



Appendix 13.1

Bat Survey Report

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APPENDIX 13.1: BAT SURVEY REPORT

Client

Bloor Homes & Pigeon

Project

**North Hemel Hempstead,
Hertfordshire**

Date

November 2025

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Rev	Issue Status	Prepared/Date	Approved/Date
-	Final	REM / 22.09.25	OGJ / 12.10.25

1.0 NON-TECHNICAL SUMMARY

Report Scope and Methodology
FPCR were commissioned by Bloor Homes & Pigeon to undertake bat surveys at land north of Hemel Hempstead, to provide an ecological baseline for the application site and determine bat activity onsite. Bat activity surveys were carried out in 2023 in accordance with the best practice guidelines current at that time. In 2025, an assessment of all trees across the Site was undertaken to evaluate their potential to support roosting bats. Aerial inspections and nocturnal surveys were carried out to assess potential roost features and to search for evidence of bat presence or use.
Ecological Baseline
A total of 53 trees onsite were assessed as having some potential to support roosting bats, with 34 trees having the potential to be impacted by the proposals. Further aerial assessments and nocturnal surveys did not identify any active roosts. The automated static and transect surveys recorded mostly common and widespread species, with the majority of registrations comprising of common pipistrelles. Low numbers of the Annex II species, barbastelle, was recorded during the static surveys.
Assessment of Impacts
Two trees with the potential to support roosting bats will be lost as part of the proposals, and many others have the potential to be impacted by light spill from the development, however none of the trees had active roosts. The loss of arable land and species-poor grassland will have a negligible effect on the bats utilising the Site due to their low value as foraging resources, as evidenced by the low levels of bat activity observed in these habitats. A small area of woodland will be lost to create access into the Site and a number of hedgerows will be punched through to create access between different development parcels. This will decrease foraging habitat present and potentially impact commuting routes. Hedgerow planting throughout the development will maintain connectivity through the Site, whilst creation of species-rich grassland, woodland and scrub in the SANG will provide high quality foraging habitats for bats
Recommended Mitigation, Compensation and Enhancement
The tree to be lost that is safe to climb will require a pre-felling climb to confirm there are no roosting bats present, whilst the tree to be lost that is unsafe to climb should be soft-felled. Update tree surveys will be required if works are not undertaken within 2 years of the surveys. A lighting scheme should be recommended that will aim to maintain suitability of hedgerows and trees that act as commuting routes and possible roosts.

2.0 INTRODUCTION

- 2.1 The following Bat Survey Report has been prepared by FPCR Environment and Design Ltd. on behalf of Bloor Homes & Pigeon, to support an outline planning application for the redevelopment of the Land at Hemel Hempstead, Hertfordshire (Central OS Grid Ref: TL 08435 10789) herein referred to as 'the Site'.
- 2.2 A suite of ecological surveys has been undertaken on the Site to inform the Biodiversity Chapter of an Environmental Statement (ES) which has been prepared to support the application. This reptile report has been prepared to support this ES, and it should therefore be read in conjunction with the Biodiversity Chapter (*Chapter 13*).
- 2.3 When planning the survey program surveying the Site, it was split into two separate parcels, divided by Little Revel End Lane. As a result, surveys on these two areas sometimes occurred at different times and different dates. Where relevant, these two areas of land will be referred to as the "southern parcel" and "northern parcel".

Site Location and Context

- 2.4 The Site is located to the north and east of Hemel Hempstead. It comprises a series of agricultural field compartments that are generally large and open. Where they are present, field boundaries comprise hedgerows or woodland. Other habitats onsite comprise species-poor grassland in the south-east of the Site, a pond and small areas of scrub.
- 2.5 The surrounding landscape to the north, east and west is composed largely of agricultural and pastoral land with small pockets of woodland interspersed throughout. The M1 motorway lies approximately 0.5km east of the Site, with the village of Redbourn beyond. To the south and west of the Site, the landscape comprises the urban environs of Woodhall farm in the north-east of Hemel Hempstead.

