

Greena Ecological Consultancy

Bat Mitigation Plan

St. Mary the Virgin

Bruera

Saighton

Chester

CH3 6EP

DRAFT V1

31st October 2021

Report compiled by:
Geoff Billington
Greena Ecological Consultancy,
Stonehaven
Witham Friary
Frome
Somerset
BA11 5HH
Email: geoffbillington@btconnect.com
Mb: 077487 42475

Agent:
Rose Riddell
Engagement Officer
Bats in Churches Project
Cathedral and Church Buildings Division
Church House
Great Smith Street
London
SW1P 3AZ

Architect details

Architect name	Graham Holland
Company	Graham Holland Associates
Address	Winnington Hall Northwich CW8 4DU
Contact email	info@grahamhollandassociates.co.uk
Contact telephone	01606 624626

Church details

Church name	St Mary the Virgin
Location	Bruera, Cheshire
Church representative/s	Mary Pleavin
Project representative/s	Rose Riddell
Appointed ecologist	Geoff Billington
Church Heritage Record	609086
Listing	II*

Disclaimer:

No part of this report may be copied or reproduced by any means without prior written permission from Greena Ecological Consultancy (GEC), it remains the property of GEC until all associated costs are paid for in full. If you have received this report in error, please destroy all copies in your possession or control and notify Greena Ecological Consultancy.

This report has been prepared for the exclusive use of the commissioning party and unless otherwise agreed in writing by GEC, no other party may use, make use of or rely on the contents of the report. No liability is accepted by GEC for any use of this report, other than for the purposes for which it was originally prepared and provided.

Opinions and information provided in the report are on the basis of Greena Ecological Consultancy using due skill, care and diligence in the preparation of the same and no explicit warranty is provided as to their accuracy. It should be noted and it is expressly stated that no independent verification of any of the documents or information supplied to Greena Ecological Consultancy has been made.

Please note basic biological record information obtained in this report may be shared with record centres; this would not include your personal information.

Contents

BRIEF	2
SUMMARY	3
1. INTRODUCTION	4
2. AIMS AND OBJECTIVES	6
3. SITE DESCRIPTION	6
4. METHODS	8
5. SURVEY CONSTRAINTS	9
6. RESULTS	9
7. DISCUSSION AND RECOMMENDATION	21
8. REFERENCES	22

Brief

To carry out bat surveys over several months to determine the extent of use of the site by bats and to produce a report including the production of a bat management plan (BMP) outlining possible bat mitigation measures to address the problems caused by the bats in the church. The architect, with their knowledge of the church building, will be involved from the outset in order to help create a bespoke solution for the church.

The BMP will aim to improve conditions inside the church for the church community, building and items of heritage significance, while maintaining a home for the bats and protecting their conservation status.

Summary

- Greena Ecological Consultancy was instructed by Judith Milne Natural England Finance Officer for the bats in churches project to undertake this survey, assessment and to draw up a mitigation plan to resolve the bat problems experienced at this site.
- The church St. Mary the Virgin contains Norman elements, but it has been subjected to alterations and modifications, particularly in 1896.
- The building was inspected in April and June and four bat activity surveys were carried out between June and September 2021.
- The church has long term historical use by bats first being visited by Mr Schofield of the Nature Conservancy Council in 1987 on account of the problems being caused by bats. A number of different people attempted to assist over the years including being raised at a European Parliament Committee in 1989. A lighting system was tried in an attempt to dissuade internal use by bats but this failed.
- Having had many visits the only detailed information has been made available from a 'light touch' survey by *wild scapes* in 2017. Previous conclusion that there was a colony of: Brown long eared bats using the church as well as small numbers of Pipistrelle bats, and conclusion was the number of bats had decreased in recent years.
- Over activity surveys six bat species were recorded in flight in the area around the church, three bat species were recorded roosting in the church species were recorded emerging;
 - ❖ Common pipistrelle individual bats in west roof and SE eaves
 - ❖ Up to three Soprano pipistrelle and six Long eared bats in the eastern roof apex
 - ❖ Overall not more than eight bats were recorded roosting in the church at one time
- A solution to stop/substantially reduce the numbers of bats entering the church has been presented to stop bats entering whilst still retaining south wall access to Long eared bats and to enhance the tower as a secondary roost site.
This methodology would need an EPS bat licence.

1. Introduction

1.1 Background

Greena Ecological Consultancy was instructed by Judith Milne Natural England Finance Officer for the bats in churches project to undertake this survey, assessment and to draw up a mitigation plan to resolve the bat problems experienced at this site.

Previous conclusion that there was a colony of: Brown long eared bats using the church as well as small numbers of Pipistrelle bats, the number of bats has decreased in recent years.

The bats use of the interior has caused damage to the fabric of the church, monuments, fixture and fittings, and widespread urine staining particularly in the eastern half in the chancel.

1.2 Legislation

All UK bat species and their roosts are fully protected under the Wildlife and Countryside Act 1981 (as amended) through inclusion in Schedule 5, under the Countryside and Rights of Way Act 2000, and under Schedule 2 of the Conservation (Natural Habitats &c) Regulations 2012 (as amended). The Conservation Regulations designate bats as European Protected Species.

