
Protected Species Survey Report

Battisford Hall, Battisford

for

Trustees of TA Harwood

25 July 2019

Client

Trustees of TA Harwood

Battisford Hall, Battisford**Protected Species Survey Report****Planning authority**

Mid Suffolk District Council
 Endeavour House
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Time limit of reliance

Please note that the reported surveys were conducted on the date(s) stated in the report and that it represents site conditions at the time of the visit. The findings and recommended mitigation are based on these conditions. If site conditions change materially after the site survey, the original report cannot be relied upon and will need to be updated. Ecological reports can typically be relied on for 18 to 24 months from the date of survey.

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Signed disclosure

The information, data, advice and opinions provided in this report which I have provided is true and has been prepared in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. I confirm that the opinions expressed are my true and professional bona fide opinions.

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SUMMARY

- Greenlight Environmental Consultancy Ltd. has been commissioned to carry out protected species surveys for bats, great crested newts and reptiles, relating to a proposed development at Battisford Hall, Battisford, Stowmarket, Suffolk, IP14 2HG.
- The survey and assessment were completed by independent qualified and experienced ecologists with Natural England survey licences for the relevant protected species, and in accordance with the latest survey guidelines.
- The findings of the assessment are that there are no significant ecological constraints that would prevent the proposed works.
- Mitigation measures to avoid potential harm to bats are outlined below.

Protected habitats/species	Status	Potential effect	Recommended mitigation and enhancements
Bats	<p>Moderate-high bat roosting potential in three buildings on site.</p> <p>Activity surveys confirmed a Natterer's maternity roost and 10 non-breeding day roosts for common pipistrelle, soprano pipistrelle, brown long-eared and barbastelle within two buildings.</p> <p>High value commuting and foraging habitat on site.</p>	<p>Destruction of bat roosts present in buildings.</p> <p>Potential light disturbance of commuting and foraging habitats on site.</p>	<p><u>Mitigation</u></p> <p>EPS mitigation licence required from Natural England prior to any works being conducted. The licence will include the following:</p> <p>Works to be conducted between September/October or March/April.</p> <p>Soft roof/wall strip undertaken by hand and under watching brief.</p> <p>Roost location of Natterer's maternity colony must not be destroyed until a replacement roost has been created and usage demonstrated.</p> <p>Replacement roost will consist of a bat loft with crevice roosts. The bat loft must be lined with traditional type 1F bitumen felt, not a breathable membrane.</p> <p>Installation of six integrated bat boxes on the converted buildings.</p> <p>Erection of four integrated bat boxes on mature trees or buildings.</p> <p>Lighting schemes should comply with Bat Conservation Trust and CIE 150:2003 guidance.</p>
Great crested newts	<p>GCN surveys recorded a small population within ponds one and three (both within 100m), with breeding confirmed in the former.</p>	<p>Potential harm to GCN if present on site during works.</p> <p>Loss of GCN terrestrial and aquatic habitats.</p>	<p><u>Mitigation</u></p> <p>An EPS mitigation licence and method statement required prior to the development commencing.</p> <p>Creation of an ecology zone on or near the site to include terrestrial (rough grassland, scrub planting and two hibernacula).</p>

Protected habitats/species	Status	Potential effect	Recommended mitigation and enhancements
			Exclusion fencing with pitfall traps installed around the site perimeter and checked for 30 nights during the GCN active period. Any animals identified to be moved to the receptor site. Phased vegetation clearance and hand search of all suitable refugia.
Reptiles	Presence/absence surveys recorded no reptiles on site.	Reptiles unlikely to be found on site and no impacts predicted.	<u>Precautionary mitigation</u> The measures detailed above for GCN will avoid any potential impacts on reptiles from the proposed works.

1. INTRODUCTION

- 1.1. Greenlight Environmental Consultancy Ltd. has been commissioned to carry out protected species surveys for bats, great crested newts (“GCN”) and reptiles at Battisford Hall, Battisford, Stowmarket, Suffolk, IP14 2HG (grid reference TM 05639 54624).
- 1.2. A Preliminary Ecological Appraisal (“PEA”) was carried out and issued by Greenlight Environmental Consultancy Ltd. in October 2016. The report recommended further bat, great crested newt and reptile surveys prior to the commencement of the development.
- 1.3. This report provides the results of the surveys and a mitigation plan to minimise impacts from the proposed development.

2. METHODOLOGY

Bat surveys

- 2.1. A physical inspection of all the buildings on site was conducted and reported in the Preliminary Ecological Appraisal Report issued by Greenlight Environmental Consultancy Ltd. in October 2016.
- 2.2. Building one (the mill) was assessed as **moderate** roost suitability for bats, which requires at least two bat activity surveys in accordance with the latest bat survey guidelines (Collins, 2016).
- 2.3. Buildings two (the grain store) and three (open barn) were assessed as **high** roost suitability for bats, which requires at least three bat activity surveys in accordance with the latest bat survey guidelines (Collins, 2016).
- 2.4. A total of six bat activity surveys (comprised of two dusk emergence and four dawn return-to-roost surveys) were conducted on 20th and 21st May, 14th and 20th June and 4th and 10th July 2019 in suitable weather conditions (Table 2).
- 2.5. Four surveyors were used per survey: Etienne Swarts (Natural England bat licence level 2 2015-16555-CLS-CLS), Nathan Duszynski (Natural England bat licence level 2 2017-31943-CLS-CLS), Lee Rudd (Natural England bat licence 2018-35600-SCI-SCI and 2019-41574-SCI-SCI), Lucy Reed Mark Jermy, John Gibson, Jill Crighton, Charlie Swarts and Aidan Holden. The surveyors were stationed as shown in Figures 3-8.
- 2.6. The dusk surveys started approximately 15 minutes before sunset and finished approximately 1.5 hours after sunset. The dawn surveys started at least 1.5 hours before sunrise and ended approximately 15 minutes after sunrise.
- 2.7. Bat calls were recorded using an Anabat SD2, Anabat Walkabout, EchoMeter Touch, EchoMeter 3+ and Anabat Swift static bat recorders. Call data was analysed using AnalookW and Analook Insight software.



Great crested newt surveys

- 2.8. The water features on and near the site were assessed for their suitability for GCN, according to a Habitat Suitability Index (Oldham *et al.*, 2000) and reported in Table 1.
- 2.9. In order to determine the presence/likely absence and population class size estimate of GCN within 250m of the proposed site, six survey visits were conducted between April-June 2019.
- 2.10. Four ponds were identified within 250m of the proposed development (Figure 2), which for the size of the development and nature of the terrestrial habitat on site, is a sufficient distance to consider for assessment.
- 2.11. The surveys were undertaken by Nathan Duszynski (Natural England GCN survey licence no. 2016-24303-CLS-CLS) and Charlie Swarts.
- 2.12. The surveys were carried out based on the guidelines contained in the Great Crested Newt Mitigation Guidelines, published by English Nature in 2001. Survey techniques included:
- Evening torch survey (1,000,000 million candlepower torches) of the ponds
 - Egg search for GCN eggs on aquatic vegetation
 - Overnight bottle trapping
- 2.13. There were no constraints to the survey in terms of weather conditions (overnight temperature $\geq 5^{\circ}\text{C}$) or seasonality for GCN surveys.

Pond	1	2	3	4
Geographic location	Zone A	Zone A	Zone A	Zone A
	1.00	1.00	1.00	1.00
Pond surface area (m ²)	600m ²	200m ²	<50m ²	100m ²
	1.00	0.40	0.05	0.20
Desiccation rate	Never	Never	>2 years in 10	Never
	0.90	0.90	0.50	0.90
Water quality/ invert density	Moderate	Moderate	Moderate	Moderate
	0.67	0.67	0.67	0.67
Shoreline shade (%)	70%	30%	0%	90%
	0.80	1.00	1.00	0.40
Waterfowl impacts	Minor	Minor	Absent	Minor
	0.67	0.67	1.00	0.67
Fish impacts	Absent	Absent	Absent	Absent
	1.00	1.00	1.00	1.00
Ponds within 1km	13+	13+	13+	13+
	1.00	1.00	1.00	1.00
Terrestrial habitat quality	Moderate	Moderate	Moderate	Moderate
	0.67	0.67	0.67	0.67
Macrophyte cover (%)	5%	60%	90%	80%
	0.35	0.90	0.90	1.00
HSI Score	Good	Good	Average	Average
	0.77	0.79	0.67	0.64

Table 1, HSI score for ponds within 250m of the proposed site.

