A428 Black Cat to Caxton Gibbet improvements

TR010044

Volume 9

9.99 Habitats Regulations Assessment: Report to Inform Appropriate Assessment

Planning Act 2008

Rule 8(1)(k)

Infrastructure Planning (Examination Procedure) Rules 2010

January 2022

Infrastructure Planning

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Development Consent Order 2021

9.99 Habitats Regulations Assessment: Report to Inform Appropriate Assessment

Regulation Reference:	Rule 8(1)(k)
Planning Inspectorate Scheme Reference	TR010044
Application Document Reference	TR010044/EXAM/9.99
Author	A428 Black Cat to Caxton Gibbet improvements Project Team, National Highways

Version	Date	Status of Version
Rev 1	14 January 2022	Deadline 8

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Foreword

The purpose of the A428 Black Cat to Caxton Gibbet scheme (the Scheme) is to address the problems of congestion, poor journey time reliability and poor resilience against incidents between the Black Cat and Caxton Gibbet roundabouts. The Scheme seeks to address these problems through construction of a new 10 mile (16 kilometres) dual 2-lane carriageway from the Black Cat roundabout to Caxton Gibbet roundabout, to be known as the A421, and in addition approximately 1.8 miles (3 kilometres) of tie-in works as.

The Scheme includes the following components:

a. A new three-level grade separated junction at Black Cat roundabout, with the A1 at the lower level, the new dual carriageway on the upper level and a roundabout between the two at approximately existing ground level. In addition to slip roads a new free flowing link between the A421 eastbound carriageway and the A1 northbound carriageway will also be provided.

b. A new grade separated all movements junction will be constructed to the east of the existing Cambridge Road roundabout to provide access to the new dual carriageway and maintain a continuous link for the existing A428.

c. At the Caxton Gibbet roundabout, a new grade separated all movements junction will be constructed, incorporating the existing roundabout on the south side of the new dual carriageway and a new roundabout on the north side. The new dual carriageway will then tie-in to the existing A428 dual carriageway to the east of the new Caxton Gibbet junction.

d. In the vicinity of the new Black Cat junction, direct access onto the A1 from some local side roads and private premises will be closed for safety reasons. A new local road will provide an alternative route. The existing Roxton Road bridge will be demolished and replaced with a new, taller structure to the west.

e. New crossings will be constructed to enable the new dual carriageway to cross the River Great Ouse, East Coast Main Line railway, Barford Road, the B1046/Potton Road, Toseland Road and the existing A428 at Eltisley.

f. The existing A428 between St Neots and Caxton Gibbet will be de-trunked and retained for local traffic and public transport with maintenance responsibility transferred to the local highway authorities.

g. An alternative access will be provided to side roads at Chawston, Wyboston and Eltisley.

h. There will be safer routes for walkers, cyclists, and horse riders and improved connections to St Neots town centre and train station.

A more detailed description of the Scheme can be found in Chapter 2, The Scheme **[APP-071]** of the Environmental Statement.

The objectives of the Scheme are:

i. **Connectivity**: Cut congestion and increase capacity and journey time reliability between Milton Keynes and Cambridge, including by providing a free-flowing network.

j. **Economic growth**: Enable growth by improving connections between people and jobs and supporting new development projects.

k. **Safety**: Improve safety at junctions, side roads and private accesses by reducing traffic flows on the existing A428. Improve safety on the A1 by removing existing side road junctions and private accesses onto the carriageway.

l. **Environmental improvements**: Maintain existing levels of biodiversity and have a beneficial impact on air quality and noise levels in the surrounding area.

m. **Accessibility**: Ensure the safety of cyclists, walkers and horse riders and those who use public transport by improving the routes and connections between communities.

n. **Resilience**: Improve the reliability of the road network so that it can cope better when accidents occur.

o. **Customer Satisfaction**: Listen to what is important to our customers to deliver a better road for everyone and improve customer satisfaction.

1 Introduction

1.1 Background

1.1.1 National Highways has undertaken a Stage 1 Habitats Regulations Assessment (HRA) to screen out likely significant effects on European sites which is recorded in a No Significant Effects Report (NSER) **[APP-233]**.

1.1.2 The analysis and conclusions in the NSER **[APP-233]** have been accepted by Natural England, save in respect of those relating to Eversden and Wimpole Woods Special Area of Conservation (SAC), for which Natural England have requested the HRA proceeds to Stage 2: Appropriate Assessment. The Applicant has undertaken further studies set out in the Barbastelle Bat Surveys and Mitigation Technical Note **[TR010044/EXAM/9.54v4]** which support the original conclusion of the NSER **[APP-233]** in relation to the Eversden and Wimpole Woods SAC and, in the Applicant's opinion, confirm that Likely Significant Effects can be ruled out at Stage 1. However, entirely without prejudice to the Applicant's position, the Applicant has produced this Stage 2 report to inform an Appropriate Assessment for the Eversden and Wimpole Woods SAC, should the Secretary of State consider that it is necessary to undertake an Appropriate Assessment in the determination of the DCO application.

1.1.3 This report contains information to inform an Appropriate Assessment, should this be considered necessary by the Secretary of State for Transport, regarding the degree of connectivity between the area of the Scheme and the Eversden and Wimpole Woods SAC, designated for Barbastelle bats (*Barbastella barbastellus*) and located 8.1 kilometres (5.0 miles) to the south-east of the Order Limits at its closest point, as illustrated on **Figure 1** in **Appendix B**. The report provides information on whether the risk of adverse effects on the integrity of the Eversden and Wimpole Woods SAC arising from the Scheme can be ruled out, both alone and in combination with other plans and projects.

1.1.4 An assessment of the implications on the Eversden and Wimpole Woods SAC, associated with the Scheme has been undertaken following guidance in the Design Manual for Roads and Bridges (DMRB) Volume LA 115 Habitats Regulations Assessment (Revision 1) [REF 1-1] and PINS Advice Note 10: Habitat Regulations Assessment relevant to nationally significant infrastructure projects (Planning Inspectorate, 2013) [REF1-12].

1.1.5 This report provides information to enable the Secretary of State for Transport (the competent authority for HRA regarding Development Consent Orders) to determine whether an Appropriate Assessment is required and, without prejudice to the Applicant's position as set out above, to undertake the assessment pursuant to Regulation 63(2) of the Conservation of Habitats and Species Regulations 2017 [Ref 1-9] should this be considered necessary.

1.2 Legislative Context

1.2.1 Under the Conservation of Habitats and Species Regulations 2017 [REF 1-9] (as amended) consent should only be granted for plans and projects once the relevant competent authority has ascertained that there will either be no likelihood of significant effects, or no adverse effect on the integrity of the European Site(s) in question. Where an Appropriate Assessment has been carried out and an adverse effect on integrity remains, consent will only be granted if there are no alternative solutions and there are Imperative Reasons of Overriding Public Interest (IROPI) for the development and compensatory measures have been secured.

1.2.2 The competent authority is entitled to request the applicant to produce such information as the competent authority may reasonably require for the purposes of the assessment, or to enable it to determine whether an appropriate assessment is required.

1.2.3 Over the years, 'Habitats Regulations Assessment' has come into wide currency to describe the overall process set out in the Habitats Regulations, from screening through to identification of IROPI. This has arisen in order to distinguish the overall process from the individual stage of "Appropriate Assessment". Throughout this Report the term HRA is used for the overall process and the use of Appropriate Assessment is restricted to the specific stage of that name.

1.2.4 In relation to Nationally Significant Infrastructure Projects, the Secretary of State for Transport acts as the competent authority with a duty to conduct an HRA.

1.3 Quality Assurance

1.3.1 The ecologists that have compiled this report are members of (at the appropriate level) the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow its code of professional conduct [REF 1-24] when undertaking ecological work.

2 Eversden and Wimpole Woods SAC

2.1.1 This report contains Information to Inform Appropriate Assessment on whether the Scheme, either alone or in combination with other plans and projects, will give rise to an adverse effect on the integrity of the Eversden and Wimpole Woods SAC. In particular, the report considers the degree of connectivity between the Scheme and the Eversden and Wimpole Woods SAC, and whether this information alone enables a conclusion of no adverse effect on integrity.

2.1.2 The key characteristics of the Eversden and Wimpole Woods SAC are summarised in **Table 2-1**. Baseline data collection was undertaken through a combination of desk study (see Appendix 8.5, Bats **[APP-192]** of the Environmental Statement), consultation and meetings with Natural England and bespoke field survey as reported in 9.54 Barbastelle bat surveys and mitigation Technical Note (Rev 4) **[TR010044/EXAM/9.54v4]**.

Table 2-1: Eversden and Wimpole Woods SAC

Physical area of the European site	66.2 ha
The qualifying interests of the European site	Annex I habitats that are a primary reason for selection: - Not applicable Annex II species that are a primary reason for selection: - Barbastelle bat (*Barbastella barbastellus*)
European site conservation objectives	The Conservation Objectives for the SAC state: *-Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:* *-The extent and distribution of qualifying natural habitats and habitats of the qualifying species;* *-The structure and function (including typical species) of qualifying natural habitats;* *-The structure and function of the habitats of qualifying species;* *-The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;* *-The populations of qualifying species; and* *-The distribution of qualifying species within the site.* *-Maintain the presence, structure and quality of any linear landscape features which function as flight-lines between the SAC and surrounding foraging areas used by Barbastelles.*

	-Maintain core areas of feeding habitat outside of the SAC boundary that are critical to Barbastelle bats during their breeding period.
Details of the existing baseline conditions of the European site including details of data collection methodologies and consultations undertaken	In line with the survey scope presented in the Eversden and Wimpole Woods SAC Technical Note **[REP1-032]**, bat trapping and radio-tagging have been undertaken close to known roost locations within the SAC. The aim of this survey was to radio-track Barbastelle movements within habitats located between the SAC and the Scheme to determine if Barbastelle were using habitats within the Scheme's Order Limits during the autumn period. A total of seven Barbastelle of both sexes, including one juvenile male, were trapped and tagged during the surveys on 23 and 24 September 2021. Analysis of the survey results conclude that the bats trapped and tagged within the SAC as part of these surveys did not roost or spend any time foraging or commuting within or close to the Order Limits of the Scheme. Also, walked activity transects and static detector surveys were undertaken within the SAC to identify autumn usage of the SAC by Barbastelle. Barbastelle were recorded soon after expected emergence times, indicating these bats were likely to come from roosts located within the Wimpole Woods section of the SAC. The population of Barbastelle for the Eversden and Wimpole Woods SAC has been estimated as up to 50 individuals (minimum 11) [REF 1-25]. In 2001, it was estimated that there were 20 females in Wimpole Woods and an additional maternity roost of at least 15 was found in 2005 [REF 1-21 and 1-22]. Given these data and the number caught by the Applicant, (seven bats) and observations of other Barbastelle flying around the site during surveys in 2021 **[TR010044/EXAM/9.54v4]**, 50 is regarded as a more accurate estimate.
The value of the European site and qualifying interests therein to the National Site Network	According to the JNCC page for the SAC, Eversden and Wimpole Woods are ancient woodland of ash-maple type which is now very localised in extent, both locally and in lowland England as a whole. The site is one of the largest remaining areas of such woods on the chalky boulder clay in Cambridge and contains a rich assemblage of woodland plants including some uncommon species. The site holds colonies of Barbastelle bat, the sole European designated feature of the site. The bats are associated with the trees in Wimpole Woods, which are used as a summer maternity roost where female bats gather to give birth to their young. The bats also use the site as a foraging area. Some of the woodland is also used as a flight path when bats forage outside the site.

Likely future changes in baseline conditions at the European site in the absence of the Scheme	In the absence of the Scheme, no particular changes to the baseline conditions of the European site are anticipated.
Details of the key species, habitat dynamics and functional relationships that maintain the European site integrity	The Eversden and Wimpole Woods site was designated as a SAC to contribute to conserving Barbastelle (a species listed in Annex II of the Habitats Directive). Eversden Wood is predominantly a relict coppice of ash and field maple over an under-storey of hazel (*Corylus avellana*), with aspen (*Populus tremula*), birch (*Betula* species) and small-leaved elm (*Ulmus minor*) also locally dominant. This type of woodland is now very localised in extent, both in this area and in lowland England as a whole. The site is one of the largest remaining areas of such woods on the chalky boulder clay in Cambridge and contains a rich assemblage of woodland plants including some uncommon species. A colony of barbastelle bats is associated with this site and is the sole reason for the SAC designation on Eversden and Wimpole Woods.

2.1.3 Eversden and Wimpole Woods SAC is located 8.1 kilometres (5.0 miles) to the south-east of the Order limits at its closest point, as illustrated on **Figure 1** in **Appendix B**. The site comprises a mixture of ancient coppice woodland (Eversden Wood) and high forest woods likely to be of more recent origin (Wimpole Woods).

2.1.4 The SAC is internationally important for its breeding colony of Barbastelle. The trees within Wimpole Woods are used as a summer maternity roost where the female bats gather to give birth and rear their young. Most of the roost sites are within tree crevices. The bats also use the site as a foraging area, and some of the woodland is also used as a flight path when bats forage outside the site.

2.1.5 Studies undertaken to inform South Cambridgeshire District Council's *Local Development Framework: Biodiversity – Supplementary Planning Document (SPD)* (July 2021) [REF1-1] identified that the Barbastelle colony at the SAC does not restrict itself to the boundaries of the SAC but also forages in suitable habitat within the surrounding countryside. The studies established that mature trees within the SAC are used as roosts by the bats and provided information on the range and type of habitats used for foraging within an area around the site (referred to as the Core Area) [REF1-1]. The surveys undertaken by the Applicant in September to October 2021 as presented in the Barbastelle Bat Surveys and Mitigation Technical Note (Rev 4) **[TR010044/EXAM/9.54v4]** support these conclusions.

2.1.6 The extents of the Core Area are illustrated on **Figure 1** in **Appendix B**, the boundary of which is approximately 5.8 kilometres (3.6 miles) from the Order limits at its closest point. The Core Area includes key flight lines, foraging areas and habitats that are important to supporting the site's breeding population outside of the SAC.

2.1.7 This Core Area is relevant as it provides an indication of the area of land which could be sensitive to potential habitat loss and disturbance, for example, through lighting and noise.

2.1.8 A review of published studies and research (refer to **Table 2-2**) identifies that the mean distance for the home range of Barbastelle varies from 2 – 11.6km with maxima of 10.5 – 20km.

Table 2-2: Published studies and research list

Location/ study	Mean distance (km)	Maximum distance (km)	Notes	Source
Mottisfont Estate, Hampshire, and Houndtor Wood, Devonshire	2.0 – 11.6	20	Individual home ranges were found to vary considerably	Zeale *et al*., 2012 [REF 1-14]
Sussex Weald	5.2 (year 2008) 7.1 (year 1998)	10.5 (year 2008)	Foraging range was recorded up to 10.5 km away from the roost at Ebernoe Common. This figure is much shorter than the previously recorded 17.8 km in 1998. Management improved site conditions, suggesting the foraging habitat closer to the roosts is better than it was 10 years prior.	Greenaway, 2008 [REF 1-15]
Sussex	4.5 (minimum)	18	All foraging sites were within 250m of a watercourse	Altringham, 2005 [REF 1-16]
Ebernoe Common SAC	6.5km Key conservation area	12km Wider conservation area	Key conservation area in which all impacts must be considered as habitats within this zone are considered critical for sustaining the populations of bats within the SAC. The 12km encompasses the wider conservation area which is the full extent of the range of foraging areas required by the bats	Natural England and South Downs National Park Authority, 2018 [REF 1-23], using data from 2015

Location/ study	Mean distance (km)	Maximum distance (km)	Notes	Source
The Mens SAC	6.5km Key conservation area	12km Wider conservation area	Key conservation area in which all impacts must be considered, as habitats within this zone are considered critical for sustaining the populations of bats within the SAC. The 12km encompasses the wider conservation area which is the full extent of the range of foraging areas required by the bats	Natural England and South Downs National Park Authority, 2018 [REF 1-23], using data from 2015

2.1.9 Additionally, The Bat Conservation Trust's Survey Guidelines has defined the general Core Sustenance Zone for Barbastelle bats as a species as being 6km, based on evidence gathered from three studies of 69 bats [REF 1-11]. A CSZ refers to the area surrounding a communal bat roost within which habitat availability and quality will have a significant influence on the resilience and conservation status of the colony using the roost.

