THE LANES

PENWORTHAM

Appendix 7.7
Bat Activity Survey Report

August 2019

Taylor Wimpey

Homes England

Document Title	The Lanes Bat Activity Survey Report
Prepared for	Taylor Wimpey North West / Homes England
Prepared by	TEP - Warrington
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Amendment History					
Version	Date	Modified by	Check / Approved by	Reason(s) issue	Status
2.0	26/11/18	LP	JC	Amended red line site boundary	Superceded
3.0	01/03/19	LP	JC	Client amendments	Superceded
4.0	06/08/19	LP	JC	Updated site description	Issued

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G6900.016 - Visit 1 - August 2017

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G6900.010 - Visit 5 - June 2018

1.0 Introduction

1.1 Taylor Wimpey and Homes England are seeking to obtain planning permission for residential-led mixed-use development on land to the east of Penwortham Way known as 'The Lanes, Penwortham' (hereafter referred to as 'the site').

1.2 TEP was commissioned in August 2017 by Taylor Wimpey North West and Homes England to determine the usage of the site by local bat populations for foraging and commuting.

Description of Survey Area

1.3 The central grid reference of the site is SD 53329 25884 and the location of the site is shown in Figure 1 below. Hatched areas within the red line site boundary in Figure 1 do not fall within the scope of the current planning application and these were not subject to surveys.

1.4 The site is irregular in shape and occupies approximately 53ha on land to the east of Penwortham Way to the south of the settlement of Penwortham.

1.5 The site is bound by Penwortham Way to the west, existing residential development south of Kingsfold Drive to the north, the West Coast mainline railway to the east and agricultural fields to the south.

1.6 The site comprises a mix of land uses including:

- Agricultural land separated into a number of fields by fences, hedgerows and trees;
- Pylon accommodation land;
- Pylon corridor; and
- Roads.

1.7 The site surrounds a number of residential dwellings and light industrial buildings which do not lie within the application boundary.

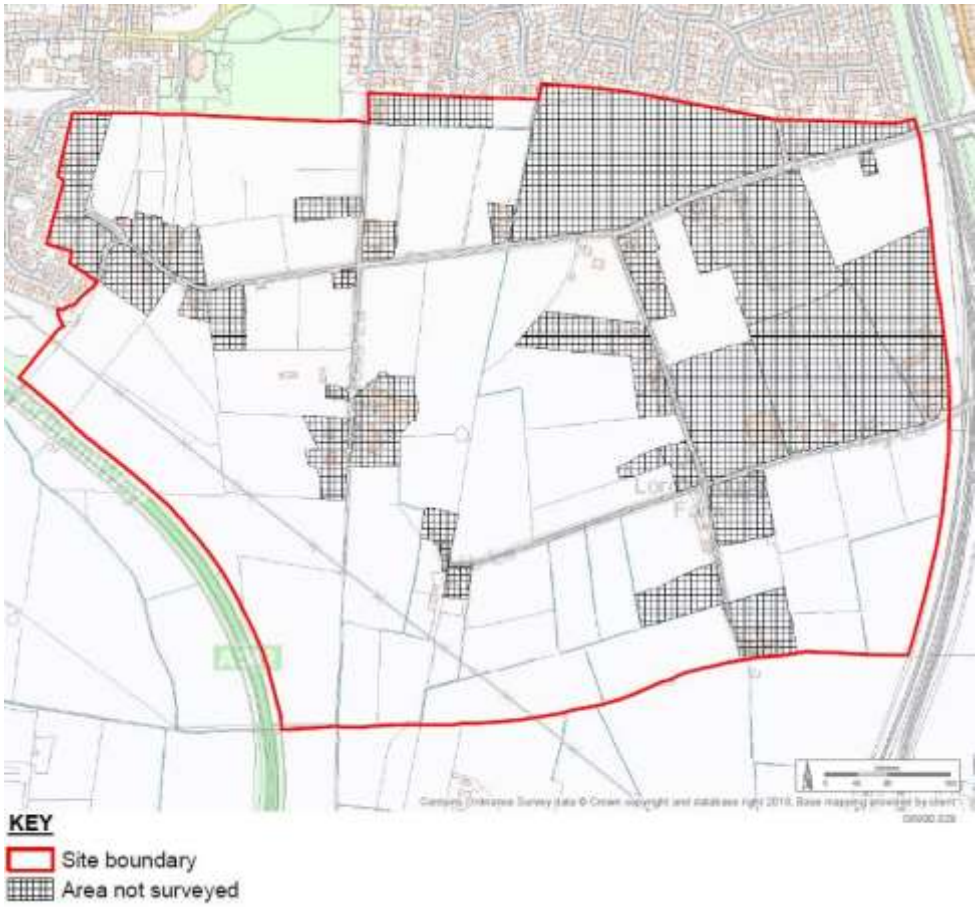


Figure 1: Site Plan. Contains Ordnance Survey data © Crown copyright and database right 2018.

Suitability for Bats

1.8 A separate report detailing the roost assessments of trees and buildings within the site has been produced (TEP reference: 6900.006).

1.9 The hedgerows, trees, ditches and ponds within the site provide suitable foraging and commuting habitat for bats, however these habitats cover a relatively small area of the site. The remaining habitats are open and exposed with poor structural diversity and these are unlikely to be utilised by bats. Overall the habitats in the site are considered to have low suitability for foraging and commuting bats.

2.0 Methods

Transect Survey

2.1 In accordance with Bat Conservation Trust (BCT) guidance (Collins 2016[1]), habitats of low suitability require one transect survey per season; in spring (April/May), summer (June to August) and autumn (September/October). Two pre-determined transect routes (described as the purple transect and the red transect), to cover all features likely to be of value to foraging and commuting bats, were surveyed to sample bat activity during the peak active season. These surveys were undertaken in August and September 2017 and April 2018 to cover the spring, summer and autumn seasons. These were supplemented by additional surveys which were completed in October 2017 and June 2018 to sample activity during the late autumn and early summer seasons.

