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ENVIRO Centre

Fintray Church
Bat Survey

July 2017

Fintray Church
Bat Survey

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EXECUTIVE SUMMARY

Envirocentre Limited was commissioned by Lippe Architects and Planners to undertake a Potential Roost Feature Assessment (PRF) and bat activity survey at Fintray Church in order to inform proposed restoration work.

The building was assessed as having high potential to host roosting bats due to its construction type and proximity to optimal habitat.

A maternity roost of up to 38 brown long-eared bats and a non-breeding roost of up to 2 common pipistrelle bats were found to be utilising the building.

A number of common and soprano pipistrelles, brown long-eared bats and Daubenton's bats were recorded foraging in the area during the activity surveys.

A Scottish Natural Heritage European Protected Species licence and a Species Protection Plan will be required prior to repair works commencing.

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1 INTRODUCTION

1.1 Scope

Envirocentre Limited was commissioned by Lippe Architects and Planners to undertake a bat activity survey at Fintray Church in order to inform proposed restoration work.

1.2 Aim and Objectives

The aim of the survey was to provide information on bats to inform building repairs work. The main objectives of the survey were as follows:

- To ascertain the potential for bats to roost within the building;
- To observe and record the behaviour of any bats associated with the buildings and environs;
- Categorise any bat roosts found;
- Identify bat foraging and commuting routes in the surrounding landscape;
- Identify any constraints to repair works; and
- Make recommendations for further survey, mitigation, compensation and species licensing as required, to manage activities that may cause disturbance to bats during future development.

1.3 Site Location and Proposed Development

The Church is located on the outskirts of the village of Hatton of Fintray, Aberdeenshire (OS grid ref: NJ 84039 16638). The main building dates back to the 19th century and has a simple rectangular structure. The walls are rendered and it has a pitched slate roof. There is a small, modern extension to the west, connected via a vestibule. The proposed works are for repairs to the external fabric of the older building, including wood rot in the roof space and replacing damaged roof slates. No repair work is planned for the recently constructed extension.

There is a small carpark to the east of the building and the site is surrounded by mature beech trees. Agricultural fields are present to the north and east and occupied residential dwellings to the west and south. There are two small watercourses to the east and west of the church and the River Don is <1km to the south.

The site location and building plan can be seen in Appendix A.

1.4 Relevant Legislation and Policy

Bats are protected under the Wildlife and Countryside Act 1981 (as amended by the Nature Conservation (Scotland) Act 2004) and under the Conservation of Habitats and Species Regulations 2010. Taken together, these make it an offence to:

(a) Deliberately capture or intentionally take a bat
(b) Deliberately or intentionally kill or injure a bat
(c) To be in possession or control of any live or dead wild bat or any part of, or anything derived from a wild bat
(d) Damage or destroy a breeding site or resting place of such an animal or intentionally or recklessly damage, destroy or obstruct access to any place that a wild bat uses for shelter or protection
(e) Intentionally or recklessly disturb any wild bat while it is occupying a structure or place that its uses for shelter or protection

(f) Deliberately disturb any bat, in particular any disturbance which is likely to impair their ability:
   i. To survive, breed, reproduce or to rear or nurture their young; or
   ii. In the case of hibernating or migratory species, to hibernate or migrate; or to affect significantly the local distribution or abundance of the species to which they belong.

1.5 Licensing

Licences can be obtained from Scottish Natural Heritage (SNH) which permit work which would otherwise constitute and offence under the above legislation. For a licence to be issued these three tests must be satisfied:

1. the development is 'in the interests of public health and public safety', or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment';
2. That there is 'no satisfactory alternative'; and
3. That the derogation (i.e. any permission/licence granted) is 'not detrimental to the maintenance of the populations of the species concerned at a favourable conservation status in their natural range'.

To obtain a licence a method statement, or species protection plan, is required that identifies the activities to be undertaken, the location, status and character of all roosting sites (e.g. bat roosts), the potential effects and details of the proposed avoidance, mitigation and compensation measures to be applied to the project.

1.6 Disclaimer

Bats are transient species and utilise a variety of habitats and structures throughout their active period (April-September). This activity survey is a 'snap-shot' of how bats were found to utilise the site in late June and early July 2017.

2 METHODS

The surveys were designed and undertaken in reference to the Bat Conservation Trust: Bat Surveys Good Practice Guidelines[1] by a team of suitably experienced and qualified surveyors. For surveyor profiles see Appendix F.

2.1 Potential Roost Feature Assessment

A Potential Roost Feature (PRF) assessment was undertaken based on the criteria outlined by the Bat Conservation Trust (BCT), which aimed to categorise the structures in terms of their potential to host roosting bats.

