



**Bat Survey Report**

**21 Hawthorne Road**

**Caversham**

**Reading**

**Berkshire**

**RG4 6LY**

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**Zoe Ridout**  
21 Hawthorne Road  
Caversham  
Reading  
Berkshire  
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**23<sup>rd</sup> November, 2016**

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**Notice to Interested Parties**

To achieve the study objectives stated in this report, we were required to base our conclusions on the best information available during the period of the investigation and within the limits prescribed by our client in the agreement.

No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information. Thus, we cannot guarantee that the investigations completely defined the degree or extent of e.g. species abundances or habitat management efficacy described in the report.

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## EXECUTIVE SUMMARY

- 0.1 Arbeco Ltd were commissioned by Zoe Ridout to undertake an ecological assessment of bat species at 21 Hawthorne Road, Caversham, Reading, Berkshire, RG4 6LY to help inform the proposed extension of the building on site.
- 0.2 An initial bat building assessment carried out on the building at 21 Hawthorne Road by a bat licensed ecologist on the 14<sup>th</sup> September 2016 recorded structural features suitable to support roosting bats.
- 0.3 Evidence of bats in the form of bat droppings were also recorded during the external inspection of the building. The droppings were confirmed to be from a common pipistrelle *Pipistrellus pipistrellus* bat following DNA analysis by the University of Warwick.
- 0.4 The building was therefore considered to currently support bat roosts. Further dusk emergence surveys were subsequently undertaken in late-September and early-October 2016 to characterise the size and status of the bat roost within the building. Due to time constraints, only two emergence surveys were undertaken in 2016 with a third to be undertaken in May 2017 following recommendations within the Bat Conservation Trust's Bat Surveys: Good Practice Guidelines (Collins, 2016).
- 0.5 The dusk emergence surveys recorded a maximum count of two common pipistrelle bats emerging from the building. Due to above average temperatures in the south of England during September and October 2016 (Met Office 2016), these surveys were considered adequate to identify bat day roosts at the site.
- 0.6 It is considered highly unlikely that a maternity roost is present within the building. Inclement weather in Spring 2016 caused bats in England to breed later into the bat active season so evidence of breeding bats such as higher numbers of bats emerging and much higher numbers of bat droppings is likely to have been recorded.
- 0.7 The building has therefore been confirmed as a **day roost for a low number of common pipistrelle bats**.
- 0.8 **Therefore, the proposed works to the building will need to take place under a Natural England European Protected Species Mitigation Licence.** The outline bat method statement detailed in Section 6 of this report provides a preliminary outline of appropriate mitigation measures. These include the retention or creation of roosting opportunities within the building for common pipistrelle bats including retaining in situ access points where possible and suitable construction materials.

## **1 INTRODUCTION**

- 1.1 Arbeco Ltd were commissioned by Zoe Ridout to undertake an ecological assessment of bat species at 21 Hawthorne Road, Caversham, Reading, Berkshire, RG4 6LY to help inform the proposed extension of the building on site.
- 1.2 The bat survey involved carrying out a detailed bat building assessment to assess the likelihood and potential of the building on site to support bat species. The assessment comprised of a thorough internal and external inspection of the building for any evidence of bats. The survey also involved assessing the buildings' potential to support breeding birds.
- 1.3 This report details the results of the initial bat building assessment and two subsequent dusk bat emergence surveys.

### **Legislation**

- 1.4 All seventeen bat species resident in the UK are fully protected under UK and European legislation. In England bats are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and within Europe all bat species are protected under Schedule 2 of the Conservation of Habitats and Species Regulations 2010.
- 1.5 These pieces of legislation make it an offence to:
  - Deliberately, intentionally, or recklessly disturb, capture, injure or kill a bat;
  - Obstruct, damage or destroy a place used for shelter or protection; and
  - Damage or destroy a bat roost (breeding site or resting place).
- 1.6 All wild bird species are afforded protection under the Wildlife & Countryside Act 1981 (as amended).
- 1.7 Further details of the legislation are outlined in Appendix 1.

### **Site Description**

- 1.8 The site is located within the suburb of Caversham within the borough of Reading at Ordnance Survey Grid Reference SU 73304 75719.
- 1.9 The site consists of a brick-built double storey residential dwelling with associated garden and driveway. The building has a pitched roof with dormer windows at the front and rear of the property. The location of the site is shown in Figure 1.1, the extent of the site boundary is shown in Figure 1.2 and the building on site that was surveyed for bat potential is shown in Figure 1.3.

### **Development Proposals**

- 1.10 The development proposals comprise an extension of the existing house into the roof and associated garden to the north of the property. A small extension will also be added to the north-east side of the property.