Taken together, the Acts and Regulations protecting bats make it an offence to:

- Deliberately kill, injure, capture or take bats
- Deliberately disturb bats. This particularly relates to disturbance that is likely to:
 - Impair their ability to survive, breed or reproduce, or to rear or nurture their young
 - Impair their ability to hibernate or (for migratory species) migrate
 - Affect significantly the local distribution or abundance of the species to which they belong
- Damage or destroy bat roosts
- Possess or transport a bat or part of a bat, unless acquired legally
- Sell, offer for sale or exchange bats or parts of bats.

A roost is any structure or place used for shelter or protection. Bats need to have access to a number of roosts because they use different roosts depending on season, breeding status and prevailing weather conditions. For this reason roosts are protected whether or not bats are present at the time.

As bats are designated European Protected Species (EPS), development and building works that are likely to result in the disturbance of bats, damage to or destruction of their roosts, or require bats to be caught or translocated, usually require an EPS licence to be obtained from Natural England before any works begin. Obtaining a licence involves completing an Application Pack, including a Method Statement that details mitigation appropriate to maintaining the 'favourable conservation status' of the local bat population. Three conditions must be met before a licence can be granted:

- There is no satisfactory alternative
- The development will not be detrimental to the maintenance of local bat populations at a 'favourable conservation status' in their natural range

- The development must be for ‘imperative reasons of overriding public interest including those of a social or economic nature’.

An EPS licence is required for all development activities if there is a reasonable likelihood that an offence against Conservation of Habitats and Species Regulations 2012 (as amended), Wildlife and Countryside Act 1981 (as amended) or Environmental Damage Regulation 2009 (as amended) **will be committed.**

The following offences could potentially be committed by carrying out the proposed development if any bat species are present during the conversion works:

- Capturing or killing – a wild animal of an European Protected Species (EPS) could be deliberately captured, injured or killed (Reg 41(1)(a))
- Disturbing EPS – a wild animal of an EPS could be deliberately disturbed including in particular a disturbance which is likely to impair its / their ability to survive or hibernate (Reg 41 (1)(b))
- Disturbing EPS whilst occupying a structure or place used for shelter or protection – includes intentional and reckless disturbance (s9 (4)(b)WCA)
- Damage of an EPS breeding site or resting place – (Reg 41 (1)(d)) – strict liability

The above stated **offences can be avoided** where works are to take place when bats are not present and bat roost will be maintained unchanged. If roost is going to be available to bats at the time they usually occupy the structure, a **continued ecological functionality of the site will be preserved.** Suitable mitigation measures must be put in place prior, during and post works to ensure that continued ecological functionality will be maintained.

In case the above listed offences cannot be guaranteed to be avoided throughout the proposed development, an EPS licence must be sought.

The full EPS licence generally applies if the proposed development is to cause greater than low ecological impact. A simpler and faster way of carrying out development with low ecological impact had been implemented by Natural England in its trial version during 2013 and 2014. The results of the trial were assessed and the low ecological impact licence was fully re-introduced from spring 2015. It involves selected highly experienced individual ecologists who can supervise the proposed low impact development under their personal class licence, the need for preparation and processing of an EPS licence is vastly reduced. The development is carried out in line with a method statement prepared for the works and under the supervision of the licensed ecologist. **Low ecological impact class development licence** only covers low impact development affecting low numbers of “common” bats and providing the site in question does not serve as a maternity or hibernation roost.

The **Bats in Churches licence** has been available over the last few years that allows special methods to be used to resolve problems in churches, held by individuals, including strict detailed assessment and post works monitoring.

2. Aims and Objectives

To carry out bat surveys over several months to determine the extent of use of the site by bats and to produce a report including the production of a BMP (bat management plan) outlining possible bat mitigation measures to address the problems caused by the bats in the church. The architect, with their knowledge of the church building, will be involved from the outset in order to help create a bespoke solution for the church.

The BMP will aim to improve conditions inside the church for the church community, building and items of heritage significance, while maintaining a home for the bats and protecting their conservation status.

