



Newlands Developments

Land Off Barnsley Road, Goldthorpe

BAT ASSESSMENT REPORT

August 2023

FPCR Environment and Design Ltd

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1.0 INTRODUCTION

- 1.1 FPCR Environment & Design Ltd were commissioned by Newlands Developments to undertake a full range of Bat Surveys across multiple visits at a site south of Barnsley Road/Doncaster Road (A635), to the west of Goldthorpe (central OS grid reference SE 442 036), hereafter referred to as 'the Site'.

Site Location & Context

- 1.2 A full description of the habitats present on site will be provided in the Ecological Appraisal which should be read in conjunction with this report (FPCR, 2023).
- 1.3 The Site lies to the west of the town of Goldthorpe on agricultural land south of the A635 Barnsley Road/Doncaster Road, and adjacent to the west of Aldi Goldthorpe Regional Distribution Centre. Carr Dike (a small watercourse) bisects the Site flowing in a south-westerly direction from Barnsley Road/Doncaster Road in the north. Dearne Valley Wetlands Site of Special Scientific Interest (SSSI) lies to the south-west with the land between dominated by large cultivated arable fields.
- 1.4 The Site comprises of five broad compartments of arable cropland; all seeded with cereal crops over the period covered by these surveys except the north-easternmost parcel which contained oil seed rape. Additionally, there is a narrow belt of plantation deciduous woodland associated with Carr Dike, and a second parcel of plantation woodland along the northern boundary between the arable fields and the A635 road. Several areas of the latter woodland block had been recently felled with chippings left in situ.
- 1.5 Linear habitat features include several hedgerows separating the agricultural compartments, two ditches, one a wet ditch tributary of Carr Dike discharging onto the Site from the distribution centre to the east, and the other a small field drain in the north of the Site which was overgrown with bramble scrub.
- 1.6 The Site is bound by the existing development of Goldthorpe Industrial Estate to the east, further agricultural land to the north and west (predominantly arable land use), and an area of woodland-scrub mosaic which forms part of the Dearne Valley Wetlands SSSI (The Mullins, SSSI Unit 14) to the south.

Site Proposals

- 1.7 As shown on the illustrative masterplan for the Site (umc architects drawing. **Environmental Statement Figure 4.1**) the proposed development includes four plots for employment uses, a new link road and associated internal access roads, landscaping, and drainage. Carr Dike is to be diverted and buffered on either side by a "biodiversity corridor" with other areas of green infrastructure including woodland and scrub planting, individual tree planting, and grassland throughout the Site. A biodiversity and flood alleviation area will be created immediately to the west of the Site and will incorporate grassland and wetland habitats, screened from the development by embankments with grassland and scrub planting. Additionally, Sustainable Urban Drainage Systems (SUDS) will be provided with the creation of a number of attenuation basins and ponds throughout the Site.

2.0 LEGISLATION

2.1 All bats and their roosts are afforded full legal protection under the Conservation of Habitats and Species Regulations 2017 (as amended) and the Wildlife & Countryside Act 1981 (as amended). The purpose of the legislation is to maintain and restore protected species to a situation where their populations are favourable.

2.2 Under Regulation 43 of the Conservation of Habitats and Species Regulations 2017 (as amended) it is illegal to:

- Deliberately capture, injure, or kill any wild animal of a European Protected Species (EPS),
- Deliberately disturb wild animals of an EPS (affecting ability to survive, breed or rear young) – disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young,
- Deliberately disturb wild animals of an EPS (impairing ability to migrate or hibernate) – disturbance of animals includes in particular any disturbance which is likely to impair their ability in the case of hibernating or migratory species to hibernate or migrate,
- Deliberately disturb wild animals of an EPS (affecting local distribution and abundance) – disturbance of animals includes in particular any disturbance which is likely to affect significantly the local distribution or abundance of the species to which they belong,
- Deliberately disturb wild animals of an EPS (whilst occupying a structure or place used for shelter or protection) – intentionally or recklessly disturb any wild animal while it is occupying a structure or place which it uses for shelter or protection,
- Damage or destroy a breeding site or resting place of a wild animal an EPS.

2.3 Under the Wildlife and Countryside Act 1981 (as amended) it is illegal to:

- Recklessly or intentionally kill, injure, or take any wild animals included in Schedule 5,
- Recklessly or intentionally damage or destroy, or obstruct access to any structure or place which any wild animal included in Schedule 5 uses for shelter or protection,
- Recklessly or intentionally disturb any such animal while it is occupying a structure or place which it uses for shelter or protection.

3.0 METHODOLOGY

Desktop Study

- 3.1 The following statutory and non-statutory organisations were consulted for data regarding designated sites for which bats are a qualifying feature, and protected/notable bat records:
- Natural England via the Multi Agency Geographic Information for the Countryside (MAGIC) website
 - Barnsley Biological Records Centre (BBRC)
- 3.2 The geographical extent of the search area for biodiversity information was related to the significance of sites and species and potential zones of influence which might arise from development within the Site, as follows:
- 15km around the Site boundary for sites of International Importance (e.g. Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Ramsar sites);
 - 2km around the Site boundary for statutory sites of National or Regional Importance (e.g. Sites of Special Scientific Interest (SSSIs)) and
 - 1km around the Site for non-statutory designated sites of County Importance (e.g. Sites of Importance for Nature Conservation (SINCs)/Local Wildlife Sites (LWSs) and protected or otherwise notable species records within the last 20 years.

Field Surveys

Activity Surveys

Bat Activity Transect Surveys

- 3.3 The primary objectives of transects completed was to identify foraging areas, commuting routes, species composition and species utilisation of the site.
- 3.4 The survey effort and methodology were determined from recommendations provided in the Bat Conservation Trust best practice guidance¹.
- 3.5 The transect routes were determined prior to survey to sample all suitable bat habitat but with particular focus on features such as hedgerows and tree cover scrub, with connectivity to other suitable habitats off-site. The start and end points of the transect routes were varied (as recommended by current survey guidance) to reduce survey bias. Dusk transects were commenced either prior to, or at sunset, and were a minimum of two hours in duration, whilst the dawn transects commenced two hours prior to sunrise concluding shortly after sunrise (being two hours in duration). Each transect was walked at a steady pace and when a bat passed by, the species, time, and behaviour was recorded on a Site plan to help to form a general view of the bat activity present on-site and highlight any habitat types or features associated with bat activity.
- 3.6 Surveyors used Wildlife Acoustics Inc. Echo Meter Touch[®] bat detectors, in conjunction with the Echo Meter Touch[®] app and Apple Inc. iPad[®] during the transect surveys to detect bats and aid species identification.

¹ Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London

- 3.7 Post-survey, bat calls were analysed using Kaleidoscope Viewer[®] (Wildlife Acoustics, Inc) software package, by taking measurements of the peak frequency, inter-pulse interval, call duration and end frequency. From this analysis, the level of bat activity across the Site in relation to the abundance of individual species foraging and commuting along habitats was assessed.
- 3.8 Seven activity surveys were undertaken in 2022 across the months of April, May, June, July, August, September, and October.
- 3.9 With the exception of the surveys on 27th April and 27th September, all transects were undertaken in accordance with conditions recommended in survey guidance (i.e. when the ambient air temperature at or exceeding 10°C and there was little wind and no rain) see Table 1.

Table 1: Activity Transect Survey Conditions

Date	Sunset/ Sunrise Times	Survey Start/End Times	Weather Conditions
27 th April 2022	20:27	20:27 / 22:27	Cloud cover: 100%, wind: light air, start temp: 7°C, end temp: 7°C. No rain.
16 th May 2022	20:58	20:58 / 23:17	Cloud cover: 60 - 75%, wind: light air, start temp: 17°C, end temp: 15°C. No rain.
20 th June 2022	21:38	21:38 / 00:35	Cloud cover: 10- 15%, wind: light air, start temp: 18°C, end temp: 13°C. No rain.
12 th July 2022	21:31	21:31 / 23:39	Cloud cover: 40 - 50%, wind: light air, start temp: 21°C, end temp: 20°C. No rain.
30 th August 2022	20:01	20:01 / 22:28	Cloud cover: 90 – 100%, wind: Light breeze, start temp: 18°C, end temp: 16°C, No rain.
26 th September 2022 - Dusk Survey	18:55	18:55 / 21:01	Cloud cover: 60 – 90%, wind: light breeze start temp: 12°C, end temp: 10°C, start rain: 0, end rain: 2.
27 th September 2022 - Dawn Survey	06:59	04:59 – 06:59	Cloud cover: 50 – 20%, wind: light air, start temp 8°C, end temp 7°C. No rain.
17 th October 2022	18:05	18:05 – 20:22	Cloud cover: 0%, wind: light air, start temp: 17°C, end temp 13°C. No rain.

Automated Static Bat Detector Surveys

- 3.10 Static (passive) recording full-spectrum detectors were deployed on-site to supplement the manual transect surveys, in line with current survey guidance (see Figure 9 for static detector locations).
- 3.11 Passive monitoring was undertaken using Wildlife Acoustics Inc. SM4 Bat FS bat detectors with automated logging system and outputs saved to an internal storage device. Detectors used SMM-U2 microphones and were placed along linear features considered to be of value to bats, such as hedgerows, woodlands, watercourses, and tree lines.
- 3.12 Devices were placed in each location for five consecutive nights when weather conditions were representative for the time of year. Detectors were programmed to activate 30 minutes before dusk and recorded continuously until 30 minutes after sunrise.
- 3.13 For the purposes of analysis, if the static detector remained in place for more than 5 nights the additional nights were only assessed for bat species listed on Annex II of the Habitats Directive².

² Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

The recorded data were analysed using Kaleidoscope Viewer® (Wildlife Acoustics, Inc) software package to assess the amount of bat activity on-site by recording the number of bat passes.

- 3.14 In accordance with the size of the Site, the number of manual bat activity transect routes undertaken and the assessment of habitat suitability to support foraging and commuting bats coupled with the baseline ecological information on the potential presence of Annex II species within the Site, two static units were deployed on site for a minimum of 5 consecutive nights during the months of April, May, June, July, August, September, and October.