3 Assessment Method

3.1 Introduction

3.1.1 The entire HRA (including this report to Inform Appropriate Assessment) has been carried out with reference to the general EC guidance on HRA [REF 1-10] and PINS Advice Note 10 [REF 1-2]. This report has also been prepared in accordance with National Highways standard on HRA as set out in Design Manual for Roads & Bridges, Volume LA 115 Habitats Regulations assessment (Revision 1) [REF 1-1] on European sites.

3.1.2 PINS Advice Note 10 [REF 1-2] requires an evaluation of the potential for the Scheme to require other consents which could also require Habitats Regulations Assessment by different competent authorities, and a statement as to whether the Order Limits overlap with devolved administrations or other European Economic Area (EEA) States. It is confirmed that the Order Limits do not overlap with areas of devolved administrations or with those of other EEA States. It is also confirmed that no other consents are required for the Scheme relating to Eversden and Wimpole Woods SAC.

3.1.3 **Plate 2** below outlines the stages of HRA according to the Design Manual for Roads and Bridges. This corresponds with that in PINS Advice Note 10 [REF 1-2].

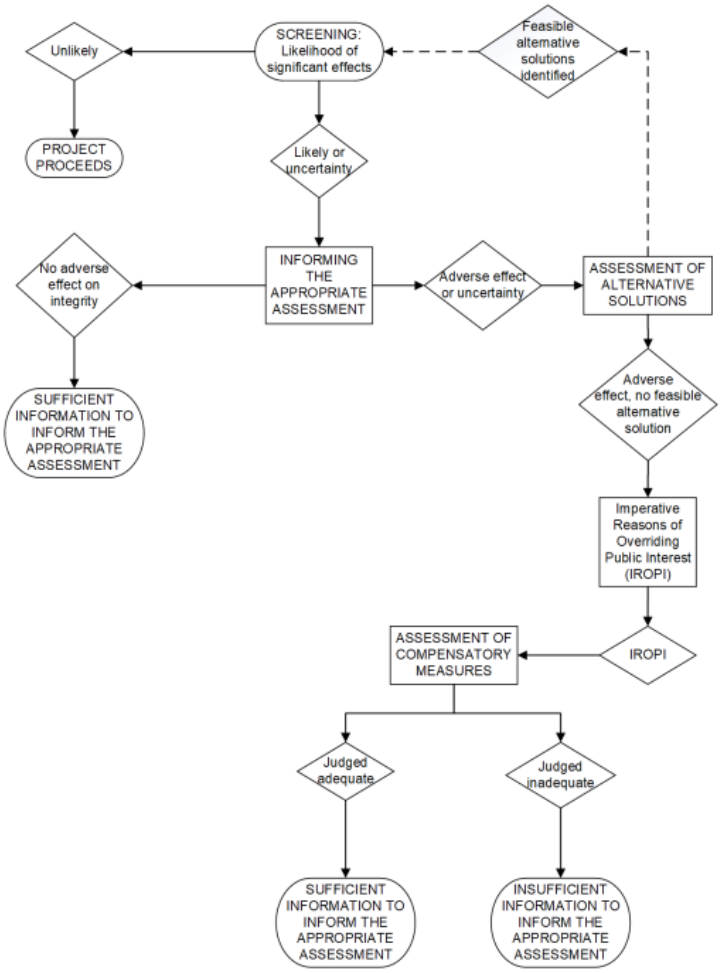


Plate 1. Generic Screening Process for Assessment of the Implications on European Sites. Source DMRB Volume LA 115 Habitats Regulations assessment.

3.1.4 The HRA covers the construction and operation phases of the Scheme. The Scheme is not considered to have a decommissioning stage as it is expected to be in place in perpetuity. Therefore, no decommissioning impacts are presented in this report.

3.2 HRA Stage 2: Process of Appropriate Assessment

3.2.1 Appropriate Assessment is not a technical term; it simply means whatever further assessment is necessary to confirm whether there would be adverse effects on the integrity of any European sites that have not been dismissed at screening. Since it is not a technical term, and levels of analysis are likely to vary from site to site and from impact pathway to impact pathway, it has no specific methodology. If adverse effects are anticipated (or there is uncertainty as to the absence of adverse effects), mitigation measures to alleviate effects should be proposed and assessed.

3.2.2 Recently, the 'People over Wind' European Court of Justice ruling has confirmed that 'mitigation' (i.e. measures that are specifically introduced to avoid or reduce the harmful effects of the project on European sites) should not be taken into account when forming a view on likely significant effects during Stage 1 screening.

3.2.3 In evaluating effects on site integrity, professional judgement, as well as the results of previous stakeholder consultation regarding development impacts on European sites has been relied upon.

3.3 Impact pathways investigated in the Report to Inform Appropriate Assessment

3.3.1 Pathways are routes by which a change in activity associated with the Scheme (impact) can lead to an effect upon a European site.

3.3.2 An integrity matrix for Eversden and Wimpole Woods SAC presented in the format prescribed in *Advice Note Ten* [REF 1-2] is provided in Appendix D.

3.3.3 For Eversden and Wimpole Woods SAC a single pathway exists for which Natural England could not dismiss likely significant effects:

a. **Species displacement** – the Scheme can have adverse effects on the species distributions of the SAC, in particular, Barbastelle bats.

3.3.4 Bat surveys have been undertaken during 2021 to provide further information in order to assess if there are any functional links between the Scheme and the SAC Barbastelle population (refer to Section 0 for further information).

3.4 Principal other Plans and Projects that may act 'In-combination'

3.4.1 PINS Advice Note Ten: Habitat Regulations Assessment relevant to Nationally Significant Infrastructure Projects [REF 1-2] states that in assessing in-combination effects the following projects should be considered:

a. Projects that are under construction.

b. Permitted application(s) not yet implemented.

c. Submitted application(s) not yet determined.

d. All refusals subject to appeal procedures not yet determined.

e. Projects on the National Infrastructure's programme of projects.

f. Projects identified in emerging development plans (e.g. South Cambridgeshire Core Strategy) recognising that much information on relevant proposals will be limited and the degree of uncertainty which may be present.

3.4.2 In order to inform fully the Appropriate Assessment process, plans and projects in the area surrounding the SAC have been considered to determine adverse effects on European site integrity that could arise from the Scheme in combination with these other plans and projects.

3.5 Determining magnitude and significance

3.5.1 The approach to determining magnitude and significance during the appropriate assessment is tailored to each impact pathway.

3.5.2 With regard to the magnitude and significance criteria for species displacement impacts on Eversden and Wimpole SAC, account has been taken of the sensitivity of the Barbastelle bats.

3.5.3 Bat surveys were undertaken at Eversden and Wimpole SAC as described in Section 0 below.

4 Relevant investigations of Barbastelle in Eversden and Wimpole Woods SAC

4.1 Distribution of Barbastelle in Bedfordshire and Cambridgeshire

Bedfordshire

4.1.2 The first record for Barbastelle in Bedfordshire is of a vagrant Barbastelle found in a copse at Old Warden, about 11km south of the closest point to the Scheme at the Black Cat roundabout, in 1976 [REF 1-19]. Barbastelle bats are now well distributed in Bedfordshire (**Figure 4** in **Appendix B**).

4.1.3 By 2013, Barbastelle had been recorded in almost all the 10 kilometre (6.2 mile) squares that are wholly or largely in Bedfordshire. The exceptions were SP 96, which [REF 1-12] was considered to probably contain the species because it had suitable woodland and is adjacent to significant areas of Barbastelle activity, and TL 01 which probably did not have the species due to a lack of suitable habitat. [REF 1-12] provides details of the radiotracking of two previously caught bats, one in Swineshead Wood and the other in Laurel Wood. Unfortunately, the tracking was limited due to losing signals for the bats.

Cambridgeshire

4.1.4 The first record of Barbastelle for Cambridgeshire was at Knapwell, 4km north-east of the Order limits. The bat had been caught by a cat [REF 1-17] (Smith, 1987).

4.1.5 The Cambridgeshire Mammal Atlas (2016) provides a relatively up to date distribution for Barbastelle [REF 1-20] with records made since 2016 being obtained from the Cambridgeshire and Peterborough Environmental Records Centre amongst other sources, all of which have been compiled in **Figure 4** in **Appendix B**.

4.2 Investigations of Barbastelle in Eversden and Wimpole Woods SAC

4.2.1 In 2014, Barbastelle were found in two hibernation sites, one of which, Bromham, was a new site. A female was mist netted at King's Wood Heath & Reach in July 2014 and, in another part of the wood, four bats (three males and a female) were mist netted on 3 September 2014. Another was mist netted in Toddington in August 2014. A Barbastelle was found in Priory CP in early November 2014, the first record at this site, and another was found clinging to a wall in Dunstable in October 2014. Barbastelle were heard on bat detectors at Baker's Wood, King's Wood Heath & Reach, Laurel Wood in Ampthill Park, Millbrook Warren, the Lodge (RSPB Sandy) and Woburn Safari Park (Cornes, 2015) [REF 1-13]. In the hibernation survey for 2014, Barbastelle numbers were lower than some recent winters (Cornes, 2015) [REF 1-13].

4.2.2 Members of the Cambridgeshire and Bedfordshire bat groups have worked together studying the Barbastelle colony at Wimpole and have (under licence) radio tracked several individual females over periods of about 7-10 days at night during the summers of 2001 and 2002. This work established that a group of mature trees were used as roosts by the bats and gave vital information on the range and type of habitats used for foraging [REF1-1]. This revealed that individual bats covered distances of many kilometres each night; one bat favouring the Orwell Barrington area, while another was tracked as far as the outskirts of Cambridge and back again in one evening (**Figure 5** from [REF1-211]). It was the outcome of this work that led to the establishment of the Eversden and Wimpole Woods area as an SAC.

4.2.3 East West Rail Company (2020) reports on information provided by the Cambridgeshire Bat Group in 2000 to 2002 and 2004 to 2005 [**REP6-053**]. These showed home ranges of Barbastelle from the Wimpole Estate which largely covered the same areas as found in the East West Rail surveys including a Barbastelle foraging in the Grantchester area. (The sex or breeding status of these bats was not ascertained).

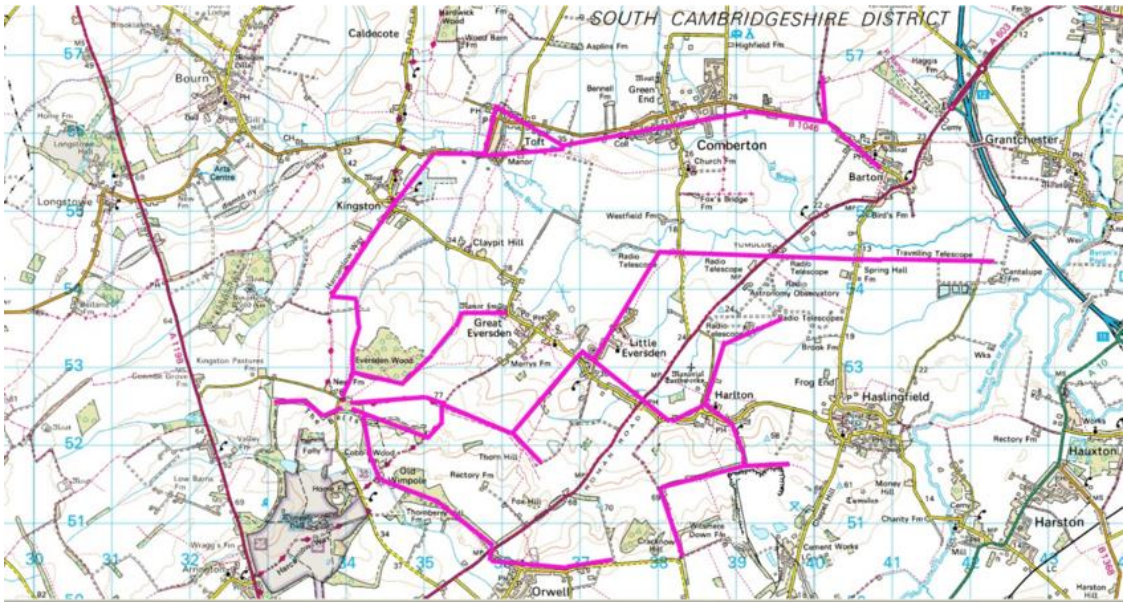


Figure 5. Main routes of radio-tracked bats, 2002 [REF1-1].

4.2.4 It has been suggested that Barbastelle would, in their natural environment, typically have a maternity roost area in the head waters of a catchment and would use the waterways as their flight lines [REF 1-22]. They would forage as they fly to richer areas of micro moths such as woodland glades along the river systems.

4.2.5 Because of the Barbastelle bats' requirements and that the males tend to be solitary, outlying woodlands may provide a sanctuary for non-breeding females and solitary males, both of which are said to use sub-optimal feeding areas leaving the richer foraging for the breeding females whose energy requirements are much greater. Therefore, woodland loss within a radius of 10-15km of the SAC could be of great significance for the viability of the population of Barbastelles at Wimpole.

4.3 South Cambridgeshire investigation and zone establishment

4.3.1 South Cambridgeshire District Council's *Local Development Framework: Biodiversity – SPD* (July 2021) [REF1-1] identified that the Barbastelle colony at the Eversden and Wimpole SAC does not restrict itself to the boundaries of the SAC but also forages in suitable habitat within the surrounding countryside referred to as the Core Area [REF1-1].

4.4 East West Rail tracking

4.4.1 Bat trapping and radio-tracking surveys were undertaken in 2020 to inform an application for development consent for the construction of Phase 3 of the Cambridge to Oxford railway from Bedford to Cambridge [REP6-053]. The objectives of these surveys for Barbastelle bats were to:

a. Trap and radio-track up to 15 Barbastelle bats post maternity to locate roosts and roost areas for Barbastelle bats.

b. Determine if there are separate maternity colonies or a single colony with sub-groups to help assess the likely impacts of the proposed rail development in the event that sub-groups are identified which could be fragmented.

c. Determine core foraging areas and commuting routes for Barbastelle specifically to assess whether the proposals will result in fragmentation or loss of core foraging habitat for bats from the maternity colony/colonies.

4.4.2 A total of 77 bats were caught during four nights of trapping (17, 18, 20 and 22 August 2020), 20 of which were Barbastelle. Trapping locations were in two areas, Wimpole Estate including the Belts and Eversden Woods, and Hayley Wood and Waresley Wood to the west (**Figure A2**: Trapping and Roost Location Plan in [**REP6-053**]). A total of 12 Barbastelle were radio-tagged. Two tags failed or the bats moved out of the survey area as no records were made of these after being released. A third bat was heard only sporadically during the daytime to the south of Hayley Wood.