3. Site description

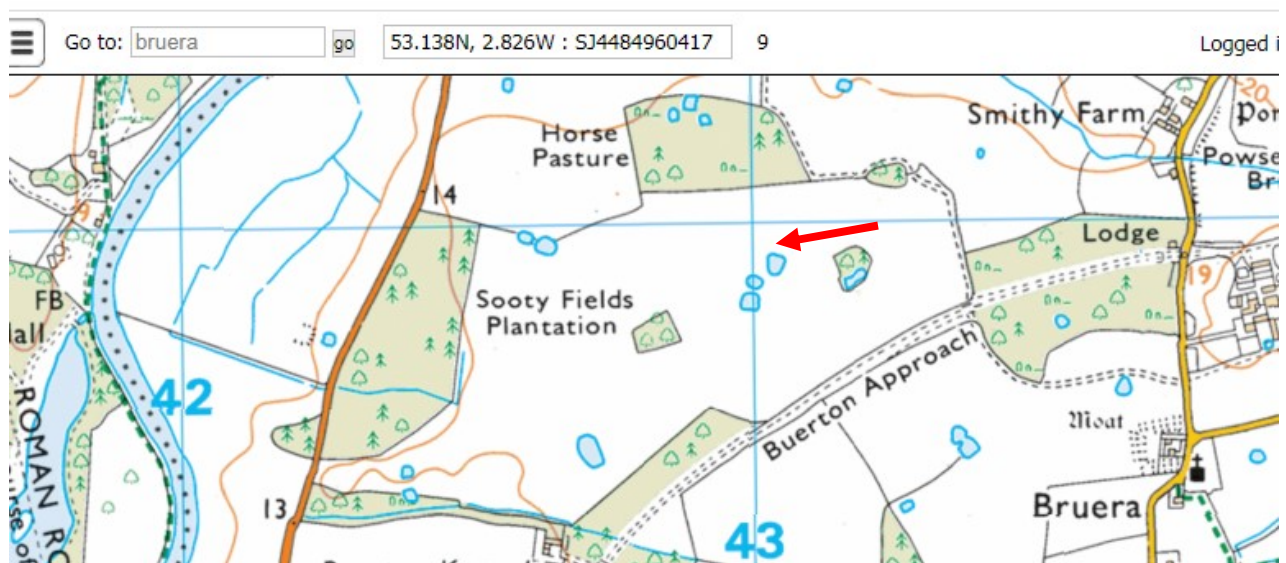
3.1 Surrounding Area

The building is located in a small village in a rural area on the edge of the Mendip Hills adjacent to trees in the village, within 230m of continuous treelines/ woodland blocks and 540m from a stream. A couple of kilometres to the west are a canal and river.

The surrounding habitat offers good quality roosting and foraging opportunities for bats.

The location of the church is shown in Figure 1; Figures 2 & 5 show photos of the church.

Figure 1 Location of the church in Bruera



3.2 Description of the building

The church St. Mary the Virgin founded in 1662 contains Norman elements, it has been subjected to alterations and modifications, particularly in 1896. The church has a timber framed tower projecting above the main body of the building its only access from a hatch in the main ceiling.
The building is located at NGR SJ437605.

Figure 2 photo of south side of the church



Figure 3 photo of north side of the church



Figure 4 photos of interior of the tower



Figure 5 photos of church interior



4. Methods

Surveyor Geoff Billington both of Greena Ecological Consultancy holder of class 3 & 4 Natural England bat licenses and a Bats in Churches licence, a full member of CIEEM. Laura Holmes an experienced local bat worker assisted on the surveys.

At night surveyors used a range of bat detection and viewing equipment including: Bat Box Duet, Batlogger, D1000X and Batcorder bat detectors. Also assisting surveyors was a generation 2 night vision scope, a thermal imaging scope and IR camera systems detailed below.

Initial site meeting with church representative and Engagement Officer Rose Riddell was held on 9th April during which an inspection of the interior and exterior was carried out. An inspection of the tower was carried out in 14th June facilitated by hiring and self-erecting a tower scaffold.

Evening activity surveys were undertaken on 14th & 29th June & 23rd September and a pre-dawn on 30th June.

The interior and exterior of the building was inspected with the aid of a high-powered torch to locate potential roosting sites, discover possible points of egress for bats and detect bats or any signs of bats such as droppings, wear marks, staining and feeding remains.

On all bat activity surveyors were assisted with SpyCamera CCTV 1080HD with built in infrared illumination and with time-synchronized bat detectors EcoObs Batcorders that contain recorders.

The manufacturer's specifications of the high-definition cameras lists its range for both, colour (daytime, dusk) and black&white (post-dusk to complete darkness) during infrared illumination as 100ft (30.48metres).

The cameras are fitted with a varifocal (adjustable) 2.8-12mm lens covering the field view from very wide (up to 100 degrees) to narrow and zoomed in. The setting is manual, and a maximum possible view of the surveyed structure is always ensured prior to the start of the survey. The smart IR technology enables the cameras to automatically adjust the intensity of the infrared lighting based on the distance objects are located from the camera (wide dynamic range enhancement).

The recordings from each night is subsequently viewed by an experienced licensed bat ecologist with the possibility to rewind and view segments repeatedly, providing much higher accuracy of the assessment than the traditional in-field survey method alone.

5. Survey Constraints

The entire building could be accessed except for the low attic above the nave which was assessed as posing a risk to the plasterwork if entered on the rafters.

