JACQUET UK, TANKERSLEY

Bat Activity Survey Report

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Jacquet UK Tankersley: Bat activity survey report
A
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Quality Management

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EXECUTIVE SUMMARY

- RPS were commissioned by the Jarvale Construction Ltd to undertake bat activity surveys to assess patterns of bat activity across the site and to make recommendations for mitigation measures if needed at a proposed redevelopment of the Jacquet UK site at Tankersley, Barnsley.
- The site was classified as offering low potential to support foraging / commuting bats in the Preliminary Ecological Appraisal (RPS. 2023a). Therefore, activity and automated / static surveys were undertaken during the 2023 survey season. In initial interim bat survey report was produced that documented the initial spring activity survey (RPS, 2023b).
- This report should be read in conjunction with the Interim bat survey report (RPS, 2023b).
- This report sets out results of bat activity surveys carried out at the site between May and October 2023.
- The overall survey site is approximately 1.77 ha in size and comprises primarily hardstanding and buildings, with an area of young / semi-mature woodland, amenity grass, ponds, ornamental shrubs, and scattered scrub. The surrounding area is industrial to the south and west with woodland and parkland to the east and north.
- Bat activity surveys comprised of three transect surveys, one per season from May to September, combined with periods of static monitoring in each season for up to five nights.
- The transect and static monitoring surveys found that the survey area is used by a minimum of five bat species:
  - Common Pipistrelle
  - Soprano Pipistrelle
  - Brown long-eared
  - Noctule
  - *Myotis* sp.
- During the transect surveys, Common Pipistrelles were the most commonly detected species, with an average number of contacts per transect across the whole survey period of 7. *Myotis* sp were recorded at a rate of 0.33 contacts per survey. Numbers of contacts recorded per season fluctuated across the survey period, with higher numbers recorded in June and July.
- The average number of bat contacts per night recorded during static monitoring across the whole survey period was 9.62 for Common Pipistrelle. The next most commonly recorded species was Noctule with an average of 3 contacts per night across the whole survey period. The other confirmed species recorded were Brown Long-eared at 0.62 contacts, soprano Pipistrelle at 0.5 contacts with 0.37 contacts per night for Myotis.
- Numbers of bat contacts recorded during static monitoring was highest in June (mostly due to high numbers of Common Pipistrelles observed foraging along the woodland edge to the east outside of the development area).
- The static monitoring detectors were placed on the boundaries within the proposed development area, at different locations during each survey period. The detector in the eastern corner of the boundary recorded higher numbers of bat contacts in May. Detector failure meant that a complete comparison could not be made for October, however given the low number of contacts overall this will not influence any recommendations for the site.
- The survey results indicate that the site and surrounding area is used by low numbers of bats in at least the spring activity season, and the bat assemblage present in the survey area is considered to be of importance at the Site level.
- The results indicate that the development area itself is relatively un-used by bats, this is likely to a combination of high levels of existing lighting, lower value habitats that minimise foraging opportunities to the south and east, and high levels of noise due to night shift operations.

- The development proposals retain boundary features and provide additional foraging habitat in the form of additional habitat creation. The proposals will not result in a significant increase in light levels at the proposed site location as the area is currently partially lit with existing high-level floodlights.
- Under current proposals the development can proceed without significantly affecting the assemblage of bats currently recorded on site.

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1 INTRODUCTION

1.1 Purpose and scope of this report

1.1.1 RPS were commissioned by Jarvale Construction Ltd to undertake bat activity surveys to assess patterns of bat activity across the site and to make recommendations for mitigation measures if needed at a proposed redevelopment of the Jacquet UK site, Tankersley.

1.1.2 The site was classified as offering low potential to support foraging / commuting bats in the Preliminary Ecological Appraisal (RPS. 2023a) due to the small scale of the proposals and avoidance of impacts to higher value linear habitat such as the woodland edges. Therefore, in line with current best practice guidelines (Collins, 2016) one walked transect per season between April and October (inclusive) was recommended along with automated surveys undertaken through the deployment of static recording devices.

1.1.3 For a site assessed as having low potential to support foraging and commuting bats, deployment of at least one static device at points on the transect for five consecutive nights each season in suitable weather conditions is required. An initial interim bat survey report was produced that documented building emergence surveys and the initial spring activity survey (RPS, 2023b).