Table 2: Static Detector Deployment Numbers

Month	Unit Numbers	
April 2022	13	14
May 2022	5	6
June 2022	3	4
July 2022	1	2
August 2022	12	13
September 2022	1	2 (Unit failed)
October 2022	9	11

Survey Limitations

- 3.15 Where bat calls could not be identified to species level, for example due to the lower quality of those recordings or where there are similarities between species echolocation calls (particularly for *Myotis* and *Nyctalus* species) making a definite identification difficult, a likely species identification is provided. This is based on the features displayed by the calls when analysed using the Kaleidoscope data analysis software package and taking into account the geographical location of the Site and the habitats present.
- 3.16 The transect undertaken on 27th April 2022 occurred when the starting temperature was below 10°C. Whilst this is outside of the recommended guidance from BCT, the transect commenced at 7°C which is considered typical for this time of year therefore this is not considered a significant limitation to the survey effort undertaken on this Site.
- 3.17 The transect undertaken on September 2022 occurred when the starting temperature was below 10°C. Whilst this is outside of the recommended guidance from BCT, the transect commenced at 7°C, which is typical temperature 2 hours before dawn at this time of year. This is therefore not considered a significant limitation to the survey effort undertaken on this site.
- 3.18 During the September 2022 period of survey using static (passive) recording, one of the bat detectors failed. This is not considered to be a significant limitation given that the other unit remained active during this period and sufficient data was also gathered from manual transects and static recordings throughout the entire survey period to assess the overall level of bat activity at the Site.

Tree Surveys

Ground based Tree Assessments

- 3.19 Tree assessments were undertaken from ground level, with the aid of a torch and binoculars by FPCR licensed bat ecologists (Natural England licence number: 2020-44420-CLS-CLS) on 28th

April 2022. During the surveys, Potential Roosting Features (PRF) for bats such as the following were sought (based on P16, British Standard, *Surveying for bats in trees and woodland – Guide*, October 2015):

- Natural holes (e.g. knot holes) arising from naturally shed branches or cavities created by branches tearing out from parent stems).
- Man-made holes (e.g. cavities that have developed from flush cuts or branches previously pruned back to a branch collar).
- Woodpecker holes.
- Cracks/splits in stems or branches (horizontal and vertical)
- Partially detached, loose, or platy bark.
- Cankers (caused by localised bark death) in which cavities have developed.
- Other hollows or cavities, including butt rots.
- Compression of forks with occluded bark, forming potential cavities.
- Crossing stems or branches with suitable roosting space between.
- Ivy stems with diameters in excess of 50mm with suitable roosting space behind (or where roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk).
- Bat or bird boxes.
- Other suitable places of rest or shelter.

3.20 Certain factors such as orientation of the feature, its height from the ground, the direct surroundings, and its location in respect to other features, may reduce enhance or reduce the potential suitability of the feature for roosting bats.

3.21 Based on the above, trees were classified into general bat roost potential groups based on the presence of these features. Table 1 (below) broadly classifies the potential categories as accurately as possible as well as discussing the relevance of the features. This table is based upon Table 4.1 and Chapter 6 in *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (J., Collins (Bat Conservation Trust), 2016).

3.22 Although the British Standard Document (British Standard, *Surveying for bats in trees and woodland – Guide*, October 2015) groups trees with moderate and high potential, these have been separated below (as per Table 4.1 in The Bat Conservation Trust Guidelines) to allow more specific survey criteria to be applied.

Table 3: Classification and Survey Requirements for Bats in Trees

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey work
Confirmed Roost	Evidence of roosting bats in the form of live bats, droppings, urine staining, mammalian fur oil staining, etc.	A Natural England derogation licence application will be undertaken. This will require a combination of aerial assessment by roped access bat workers and

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey work
		<p>nocturnal survey during appropriate period (May to August). Replacement roost sites commensurate with status of roost to be provided. Works to be undertaken under supervision using a good practice method statement.</p>
High Potential	<p>A tree with one or more Potential Roosting Features that are obviously suitable for larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter protection, conditions (height above ground level, light levels, etc) and surrounding habitat but unlikely to support a roost of high conservation status (i.e. larger roost, irrespective of wider conservation status). Examples include (but are not limited to); woodpecker holes, larger cavities, hollow trunks, hazard beams, etc.</p>	<p>Aerial assessment by roped access bat workers (if appropriate) and / or nocturnal survey during appropriate period (May to August).</p> <p>Following additional assessments, a tree may be upgraded or downgraded based on findings.</p> <p>If roost sites are confirmed and the tree or roost is to be affected by proposals a licence from Natural England will be required. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate.</p>
Moderate Potential	<p>A tree with Potential Roosting Features which could support one or more potential roost sites due to their size, shelter protection, conditions (height above ground level, light levels, etc) and surrounding habitat but unlikely to support a roost of high conservation status (i.e. larger roost, irrespective of wider conservation status). Examples include (but are not limited to); woodpecker holes, rot cavities, branch socket cavities, etc.</p>	<p>A combination of aerial assessment by roped access bat workers and / or nocturnal survey during appropriate period (May to August).</p> <p>Following additional assessments, a tree may be upgraded or downgraded based on findings.</p> <p>After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate.</p> <p>If a roost site/s is confirmed a licence from Natural England will be required.</p>
Low Potential	<p>A tree of sufficient size and age to contain Potential Roosting Features but with none seen from ground or features seen only very limited potential.</p>	<p>No further survey required but some good practice removal operations may be required</p>

Classification of Tree	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey work
	Examples include (but are not limited to); loose/lifted bark, shallow splits exposed to elements or upward facing holes.	
Negligible/No potential	Negligible/no habitat features likely to be used by roosting bats	None.

NB: The Conservation of Habitats & Species Regulations 2017 (as amended) affords protection to breeding sites or resting places at all times. For an area to be classified as a breeding site or resting place, the Regulations require there to be a reasonably high probability that the species will return to the breeding sites and / or resting place.

- 3.23 Where features suitable to be used as a roost site were identified, evidence that bats had used the site as a roost, where accessible, was sought. Such evidence may include; live or dead bats, droppings, urine staining, and grease/scratch marks on wood.

Aerial Roped-Access Surveys

- 3.24 Where it was deemed safe to do so, further inspections were undertaken on 6th February 2023 on the four trees identified as providing roosting potential, by aerial roped access methods by FPCR licensed bat ecologists (Natural England licence number: 2021-10045-CL20-BAT).
- 3.25 Features identified as providing potential to support roosting bats during the climbing inspection were thoroughly examined using endoscopes, mirrors, and torches. Evidence of bat occupation was sought and included: the physical presence of bats, droppings, urine staining, and mammalian oil staining.

Nocturnal Tree Surveys

- 3.26 Nocturnal (dusk) emergence and (dawn) re-entry surveys were completed on the two trees identified as having moderate bat roosting potential within the development site (Trees T4 and T5, see Figure 10). Surveyors were positioned at various aspects of the trees to cover all potential features, and surveys ran from up to 15 minutes prior to sunset until 120 minutes following sunset and from 90-120 minutes prior to sunrise until 15 minutes post sunrise. The number and species of bats observed emerging or entering the tree was recorded (if an emergence/re-entry was seen). All surveys were undertaken when weather conditions were suitable i.e. when the ambient air temperature exceeded 10°C and when there was little/no wind or rain (see Table 2). This methodology takes into account the statutory guidance from English Nature (now Natural England, 2001)³ and guidance from the Joint Nature Conservation Committee (JNCC, 1999)⁴. Further guidelines introduced by the Bat Conservation Trust (BCT, 2016)⁵.
- 3.27 Wildlife Acoustics Inc. Echo Meter Touch® bat detectors were utilised in conjunction with Echo Meter Touch® app and Samsung Tab® (referred to as EM Touch detectors) to provide back-up information and enable identification of bats encountered.
- 3.28 Post-survey, bat calls recorded using the EM Touch detectors were subjected to computer analysis using the Kaleidoscope© software package (Wildlife Acoustics) if any potential emergence/re-entry was observed. Interpretation of each bat call recorded was made by taking measurements of the

³ Mitchell-Jones, A. J., (2004) Bat Mitigation Guidelines. English Nature

⁴ Mitchell-Jones, A. J. & McLeish, A. P. (eds), (2004) Bat Workers' Manual (3rd Edition). JNCC

⁵ Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition). The Bat Conservation Trust, London.

peak frequency, inter-pulse interval, call duration and start / end frequency in addition to observations on the call shapes within the sonogram. Analysis was undertaken by suitably experienced and licensed bat ecologists from FPCR. Table 4 below provides further details of the surveys undertaken on each tree.

Table 4: Summary of Tree Survey Dates and Conditions

Tree Reference	Survey Date	Start/End Time	Sunset /Sunrise Time	Weather Conditions
T4 and T5	04.07.2023	21:21 / 23:06	21:36	Cloud cover: 90%, wind: none, light rain at the start of the survey with no rain by the end, start temp: 15°C, end temp: 14°C
T4 and T5	11.08.2023	04:07 / 05:52	05:37	Cloud cover: 70%, wind: light breeze picking up to a moderate breeze by the end of the survey, no rain, start temp: 19°C, end temp: 19°C

4.0 RESULTS & EVALUATION

Desk Study

Designated Sites

- 4.1 The Site is not covered by any statutory designation and no international nature conservation designations were recorded within 15km.
- 4.2 Records of common pipistrelle *Pipistrellus pipistrellus*, Daubenton's bat *Myotis daubentonii*, noctule bat *Nyctalus noctula*, and soprano pipistrelle *Pipistrellus pygmaeus* have been returned in the vicinity. Refer to Figure 1 of the separate Ecological Appraisal (FPCR, 2023) for an annotated plan showing the locations of these records.

Field Surveys

Activity Surveys – Automated Static Bat Detector Surveys

- 4.3 Locations for each static detector unit between the months of April and October can be seen on Figure 1.

April 2022

- 4.4 Static detector units 13 and 14 each recorded for 50 hours over five nights from the 26th April until 1st May 2022.
- 4.5 Unit 13 was located along a hedgerow at the northern boundary of the site and recorded almost 8 times less activity than unit 14, with common pipistrelle making up 79% of the total 72 registrations.
- 4.6 Far greater bat activity was recorded by unit 14 which was located in the treeline adjacent to Carr Dike, in the centre of the Site, and common pipistrelle made up 87.5% of the total 630 registrations.

Table 5: April static survey results

Unit number	Average registrations per hour	Total registrations	Most recorded species (number of registrations)	Other Species recorded (number of registrations)
13	1.82	91	Common pipistrelle (72)	Soprano pipistrelle (14) Noctule (3) Nyctalus Species (1) Myotis Species (1)

Unit number	Average registrations per hour	Total registrations	Most recorded species (number of registrations)	Other Species recorded (number of registrations)
14	14.4	720	Common pipistrelle (630)	Soprano pipistrelle (69) Noctule (10) Myotis Species (6) Pipistrelle Species (3) Nyctalus Species (2)

May 2022

- 4.7 Static detector units 5 and 6 each recorded for 44.25 hours over five nights from 16th May until 21st May 2022.
- 4.8 Unit 5 was located along a hedgerow in the centre of the Site, adjacent to the east/west oriented ditch and recorded almost 6 times less activity than unit 6, activity levels were considered to be low with common pipistrelle making up 86.2% of the 196 total registrations.
- 4.9 Far greater bat activity was recorded at unit 6 which was located in the base of a large tree (field maple) located on the southern boundary of the Site, adjacent to Carr Head Lane, activity levels were considered to be moderate with common pipistrelle making up 89.5% of the total 1126 registrations.