6. Results

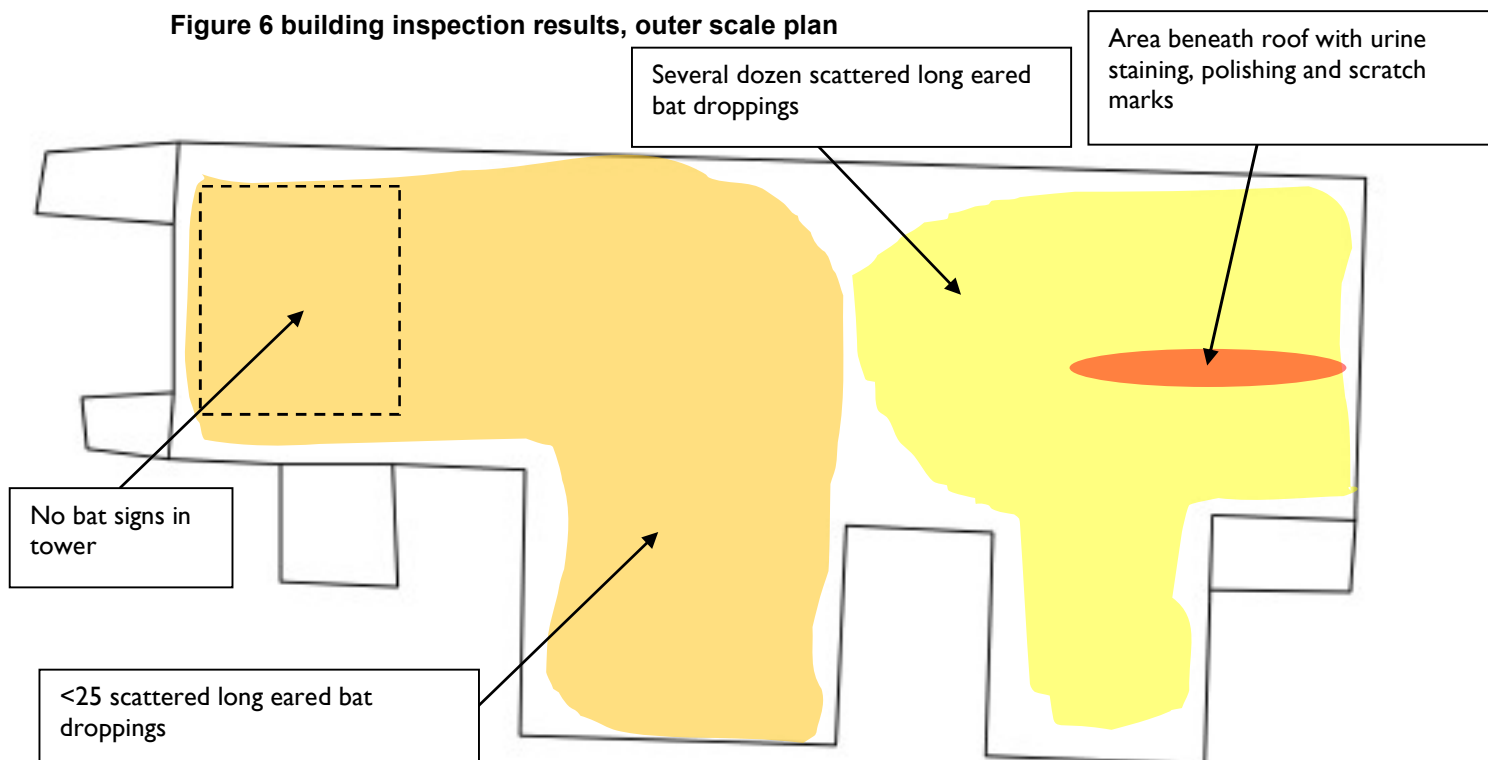
6.1 Past records

The church has long term historical use by bats first being visited by Mr Schofield of the Nature Conservancy Council in 1987 on account of the problems being caused by bats. A number of different people attempted to assist over the years including being raised at a European Parliament Committee in 1989, most recent assistance was from members of the Cheshire bat group. A lighting system was tried in an attempt to dissuade internal use by bats but this failed.

6.2 Building survey bats

Figure 6 shows the results of building inspections plan.

