

**Bat Roost Assessment and Bird Survey for,
Mr. O. Howard.
Buildings at,
Barn Farm,
Wards Lane,
Stanton by Bridge,
DERBY,
Derbyshire
DE73 7HX.**

**Map Ref SK 3757 2732
31st July 2018.**

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Natural England License Number 2016-23395-CLS-CLS

Natural England Bat Mitigation Class License

Registered Consultant RC133

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Contents.

Summary	Page 2.
Introduction.	Page 3.
Legislation concerning bats.	Page 3.
Legislation concerning birds.	Page 4.
Methodology for bats.	Page 5.
Bat records and habitats.	Page 5.
Constraints.	Page 8.
Building survey.	Page 8.
Bat droppings.	Page 25.
Emergence surveys.	Page 27.
Conclusion.	Page 51.
Impacts on bats.	Page 53
Mitigation for bats.	Page 54.
Mitigation for birds.	Page 58.
Method of working.	Page 60.
Bibliography.	Page 63.
Appendix 1.	Page 64.

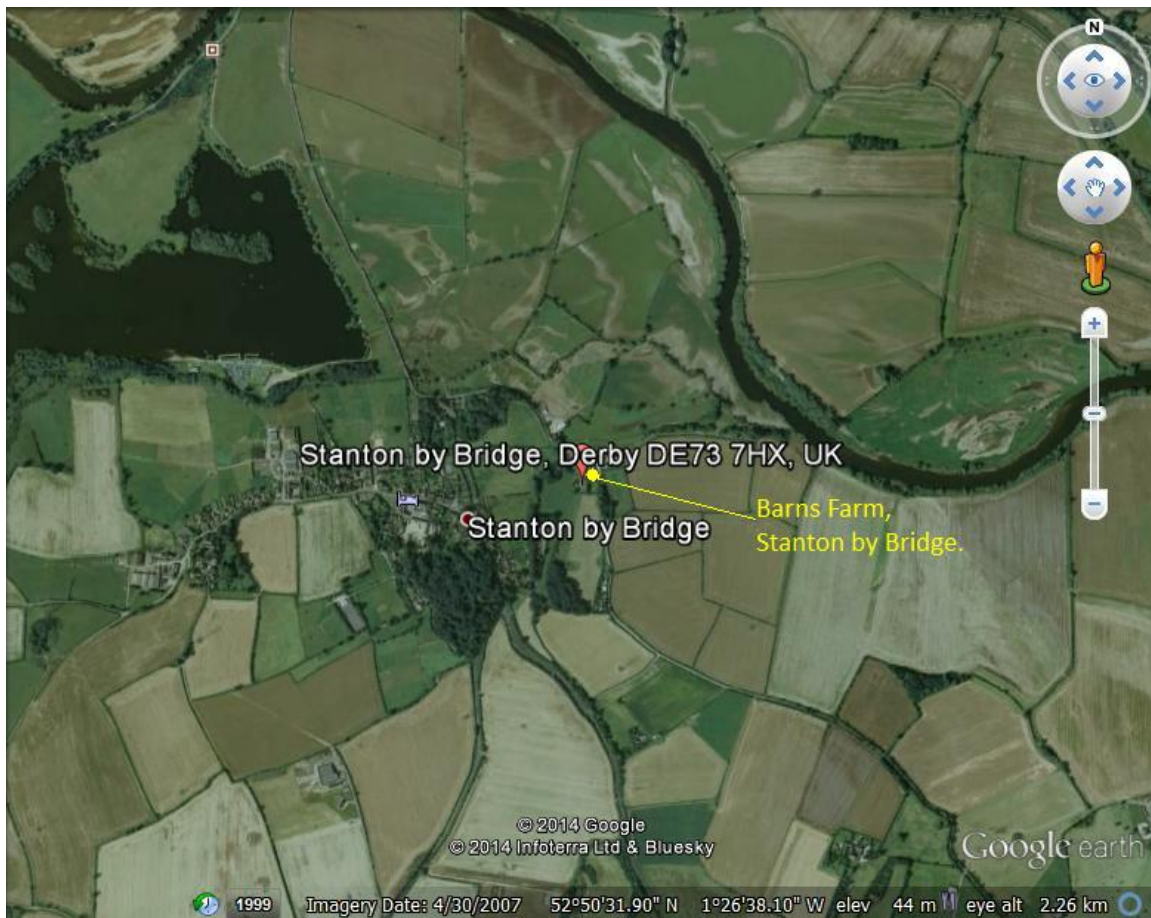
Summary.

- There is evidence of bats using the building as a place of shelter.
- There was evidence of birds nesting in the buildings on site.
- Brown Long Eared bats are using the first floor area of the two storey brick barn extension as a feeding perch and place of shelter.
- A Common pipistrelle bat was found in the building during the survey by ARC Ecology.
- A Common pipistrelle bat was seen to re-enter a crevice during the dawn survey in 2014.
- A European Protected Species Bat Mitigation Class license, WML-CL21, will be required to undertake the development if planning permission is granted.
- A new roosting opportunity for Brown Long Eared bats can be created in the roof space of the southern part of the new garage building
- Pipistrelle bats are using the crevices in the stonework of the two storey barn for temporary roosting. The crevice must be retained if planning permission for development is granted.
- New roosting opportunities for local crevice dwelling bats should be created by installing a brick built bat box into an area of new brickwork.
- Three Sparrow terraces are to be installed in the new brickwork on site.
- A Swallow loft area is to be created in the northern roof space of the new garage building.
- A method of working must be put in place with contractors to ensure that in the event of bats being found they will not be injured.

Introduction.

In 2013 an inspection and building survey for bats was requested by Mr. and Mrs. R. Shipley. That survey was to be undertaken in relation to the submission of a planning application to South Derbyshire District Council to change the farm buildings to residential uses. The property was visited on the 30th July 2014 and the surveyor spent 2.5 hours on site undertaking emergence surveys. The weather was dry with patchy cloud and sunshine. A building survey for bats had been undertaken in September 2013 by ARC Ecology and this identified that the buildings were being used by House Martins, the presence of bat droppings and feeding remains from Brown Long Eared bats were found and a single Common Pipistrelle bat was seen.

This survey was undertaken to update the building survey and emergence surveys in 2014 by a site visit on the 2nd May 2018 followed by an emergence survey with two surveyors. Further emergence surveys were undertaken on the 22nd July 2018 and a building survey on the 31st July 2018.



Legislation concerning bats.

The Wildlife and Countryside Act 1981 (WCA) protects bats and their roosts in England, Scotland and Wales. Some parts have been amended by the Countryside and Rights of Way Act 2000 (CROW) which applies only in England and Wales, and by the Nature Conservation (Scotland) Act 2004 which applies in Scotland.

The Conservation and Habitats Regulations 2010 (better known as the Habitats Regulations) implements the Council Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora. All bats are listed as 'European protected species of animals'

Under Regulation 41 of the Conservation of Habitats and Species Regulations 2010 it is illegal to:

- Deliberately capture, injure or kill any wild animal of a European Protected Species (EPS),
- Deliberately disturb wild animals of an EPS (affecting ability to survive, breed or rear young) – disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young,
- Deliberately disturb wild animals of an EPS (impairing ability to migrate or hibernate) – disturbance of animals includes in particular any disturbance which is likely to impair their ability in the case of hibernating or migratory species to hibernate or migrate,
- Deliberately disturb wild animals of an EPS (affecting local distribution and abundance) – disturbance of animals includes in particular any disturbance which is likely to affect significantly the local distribution or abundance of the species to which they belong,
- Deliberately disturb wild animals of an EPS (whilst occupying a structure or place used for shelter or protection) – intentionally or recklessly disturb any wild animal while it is occupying a structure or place which it uses for shelter or protection,
- Damage or destroy a breeding site or resting place of a wild animal an EPS.

Under the Wildlife and Countryside Act 1981 (as amended) it is illegal to:

- Recklessly or intentionally kill, injures or take any wild animals included in Schedule 5.
- Recklessly or intentionally damage or destroy, or obstruct access to any structure or place which any wild animal included in Schedule 5 uses for shelter or protection,
- Recklessly or intentionally disturb any such animal while it is occupying a structure or place which it uses for shelter or protection.

Legislation concerning birds.

All common wild birds are protected under The Wildlife and Countryside Act 1981 (and as amended). Under this legislation it is an offence to:

- kill, injure or take any wild bird
- take, damage or destroy the nest of any wild bird while it is in use or being built
- take or destroy the egg of any wild bird

Certain rare breeding birds are listed on Schedule 1 of The Wildlife and Countryside Act 1981 (and as amended). Under this legislation they are afforded the same protection as common wild birds and are also protected against disturbance whilst building a nest or on or near a nest containing eggs/unfledged young.

Methodology for bats.

The building surveys have been undertaken in accordance with Bat Surveys for Professional Ecologists- Good Practice Guidelines, 2016, the Bat Conservation Trust. Surveys of the buildings were undertaken during the daytime to look for evidence of bats using the buildings, or likely roosting sites. The evidence of bats using a building as a place of shelter can include bat droppings, grease marks, urine stains or actual bats. This evidence is then considered when planning evening emergence counts and activity surveys, using bat detectors. These surveys provide evidence of where bats are roosting and activity across the site by foraging or commuting bats.

The Bat Surveys for Professional Ecologists- Good Practice Guidelines, 2016, specify that emergence surveys are undertaken dependent upon the roost potential of the buildings on the survey site, as set out below;

Roost potential.	Number of surveys.
High.	3
Low to moderate.	2
Low.	1

The surveys are started at sunset, with bats emerging from roosts at different times, dependent upon the species, and continued for two hours. Emergence surveys can only be undertaken from the beginning of April to the end of September when bats are active. The optimum period of undertaking surveys is the beginning of May to the end of August. Their emergence is dependent upon the weather, the bats only leaving their roost on warm nights when there will be sufficient insect prey around to make flight worthwhile. While bats will emerge in light rain and moderate winds, the surveys would not be undertaken when there is heavy rain and/or strong winds as this would not provide reliable data upon which to base the conclusions of the surveys. Mild weather in April and September will produce bat activity, particularly providing information on forage areas, commuting routes and pre-maternity group roosting.

Any trees on site are surveyed following the methodology set out in the Bat Tree Habitat Key, Henry L Andrews et al 2013, which produces a key for identifying Potential Roost Features in trees and their likelihood of being used by bats. Trees on any site being surveyed will have Potential Roost Features identified from ground level surveys and highlighted in the report.

Bat records and habitats.

A search of public records has revealed the presence of;

Eptesicus serotinus/*Nyctalus noctula*.

Myotis daubentonii.

Myotis mystacinus/*brandtii*.

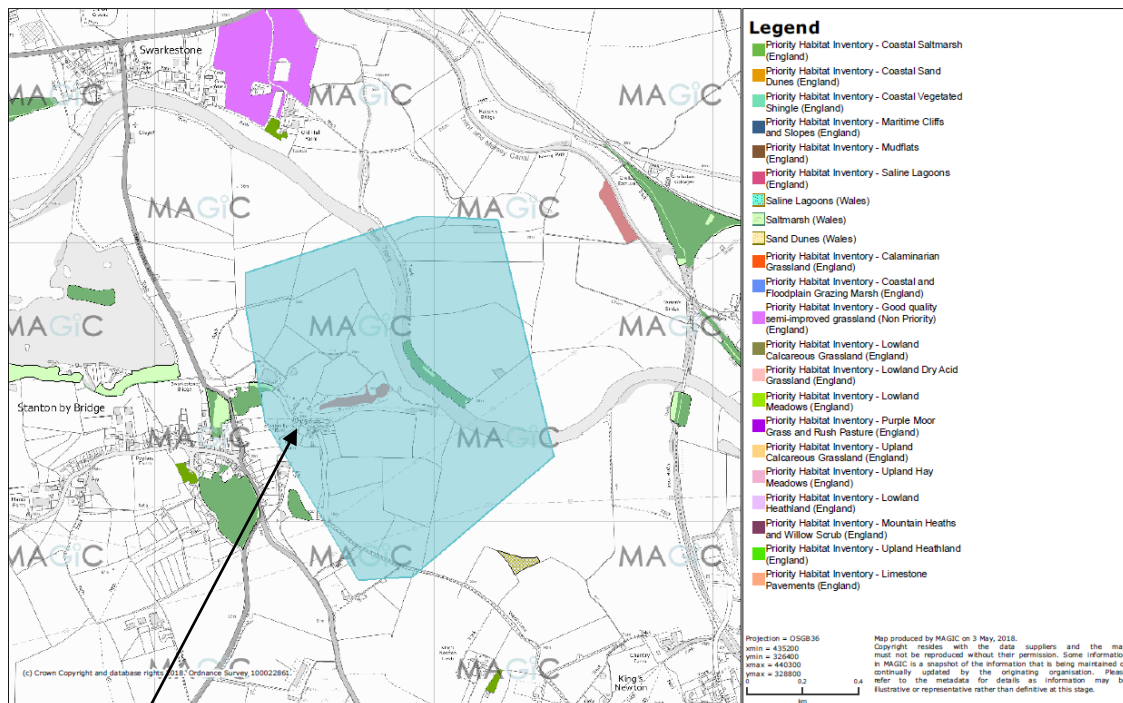
Myotis mystacinus.
 Myotis nattereri.
 Nyctalus noctula.
 Pipistrellus pipistrellus.
 Pipistrellus pygmaeus.
 Plecotus auritus.