1.1.4 The results of the bat activity transects and static bat detectors are detailed in this report.

1.1.5 The aims of the survey and report were to:

- Investigate which species of bat use habitats within the site and collect data on how they use the site to allow an assessment of the importance of the site to these species;
- Assess relative levels of bat activity across the site to allow an evaluation of the relative value of habitats for foraging and commuting bats;
- Collect data on bats present on or near the site close to roost emergence/ return times, to provide further information relating to the likely presence of roosting bats on the site or in the vicinity of the site; and,
- Assess timings, nature and frequency of habitat usage to provide an indication of which (if any) habitats may be important to maintaining the integrity of bat roosts in the local area.

1.1.6 This report pertains to these results only; recommendations included within this report are the professional opinion of an experienced ecologist and therefore the view of RPS.

1.2 Study area

1.2.1 The site is located on Wentworth Way Industrial Estate, Tankersley, Barnsley. The site is approximately 1.77 ha in size. The National Grid coordinates for the centre of the site are SK 34050 99585.

1.2.2 The site comprises primarily hardstanding and buildings, with an area of young / semi-mature woodland, amenity grass, ponds, ornamental shrubs, and scattered scrub. The surrounding area is industrial to the south and west with woodland and parkland to the east and north.

1.2.3 The PEA identified one building on site with high potential to support roosting bats (B2), no impacts or works are proposed to this building therefore emergence surveys are not required at this time.

1.2.4 The study area for this report comprised a walked transect of the wider Jacquet UK site boundary with a particular focus on the proposed area of development.

1.3 Development proposals

1.3.1 The proposals involve the construction of warehouse space and hardstanding extending the existing office and warehouse provision on the site.

1.4 Legislation and policy

1.4.1 All British bat species are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981, as updated by the Countryside and Rights of Way Act 2000. All British bats are also included on Schedule 2 of The Conservation of Habitats and Species Regulations 2017 (as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019). It is an offence to:

- intentionally or recklessly kill, injure or capture bats;
- deliberately or recklessly disturb bats (whether in a roost or not); and
- damage, destroy or obstruct access to bat roosts

1.4.2 A roost is defined as 'any structure or place which [a bat] uses for shelter or protection'. As bats tend to reuse the same roosts, legal opinion is that a roost is protected whether or not bats are present at the time of survey.

1.4.3 A licence will therefore be required by those who carry out any operation that would otherwise result in offences being committed.

1.4.4 The following bat species are listed as being of principal importance for the conservation of biodiversity in England, (commonly referred to as UKBAP Priority species): Barbastelle, Bechstein's, Noctule, Soprano Pipistrelle, Brown Long-eared, Greater Horseshoe, and Lesser Horseshoe.

2 METHODS

2.1 Activity survey transects.

2.1.1 Dusk activity surveys were conducted in June, July and October 2023. The transects were walked by a suitably experienced ecologist, covering the habitats identified as likely to be the most important for foraging and commuting bats. This included linear and boundary features which are often favoured by bats. Transect routes are shown on Figure 2.1.

2.1.2 Bat detectors were used during the activity surveys to record bat echolocation.

2.1.3 Dusk surveys started at sunset and lasted for 2 hours. This includes the expected peak period of bat activity. All bat passes were recorded, including time and species. Behaviour was also recorded, if possible, for example foraging and commuting.

2.1.4 The surveys were conducted prior to the 2023 bat mitigation guideline update, therefore this report reflects the previous guidelines.

2.1.5 The surveys were carried out following current guidelines (Collins, 2016) The weather conditions during the surveys are shown in Table 2.1.

Table 2.1: Dates and Weather conditions during activity survey

Date	Weather	Sunset time	Start time	End time
22.06.2023	21°C 6/8 Cloud cover F1 Wind Dry	21:39	21:34	23:39
27.07.2023	17°C 0/8 Cloud cover F1 Wind Dry	21:11	21:01	23:11
31.10.2023	9°C 8/8 Cloud cover F1 Wind Dry	16:34	16:29	19:18

2.2 Bat detectors and data analysis

2.2.1 Anabat Swift and EMT2 Pro bat detectors were used for the activity transect surveys. Anabat Swifts were deployed for the static surveys.

2.2.2 The recorded calls were analysed using Kaleidoscope software to identify the bat species encountered on each survey.

2.3 Limitations

2.3.1 It should be noted that bats are a group of species with a range of dynamic behaviours and as such, bats can roost in different locations, forage in different areas and preferentially commute along different routes in response to a number of changing physical and environmental factors. Bats exhibit seasonal use of buildings, built structures and trees, and being mobile may arrive and start using a site after it has been surveyed or be roosting somewhere else during the period it was surveyed.