An internal and external inspection of the buildings on site was undertaken to search for field signs of bats or locate any potential roosts. Table 2-1 lists the common indicators used to determine the actual or potential presence of roosting bats.

Table 2-1: Active Bat Roost Indicators and PRFs in Buildings

Signs indicating possible use by bats	Features of buildings frequently used as bat roosts
Live bats or dead specimens	Gaps in windowsills and window panes
Droppings and their relative freshness, shape and size	Underneath peeling paintwork or lifted rendering
Feeding remains including the amount and type of prey	Behind hanging tiles, weather boarding, eaves, soffit boxes, fascia and lead flashing
Urine splashes and fur-oil straining around crevices and holes	Under tiles and slates
Distinctive smell of bats	Gaps in brickwork and stonework

According to their suitability to host roosting bats, structures were categorised as follows:

Table 2-2: Categorising PRFs in Structures

Suitability	Structure Description
High	A structure with one or more potential roost features that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat
Moderate	A structure with one or more potential roost features that could be used by bats due their size, shelter, protection, conditions and/ or surrounding habitat but unlikely to support a roost of high conservation status
Low	A structure with features that could be used by individual bats opportunistically; PRFs not suitable for use on a regular basis or by larger numbers of bats
Negligible	A structure with negligible features which is unlikely to be used by bats

[1] Collins, J.(ed.) (2016). Bat Surveys for professional Ecologists: Good Practice Guidelines, 3rd edition, Bat Conservation Trust.

2.2 Bat Activity Survey

Bat activity surveys aim to establish if a roost is present on, or immediately adjacent to, the site and to identify foraging and commuting routes in the surrounding landscape. This information is used to determine the type and extent of mitigation and/or compensation that may be required to address the issue of bats in line with current wildlife legislation. The survey effort (i.e. number of survey visits) is scoped from the overall potential of the structures to host roosting bats.

Accurate numbers of bats can be difficult to identify during flight, therefore each bat pass (i.e. each call identified using a bat detector) is recorded to species level with an indication of the time it was identified, its location and behaviour. This information is gathered to characterise activity and any roosts discovered at the site.

Frequency division bat detectors (Bat Box Duet) coupled with MP3 recorders and time expansion recorders (EM Touch) are used to gather digital sound file samples of bat activity. Where sound data is collected, post survey analysis is conducted to collate species diversity on site and identify any observed species not fully confirmed in the field.

2.2.1 Dusk and Dawn Activity Surveys

The purpose of dusk and dawn activity surveys is to locate bats emerging and re-entering roost sites. During activity surveys, surveyors are positioned in order to gain visual and audible coverage of all features of a structure which offer potential to roosting bats.

A dusk survey was conducted at Fintray Church on the 20th June 2017. The dawn survey took place on the 6th July 2017. See Appendix B for surveyor vantage point locations. The small extension was only partially observed during the surveys, however no works are proposed for this part of the building. The main focus of the survey was the main body of the building where repairs are to be undertaken.

The dusk survey commenced 15 min before sunset and continued for 1.75 hours. The dawn survey commenced 1.5 hours before sunrise and ceased at sunrise. Surveys were completed during suitable weather conditions for bat activity (i.e. sunset temperatures of >10^{o}C no rain or strong wind).

2.3 Constraints

2.3.1 Potential Roost Feature Assessment

It was not possible to fully inspect the roof space as access was not deemed to be safe. Surveyors were able to look inside the space from the loft hatch to search the visible area using torches and assess the structure's suitability for bats.

2.3.2 Dusk and Dawn Activity Surveys

Due to the height of the building and the proximity of the mature trees, it was not possible to gain a clear view of the highest aspect of the roof on the southern side of the building (refer to Appendix B). The surveyor could view the space between the building and the trees, a route which bats would likely have relied on for access to this area however. As such, the surveyor would be in the positon of highlighting any bats that may have entered or exited from the surrounds of the structure section not directly in view.

3 RESULTS

Please read the following results in conjunction with Appendix B: Surveyor Vantage Points, Appendix C: Photographic Record, Appendix D: Bat Activity Survey Results and Appendix E: Sample Spectrograms from Call Analysis.

3.1 Potential Roost Feature (PRF) Assessment

External Inspection

A number of potential bat roost entry and exit points were identified on the building including;

- Gaps under slates and missing slates on the roof;
- Gaps under the roof ridge;
- Deteriorating masonry at the wall-head and gutter line (Photo 1);
- Raised lead flashing
- Three bat droppings, thought to be from pipistrelle bats were found on the windows on the west aspect of the extension (Photo 2).