Report Aims and Objectives

- 2.6 The report has been prepared to achieve the following objectives:
- Summarise the survey and assessment methodologies employed to assess the importance of the Site for reptile species
 - Provide the desk study records of reptiles within a 2km radius of the site
 - Provide the results of a presence/absence survey for reptiles undertaken onsite in 2023
 - Assess the likelihood of reptiles being present onsite and a population size estimate
 - Provide recommendations for avoidance, mitigation, compensation and/or enhancement in accordance with the WCA legislation and the NPPF mitigation hierarchy where required.

3.0 LEGISLATION

- 3.1 All bats and their roosts are afforded 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.
- 3.2 Under Regulation 43 of the Conservation of Habitats and Species Regulations 2017 (as amended) it is an offence to deliberately capture, injure or kill; deliberately disturb (including intentionally or recklessly) all UK bat species. This includes disturbance which impairs their ability to: breed and rear young; migrate; and hibernate; or affects their local distribution and abundance.
- 3.3 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; and/or
 - Recklessly or intentionally disturb any such animal while it is occupying a structure or place which it uses for shelter or protection.
- 3.4 Foraging habitat and commuting routes used by bats are not protected as such, but impacts that could prevent bats from using a resource or commuting to or from a valued roosting site may be considered as an indirect impact on a roost or a significant disturbance effect and would therefore also need to be avoided or prevented.
- 3.5 Several bat species are listed as species of principal importance for the purpose of conserving biodiversity under the Natural Environment and Rural Communities (NERC) Act 2006. These species are Barbastelle bat, Bechstein's bat, brown long-eared bat, greater horseshoe bat, lesser horseshoe bat, noctule and soprano pipistrelle.
- 3.6 Bats are recognised in the National Planning Policy Framework (NPPF)¹ which advises that when determining planning applications, Local Planning Authorities should aim to conserve and enhance biodiversity by applying a set of principles including:
- *"If significant harm resulting from a development cannot be avoided....., adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
 - *development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity."*

¹Department for Communities and Local Government. (2019). National Planning Policy Framework. Available from: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

4.0 METHODOLOGY

Desk Study

4.1 A desk study was undertaken to collate existing information for the Site and its surroundings in relation to bat species. This included a review of:

- Biological records requested from Hertfordshire Environmental Records Centre
- Multi Agency Geographic Information for the Countryside (MAGIC) website (www.magic.defra.gov.uk); and
- Granted EPS licences for bats from <https://magic.defra.gov.uk/magicmap.aspx>
- Publicly available aerial imagery showing connectivity across the site and to the wider landscape.

4.2 Bat records were searched for at a resolution of 2km around the Site and were limited to records from within the last 20 years.

Roost Assessment

Trees

Preliminary Roost Assessment (ground level)

4.3 Preliminary Roost Assessments (PRA) were undertaken from ground level, with the aid of binoculars on 21 January 2025 by suitably experienced ecologists from FPCR. Potential Roosting Features (PRFs) (based on p.16, British Standard 8596:2015 Surveying for bats in trees and woodland, October 2015) which were sought included:

- Natural holes (e.g. knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar;
- Man-made holes (e.g. cavities that have developed from flush cuts or cavities created by branches tearing out from parent stems;
- 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); and
- Bat or bird boxes.

- 4.4 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 enhance or reduce the potential value.
- 4.5 Using professional judgement, the ground-based PRA assessment classified any trees identified based upon the presence of suitable features as set out in Bat Surveys for Professional Ecologists: Good Practice Guidelines (BCT, 2023²) in which the general bat roost potential groups are defined (refer Table 4.2 of the guidelines) and provided in *Table 1* below.

Table 1: Suitability of trees for bats

Suitability	Description
NONE	Either no potential roost features or highly unlikely to be any.
FAR	Further Assessment Required to establish if Potential Roost Features are present.
PRF	A tree with at least one Potential Roost Feature.

