



Bat Emergence and Re-entry Surveys

Dower House, Dunthrop Road, Heythrop, Chipping Norton, Oxfordshire, OX7 5TL

Richard Barker

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Executive summary

Arbtech were commissioned by Richard Barker to undertake Bat Emergence and Re-entry Surveys at Dower House, OX7 5TL. The surveys were completed on 8th June, 22nd June and 8th July 2020. The aim of the assessment was to confirm the presence or likely absence of a bat roost and to provide an assessment of the current status of all the survey features. This includes providing evidence for species, numbers and levels of activity, to identify any entrance and egress points, and to gain an understanding of the activity of bats using the site in the local landscape.

The development proposals are for alterations to include demolition, conversion and replacement of various outbuildings. A planning application is being prepared for submission to West Oxfordshire District Council.

Recommendations

A day roost and possible night roost of a maximum of two soprano pipistrelles and two common pipistrelles in building B2 was confirmed by survey. A European Protected Species Mitigation Licence (EPSML) will be required from Natural England prior to the commencement of works once planning has been granted. As there are two bat roosts of low numbers of common species present, the works can be completed under a Natural England Bat Mitigation Class Licence (Low Impact).

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1.0 Introduction and Context

1.1 Background

Arbtech were commissioned by Richard Barker to undertake Bat Emergence and Re-entry Surveys at Dower House, OX7 5TL. The surveys were completed on 8th June, 22nd June and 8th July 2020. The assessment is informed by the Bat Conservation Trust publication; *Bat Surveys for Professional Ecologists – Good Practice Guidelines* (Collins, J. (Ed) 2016).

These surveys were completed following recommendations made in the Preliminary Roost Assessment Survey report (Arbtech Consulting Ltd. April 2020).

1.2 Site Context

The site is located at National Grid Reference SP 35192 27776 and has an area of approximately 1.4ha. There are six buildings within the site boundary. Three buildings were surveyed as these will be affected by the proposed development.

1.3 Scope of the report

This report provides a description of the bat activity observed and recorded during each survey. The aim of the assessment was to characterise any roosts present including species, number of individuals, number and location of roost access points, and to gain an understanding of how bats use the site.

Robust data has been collected, following good practice guidelines, to inform an assessment of the potential impacts of the proposed development on bats, and inform mitigation and enhancements. This report provides information on constraints to the proposals as a result of roosting bats, and summarises any mitigation required to achieve planning permission, and statutory consent to comply with wildlife legislation.

To achieve the aims of the assessment, the following steps have been taken:

- A desk study has been carried out, including a request for information from the local bat group or records centre - please refer to the Preliminary Roost Assessment Survey report (Arbtech Consulting Ltd. April 2020).
- Field survey(s) has been undertaken, including an external survey and internal inspection.
- An outline of likely impacts on any known roosts has been provided, based on current development proposals.
- Recommendations for further survey and assessment have been made, along with advice on the requirements of a European Protected Species Mitigation Licence (EPSML) application if appropriate.

A survey plan is presented in Appendix 1 showing the location of each surveyor and the bat activity observed and recorded during each survey, proposed plans in Appendix 2 (where available), and a summary of relevant legislation is presented in Appendix 3.

1.4 Project Description

The development proposals are for alterations to include demolition, conversion and replacement of various outbuildings. A planning application is being prepared for submission to West Oxfordshire District Council.

2.0 Methodology

2.1 Desk Study methodology

The desk study included a 2km radius review of statutory and non-statutory designated sites, Biodiversity Action Plan (BAP) Priority Habitats and granted EPSML records for bats held on Magic database. An assessment of the surrounding landscape structure was also completed using aerial images from Google Earth and OS maps.

Existing bat records relating to the site and a surrounding 2km radius are required to conform to national guidelines. The data search is confidential information that is not suitable for public release and was analysed and summarised in the Preliminary Roost Assessment Survey report (Arbtech Consulting Ltd. April 2020).

2.2 Site Survey methodology

The survey methods were informed by the recommendations presented in the Preliminary Roost Assessment Survey report (Arbtech Consulting Ltd. April 2020). This survey identified the following survey requirements in line with best practice:

