

A303 Amesbury to Berwick Down

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6.3 Environmental Statement Appendices

Appendix 8.18 Bat crossing point survey report

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A303 Stonehenge

Amesbury to Berwick Down

Bat Crossing Point Survey Report 2017

Arup Atkins Joint Venture

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Foreword

The A303/A358 corridor is a vital connection between the South West and London and the South East. While the majority of the road has been dualled, there are still over 35 miles of single carriageway. These sections act as bottlenecks for users of the route resulting in congestion, particularly in the summer months and at weekends, delays to traffic travelling between the M3 and the South West and an increased risk of accidents. The A303 passes through the Stonehenge, Avebury and Associated Sites World Heritage Site, separating the stones from other scheduled monuments and severely limiting the enjoyment of the wider site.

The A303 Stonehenge (Amesbury to Berwick Down) scheme is part of the wider package of proposals for the A303/A358 corridor designed to transform the connectivity to and from the South West by creating an expressway. This would comprise of consistently good dual carriageway roads with grade-separated junctions, giving most users a motorway-quality journey. The A303/A358 package was identified in the 2014 National Infrastructure Plan as one of the country's Top 40 priority infrastructure projects.

The proposals by Highways England to upgrade the A303 past Stonehenge consist of an eight mile (13 kilometre) stretch from Amesbury in the east, through the Stonehenge World Heritage Site (WHS) and the village of Winterbourne Stoke, to Berwick Down in the west. Proposals include a 1.8 mile (2.9 kilometre) tunnel with approach roads inside the WHS, a new bypass for Winterbourne Stoke (passing either north or south of the village) and improvements to existing junctions with the A345 and A360.

Highways England (HE) commissioned the Arup-Atkins Joint Venture (AAJV) to undertake the Options Phase for the scheme starting in January 2016. The AAJV was also commissioned by HE to undertake bat surveys along these proposed route options in order to 'de-risk' the next stages of the project, due to the fast-tracked nature of the scheme. This report presents the findings of the 2017 bat crossing point surveys, and should be read in conjunction with the other bat survey reports (namely the 2017 Bat Activity Survey Report (in prep), the 2017 Bat Roost Report (in prep), and the 2017 bat trapping and radiotracking report (in prep) to gain a full appreciation of the overall bat activity and species assemblages across the route options. The AAJV would like to thank all the landowners for their considerable help and consideration during the course of the surveys.

Executive Summary

The AAJV were commissioned by Highways England in 2017 to undertake Bat Crossing Point Surveys as part of a programme of ecological surveys to inform the design of the proposed A303 Amesbury to Berwick Down road improvement scheme. This report presents the methodology and baseline survey data recorded during the 2017 crossing point surveys across each of the three route options proposed at the time.

A framework of international (European), national and local legislation and planning policy guidance exists to protect and conserve bats.

The bat crossing point surveys were carried out in accordance with the Department for Environment, Food & Rural Affairs (DEFRA)'s "*Development of a cost-effective method for monitoring the effectiveness of mitigation for bats crossing linear transport infrastructure - WC1060* (A. Berthinussen & J. Altringham, 2015)"¹.

The objective of these 2017 surveys was to collect quantifiable data from existing bat commuting routes that would be directly severed by the three proposed route options. Following a desk study and an appraisal of the habitats on the ground by AAJV ecologists, alongside emerging data from static bat detector surveys and bat activity transect surveys undertaken across all options in May 2017, a total of nine commuting features which would be directly severed by the three proposed route options were selected for further survey. Three of these locations, CP1, CP2 and CP3, were common to all three route options.

The number of commuting bats seen using the features at each survey location and the overall levels of bat activity varied considerably according to the nature of the feature being surveyed and the quality of the commuting and foraging habitat for bats in the immediate and wider surroundings.

This survey fulfilled its objectives in producing quantifiable pre-construction data that can be used alongside the data from the same surveys repeated during construction and post-construction to determine the effectiveness of future mitigation structures designed and built to help bats cross the preferred scheme option.

A complete assessment of potential impacts to bats will be undertaken within the Environmental Impact Assessment for the preferred route option, along with details of mitigation and compensation measures as appropriate.

¹ [Development of a cost-effective method for monitoring the effectiveness of mitigation for bats crossing linear transport infrastructure - WC1060.](#)

1 Introduction

1.1 Project Background

1.1.1 The A303 Stonehenge (Amesbury to Berwick Down) scheme forms part of the A303/A30 trunk route, which provides vital east-west connectivity between London and the South West and is also part of the Trans-European Network-Transport (TEN-T). The A303, which runs for approximately 150km from Junction 8 of the M3 near Basingstoke towards Taunton and Exeter, serves not only long distance traffic but also intermediate regional destinations via connecting major north-south route options as well as local small and medium sized settlements along the route.

1.1.2 Recognising the importance of the A303/A358 Corridor and the problems along it, the Government has committed in its Road Investment Strategy (RIS) to create an 'Expressway' to the South West via the A303/A358 route by 2029. The A303 Stonehenge scheme, involving dualling the A303 between Amesbury and Berwick Down, including the construction of a tunnel at least 1.8 miles (2.9 kilometres) long as the road passes Stonehenge, has been prioritised within the first RIS period (2015/16 to 2019/20).

1.1.3 Following public consultation in January 2017, three routes were recommended for detailed assessment during 2017, Route Options 1Na, 1Sa and 1Nd.

1.2 Scope

1.2.1 This report presents the survey data from the first stage (the pre-construction stage) of the bat crossing point surveys for the A303 Stonehenge Amesbury to Berwick Down Scheme, collected along the three route options.

1.3 Survey Objectives

1.3.1 The crossing point surveys were carried out in accordance with DEFRA's "Development of a cost-effective method for monitoring the effectiveness of mitigation for bats crossing linear transport infrastructure - WC1060 (A. Berthinussen & J. Altringham, 2015)"². The objectives of which are as follows:

- To collect quantifiable data from existing bat commuting routes at the pre-construction stage, which will be directly severed by the proposed scheme options. This data can then be used to compare with future data from construction stage and a minimum three years' post-construction stage data to assess the effectiveness of mitigation structures designed and built to help bats cross the preferred route option safely. For the crossing structure to be effective, a similar number of bats must be using the commuting route before and after construction, and at least 90% of bats must be 'using' the structure to cross the road safely. If either of these criteria are not met then the crossing structure cannot be considered to be effective.
- Carry out the surveys in such a way that they are repeatable during and after construction in order that the data from each year's surveys can be compared.

² [Development of a cost-effective method for monitoring the effectiveness of mitigation for bats crossing linear transport infrastructure - WC1060.](#)

1.4 Legislation

- 1.4.1 Bats are a European Protected Species (EPS), and are protected under Regulation 41 of the Conservation of Habitats and Species Regulations 2010 (as amended), known as the Habitats Regulations.
- 1.4.2 Under the Habitats Regulations, it is an offence to deliberately capture, injure or kill any wild animal of an EPS, deliberately disturb wild animals of any such species, deliberately take or destroy the eggs of such an animal or damage or destroy a breeding site or resting place of such an animal.
- 1.4.3 Bats receive further protection through inclusion on Schedule 5 of the Wildlife and Countryside Act (WCA) 1981 (as amended). Under this Act it is an offence to intentionally kill, injure or take any protected species; intentionally or recklessly damage, destroy or obstruct access to any structure or place which a protected species uses for shelter or protection; and intentionally or recklessly disturb any protected species while it is occupying a structure or place which it uses for shelter or protection.
- 1.4.4 Actions which are prohibited by legislation can be made lawful on the approval and granting of a licence from Natural England (NE), subject to conditions.
- 1.4.5 The reader should refer to the original legislation for the definitive interpretation.

2 Methodology

2.1 Survey Methods

2.1.1 The crossing point surveys were carried out in accordance with DEFRA's "Development of a cost-effective method for monitoring the effectiveness of mitigation for bats crossing linear transport infrastructure - WC1060 (A. Berthinussen & J. Altringham, 2015)"³.

2.1.2 The locations for the crossing point surveys needed to comprise potential bat commuting routes which would be severed by the three proposed route options. To identify such commuting routes, the habitats within the footprint of the three route options were appraised using publically available aerial imagery⁴ to look for any significant habitat feature or boundary (such as hedgerows, treelines, woodland, rivers, streams and wetlands). These features were then subject to a walkover by suitably qualified bat ecologists, where access was available, to further assess their suitability as commuting routes. To further inform the identification of potential commuting routes, a review of desk study information was carried out including a review of the following:

- data from the various bat surveys carried out between 2001 and 2002 as published in the ES for the previous scheme⁵;
- results of roost assessments carried out in 2016 (northern route option only);
- data from static bat detector surveys carried out in 2016 (northern route option only) and May 2017 (all route options);
- emerging data from bat activity transect surveys undertaken across all scheme options in May 2017; and,
- data from radio tracking surveys carried out in May 2017.

2.1.3 A total of nine potential bat commuting routes were selected following the desk study and site walkovers at crossing point survey locations. These locations are described in Table 2.1 and are shown on drawings **HE551506-AA-VES-D_SWI-DR-YE-000044 to HE551506-AA-VES-D_SWI-DR-YE-000047** in **Appendix A**. Three of these locations were common to all three route options.

2.1.4 Each crossing point survey location was subject to the following survey protocol:

- Six surveys were carried out between June and September 2017 (a single dusk survey in June, a dusk followed by a dawn in July and again in August, and a single dusk survey in September).
- Surveys commenced either at dusk, or an hour prior to dawn, and continued for at least one hour after the start of the survey. An element of later survey was also included to account for the presence of barbastelle bats in the locality.

³ [Development of a cost-effective method for monitoring the effectiveness of mitigation for bats crossing linear transport infrastructure - WC1060.](#)

⁴ <https://maps.google.co.uk>

⁵ [Environmental Statement, Chapter 7 Nature Conservation & Biodiversity \(Balfour Beatty-Costain Halcrow-Gifford, 2003\).](#)

- Two surveyors were present at each survey location, except for CP2 Countess roundabout where four surveyors were present. Where there were two surveyors, one surveyor was positioned on each side of the proposed route option. For some of the survey locations, where the proposed route is in line with the existing A303, this involved positioning a surveyor either side of the existing road (e.g. CP1 and CP3), in other survey locations, both surveyors were some distance away from the existing road (CP4 or CP8). At Countess roundabout, one surveyor was placed in each quadrant in order to try and observe bats crossing the A303 both east and west of the roundabout as well as the A465 north and south of the roundabout.
- In two of the CP survey locations (CP1, and CP2), the surveyor positions were altered slightly following the first survey visit. This was due to alternative positions being realised which allowed the surveyors better visibility of the feature. These alterations in surveyor location are shown on drawings **HE551506-AA-VES-D_SWI-DR-YE-000044 to HE551506-AA-VES-D_SWI-DR-YE-000047** in **Appendix A**.
- The same team of surveyors were used for each location as much as possible, in order to eliminate any variation in recordings due to observer bias.
- Each surveyor was equipped with either an Anabat Walkabout, Elekon Batlogger M, Echo Meter Touch, or a Bat Box Duet heterodyne / frequency division bat detector (with all calls being recorded on a Roland Edirol R-09 recorder) in order to help detect and identify any bats observed. The same types of detectors were used for the different visits at each location.
- Each surveyor remained vigilant throughout the 60 minute survey to observe and count bats commuting along the linear feature and recorded the following information on recording sheets (as set out in A. Berthinussen & J. Altringham, 2015³):
 - time of the observation;
 - species (if known);
 - the height of the bat above the commuting feature in metres;
 - distance of the bat from the feature (on the horizontal plane) in metres;
 - the side of the feature that the bat commuted along (e.g. east or west);
 - the direction the bat was flying in when it commuted along the feature (e.g south to north).
- Only those bats which were seen commuting along the length of the linear feature where it will be severed by the proposed routes were counted as having crossed the proposed scheme, and only those which were flying within five metres of it (on the horizontal plane). Those bats which did not fly far enough across the proposed route before changing direction were not counted as having crossed.
- If it was likely the same individual bat commuting up and down the length of the linear feature crossing the proposed scheme multiple times, each crossing was still counted.

- Other incidental records of bat activity (i.e. any bats observed which were not using the feature⁶) were also recorded on the record sheets.
- Surveys were conducted on warm (>7°C), relatively still (wind < 20 km/h), dry nights to avoid weather dependent variation in bat activity. Weather conditions were recorded on the record sheets at the start and end of each survey visit (see **Appendix B**).

2.1.5 Following the surveys, all bat recordings were analysed to identify species using the relevant bat analysis software packages (e.g. BatExplorer, Analook and Kaleidoscope Viewer), to species level where possible.

2.1.6 Following the sound analysis, the confirmed records of crossing bats i.e. those bats which were seen by surveyors to cross the proposed route option whilst using the feature (i.e. within ≤ 5m of it on a horizontal plane), were recorded in an Excel spreadsheet in accordance with guidance³. Any duplicate crossing events were removed from the data, i.e. bats recorded crossing at the same time, height, distance and direction by more than one surveyor. Any other incidental records of bats from the field recording forms were not transcribed into these Excel tables. These spreadsheets provide the quantifiable data which can later be compared with the construction stage and post-construction stage surveys to be repeated at the same locations, and are shown in **Appendix C**.

2.1.7 All bat crossing point surveys were led by competent ecologists, familiar with bat ecology and surveying, and full or associate members of the Chartered Institute of Ecology and Environmental Management (CIEEM).

2.2 Survey Area

2.2.1 The survey area included the three proposed route options being considered during 2017; Option 1Na, Option 1Sa and Option 1Nd. Following an assessment of each route option and the habitat features that would be crossed by them, in combination with a review of desk study information alongside emerging data from static bat detectors and bat activity transect surveys undertaken across all options in May 2017, a total of nine crossing point locations were identified for further survey, as described in **Table 2.1** below (drawings **HE551506-AA-VES-D_SWI-DR-YE-000044 to HE551506-AA-VES-D_SWI-DR-YE-000047** in **Appendix A** show the location of the above crossing point locations alongside the location of the surveyors).