Aerial Inspection Surveys

- 4.6 Any trees that were categorised as Further Inspection Required (FAR) or Potential Roost Feature (PRF) were subject to further aerial inspection. This survey included a detailed inspection of trees for the presence of further PRF's and also for the level of suitability provided by PRF's.
- 4.7 The first set of aerial assessments were undertaken from 21st May to 23rd May, with any PRF-M trees having second climbs on June 23rd and third climbs on 18th August.
- 4.8 This assessment was completed by suitably experienced and accredited ecologists (2024-12528-CL18-BAT) meeting the BCT competency requirements.
- 4.9 The survey involved accessing the tree using arborists tree climbing techniques (certified to Climb Trees (J/101/2449) and Perform Aerial Rescue (A/101/2450) – Level 2 (NPTC). The climbing methodology used follows that detailed within the Arboriculture and Forestry Advisory Group (AFAG) Tree Climbing Operations Leaflet (AFAG401) and included inspecting each PRF for suitability and evidence of current or past occupation by bats using endoscopes, mirrors, torches and cameras as necessary.
- 4.10 Each PRF was then categorised as outlined in *Table 2*.

² Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London.

Table 2: Bat 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 / Actions
Negligible/ No potential	Negligible/no habitat features likely to be used by roosting bats	None.
PRF-I	A tree with one or more Potential Roosting Features that are suitable for only individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats. Examples include (but are not limited to); loose/lifted bark, shallow splits exposed to elements or upward facing holes.	No further survey is required but appropriate compensation must be provided in advance of impacts and a precautionary working method statement must be applied. ^A
PRF-M	A tree with PRF's which could support multiple bats and may therefore be used by a maternity colony. Examples include (but are not limited to); woodpecker holes, larger cavities, hollow trunks, hazard beams, etc.	Three aerial assessments ^B of PRF's by appropriately licensed/ accredited tree climbers to determine presence or likely absence of roosting bats. Surveys were undertaken between May and September (with at least two surveys between May and August and spread at least three weeks apart). ^C If roost sites are confirmed and the roost is affected by proposals a licence from Natural England will likely be required. After completion of survey work (and the presence of a bat roost is discounted), a precautionary pre-felling survey or working method statement may still be appropriate.

^A In circumstances where there are lots of trees grouped together with PRF-I then further surveys may still be appropriate.

^B Nocturnal surveys using NVA's may be appropriate if a tree or PRF cannot be sufficiently accessed or fully assessed.

^C If the initial aerial inspection was undertaken during the optimum survey period, this can count as one of the three surveys

Nocturnal Tree Surveys

- 4.11 Where trees were considered unsafe to climb but had roosting features that could be affected either directly or indirectly by the proposals, nocturnal surveys were undertaken on these trees to access roosting potential.
- 4.12 During the nocturnal surveys, surveyors were positioned so that all aspects of the features on the trees with the potential to support bats could be observed. The emergence surveys commenced at least 15 minutes prior to sunset until at least 90 minutes following sunset. The number and species of bats observed emerging or entering the trees was recorded.
- 4.13 Any notable activity patterns including commuting and/or foraging within the vicinity of the tree was recorded.
- 4.14 Echo Meter Touch® (Wildlife Acoustics, Inc.) bat detectors were utilised in conjunction with Echo Meter Touch® app. Where necessary to confirm species identification Bat calls were analysed using the Kaleidoscope Viewer® (Wildlife Acoustics, Inc.) software package.
- 4.15 All surveyors were equipped with night vision aids (NVA's) to enhance visibility of the survey area throughout the survey. NVA's were set to record for the duration of the survey, where roosting bats were observed or uncertain behaviours observed, footage was extracted, analysed and saved. A still shot of the darkest point of the survey was also extracted and saved

and are included in Appendix A. Nightfox Whisker night vision binoculars were used with an associated IR lighting for each unit.

- 4.16 All nocturnal surveys were conducted in appropriate conditions, i.e. ambient temperature exceeding 10°C and little wind and no rain, details are provided in *Table 3* below.
- 4.17 Two nocturnal surveys were conducted on T43 and T45 as they had both previously had one aerial assessment before being classified as unsafe to climb again, moving to nocturnal surveys.

Table 3: Summary of Emergence Survey Dates and Conditions

Survey Date	Trees Covered	Start / Finish	Sunset	Conditions
07/08/25	T27, T37, T42, T43, T45	20:26 to 22:41	20:41	21°C, 100% cloud cover, BF 3, no rain.
26/08/25	T27, T37, T42	19:46 to 21:31	20:01	22°C, 90% cloud cover, BF 1, no rain.
17/09/25	T27, T37, T42, T43, T45	18:57 to 19:12	20:45	18°C, 100% cloud cover, BF 2, light rain.