4.4.3 The results showed that the Eversden and Wimpole Woods SAC and Hayley Wood and Waresley Wood, both Sites of Special Scientific Interest (SSSI) (), support breeding colonies of Barbastelle. However, the radio-tracking showed that there was no interchange between bats from the SAC woodlands and the two woodland SSSIs to the west. The tracking also showed that bats from these two areas do not have overlapping home-ranges.

4.4.4 The main foraging areas for Barbastelle from Eversden and Wimpole Woods SAC was primarily to the north and east (Figures B5, B6, B7, B8 in [REP6-053]) with the exception of one bat which foraged over the Wimpole parkland and habitats to the south of the River Cam. During these surveys in 2020, the maximum distance recorded from a roost was 10.2km (a breeding female) whilst the mean maximum distance from a roost for breeding females was 5.17km. The mean maximum distance for the non-breeding female bats was 6.15km whilst the mean maximum distance for the male bats was 7.05km. These results are in line with other studies at the SAC (section 4.2).

5 Barbastelle surveys for the Scheme and at Eversden and Wimpole Woods SAC

5.1 Background

5.1.1 A summary of the relevant surveys carried out between 2018 and 2021 by the Applicant is given in **Table 5-1**. Further details for surveys undertaken by the Applicant during 2018-2019 are presented in Appendix 8.5, Bats (Confidential) **[APP-192]** of the Environmental Statement. Also, full details for the 2021 bat surveys undertaken within the Scheme and its environs are presented in 9.60 Updated Bat Surveys 2021 **[REP5-010]** and details for Barbastelle bat surveys undertaken at Eversden and Wimpole SAC are presented in 9.54 Barbastelle Bat Surveys and Mitigation Technical Note **[TR010044/EXAM/9.54v4]**.

Table 5-1: Summary of bat surveys undertaken by National Highways

Receptor	Survey type	Maximum distance from the Order Limits (within zone of influence of the Scheme) (m)	When
A428 Scheme and its environs	Bat Trapping/radio-tagging Surveys	Nearby woodland within 250m. Up to 5km to track tagged bats to roost locations.	August to October 2018 July to October 2019
	Bat Crossing Point Surveys Bat Crossing Point Surveys Update	Within the Order Limits at potential commuting features identified through activity surveys.	May to September 2019 Update: October to November 2021
	Hibernation surveys	Selected features on trees/building within the Order Limits.	February 2019.
	Tracking bats		October 2019
Barbastelle surveys at Eversden and Wimpole Woods SAC	Bat Trapping/radio-tagging Surveys	Movements in relation to the SAC and within the Scheme's Order Limits.	September 2021
	Bat Activity Surveys (transects and statics)	Within the SAC.	September and October 2021

5.2 Barbastelle surveys of the Scheme

5.2.1 Barbastelle activity was recorded during activity transect and static surveys undertaken as part of a biodiversity assessment for the Scheme (see Chapter 8, Biodiversity **[APP-077]** of the Environmental Statement). Further investigations were carried out to determine the location of Barbastelle roosts within and in close proximity to the Scheme. Following bat trapping and radio-tagging surveys in July – October 2019, two roosts were identified beyond the Order Limits (>200 metres from the Scheme) and close to Little Barford towards the western end of the Scheme. These roosts are located approximately 14.5 kilometres (9.0 miles) from the Eversden and Wimpole Woods SAC. A figure showing the location of the roosts and other details relating to the radio-tagging studies are presented in Appendix 8.5, Bats (Confidential) **[APP-192]** of the Environmental Statement.

5.2.2 The findings of the radio-tracking studies were considered in the review of potential impact sources as any loss of relevant habitat or severance of commuting routes could affect the ability of the SAC to support its Barbastelle population, and thereby prevent the site from achieving Favourable Conservation Status.

5.2.3 Given the presence and activity of Barbastelle recorded outside of the SAC boundary, the review considered whether any functionally linked land exists within the Order Limits, and if so, whether habitats on that land would be fragmented as a result of the Scheme.

5.2.4 Consideration was also given to:

a. The likelihood of increased mortality of the SAC's bat population as a result of possible collisions with vehicles travelling on the new dual carriageway once the Scheme is operational.

b. Whether potential connections exist between the Scheme and the SAC, through which pollution could migrate to the SAC and affect its bat population.

c. Whether the Scheme could present a physical barrier to bat foraging grounds and roost sites potentially used by the SAC's bat population.

d. Whether there is potential for a reduction in the genetic exchange of the SAC's bat population as a consequence of the Scheme.

5.2.5 The citation for Eversden and Wimpole Woods SAC is included in **Appendix D**.

5.2.6 A review was undertaken of the SAC to determine if it might be negatively impacted by predicted increases in noise associated with the use of construction plant, equipment, machinery and vehicles within the Order Limits or due to increased traffic load on any roads adjacent to the SAC during the operation of the Scheme. The Scheme is located outside of the core feeding habitat areas, as illustrated in **Figure 1**, **Appendix B**. This is supported by bat surveys described in Chapter 8, Biodiversity **[APP-077]** and Appendix 8.5, Bats (Confidential) **[APP-192]** of the Environmental Statement which showed no functional linkage between the Scheme and the Core Area.

5.2.7 Once the Scheme is operational, noise levels would change on affected routes on the road network (and outward to a distance of 600m), where traffic volumes are predicted to increase and decrease. As the extents of the SAC do not coincide with these routes or the 600m extensions, no impacts on qualifying features from operational and maintenance traffic are predicted.

5.2.8 There would be no increase in species mortality because no functionally linked land was identified within the Order Limits and the Scheme would not result in any fragmentation of the SAC's bat population as a result of road collisions with vehicles, once the Scheme is operational.

5.2.9 Sources of temporary and permanent lighting would be introduced within the Order Limits of the Scheme during the construction and operational phases, and potentially when undertaking maintenance activities. Given the distance between these sources and the SAC, no impacts from lighting are predicted on qualifying features during the Scheme's construction, operational and maintenance phases.

5.2.10 New activity and infrastructure would be introduced within the Order Limits during construction, operation and maintenance of the Scheme. Given the intervening distance between the Scheme and the SAC, no visual disturbance from these impact sources is predicted.

5.2.11 During its operational phase, the Scheme would be subjected to periodic maintenance, repair and management activities. However, no impacts are predicted on the SAC because of the distance from the SAC.

5.2.12 As the Scheme would form an integral part of the strategic road network, it would remain in long-term operation and is therefore unlikely to be decommissioned in the future.

5.2.13 The 2021 bat surveys have been undertaken in line with a survey scope agreed with Natural England in Eversden and Wimpole Woods SAC Technical Note **[REP1-032]** in order to provide further information to assess if there are any functional links between the Scheme and the SAC Barbastelle population.

5.2.14 The methods, results, analysis and conclusions of the following surveys are explained below:

a. Barbastelle trapping within the SAC and tracking between the SAC and the Scheme in September 2021.

b. Bat activity surveys (comprising transect and static surveys) undertaken within the SAC in September and October 2021.

5.3 Barbastelle surveys at Eversden and Wimpole Woods SAC

Bat trapping and radio-tagging

5.3.2 In line with the survey scope presented in the Eversden and Wimpole Woods SAC Technical Note **[REP1-032]** submitted to the Examination at Deadline 1, bat trapping and radio-tagging have been undertaken by the Applicant close to known roost locations within the SAC. The aim of this survey was to radio-track Barbastelle movements within habitats located between the SAC and the Scheme to determine if Barbastelle were using habitats within the Scheme's

Order Limits on the 23 and 24 September 2021 to complement those surveys described in Section 0.2 which were undertaken earlier in the year.

5.3.3 All trapping, radio-tagging and radio-tracking were undertaken under a project licence from Natural England (licence number 2021-54947-SCI-SCI), which was obtained by an ecologist with the relevant experience including previous trapping and tagging in the SAC. The project licence holder and their accredited agents led the design and coordination of the field surveys, carried out data analysis and evaluation of the results.

5.3.4 Bat trapping and radio-tagging took place close to known roost locations at the Belts woodland within the SAC that were pre-determined during a daylight walkover survey on 21 September 2021 (see **Figure 1** in **Appendix B**).

5.3.5 Trapping surveys were undertaken on 23 and 24 September 2021, with radio-tracking surveys undertaken on 25, 26, 28, 29 and 30 September 2021 as detailed below.

5.3.6 Bats were trapped using mist nets on 23 and 24 September 2021 as they emerged from nearby roosts within the SAC woodland. Only two trapping visits were carried out as the total number of Barbastelle trapped was considered by the licence holder to be an appropriate and representative number of bats (see Paragraph 5.4.2). Additionally, it was important to avoid unnecessary disturbance to the Barbastelle population of the SAC through continuation of the trapping surveys. Each of the trapping locations (TL1-5) within the SAC (see **Figure 1** in **Appendix B**) was supervised by an ecologist holding Natural England Level 3 and 4 bat licences, who were named on the Natural England project licence. All bats captured were removed by these ecologists and taken to a central point (next to TL4) for biometrics measurements and tagging.

5.3.7 Captured Barbastelle were fitted with radio-tags adhered to an area of fur between the bats shoulder blades using a contact adhesive, Lotek© PicoPip Tags, of no more than 5% of the weight of each bat. Bats were then released from a central location, next to TL4 (**Figure 1, Appendix B**), in The Belts close to where they were trapped and then tracked from the following night.

5.3.8 All radio-tagged bats were tracked using a combination of vehicle-mounted antennae by car and hand-held antennae on foot, depending on the movements of the bats.

5.3.9 Barbastelle were tracked from dusk for a period of five nights using the ‘homing-in’ / 'close approach’ method [REF 1-3] and the triangulation method [REF 1-4] by up to three teams of surveyors. Of the five nights tracking, three surveys commenced around sunset and continued to around midnight as most bats remained close to the SAC and any that left the SAC returned before midnight. The other two survey nights included the full night from sunset to sunrise, i.e. approximately 12 hours. This extended period was in case bats moved further from their previous locations to forage later in the night in habitats between the SAC and the Scheme.

5.3.10 Positions of tagged bats were pinpointed through close contacts or triangulations between surveyors at regular intervals throughout the night depending on whether or not the tracking surveyor was in contact with the bat. As the main aim was to determine bat movements in relation to the Scheme, regularly driven transects were also undertaken from the SAC north towards the Scheme (see survey observation routes on **Figure 2.1** in **Appendix B**), with frequent stops made for scanning to pick up possible radio-tag signals between the SAC and the Scheme to record any bats close to the Scheme and any bats travelling in the habitat between the SAC and the Scheme.

5.3.11 Results of bat trapping and radio-tagging surveys are in **Appendix A**.

SAC transect surveys

5.3.12 Three walked bat activity transects and static detector surveys were undertaken within the SAC to identify autumn usage of the SAC by Barbastelle. It was agreed with Natural England to collect these additional activity data as they may pick up swarming or hibernation sites and ascertain if bats were still present within the SAC at this time of year, which may indicate a lower risk of Barbastelle dispersing to other suitable hibernation sites outside the SAC. Therefore, if Barbastelle were still regularly using the SAC at this time of year this would indicate that the bats were remaining in the SAC during the autumn and potentially into the winter, and therefore unlikely to be using hibernation sites within or closer to the Scheme.

5.3.13 The method involved walking a set transect commencing at sunset for a minimum of 2 hours within the SAC (both Wimpole Wood and Eversden Wood) and the deployment of three static detectors for a minimum of 5 nights per month in accordance with standard methods [REF 1-5].

5.3.14 The transect surveys were undertaken on 22 September 2021, 6 October 2021 and 15 October 2021.

5.3.15 The transect survey route was designed to include potential flight paths or foraging areas, and also potential roost sites (see **Figures 3.1 to 3.3** in **Appendix B)**. The starting points and walked direction of the transects were varied during each survey visit in order to ensure different areas of the transect were walked close to dusk. All transects were of similar time duration to allow a more accurate cross comparison between visits.

5.3.16 Surveyors carried bat echolocation detectors with built in GPS receivers (e.g. Batlogger M or Anabat Scout) to determine which species were present and their locations. The time, location, numbers, species (where possible) and direction of flight were recorded for each bat pass (discrete burst of echolocation heard, or bat activity observed) during the survey. Echolocation calls detected were analysed with specialist software comprising Batexplorer v2.1.7, Kaleidoscope v5.4.6 or Analook W v4.5s to analyse bat calls. Survey visits were scheduled to avoid nights with cold (>7°C), wet or windy conditions.

5.3.17 Results of bat transect surveys are in **Appendix A1**.

Static detector surveys

5.3.18 In addition to the transect surveys, three automated static bat detectors (Anabat Swift detectors, with the same standard microphones) were placed across the SAC (S1-3 on **Figure 3** in **Appendix B**) in habitats suitable for bats to record bat activity over a longer period of time. The static detectors were set up to record bat calls from sunset to sunrise for the recommended minimum of five consecutive nights per month from September to October 2021 as per [REF 1-5] (see deployment dates and weather in **Appendix A2**).

5.3.19 All microphones were located at least 1 m above the ground on trees, and clear of vegetation between the adjacent habitats and the microphone. All detectors were set on default settings to record in zero-crossing format.

5.3.20 Weather conditions were recorded using the log.csv files on each static detector and rain/wind conditions were recorded at the nearest weather station (Cambridge Airport) using online resources (i.e. https://www.timeanddate.com/weather/uk/). Weather data were taken into consideration in the analysis. Where any prolonged period of strong wind >25 mph or rain was experienced the static detectors were left within the SAC for longer to obtain sufficient data during optimum weather conditions for bat activity.

5.3.21 Results of static detector surveys are in **Appendix A2**.

5.4 Assumptions and limitations

Bat trapping and tracking surveys

5.4.2 Following the second trapping night on 24 September 2021, a total of seven Barbastelle (of both sexes) were captured and tagged. In order to avoid further disturbance to the Barbastelle population of the SAC (including netting of previously tagged bats), and due to the time of year (i.e. late September – close to the end of the survey period), efforts were redirected to tracking the Barbastelle that had been tagged for the remaining number of survey nights. The total number of Barbastelle trapped and radio-tagged (see **Section 5.5**) was considered by the licence holder to be an appropriate and representative number of bats (in terms of sufficient numbers of bats to track and of both sexes), and therefore does not present a limitation to establishing their movements within and beyond the SAC.

5.4.3 The location accuracy of bat position fixes was optimised using a combination of triangulation and close approach methods. Where triangulation was used to determine positions, a tracking resolution of 100m was applied to take account of potential accuracy issues associated with triangulation at distance. As this limitation is inherent with this type of survey it does not, therefore, affect the survey conclusions. Where close encounters of bats were observed and recorded, the tracking resolution is increased and where bats were tracked to within specific woodland blocks the bat observation area was clipped from the 100m buffer to the woodland edge.

5.4.4 Although no land access restrictions were encountered within the SAC, the habitats surrounding the SAC (including the areas between the SAC and the land defined by the Scheme's Order Limits) were only accessible via roads and public rights of way. This restriction did not, however, limit the effectiveness of the radio-tracking as all areas were accessed within close enough proximity using multiple surveyors to accurately determine Barbastelle movements.

5.5 Results and analysis

Bat trapping and radio-tagging

5.5.2 The Barbastelle trapping and tracking survey results were plotted to show bat roosting locations and recorded movements in relation to the SAC and the land within the Scheme's Order Limits (see **Figures 1, 2.1 – 2.8** in **Appendix B**).