Table 2-1 Crossing Point Survey locations and description

Crossing Point ref.	Grid Reference	Connective Feature	Connected habitats / features in the wider landscape
CP1 River Avon / A303 bridge	SU 15876 42176	River Avon bridge	River Avon corridor, with wet woodland and marshy grassland species to the north and south of the A303. Footpath running along east side of river beneath A303 with handrail between river and footpath. There is a historical record of a Daubenton's bat roost underneath the bridge ⁷ .

⁶ For the purpose of this report, 'using' the feature is defined as a bat being recorded ≤ 5m of it (on a horizontal plane).

⁷ Environmental Statement, Chapter 7 Nature Conservation & Biodiversity (Balfour Beatty-Costain Halcrow-Gifford, 2003)

Crossing Point ref.	Grid Reference	Connective Feature	Connected habitats / features in the wider landscape
CP2 Countess Roundabout	SU 15394 42036	Vegetated roundabout (A303/A345)	Vegetated central reservation with broadleaved plantation woodland to the east and west of A303 highway boundaries, River Avon and floodplain habitats to the north-east and south-east, River Avon and Amesbury woodland to the south-west, pastures and arable land to the north-west.
CP3 A303 bowtie field underpass	SU 14406 42099	Underpass (5m high, 4m wide)	Farm track going under the A303. Immediate surrounding vegetation comprised mainly of arable fields (north and south of A303) with Amesbury Abbey woodland to the south-east, tree lines with scrub along the A303 on either side of underpass, and pasture and arable reversions further north (National Trust land).
CP4 Diamond Wood	SU 10330 41028	Woodland with sparse shelter belt	Diamond Wood is bounded by an arable field to the west, and a pig farm to the east. A sparse coniferous shelter belt links the northern tip of the woodland with Longbarrow roundabout.
CP5 River Till southern crossing	SU 07615 40001	River in wet woodland	River at this location is surrounded by a strip of wet woodland, marshy grassland pasture to the east, arable field to the west, and scrub to the north.
CP6 River Till southern beech shelter belt	SU 07936 40031	Beech shelter belt	Thin beech-dominated shelter belt runs north to south, surrounded by arable land to the east and west, and continuing as a shelter belt to the west until it connects to the wet woodland along the River Till. Connects directly to Asserton Farm woodland to the south.
CP7 River till northern crossing (byway)	SU 07722 41489	Byway bordered native species hedgerow	Byway at this location runs north to south, and is surrounded by arable land to the west, and the River Till floodplain pastures to the east (cow grazed).
CP8 Scotland Lodge Farm / Parsonage Down	SU 06790 41276	Conjoined field margins surrounded by two arable fields	This linear feature provides connection to the wide expanse of chalk grassland at Parsonage Down to the north-west. To the south-west, the wooded edges of Scotland Lodge Farm and the tree-lined A303 provides a connecting habitat over the A303, for bats roosting to the south of the road.
CP9 Grant's hedge (also known as the "one mile" hedgerow)	SU 08998 41206	Mature double hedgerow with trees	Grant's hedgerow, which runs north to south, directly connects to the managed native species hedgerow that borders the north side of the A303. Another hedgerow borders the southern side of the A303, and at this location, scattered trees are present, which provide a corridor for bats to cross the road. To the south are arable fields, and in the wider landscape, Asserton Farm and the River Till wooded corridor are to the south-west.

2.2.2 Three locations (CP1, CP2 and CP3) are common to all three route options.

2.2.3 Prior to the start of the surveys, a daytime site visit was undertaken for each location by the lead surveyor in order to plan the works, assess any health and safety issues on site, and record the context of the survey location, including a note of adjacent vegetation to assist in judging the height of bat flight during the survey.

2.2.4 Each crossing point location was covered by two surveyors, with the exception of Countess Roundabout where a team of four surveyors was necessary due to the complexity of the site and for health and safety reasons. Although not a typical structure/linear habitat feature, the crossing point survey methodology was applied to this location, with the purpose for surveying Countess Roundabout being to gain an appreciation of the general bat activity around the roundabout,

and to assess whether bats were crossing the roundabout itself, but also the A345 (north and south) and the A303 (east and west).

2.3 Limitations and Assumptions

- 2.3.1 The Berthinussen & Altringham methodology advises conducting two preliminary dusk and dawn surveys (following the crossing point survey protocol) at any significant habitat feature or boundary that will be severed by the proposed scheme(s) (such as hedgerows, treelines, woodland, rivers, streams and wetlands), in order to identify potential bat commuting routes. Any features where more than 10 bats are recorded using a flight path (1-5 for rare species), a full set of the crossing point surveys are then undertaken. However, since the AAJV ecologists were already familiar with the Amesbury to Berwick Down area and were able to review the bat data from surveys carried out to inform the previously published Environmental Statement (ES) as well as emerging data from static and transect surveys carried out in May 2017 (as detailed in the methodology), it was decided that the two preliminary dusk and dawn surveys at each potential commuting feature were not required.
- 2.3.2 Crossing point surveys were undertaken between June to September, with September still considered to be within the bat active period. It should be noted that bat activity may be lower than in other bat active months (June-August which is the period recommended in the DEFRA methodology) and behaviour may not be typical of mid-summer. However, this spread of surveys was chosen to allow some recording of seasonal bat activity rather than focussing on the core mid-summer.
- 2.3.3 In some instances, crossing point surveys ended up to 1.5 hours after the start time for the survey, this element of later survey being included to account for the presence of barbastelle bats in the locality. Full survey results have been included in this report for completeness of data. However, when comparing results for long-term monitoring, according to the Berthinussen & Altringham methodology, data collected for the initial one-hour period only should be included in analysis for comparison of bat activity pre- and post-construction.
- 2.3.4 Survey guidance for crossing point surveys suggests that surveyors should be positioned on each side of the road or habitat feature to monitor bat activity. However, due to land access restrictions at CP1 (River Avon/A303), both surveyors were positioned on one side of the bridge (south side). Surveyors had good visibility of the crossing point (both above and below the A303), but it is considered likely that vegetation height on either side of the river, and the length of the bridge (making the area under the bridge very dark) may have prevented a full account of bat activity on the opposite side of the bridge. High levels of bat activity were observed by the surveyors in this location, with often multiple numbers of bats foraging over the river and bankside habitat at any one time. This added to the difficulties in counting bats commuting through the underpass or over the road. Infra-red cameras and monoculars were used to address the issue of observing bats flying through the bridge, but due to the width of the bridge itself and the narrow field of view from the infra-red equipment, such survey tools did not provide any significant improvements to the observations made by the surveyors.

- 2.3.5 The weather conditions on 20th September during the sixth survey visit (4th dusk survey) at CP4 Diamond Wood and CP9 Grant's Hedge was sub-optimal as there was light rain throughout, but the evening was relatively still and bats were still observed in flight, and therefore the survey was not abandoned.
- 2.3.6 Adverse weather conditions during the dawn survey in both July and August at CP7 River Till north, led to the surveys being abandoned, and rescheduled in August and September respectively. This means that for this site, one of the six survey visits was carried out during the month of September, which is still acceptable according to the guidance¹, but bat activity may have been lower than in other months and behaviour may not have been typical of mid-summer. Nevertheless, so long as in future stages of the surveys i.e. during construction stage and post-construction surveys, the visits are repeated during the same months, then the data will be comparable.
- 2.3.7 Due to the geographical location, desk study information and habitat structure within the survey area, every *Plecotus* bat recorded was assumed to be a brown long-eared bat.
- 2.3.8 The echolocation calls of *Myotis*⁸ species are notoriously difficult to separate^{9,10} during sound analysis. Analysis of calls determined to species level should therefore be treated with caution. Where it was not possible to differentiate calls to species level, the genus or likely bat species were documented instead. Calls from long-eared bats are directional and usually very quiet, which makes them difficult to pick up using the detector. In order to reduce the significance of this limitation, visual observations were used to compliment recordings, which enabled the location of such species during the surveys, where present.
- 2.3.9 Ecological surveys are limited by factors which affect the presence of animals such as the time of year, migration patterns and behaviour. The absence of bat activity from any particular location during the surveys cannot be taken as conclusive proof that any of these species is not present or that it will not be present in the future.
- 2.3.10 The results of this survey work are considered sufficient to inform an ecological impact assessment.

⁸ The *Myotis* bats: Daubenton's, Bechstein's, whiskered, Brandt's and alcahloe bats (and often Natterer's Bat) are difficult to differentiate from call analysis alone. Considering the rarity of greater mouse-eared bat in the UK, this species is highly unlikely to be present.

⁹ Parsons, S. and Jones, G. (2000) *Acoustic identification of 12 species of echolocating bat by discriminant function analysis and artificial neural networks*. Journal of Experimental Biology 203: 2641–2656.

¹⁰ Walters, C.L., Freeman, R., Collen, A., Dietz, C., Fenton, M.B., Jones, G., Obrist, M.K., Puechmaille, S.J., Sattler, T., Siemers, B.M., Parsons, S. and Jones, K.E. (2012) *A continental-scale tool for acoustic identification of European bats*. Journal of Applied Ecology 49: 1064–1074.

3 Results

3.1 Context

- 3.1.1 The results of the crossing point surveys during the six survey visits at each of the nine survey locations are summarised below.
- 3.1.2 Only the total counts of confirmed bats which crossed the proposed route options using the feature and whether they were commuting/crossing at a safe or unsafe height are included in the tables below. Any other incidental bat activity observed by the surveyors during the surveys is not included in the tables, but is discussed in the paragraphs above each table.
- 3.1.3 For a map showing the position of each surveyor at each location, see drawings **HE551506-AA-VES-D_SWI-DR-YE-000044 to HE551506-AA-VES-D_SWI-DR-YE-000047** in **Appendix A**. Full survey results can be found in **Appendix C**.

3.2 CP1 – River Avon / A303 bridge

- 3.2.1 Due to land access restrictions at CP1 (River Avon/A303), both surveyors were positioned on one side of the bridge (south side). Surveyors had good visibility of the crossing point (both above and below the A303), but it is considered likely that the vegetation height on either side of the river, and the length of the bridge (making the area under the bridge very dark) may have prevented a full account of bat activity on the opposite side of the bridge. High levels of bat activity were observed by the surveyors in this location, with often multiple numbers of bats foraging over the river and bankside habitat at any one time. This added to the difficulties in counting bats commuting through (under the bridge) or over the road. Infra-red cameras and monoculars were used to address the issue of observing bats flying through the bridge, but due to the width of the bridge itself and the narrow field of view from the infra-red equipment, such survey tools did not provide any significant improvements to the observations made by the surveyors.
- 3.2.2 Subsequently, a total of only 21 bats were confirmed by the surveyors to cross the existing A303 under the bridge (17 bats) or over the road (4 bats) throughout the six survey visits (see details in **Table 3-1**). But this number is likely to be much higher. Soprano pipistrelles, Daubenton's bats and noctules were seen crossing in this location.

Table 3-1 Number and crossing behaviour for each bat species at River Avon / A303 bridge. Totals for all bat species include bats that could not be identified to species level.

Species	Total crossing	Crossing under road (through bridge below)	Unsafe height over A303 road surface (<5m)	Safe height over A303 road surface (>5m)
All bat species	21	17	0	4
Soprano pipistrelle	9	9	0	0
Daubenton's bat	6	6	0	0
Noctule	4	0	0	4
Unknown	2	2	0	0

3.3 CP2 – Countess Roundabout

- 3.3.1 Throughout the course of the six survey visits a total of eight bats were seen crossing either the A303, or the A465 (see details in **Table 3-2**).
- 3.3.2 Four bats were seen crossing the westbound carriageway of the A303 to the east of the roundabout, either from or into the central reservation. These included three soprano pipistrelles, two flying from the central reservation to the south (July and August) and one flying from the south into the central reservation (July). The fourth was an unidentified bat species flying from the south side into central reservation in July. Two soprano pipistrelles were seen crossing the westbound carriageway of the A303 to the west of the roundabout in September. Both were crossing from the central reservation into the vegetation on the south side of the A303. One *Pipistrellus* sp. was seen crossing west to east over the A345 where the road passes over the River Avon in June. A soprano pipistrelle was seen crossing east to west over the A345 in the same location during the August survey.
- 3.3.3 None of the eight bats seen crossing the roads around the Countess Roundabout were seen crossing at a safe height, all were 5m or less from the ground.
- 3.3.4 Other species observed during the surveys which were not seen crossing one of the roads, were noctule (heard, not seen) and *Myotis* species (considered likely to be Daubenton’s as they were flying low over the River Avon).

Table 3-2 Number and crossing behaviour for each bat species at Countess roundabout. Totals for all bat species include bats that could not be identified to species level.

Species	Total crossing (A303 / A345)	Unsafe height over (<5m)	Safe height over (>5m)
All bat species	8	8	0
Soprano pipistrelle	6	6	0
<i>Pipistrellus</i> sp.	1	1	0
Unknown	1	1	0

3.4 CP3 – A303 bowtie field underpass

- 3.4.1 A total of 73 bats were seen to cross at this location throughout the course of the six survey visits. Overall, the vast majority of bats flew through the underpass rather than above, i.e. over the A303 (see details in **Table 3-3**). However, 15% of the bats crossed at an unsafe height (i.e. within 5m of the A303 road surface).
- 3.4.2 Species recorded included common and soprano pipistrelle, a noctule, *Myotis* species (likely Natterer’s and/or Daubenton’s based on static detector and trapping data), and a pipistrelle species (likely to be either common or soprano pipistrelle based on the frequency of the echolocation call). Of the records 75% of the bats were flying through and/or over the underpass in a south to north direction. During the dusk survey in June all bats but one were seen commuting in this direction, indicating that these bats were most likely roosting to the south of the A303, and going to forage over the field pastures within the World Heritage Site (roost sites of Daubenton’s and Natterer’s bats were later confirmed in Amesbury Abbey woodland and parkland).

