A303 Amesbury to Berwick Down

Applicant's provision of technical reports supporting the Environmental Information Review

Bat Crossing Point Survey Report (2018)

Document reference: Redetermination 2.11

Planning Act 2008

The Infrastructure Planning (Examination Procedure) Rules 2010

February 2022

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1 Introduction

1.1.1 A suite of bat surveys were carried out in 2017 to inform the biodiversity chapter of the Environmental Impact Assessment of the A303 Amesbury to Berwick Down Scheme (hereafter referred to as the 'Scheme'). These included surveys for bat roosts; bat activity surveys using walked transects and bat crossing point surveys, as well as static recording and advanced techniques including trapping and radio-tracking bats to their roosts and foraging areas.

1.1.2 Bat crossing point surveys were undertaken in 2017[1]. These surveys were undertaken for the three route options presented at the time of assessment (Route Options 1Na, 1Sa and 1Nd). Following the confirmation of the final Scheme design in 2018, the requirement for further crossing point surveys were identified which, together with some of the locations surveyed in 2017, would provide a baseline for future monitoring of the effectiveness of the mitigation provided for bats by the Scheme.

1.1.3 This report presents the data from the 2018 bat crossing point surveys. The surveys provide a baseline for future monitoring that can be easily repeated both during and post construction to verify the effectiveness of the incorporated mitigation.

[1] Highways England (2018) A303 Stonehenge Amesbury to Berwick Down, Bat Crossing Point Survey Report 2017

2 Methodology

2.1 Survey locations

2.1.1 The following reports have been used to identify suitable bat commuting routes to be included within the 2018 survey effort:

1. Bat crossing survey report 2017[1]
2. Bat activity survey report 2017[2]
3. Bat roost survey report 2017[3]

2.1.2 The description and justification of the 2018 crossing point survey locations are detailed within **Table 1**, the locations of which are illustrated within Appendix A, Figure 1.

Table 1 Crossing point survey locations and description

Crossing point ref.	Grid reference	Description and justification for survey
2018_1	SU 0732 4134	Located along the B3083, between Winterbourne Stoke and Rollestone. The road is bounded on both sides by defunct species poor hedgerows. The road is located between suitable roosting opportunities within Winterbourne Stoke and suitable foraging habitats in the form of sheltered tree lines and pasture fields to the north. This section within the survey area was not sampled during the 2016 and 2017 bat surveys.
2018_2	SU 0842 4133	Located along a Public Rights of Way (PRoW) that has a defunct hedgerow / sporadic scattered scrub adjacent to it. The walked transect recorded bat activity along the PRoW including a barbastelle bat (*Barbastella barbastellus*).
2018_3	SU 1178 4182	Located along Byway 12. The byway has been identified within the 2017 bat activity report as being of note, with common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), *Myotis* species (*Myotis* sp.) and serotine (*Eptesicus serotinus*) bats being recorded during the walked transects. No sampling was undertaken within this area during the static 2016 and 2017 monitoring surveys.

2.2 Survey methods

2.2.1 The crossing point surveys were carried out in accordance with the 2017 survey methodology and current best practice[4]. Six 60-minute dusk and dawn surveys were carried out at each of the identified locations (detailed in **Table 2**). At least three of the six surveys were undertaken at dusk, to account for night to night variability in bat activity patterns. The surveys commenced at sunset or one hour before sunrise.

[2] Highways England (2018) A303 Stonehenge Amesbury to Berwick Down, Bat Activity Survey Report 2017.
[3] Highway England (2018) A303 Stonehenge Amesbury to Berwick Down, Bat Roost Survey Report 2017
[4] Berthinussen, A. & Altringham J. (2015) WC1060: Development of a cost-effective method for monitoring the effectiveness of mitigation for bats crossing linear transport infrastructure. Final report to Defra.

2.2.2 The surveys were undertaken between 5th July and 31st August 2018. Surveys were undertaken in 'good' weather where the temperature was greater than 7°C, wind less than 5.5 m/s and no rain (**Table 2**).

Table 2 Survey dates and weather conditions

Date	Dusk or Dawn	Crossing points (CP)	Visit	Air temp (°C)			Rain (0-5)[1]			Cloud cover (0-8)[2]			Wind speed (m/s)			Notes
				S	M	E	S	M	E	S	M	E	S	M	E	
05/07/18	Dusk	2018_1	1	22	18	18	0	0	0	0	0	0	0.5	0.5	0	Warm and clear
17/07/18	Dawn	2018_1	2	9	-	10	0	0	0	0	0	0	0	0	0	-
20/07/18	Dawn	2018_1	3	21	18	18	0	0	0	0	0	0	0	0	0	-
23/07/18	Dusk	2018_1	4	22	22	21	0	0	0	0	0	0	0	0	0	-
26/07/18	Dawn	2018_1	5	14	14	13	0	0	0	0	0	0	0	0	0	Cool
06/09/18	Dusk	2018_1	6	18	17	16	0	0	0	8	8	8	2	2	2	Rain earlier in night
10/07/18	Dusk	2018_2	1	19	-	-	0	0	0	0	0	0	1	1	1	-
20/07/18	Dawn	2018_2	2	16	-	15	0	0	0	0	0	0	1	1	1	Calm and mild
23/07/18	Dusk	2018_2	3	24	-	19	0	0	0	3	1	1	0	0	0	Settled
24/07/18	Dawn	2018_2	4	12	-	17	0	0	0	1	1	1	0	0	0	Low mist with a slight chill
30/07/18	Dusk	2018_2	5	20	19	-	0	0	0	8	8	8	-	-	-	Dry, still/ low breeze overcast
31/08/18	Dawn	2018_2	6	9	-	10	0	0	0	6	5	5	1	1	1	Dew on grass and mist in valley
10/07/18	Dusk	2018_3	1	22	-	17	0	0	0	0	0	0	1	1	1	-
19/07/18	Dusk	2018_3	2	23	23	23	0	0	0	8	8	8	0	0	0	Warm and dry
24/07/18	Dawn	2018_3	3	19	-	17	0	0	0	0	0	0	0	0	0	Clear and bright
25/07/18	Dusk	2018_3	4	22	-	-	0	0	0	0	0	0	0	0	0	Warm and still
31/07/18	Dawn	2018_3	5	19	-	-	0	0	0	8	8	8	0	0	0	Rain over night
07/08/18	Dawn	2018_3	6	9	-	7	0	0	0	0	0	0	0	0	0	Cool and clear – no insects

S= Start, M=Middle, E=End

[1] Rain scale: 0 = none, 1 = drizzle, 2 = shower, 3 = rain, 4 = downpour, 5 = flood

[2] Estimate of cloud cover: 0= Sky completely clear, 4= Sky half clouded, 8=Sky fully clouded

2.2.3 Each crossing point location was surveyed by two surveyors, with each surveyor recording all bat passes using an Echo-Metre Touch II Pro[5] or Batlogger M[6]. The following information was recorded:

1. bat pass reference;
2. time of observation;
3. species of bat (if known);
4. flight height of bat (at the lowest point);
5. horizontal distance from the feature (at the closest point);
6. side of the feature bat was seen commuting along (e.g. eastern side);
7. direction of flight (e.g. north – south);
8. weather variables at the start, middle and end of survey period; and
9. any additional comments.