## 2 METHODS

### **Bat Building Inspection**

- 2.1 The methods used in the bat building inspection were based on those recommended in English Nature's Bat Mitigation Guidelines (Mitchell-Jones 2004), the Joint Nature Conservation Committee's Bat Worker's Manual (Mitchell-Jones and McLeish 2004) and the Bat Conservation Trust's Bat Surveys: Good Practice Guidelines (Collins, 2016).
- 2.2 The buildings' suitability for roosting bats was assessed by examining structural features. Structural features that may influence the suitability of a building to support roosting bats include the presence of a roof void, the presence of access points into the building (including gaps beneath barge boards, soffits and fascias, gaps under lead flashing, gaps within masonry and under loose tiles, gaps between mortise and tenon joints), the complexity and size of any roof void and daytime light levels in the roof void.
- 2.3 The buildings' suitability for roosting bats was also assessed by examining the surrounding habitat. Important habitat features surrounding the structure which may influence roost potential include whether the structure is in a semi-rural or parkland location, its proximity to significant linear habitat features such as a watercourse, mature hedgerow, wooded lane or an area of woodland.
- 2.4 Taking account of these architectural and habitat features, the building was then assigned a level of roost suitability based on the criteria given in the Bat Conservation Trust's Bat Surveys: Good Practice Guidelines (Collins, 2016) and professional judgement. The primary objective of this exercise was to identify the need for further detailed bat survey later in the year, or alternatively to obtain sufficient information that would dismiss the need for further assessment.
- 2.5 A detailed bat building inspection was undertaken on the 28<sup>th</sup> September 2016 by qualified ecologist Stacey Waring (bat licence number 2015-14109-CLS-CLS). An external search around the perimeter of the building was conducted and any possible access points i.e. gaps and crevices were noted and surveyed with a high powered torch, ladder and endoscope as required.
- 2.6 A systematic internal inspection of the building was conducted using a high-powered torch to illuminate all areas thought to be suitable for roosting bats. All surfaces were surveyed for signs of bat presence.
- 2.7 Features of potential value to bats were surveyed not only for the presence of bats but also for signs that could indicate use by bats, such as:
  - Bat droppings;
  - Staining of access points used by bats to enter the structure; and
  - Feeding remains such as moth and butterfly (Lepidoptera) wings.

### **Bat Emergence Surveys**

- 2.1 Two dusk emergence surveys were carried out by experienced bat surveyors Stacey Waring and Tony Wells on the 28<sup>th</sup> September and the 6<sup>th</sup> October 2016 in appropriate weather conditions following standard guidelines (Collins, 2016) and when bats are likely to be active.
- 2.2 Observations were made outside the building from where it was considered bats might emerge. The dusk emergence surveys commenced approximately 15 minutes before sunset and lasted for approximately 90 minutes after. This is the optimum time for bats to emerge from a roost which allows surveyors to record any bats that may emerge from the building.
- 2.3 A combination of real time detectors (Elekon Batlogger M) and frequency division detectors (PeerSonic) were used to record bat echolocation calls of any emerging bats and identify species where possible.
- 2.4 All bat passes were noted, and all bats were identified to species level where possible. Echolocation calls were also recorded onto the detectors in-built sound cards and subsequently analysed using Elekon Bat Explorer and Pettersson BatSound computer software which facilitates species identification. Where possible additional notes on size, flight height, type of flight (such as commuting, foraging, fast or slow) and direction of flight were also recorded.

### **Survey Constraints**

- 2.5 The bat building assessment was undertaken in late-September which is late in the bat active period (April to October inclusive) and as such, subsequent survey effort was restricted to only two emergence surveys in late-September and early-October 2016.
- 2.6 Bats are difficult to locate in large structures, with so many potential roosting areas, particularly in inaccessible areas such as large buildings, finding the exact roosting site can be difficult, especially male/single bat roosting sites.
- 2.7 Bats can have seasonal use of buildings and being so mobile may arrive and start using a site after it has been surveyed, or roost somewhere else during the period it was surveyed. For this reason bats may potentially be present but remain undetected, particularly during day time assessment surveys.

### 3 RESULTS

#### Building Description

- 3.1 The building is a double storey residential dwelling with a rear north facing elevation clad with hanging tiles. The roof is pitched, cross-gabled and clad with clay tiles with roof dormer windows to the front and back of the house (see Photographs 1 and 2 in Appendix 2). A roof void spans the length of the building and is obstructed in places by water tanks and chimney stacks. At its apex, the roof void measures approximately 1 m in height and is of simple timber frame construction with tie-beams and struts supporting purlins and rafters with a bitumen underlay.