Table 3-3 Number and crossing behaviour for each bat species at the A303 bowtie field underpass. Totals for all bat species include bats that could not be identified to species level.

Species	Total crossing	Using underpass (i.e. flying through)	Unsafe height over Road (<5m)	Safe height over Road (>5m)
All bat species	73	62	10	1
Soprano pipistrelle	55	46	9	0
Common pipistrelle	13	12	1	0
Noctule	1	0	0	1
<i>Myotis</i> sp.	3	3	0	0
<i>Pipistrellus</i> sp.	1	1	0	0

3.4.3 Dawn surveys at this location were inconclusive, with a generally low level of bat activity (i.e. no bats seen flying through or above the underpass, but small number of bats heard foraging in the vicinity).

3.4.4 Other species heard during surveys and seen foraging but not observed using the structure included all species listed above, as well as serotine and brown long-eared bats. Foraging activity was noticed on either side of the underpass, with a small number of bats foraging within it.

3.5 CP4 – Diamond Wood

3.5.1 A total of six bats were seen commuting along the woodland edge or line of vegetation to the north of the wood at CP4 (see details in **Table 3-4**). Four of these bats were seen at surveyor location A to the north of the wood and two were seen at surveyor location B along the woodland edge (east side of Diamond Wood). Four of these six bats were seen flying south to north during dusk surveys in June, August or September. One was seen flying south to north during a dawn survey in August and the remaining bat seen was flying north to south at dawn in August.

3.5.2 All were commuting at unsafe heights of five metres off the ground or lower.

Table 3-4 Number and crossing behaviour for each bat species at Diamond Wood. Totals for all bat species include bats that could not be identified to species level.

Species	Total commuting	Unsafe height over Road (<5m)	Safe height over Road (>5m)
All bat species	6	6	0
Soprano pipistrelle	2	2	0
Common pipistrelle	1	1	0
Serotine	1	1	0
Unknown	2	2	0

3.6 CP5 – River Till southern crossing

3.6.1 A total of 65 bats were seen crossing this location throughout the surveys (see details in **Table 3-5**). The majority of bat crossings seen were soprano pipistrelle. Common pipistrelle, serotine, Noctule, *Myotis* sp and one possible brown long-eared/barbastelle were also seen crossing in this location.

- 3.6.2 Of the bats seen crossing during dusk surveys which was 47 in total, 29 of these were crossing/commuting from the north, northeast or northwest. A total of 17 were crossing/commuting from the south or southwest, and one was crossing/commuting from the west. Over half therefore were heading south down the river at dusk. Of those seen crossing at dawn which was 18 in total, 9 were crossing/commuting from the south, southwest or southeast, 8 were from the north or northeast, and one was crossing/commuting from the east.
- 3.6.3 More bats were travelling at an unsafe height (<5m) compared to those at a safe height.

Table 3-5 Number and crossing behaviour for each bat species at River Till southern crossing. Totals for all bat species include bats that could not be identified to species level.

Species	Total crossing	Unsafe height (<5m)	Safe height (>5m)	Height not recorded
All bat species	65	37	9	3
Soprano pipistrelle	44	27	16	1
Common pipistrelle	9	3	6	0
Noctule	3	0	3	0
Serotine	2	2	0	0
<i>Myotis</i> sp	5	4	0	1
Unknown	2	1	0	1

3.7 CP6 – River Till beech shelter belt

- 3.7.1 The total count of bats observed commuting along this feature, which comprised a strip of woodland consisting of mature beech trees, was 126 (see details in **Table 3-6**). The majority of commuting bats were common pipistrelle. Soprano pipistrelle, serotine, noctule, barbastelle and *Myotis* species were also observed commuting along the feature.
- 3.7.2 Of those bats seen commuting during dusk surveys, which was 113 of the total 126, 63 were commuting the feature from the south or south west, 36 were seen commuting from the north or northwest, 8 were from the west and 6 were from the east. Over half therefore were crossing/commuting north which may suggest they were travelling towards foraging areas to the north.
- 3.7.3 Of the 13 bats seen commuting at dawn, there didn't seem to be a clear majority for direction (four were commuting from the east, four from the west, four from the north and one from the south).
- 3.7.4 Unlike most of the other CP locations, the bats in this location were seen commuting along the linear feature at a safe height, i.e. over 5m off the ground. This is likely to be attributable to the height of the mature beech trees.

Table 3-6 Number and crossing behaviour for each bat species at River Till beech shelter belt. Totals for all bat species include bats that could not be identified to species level.

Species	Total commuting using feature	Unsafe height (<5m)	Safe height (>5m)
All bat species	126	28	98
Soprano pipistrelle	22	7	15
Common pipistrelle	86	17	69
<i>Pipistrellus</i> sp	2	0	2
Serotine	6	1	5
Barbastelle	1	1	0
Noctule	3	1	2
<i>Myotis</i> sp	1	0	1
Unknown	5	1	4

3.8 CP7 – River Till northern crossing (byway)

3.8.1 A total of 34 bats were seen commuting along this feature which comprised a farm track and adjacent hedgerow (see details in **Table 3-7**). The majority of bats observed commuting along the feature were common and soprano pipistrelles. Serotine, Leisler’s and *Myotis* sp. were also seen commuting.

3.8.2 There was no overriding direction of commuting bats at dusk or dawn with almost equal numbers of bats commuting in each direction (14 out of 34 were from the south and 12 were from the north during dusk surveys).

Table 3-7 Number and crossing behaviour for each bat species at River Till northern crossing (byway). Totals for all bat species include bats that could not be identified to species level.

Species	Total commuting along track	Unsafe height (<5m)	Safe height (>5m)	Height not recorded
All bat species	34	30	0	4
Common pipistrelle	15	14	0	1
Soprano pipistrelle	8	7	0	1
Serotine	3	2	0	1
<i>Myotis</i> sp	1	0	0	1
Leisler’s	5	5	0	0
<i>Pipistrellus</i> sp.	1	1	0	0
Unknown	1	1	0	0

3.9 CP8 – Scotland Lodge Farm/Parsonage Down

3.9.1 A total of 39 bats were seen commuting along the hedgerow throughout the six survey visits (see details in **Table 3-8**). Species seen commuting included common and soprano pipistrelle, serotine, *Myotis* species, brown long-eared bat, and an unknown bat species. Over half of the commuting bats seen immediately after dusk, which accounted for 37 of the total 39, were bats flying in a SE-NW direction (22 out of the 37 bats), which suggests the vegetated strip (adjoining field margins) is a corridor for bats commuting towards the wide expanse of foraging areas within Parsonage Down SAC/SSSI/NNR to the north west. Only

two of the total commuting bats were seen at dawn, these were NW-SE and W-E, suggesting bats returning to roost after foraging on Parsonage Down.

3.9.2 All of the commuting bats, except for two, were at an unsafe height.

Table 3-8 Number and crossing behaviour for each bat species at Scotland Lodge Farm/Parsonage Down. Totals for all bat species include bats that could not be identified to species level.

Species	Total commuting along hedge	Unsafe height (<5m)	Safe height (>5m)
All bat species	39	37	2
Soprano pipistrelle	1	1	0
Common pipistrelle	16	16	0
Serotine	10	9	1
<i>Myotis</i> sp	7	7	1
Brown long-eared bat	1	1	0
Unknown	4	4	0

3.10 CP9 – Grant’s hedgerow

3.10.1 A total of eight bats were seen commuting along the hedgerow over the six survey visits; either the hedgerow which runs along the northern side of the A303 or Grant’s hedge (see details in **Table 3-9**). The species recorded commuting were common and soprano pipistrelle. A single brown long-eared bat was also recorded foraging in this location during the July dusk survey but the direction it flew from or to was not seen.

3.10.2 There was one incidental sighting of a bat crossing the existing A303 in September, this was a soprano pipistrelle seen flying from the east along the hedgerow on the south side of A303 before crossing to the north side in the location of Gant’s hedgerow, and continuing in a westerly direction along the hedgerow on the north side of the A303. This incidental sighting was made possible due to it being September and the vegetation having started to die back. There were a number of other occasions when the surveyors at both Point A and Point B suspected bats had crossed the A303 at this location, as they had flown from/to that direction but these were not confirmed due to the height of the vegetation/trees meaning the road was out of sight. It must be noted that a small number of trees are present within the hedgerows bordering the existing A303 on either side of the road, which are likely to provide a safe and favoured crossing point over the road for bats at this particular location.

Table 3-9 Number and crossing behaviour for each bat species at Grant’s hedgerow. Totals for all bat species include bats that could not be identified to species level.

Species	Total commuting along hedge	Unsafe height (<5m)	Safe height (>5m)
All bat species	8	7	1
Soprano pipistrelle	3	2	1
Common pipistrelle	5	5	0

4 Conclusions and Recommendations

4.1 Conclusions

- 4.1.1 This survey fulfilled its objectives in producing quantifiable pre-construction data that can be used alongside the data from the same surveys repeated during construction and post-construction to determine the effectiveness of future mitigation structures which will be designed and built to help bats cross the preferred scheme option.
- 4.1.2 The number of commuting bats seen by surveyors at each survey location and the overall levels of bat activity varied considerably according to the nature of the feature being surveyed and the quality of the commuting and foraging habitat for bats in the immediate and wider surroundings.
- 4.1.3 The majority of bats, even those crossing over the existing dual carriageways of the A303 at Countess Roundabout, were travelling at unsafe heights of 5m or less above ground. The challenge with the design of any mitigation structures which will carry bats over the preferred option of the A303 will be to get the bats to cross at a safe height.
- 4.1.4 The relatively low levels of crossing bats seen across some of the nine survey locations during these surveys is likely to be a reflection of the short survey period i.e. only one hour after dusk and one hour before dawn. The majority of bats emerge from their roosts 30 minutes after sunset and return to their roosts 30 minutes before sunrise therefore only a very short window of their activity period is sampled with these surveys. This survey duration, however, is as set out in the Berthinussen & Altringham methodology and is only an hour since the confirmation of crossing bats depends on actual sightings so some level of light is required.

4.2 Recommendations

- 4.2.1 Since these crossing point surveys were designed before the preferred route was chosen, when there were three route options being considered, it is recommended that the crossing point survey locations are reviewed to check they are in the most suitable locations i.e. that they cover all suitable linear features which will be directly severed by the preferred scheme. This may mean that additional locations are added and others may need to be scoped out.

Appendices

Appendix A – Survey Location Plans

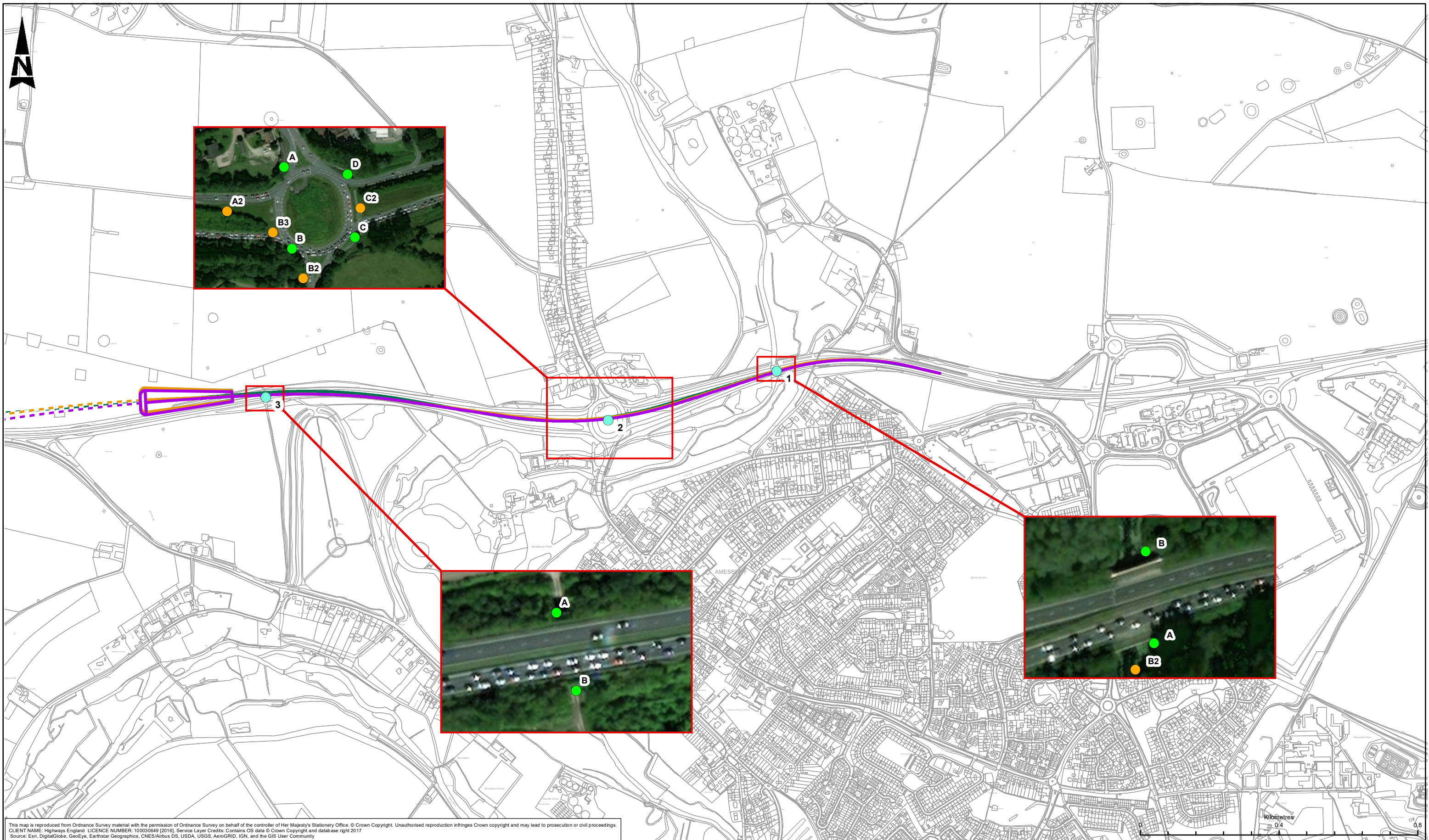
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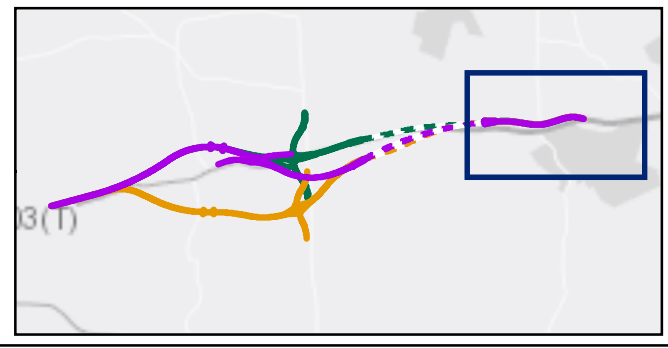
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- LEGEND**
- ROUTE OPTION 1Na
 - ROUTE OPTION 1Sa
 - ROUTE OPTION 1Nd
 - - - TUNNEL SECTION
 - CROSSING POINT SURVEY LOCATIONS
 - SURVEYOR LOCATION
 - SURVEYOR LOCATION FOR SURVEY VISITS 2 TO 6