[5] Echo Meter Touch (Wildlife Acoustics, Concord, Massachusetts, USA)
[6] Batlogger M (http://www.batlogger.com/en/detectors.html)

2.2.4 Each individual bat pass was recorded as a separate observation as per the guidelines. Bats were considered to be using the feature if individuals crossed the proposed Scheme in a horizontal direction (roughly parallel) to the linear feature within 5 m of the linear feature. Bats were considered to be crossing the proposed Scheme but not using the linear feature when bats were recorded parallel to the features although further than 5 m. Bats were not considered to be crossing the proposed Scheme if they were recorded to be flying perpendicular to the linear feature (and not crossing the proposed Scheme in between surveyors).

2.2.5 Post survey data handling involved the removal of duplicate survey results (this was only possible for bats that were both heard and seen), whereby both surveyors recorded bats traversing the feature at the same time, height, distance and directions. Where there was uncertainty of duplicates, records were retained.

2.3 Limitations and assumptions

2.3.1 In order to ensure that the surveys were comparable with the 2017 surveys, the surveys only extended for an hour after sunset and an hour before dawn. As such, late emerging species including *Myotis* species, lesser horseshoe bat (*Rhinolophus hipposideros*), brown long-eared bat (*Plecotus auritus*) and barbastelle bat which were recorded in the 2017 bat activity surveys may have been missed. This is however unlikely to have limited the validity of the surveys, as the repeated monitoring surveys will be undertaken during the same season and same time of day.

2.3.2 The 2018 survey period was unseasonably dry and hot, this may have resulted in a reduction of suitable prey and possibly a reduction in bat activity, particularly during the mid-season surveys. This would not however limit the results as all surveys were undertaken at the correct time of year, during suitable weather conditions.

2.3.3 Due to health and safety issues, it was not possible to locate a surveyor both north and south of the existing A303 at crossing point 2018_3. As such, the survey was undertaken from one vantage point to the south of the road. This is not considered to limit the survey results, as visibility was suitable to collect all relevant information north of the road as well as south.

3 Results

3.1 Introduction

3.1.1 The results for the 2018 crossing point surveys are detailed in this section. The raw data for all the 2018 crossing point surveys can be seen in Appendix B.

3.1.2 A minimum of six species were recorded during the 2018 crossing point surveys, species included common pipistrelle, soprano pipistrelle, noctule (*Nyctalus noctula*), serotine, brown long-eared bat and a *Myotis* species. Common pipistrelles were recorded most frequently throughout the survey season, with all other species being recorded individually.

3.1.3 Crossing point 2018_01 recorded the highest number of bats crossing using the feature (B3083), with common pipistrelle and soprano pipistrelle constituting most of the bat passes recorded.

3.1.4 The results of the 2018 surveys have been displayed as box plots, that depict the quartiles of the range of data. Where no median or upper quartile is present, it is due to the limited range of the results (for example the median can also be the upper quartile). Where there is no median presented, it will be due to either single bats being recorded, or all bats being recorded at the same height. This is applicable to all box and whisker graphs.

3.2 Crossing point 2018_1

3.2.1 A total of 65 bat passes were recorded at crossing point 2018_1 throughout the six survey visits (see details in **Table 3**). Species recorded included common pipistrelle, soprano pipistrelle, serotine, brown long-eared bat, noctule and two unidentified bats. The September visit recorded the highest level of bat activity, with 49 individual bat passes being recorded (**Appendix B, Table 6**).

3.2.2 Of the bat passes recorded 44 bats were recorded to be crossing using the feature and flying under 5m from the height of the existing road, 10 bats were heard and not seen and 11 bats were seen, but were not using the feature (**Table 3**).

3.2.3 All of the bats that were recorded to be crossing the Scheme were recorded to be using the feature, and flying at an unsafe height, which is considered to be below 5m (**Figure 1** and **Figure 2**)

3.2.4 When looking at the bats crossing per survey the total number of bats recorded ranged between 0 and 30 with a median of 2.5 bats recorded crossing per survey. This was very similar to the total number of bats seen to be using the feature and the number of bats recorded flying at unsafe heights (0-29 with a median of 2.5 per survey) (**Figure 2**).

Table 3 Number and crossing behaviour for each bat species at CP2018_1

Species	Total number of bats recorded	Crossing using Feature	Heard and not seen	Bats seen but not using feature	Flying under 5m
All bat species	**65**	**44**	**10**	**11**	**44**
Common pipistrelle	43	29	5	9	29
Soprano pipistrelle	11	10	1	0	10
Noctule	6	0	4	2	0
Brown long-eared bat	2	2	0	0	2
Serotine	1	1	0	0	1
Unidentified bat	2	2	0	0	2