#### External Results

- 3.2 Only a low number of structural features with the suitability to support roosting bats were recorded during the external inspection. The features included gaps beneath the hanging tiles on the rear elevation to the north of the property, small gaps underneath roof tiles where mortar was missing at the north-east gable end and lifted tiles in some areas of the rear north-facing valley meeting points (see Photographs 3-5 in Appendix 2).
- 3.3 A low number of bat droppings (<50) were recorded on the lead flashing beneath a roof dormer window on the rear elevation (see Photograph 6). A sample of the droppings were sent to the University of Warwick for DNA analysis and were confirmed as being from a common pipistrelle bat *Pipistrellus pipistrellus* (see Appendix 3).

#### Internal Results

- 3.4 The roof internally had no obvious structural features suitable for roosting bats and no droppings were found. The bitumen underlay was in good condition and the loft was draught free with no discernible obvious access/egress points (see Photograph 7 in Appendix 2).

#### Emergence Survey Results

- 3.5 Due to the presence of evidence of bats the building was confirmed as a bat roost. Therefore, two subsequent dusk bat emergence surveys were carried out on the building to characterise the size and status of the bat roost(s) within the building. Details of the weather conditions for the survey undertaken on the 28<sup>th</sup> September 2016 and the temperature and time of the survey undertaken on the 6<sup>th</sup> October 2016 are presented below in Table 3.1.

**Table 3.1:** Weather conditions during emergence surveys

| Date     | Sunset | Start/Finish  | Weather Conditions at Sunset                                                              |
|----------|--------|---------------|-------------------------------------------------------------------------------------------|
| 28.09.16 | 18:48  | 18:30 / 20:15 | Temperature (°C): 19<br>Cloud Cover (Okta): 8<br>Wind (Beaufort): 2<br>Precipitation: 0   |
| 06.10.16 | 18:26  | 18:10 / 20:00 | Temperature (°C): 12<br>Cloud Cover (Okta): 8<br>Wind (Beaufort): 3-4<br>Precipitation: 0 |

**Bat Emergence Survey 28<sup>th</sup> September 2016**

- 3.6 Two surveyors surveyed the building on site. Surveyor 1 surveyed the southern and western elevations of the building and surveyor 2 surveyed the northern and eastern elevations of the building.
- 3.7 Surveyor 1 did not record any bats emerging from the building but did record commuting behaviour of noctule *Nyctalus noctula* bat, to the south of site heading east close to the adjacent road, common pipistrelle bat commuting in a northerly direction and soprano pipistrelle *Pipistrellus pygmaeus* bat heading south towards the adjacent road.
- 3.8 Surveyor 2 recorded the emergence of two common pipistrelle bats from the roof of the dormer window on the rear elevation to the north of the building. Commuting and foraging behaviour of noctule bat and common pipistrelle bat to the north of the building was also recorded.
- 3.9 The results of the surveys are detailed in Figure 3.1.

**Bat Emergence Survey 06<sup>th</sup> October 2016**

- 3.10 Two surveyors surveyed the building on site. Surveyor 1 surveyed the southern and western elevations of the building and surveyor 2 surveyed both the northern and eastern elevations of the building.
- 3.11 No bats were recorded emerging from the building during the second survey. . Surveyor 1 recorded a single pass of a common pipistrelle which was heard but not seen..

**Surrounding Habitat**

- 3.12 The site is set in a suburban landscape and is immediately surrounded to the north, east, south, and west by residential development. The wider landscape comprises extensive pasture, arable fields, large waterbodies and the River Thames to the south. Traditional orchards and woodland copses including deciduous, broadleaved and ancient woodland lie within 2km of the site boundary. These areas represent high quality bat foraging habitat but are not well connected to the site via suitable linear habitat features such as mature hedgerows and treelines bordering surrounding fields and adjacent roads.

## 4 EVALUATION

- 4.1 All species of bat present in the UK receive full protection under The Conservation of Habitats and Species Regulations 2010, and the Wildlife and Countryside Act 1981 (as amended).
- 4.2 The bat building assessment recorded droppings deposited by a common pipistrelle bat externally beneath the rear roof dormer window to the north of the property and a small number of external structural features suitable to support roosting bats.
- 4.3 The surrounding area provides opportunities for foraging and commuting bats however, these habitats are not well connected to site via suitable linear habitat features.
- 4.4 The dusk bat emergence surveys recorded a maximum count of two common pipistrelle bats emerging from the building.
- 4.5 It is considered highly unlikely that a maternity roost is present within the building. Inclement weather in Spring 2016 caused bats in England to breed later into the bat active season. Therefore, evidence of breeding bats, such as higher numbers of bats emerging and much higher numbers of bat droppings, is likely to have been recorded if a maternity roost was present.
- 4.6 The building is therefore considered to be a day roost for a low number of common pipistrelle bats and is therefore of a low conservation significance in a local context due to the common pipistrelle bat being widespread and common throughout the UK.
- 4.7 Due to the building assessment being undertaken late in the 2016 bat active period, subsequent survey effort was restricted to two dusk bat emergence surveys in late-September and early-October 2016. Due to above average temperatures in the south of England during September and October 2016 (Met Office 2016), these surveys were considered adequate to identify bat day roosts at the site.
- 4.8 The current development proposals comprise the extension of the building into the associated garden which will impact upon the existing roof. In the absence of mitigation, the proposed works to the building will result in the disturbance and/or loss of the common pipistrelle bat day roost and has the potential to kill or injure bats roosting within the building. Therefore, the works to the building will need to take place under a Natural England European Protected Species Mitigation licence.

