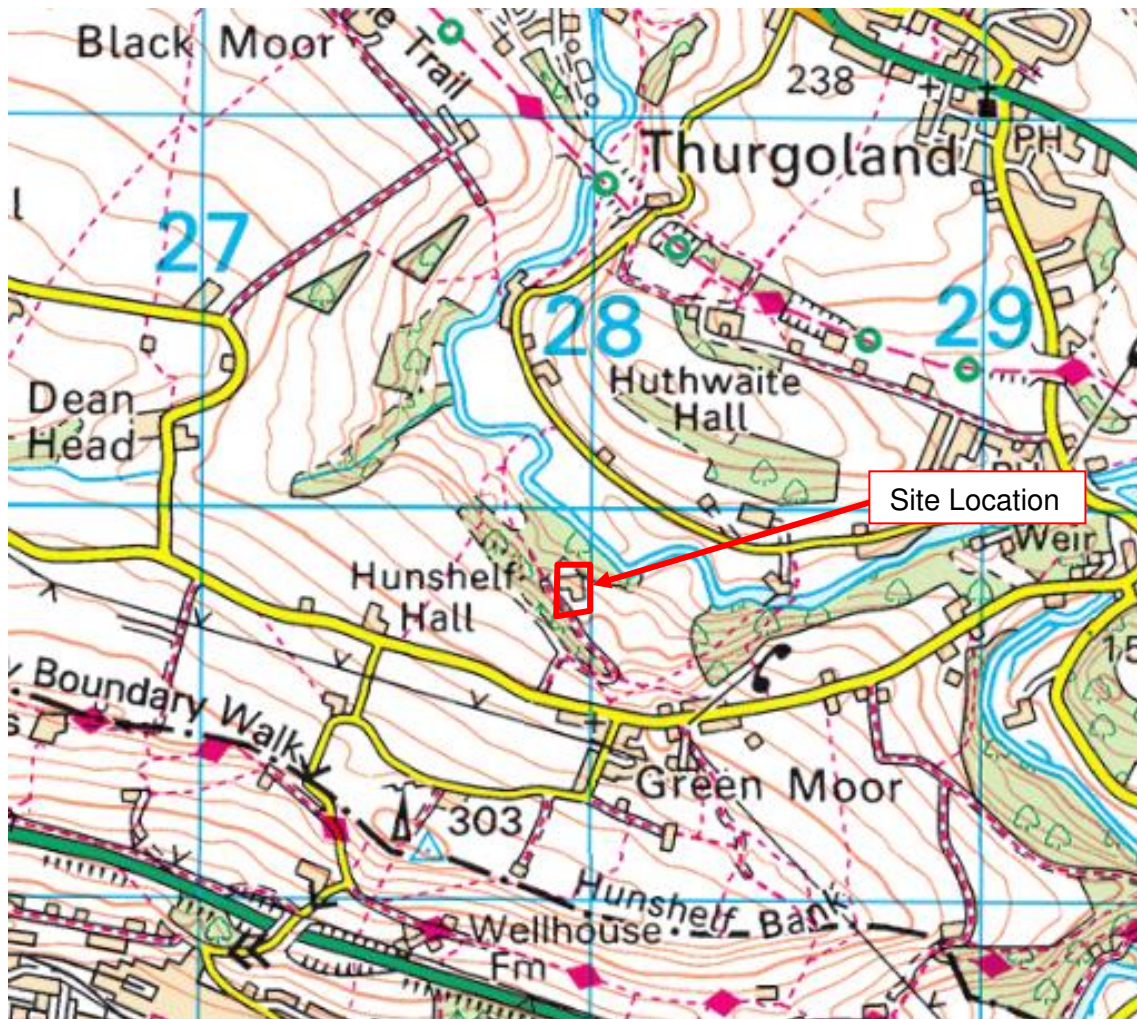
1.3 Site Description

The Site is situated towards the bottom of a steep valley, approximately 330m northwest of the small hamlet of Green Moor in South Yorkshire (central grid reference: SK 27924 99807).

There are nine buildings on site. To aid identification, the buildings have been labelled as per the PEA (Whitcher Wildlife, 2020) and include a row of three buildings comprising the main farmhouse (Building 1) situated at the eastern end of the row, a single storey barn at the centre (Building 2) and a large open plan barn with a mezzanine floor at the western end (Building 3). Building 4 is a small, single storey outbuilding situated towards the south east of the site. Buildings 5, 6, 7 and 8 are timber sheds/ open fronted garages. Building 9 is a greenhouse.

The buildings are surrounded by grazing pasture, with linear branches of Dean Wood, a large area of broadleaved woodland, to the north, east and west. The River Don is situated approximately 100m northeast. Semi-mature and mature trees are present within the gardens and scattered within the wider landscape, including a large sycamore *Acer pseudoplatanus* at the gateway (SK 27910 99782).

Figure 1: Site location map*



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2 **METHODOLOGY**

2.1 **Dusk Emergence/ Dawn Re-entry Surveys**

The bat activity surveys were carried out between July and September 2020, in accordance with current good practice guidelines published by the Bat Conservation Trust (Collins (ed), 2016). Surveys lasted for 1.5 to 2 hours, with dusk surveys commencing approximately 15 minutes before sunset and the dawn survey commencing approximately 1.5 hours before sunrise and concluding at sunrise, covering the usual emergence times of UK bat species. Further information is provided in Table 3 overleaf.

Surveyors were equipped with either a hand-held heterodyne bat detector (Batbox Duet) or full spectrum detector (EM3+) and were positioned close to the buildings (B1, B2, B3 & B4) to observe any bats entering or exiting the structures. All potential entry/exit features were covered. Each surveyor also had with them a full spectrum recording device; either an Anabat Express static recorder or an Anabat SD2, which recorded bat calls for computer analysis using AnalookW software.