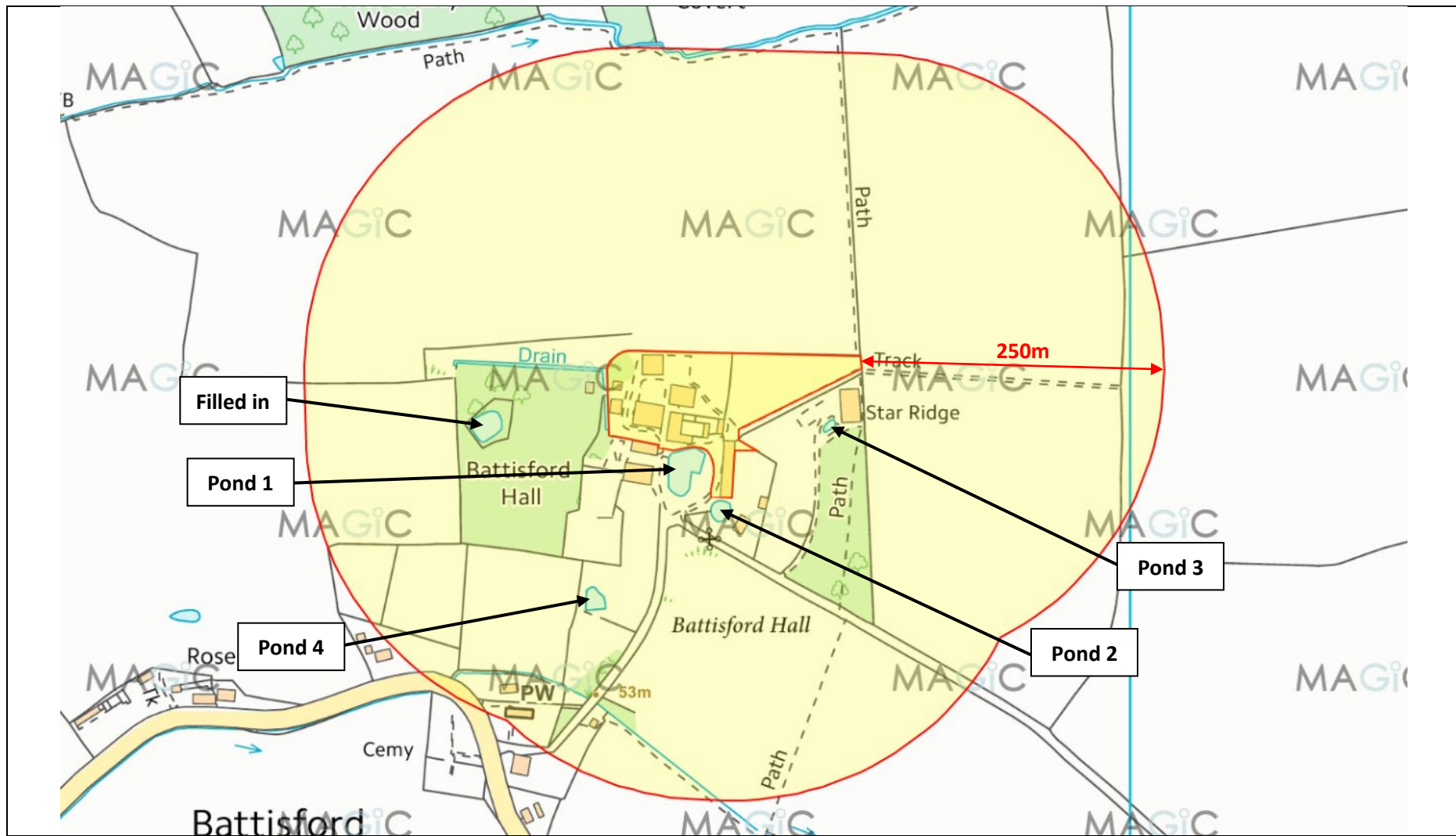


Figure 2
Ponds within 250m of the proposed site.
Image © MAGiC, date accessed 05/04/18

Reptile surveys

- 2.14. A total of seven reptile checks were carried out during April and June 2019 in suitable weather and in accordance with the best practice guidelines (Froglife 1999, Gent *et al.*, 1998 and Sewell *et al.*, 2013).
- 2.15. The surveys included:
- Searching for basking animals in suitable locations, such as on banks, patches of bare ground and piles of wood.
 - Laying out artificial refuges such as corrugated iron sheets and bitumen roofing felt. Thirty refugia, at a density of ≈ 15 per hectare, were placed within suitable reptile habitat on the 12th April 2019, and left in situ for two weeks prior to monitoring commencing. This provided sufficient coverage for an assessment of the habitats most likely to contain reptiles, being the site periphery and some areas between the buildings. Best practice guidelines state a minimum of 30 refugia, and at a density of 5-10 per hectare, should be used for presence/likely absence surveys (Froglife, 1999; Sewell *et al.*, 2013).
- 2.16. Reptiles rely on conditions that allow them to maintain their body temperature through basking. They require access to direct sunlight, shelter from the elements, sufficiently large populations of prey species and hibernation sites.

3. LEGISLATION AND POLICY

Legislation for protected species

- 3.1. The main piece of legislation relating to nature conservation in Great Britain is the **Wildlife and Countryside Act 1981 (as amended)**. This Act is supplemented by provision in the **Countryside and Rights of Way (CROW) Act 2000** and the **Natural Environment and Rural Communities Act 2006** (in England and Wales). This act provides varying degrees of protection for the listed species of flora and fauna, including comprehensive protection of wild birds and their nests and eggs.
- 3.2. UK wildlife is also protected under the **Conservation (Natural Habitats &c.) Regulations 1994** (which were issued under the European Communities Act 1972), through inclusion on Schedule 2. In 2017, these Regulations, together with subsequent amendments, were consolidated into the **Conservation of Habitats and Species Regulations 2017**.
- 3.3. The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites. The Regulations make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2. However, these actions can be made lawful through the granting of licenses by the appropriate authorities. Licenses may be granted for a number of purposes but only after the appropriate authority is satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on wild population of the species concerned.

National Planning Policy - National Planning Framework (“NPPF”)

- 3.4. Section 15 of the National Planning Policy Framework 2018 (NPPF): Conserving and enhancing the natural environment states that ‘planning policies and decisions should contribute to and enhance the natural and local environment by ... minimising impacts on and providing net gains for biodiversity.’
- 3.5. **Office of The Deputy Prime Minister (“ODPM”) Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their impact within the planning system.** Paragraph 98 of Circular 06/2005 states that ‘the presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat’.

Implications of legislation and policies

- 3.6. Without this ecological assessment, the potential developer would be unable to demonstrate due diligence in his responsibilities. Furthermore, the local planning authority would not have been provided with sufficient information for a planning decision to be made. This could result in non-determination or refusal of the application.
- 3.7. With legal responsibilities and planning implications, it is essential that any ecological assessment of a potential development site, including the area of this report, must determine the possible presence or absence of any protected species as part of any planning development consideration.

4. SITE CONTEXT

Location

- 4.1. The site is located on the northeast edge of the rural village of Battisford. The closest town is Needham Market, located approximately 3km east.
- 4.2. The site is enclosed by an arable field to the north, residential dwellings and gardens to the east and south, and deciduous woodland to the west. The wider surroundings are comprised of a mixture of sparsely populated residential dwellings, blocks of woodland and arable fields lined with mature trees and hedgerows.

5. DESCRIPTION OF THE DEVELOPMENT

- 5.1. The proposed project involves the conversion of the existing cart lodge and barns on site to residential use and the demolition of the pig shed and other buildings.
- 5.2. The access route for construction and occupation of the site will be gained from Church Road to the south of the site, via the existing track.

6. FIELD STUDY

Bat surveys

- 6.1. The survey conditions, start/end times, and sunset/sunrise times are indicated in Table 2 below.
- 6.2. Visit number one, three and five were conducted on buildings one and three, with visit number two, four and six conducted on building two.

Visit number	Date of survey	Conditions	Start of survey	End of survey	Sunset/sunrise time
1	20/05/19	Air temperature: 13°C Cloud cover: 0% Wind: 5 mph Rain: none	20:36	22:25	20:51
2	21/05/19	Air temperature: 12°C Cloud cover: 10% Wind: 5-6 mph Rain: none	20:38	22:26	20:53
3	14/06/19	Air temperature: 11°C Cloud cover: 95% Wind: 8-10 mph Rain: spitting 04:30-04:50	02:45	04:50	04:34
4	20/06/19	Air temperature: 14°C Cloud cover: 100% Wind: 4-5 mph Rain: light rain 03:30-04:00	02:58	04:50	04:34
5	04/07/19	Air temperature: 10°C Cloud cover: 0% Wind: 3 mph Rain: none	02:55	04:56	04:41
6	10/07/19	Air temperature: 15°C Cloud cover: 100% Wind: 2 mph Rain: none	03:11	05:03	04:47

Table 2, bat activity surveys information.

First activity survey (dusk) – 20th May 2019

- 6.3. A total of five bats were recorded emerging from the buildings during the survey, consisting of four common pipistrelles *Pipistrellus pipistrellus* and one brown long-eared *Plecotus auritus*.
- 6.4. The first bat recorded was a common pipistrelle, recorded flying within building three at 21:00. This is consistent with the typical emergence time of this species, indicating the bat was roosting within the structure.
- 6.5. Four common pipistrelles were recorded emerging from the open doorway on the south gable end of building three between 21:16 and 21:27 (Figure 3, Photo 1).
- 6.6. A brown long-eared was observed emerging from the open doorway on the north aspect of building three at 21:30 (Figure 3).

- 6.7. Although the exact roosting locations of these bats was unable to be identified, it is considered they were roosting within the timber frame of the building.
- 6.8. No further bats were observed emerging the buildings during the survey.
- 6.9. A high level of foraging and commuting activity was recorded and observed by common pipistrelles, soprano pipistrelles *Pipistrellus pygmaeus*, brown long-eared and noctules *Nyctalus noctula* using the site.

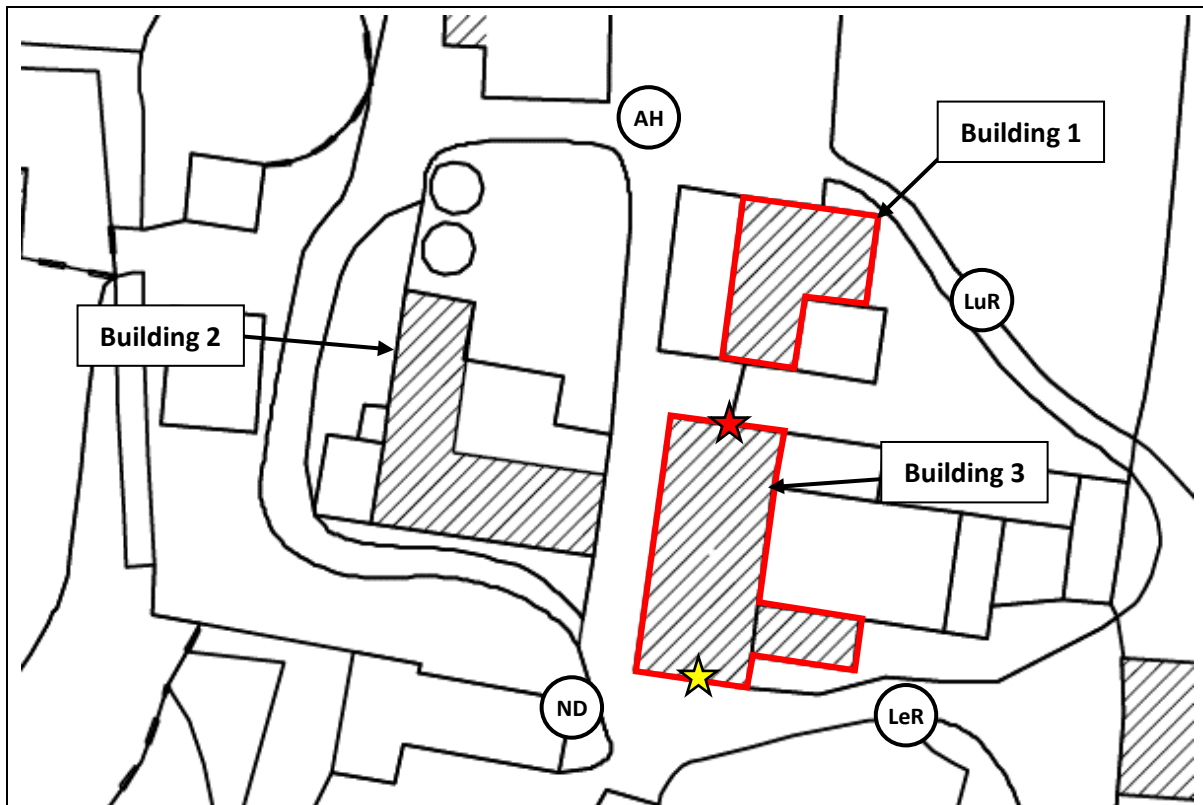


Figure 3,
Building surveyed highlighted in red. Surveyor locations indicated by their initials (20th May 2019).
Common pipistrelle (yellow) and brown long-eared (red) access points indicated by stars.