Table 1: Recommended surveys

Ref	Survey assessment conclusions (with justification)	Foreseen impacts	Recommendations
B2 Bats	<p>Building B2 has moderate habitat value for supporting roosting bats. Raised tiles are present on all of the roof pitches of the building, and gaps are present beneath the eaves on three elevations. Additional gaps occur in stonework on some of the exterior walls and around the doorframe of the main barn door. All of these features could be utilised by crevice dwelling bats.</p> <p>Gaps are also present leading into the building interior and conditions on the upper floor of the main barn are suitable for void dwelling bats, although no evidence of a bat roost was found to be present, implying a likely absence of void dwelling bats.</p>	<p>As the proposals involve the conversion of B2, any bat roosts present in the roof space would be destroyed. This could result in death, injury or disturbance of bats.</p>	<p>Two bat emergence or re-entry surveys are required during the active bat season (May – September) to confirm presence or likely-absence of a bat roost in the building. Both surveys should be completed during the optimal survey period mid-May to August inclusive.</p> <p>Sub-optimal: early May and September.</p> <p>One of these surveys must be a dawn re-entry survey.</p> <p>Two surveyors are required to provide full coverage of the building.</p> <p>If bat roosts are confirmed in the building one additional survey will be required to inform a European protected species mitigation licence application to Natural England once planning permission has been granted.</p>
	<p>Building B3 has moderate habitat value for supporting roosting bats. A large number of raised tiles are present on both roof pitches and mortar gaps occur at the gable ends, all of which could be utilised by crevice dwelling bats.</p> <p>Although damage has occurred to an interior timber board which would allow internal access to B3 via roof tiles, internal conditions are</p>	<p>As the proposals involve the conversion of B3, any bat roosts present in the roof space would be destroyed. This could result in death, injury or disturbance of bats.</p>	<p>Two bat emergence or re-entry surveys are required during the active bat season (May – September) to confirm presence or likely-absence of a bat roost in the building. Both surveys should be completed during the optimal survey period mid-May to August inclusive.</p> <p>Sub-optimal: early May and September.</p>

	well lit and generally unsuitable for void dwelling bats, and no evidence of roosting bats was found to be present.		One of these surveys must be a dawn re-entry survey. Two surveyors are required to provide full coverage of the building. If bat roosts are confirmed in the building one additional survey will be required to inform a European protected species mitigation licence application to Natural England once planning permission has been granted.
	Building B4 has low habitat value for supporting roosting bats. Although multiple raised and missing tiles occur on all roof pitches, three of the four roof pitches are unlined, reducing the available space for crevice dwelling bats. The lining, where present, is also not bitumen felt and is therefore likely to be of lower than normal suitability. However, gaps suitable for crevice dwelling bats occur beneath the eaves of the building on three of the four elevations. The building has interior conditions suitable for void dwelling bats, although no evidence of a bat roost was found to be present, implying a likely absence of void dwelling bats.	As the proposals include the demolition of B4, any bat roosts present would be destroyed. This could result in death, injury or disturbance of bats.	One bat emergence or re-entry survey are required during the active bat season (May – September) to confirm presence or likely-absence of a bat roost in the building. The survey should be completed during the optimal survey period mid-May to August inclusive. Sub-optimal: early May and September. Two surveyors are required to provide full coverage of the building. If bat roosts are confirmed in the building, two additional surveys will be required to inform a European protected species mitigation licence application to Natural England once planning permission has been granted. At least one of these will need to take place during the optimal period, and at least one of the three surveys must be a dawn re-entry survey.

The presence of a bat roost was confirmed in B2 during the dusk emergence survey on 8th June 2020. Two additional surveys were completed on 22nd June 2020 and 8th July 2020 to characterise the roost to inform the EPSML application, in accordance with the best practice guidelines (2016).

The surveys involved surveyors positioned around the buildings ensuring that all elevations and roof sections with suitable roosting features could be clearly observed. Particular attention was paid to the areas of the buildings identified as providing suitable access points to bat roosts. The location of each surveyor during each survey is shown in Appendix 1. Each surveyor was assigned an area of a building to observe for the duration of the survey. Surveyors used heterodyne and frequency division bat detectors, and Wildlife Acoustics EM3+ and Echo Meter Touch detectors connected to iPads. Bat echolocation calls recorded during the surveys were analysed using Wildlife Acoustics sound analysis software Kaleidoscope V3.1.7 when required. The Echo Meter Touch includes an auto ID function for bat species, however this is not 100% accurate and further post-survey sound analysis is often required to confirm species that could not be identified by the auto ID software during the survey. Surveyors also used head torches, survey record sheets and pens/pencils for recording all activity observed during the surveys. Each

surveyor was also provided with a handheld radio for communication between surveyors to assist with confirming ambiguous bat activity e.g. a bat emergence or a bat passing over the building.

In accordance with the latest bat survey guidelines (Collins, J. 2016) dusk emergence surveys commenced 15 minutes before sunset and continued for 1½ - 2 hours after sunset – depending upon bat activity and surveyor visibility. Dawn re-entry surveys commenced 2 hours before sunrise and continued until 15 minutes after sunrise.

Surveys were completed during optimal weather conditions i.e. when temperatures were above 10°C, with no rain or strong winds, as these adverse weather conditions can impact upon bat emergence and foraging behaviour.