The surveyor has recorded a maternity roost and a non-maternity roosts of Common Pipistrelle bats within 3 km of the site. Bats recorded with bat detectors have been foraging and commuting Common Pipistrelle bats and three grounded Common Pipistrelle bats have been found in Melbourne.

A search of the DEFRA MAGIC Dataset shows that there are no habitats adjacent to the site which of a special nature conservation status or significance. There are areas of Deciduous Woodland on the Priority Habitat Inventory to the north and west of the site. There is agricultural land and the flood plain of the River Trent to the north and east of the site. There are small areas of deciduous woodland on the Priority Habitat Inventory in the landscape. In the urban area of Aldridge, to the west, there is an area of Ancient Woodland which is also classified as Deciduous Woodland on the Priority Habitat Inventory. To the north west is an area of Good Quality semi-improved grassland on the Priority Habitat Inventory.

MAGiC

habitats



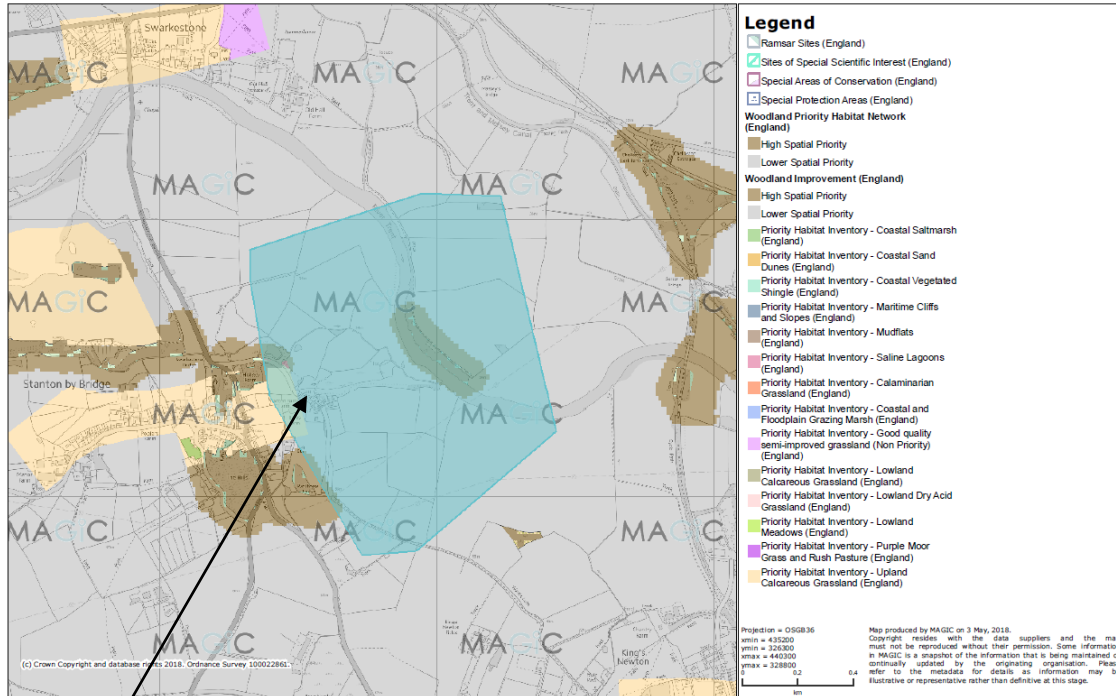
Barn Farm.

A search of the DEFRA MAGIC Dataset shows that the site falls inside of a Farm Wildlife Package area where there is support for Willow Tits in woodland buffer zones, and Countryside Stewardship targeting for Curlew and Lapwing. The site does not fall into the buffer zone for

Willow Tits around the Deciduous Woodland to the north west of the site. There are no other biodiversity enhancement areas adjacent to the site.

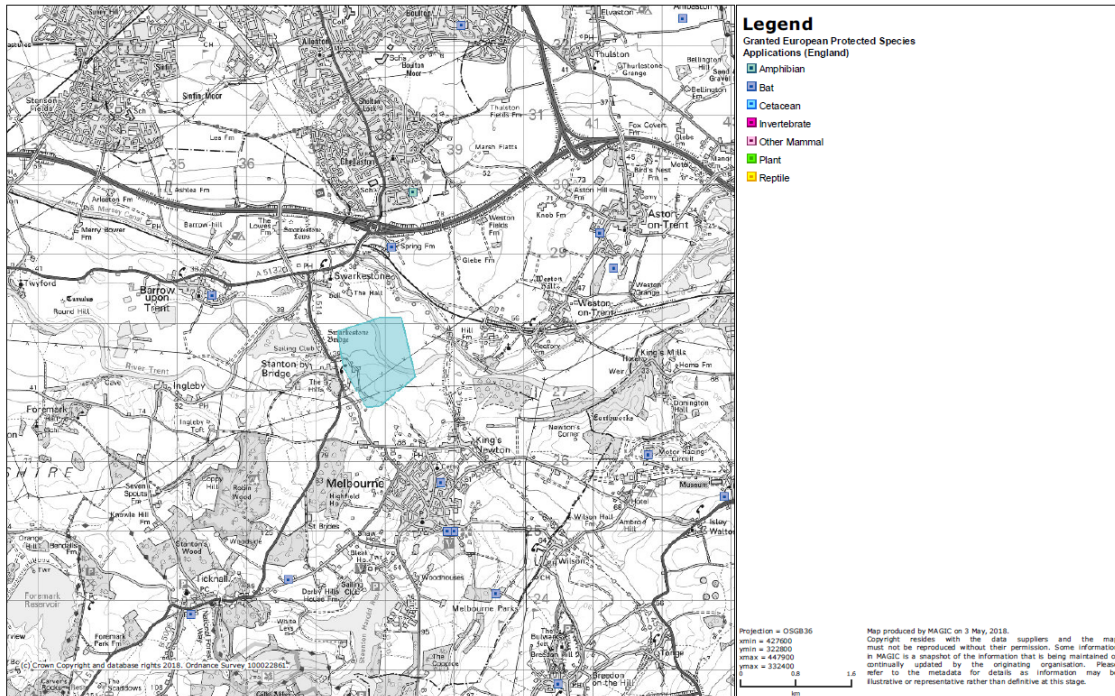
MAGiC

biodiversity



Barn Farm.

A search of the DEFRA MAGIC Dataset shows that there have been a number of European Protected Species licenses granted locally. None of the sites is adjacent to the property being surveyed.



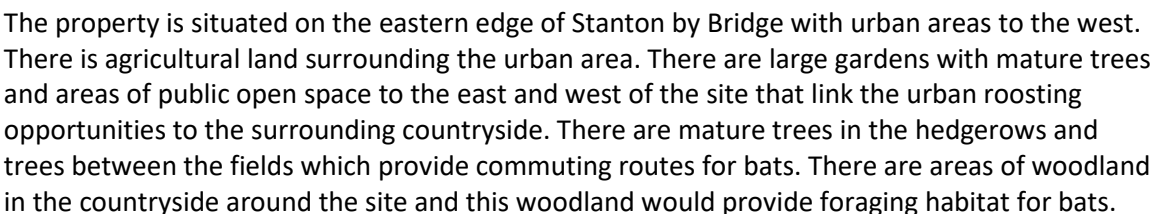
Constraints.

The building survey was undertaken in the spring when evidence of bats internally can still be seen but external evidence may be unavailable after heavy rain. The surveyor does not believe that the weather masked any evidence or access points for bats. There were no constraints to the surveyor for access in the building survey for bats.

Building Survey.

The buildings to be surveyed consisted of a single storey solid brick and stonework line of stables with a pitched roof. The roof is covered with plain tiles.





The results of the building survey are presented as the likelihood of bats using an area/feature;

- None.** Bats are unlikely to use the feature/area in any way.
Poor. Bats may use the feature/area but it is not thought to be likely.
Possible. The feature/area provides an area that may be used by bats but no direct evidence of occupation was found.
Definite. Clear evidence of the use of a feature/area as a place of shelter, such as droppings.

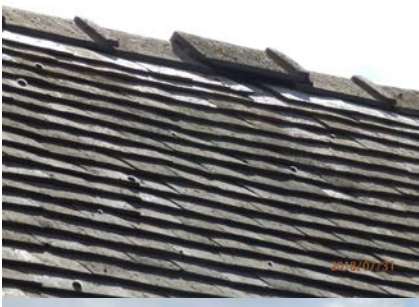
There had been no change in the structural stability and condition of the buildings from 2014 to 2018. At the request of the Derbyshire Wildlife Trust a further building survey for bats and birds was undertaken on the 31st July 2018.

Single storey stables.



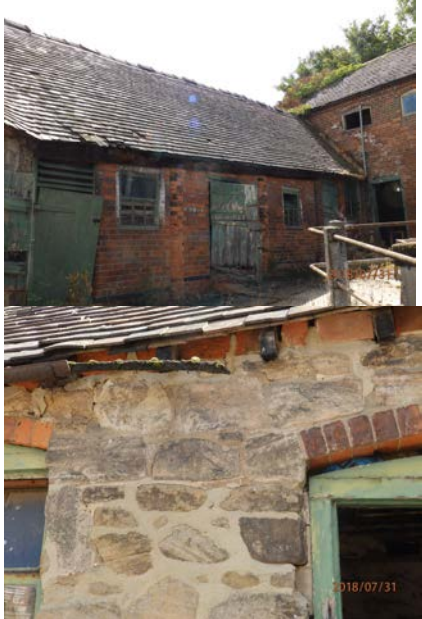
Feature.	Evidence of bats.	Likelyhood of bats roosting.	Photograph.
Behind ridge board.	None.	Possible. There is access to the roof space for bats but the ridge tiles allow weather penetration.	A close-up photograph of the roof structure, showing wooden beams and tiles. A date stamp '2018/07/31' is visible in the bottom right corner of the image.

			
In splits in timber rafters.	None.	None. Machine cut timbers.	
Feature.	Evidence of bats.	Likelihood of bats roosting.	Photograph.

Under ridge tiles.	None.	Possible. There is access to the underside of the ridge tiles for bats but the raised/ventilated ridge tiles make such areas prone to weather penetration.	   
Feature.	Evidence of bats.	Likelihood of bats roosting.	Photograph.
Under loose or missing roof tiles.	None.	None. The plain tiles have no underfelt so no roosting only access points for bats.	

			
Feature.	Evidence of bats.	Likelihood of bats roosting.	Photograph.
Between the rear of the plain tiles and the top of the brickwork.	None.	Poor. There is access for bats in some areas but cobwebs and rubbish show there has been no use..	

			
Feature.	Evidence of bats.	Likelihood of bats roosting.	Photograph.
In eaves.	None.	None. Corbel brickwork and stone with access for bats but no crevices for roosting.	

			
Feature.	Evidence of bats.	Likelyhood of bats roosting.	Photograph.
In verge.	None.	None. There is no access for bats.	  

In crevices in the stone walls	None.	Possible. There is access for bats to the crevices in the stone wall but these are not very large so would only support small numbers of bats..	
Feature.	Evidence of bats.	Likelyhood of bats roosting.	Photograph.
In the flat roofed stone extension	None.	Poor. There is access for bats to the underside of the flat roof where bats could roost against the roof joists.	

Swallows were seen flying in and out of the stables where there were nests.





There are Sparrows nesting beneath the ridge tiles.



Bird nesting; Definite.

Two storey brick and stone barn.



Feature.	Evidence of bats.	Likelyhood of bats roosting.	Photograph.
Behind ridge board.	None.	Possible. There is access to the roof space for bats.	
In splits in timber rafters.	None.	None. Machine cut timbers.	
Feature.	Evidence of bats.	Likelyhood of bats roosting.	Photograph.
Under ridge tiles.	None.	None. There is no access to the underside of the ridge tiles for bats	

			
Feature.	Evidence of bats.	Likelihood of bats roosting.	Photograph.
Under loose or missing roof tiles.	None.	None. The plain tiles have no underfelt to provide a crevice for bats to roost in but there are access points for bats.	
Feature.	Evidence of bats.	Likelihood of bats roosting.	Photograph.
In eaves.	None.	None. Coirbel brick eaves with no access for bats.	
In verge.	None.	None. There is no access for bats.	