Bat Activity

Habitat Assessment

- 4.18 This assessment was undertaken to identify the suitability of the Site for foraging and commuting bats or areas which may be important for exhibiting various social behaviours. This was informed by the results of the initial UKHabs survey and also from information gathered in the desk study to ensure that potential effects are considered in the context of the onsite habitats within the wider area.
- 4.19 The Site was also categorised for its habitat suitability for bats, which would inform the necessary survey effort. The habitat suitability was assessed using guidance from 'Bat Surveys for Professional Ecologists: Good Practice Guidelines' (Bat Conservation Trust, 3rd Edition, 2015). Table 4.1 of those guidelines provides an outline for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape. This should be applied using professional judgement. This groups a site into five categories based on habitat suitability for foraging and commuting bats which has been further summarised in *Table 4*, below:

Table 4: Criteria for Assessing Habitat Suitability for Commuting and Foraging Bats - Based on table 4.1 (Collins, 2023)

Suitability	Potential Flight Paths and Foraging Habitat	Proposed Further Survey Requirements
None	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitats that provide continuous lines of shade/protection for flight-lines or generate/shelter insect populations available to foraging bats).	No further surveys required
Negligible	No obvious habitat features on site likely to be used as flightpaths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.	
Low	Habitat that could be used by small numbers of bats as flightpaths such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat.	Automated static detector monitoring and nighttime bat walkover surveys (flight path and transect) on a seasonal* basis.

Suitability	Potential Flight Paths and Foraging Habitat	Proposed Requirements	Further Survey
	Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.		
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for flightpaths such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.	Automated static detector monitoring on a monthly basis and nighttime bat walkover surveys (flight path and transect) on a seasonal* basis.	
High	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight-paths such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.		
*Seasonal surveys should be increased to monthly where Annex II species are expected/ detected or if significant commuting routes are identified.			

Bat Activity Surveys

- 4.20 Bat activity surveys were undertaken because the Site was considered to provide moderate suitability for bats. These surveys were undertaken to identify the value of the Site to foraging and commuting bats or areas which may be important for exhibiting various social behaviours so that the effects of the proposals can be assessed.
- 4.21 In order to inform an impact assessment, where possible the bat activity surveys aim to identify:
- The presence or absence of bats, abundance and species using the Site whilst away from the roost;
 - The usage of the habitats on the Site by bats;
 - The temporal (both seasonally and nightly) and spatial distribution of recorded bat activity on site and any associations in terms of timings or particular features;
 - Any connectivity in terms of habitats within the Site and/or the surrounding area;
 - The effect of any existing lighting on the existing bat population.

Static Monitoring

- 4.22 Static (passive) monitoring was undertaken using an automated logging system (Wildlife Acoustics Inc. Song Meter® SM4BAT FS bat detectors with SMM-U2 microphones). During the survey period, static detectors were deployed within the survey area in habitats likely to be impacted by the development and/or habitats suitable for navigational/foraging routes. Locations are shown in *Figure 1*. A variable number of static detectors were utilised a month due to the original Site boundary differing from the current boundary and so not all deployed statics being within the current Site boundary.

- 4.23 The devices were deployed for 5 consecutive nights during suitable weather conditions that were typical for the season/month of deployment and were programmed to activate 30 minutes before sunset and record continuously until 30 minutes following sunrise.
- 4.24 Static detectors were deployed during the following periods outline in *Table 5*:

Table 5: Automated Activity Survey Timings

Month	Start Date	End Date	Start Date	End Date
	Northern parcel		Southern parcel	
April	26.04.23	30.04.23	NO SURVEY	
May	24.05.23	29.05.23	24.05.23	29.05.23
June	13.06.23	18.06.23	19.06.23	24.06.23
July	24.07.23	29.07.23	23.07.23	28.06.23
August	17.08.23	22.08.23	17.08.23	22.08.23
September	21.09.23	26.09.23	25.09.23	30.09.23
October	26.10.23	31.10.23	10.10.23	15.10.23

- 4.25 Following collection, the recordings are analysed using Kaleidoscope software by experienced ecologists. Each sound file (15 seconds in length) is counted as a single bat pass or registration for each species visible in the sound file. The total number of registrations provides an indication of the relative importance of the site/detector location for bats.
- 4.26 The data from the nighttime Bat Walkover survey was analysed as soon as possible after the survey using the Kaleidoscope Viewer[®] (Wildlife Acoustics, Inc.) software package to assess the amount of bat activity on site by recording the number of bat registrations. Measurements including peak frequency, inter-pulse interval, call duration and end frequency were taken to aid in species identification. This analysis was completed by a suitably experienced ecologist (Analysts are audited internally for quality control purposes and to maintain consistent results).