2.3.2 The static data for October is unavailable due to a detector / software fault.

2.3.3 Therefore, this survey provides a snapshot of ecological constraints found to be present at the time and should not be relied upon as evidence of presence / absence for periods longer than one year from the most recent bat survey.

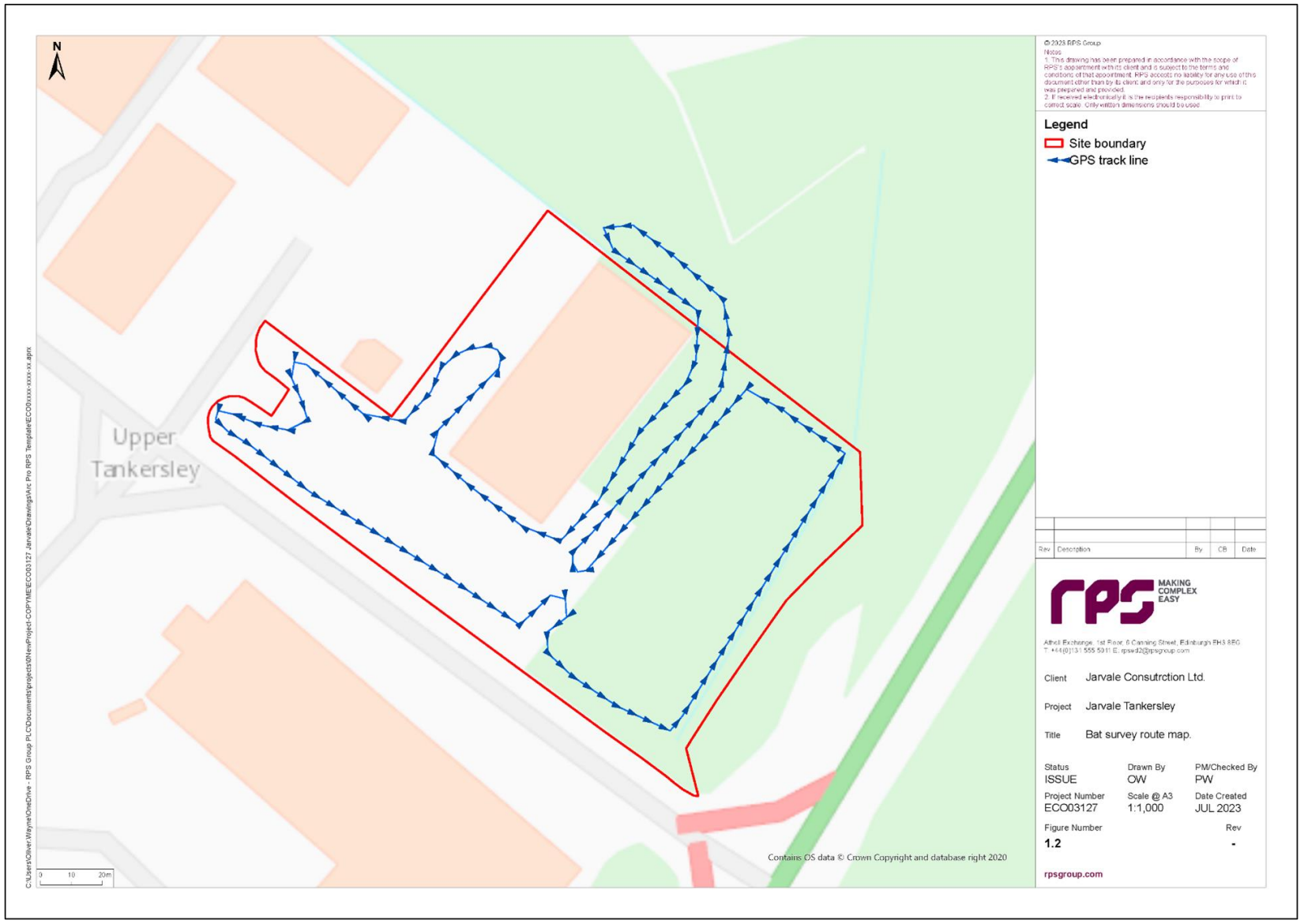
2.3.4 The bat data presented shows the number of contacts for different bat species. It is important to note that the number of contacts does not equate to the number of individual bats, as several contacts can be generated by one bat flying past the surveyors several times. Instead, the number of contacts provides an index of bat activity, which can be used to identify areas of habitat of greater or lesser importance for bats.