Table 6: May static survey results

Unit number	Average registrations per hour	Total registrations	Most recorded species (number of registrations)	Other Species recorded (number of registrations)
5	4.42	196	Common pipistrelle (169)	Soprano pipistrelle (19) Noctule (5) Pipistrelle Species (2) Myotis Species (1)
6	25.4	1126	Common pipistrelle (1008)	Soprano pipistrelle (92) Myotis Species (10) Noctule (9) Pipistrelle Species (4) Nyctalus Species (3)

June 2022

- 4.10 Static detector units 3 and 4 each recorded for 39.8 hours over five nights from June 20th until June 25th, 2022.
- 4.11 Unit 3 was located in the north-east corner of the site, situated on a field boundary hedgerow. The level of bat activity was considered to be low, with only 762 registrations, 87.8% being from common pipistrelle. Activity peaked at 00:00 and 01:00 across the five nights.
- 4.12 Unit 4 was located along the western site boundary, attached to a small hawthorn tree adjacent to Carr Dike. The level of bat activity was considered to be low, with only 227 registrations, 54.2% being from common pipistrelle. Activity peaked at 23:00 to 00:00 across the five nights.

Table 7: June static survey results

Unit number	Average registrations per hour	Total registrations	Most recorded species (number of registrations)	Other Species recorded (number of registrations)
3	19.1	762	Common pipistrelle (669)	Noctule (53) Pipistrelle Species (16) Soprano Pipistrelle (12) Nyctalus Species (6) Myotis Species (5) Brown Long-eared (1)
4	5.7	227	Common Pipistrelle (123)	Noctule (62) Soprano pipistrelle (23) Myotis Species (8) Pipistrelle Species (6) Nyctalus Species (3) Brown Long-eared (2)

July 2022

- 4.13 Static detector units 1 and 2 each recorded for 42.5 hours over five nights from 12th July until 17th July 2022.
- 4.14 Unit 1 was located in the north-eastern quarter of the site, attached to a hawthorn hedgerow adjacent to a north-east/south-west orientated ditch discharging into Carr Dike. The level of bat activity was considered to be low, with only 165 total registrations, 64.8% being from common pipistrelle. Activity peaked between 23:00 and 00:00 across the five nights.
- 4.15 Unit 2 was located in the south-eastern quarter of the Site, just south of Aldi Goldthorpe RDC. The unit was attached to the metal fencing that forms the eastern boundary of the Site. The level of bat

activity was considered to be moderate, with 902 registrations, 58.6% of which were from common pipistrelle. Activity peaked between the hours of 22:00 and 23:00 across the five nights.

Table 8: July static survey results

Unit number	Average registrations per hour	Total registrations	Most recorded species (number of registrations)	Other Species recorded (number of registrations)
1	3.88	165	Common Pipistrelle (107)	Noctule (37) Soprano Pipistrelle (14) <i>Myotis</i> species (5) <i>Nyctalus</i> species (2)
2	21.2	902	Common Pipistrelle (529)	Noctule (236) Soprano Pipistrelle (110) <i>Myotis</i> species (20) <i>Nyctalus</i> species (6) <i>Pipistrelle</i> species (1)

August 2022

- 4.16 Static detector units 12 and 13 each recorded for 50.75 hours over five nights from 11th August until 16th August 2022.
- 4.17 Unit 12 was located in the north-west corner of the Site, along the north/south oriented hedgerow between two arable fields. The unit was attached to an individual willow tree within the predominantly hawthorn hedgerow. The level of bat activity was considered to be low, with 290 registrations recorded, 58.9% of which were common pipistrelle. Activity peaked between the hours of 22:00 and 23:00 across the five nights.
- 4.18 Unit 13 was located in the north of the Site, attached to a birch tree adjacent to Carr Dike. The level of activity was considered to be moderate, with a total of 1064 registrations, 61.8% being from common pipistrelle. Common pipistrelle activity peaked between the hours of 01:00 and 02:00, whilst activity across all bat species recorded peaked at 22:00 and 23:00.

Table 9: August static survey results

Unit number	Average registrations per hour	Total registrations	Most recorded species (number of registrations)	Other Species recorded (number of registrations)
12	7.68	390	Common Pipistrelle (230)	Soprano Pipistrelle (90) Noctule (33) <i>Myotis</i> species (32) <i>Nyctalus</i> species (5)
13	20.9	1064	Common Pipistrelle (658)	<i>Myotis</i> species (136) <i>Nyctalus</i> species (118) Soprano Pipistrelle (75) Noctule (63) <i>Pipistrelle</i> species (9) Brown Long-eared (5)

September 2022

- 4.19 Static detector unit 1 recorded for 66.5 hours over five nights from 26th September until 1st October 2022. Static detector unit 2 failed due to SD card corruption, and no records were obtained from this unit for this period.
- 4.20 Unit 1 was located on the northern boundary of the Site, attached to a hawthorn hedgerow along the field boundary. The level of bat activity was considered to be moderate, with a total 547 registrations, 77.5% being from common pipistrelle. Activity was highest between the hours of 19:00 and 20:00.
- 4.21 Unit 2 was located in the east of the Site, adjacent to the east/west oriented ditch that runs across the centre of the east of the site and attached to a small field maple tree. The static unit failed due to an SD card corruption issue, meaning that no data was recorded over the five nights.

Table 10: September static survey results

Unit number	Average registrations per hour	Total registrations	Most recorded species (number of registrations)	Other Species recorded (number of registrations)
1	8.23	547	Common Pipistrelle (424)	<i>Myotis</i> species (84) Noctule (28) Soprano Pipistrelle (11)

October 2022

- 4.22 Static detector units 9 and 11 each recorded for 73.75 hours over five nights from 17th October until 22nd October 2022.
- 4.23 Unit 9 was located in the north-west corner of the Site, adjacent to a hedgerow on the northern boundary. The static detector was attached to a hawthorn hedge that was situated to the south of a small stand of woodland. The activity at this location was considered to be low, with 305 registrations, 56.9% being from common pipistrelle. Activity peaked between the hours of 01:00 and 04:00.
- 4.24 Unit 11 was located in the same location as Unit 2 from the September survey (in the east of the Site, adjacent to the east/west oriented ditch that runs across the centre of the east of the site and attached to a small field maple tree). This location was used to compensate for the failed unit in the previous month. The level of bat activity was considered to be low, with 198 registrations, 44.9% of which were from common pipistrelle. Activity peaked between 19:00 and 20:00 across the five nights.

Table 11: October static survey results

Unit number	Average registrations per hour	Total registrations	Most recorded species (number of registrations)	Other Species recorded (number of registrations)
9	4.24	313	Common Pipistrelle (178)	Soprano Pipistrelle (115) Noctule (12) <i>Nyctalus</i> species (4) <i>Myotis</i> species (3) <i>Pipistrelle</i> species (1)
11	2.68	198	Common Pipistrelle (89)	Soprano Pipistrelle (41) <i>Nyctalus</i> species (34) Noctule (32) <i>Myotis</i> species (2)

Activity Surveys – Transect Surveys**27th April 2022**

- 4.25 The survey started at 20:27 and a total of 5 contacts (and 1 episode of foraging) were recorded, with all recordings being from common pipistrelle (Figure 2).
- 4.26 The first contact was at 21:02, a common pipistrelle commuting along the north-east/west oriented ditch and hedgerow within the eastern area of the Site. Activity during the survey was limited to

commuting common pipistrelles, with one instance of common pipistrelle foraging. The final contact was a common pipistrelle at point count F and the survey finished at 22:27.

16th May 2022

- 4.27 The survey started at 20:58 and a total of 41 contacts (and 5 episodes of continuous foraging) were recorded, the majority of contacts were from common pipistrelles although the occasional soprano pipistrelle, and less frequent noctule, were also noted (Figure 3).
- 4.28 The first contact was at 21:44, a common pipistrelle continuously foraging at the northern part of the Site in the vicinity of Carr Dike. Activity during the survey was concentrated along Carr Dike and the adjacent hedgerows, as well as along the hedgerow adjacent to Carr Head Lane, on the southern boundary of the Site. Activity in these areas consisted of commuting and foraging for both common pipistrelle and soprano pipistrelles. Along the hedgerow and fence line on the eastern boundary of the site, adjacent to Aldi Goldthorpe RDC, commuting activity was observed for common pipistrelle, soprano pipistrelle, and noctule bats. The final contact was a common pipistrelle foraging along the hedgerow on the northern boundary of the Site and the survey finished at 23:17.

20th June 2022

- 4.29 The survey started at 21:38 and a total of 12 contacts (and 1 episode of continuous foraging) were recorded, the majority from noctule bats although the occasional common pipistrelle or soprano pipistrelle were also noted (Figure 4).
- 4.30 The first contact was at 22:20, a noctule commuting along the north-east/west oriented ditch and hedgerow feature within the eastern area of the Site. Activity during the survey was concentrated in the centre of the Site on the hedgerows adjacent to Carr Dike, as well as foraging activity from noctule, common pipistrelle, and soprano pipistrelle recorded along the hedgerow adjacent to Carr Head Lane, on the southern boundary of the Site. The final contact was a foraging common pipistrelle and the survey finished at 00:35.

12th July 2022

- 4.31 The survey started at 21:31 and a total of 20 contacts (and 3 episodes of continuous foraging) were recorded, the majority from common pipistrelles and noctules although the occasional soprano pipistrelle or *Nyctalus* species was also noted (Figure 5).
- 4.32 The first contact was at 22:01 at point count B, a noctule was detected commuting across the field on the western part of the Site, north of Carr Dike. Activity during the survey was concentrated around the centre of the Site in the vicinity of Carr Dike, and on the northern and eastern boundaries of the Site. The final contact was a foraging common pipistrelle and the survey finished at 23:39.

30th August 2022

- 4.33 The survey started at 20:01 and a total of 10 contacts (and 2 episodes of continuous foraging) were recorded, the majority from common pipistrelle and soprano pipistrelle (Figure 6).
- 4.34 The first contact was at 20:33, a common pipistrelle commuting along the north-eastern boundary of the Site. Activity during the survey was concentrated along Carr Dike, with 80% of contacts being recorded in the vicinity of the watercourse. The final contacting of the survey was a soprano pipistrelle foraging along the southern boundary of the Site at 22:24, with the survey concluding at 22:28.

26th September 2022

- 4.35 The survey started at 18:55 and a total of 9 contacts were recorded, the majority from common pipistrelle (Figure 7).
- 4.36 The first contact was at 19:33, a soprano pipistrelle commuting in the centre of the Site, adjacent to Carr Dike. Activity during the survey was concentrated along Carr Dike, with some activity along the southern boundary of the Site, and one bat contact on the eastern boundary of the Site. The final contact of the survey occurred at point count G and was a noctule commuting along the fence that runs along the eastern boundary of the Site. The survey concluded at 21:01.