2.2 A pair of surveyors walked each transect route using heterodyne (Pettersson D230) and frequency division (Anabat) detectors. The surveys commenced at sunset and continued for at least 120 minutes after sunset in accordance with the 2016 BCT Guidelines. The routes were reversed on alternative visits to optimise sampling efficacy. Number of bat passes[2], species, behaviour and flight direction were noted at each pre-determined four-minute stop and the intervening walks.

2.3 Standardised methods of measuring and recording weather parameters were used e.g. cloud cover (oktas) and wind (Beaufort scale).

Static Monitoring

2.4 To accompany the transect surveys static monitoring was undertaken. Eight static detectors were placed close to features of valuable foraging/commuting habitat within the site.

2.5 Below is a summary of the eight static monitoring locations:

- A – hedgerow in north
- B – hedgerow adjacent to railway in east
- C – hedgerow in centre of site
- D – adjacent to ditch in centre of site
- E – hedgerow junction in centre of site
- F – adjacent to ditch in centre of site
- G – adjacent to wooded pond in west of site
- H – adjacent to woodland in west of site

2.6 Anabat Express and SM2 detectors were used for the static monitoring. In parallel with each transect survey, the statics were set to record for five consecutive nights during favourable weather conditions to monitor bat activity (in line with the 2016 BCT guidance).

[1] Collins, J. 2016. Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd Edition. Bat Conservation Trust.

[2] A bat pass is defined as the number of bat calls in a continuous sequence; each sequence or pass is separated by 1 second or more in which no calls are recorded (Hundt, 2012).

Sonogram Analysis

2.7 Recorded sonograms were analysed using Analook W4.2d software by Lizi Pimlott, trained to Analook Analysis Advanced Level 3.

2.8 For transect data, bat calls were manually verified, automatically (where possible) geo-referenced and digitally mapped using GIS. Mapping of each species is colour coded and flight direction is provided where this was observed.

2.9 The monitoring data was scanned using an automated *Pipistrellus* sp. filter (developed by TEP) and all non-pipistrellus calls then manually verified. Data is presented as an activity index of average bat passes per night (ppn; total number of passes divided by the number of nights monitored).

Limitations

Overall

2.10 Some species, such a brown long-eared bats *Plecotus auritus* can be relatively difficult to detect due to the low amplitude (i.e. quiet) calls. Presence of brown long-eared was recorded on site but the activity of this species may be underestimated. The conclusions and interpretation in this report takes this into consideration.

2.11 Bats vary their calls dependent on the habitats they fly in and on their activity (commuting, foraging, social interaction, etc). It is not always possible to identify bat calls to species level owing to the overlap of call parameters between some species and/or poor quality recordings (e.g. brief and distant passes). In these cases, it is accepted that species are identified to genus level or group level (e.g. *Myotis*, *Myotis/Plecotus* and *Nyctalus/Eptesicus*) (Russ, 1999). Where call parameters are inconclusive the species has been labelled as 'unknown'. This ensures the dataset is interpreted accurately and transparently.

Transect Surveys

2.12 During the August 2017 survey no bat call recordings were obtained for the purple transect. Surveyors were able to identify bats to species level during the survey and therefore this was not considered to be a significant constraint.

2.13 Light rain showers occurred during the August survey but bat activity was still recorded and therefore this was not considered to be a significant constraint.

Static Monitoring

2.14 During the September 2017 monitoring, one of the detectors (Location H) only recorded for four nights. During the October 2017 monitoring no data was recorded at Location E. This was due to equipment malfunction. Due to the additional surveys undertaken in 2017 and 2018 these were not considered to be significant constraints.

2.15 There was a light rain shower between 19:50 and 20:20 on September 14th and during the September monitoring the temperature dropped to 9ºC each night. This is not atypical for this time of year and, as bat activity was still recorded, this wasn't considered to be a significant constraint.

3.0 Results

3.1 Records of pipistrelle bats were returned within 1km of the site in the desk based assessment produced by TEP in June 2018 (Report Ref: 6900.007).

Transect Surveys

3.2 Results are displayed in Drawings G6900.016 to G6900.018 and G6900.006 and G6900.010. Survey timings and weather conditions are presented in Table 1 below.

Table 1: Transect Survey Dates, Times and Weather Conditions

Visit	Date	Start Time	End Time	Sunset	Weather at Start	Weather at End
1	22/08/17	20:25	22:17	20:25	21ºC, no rain or wind	20ºC, no rain or wind
2	14/09/17	19:30	21:28	19:30	13ºC, light rain shower, no wind	11ºC, no rain or wind
3	05/10/17	18:39	20:40	18:39	12ºC, no rain or wind	12ºC, no rain or wind
4	03/05/18	21:43	23:43	21:43	25ºC, no rain or wind	20ºC, no rain or wind
5	26/06/18	20:45	22:23	20:45	12ºC, no rain or wind	12ºC, no rain or wind

3.3 The activity transects revealed at least three species of bat across the site;

- Common pipistrelle *Pipistrellus pipistrellus* as well as passes of unconfirmed *Pipistrellus* species.
- Noctule *Nyctalus noctula* as well as passes of unconfirmed big bat species
- Unconfirmed *Myotis* bat.

3.4 Activity levels were relatively consistent throughout the months and were evenly spread across the site. Pipistrelle species were the most frequently recorded with occasional passes from noctule and, less frequently, *Myotis* species.

3.5 Foraging hotspots and commuting routes were concentrated along hedgerow networks, particularly the species-rich hedgerows with trees. However no pattern was noted across the surveys which would indicate that any particular hedgerows are more important than others. The remainder of the site comprises open fields which were used less by bats.