Internal inspection

Although it was not possible to enter into the roof space due to unsafe access, surveyors were able to view the space from the loft hatch. The loft space is c. 2m in height and extends the length and breadth (c.20m x 10m) of the building. There are open rafters and sarking boards. A brown long eared bat was seen flying within the loft space. Damp patches on the ceiling suggest that there has been some water ingress through the roof space. The wood has previously been treated for woodworm although the exact date was unknown.

Based on these findings and the criteria listed in tables 2-1 and 2-2, the building was assessed as having Potential Roost Features with high suitability for roosting bats.

3.2 Bat Activity Survey

Dusk survey: 20th June 2017

- Two common pipistrelle and 20 brown long-eared bats were seen emerging from the wall-head void behind the guttering on the southern aspect of the building (Photo 3).
- A single bat was seen emerging from the wall-head void behind the guttering on the northern aspect of the building (Photo 4). It was not echolocating as it emerged and no identifying features/characteristics were clearly observed. Timing of emergence (50 min after sunset) and lack of echolocation suggests this was a brown long-eared bat.
- A number of common and soprano pipistrelles were observed foraging in trees around the building throughout the duration of the survey, with brown long-eared bats observed foraging in the latter half of the survey.

Dawn survey 6th July 2017

- One common pipistrelle and 38 brown long-eared bats were seen entering the roost at the wall-head void behind the guttering on the south aspect of the building (Photo 3).
- A number of common and soprano pipistrelles, brown long- eared bats and Daubenton's were observed foraging throughout the duration of the survey.

4 ASSESSMENT

4.1 Site Status and Assessment

From the PRF assessment Fintray church was assessed as having **high potential** to host roosting bats**:**

'*A structure with one or more potential roost features that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat*' to host roosting bats.

From observations made during the activity survey, the church is assessed as hosting a brown long-eared bat maternity roost of up to 38 individuals and a non-breeding roost for up to 2 common pipistrelle bats.

Fintray Church is unlikely to provide the insulated, constant cool and humid conditions required by bats for winter torpor and as such are considered to offer **negligible hibernation potential** for bats.

Throughout both surveys brown long-eared, common and soprano pipistrelle bats were recorded foraging around the church and surrounding trees. Daubenton's bats were also recorded during the dawn survey. The riparian habitats, surrounding agricultural fields with shelterbelt woodland and proximity to the River Don provide optimal commuting and foraging resource for a range of bat species present in the locale.

4.2 Potential Impacts to Bats

The following impacts (positive and negative) may occur depending on the timing, duration and method of works:

- Temporary disturbance to roosting bats whilst works are undertaken;
- Death of bats due to exposure to unsuitable chemical timber treatments;
- Permanent loss of roosting space for a brown long-eared maternity roost and a non-breeding common pipistrelle roost if roost access is blocked and not re-instated;
- Improved conditions within the roost space and increased longevity of roost availability due to repairing leaks in the roof and replacement of damp timbers.

4.2.1 Licensing

A European Protected Species (EPS) licence for bats is required from Scottish Natural Heritage to undertake the repair works at Fintray Church. A species protection plan and licence application can be formed using the information contained in this report along with a client agreed mitigation plan based on the specific design proposals and work logistical intentions.

5 FURTHER SURVEY, MITIGATION, COMPENSATION AND OPTIONAL ENHANCEMENT

5.1 Further Survey

The results of bat activity surveys to inform an SNH licence applications are generally considered valid for 18 months. If development does not take place within this time period further survey to inform the application will be required.

5.2 Mitigation

The mitigation below comprises suggested avoidance measures. These should be applied to the project to reduce any potential negative impacts to bats.

- It is suggested that repair works are scheduled to occur and be completed outside of the sensitive bat activity season (April – end September);
- If possible, current access points and internal roosting space should be maintained;
- Contractors should be made aware of the presence of bats at the site and in the locale during works;
- In the event that a bat, or a bat roost, is discovered on site, works must stop immediately until an appropriately qualified ecologist contacted for advice;
- A bat box such as: http://www.nhbs.com/title/158636/1ff-schwegler-bat-box-with-built-in-wooden-rear-panel should be installed so to provide temporary accommodation for any bats unexpectedly discovered.
- Any roof stripping should take place under supervision of a licenced bat worker.
- Temporary lighting which might be required during works and permanent exterior lighting positioned upon or around the renovated building, should not illuminate adjacent trees which will be favoured by bats present in the locale for commuting and foraging resources and could be used at any time of year.
- Only timber treatment chemicals suitable for use in bat roosts should be used for rot treatment. A list of approved chemicals can be found at https://www.gov.uk/guidance/bat-roosts-use-of-chemical-pest-control-products-and-timber-treatments-in-or-near-them#treating-timber-to-protect-against-insects-fungal-growth-or-weathering.
- Trees should be protected to standard BS5837:2012, in order to preserve the foraging and commuting resource.