27th September 2022

- 4.37 The survey started at 04:59. No bat contacts were made during the survey. The survey ran for 2 hours and finished at sunrise, which occurred at 06:59 (Figure 8).

17th October 2022

- 4.38 The survey started at 18:05 and a total of 7 contacts (and 2 episodes of continuous foraging) were recorded, the majority were from common pipistrelle and soprano pipistrelle (Figure 9).
- 4.39 The first contact was at 18:45, a soprano pipistrelle and common pipistrelle continuously foraging along the southern boundary of the Site. Activity was concentrated along Carr Head Lane and the bordering hedgerows on the southern boundary of the Site, with one contact being registered adjacent to Carr Dike in the northern area of the Site.

A single commuting *Myotis* species was also recorded as the last contact of the survey at 20:12, with the survey finishing at 20:22.

Activity Survey Summary

- 4.40 Seven species/species groups (incl. *Myotis*, *Pipistrellus* and *Nyctalus* groups) were recorded across all activity surveys.
- 4.41 Activity from common pipistrelle dominated in all months. While static data cannot be relied upon for accurate estimations of numbers the data recorded by surveyors supports the predominance of common pipistrelles using the Site.
- 4.42 Transect data showed bat activity throughout the Site, but predominantly focused through the centre of the Site along Carr Dike and associated ditches and hedgerows. At the southern boundary of the Site, along Carr Head Lane and its bordering hedgerows and trees, large numbers of commuting and foraging bats were also observed. Commuting bats were also observed along the eastern boundary of the Site, along the metal fencing and hedgerows between the Site and the Aldi Goldthorpe RDC site. The pattern of activity identified during the transects at these areas of the Site is supported by the static detectors.
- 4.43 Away from the site boundaries activity was generally lower with the possible exception of the field boundary between the two large arable fields in the south of the Site, where one of the point counts was located. Four commuting bats were recorded at this point count across all transect surveys.
- 4.44 The total number of registrations from over 735 static survey hours was considered low at 6701 (9.11 registrations per hour). Table 10 below provides a species breakdown collated across all static units and shows that species regarded as light sensitive (*Myotis* species, and brown long-

eared) contributed only 4.79% of the total assemblage. No Annex II species were registered on any static detector or observed on any transect.

Table 12: Species Breakdown Across All Static Deployments

Species	Registrations	Percentage
Common pipistrelle	4886	72.914%
Soprano pipistrelle	685	10.222%
Noctule	583	8.700%
<i>Myotis</i> species	313	4.671%
<i>Nyctalus</i> species	184	2.746%
Pipistrelle species	42	0.627%
Brown long-eared	8	0.119%

Tree Surveys

Ground-Based and Aerial Tree Assessments

- 4.45 Ground level assessments were completed on all trees across the Site, with further aerial assessment undertaken on four trees identified to have roost suitability (see Figure 10). Following aerial assessment the four trees identified as providing bat roosting potential during the ground-based assessment were reassessed, one tree was downgraded to negligible, leaving three trees with bat roost potential. Appendix A summarises the features which were identified during the ground-based and aerial assessments.

Confirmed Roosts

- 4.46 No bat roosts in tree features were confirmed during the ground-based and aerial assessments.

High Potential Trees

- 4.47 From the completed assessments, no trees were identified as offering high bat roosting potential.

Moderate Potential Trees

- 4.48 From the completed assessments, two trees were identified as offering moderate bat roosting potential, Trees T4 and T5.

Low Potential Trees

- 4.49 From the completed assessments, one tree present on-site was identified as offering low bat roosting potential, Tree T1.
- 4.50 Appendix A summarises the features which were identified during the ground-based assessment.

Tree nocturnal surveys

Survey 04.07.23

- 4.51 No bats were observed emerging from either T4 or T5 during this survey. Only low numbers of bat passes were noted with a Noctule *Nyctalus noctula* recorded around 21.58pm commuting and low numbers of both common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus* were recorded commuting and foraging.

Survey 11.08.23

- 4.52 No bats were observed emerging from either T4 or T5 during this survey. Only low numbers of common pipistrelles foraging were recorded.

Summary of Nocturnal Surveys

- 4.53 No bats were observed emerging from or entering either T4 or T5 on either survey occasion. General activity recorded across the surveys was mostly made up of only low numbers of commuting and foraging common pipistrelle, soprano pipistrelle and noctule bats.

5.0 DISCUSSION & RECOMMENDATIONS

Bat Activity

- 5.1 Static detectors located around the Site recorded a relatively low number of registrations considering the number of detectors deployed over the survey period and the size of the Site. With an average of 103 registrations per night per static detector unit across the 65 nights of deployment, the Site is not considered exceptional for bat activity.
- 5.2 No Annex II species were recorded on-site.
- 5.3 The transect surveys did not record any further bat species on-site. Activity during the transects was spread across the Site with some higher concentrations found in association with the area along Carr Dike in the centre of the Site, and the southern boundary of the Site along Carr Head Lane. This is to be expected due to the relatively increased diversity of habitats and associated flora in these areas, providing greater foraging opportunities for all bat species. Under current proposals Carr Dike and the majority of its surrounding vegetation will be retained, as well as the hedgerow along the southern boundary of the Site.
- 5.4 It is recommended that hedgerows that are to be retained should be maintained as dark corridors following the artificial lighting recommendations detailed below. This will ensure connectivity to the wider landscape is not lost and allow bats to continue to use the site for commuting.

Trees

- 5.5 The ground-based and aerial tree assessments identified two trees (Trees T4 and T5) with features considered to have moderate potential to support roosting bats, and one tree (Tree T1) with features considered to have low potential to support roosting bats.
- 5.6 Tree T1 that had low potential to support roosting bats was not subject to further survey for roosts. However, it is recommended that this tree is soft felled under the supervision of a suitably experienced and bat licensed ecologist. Soft felling entails felling the tree either as one intact piece, or in sections/separate limbs, and lowering the tree/sections the ground as gently possible. Limbs or sections may be maintained in an upright position or with potential roost features facing outwards to allow bats (if present) to leave the tree. The intact tree or sections will remain on the ground for a minimum of 24 hours, to allow any bats within the tree to leave, before the tree can be cut up further and/or removed from Site.
- 5.7 Trees T4 and T5 with moderate potential to support roosting bats had two further nocturnal surveys (as per BCT guidance) and no roosts were identified. As such, bats roosts are considered unlikely to be present and the trees may be felled without further survey or supervision. Due to the transient nature of bat roosts if the trees have not been removed within 12 months from the last survey update, additional surveys will need to be undertaken to confirm that bats have not begun using the features present. Should a roost be discovered at this time, an European Protected Species Licence (EPSL) application will be needed to facilitate the removal of the tree(s).

Development Enhancements

- 5.8 Hedgerows, scrub, grassland fields, and wooded areas across the site are recommended for retention wherever possible. The retention of these features as green corridors and landscape buffers will allow bats to enter the development and area and continue to use the area for foraging

and commuting. However, this is dependent on minimising disturbance to these areas, particularly where segments of hedgerow are to be removed, as described below in the hop-overs and lighting sections below. This is particularly important due to the presence of relatively small number of *Myotis* species and a very small number of brown long-eared bats using the Site, as these are a light-sensitive species and require an adequate amount of canopy cover.

- 5.9 The provision of green infrastructure and habitat creation within current proposals will seek to provide habitats of greater value to bats, with areas of herb rich grassland, scrub, and wetland to provide a foraging resource, with well-structured linear wood-edge habitats to provide movement corridors. Additional ponds and wetland basins (created as Sustainable Urban Drainage Systems) will provide additional habitat for insects, increasing available prey items and foraging habitats for bats within the Site. It is recommended that trees felled as part of the development should be used to create a number of log piles located within the public greenspaces, woodland areas, and along the retained hedgerows and streams. This will provide additional habitat for insects which will increase the amount of prey items available to foraging bat species.
- 5.10 Habitat retention and creation along Carr Dike and the southern and eastern Site boundaries will maintain and enhance connectivity through the Site from the south-west to the north-east and along the Site boundaries.
- 5.11 As a number of trees are to be lost as part of the development, a number of bat boxes should be erected within the retained woodland and hedgerow areas to increase the available roosting habitat available. Given the size of the site it is recommended that 15 bat boxes would be appropriate and should be erected at five locations across the Site in the areas of high bat activity (along Carr Dike and on the southern and eastern boundaries). Boxes should be erected between three and four meters above ground level and installed on existing tree trunks with no surrounding branches or vegetation or on poles, to allow clear flight paths. Three boxes should be installed at each location, at the same height, facing north, south-east and south-west. A range of models of bat box are available and should be used, to suit a range of species. It is recommended that at least one maternity box (with a larger cavity for maternity roosts) is provided.
- 5.12 Suitable boxes include, but are not limited to, the following:
- Vincent Pro boxes
 - Schwegler 1FD maternity bat box
 - Large colony box such as Schwegler 1FS
 - Schwegler 2F universal bat boxes
 - Miramare bat boxes

Hop-overs

- 5.13 In order to minimise any potential impact to commuting and foraging routes, in the event that any hedgerows are to be broken (e.g., to incorporate proposed accesses), the retained hedgerows are recommended to be reinforced with native species planting with tree standards to create 'hop-overs' to aid crossing of these breaks for bats. These measures are detailed in Highways Agency Interim Advice Note: Nature Conservation Advice in Relation to Bats⁶ and require the retention or planting of semi-mature trees / tree standards to grow above the level of vehicle movement. Where

⁶ Highways Agency (2001) Nature Conservation Advice in Relation to Bats Design Manual for Roads and Bridges: Volume 10 Section 4, Part 3. Highways Agency

the proposed breach of the hedgerow exceeds 7m in length the planting should also include the implementation of standard trees adjacent to the road/footpath which will grow to be above the level of vehicle movement. The lower branches of such trees should be regularly pruned back to the trunk to ensure that the most suitable flight line is above the maximum traffic height. The growth of the trees will merge with that of the existing hedgerow to create an alternative route to 'hop-over' over the road. The implementation of such 'hop-overs' will allow continued echolocation across the break in the hedgerow, thereby allowing continued usage of the hedgerow as a foraging/commuting area. It will also reduce the potential for road traffic accidents to bats (and for birds).

- 5.14 Whilst the hop-overs will take time to establish, the tree standards to be used shall be of an appropriate size and will be planted early in the development cycle. Whilst breaches will be present during the construction period until the hop-over is established, due to the small size of the proposed breaches, the impacts upon bats potentially commuting along them is considered to be minor.
- 5.15 In the locations where the watercourses are to be culverted, small sections of plantation woodland and hedgerow will be breached in order to facilitate the construction of the access road and culverts. In these areas the creation of hop-overs are not considered to be necessary as the retained woodland areas and additional proposed woodland planting would, once established, provide adequate height of vegetation to guide bats above any potential traffic risk on the access roads. It is also noted that the access road will likely have a lower traffic volume at night, reducing the risks to commuting/foraging bats in these areas.