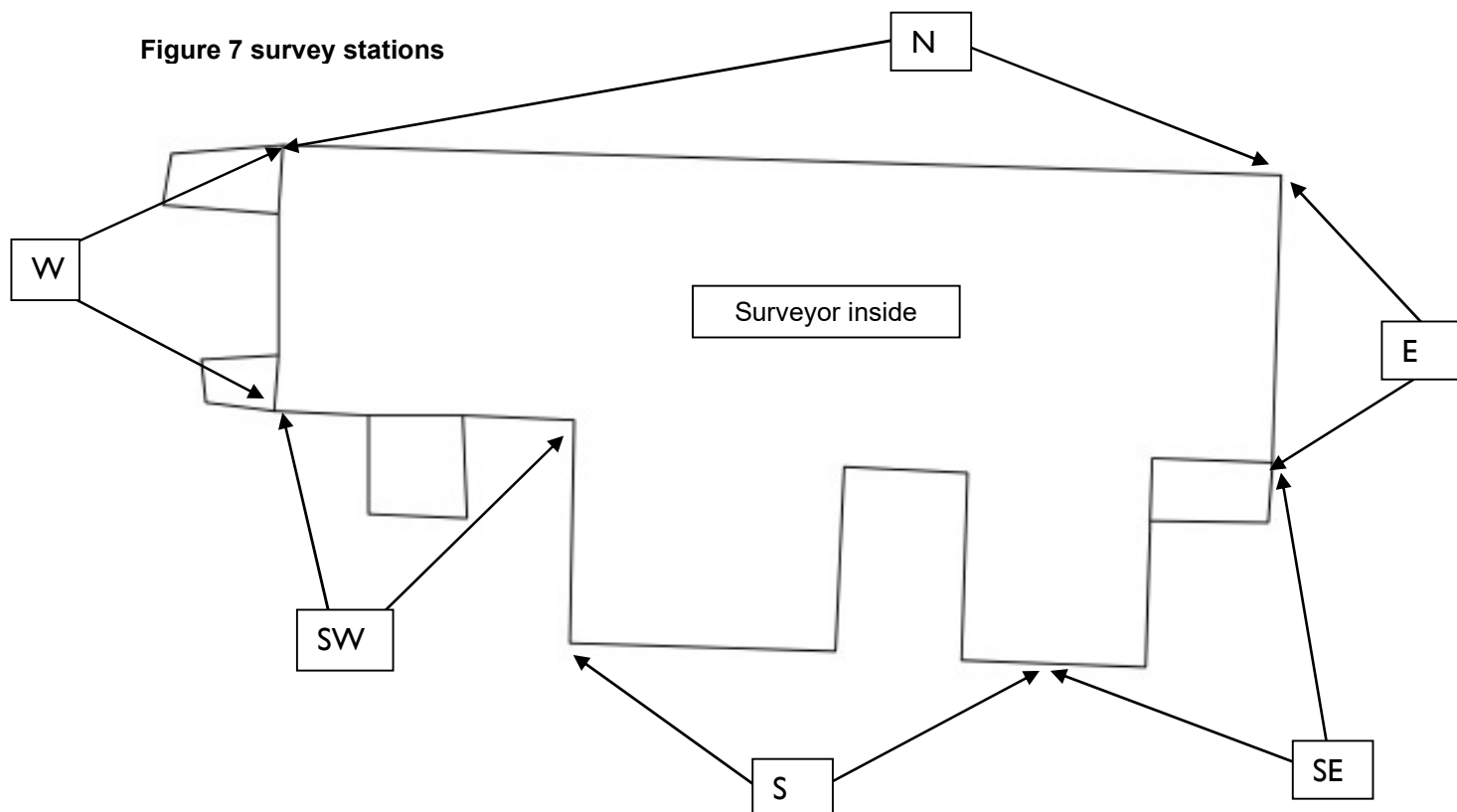
Figure 6 building inspection results, outer scale plan



6.3 Bat activity surveys

Figure 7 shows the survey points used for surveyors/ equipment

Figure 7 survey stations



Agreed specification/costing were for four exterior survey locations, but five or six exterior points were used.

14th June 2021 dusk

Survey was conducted between 2109 & 2253 (sunset 2139)

Geoff Billington & Laura Holmes

Weather

	Temp.	Cloud	Rainfall	Wind
Start	14C	35%	0	0
End	13C	50%	0	0

S

West & South West

Geoff Billington

time	bat species	behaviour	notes
2211	45P	heard	Heading to N
2213	45P	emerged	from west roof below tower 'D'
2216	45P	foraging	to S
2217	45P	commuting	S-N
2221	45P	commuting	S-N
2224	2x LE & 45P	heard	to E
2225	LE	heard	to S
2230	LE	circling	in churchyard
2231	LE	commuting	S-N

2233	LE	heard	to E
2234	LE	heard	to SE
2237	45P	heard	to S
2238	W/Br	commuting	along road

45P – Common pipistrelle, LE - Long eared, W/Br – Whiskered/Brandt's

One Common pipistrelle bat emerged from the west roof 'D'

Inside the church

Laura Holmes

time	bat species	behaviour	notes
2200-2210	45P	flying	flying inside
2209-2245	4x LE	flying	flying inside at east end of church and exited in east end of south wall

45P – Common pipistrelle, LE - Long eared

4 Long eared recorded emerging into interior and exiting into south wall top

Northwest

Batcorder & video recording

time	bat species
2225	55P
2234	LE
2237	55P
2239	LE

55P – Soprano pipistrelle, LE – Long eared

No bats emerged on video

Northeast & East gable

Batcorder & video recording

time	bat species
2201	2x 55P
2213	55P & 45P & Sert
2217	3x 45P
2222	Sert & 45P
2223	55P & 45P
2224	6x 55P
2226-2228	2x 45P
2232	LE
2233	45P & 4x 55P
2236	LE
2237	45P & Sert & 2x 55P
2247	LE & 55P
2251-2253	4x LE

45P – Common pipistrelle, 55P – Soprano pipistrelle, Sert – Serotine,

LE – Long eared

No bats emerged on video

South middle

Batcorder & video recording

time	bat species
2158-2212	50x 55P
2213	2x 45P & 2x Sert & 6x 55P
2217-2223	51x 55P & 2x 45P
2224-2226	45P & 22x 55P
2227-2231	31x 55P
2232	2x LE
2233	2x 45P & 10x 55P
2235	LE & 10x 55P
2239	LE

45P – Common pipistrelle, 55P – Soprano pipistrelle, Sert – Serotine,
LE – Long eared