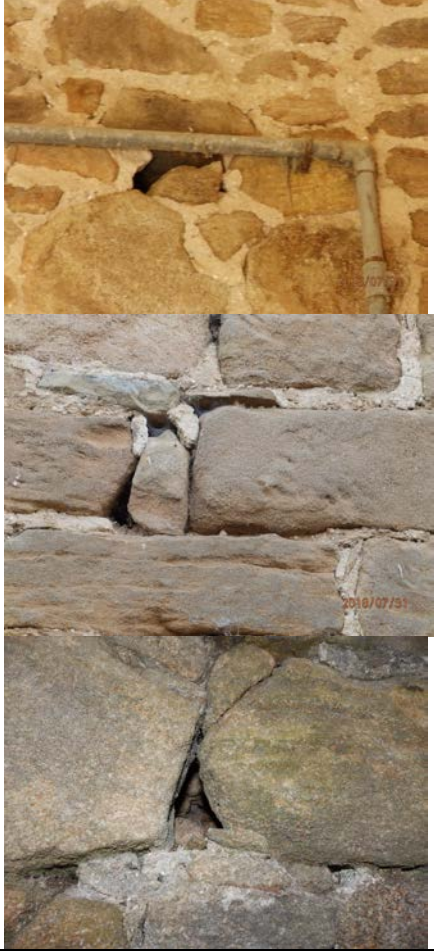
There was no nesting evidence of use of the building by birds but there are nesting opportunities.

Bird nesting opportunities; Possible

Two storey stone building.



Feature.	Evidence of bats.	Likelihood of bats roosting.	Photograph.
Behind ridge board.	None.	None. The roof is a monopitch with no ridge boards.	
In splits in timber rafters.	None.	None. Machine cut timbers.	
In crevices in the stone walls	None.	Possible. There is access for bats to the crevices but the space is small and would only support small numbers or individual bats.	

			
Feature.	Evidence of bats.	Likelihood of bats roosting.	Photograph.
In eaves.	None.	None. Timber wall plate and fascia boards with no crevices for bats but there is access for bats to the inside of the building.	

There was no nesting evidence of use of the building by birds but there are nesting opportunities.

Bird nesting opportunities; Possible

Two storey brick extension.



Feature.	Evidence of bats.	Likelihood of bats roosting.	Photograph.
Behind ridge board.	Bat droppings.	Definite. There is access to the roof space for bats and in 2014 there were bat droppings and butterfly wing fragments on the floor. The gaps in the ridge tiles mean that there will be weather penetration.	

			
In splits in timber rafters.	None.	None. Machine cut timbers.	
Feature.	Evidence of bats.	Likelyhood of bats roosting.	Photograph.
Under ridge tiles.	None.	Possible. There is access to the underside of the ridge tiles for bats but there is also weather penetration.	  

Under loose or missing roof tiles.	None.	None. The plain tiles have access points for bats but the only underfelt is polythene sheet material that is not suitable for bats to roost against..	   
Feature.	Evidence of bats.	Likelihood of bats roosting.	Photograph.
In eaves.	None.	None. Corbel brick eaves with no access for bats.	

In verge.	None.	Poor. There is access for bats but there is also weather penetration making use by bats unlikely except in periods of warm and dry weather.	
Feature.	Evidence of bats.	Likelihood of bats roosting.	Photograph.

There was nesting evidence of use of the building by birds and there are nesting opportunities.



Bird nesting opportunities; Definite

Bat droppings.

The buildings survey for bats and birds undertaken by ARC Ecology had revealed the presence of bats in the buildings. The surveyor checked the buildings prior to undertaking the emergence surveys to see if there was any further evidence in July 2014, May 2018 and July 2018.

Medium sized, segmented bat droppings and butterfly and moth wings were found in the first floor area of the southern barns in 2014 and 2018.



The droppings and butterfly/moth wings were all found beneath the ridge board. The size and shape of the droppings and the presence of the butterfly/moth wings confirm this site as being a feeding perch for Brown Long Eared bats.

No other bat droppings were found around the site.



Emergence surveys.

In order to provide data upon bat movements on site, to determine whether bats are roosting in buildings and to allow the identification of bats emerging from buildings, four evening emergence surveys and one dawn survey were undertaken. The number of surveys undertaken was determined by the surveyor to assess how often the feeding perch was being used and how bats are using the whole site. Sufficient surveys have been undertaken to ensure that if Mr. and Mrs. Shipley want to undertake the development themselves there are enough surveys for a Natural England European Protected Species license.

The aim of each survey was to look at different areas of the buildings to determine if bats were emerging from a roost and to assess bat activity across the site. The surveys were undertaken using heterodyne and frequency division bat detectors from which it is possible to identify bats by their different ultrasound call. Bat passes were recorded during ten minute periods from sunset. Where a bat was seen it was recorded on a plan of the site to provide information upon movements across the site. As bats close in on their prey their echolocation calls get closer together sounding like a buzz. These feeding buzzes are recording as they confirm the presence of prey and bats feeding in the area.

The surveys were undertaken using a Batbox Duet frequency division bat detector with an Edirol R09 recording device and Magenta heterodyne bat detectors..

30th July 2014.

Surveyor. S. Christopher Smith.

Positioned on the lane to the east of the barns.

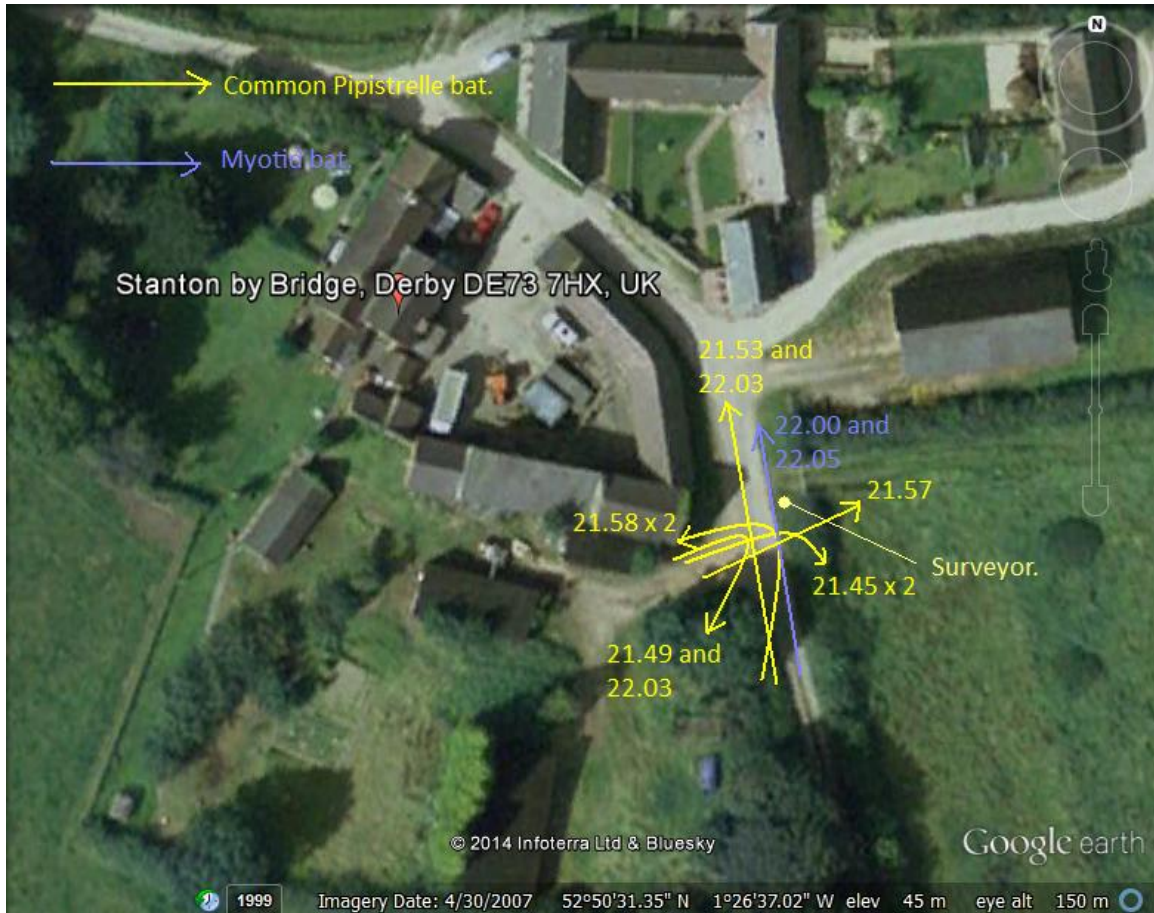
Time	Pipistrelle ?	Pipistrelle 45kHz	Pipistrelle 55kHz	Brown Long Eared bat.	Noctule	Myotis bat
20.50-21.00						
21.00-21.10						
21.10-21.20						
21.20-21.30						
21.30-21.40	2* ¹					
21.40-21.50	1* ²	3* ³	5* ⁴		1* ⁵	1* ⁶
21.50-22.00	1* ⁷	16* ⁸	2* ⁹			1* ¹⁰
22.00-22.10		8* ¹¹	4* ¹²			2* ¹³
22.10-22.20	1* ¹⁴	5* ¹⁵	2* ¹⁶	2* ¹⁷		2* ¹⁸
22.20-22.30		4* ¹⁹		1* ²⁰		
22.30-22.40	1* ²¹	6* ²²		1* ²³		
22.40-22.50		3* ²⁴	2* ²⁵	5* ²⁶		
22.50-23.00		1* ²⁷				

Sunset. 21.04
 Air Temperature. 23°C at the start of 14°C at the end of the survey .
 Wind. Light/nil.
 Cloud cover. 1/8th.

Notes;

1. Bat heard but not seen at 21.35 and 21.38.
2. Bat heard faintly but not seen at 21.43.
3. Bats heard and seen at 21.45 x 2 and 21.49.
4. Bats heard but not seen.
5. Bat heard but not seen at 21.48.
6. Bat heard but not seen at 21.45.
7. Bat heard faintly but not seen.
8. Bats heard and seen at 21.50, 21.53, 21.58 x2 and 21.57. Other bats heard but not seen. Feeding buzz heard.
9. Bats heard but not seen.
10. Bat heard but not seen at 21.55.
11. Bats heard and seen at 22.03 and 22.03. Other bats heard but not seen. Feeding buzz heard.
12. Bats heard but not seen.
13. Bats heard and seen at 22.00 and 22.05.
14. Bat heard faintly but not seen.
15. Bats heard but not seen.
16. Bats heard but not seen.
17. Bats heard at 22.16 and 22.18 but not seen.
18. Bats heard but not seen at 22.13.
19. Bats heard but not seen.
20. Bat heard but not seen at 22.27.

21. Bat heard faintly but not seen.
22. Bats heard but not seen.
23. Bat heard but not seen at 22.38.
24. Bats heard but not seen.
25. Bats heard but not seen.
26. Bats heard but not seen at 22.43, 22.46, 22.48, 22.48 and 22.48.
27. Bat heard but not seen.



30th July 2014.

Surveyor. Rachel Fryer, licensed bat worker.

Positioned in the courtyard.

Time	Pipistrelle ?	Pipistrelle 45kHz	Pipistrelle 55kHz	Brown Long Eared bat.	Noctule	Myotis bat
20.50-21.00						
21.00-21.10						
21.10-21.20						
21.20-21.30						
21.30-21.40		10* ¹				
21.40-21.50		7* ²			1* ³	

21.50-22.00				1*4		
22.00-22.10	1*5					
22.10-22.20		1*6				
22.20-22.30		1*7				
22.30-22.40				1*8		
22.40-22.50	1*9					
22.50-23.00						

Notes;

1. Bat heard and seen to enter courtyard and forage.
2. Bat heard and seen to forage around courtyard. 2 bats seen and heard to fly across the site at 21.46.
3. Bat heard but not seen at 21.59.
4. Bat seen to fly from ridge of barn at 21.59 but no echolocation.
5. Bat heard faintly but not seen.
6. Bat heard and seen at 22.14.
7. Bat heard but not seen at 22.25.
8. Bat heard but not seen at 22.39.
9. Bat heard faintly but not seen at 22.44.



30th July 2014.