Photo 1, common pipistrelle, barbastelle and Natterer's access points on south gable end of building three (the open barn) highlighted in yellow, green and blue respectively.

Second activity survey (dusk) – 21st May 2019

- 6.10. A total of five bats were recorded emerging from the buildings during the survey, consisting of two common pipistrelles, one soprano pipistrelle, one brown long-eared and one barbastelle *Barbastella barbastellus*.
- 6.11. The first bat recorded was a soprano pipistrelle, recorded flying within the east extension of building two at 20:56. This is consistent with the typical emergence time of this species, indicating the bat was roosting within the structure.
- 6.12. Two common pipistrelles were recorded emerging from the open window on the south aspect of building two between 20:58 and 21:03 (Figure 4, Photo 2), with a brown long-eared observed emerging from the exact same location at 21:29.
- 6.13. A barbastelle was observed emerging from the open doorway on the north aspect of building three at 21:34 (Figure 4).
- 6.14. Although the exact roosting locations of these bats was unable to be identified, it is considered they were roosting within the timber frame of the buildings.
- 6.15. No further bats were observed emerging the buildings during the survey.

6.16. A high level of foraging and commuting activity was recorded and observed by common pipistrelles, soprano pipistrelles, brown long-eared and barbastelles using the site.

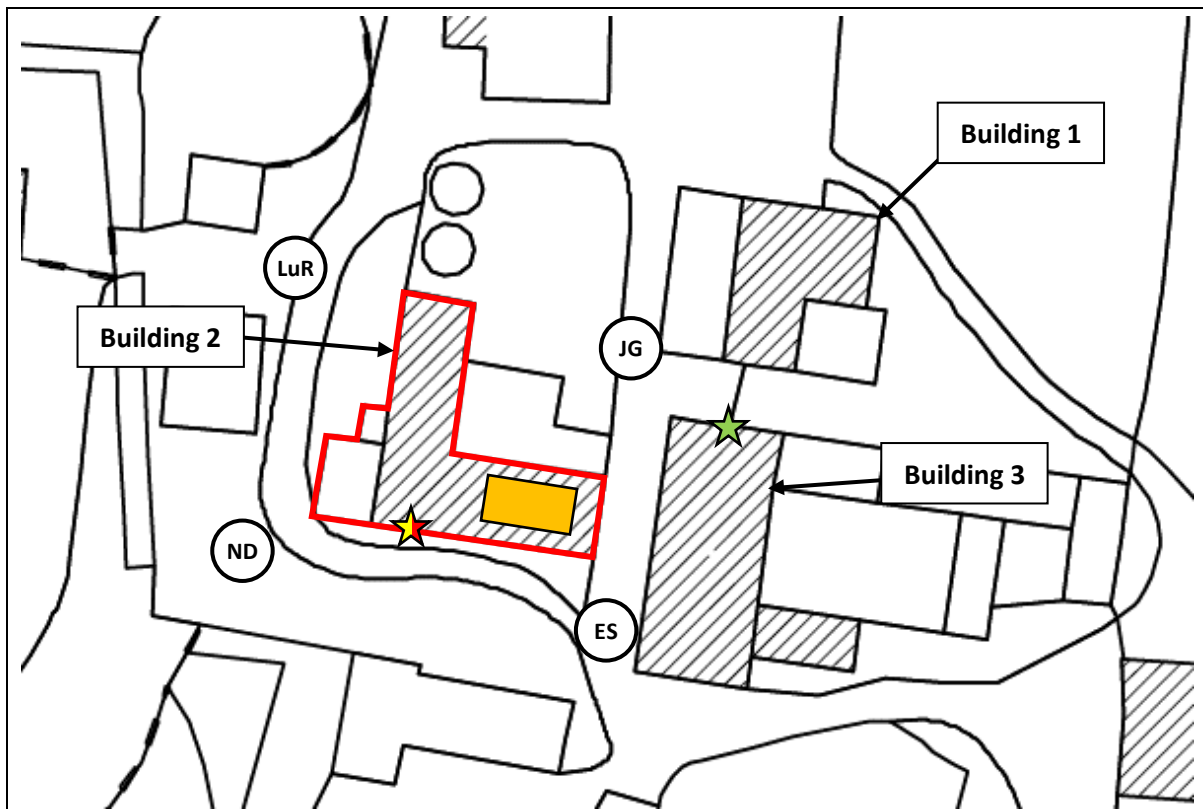


Figure 4,
Building surveyed highlighted in red. Surveyor locations indicated by their initials (21st May 2019). Common pipistrelle (yellow), soprano pipistrelle (orange), brown long-eared (red) and barbastelle (green) access points/approximate roost location indicated by stars/squares respectively.



Photo 2, common pipistrelle and brown long-eared access points on south gable end of building two (the grain store) highlighted in yellow and red respectively.

Third activity survey (dawn) – 14th May 2019

- 6.17. A total of 34 bats were recorded entering the buildings during the survey, consisting of one common pipistrelle, one barbastelle and 32 Natterer's *Myotis nattereri*.
- 6.18. A common pipistrelle was recorded entering between a section of weatherboarding and the timber frame on the south gable end of building three at 04:23 (Figure 5, Photo 1).
- 6.19. A barbastelle was recorded entering the open doorway on the south gable end of building three at 03:06 (Figure 5, Photo 1). Although the exact roosting location was unable to be identified, the bat failed to emerge and was considered to be roosting within the timber frame.
- 6.20. 32 Natterer's were observed entering building three via the open doorway on the south gable end and roosting within a mortise and tenon joint in the timber frame between 02:54 and 03:57 (Figure 5, Photos 1 and 3).
- 6.21. No further bats were observed emerging/entering the buildings during the survey.
- 6.22. A high level of foraging and commuting activity was recorded and observed by common pipistrelles, soprano pipistrelles, Natterer's and barbastelles using the site.

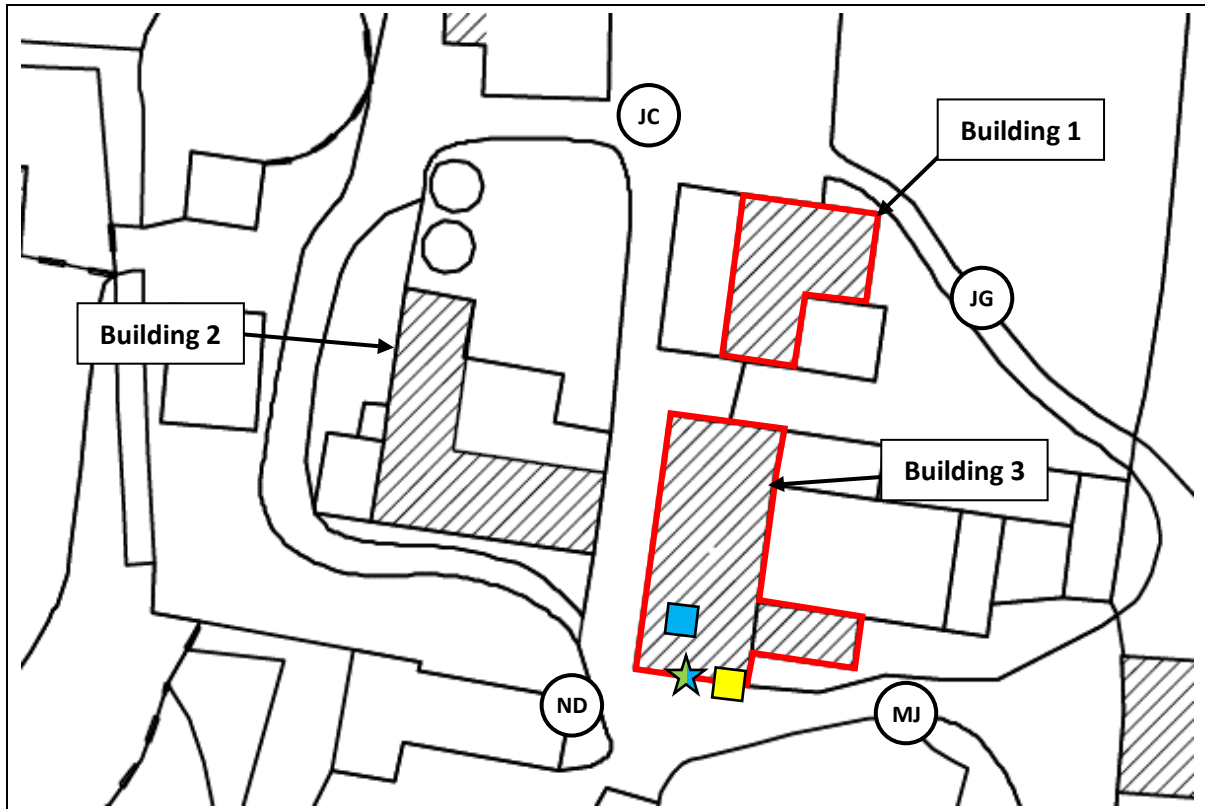


Figure 5,
 Building surveyed highlighted in red. Surveyor locations indicated by their initials (14th June 2019).
 Common pipistrelle (yellow), barbastelle (green) and Natterer's (blue) access points/approximate
 roost location indicated by stars/squares respectively.



Photo 3, Natterer's roost location in mortise and tenon joint within the timber frame of building three highlighted in blue.



Photo 4, Natterer's roosting within mortise and tenon joint in building three.