## 5 CONCLUSIONS

- 5.1 The building has been confirmed as a day roost for low numbers of common pipistrelle bats.
- 5.2 In the absence of mitigation, the proposed works to the building will result in the disturbance and/or loss of the common pipistrelle bat day roost and has the potential to kill or injure bats roosting within the building. Therefore, the works to the building will need to take place under a Natural England European Protected Species Mitigation licence.
- 5.3 Section 6 of this report provides details of an outline bat mitigation strategy to ensure that no bats are harmed during works to the building and that the bat roosts within the building are reinstated post-works where possible. This will ensure that bats are not detrimentally affected by the works and that there is no loss of ecological viability and that the favourable conservation status of the species in the local area is not affected by the proposed works.
- 5.4 A further dusk bat emergence survey and/or pre-dawn bat re-entry survey should be undertaken between May to August 2017 to help inform the European Protected Species Mitigation licence application.

## 6 RECOMMENDATIONS

6.1 The proposed works to the building will need to take place under a Natural England European Protected Species Mitigation licence. This outline method statement has been developed to ensure that no bats are disturbed or harmed due to the proposed works and to ensure that an adequate mitigation strategy will be provided to ensure the ecological continuity of bat species at the site through the provision of replacement and additional roosts. The mitigation strategy includes:

- The provision of suitable bat roosts for common pipistrelle bats within the converted building;
- Sensitive timings to avoid disturbing bats during the sensitive hibernation period i.e. all works to the roof of the building should avoid the period beginning the 1<sup>st</sup> November to the 1<sup>st</sup> March inclusive;
- No works to the roof should be undertaken during temperatures lower than 7°C to avoid disturbing any torpid bats;
- The delivery of a pre-works site induction to all site contractors involved with initial roof / hanging tile stripping works via a 'tool box talk' by the licensed ecologist regarding the bat issues on site and the legal protection afforded to them;
- Ensuring that any works to the roof of the building are done by hand under the direct supervision of a licensed bat ecologist with any tiles/slates carefully removed, turned over and checked for bats prior to disposal;
- The provision of one Schwegler 2FN bat box or similar installed on suitable mature native species of tree within the grounds of the building;
- An appropriate lighting scheme to include the placement of lights away from roost entrances and low-level lighting with stepped baffle trims to minimise disturbance to bats.

### **Provision of Suitable Roosting Features within Converted Building**

- 6.2 Common pipistrelle bats are known to frequently roost within newer buildings behind hanging tiles, between roofing felt and roof tiles and behind soffit and barge and eaves boarding (Bat Conservation Trust, 2010). Therefore, it is recommended that any new areas of roof / hanging tiles where new bat roost features are installed are lined with 'bat-friendly' Monartile 1F bituminous roofing underlay.
- 6.3 Any remedial timber treatment to roof timbers would need to be done with chemical treatments listed as being safe for use in buildings where bats roost on Natural England Technical Information Note TIN092 (Natural England 2011).
- 6.4 Suitable access/egress points will need to be incorporated into the roof to allow bats to enter/exit the roost. These could comprise bat access roof and/or ridge tiles to allow crevice dwelling bats to gain access to spaces between the roof tiles and the roof lining.

**Additional Roosts**

- 6.5 To ensure ecological continuity of bat species at the site, one Schwegler 2FN bat box or similar will be installed on mature native tree species close to the grounds of the building.

## REFERENCES

Bat Conservation Trust (2010) [http://www.bats.org.uk/pages/about\\_bats.html](http://www.bats.org.uk/pages/about_bats.html), accessed on 23<sup>rd</sup> November 2016.

Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd Edition*. Bat Conservation Trust, London.

Met Office (2016) <http://www.metoffice.gov.uk/climate/uk/summaries/2016/september>,  
<http://www.metoffice.gov.uk/climate/uk/summaries/2016/october>, accessed on 9<sup>th</sup> November 2016.

Mitchell-Jones A.J (2004) *Bat Mitigation Guidelines*. English Nature.

Mitchell-Jones A.J. and McLeish A.P. (2004) *The Bat Workers Manual* 3<sup>rd</sup> Edition. Joint Nature Conservation Committee.