5.5.3 The positions of Barbastelle and their ranges of movement were calculated using ArcGIS software using estimated bat positions derived from grid references, field maps, observations on direction of movements and bearing of travel from surveyor positions (shown as arrows of direction of flight), and close encounters of bats recorded during the survey nights.

5.5.4 A summary of the roost locations and tracked Barbastelle movements, both for overall movement and for individual bats, are provided as **Figures 2.1 – 2.8** in **Appendix B**. Trapping details and weather conditions are provided in **Appendix A1**.

5.5.5 A total of seven Barbastelle of both sexes, including one juvenile male, were trapped and tagged during the surveys on 23 and 24 September 2021.

5.5.6 Non-target bat species which were also caught (and subsequently released) comprised:

a. A male and a female Brown Long-eared bat (*Plecotus auritus*).

b. Two male Natterer's bats (*Myotis nattereri*).

5.5.7 The seven Barbastelle trapped were assigned individual names to enable surveyors to efficiently communicate during bat tracking and triangulation. Information was also recorded regarding their weight (in grams), as presented in **Table 5-2.**

Table 5-2: Summary of Barbastelle tagging

Bat No.	Name	Sex (M/F)	Weight (g)
1	Nancy	F	9.12
2	Dustin	M	7.63
3	Billy	M (juvenile)	6.92
4	Karen	F	8.81

Bat No.	Name	Sex (M/F)	Weight (g)
5	Barbara	F	7.74
6	Eleven	F	7.83
7	Steve	M	7.78

5.5.8 A summary of bat foraging and/or commuting movements is shown in **Table 5-3**.

Table 5-3: Bat roosting locations and foraging/commuting movements

Bat No.	Roosting location (see Figure 1 in Appendix B)	Foraging/commuting movements (see Figure 2.1 – 2.8 in Appendix B)
1	Trees within the Belts throughout survey period.	Within the SAC, mainly within the Belts/Gloucesters woodland areas occasionally moving to Eversden Woods to forage. Recorded once north-east of the SAC south of Toft Wood.
2	Trees within the Belts but no specific location found as bat transmitter did not work inside roost. It transmitted a signal only when foraging (possible due to the roost located in a deep tree cavity).	Within the SAC, mainly within the Belts/Gloucesters woodland areas. Movements south-east through Cobbs Wood towards Orwell.
3	Trees within the Belts throughout survey period.	Within the SAC, mainly within the Belts west of the road and foraging east of the road in the Belts/Gloucesters woodland areas. Movements south-east through Cobbs Wood towards Orwell. Some foraging around Orwell before returning to the Cobbs Wood/SAC woodland.
4	Trees within the Belts and the Gloucesters.	Within the SAC, mainly within the Belts/ Gloucesters woodland areas. Recorded once north-east of the SAC around Great Eversden village, having left the SAC to the east along a hedge line.
5	Trees within the Belts throughout survey period.	Within the SAC, mainly within the Belts/ Gloucesters woodland areas. Recorded once around Bourn Brook south of Toft.
6	Trees within the Belts throughout survey period	Within the SAC, mainly within the Belts/Gloucesters woodland areas and made regular movements north to Eversden Wood and then north-east along a hedge line to Great Eversden village and then north to Toft, around the golf course, Bourn Brook and Toft Wood. Returned to the SAC woodland (the Belts) after 2 to 3 hours.

Bat No.	Roosting location (see Figure 1 in Appendix B)	Foraging/commuting movements (see Figure 2.1 – 2.8 in Appendix B)
7	Recorded in Cobbs Wood and a barn at Cobbs Farm	Within the SAC, mainly within the Belts/Gloucesters and around Cobbs Farm and Cobbs Wood.

5.5.9 Analysis of the findings indicates that all tagged Barbastelle were roosting within or close (<250m) to the SAC (see **Figure 1**, **Appendix B**) and emerged between 30 minutes and 1 hour after sunset.

5.5.10 Although the majority of Barbastelle were recorded as foraging within, or close to, the SAC (see **Figures 2.1 – 2.8** in **Appendix B**), the following movements outward into the landscapes surrounding the SAC were identified:

a. Bat 6 left the SAC after 50 minutes to 1 hour on four nights and headed north to Eversden Wood then Great Eversden and to Toft location around Cambridge Meridian Golf Club and Bourn Brook, and took approximately 1 hour to arrive at Toft from leaving the SAC. This bat returned to the SAC 4 to 5 hours (by midnight) after this on all four nights along a similar route.

b. Bats 1 and 5 were recorded close to Toft on one night around 20:30 and returned to the SAC by 22.57.

c. Bats 2, 3 and 7 were recorded south-east of the SAC in Cobbs Wood, with Bat 3 also being recorded around the village of Orwell on two occasions, located 2km south-east of the SAC.

d. After midnight, Bats 1 to 6 were present within the SAC and Bat 7 within 400 m of the SAC to the south (noting that Bat 2 did not transmit a signal in its roost). There was very limited foraging in the SAC during this time with bats either foraging within the SAC woodland or remaining stationary in their roosts.

e. Bats 1, 5 and 6 were the closest bats recorded in relation to the Scheme, located approximately 6km to south-east of the Scheme at Toft.

5.5.11 Analysis of the survey results conclude that the bats trapped and tagged within the SAC as part of these surveys did not roost or spend any time foraging or commuting within or close to the Order Limits of the Scheme. The nearest point a Barbastelle was recorded was approximately 6km south-east of the Scheme. Between this tracked Barbastelle location and the Scheme is the town of Cambourne, and whilst noting Barbastelle may move across open countryside and not just rely on linear features, there is a lack of connecting habitats from the SAC to the habitats located along the Scheme.

5.5.12 The results demonstrate the value of the SAC to Barbastelle roosting and foraging in the late summer/early autumn period. There is regular use of habitats for foraging to the north-east around Great Eversden and Toft villages, including Bourn Brook and Cambridge Meridian Golf Club and south-east in Cobbs Wood and the village of Orwell. Hedges and, or tree lines to the north-east, east and south-east of the SAC to these villages are regularly used by Barbastelle. The results also demonstrate a lack of use of the area between the SAC and the Scheme.

5.5.13 All the bat roosts and movements are within the 6km Core Sustenance Zone (CSZ) for this species (see **Figure 2.1** in **Appendix B**). A CSZ refers to the area surrounding a communal bat roost within which habitat availability and quality will have a significant influence on the resilience and conservation status of the colony using the roost. All activity was also within a 5km distance of the SAC that is considered by Natural England as a key conservation area (see **Figure 2.1** in **Appendix B**) (Greater Cambridge Shared Planning Biodiversity Supplementary Planning Document Consultation draft, July 2021) [REF 1-7]. No Barbastelle were recorded within the 5 to 10km sustenance or wider conservation area as defined in this Planning Document.

5.5.14 The data and associated observations are strongly in line with other investigations into the movement of the Barbastelle of Eversden and Wimpole Woods SAC including those of the East West Rail Company [**REP6-053**].

Transect and static surveys results

5.5.15 The transect routes, results and static detector locations are shown on **Figures 3.1 to 3.3** in **Appendix B**. Full transect results are shown in **Appendix A2**. During the three transect surveys, there was low to moderate bat activity recorded within the SAC's woodlands. This comprised primarily Soprano Pipistrelle (9 to 58 passes), with lower numbers of Common Pipistrelle (15 passes during one survey), Barbastelle (2 to 6 passes), Noctule (2 to 3 passes), Myotis species (1 pass) and either Common or Soprano Pipistrelle (2 to 4 passes).

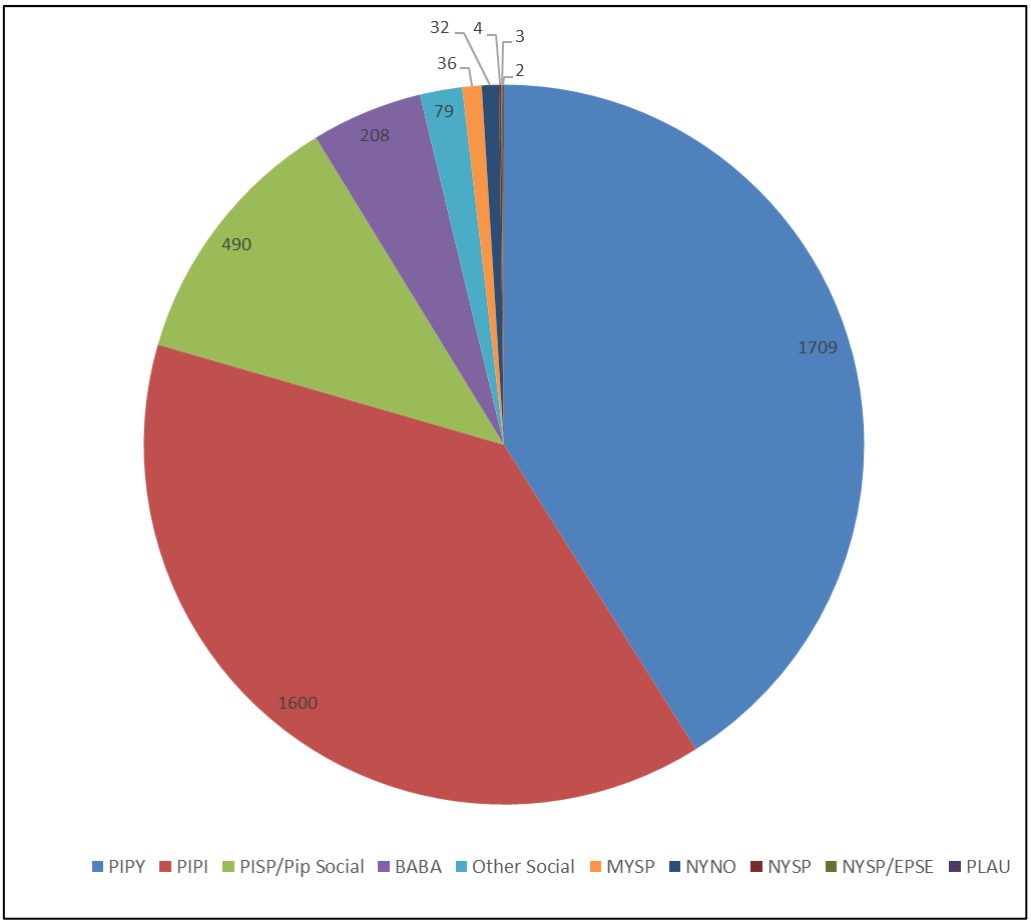
5.5.16 Barbastelle were recorded soon after expected emergence times, indicating these bats were likely to come from roosts located within the Wimpole section of the SAC.

5.5.17 The results of the static detector surveys are summarised below in 5.5.18 to 5.5.19 with full results and weather conditions in **Appendix A2**.

5.5.18 A total of 208 passes of Barbastelle across all three static detectors were recorded in September and October 2021 (with no obvious difference in activity between the months). The highest overall bat activity was on Static 1 in The Belts with a Bat Activity Index (BAI) of 17.82 (passes per hour) during September 2021, with a total of 58 Barbastelle passes contributing to the BAI. The highest Barbastelle activity was in Eversden Woods with 112 passes on Static 3 (see **Figure 3.1, Appendix B**).

5.5.19 Barbastelle accounted for 5% of all bat passes, with 91% of passes (3,799 passes) from common or soprano pipistrelle bats including social calls (see **Chart 1**). These results indicate that Barbastelle bats were active in the SAC between 22 September and 16 October 2021.

Chart 1: Total number of passes across all three SAC statics



Key to species in Pie Chart - PIPI (Common Pipistrelle (*Pipistrellus pipistrellus*)) PIPY (Soprano Pipistrelle (*Pipistrellus pygmaeus*)), PISP (Common or Soprano Pipistrelle), PIP Social (Pipistrelle Social Call), BABA (Barbastelle (*Barbastella barbastellus*)), MYSP (*Myotis* species), NYNO (Noctule (*Nyctalus noctula*)), NYSP (Noctule or Leisler's (*Nyctalus leisleri*)), NYSP/EPSE ('*Nyctalus/ Eptesicus* species', i.e. Noctule, Leisler's or Serotine (*Eptesicus serotinus*), PLAU (Brown Long-eared (*Plecotus auritus*)).

6 Information to Inform Appropriate Assessment for Eversden and Wimpole Woods SAC

6.1 Impact Pathway: Species displacement

6.1.1 From the first records for Barbastelle in Cambridgeshire and Bedfordshire, 1987 and 1976 respectively, this bat species has in about 40 years, become widespread across both counties (**Figure 4**, **Appendix B**).

6.1.2 In 2001, radio-tracking by the Cambridgeshire and Bedfordshire Bat Group identified a maternity roost of Barbastelle in Eversden and Wimpole Woods SAC [REF 1-181]. In 2005, a second maternity roost was found [REF 1-18] and in the same year Eversden and Wimpole Woods was designated as a SAC.

6.1.3 Investigations into the movement of Barbastelles generally are summarised in **Table 2-2**, the mean distance of movement away from the roost was 2.0 to 11.6 km, with the maxima ranging from 10.5 to 20km.

6.1.4 Additionally, the Bat Conservation Trust has defined the Core Sustenance Zone for Barbastelle as a species in general as being 6 km from a communal roost, based on evidence gathered from three studies of 69 bats [REF 1-11].

6.1.5 Barbastelle activity, carried out by the Applicant, was recorded during activity transect and static surveys undertaken of the Scheme in 2018-2019 as part of a biodiversity assessment (refer to Chapter 8, Biodiversity **[APP-077]** of the Environmental Statement). Further investigations were carried out to determine the location of Barbastelle roosts within and in close proximity to the Scheme. Following bat trapping and radio-tagging surveys in July – October 2019, two roosts were identified beyond the Order Limits (>200 metres from the Scheme) and close to Little Barford towards the western end of the Scheme. However, these roosts are located approximately 14.5 kilometres (9 miles) from the Eversden and Wimpole Woods SAC and therefore well outside the 6km Core Sustenance Zone for barbastelle as a species.

6.1.6 Details relating to the radio-tagging studies are presented in Appendix 8.5, Bats (Confidential) **[APP-192]** of the Environmental Statement. The findings of the radio-tracking studies were considered in the review of potential impact sources as any loss of relevant habitat or severance of commuting routes could affect the ability of the SAC to support its Barbastelle population, and thereby prevent the site from achieving Favourable Conservation Status.

6.1.7 Further investigations (trapping, radio-tagging and radio-tracking at the SAC) were undertaken in 2021, close to known roost locations within the SAC, in line with the survey scope presented in the Eversden and Wimpole Woods SAC Technical Note **[REP1-032]**, agreed with Natural England and submitted to the Examination at Deadline 1. The aim of these surveys was to radio-track Barbastelle movements within habitats located between the SAC and the Scheme to determine if Barbastelle were using habitats within the Scheme's Order Limits during the autumn period. Refer to Section 5.3 for further details.

6.1.8 The Core Sustenance Zone (CSZ) was used as a criterion to determine the impact for the species displacement. A CSZ refers to the area surrounding a communal bat roost within which habitat availability and quality will have a significant influence on the resilience and conservation status of the colony using the roost. All the bat roosts within the SAC and movements of bats from the SAC to the wider habitat were located within the 6km Core Sustenance Zone (CSZ) for this species (see **Figure 2.1** in **Appendix B**).

6.1.9 All activity from the radio-tagging surveys at the SAC was also within a 5 km distance of the SAC that is considered by Natural England as a key conservation area (see **Figure 2.1** in **Appendix B**) (Greater Cambridge Shared Planning Biodiversity Supplementary Planning Document Consultation draft, July 2021) [REF 1-7]. No Barbastelle were recorded within the 5 to 10km sustenance or wider conservation area as defined in this Planning Document.