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Use	None
Decommission / Demolition	None

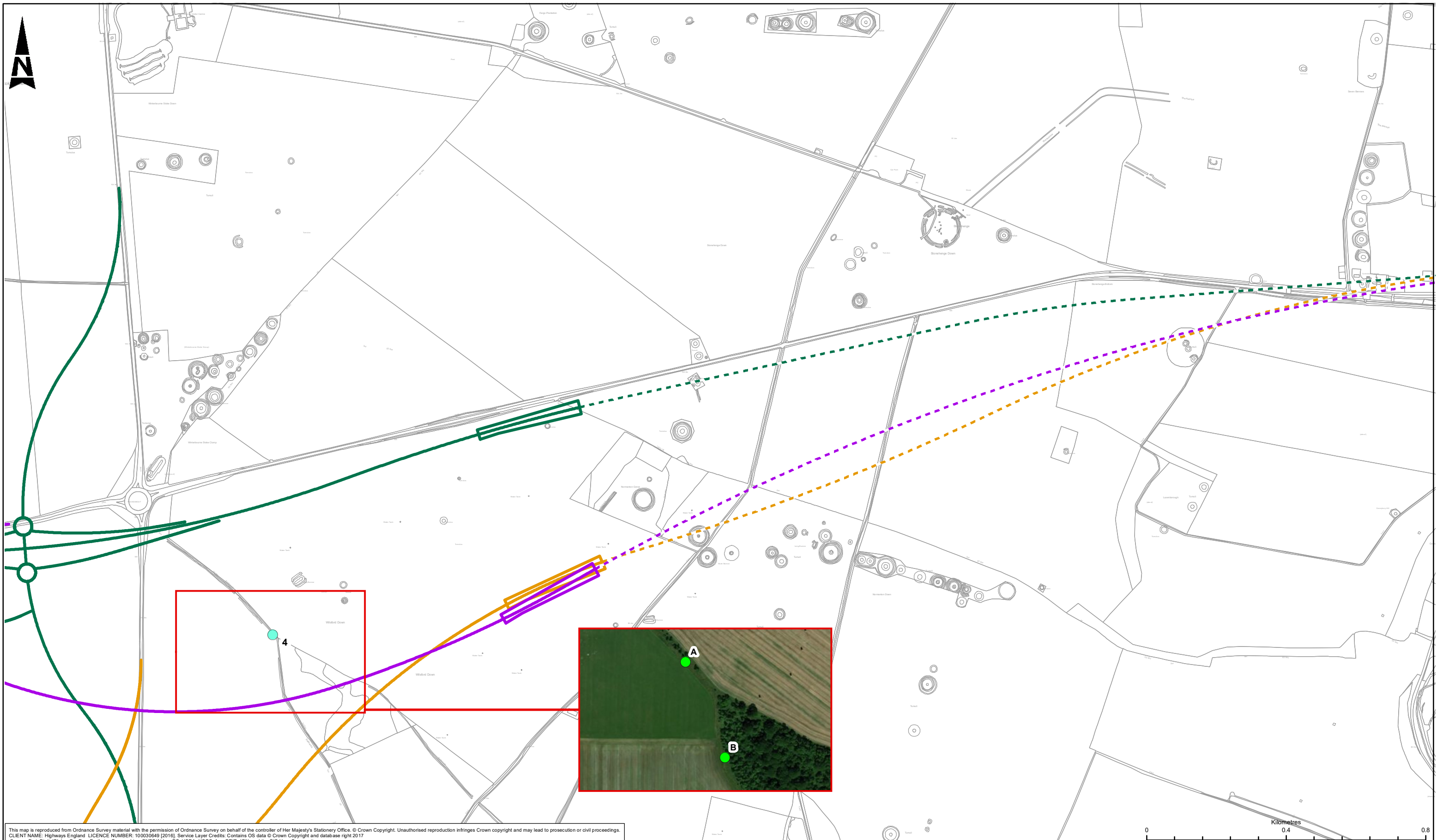
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Designers:

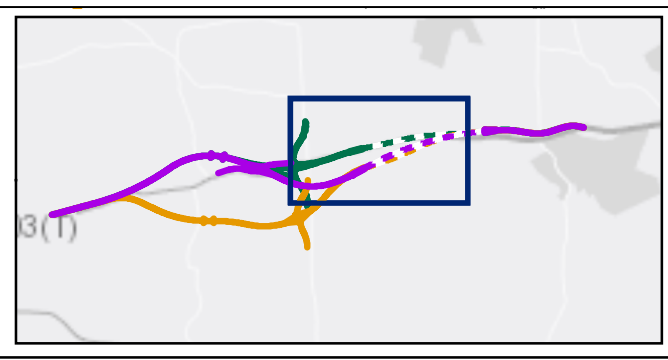
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Location	Type	Role	Number			



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LEGEND

- ROUTE OPTION 1Na
- ROUTE OPTION 1Sa
- ROUTE OPTION 1Nd
- CROSSING POINT SURVEY LOCATIONS
- SURVEYOR LOCATION
- - - TUNNEL SECTION



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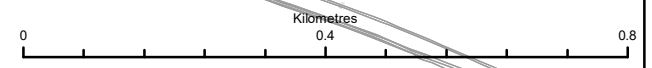
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Drawing Title: BAT CROSSING POINT SURVEY LOCATIONS PAGE 2 OF 4

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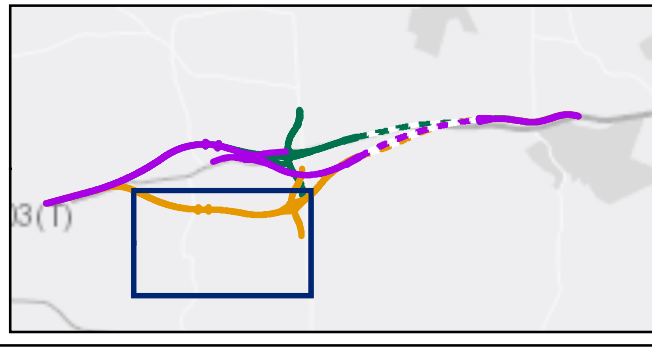




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LEGEND

- ROUTE OPTION 1Na
- ROUTE OPTION 1Sa
- ROUTE OPTION 1Nd
- CROSSING POINT SURVEY LOCATIONS
- SURVEYOR LOCATION
- RIVER CROSSING STRUCTURE



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Project Title: A303 AMESBURY TO BERWICK DOWN

Drawing Title: BAT CROSSING POINT SURVEY LOCATIONS PAGE 3 OF 4

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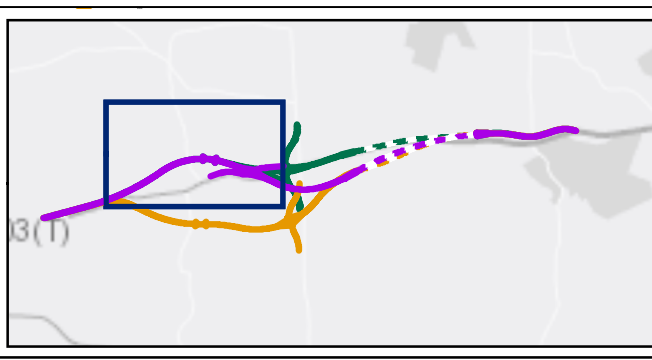
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LEGEND

- ROUTE OPTION 1Na
- ROUTE OPTION 1Sa
- ROUTE OPTION 1Nd
- - - TUNNEL SECTION
- RIVER CROSSING STRUCTURE
- CROSSING POINT SURVEY LOCATIONS
- SURVEYOR LOCATION



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Maintenance / Cleaning	None
Use	None
Decommission / Demolition	None

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P02	27/02/18	FIRST ISSUE	FG	CD	AK

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	HE551506-AA-VES			P02	
Location	Type	Role	Number		

Appendix B Weather Conditions During Surveys

B.1 Weather Conditions

B.1.1 June 2017 (Dusk)

Table B-1 Weather Conditions During June 2017 (Dusk) Surveys

Crossing Point ref.	Date of Survey	Sunset	Survey times		Temperature (°C)		Humidity (%)		Wind Speed (Beaufort) / Direction		Cloud cover		Weather the night before	General Conditions
			Start	End	Start	End	Start	End	Start	End	Start	End		
CP1 River Avon / A303 bridge	14/06/17	21:24	21:24	22:30	14	13	-	-	0	0	1	2	Warm, still and dry	Dry
CP2 Countess roundabout	12/06/17	21:22	20:19	22:43	15	13	70	70	2(WNW)	1(W)	0	0	Overcast	Dry
CP3 A303 bowtie field underpass	13/06/17	21:24	21:20	22:46	16.7	10	37	83	0	0	1	1	Warm, clear, still	Dry
CP4 Diamond Wood	13/06/17	21:21	21:30	22:50	17	16	74	79	0	0	0	0	Dry, clear	Dry
CP5 River Till southern crossing	12/06/17	21:27	21:16	23:00	17	9	80	80	1(W)	1	0	0	-	Dry
CP6 River Till southern beech shelter belt	28/06/17	21:35	21:25	22:45	16	15	-	-	2(NE)	1(NE)	8	8	Heavy rain	Dry
CP7 River Till northern crossing (byway)	01/06/17	21:13	21:13	22:30	19	17	67	73	1 (W)	1 (SW)	1	6	Dry and Warm	Dry
CP8 Scotland Lodge Farm / Parsonage Down	14/06/17	21:23	21:20	22:54	15.5	10.3	37	80	1 (SSW)	0	2	2	Clear and dry	Dry
CP9 Grant's hedge	13/06/17	21:18	21:00	22:40	17	15	80	80	1(SE)	1(SE)	0	0	Dry and clear	Dry

B.1.2 July 2017 (Dusk)

Table B-2 Weather Conditions During July 2017 (Dusk) Surveys

Crossing Point ref.	Date of Survey	Sunset	Survey times		Temperature (°C)		Humidity (%)		Wind Speed (Beaufort) / Direction		Cloud cover		Weather the night before	General Conditions
			Start	End	Start	End	Start	End	Start	End	Start	End		
CP1 River Avon / A303 bridge	17/07/17	21:15	21:15	22:25	22.1	18.5	63	74	0	0	8	8	Warm, light shower early evening	Dry
CP2 Countess roundabout	05/07/17	21:24	21:00	22:40	22	20	56	53	3(S)	3(S)	1	1	-	Dry
CP3 A303 bowtie field underpass	13/07/17	21:19	21:19	23:35	18.7	15.6	33	46	1	1	6	2	Occasional light drizzle	Dry
CP4 Diamond Wood	06/07/17	21:24	21:24	22:44	17	16	63	72	3(W)	3(W)	2	2	Dry, mild, still	Dry
CP5 River Till southern crossing	12/07/17	21:19	21:22	22:55	19	13	-	-	0	1(SW)	4	5	Rain	Dry
CP6 River Till southern beech shelter belt	26/07/17	21:04	21:00	22:34	16	15	-	-	2(W)	1(W)	7	8	-	Dry
CP7 River Till northern crossing (byway)	19/07/17				21.6	18	72	83	-	-	3	3	Rain	Dry
CP8 Scotland Lodge Farm / Parsonage Down	12/07/17	21:20	21:20	23:40	16.6	12.3	34	70	0	0	7	8	-	Dry
CP9 Grant's hedge	06/07/17	21:15	21:24	22:45	21	18	63	60	1(W)	1(W)	0	0	Dry	Dry

B.1.3 July 2017 (Dawn)

Table B-3 Weather Conditions During July 2017 (Dawn) Surveys

Crossing Point ref.	Date of Survey	Sunrise	Survey times		Temperature (°C)		Humidity (%)		Wind Speed (Beaufort) / Direction		Cloud cover		Weather the night before	General Conditions
			Start	End	Start	End	Start	End	Start	End	Start	End		
CP1 River Avon / A303 bridge	18/07/17	05:14	04:10	05:10	18.3	17.6	69	67	0	0	8	8	-	Dry

Crossing Point ref.	Date of Survey	Sunrise	Survey times		Temperature (°C)		Humidity (%)		Wind Speed (Beaufort) / Direction		Cloud cover		Weather the night before	General Conditions
			Start	End	Start	End	Start	End	Start	End	Start	End		
CP2 Countess roundabout	06/07/17	05:00	03:55	05:00	17	17	83	82	2(NE)	2(ENE)	4	4	Clear and warm	Dry
CP3 A303 bowtie field underpass	14/07/17	05:06	04:05	05:06	13.7	8.5	42	85	0	1	0	0	Dry and clear	Dry
CP4 Diamond Wood	07/07/27	05:15	03:45	05:15	15	15	87	88	1(W)	1(W)	0	0	Dry	Dry
CP5 River Till southern crossing	13/07/17	05:02	03:20	05:02	15	19	-	-	0	0	8	8	-	Light shower prior to start of survey, then dry
CP6 River Till southern beech shelter belt	27/07/17	05:24	03:58	05:30	16	14	-	-	1(E-W)	2(E-W)	8	5	-	Dry
CP8 Scotland Lodge Farm / Parsonage Down	13/07/17	05:07	03:51	05:07	16.7	15.7	44	53	0	0	8	8	Dry	Dry
CP9 Grant's hedge	07/07/17	05:00	04:00	05:00	15	15	89	89	1(NE)	1(NE)	3	2	Clear and dry	Dry