Artificial Lighting

- 5.16 Light spill onto sensitive bat habitat resources from development lighting could impact on bats commuting and foraging along the retained Site boundaries, particularly the southern boundary of the Site with Carr Head Lane, the retained watercourse Carr Dike, and associated retained hedgerow, and newly created habitats.
- 5.17 In particular, the presence of light sensitive species including *Myotis* species and brown long-eared bat is of particular concern (though only encountered at the Site in relatively small numbers) and should be accommodated accordingly, including with an adequate amount of canopy cover. The lighting and layout of the proposed redevelopment should be designed to minimise light spill onto habitats both within and adjacent to the development Site that are used by the local bat population foraging or commuting. This will be achieved by providing areas of habitat that buffer the edges of the Site and along Carr Dike. It is also recommended that the design of lighting is based upon guidelines presented in the Institute of Lighting Professionals 'Guidance Note 8 Bats and Artificial Lighting' 2018, Bat Conservation Trust & Institute of Lighting Engineers 'Bats and Lighting in the UK - Bats and Built Environment Series', the Bat Conservation Trust 'Artificial Lighting and Wildlife Interim Guidance', and the Bat Conservation Trust 'Statement on the impact and design of artificial light on bats'.
- 5.18 Therefore, it is recommended that the lighting scheme should include the following:
- 5.19 The strategic use of landscaping and planting to avoid light spill on sensitive habitats, including the retained woodland areas along Carr Dike. Additional LUX levels should be no greater than 1LUX for this habitat area.

- The avoidance of direct lighting of existing trees, scrub, woodland, or proposed areas of habitat creation / landscape planting. Lighting should be directed away from retained or created habitats.
- Unnecessary light spill is recommended to be controlled (where appropriate) through a combination of directional lighting, low level lighting columns, hooded/shielded luminaires, and strategic planting. Smart lighting should be considered (where appropriate) for footpaths and areas of lighting around the edges of the development area to provide lighting only when necessary.
- It is recommended that all new column mounted luminaires to be fitted with flat glass (where appropriate) to aid 0% upward light discharge which will reduce light pollution for the larger bat species identified to forage over the Site such as noctule bat.
- Where located adjacent to green infrastructure and retained habitats, it is recommended that lighting should be installed facing away from the habitats and will be fitted with rear light baffles or cowls to prevent light spill behind them.

Summary

- 5.20 Overall, the comprehensive and detailed survey effort indicates levels of bat activity that are not considered exceptional, given the numbers of bats recorded during both static and transect surveys across the area. The species present and numbers of bats recorded, as well as no known roosts identified, would indicate that the Site provides nature conservation value of **Local level** to bat species.
- 5.21 With the implementation of the proposed scheme of habitat creation and the mitigation proposed above, effects on the local populations of all bat species are considered likely to be **negligible**.

APPENDIX A – GROUND-BASED AND AERIAL TREE ASSESSMENT RESULTS

Tree No.	Tree Species	Location (Grid Ref)	Features	Initial Potential for roosting Bats- Ground Based Tree Assessment	Final Potential for roosting Bats- Aerial Based Tree Assessment
T1	Crack Willow, <i>Salix fragilis</i>	SE44400381	Rot hole in main stem, very exposed and open, doesn't extend into suitable cavity. Branch tear out 3 m high, small cavity at the top which extends upwards by 5 cm.	Moderate	Low
T3	English Oak, <i>Quercus robur</i>	SE44300366	Healed vertical split and rot hole which doesn't extend into cavity.	Moderate	Negligible
T4	English Oak, <i>Quercus robur</i>	SE44180386	Knot hole 4m, connects downwards to the main split in stem. Extends downwards to the left about 0cm into dry well sheltered cavity, rough inside Opening diameter 10 cm x 5 cm. Rot hole 4m, in heartwood within the main vertical split in the trunk. Diameter opening is 3cm x 3cm and extends downwards but is sheltered. Vertical split 7m. Internal diameter 5cm by 5cm, extends upwards by approximately 1m. Rough inside with old nest material present. Vertical split 6 m, shallow superficial crevices within heartwood of split.	Moderate	Moderate
T5	English Oak, <i>Quercus robur</i>	SE44210365	Hollow main stem with vertical split. Extends upward into three distinct cavities, which have a rough interior with old nest material in the base. The entrance diameter is roughly 8cm by 8cm and narrows internally. Left hand cavity extends the furthest, approximately 40cm upwards.	Moderate	Moderate



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Key

Site Boundary

Static Detector Locations (with ref.)

- April 22
- May 22
- June 22
- July 22
- August 22
- September 22
- October 22

client
Newlands Development
project
Barnsley Road, Goldthorpe
drawing title
Static Detector Location Plan



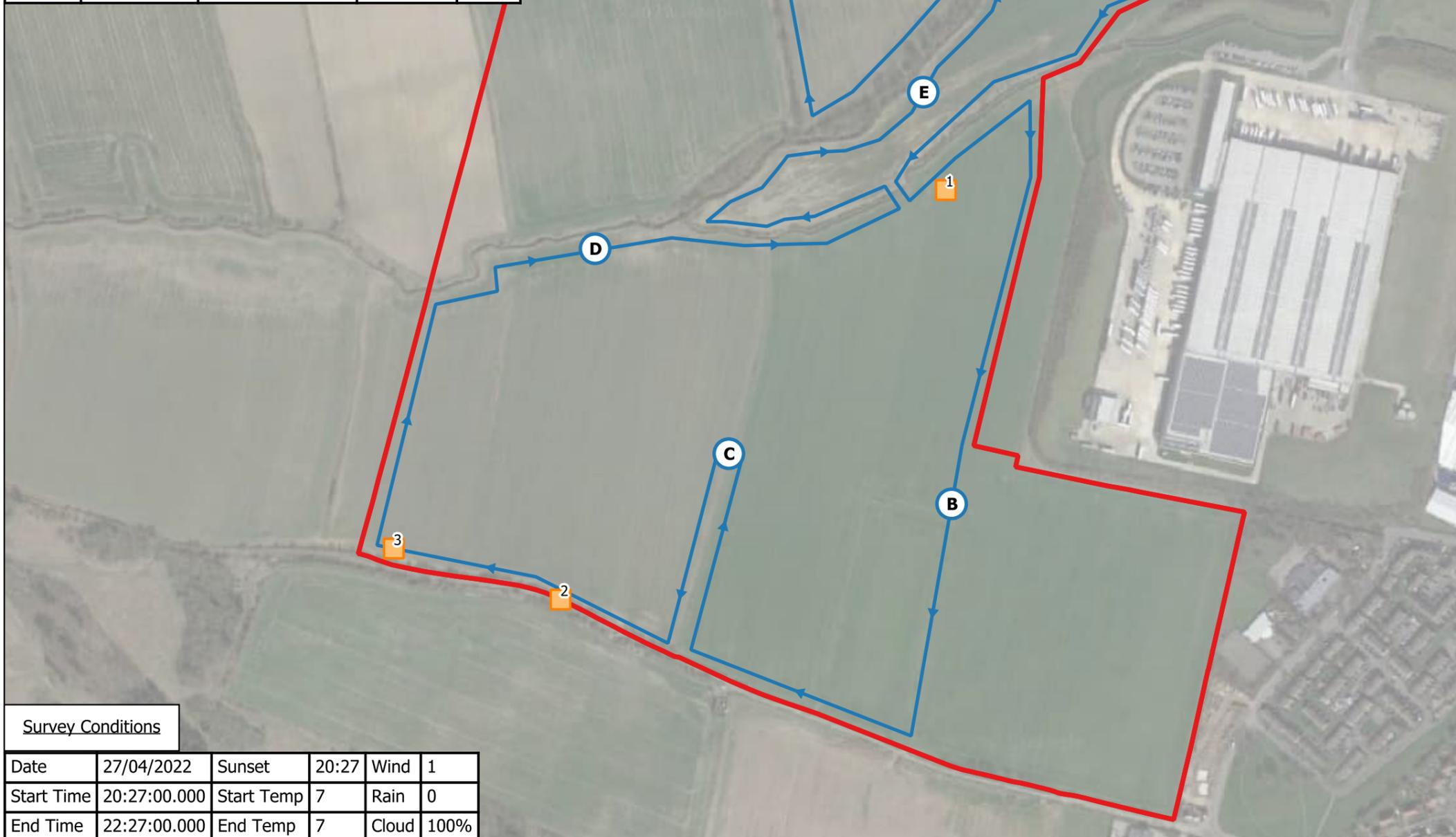
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RJC
issue date
16/11/2022



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Figure 1

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Bat Species				
Plan ref.	Time	Species	Behaviour	Passes
PCA	20:46 - 20:49			
1	21:02	Common Pipistrelle	Commuting	1
PCB	21:06 - 21:09			
PCC	21:21 - 21:24			
2	21:28	Common Pipistrelle	Foraging	2
3	21:31	Common Pipistrelle	Commuting	1
PCD	21:39 - 21:42			
PCE	21:56 - 21:59			
4	22:06	Common Pipistrelle	Commuting	1
PCF	22:10 - 22:13			
F1	22:11	Common Pipistrelle	Commuting	1
PCG	22:23 - 22:26			



Survey Conditions

Date	27/04/2022	Sunset	20:27	Wind	1
Start Time	20:27:00.000	Start Temp	7	Rain	0
End Time	22:27:00.000	End Temp	7	Cloud	100%

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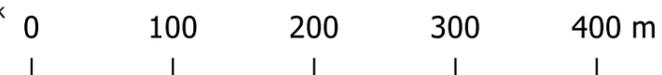
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Key:

- Site Boundary
- Start point
- Finish point
- Point Count (with ref.)
- Transect Route
- Flight Path

Bat Species (contacts)