Fourth activity survey (dawn) – 20th June 2019

- 6.23. A total of four bats were recorded entering with the buildings during the survey, consisting of three common pipistrelles and one soprano pipistrelle.
- 6.24. A common pipistrelle was recorded entering the open window on the south aspect of building two at 03:54 (Figure 6, Photo 2). Although the exact roosting location was unable to be identified, the bat failed to emerge and was considered to be roosting within the timber frame.
- 6.25. The soprano pipistrelle was recorded entering between a section of weatherboarding and the fascia board at the apex of the north gable end of building two at 03:55 (Figure 6), with a common pipistrelle entering the exact same location at 03:56.
- 6.26. A common pipistrelle was recorded entering building three via an area of missing weatherboarding on the west aspect at 04:12 (Figure 6). Although the exact roosting location was unable to be identified, the bat failed to emerge and was considered to be roosting within the timber frame.
- 6.27. No further bats were observed emerging/entering the buildings during the survey.
- 6.28. A moderate level of foraging and commuting activity was recorded and observed by common pipistrelles, soprano pipistrelles, brown long-eared and barbastelles using the site.

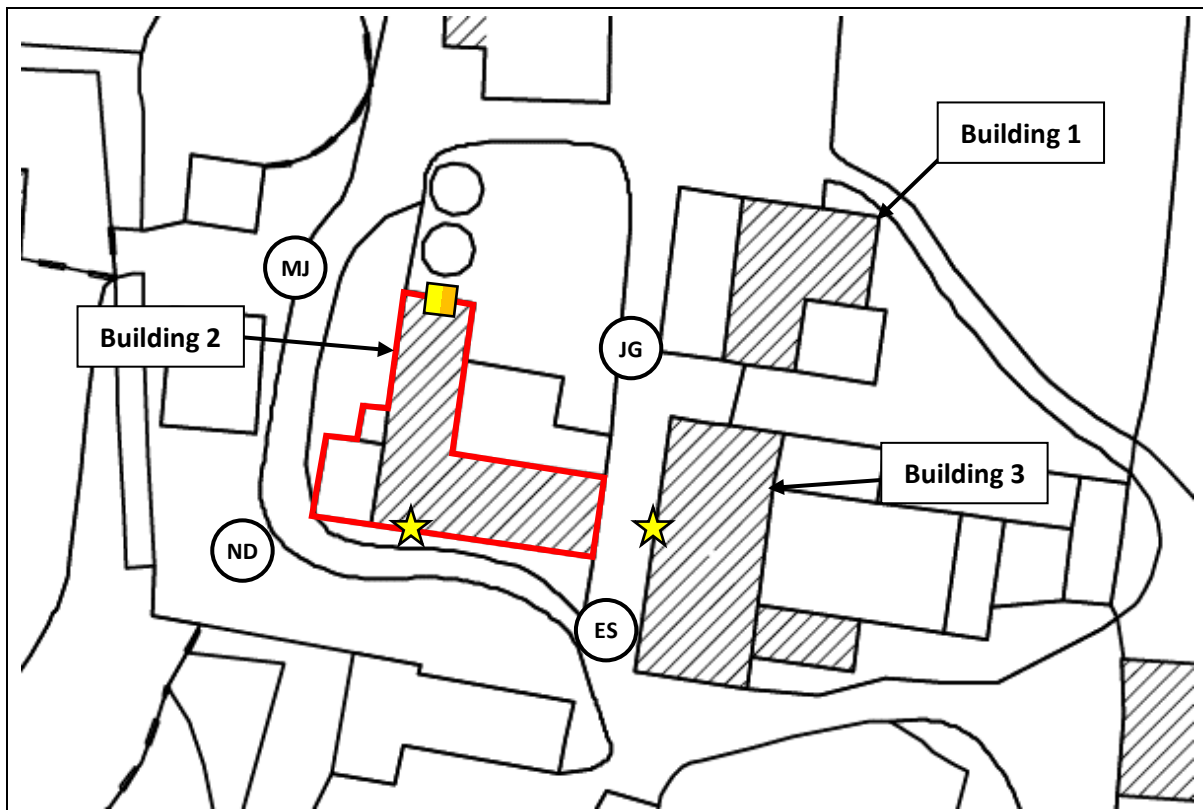


Figure 6,
Building surveyed highlighted in red. Surveyor locations indicated by their initials (20th June 2019).
Common pipistrelle (yellow) and soprano pipistrelle (orange) points/approximate roost location
indicated by stars/squares respectively.

Fifth activity survey (dawn) – 4th July 2019

- 6.29. No bats were observed emerging/entering the buildings during the survey.
- 6.30. A very low level of foraging and commuting activity was recorded and observed by common pipistrelles and soprano pipistrelles using the site.

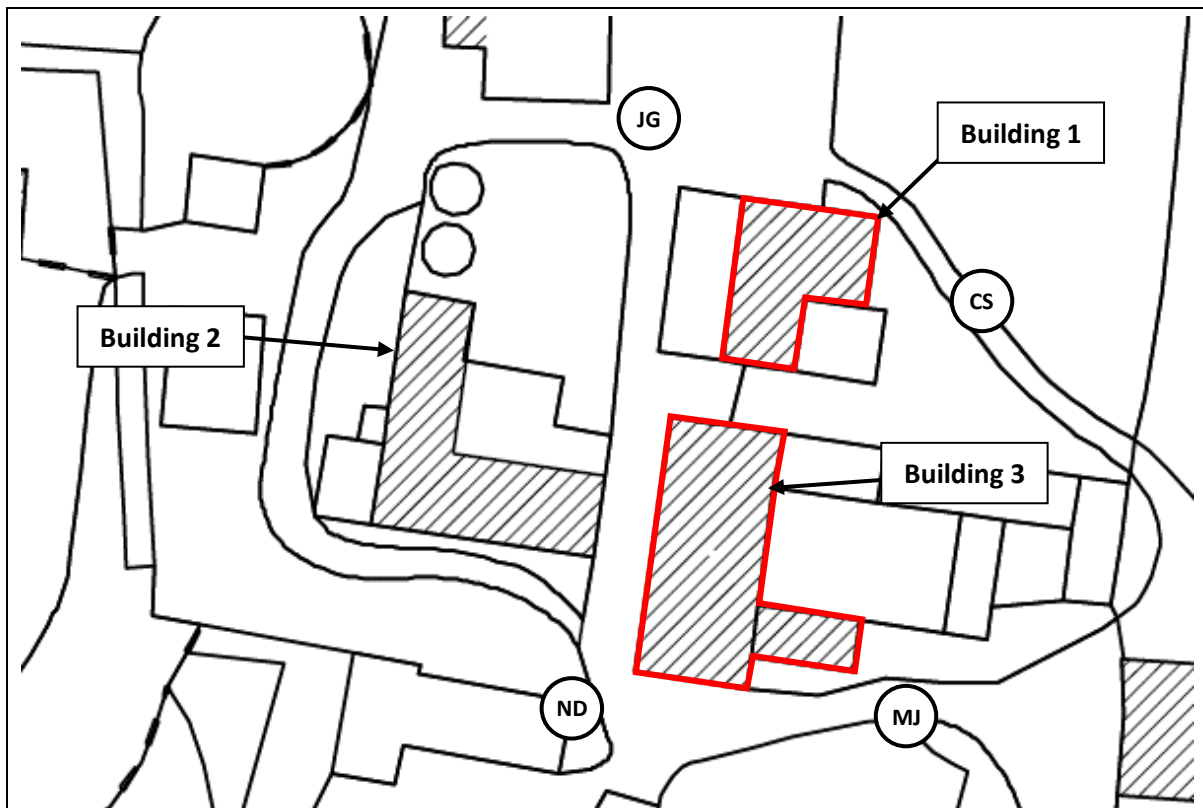


Figure 7,
Building surveyed highlighted in red. Surveyor locations indicated by their initials (4th July 2019).

Seven activity survey (dawn) – 10th July 2019

- 6.31. A total of four bats were recorded entering the buildings during the survey, consisting of three common pipistrelles and one soprano pipistrelle.
- 6.32. A common pipistrelle was recorded entering between a section of weatherboarding and the fascia board at the apex of the north gable end of building two at 04:25 (Figure 8), with a soprano pipistrelle entering a few moments later at the exact same location.
- 6.33. Two common pipistrelles were recorded entering the open window on the south aspect of building two at 04:27 and 04:37 (Figure 8, Photo 2). Although the exact roosting location was unable to be identified, the bats failed to emerge and were considered to be roosting within the timber frame.
- 6.34. No further bats were observed emerging/entering the buildings during the survey.
- 6.35. A high level of foraging and commuting activity was recorded and observed by common pipistrelles, soprano pipistrelles, brown long-eared, barbastelles, noctules and *Myotis sp.* using the site.

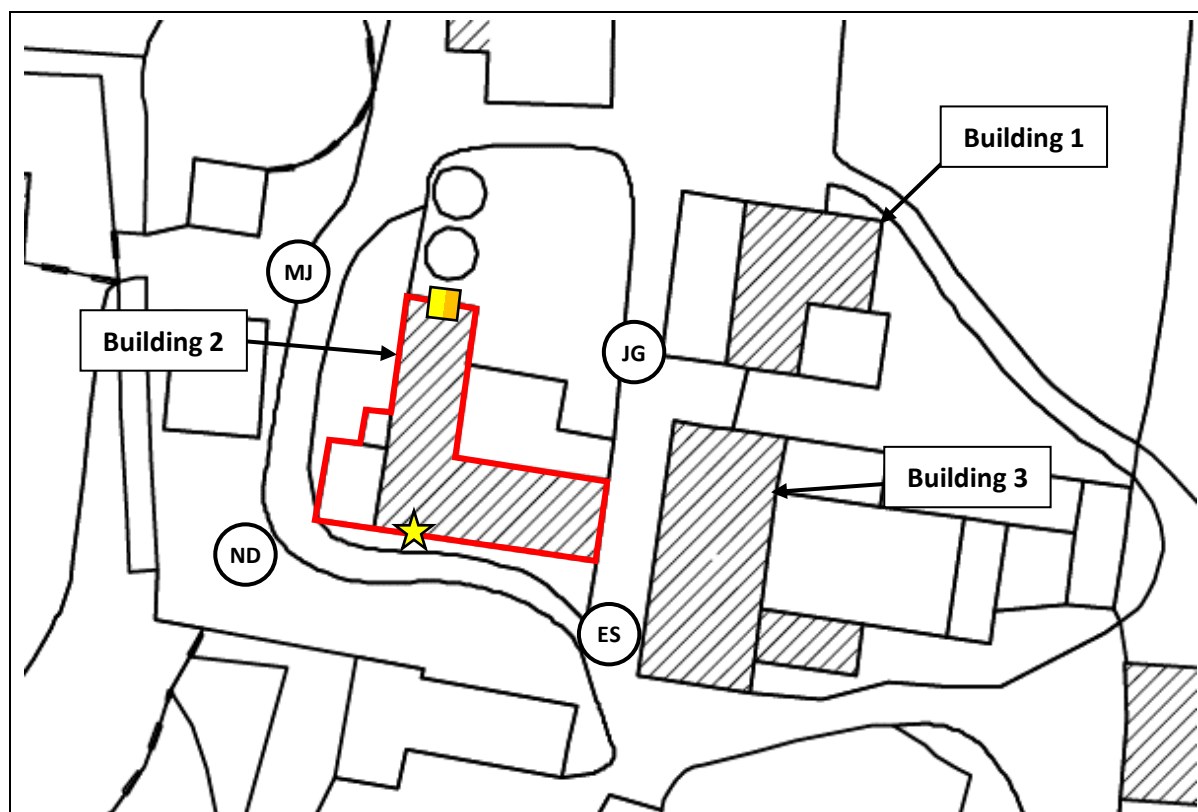


Figure 8,
Building surveyed highlighted in red. Surveyor locations indicated by their initials (10th July 2019). Common pipistrelle (yellow) and soprano pipistrelle (orange) points/approximate roost location indicated by stars/squares respectively.