2.3 Surveyors

The lead surveyors are David Kent (accredited agent on Natural England Bat Licence Number: 2016-22119-CLS-CLS) and Kathryn Carpenter (2 years of experience carrying out bat emergence and re-entry surveys) and was assisted by experienced surveyors with several years of bat survey experience. Six surveyors were used to provide sufficient cover of the buildings during the first survey (covering B2, B3 and B4), four surveyors during the second survey (covering only B2 and B3), and two surveyors during the third survey (covering only B2). The designated position of each surveyor during each survey is detailed in the tables in Section 3.1 below and shown on the plan in Appendix 1.

2.4 Limitations

These surveys follow best practice guidance to confirm presence or likely absence of roosting bats and where present, characterise the roost. However, this information is collected at finite dates and times, and provides an indication of the conditions on site only. The use of the buildings and the site as a whole by bats, at all times cannot be established based on this information. There were no specific limitations to the surveys.

3.0 Results and Evaluation

3.1 Survey Results

The results of each survey are provided in the tables below.

Table 2: Survey results

Date		8 th June 2020		
Start and End Times		21:02 – 23:00 Sunset: 21:21		
Weather Conditions		<table border="0"> <tr> <td style="vertical-align: top;"> Start: Temp: 15°C Relative Humidity: 53% Cloud Cover: 100% Wind: 0mph Rain: light rain </td> <td style="vertical-align: top;"> End: Temp: 10°C Relative Humidity: 74% Cloud Cover: 100% Wind: 1mph Rain: None </td> </tr> </table>	Start: Temp: 15°C Relative Humidity: 53% Cloud Cover: 100% Wind: 0mph Rain: light rain	End: Temp: 10°C Relative Humidity: 74% Cloud Cover: 100% Wind: 1mph Rain: None
Start: Temp: 15°C Relative Humidity: 53% Cloud Cover: 100% Wind: 0mph Rain: light rain	End: Temp: 10°C Relative Humidity: 74% Cloud Cover: 100% Wind: 1mph Rain: None			
Surveyor (position) As shown in Appendix 1		Deqa Mohamed – (Position 1 –) Louise Haycock – (Position 2) Rebecca Burt – (Position 3) Farhat Ramzan – (Position 4 –) Kathryn Carpenter – (Position 5) Elen Thompson – (Position 6)		
Building Reference	Surveyor Position	Notes/observations:		
B2	1	<p>A likely emergence by a common pipistrelle occurred at 21:16 – The bat was first seen flying south east from the south corner of B2 and likely emerged from beneath the eaves.</p> <p>Eight passes by common pipistrelles subsequently occurred between 22:22 and 22:31. Bats were frequently seen flying in and out of the treeline to the north of the surveyor, as well as north west to south east between the building and trees. A period of constant activity by multiple common pipistrelles then lasted from 22:31 until 22:40, with bats seen foraging around the south east elevation of B2. Three periods of unseen constant activity by this species also occurred throughout the survey, with two unseen passes occurring at 21:05 and 21:31.</p> <p>An emergence by a soprano pipistrelle occurred at 21:18 – the surveyor recorded the bat emerging from a gap in the barn door on the south east elevation of B2 before flying east. However, this may have been the same emergence recorded by the surveyor in position 4 at 21:19, which indicated that the bat emerged from beneath the eaves on the same elevation. Due to the slight time difference and the results of the dawn survey it is not possible to fully discount either scenario.</p> <p>A single subsequent pass by this species occurred at 21:47, with the bat flying east to north west over the surveyor. A single unseen pass was heard later in the survey at 22:33, with a period of constant unseen activity by this species occurring towards the end of the survey between 22:54 and 22:59.</p>		



Figure 1: Emergence locations for common (orange) and soprano (red) pipistrelles.

B2	2	<p>Six passes by unidentified pipistrelles occurred between 21:15 and 21:31, with the bats flying north west to south east along the treeline behind B2 and B3.</p> <p>Two passes by a common pipistrelle occurred at 22:27 and 22:30, with the bat flying west to east over surveyor and B2 before a return pass in the opposite direction. Nine unseen passes and two unseen distant passes by this species also occurred throughout the survey.</p>
B3	3	<p>Two passes by common pipistrelles occurred at 21:16 and 21:18, with the bats flying north west to south east to the north east of B2, visible above roof height. Three periods of continuous unseen activity and ten unseen passes by this species also occurred throughout the survey.</p> <p>A single unseen pass by a soprano pipistrelle occurred at 22:33.</p>
B3	4	<p>An emergence by a soprano pipistrelle occurred at 21:19 – the bat was seen emerging from beneath the eaves near the east corner of B2 before flying south east.</p> <p>Two subsequent unseen passes by this species occurred at 22:34 and 22:55.</p> <p>An emergence by a common pipistrelle occurred at 21:31 – the bat was seen emerging from beneath the eaves close to the first emergence location at 21:19, before flying south east.</p> <p>Two subsequent passes by this species occurred at 22:29 and 22:32, with the bat flying south east to north west high above B3 and north west to south east in front of surveyor. Twenty-four unseen passes and four unseen distant passes by common pipistrelles also occurred throughout the survey.</p>

A single pass by an unidentified bat occurred at 22:05, with the bat flying north east to south west over B3. This may have been the Natterer's bat recorded by the lead surveyor in position 5.