## **FIGURES**

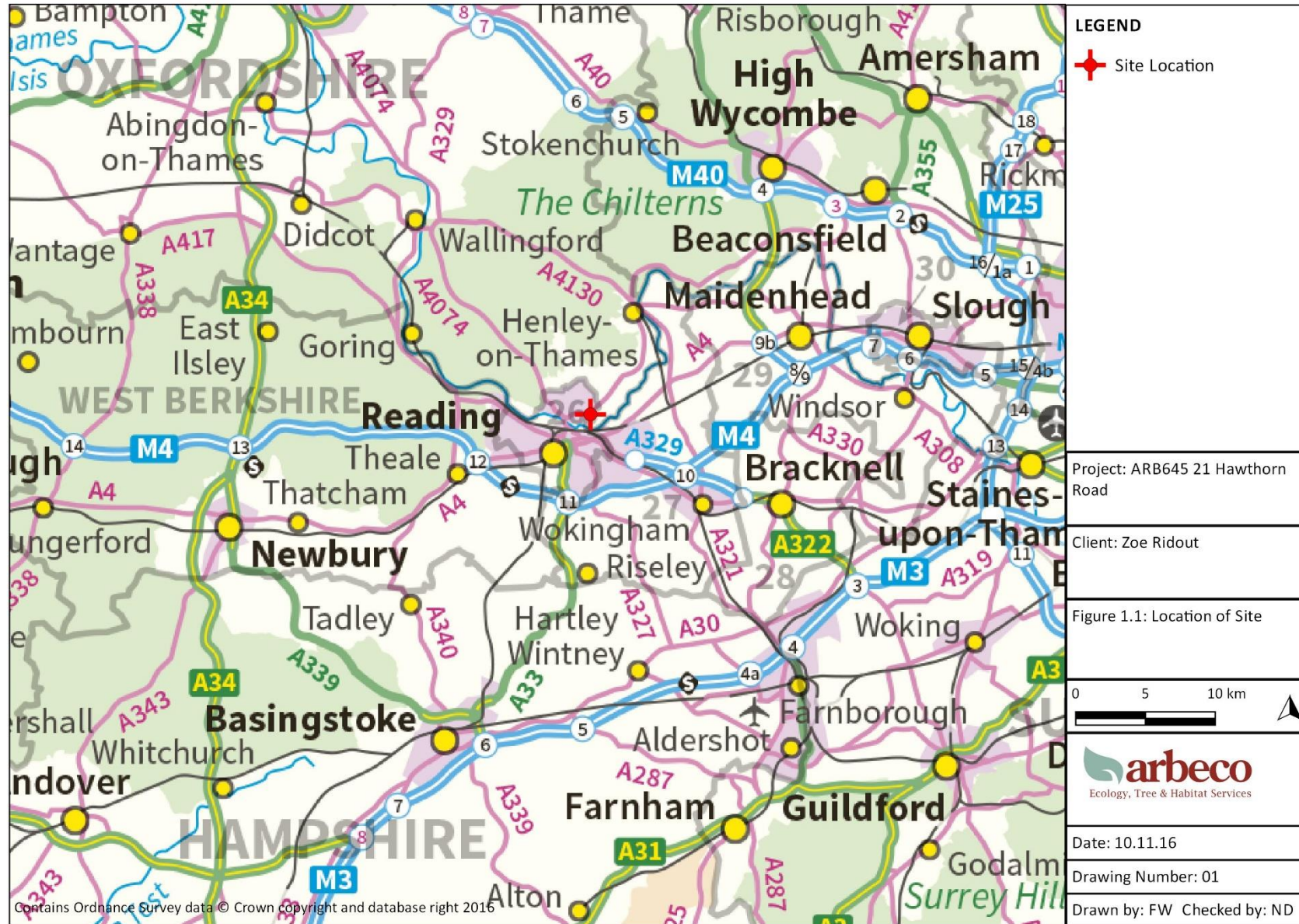
**Figure 1.1 Location of site**

**Figure 1.2 Extent