Transect Surveys

- 4.27 The site was assessed as having moderate habitat suitability for bats as per BCT guidelines (2015). As such, monthly bat activity surveys were undertaken to assess which bat species were using the site.
- 4.28 The primary objective of transects was to identify foraging areas, commuting routes and species utilisation of the site. Guidance from the Bat Conservation Trust and Natural England³ indicates that effort should be applied appropriately and in a proportionate manner, having regard to the area of habitat affected and the likely direct impact on bats.
- 4.29 The transect routes were determined prior to survey to sample most areas of the site, with those areas considered to be of higher suitability for bat use being the main focus of the survey. The routes included point count stops to identify activity levels around the features of potential value to bats that are to be most affected by proposals (i.e. hedgerows, tree lines, dense scrub

³ Mitchell-Jones AJ and McLeish AP (2004). *The Bat Workers' Manual, 3rd Edition*. JNCC, Peterborough

etc). Each point count was approximately five minutes long, during which time all bat activity was recorded.

- 4.30 Dusk transects commenced at sunset and were a minimum of two hours in duration. Dawn surveys commenced two hours before sunrise and ended at sunrise (or longer if bat activity continued). 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. This information provides a general view of the bat activity present on site and identifies the key foraging area/commuting routes.
- 4.31 The surveys were undertaken by appropriately experienced/licenced ecologists from FPCR. The transect was walked at a steady pace using an Apple iPad mini with an Echo Meter Touch (Wildlife Acoustics Version 2.0.4). This software identifies and tags sound files that it suggests are bat passes; these surveys are also supplemented by written notes documenting bat activity present on site and identifying any key foraging and commuting routes.
- 4.32 Post-survey, bat calls were analysed using Wildlife Acoustics, Inc. Kaleidoscope® software package. Measurements were taken of the peak frequency, inter-pulse interval, call duration and end frequency. From this, the level of bat activity across the site in relation to the abundance of individual species foraging and commuting along habitats was assessed.
- 4.33 Eight transects were undertaken from April to October 2023 on the northern parcel and seven transects were undertaken from May-October 2023 on the southern parcel. All transects were undertaken when conditions were suitable, i.e. when the ambient air temperature exceeded 10°C and there was little wind and no rain.
- 4.1 The timings and weather conditions for the activity transects are shown in *Table 6* below.

Table 6: Activity Survey Timings and Weather Conditions

Date	Transect Type (Dusk/Dawn)	Start Time	Sunset/ Sunrise Time	Finish Time	Weather Conditions (temp °C; cloud cover %; wind; and rain)
Northern parcel					
26.04.23	Dusk	20:17	20:17	22:23	10°C, 100%, 1, 0
24.05.23	Dusk	21:01	21:01	23:27	14°C, 10%, 1, 0
12.06.23	Dusk	21:20	21:20	23:41	19°C, 30%, 0, 0
24.07.23	Dusk	21:03	21:03	23:40	13°C, 60%, 1, 0
17.08.23	Dusk	20:21	20:21	22:56	18°C, 20%, 2, 0
21.09.23	Dusk	19:07	19:07	21:41	13°C, 90%, 1, 0
22.09.23	Dawn	04:45	06:45	06:50	9°C, 80%, 1, 1
26.10.23	Dusk	17:46	17:46	19:51	11°C, 20%, 1, 1
Southern parcel					
30.05.23	Dusk	21:08	21:08	23:08	12°C, 100%, 3, 0
19.06.23	Dusk	21:24	21:24	23:24	18°C, 20%, 1, 0
24.07.23	Dusk	21:03	21:03	23:03	15°C, 60%, 1, 1
17.08.23	Dusk	20:22	20:22	22:25	19°C, 40%, 2, 0