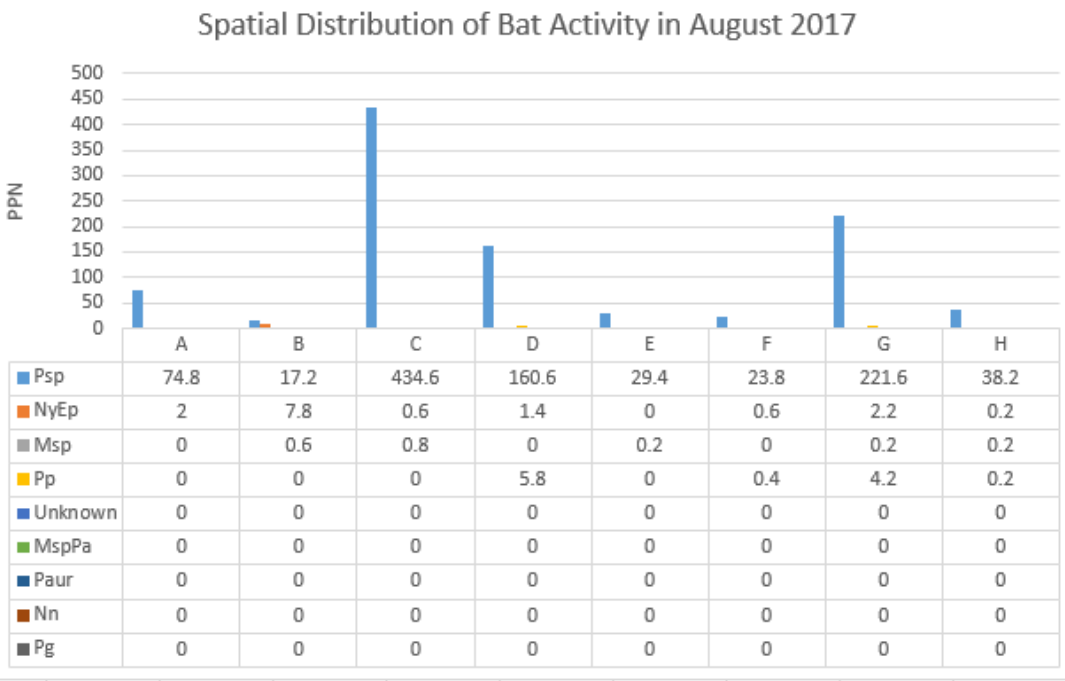
3.6 No incidental activity which could be linked to potential specific roost sites was observed during the transect surveys. The activity levels within the site were relatively low with no clear peaks at dusk when emergence would occur.

Static Monitoring

3.7 Recorded bat passes have been analysed with regard to spatial distribution (comparing activity across locations at one time), and temporal distribution (how activity changes over time) across the site. Results are first presented in a series of graphs below, with detailed description to follow.

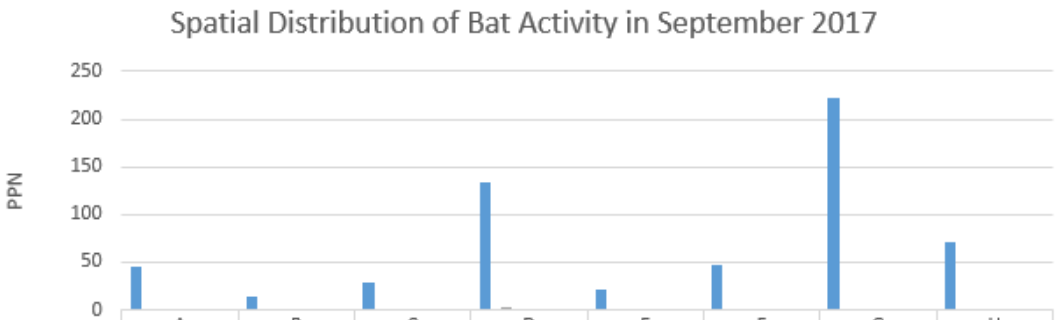
Spatial Distribution

3.8 Figures 2 to 6 below show the spatial distribution of bat activity across the survey months.



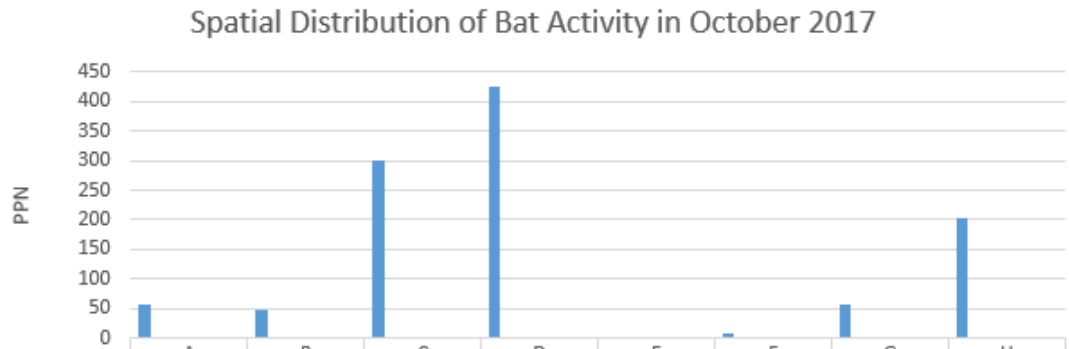
	A	B	C	D	E	F	G	H
Psp	74.8	17.2	434.6	160.6	29.4	23.8	221.6	38.2
NyEp	2	7.8	0.6	1.4	0	0.6	2.2	0.2
Msp	0	0.6	0.8	0	0.2	0	0.2	0.2
Pp	0	0	0	5.8	0	0.4	4.2	0.2
Unknown	0	0	0	0	0	0	0	0
MspPa	0	0	0	0	0	0	0	0
Paur	0	0	0	0	0	0	0	0
Nn	0	0	0	0	0	0	0	0
Pg	0	0	0	0	0	0	0	0