An infra – red camera was placed in strategic locations where potential roosting features had been identified and recorded throughout the survey (Survey 1 & Survey 2).

2.2 **Surveyors**

The surveys were led by Lorna Griffiths MRes BSc (Hons) ACIEEM. Lorna has been a professional ecologist for nine years and has extensive experience in surveying and site assessment for bats. She is registered to use a Class 2 bat survey licence issued by Natural England.

Table 2 below provides details of all the ecologists that attended the bat activity surveys at Trunce Farm. Each surveyor is experienced in undertaking bat activity surveys and appropriately qualified based on the CIEEM competency framework (CIEEM, 2012).

Table 2: Survey Team

Name*	Job Title	Accreditation(s)	Licence Registration Number
Jessica Eades (JE)	Technical Director	BSc (Hons) MCIEEM	2015-16543-CLS-CLS
Lorna Griffiths (LG)	Senior Ecologist	MRes BSc (Hons) ACIEEM	2016-19884-CLS-CLS
Michelle Cullimore-Pike (MCP)	Senior Ecologist	MSc BSc (Hons)	2017-28061-CLS-CLS
Jenny Hills (JH)	Ecologist	MSc BSc (Hons)	2018-37790-CLS-CLS
Katie Hadwin (KH)	Senior Ecologist	MSc BSc (Hons) ACIEEM	N/A
Sally Clague (SC)	Ecologist	BSc (Hons)	N/A
Darran Sharp (DS)	Senior Surveyor	BSc (Hons) ACIEEM	N/A

2.3 Survey Timing & Conditions

The Bat Activity Surveys were undertaken during the optimum bat activity season, as per best practice guidelines (Collins (ed), 2016) and during appropriate weather conditions. See Table 3 below for further details.

Table 3: Details on timing, weather conditions & surveyors during the bat activity surveys

Date	Sunrise/ Sunset Time	Start Time	End Time	Weather Conditions	Surveyors
15/07/2020	21:27	21:15	23:00	Temperature started at 15°C & remained constant throughout the survey. The humidity levels were 82%. Cloud cover was mostly cloudy. 0mph wind speed.	LG, JE, MCP, DS, SC
19/08/2020	05:54	04:18	06:10	Temperature started at 13.8°C & dropped to 12.3°C. Humidity levels went from 57% to 90%. Cloud cover was high, turning to shallow fog towards the end of the survey. 3mph wind speed.	LG, MCP, SC
02/09/2020	06:18	04:50	06:35	Temperature started at 11°C & remained constant throughout the survey. The humidity levels were 65%, increasing to 85%. Cloud cover was approx. 30% at the start, increasing to 45% towards the end of the survey. 5mph wind speed.	LG, JH, KH, SC

2.4 Limitations

2.4.1 Access

It was not possible to access the interior of the farmhouse (Building 1) to undertake an updated loft inspection as the building was occupied. At the time of the surveys, Covid-19 guidelines were in place, and Peak Ecology took the position to protect their employees, clients and members of the public which restricted surveyors from entering occupied buildings, to reduce the chance of infection or spread. In addition, DEFRA (2020) guidelines recommend that surveyors avoid sustained close proximity (within 2m) to any potential bat roosts and keep their distance (2m) from any live wild mammals at all times, to prevent cross-species transmission (should it be viable).

Some of the smaller outbuildings were also not entered as it was evident that they were being used by the occupants. The ecologists therefore made the decision not to enter, to reduce the risk of Covid-19 transmission.

2.4.2 Survey Method

Some species such as brown long-eared bats *Plecotus auritus* echolocate very quietly and can therefore be difficult to detect. This species also typically emerges after dark, when it is less likely to be seen by surveyors. Surveyors were positioned in order to maximise the chances of observing all species and an IR camera utilised (Survey 1 & 2) to capture bat activity footage once light levels had dropped too low for surveyor detection. Early emerging species such as pipistrelles may not echolocate when leaving a roost if there is sufficient light for them to see, which may make species identification difficult.

2.4.3 Survey Equipment

Anabat detectors typically pick up bat calls over a range of approximately 20m. Range for detecting species that echolocate quietly such as brown long-eared bats or those that have very directional calls may be less and conversely species such as noctule *Nyctalus noctula* that have loud calls may be detected at greater distances.

2.4.4 Data Analysis

Recorded data from the Anabat detectors used for surveys were analysed using AnalookW sound analysis software, published by Titley Scientific.

Based on characteristics such as peak frequency and call duration, each recorded call was assigned to the relevant bat species, or to family level such as *Myotis sp.* and *Nyctalus sp.* where calls were not distinct enough to have confidence to actual species level.

2.4.5 Lifespan of Data

The results and recommendations contained within this report are considered to be valid for up to two years from the date of survey. After that period, an update may be required in order to inform ecological constraints to development proposals and/or accompany a planning submission.

If a European Protected Species (EPS) mitigation licence is applied for from Natural England, the survey data must be collected within the most recent survey period to the date of the licence submission. In order to apply for a licence, planning permission must have already been obtained for the site. In some cases when there is a proposed delay between obtaining planning permission and works scheduled to start, there may be a requirement for updated surveys to be undertaken to inform the EPS licence.

3 **RESULTS**

Prior to the first activity survey, the mezzanine floor in Building 3 was accessed by Peak Ecology to inspect the area for recent bat activity. In June, two aggregations of fresh and old bat droppings were identified (Whitcher Wildlife, 2020). However, during the inspection undertaken by Peak ecology in July, no bat droppings were found, though the surveyor did identify several wing casings indicative of underwing *Catocala* sp. moths, situated below the timber crossbeam. It is therefore likely that the building supports a brown long-eared bat feeding perch. The Peak Ecology ecologist also noted a large pile of bird droppings in the area where the bat droppings were noted previously by Whitcher Wildlife (Whitcher Wildlife, 2020).