Great crested newt surveys

6.36. The four ponds surveyed for GCN are as shown in Figure 2.

6.37. Survey conditions and results of the four GCN survey visits are indicated in Tables 3 and 4 below:

Visit	Date	Temperature (°C)	Wind (mph)	Precipitation
1	23/04/19	10-12	6-7	Dry
2	25/04/19	7-12	6-11	Dry
3	30/04/19	7-10	5-7	Dry
4	02/05/19	6-9	6-7	Dry
5	20/05/19	9-13	5-9	Dry
6	04/06/19	12-14	8-10	Dry

Table 3, weather conditions during the GCN surveys.

6.38. The total site count (sum of adult GCN across all ponds on one visit from either bottle trapping or torching) was observed on the 2nd May 2019, comprising two GCN (**small population**).

6.39. Ponds one and three contained a small (≤ 10 individuals), with breeding confirmed in the former only (Photo 5).

6.40. Numerous smooth newts *Lissotriton vulgaris* were recorded within all four ponds.

Pond 1	Visit					
	1	2	3	4	5	6
Torch survey	0	0	0	1	0	0
Bottle-trapping	0	0	1	0	0	0
Egg search	Absent	Absent	Present	-	-	-
Netting	N/A	N/A	N/A	N/A	N/A	N/A
Smooth newts	3	0	6	6	2	1
Palmate newts	0	0	0	0	0	0
Visibility	Average	Average	Very good	Good	Good	Very good
Vegetation cover	0%	0%	0%	0%	0%	0%
Pond accessibility	75%		Number of bottle traps		20	

Pond 2	Visit			
	1	2	3	4
Torch survey	0	0	0	0
Bottle-trapping	0	0	0	0
Egg search	Absent	Absent	Absent	Absent
Netting	N/A	N/A	N/A	N/A
Smooth newts	6	14	10	16
Palmate newts	0	0	0	0
Visibility	Good	Good	Very good	Good
Vegetation cover	40%	40%	60%	60%
Pond accessibility	75%	Number of bottle traps		15

Pond 3	Visit					
	1	2	3	4	5	6
Torch survey	0	0	0	1	0	0
Bottle-trapping	N/A	N/A	N/A	N/A	N/A	N/A
Egg search	Absent	Absent	Absent	Absent	Absent	Absent
Netting	N/A	N/A	N/A	N/A	N/A	N/A
Smooth newts	11	23	31	50	108	70
Palmate newts	0	0	0	0	0	0
Visibility	Average	Average	Good	Good	Good	Good
Vegetation cover	40%	40%	40%	40%	60%	80%
Pond accessibility	100%		Number of bottle traps		N/A (lined)	

Pond 4	Visit			
	1	2	3	4
Torch survey	0	0	0	0
Bottle-trapping	0	0	0	0
Egg search	Absent	Absent	Absent	Absent
Netting	N/A	N/A	N/A	N/A
Smooth newts	8	5	9	22
Palmate newts	0	0	0	0
Visibility	Average	Good	Very good	Good
Vegetation cover	40%	40%	40%	40%
Pond accessibility	100%	Number of bottle traps		15

Table 4, results of the GCN surveys.



Photo 5, GCN egg on vegetation within pond one.



Photo 6, female GCN caught in a bottle trap within pond one.

Reptile surveys

- 6.41. Reptile surveys were conducted in suitable weather conditions, which require temperatures between 9°C and 18°C. Survey conditions are shown in Table 5.
- 6.42. Refugia were placed as indicated in Figure 9.
- 6.43. No reptiles were recorded on site during any of the seven visits, although a mixture of common toads *Bufo bufo*, common shrews *Sorex araneus*, short tailed field voles *Microtus agrestis* and wood mice *Apodemus sylvaticus* were recorded on several occasions.

Visit No.	Date	Time	Conditions	Results
1	24/04/19	09:30	Air temperature at 14°C, sunny and dry	No reptiles
2	26/04/19	09:00	Air temperature at 12°C, sunny and dry	No reptiles
3	01/05/19	09:15	Air temperature at 9°C, sunny and dry	No reptiles
4	03/05/19	09:00	Air temperature at 9°C, overcast and damp	No reptiles
5	21/05/19	09:20	Air temperature at 15°C, sunny and dry	No reptiles
6	30/05/19	09:30	Air temperature at 18°C, sunny and dry	No reptiles
7	05/06/19	09:40	Air temperature at 15°C, sunny intervals and damp	No reptiles

Table 5, survey conditions and results for reptile surveys.

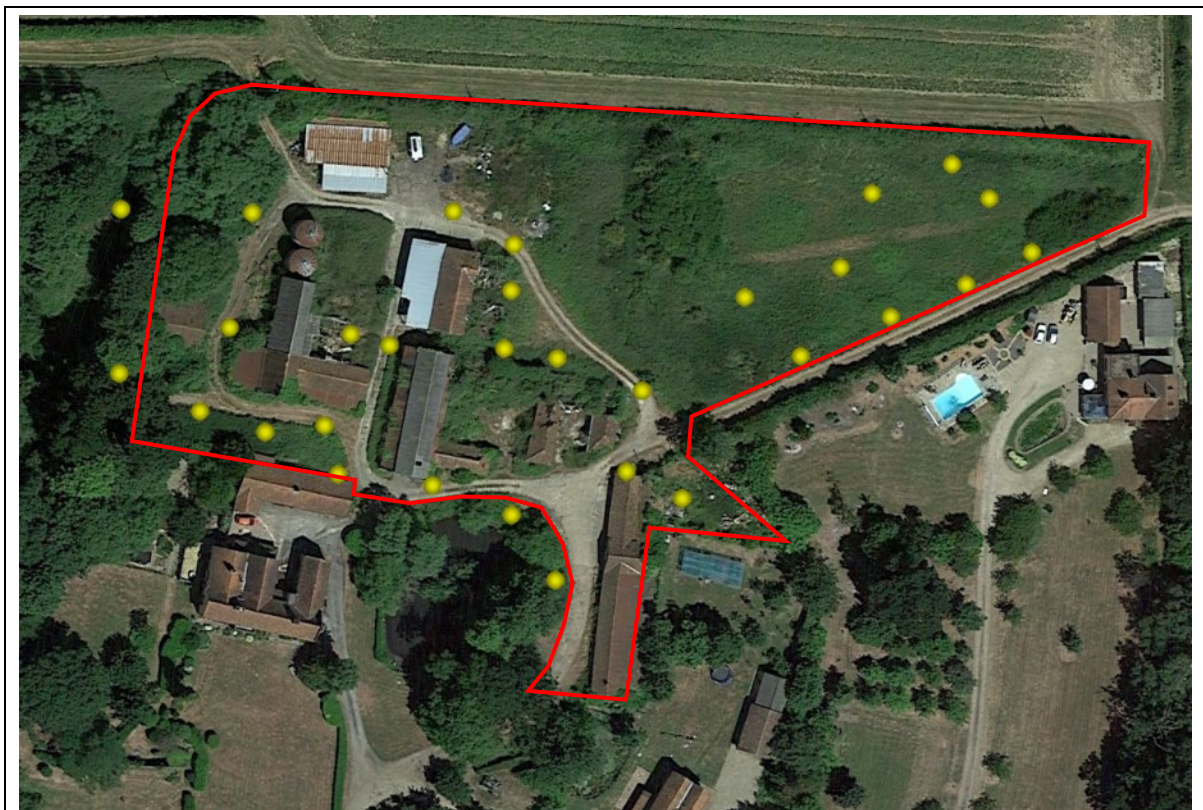


Figure 9,
 Satellite image showing the approximate locations of reptile refugia highlighted in yellow.
 Approximate site boundary highlighted in red.
 Image © Microsoft, date accessed 24/07/19

7. DISCUSSION AND CONCLUSIONS

Bats

- 7.1. The six bat activity surveys, comprised of two dusk emergence and four dawn return-to-roost surveys, were conducted within the optimal surveying season for bats and by independent, qualified and experienced surveyors.
- 7.2. The surveys confirmed the use of the building as follows (peak count given in brackets):
 - Building two – common pipistrelle (three), soprano pipistrelle (one) and brown long-eared (one) non-breeding day roosts.
 - Building three – Natterer's (32) maternity roost and common pipistrelle (four), brown long-eared (one) and barbastelle (one) non-breeding day roost.
- 7.3. The activity survey also showed a high level of foraging and commuting activity around the site by common pipistrelles, soprano pipistrelles, brown long-eared, noctules, Natterer's, unidentified *Myotis sp.* and barbastelles.
- 7.4. The proposed project involves the conversion of the existing cart lodge and barns on site to residential use and the demolition of the pig shed and other buildings. This will result in the modification/destruction of one maternity roost and 10 non-breeding day roosts.
- 7.5. Natterer's are uncommon but widespread (BCT, 2014) and the **modification/destruction of a maternity roost** would have a potentially **high** impact on the local bat population (Mitchell-Jones, 2004).
- 7.6. Common pipistrelles, soprano pipistrelles and brown long-eared are common and widespread (BCT, 2014) and the **modification/destruction of a non-breeding day roost** would have a potentially **low** impact on the local bat population (Mitchell-Jones, 2004).
- 7.7. Barbastelles are rare but widespread in England (BCT, 2014) and the **modification/destruction of a non-breeding roost** would have a **low to moderate** impact on the local bat population (Mitchell-Jones, 2004).
- 7.8. A European Protected Species mitigation licence from Natural England will be required for the proposed works and we recommended the following mitigation measures:
 - i. Works should be undertaken outside the main bat maternity and hibernation seasons, ideally during September/October or March/April.
 - ii. Workers to be given a toolbox talk prior to works commencing detailing bat signs, potential roosts/access points, what to do if bats are found and to avoid activities that might cause high vibrations or noise.