5.3 Compensation

It is not clear at present whether the planned works will affect the roost access points currently being used by the bats at the wall-head void behind the guttering (as indicated in Photos 3 and 4). The preferred option is to leave these intact. If works are going to impact the access points, they should be re-instated similarly to the drawing in figure 5-1.

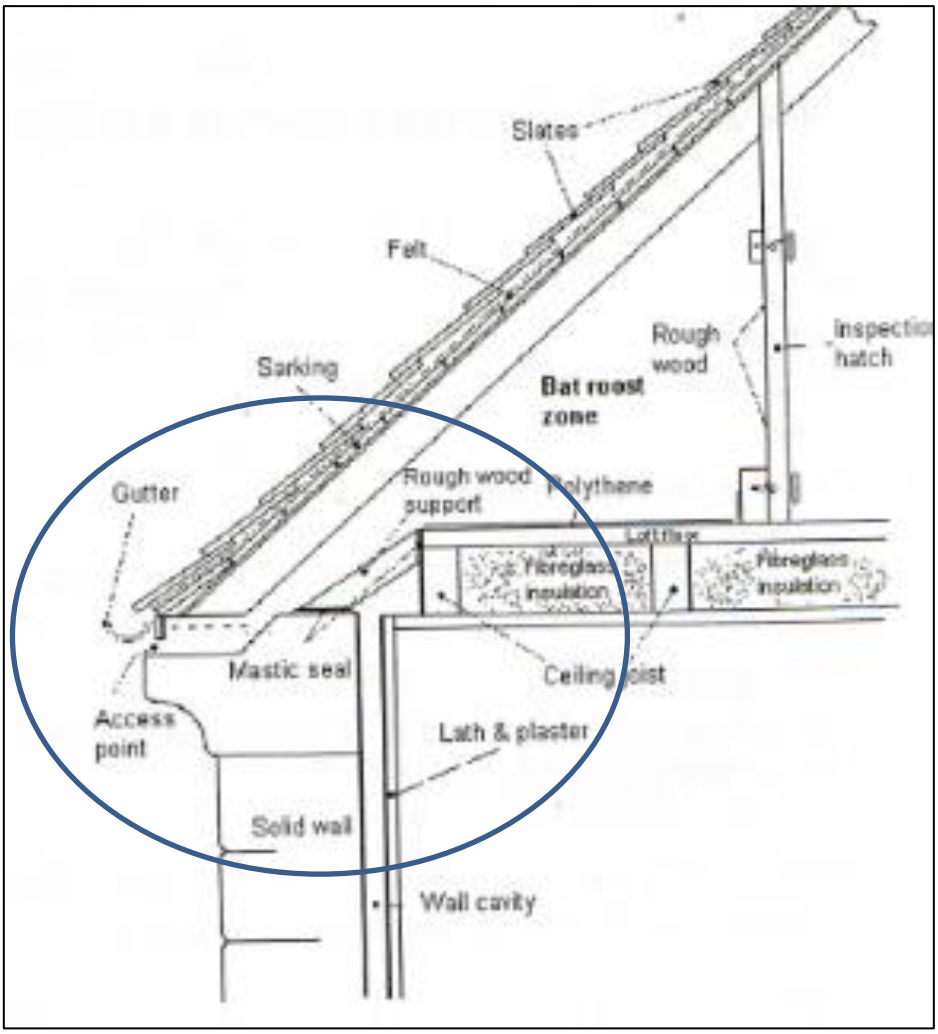

Figure 5-1 Example of reinstated access point beneath guttering taken from the Bat Mitigation Guidelines (2004)[2].

5.4 Optional Enhancement

There are a number of features on the roof (eg. raised flashing and loose tiles) which surveyors did not directly observe bats using but have the potential to be used. As these may be lost through the roof works we recommend that opportunities for roosting bats are recreated once repairs have been completed. Optional enhancement may include:

- Leaving space for bats to roost underneath tiles. This can be achieved by leaving a strategic gaps (c.20mm) between tiles, raised lead or using a specially designed bat access slate similar to this: http://www.nhbs.com/title/192461/habibat-bat-access-slate allowing bats to access a roost void within the roof structure or simply shelter under an individual slate;
- Providing roosting space underneath ridge tiles. This can be achieved by placing one ridge tile on top of the two adjacent tiles to leave a small gap below, thus allowing bats to roost in the ridge void;
- Bat boxes such as: http://www.nhbs.com/title/158636/1ff-schwegler-bat-box-with-built-in-wooden-rear-panel could be installed on the exterior of the building or in near-by trees. Bat boxes should be installed at least 3m above ground.