No bats were observed emerging from any of the buildings during the first survey of Building 1, Building 2, Building 3, or Building 4. **However, bat roosts were identified on Building 1 during survey 2 and survey 3.** Further details have been provided below.

The nocturnal bat activity map in Appendix A shows bat roost locations identified during the nocturnal surveys and the main bat flight paths.

3.1 **Bat Activity Surveys**

3.1.1 **Activity Survey 1: Dusk – 23rd July 2020**

3.1.1.1 *Buildings 1, 2 & 3*

No bats were seen emerging from the buildings.

A total of 285 bat passes were recorded throughout the survey period by the four surveyors observing the buildings. The first bat recorded was a common pipistrelle *Pipistrellus pipistrellus* at 21:20, a few seconds before one was recorded by the surveyor watching Building 4. Two of the surveyors heard the bat pass but did not observe the bat in flight. Given that the bat was recorded prior to nightfall, it is likely that the bat was out of the surveyors' field of vision and therefore away from the building(s).

The most recorded bat species during the survey was common pipistrelle and represented 88.1% of the total bat activity.

A total of five bat species were recorded on site, common pipistrelle, soprano pipistrelle *P. pygmaeus*, noctule *Nyctalus noctula*, a myotis species *Myotis* sp. and brown long-eared *Plecotus auratus*. Pipistrelle bats were constantly foraging around the buildings, and at least one noctule was observed foraging over the fields to the east. The myotis and brown long-eared were likely commuting as only the occasional pass was recorded.

The most bat activity was recorded by the surveyor (LG) covering the southern elevation of the row of buildings (in front of B2). This location was close to the woodland edge and the large sycamore, noted during later surveys as potentially supporting a bat roost.

The last bat, a noctule foraging over the fields to the south of the buildings, was recorded at 23:06.

A static detector was placed within Building 3 for the duration of the survey. The detector did not record any bat activity within the building.

3.1.1.2 *Building 4*

No bats were seen emerging from the building.

A total of 63 bat passes were recorded during the survey, the first of which was a common pipistrelle at 21:20. Four species of bat were recorded in the vicinity of Building 4. The most recorded bat species was common pipistrelle, with high levels of foraging recorded and observed in the vicinity. The other three bat species recorded included noctule, soprano pipistrelle and a myotis species of which only singular or low numbers of passes were recorded.

Bat activity remained constant throughout the night, with most of the activity observed to the east of Building 4, around the trees, and to the south of the building, within the grassland.

The last bat recorded was a common pipistrelle at 22:53.

3.1.2 **Activity Survey 2: Dawn – 19th August 2020**

No bat roosts were identified on Buildings 2 or 3 during the survey. **However, four bat roost sites were identified on Building 1.** The locations of the roosts have been assigned a reference to aid identification and their locations are illustrated on the Nocturnal Bat activity Plans in Appendix A. The roosts have been summarised below:

- Common pipistrelle x 2 entered below lead flashing beneath the chimney on the eastern gable of Building 1 (roost location a). Entered roost at 05:13 & 05:19;
- Common pipistrelle x 2 entered below lead flashing beneath the chimney on the western gable of Building 1 (roost location b). Entered roost at 05:20 & 05:44;
- Common pipistrelle x 1 entered behind timber bargeboard on the southern elevation of Building 1 (roost location c). Entered roost at 05:20; and
- Common pipistrelle x 1 entered behind timber bargeboard on the southern elevation of Building 1 (roost location d). Entered roost at 05:36.

Representative photographs of the features have been provided in Appendix B.

More than one hundred bat passes were recorded during the survey, the majority of which were attributed to common pipistrelle. Common pipistrelle and soprano pipistrelle social calls were also recorded.

Five species of bat were recorded, common pipistrelle, soprano pipistrelle, noctule, brown long-eared and a myotis species.

The surveyor (LG) located on the southern elevation of the row of buildings recorded the highest concentration of bat activity, with constant foraging activity observed over the courtyard by common pipistrelle, with the occasional soprano pipistrelle.

Bat calls were recorded right from the start of the survey, a common pipistrelle at 04:18 and continued until 05:44 when the last bat entered its roost.

3.1.2.1 *Static Detector*

A static detector was placed within Building 3 for the duration of the survey. The detector recorded 76 bat passes; common pipistrelle (63 bat passes), soprano pipistrelle (10), brown long-eared (1 bat pass), noctule (1 bat pass) and a myotis species (1 bat pass). The first bat pass recorded was a common pipistrelle at 04:09, the last call was a soprano pipistrelle at 05:44. Bats were observed flying in and out of the open doors of the barn throughout the survey. However, no clustering behaviours to suggest a bat roost were witnessed.

3.1.2.2 *Potential Tree Roost*

During the survey, the surveyor located to the north of the buildings (SC) observed bat clustering behaviours (suggesting that a potential bat roost may be present), around a mature oak *Quercus* sp. tree located approximately 800m east of the farmhouse (Building 1). The approximate grid reference of the tree is SK 28071 99698. The tree is outside of the area of works and is to be retained.

3.1.3 **Activity Survey 3: Dawn – 2nd September 2020**

No bat roosts were identified on Buildings 2 or 3 during the survey. **However, five bat roost sites were identified on Building 1.** The locations of the roosts have been assigned a reference to aid identification and their locations are illustrated on the Nocturnal Bat activity Plans in Appendix A. The roosts have been summarised below:

Common pipistrelle x 2 entered behind timber bargeboard on the southern elevation of Building 1. Entered roost at 05:46;

- Common pipistrelle x 1 entered below lead flashing beneath the chimney on the eastern gable of Building 1 (roost location a). Entered roost at 05:48;
- Common pipistrelle x 1 entered below lead flashing beneath the chimney on the western gable of Building 1 (roost location b). Entered roost at 06:04;
- Soprano pipistrelle x 1 entered behind timber bargeboard on the southern elevation of Building 1 (roost location e). Entered roost at 06:10; and
- Soprano pipistrelle x 1 entered behind timber bargeboard on the southern elevation of Building 1 (roost location f). Entered roost at 06:12.