- iii. A soft roof strip and partial demolition of the walls around the bat roosts should be undertaken with special care and under watching brief of a licenced bat ecologist. If any bats are found, work should cease immediately and any bats removed to safety.
 - iv. The mortise and tenon joint within building three, which is used by a maternity colony of Natterer's, must not be modified, obstructed or destroyed until a replacement roost has been created and usage demonstrated. The replacement roost should consist of a loft space within building three that spans two trusses (measuring approximately 7m long, 6m wide and at least 2.5m high) and connected to the south gable end (Appendix D). The loft space must be lined with traditional type 1F bitumen felt, not a breathable membrane as these are proven to entangle bats through regular contact, which also compromises the integrity of the membrane. The loft space should feature clay pantiles, a ridge beam, eight crevice roosts (Appendix B) and five baffled access points (Appendix C). An inspection hatch should be installed into the loft space to allow for monitoring and cleaning, measuring 500mm by 500mm. A sign should be positioned on the inspection hatch denoting the loft space is a bat roost and should only be entered by licenced bat workers.
 - v. The installation of six integrated bat boxes on the converted buildings (Schwegler 1FR Bat Tube – Appendix B).
 - vi. The erection of four standalone bat boxes on mature trees or buildings in the local vicinity (Schwegler 1FF Bat Box with built-in wooden rear panel – Appendix B).
 - vii. Lighting schemes should follow guidance from the Bat Conservation Trust and CIE 150:2003. Warm-white (long wavelength) lights with UV filters should be fitted as close to the ground as possible. Lighting units should be angled below 70° and equipped with movement sensors, baffles, hoods, louvres and horizontal cut off units at 90°.
 - viii. A soft landscaping scheme including the planting of new hedgerows around the site, using native species (Appendix F).
- 7.9. After the effects of the above mitigation, we consider that the favourable conservation status of the local bat population will be maintained and that an EPS mitigation licence should be granted by Natural England.

Great crested newts

- 7.10. The highest total site count, observed on the 2nd May 2019, was two GCN (**small population**), with breeding confirmed in pond one.
- 7.11. The proposed works are expected to result in a low scale loss of suitable GCN terrestrial habitat (≈0.5ha of scrub and tall ruderal vegetation), with aquatic habitats unaffected. This involves a

risk of injuring or killing individual GCN present within the site, and the loss of habitat to support the local population. Taking these impacts and risks into account, the risk assessment calculation (set out in the GCN method statement template provided by Natural England) indicates an “*offence highly likely*”.

- 7.12. In order to be able to proceed with the proposed works and to ensure that no detrimental impacts will result on the species, a European Protected Species (“EPS”) Mitigation Licence and an appropriate mitigation strategy will be required.
- 7.13. The extent of proposed mitigation measures are considered to provide a net enhancement to the local GCN population and include the following, to be detailed in a mitigation plan and method statement to support the licence application.
- i. Creation of an ecology zone on or near the site to include terrestrial habitats. Terrestrial habitats should consist of rough grassland, with scrub planting and the creation of two hibernacula suitable for amphibians (Appendix E).
 - ii. A temporary exclusion fencing with pitfall traps to be installed around the site perimeter and checked for a minimum of 30 nights, in suitable weather conditions and during the active season for amphibians. This will meet the Natural England required trapping effort for a medium sized local population of GCN. Any animals caught are to be translocated to a suitable receptor site. The fence will remain in situ during the construction period.
 - iii. Phased vegetation clearance and hand search of all suitable amphibian refuges present on site conducted under the supervision of a licenced ecologist.
 - iv. Storage of building materials to be raised from the ground on pallets to avoid providing potential resting places for GCN.
 - v. Any excavations should have a rough sawn plank placed inside to act as a ramp to allow any animals that have fallen in to escape. The excavations should be checked each morning works are scheduled for, to remove any animals trapped.
 - vi. A soft landscaping scheme including the planting of new hedgerows around the site, using native species (Appendix F) to maintain habitat links, but not shading any ponds.
- 7.14. After the effects of the above mitigation, we predict a significant enhancement of the favourable conservation status of GCN on and near the site, and we therefore consider that an EPS mitigation licence should be granted by Natural England.

Reptiles

- 7.15. A reptile survey was conducted between 24th April and 5th June 2019, comprising seven checks in suitable weather.

7.16. No reptiles were recorded on site during any of the seven visits.

7.17. The mitigation detailed above for GCN will avoid any potential impacts on reptiles from the proposed works. We therefore predict no impact on reptiles as a result of the development plans, and no further surveys are necessary.

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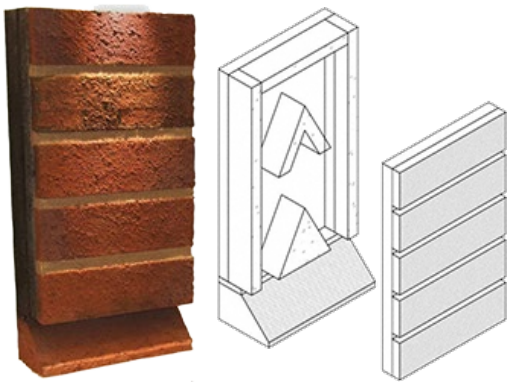
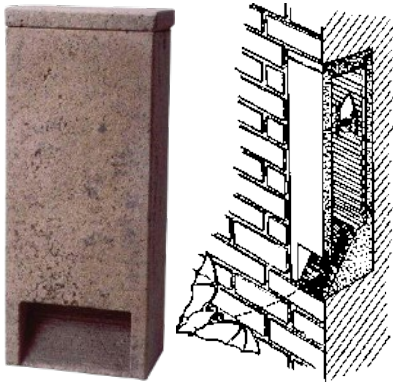


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Appendix A Examples of bat boxes

(images sourced from www.nhbs.com and www.habibat.co.uk)

<p style="text-align: center;">Integrated bat box Habibat Bat Box</p> 	<p style="text-align: center;">Integrated bat box 1FR Schwegler Bat Tube</p> 
<p style="text-align: center;">Standalone bat box 2F Schwegler Bat Box (General purpose)</p> 	<p style="text-align: center;">Standalone bat box 1FF Schwegler Bat Box with built-in wooden rear panel</p> 

Recommendations for installing bat boxes:

(Sourced from Bat Conservation Trust www.bct.org)

Ideally, several boxes should be put up facing in different directions to provide a range of conditions.

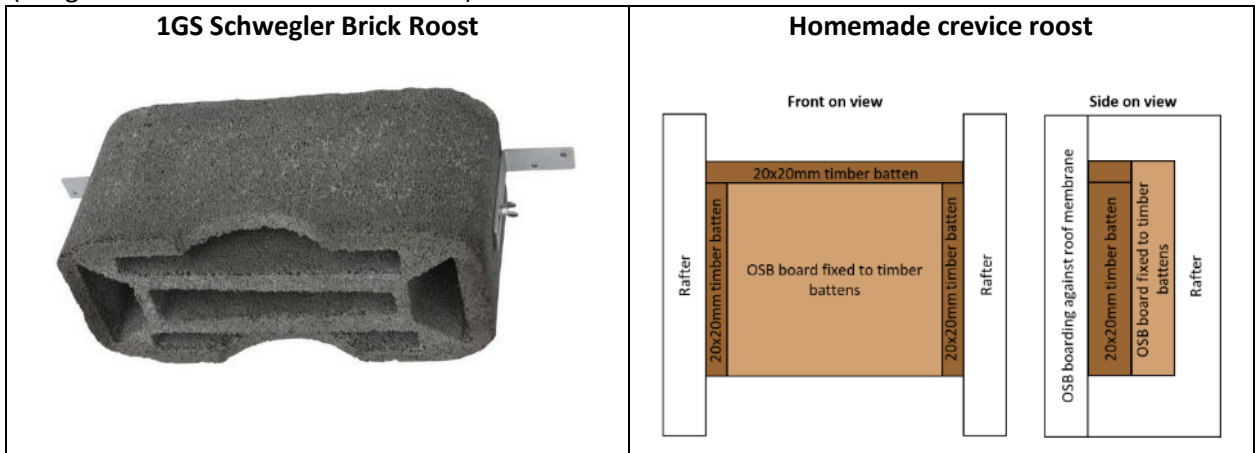
Locate boxes:

- Where bats are known to feed close to hedges and tree lines (some bats use a tree line or hedgerow for navigation, putting boxes near these features may help the bats find the box).
- Boxes should be put as high as possible in sheltered sunny places. Ideally at least 4m above the ground (where safe installation is possible).
- Sheltered from strong winds and exposed to the sun for part of the day (usually south or southwest).
- On buildings, boxes should be placed as close to the eaves as possible.

Bats need time to find and explore new homes, and it may be several months or even years before boxes have residents. Once bats find a place they want to live they can return over and over again. Droppings on the landing area, urine stains around the lower parts of the box and chittering noises from inside on warm afternoons and evenings are signs of occupation.