Figure 2: Spatial Distribution of Bat Activity in August 2017



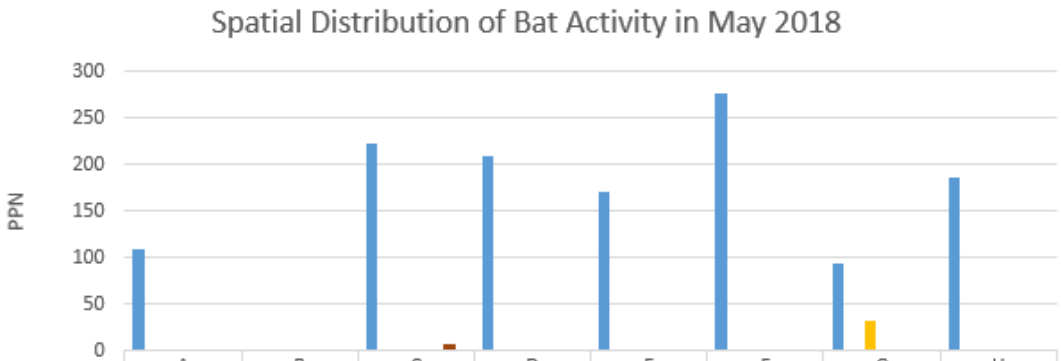
	A	B	C	D	E	F	G	H
Psp	44.6	13.2	28.6	133.4	22.2	46.2	222.4	70.75
NyEp	0	0	0	0	0	0	0	0
Msp	0.4	0	0	2	0	0	0	0
Pp	1.8	0	0.2	0.4	0	0	0	0
Unknown	0	0	0	0.2	0.4	0	0	0
MspPa	0	0	0	0.2	0	0	0	0
Paur	0	0	0	0.6	0	0	0	0
Nn	0	0	0	0.6	1.2	0	0	0
Pg	0	0	0	0	0	0	0	0

Figure 3: Spatial Distribution of Bat Activity in September 2017



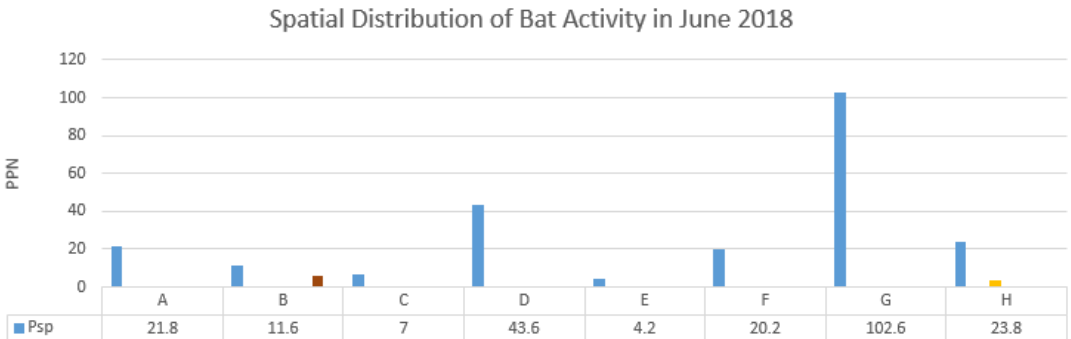
	A	B	C	D	E	F	G	H
Psp	56.6	48	299.2	426.6	0	6.4	58	202.4
NyEp	0	0	0	0	0	0	0	0
Msp	0	0	0	0	0	0	0	0
Pp	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0
MspPa	0	0	0	0	0	0	0	0
Paur	0	0	0	0	0	0	0	0
Nn	0	0	0	0	0	0.8	0	0
Pg	0	0	0	0	0	0	0	0

Figure 4: Spatial Distribution of Bat Activity in October 2017



	A	B	C	D	E	F	G	H
Psp	109	0.2	223	210.2	171.4	276.8	93.4	186.2
NyEp	0	0	0	0	0	0	0	0
Msp	1	0	0	0	0	0.2	2	1
Pp	1.4	0	1.4	0	0	0	31.6	0.2
Unknown	0	0	0	0	0	0	0	0
MspPa	0	0	0	0	0	0	0	0
Paur	0.2	0	0	0	0	0.4	0	0
Nn	1.6	0	6.6	2	0	0.4	2	0.4
Pg	0	0	0	0	0	0.8	0	0

Figure 5: Spatial Distribution of Bat Activity in May 2018

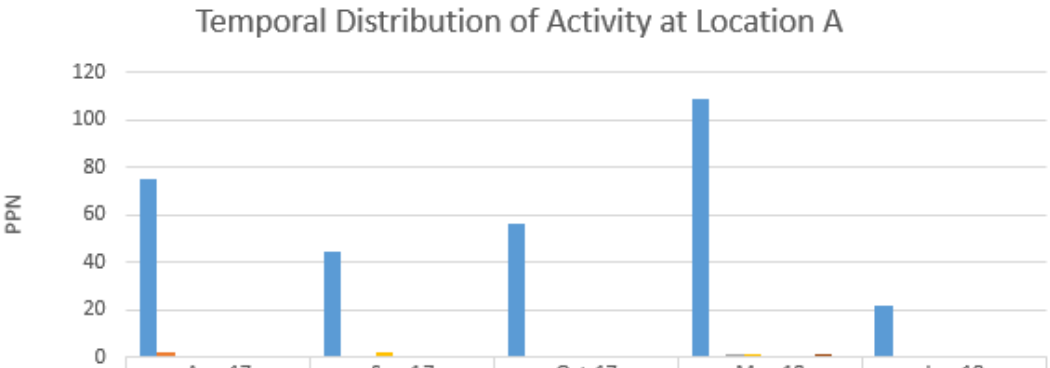


	A	B	C	D	E	F	G	H
Psp	21.8	11.6	7	43.6	4.2	20.2	102.6	23.8
NyEp	0	0	0	0	0	0	0	0
Msp	0	0	0	0	0	0	0	0
Pp	0	0.2	0	0.6	0.2	0.8	0	3.4
Unknown	0	0	0	0	0	0	0	0
MspPa	0	0	0	0	0	0	0	0
Paur	0	0	0	0	0	0	0	0
Nn	0	6	0	0.4	0	0	0	0.6
Pg	0	0	0	0	0	0	0	0