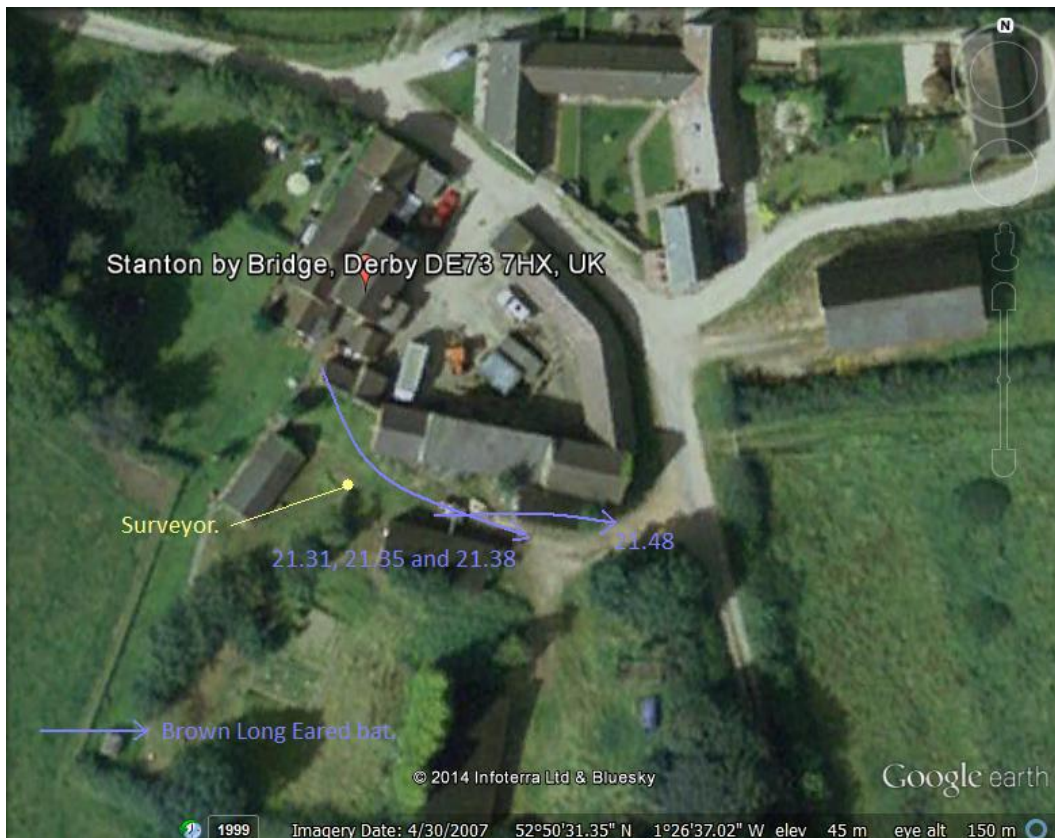
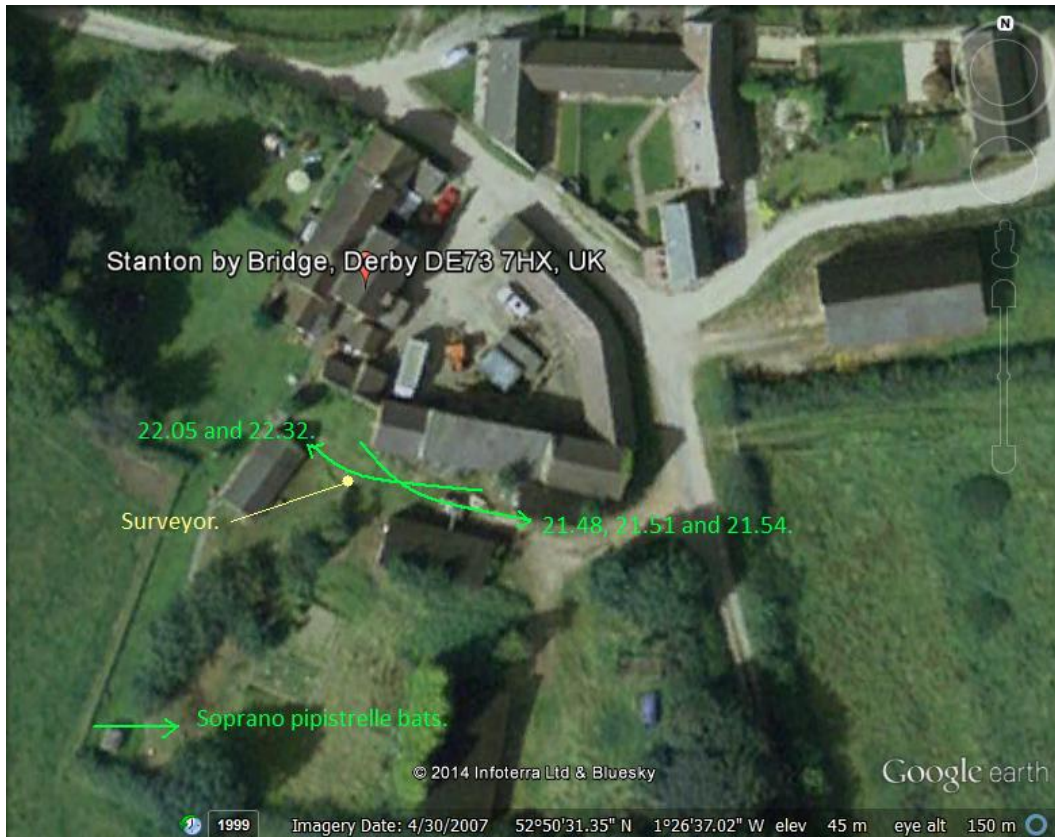
Surveyor. Lucy Mackinson, trainee bat worker.
Positioned to the south of the barns.

Time	Pipistrelle ?	Pipistrelle 45kHz	Pipistrelle 55kHz	Brown Long Eared bat.	Noctule	Myotis bat
20.50-21.00						
21.00-21.10						
21.10-21.20						
21.20-21.30						
21.30-21.40		1* ¹		4* ²		
21.40-21.50		3* ³	1* ⁴	2* ⁵		
21.50-22.00		2* ⁶	2* ⁷			
22.00-22.10		3* ⁸				
22.10-22.20		2* ⁹	3* ¹⁰			
22.20-22.30		1* ¹¹	1* ¹²			
22.30-22.40			1* ¹³			
22.40-22.50			3* ¹⁴			
22.50-23.00		3* ¹⁵	1* ¹⁶			

Notes;

1. Bat heard but not seen at 21.39.
2. Bats heard and seen at 21.31, 21.35 and 21.38. Other bat heard but not seen.
3. Bats heard and seen at 21.41, 21.47 and 21.47.
4. Bat heard and seen at 21.48.
5. Bat heard and seen at 21.48. Other bat heard but not seen at 21.44.
6. Bat heard and seen at 21.56 and 21.58.
7. Bats heard and seen at 21.51 and 21.54.
8. Bats heard and seen at 22.02 and 22.04.
9. Bat heard and seen at 22.17. Other bat heard but not seen.
10. Bat heard and seen at 22.05. Other bats heard but not seen.
11. Bat heard but not seen at 22.20.
12. Bat heard but not seen at 22.22.
13. Bat heard but not seen at 22.32.
14. Bats heard but not seen at 22.40, 22.43 and 22.43.
15. Bats heard but not seen at 22.50, 22.51 and 22.53.
16. Bat heard but not seen at 22.50.





24th September 2014.

Surveyor. S. Christopher Smith.

Positioned to the south west of the two storey barn building.

Time	Pipistrelle ?	Pipistrelle 45kHz	Pipistrelle 55kHz	Brown Long Eared bat.	Noctule	Myotis bat
18.50-19.00						
19.00-19.10						
19.10-19.20			1* ¹			
19.20-19.30	3* ²				2* ³	
19.30-19.40		27* ⁴	2* ⁵		3* ⁶	
19.40-19.50	3* ⁷	13* ⁸				
19.50-20.00		12* ⁹				
20.00-20.10	1* ¹⁰	3* ¹¹		?* ¹²		3* ¹³
20.10-20.20	1* ¹⁴	7* ¹⁵				
20.20-20.30		3* ¹⁶			2* ¹⁷	1* ¹⁸
20.30-20.40	2* ¹⁹	3* ²⁰		2* ²¹	3* ²²	3* ²³
20.40-20.50	1* ²⁴	7* ²⁵		1* ²⁶		
20.50-21.00		3* ²⁷				

Sunset. 19.02

Air Temperature. 13.6°C at the start of 9.3°C at the end of the survey.

Wind. Light.

Cloud cover. 0/8th.

Notes;

1. Bat heard and seen at 19.19 flying across the site.
2. Bats heard but not seen at 19.27, 19.28 and 19.28.
3. Bats heard faintly but not seen.
4. Bats heard and seen at 19.30, 19.31, 19.32, 19.32 and 19.34. Other bats heard but not seen.
5. Bats heard but not seen at 19.33 and 19.34.
6. Bats heard but not seen at 19.44, 19.45 and 19.45.
7. Bats heard faintly but not seen.
8. Bats heard but not seen.
9. Bats heard but not seen.
10. Bat heard faintly but not seen at 20.08.
11. Bats heard but not seen.
12. Faint short duration ticking heard but bat not seen at 20.09.
13. Bats heard but not seen at 20.01, 20.02 and 20.02.
14. Bat heard faintly but not seen.
15. Bats heard but not seen.
16. Bats heard but not seen.
17. Bats heard but not seen at 20.22 and 20.22.
18. Bat heard but not seen at 20.29.

19. Bats heard faintly but not seen.
20. Bats heard but not seen.
21. Bats heard but not seen at 20.32 and 20.32.
22. Bats heard but not seen at 20.38, 20.38 and 20.38.
23. Bats heard but not seen at 20.30, 20.34 and 20.36.
24. Bat heard faintly but not seen.
25. Bats heard but not seen.
26. Bat heard but not seen at 20.47.
27. Bats heard but not seen.



29th September 2014.
 Surveyor. S. Christopher Smith.
 Positioned in front of the property to the west.

Time	Pipistrelle ?	Pipistrelle 45kHz	Pipistrelle 55kHz	Brown Long Eared bat.	Noctule	Myotis bat
07.00-07.10						
06.50-07.00						
06.40-06.50						
06.30-06.40			5*15			

06.20-06.30	1*13	3*14				
06.10-06.20	1*11	1*12				
06.00-06.10	1*9	2*10				
05.50-06.00	2*7		2*8			
05.40-05.50	1*4	3*5	2*6			
05.30-05.40		2*3				
05.20-05.30	1*1		1*2			
05.10-05.20						
05.00-05.10						

Sunrise. 07.04
 Air Temperature. 12.9°C at the start of 10.4°C at the end of the survey.
 Wind. Nil.
 Cloud cover. 0/8th increasing to 1/8th.

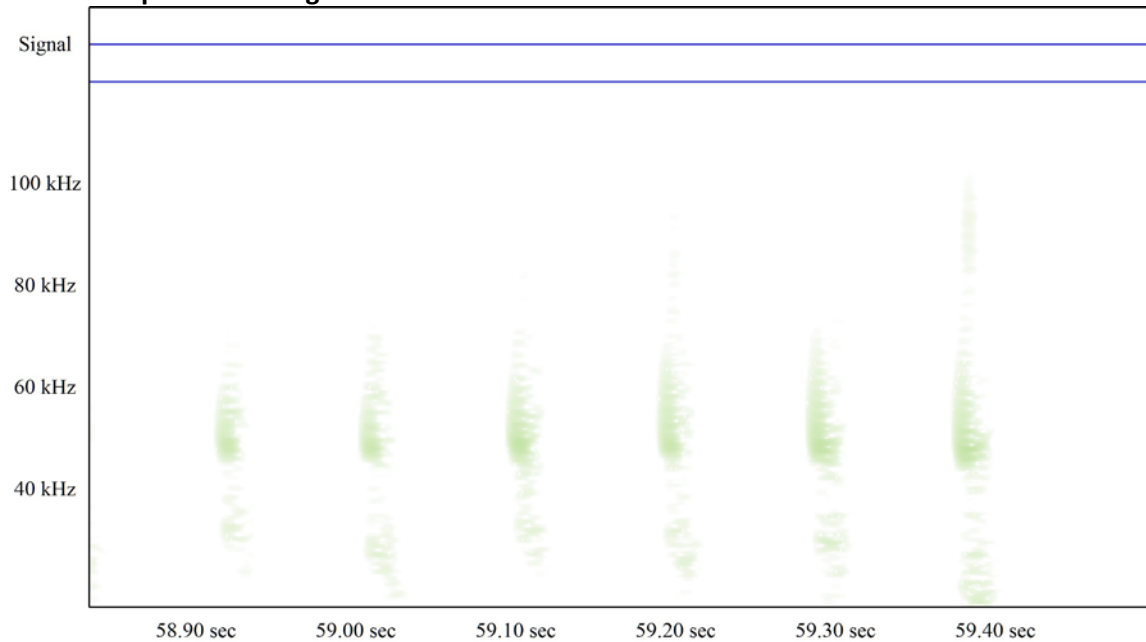
Notes;

1. Bat heard faintly but not seen at 05.23.
2. Bat heard but not seen at 05.25.
3. Bats heard but not seen at 05.36 and 05.36.
4. Bat heard faintly but not seen at 05.49.
5. Bats heard but not seen at 05.45, 05.45 and 05.47.
6. Bats heard but not seen at 05.43 and 05.47.
7. Bat heard faintly but not seen at 05.50 and 05.51.
8. Bats heard but not seen at 05.52 and 05.52.
9. Bat heard faintly but not seen at 06.02.
10. Bats heard but not seen at 06.09 and 06.09.
11. Bat heard faintly but not seen at 06.18.
12. Bat heard but not seen at 06.19.
13. Bats heard but not seen at 06.26.
14. Bats seen and heard at 06.21, 06.21 and 06.22 when bat seen to enter crevice in stonework. Bat seen at 06.26 in lane to east of site.
15. Bats heard but not seen at 06.32, 06.33, 06.33, 06.34 and 06.36.