Figure 2: Emergence locations for common (orange) and soprano (red) pipistrelles.

		<p>A single pass by an unidentified bat occurred at 22:05, with the bat flying north east to south west over B3. This may have been the Natterer's bat recorded by the lead surveyor in position 5.</p>
B4	5	<p>A single pass by an unidentified pipistrelle occurred at 21:13, with the bat flying north to south near B2 and B3. Two unseen passes by unidentified pipistrelles occurred at 21:14 and 21:15.</p> <p>Two passes by a common pipistrelle occurred at 21:36 and 21:47, with the bat flying north east to south west across the courtyard and south to north towards the treeline. One period of continuous unseen activity and feeding by this species occurred between 22:32 and 22:35. Eleven unseen passes and four unseen distant passes by common pipistrelles also occurred throughout the survey.</p> <p>Two passes by a Natterer's bat occurred at 22:01 and 22:18, with the bat flying north to south over the driveway and west to south east over the wall and courtyard south of B4. Two unseen passes by this species also occurred at 22:04 and 22:22.</p> <p>Two unseen passes and one unseen distant pass by a soprano pipistrelle occurred throughout the survey.</p>
B4	6	<p>Two periods of unseen constant activity by a common pipistrelle occurred from 22:30 until 22:34 and from 22:54 until 22:57. Feeding and social calls were heard during this time. Four unseen passes and three unseen distant passes by this species also occurred throughout the survey.</p> <p>A single unseen distant pass by an unidentified bat occurred at 22:05. This may have been the Natterer's recorded by the lead surveyor in position 5.</p>

Table 3: Survey results

Date		22 nd June 2020		
Start and End Times		03:00 – 05:00 Sunrise: 04:46		
Weather Conditions		<table border="0"> <tr> <td style="vertical-align: top;"> Start: Temp: 8.5°C Relative Humidity: 88% Cloud Cover: 10% Wind: 0mph Rain: None </td> <td style="vertical-align: top;"> End: Temp: 7.5°C Relative Humidity: 100% Cloud Cover: 0% Wind: 1mph Rain: None </td> </tr> </table>	Start: Temp: 8.5°C Relative Humidity: 88% Cloud Cover: 10% Wind: 0mph Rain: None	End: Temp: 7.5°C Relative Humidity: 100% Cloud Cover: 0% Wind: 1mph Rain: None
Start: Temp: 8.5°C Relative Humidity: 88% Cloud Cover: 10% Wind: 0mph Rain: None	End: Temp: 7.5°C Relative Humidity: 100% Cloud Cover: 0% Wind: 1mph Rain: None			
Surveyor (position) As shown in Appendix 1		Elen Thompson – (Position 1 –) Louise Haycock – (Position 2) Farhat Ramzan – accredited agent on Natural England Bat Licence Number: 2016-22119-CLS-CLS (Position 3 –) Kathryn Carpenter – (Position 4)		
Building Reference	Surveyor Position	Notes/observations:		
B2	1	<p>One unseen pass and two unseen distant passes by soprano pipistrelles occurred throughout the survey.</p> <p>One unseen pass and one unseen distant pass by noctules occurred throughout the survey.</p> <p>Three unseen passes and two unseen distant passes by common pipistrelles occurred throughout the survey.</p>		
B2	2	<p>Three passes by brown long-eared bats occurred between 03:29 and 04:25, with the bats flying south west to north east over garden and B2, circling high above B2 and B3 before flying west and flying south east to north west high up between B2 and the tree line to the north.</p> <p>A single pass by a common pipistrelle occurred at 03:53, with the bat flying north west to south east over B3.</p>		
B3	3	<p>A possible emergence by a soprano pipistrelle occurred at 03:39 – the bat flew east from a gap at the bottom of the upper barn door on the south east elevation of B2.</p> <p>A possible emergence by a common pipistrelle occurred at 04:05 – the bat emerged from the same location as above, again flying east. It is possible that the two bats were using the barn interior for foraging prior to emerging.</p> <p>Four passes by this species occurred between 03:30 and 04:21, with bats flying north to south over B2, east to west over B3 and west to east along the sides of B2 and B3. Four unseen passes by common pipistrelles also occurred throughout the survey.</p>		

Two unseen passes and two unseen distant passes by a noctule occurred throughout the survey.