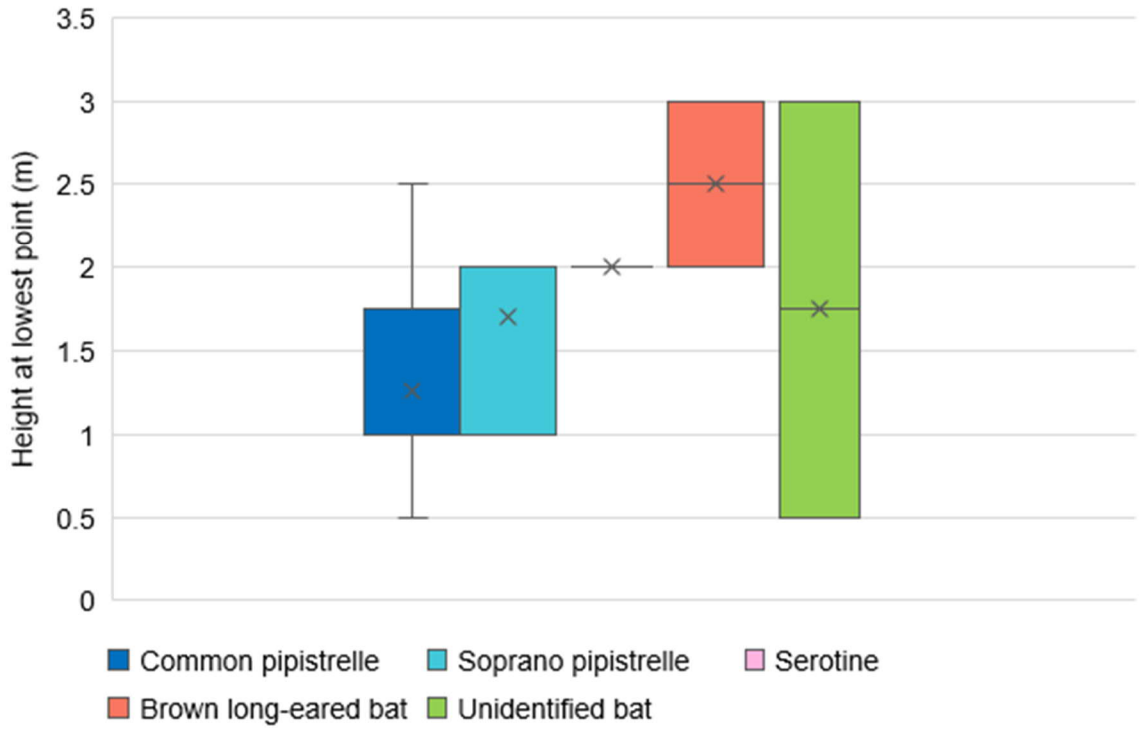


Figure 1: Box-plot showing the flight heights recorded for each species at CP2018_1

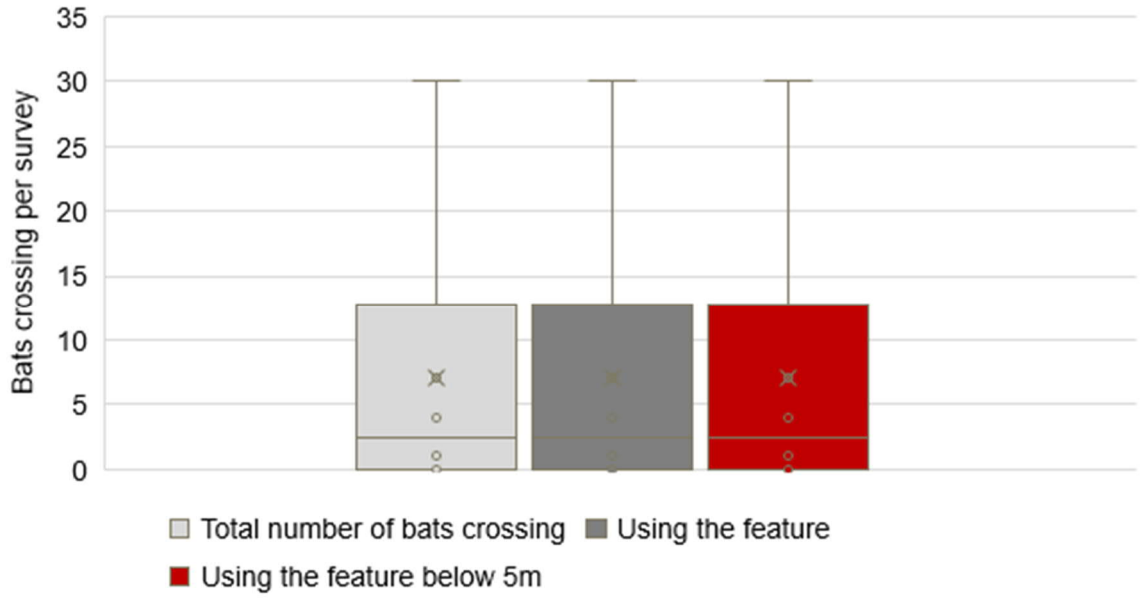


Figure 2: Box-plot showing the number of bats crossing per survey at crossing point 2018_1 and the number of bats that were recorded crossing using the feature below 5m

3.3 Crossing point 2018_2

3.3.1 A total of 16 bat passes were recorded at crossing point 2018_2 throughout the six survey visits (**Table 4**). Species recorded included common pipistrelle, soprano pipistrelle, noctule and *Myotis* species. Crossing point 2018_2 recorded the lowest level of bat activity with only 16 bat passes being recorded over the six surveys.

3.3.2 Of the 16 bat passes recorded crossing the Scheme, 14 were recorded using the feature (**Table 4**). The remaining two bats were not using the feature this included a noctule flying 'high' overhead (over 5m from the top of the feature) and a common pipistrelle foraging south of the crossing point along a hedgerow. All the bats recorded to be using the feature were recorded flying below 5m (unsafe heights) (**Figure 3** and **Figure 4**).

Table 4 Number and crossing behaviour for each bat species at CP2018_2

Species	Total number of bats recorded	Using Feature	Heard and not seen	Bats seen but not using feature	Using the feature below 5m
All bat species	**16**	**14**	**0**	**2**	**14**
Common pipistrelle	11	10	0	1	10
Soprano pipistrelle	3	3	0		3
Noctule	1	0	0	1	0
Myotis species	1	1	0		1

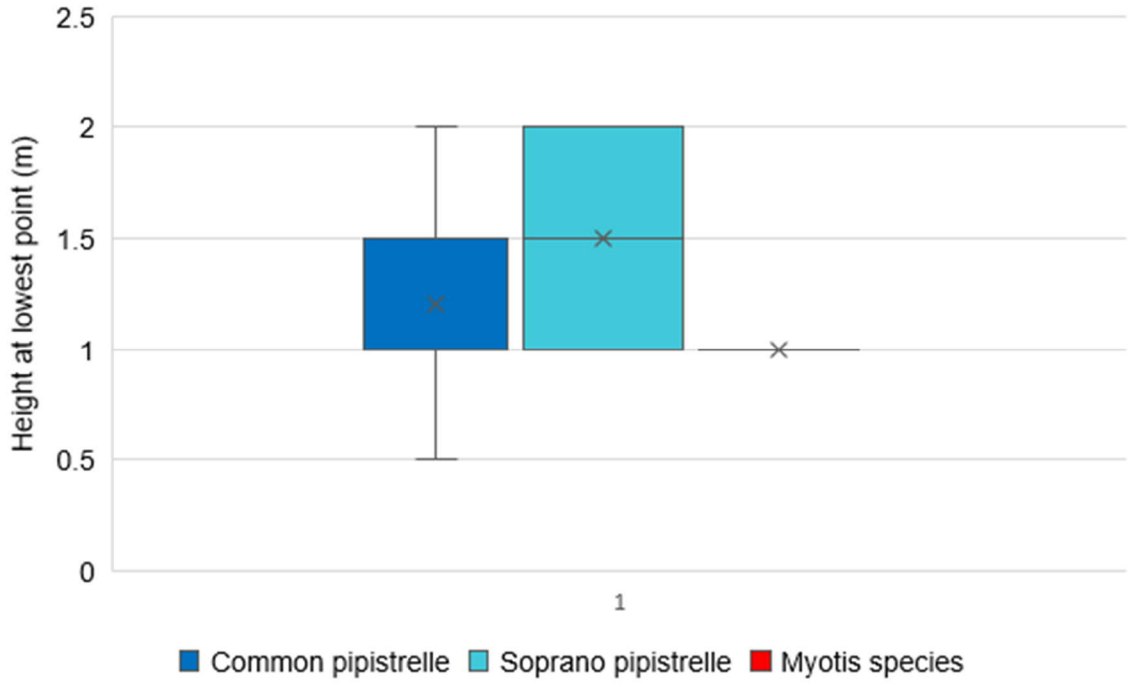


Figure 3: Box-plot showing the flight heights recorded for each species at CP2018_2