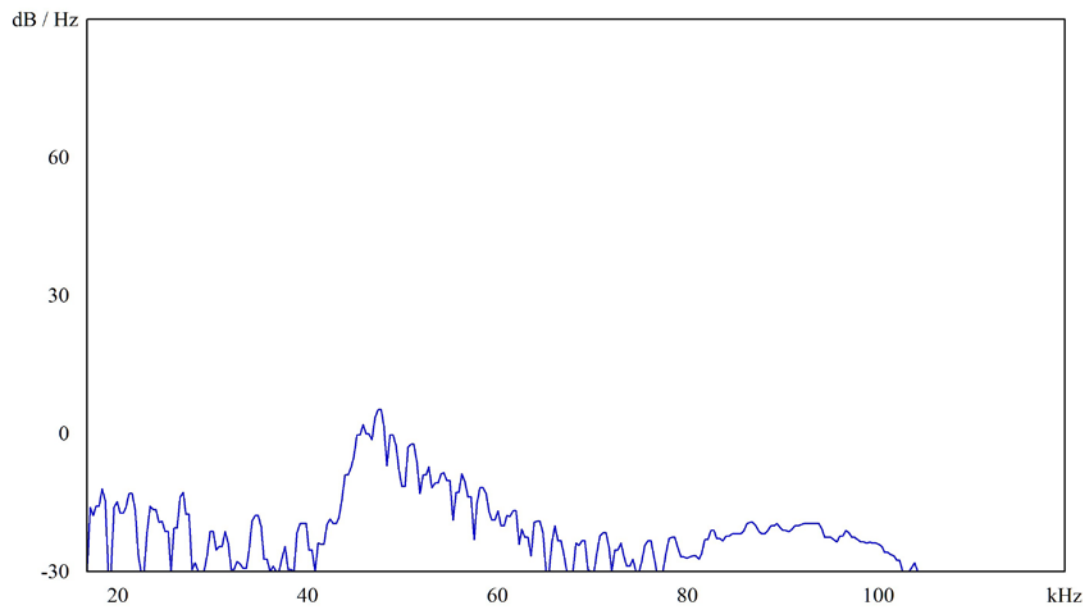


Analysis of the recordings from the bat detectors have confirmed the presence of Common Pipistrelle bats. The sonogram shows the typical 'hockey stick' shape of an initial frequency modulated downwards sweeping call followed by the constant frequency peak frequency area. The peak frequency can be seen to be around 45kHz on the peak frequency graph, confirming that the bat was a Common Pipistrelle.

Common Pipistrelle sonogram.

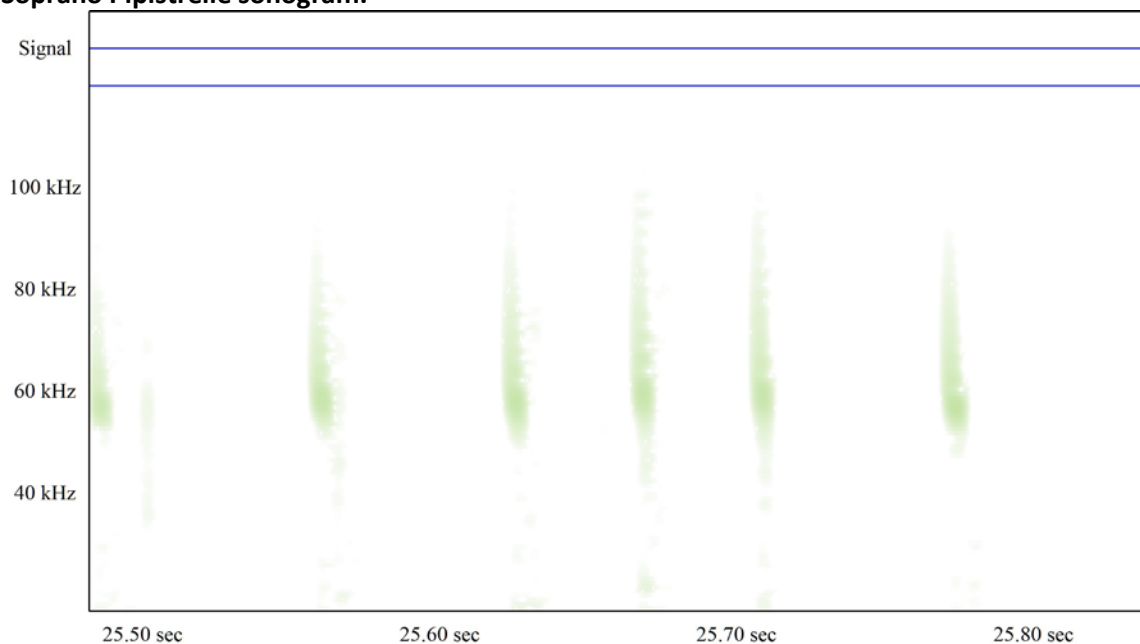


Common Pipistrelle peak frequency.

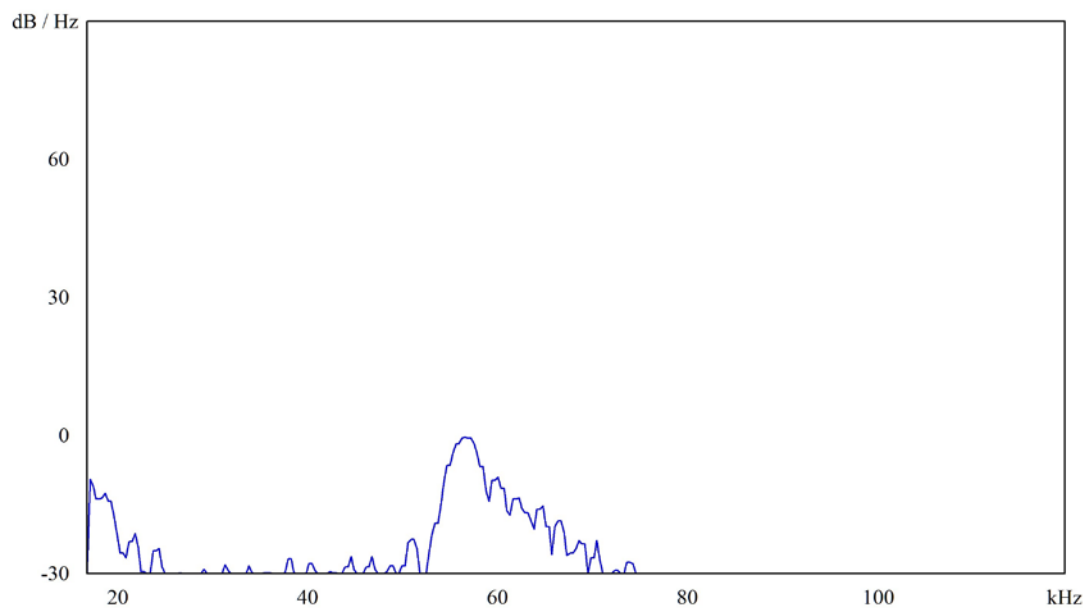


The Soprano Pipistrelle bats heard have also been confirmed by sound analysis with the peak frequency being around 57kHz, with the same 'hockey stick' shape to the sonogram seen with the Common Pipistrelle bats.

Soprano Pipistrelle sonogram.

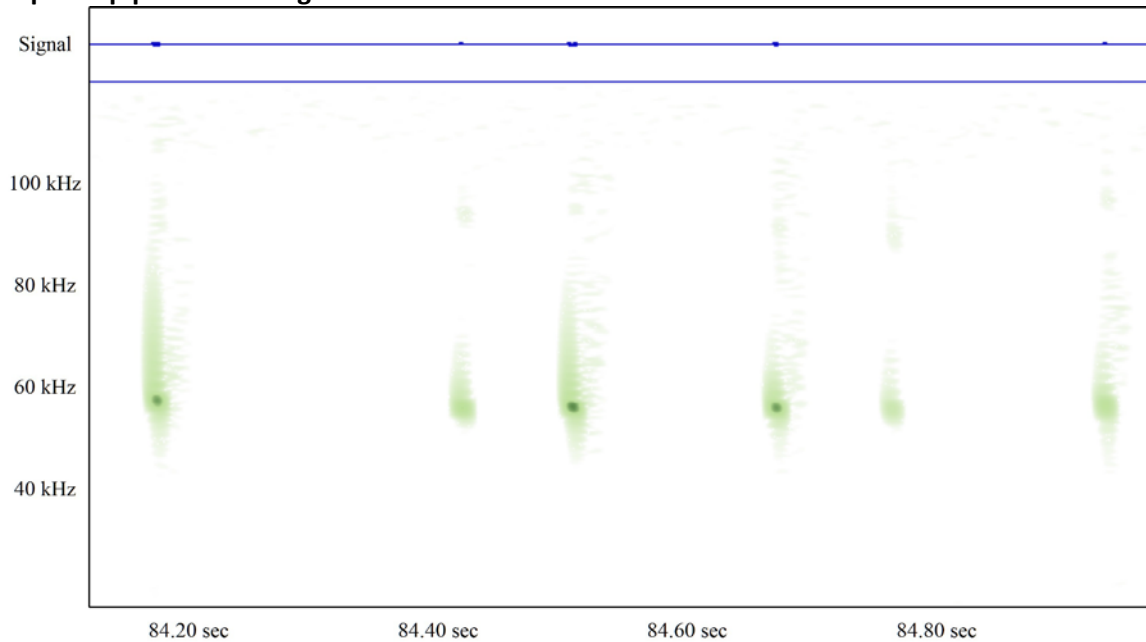


Soprano Pipistrelle peak frequency.

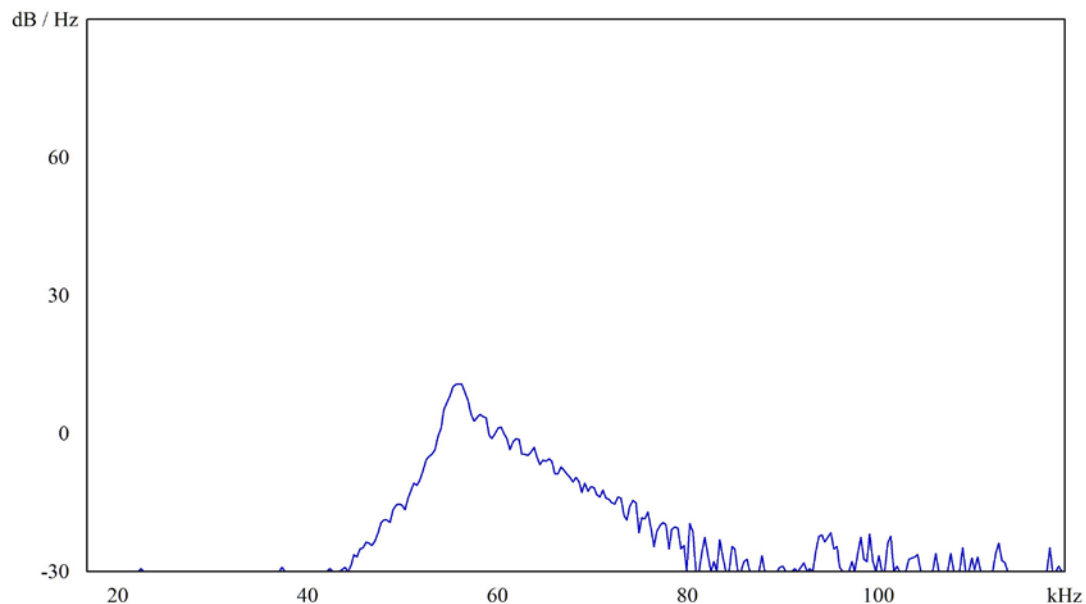


On the 24th September 2014 stronger Soprano recordings were made that further supported the presence of Soprano pipistrelle bats.

Soprano pipistrelle sonogram

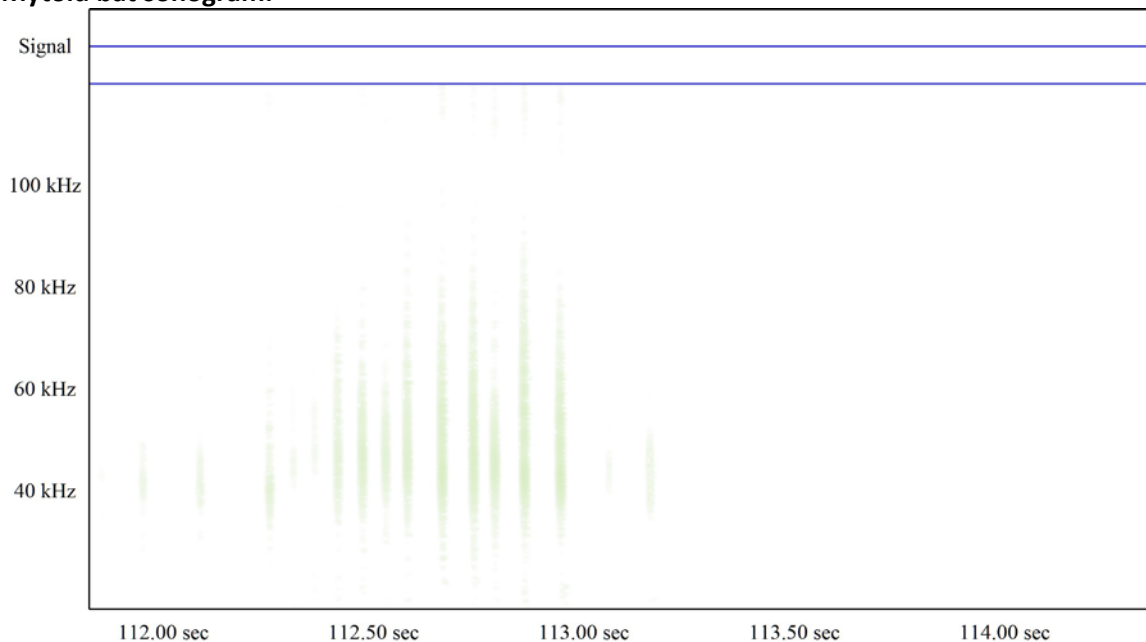


Soprano pipistrelle peak frequency.



