



# **West Winch Housing Access Road**

## **Environmental Statement Chapter 8: Biodiversity Annex 8.16 Bat Crossing Point Survey Report**

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# 1 Introduction

## 1.1 Methodology

### Overview

- 1.1.1 Bat Crossing Point surveys were undertaken for the Proposed Scheme within the (previous) Scheme Boundary (all maps have been updated with the latest Scheme Boundary (October 2023)).
- 1.1.2 The methodology applied for all survey techniques and bat call analysis was completed with reference to best practice guidance and industry standards: British Bat Calls: A Guide to Species Identification (Russ J. , 2012), and Development of a Cost Effective Method for Monitoring the Effectiveness of Mitigation for Bats Crossing Linear Transport Infrastructure (Berthinussen & Altringham, 2015).
- 1.1.3 Crossing point surveys were undertaken by surveyors sat in static positions and using thermal imaging or infra-red cameras to identify the behaviour of bats at linear habitat features (woodland, hedgerows, treelines and ditches) due to be intersected by the Proposed Scheme. Surveys were also undertaken where the A47 is to be dualled. Observations were made regarding height, distance from feature and direction of flight, behaviour and time after sunset.
- 1.1.4 Surveys were undertaken for 1.5 to 2 hours which is an extended survey period to those described in the guidance material above. This was to ensure that woodland adapted species could be detected.

### Surveys

- 1.1.5 A series of crossing point bat surveys were completed in the months of August and September during 2021 and 2022. Surveys were undertaken with reference to the DEFRA guidelines (Berthinussen & Altringham, 2015) these were intended to contribute to the overall bat activity dataset, and specifically gather qualitative information such as number of bats, species, species



behaviour, bat flight height, and activity information for all species, across the Proposed Scheme.

- 1.1.6 A total of seven crossing point survey locations were surveyed in total , with six locations surveyed in 2022 and one location surveyed in 2021, as shown in Appendix A. These locations required surveys in line with the DEFRA guidelines. As such, two scoping crossing point surveys at each of these locations were conducted to determine whether the additional four surveys were required. Where more than ten bats were recorded commuting along a linear feature, or one to five for rare species (depending on rarity, such as one Barbastelle *Barbastella barbastellus*) a further four surveys were required to make a total of six crossing point surveys per location. None of the crossing point survey locations met this threshold within the two scoping crossing point surveys.
- 1.1.7 The aim of the surveys was to use visual observation and thermal and infrared imagery to determine the direction of flight, flight heights and behaviour of bats in relation to the linear features as well as species and number of bats, with particular consideration for Barbastelle as a rare bat species.
- 1.1.8 Each crossing point survey in 2022 began at sunset and continued for 90 minutes. Surveys were undertaken for 90 minutes after sunset to survey and record bat activity. The 2021 surveys were conducted for two hours, with the second survey start time delayed until one hour after sunset. This change in survey timing was to attempt to detect and observe Barbastelle that had been frequently recorded at this time by static detectors placed at the location in 2021. Dates, start and end times, and meteorological data of these surveys are provided in Appendix B. The survey set-up is detailed in Table 2.
- 1.1.9 During each survey the surveyors noted the bat species heard and seen, including the time, location, and where possible gathered commentary on number of bats, behaviour and flight direction. In addition, where bats were observed by the surveyor, approximate height of flight and distance from



feature was noted. Flight heights and distance from feature were estimated using predetermined fixed points, where bats were clearly observed.

Surveyors were equipped with full spectrum bat detectors (EchoMeter Touch (EMT) Pro and Batlogger M2) to listen to and record bat activity. Calls registered by the bat detectors were recorded for later analysis using specialist computer software Kaleidoscope Pro, details are provided below.

1.1.10 As well as bat detectors, surveyors were equipped with a thermal imaging camera (model used was FLIR E95) or an infrared imaging camera (model Canon XA11 Compact Full HD Camcorder) to enable bats to be visualised after dark. Infrared cameras were used in conjunction with high powered infrared lamps to enable sufficient lighting coverage.