Representative photographs of the features have been provided in Appendix B.

Over a hundred bat passes were recorded during the survey, a high proportion of which was attributed to common pipistrelle. Common pipistrelle social calls were also recorded.

Four species of bat were recorded, common pipistrelle, soprano pipistrelle, noctule and a myotis species (1 bat passes).

The surveyor (LG) located at the southwest corner of the row of buildings recorded the highest concentration of bat activity, of which 46 of the bat passes were attributed to common pipistrelle.

Bat calls were recorded right from the start of the survey (04:50) and continued until 06:11.

3.1.3.1 *Static Detector*

A static detector was placed within Building 3 for the duration of the survey. The detector recorded 19 bat passes; all were attributed to pipistrelle species. The first bat pass recorded was a common pipistrelle at 04:56, this was a clear, uncluttered call suggesting that the bat was flying within the structure. The last calls recorded were at 05:41, the common pipistrelle calls included a lot of noise, suggesting that the bat was outside of the structure.

3.1.3.2 *Potential Tree Roost*

During the survey, the surveyor located to the southwest of the buildings (LG) and the surveyor located on the north elevation (SC) observed bat clustering behaviour around the mature sycamore tree located by the main gate into the courtyard, suggesting that a potential bat roost may be present. The approximate grid reference of the tree is SK 27910 99782.

3.2 **Barn Owl**

During Survey 3, a barn owl *Tyto alba* was observed by three of the surveyors. It was first seen by the surveyor located to the north of the buildings (SC), flying from the woodland to the west, and moving slowly along the roofs of Building 3 and Building 2 before perching on the western chimney of Building 1. The owl remained in situ for approximately two minutes before it was disturbed by the movement of the surveyor on the southern elevation.

No evidence of barn owl was noted within any of the buildings during the PEA (Whitcher Wildlife, 2020), and no other incidences of the species was noted during the other surveys.

4 **EVALUATION**

Bat species and their roosts are fully protected under the Conservation of Habitats and Species Regulations 2017 and under the Wildlife and Countryside Act 1981 (as amended) through inclusion in Section 1 (Schedule 5). Bats are also a UK Post-2010 Biodiversity Framework species.

In accordance with industry standard guidelines (Collins (ed), 2016), the four buildings identified by Whitcher Wildlife as having **low**, **moderate** and **high** potential to support roosting bats were subjected to three nocturnal bat surveys (B1, B2 & B3) and a single nocturnal bat survey (B4).

4.1 **Bats Roosts**

The evidence gained during the three bat activity surveys suggest that the buildings are not playing host to a large bat colony or maternity roost. However, six small day roosts supporting common and soprano pipistrelle were identified on Building 1. A potential brown long-eared feeding roost, of a single individual bat, was also identified in Building 3.

Due to current Covid-19 restrictions, it was not possible to undertake an inspection of the loft void within Building 1. However, given that only single, or bats in pairs, were observed entering roost locations on the interior of the building, it is unlikely that the loft supports a maternity roost or a large colony of bats. Furthermore, the PEA found no evidence of bat occupation within the loft space (Whitcher Wildlife, 2020).

4.1.1 ***Building 1***

A total of **six** separate **bat roost** locations were identified on Building 1 during the bat surveys. At four separate locations along the southern elevation of the building, bats were observed entering behind the timber bargeboard. Two further roost locations were identified on the eastern and western gable ends, just below the chimneys. The bats were observed entering beneath raised lead flashing.

All six of the bat roosts were attributed to common pipistrelle and soprano pipistrelle, and were either single occupants, or roosting in pairs.

4.1.2 ***Building 2***

No bats were observed emerging from (Survey 1) or entering (Surveys 2 & 3) the building or any features on the exterior of the building during the three bat activity surveys. It is therefore considered unlikely that the building supports a bat roost.

4.1.3 ***Building 3***

During the PEA undertaken by Whitcher Wildlife (Whitcher Wildlife, 2020), two aggregations of bat droppings were identified on the mezzanine floor, along with insect remains. The mezzanine floor was inspected prior to the first survey (15/07/2020) for fresh evidence of bat droppings/ feeding remains. Several wing casings likely belonging to underwing moth species were located below the main crossbeam (in line with the findings of Whitcher Wildlife, 2020). However, despite a thorough search, not bat droppings could be found.

Bat droppings swiftly break down and crumble when subjected to the right conditions, due in part to the high invertebrate concentrations. It is therefore likely that the droppings disintegrated between surveys. and would suggest that a brown long-eared bat(s) is utilising the crossbeam as a feeding perch.

The moth wing casings are evidence of bat presence within the building. Brown long-eared bats regularly utilise feeding perches, where they take larger prey to digest. Their diet mainly consists of large invertebrates including moths, beetles, and flies, and therefore the presence of discarded moth wings would suggest that a brown long-eared bat has accessed the interior of the building, and occasionally uses the crossbeam as a feeding roost.

During the activity surveys, most of the bat activity was centred around the courtyard to the south of Building 3, with common and soprano pipistrelles occasionally observed flying in and out of the building whilst foraging. No evidence of clustering, a typical behaviour undertaken by bats just prior to entering a roost, was observed by the surveyor. The IR camera situated at the open doorway during Survey 1, did not capture any bats emerging from the building. As such it is considered that the building supports a brown long-eared feeding perch used on an in-frequent basis within the interior of the building, however the building is unlikely to support any additional bat roosts.