[2] Mitchell-Jones, A.J. (2004) *Bat Mitigation Guidelines*. English Nature

APPENDICES

A SITE LOCATION AND BUILDING PLAN

OS MAP
Scale 1:10,000 at A3

REVISIONS

PROJECT DETAILS

FABRIC REPAIRS

Fintray Parish Church
Hatton of Fintray

Church of Scotland

OS Map

Scale: 1:10,000 @ A3
Date: 30.05.17
Drawn:da

CHECK INITIALS DATE
planning:
warrant:
tender:

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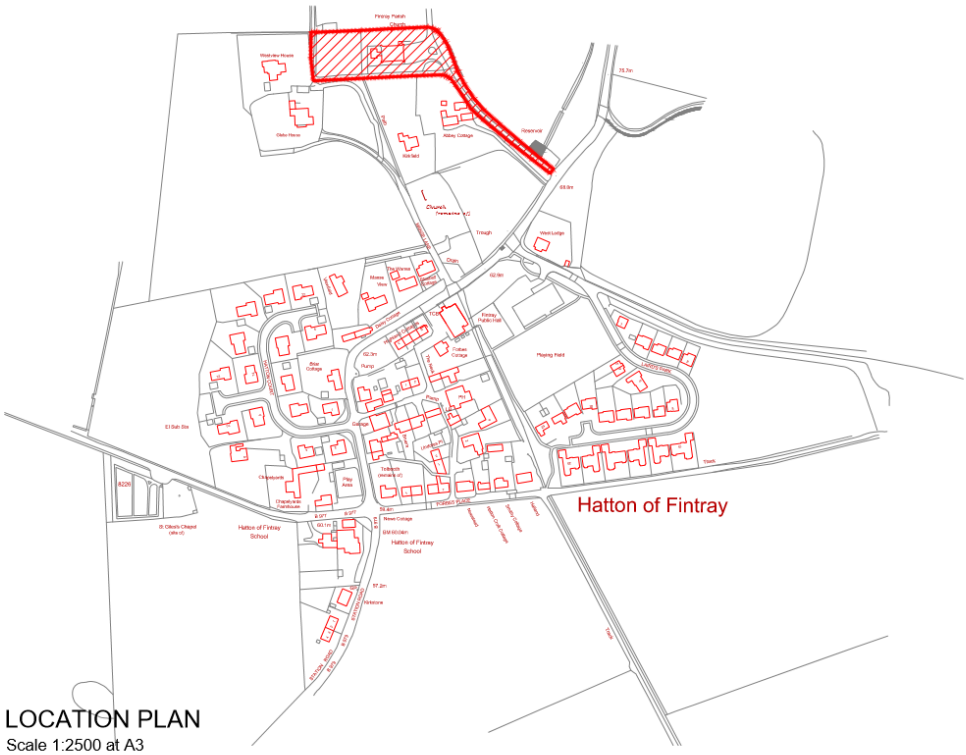