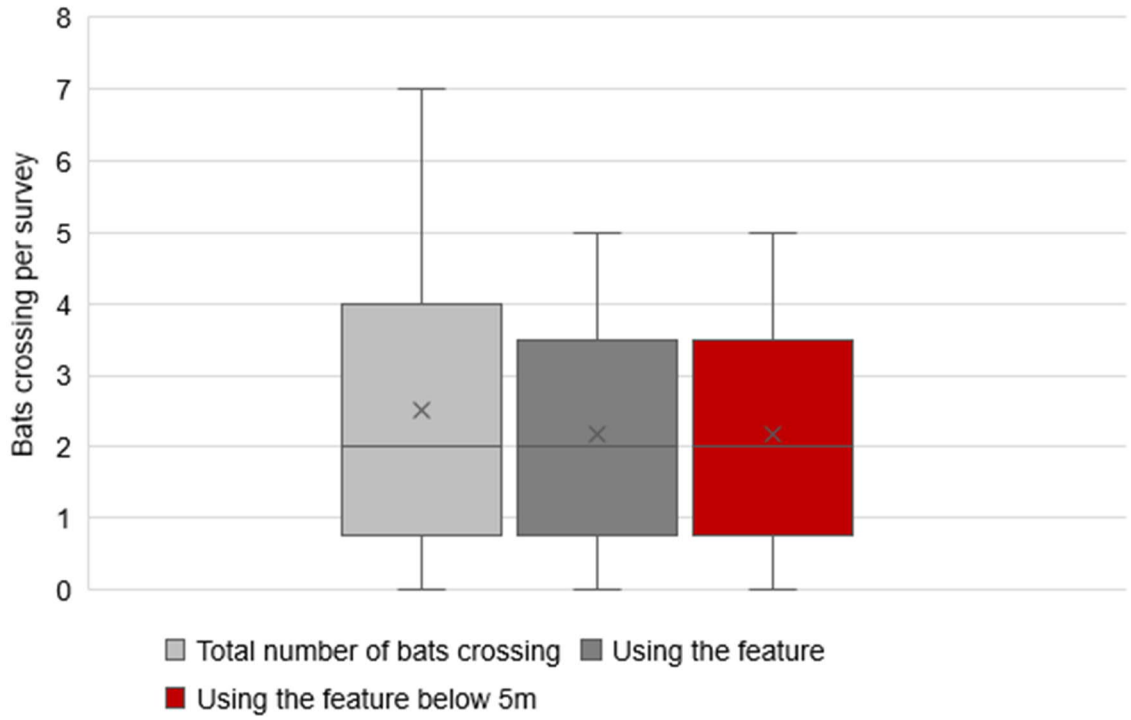


Figure 4: Box-plot showing the number of bats crossing per survey at crossing point 2018_2 and the number of bats that were recorded crossing using the feature below 5m

3.4 Crossing point 2018_3

3.4.1 A total of 18 bats were recorded at crossing point 2018_3 throughout the six survey visits (Table 5). Species recorded included common pipistrelle, soprano pipistrelle, serotine, noctule and an unidentified bat.

3.4.2 Of the 18 bat passes recorded 12 were recorded crossing and using the feature. The remaining six bat passes were seen and not heard (**Table 5**), this included a serotine, one common pipistrelle and four noctules. The flight heights of the bat passes at their lowest points ranged between 3 and 7m with only the serotine bats recorded not flying below 5m (**Figure 5**).

3.4.3 Approximately half of the bats that were recorded to be crossing the current A303, were flying below 5m, which is considered to be at an unsafe height and within the collision zone of vehicles (**Figure 6**). It should be noted that the majority of activity was recorded at the start of the season (**Appendix B, Table 8**).

Table 5 Number and crossing behaviour for each bat species at CP2018_3

Species	Total number of bats recorded	Using Feature	Heard and not seen	Using the feature below 5m
All bat species	**18**	**12**	**6**	**7**
Serotine	9	8	1	3
Noctule	4	0	4	0
Soprano pipistrelle	3	3	0	3
Common pipistrelle	1	0	1	0
Unidentified bat	1	1	0	1