No bats emerged on video

Southeast

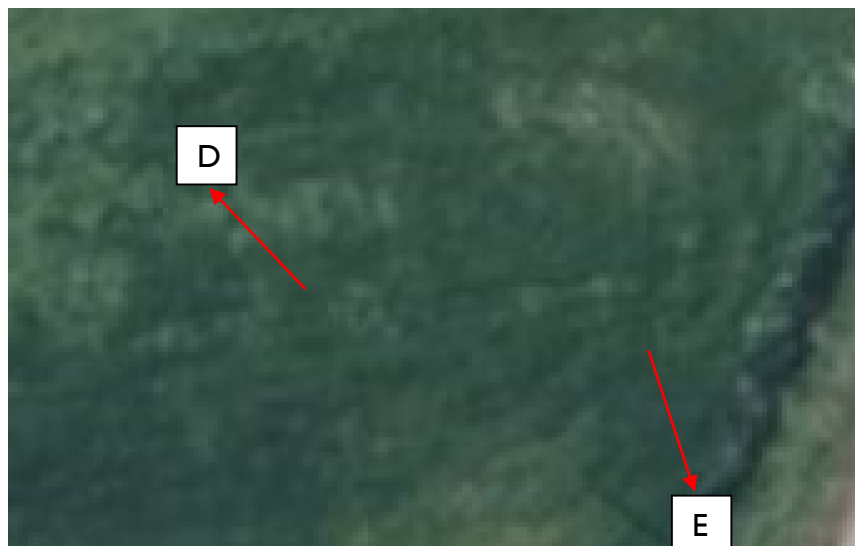
Batcorder & video recording

time	bat species
2157-2213	90x 55P
2213	45P
2214-2233	158x 55P & 2x 45P & LE
2234-2236	11x 55P
2237-2238	LE & 7x 55P

45P – Common pipistrelle, 55P – Soprano pipistrelle, LE – Long eared

6x Long eared emerged on video at 2233, 2237, 2x 2245, 2x 2246 from SE eaves 'E'

Figure 8 plan of bat emergence points



Summary

The following table shows the minimum number of bats roosting in the church during this survey

Species	No.	Location	Exterior exit route
Common pipistrelle	1	In west church roof	Between tiles at west end
Long eared	6	In eastern roof	SE eaves

29th June 2021 dusk

Survey was conducted between 2109 & 2253 (sunset 2142)

Geoff Billington & Laura Holmes

Weather

	Temp.	Cloud	Rainfall	Wind
Start	14C	35%	0	0
End	13C	50%	0	0

S

Southeast & East Gable

Geoff Billington

time	bat species	behaviour	notes
2158-2159	2x 55P	foraging	in churchyard
2200	55P	social calling	over east main roof
2204	55P	passing	S-N
2205	N	past	SW-NE
2207	2x 55P	emerged	out of 'A' east main roof south side
2208	55P	foraging	in churchyard
2209	2x 55P	passing	S-N
2210	55P	emerged	out of 'B' east main roof south side
2211	LE	emerged	out of north side of eastern roof 'C'
	45P	foraging	near east end
2213	55P	foraging	near east end
2215	LE	emerged	out of north side of eastern roof 'C'
2212-2215	3x LE	emerged	out of north side of eastern roof 'C'
2216	55P	foraging	near E gable
2218	2x 55P	commuting	S-N
2220	Pp	passing	over roof S-N
2221	N	foraging	in churchyard
2225	2x 55P	chasing each other	
2224	2x LE & 45P	heard	to E
2227	Myt	heard	
2230	55P	social calling	over east main roof
2231	LE	commuting	S-N
2232	55P	passing	
2235	3x 55P	circling	over east main roof
2236	2x 55P	circling	over chancel roof
2239	55P	circling	over chancel roof

45P – Common pipistrelle, 55P – Soprano pipistrelle, LE - Long eared, N – Natterer's, Myt – Myotis species, Pp – Pipistrelle species

Three Soprano pipistrelle bats emerged from eastern roof from 'A' & 'B'

Five Long eared bats emerged from eastern roof from 'C' area

Inside the church

Laura Holmes

time	bat species	behaviour	notes
2150	55P	flying	flying inside
2200	2x 55P	flying	flying inside
2207	55P	disappeared	into area near organ
2212	LE	roosting	on ridge above altar
2218	LE	disappeared	into area near organ
2225	LE	emerged	from ridge

55P – Soprano pipistrelle, LE - Long eared

Three Soprano pipistrelle bats emerged into interior and headed out near the organ

3 Long eared recorded emerging into interior and disappeared into organ area

North

Batcorder & video recording

time	bat species
2156	55P
2207	2x 45P
2207-2211	3x 55P
2211-2215	3x 45P
2221	3x LE
2242	45P

45P – Common pipistrelle, 55P – Soprano pipistrelle, LE –Long eared

3x Soprano pipistrelle bats emerged from near top of the roof at the east end.