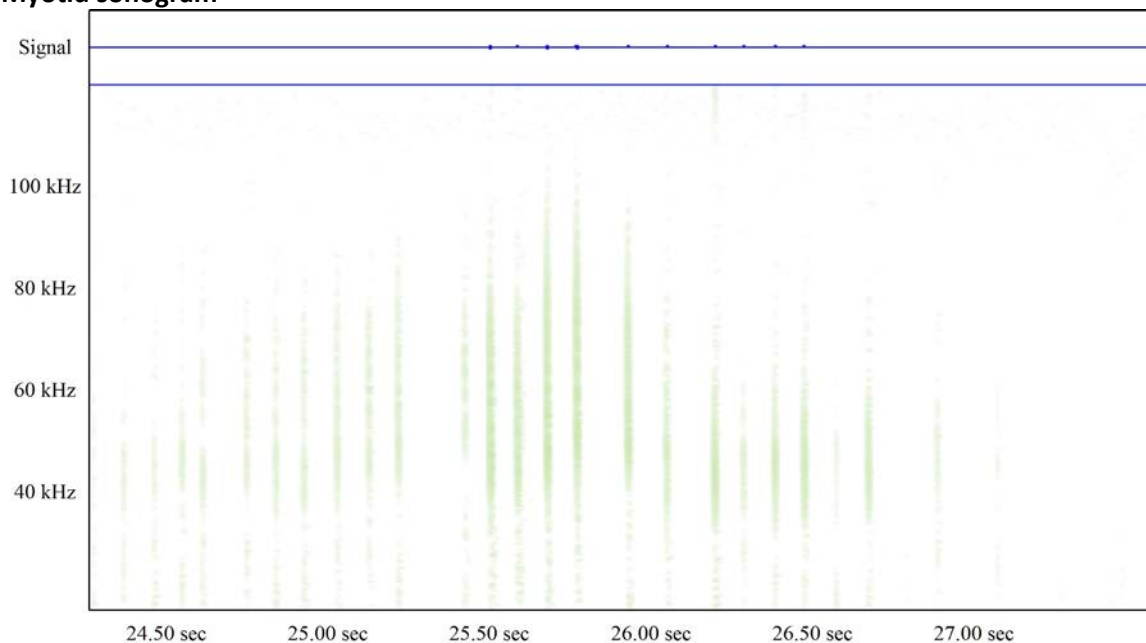
The Myotis bats that were heard on site were only heard briefly and the signal strength was therefore poor for undertaking analysis. The sonogram for the Myotis calls however does show the downwards sweeping frequency modulated call typical of all Myotis bats. The surveyor thought from the heterodyne call heard on site that the bat was possibly a Natterer's bat. The echolocation call analysis shows the call extending down to around 30kHz. The start of the call however is shown as being around 80kHz and this would make it more likely that the bat was a Whiskered bat. Both species of bats are known to be present locally.

Myotis bat sonogram.



The recording of the myotis bats on the 24th September 2014 was of a stronger echolocation and the sonogram for these calls supports the above identification of the bats as Natterer's bats.

Myotis sonogram



The emergence surveys have confirmed that one bat emerged from the western part of the two storey barn area, from the ridge/roof tile area, at 21.59. Other Brown Long Eared bats were seen to fly into the site from the north of the surveyor at 21.31, 21.35 and 21.38. This time of emergence is consistent with the bats emerging from a roost close to the site.

In 2018 an additional emergence survey was undertaken by S Christopher Smith and Katy Smith.

The surveys were undertaken using Batbox Duet frequency division bat detectors with an Edirol R09 recording device, a Batbox Baton frequency division bat detector with an Olympus WAV sound recorder, a Batbox Baton XD Time Expansion bat detector with Olympus wav recorder , an Elekon Batscanner and Magenta 5 heterodyne bat detectors.

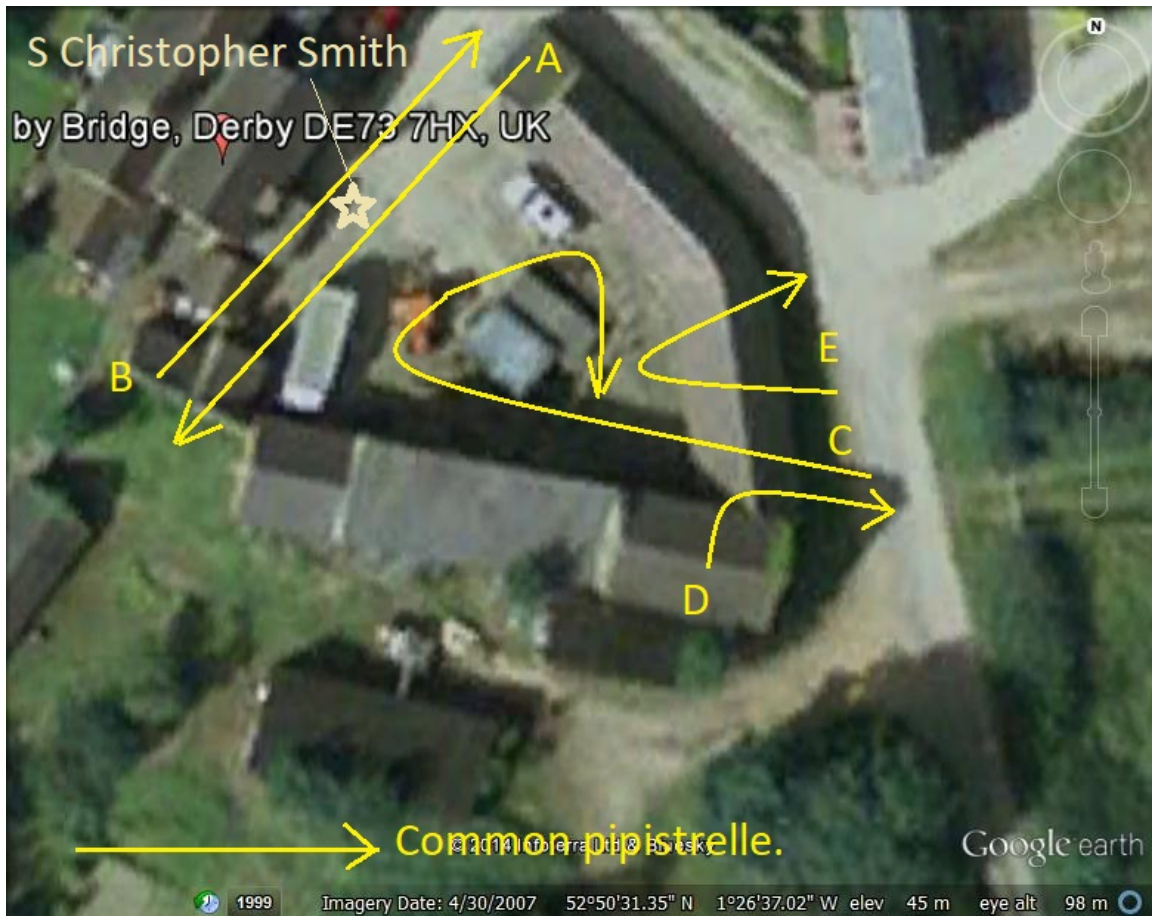
2nd May 2018.

Sunset. 20.36
Air Temperature. 10°C at the start of 8°C at the end of the survey .
Wind. Beaufort Scale 1.
Cloud cover. 408th.

Survey started 20.20 and ended at 22.15.

Surveyor. S. Christopher Smith.
Positioned in the courtyard.

Time.	Direction.	Activity.	Species.	Notes.
20.55		Commuting	Common pipistrelle	
20.55		Commuting	Common pipistrelle	
20.58		Foraging	Common pipistrelle	Flying around courtyard from 20.58 to 21.32
21.00		Commuting	Common pipistrelle	
21.12		Commuting	Noctule	
21.18		Commuting	Common pipistrelle	
21.24		Commuting	Noctule	
21.28		Commuting	Common pipistrelle	
21.41		Commuting	Common pipistrelle	



A remote bat detector with a recording device was positioned on the ground floor of the two storey stone barn. No bats were recorded.

Surveyor. Katy Smith, trainee bat worker.
Positioned at the north of the two storey stone barn.

Time.	Direction.	Activity.	Species.	Notes.
21.10	A	Foraging	Common pipistrelle	
21.12	B	Foraging	Common pipistrelle	
21.14	A	Foraging	Common pipistrelle	
21.15	Not seen	Foraging	Common pipistrelle	
21.16	Not seen	Foraging	Common pipistrelle	
21.18	C	Foraging	Common pipistrelle	
21.19	D	Emerged	Brown long eared	Emerged from ridge tile of two storey brick extension.
21.22	A	Foraging	Common pipistrelle	
21.27	C	Foraging	Common pipistrelle	



22nd July 2018.

Sunset. 21.15
 Air Temperature. 23.5°C at the start of 23.0°C at the end of the survey .
 Wind. Beaufort Scale 0.
 Cloud cover. 0/8th.

Survey started 21.00 and ended at 23.09.

Surveyor. S. Christopher Smith.
 Positioned to the southeast of the courtyard.

Time.	Direction.	Activity.	Species.	Notes.
21.41	Not Seen	Commuting	Soprano pipistrelle	
21.44	A	Commuting	Common pipistrelle	
21.45	A	Commuting	Common pipistrelle	
21.46	Not Seen	Commuting	Common pipistrelle	
21.53	B	Commuting	Brown long eared	
21.54	Not Seen	Commuting	Soprano pipistrelle	
21.59	C	Commuting	Common pipistrelle	
22.00	Not Seen	Commuting	Common pipistrelle	

22.02	Not Seen	Commuting	Common pipistrelle	
22.02	Not Seen	Commuting	Soprano pipistrelle	
22.02	Not Seen	Commuting	Noctule	
22.04	Not Seen	Commuting	Soprano pipistrelle	
22.07	Not Seen	Foraging	Common pipistrelle	
22.10	Not Seen	Foraging	Common pipistrelle	
22.11	Not Seen	Foraging	Common pipistrelle	
22.12	Not Seen	Commuting	Common pipistrelle	
22.13	Not Seen	Foraging	Common pipistrelle	
22.13	D	Foraging	Common pipistrelle	
22.15	A	Commuting	Common pipistrelle	
22.16	d	Commuting	Brown long eared	
22.18	Not Seen	Commuting	Common pipistrelle	
22.19	Not Seen	Commuting	Common pipistrelle	
22.20	Not Seen	Commuting	Myotis	Whiskered?
22.22	Not Seen	Foraging	Common pipistrelle	
22.22	C	Foraging	Common pipistrelle	
22.23	Not Seen	Foraging	Common pipistrelle	
22.23	Not Seen	Foraging	Soprano pipistrelle	
22.24	Not Seen	Foraging	Soprano pipistrelle	
22.25	Not Seen	Commuting	Common pipistrelle	
22.26	Not Seen	Commuting	Soprano pipistrelle	
22.26	Not Seen	Commuting	Whiskered	
22.27	Not Seen	Commuting	Common pipistrelle	
22.28	Not Seen	Commuting	Common pipistrelle	
22.29	Not Seen	Foraging	Common pipistrelle	
22.30	Not Seen	Commuting	Common pipistrelle	
22.43	Not Seen	Commuting	Brown long eared	
22.43	Not Seen	Commuting	Soprano pipistrelle	
22.46	Not Seen	Commuting	Common pipistrelle	
22.49	Not Seen	Commuting	Noctule	
22.50	Not Seen	Commuting	Soprano pipistrelle	
22.50	Not Seen	Commuting	Common pipistrelle	
22.52	Not Seen	Foraging	Whiskered	
22.53	Not Seen	Commuting	Noctule	
22.55	Not Seen	Commuting	Common pipistrelle	
22.56	Not Seen	Commuting	Common pipistrelle	
22.59	Not Seen	Commuting	Noctule/leislers	



Surveyor. Diana Webber, trainee bat worker.
Positioned the courtyard looking at the two storey buildings.

Time.	Direction.	Activity.	Species.	Notes.
21.46	A	Emerged then Foraging	Common pipistrelle	Bat emerged from first floor doorway and forage around courtyard from 21.48 until 22.20
22.02	Not seen	Foraging	Noctule	
22.09	B	Foraging	Common pipistrelle	Entering and emerging from ground floor door way, flying in and out of two storey stone barn from 21.48 until 22.20
22.20	Not seen	Commuting	Noctule	
22.20	Not seen	Commuting	Myotid	Faint
22.24	Not seen	Commuting	Myotid	Faint
22.27	Not seen	Commuting	Serotine/Noctule	Faint
22.39	Not seen	Commuting	Common pipistrelle	Faint
22.40	Not seen	Commuting	Common pipistrelle	
22.50	Not seen	Foraging	Common pipistrelle	

22.59	Not seen	Commuting	Myotis	Faint
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Surveyor. Sophie Gooding, trainee bat worker.
Positioned in the courtyard looking at the single storey buildings.