#### Data analysis

1.1.11 Bat call data recorded on detectors during these surveys were analysed manually by ecologists with experience in bat call analysis. Where multiple surveyors on a crossing point survey detected and/or recorded a bat at the same time, this was recorded as a single individual to prevent duplication.

1.1.12 During the analysis, all call files (including noise files) were manually checked for bat species to make sure all bat species were recorded in the field.

1.1.13 In addition to this, the thermal imaging and infra-red imaging camera footage was analysed by ecologists where required, due to a query in the field.

Camera footage was also reviewed where data was not recorded in the field (e.g., where height data or numbers were unclear).



**Table 1-1 Summary of bat crossing point survey locations (relating to Appendix A)**

| Reference        | Location   | Feature  | Surveyor setup   | Location survey objective  |
|------------------|--|--|--|--|
| Crossing point 1 | Underpass under A47, east of Hardwick interchange. | Underpass running west to east under A47, from woodland to arable field, east of Hardwick interchange. | One pair of surveyors located west of the underpass, facing east towards the underpass.  | To determine the nature of use by bats (their flight height and direction) of the underpass under the A47 which is to be dualled. This survey data will inform mitigation design in this location, if required.                  |
| Crossing point 2 | A47, south of A47 barns                            | A47  | One pair of surveyors located south of the entrance to the A47 barns, facing east towards the A47.   | To determine whether bats are crossing the A47, (their flight height and direction) where the A47 is to be dualled. This survey data will inform mitigation design in this location, if required.                                |
| Crossing point 3 | Edge of woodland, north of Rectory Lane            | Edge of woodland, north of Rectory Lane,   | One pair of surveyors located in the arable field bordering the woodland north of Rectory Lane, at the end of the track, facing west along the edge of the woodland. | To determine the nature of use by bats (their flight height and direction) of the woodland edge which is to be intersected by the Proposed Scheme. This survey data will inform mitigation design in this location, if required. |



| Reference        | Location                        | Feature                                    | Surveyor setup  | Location survey objective   |
|------------------|---------------------------------|--|---|---|
| Crossing point 4 | Rectory Lane.                   | Hedgerows north and south of Rectory Lane. | One pair of surveyors in the arable field north of Rectory Lane, next to the track, facing west along the hedgerow and south-west along the road and southern hedgerow. | To determine the nature of use by bats (their flight height and direction) of the hedgerows which are to be intersected by the Proposed Scheme. This survey data will inform mitigation design in this location, if required.     |
| Crossing point 5 | Chequers Lane.                  | Line of trees north of Chequers Lane.      | One pair of surveyors in the arable field south of Chequers Lane, facing east along the line of trees and north along the road.   | To determine the nature of use by bats (their flight height and direction) of the line of trees which are to be intersected by the Proposed Scheme. This survey data will inform mitigation design in this location, if required. |
| Crossing point 6 | Ditches south of Chequers Lane. | Ditches south of Chequers Lane.            | One pair of surveyors located at the crossing between the three ditches, facing west along the ditch to be intersected by the Proposed Scheme.                          | To determine the nature of use by bats (their flight height and direction) of the ditch which is to be intersected by the Proposed Scheme. This survey data will inform mitigation design in this location, if required.          |



| Reference        | Location  | Feature                   | Surveyor setup   | Location survey objective  |
|------------------|---|---------------------------|--|--|
| Crossing point 7 | Field boundary with mature trees north of Chequers Lane and north of North Runcton Common | Field boundary with trees | Three surveyors. One surveyor on east of field boundary and two surveyors on west, separated by a ditch. | To determine the nature of use by bats across the T-shaped feature. The feature comprises a field boundary with trees and a ditch lies to the west of the feature. This survey data will inform mitigation design in this location, if required. |

Dates of Survey and Personnel

1.1.14 Crossing point surveys were completed in August and September 2022. For full list of dates, see Appendix B Crossing point surveys were undertaken by surveyors with experience in conducting bat activity surveys.

Notes and Limitations

1.1.15 Every effort has been made to provide a comprehensive set of survey data; however, the following assumptions and limitations and notes have been considered for these surveys.