6.1.10 The survey results concluded that the Barbastelle trapped and tagged during the September 2021 trapping and tracking surveys did not roost or spend any time foraging or commuting within or close to the Scheme's Order Limits. The nearest point a Barbastelle was tracked was approximately 6km south-east of the Scheme. Between this and the Scheme is the town of Cambourne, and whilst noting Barbastelle may move across open countryside and not just rely on linear features, there is a lack of connecting habitats from the SAC to the habitats located along the Scheme.

6.1.11 The results demonstrate the value of the SAC to Barbastelle roosting and foraging in the late summer/early autumn period. There is regular use by the SAC Barbastelle population of habitats for foraging to the north-east around Great Eversden and Toft villages, including Bourn Brook and Cambridge Meridian Golf Club and south-east in Cobbs Wood and the village of Orwell all over 6km south-east of the Scheme. Hedges and/or tree lines to the north-east, east and south-east of the SAC linked to these villages are regularly used by Barbastelle.

6.1.12 Three walked bat activity transects and static detector surveys were undertaken within the SAC to identify autumn usage of the SAC by Barbastelle. It was agreed with Natural England to collect these additional activity data as they may pick up swarming or hibernation sites and ascertain if bats were still present within the SAC at this time of year, which may indicate a lower risk of Barbastelle dispersing to other suitable hibernation sites outside the SAC.

6.1.13 There was Barbastelle activity in September and October 2021 on the transects and static detectors deployed in the SAC indicating Barbastelle are present in the SAC into the autumn and that they are less likely to be dispersing to sites outside the SAC for hibernation/swarming.

6.1.14 Given that no barbastelles recorded at the Scheme were tracked to the SAC, no barbastelles recorded at the SAC were tracked to the Scheme (the nearest location being 6km from the Scheme) and other surveys (such as those undertaken for the 2021 SAC SPD) support the same conclusion, there is no reasonable scientific doubt that the Scheme would not have an adverse effect on the integrity of the Eversden and Wimpole Woods SAC.

6.2 Mitigation

6.2.1 The 2021 survey data as presented herein, reaffirms the conclusions presented in the NSER **[APP-233]** and provides additional evidence that there are no likely significant effects on the SAC designation, as well as evidence of no adverse effect on its integrity, as a result of the Scheme. As a consequence of this conclusion, there is no need for any mitigation.

6.3 In-combination Effects

6.3.1 The assessment identified that construction, operation and maintenance of the Scheme would not result in any impacts on the SAC as there is no evidence of Barbastelle from the SAC using habitats along the Scheme for roosting, foraging or commuting. As such, there is no potential for in-combination effects to occur as a result of the Scheme interacting with other plans and projects.

7 Consultations

7.1.1 Natural England have been consulted throughout the HRA process including on the potential for connectivity between the area of the Scheme and the Eversden and Wimpole Woods SAC. Natural England was consulted on the NSER **[APP-233]** and will be consulted on this report to inform an appropriate assessment during the examination of the DCO application for the Scheme.

8 Conclusions

8.1.1 The Scheme will have no adverse effect on the integrity of Eversden and Wimpole Woods SAC either alone or in-combination with other plans and projects.

8.1.2 The Scheme is located 8.10 kilometres (5.03 miles) from the Eversden and Wimpole Woods SAC boundary at its closest point. The SAC is internationally important for its breeding colony of Barbastelle, a species of bat.

8.1.3 The 2021 survey results concluded that the Barbastelle from Eversden and Wimpole Woods SAC did not roost or spend any time foraging or commuting within or close to the Scheme's Order Limits. The nearest point a Barbastelle was tracked was approximately 6km south-east of the Scheme.

8.1.4 There was Barbastelle activity in September and October 2021 on the transects and static detectors deployed in the SAC indicating Barbastelle bats are present in the SAC into the autumn and that they are less likely to be dispersing to sites outside the SAC for hibernation/swarming.

8.1.5 Barbastelle activity on the bat crossing point statics (undertaken in 2021, and results presented in the Barbastelle Bat Surveys and Mitigation Technical Note **[TR010044/EXAM/9.54v4]**) within the Scheme was very low with occasional passes sporadically across the night at some locations, and on only a few of the nights surveyed. There were no data suggesting the regular use of the crossing points or roosting bats within the Order Limits. There is some potential for the presence of nearby Barbastelle roosts in suitable habitats outside the Order Limits such as woodland, as identified in Appendix 8.5, Bats (Confidential) **[APP-192]** of the Environmental Statement (e.g. at Boys Wood) and during the winter hibernation suitability surveys reported in 9.54 Barbastelle Bat Surveys and Mitigation Technical Note **[TR010044/EXAM/9.54v4]**.

8.1.6 Based on the findings of the 2021 surveys and previous data presented in Appendix 8.5, Bats (Confidential) **[APP-192]** of the Environmental Statement, there is no indication that Barbastelle from the SAC are using habitats along the Scheme for roosting, foraging or commuting. The nearest point a Barbastelle bat from the SAC was recorded was approximately 6km south-east of the Scheme and no tagged Barbastelle were recorded in the habitat between the Order Limits and this record.

8.1.7 The 2021 survey data as presented herein, reaffirm the analysis presented in the NSER **[APP-233]** and provides additional evidence to confirm that there would be no adverse effects on the integrity of the SAC as a result of the Scheme.

9 References

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Appendix A: Summary of Bat Surveys Results

Appendix A1 Bat Trapping/Tracking

Trapping results

Table 9-1. Trapping Results

Project name			**A428 Black Cat - Eversden and Wimpole Woods SAC Survey**			**Weather Description**		**19 C, dry, clear 0% cloud cover, light air/ no wind.**		
Lead Surveyor Names			MP, CV							
Date			23-09-21			**Trap 1**		Mist net TL 34030 52447		
Start			18:56			**Trap 2**		Mist net TL 34075 52445		
Sunset			18:56			**Trap 3**				
Finish			21:15			**Trap 4**				
Time	**Trap**	**Species**	**Sex (M/F)**	**Age (A/J)**	**Fore arm (mm)**	**Weight (g)**	**Testes**	**Epi**	**Reproductive Status (F)**	**Comments**
19:34	2	Brown long-eared	M	A						Non-target species released immediately
19:48	2	Brown long-eared	F	A						Non-target species released immediately
19:58	2	Natterer's	M	A						Non-target species released immediately

Project name			A428 Black Cat - Eversden and Wimpole Woods SAC Survey			Weather Description		23 C, dry, humid, clear 0% cloud cover, light air/ no wind.		
Lead Surveyor Names			MP, CV, IN							
Date			24-09-21			Trap 1		Mist net TL 34185 52355		
Start			18:55			Trap 2		Mist net TL 34197 52315		
Sunset			18:55			Trap 3		Mist net TL 34055 52538		
Finish			20:30			Trap 4				
Time	**Trap**	**Species**	**Sex (M/F)**	**Age (A/J)**	**Forearm (mm)**	**Weight (g)**	**Testes**	**Epi**	**Reproductive Status (F)**	**Comments**
19:20	1	Barbastelle	M	J	36.4	6.92	2	0	n/a	Tagged as Bat 3
19:25	3	Barbastelle	F	A	38.6	7.83	n/a	n/a	Not bred	Tagged as Bat 6
19:25	3	Natterer's	M	A						Non-target species released immediately
19:20	1	Barbastelle	F	A	41.1	8.81	n/a	n/a	Bred this year	Tagged as Bat 4
19:20	1	Barbastelle	M	A	38.9	7.78	1	0	n/a	Tagged as Bat 7
19:43	1	Barbastelle	M	A	39.5	7.63	3	0	n/a	Tagged as Bat 2
19:20	2	Barbastelle	F	A	38.8	7.74	n/a	n/a	Not bred	Tagged as Bat 5
19:30	1	Barbastelle	F	A	40	9.12	n/a	n/a	Bred this year	Tagged as Bat 1

Tracking Information

Table 9-2. Summary of Barbastelle tagging

Bat	Name	M/F	weight g	Channel	Tag Freq
1	Nancy	F	9.12	1	173.293
2	Dustin	M	7.63	2	173.802
3	Billy	M	6.92	3	173.952
4	Karen	F	8.81	4	173.704
5	Barbara	F	7.74	5	173.901
6	Eleven	F	7.83	6	173.211
7	Steve	M	7.78	7	173.744

Roost Locations

Table 9-3. Summary of Roost Location

Date	Bat	Roost Location	Roost Notes
26-09-21	1	TL 33948 52456	Specific tree unknown
26-09-21	2	TL 341 524	No specific roost found, no signal when in roost. Active in the Belts woodland at expected emergence times on multiple occasions therefore assumed normally roosting in this woodland, close to where trapped.
25-09-21	3	TL 33720 52388	Hornbeam behind thick ivy stems
25-09-21	4	TL34033 52495	Dead ash with flaky bark and ivy cover
25-09-21	5	TL34033 52495	Dead ash with flaky bark and ivy cover
25-09-21	6	TL34033 52495	Dead ash with flaky bark and ivy cover
25-06-21	7	TL3418451762	Woods south of Cobbs Farm
27-09-21	6	TL 3410 5244	Oak tree
29-09-21	7	TL 3443 5171	In barn on one occasion
27-09-21	3	TL 33720 52388	Hornbeam with thick ivy stems, in belts west of road as before
27-09-21	6	TL 34105244	Oak within Belts east of road. As before

Date	Bat	Roost Location	Roost Notes
27-09-21	5	TL 34105244	Roost tree not identified but was with Bat 1 and close to Bat 6.
27-09-21	1	TL 34105244	Appeared to be with 5. Roost tree not identified but was close to Bat 6.
27-09-21	4	TL 34725221	Estimated to be central location within the Gloucesters.

Tracking Weather

Table 9-4. Weather During Tracking Surveys

Tracking Visit	Date	Sunset	Sunrise	Time start	Time end	Temp C	Cloud (0-5)	Rain (0-5)	Wind (0-7)
1	25-09-21	18:51	6:51	18:45	1:00	20 to 16	5	0	2
2	26-09-21	18:49	6:53	18:45	0:15	20 to 16	2	0	2 to 3
3	28-09-21	18:44	6:56	18:45	7:00	14 to 12	5	1	4 to 2
4	29-09-21	18:43	6:58	18:43	7:00	12 to 8	1 to 0	0	1
5	30-09-21	18:40	7:00	18:30	0:00	16 to 15	5	0	4 to 5

Appendix A2 Transect and Static Detector Survey at the SAC

Transect Results

Table 9-5. Transect Surveys Results at the SAC

Date: 22/9/21	**Start/End Time 18:45 to 21:00**	**Temp C: 17 to 15 Wind: 3 Cloud: 0 Rain: 0**
Sunset time: 18:58	**Surveyors MP/CV**	**Weather notes: Dry and mild, light wind**
Recording	**Timestamp**	**Species**
2130001	22-09-21 19:06	*Pipistrellus pygmaeus*
2130002	22-09-21 19:09	*Pipistrellus pygmaeus*
2130004	22-09-21 19:14	*Pipistrellus pygmaeus*
2130005	22-09-21 19:14	*Pipistrellus pygmaeus*
2130006	22-09-21 19:14	*Pipistrellus pygmaeus*
2130007	22-09-21 19:16	*Pipistrellus pygmaeus*
2130008	22-09-21 19:18	*Pipistrellus pygmaeus*
2130009	22-09-21 19:19	*Pipistrellus pipistrellus*
2130011	22-09-21 19:19	*Pipistrellus pygmaeus*
2130012	22-09-21 19:20	*Pipistrellus pygmaeus*
2130014	22-09-21 19:20	*Pipistrellus pygmaeus*
2130016	22-09-21 19:20	*Pipistrellus pygmaeus*
2130018	22-09-21 19:20	*Pipistrellus pygmaeus*
2130019	22-09-21 19:21	*Pipistrellus pygmaeus*
2130021	22-09-21 19:21	*Pipistrellus pygmaeus*
2130022	22-09-21 19:21	*Pipistrellus pygmaeus*
2130023	22-09-21 19:21	*Barbastella barbastellus*
2130024	22-09-21 19:21	*Pipistrellus pygmaeus*
2130025	22-09-21 19:21	*Pipistrellus pygmaeus*
2130026	22-09-21 19:21	*Pipistrellus pygmaeus*

Date: 22/9/21	Start/End Time 18:45 to 21:00	Temp C: 17 to 15 Wind: 3 Cloud: 0 Rain: 0
Sunset time: 18:58	Surveyors MP/CV	Weather notes: Dry and mild, light wind
Recording	**Timestamp**	**Species**
2130027	22-09-21 19:21	*Pipistrellus pygmaeus*
2130028	22-09-21 19:21	*Pipistrellus pygmaeus*
2130030	22-09-21 19:22	*Barbastella barbastellus*
2130032	22-09-21 19:23	*Pipistrellus pygmaeus*
2130033	22-09-21 19:23	*Pipistrellus pygmaeus*
2130034	22-09-21 19:23	*Pipistrellus pygmaeus*
2130035	22-09-21 19:23	*Pipistrellus pygmaeus*
2130036	22-09-21 19:23	*Pipistrellus pygmaeus*
2130037	22-09-21 19:23	*Barbastella barbastellus*
2130038	22-09-21 19:23	*Pipistrellus pygmaeus*
2130039	22-09-21 19:23	*Pipistrellus pygmaeus*
2130040	22-09-21 19:23	*Pipistrellus pygmaeus*
2130041	22-09-21 19:23	*Pipistrellus pygmaeus*
2130043	22-09-21 19:26	*Pipistrellus pygmaeus*
2130047	22-09-21 19:32	*Pipistrellus pipistrellus*
2130048	22-09-21 19:32	*Pipistrellus pipistrellus*
2130051	22-09-21 19:43	*Pipistrellus pipistrellus*
2130053	22-09-21 19:43	*Barbastella barbastellus*
2130054	22-09-21 19:43	*Pipistrellus pygmaeus*
2130056	22-09-21 19:43	*Pipistrellus pygmaeus*
2130058	22-09-21 19:44	*Pipistrellus pygmaeus*
2130059	22-09-21 19:44	*Pipistrellus pygmaeus*
2130060	22-09-21 19:44	*Pipistrellus pygmaeus*

Date: 22/9/21	Start/End Time 18:45 to 21:00	Temp C: 17 to 15 Wind: 3 Cloud: 0 Rain: 0
Sunset time: 18:58	Surveyors MP/CV	Weather notes: Dry and mild, light wind
Recording	**Timestamp**	**Species**
2130061	22-09-21 19:44	*Pipistrellus pygmaeus*
2130062	22-09-21 19:44	*Pipistrellus pygmaeus*
2130066	22-09-21 19:44	*Pipistrellus pipistrellus*
2130067	22-09-21 19:45	*Pipistrellus pygmaeus*
2130069	22-09-21 19:51	*Pipistrellus pygmaeus*
2130070	22-09-21 19:54	*Pipistrellus pygmaeus*
2130071	22-09-21 19:54	*Pipistrellus pygmaeus*
2130073	22-09-21 19:55	*Pipistrellus pygmaeus*
2130074	22-09-21 19:55	*Pipistrellus pygmaeus*
2130075	22-09-21 19:55	*Pipistrellus pygmaeus*
2130079	22-09-21 19:59	*Pipistrellus pipistrellus*
2130080	22-09-21 20:00	*Pipistrellus pygmaeus*
2130081	22-09-21 20:00	*Pipistrellus pygmaeus*
2130083	22-09-21 20:01	*Pipistrellus pygmaeus*
2130084	22-09-21 20:01	*Pipistrellus pygmaeus*
2130085	22-09-21 20:01	*Pipistrellus pygmaeus*
2130089	22-09-21 20:18	*Pipistrellus pygmaeus*
2130090	22-09-21 20:19	*Pipistrellus pygmaeus*
2130091	22-09-21 20:19	*Pipistrellus pipistrellus*
2130092	22-09-21 20:19	*Pipistrellus pipistrellus*
2130094	22-09-21 20:19	*Pipistrellus pygmaeus*
2130095	22-09-21 20:19	*Pipistrellus pygmaeus*
2130096	22-09-21 20:20	*Pipistrellus spec.*