Figure 3: Emergence location for both common and soprano pipistrelles.

B3

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Three unseen passes and three unseen distant passes by noctules occurred throughout the survey.

Two unseen distant passes by soprano pipistrelles occurred at 03:22 and 03:38.

An unseen pass by a brown long-eared bat occurred at 03:29.

Four unseen passes and five unseen distant passes by common pipistrelles occurred throughout the survey.

Table 4: Survey results

Date	8 th July 2020	
Start and End Times	21:10 – 22:45 Sunset: 21:25	
Weather Conditions	Start: Temp: 15°C Relative Humidity: 97% Cloud Cover: 100% Wind: 2mph Rain: intermittent light rain	End: Temp: 15°C Relative Humidity: 97% Cloud Cover: 100% Wind: 3mph Rain: light rain
Surveyor (position) As shown in Appendix 1	David Kent – accredited agent on Natural England Bat Licence Number: 2016-22119-CLS-CLS (Position 1 –) Kathryn Carpenter – (Position 2)	
Building Reference	Surveyor Position	Notes/observations:
B2	1	<p>An emergence by a soprano pipistrelle occurred at 21:21 – the bat was seen emerging from beneath the bargeboard on the north east side of the south east gable end and flying away to the south east.</p> <p>An emergence by a common pipistrelle occurred at 21:26 – the bat emerged from lower down beneath the same barge board as the soprano pipistrelle above and flew south east.</p> <p>A second emergence by a common pipistrelle occurred at 21:43 – the bat emerged either from beneath the barge board or a mortar gap at the roof edge on the south west side of the south east gable end and flew north east. A single unseen distant pass by a common pipistrelle subsequently occurred at 22:32.</p> <p>Four unseen distant passes by a Leisler’s bat occurred throughout the survey.</p> <p>Two unseen distant passes by a noctule occurred at 22:32 and 22:33.</p>



Figure 4: Emergence locations for common (orange) and soprano (red) pipistrelles.

B2	2	<p>Two unseen distant passes by a common pipistrelle occurred at 21:59 and 22:27.</p> <p>Three unseen passes and two unseen distant passes by a Leisler's bat occurred throughout the survey.</p> <p>A single unseen distant pass by an unidentified pipistrelle (call too brief for identification) occurred at 22:25.</p>
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4.0 Conclusions, Impacts and Recommendations

4.1 Informative guidelines

When bat roosts are present, the bat surveys undertaken at a site facilitate the characterisation of the roost type. This allows for appropriate mitigation and compensation to be designed to inform a European Protected Species Mitigation Licence (EPSML) application to Natural England.

The definitions of bat roost types are provided below, taken from the *Bat Mitigation Guidelines* (English Nature, 2004) and the Bat Conservation Trust publication, *Bat Surveys for Professional Ecologists – Good Practice Guidelines* (Collins, J. (Ed) 2016).

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.

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.

Feeding roost: a place where individual bats or a few individuals rest or feed during the night but are rarely present by day.

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.

Swarming site: where large numbers of males and females gather during late summer to autumn. Appear to be important mating sites

Mating sites: sites where mating takes place from later summer and can continue through winter.

Maternity roost: where female bats give birth and raise their young to independence.

Hibernation roost: where bats may be found individually or together during winter. They have a constant cool temperature and high humidity. Sites where hibernating bats have been confirmed by appropriate survey effort should be classed as 'hibernation confirmed'.

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.

Other: roost types are interchangeable and not always easy to classify according to the nuances of certain species.

The surveys undertaken to date in and around B1 provide sufficient information to inform a European Protected Species Mitigation Licence (EPSML). An EPSML **will be required** to enable the proposed works to be lawfully undertaken, whilst ensuring the favourable conservation status of the species concerned in their natural range; detailed mitigation will be described in the EPSML Method Statement. Appropriate justification for this assessment is provided in Section 3 of this report.

Natural England issues licences under Regulation 55 of the Habitats Regulations to allow you to work within the law. Licences are issued for specific purposes stated in the Regulations, if the following three tests are met:

- The purpose of the work meets one of those listed in the Habitats Regulations (see below);
- That there is no satisfactory alternative;
- That the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status (FCS) in their natural range

The Habitats Regulations permits licences to be issued for a specific set of purposes including:

1. ***include preserving public health or public safety or other imperative reasons of over-riding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment;***
2. scientific and educational purposes,
3. ringing or marking
4. conserving wild animals

Development works fall under the first purpose and Natural England issues bat mitigation licences for developments.