1.1.16 All surveys were undertaken in August and September only. Static detector surveys undertaken across the Survey Area throughout the core activity period (April to October) identified high levels of activity for all species in August and September. For some species at certain locations, August and September returned peak activity levels across the Survey Area. Therefore this is not considered to be a limitation to this survey data.

1.1.17 Due to the limited field of view of thermal imaging cameras, bats were frequently recorded by bat detectors but not observed by surveyors or recorded by the thermal imaging cameras. The field of view was sufficient to cover the features and 5 to 10m either side of the feature and so it is assumed





that these bats were not using the linear feature or habitat subject to the surveys, in addition, cameras were panned (moved horizontally) where possible to observe bats. Data collected is considered valid and not a limitation to the survey.

## 2 Results

### 2.1 Field Survey

2.1.1 At least seven bat species were recorded using habitats within the Survey Area during the crossing point surveys. The following species and species groups were confirmed and will be discussed as follows;

- Barbastelle;
- Common Pipistrelle *Pipistrellus pipistrellus*;
- Soprano Pipistrelle *Pipistrellus pygmaeus*;
- *Myotis* species;
- Noctule *Nyctalus noctula*;
- *Nyctalus* species (Noctule or Leisler's bat *Nyctalus leisleri*);
- Brown Long-eared bat *Plecotus auritus*; and
- Unidentified bat species.

#### Crossing Point 1

2.1.2 A total of two surveys were undertaken at this location on 30 August 2022 and 20 September 2022. During both surveys continuous foraging by Common Pipistrelle was recorded within the A47 underpass and surrounding woodland habitat.

#### **30 August 2022**

2.1.3 A total of 19 passes were recorded at CP1. Of these passes, 16 were observed foraging and three were heard but not observed by surveyors. A



total of 14 of the passes were from bats foraging within the underpass with bats observed on two occasions foraging at road level near to street lights. Further details of the passes observed during the survey are summarised below.

2.1.4 The Pipistrelle activity was from two to three individuals foraging continuously at occasions throughout the survey. Where breaks in activity occurred for more than one minute, the bats were then recorded as additional passes. It is considered likely that the activity recorded was from the same two or three individuals using the underpass and surround areas as foraging habitat.

- Two to three individual bats were observed foraging through the underpass at less than 1 to 3m, from north to south and vice versa, with some of those bats returning east again (on eight occasions) foraging along the farm track that segregates two parcels of woodland. Of these bats, nine were Common Pipistrelle, two were Soprano Pipistrelle and on one occasion was a Brown Long-eared bat.
- Two bats were observed foraging over the road at 4 to 5m above the road level, from south to north and back again. Both bats were Common Pipistrelle.

### **20 September 2022**

2.1.5 A total of five passes were recorded at CP1. All of these passes were observed foraging. All but one bat was observed foraging within the underpass. It should be noted that the five passes include constant foraging activity by up to four individual bats. Where there were breaks in activity for more than one minute, further activity was recorded as new passes. Further details of the passes observed during the survey are summarised below:

- Up to four individual bats were observed foraging through the underpass at 2-3m, (on one occasion) and (on three occasions), with some of those bats returning east again (on two occasions). Of these bats, two were Common Pipistrelle and two were Soprano Pipistrelle.



- An individual bat was observed foraging north at 3m along the eastern side of the underpass. This was an unidentified bat species and is likely to be a Brown Long-eared Bat.

#### Crossing Point 2

2.1.6 A total of two surveys were undertaken at this location on 1 September 2022 and 22 September 2022. A single bat was observed commuting across the road once within these surveys.

#### **01 September 2022**

2.1.7 A total of four passes were recorded at CP2. Of these passes, three were observed commuting, with two of which commuting parallel to the road and one of which was observed crossing the road. A single bat was observed foraging. Further details of the passes observed during the survey are summarised below:

- A single Noctule was observed commuting north across the road at over 5m.
- A single Soprano Pipistrelle was observed commuting north-west along the field boundary at 4m, in a direction that ran parallel to the road.
- A single Soprano Pipistrelle was observed commuting east behind the surveyors along the field boundary at 5m.
- A single Noctule was observed foraging south-east of the A47 along the edge of the field at 3m.