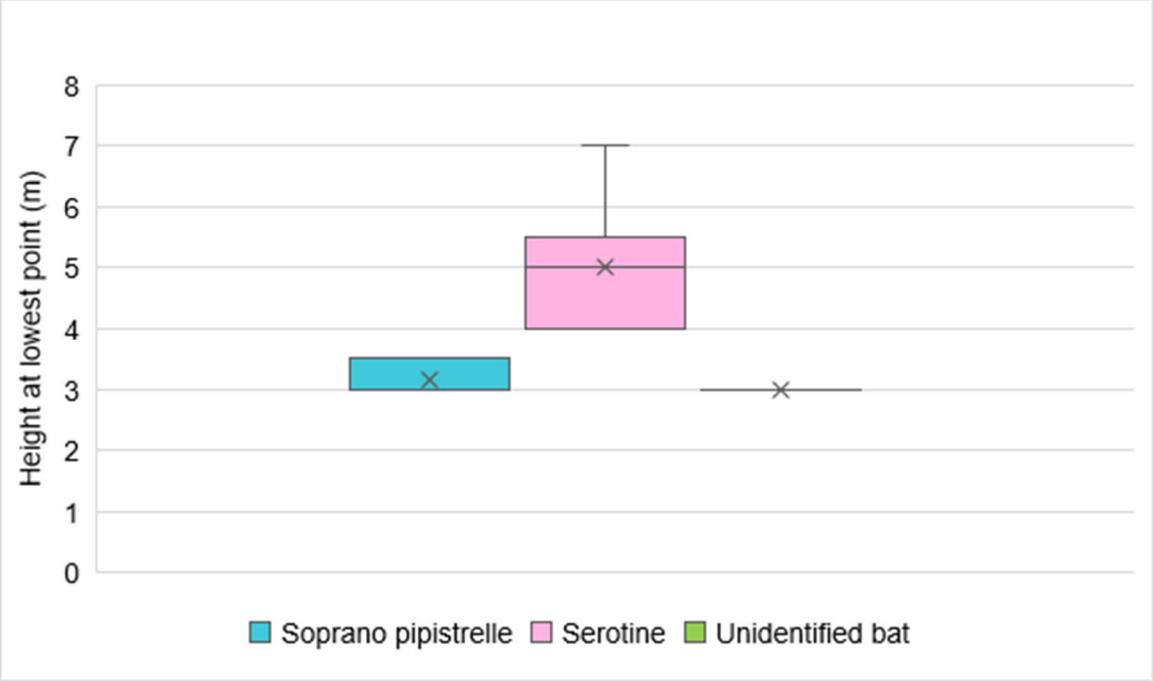


Figure 5: Box-plot showing the flight heights recorded for each species at CP2018_3

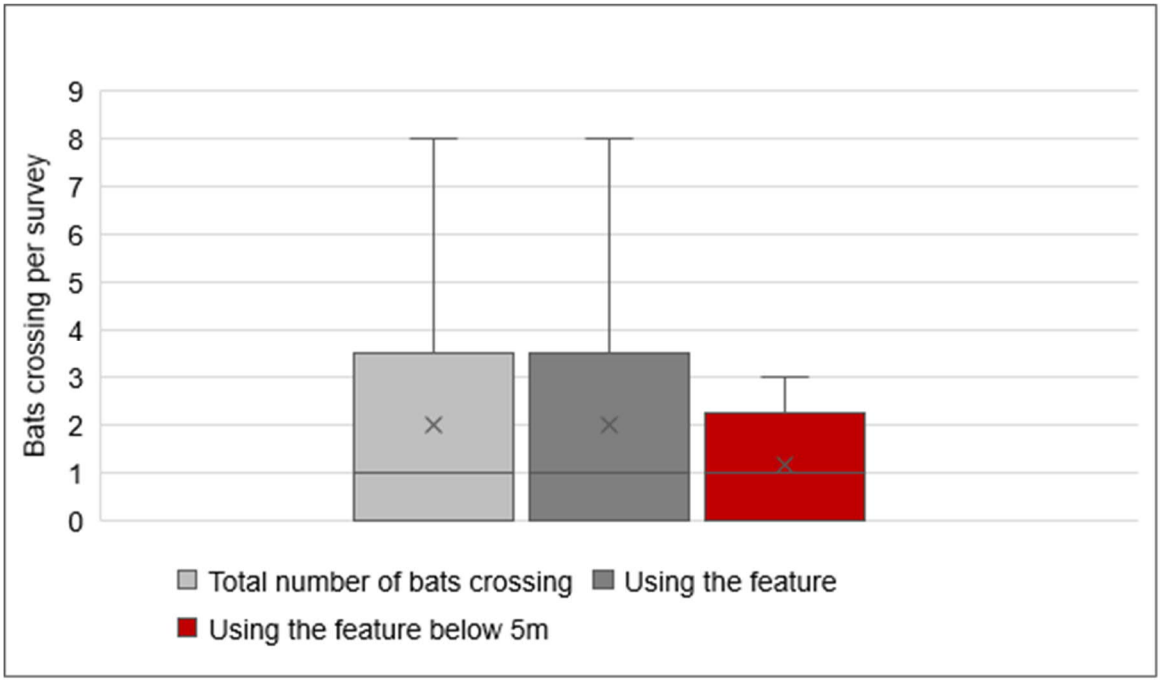


Figure 6: Box-plot showing the number of bats crossing per survey at crossing point 2018_3 and the number of bats that were recorded crossing using the feature below 5m

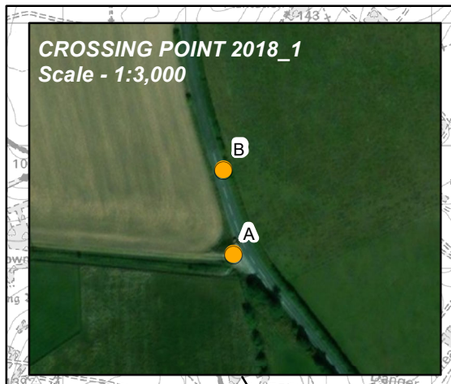
4 Discussion

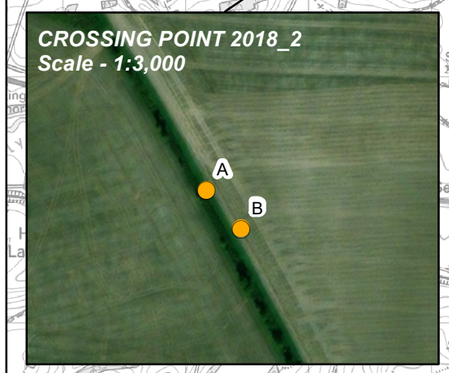
4.1.1 During the 2018 crossing point update surveys a minimum of six species was recorded, this included common pipistrelle, soprano pipistrelle, serotine, brown long-eared bat, noctule and *Myotis* species.

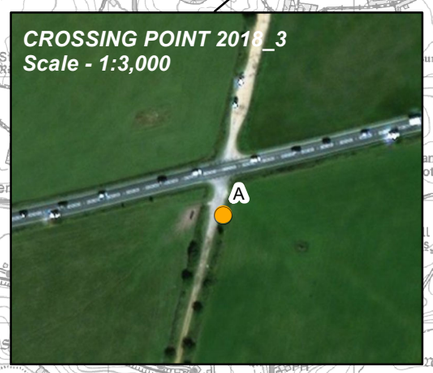
4.1.2 The highest level of bat activity was recorded at crossing point 2018_1 where the majority of bats recorded crossing, were recorded at unsafe heights (below 5m). Crossing point 2018_2 located along the PRoW recorded the lowest amount of bat activity, with a total of 16 passes being recorded. Crossing point 2018_3 also recorded comparatively low levels of bat activity, recording only two more passes than crossing point 2018_2. Approximately half of the bats that were crossing the live carriageway were crossing at heights that brought the bats directly into the path of oncoming traffic (below 5m).

4.1.3 The data obtained from the 2018 crossing point surveys does not alter any of the findings of the ecological assessment included in the Environmental Statement submitted for the Scheme in October 2018. Indeed, most of the survey sessions were carried out in July, prior to the completion of the Environmental Statement so were available to inform the assessment. The mitigation provided within the Environmental Masterplan of the Environmental Statement is considered to be suitable and proportionate for the likely impacts associated with the construction of the Scheme, to maintain a permeable landscape to allow free movement of bat species through the wider landscape. The locations of the 2017/2018 crossing point survey provide a baseline to allow future monitoring of bat crossing activity both during and after construction. Details of monitoring will be set out within a draft LEMP.