Date	Transect Type (Dusk/Dawn)	Start Time	Sunset/ Sunrise Time	Finish Time	Weather Conditions (temp °C; cloud cover %; wind; and rain)
25.09.23	Dusk	18:54	18:54	20:58	21°C, 30%, 2, 0
26.09.23	Dawn	04:54	06:54	06:54	12°C, 100%, 1, 0
10.10.23	Dusk	18:20	18:20	20:26	17°C, 90%, 2, 0

Limitations

- 4.2 Although species identification is undertaken to as accurate a level as possible, in some cases the quality of the call is such that full species identification cannot be made. Therefore, in some cases terminology may be general and limited to genus level only (for example *Pipistrellus* species or *Myotis* species).
- 4.3 The SM4BAT-FS records sound files of up to 15 seconds in length before a new file is created. The analysis of the SM4BAT-FS files recorded can highlight the presence of more than one bat were recorded simultaneously on the same sound file. However, it is not possible to determine whether consecutive sound files have been recorded as the result of a single bat passing the detector as it commutes across the landscape or by one bat repeatedly triggering the detector as it forages in close proximity for an extended period. Therefore, each sound file is counted as a single bat register. The number of sound files recorded does, however, reflect the relative importance of the location of the detector by calculating the bat registrations per hour.
- 4.4 The lower amplitude calls made by brown long-eared bat *Plecotus auritus* and barbastelle *Barbastella barbastellus* are more difficult to detect and may not be picked up by the directional microphones. Therefore, these species may have been under-recorded during these surveys.
- 4.5 Long eared species cannot be separated using their calls, however, they are assumed to be brown long-eared bats based on the limited distribution of grey long-eared bats *Plecotus austriacus* and lack of records in the surrounding area.
- 4.6 When survey works were undertaken, the Site boundary was much larger than it now is. This means that transect and static surveys were planned to cover a wider area than the actual Site boundary. As a result, there is an irregular number of automated statics used each survey month and some of the transect results include bats that are not within the Site boundary.
- 4.7 The bat survey conducted follow the BCT 3rd edition guidelines as the new, 4th edition, guidelines were only released once the surveys had already started. To maintain consistency, the 3rd edition methods were used throughout the surveys. This methodology is still considered robust, with monthly transect surveys undertaken and a high number of automate static detectors utilised throughout the season.
- 4.8 An April transect surveys was not conducted as the work was instructed after April. All other months were covered, including the summer months with peak activity, and so this is not considered to be a constraint.

5.0 RESULTS

Desk Study

- 5.1 No statutory sites that are designated for bats were identified within 15km of the Site.
- 5.2 HERC returned 6 records of bats within 2 km of the site from the last 20 years that had a good resolution grid reference (more than 4 figures). These included three records of noctule, one soprano pipistrelle, a pipistrelle and an unknown bat species. The nearest records were from between 600-800m from the Site boundary.
- 5.3 A single record of a soprano pipistrelle and Barbastelle was returned from within the Site, located along Little Revel End Lane.
- 5.4 A large number of low resolution 2-figure grid references were also returned, which may have been within 2km of the Site or could have been up to 9km away from the Site, due to the low-resolution grid references provided. These included brown long-eared, Natterer's and Daubenton's records.
- 5.5 Many records older than 20 years were also returned, including a common and soprano pipistrelle, brown long-eared bat, noctule, Whiskered bat and Natterer's.
- 5.6 There are no bat licence records within 2km on MAGIC.

Trees

Preliminary Roost Assessment

- 5.7 A total of 53 trees were identified within the Site as having potential roosting features (PRFs) for bats during the ground-level tree assessment conducted in January 2025. Of these, 34 trees were identified as potentially being impacted by the proposed development. Details of these potentially impacted trees are summarised in *Table 7* below. Locations of trees are displayed in *Figure 1*, and a summary description of all trees identified for potential bat roosts is provided in Appendix B.