Time.	Direction.	Activity.	Species.	Notes.
21.47	B1	Emerged	Common pipistrelle	
21.48	B2	Entered	Common pipistrelle	
21.49	B2	Emerged	Common pipistrelle	
21.50	B2	Entered	Common pipistrelle	
21.52	B2	Emerged	Common pipistrelle	
21.53	A	Commuting	Brown long eared	
21.53	A	Commuting	Brown long eared	
21.57	A	Foraging	Common pipistrelle	
21.58	A	Foraging	Common pipistrelle	
22.01	Not seem	Commuting	Soprano pipistrelle	
22.02	Not seen	Commuting	Noctule	
22.04	A	Foraging	Common pipistrelle	
22.08	Not seem	Commuting	Noctule	
22.08	Not seem	Foraging	Common pipistrelle	
22.10	A	Commuting	Soprano pipistrelle	

22.10	Not seem	Commuting	Soprano pipistrelle	
22.10	Not seem	Foraging	Common pipistrelle	
22.12	Not seem	Foraging	Soprano pipistrelle	
22.12	Not seem	Commuting	Soprano pipistrelle	
22.12	A	Commuting	Soprano pipistrelle	
22.12	A	Commuting	Soprano pipistrelle	
22.13	A	Foraging	Soprano pipistrelle	
22.15	Not seem	Foraging	Common pipistrelle	
22.16	Not seem	Foraging	Common pipistrelle	
22.17	C	Commuting	Common pipistrelle	
22.18	Not seem	Commuting	Common pipistrelle	
22.19	Not seem	Commuting	Common pipistrelle	
22.20	Not seem	Commuting	Noctule	
22.21	Not seem	Commuting	Soprano pipistrelle	
22.22	Not seem	Commuting	Common pipistrelle	
22.22	D	Commuting	Soprano pipistrelle	
22.23	Not seem	Foraging	Soprano pipistrelle	
22.24	Not seem	Foraging	Common pipistrelle	
22.24	Not seem	Foraging	Soprano pipistrelle	
22.26	Not seem	Commuting	Soprano pipistrelle	
22.27	Not seem	Foraging	Soprano pipistrelle	
22.27	Not seem	Foraging	Soprano pipistrelle	
22.27	Not seem	Commuting	Soprano pipistrelle	
22.28	Not seem	Foraging	Noctule	
22.29	Not seem	Commuting	Common pipistrelle	
22.30	Not seem	Commuting	Common pipistrelle	
22.31	Not seem	Commuting	Common pipistrelle	
22.32	Not seem	Foraging	Common pipistrelle	
22.39	Not seem	Commuting	Noctule	
22.40	Not seem	Commuting	Common pipistrelle	
22.40	Not seem	Commuting	Soprano pipistrelle	
22.40	Not seem	Commuting	Soprano pipistrelle	
22.41	Not seem	Commuting	Soprano pipistrelle	
22.43	Not seem	Commuting	Common pipistrelle	
22.44	Not seem	Commuting	Soprano pipistrelle	
22.47	Not seem	Commuting	Common pipistrelle	
22.47	Not seem	Foraging	Common pipistrelle	
22.47	Not seem	Foraging	Soprano pipistrelle	
22.51	Not seem	Commuting	Soprano pipistrelle	
22.52	Not seem	Commuting	Soprano pipistrelle	
22.53	Not seem	Commuting	Soprano pipistrelle	
22.55	Not seem	Commuting	Soprano pipistrelle	
22.56	Not seem	Commuting	Common pipistrelle	
22.58	Not seem	Commuting	Soprano pipistrelle	
22.58	Not seem	Commuting	Common pipistrelle	
23.01	Not seem	Commuting	Soprano pipistrelle	

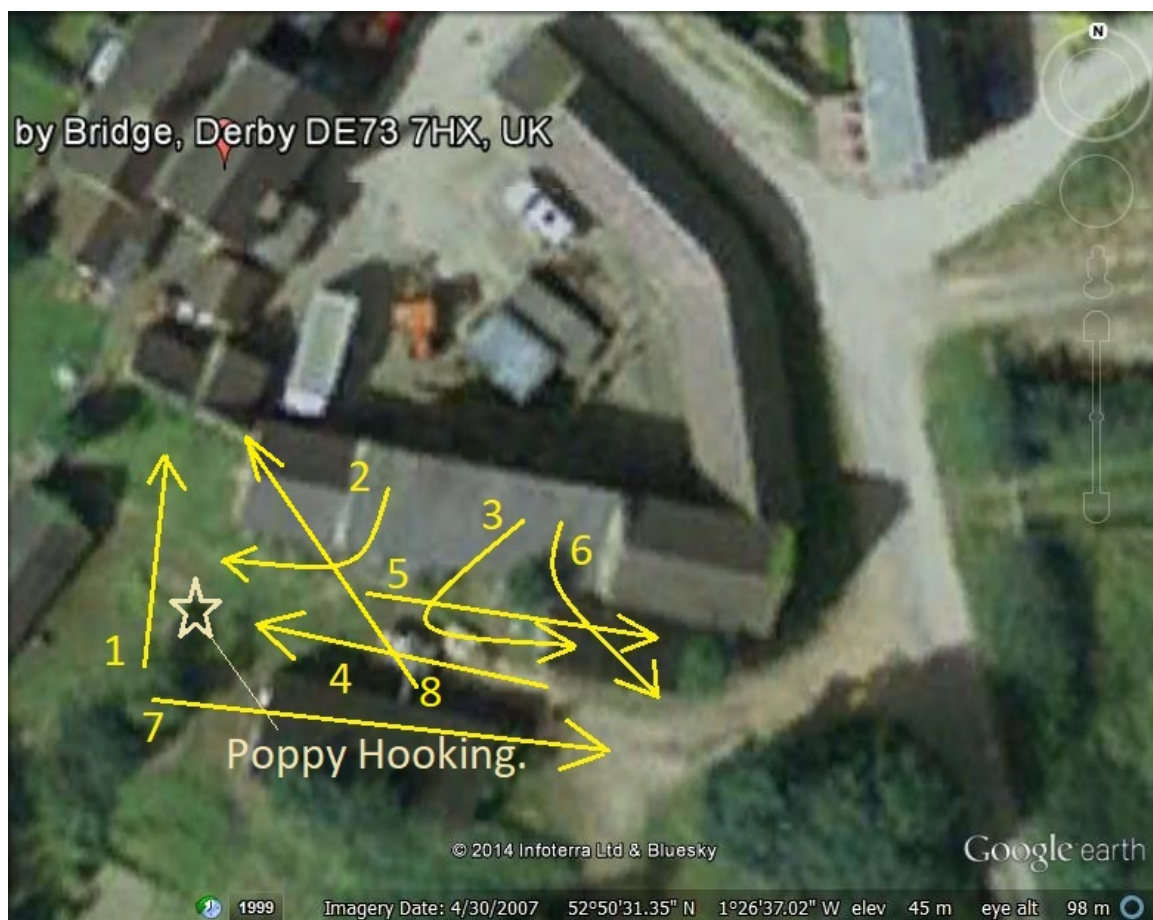
23.01	Not seem	Commuting	Common pipistrelle	
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Surveyor. Poppy Hooking, Trainee bat worker.
Positioned to the south of the buildings.

Time.	Direction.	Activity.	Species.	Notes.
21.36	Not seen	Commuting	Soprano pipistrelle	
21.40	1	Commuting	Brown long eared	
21.45	Not seen	Foraging	Brown long eared	
21.52	2	Commuting	Brown long eared	
21.54	1	Commuting	Brown long eared	
21.56	3	Commuting	Common pipistrelle	
21.58	Not seen	Commuting	Noctule	
22.00	4	Commuting	Soprano pipistrelle	
22.02	Not seen	Foraging	Noctule	
22.04	Not seen	Foraging	Soprano pipistrelle	
22.07	5	Foraging	Soprano pipistrelle	2 bats
22.09	4	Foraging	Soprano pipistrelle	
22.10	7	Foraging	Soprano pipistrelle	
22.11	4	Commuting	Soprano pipistrelle	
22.13	4	Foraging	Common pipistrelle	

22.15	1	Foraging	Common pipistrelle	
22.18	Not seen	Commuting	Common pipistrelle	
22.20	8	Commuting	Brwon long eared	
22.21	5	Foraging	Soprano pipistrelle	2 bats
22.23	5	Foraging	Soprano pipistrelle	
22.24	7	Foraging	Common pipistrelle	
22.26	7	Foraging	Common pipistrelle	
22.28	4	Foraging	Soprano pipistrelle	
22.29	4	Foraging	Soprano pipistrelle	
22.30	7	Foraging	Common pipistrelle	
22.31	8	Foraging	Common pipistrelle	
22.52	Not seen	Foraging	Common pipistrelle	
22.59	Not seen	Commuting	Myotid	



Conclusion.

The previous survey by ARC Ecology and the Bat Consultant's emergence surveys in 2014 have shown that there are small numbers of Common pipistrelle bats using the two storey brick and stone built barn as a place of shelter.

The emergence surveys in 2014 and 2018 have shown that there are small numbers of Common pipistrelle and Brown long eared bats using the two storey buildings as a place of shelter. A Common pipistrelle bat was seen to emerge from the first floor doorway of the two storey brick and stone barn and then forage in the courtyard and fly in and out of the ground floor of the two storey stone barn.



In 2018 a single Brown long eared bat was seen to emerge from the two storey brick extension.



During the dawn survey of the 29th September 2014 a Common pipistrelle bat was seen to enter a crevice in the stonework on the south side of the 2 storey barn at 06.22. These crevices can be retained in any development of the buildings.



Small numbers of Common pipistrelle bats are using the Two storey buildings as a place of shelter. The bats are roosting in the first floor of the two storey brick and stone barn and a Common pipistrelle bat was seen to use one of the crevices on the southern elevation. These are Day roosts.

A single Brown long eared bat was seen to emerge from the ridge tiles of the two storey brick extension and this use matches with the bat droppings and butterfly wing fragments found on the floor at first floor. This is a Day roost and also a feeding perch, Night roost.

Swallows are nesting in the single storey stables and the two storey brick built extension.

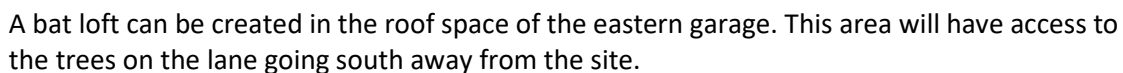


Impacts on bats.

The conversion of the property will have a minor negative impact on bats due to the loss of the roosting against the ridge board and in crevices in the stone work. A Bat Mitigation Class license, WML-CL21, must be obtained before work to convert the two storey barns is commenced. The method of working below must be followed to ensure that the potential for disturbing or harming bats, however small, is minimized and avoided.

There is no loss of habitat from the proposed development and there will be no impact on habitat, forage or commuting routes from the proposed development.

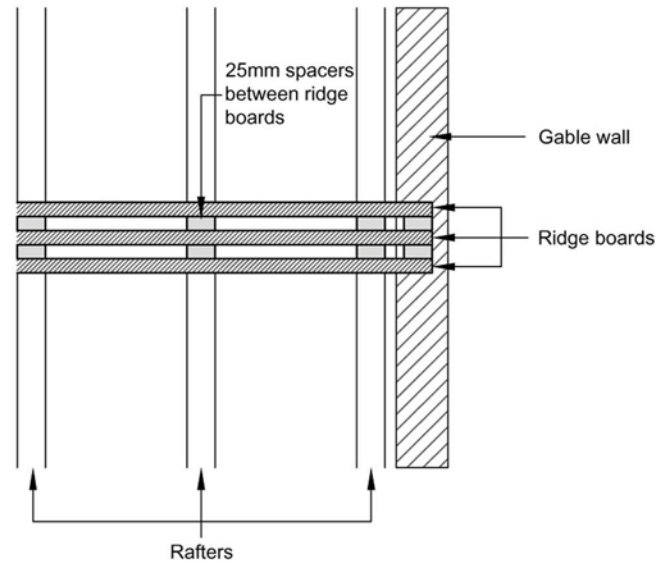
The building and emergence surveys have shown that the two storey solid brick barn extension is being used by a small number of Brown long eared bats, no a maternity roost. Natural England require that a replacement roost for Brown Long Eared bats meet their minimum requirement of being 5m long by 2m high. This can be varied slightly by reducing the height but increasing the length of the roost to ensure there is a consistent volume for the bats to fly around in before emerging at night for maternity groups of bats. The site is to be developed with the construction of garages to the south of the site.