Appendix A 2018 Crossing point survey locations







1 0 1 2 3 4 5 km

NOTES / LEGEND

- Indicative centreline
- Proposed tunnel
- Proposed scheme boundary

Bat Crossing Points

- Crossing Point Survey Locations
- Surveyor Location

Revision Details	By / Check	Date	Suffix

Purpose of issue: FOR INFORMATION

Client: Highways England

Working on behalf of: highways england

Project Title: A303 AMESBURY TO BERWICK DOWN

Drawing Title: FIGURE 1 2018 BAT CROSSING POINT SURVEY LOCATIONS

Designed	Drawn	Checked	Approved	Date
HM	KD	MC	SP	05/02/19

Internal Project No.: 60541200

Scale @ A3: 1:50,000 | Zone: SW

Highways England
Temple Quay House
2 The Square, Temple Quay
Bristol
BS1 6HA

AECOM + mace + WSP

Drawing Number Highways England PIN	Originator	Volume		Rev
HE551506	AMW	GEN	00554	02
SCHEME WIDE	DR	GI		
Location	Type	Role	Number	

Filename: pw:\pw:\\UKLON3AP114.aecomonline.local:PWAECOM_EU\Documents\60541439-A303 Stonehenge Technical Partner\0300 Non Deliverables\0330 Environmental Management Team\GIS\Figures\HE551506-AMW-DR-GI-00554.mxd

Appendix B Raw Survey Results

Table 6: Crossing point 1 survey data

Stage	Survey ID	Surveyors	Survey number	Location	Species	Horizontal distance (m)	Side	Height (m)	Direction of flight	Using Feature	Comments
Pre	CP2018_1_070518	A	1	B3083	Ppip	1	West	1	N > SW	Yes	Foraging - flew south. 4 passes not confirmed as the same bat
Pre	CP2018_1_070518	A	1	B3083	Ppip	1	West	1	N > SW	Yes	Foraging - flew south. 4 passes not confirmed as the same bat
Pre	CP2018_1_070518	A	1	B3083	Ppip	1	West	1	N > SW	Yes	Foraging - flew south. 4 passes not confirmed as the same bat
Pre	CP2018_1_070518	A	1	B3083	Ppip	1	West	1	N > SW	Yes	Foraging - flew south. 4 passes not confirmed as the same bat
Pre	CP2018_1_070518	A	1	B3083	Ppip	1	West	1	N-S-N	Yes	Two bats foraging - Constitute two passes (as both only crossed once although numerous calls made)
Pre	CP2018_1_070518	A	1	B3083	Ppip	1	West	1	N-S-N	Yes	Two bats foraging - Constitute two passes (as both only crossed once although numerous calls made)
Pre	CP2018_1_070518	B	1	B3083	Nnoc	-	-	-	-	No	Commuting high overhead
Pre	CP2018_1_070518	B	1	B3083	Nnoc	-	-	-	-	No	Commuting high overhead
Pre	CP2018_1_070518	B	1	B3083	Ppip	-	-	-	-	No	Foraging along hedgerows to south of CP, not using feature
Pre	CP2018_1_070518	B	1	B3083	Ppyg	0	East	1	S-N	Yes	Foraging/ commuting along eastern field boundary, low to ground.
Pre	CP2018_1_200718	A	3	B3083	Ppip	0	-	2	N-S-N	Yes	Commuting along road
Pre	CP2018_1_200718	A	3	B3083	Ppip	3	West	1	-	Yes	Foraging
Pre	CP2018_1_200718	A	3	B3083	Ppip	0	-	1	N-S-N	Yes	Commuting along road
Pre	CP2018_1_200718	A	3	B3083	Ppip	0	-	1	S-N	Yes	Commuting along road
Pre	CP2018_1_230718	A	4	B3083	Ppyg	-	-	-	-	-	Heard not seen
Pre	CP2018_1_260718	A	5	B3083	Ppip	0	-	0.5	N-S	Yes	Heard and seen
Pre	CP2018_1_060918	A	6	B3083	Unk	1	West	0.5	S-N	Yes	Seen not heard -Not echolocating
Pre	CP2018_1_060918	A	6	B3083	Ppyg	1	West	1	S-N	Yes	Heard and seen - Commuting
Pre	CP2018_1_060918	A	6	B3083	Ppyg	2	West	1	S-N	Yes	Heard and seen - Commuting
Pre	CP2018_1_060918	A	6	B3083	Ppip	1	West	1	S-N-S	Yes	Heard and seen - Foraging
Pre	CP2018_1_060918	A	6	B3083	Ppip	4	West	1	S-N-S	Yes	Heard and seen - Foraging 1 of 2 bats