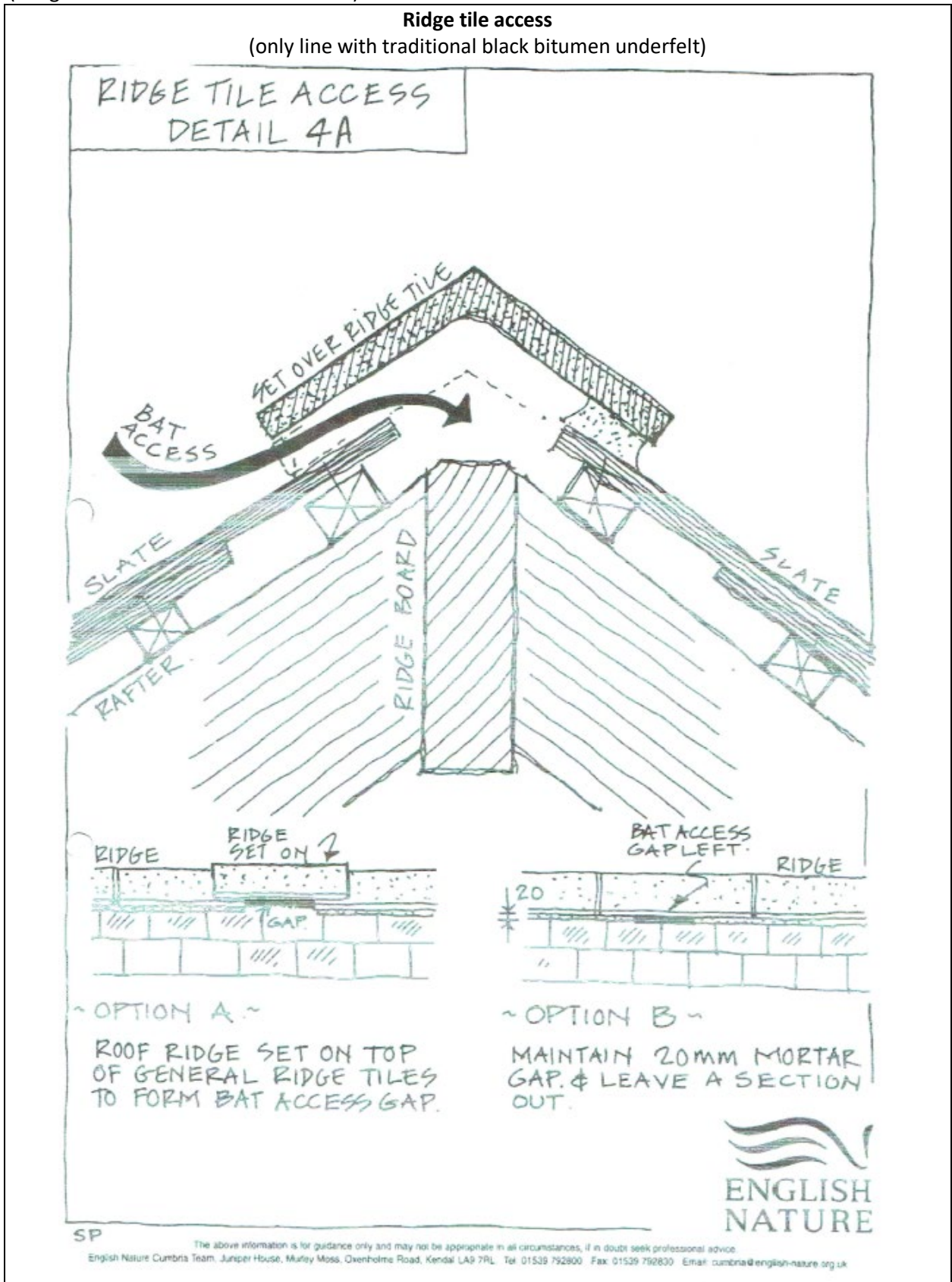
Appendix B Examples of crevice roosts for bats

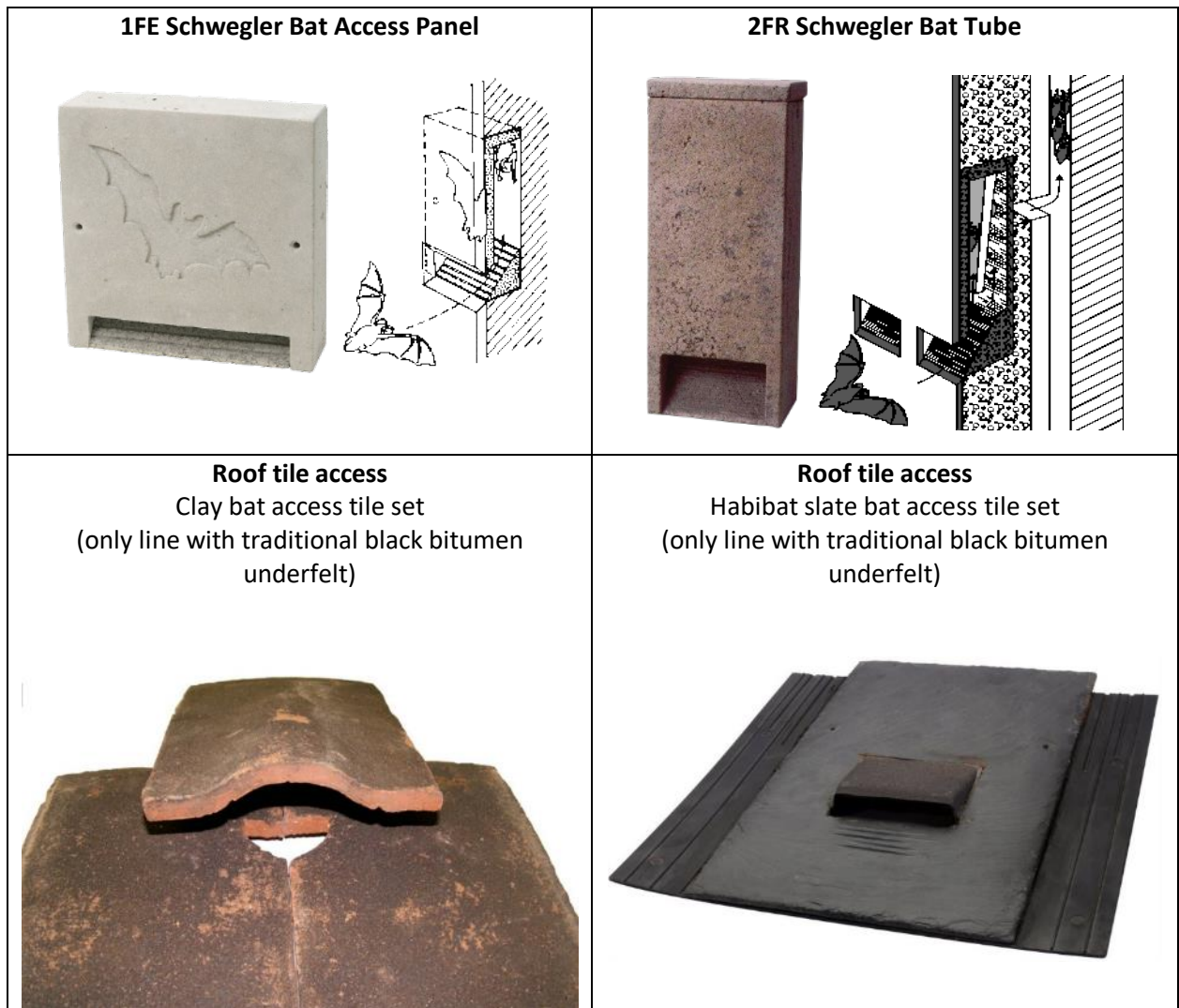
(images sourced from www.nhbs.com)



Appendix C Examples of access points

(images sourced from www.nhbs.com)



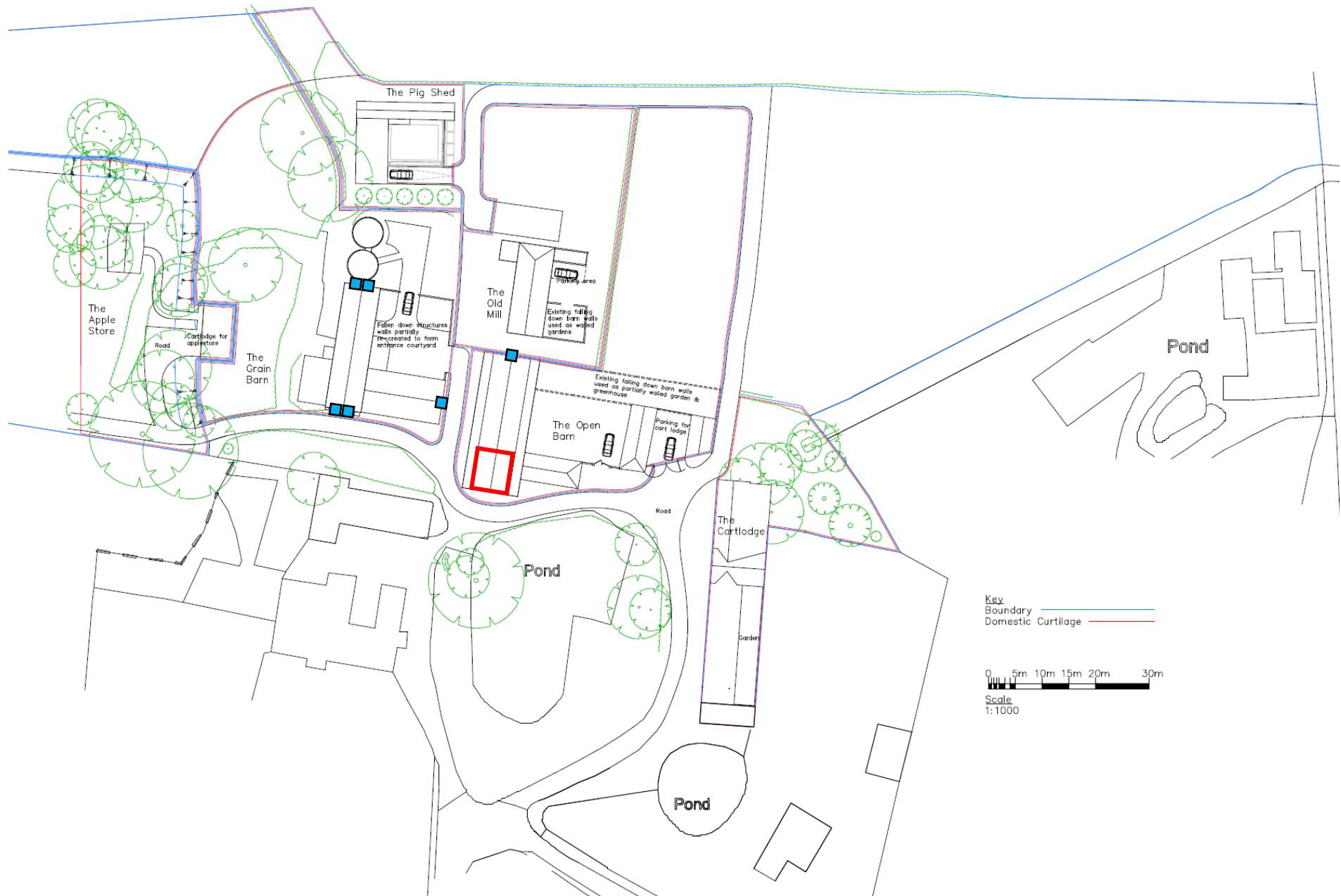


Appendix D

Proposed location of bat mitigation

Red line indicates the location of the proposed bat loft.