LOCATION PLAN
Scale 1:2500 at A3

REVISIONS

PROJECT DETAILS

FABRIC REPAIRS

Fintray Parish Church
Hatton of Fintray

Church of Scotland

Location Plan

Scale: 1:2500 @ A3
Date: 30.05.17
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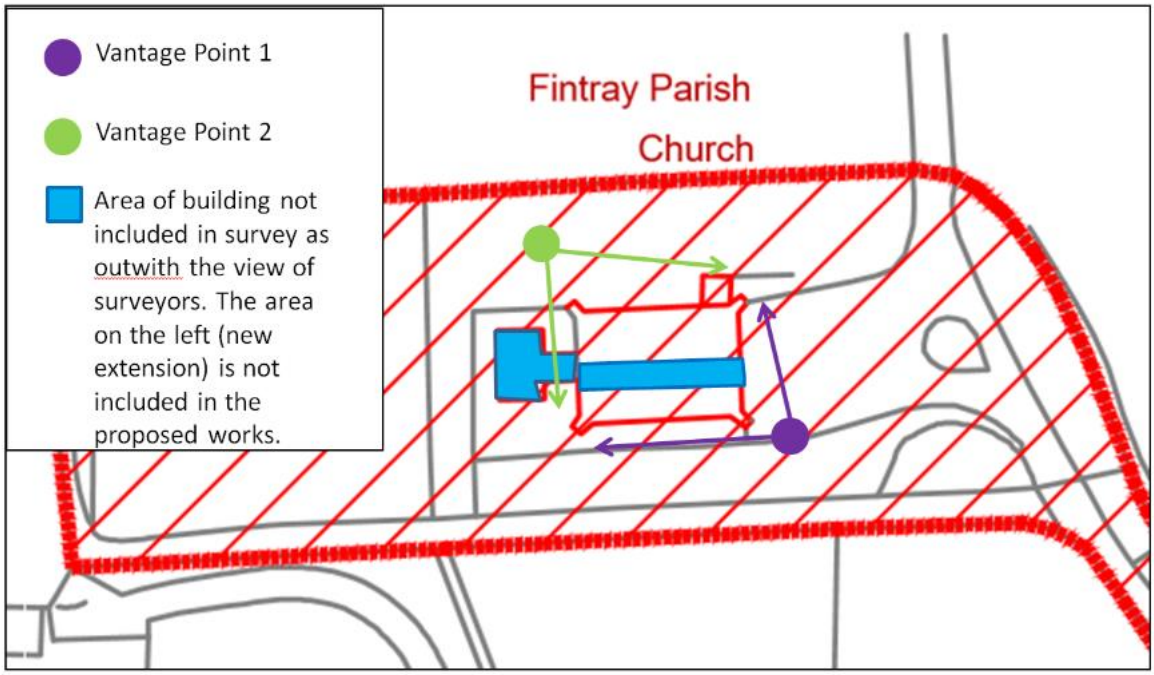
B SURVEYOR VANTAGE POINT LOCATIONS



C PHOTOGRAPHIC RECORD

Photo 1: Example of deteriorating masonry at wall head and under guttering.

Photo 2: Pipistrelle dropping located on west aspect of new extension.

Photo 3: Roost exit points identified during the dusk survey (dusk: 2 common pipistrelles from exit on left, 20 brown long-eareds from exit on right, dawn: 38 brown long-eared and 1 common pipistrelle entered on right).

Photo 4: Brown long-eared exit point on north aspect.

D ACTIVITY SURVEY RESULTS

Dusk Survey 20/06/2017	
Sunset:	22:08
Start time:	21:55
End time:	23:40
Conditions:	12°c at start, still, dry, 10% cloud cover.

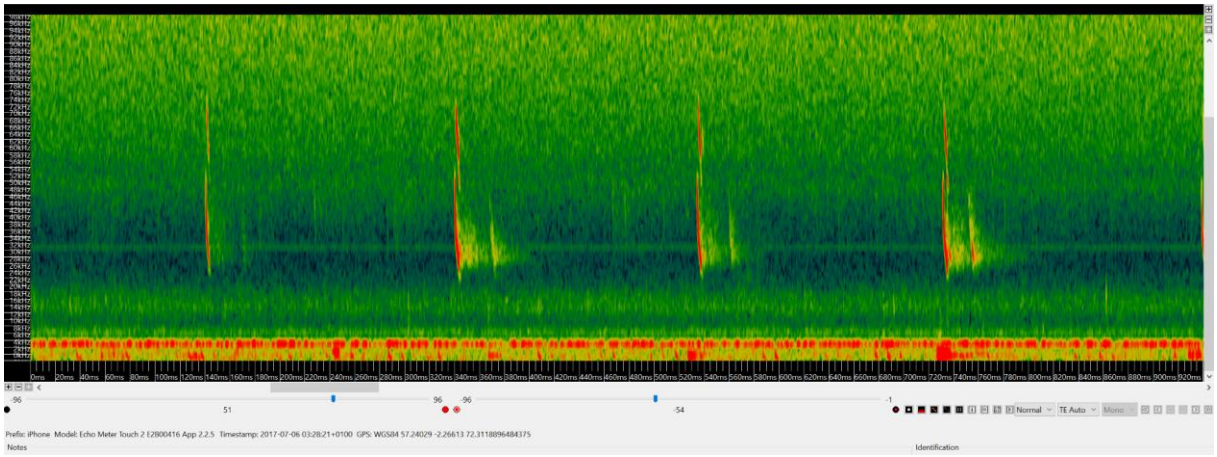
Vantage Point: 1	**Surveyor: Emma Archer**	**Equipment: EM Touch + Bat Box Duet + Roland**
Time	Species	Activity
22:10	Common pipistrelle	Feint pass not seen.
22:14	Common pipistrelle	Emerge from under gutter.
22:16	Common pipistrelle	Second bat emerging from under guttering, same location.
22:32	Common and soprano pipistrelle	At least 3 bats seen foraging around building and in trees to south.
22:54	Soprano pipistrelle	At least one bat still foraging but activity reduced.
22:59-23:12	Brown long-eared	20 bats seen emerging from under guttering. Not echolocating during emergence but surveyor could see ears and brown long-eared were picked up in recordings from later on.
Vantage Point: 2	**Surveyor: Mhairi Mackintosh**	**Equipment: EM Touch + Bat Box Duet + Zoom**
Time	Species	Activity
22:24	Soprano pipistrelle	Foraging around building and trees to north.
22:27	Soprano pipistrelle	Second bat foraging
22:56	Possible brown long ear	Emerging from under gutter.
23:16	Soprano and common pipistrelle	Foraging around building and trees to north but activity less frequent than earlier.
23:23	Soprano pipistrelle	Feint pass.
23:28	Soprano pipistrelle	Feint pass.
23:30	Soprano pipistrelle	Foraging in trees to north.