B.1.4 August 2017 (Dusk)

Table B-4 Weather Conditions During August 2017 (Dusk) Surveys

Crossing Point ref.	Date of Survey	Sunset	Survey times		Temperature (°C)		Humidity (%)		Wind Speed (Beaufort) / Direction		Cloud cover		Weather the night before	General Conditions
			Start	End	Start	End	Start	End	Start	End	Start	End		
CP1 River Avon / A303 bridge	17/08/17	20:26	20:25	21:55	21.7	17.6	63	79	0	1(S)	8	1	Rain overnight	Dry throughout survey but torrential rain shower prior to survey.
CP2 Countess roundabout	09/08/17	20:34	20:10	21:50	14	13	88	88	1(N)	1(N)	8	8	Rain	Dry
CP3 A303 bowtie field underpass	10/08/17	20:39	20:39	21:55	15	12.2	44	60	1	1	1	1	-	Dry
CP4 Diamond Wood	10/08/17	20:32	20:15	22:00	19	16	59	78	1(NW)	1(NW)	0	0	Dry	Dry
CP5 River Till southern crossing	10/08/17	20:37	20:30	22:10	14	12	-	-	0	1(SW)	1	0	Rain	Dry

Crossing Point ref.	Date of Survey	Sunset	Survey times		Temperature (°C)		Humidity (%)		Wind Speed (Beaufort) / Direction		Cloud cover		Weather the night before	General Conditions
			Start	End	Start	End	Start	End	Start	End	Start	End		
CP6 River Till southern beech shelter belt	17/08/17	20:31	20:31	22:01	19	16	-	-	4(S-N)	3(S-N)	3	2	-	Dry
CP7 River Till northern crossing (byway)	08/08/17	20:40	21:00	22:14	19	13	-	-	0	0	7	7	Rain	Light rain at the beginning of survey. Stopped 21:15.
CP7 River Till northern crossing (byway)	24/08/17	20:09	19:50	21:49	17	15	-	-	1	1	2	2	-	Dry
CP8 Scotland Lodge Farm / Parsonage Down	09/08/17	20:42	20:40	21:55	15.8	13.7	39	49	2	1	8	8	-	Dry
CP9 Grant's hedge	10/08/17	20:38	20:37	22:00	16	14	68	78	1(W)	1(W)	1	1	-	Dry

B.1.5 August 2017 (Dawn)

Table B-5 Weather Conditions During August 2017 (Dawn) Surveys

Crossing Point ref.	Date of Survey	Sunrise	Survey times		Temperature (°C)		Humidity (%)		Wind Speed (Beaufort) / Direction		Cloud cover		Weather the night before	General Conditions
			Start	End	Start	End	Start	End	Start	End	Start	End		
CP1 River Avon / A303 bridge	18/08/17	05:57	04:57	06:00	16.6	14.3	84	95	0	0	2	4	Rain overnight	Dry throughout survey although light rain prior to survey, dewy conditions.
CP2 Countess roundabout	10/08/17	05:45	04:43	05:45	10	10	86	89	0	0	0	0	Cloudy	Dry
CP3 A303 bowtie field underpass	11/08/17	05:47	04:45	05:47	9	5.5	38	91	0	0	0	0	-	Dry. Bright moonlight.
CP4 Diamond Wood	11/08/17	05:39	04:15	05:45	11	10	93	88	1(WNW)	1(WNW)	0	1	Dry	Dry
CP5 River Till southern crossing	11/08/17	05:45	04:10	05:45	10	7	-	-	0	0	0	0	Calm and dry	Dry and clear, but a light, low-lying fog along River Till
CP6 River Till southern beech shelter belt	18/08/17	05:56	04:20	05:56	15	14	-	-	2(SW)	3(SW)	0	4	Rain showers	Dry

Crossing Point ref.	Date of Survey	Sunrise	Survey times		Temperature (°C)		Humidity (%)		Wind Speed (Beaufort) / Direction		Cloud cover		Weather the night before	General Conditions
			Start	End	Start	End	Start	End	Start	End	Start	End		
CP7 River Till northern crossing (byway)	09/08/17	05:40	04:25	05:40	14	12	100	100	0	0	8	8	Light rain then dry.	Light to moderate rain throughout survey.
CP7 River Till northern crossing (byway)	25/08/17	06:09	05:00	06:09	10	10	96	96	1	1	2	2	-	Dry
CP8 Scotland Lodge Farm / Parsonage Down	10/08/17	05:44	04:38	05:44	11.2	8.9	44	82	3	1	0	0	-	Dry. Very clear with bright moon and wind blowing from bottom to top of ridge.
CP9 Grant's hedge	11/08/17	05:47	04:55	05:55	9	9	97	97	1(W)	1(W)	0	0	Dry, clear, still	Dry

B.1.6 September 2017 (Dusk)

Table B-6 Weather Conditions During September 2017 (Dusk) Surveys

Crossing Point ref.	Date of Survey	Sunset	Survey times		Temperature (°C)		Humidity (%)		Wind Speed (Beaufort) / Direction		Cloud cover		Weather the night before	General Conditions
			Start	End	Start	End	Start	End	Start	End	Start	End		
CP1 River Avon / A303 bridge	29/09/17	18:50	18:50	19:50	17.2	14.3	78	88	0	0	8	8	-	Light rain/drizzle
CP2 Countess roundabout	11/09/17	19:29	19:29	20:35	13	12	88	94	2(W)	1(SW)	2	2	Occasional rain showers	Dry
CP3 A303 bowtie field underpass	14/09/17	19:25	19:25	20:40	13	7.1	36	82	1	0	6	1	Clear	Dry
CP4 Diamond Wood	20/09/17	19:12	19:12	20:12	13	13	-	-	4(SW)	4(SW)	8	8	Dry	Light rain at start of survey, then drizzle. Stopped raining by end.
CP5 River Till southern crossing	19/09/17	19:05	19:00	20:45	15	11	-	-	0	0	4	0	-	Dry
CP6 River Till southern beech shelter belt	19/09/17	19:05	19:00	20:55	19	14	-	-	1	1	6	1	-	Dry
CP7 River Till northern crossing (byway)	14/09/17	19:25	19:25	20:55	14.9	12.1	70	71	1 (WNW)	2 (WNW)	4	1	Light showers	Dry

Crossing Point ref.	Date of Survey	Sunset	Survey times		Temperature (°C)		Humidity (%)		Wind Speed (Beaufort) / Direction		Cloud cover		Weather the night before	General Conditions
			Start	End	Start	End	Start	End	Start	End	Start	End		
CP8 Scotland Lodge Farm / Parsonage Down	13/09/17	19:27	19:27	20:37	11	9.9	39	57	0	0	2	3	-	Dry
CP9 Grant's hedge	20/09/17	19:12	19:08	20:50	14	-	79	-	1(SW)	-	8	-	-	Rain showers (between 1-3) throughout survey

B.1.7 September 2017 (Dawn)

Table B-7 Weather Conditions During September 2017 (Dawn) Surveys

Crossing Point ref.	Date of Survey	Sunrise	Survey times		Temperature (°C)		Humidity (%)		Wind Speed (Beaufort) / Direction		Cloud cover		Weather the night before	General Conditions
			Start	End	Start	End	Start	End	Start	End	Start	End		
CP7 River Till northern crossing (byway)	15/09/17	06:40	05:20	06:40	8	8	93	93	0	0	3	1	Light showers early evening then dry and calm	Dry

Appendix C – Survey Data - Bats Seen Crossing at Each CP Location

C.1 CP1 River Avon/A303 Bridge

Table C-1 Survey Results at CP1 River Avon/A303 Bridge

Stage	Survey_id	Survey_no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
Pre	14June17_Dusk	dusk1	RiverAvon/A303	1	0	n/a	S	Soprano pipistrelle	Point A	Flew S-N under bridge
Pre	14June17_Dusk	dusk1	RiverAvon/A303	1	0	n/a	S	Daubenton's bat	Point A	Flew S-N under bridge
Pre	17Jul17_Dusk	dusk 2	RiverAvon/A303	1	0	n/a	S	Daubenton's bat	Point A	Flew S-N under bridge
Pre	17Jul17_Dusk	dusk 2	RiverAvon/A303	2	0	n/a	N	Soprano pipistrelle	Point A	Flew N-S under bridge
Pre	17Jul17_Dusk	dusk 2	RiverAvon/A303	2	0	n/a	S	Soprano pipistrelle	Point A	Flew S-N under bridge
Pre	17Jul17_Dusk	dusk 2	RiverAvon/A303	-	0	n/a	S	Unknown	Point A	Flew S-N under bridge
Pre	17Jul17_Dusk	dusk 2	RiverAvon/A303	-	0	n/a	S	Unknown	Point A	Flew S-N under bridge
Pre	18Jul17_Dawn	dawn 1	RiverAvon/A303	1	0	n/a	N	Daubenton's bat	Point A	Flew N-S under bridge
Pre	18Jul17_Dawn	dawn 1	RiverAvon/A303	1	0	n/a	N	Daubenton's bat	Point A	Flew N-S under bridge
Pre	18Jul17_Dawn	dawn 1	RiverAvon/A303	15-20	0	n/a	S	Noctule	Point B2	Flew S-NE over bridge, 15-20m above road surface
Pre	18Jul17_Dawn	dawn 1	RiverAvon/A303	15-20	0	n/a	S	Noctule	Point B2	Flew S-NE over bridge, 15-20m above road surface
Pre	17Aug17_Dusk	dusk 3	RiverAvon/A303	2	0	n/a	S	Soprano pipistrelle	Point A	Flew S-N under bridge

Stage	Survey_id	Survey_no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
Pre	17Aug17_Dusk	dusk 3	RiverAvon/A303	1	0	n/a	S	Daubenton's bat	Point A	Flew S-N under bridge
Pre	18Aug17_Dawn	dawn 2	RiverAvon/A303	1	0	n/a	N	Soprano pipistrelle	Point A	Flew N-S under bridge
Pre	18Aug17_Dawn	dawn 2	RiverAvon/A303	2	0	n/a	S	Soprano pipistrelle	Point A	Flew S-N under bridge
Pre	18Aug17_Dawn	dawn 2	RiverAvon/A303	2	0	n/a	S	Soprano pipistrelle	Point A	Flew S-N under bridge
Pre	18Aug17_Dawn	dawn 2	RiverAvon/A303	1	0	n/a	N	Soprano pipistrelle	Point A	Flew N-S under bridge
Pre	29Sep17_Dusk	dusk 4	RiverAvon/A303	1	0	n/a	S	Daubenton's bat	Point A	Flew S-N under bridge
Pre	29Sep17_Dusk	dusk 4	RiverAvon/A303	2	0	n/a	S	Soprano pipistrelle	Point A	Flew S-N under bridge
Pre	29Sep17_Dusk	dusk 4	RiverAvon/A303	8	0	n/a	S	Noctule	Point B2	Flew S-N over bridge, 8m above road surface
Pre	29Sep17_Dusk	dusk 4	RiverAvon/A303	8	0	n/a	S	Noctule	Point B2	Flew S-N over bridge, 8m above road surface

C.2 CP2 Countess Roundabout

Table C-2 Survey Results at CP2 Countess Roundabout

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	12Jun17_Dusk	dusk 1	Countess	Not recorded	n/a	n/a	W	<i>Pipistrellus</i> sp	Point B	Seen crossing over A345 W-E (over River Avon) south of Countess Roundabout (not picked up on detector)
pre	05Jul17_Dusk	dusk 2	Countess	4	n/a	n/a	N	Soprano pipistrelle	Point C	N to S from central reservation to south of A303

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	05Jul17_Dusk	dusk 2	Countess	3	n/a	n/a	S	Unknown	Point C	From south of A303 to central reservation (not echolocating).
pre	06Jul17_Dawn	dawn 1	Countess	3	n/a	n/a	E	Soprano pipistrelle	Point B	E to W, flew over A345 E to W (over River Avon).
pre	06Jul17_Dawn	dawn 1	Countess	4	n/a	n/a	S	Soprano pipistrelle	Point C	S to N from south of A303 to central reservation.
pre	09Aug17_Dusk	dusk 3	Countess	5	n/a	n/a	N	Soprano pipistrelle	Point C	N to S from central reservation, to south of A303.
pre	11Sep17_Dusk	dusk 4	Countess	4	n/a	n/a	N	Soprano pipistrelle	Point B	N to S from central reservation, to south of A303.
pre	11Sep17_Dusk	dusk 4	Countess	3	n/a	n/a	N	Soprano pipistrelle	Point B	N to S from central reservation, to south of A303.