■ Indicates integrated bat box (Appendix A).



Proposed features within the bat loft

■ Indicates 1GS Schwegler brick roost (Appendix B).

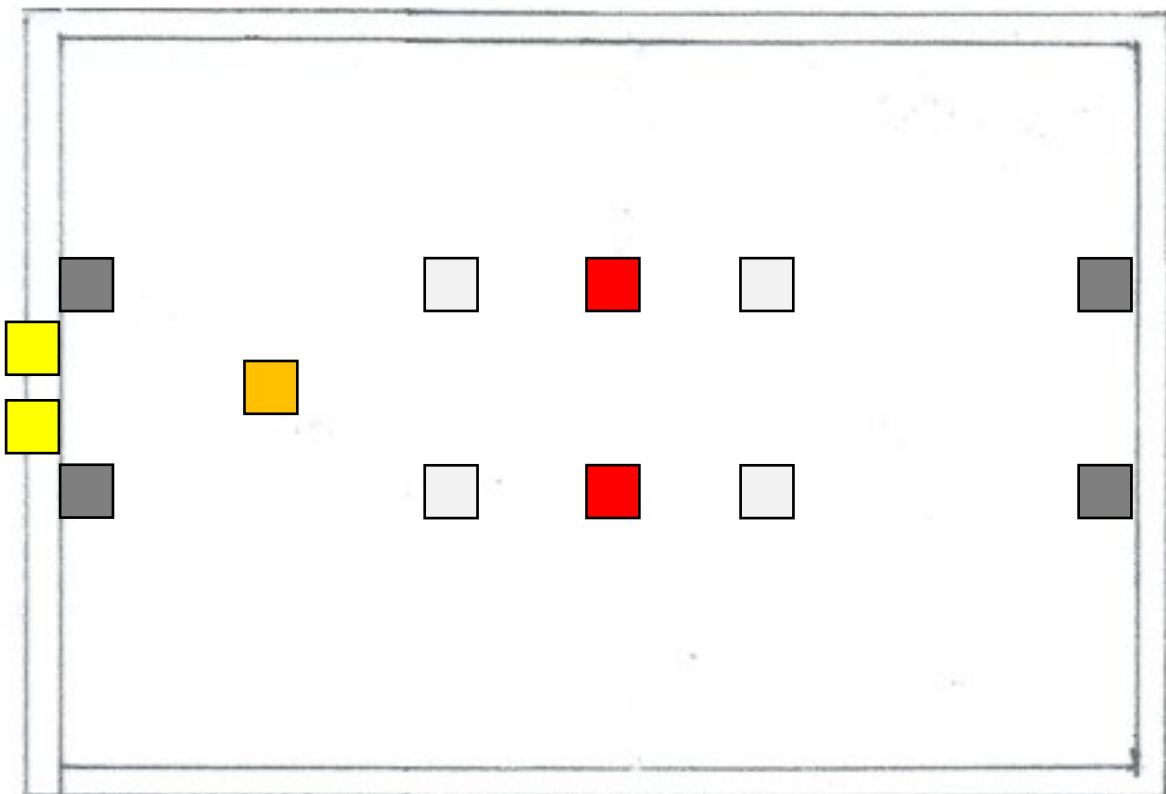
□ Indicates crevice roost (Appendix B).

■ Indicates a bat access point - wall (Appendix C).

■ Indicates a bat access point – ridge tile (Appendix C).

■ Indicates a bat access point – roof tile (Appendix C).

North
→

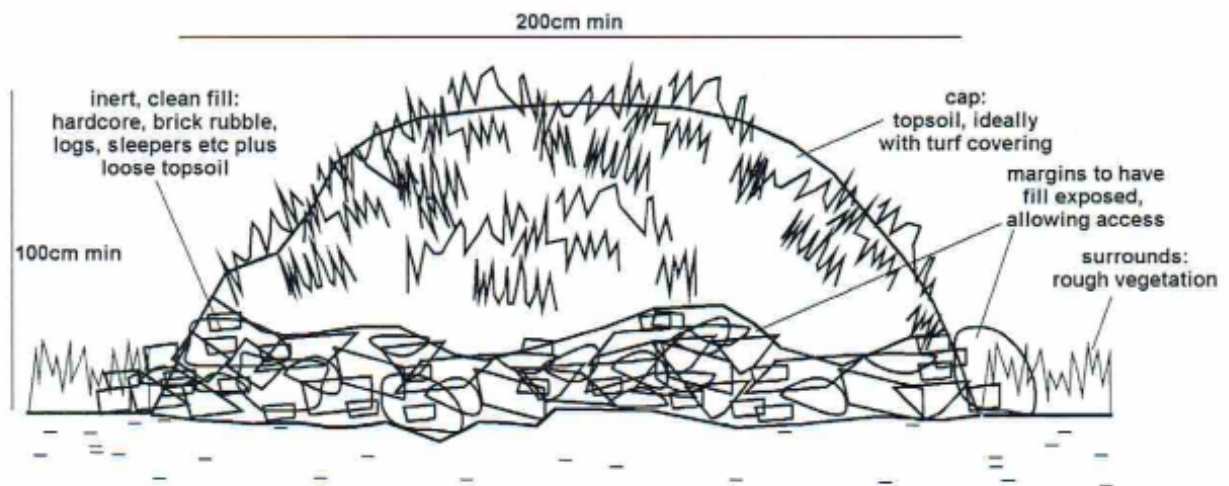


Appendix E

Newt and reptile artificial hibernaculum design

Figure 3: Suggested hibernaculum design

This design mimics artificial and natural conditions in which great crested newts have frequently been found over-wintering. Dimensions should not be below 2m length x 1m width x 1m height. The illustrated design would be suitable for locating on an impermeable substrate. On free-draining substrates, the design is largely similar but the bulk of the fill is sited in an excavated depression in the ground. Hibernacula should ideally be positioned across a site, both close to and distant from breeding ponds, always in suitable terrestrial habitat and above the flood-line.



Source: English Nature (2001) *Great Crested Newt Mitigation Guidelines*, Peterborough.

Appendix F

Native species suitable for planting and sowing

Plants should be obtained from specialist nurseries and preferably be of local genetic stock.

Key: (f) – fruit and berry species; (e) – evergreen species; (se) semi-evergreen species; (d) – deciduous species

Trees	
Alder (d)	<i>Alnus glutinosa</i>
Apples (f; d)	<i>Malus spp.</i> (local varieties)
Ash (d)	<i>Fraxinus excelsior</i>
Beech (d)	<i>Fagus sylvatica</i>
Bird cherry (f; d)	<i>Prunus padus</i>
Elder (f; d)	<i>Sambucus nigra</i>
Elm (d)	<i>Ulmus procera</i>
Field maple (d)	<i>Acer campestre</i>
Pedunculate oak (d)	<i>Quercus robur</i>
Rowan (f; d)	<i>Sorbus aucuparia</i>
Pears (f; d)	<i>Pyrus spp.</i>
Silver birch (d)	<i>Betula pendula</i>
Small-leaved lime (d)	<i>Tilia cordata</i>
White willow (d)	<i>Salix alba</i>
Wild cherry (f; d)	<i>Prunus avium</i>
Walnut (d)	<i>Juglans regia</i>

Shrubs	
Blackthorn (f; d)	<i>Prunus spinosa</i>
Buckthorn (f; d)	<i>Rhamnus catharticus</i>
Crab apple (f; d)	<i>Malus sylvestris</i>
Dog rose (f; d)	<i>Rosa canina</i>
Dogwood (f; d)	<i>Cornus sanguinea</i>
Field maple (d)	<i>Acer campestre</i>
Guelder-rose (f; d)	<i>Viburnum opulus</i>
Hawthorn (f; d)	<i>Crataegus monogyna</i>
Hazel (d)	<i>Corylus avellana</i>
Holly (e)	<i>Ilex aquifolium</i>
Honeysuckle (f; d)	<i>Lonicera periclymenum</i>
Spindle (f; d)	<i>Euonymus europaeus</i>
Wild privet (f; se)	<i>Ligustrum vulgare</i>
Yew (f; e)	<i>Taxus baccata</i>

Flowering plants	
Bird's-foot trefoil	<i>Lotus corniculatus</i>
Black knapweed	<i>Centaurea nigra</i>
Common cat's-ear	<i>Hypochaeris radicata</i>
Common sorrel	<i>Rumex acetosa</i>
Common vetch	<i>Vicia sativa</i>
Cowslip	<i>Primula veris</i>
Field scabious	<i>Knautia arvensis</i>
Foxglove	<i>Digitalis purpurea</i>
Lady's bedstraw	<i>Galium verum</i>
Meadow buttercup	<i>Ranunculus acris</i>
Meadow vetchling	<i>Lathyrus pratensis</i>
Oxeye daisy	<i>Leucanthemum vulgare</i>
Primrose	<i>Primula vulgaris</i>
Red clover	<i>Trifolium pratense</i>
Selfheal	<i>Prunella vulgaris</i>
Sweet violet	<i>Viola odorata</i>
Wild daffodil	<i>Narcissus pseudonarcissus</i>
Yarrow	<i>Achillea millefolium</i>

Grasses	
Common bent	<i>Agrostis capillaris</i>
Crested dog's-tail	<i>Cynosurus cristatus</i>
Meadow fescue	<i>Festuca pratensis</i>
Red fescue	<i>Festuca rubra</i>
Rough meadow-grass	<i>Poa trivialis</i>
Small timothy	<i>Phleum bertolonii</i>
Smooth meadow-grass	<i>Poa pratensis</i>
Sweet vernal-grass	<i>Anthoxanthum odoratum</i>
Yellow oat-grass	<i>Trisetum flavescens</i>