of site boundary**

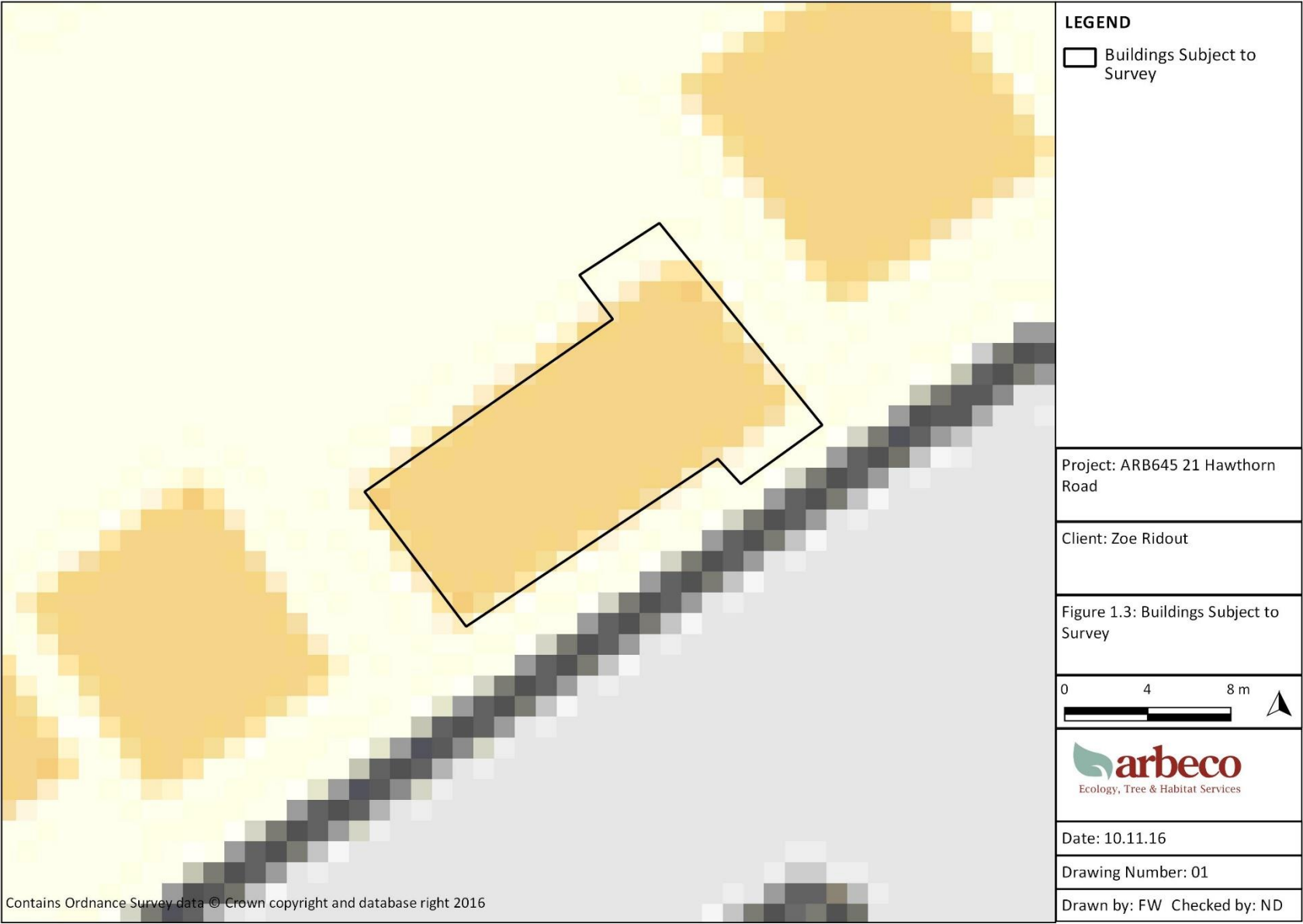
**Figure 1.3 Buildings subject to survey**