4.2 Evaluation

The following recommendations are provided taking the desk-based assessment and site survey results into account.

Table 5: Evaluation of buildings on site

Ref	Survey conclusions	Foreseen impacts	Recommendations / Mitigation	Enhancements
B2	A day roost and possible night roost for a maximum of two soprano pipistrelles and two common pipistrelles was confirmed by survey.	As the proposed development involves the conversion of B2, bat roosts beneath the eaves on the south west elevation will be modified or destroyed. If any bats are roosting within crevices in the building interior (see results of surveys 1 and 2) these roosts will also be destroyed.	<p>A European Protected Species Mitigation Licence (EPSML) will be required from Natural England prior to the commencement of works, once planning has been granted. As there are two bat roosts of low numbers of common species present, the works can be completed under a Natural England Bat Mitigation Class Licence (Low Impact).</p> <p>Detail mitigation required under the Licence:</p> <ul style="list-style-type: none"> • Bat boxes erected on site prior to commencement of works. These will include two 'Nestbox Company' improved crevice bat boxes. <p>Bat boxes should be positioned 3-5m above ground level facing in a south/south-westerly direction with a clear flight path to and from the entrance.</p> <ul style="list-style-type: none"> • Pre-works inspection of the known roost locations by the licence Named Ecologist or their Accredited Agent immediately prior to the commencement of the destructive search. • Destructive search via soft stripping by hand of the roof structure where any modifications to the roof of the building are planned. • Any bats located during the pre-works inspection and destructive search will be carefully captured by hand and transported to an appropriate bat box by the Licence Named Ecologist or their Accredited Agent. • Permanent replacement roosting provision will be incorporated into the converted barn. Suitable options include the creation of roosting space beneath barge boards, the inclusion of bat access tiles on the roof of the building, or the inclusion of soffit bat boxes beneath the eaves of the building. • The roof will be lined with Type 1F Felt lining only. Scientific research has shown that Breathable Roof Membranes (BRMs) are harmful to bats with bats becoming entangled in loose fibres resulting in the death of bats. BRMs used in bat roosts can quickly become shredded by the bats claws resulting in a reduced lifespan of the product. There 	<p>The Local Planning Authority has a duty to ask for enhancements under the NPPF (July 2018)</p> <p>The mitigation/compensation detailed for the EPSML will provide sufficient enhancements of the developed site for bats.</p>