#### **22 September 2022**

2.1.8 A total of nine passes were recorded at CP2. Of these passes, four were observed commuting, one was observed foraging and three were heard but not observed by surveyors. None of the observed passes crossed the road. Further details of the passes observed during the survey are summarised below:



- A single Soprano Pipistrelle was observed commuting east from the field then continuing south-east along the edge of the field at over 4m.
- A single Common Pipistrelle was observed commuting south-east along the field boundary at over 3m.
- A single Soprano Pipistrelle was observed commuting northwest from the field and heading along the field boundary, past the surveyors, at 2m.
- Two bats were observed commuting over the barn, from the south (on one occasion) and the north (on one occasion) at 3m. One of these observed bats was also foraging. Of these bats, one was a Soprano Pipistrelle and the other a Common Pipistrelle.

### Crossing Point 3

2.1.9 A total of two surveys were undertaken at this location on 1 September 2022 and 22 September 2022. Individual bats were observed foraging along the feature in both surveys and a single bat was observed commuting once along the feature within one of these surveys.

#### **1 September 2022**

2.1.10 A total of nine passes were recorded at CP3. Of these passes, one was observed commuting, six were observed foraging and two were heard but not seen by surveyors. All but one of the observed bats were utilising the feature. Further details of the passes observed during the survey are summarised below:

- An individual bat was observed commuting west along the woodland edge at 4m. This was a Soprano Pipistrelle.
- Individual bats were observed foraging along the edge of the woodland at 2 to 3m, from the east (on four occasions) and from the west (on one occasion), then entering into the woodland and returning (on one occasion). Of these bats, three were Soprano Pipistrelle and two were Common Pipistrelle.



- An individual bat was observed foraging south out of the woodland and circling east towards the hedgerow at 3m. The observed bat was a Soprano Pipistrelle.

### **22 September 2022**

2.1.11 A total of ten passes were recorded at CP3. Of these passes, three were observed foraging and seven were heard but not observed by surveyors. All but one of the observed bats were utilising the feature. Further details of the passes observed during the survey are summarised below:

- Single bats were observed foraging along the woodland edge at 1 to 2m, from the east (on one occasion) and the west (on one occasion). Both these bats were Common Pipistrelle.
- An single bat was observed foraging along the hedgerow running north to south behind the surveyors at 0.5m above ground level. The foraging lasted for approximately five minutes and the bat was approximately 1m from the hedgerow. The observed bat was a Soprano Pipistrelle.

### **Crossing Point 4**

2.1.12 A total of two surveys were undertaken at this location on 5 September 2022 and 28 September 2022. Individual bats were observed foraging and commuting along the feature during the first survey and a single bat was observed commuting and foraging along the feature during the second survey.

### **5 September 2022**

2.1.13 A total of ten passes were recorded at CP4. Of these passes, two were observed commuting, two were observed foraging, one was observed foraging and commuting and five were heard but not observed by the surveyors. All of the observed bats were utilising the feature. Further details of the passes observed during the survey are summarised below:



- Single bats were observed commuting along the hedgerow at 2 to 3m, from the east (on one occasion) and the west (on two occasions). One of these bats then continued to forage in the field. Of these bats, one was a Soprano Pipistrelle and two were Brown Long-eared bats.
- Individual bats were observed foraging along the hedgerow at 2 to 3m from the east (on one occasion) and the west (on one occasion). One of these bats continued to forage along the hedgerow for approximately 13 minutes. Of these bats, one was a Brown Long-eared bat and the other a Soprano Pipistrelle.

### **28 September 2022**

2.1.14 A total of seven passes were recorded at CP4. Of these passes, one was observed commuting and foraging and six were heard but not observed by the surveyors. The only observed bat was utilising the feature. Further details of the passes observed during the survey are summarised below:

- An individual bat was observed foraging and commuting along the hedgerow at 2m, from the east. This bat was a Soprano Pipistrelle.

### **Crossing Point 5**

2.1.15 A total of two surveys were undertaken at this location on 08 September 2022 and 28 September 2022. Individual bats were observed foraging along the feature during the first survey and observed commuting along the feature in the second survey.