4.1.4 ***Building 4***

No bats were observed emerging from the building during the nocturnal survey, and no evidence of bats was found during the PEA (Whitcher Wildlife, 2020). Therefore, no further survey work or mitigation is required.

4.1.5 ***Tree Roosts***

During Survey 2 and Survey 3, two of the surveyors observed bat clustering behaviour around two trees, a mature oak in the wider landscape and a mature sycamore at the gate to the courtyard. The observed behaviour would suggest that both trees support a bat roost and would therefore require further investigation should it become necessary to impact the trees.

4.2 Foraging and Commuting Habitat

Overall, the site was considered to provide excellent foraging and commuting opportunities. The buildings themselves were sited towards the bottom of a steep-sided hill with a broad expanse of woodland to the north, east and west, providing some shelter from the elements. The woodland edge, particularly to the west, and surrounding grassland provided further foraging opportunities, as did the scattered trees, both on site and within the wider landscape.

4.3 Barn Owl

On a single occasion, a barn owl was observed perching on the western chimney of Building 1, during which no breeding/ nurturing behaviours were witnessed. It is therefore considered likely that the barn owl was using the chimney as a lookout post whilst hunting.

Barn owls are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and are therefore afforded extra legal protection against disturbance whilst nesting, in addition to the basic level of protection afforded to all wild birds. Since no evidence of breeding was identified on site, mitigation for the species is not required. However, it is recommended that lighting is kept to a minimum post-development, and aimed away from the roof tops, grassland, nearby trees, and woodland edge to prevent disturbing hunting behaviours of the local barn owl population.

5 ASSESSMENT OF EFFECTS & MITIGATION REQUIREMENTS

Common pipistrelle, soprano pipistrelle, and brown long-eared bats are described as 'common', 'fairly common', and 'locally distributed' in South Yorkshire, respectively (South Yorkshire Bat Group, 2020). Soprano pipistrelles and brown long-eared bats are listed as priority species under the UK post-2010 biodiversity framework due to declining population trends (on a national level) but remain relatively widespread and common, particularly within suitable habitat. All three species are regularly associated with buildings but also habitually roost in trees, and it is therefore likely that there are many other suitable roosting sites for these species within the local area. As such, the proposals are not considered to have a negative impact on the overall conservation status of bats.

The nocturnal bat activity surveys confirmed the presence of six bat roosts and a potential brown long-eared bat feeding roost (Building 3) all of which would likely be lost under the proposed development. Consequently, a European Protected Species (EPS) licence will be required from Natural England before renovation works can commence. This can only be applied for once any relevant permissions are in place (such as planning consent or listed building consent) and any conditions related to bats have been discharged, where possible to do so in advance of applying for a licence.

The licence application involves three parts:

- Application form;
- Method statement (including detailed mitigation strategy); and
- Construction schedule (setting out the timing of various activities).

Natural England requires that the method statement is prepared by a bat ecologist with prior experience of mitigation design for the species affected and prior experience of European Protected Species development licencing. In order to grant a licence, Natural England has to be satisfied that the application meets the three tests set out in the Conservation of Habitats and Species Regulations 2017:

- A licence can only be granted for the purposes of "preserving public health or public safety or other imperative reasons of overriding public interest (IROPI) including those of a social or economic nature and beneficial consequences of primary importance for the environment";
- A licence can only be granted where there is no satisfactory alternative; and
- 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.

Current Natural England guidance for residential developments less than 1ha (including demolition and redevelopment), does not require the submission of a separate 'reasoned statement' to provide evidence for the three tests. However, the client should be aware that this information may still be required during the licensing process.

5.1 Mitigation Measures

Mitigation and compensations measures shall be identified that are proportionate and appropriate for the level of impact, the impacted species, and the roost types present. The mitigation design will be drawn up as part of the EPS licence, in collaboration with the architect to ensure all requirements are met within the proposals. The mitigation is likely to include:

- New roost locations integrated into the new roof, as close to the original roost locations as possible. This could be achieved by installing lead habitat tiles (<https://www.nhbs.com/habibat-lead-access-tile>) or by manipulating any replacement flashing to provide a cavity of a similar size and shape; and
- Creating small cavities behind the replacement bargeboard on the southern elevation (if it becomes necessary to replace the existing one). This could be achieved by placing a baton behind the timber board at strategic locations, to lift it away from the wall top.
- If artificial cavities cannot be created, suitable bat boxes should be installed as an alternative. At least one cavity box should be installed on the eastern gable, and three cavity boxes at strategic places along the southern elevation. Examples of suitable bat boxes can be seen in Figure 2 below.



Figure 2: (L to R) Habibat Lead Access Tile, Vivara Pro Interconnectable WoodStone Bat Box & Greenwood Ecohabitat Single Crevice Bat Box

5.1.1 *Removal of Areas with Bat Roosting Potential*

Some aspects of the works will require the presence of an Ecological Clerk of Works (ECoW). This would be a licensed bat ecologist operating under the terms of the licence issued by Natural England. The ECoW would be on site to undertake the following works during the course of the development:

- Delivery of Toolbox talk to builders prior to works commencing;
- Performing a further survey to check current level of bat activity inside of the building (this visit must be undertaken within 3-months prior to demolition);

- Endoscopy and blocking off any cavities in the impact zones. Exclusion devices may be used where appropriate to ensure no roost sites are occupied prior to works commencing; and
- Be on hand during the roof strip/ bargeboard removal in case any bats are found roosting under the lead flashing and/or timber bargeboard.

Throughout the rest of the works, workers must remain vigilant. If any bats are found on site at other times outside of the terms of any granted EPS licence, works must cease immediately, and a suitably qualified and licensed bat ecologist contacted for further advice.

Any bats found on site would need to be moved by the licensed ecologist and placed in a safe location agreed prior to the commencement of works.