2.3.5 Species identification by sonogram is limited to a certain extent by similarities in call structure parameters for certain species. All bats modulate their calls according to the habitats they are navigating and their behaviour. This imposes limitations on reliable identification of bats to species level for species of the same genus, and specifically for *Plecotus*, *Myotis* and *Nyctalus* bats.

Accurate Lifespan of Ecological Data

2.3.6 The majority of ecological data remain valid for only short periods due to the inherently transient nature of the subject. The survey results contained in this report are considered accurate for one year, assuming no significant considerable changes to the site conditions.

Figure 1.1: Activity transect route.



3 RESULTS

3.1 Bat activity transects

3.1.1 Table 3. shows the total bat contacts for each species on each transect (**Error! Reference source not found.**). Full results can be found in Appendix B.

Table 3.1: Number of bat contacts recorded during activity transects.

Date	COP	SOP	NAP	NOC	LEI	NYS	SER	BLE	MYO	Total
22.06.2023	10									10
27.07.2023	11								1	12
31.10.2023	0									0

*NYS indicates bats of Nycalus species, either Noctule or Leisler's.

3.1.2 Common pipistrelles *Pipistrellus pipistrellus* were the only encountered bat species during the June transect.

3.1.3 The common pipistrelles were encountered in the north-eastern corner of the site adjacent to the woodland edge.

3.1.4 Common pipistrelles *Pipistrellus pipistrellus* were the most encountered bat species during the July transect, However there was one contact from a *Myotis* sp. bat recorded half way through the survey.

3.1.5 During the July transect, the common pipistrelles were mostly encountered in the eastern area of the site adjacent to the woodland edge

3.1.6 Each transect consisted of three or four circuits of the site.

3.2 Static monitoring surveys

3.2.1 Table 3.2 shows the total bat contacts for each species during the deployments. No data is available for the October deployment due to detector / software failure.

3.2.2 Table 3.3 shows the same static bat detector data but divides the number of calls recorded by the number of nights of recording to give an average for each night. This allows for an easier comparison with the transect data on occasions when the static detectors did not record for the whole 5-day period.

3.2.3 The common pipistrelle was the most frequently encountered species. The next most frequently recorded species was the noctule which was found to be present on every evening. A single soprano pipistrelle was recorded on 4 nights, a brown long-eared bat was recorded on 4 nights and a *Myotis* sp bat was recorded on 3 nights. In total 5 species were confirmed.

Table 3.2: Numbers of bat contacts recorded during static monitoring surveys.

Night Number	Survey nights	Recorder	Number of nights recording	Bat Species										
				COP	SOP	NAP	NOC	LEI	NYS	SER	BLE	MYO	BAR	Total
June														
1	22/06/23-23/06/23	Swift 707468	1	12	1		2					1		16
2	23/06/23-24/06/23	Swift 546492	1	7	1		3				1			12
3	24/06/23-25/06/23	Swift 546492	1	19	1		1				1	1		23
4	25/06/23-26/06/23	Swift 546492	1	4			9							13
Total				42	3		15				2	2		64
July														
1	27/07/23-28/07/23	Swift 546492	1	8			1				2			11
2	28/07/23-29/07/23	Swift 546492	1	5			3							8
3	29/07/23-30/07/23	Swift 546492	1	11	1		3				1	1		17
4	30/07/23-31/07/23	Swift 546492	1	4			2							6
Total				28	1		9				3	1		42

Table 3.3: Average bat contacts recorded per night of recording during static monitoring surveys.

	Survey nights	Recorder	Number of nights recording	Bat Species										
				COP	SOP	NAP	NOC	LEI	NYC	SER	BLE	MYO	BAR	Total
	22/06/23-26/06/23	Swift 707468 & Swift 546492	4	10.5	0.75		3.75				0.5	0.5		16
	27/07/23-31/07/23	Swift 546492	4	8.75	0.25		3				0.75	0.25		14

COP = Common Pipistrelle, SOP = Soprano Pipistrelle, NAP = Nathusius' Pipistrelle, NOC = Noctule, LEI = Leisler's, NYC = *Nyctalus sp*., SER = Serotine, BLE = Brown Long-eared bat

4 EVALUATION

4.1 Levels of bat activity were very low during the first survey and slightly less frequent during the second survey, when some Pipistrelle foraging (likely one or two bats) was recorded around the carpark area.