South middle

Batcorder & video recording

time	bat species
2158-2203	2x 55P
2207-2207	8x 45P
2209-2210	3x 55P
2211	6x 45P
2212	4x 55P
2214-2215	2x 45P
2215-2245	65x 55P

45P – Common pipistrelle, 55P – Soprano pipistrelle

No bats emerged on video

Southwest

Batcorder & video recording

time	bat species
2145-2146	2x 55P
2207-2208	3x 45P
2209	55P
2211-2218	2x 55P & 4x 45P
2225-2236	6x 55P

45P – Common pipistrelle, 55P – Soprano pipistrelle
No bats emerged on video

West

Batcorder & video recording

time	bat species
2156	55P
2158	45P
2208	55P
2209	45P
2210	55P
2212	45P
2227	55P
2231	LE
2234	55P

45P – Common pipistrelle, 55P – Soprano pipistrelle, LE –Long eared
No bats emerged on video

Figure 9 plan of bat emergence points



Summary

The following table shows the minimum number of bats roosting in the church during this survey

Species	No.	Location	Exterior exit route
Soprano pipistrelle	3	In eastern roof	Eastern roof apex south side
Long eared	5	In eastern roof	Eastern roof apex north side

30th July 2021 dawn

Survey was conducted between 0313 & 0455 (sunrise 0448)

Geoff Billington & Laura Holmes

Weather

	Temp.	Cloud	Rainfall	Wind
Start	11C	30%	0	0
End	13C	50%	0	0

Southeast

Geoff Billington

time	bat species	behaviour	notes
0355-0415	55P	social calling	
0328	45P	passing	
0332	LE & 45P	passing	
0334	LE	commuting	S-N
0335	LE	commuting	N-S
0336	55P	social calling	
0348	45P & N	passing	NE-SW
0353	LE	over cancel	
0356	LE	over cancel	
0407	LE	entered 'E'	south eaves behind chimney
0410	LE	entered 'E'	south eaves behind chimney
0411	2x LE	entered 'E'	south eaves behind chimney
0419	55P	briefly circling	
0424	55P	entered 'A'	roof south side near ridge
0426	45P	entered 'F'	into south eaves into slit below east parapet wall

45P – Common pipistrelle, 55P – Soprano pipistrelle, N – Natterer's,

LE – Long eared

One Common pipistrelle bat entered into slit in eaves below east parapet wall 'F'

Four Long eared bats entered from eastern roof from 'C' area

One Soprano pipistrelle entered into roof south side near ridge 'A'

Northeast

Laura Holmes

time	bat species	behaviour	notes
0323	LE & 55P & Myt	passing	
0333	U	heard	flying inside
0336	55P	flying	in churchyard
0346	55P	flying	over E ridge
0354	LE	flying	W-E
0401-0405	LE & 55P	circling	around E gable
0424	55P	flying back & forth	into roof south side near ridge 'A'

55P – Soprano pipistrelle, Myt – Myotis species, LE - Long eared, U – Unknown

One Soprano pipistrelle entered into roof south side 'A' near ridge

Inside church

Batcorder

time	bat species	behaviour	notes
0254	LE	flying	flying inside
0259	4x LE	social calls	
0409	2x 55P & 2x LE	LE social calls	
0412	5x LE	social calls	

55P – Soprano pipistrelle, LE - Long eared

Video recording

time	bat species	behaviour	notes
0245-0301	up to 5x LE LE	flying/circling roosting	flying inside on ridge 40cm from gable
0303	2x LE	flying/circling	
0305-0310 0310	LE	roosting	on timber 60cm from gable north side disappeared behind timber
0310-0312	2x LE	flying/circling	
0316-0317	2x LE	flying/circling	
0317-0318	3x LE	flying/circling	
0319	1x LE	flying/circling	
0322	2x LE	flying/circling	
0324-0331	2x LE	flying/circling	
0337	1x LE	flying/circling	

LE - Long eared

Video recording ended at 0400

Up to 6 LE visible at a time, odd bats roosting for several minutes on timbers at or close to the ridge close to the gable

Northwest

Batcorder & video recording

time	bat species
0351	45P
0404 & 0405	2x 55P

45P – Common pipistrelle, 55P – Soprano pipistrelle

No bats entered on video

South Middle

Batcorder & video recording

time	bat species
0318	2x 55P
0320	LE
0325-0327	3x 55P
0332	2x LE
0335	4x 55P
0348-0351	4x 45P
0355-0358	3x LE
0400	6x 45P & 2x LE
0402	55P
0406	45P
0418-0425	7x 55P

45P – Common pipistrelle, 55P – Soprano pipistrelle,

LE – Long eared

No bats emerged on video

Southwest

Batcorder & video recording

time	bat species
0315-0318	55P
0320	LE & 55P
0323-0336	2x 55P & LE
0354-0406	3x 45P
0418	55P

45P – Common pipistrelle, 55P – Soprano pipistrelle, LE – Long eared
No bats emerged on video

West

Batcorder & video recording

time	bat species
0320	45P
0320-0336	8x 55P
0338	LE
0341-0346	2x 55P & LE
0359	45P
0400	LE
0405	2x 55P & LE

45P – Common pipistrelle, 55P – Soprano pipistrelle, LE – Long eared
No bats emerged on video

Northwest

Batcorder & video recording

No sound recordings battery fault

No bats emerged on video

Figure 10 plan of bat entry points



Figure 11 exit/entry E photo



Figure 12 roost F entry photo



Summary

The following table shows the minimum number of bats roosting in the church during this survey

Species	No.	Location	Exterior exit route
Soprano pipistrelle	1	In eastern roof	Eastern roof apex south side 'A'
Long eared	6	In eastern roof	Eastern roof eaves 'E'
Common pipistrelle	1	In eastern south roof wall top	Eastern roof eaves 'F'