Figure 6: Spatial Distribution of Bat Activity in June 2018

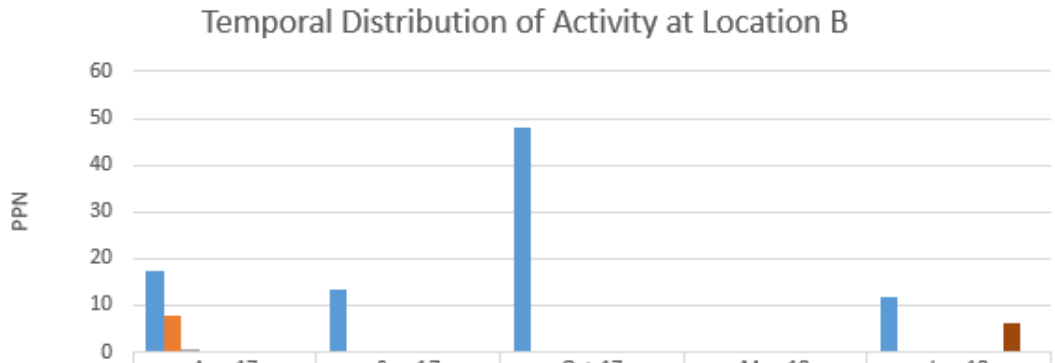
Temporal Distribution

3.9 Figures 7 to 14 show the temporal distribution of bat activity across the eight static detector locations.



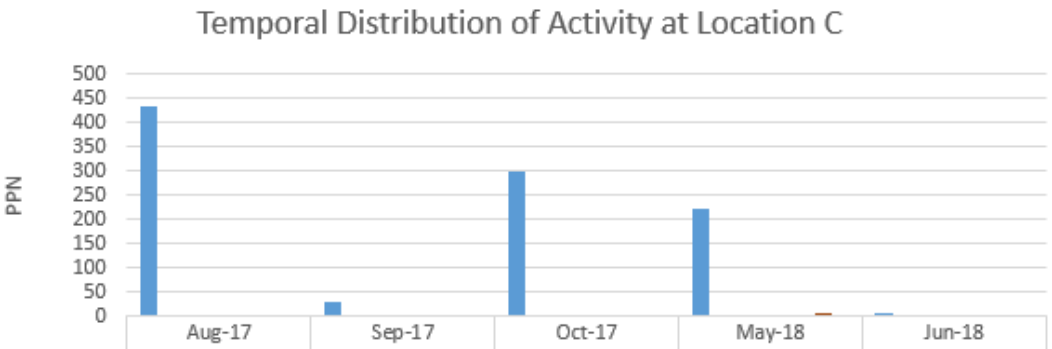
	Aug-17	Sep-17	Oct-17	May-18	Jun-18
Psp	74.8	44.6	56.6	109	21.8
NyEp	2	0	0	0	0
Msp	0	0.4	0	1	0
Pp	0	1.8	0	1.4	0
Unknown	0	0	0	0	0
MspPa	0	0	0	0	0
Paur	0	0	0	0.2	0
Nn	0	0	0	1.6	0
Pg	0	0	0	0	0

Figure 7: Temporal Distribution of Bat Activity at Location A



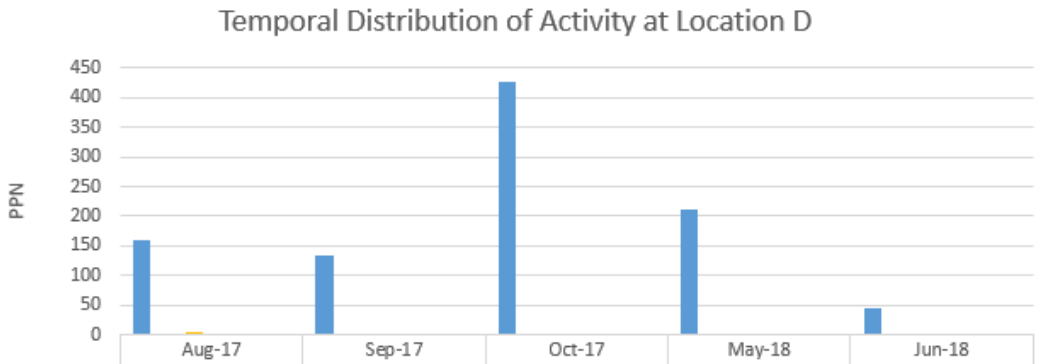
	Aug-17	Sep-17	Oct-17	May-18	Jun-18
Psp	17.2	13.2	48	0.2	11.6
NyEp	7.8	0	0	0	0
Msp	0.6	0	0	0	0
Pp	0	0	0	0	0.2
Unknown	0	0	0	0	0
MspPa	0	0	0	0	0
Paur	0	0	0	0	0
Nn	0	0	0	0	6
Pg	0	0	0	0	0