Date: 22/9/21	Start/End Time 18:45 to 21:00	Temp C: 17 to 15 Wind: 3 Cloud: 0 Rain: 0
Sunset time: 18:58	Surveyors MP/CV	Weather notes: Dry and mild, light wind
Recording	**Timestamp**	**Species**
2130097	22-09-21 20:20	*Pipistrellus pygmaeus*
2130098	22-09-21 20:20	*Pipistrellus pygmaeus*
2130099	22-09-21 20:20	*Pipistrellus pygmaeus*
2130102	22-09-21 20:20	*Pipistrellus pygmaeus*
2130105	22-09-21 20:26	*Pipistrellus pipistrellus*
2130109	22-09-21 20:35	*Pipistrellus pipistrellus*
2130110	22-09-21 20:36	*Pipistrellus pygmaeus*
2130111	22-09-21 20:39	*Pipistrellus pipistrellus*
2130112	22-09-21 20:41	*Pipistrellus pipistrellus*
2130113	22-09-21 20:41	*Pipistrellus pipistrellus*
2130114	22-09-21 20:41	*Pipistrellus spec.*
2130116	22-09-21 20:41	*Pipistrellus spec.*
2130117	22-09-21 20:41	*Pipistrellus spec.*
2130119	22-09-21 20:47	*Pipistrellus pipistrellus*
2130120	22-09-21 20:49	*Pipistrellus pipistrellus*

Date: 6/10/21	Start/End Time 18:25 to 20:30	Temp C: 14 to 12 Wind: 2 Cloud: 1 Rain: 0
Sunset time: 18:26	Surveyors MP/CV	Weather notes: Dry and mild, light wind
Recording	**Timestamp**	**Species**
2130000	06-10-21 18:29	*Pipistrellus pygmaeus*
2130001	06-10-21 18:29	*Pipistrellus pygmaeus*
2130003	06-10-21 18:34	*Pipistrellus pygmaeus*
2130004	06-10-21 18:34	*Pipistrellus pygmaeus*
2130005	06-10-21 18:34	*Pipistrellus pygmaeus*
2130006	06-10-21 18:34	*Pipistrellus pygmaeus*
2130007	06-10-21 18:34	*Pipistrellus pygmaeus*
2130008	06-10-21 18:35	*Pipistrellus pygmaeus*
2130009	06-10-21 18:35	*Pipistrellus pygmaeus*
2130010	06-10-21 18:35	*Pipistrellus pygmaeus*
2130011	06-10-21 18:35	*Pipistrellus pygmaeus*
2130012	06-10-21 18:35	*Pipistrellus pygmaeus*
2130013	06-10-21 18:35	*Pipistrellus pygmaeus*
2130014	06-10-21 18:36	*Pipistrellus pygmaeus*
2130015	06-10-21 18:36	*Pipistrellus pygmaeus*
2130016	06-10-21 18:47	*Pipistrellus pygmaeus*
2130017	06-10-21 18:49	*Pipistrellus pygmaeus*
2130018	06-10-21 18:49	*Pipistrellus pygmaeus*
2130019	06-10-21 19:02	*Pipistrellus pygmaeus*
2130020	06-10-21 19:11	*Barbastella barbastellus*
2130022	06-10-21 19:13	*Barbastella barbastellus*
2130023	06-10-21 19:14	*Pipistrellus pygmaeus*
2130024	06-10-21 19:14	*Pipistrellus pygmaeus*

Date: 6/10/21	**Start/End Time 18:25 to 20:30**	**Temp C: 14 to 12 Wind: 2 Cloud: 1 Rain: 0**
Sunset time: 18:26	**Surveyors MP/CV**	**Weather notes: Dry and mild, light wind**
Recording	**Timestamp**	**Species**
2130025	06-10-21 19:14	*Barbastella barbastellus*
2130026	06-10-21 19:16	*Pipistrellus pygmaeus*
2130027	06-10-21 19:17	*Barbastella barbastellus*
2130028	06-10-21 19:17	*Pipistrellus pygmaeus*
2130029	06-10-21 19:18	*Pipistrellus pygmaeus*
2130030	06-10-21 19:19	*Pipistrellus pygmaeus*
2130031	06-10-21 19:19	*Barbastella barbastellus*
2130032	06-10-21 19:19	*Barbastella barbastellus*
2130033	06-10-21 19:20	*Pipistrellus pygmaeus*
2130034	06-10-21 19:20	*Pipistrellus pygmaeus*
2130040	06-10-21 19:23	*Pipistrellus pygmaeus*
2130041	06-10-21 19:25	*Pipistrellus pygmaeus*
2130043	06-10-21 19:28	*Pipistrellus pygmaeus*
2130044	06-10-21 19:28	*Pipistrellus pygmaeus*
2130046	06-10-21 19:31	*Pipistrellus pygmaeus*
2130047	06-10-21 19:31	*Pipistrellus pygmaeus*
2130048	06-10-21 19:31	*Pipistrellus pygmaeus*
2130051	06-10-21 19:46	*Nyctalus noctula*
2130052	06-10-21 19:48	*Nyctalus noctula*
2130053	06-10-21 19:48	*Nyctalus noctula*
2130055	06-10-21 19:58	*Pipistrellus pygmaeus*
2130056	06-10-21 19:58	*Pipistrellus pygmaeus*
2130057	06-10-21 19:58	*Pipistrellus pygmaeus*

Date: 6/10/21	Start/End Time 18:25 to 20:30	Temp C: 14 to 12 Wind: 2 Cloud: 1 Rain: 0
Sunset time: 18:26	Surveyors MP/CV	Weather notes: Dry and mild, light wind
Recording	**Timestamp**	**Species**
2130058	06-10-21 19:59	*Pipistrellus pygmaeus*
2130059	06-10-21 19:59	*Pipistrellus pygmaeus*
2130060	06-10-21 19:59	*Pipistrellus pygmaeus*
2130061	06-10-21 20:00	*Pipistrellus pygmaeus*
2130062	06-10-21 20:01	*Pipistrellus pygmaeus*
2130063	06-10-21 20:08	*Pipistrellus pygmaeus*
2130064	06-10-21 20:08	*Pipistrellus spec.*
2130065	06-10-21 20:10	*Pipistrellus pygmaeus*
2130067	06-10-21 20:13	*Pipistrellus pygmaeus*
2130068	06-10-21 20:13	*Pipistrellus spec.*
2130070	06-10-21 20:15	*Pipistrellus pygmaeus*
2130072	06-10-21 20:16	*Pipistrellus pygmaeus*
2130073	06-10-21 20:16	*Pipistrellus pygmaeus*
2130074	06-10-21 20:16	*Pipistrellus pygmaeus*
2130075	06-10-21 20:20	*Pipistrellus pygmaeus*
2130071	06-10-21 20:16	*Pipistrellus pygmaeus*

Date: 15/10/21	**Start/End Time 18:00 to 20:15**	**Temp C: 12 to 8 Wind: 1 Cloud: 1 Rain: 0**
Sunset time: 18:03	**Surveyors MP/KD**	**Weather notes: Dry, still**
Recording	**Timestamp**	**Species**
2130017	15-10-21 18:42	*Nyctalus noctula*
2130018	15-10-21 18:42	*Pipistrellus pygmaeus*
2130019	15-10-21 18:43	*Nyctalus noctula*
2130020	15-10-21 18:50	*Pipistrellus pygmaeus*
2130021	15-10-21 18:52	*Pipistrellus pygmaeus*
2130024	15-10-21 18:55	*Barbastella barbastellus*
2130026	15-10-21 19:02	*Pipistrellus pygmaeus*
2130027	15-10-21 19:02	*Barbastella barbastellus*
2130027	15-10-21 19:02	*Pipistrellus pygmaeus*
2130061	15-10-21 19:19	*Pipistrellus spec.*
2130047	15-10-21 19:21	*Pipistrellus pygmaeus*
2130048	15-10-21 19:21	*Pipistrellus pygmaeus*
2130049	15-10-21 19:32	*Myotis species*
2130055	15-10-21 19:48	*Pipistrellus pygmaeus*
2130056	15-10-21 19:48	*Pipistrellus pygmaeus*

Static Data Results

Table 9-6. Summary of Static Detector Surveys at the SAC

Location	Dates	PIPY	PIPI	PISP/Pip Social	BABA	Other Social Call	MYSP	NYNO	NYSP	NYSP/EPSE	PLAU	Total	Nights	hrs/nt	BAI all species (passes per hr)
Static 1	22 - 27 Sept	269	320	375	22	74	5	3	0	2	0	1070	5	12.00	**17.83**
Static 1	6 - 16 Oct	608	243	22	36	0	9	27	0	0	0	945	10	13.00	**7.27**
Static 2	22 Sept - 1 Oct	264	450	55	26	5	0	1	1	1	1	804	9	12.00	**7.44**
Static 2	6 - 16 Oct	245	459	25	12	0	14	1	2	0	1	759	10	13.00	**5.84**
Static 3	24 Sept - 6 Oct	63	21	1	50	0	2	0	0	0	0	137	12	12.00	**0.95**
Static 3	6 - 16 Oct	260	107	12	62	0	6	0	1	0	0	448	10	13.00	**3.45**
Total passes		**1709**	**1600**	**490**	**208**	**79**	**36**	**32**	**4**	**3**	**2**	**4163**			

Notes:
1. Note varying numbers of hours per night (sunset to sunrise) at different times of the year, rounded to nearest 0.25hrs.
2. Key to species in table - PIPI (Common Pipistrelle (*Pipistrellus pipistrellus*)) PIPY (Soprano Pipistrelle (*Pipistrellus pygmaeus*)), PISP (Common or Soprano Pipistrelle), BABA (Barbastelle (*Barbastella barbastellus*)), Pip Social (Pipistrelle social call), NYNO (Noctule (*Nyctalus noctula*)), NYLE (Leisler's (*Nyctalus leisleri*)), NYSP (Noctule or Leisler's), NYSP/EPSE ('*Nyctalus/ Eptesicus* species', i.e. Noctule, Leisler's or Serotine (*Eptesicus serotinus*), MYSP (*Myotis* species), MYDA (Daubenton's (*Myotis daubentonii*)), PLAU (Brown Long-eared (*Plecotus auritus*)).

Weather conditions

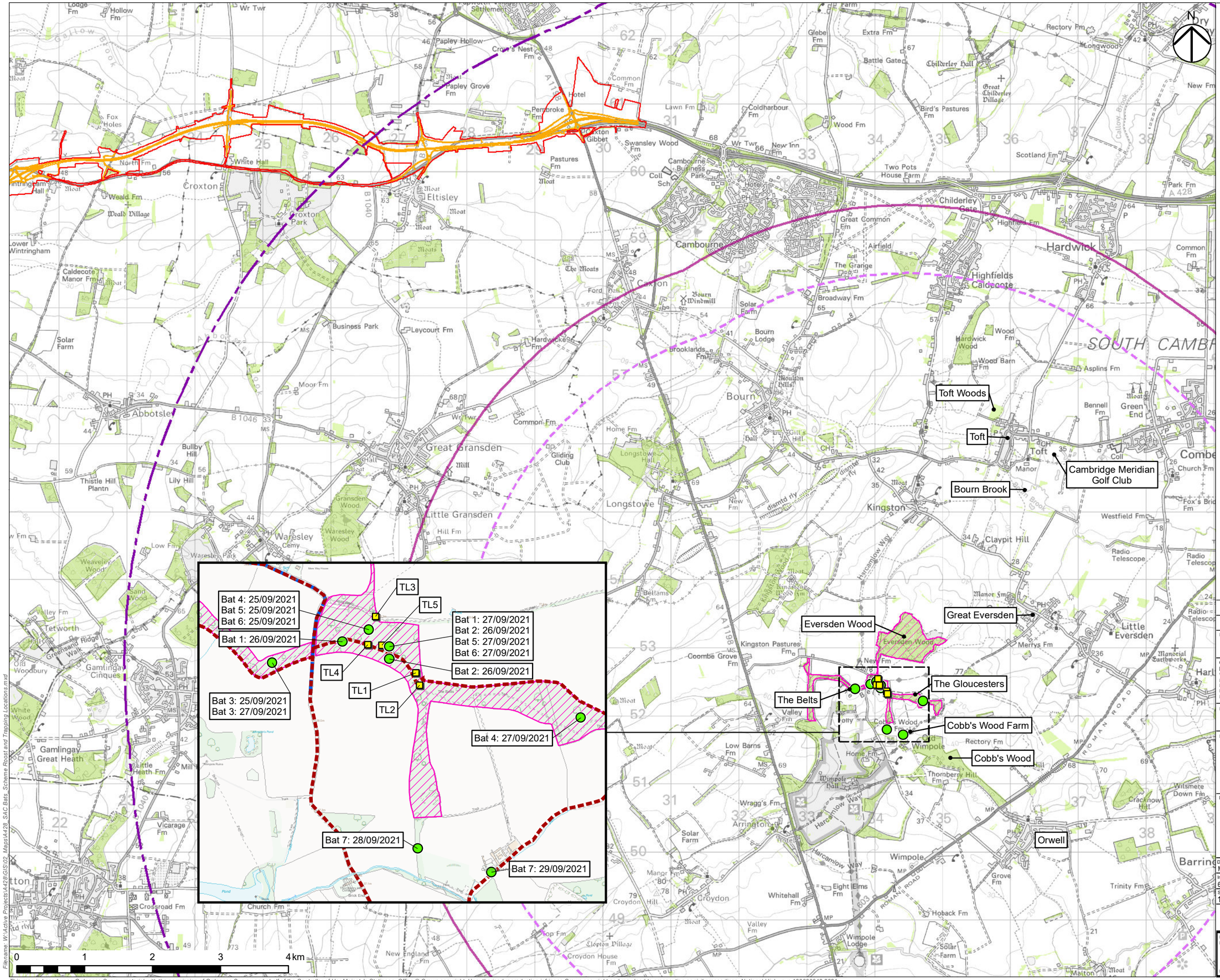
Table 9-7. Weather During Static Detector Surveys at SAC

Date	Minimum temperature (°C)	Maximum Temperature (°C)	Minimum wind mph	Max. Wind mph	Rain*
22-Sep	11	19	3	7	0
23-Sep	11	18	2	9	2
24-Sep	16	21	3	9	0
25-Sep	14	18	3	7	2
26-Sep	15	18	7	14	1
27-Sep	10	15	7	10	0
28-Sep	8	14	6	15	2
29-Sep	7	13	6	8	1
30-Sep	7	10	7	9	0
01-Oct	6	12	5	7	0
02-Oct	9	13	5	10	1
03-Oct	9	12	7	10	0
04-Oct	12	13	10	24	2
05-Oct	10	12	14	25	1
06-Oct	11	13	2	9	0
07-Oct	13	17	5	8	0
08-Oct	9	16	1	7	0
09-Oct	10	12	1	5	0
10-Oct	7	13	5	12	0
11-Oct	8	12	5	10	0
12-Oct	8	11	2	7	0

Date	Minimum temperature (°C)	Maximum Temperature (°C)	Minimum wind mph	Max. Wind mph	Rain*
13-Oct	10	14	2	5	0
14-Oct	11	14	7	12	0
15-Oct	5	8	1	7	0

*Rain Scale: 0-none, 1-drizzle, 2-showers, 3-consistent rain, 4-downpour, 5-flood.