23rd September 2021 dusk

Survey was conducted between 1846 & 2012 (sunset 1907)

Geoff Billington & Laura Holmes

Weather

	Temp.	Cloud	Rainfall	Wind
Start	15.5C	50%	0	1
End	13.5C	15%	0	0

West

Geoff Billington

time	bat species	behaviour	notes
1924	45P	foraging	S side
1933	45P	commuting	along road
1934	55P	passing	
1939	LE	commuting	SE-NW
1942	45P	heard	

1943	LE	heard	to SE
1948	N	passing	
1959	45P	passing	

45P – Common pipistrelle, 55P – Soprano pipistrelle, LE – Long eared,
N – Natterer's
No bats emerged

Inside the church

No recording as no access available

North

Batcorder & video recording

time	bat species
1935	55P
1942-1943	2x LE
1949	55P

55P – Soprano pipistrelle, LE – Long eared
No bats emerged on video

Southeast & East

Laura Holmes

time	bat species	behaviour	notes
1929	LE	passing	near E gable
1931	45P	foraging	near E gable
1933	55P	circling in trees	
1943	2x LE	emerged 'E'	
1944	LE	emerged 'E'	

45P – Common pipistrelle, 55P – Soprano pipistrelle, LE – Long eared
Three Long eared bats emerged from eastern south roof eaves from 'E' area

South Middle

Batcorder & video recording

time	bat species
1930-1932	7x 45P
1935-1938	3x 55P
1940-1941	13x LE
1949	5x 55P
1950-1959	4x 45P
2000-2004	60x 55P

No bats emerged on video

Southwest

Batcorder & video recording

No sound recordings

No bats emerged on video

Summary

Species	No.	Location	Exterior exit route
Long eared	3	In eastern roof	Eastern roof south eaves 'E'

7. Discussion and Recommendations

Overall summary of bat use of the church in 2021

See Figures 9-12

Natterer's

None confirmed roosting but as odd ones recorded during surveys possible an odd bat roosts here.

Common pipistrelle

Single bats have been recorded roosting in the western roof ('D') and SE eaves ('F') social calling particularly at the west end suggests a male lekking site he is attempting to attract females.

Soprano pipistrelle

Up to three bats were recorded in the eastern end of the main roof apex lots of social calling suggest suggests a male lekking site attempting to attract females.

The high number of bat detector records around the church suggests a colony is feeding in the church yard and is likely to roost in the village.

Long eared

Up to 6 bats were recorded varying between 3 & 6 so a small colony uses the church possibly for breeding this year.

Roosting site is around the roof apex at the eastern end of the church close to the east gable.

Bats emerge inside the church from around the roof apex, sometimes sitting on beams, they exit either by returning back into the roof apex area to then head out above ('A' & 'B') or flying across to south wall and exiting there behind the chimney at 'E'.

Serotine

Suggestion of individual(s) from detector records, not previously known this far north in Cheshire, no suggestion they are roosting in the church but based on detection times and their emergence times likely to be roosting in the village.

Solutions and Mitigation

The following suggested mitigation works require an EPS bat licence (standard or church licence or level 3 earned recognition licence (not available yet) must be carried out in winter (November-February).

- Fit extra layers of matching timber ceiling boards in the chancel beneath either side of ridge for first two bays, maintaining a 40mm gap between the existing ceiling boards and upper side of new boards, ensure no obstructions are created at the ridge or at the south wall top.
- Seal all ceiling gaps >10mm wide at the internal roof edges throughout the church will require use of lightweight scaffold platform or MEWP small enough

to enter church. These works should be completed before the end of February.

- The tower is currently not used by bats as they cannot get in, the apex offers a highly suitable Long eared alternative roost. This should be made suitable as the flight area inside the church will be lost to bats. Modifications would be simply opening up four separate lower level ventilation slits (south, west, east & north) removing mesh, then placing boarding to stop light ingress via all the other slits, ventilation gaps should be incorporated at the board edges.
- If funds permit small cameras (e.g. 6) should be installed into the new ceiling void area and tower along with a mains power recording system set at lower level e.g. in the vestry.
- Monitoring emergence counts should be conducted in three years starting summer after works next but one summer and further next but one summer after that.
- The suggested measures will need input from the churches architect and faculty to agree the materials to be used for exclusion and ceiling modifications.
- These measures will maintain/create roosting sites to maintain the conservation status of these species at this site and in this area.

8. References

Institute of Ecology and Environmental Management (2012). Guidelines for Preliminary Ecological Appraisal. [online] IEEM: Winchester. Available at: http://www.iem.net/docs/GPEA_web.pdf

Mitchell-Jones AJ (2004) *Bat mitigation guidelines (version January 2004)*. English Nature, Peterborough.

Mitchell-Jones, A.J. & McLeish, A.P. (2004). *The Bat Workers' Manual (3rd Ed.)*. JNCC, Peterborough.

HMSO (1981) *The Wildlife and Countryside Act 1981*. The Stationery Office Ltd. Norwich.

HMSO (2012) *The Conservation (Natural Habitats, & c) Regulations 2012*. The Stationery Office Ltd, Norwich.

Wild Scapes (2017) Natural England 'Bats in Churches Project 'Light Touch' Surveys 2017