Figure 8: Temporal Distribution of Bat Activity at Location B



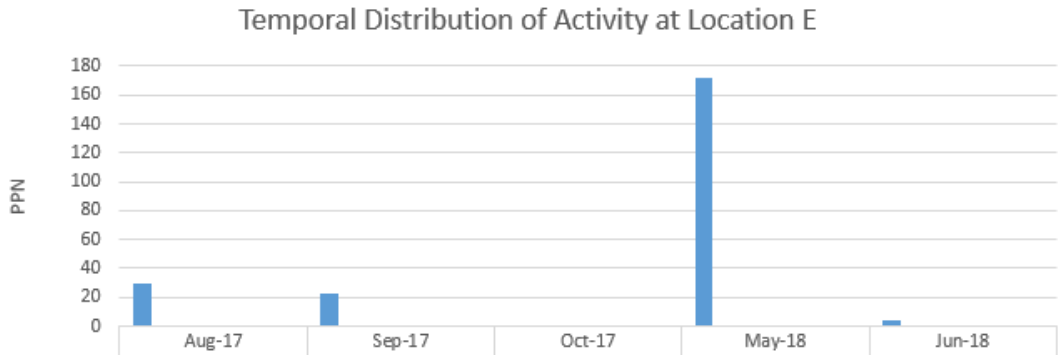
	Aug-17	Sep-17	Oct-17	May-18	Jun-18
Psp	434.6	28.6	299.2	223	7
NyEp	0.6	0	0	0	0
Msp	0.8	0	0	0	0
Pp	0	0.2	0	1.4	0
Unknown	0	0	0	0	0
MspPa	0	0	0	0	0
Paur	0	0	0	0	0
Nn	0	0	0	6.6	0
Pg	0	0	0	0	0

Figure 9: Temporal Distribution of Bat Activity at Location C



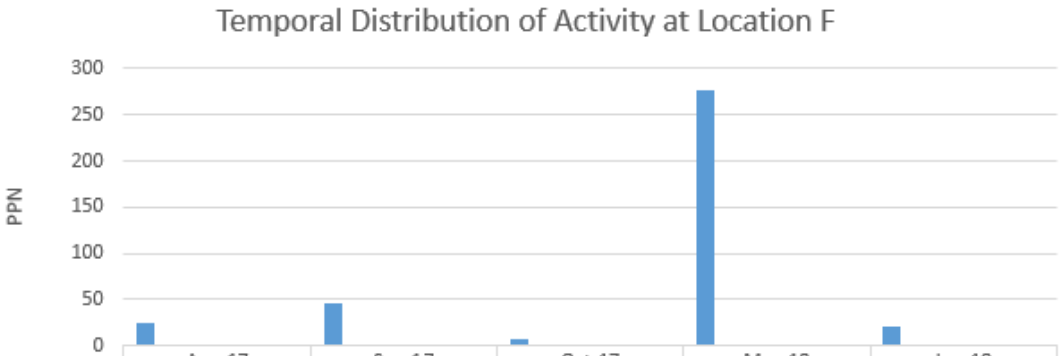
	Aug-17	Sep-17	Oct-17	May-18	Jun-18
Psp	160.6	133.4	426.6	210.2	43.6
NyEp	1.4	0	0	0	0
Msp	0	2	0	0	0
Pp	5.8	0.4	0	0	0.6
Unknown	0	0.2	0	0	0
MspPa	0	0.2	0	0	0
Paur	0	0.6	0	0	0
Nn	0	0.6	0	2	0.4
Pg	0	0	0	0	0

Figure 10: Temporal Distribution of Bat Activity at Location D



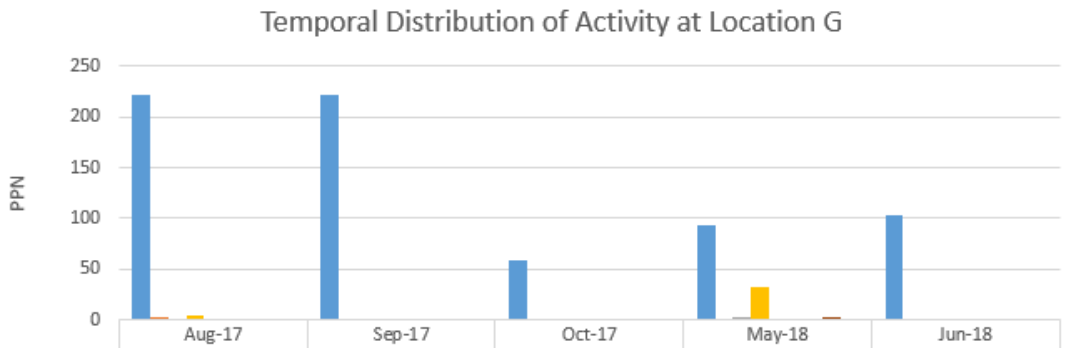
	Aug-17	Sep-17	Oct-17	May-18	Jun-18
Psp	29.4	22.2	0	171.4	4.2
NyEp	0	0	0	0	0
Msp	0.2	0	0	0	0
Pp	0	0	0	0	0.2
Unknown	0	0.4	0	0	0
MspPa	0	0	0	0	0
Paur	0	0	0	0	0
Nn	0	1.2	0	0	0
Pg	0	0	0	0	0

Figure 11: Temporal Distribution of Bat Activity at Location E



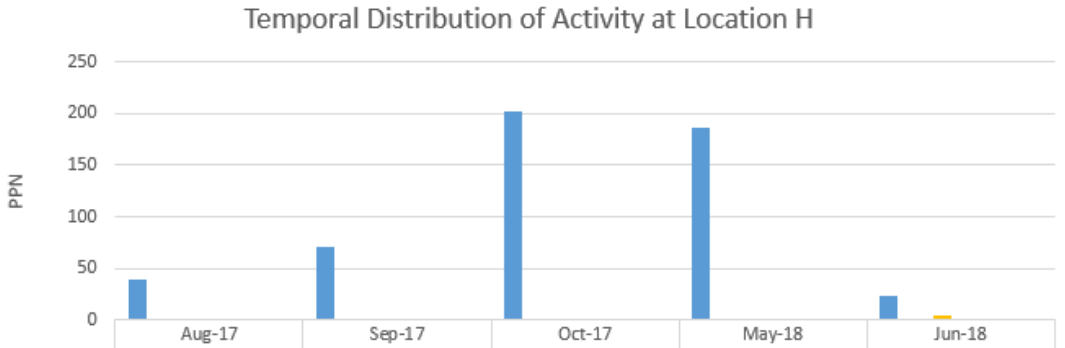
	Aug-17	Sep-17	Oct-17	May-18	Jun-18
Psp	23.8	46.2	6.4	276.8	20.2
NyEp	0.6	0	0	0	0
Msp	0	0	0	0.2	0
Pp	0.4	0	0	0	0.8
Unknown	0	0	0	0	0
MspPa	0	0	0	0	0
Paur	0	0	0	0.4	0
Nn	0	0	0.8	0.4	0
Pg	0	0	0	0.8	0