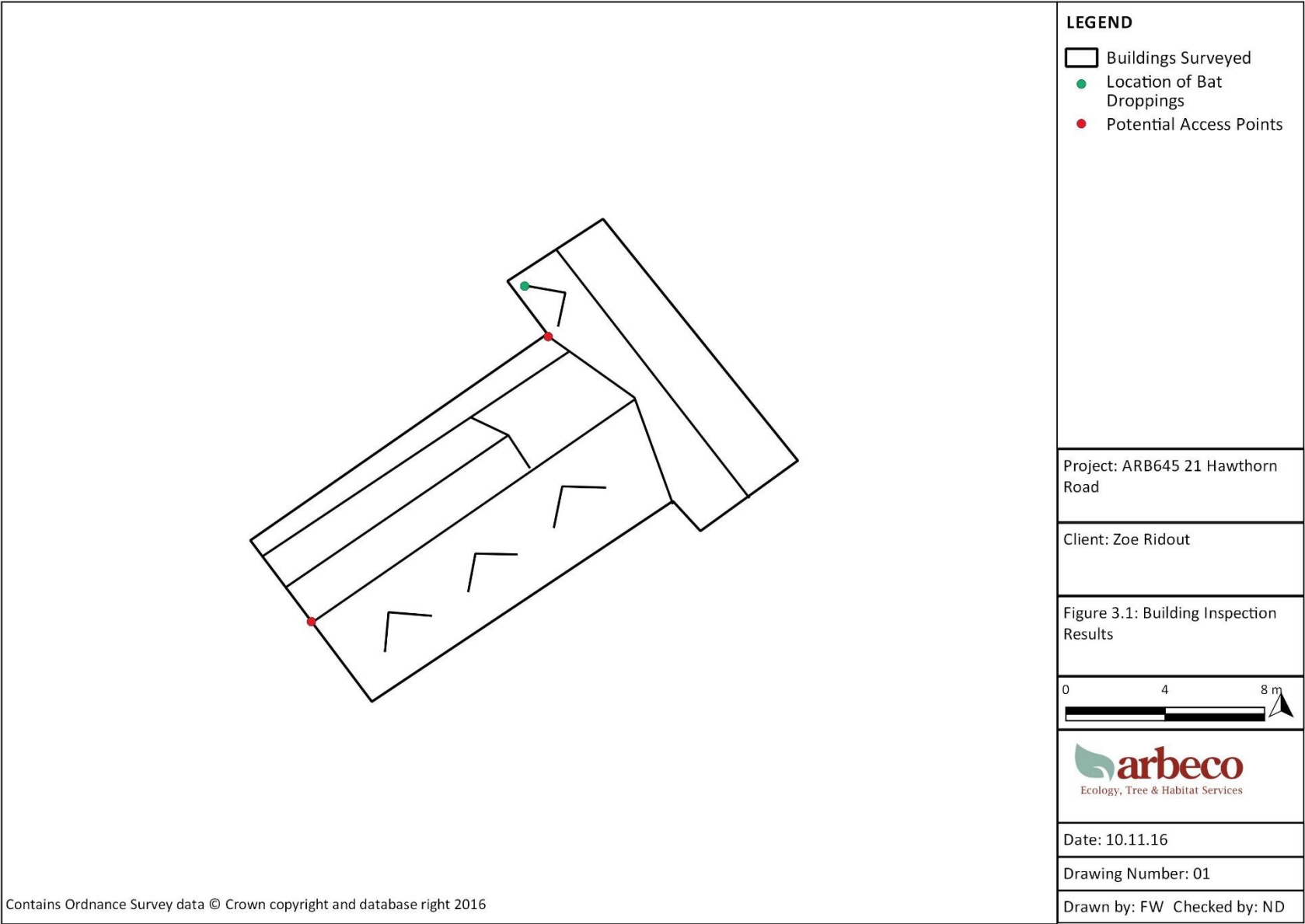
**Figure 3.1 Building inspection results**

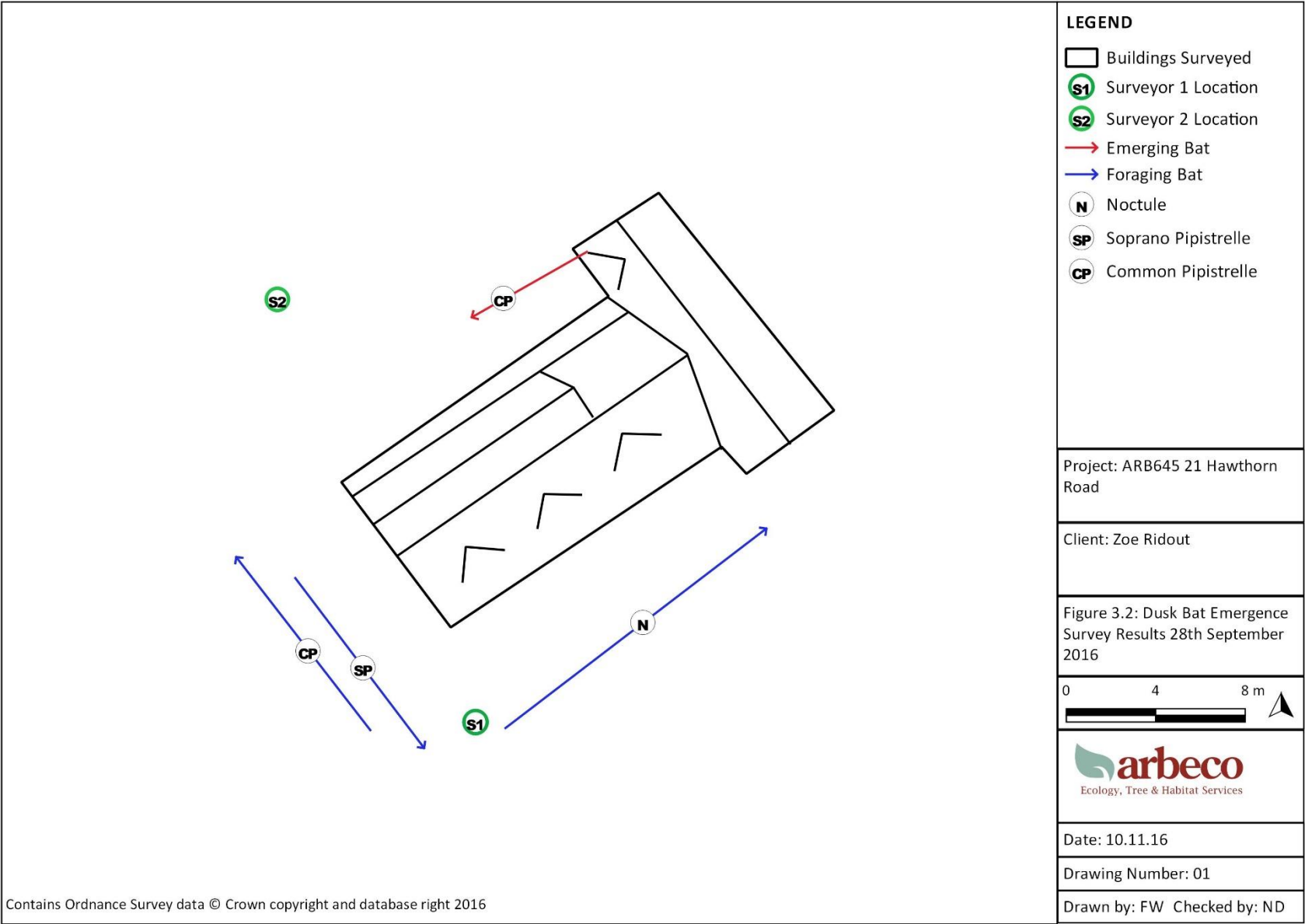
**Figure 3.2 Dusk emergence survey results 28<sup>th</sup> September 2016**