4.2 Activity during the transect was restricted to two areas of the site. One was the woodland edge in the north-eastern portion of the site which will not be impacted by the proposed works. The second area of activity was the existing carpark.

4.3 Detector failure during the static survey meant that a complete comparison could not be made for October, however given the low number of contacts overall this will not influence any recommendations for the site.

4.4 The findings of this survey indicate that the onsite and surrounding habitat are not of high importance for foraging and commuting bats.

4.5 Best practice recommendations to avoid impacts on foraging bats across the wider site are provided in Section 5.

5 IMPACTS, MITIGATION AND CONCLUSIONS

Bat activity

5.1.1 The site was assessed as offering low potential for commuting and foraging bats therefore three bat activity surveys were required. All surveys were completed in 2023, the results strongly suggest the proposed development is unlikely to negatively impact foraging and commuting bats.

5.1.2 Bats are nocturnal and adapted to roost and forage in low light conditions therefore increases in artificial lighting can cause disturbance or disrupt existing flight paths and roosting, even with more light tolerant bats such as *Pipistrelle* and *Nyctalus* species.

5.1.3 A sensitive lighting scheme will be developed to avoid disturbing foraging, commuting and roosting bats on / adjacent to site during construction and post development. Lighting will be designed to minimise light spillage on buildings and site boundaries.

5.1.2 The points listed below will also help to minimise any potential impacts from lighting:

- Avoid the illumination of retained boundary features;
- Use light sources that emit minimal ultraviolet light and avoid white or blue wavelengths to avoid attracting lots of insects (attracting insects to lamps may reduce their abundance in darker foraging areas favoured by bats);
- Individual lamps should be hooded and directed where needed to avoid unnecessary light spillage;
- Use motion detectors to activate security lamps rather than continual flood lighting and if any CCTV security system is proposed, Infra-Red lighting would be preferential; and

5.1.1 Design recommendations for wildlife friendly lighting are included in the Statement on the impact and design of artificial light on bats produced by BCT (2011). This list can be found in Appendix A.

5.2 Enhancement

5.1 The wider site will be enhanced for bats by the use of native plant species for soft landscaping and BNG habitat creation wherever practicable.

REFERENCES

Bat Conservation Trust (2011). *Statement on the impact and design of artificial light on bats*. Bat Conservation Trust, London.

Bat Conservation Trust (2014). *Artificial lighting and wildlife Interim Guidance: Recommendations to help minimise the impact of artificial lighting on bats*. Bat Conservation Trust, London.

Collins J. (ed.) (2016). *Bat surveys for Professional Ecologists: Good practice guidelines* (3rd Edition). Bat Conservation Trust, London.

RPS (2023a). *Jacquet UK Tankersley: Preliminary Ecological Appraisal*. (Doc Ref ECO03127-R-002b). RPS, St Ives, Cambridgeshire

RPS (2023b). *Jacquet UK Tankersley: Preliminary Bat Roost Assessment*. (Doc Ref ECO03127-R-004a). RPS, St Ives, Cambridgeshire

Appendix A

Impact and Design of Artificial Light for Bats

Design recommendations for wildlife-friendly lighting include:

- Do not "over" light. This is a major cause of obtrusive light and is a waste of energy. Use only the minimum amount of light needed for safety. There are published standards for most lighting tasks, adherence to which will help minimise upward reflected light.
- Eliminate any bare bulbs and any light pointing upwards. The spread of light should be kept near to or below the horizontal.
- Use narrow spectrum bulbs to lower the range of species affected by lighting.
- Use light sources that emit minimal ultra-violet light. Insects are attracted to light sources that emit ultra-violet radiation.
- Reduce light-spill so that light reaches only areas needing illumination. Shielding or cutting light can be achieved through the design of the luminaire or with accessories, such as hoods, cowls, louvers and shields to direct the light.
- Reduce the height of lighting columns. Light at a low level reduces ecological impact. However, higher mounting heights allow lower main beam angles, which can assist in reducing glare.
- For pedestrian lighting, use low level lighting that is directional as possible and below 3 lux at ground level.
- Use embedded road lights to illuminate the roadway and light only high-risk stretches of roads, such as crossings and merges, allowing headlights to take up the slack at other times.
- Limit the times that lights are on to provide some dark periods for wildlife.
- Use lighting design computer programs and professional lighting designers to predict where light spill will occur.