C.3 CP3 Bowtie field / A303 underpass

Table C-3 Survey Results at CP3 Bowtie field/A303 underpass

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	13June17_Dusk	dusk1	under	9	0	0	SE	Soprano pipistrelle	Point B	Flew from hedgerow over underpass
pre	13June17_Dusk	dusk1	under	2	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	13June17_Dusk	dusk1	under	2	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	13June17_Dusk	dusk1	under	2	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	13June17_Dusk	dusk1	under	2	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	13June17_Dusk	dusk1	under	9	0	0	SE	Soprano pipistrelle	Point B	Flew from hedgerow over underpass
pre	13June17_Dusk	dusk1	under	2	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	13June17_Dusk	dusk1	under	2	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	13June17_Dusk	dusk1	under	2	0	0	S	Soprano pipistrelle	Point B	Through underpass

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	13June17_Dusk	dusk1	under	2	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	13June17_Dusk	dusk1	under	2	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	13June17_Dusk	dusk1	under	2	0	0	S	<i>Pipistrellus</i> sp.	Point B	Through underpass
pre	13June17_Dusk	dusk1	under	2	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	13June17_Dusk	dusk1	under	2	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	13June17_Dusk	dusk1	under	2	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	13June17_Dusk	dusk1	under	2	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	13June17_Dusk	dusk1	under	2	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	13June17_Dusk	dusk1	under	2	0	0	S	<i>Myotis</i> sp	Point B	Foraged before entering underpass and flying through
pre	13June17_Dusk	dusk1	under	2	0	0	S	Common pipistrelle	Point B	Through underpass
pre	13June17_Dusk	dusk1	under	2	0	0	S	Soprano pipistrelle	Point B	Flew along track through underpass
pre	13June17_Dusk	dusk1	under	2	0	0	S	Soprano pipistrelle	Point B	Flew along track through underpass
pre	13Jul17_Dusk	dusk2	under	4	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	13Jul17_Dusk	dusk2	under	4	0	0	S	Common pipistrelle	Point B	Through underpass
pre	13Jul17_Dusk	dusk2	under	4	0	0	S	Common pipistrelle	Point B	Through underpass
pre	13Jul17_Dusk	dusk2	under	9	0	0	S	Soprano pipistrelle	Point B	Flew above vegetation and over road/underpass
pre	13Jul17_Dusk	dusk2	under	9	0	0	S	Soprano pipistrelle	Point B	Flew above vegetation and over road/underpass
pre	13Jul17_Dusk	dusk2	under	9	0	0	S	Soprano pipistrelle	Point B	Over underpass
pre	13Jul17_Dusk	dusk2	under	5	0	0	S	Common pipistrelle	Point B	Through underpass
pre	13Jul17_Dusk	dusk2	under	9	0	0	S	Common pipistrelle	Point B	Over underpass
pre	13Jul17_Dusk	dusk2	under	9	0	0	S	Soprano pipistrelle	Point B	Circled over trees then flew north over road/underpass
pre	14Jul17_Dawn	dawn1	under	0	0	0	-	-	-	-
pre	10Aug17_Dusk	dusk3	under	4	0	0	S	Soprano pipistrelle	Point A	Through underpass
pre	10Aug17_Dusk	dusk3	under	4	0	0	S	Soprano pipistrelle	Point A	Through underpass
pre	10Aug17_Dusk	dusk3	under	4.5	0	0	S	Common pipistrelle	Point A	Through underpass

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	10Aug17_Dusk	dusk3	under	4	0	0	S	Soprano pipistrelle	Point A	Through underpass
pre	10Aug17_Dusk	dusk3	under	4.5	0	0	S	Soprano pipistrelle	Point A	Through underpass
pre	10Aug17_Dusk	dusk3	under	4	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	10Aug17_Dusk	dusk3	under	4	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	10Aug17_Dusk	dusk3	under	4	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	10Aug17_Dusk	dusk3	under	4	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	10Aug17_Dusk	dusk3	under	4	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	10Aug17_Dusk	dusk3	under	4	0	0	S	Common pipistrelle	Point B	Through underpass
pre	10Aug17_Dusk	dusk3	under	3	0	0	S	Common pipistrelle	Point B	Through underpass
pre	10Aug17_Dusk	dusk3	under	3	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	10Aug17_Dusk	dusk3	under	3	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	10Aug17_Dusk	dusk3	under	3	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	10Aug17_Dusk	dusk3	under	4	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	10Aug17_Dusk	dusk3	under	3	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	10Aug17_Dusk	dusk3	under	3	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	10Aug17_Dusk	dusk3	under	3	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	10Aug17_Dusk	dusk3	under	6	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	10Aug17_Dusk	dusk3	under	2	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	10Aug17_Dusk	dusk3	under	4	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	10Aug17_Dusk	dusk3	under	4	0	0	S	Soprano pipistrelle	Point B	Through underpass
pre	10Aug17_Dusk	dusk3	under	2	0	0	S	<i>Myotis</i> sp	Point B	Through underpass
pre	11Aug17_Dawn	dawn2	under	0	0	0	-	-	-	-
pre	14Sep17_Dusk	dusk4	under	20	10	W	S	Noctule	Point B	Flew very high over road west of underpass

C.4 CP4 Diamond Wood

Table C-4 Survey Results at CP4 Diamond Wood

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	13Jun17_Dusk	dusk 1	Diamond Wood	3	0	n/a	S	Common pipistrelle	Point A	S-NW
pre	10Aug17_Dusk	dusk 3	Diamond Wood	3	0	n/a	S	Unidentified	Point A	S-NW
pre	10Aug17_Dusk	dusk 3	Diamond Wood	4	5	S	S	Serotine	Point B	Flew along edge of tree line S-NW
pre	11Aug17_Dawn	dawn 2	Diamond Wood	5	0	S	S	Soprano pipistrelle	Point A	S-NW
pre	11Aug17_Dawn	dawn 2	Diamond Wood	4	0	N	N	Unidentified	Point A	NW-S
pre	20Sep17_Dusk	dusk 4	Diamond Wood	5	4	S	S	Soprano pipistrelle	Point B	S-NW

C.5 River Till southern crossing

Table C-5 Survey Results at CP5 River Till Southern Crossing

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	12June17_Dusk	dusk1	TillSouth	6	0	0	N	Soprano pipistrelle	Point A	Flying south along river
pre	12June17_Dusk	dusk1	TillSouth	6	0	0	N	Soprano pipistrelle	Point A	Flying south along river
pre	12June17_Dusk	dusk1	TillSouth	6	3	E	N	Soprano pipistrelle	Point A	Foraging - crossing occasionally
pre	12June17_Dusk	dusk1	TillSouth	6	0	0	N	Soprano pipistrelle	Point A	Flew down onto river
pre	12June17_Dusk	dusk1	TillSouth	2	0	0	N	Soprano pipistrelle	Point A	Over river
pre	12June17_Dusk	dusk1	TillSouth	6	3	E	N	Soprano pipistrelle	Point A	Slow commute overhead
pre	12June17_Dusk	dusk1	TillSouth	7	2	E	N	Soprano pipistrelle	Point A	Commuting very fast overhead
pre	12June17_Dusk	dusk1	TillSouth	6	0	0	N	Soprano pipistrelle	Point A	Through gap
pre	12June17_Dusk	dusk1	TillSouth	10	13	W	S	Soprano pipistrelle	Point B	Along hedgerow
pre	12July17_Dusk	dusk2	TillSouth	30	10	E	S	Noctule	Point A	n/a
pre	12July17_Dusk	dusk2	TillSouth	3	0	E	NE	Soprano pipistrelle	Point A	NE-SW

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	12July17_Dusk	dusk2	TillSouth	3	0	E	NE	Soprano pipistrelle	Point A	NE-SW
pre	12July17_Dusk	dusk2	TillSouth	Not given	5	W	SW	Unknown	Point B	SW-NE
pre	12July17_Dusk	dusk2	TillSouth	Not given	12	W	SW	Soprano pipistrelle	Point B	SW-NE
pre	12July17_Dusk	dusk2	TillSouth	Not given	3	W	SW	<i>Myotis</i> sp	Point B	SW-NE
pre	13July17_Dawn	dawn1	TillSouth	3	0	E	NE	Common pipistrelle	Point A	NE-SW
pre	13July17_Dawn	dawn1	TillSouth	3	0	E	SE	Soprano pipistrelle	Point A	Flew through clearing SE-W
pre	13July17_Dawn	dawn1	TillSouth	3	2	E	SE	Soprano pipistrelle	Point A	Flew along eastern edge SE-NE
pre	13July17_Dawn	dawn1	TillSouth	3	2	E	SE	Soprano pipistrelle	Point A	Flew along eastern edge SE-NE
pre	13July17_Dawn	dawn1	TillSouth	3	2	E	NE	Common pipistrelle	Point A	NE-SW
pre	13July17_Dawn	dawn1	TillSouth	3	2	E	S	Soprano pipistrelle	Point A	S-N
pre	13July17_Dawn	dawn1	TillSouth	30	0	0	S	Noctule	Point A	Flew above river
pre	13July17_Dawn	dawn1	TillSouth	3	0	0	N	Common pipistrelle	Point A	N-S
pre	13July17_Dawn	dawn1	TillSouth	3	0	0	NE	Soprano pipistrelle	Point A	NE-SW
pre	13July17_Dawn	dawn1	TillSouth	3	0	0	S	Soprano pipistrelle	Point A	S-NE
pre	13July17_Dawn	dawn1	TillSouth	20	0	0	N	Noctule	Point A	N-S
pre	13July17_Dawn	dawn1	TillSouth	5	10	W	NE	Soprano pipistrelle	Point B	Bat flew NE to SW
pre	13July17_Dawn	dawn1	TillSouth	10	15	W	SW	Soprano pipistrelle	Point B	Flew SW to NE - could be same bat foraging
pre	13July17_Dawn	dawn1	TillSouth	5	0	0	E	Soprano pipistrelle	Point B	Flew down hedge line E-W
pre	13July17_Dawn	dawn1	TillSouth	25	5	W	NE	Soprano pipistrelle	Point B	NE-SW
pre	13July17_Dawn	dawn1	TillSouth	10	20	W	NE	Common pipistrelle	Point B	NE-SW
pre	13July17_Dawn	dawn1	TillSouth	10	10	W	SW	Soprano pipistrelle	Point B	SW-NE
pre	8Aug17_Dusk	dusk3	TillSouth	3	2	E	S	Soprano pipistrelle	Point A	S-N
pre	8Aug17_Dusk	dusk3	TillSouth	3	2	E	S	Soprano pipistrelle	Point A	S-N
pre	8Aug17_Dusk	dusk3	TillSouth	1	2	E	N	Soprano pipistrelle	Point A	N-S
pre	8Aug17_Dusk	dusk3	TillSouth	3	1	E	NE	Soprano pipistrelle	Point A	From NE down river
pre	8Aug17_Dusk	dusk3	TillSouth	3	1	E	NE	Soprano pipistrelle	Point A	From NE down river
pre	8Aug17_Dusk	dusk3	TillSouth	3	1	E	NE	Soprano pipistrelle	Point A	Down eastern side of river

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	8Aug17_Dusk	dusk3	TillSouth	3	1	E	NE	Soprano pipistrelle	Point A	Down eastern side of river
pre	8Aug17_Dusk	dusk3	TillSouth	4	0	0	NE	Unknown	Point A	Over river (BLE/barbastelle)
pre	8Aug17_Dusk	dusk3	TillSouth	3	0	0	NE	Soprano pipistrelle	Point A	Flew east to river then south
pre	8Aug17_Dusk	dusk3	TillSouth	4	2	E	S	Soprano pipistrelle	Point A	S-N
pre	8Aug17_Dusk	dusk3	TillSouth	5	2	E	N	Soprano pipistrelle	Point A	N-S
pre	8Aug17_Dusk	dusk3	TillSouth	3	0	0	NE	Soprano pipistrelle	Point A	Flew from NE then down river N-S
pre	8Aug17_Dusk	dusk3	TillSouth	3	0	0	NE	<i>Myotis</i> sp	Point A	Flew from NE then down river N-S
pre	8Aug17_Dusk	dusk3	TillSouth	3	0	0	NW	Serotine	Point A	Flew through gap then south
pre	8Aug17_Dusk	dusk3	TillSouth	6	0	0	NE	Common pipistrelle	Point A	Down onto river
pre	8Aug17_Dusk	dusk3	TillSouth	4	0	0	NE	<i>Myotis</i> sp	Point A	Down onto river
pre	8Aug17_Dusk	dusk3	TillSouth	5	0	0	NE	<i>Myotis</i> sp	Point A	Down onto river
pre	8Aug17_Dusk	dusk3	TillSouth	5	0	0	SW	Serotine	Point B	SW-NE
pre	11Aug17_Dawn	dawn2	TillSouth	4	0	0	S	<i>Myotis</i> sp	Point A	Very brief pass
pre	19Sep17_Dusk	dusk4	TillSouth	6	4	E	S	Soprano pipistrelle	Point A	S-N
pre	19Sep17_Dusk	dusk4	TillSouth	6	3	E	S	Soprano pipistrelle	Point A	Foraged and then moved North
pre	19Sep17_Dusk	dusk4	TillSouth	5	3	E	N	Soprano pipistrelle	Point A	Very direct onto river
pre	19Sep17_Dusk	dusk4	TillSouth	5	3	E	N	Soprano pipistrelle	Point A	Very direct onto river
pre	19Sep17_Dusk	dusk4	TillSouth	5	0	0	N	Soprano pipistrelle	Point B	Above river
pre	19Sep17_Dusk	dusk4	TillSouth	10	5	E	S	Soprano pipistrelle	Point B	S-N
pre	19Sep17_Dusk	dusk4	TillSouth	10	0	0	N	Soprano pipistrelle	Point B	Above river
pre	19Sep17_Dusk	dusk4	TillSouth	2	0	0	W	Soprano pipistrelle	Point B	Crossed bridge several times
pre	19Sep17_Dusk	dusk4	TillSouth	15	10	W	S	Common pipistrelle	Point B	S-N
pre	19Sep17_Dusk	dusk4	TillSouth	15	0	0	S	Common pipistrelle	Point B	Above river
pre	19Sep17_Dusk	dusk4	TillSouth	10	0	0	S	Common pipistrelle	Point B	S-N
pre	19Sep17_Dusk	dusk4	TillSouth	10	0	0	S	Soprano pipistrelle	Point B	S-N
pre	19Sep17_Dusk	dusk4	TillSouth	10	0	0	N	Common pipistrelle	Point B	Above river

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	19Sep17_Dusk	dusk4	TillSouth	5	0	0	S	Soprano pipistrelle	Point B	Above river