Appendix B: Figures



NOTES

LEGEND

- Order Limits
- The Scheme
- Bat roost location (with bat reference number)
- Trapping location (TL)
- Eversden and Wimpole Woods SAC
- Core Sustenance Zone, 6km (source: Bat Conservation Trust (2016) Core Sustenance Zones: Determining zone size)

Eversden and Wimpole SAC Impact Risk Zone: (source: Greater Cambridgeshire Shared Planning: Biodiversity Supplementary Planning Document (SPD) Consultation Draft July 2021)

- 5km
- 10km

Revision Details	By / Check	Date	Suffix

Purpose of Issue: FOR INFORMATION

Client: National Highways, Woodlands, Manton Lane, Manton Industrial Estate, Bedford, MK41 7LW

Development Consent Order Number:

Project Title: A428 BLACK CAT TO CAXTON GIBBET IMPROVEMENTS

Drawing Title: FIGURE 1 THE SAC, SCHEME, ROOST AND TRAPPING LOCATIONS

Designed	Drawn	Checked	Approved	Date
MP	BF	MW	JG	15/11/2021

Internal Project No	Suitability
60541541	S1
Scale @ A3: 1:50,000	Zone

Drawing Number: National Highways Pin | Originator | Volume | Location | Type | Role | Number

Rev: P01

Filename: W:\Active Projects\A428\GIS\02_Maps\A428_SAC Bats_Scheme Roost and Trapping Locations.mxd

NOTES

LEGEND

- Order Limits
- The Scheme
- Eversden and Wimpole Woods SAC
- Summary extent of all tracked bat locations (See figures 2.2 to 2.8 for Individual bat tracking)

Survey Observation Route

- Route 1
- Route 2
- Route 3

- Core Sustenance Zone, 6km (source: Bat Conservation Trust (2016) Core Sustenance Zones: Determining zone size)

Eversden and Wimpole SAC Impact Risk Zone: (source: Greater Cambridgeshire Shared Planning: Biodiversity Supplementary Planning Document (SPD) Consultation Draft July 2021)

- 5km
- 10km

Extents of Everden and Wimpole SAC Impact Risk Zone and Core Sustenance Zone

1:300,000

0 1 2 3 4 5 10 km

0 1 2 3 4 km

Revision Details	By / Check	Date	Suffix

Purpose of Issue

FOR INFORMATION

Client

National Highways
Woodlands
Manton Lane
Manton Industrial Estate
Bedford
MK41 7LW

Development Consent Order Number

Project Title

A428 BLACK CAT TO CAXTON GIBBET IMPROVEMENTS

Drawing Title

FIGURE 2.1
BARBASTELLE BAT TRACKING RESULTS OVERVIEW

Designed	Drawn	Checked	Approved	Date
MP	BF	MW	JG	16/11/2021

Internal Project No	Suitability
60541541	S1
Scale @ A3	Zone
1:50,000	

Drawing Number
National Highways Pin | Originator | Volume | Location | Type | Role | Number

Rev P01

Filename: W:\Active Projects\A428\GIS\02_Maps\A428_SAC Bats_Tracking overview 2021.mxd

Toft Woods
Toft
Cambridge Meridian Golf Club
Bourn Brook
Eversden Wood
The Belts
The Gloucesters
Cobb's Wood Farm
Cobb's Wood
Great Eversden
Kingston
Claypit Hill
Westfield Fm
Radio Telescope
Manor
Toft
Coll
Bennell Fm
Green End
Gill's Hall
New Fm
Kingston Wood Fm
Kingston Pastures Fm
Valley Fm
Low Barns Fm
Old Wimpole
Home Fm
Wimpole
Thorn Hill
Rectory Fm
Fox Hill
Thornberry Hill Fm
Merrys Fm
Little Eversden
Manorial Earthworks
Harcamlow Way
ROMAN ROAD
dismtd rly
Born Brook
Moat

0 0.2 0.4 0.6 0.8 1 2 km

NOTES

LEGEND

- Eversden and Wimpole Woods SAC
- Bat roost locations

Tracked bat activity

- Commuting/foraging route
- Estimated bat location

Eversden and Wimpole SAC Impact Risk Zone: (source: Greater Cambridgeshire Shared Planning: Biodiversity Supplementary Planning Document (SPD) Consultation Draft July 2021)

- 5km

Revision Details	By / Check	Date	Suffix

Purpose of Issue: FOR INFORMATION

Client: National Highways, Woodlands, Manton Lane, Manton Industrial Estate, Bedford, MK41 7LW

Development Consent Order Number:

Project Title: A428 BLACK CAT TO CAXTON GIBBET IMPROVEMENTS

Drawing Title: FIGURE 2.2 **BAT 1** - TRACKING RESULTS

Designed	Drawn	Checked	Approved	Date
MP	BF	MW	JG	16/11/2021

Internal Project No	Suitability
60541541	S1
Scale @ A3: 1:20,000	Zone

Drawing Number: National Highways Pin | Originator | Volume | Location | Type | Role | Number — Rev: P01

Filename: W:\Active Projects\A428\GIS\02_Maps\A428_SAC Bats_Individual Bat Tracking 2021.mxd

Eversden Wood

The Belts

The Gloucesters

Cobb's Wood Farm

Cobb's Wood

Great Eversden

Orwell

0 0.2 0.4 0.6 0.8 1 2km

NOTES

LEGEND

Eversden and Wimpole Woods SAC

Bat roost locations

Tracked bat activity

Commuting/foraging route

Estimated bat location

Eversden and Wimpole SAC Impact Risk Zone: (source: Greater Cambridgeshire Shared Planning: Biodiversity Supplementary Planning Document (SPD) Consultation Draft July 2021)

5km

Revision Details	By / Check	Date	Suffix

Purpose of Issue: FOR INFORMATION

Client: National Highways, Woodlands, Manton Lane, Manton Industrial Estate, Bedford, MK41 7LW

Development Consent Order Number:

Project Title: A428 BLACK CAT TO CAXTON GIBBET IMPROVEMENTS

Drawing Title: FIGURE 2.3 **BAT 2** - TRACKING RESULTS

Designed	Drawn	Checked	Approved	Date
MP	BF	MW	JG	16/11/2021

Internal Project No	Suitability
60541541	S1
Scale @ A3: 1:15,000	Zone

Drawing Number: National Highways Pin | Originator | Volume | Location | Type | Role | Number

Rev: P01

Filename: W:\Active Projects\A428\GIS\02_Maps\A428_SAC Bats_Individual Bat Tracking 2021.mxd

Eversden Wood

The Belts

The Gloucesters

Great Eversden

Cobb's Wood Farm

Cobb's Wood

Orwell

0 0.2 0.4 0.6 0.8 1 2km

NOTES

LEGEND

Eversden and Wimpole Woods SAC

Bat roost locations

Tracked bat activity

Commuting/foraging route

Estimated bat location

Eversden and Wimpole SAC Impact Risk Zone: (source: Greater Cambridgeshire Shared Planning: Biodiversity Supplementary Planning Document (SPD) Consultation Draft July 2021)

5km

Revision Details	By / Check	Date	Suffix

Purpose of Issue: FOR INFORMATION

Client: National Highways, Woodlands, Manton Lane, Manton Industrial Estate, Bedford, MK41 7LW

Development Consent Order Number:

Project Title: A428 BLACK CAT TO CAXTON GIBBET IMPROVEMENTS

Drawing Title: FIGURE 2.4 **BAT 3** - TRACKING RESULTS

Designed	Drawn	Checked	Approved	Date
MP	BF	MW	JG	16/11/2021

Internal Project No	Suitability
60541541	S1
Scale @ A3: 1:15,000	Zone

Drawing Number: National Highways Pin | Originator | Volume | Location | Type | Role | Number

Rev: P01

Filename: W:\Active Projects\A428\GIS\02_Maps\A428_SAC Bats_Individual Bat Tracking 2021.mxd

Eversden Wood

Great Eversden

The Belts

The Gloucesters

Cobb's Wood Farm

Cobb's Wood

Orwell

0 0.2 0.4 0.6 0.8 1 2km

NOTES

LEGEND

Eversden and Wimpole Woods SAC

Bat roost locations

Tracked bat activity

Commuting/foraging route

Estimated bat location

Eversden and Wimpole SAC Impact Risk Zone: (source: Greater Cambridgeshire Shared Planning: Biodiversity Supplementary Planning Document (SPD) Consultation Draft July 2021)

5km

Revision Details	By / Check	Date	Suffix

Purpose of Issue: FOR INFORMATION

Client: National Highways, Woodlands, Manton Lane, Manton Industrial Estate, Bedford, MK41 7LW

Development Consent Order Number:

Project Title: A428 BLACK CAT TO CAXTON GIBBET IMPROVEMENTS

Drawing Title: FIGURE 2.5 **BAT 4** - TRACKING RESULTS

Designed	Drawn	Checked	Approved	Date
MP	BF	MW	JG	16/11/2021

Internal Project No	Suitability
60541541	S1
Scale @ A3: 1:15,000	Zone

Drawing Number: National Highways Pin | Originator | Volume | Location | Type | Role | Number — Rev: P01

Filename: W:\Active Projects\A428\GIS\02_Maps\A428_SAC Bats_Individual Bat Tracking 2021.mxd

Eversden Wood

Great Eversden

The Belts

The Gloucesters

Cobb's Wood Farm

Cobb's Wood

Orwell

0 0.2 0.4 0.6 0.8 1 2km

NOTES

LEGEND

Eversden and Wimpole Woods SAC

Bat roost locations

Tracked bat activity

Commuting/foraging route

Estimated bat location

Eversden and Wimpole SAC Impact Risk Zone: (source: Greater Cambridgeshire Shared Planning: Biodiversity Supplementary Planning Document (SPD) Consultation Draft July 2021)

5km

Revision Details	By / Check	Date	Suffix

Purpose of Issue: FOR INFORMATION

Client: National Highways, Woodlands, Manton Lane, Manton Industrial Estate, Bedford, MK41 7LW

Development Consent Order Number:

Project Title: A428 BLACK CAT TO CAXTON GIBBET IMPROVEMENTS

Drawing Title: FIGURE 2.6 **BAT 5** - TRACKING RESULTS

Designed	Drawn	Checked	Approved	Date
MP	BF	MW	JG	16/11/2021

Internal Project No	Suitability
60541541	S1
Scale @ A3: 1:15,000	Zone

Drawing Number: National Highways Pin | Originator | Volume | Location | Type | Role | Number — Rev: P01

Filename: W:\Active Projects\A428\GIS\02_Maps\A428_SAC Bats_Individual Bat Tracking 2021.mxd

Toft Woods
Toft
Cambridge Meridian Golf Club
Bourn Brook
Eversden Wood
The Belts
The Gloucesters
Cobb's Wood Farm
Cobb's Wood
Great Eversden

0 0.2 0.4 0.6 0.8 1 2 km

Filename: W:\Active Projects\A428\GIS\02_Maps\A428_SAC Bats_Individual Bat Tracking 2021.mxd

NOTES

LEGEND

- Eversden and Wimpole Woods SAC
- Bat roost locations

Tracked bat activity

- Commuting/foraging route
- Estimated bat location

Eversden and Wimpole SAC Impact Risk Zone: (source: Greater Cambridgeshire Shared Planning: Biodiversity Supplementary Planning Document (SPD) Consultation Draft July 2021)

- 5km

Revision Details	By / Check	Date	Suffix

Purpose of Issue: FOR INFORMATION

Client: National Highways, Woodlands, Manton Lane, Manton Industrial Estate, Bedford, MK41 7LW

Development Consent Order Number:

Project Title: A428 BLACK CAT TO CAXTON GIBBET IMPROVEMENTS

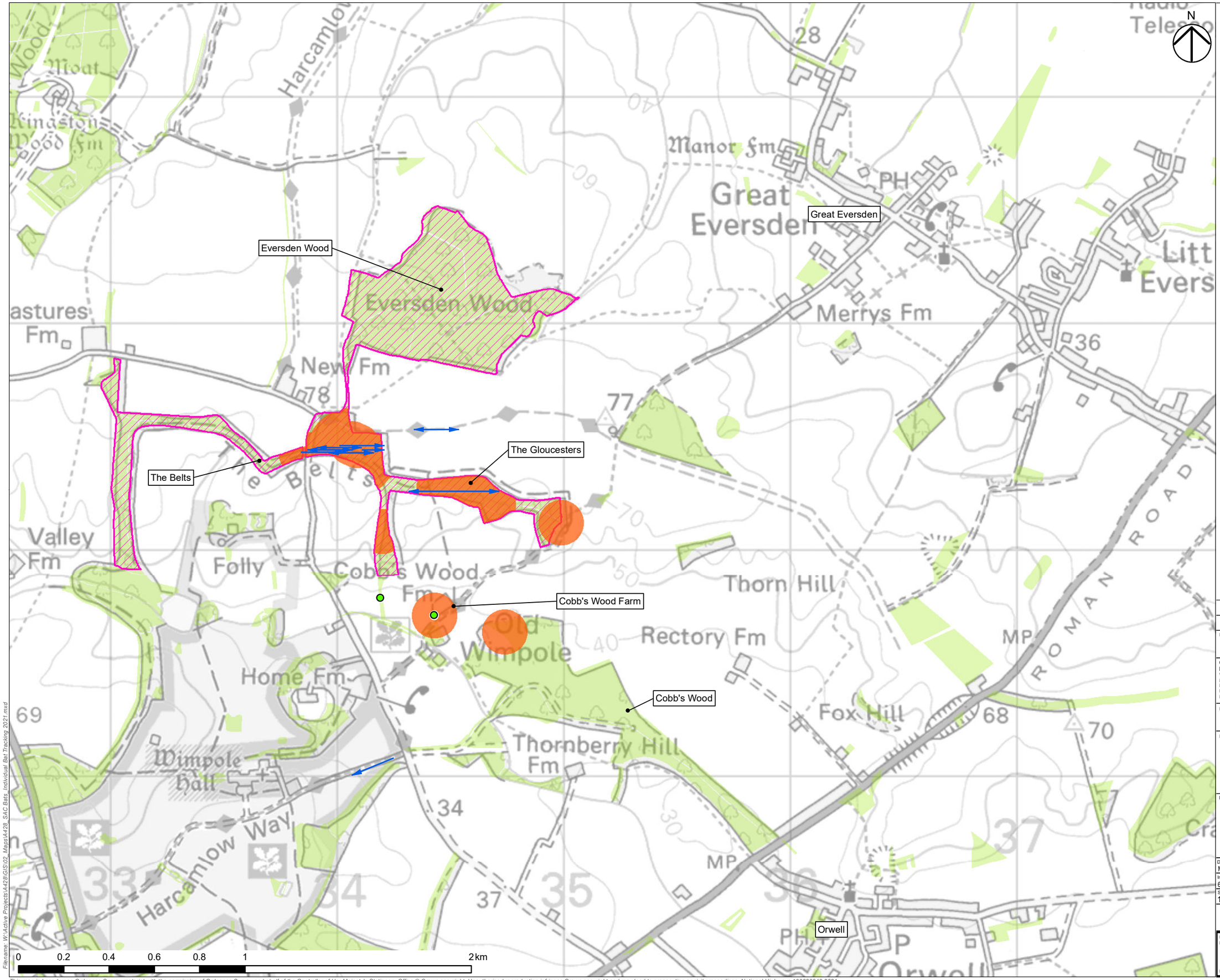
Drawing Title: FIGURE 2.7 **BAT 6** - TRACKING RESULTS