Dawn Survey 06/07/2017	
Sunrise:	04:23
Start time:	02:50
End time:	04:23
Conditions:	12°c at start, light breeze, dry, 100% cloud cover.

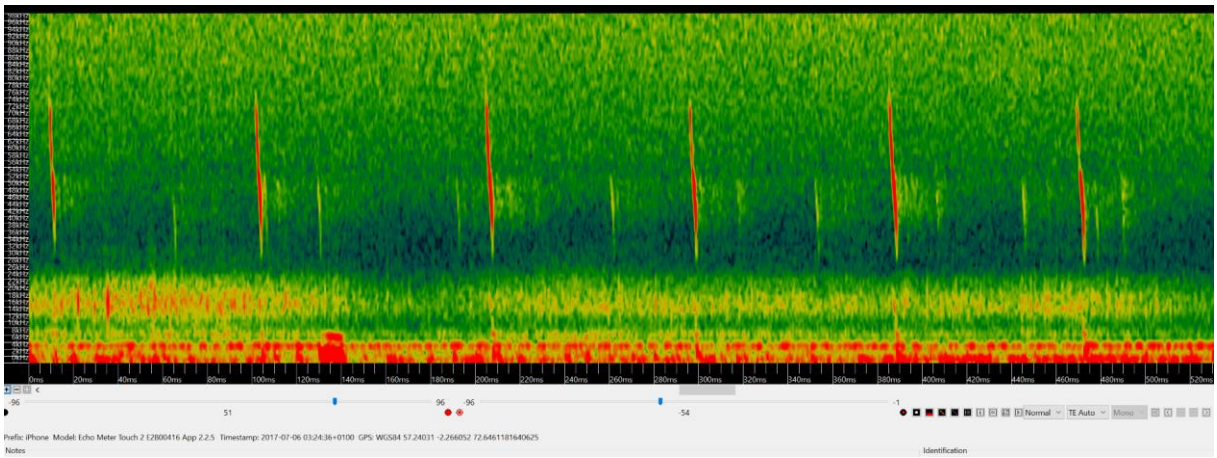
Vantage Point: 1	**Surveyor: Emma Archer**	**Equipment: Bat Box Duet + Roland**
Time	Species	Activity
03:10	Brown long-eared	Up to 6 bats displaying swarming behaviour
03:23	Brown long-eared	2 bats entered
03:28	Brown long-eared	Third bat entered
03:33	Brown long-eared	C. 10 bats swarming
03:40	Brown long-eared	Twelfth bat entered

03:42	Brown long-eared	Fifteenth bat entered
03:45	Brown long-eared	Eighteenth bat entered
03:54	Brown long-eared	Thirtieth bat entered
03:59	Common pipistrelle	One bat entered underneath guttering
04:02	Brown long-eared	Thirty third bat entered
04:03	Pipistrelle species	3 bats swarming at the east end of church but did not enter
04:10	Brown long-eared	Thirty eighth bat entered
04:14	Soprano pipistrelle	Foraging in trees to south of building
Vantage Point: 2	**Surveyor: Mhairi Mackintosh**	**Equipment: EM Touch + Bat Box Duet + Zoom**
Time	Species	Activity
03:09	Brown long-eared	Foraging in trees to north of building
03:10	Soprano pipistrelle	Pass not seen
03:18	Soprano pipistrelle	Pass not seen
03:21	Soprano pipistrelle	2 bats foraging between building and trees to north.
03:23	Daubenton's	Pass not seen
03:30	Brown long-eared	2 bats foraging in trees to north of building
03:32	Common pipistrelle	Pass not seen
03:38	Common and soprano pipistrelle	Foraging
03:47 – 04:11	Soprano pipistrelle	At least 1 bat foraging