C.6 CP6 – River Till beech shelter belt

Table C-6 Survey Results at CP6 River Till Beech Shelter Belt

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	28June17_Dusk	dusk1	Beech	8	1	W	S	Common pipistrelle	Point B	Flew S to N (no bats seen on eastern side)
pre	28June17_Dusk	dusk1	Beech	7	1	W	S	Soprano pipistrelle	Point B	S-N
pre	28June17_Dusk	dusk1	Beech	8	5	W	S	Common pipistrelle	Point B	S-N
pre	28June17_Dusk	dusk1	Beech	8	5	W	N	Common pipistrelle	Point B	N-S
pre	28June17_Dusk	dusk1	Beech	9	7	W	S	Common pipistrelle	Point B	S-N
pre	28June17_Dusk	dusk1	Beech	9	7	W	S	Common pipistrelle	Point B	S-N
pre	28June17_Dusk	dusk1	Beech	9	8	W	N	Common pipistrelle	Point B	N-S
pre	28June17_Dusk	dusk1	Beech	9	5	W	S	Common pipistrelle	Point B	S-N
pre	28June17_Dusk	dusk1	Beech	9	8	W	N	Common pipistrelle	Point B	N-S
pre	28June17_Dusk	dusk1	Beech	9	5	W	S	Common pipistrelle	Point B	S-N
pre	28June17_Dusk	dusk1	Beech	10	8	W	N	Common pipistrelle	Point B	N-S
pre	28June17_Dusk	dusk1	Beech	8	7	W	N	Common pipistrelle	Point B	N-S
pre	28June17_Dusk	dusk1	Beech	7	2	W	S	Common pipistrelle	Point B	S-N
pre	28June17_Dusk	dusk1	Beech	5	10	W	N	Unknown	Point B	N-S
pre	28June17_Dusk	dusk1	Beech	8	10	W	N	Common pipistrelle	Point B	N-S
pre	28June17_Dusk	dusk1	Beech	5	2	W	S	Soprano pipistrelle	Point B	Low, under canopy
pre	28June17_Dusk	dusk1	Beech	8	2	W	S	Unknown	Point B	Big bat
pre	28June17_Dusk	dusk1	Beech	7	10	W	S	Common pipistrelle	Point B	S-N

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	28June17_Dusk	dusk1	Beech	10	10	W	N	Unknown	Point B	-
pre	28June17_Dusk	dusk1	Beech	10	10	W	N	Unknown	Point B	-
pre	28June17_Dusk	dusk1	Beech	8	5	W	N	Soprano pipistrelle	Point B	N-S
pre	28June17_Dusk	dusk1	Beech	10	10	W	S	Common pipistrelle	Point B	S-N
pre	28June17_Dusk	dusk1	Beech	15	10	W	N	Common pipistrelle	Point B	N-S
pre	28June17_Dusk	dusk1	Beech	8	8	W	S	Common pipistrelle	Point B	S-N
pre	28June17_Dusk	dusk1	Beech	7	7	W	N	<i>Pipistrellus</i> sp	Point B	-
pre	28June17_Dusk	dusk1	Beech	17	8	W	N	Unknown (big bat)	Point B	-
pre	28June17_Dusk	dusk1	Beech	7	5	W	N	<i>Pipistrellus</i> sp	Point B	-
pre	28June17_Dusk	dusk1	Beech	10	10	W	S	Common pipistrelle	Point B	S-N
pre	28June17_Dusk	dusk1	Beech	7	8	W	S	Common pipistrelle	Point B	S-N
pre	28June17_Dusk	dusk1	Beech	7	5	W	N	Common pipistrelle	Point B	N-S
pre	28June17_Dusk	dusk1	Beech	7	8	W	S	Common pipistrelle	Point B	S-N
pre	28June17_Dusk	dusk1	Beech	6	2	W	S	Soprano pipistrelle	Point B	S-N
pre	28June17_Dusk	dusk1	Beech	8	12	W	S	Common pipistrelle	Point B	S-N
pre	26Jul17_Dusk	dusk2	Beech	7	3	E	N	Soprano pipistrelle	Point A	Flew N-S along edge
pre	26Jul17_Dusk	dusk2	Beech	7	0	0	N	Soprano pipistrelle	Point A	Flew into woodland
pre	26Jul17_Dusk	dusk2	Beech	6	3	E	N	Soprano pipistrelle	Point A	Flew N to S along edge
pre	26Jul17_Dusk	dusk2	Beech	6	3	E	S	Soprano pipistrelle	Point A	Flew S to N along edge
pre	26Jul17_Dusk	dusk2	Beech	6	0	0	S	Soprano pipistrelle	Point A	Flew into woodland
pre	26Jul17_Dusk	dusk2	Beech	5	2	E	S	Soprano pipistrelle	Point A	S-N
pre	26Jul17_Dusk	dusk2	Beech	7	2	E	N	Soprano pipistrelle	Point A	N-S
pre	26Jul17_Dusk	dusk2	Beech	7	3	E	S	Common pipistrelle	Point A	S-N
pre	26Jul17_Dusk	dusk2	Beech	9	5	E	N	Soprano pipistrelle	Point A	N-S
pre	26Jul17_Dusk	dusk2	Beech	5	3	E	S	Common pipistrelle	Point A	S-N
pre	26Jul17_Dusk	dusk2	Beech	2	3	E	S	Common pipistrelle	Point A	S-N
pre	26Jul17_Dusk	dusk2	Beech	7	3	E	S	Common pipistrelle	Point A	S-N

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	26Jul17_Dusk	dusk2	Beech	7	3	E	S	Common pipistrelle	Point A	S-N
pre	26Jul17_Dusk	dusk2	Beech	6	3	E	S	Common pipistrelle	Point A	S-N
pre	26Jul17_Dusk	dusk2	Beech	8	3	E	S	Common pipistrelle	Point A	S-N
pre	26Jul17_Dusk	dusk2	Beech	8	5	E	N	Common pipistrelle	Point A	N-S
pre	26Jul17_Dusk	dusk2	Beech	8	5	E	S	Common pipistrelle	Point A	S-N
pre	26Jul17_Dusk	dusk2	Beech	8	5	E	S	Common pipistrelle	Point A	S-N
pre	26Jul17_Dusk	dusk2	Beech	7	5	E	S	Common pipistrelle	Point A	S-N
pre	26Jul17_Dusk	dusk2	Beech	8	7	E	N	Common pipistrelle	Point A	N-S
pre	26Jul17_Dusk	dusk2	Beech	7	7	E	S	Common pipistrelle	Point A	S-N
pre	26Jul17_Dusk	dusk2	Beech	7	7	E	N	Common pipistrelle	Point A	N-S
pre	26Jul17_Dusk	dusk2	Beech	7	7	E	S	Common pipistrelle	Point A	S-N
pre	26Jul17_Dusk	dusk2	Beech	7	7	E	S	Common pipistrelle	Point A	S-N
pre	26Jul17_Dusk	dusk2	Beech	7	5	E	N	Common pipistrelle	Point A	N-S
pre	26Jul17_Dusk	dusk2	Beech	8	5	E	N	Common pipistrelle	Point A	N-S
pre	26Jul17_Dusk	dusk2	Beech	7	5	E	S	Common pipistrelle	Point A	S-N
pre	26Jul17_Dusk	dusk2	Beech	7	5	E	N	Common pipistrelle	Point A	N-S
pre	26Jul17_Dusk	dusk2	Beech	9	5	E	S	Common pipistrelle	Point A	S-N
pre	26Jul17_Dusk	dusk2	Beech	6	5	E	S	Common pipistrelle	Point A	S-N
pre	26Jul17_Dusk	dusk2	Beech	12	10	E	N	Serotine	Point A	N-S
pre	26Jul17_Dusk	dusk2	Beech	5	3	E	N	Common pipistrelle	Point A	N-S
pre	26Jul17_Dusk	dusk2	Beech	7	3	E	S	Common pipistrelle	Point A	S-N
pre	26Jul17_Dusk	dusk2	Beech	2	Not given	E	S	Noctule	Point A	Flew S-N above trees
pre	26Jul17_Dusk	dusk2	Beech	6	2	S	E	Soprano pipistrelle	Point B	E-W
pre	26Jul17_Dusk	dusk2	Beech	6	4	S	W	Common pipistrelle	Point B	W-E
pre	26Jul17_Dusk	dusk2	Beech	6	3	S	E	Common pipistrelle	Point B	Foraging loop along field margin (E-W)
pre	26Jul17_Dusk	dusk2	Beech	6	3	S	W	Common pipistrelle	Point B	W-E
pre	26Jul17_Dusk	dusk2	Beech	6	3	S	E	Common pipistrelle	Point B	E-W

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	26Jul17_Dusk	dusk2	Beech	15	20	S	W	Serotine	Point B	W-E
pre	26Jul17_Dusk	dusk2	Beech	4	10	S	W	Common pipistrelle	Point B	Foraging along field margin (W-E)
pre	26Jul17_Dusk	dusk2	Beech	4	10	S	E	Common pipistrelle	Point B	Foraging along field margin (E-W – could be the same bat)
pre	26Jul17_Dusk	dusk2	Beech	6	10	S	E	Common pipistrelle	Point B	E-W
pre	26Jul17_Dusk	dusk2	Beech	10	15	S	W	Common pipistrelle	Point B	W-E
pre	26Jul17_Dusk	dusk2	Beech	10	15	S	E	Common pipistrelle	Point B	E-W
pre	27Jul17_Dawn	dawn1	Beech	6	5	N	E	Common pipistrelle	Point A	Flew E-W between trees and crops
pre	27Jul17_Dawn	dawn1	Beech	5	3	N	E	Common pipistrelle	Point A	Flew E-W between trees and crops
pre	27Jul17_Dawn	dawn1	Beech	5	5	N	W	Common pipistrelle	Point A	Flew W-E between trees and crops
pre	27Jul17_Dawn	dawn1	Beech	7	8	N	W	Soprano pipistrelle	Point A	Flew W-E between trees and crops
pre	27Jul17_Dawn	dawn1	Beech	4	5	N	W	Common pipistrelle	Point A	Flew W-E between trees and crops
pre	27Jul17_Dawn	dawn1	Beech	4	5	N	E	Common pipistrelle	Point A	Flew E-W between trees and crops
pre	27Jul17_Dawn	dawn1	Beech	5	4	N	W	Common pipistrelle	Point A	Flew W-E between trees and crops
pre	27Jul17_Dawn	dawn1	Beech	4	2	S	E	Soprano pipistrelle	Point B	E-W
pre	17Aug17_Dusk	dusk3	Beech	6	5	E	S	Common pipistrelle	Point A	S-N
pre	17Aug17_Dusk	dusk3	Beech	4	4	E	S	Common pipistrelle	Point A	S-N
pre	17Aug17_Dusk	dusk3	Beech	7	6	E	S	Common pipistrelle	Point A	S-N
pre	17Aug17_Dusk	dusk3	Beech	7	6	E	S	Common pipistrelle	Point A	S-N
pre	17Aug17_Dusk	dusk3	Beech	6	6	E	S	Common pipistrelle	Point A	S-N
pre	17Aug17_Dusk	dusk3	Beech	6	6	E	S	Common pipistrelle	Point A	S-N
pre	17Aug17_Dusk	dusk3	Beech	6	5	E	S	<i>Myotis</i> sp	Point A	S-N
pre	17Aug17_Dusk	dusk3	Beech	7	6	E	S	Soprano pipistrelle	Point A	S-N

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	17Aug17_Dusk	dusk3	Beech	4	5	E	S	Soprano pipistrelle	Point A	S-N
pre	17Aug17_Dusk	dusk3	Beech	6	6	E	S	Common pipistrelle	Point A	S-N
pre	17Aug17_Dusk	dusk3	Beech	6	6	E	N	Common pipistrelle	Point A	N-S
pre	17Aug17_Dusk	dusk3	Beech	8	7	E	N	Common pipistrelle	Point A	N-S
pre	17Aug17_Dusk	dusk3	Beech	7	6	E	S	Common pipistrelle	Point A	S-N
pre	17Aug17_Dusk	dusk3	Beech	6	7	E	S	Common pipistrelle	Point A	S-N
pre	17Aug17_Dusk	dusk3	Beech	8	10	W	S	Soprano pipistrelle	Point B	S-N
pre	17Aug17_Dusk	dusk3	Beech	6	3	W	S	Common pipistrelle	Point B	S-N
pre	17Aug17_Dusk	dusk3	Beech	4	5	W	S	Serotine	Point B	S-N
pre	17Aug17_Dusk	dusk3	Beech	5	7	W	S	Soprano pipistrelle	Point B	S-N
pre	18Aug17_Dawn	dawn2	Beech	4	6	E	S	Common pipistrelle	Point A	S-N
pre	18Aug17_Dawn	dawn2	Beech	6	6	E	N	Common pipistrelle	Point A	N-S
pre	18Aug17_Dawn	dawn2	Beech	5	5	E	N	Common pipistrelle	Point A	N-S
pre	18Aug17_Dawn	dawn2	Beech	5	5	E	N	Common pipistrelle	Point A	N-S
pre	18Aug17_Dawn	dawn2	Beech	7	3	W	N	Soprano pipistrelle	Point B	N-S
pre	19Sep17_Dusk	dusk4	Beech	16	0	W	W	Common pipistrelle	Point A	W-E
pre	19Sep17_Dusk	dusk4	Beech	16	5	W	N	Common pipistrelle	Point A	N-S
pre	19Sep17_Dusk	dusk4	Beech	3	5	W	N	Common pipistrelle	Point A	Flew N-S along track
pre	19Sep17_Dusk	dusk4	Beech	5	10	W	NW	Soprano pipistrelle	Point A	NW-SE
pre	19Sep17_Dusk	dusk4	Beech	2	3	W	S	Common pipistrelle	Point A	S-N
pre	19Sep17_Dusk	dusk4	Beech	5	2	W	W	Barbastelle	Point A	W-E
pre	19Sep17_Dusk	dusk4	Beech	5	5	W	W	Common pipistrelle	Point A	W-E
pre	19Sep17_Dusk	dusk4	Beech	5	5	W	N	Soprano pipistrelle	Point B	Commute through top N-S
pre	19Sep17_Dusk	dusk4	Beech	20	0	0	SW	Noctule	Point B	Crossed at top of tree belt, not at crossing point, from SW to NE
pre	19Sep17_Dusk	dusk4	Beech	20	0	0	NW	Common pipistrelle	Point B	Flew NW-SE along top of shelter belt