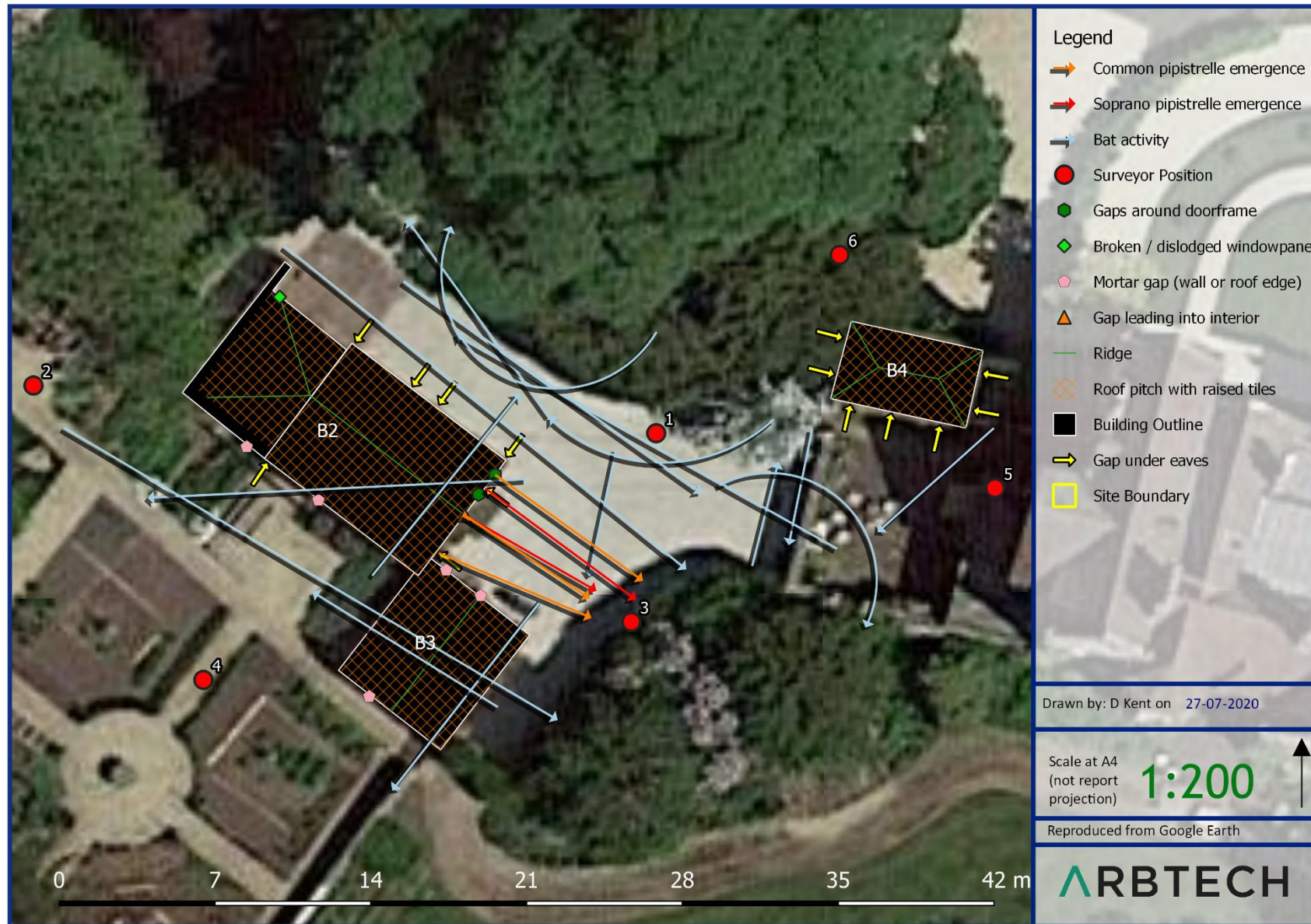
			<p>are currently no bat friendly BRM products on the market. For more information visit www.batsandbrms.co.uk.</p> <ul style="list-style-type: none"> • No post-development monitoring is required for low numbers of common species. Evidence to confirm that the bat compensation measures detailed within the EPSML have been installed will be provided by the Licensee for the Licence Return which will be submitted to Natural England within 14 days of the Licence expiration date. • Lighting will be controlled across the developed site. Research into the effects of artificial lighting on bats has shown that it can impact upon bat emergence times and lead to a reduced foraging time (particularly for the light sensitive Brown long-eared bat). As bats are faithful to their roost sites, often returning to the same site for many years, the impact of lighting on emergence times and in turn reduced foraging times can ultimately result in the roosts being abandoned. • Key areas of the site which are sensitive to artificial lighting are the area between B2 and the trees to the north east, and the courtyard to the east. • The lighting on the developed site will be limited to the new and converted buildings only. No lighting will be installed within the garden area, thereby maintaining the existing dark areas within the developed site for bats. • Low impact lighting strategies will be adopted from the guidance outlined in the new Bats and Lighting Publication produced by the Institution of Lighting Professionals and the Bat Conservation Trust "Guidance Note 08/18 Bats and artificial lighting in the UK Bats and the Built Environment series" publication: http://www.bats.org.uk/news.php/406/new_guidance_on_bats_and_lighting • The lighting on the site will: <ul style="list-style-type: none"> - Use narrow spectrum light sources to lower the range of species affected by lighting - Use light sources that emit minimal ultra-violet light - Avoid white and blue wavelengths of the light spectrum to reduce insect attraction and where white light sources are required in order to manage the blue short wavelength content they should be of a warm / neutral colour temperature <4,200 kelvin. - Not use bare bulbs and any light pointing upwards. The spread of light will be kept in line with or below the horizontal. • Light spill will be reduced via the use of low-level lighting used in conjunction with hoods, cowls, louvers and shields. Lights will also be directional to ensure that light is directed to the intended areas only. • External lighting will be positioned below the eaves, be on PIR sensors that are sensitive to large objects only (so that they are not triggered by passing bats), and will be set to the shortest time duration to reduce the amount of time the lights are on. 	
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			<ul style="list-style-type: none"> Wall lights and security lights will be 'dimmable' and set to the lowest light intensity settings. There are several products on the market that allow the control of the light intensity and the duration that the lights are on. All lighting on the developed site will make use of the most up to date technology available. <p>All of the above will ensure that the replacement bat roosts within the developed site will not be affected by any external lighting ensuring their long-term use.</p>	
B3	A likely absence of roosting bats was confirmed by survey.	Bats are very unlikely to be roosting within B3 and as such, there are not anticipated to be any impacts on bats as a result of the proposed works.	In the unlikely event that bats are unexpectedly found during any stage of the development, work should stop immediately, and a suitably qualified ecologist should be contacted to seek further advice.	
B4	A likely absence of roosting bats was confirmed by survey.	Bats are very unlikely to be roosting within B4 and as such, there are not anticipated to be any impacts on bats as a result of the proposed works.	In the unlikely event that bats are unexpectedly found during any stage of the development, work should stop immediately, and a suitably qualified ecologist should be contacted to seek further advice.	