Figure 12: Temporal Distribution of Bat Activity at Location F



	Aug-17	Sep-17	Oct-17	May-18	Jun-18
Psp	221.6	222.4	58	93.4	102.6
NyEp	2.2	0	0	0	0
Msp	0.2	0	0	2	0
Pp	4.2	0	0	31.6	0
Unknown	0	0	0	0	0
MspPa	0	0	0	0	0
Paur	0	0	0	0	0
Nn	0	0	0	2	0
Pg	0	0	0	0	0

Figure 13: Temporal Distribution of Bat Activity at Location G



	Aug-17	Sep-17	Oct-17	May-18	Jun-18
Psp	38.2	70.75	202.4	186.2	23.8
NyEp	0.2	0	0	0	0
Msp	0.2	0	0	1	0
Pp	0.2	0	0	0.2	3.4
Unknown	0	0	0	0	0
MspPa	0	0	0	0	0
Paur	0	0	0	0	0
Nn	0	0	0	0.4	0.6
Pg	0	0	0	0	0

Figure 14: Temporal Distribution of Bat Activity at Location H

4.0 Interpretation

Species Composition

4.1 Six confirmed species of bat were recorded in the site. Common and soprano pipistrelle bats were the most frequently recorded and activity was relatively low and spread evenly across the site. Foraging hotspots and commuting routes were identified along hedgerows particularly the species-rich hedgerows with trees. Occasional passes were noted across the site by big bat species, including noctule. Brown long-eared bats and Myotis species were also recorded.

The species have been categorised by distribution and rarity (Wray, 2010):

Common (Populations over 100,000 in England)

- Common pipistrelle
- Soprano pipistrelle
- Pipistrelle species
- Brown long-eared bat

Rarer (Populations between 10,000 - 100,000 in England)

- *Myotis* species (including Daubenton's, Natterer's and whiskered/Brandt's/Alcathoe)
- Big bat species (noctule, serotine and Leisler's)

4.2 The assemblage recorded a low diversity of bat species. This reflects the habitats present – high quality habitat is limited to the hedgerows within the site with the remaining habitats generally of low quality and too exposed to be of value to bats. The site also has limited connectivity to suitable habitat in the local area due to its isolation by surrounding major roads and urban development.

4.3 The abundance of pipistrelle species reflects the national trend. A reasonable level of *Myotis* species are present. Due to the nature of the habitats present these are most likely to be whiskered bats. A low number of brown long-eared bats are present, most likely due to the relatively low suitability of the habitats within the site. *Myotis* and brown long-eared bats tend to favour woodland areas which is located adjacent to the west site boundary.

Spatial Distribution

4.4 Species presence at each monitoring location is summarised in Figure 15 below.

	Species Present at Each Location							
	A	B	C	D	E	F	G	H
Psp	Y	Y	Y	Y	Y	Y	Y	Y
NyEp	Y	Y	Y	Y	N	Y	Y	Y
Msp	Y	Y	Y	Y	Y	Y	Y	Y
Pp	Y	Y	Y	Y	Y	Y	Y	Y
MspPa	N	N	N	Y	N	N	N	N
Paur	Y	N	N	Y	N	Y	N	N
Nn	Y	Y	Y	Y	Y	Y	Y	Y
Unknown	N	N	N	Y	Y	N	N	N
Pg	N	N	N	N	Y	N	N	N

Figure 15: Species Presence at each Monitoring Location

Location A

4.5 Compared to other locations in the site activity was moderate. Activity levels at this location were distributed relatively evenly across the survey months with a spike in May and the lowest levels in June. Species diversity was relatively diverse in this location (at least four species including common pipistrelle, myotis sp, brown long-eared bat and noctule).

Location B

4.6 Compared to other locations in the site activity was relatively low. Activity levels at this location peaked in October with very low activity in May. Species diversity was similar to that of Location A but with no brown long-eared bats recorded.

Location C

4.7 Compared to other locations in the site activity was relatively high. Activity levels at this location peaked in August with low levels in September and June. Species composition is the same as that of Location B.

Location D

4.8 Compared to other locations in the site activity was relatively high. Activity levels at this location peaked in October with the lowest levels in June. Species diversity was relatively diverse in this location (at least four species including common pipistrelle, myotis sp, brown long-eared bat and noctule).

Location E

4.9 Compared to other locations in the site activity was relatively low. Activity levels at this location peaked in May with lower levels in June (no data recorded in October). Species diversity was relatively diverse in this location (at least four species including common pipistrelle, myotis sp, soprano pipistrelle and noctule).

Location F

4.10 Compared to other locations in the site activity was relatively low. Activity levels at this location peaked in May with lower levels in October. Species diversity was relatively diverse in this location (at least four species including common pipistrelle, myotis sp, brown long-eared bat and noctule).

Location G

4.11 Compared to other locations in the site activity was relatively high. Activity levels at this location were higher in August with a peak in September and a large drop in October. Species diversity was lower in this location (at least three species including common pipistrelle, myotis sp and noctule).

Location H

4.12 Compared to other locations in the site activity was relatively moderate. Activity levels at this location peaked in October and May with the lowest levels in June. Species diversity was lower in this location (at least three species including common pipistrelle, myotis sp and noctule).

Temporal Distribution

4.13 In August the highest activity within the site was at Location C and the lowest was Location B. In September the highest activity was at Location G and the lowest was Location B. In October the highest activity was at Location D and the lowest was at Location F (no data was obtained at Location E in October). In May the highest activity was at Location F and the lowest was at Location B. In June the highest activity was at Location G and the lowest was at Location E.