- Common Pipistrelle



client
Newlands Development

project
Barnsley Road, Goldthorpe

drawing title
BAT TRANSECT PLAN (16.05.2022)

scale @ A3
1:5,000

drawn
RJC

issue date
23/8/2022

drawing / figure number
Figure 2

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Bat Species				
Plan ref.	Time	Species	Behaviour	Passes
PCA	20:59 - 21:04			
PCB	21:16 - 21:21			
PCC	21:32 - 21:37			
1	21:44	Common Pipistrelle	Foraging	Continuous
2	21:45	Common Pipistrelle	Foraging	Continuous
3	21:46	Common Pipistrelle	Foraging	Continuous
PCD	21:54 - 21:59			
4	22:00	Common Pipistrelle	Commuting	1
5	22:01	Common Pipistrelle	Commuting	1
6	22:02	Common Pipistrelle	Commuting	1
7	22:03	Common Pipistrelle	Commuting	1
8	22:06	Soprano Pipistrelle	Commuting	1
9	22:11	Soprano Pipistrelle	Commuting	1
10	22:14	Common Pipistrelle	Commuting	1
11	22:15	Common Pipistrelle	Commuting	1
12	22:16	Common Pipistrelle	Foraging	Continuous
13	22:17	Common Pipistrelle	Commuting	1
14	22:18	Common Pipistrelle	Commuting	1
15	22:18	Soprano Pipistrelle	Commuting	1
16	22:19	Soprano Pipistrelle	Foraging	Continuous
17	22:19	Common Pipistrelle	Commuting	1
18	22:20	Common Pipistrelle	Commuting	1
19	22:20	Soprano Pipistrelle	Commuting	1
20	22:21	Soprano Pipistrelle	Commuting	1
21	22:26	Common Pipistrelle	Commuting	1
22	22:28	Soprano Pipistrelle	Commuting	1
PCE	22:30 - 22:35			
E1	22:31	Common Pipistrelle	Commuting	1
E2	22:34	Soprano Pipistrelle	Commuting	1
23	22:35	Pipistrelle Species	Commuting	1
24	22:39	Common Pipistrelle	Foraging	3
25	22:39	Soprano Pipistrelle	Commuting	1
26	22:40	Soprano Pipistrelle	Foraging	2
27	22:40	Common Pipistrelle	Commuting	1
PCF	22:50 - 22:55			
F1	22:51	Common Pipistrelle	Commuting	1
F2	22:52	Common Pipistrelle	Commuting	1
F3	22:53	Noctule	Commuting	1
F4	22:53	Common Pipistrelle	Foraging	3
F5	22:53	Soprano Pipistrelle	Commuting	1
F6	22:54	Common Pipistrelle	Commuting	1
28	22:55	Common Pipistrelle	Commuting	1
29	22:57	Common Pipistrelle	Commuting	1
30	23:00	Common Pipistrelle	Foraging	2
31	23:02	Common Pipistrelle	Commuting	1
32	23:05	Common Pipistrelle	Commuting	1
PCG	23:07 - 23:12			
33	23:13	Common Pipistrelle	Foraging	3



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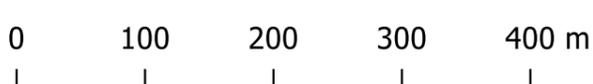
- Site Boundary
- S Start point
- F Finish point
- Point Count (with ref.)
- Transect Route
- - - - - Flight Path

Bat Species (contacts)

- Common Pipistrelle
- Soprano Pipistrelle
- ▽ Nyctalus Species
- ▽ Noctule

Survey Conditions

Date	16/05/2022	Sunset	20:58	Wind	1
Start Time	20:58:00.000	Start Temp	17	Rain	0
End Time	23:17:00.000	End Temp	15	Cloud	65%



client
Newlands Development

project
Barnsley Road, Goldthorpe

drawing title
BAT TRANSECT PLAN (16.05.2022)

scale @ A3
1:5,500

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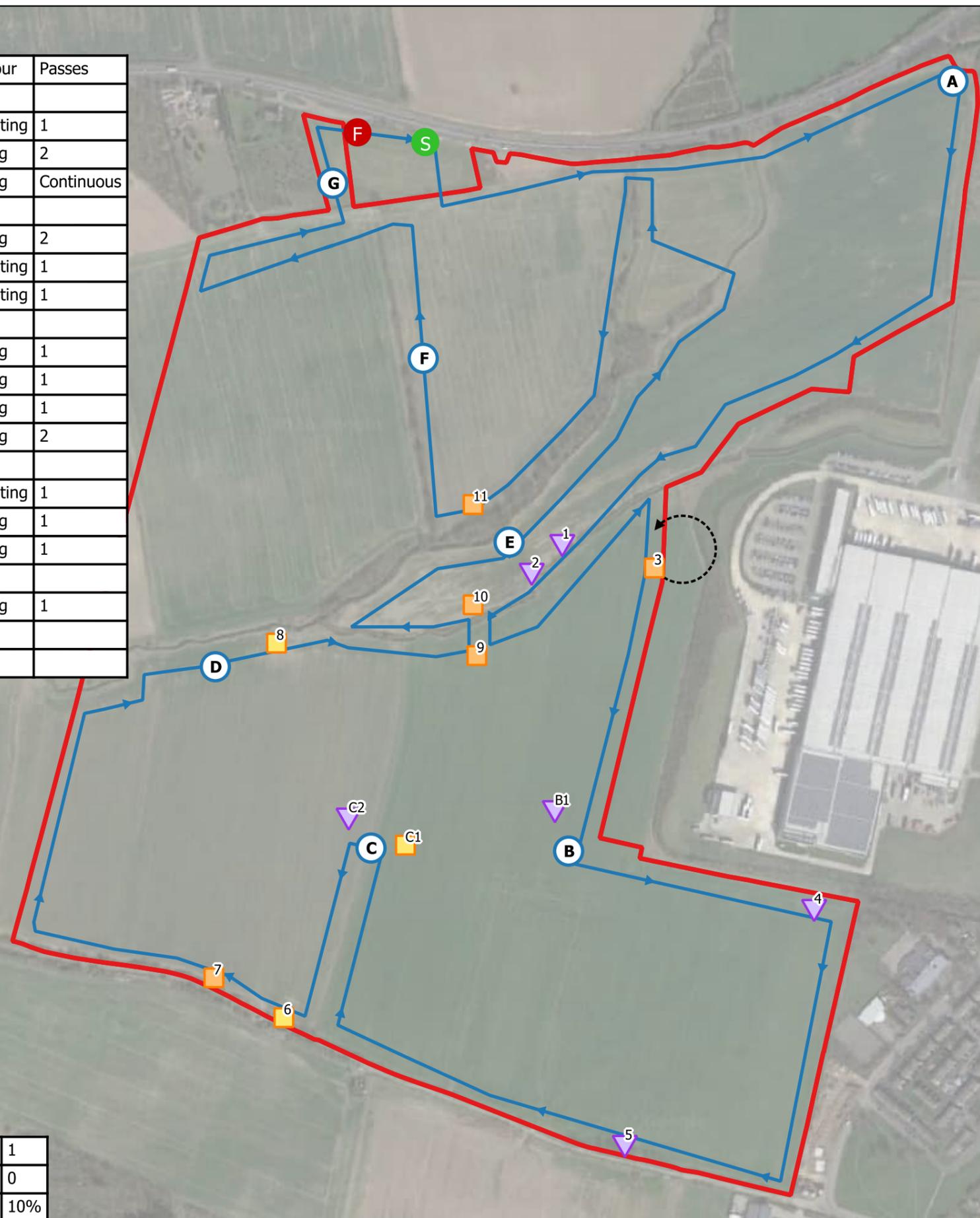
issue date
23/8/2022

drawing / figure number
Figure 3

rev
-

Bat Species				
Plan ref.	Time	Species	Behaviour	Passes
PCA	21:52 - 21:57			
1	22:20	Noctule	Commuting	1
2	22:21	Noctule	Foraging	2
3	22:38	Common Pipistrelle	Foraging	Continuous
PCB	22:43 - 22:48			
B1	22:47	Noctule	Foraging	2
4	22:50	Noctule	Commuting	1
5	22:56	Noctule	Commuting	1
PCC	23:05 - 23:10			
C1	23:08	Soprano Pipistrelle	Foraging	1
C2	23:09	Noctule	Foraging	1
6	23:12	Soprano Pipistrelle	Foraging	1
7	23:14	Common Pipistrelle	Foraging	2
PCD	23:25 - 23:30			
8	23:30	Soprano Pipistrelle	Commuting	1
9	23:38	Common Pipistrelle	Foraging	1
10	23:45	Common Pipistrelle	Foraging	1
PCE	23:49 - 23:54			
11	00:15	Common Pipistrelle	Foraging	1
PCF	00:18 - 00:23			
PCG	00:29 - 00:34			

Survey Conditions					
Date	20/06/2022	Sunset	21:38	Wind	1
Start Time	21:38:00.000	Start Temp	18	Rain	0
End Time	00:35:00.000	End Temp	13	Cloud	10%



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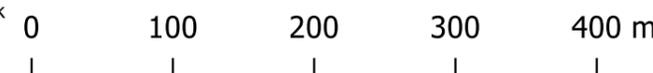
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Key:

- Site Boundary
- S Start point
- F Finish point
- Point Count (with ref.)
- Transect Route
- - - - - Flight Path

Bat Species (contacts)

- Common Pipistrelle
- Soprano Pipistrelle
- ▼ Noctule



client
Newlands Development

project
Barnsley Road, Goldthorpe

drawing title
BAT TRANSECT PLAN (20.06.2022)

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issue date
23/8/2022

drawing / figure number
Figure 4

rev
-

Bat Species				
"Plan ref.	Time	Species	Behaviour	Passes
PCA	21:46 - 21:51			
PCB	21:58 - 22:03			
B1	22:01	Noctule	Commuting	1
1	22:13	Noctule	Foraging	2
2	22:15	Noctule	Commuting	1
PCC	22:18- 22:23			
C1	22:19	Noctule	Foraging	2
3	22:29	Common Pipistrelle	Foraging	4
PCD	21:39 - 22:44			
D1	22:40	Noctule	Foraging	Continuous
PCE	22:50 - 22:55			
E1	22:51	Common Pipistrelle	Foraging	Continuous
E2	22:51	Nyctalus Species	Commuting	1
4	22:56	Common Pipistrelle	Foraging	1
5	22:58	Common Pipistrelle	Commuting	4
6	22:59	Noctule	Foraging	3
PCF	23:00 - 23:05			
F1	23:00	Soprano Pipistrelle	Commuting	1
F2	23:05	Soprano Pipistrelle	Commuting	1
7	23:15	Common Pipistrelle	Foraging	2
8	23:19	Common Pipistrelle	Foraging	3
9	23:23	Common Pipistrelle	Foraging	Continuous
PCG	23:27 - 23:32			
G1	23:31	Common Pipistrelle	Commuting	1
10	23:32	Soprano Pipistrelle	Commuting	1
11	23:32	Noctule	Commuting	1
12	23:33	Common Pipistrelle	Foraging	4

Survey Conditions

Date	12/07/2022	Sunset	21:31	Wind	1
Start Time	21:31:00.000	Start Temp	21	Rain	0
End Time	23:39:00.000	End Temp	20	Cloud	45%

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Key:

- Site Boundary
- Start point
- Finish point
- Point Count (with ref.)
- Transect Route
- Flight Path

Bat Species (contacts)

- Common Pipistrelle
- Soprano Pipistrelle
- ▽ Nyctalus Species
- △ Noctule

client
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project
Barnsley Road, Goldthorpe