Designed	Drawn	Checked	Approved	Date
MP	BF	MW	JG	16/11/2021

Internal Project No	Suitability
60541541	S1
Scale @ A3: 1:20,000	Zone

Drawing Number: National Highways Pin | Originator | Volume | Location | Type | Role | Number

Rev: P01



NOTES

LEGEND

- Eversden and Wimpole Woods SAC
- Bat roost locations

Tracked bat activity

- Commuting/foraging route
- Estimated bat location

Eversden and Wimpole SAC Impact Risk Zone: (source: Greater Cambridgeshire Shared Planning: Biodiversity Supplementary Planning Document (SPD) Consultation Draft July 2021)

- 5km

Revision Details	By / Check	Date	Suffix

Purpose of Issue: FOR INFORMATION

Client: National Highways, Woodlands, Manton Lane, Manton Industrial Estate, Bedford, MK41 7LW

Development Consent Order Number:

Project Title: A428 BLACK CAT TO CAXTON GIBBET IMPROVEMENTS

Drawing Title: FIGURE 2.8 **BAT 7** - TRACKING RESULTS

Designed	Drawn	Checked	Approved	Date
MP	BF	MW	JG	16/11/2021

Internal Project No	Suitability
60541541	S1
Scale @ A3: 1:15,000	Zone

Drawing Number: National Highways Pin | Originator | Volume | Location | Type | Role | Number — Rev: P01

Filename: W:\Active Projects\A428\GIS\02_Maps\A428_SAC Bats_Individual Bat Tracking 2021.mxd

N

Eversden Wood

S1

S2

S3

The Belts

The Gloucesters

Crane's Lane

Track

Drain

Pond

Moat

Ponds

Cottage

(Telecommunication)

Silos

Driftway

Mare Way House

Path (um)

Johnston's Pond

Wimpole Ruins

1:400
0 5 10m

1:300
0 5 10m

0 150 300m

NOTES

LEGEND

- Eversden and Wimpole Woods SAC
- Survey transect route
- Static detector location (**S#**)

Bat records and number of passes

- B Barbastella barbastellus (4)
- CP Pipistrellus pipistrellus (15)
- SP Pipistrellus pygmaeus (58)
- P Pipistrellus spec. (4)

Revision Details	By / Check	Date	Suffix

Purpose of Issue

FOR INFORMATION

Client

National Highways
Woodlands
Manton Lane
Manton Industrial Estate
Bedford
MK41 7LW

Development Consent Order Number

Project Title

A428 BLACK CAT TO CAXTON GIBBET IMPROVEMENTS

Drawing Title

FIGURE 3.1
EVERSDEN AND WIMPOLE WOODS SAC TRANSECT SURVEY
22/09/2021

Designed	Drawn	Checked	Approved	Date
MP	BF	MW	JG	07/12/2021

Internal Project No	Suitability
60541541	S1
Scale @ A3	Zone
1:6,000	

Drawing Number
National Highways Pin | Originator | Volume | Location | Type | Role | Number

Rev P01

Filename: W:\Active Projects\A428\GIS\02_Maps\A428_SAC Bats_Transect Survey 2021.mxd

N

Eversden Wood

S1

S2

S3

The Belts

The Gloucesters

Cottage

Crane's Lane

Track

Pond

Drain

Moat

Ponds

Path (um)

(Telecommunication)

Silos

Driftway

Mare Way House

Johnston's Pond

Wimpole Ruins

77.3m

76.9m

75.8m

76.6m

77.9m

78.2m

78.6m

0 150 300m

1:1,250
0 10 20m

1:400
0 5 10m

NOTES

LEGEND

- Eversden and Wimpole Woods SAC
- Survey transect route
- Static detector location (**S#**)

Bat records and number of passes

- B Barbastella barbastellus (6)
- NO Nyctalus noctula (3)
- SP Pipistrellus pygmaeus (51)
- P Pipistrellus spec. (2)

Revision Details	By / Check	Date	Suffix

Purpose of Issue

FOR INFORMATION

Client

National Highways
Woodlands
Manton Lane
Manton Industrial Estate
Bedford
MK41 7LW

Development Consent Order Number

Project Title

A428 BLACK CAT TO CAXTON GIBBET IMPROVEMENTS

Drawing Title

FIGURE 3.2
EVERSDEN AND WIMPOLE WOODS SAC TRANSECT SURVEY
06/10/2021

Designed	Drawn	Checked	Approved	Date
MP	BF	MW	JG	07/12/2021

Internal Project No	Suitability
60541541	S1
Scale @ A3 1:6,000	Zone

Drawing Number
National Highways Pin | Originator | Volume | Location | Type | Role | Number

Rev P01

Filename: W:\Active Projects\A428\GIS\02_Maps\A428_SAC Bats_Transect Survey 2021.mxd

N

Eversden Wood

The Belts

The Gloucesters

S1

S2

S3

Crane's Lane

Track

Drain

Pond

Moat

Ponds

Cottage

(Telecommunication)

Driftway

Mare Way House

Path (um)

Johnston's Pond

Wimpole Ruins

(Track)

77.3m

76.9m

75.8m

76.6m

77.9m

78.2m

77.5m

78.6m

75.9m

58.5m

47.3m

0 150 300m

NOTES

LEGEND

- Eversden and Wimpole Woods SAC
- Survey transect route
- Static detector location (**S#**)

Bat records and number of passes

- B Barbastella barbastellus (2)
- M Myotis spec. (1)
- NO Nyctalus noctula (2)
- SP Pipistrellus pygmaeus (9)

Revision Details	By / Check	Date	Suffix

Purpose of Issue

FOR INFORMATION

Client

National Highways
Woodlands
Manton Lane
Manton Industrial Estate
Bedford
MK41 7LW

Development Consent Order Number

Project Title

A428 BLACK CAT TO CAXTON GIBBET IMPROVEMENTS

Drawing Title

FIGURE 3.3
EVERSDEN AND WIMPOLE WOODS SAC TRANSECT SURVEY
15/10/2021

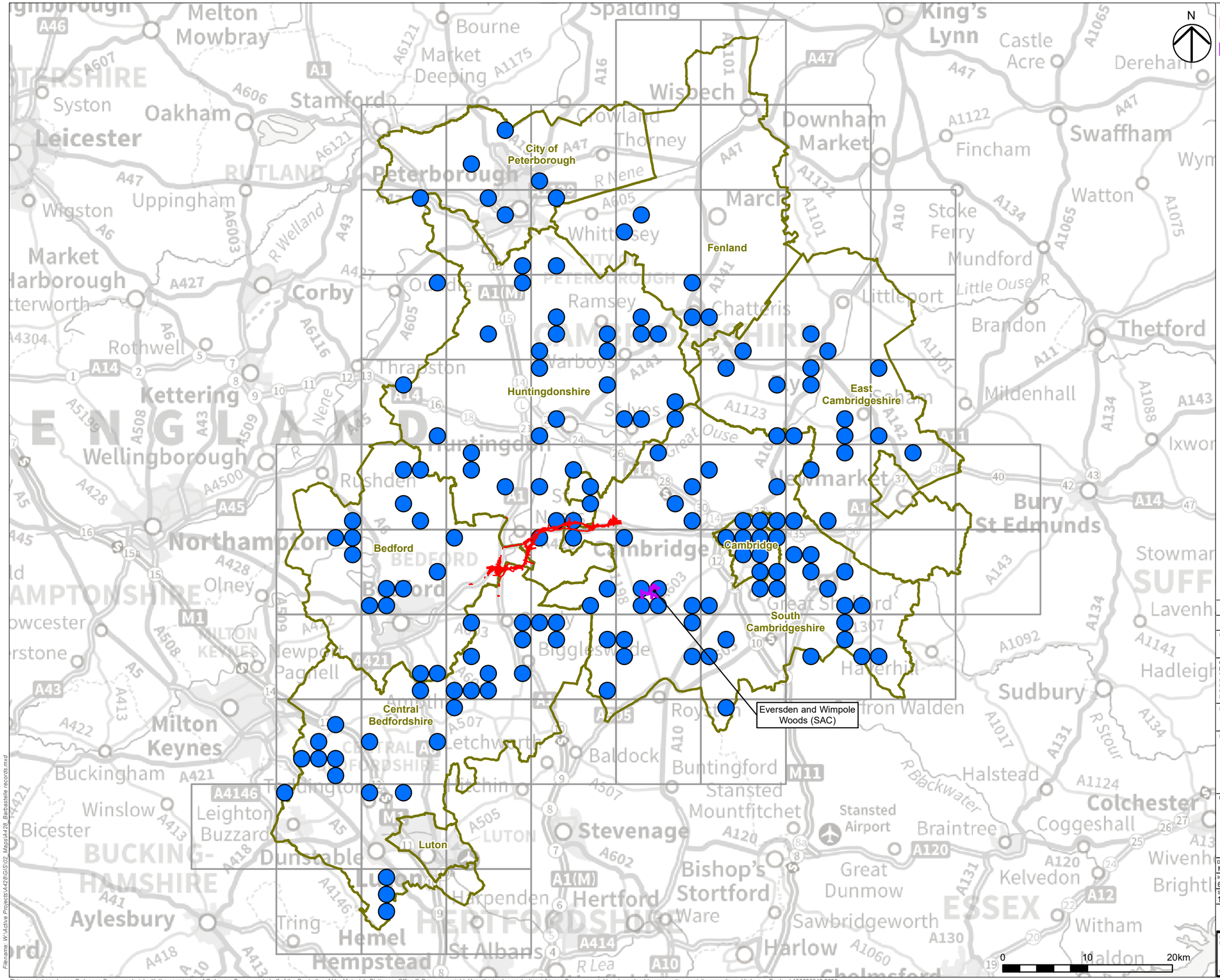
Designed	Drawn	Checked	Approved	Date
MP	BF	MW	JG	07/12/2021

Internal Project No	Suitability
60541541	S1
Scale @ A3 1:6,000	Zone

Drawing Number
National Highways Pin | Originator | Volume | Location | Type | Role | Number

Rev P01

Filename: W:\Active Projects\A428\GIS\02_Maps\A428_SAC Bats_Transect Survey 2021.mxd



Legend

- Order Limits
- Eversden and Wimpole Woods SAC
- Barbastelle bat record (Source: Bedford and Cambridge record centre, NBN Gateway, BMRC)

Revision Details	By / Check	Date	Suffix

Purpose of Issue: FOR INFORMATION

Client: National Highways, Woodlands, Manton Lane, Manton Industrial Estate, Bedford, MK41 7LW

Development Consent Order Number:

Project Title: A428 BLACK CAT TO CAXTON GIBBET IMPROVEMENTS

Drawing Title: FIGURE 4. BARBASTELLE BAT RECORDS, BEDFORD AND CAMBRIDGESHIRE

Designed	Drawn	Checked	Approved	Date
MC	BF		--	24/11/2021

Internal Project No	Suitability
60541541	S01
Scale @ A3: 1:400,000	Zone

Drawing Number: Highways England Pin | Originator | Volume | Location | Type | Role | Number — Rev: P01

Filename: W:\Active Projects\A428\GIS\02_Maps\A428_Barbastelle records.mxd

Appendix C Planning Insepctorate Appropriate Assessment Matrices

Following Natural England's advice that likely significant effects could not be ruled out, and without prejudice to the Applicant's position, the potential for an adverse effect on integrity to arise as a result of the Scheme alone and in-combination with other plans and projects has been considered in respect of the following European site:

Eversden and Wimpole Woods SAC

Evidence for the conclusions reached on integrity is detailed within the footnotes to the matrices below.

Matrix Key

✓ **=** Adverse effect on integrity **cannot** be excluded
✕ **=** Adverse effect on integrity **can** be excluded

C = construction
O = operation
D = decommissioning

Potential effects upon the identified European sites are presented below in the format prescribed in the Planning Inspectorate's Advice Note Ten [REF 1-2].

Table 9-8. HRA Integrity Matrix 1: Eversden and Wimpole Woods SAC

Name of European site and designation: Eversden and Wimpole SAC						
EU Code: UK0030331						
Distance to Scheme: 8.10 km (5.03 miles)						
European site features	**Adverse effect on integrity**					
Effect	Species displacement			In-combination effects		
Stage of Development	C	0	D	C	O	D
Annex II [REF 1-9] species (Barbastelle)	X a	X b	X c	X d	X e	X c

Footnotes to Table

a. As the SAC is located at a distance from the Scheme, there would be no disturbance to, or displacement of, key species during construction of the Scheme from temporary noise, vibration, lighting and visual changes. Accordingly, no impacts would occur on the site's Barbastelle population from these sources during construction. Refer to Section 5.2 for analysis to support this conclusion.

b. Given the intervening distance between the Scheme and the Core Area (which contains habitat areas relevant to supporting the breeding population), the SAC's population of Barbastelle has access to other populations outside of the Core Area, and the absence of functionally-linked habitat, there would be no reduction in species density, no increases in mortality and no reduction in genetic exchange on the site's Barbastelle population as a result of the Scheme. Refer to Section 5.2 for analysis to support this conclusion.

c. This scenario does not apply as the Scheme has no planned obsolescence (and would therefore not be subject to any decommissioning); therefore, no impacts would occur on the site's Barbastelle population. Refer to Section 5.2 for analysis to support this conclusion.

d. As construction of the Scheme would not result in any impacts on the site's Barbastelle population, the assessment concluded there to be no potential for in-combination effects to occur as a result of the Scheme interacting with other plans and projects. Refer to Section 5.2 for analysis to support this conclusion.

e. As operation and maintenance of the Scheme would not result in any impacts on the site's Barbastelle population, the assessment concluded there to be no potential for in-combination effects to occur as a result of the Scheme interacting with other plans and projects. Refer to Section 5.2 for analysis to support this conclusion.

Appendix D Eversden and Wimpole Woods SAC Citation

EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

Citation for Special Area of Conservation (SAC)

Name:	Eversden and Wimpole Woods
Unitary Authority/County:	Cambridgeshire
SAC status:	Designated on 1 April 2005
Grid reference:	TL340526
SAC EU code:	UK0030331
Area (ha):	66.48
Component SSSI:	Eversden and Wimpole Woods SSSI

Site description:
The site comprises a mixture of ancient coppice woodland (Eversden Wood) and high forest woods likely to be of more recent origin (Wimpole Woods). A colony of barbastelle bats *Barbastella barbastellus* is associated with the trees in Wimpole Woods. These trees are used as a summer maternity roost where the female bats gather to give birth and rear their young. Most of the roost sites are within tree crevices. The bats also use the site as a foraging area. Some of the woodland is also used as a flight path when bats forage outside the site.

Qualifying species: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

- Barbastelle bat *Barbastella barbastellus*

This citation relates to a site entered in the Register of European Sites for Great Britain.
Register reference number: UK0030331
Date of registration: 14 June 2005
Signed: Trevor Salmon
On behalf of the Secretary of State for Environment, Food and Rural Affairs