Stage	Survey ID	Surveyors	Survey number	Location	Species	Horizontal distance (m)	Side	Height (m)	Direction of flight	Using Feature	Comments
Pre	CP2018_1_060918	A	6	B3083	Ppip	4	West	1	S-N-S	Yes	Heard and seen - Foraging 2 of 2 bats
Pre	CP2018_1_060918	A	6	B3083	Ppip	4	West	1	N-S	Yes	Heard and seen - Foraging
Pre	CP2018_1_060918	A	6	B3083	Nnoc	-	-	-	-	No	Heard not seen
Pre	CP2018_1_060918	A	6	B3083	Ppip	2	West	1	-	No	Foraging in adjacent field
Pre	CP2018_1_060918	A	6	B3083	Ppyg	0	West	2	N-S	Yes	Foraging along centre of road
Pre	CP2018_1_060918	A	6	B3083	Ppip	2	West	1	-	No	Foraging in adjacent field
Pre	CP2018_1_060918	A	6	B3083	Ppip	2.5	West	1	N-S	Yes	Heard and seen - foraging
Pre	CP2018_1_060918	A	6	B3083	Ppip	3	West	1	N-S-N	Yes	Heard and seen - foraging 1 of 4 bats
Pre	CP2018_1_060918	A	6	B3083	Ppip	3	West	1	N-S-N	Yes	Heard and seen - foraging 2 of 4 bats
Pre	CP2018_1_060918	A	6	B3083	Ppip	3	West	1	N-S-N	Yes	Heard and seen - foraging 3 of 4 bats
Pre	CP2018_1_060918	A	6	B3083	Ppip	3	West	1	N-S-N	Yes	Heard and seen - foraging 4 of 4 bats
Pre	CP2018_1_060918	A	6	B3083	Ppip	4	West	1.5	S-N	Yes	Heard and seen - Commuting
Pre	CP2018_1_060918	A	6	B3083	Ppip	4	West	1	N-S	Yes	Heard and seen - Commuting
Pre	CP2018_1_060918	A	6	B3083	Ppyg	0	-	2	N-S	Yes	Heard and seen - Commuting
Pre	CP2018_1_060918	A	6	B3083	Ppip	0	-	2	N-S	Yes	Heard and seen - Commuting
Pre	CP2018_1_060918	A	6	B3083	Unk	2	West	3	N-S	Yes	Heard not seen
Pre	CP2018_1_060918	A	6	B3083	Ppip	-	-	-	-	-	Foraging in adjacent field - sounds distant
Pre	CP2018_1_060918	A	6	B3083	Ppip	3	West	1	N-S	Yes	Heard and seen - Commuting
Pre	CP2018_1_060918	A	6	B3083	Ppip	2	West	2.5	S-N	Yes	Heard and seen - Commuting
Pre	CP2018_1_060918	A	6	B3083	Paur	3	West	3	S-N	Yes	Heard and seen - Commuting - Paur, very quiet
Pre	CP2018_1_060918	B	6	B3083	Ppyg	0	-	2	S-N	Yes	Heard and seen - Commuting
Pre	CP2018_1_060918	B	6	B3083	Nnoc	-	-	-	-	No	Heard not seen
Pre	CP2018_1_060918	B	6	B3083	Ppyg	0	-	2	S-NE	Yes	Heard and seen - Commuting
Pre	CP2018_1_060918	B	6	B3083	Nnoc	-	-	-	-	No	Heard not seen
Pre	CP2018_1_060918	B	6	B3083	Ppip	-	-	-	-	No	Heard not seen
Pre	CP2018_1_060918	B	6	B3083	Ppyg	0	East	2	S-N	Yes	-
Pre	CP2018_1_060918	B	6	B3083	Ppyg	0	East	2	S-N	Yes	-
Pre	CP2018_1_060918	B	6	B3083	Ppip	0	East	2	S-N	Yes	Heard and seen - Foraging

Stage	Survey ID	Surveyors	Survey number	Location	Species	Horizontal distance (m)	Side	Height (m)	Direction of flight	Using Feature	Comments
Pre	CP2018_1_060918	B	6	B3083	Ppip	0	East	2	S-N	Yes	Heard and seen - Commuting
Pre	CP2018_1_060918	B	6	B3083	Ppyg	0	East	2	S-N	Yes	Heard and seen - Commuting
Pre	CP2018_1_060918	B	6	B3083	Ppip	0	-	2	E-W	No	Heard and seen - Commuting
Pre	CP2018_1_060918	B	6	B3083	Nnoc	-	-	-	-	No	Heard not seen
Pre	CP2018_1_060918	B	6	B3083	Eser	0	East	2	S-N	Yes	Heard and seen - Commuting
Pre	CP2018_1_060918	B	6	B3083	Ppip	0	-	-	-	No	Heard not seen
Pre	CP2018_1_060918	B	6	B3083	Ppip	1	West	2	N-S	Yes	Heard and seen - Foraging along hedgerow
Pre	CP2018_1_060918	B	6	B3083	Ppip	1	West	2	S-N	Yes	Heard and seen - Foraging along hedgerow
Pre	CP2018_1_060918	B	6	B3083	Ppip	0	East	2	E-W	No	Heard and seen - across CP
Pre	CP2018_1_060918	B	6	B3083	Ppip	3	East	-	-	No	Foraging in field adjacent
Pre	CP2018_1_060918	B	6	B3083	Ppip	3	East	-	-	No	Foraging in field adjacent
Pre	CP2018_1_060918	B	6	B3083	Ppip	3	East	-	-	No	Foraging in field adjacent
Pre	CP2018_1_060918	B	6	B3083	Paur	1	West	2	S-N	Yes	Heard and seen - Commuting
Pre	CP2018_1_060918	B	6	B3083	Ppip	-	-	-	-	No	Heard not seen
Pre	CP2018_1_060918	B	6	B3083	Ppip	-	-	-	-	No	Heard not seen
Pre	CP2018_1_060918	B	6	B3083	Ppip	-	-	-	-	No	Heard not seen

Table 7: Crossing point 2 survey data

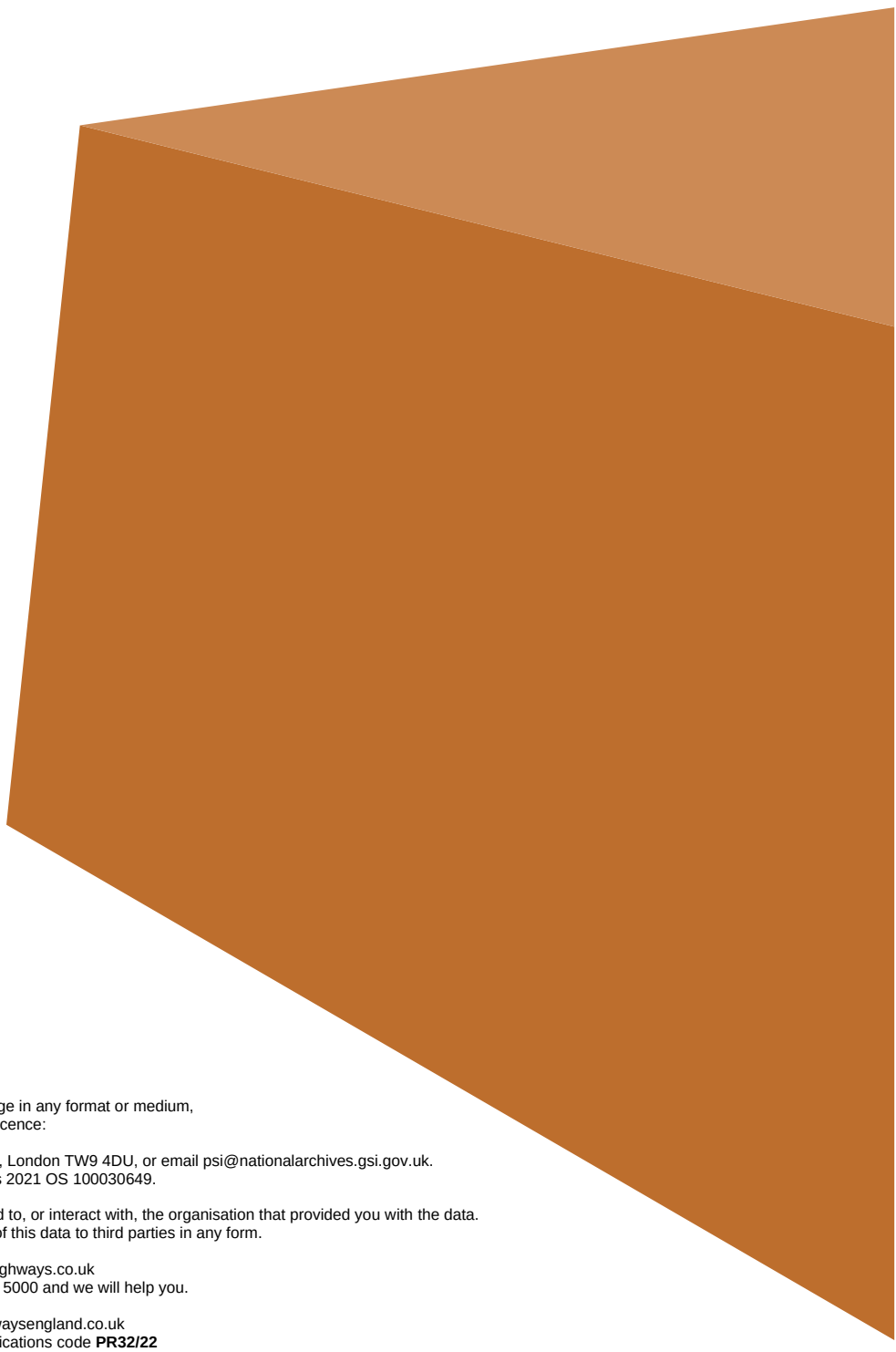
Stage	Survey ID	Surveyors	Survey number	Location	Species	Horizontal distance (m)	Side	Height (m)	Direction of flight	Using Feature	Comments
Pre	CP2018_2_100718	A	1	PRoW	Ppip	1	East	2	N - S	Yes	Foraging
Pre	CP2018_2_200718	B	2	PRoW	Myo	0	Centre	1	N - S	Yes	commuting up centre
Pre	CP2018_2_200718	A	2	PRoW	Spip	2	Centre	2	N – S	Yes	commuting up centre
Pre	CP2018_2_200718	A	2	PRoW	Ppip	3	East	1	N – S	Yes	Foraging and commuting
Pre	CP2018_2_230718	A	3	PRoW	PPip	0.5	East	0.5	S – N	Yes	Commuting, not recorded
Pre	CP2018_2_230718	A	3	PRoW	Spip	5	East	1	S – N	Yes	Commuting, followed feature at start