ROOST OPPORTUNITY: TRIPLE RIDGE BOARD

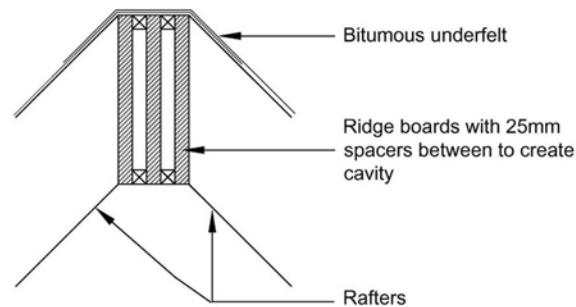
PLAN: TRIPLE RIDGE BOARD WITH ROOSTING OPPORTUNITIES

Not to scale



SECTION: TRIPLE RIDGE BOARD WITH ROOSTING OPPORTUNITIES

Not to scale



TAMWORTH PROPERTY SERVICES

Suite D, 4/5 Market Street, TAMWORTH, Staffordshire. B79 7LU

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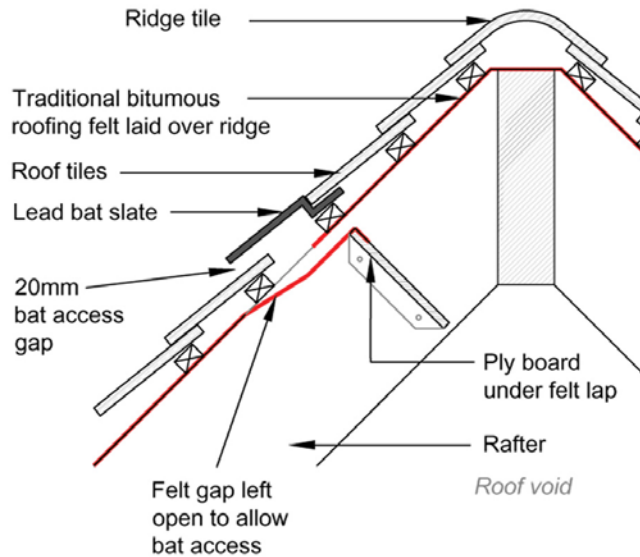
Drawn by: Emma L. Smith B.A. (Hons.)

The roof covering must be a bitumous underfelt which is known to be compatible with bat use. Access will be created by installing a bat access slate on the southern elevation where it will be away from any lighting of the entrance to the garage.

**BAT ACCESS 'SLATE'
DETAIL 1B - with access to
roof void**

SECTION: BAT ACCESS 'SLATE' 1B

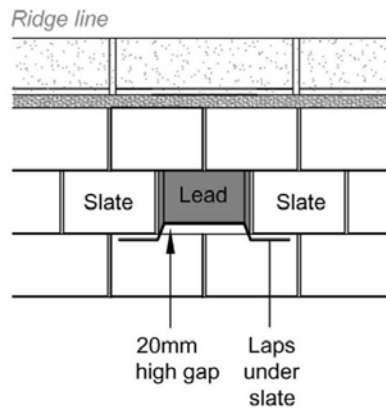
Not to scale



Elevation: BAT ACCESS 'SLATE' DETAIL 1B

Not to scale

Bat slate built into slope



Photograph of bat slate



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Drawn by: Emma L Smith B.A. (Hons.)

The building survey undertaken by ARC Ecology and the emergence survey shows that there are populations of crevice dwelling bats locally; Common Pipistrelle bats. New roosting

opportunities for these species of bats can be created when the new dwellings are built by installing a brick built bat box and retaining the crevices in the stone walls.

A new roosting opportunity to meet the requirements of the National Planning Policy Framework (2012) can be created by installing a brick built bat box in one of the re-built brick walls.



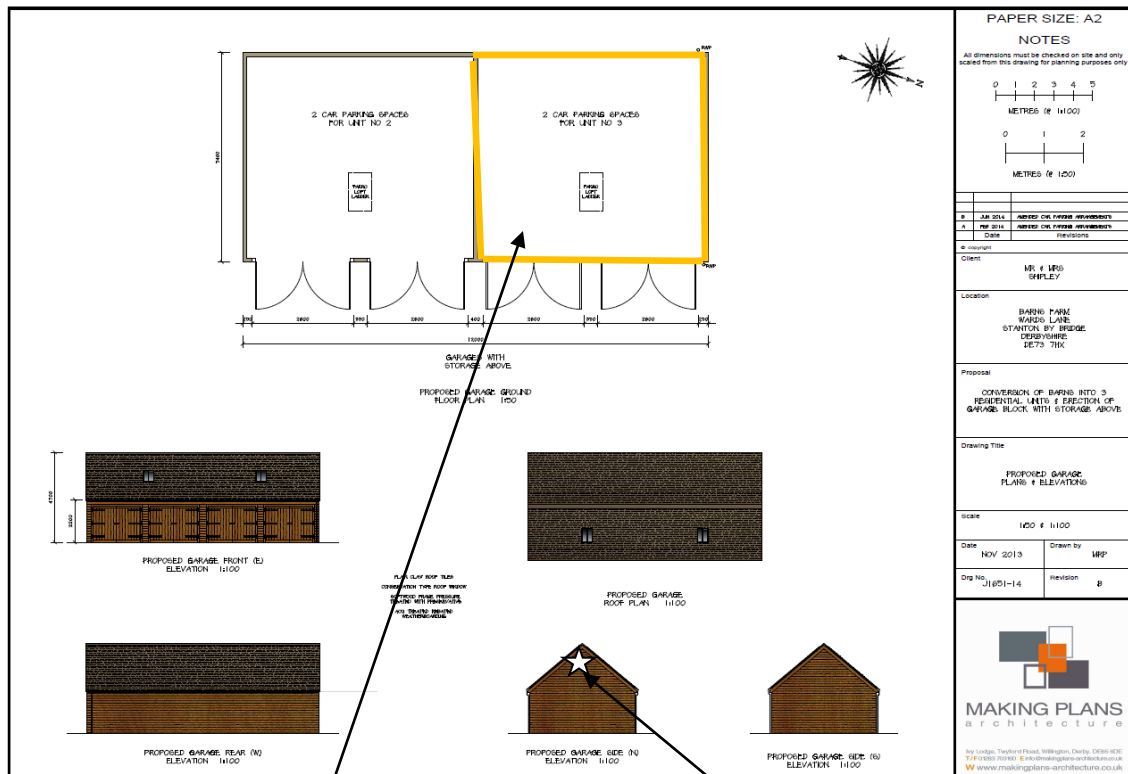
There should be no direct illumination of the new bat roosting opportunities. Lighting around the site will be by low wattage down lights at low level to provide security and safety lighting for the dwelling and service area. This lighting will be set no higher than the head height of the ground floor windows and will minimise the possible disturbance to bats in this area. Any security lighting will use PIR's to ensure they turn off automatically once the movement has ceased.

Mitigation for birds.

Sparrows are nesting under the ridge tiles. Replacement nesting for the Sparrows is to be provided by installing three Sparrow terrace nest boxes in the re-built brickwork at the eaves.



Replacement nesting for Swallows is to be provided in the roof space of the eastern garage. This roof space is to be separated from the adjacent bat loft and a ceiling installed in the garage to stop bird droppings falling on the cars. Access for the swallows is to be provided by making an opening in the northern gable wall, 450mm x 450mm.



Swallow roof nesting area.

Access opening in gable wall.

The method of working has been set out so that it can be printed and handed to contractors on site.

Method of working.

There is evidence of bats using the buildings as a place of shelter and it is possible that individual bats may use the possible roosting site behind the hanging tiles at different times of year. Because of this possibility a method of working should be put in place when there are contractors on site. This would cover work to the roof or demolition where there was access for bats.

The common species of bats that are likely to roost in buildings of this nature and are evidenced from the regional records, are crevice dwelling bats, such as the Common Pipistrelle. These bats are small and can use accesses as little as 50mm x 20mm. When found in buildings they appear no bigger than a thumb and have dark brown fur.



It is common to find bat droppings in places used by bats. These are small and often confused with mouse droppings. It is possible to distinguish between them as mouse droppings are hard whereas bat droppings, being only insect remains, crumble when rubbed between the fingers.



The other species of bat that may possibly be found on site is the Brown Long Eared bat. These are a medium sized bat, larger than a Pipistrelle with very long ears that meet in the centre of

the head. These bats may be found in crevices in the brickwork, behind ridge boards or in splits in the larger roof timbers.



- When tiles are removed they should be lifted away from the roof and not slid or twisted to avoid injuring any bats roosting beneath the tiles.
- Ridge tiles should be lifted without sliding so as to avoid injuring any bats roosting beneath them.
- If a bat is found under a roof tile or ridge tile, the tile should be carefully replaced and work in that area stopped until such time as a licensed bat worker can attend the site.
- The bat can then be removed to a place of safety until such time that it can be released at night.
- The demolition of any part of the building where bats could potentially roost should be by hand. This includes the removal of roof tiles, ridge tiles, soffits, gutter fascia boards and hanging tiles. If a bat is found the work should be stopped immediately and a bat worker called to come and deal with the bat. The bat should not be handled except by a licensed bat worker. Any bats found will be taken into care for release on site later dependent upon the time and weather.
- Bats discovered during the winter period will be taken into care, feed and kept healthy until they can be released on site in the Spring.
- Bats will not be released on site until evening temperatures are consistently above 6°C, at least three nights, the wind is light, and there is no rain.
- Bats taken into care over the winter will be released to the new roost opportunities in Spring if they are available using the same release criteria as above.

Legislation concerning bats.

The Wildlife and Countryside Act 1981 (WCA) protects bats and their roosts in England, Scotland and Wales. Some parts have been amended by the Countryside and Rights of Way

Act 2000 (CRoW) which applies only in England and Wales, and by the Nature Conservation (Scotland) Act 2004 which applies in Scotland.

The Conservation of Habitats and Species Regulations 2010 (better known as the Habitats Regulations) implements the Council Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora. All bats are listed as 'European protected species of animals'.

It is an offence for any person to:

- Deliberately capture, injure or kill a bat.
- Intentionally or recklessly disturb bats, where that disturbance may significantly affect the ability of those bats to survive, breed, rear or nurture their young, or is likely to significantly affect the local distribution or abundance of any bat species, whether in a roost or not.
- Damage or destroy a place of shelter (roost) of a bat, be that a resting or breeding place.
- Possess a bat, whole or in part, alive or dead.
- Intentionally or recklessly obstruct access to a roost.
- Sell or offer for sale or exchange whole or parts of bats, alive or dead.

The fine for committing an offence is £5,000 per bat.

If a bat is found on site, work should stop in the area where the bat was found and the contractor should call the Bat Consultant; S. Christopher Smith 07967636115.

Breathable Roofing Membranes-Info Sheet

What are they?

- ✦ Traditional roofing felt was bitumen based
- ✦ Modern membranes are made from very fine and long plastic fibres that are spun into thin sheets. They be single ply or have various layers to provide a more complex membrane.
- ✦ They are known as Breathable roofing membranes or Vapour permeable underlay's (BRMs/VPUs)

Who Makes them?

- ✦ When most people talk about BRMs, they will call it Tyvek as this is the most famous brand name
- ✦ There are over 70 products in the UK alone, made by 20+ companies – never assume the product is Tyvek unless there is proof.



Why are they used?

- ✦ Modern houses are designed to be more energy efficient, meaning they tend to be warmer.
- ✦ Along with human activities this means increased levels of water vapour in the air
- ✦ When this passes up into the cold roof space, it forms condensation, which can lead to problems
- ✦ In the past gaps would have been left near the ridge and eaves to allow ventilation, but increased insulation often means this isn't possible. A breathable membrane aids this as it allows water vapour to pass out of the loft into the external air

Potential Problems

- ✦ There have been reports of bats becoming entangled in fibres pulled from the membranes
- ✦ Possibility of Temperature and humidity change
- ✦ A lot of membranes are white or brightly coloured

Advice

- ✦ At present we cannot recommend specific brands that are considered safe for use in bat roosts, as such it is recommended that bitumen felt be used where possible
- ✦ It is not against the law not to install a BRM
- ✦ If the planner insists on a BRM, suggest a dark coloured and reinforced membrane

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S.Christopher Smith MRICS MSc CEnv.

Appendix 1.

Roost Types as designated by Natural England and the Bat Surveys for Professional Ecologists, Good Practice Guidelines.

- A. Day roost: a place where individual bats, or small groups of males, rest or shelter in the day but are rarely found by night in the summer.
- B. Night roost: a place where bats rest or shelter in the night but are rarely found in the day. May be used by a single individual on occasion or it could be used regularly by the whole colony.
- C. Feeding roost: a place where individual bats or a few individuals rest or feed during the night but are rarely present by day.
- D. Transitional / occasional roost: used by a few individuals or occasionally small groups for generally short periods of time on waking from hibernation or in the period prior to hibernation.
- E. Swarming site: where large numbers of males and females gather during late summer to autumn. Appear to be important mating sites
- F. Mating sites: sites where mating takes place from later summer and can continue through winter.
- G. Maternity roost: where female bats give birth and raise their young to independence.
- H. Hibernation roost: where bats may be found individually or together during winter. They have a constant cool temperature and high humidity.
- I. Satellite roost: an alternative roost found in close proximity to the main nursery colony used by a few individual breeding females to small groups of breeding females throughout the breeding season.
- J. Other – Explain what the roost type is if not one of the above (it is recognised that roost types are interchangeable and not always easy to classify according to the nuances of certain species).