5.0 Bibliography

- Arbtech Consulting Ltd. (2020) Preliminary Roost Assessment Survey
- Collins, J. (ed.) (2016). Bat Surveys for Professional Ecologists —Good Practice Guidelines, 3rd edition, Bat Conservation Trust, London.
- Garland & Markham (2008) Is important bat foraging and commuting habitat legally protected?
- Google Earth (2019) accessed on 27/07/2020.
- Mitchell-Jones, A.J. (2004). Bat Mitigation Guidelines. English Nature, Peterborough.

Appendix 1: Survey Plan



Appendix 2: Proposed Site Plan

None provided

Appendix 3: Legislation and Planning Policy related to bats

LEGAL PROTECTION

New legislation (2020)

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 came into force when Britain left the European Union on 31st January 2020. It covered amendments relevant to this survey to:

Wildlife and Countryside Act 1981: England and Wales (x1 amendment)

Conservation of Habitats and Species Regulations 2017 (x29 amendments)

All species of bat are fully protected under *The Conservation of Habitats and Species Regulations 2017* through their inclusion on Schedule 2.

Regulation 43: Protection of certain wild animals - offences

(1) A person is guilty of an offence if they:

- (a) Deliberately captures, injures or kills any wild animal of a European protected species,
- (b) Deliberately disturbs wild animals of any such species,
- (c) Deliberately takes or destroys the eggs of such an animal, or
- (d) Damages or destroys a breeding site or resting place of such an animal,

(2) For the purposes of paragraph (1) (b), disturbance of animals includes in particular any disturbance which is likely—

- (a) To impair their ability:
 - (i) To survive, to breed or reproduce, or to rear or nurture their young; or
 - (ii) In the case of animals of a hibernating or migratory species, to hibernate or migrate; or
- (b) To affect significantly the local distribution or abundance of the species to which they belong.

Bats are also protected under the *Wildlife and Countryside Act 1981 (as amended)* through their inclusion on *Schedule 5*. Under this Act, they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection
- Selling, offering or exposing for sale, possession or transporting for purpose of sale

NATIONAL PLANNING POLICY (ENGLAND)

National Planning Policy Framework 2017

The National Planning Policy Framework promotes sustainable development. The Framework specifies the need for protection of designated sites and priority habitats and species. An emphasis is also made on the need for ecological infrastructure through protection, restoration and re-creation. The protection and recovery of priority species (considered likely to be those listed as UK Biodiversity Action Plan priority species) is also listed as a requirement of planning policy.

In determining a planning application, planning authorities should aim to conserve and enhance biodiversity by ensuring that: designated sites are protected from harm; there is appropriate mitigation or compensation where significant harm cannot be avoided; opportunities to incorporate biodiversity in and around developments are encouraged; and planning permission is refused for development resulting in the loss or deterioration of irreplaceable habitats including aged or veteran trees and also ancient woodland.

The Natural Environment and Rural Communities Act 2006 and the Biodiversity Duty

Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006, requires all public bodies to have regard to biodiversity conservation when carrying out their functions. This is commonly referred to as the 'biodiversity duty'.

Section 41 of the Act requires the Secretary of State to publish a list of habitats and species which are of 'principal importance for the conservation of biodiversity'. This list is intended to assist decision makers such as public bodies in implementing their duty under Section 40 of the Act. Under the Act these habitats and species are regarded as a material consideration in determining planning applications. A developer must show that their protection has been adequately addressed within a development proposal.

Effect on development works:

A European Protected Species Mitigation (EPSM) licence issued by Natural England will be required for works likely to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficiency/success to be monitored. The legislation may also be interpreted such that, in certain circumstances, important foraging areas and/or commuting routes can be regarded as being afforded *de facto* protection, for example, where it can be proven that the continued usage of such areas is crucial to maintaining the integrity and long-term viability of a bat roost (Garland & Markham, 2008).

There are 17 species of bat breeding in England and Natural England issues licences under Regulation 55 of the Habitats Regulations to allow you to work within the law.

licences are issued for specific purposes stated in the Regulations, if the following three tests are met:

- The purpose of the work meets one of those listed in the Habitats Regulations (see below);
- That there is no satisfactory alternative;
- That the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status (FCS) in their natural range

The Habitats Regulations permits licences to be issued for a specific set of purposes including:

5. ***include preserving public health or public safety or other imperative reasons of over-riding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment;***
6. scientific and educational purposes,

7. ringing or marking

8. conserving wild animals

Development works fall under the first purpose and Natural England issues bat mitigation licences for developments.