Stage	Survey ID	Surveyors	Survey number	Location	Species	Horizontal distance (m)	Side	Height (m)	Direction of flight	Using Feature	Comments
Pre	CP2018_2_240718	A	4	PRoW	Spip	2	East	1.5	N – S	Yes	Commuting
Pre	CP2018_2_240718	A	4	PRoW	Ppip	3	East	1	S - N	Yes	Commuting
Pre	CP2018_2_300718	B	5	PRoW	Ppip	1	West	1	S - N	Yes	rapidly commuting on west side of hedgerow
Pre	CP2018_2_300718	B	5	PRoW	Nnoc	-	-	-	-	No	high overhead
Pre	CP2018_2_300718	B	5	PRoW	Ppip	-	-	-	-	No	foraging south of crossing point in hedgerow
Pre	CP2018_2_300718	B	5	PRoW	Ppip	1	West	1	N - S	Yes	foraging along fence line, low, quick
Pre	CP2018_2_300718	B	5	PRoW	Ppip	1	West	1	S - N	Yes	foraging
Pre	CP2018_2_300718	B	5	PRoW	Ppip	1	West	1-2	S - N	Yes	approached crossing point foraging, then crossed
Pre	CP2018_2_300718	B	5	PRoW	Ppip	1	East	1-2	N - S	Yes	foraging along field margin
Pre	CP2018_2_300718	B	5	PRoW	Ppip	1	West	1-2	S - N	Yes	foraging along field margin probably crossed

Table 8: Crossing point 3 survey data

Stage	Survey ID	Surveyors	Survey number	Location	Species	Horizontal distance (m)	Side	Height (m)	Direction of flight	Using Feature	Comments
Pre	CP2018_3_190618	A	1	CP2018_3	Eser	-	-	-	-	-	Heard not seen
Pre	CP2018_3_190618	A	1	CP2018_3	Ppyg	0	Centre	3	S-N	Yes	Crossed the A303
Pre	CP2018_3_190618	A	1	CP2018_3	Ppyg	0	Centre	3.5	S-N	Yes	Crossed the A303
Pre	CP2018_3_190618	A	1	CP2018_3	Ppip	-	-	-	-	-	Heard not seen
Pre	CP2018_3_100718	A	2	CP2018_3	Eser	0	Centre	5.5	S-N	Yes	Heard and seen- Commuting along feature
Pre	CP2018_3_100718	A	2	CP2018_3	Eser	0	Centre	5.5	N-S	Yes	Heard and seen- Commuting along feature
Pre	CP2018_3_100718	A	2	CP2018_3	Nnoc	-	-	-	-	-	Heard not seen
Pre	CP2018_3_100718	A	2	CP2018_3	Eser	0	Centre	4	N-S	Yes	Heard and seen- Commuting along feature
Pre	CP2018_3_100718	A	2	CP2018_3	Eser	0	Centre	4	S-N	Yes	Heard and seen- Commuting along feature
Pre	CP2018_3_100718	A	2	CP2018_3	Eser	0	Centre	4	S-N	Yes	Heard and seen- Commuting along feature
Pre	CP2018_3_100718	A	2	CP2018_3	Eser	0	Centre	7	S-N	Yes	Heard and seen- Commuting along feature

Stage	Survey ID	Surveyors	Survey number	Location	Species	Horizontal distance (m)	Side	Height (m)	Direction of flight	Using Feature	Comments
Pre	CP2018_3_100718	A	2	CP2018_3	Eser	0	Centre	5	S-N	Yes	Heard and seen- Commuting along feature
Pre	CP2018_3_100718	A	2	CP2018_3	Eser	0	Centre	5	N-S	Yes	Heard and seen Commuting along feature
Pre	CP2018_3_240718	A	3	CP2018_3	Unk	1	East	3	N-S	Yes	Seen not heard
Pre	CP2018_3_250718	A	4	CP2018_3	Nnoc	-	-	-	-	-	Heard not seen
Pre	CP2018_3_310718	A	5	CP4	Ppyg	0	Centre	3	S-N	Yes	Heard and seen- Foraging along feature
Pre	CP2018_3_310718	A	5	CP4	Nnoc	-	-	-	-	-	Heard not seen
Pre	CP2018_3_310718	A	5	CP4	Nnoc	-	-	-	-	-	Heard not seen



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National Highways Limited registered in England and Wales number 09346363