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BAT TRANSECT PLAN (12.07.2022)

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issue date
25/8/2022

drawing / figure number
Figure 5

rev
-

Bat Species				
Plan ref.	Time	Species	Behaviour	Passes
PCA	20:08 - 20:13			
1	20:33	Common Pipistrelle	C	1
PCB	20:49 - 20:54			
B1	20:49	Common Pipistrelle	F/S	Cont.
PCC	21:03 - 21:08			
PCD	21:16 - 21:21			
2	21:34	Common Pipistrelle	F	3
PCE	21:38 - 21:43			
E1	21:38	Common Pipistrelle	F	Cont.
E2	21:43	Soprano Pipistrelle	C	1
3	21:46	Common Pipistrelle	F	4
F	21:54 - 21:59			
F1	21:53	Common Pipistrelle	F	3
4	22:01	Common Pipistrelle	F	2
5	22:02	Brown long-eared	F	2
PCG	22:13 - 22:18			
6	22:24	Soprano Pipistrelle	F	4

Survey Conditions					
Date	30.08.22	Sunset	20:01	Wind	2
Start Time	20:01:00.000	Start Temp	18	Rain	0
End Time	22:28:00.000	End Temp	16	Cloud	95



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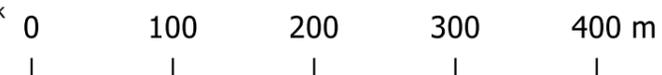
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Key:

- Site Boundary
- S Start point
- F Finish point
- C Point Count (with ref.)
- Transect Route
- - - - - Flight Path

Bat Species (contacts)

- Common Pipistrelle
- Soprano Pipistrelle
- ◆ Brown Long-eared



client
Newlands Development

project
Barnsley Road, Goldthorpe

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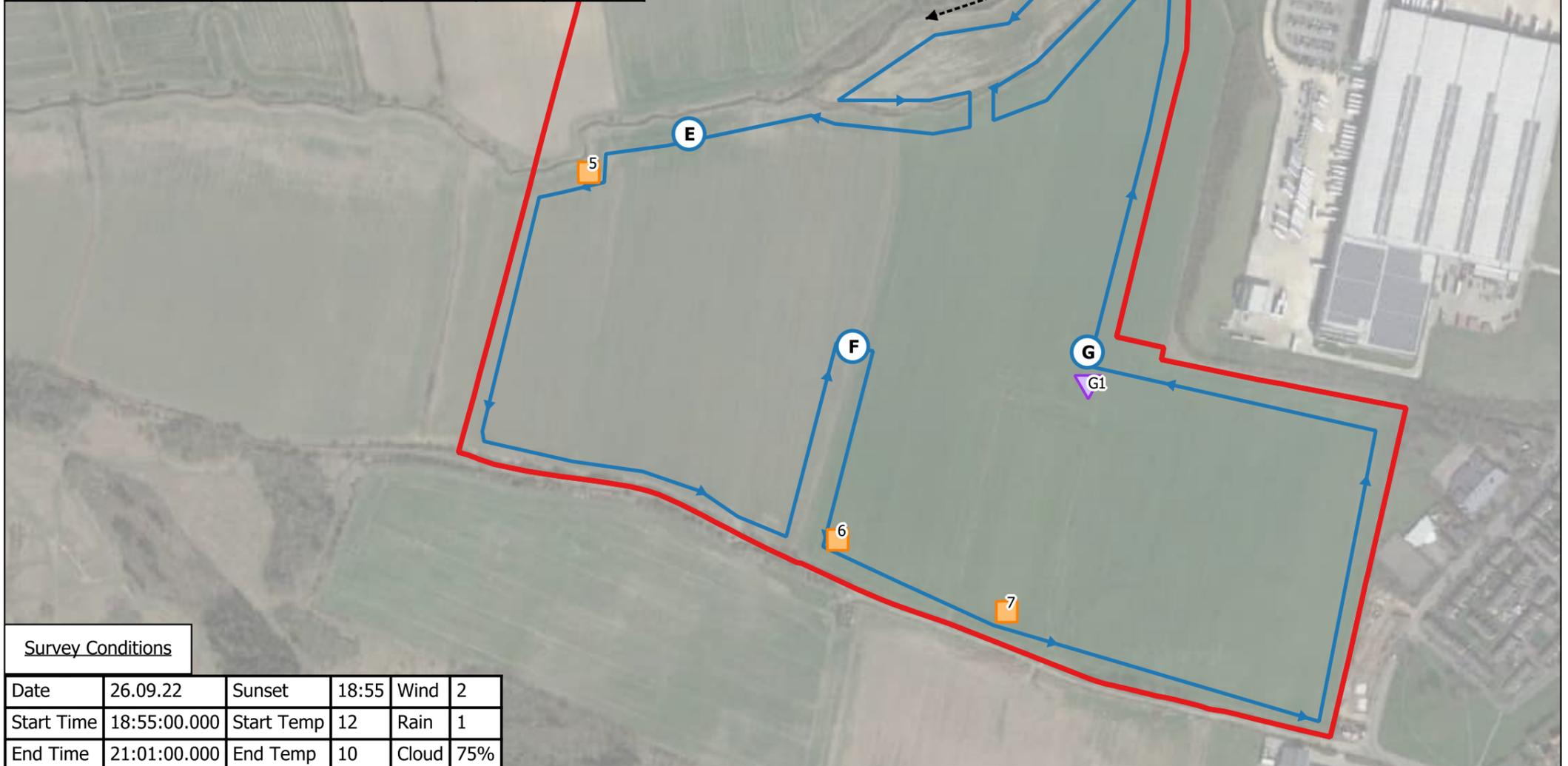
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issue date
16/11/2022

drawing / figure number
Figure 6

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-

Bat Species					
Plan ref.	Time	Species	Behaviour	Passes	Comments
PCA	18:57 - 19:02				
PCB	19:09 - 19:14				
PCC	19:22 - 19:27				
1	19:33	Soprano Pipistrelle	C	1	
2	19:34	Common Pipistrelle	F	2	
3	19:36	Soprano Pipistrelle	F	2	
4	19:38	Common Pipistrelle	F	2	
PCD	19:44 - 19:49				
D1	19:46	Common Pipistrelle	F/S	2	2 Bats
PCE	20:07 - 20:12				
5	20:13	Common Pipistrelle	C	1	
PCF	20:23 - 20:28				
6	20:31	Common Pipistrelle	C	1	
7	20:34	Common Pipistrelle	F	3	
PCG	20:42 - 20:47				
G1	20:46	Noctule	C	1	



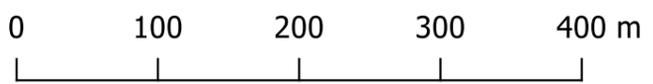
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- Key:**
- Site Boundary
 - Start point
 - Finish point
 - Point Count (with ref.)
 - Transect Route
 - Flight Path

- April 22 Bat contacts**
- Common Pipistrelle
 - Soprano Pipistrelle
 - Noctule

Survey Conditions					
Date	26.09.22	Sunset	18:55	Wind	2
Start Time	18:55:00.000	Start Temp	12	Rain	1
End Time	21:01:00.000	End Temp	10	Cloud	75%



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project
Barnsley Road, Goldthorpe

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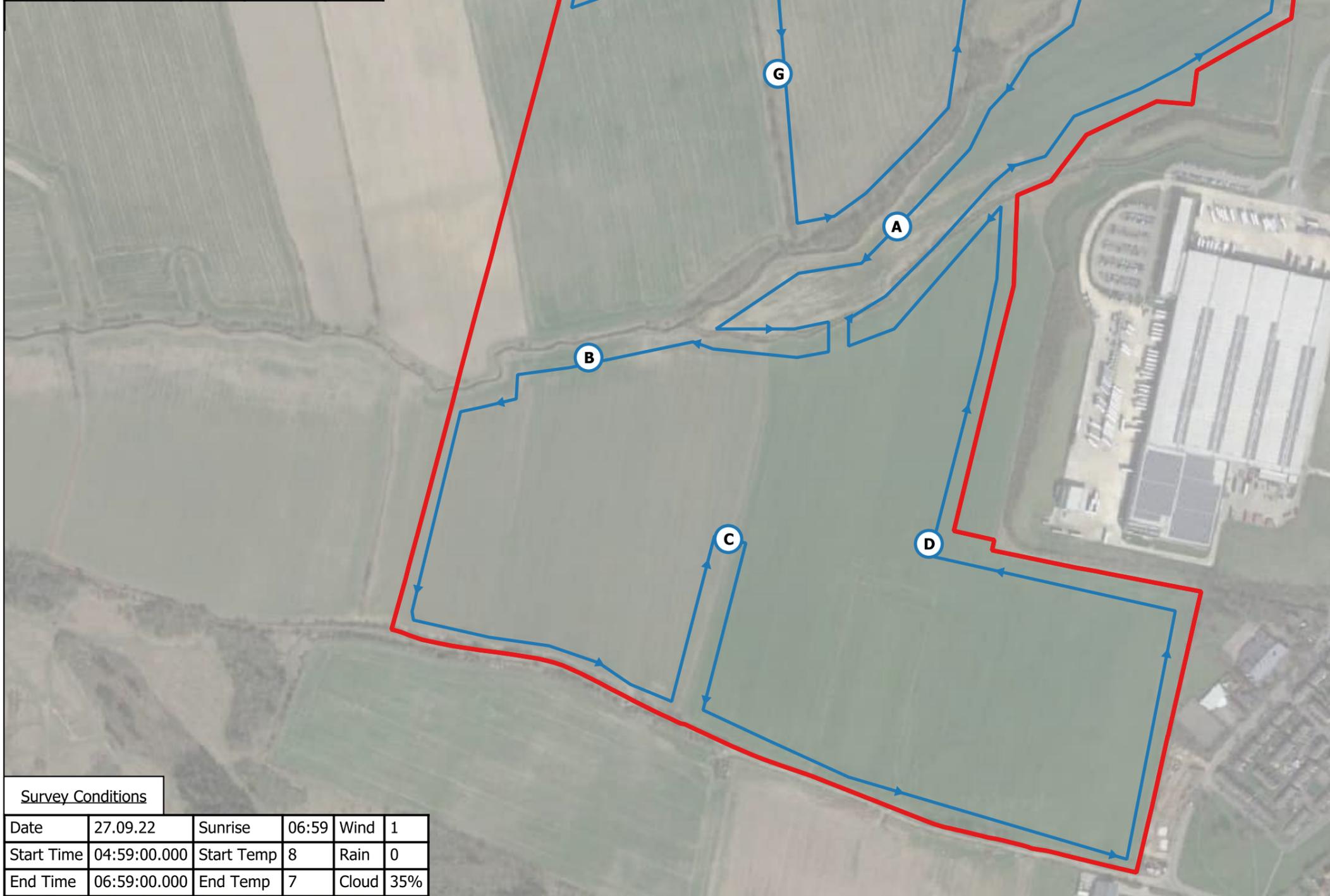
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Bat Species				
Plan ref.	Time	Species	Behaviour	Passes
PCA	05:06 - 05:11			
PCB	05:26 - 05:31			
PCC	05:43 - 05:48			
PCD	06:01 - 06:06			
PCE	06:24 - 06:29			
PCF	06:36 - 06:41			
PCG	06:41 - 06:52			