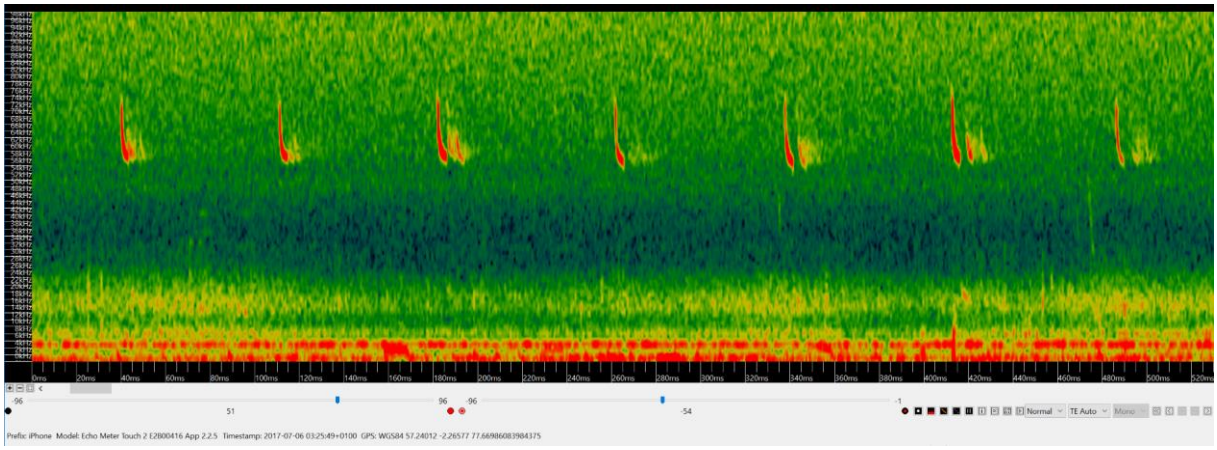
E SAMPLE OF SPECTOGRAMMES FROM CALL ANALYSIS



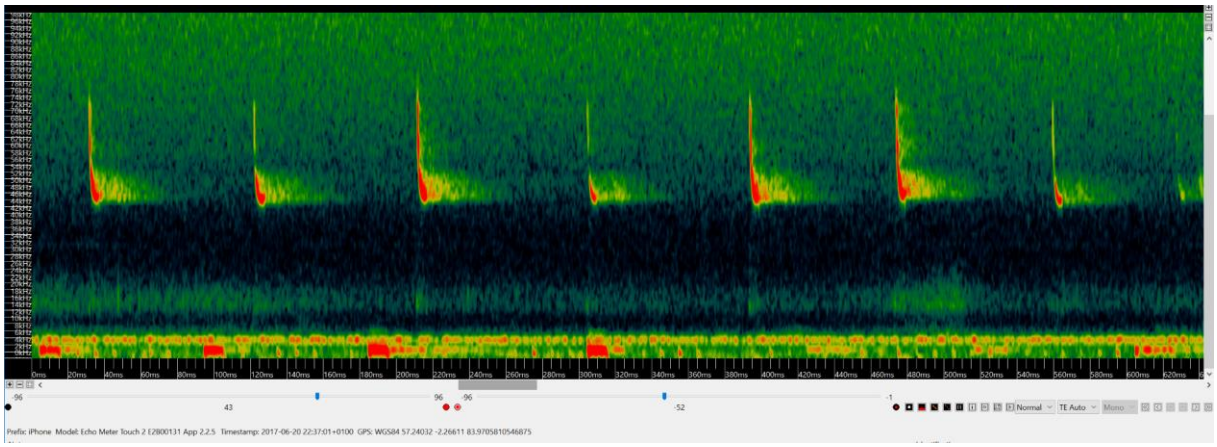
Brown long-eared recording – 03:38 06/07/2017



Daubenton's recording – 03:24 06/07/2017



Soprano pipistrelle recording – 03:25 06/07/2017



Common pipistrelle recording – 22:37 20/06/2017

F SURVEYOR PROFILES

Mhairi Mackintosh BSc (Hons) MSc Consultant Ecologist	Mhairi has five years bat survey experience in Scotland. She has worked for SNH within the licencing team and published research on bat licencing and mitigation. She is a trainee bat worker with SNH and a committee member of the North East Scotland Bat group.
Emma Archer BSc (Hons) Graduate Ecologist	Emma is a graduate ecologist training to undertake background research, bat roost potential and activity surveys and report in relation to development projects in Scotland.