4.14 Species composition was the most diverse in September (at least four species including common pipistrelle, myotis sp, brown long-eared bat and noctule) with the lowest diversity in October (at least two species including pipistrelle sp and noctule).

4.15 Species recorded during each month is summarised in Figure 16.

	Species Present During Each Month				
	August	September	October	May	June
Psp	Y	Y	Y	Y	Y
NyEp	Y	N	N	N	N
Msp	Y	Y	N	Y	N
Pp	Y	Y	N	Y	Y
MspPa	N	Y	N	N	N
Paur	N	Y	N	Y	N
Nn	N	Y	Y	Y	Y
Unknown	N	Y	N	N	N
Pg	N	N	N	Y	N

Figure 16: Species Recorded during each Month

5.0 Conclusion

5.1 Bat activity was distributed across the site, concentrated along the hedgerow networks. Activity levels and species diversity were low across the site. The site is therefore considered to have low suitability for bats.

5.2 A separate report detailing the roost assessments of trees and buildings within the site has been produced (TEP reference: 6900.006).

5.3 Loss of hedgerows and mature trees within the site could result in a reduction in foraging opportunities for local bat populations. Light spill on to retained and newly created habitats, during the construction and operation phases, could also negatively impact bat activity within and adjacent to the site.

6.0 Recommendations

6.1 Hedgerows within the site should be retained where possible and protected from development in accordance with the recommendations made in the Hedgerow Assessment Report (TEP Report Ref: 6900.003).

6.2 Sensitive lighting principles should be implemented during the construction and operation phases of the development. This may include:

- Use of unnecessary lighting will be avoided;
- Spatial spread of lighting – the horizontal and vertical spread of artificial light will be minimised, and take into account both primary and reflected light sources. Directional lighting can be achieved by angle and orientation of beam, use of a cowl, louvre or other light shield, or a combination of these;
- Timing and duration of lighting – timers and bespoke dimming regimes may be used to ensure that luminaires are reduced at times of predicted low use. These can be set to change with the seasons and therefore reflect the shifting time of dusk and dawn throughout the year. Motion sensors provide further control to ensure that areas are illuminated only when required; and
- Intensity and colour of lighting – light intensity will be as low as possible whilst meeting the objectives of the intended function. The colour of lighting will need to take into account the sensitivity of the ecological receptors on site. Light sources selected should emit zero ultra-violet light wherever possible. Interim guidance from the Bat Conservation Trust (2014) recommends that white and blue spectrum light should be avoided or, where white lights are required, these should be of warm/neutral colour and have a peak wavelength above 550 nanometers. Narrow spectrum light sources should be used (to lower the range of species affected by lighting).

Drawings

G6900.016 - Visit 1 - August 2017

G6900.017 - Visit 2 - September 2017

G6900.018 - Visit 3 - October 2017

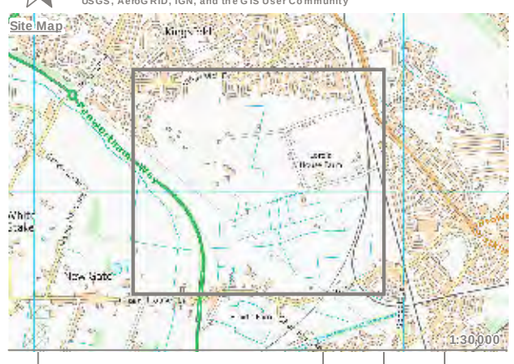
G6900.006 - Visit 4 - April 2018

G6900.010 - Visit 5 - June 2018

KEY

- Site boundary
- Noctule
- Common pipistrelle
- Bat flightline (colour denotes bat species)

Site Map



Rev	Description	Drawn	Approved	Date

THE ENVIRONMENT PARTNERSHIP

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Project
The Lanes, Penwortham

Title
Bat Transects Survey - Visit 1
22nd August 2017

Drawing Number
G6900.016

Drawn	Checked	Approved	Scale	Date
MK	LL	LL	1:4,600 @ A3	30/11/2018

KEY

- Site boundary
- Myotis species
- Noctule
- Common pipistrelle
- Pipistrelle species
- Bat flightline (colour denotes bat species)

Site Map

Rev	Description	Drawn	Approved	Date

THE ENVIRONMENT PARTNERSHIP

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Project
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Title
Bat Transects Survey - Visit 2
14th September 2017

Drawing Number
G6900.017

Drawn	Checked	Approved	Scale	Date
MK	LL	LL	1:4,600 @ A3	30/11/2018

KEY

- Site boundary
- Big bats species
- Soprano pipistrelle
- Common pipistrelle
- Bat flightline (colour denotes bat species)

Site Map

Rev	Description	Drawn	Approved	Date

THE ENVIRONMENT PARTNERSHIP

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Project
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Title
Bat Transects Survey - Visit 3
05th October 2017

Drawing Number
G6900.018

Drawn	Checked	Approved	Scale	Date
MK	LL	LL	1:4,600 @ A3	30/11/2018

KEY

- Survey boundary
- Common pipistrelle
- Bat flightline (colour denotes bat species)

Site Map

Rev	Description	Drawn	Approved	Date
A	Site boundary update.	MK	LP	29/11/2018

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Project
The Lanes, Penwortham

Title
Bat Transect Survey
Visit 4 - 3rd May 2018

Drawing Number
G6900.006A

Drawn	Checked	Approved	Scale	Date
CB	MK	LP	1:4,600 @ A3	30/11/2018

KEY

- Survey boundary
- Noctule
- Common pipistrelle
- Unknown species
- Bat flightline (colour denotes bat species)

Site Map

Rev	Description	Drawn	Approved	Date
A	Site boundary update.	MK	LP	29/11/2018

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Project
The Lanes, Penwortham

Title
Bat Transect Survey
Visit 5 - 26th June 2018

Drawing Number
G6900.010A

Drawn	Checked	Approved	Scale	Date
CB	MK	MK	1:4,600 @ A3	29/11/2018

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