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	19Sep17_Dusk	dusk4	Beech	20	0	0	NW	Common pipistrelle	Point B	Flew NW-SE along top of shelter belt
pre	19Sep17_Dusk	dusk4	Beech	20	0	0	SW	Noctule	Point B	Crossed at top of tree belt SW-NE
pre	19Sep17_Dusk	dusk4	Beech	7	0	0	S	Serotine	Point B	Flew S-N alongside shelter belt - crossed through at top
pre	19Sep17_Dusk	dusk4	Beech	10	0	0	S	Common pipistrelle	Point B	S-N
pre	19Sep17_Dusk	dusk4	Beech	8	0	0	S	Serotine	Point B	Crossed at top of field over intersecting tree belt, S-N
pre	19Sep17_Dusk	dusk4	Beech	12	0	0	S	Common pipistrelle	Point B	Crossed at top of field over intersecting tree belt, S-N
pre	19Sep17_Dusk	dusk4	Beech	14	0	0	S	Serotine	Point B	Crossed at top of field over intersecting tree belt, S-N

C.7 CP7 – River Till northern crossing (byway)

Table C-7 Survey Results at CP7 River Till Northern Crossing (byway)

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	01Jun17_dusk	dusk1	TillNorth	2.5	0	0	S	Common pipistrelle	Point B	Flew S-N along track and then West through gap in hedgerow
pre	01Jun17_dusk	dusk1	TillNorth	2.5	0	0	S	Common pipistrelle	Point B	Flew S-N then foraging back and forth along track and eastern hedge
pre	01Jun17_dusk	dusk1	TillNorth	2.5	0	0	S	Common pipistrelle	Point B	Flew S-N then foraging back and forth along track staying close to western hedge
pre	01Jun17_dusk	dusk1	TillNorth	2	0	0	S	Common pipistrelle	Point B	Foraging heard although the bat was flying fast S-N along track
pre	01Jun17_dusk	dusk1	TillNorth	2.5	0	0	S	Common pipistrelle	Point B	Flying S-N from large oak tree along track and then W through gap in hedgerow and then back again - multiple passes of same bat (foraging). Social calls heard.
pre	01Jun17_dusk	dusk1	TillNorth	3	0	0	N	Common pipistrelle	Point B	Flying N-S along track - multiple passes (foraging)
pre	01Jun17_dusk	dusk1	TillNorth	2.5	0	0	N	Common pipistrelle	Point B	Flying N-S along track (foraging heard).
pre	01Jun17_dusk	dusk1	TillNorth	2.5	0	0	S	Serotine	Point B	Flew S-N along track.
pre	01Jun17_dusk	dusk1	TillNorth	2.5	0	0	N	Common pipistrelle	Point A	Flew N-S along track (foraging circle above surveyor).
pre	01Jun17_dusk	dusk1	TillNorth	3.5	0	0	N	Soprano pipistrelle	Point A	Flew N-S along track close to western hedgerow.
pre	01Jun17_dusk	dusk1	TillNorth	3.5	0	0	N	Common pipistrelle	Point A	Flew N-S along track close to western hedgerow.
pre	19Jul17_dusk	dusk2	TillNorth	2	0	0	N	Soprano pipistrelle	Point B	Flying N-S adjacent to hedgerow (eastern side)
pre	24Aug17_dusk	dusk3	TillNorth	2	0	0	S	Leisler's bat	Point A	Foraging but flying in northerly direction
pre	24Aug17_dusk	dusk3	TillNorth	3	0	0	S	Soprano pipistrelle	Point B	Flew along track approx 1 m from eastern side of hedgerow
pre	24Aug17_dusk	dusk3	TillNorth	3	0	0	S	Soprano pipistrelle	Point B	Flew along track approx 1 m from eastern side of hedgerow

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	24Aug17_dusk	dusk3	TillNorth	3	0	0	S	Soprano pipistrelle	Point B	Flew E-W across hedgerow and then turned and flew South along western side of hedge
pre	24Aug17_dusk	dusk3	TillNorth	3	0	0	S	<i>Pipistrellus</i> sp	Point B	Flew along track approx 1 m from eastern side of hedgerow
pre	24Aug17_dusk	dusk3	TillNorth	2	0	0	N	Common pipistrelle	Point B	Flew N-S but foraging above surveyor.
pre	14Sept17_dusk	dusk4	TillNorth	2.5	0	0	N	Common pipistrelle	Point B	Flying N-S along track
pre	14Sept17_dusk	dusk4	TillNorth	3.5	0	0	N	Common pipistrelle	Point B	Flying N-S along track
pre	14Sept17_dusk	dusk4	TillNorth	?	0	0	S	<i>Myotis</i> sp	Point B	Unknown height - bat not seen but heard to fly overhead of surveyor on track in S-N direction.
pre	14Sept17_dusk	dusk4	TillNorth	5	0	0	N	Serotine	Point B	Flying N-S along track
pre	14Sept17_dusk	dusk4	TillNorth	?	0	0	N	Soprano pipistrelle	Point B	Unknown height - bat not seen but heard to fly overhead of surveyor on track in N-S direction.
pre	14Sept17_dusk	dusk4	TillNorth	?	0	0	S	Serotine	Point B	Unknown height - bat not seen but heard to fly overhead of surveyor on track in S-N direction.
pre	14Sept17_dusk	dusk4	TillNorth	?	0	0	N	Common pipistrelle	Point B	Unknown height - bat not seen but heard to fly overhead of surveyor on track in S-N direction.
pre	14Sept17_dusk	dusk4	TillNorth	1.5	3	W	S	Soprano pipistrelle	Point A	Flying S-N on western side of hedgerow

C.8 CP8 – Scotland Lodge Farm/Parsonage Down

Table C-8 Survey Results at CP8 Scotland Lodge Farm/Parsonage Down

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	14June17_Dusk	dusk1	ScotLodge	3	0	0	SW	Unknown	Point A	Not on recording, flew SW-NE

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	14June17_Dusk	dusk1	ScotLodge	10	20	W	SE	Serotine	Point A	From trees (SE) to NW
pre	14June17_Dusk	dusk1	ScotLodge	1	10	W	SE	Common pipistrelle	Point A	From trees (SE) to N
pre	14June17_Dusk	dusk1	ScotLodge	5	10	E	E	Serotine	Point A	From east up to ridge then flew North
pre	14June17_Dusk	dusk1	ScotLodge	5	0	0	SW	Serotine	Point A	From south then along ridge (NE)
pre	14June17_Dusk	dusk1	ScotLodge	5	0	0	SE	Serotine	Point A	Flew along ridge (SE to N)
pre	14June17_Dusk	dusk1	ScotLodge	5	0	0	SW	Serotine	Point A	From SW then along ridge (N)
pre	14June17_Dusk	dusk1	ScotLodge	1	0	0	SE	Unknown	Point A	From trees (SE) to NW
pre	14June17_Dusk	dusk1	ScotLodge	5	0	0	SE	Serotine	Point A	From trees (SE) to NW
pre	14June17_Dusk	dusk1	ScotLodge	3	10	W	S	Common pipistrelle	Point A	Low flying from S to N (used vehicle track)
pre	14June17_Dusk	dusk1	ScotLodge	2	10	W	SE	<i>Myotis</i> sp	Point A	From trees (SE) to NW
pre	14June17_Dusk	dusk1	ScotLodge	3	1	E	SE	Common pipistrelle	Point B	Flew from eastern edge of field boundary (SE) to line of trees (NW)
pre	14June17_Dusk	dusk1	ScotLodge	1	1	E	SE	Common pipistrelle	Point B	Flew from eastern edge of field boundary (SE) to line of trees (NW)
pre	14June17_Dusk	dusk1	ScotLodge	2	1	E	SE	Common pipistrelle	Point B	Flew from eastern edge of field boundary (SE) to line of trees (NW)
pre	14June17_Dusk	dusk1	ScotLodge	5	0	N	E	Serotine	Point B	Flew E to W, on the N side of tree line N of crossing point
pre	14June17_Dusk	dusk1	ScotLodge	5	2	W	SE	Serotine	Point B	Then continued E-W on N side of tree line N of crossing point
pre	14June17_Dusk	dusk1	ScotLodge	4	2	W	SE	Common pipistrelle	Point B	Then flew E-W on N side of tree line
pre	14June17_Dusk	dusk1	ScotLodge	1	1	E	SE	Unknown (possible BLE)	Point B	Possible LE (not on recording). Then flew NW on S edge of trees.
pre	14June17_Dusk	dusk1	ScotLodge	2	0	E	SE	Common pipistrelle	Point B	Seen over top then flew NW along S edge of tree line
pre	14June17_Dusk	dusk1	ScotLodge	4	2	W	SE	Common pipistrelle	Point B	Then flew N of tree line to W
pre	14June17_Dusk	dusk1	ScotLodge	2	1	E	SE	Common pipistrelle	Point B	Then flew W along N edge of tree line
pre	14June17_Dusk	dusk1	ScotLodge	4	1	E	SE	<i>Myotis</i> sp (possibly Natterer's)	Point B	Poss Natterer's. Seen on eastern edge then flew NW along S edge of tree line
pre	12Jul17_Dusk	dusk2	ScotLodge	1	0	0	E	Common pipistrelle	Point A	Flew E to W over feature then NW over field crop

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	12Jul17_Dusk	dusk2	ScotLodge	2	0	0	W	Unknown (Common pipistrelle or <i>Myotis</i> sp)	Point A	Common pipistrelle or <i>Myotis</i> sp (not on recording). Flew W-E from crop field into bushes above surveyors head
pre	12Jul17_Dusk	dusk2	ScotLodge	1	0	0	W	<i>Myotis</i> sp	Point A	Flew from field (NW) to bushes (SE)
pre	12Jul17_Dusk	dusk2	ScotLodge	4	2	S	SE	Common pipistrelle	Point B	Flew across SE to NW
pre	12Jul17_Dusk	dusk2	ScotLodge	2	2	S	SE	<i>Myotis</i> sp	Point B	Flew across SE to NW
pre	12Jul17_Dusk	dusk2	ScotLodge	1	0.5	S	SE	<i>Myotis</i> sp	Point B	Crossed SE to NW
pre	12Jul17_Dusk	dusk2	ScotLodge	1	0.5	S	SE	Brown long-eared bat	Point B	Crossed SE to NW
pre	13Jul17_Dawn	dawn1	ScotLodge	0.5	0	0	NW	Common pipistrelle	Point A	Commuted along feature NW to SE
pre	13Jul17_Dawn	dawn1	ScotLodge	1	0	0	W	Common pipistrelle	Point A	Crossed over feature from W to E
pre	09Aug17_Dusk	dusk3	ScotLodge	3	0	0	SW	Common pipistrelle	Point A	Crossed over feature SW to NE
pre	09Aug17_Dusk	dusk3	ScotLodge	3	0	0	S	Common pipistrelle	Point A	Crossed over feature S to N
pre	09Aug17_Dusk	dusk3	ScotLodge	4	0	0	SE	Serotine	Point A	crossed from SE then flew NW across field
pre	09Aug17_Dusk	dusk3	ScotLodge	3	0	0	E	Serotine	Point A	Crossed over feature E to W
pre	09Aug17_Dusk	dusk3	ScotLodge	3	0	0	SE	<i>Myotis</i> sp	Point A	Flew down middle of feature SE to NW
pre	09Aug17_Dusk	dusk3	ScotLodge	3	0	0	SE	<i>Myotis</i> sp	Point A	Crossed SE to NW
pre	09Aug17_Dusk	dusk3	ScotLodge	2	2	S	SE	Common pipistrelle	Point B	Flew along ridge SE to NW
pe	10-Aug-17	dawn2	ScotLodge	0	0	-	-	-	-	-
pre	13Sep17_Dusk	dusk4	ScotLodge	4	0	0	W	Soprano pipistrelle	Point B	Flew E to N across feature

C.9 CP9 – Grants Hedgerow

Table C-9 Survey Results at CP9 Grants Hedgerow

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	13Jun17_Dusk	dusk 1	Grants Hedge	3	0	n/a	W	Common pipistrelle	Point A	From W along northern hedge of A303, through gap in Grant's Hedge and then North.

Stage	Survey_id	Survey no	Location	Height from Ground (m)	Distance	Side	Direction From	Species	Surveyor Location	Notes
pre	13Jun17_Dusk	dusk 1	Grants Hedge	4	2	E	S	Common pipistrelle	Point B	From hedge adjacent to A303 north up E side of Grant's hedge.
pre	13Jun17_Dusk	dusk 1	Grants Hedge	2	6	E	S	Common pipistrelle	Point B	From hedge adjacent to A303 north up E side of Grant's hedge.
pre	13Jun17_Dusk	dusk 1	Grants Hedge	10	2	E	N	Soprano pipistrelle	Point B	From Grant's Hedge (north) towards road.
pre	06Jul17_Dusk	dusk 2	Grants Hedge	4	1	W	S	Common pipistrelle	Point A	Flying north up Grant's Hedge from A303
pre	06Jul17_Dusk	dusk 2	Grants Hedge	4	2	W	s	Common pipistrelle	Point B	Flying north up Grant's Hedge from A303
pre	10Aug17_Dusk	dusk 3	Grants Hedge	4	2	W	N	Soprano pipistrelle	Point A	Flew south along west side of hedge towards A303 and likely crosses but not confirmed.
pre	20Sep17_Dusk	dusk 4	Grants Hedge	4	1	S	S	Soprano pipistrelle	Point A	Flew along hedgerow east to west on southern side of A303 before crossing to north side of road in location of Gant's Hedge and then continued in a westerly direction along hedgerow on north side of A303.

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