5.1.2 *Timing of Works*

The Bat Mitigation Guidelines provide the optimum timings for works in different types of roosts (English Nature, 2004). The survey evidence gathered during the three activity surveys identified potential impacts to six bat roosts. There was no evidence to suggest that a maternity colony was utilising the structure, as such, the roosts are considered to be summer roosts and therefore it is suggested that works are undertaken between 1st September and 1st May, in line with the guidance demonstrated in Table 4 below.

Table 4: Optimum timing of works in different types of bat roosts (English Nature, 2004)

Bat usage of site	Optimum period for carrying out works (some variations between species)
Maternity	1 st October – 1 st May
Summer (not a proven maternity site)	1 st September – 1 st May
Hibernation	1 st May – 1 st October
Mating/swarming	1 st November – 1 st August

5.1.3 *Post Construction Lighting*

To minimise any negative effects on bat foraging habitat within the development, it is recommended that bat friendly lighting is used. A lighting scheme which utilises either low or high-pressure sodium lamps and minimise light scatter using light spill accessories (BCT & ILP, 2018) could be incorporated into site designs. Any lighting should also be aimed away from sensitive habitats including the identified bat roosts, any bat boxes that may be installed as part of the development, retained trees, grassland, and the woodland edges. Consideration should also be given to the times automatic lighting will be on, to maximise the amount of time the area is in darkness.

5.2 **Tree Roosts**

Should it become necessary to impact the two trees identified in this report, then further surveys will be required to assess the level of impact to the bats and/or bat roosts. This would usually involve aerial assessments undertaken by licensed bat workers with tree climbing capabilities, to closely inspect any potential bat roosting features and if possible, determine the bat species/size of bat roost (colony size).

6 **REFERENCES**

BCT and ILP (2018) Guidance Note 08/18 - Bats and artificial lighting in the UK, Bats and the Built Environment series Bat Conservation Trust, London.

British Standards Institution (2013) BS42020:2013 Biodiversity – code of practice for planning and development. BSI Standards Ltd, London

Chartered Institute of Ecology and Environmental Management (2013) *Competencies for Species Surveys in Britain and Ireland; Overview*. CIEEM, Winchester. Online [Available at] <http://www.cieem.net/competencies-for-species-survey-css->

Collins J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). Bat Conservation Trust, London.

Department for Communities and Local Government (2012) *The National Planning Policy Framework*. <http://www.communities.gov.uk/publications/planningandbuilding/nppf>

South Yorkshire Bat Group (2020) The Bats of South Yorkshire
<https://www.sybatgroup.org.uk/bats-of-south-yorkshire>

Whitcher Wildlife Ltd (2020). *Trunce Farm, Green Moor*. Preliminary Ecological Appraisal. A report under contract to Mark Barton.

Websites for Bat Boxes

NHBS

<https://www.nhbs.com/habibat-lead-access-tile>

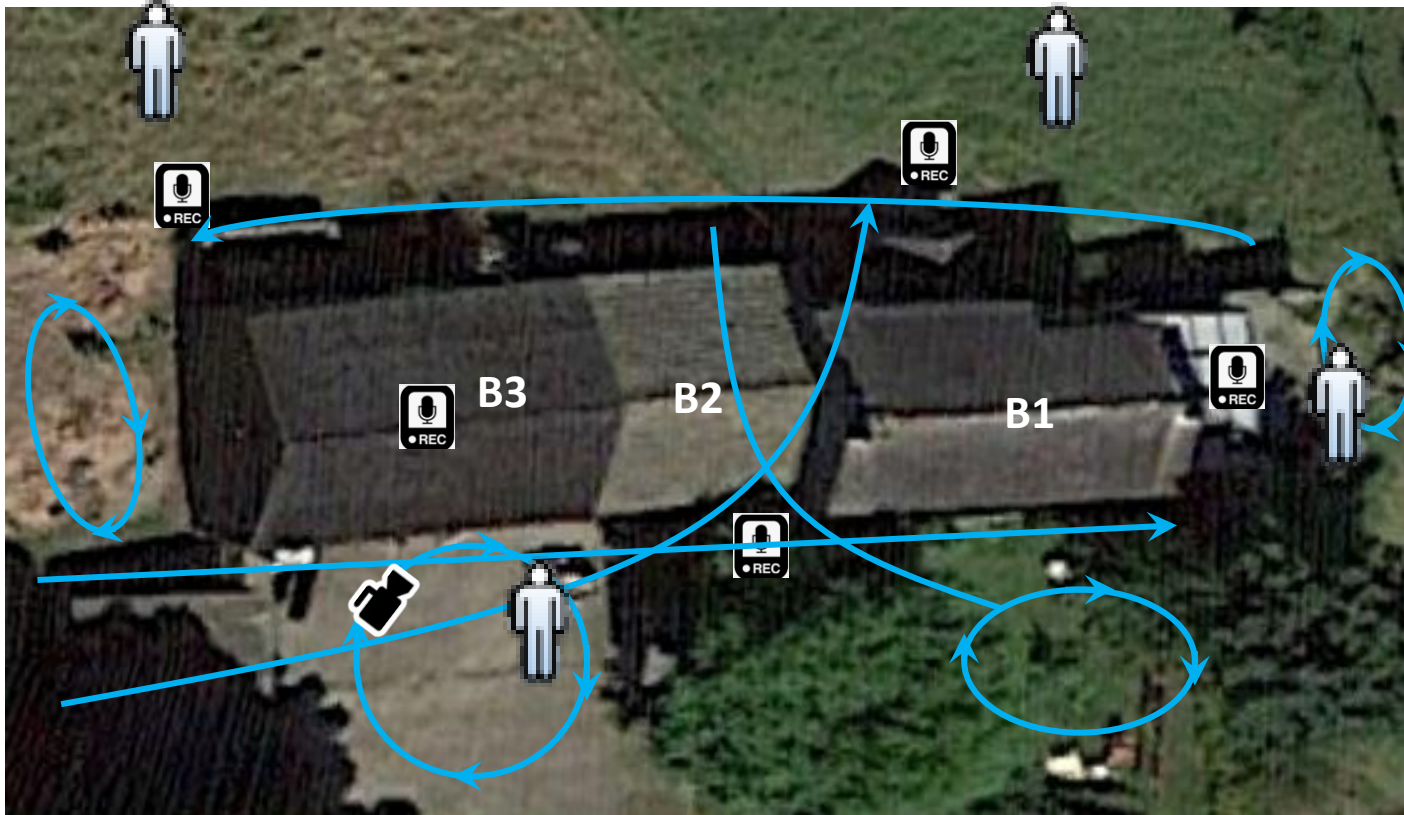
<https://www.nhbs.com/interconnectable-woodstone-bat-box>