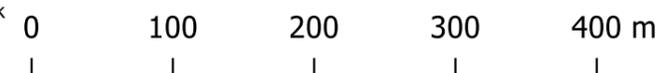


Survey Conditions					
Date	27.09.22	Sunrise	06:59	Wind	1
Start Time	04:59:00.000	Start Temp	8	Rain	0
End Time	06:59:00.000	End Temp	7	Cloud	35%

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- Key:**
- Site Boundary
 - S Start point
 - F Finish point
 - A Point Count (with ref.)
 - Transect Route
 - - - - -> Flight Path



client
Newlands Development

project
Barnsley Road, Goldthorpe

drawing title
BAT TRANSECT PLAN (27.09.2022)

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16/11/2022

drawing / figure number
Figure 8

rev
-

Bat Species

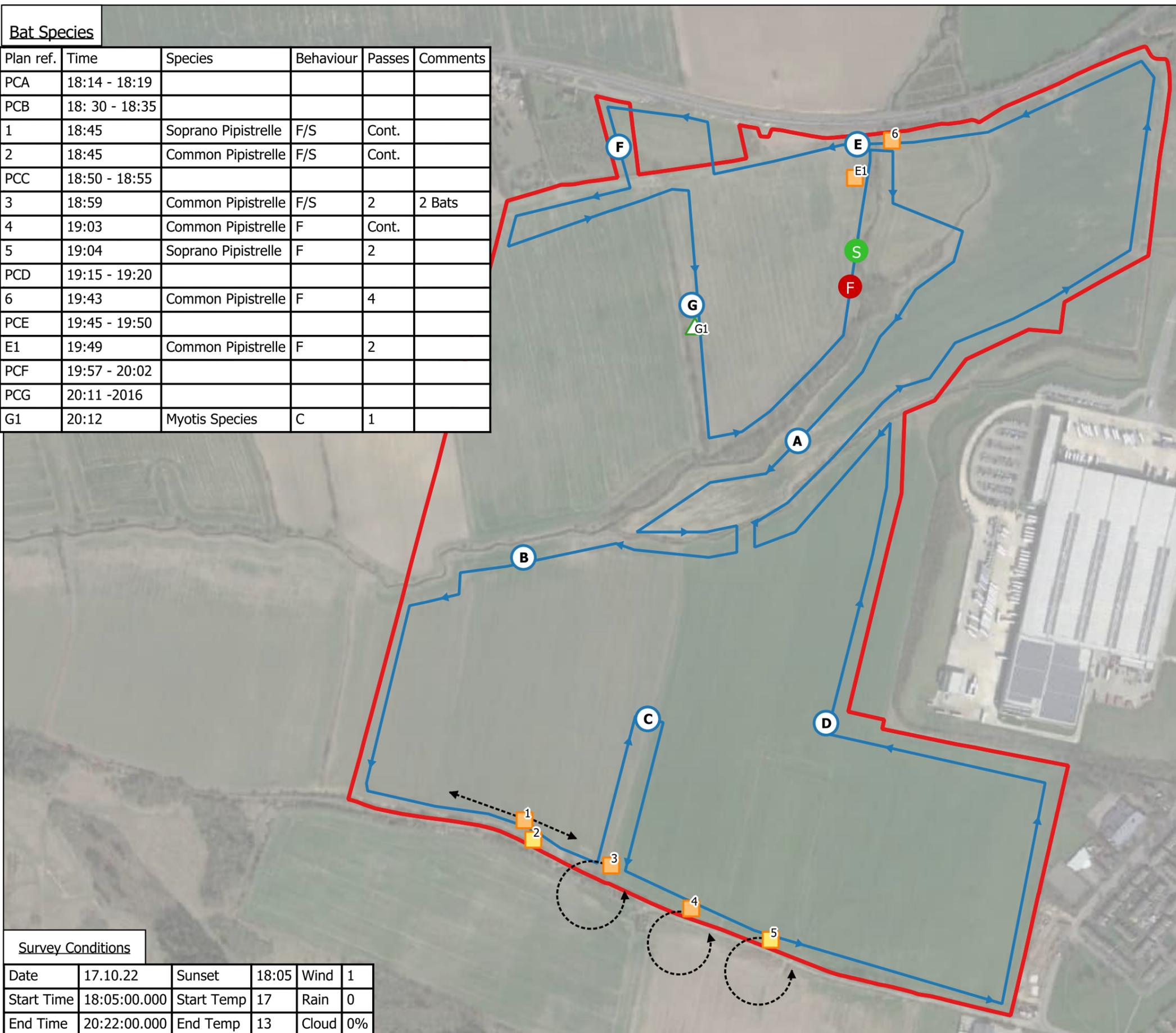
Plan ref.	Time	Species	Behaviour	Passes	Comments
PCA	18:14 - 18:19				
PCB	18:30 - 18:35				
1	18:45	Soprano Pipistrelle	F/S	Cont.	
2	18:45	Common Pipistrelle	F/S	Cont.	
PCC	18:50 - 18:55				
3	18:59	Common Pipistrelle	F/S	2	2 Bats
4	19:03	Common Pipistrelle	F	Cont.	
5	19:04	Soprano Pipistrelle	F	2	
PCD	19:15 - 19:20				
6	19:43	Common Pipistrelle	F	4	
PCE	19:45 - 19:50				
E1	19:49	Common Pipistrelle	F	2	
PCF	19:57 - 20:02				
PCG	20:11 -2016				
G1	20:12	Myotis Species	C	1	

Survey Conditions

Date	17.10.22	Sunset	18:05	Wind	1
Start Time	18:05:00.000	Start Temp	17	Rain	0
End Time	20:22:00.000	End Temp	13	Cloud	0%

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Key:

- Site Boundary
- S Start point
- F Finish point
- O Point Count (with ref.)
- Transect Route
- - - - - Flight Path

Bat Species (contacts)

- Common Pipistrelle
- Soprano Pipistrelle
- △ Myotis Species

client
Newlands Development

project
Barnsley Road, Goldthorpe

drawing title
BAT TRANSECT PLAN (17.10.2022)

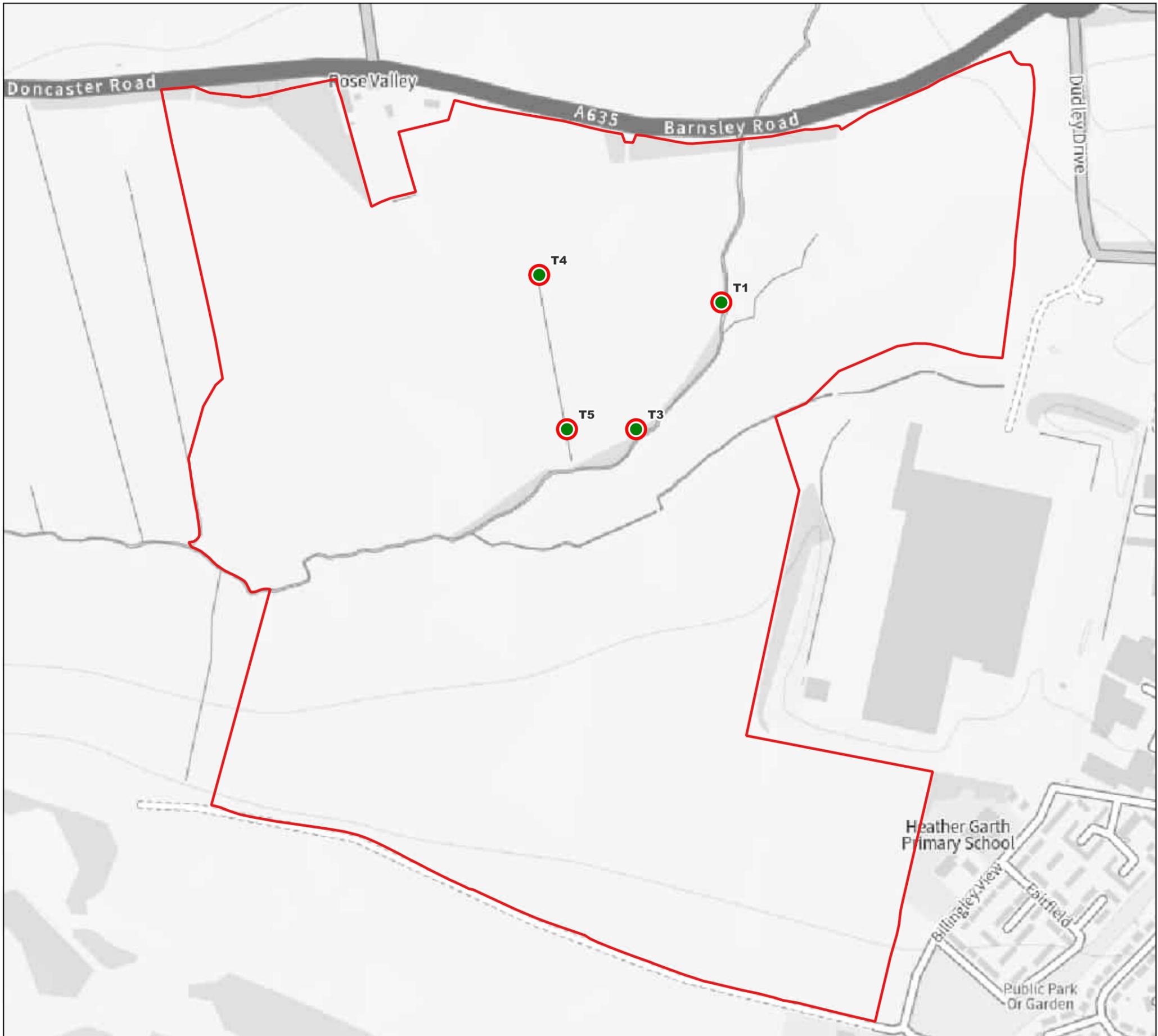
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Figure 9

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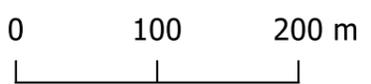


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Key

- Red Line Boundary
- Tree with bat potential



client
Newlands Developments

project
Barnsley Road.
Goldthorpe

drawing title
Tree Location Plan

scale @ A3
1:5000

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HEJ / PRA

issue date
17/4/2023

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Figure 10

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-