### **08 September**

2.1.16 A total of 17 passes were recorded at CP5. Of these passes, one was observed commuting, twelve were observed foraging and four were heard but not observed by the surveyors. Of these bats, six were observed utilising the feature. Further details of the passes observed during the survey are summarised below:

- An individual Soprano Pipistrelle was observed commuting from the hedgerow into the field at 10m, from east to west.



- Individual bats were observed foraging in the road at 1 to 5m, from the east (on three occasions) and from the west (on two occasions). All but one of these bats continued to forage in the road for multiple passes. All of these bats were Soprano Pipistrelle.
- An individual Common Pipistrelle was observed foraging along the hedgerow at 3m, from east to west.
- The remaining six observed foraging bats were not utilising the feature and were observed foraging at 3 to 60m, from the east (on three occasions), from the west (on one occasion) and from the north (on one occasion). Of these bats, four were Soprano Pipistrelle, one was a Common Pipistrelle and one was a Noctule.

## 28 September

2.1.17 A total of 15 passes were recorded at CP5. Of these passes, six were observed commuting and nine were heard but not observed by the surveyors. All but one of the observed bats was utilising the feature. Further details of the passes observed during the survey are summarised below:

- Individual bats were observed commuting along the line of trees at 1 to 5m from the east (on one occasion) and the west (on four occasions). Of these bats, one crossed the tree line from the north before commuting along the tree line and another continued south into the field once commuting along the tree line. Of these bats, three were Soprano Pipistrelle, one was a Common Pipistrelle and one was an unidentified bat.
- An individual *Nyctalus* sp. was observed commuting at 15m from north to south across the line of trees.

## Crossing Point 6

2.1.18 A total of two surveys were undertaken at this location on 16 September 2022 and 28 September 2022. No bats were observed during either of these surveys.



### **16 September 2022**

2.1.19 A total of five passes were recorded at CP6. All of the passes were heard but not observed by surveyors. Of these passes, three were Common Pipistrelle, one a Soprano Pipistrelle and one a Noctule.

### **28 September 2022**

2.1.20 A total of two passes were recorded at CP6. Both passes were heard but not observed by surveyors. One pass was a Common Pipistrelle and the other a Soprano Pipistrelle.

### **Crossing Point 7**

2.1.21 A total of two surveys were undertaken at CP7 on 12 August 2021 and 21 September 2021. Bat activity was recorded during both surveys. Activity included foraging and commuting along the field boundary on the east of the hedgerow, with the majority of activity recorded near to the North Runcton Common to the south of the crossing point feature.

### **12 August 2021**

2.1.22 A total of 22 bat passes were recorded at CP7. This activity included seven bats utilising the feature and 15 registrations where bats were heard but not observed at the feature using night vision aids. This registration included a three passes by Common Noctule that was likely a long way from the feature, eight Soprano Pipistrelle, three Common Pipistrelle and one Brown Long-eared Bat.

2.1.23 Six individual bat passes were recorded commuting along the feature in a north/south direction. Three were Common Pipistrelle and three were Soprano Pipistrelle. One Soprano Pipistrelle was recorded foraging through the boundary trees in a south to north direction. Flight paths were typically five to 10m into the arable field and 2 to 4m above ground level.

### **21 September 2021**

2.1.24 A total of 15 call registrations were detected at CP7. All passes were heard and not seen by the surveyors located in the northwest surveyor position.





Surveyors on the east side of the field boundary and trees identified bats foraging near to the wooded area within North Runcton Common, south of the feature. Bats were occasionally observed foraging along the feature and returning towards North Runcton Common. No bats were observed foraging or commuting along the full length of the feature. This included a single Common Pipistrelle that was observed foraging towards the survey position east of the feature. The bat was circling and returning to the area south of the feature. Barbastelle activity was recorded for approximately 5 minutes towards the end of the survey although they were heard and not observed using the feature. Camera were used to scan the area for these passes and none were observed and so it is likely that they were high above the surveyor positions or outside of the range of the camera equipment and so unlikely to be using the feature for foraging or commuting.

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