## APPENDIX 1: Legislation relating to bats

Bats and the places they use for shelter or protection i.e. roosts, receive European protection under The Conservation of Habitats and Species Regulations 2010, as amended (Habitats Regulations 2010, as amended). They receive further legal protection under the Wildlife and Countryside Act (WCA) 1981, as amended. This protection means that bats, and the places they use for shelter or protection, are capable of being a material consideration in the planning process.

Regulation 41 of the Habitats Regulations 2010 (as amended), states that a person commits an offence if they:

- deliberately capture, injure or kill a bat;
- deliberately disturb bats; or
- damage or destroy a bat roost (breeding site or resting place).

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, or in the case of animals of a hibernating or migratory species, to hibernate or migrate; or to affect significantly the local distribution or abundance of the species to which they belong.

It is an offence under the Habitats Regulations 2010 (as amended) for any person to have in his possession or control, to transport, to sell or exchange or to offer for sale, any live or dead bats, part of a bat or anything derived from bats, which has been unlawfully taken from the wild.

Whilst broadly similar to the above legislation, the WCA 1981 (as amended) differs in the following ways:

- Section 9(1) of the WCA makes it an offence to *intentionally* (rather than deliberately) kill, injure or take any protected species.
- Section 9(4)(a) of the WCA makes it an offence to *intentionally or recklessly\** damage or destroy, *or obstruct access to*, any structure or place which a protected species uses for shelter or protection.
- Section 9(4)(b) of the WCA makes it an offence to *intentionally or recklessly\** disturb any protected species *while it is occupying a structure or place which it uses for shelter or protection*.

\*Reckless offences were added by the Countryside and Rights of Way (CROW) Act 2000.

As bats re-use the same roosts (breeding site or resting place) after periods of vacancy, legal opinion is that roosts are protected whether or not bats are present.

Several bat species are considered to be Species of Principal Importance for Nature Conservation in England.

The reader should refer to the original legislation for the definitive interpretation.

## APPENDIX 2: Site Photographs



**Photograph 1:** Front of house, south facing.



**Photograph 2:** The rear of the house, north facing.



**Photograph 3:** Gaps beneath hanging tiles around the roof of the property.



**Photograph 4:** Gaps within the mortar of the ridge at the gable end to the west of the property.



**Photograph 5:** Gaps between hanging tiles by the valley meeting point to the rear of the north facing property.



**Photograph 6:** Droppings recorded on the lead flashing beneath a roof dormer window on the rear elevation.



**Photograph 7:** Internal roof void.

## Appendix 3: DNA Results



28 October 2016

Re: Bat Identification Results for Emily Rich, Arbeco Ltd

Bat job number 8506, received 07 October 2016

Sample labelled: ARB645- Hawthorne 14/09/16

PCR amplification successful. DNA sequence:

TCTGATGTGTAGTGTATGGCAAGAAATAAGCCCGTTAGGATCTGTAGTCCCAAACAG  
ATGCCTAATAGGGACCCAAAATTTTCATCATGCTGAAATGTTTGATGGAGCTGG

Phylogenetic analysis identification: *Pipistrellus pipistrellus*

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

The EcoWarwicker Team

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.