Greenwood Ecohabitats

<https://www.greenwoodsecohabitats.co.uk/shop>

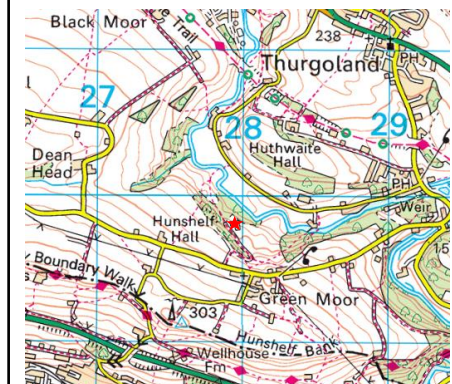
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Survey 1: Dusk 15/07/2020



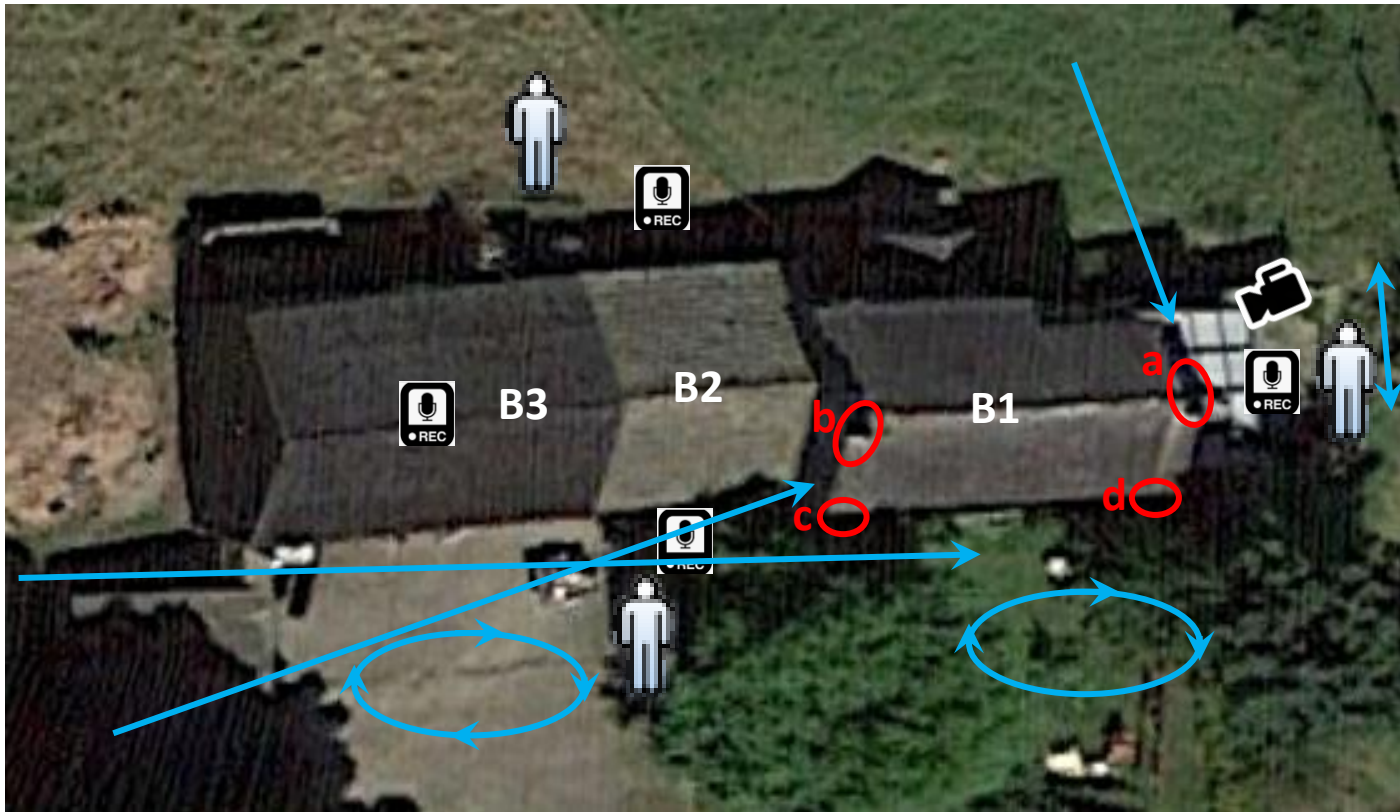
	Surveyor location
	IR camera location
	Full spectrum bat detector location
	Bat flight paths

Location Map:



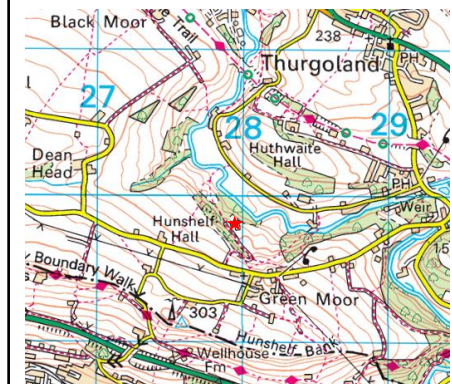
Site Name : Trunce Farm, Green Moor

Survey 2: Dawn 19/08/2020



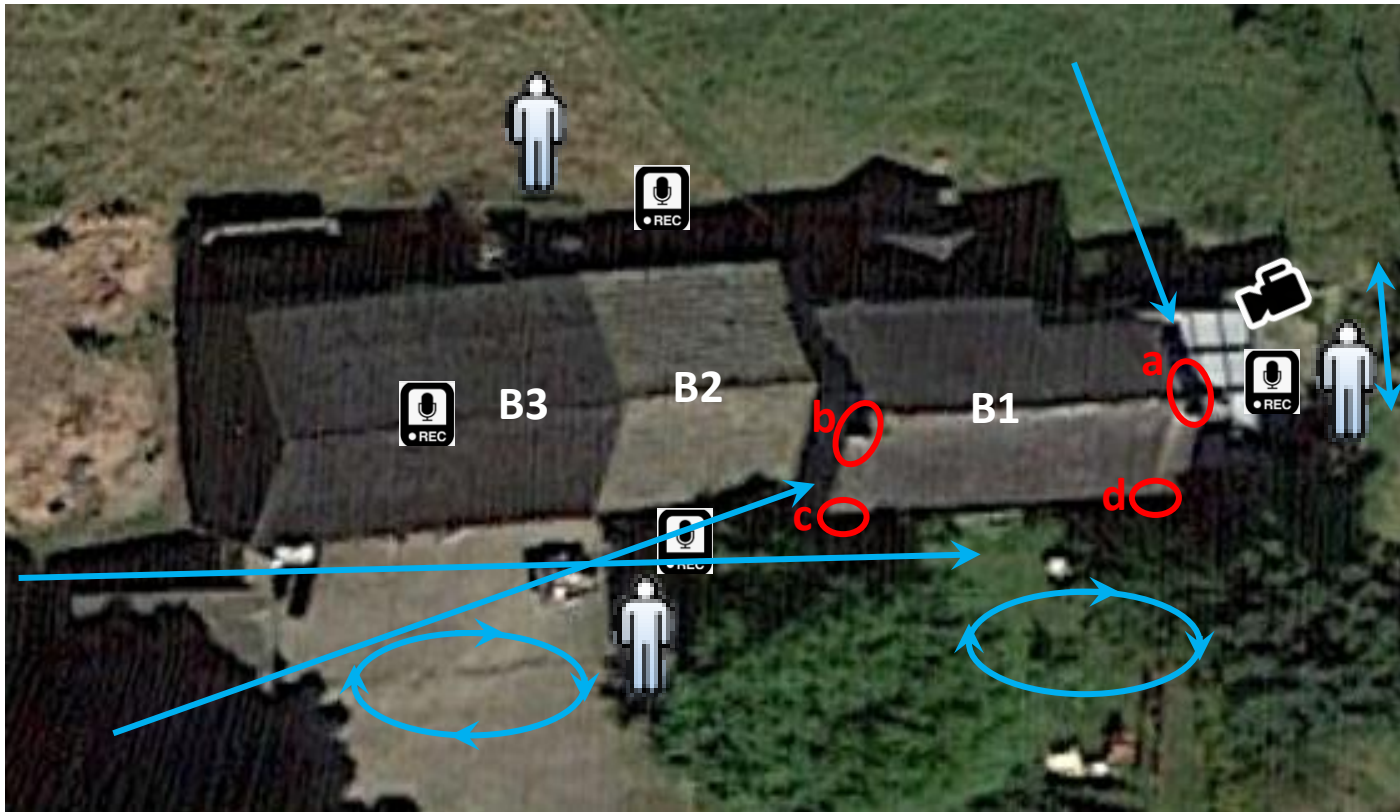
	Bat roost location
	Surveyor location
	IR camera location
	Full spectrum bat detector location
	Bat flight paths

Location Map:



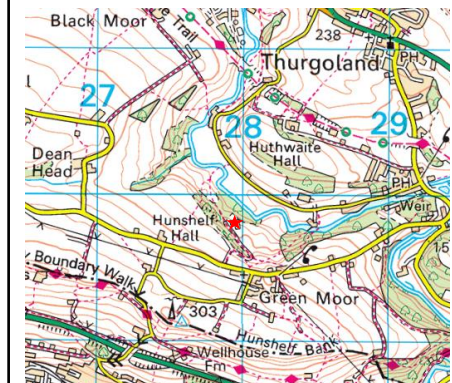
Site Name : Trunce Farm, Green Moor

Survey 2: Dawn 19/08/2020



	Bat roost location
	Surveyor location
	IR camera location
	Full spectrum bat detector location
	Bat flight paths

Location Map:



APPENDIX B : Site Photographs

No.	Description	Photograph
1	Identified bat roost on the western gable of Building 1, a small cavity beneath slightly raised lead flashing.	
2	A bat roost was identified on the eastern gable of Building 1, a small cavity beneath raised flashing to the side of the chimney.	
3	Four separate bat roosts were identified behind the timber bargeboard on the southern elevation of Building 1 (arrows). The circle highlights the location of the bat roost beneath the lead flashing mentioned in Photograph 1.	

No.	Description	Photograph
4	Bats were roosting behind the timber bargeboard on the southern elevation of Building 1, at 4 separate locations.	
5	Old moth wing casings beneath the timber crossbeam on the mezzanine floor of Building 3.	
6	Southern elevation of buildings B1 (right), B2 (centre) & part of B3 (left).	

No.	Description	Photograph
7	Southern elevation of Building 3.	
8	Rear (north) view of buildings B1 (left) & part of B2 (right).	
9	Building 4.	