Table 7: Bat Potential Trees on Site

Tree Ref.	Tree Species	Bat Potential	Feature(s)	Further Surveys Conducted
T18	English Oak	FAR	6m branch tear out on main trunk Possible knot hole in canopy	Aerial Assessment
T19	Ash	FAR	4m knot hole on main trunk (south)	Aerial Assessment
T20	English Oak	FAR	3m knot hole on main trunk (East)	Aerial Assessment
T21	Wild Cherry	FAR	5m knot hole on main trunk (north)	Aerial Assessment
T22	English Oak	FAR	8m natural knot hole (east)	Aerial Assessment
T23	Scots Pine	FAR	3.5m 2x small knot holes on main trunk (North)	Aerial Assessment
T24	Ash	FAR	3m vertical crack and knot hole (East)	Aerial Assessment
T25	English Oak	FAR	8m Hazard Beam (south) 6m Vertical Split (south-east)	Aerial Assessment

Tree Ref.	Tree Species	Bat Potential	Feature(s)	Further Surveys Conducted
T26	Field maple	FAR	1m vertical split (south)	Aerial Assessment
T27	Ash	FAR	8m six knot holes around main crown (south) Two knot holes on branch (east)	Emergence surveys
T28	English Oak	FAR	6m two branch tear outs (south)	Aerial Assessment
T29	Sycamore	FAR	5m small knot hole (south)	Aerial Assessment
T30	Beech	FAR	6m knot hole in main trunk (south)	Aerial Assessment
T31	Sycamore	FAR	6-8m three small knot holes on trunks (east)	Aerial Assessment
T32	Sycamore	FAR	7m two knot holes, one on dead limb (west)	Aerial Assessment
T33	Sycamore	FAR	8m two small knot holes on limbs (north) 6m two small knot holes on limbs (west)	Aerial Assessment
T36	English Oak	FAR	4m knot hole (west)	Aerial Assessment
T37	English Oak	FAR	3m knot hole (south)	Emergence surveys
T38	English Oak	FAR	2m branch tear out (south-east) 4m small crack in branch (south-west)	Aerial Assessment
T39	Ash	FAR	5m crack / split (south)	Aerial Assessment
T40	English Oak	FAR	3m knot hole (south)	Aerial Assessment
T41	Ash	FAR	2m knot hole (east)	Aerial Assessment
T42	English Oak	FAR	3m partially detached platelly bark (east)	Emergence surveys
T43	English Oak	FAR	0m butt rot (north)	Emergence surveys
T44	English Oak	FAR	6m branch tear out (east)	Aerial Assessment
T45	Ash	FAR	2m branch tear out (north-east)	Aerial Assessment
T46	English Oak	FAR	5m knot hole (west)	Aerial Assessment
T48	Sycamore	FAR	0m butt rot (west)	Aerial Assessment
T49	English Oak	FAR	5m knot hole (west)	Aerial Assessment
T50	English Oak	FAR	3m knot hole (west)	Aerial Assessment
T51	English Oak	FAR	1m butt rot (west)	Aerial Assessment
T52	English Oak	FAR	3m knot hole (south)	Aerial Assessment
T53	English Oak	FAR	11m vertical crack in heartwood (north-west)	Aerial Assessment
T54	English Oak	FAR	3m knot hole (north)	Aerial Assessment

Aerial Inspection Surveys

- 5.8 Aerial assessments were carried out on each of 30 trees considered at risk and safe to climb, in accordance with the BCT guidelines. Where only PRF-I features were recorded, a single climb was undertaken, whereas PRF-M features were subject to two further climbs.

5.9 No evidence of roosting bats was recorded during the surveys; results of the aerial assessment are provided within *Table 8*.

Table 8: Aerial Assessment Results

Tree Ref.	Species	PRF	PRF Characterisation
T18	English Oak	6m branch tear (main trunk)	PRF-NEG
		8m knot hole (south-east)	PRF-NEG
T19	Ash	3m knot hole on main trunk (East)	PRF-NEG
T20	English Oak	4m knot hole on main trunk (south)	PRF-NEG
T21	Wild Cherry	5m left knot hole on trunk (north)	PRF-I
		5m right knot hole on trunk (north)	PRF-I
T22	English Oak	8m knot hole (natural) (east)	PRF-I
T23	Scots Pine	6m branch tear out x2 (south)	PRF-I
		7m branch tear out (south)	PRF-NEG
		7m branch tear out (south-east)	PRF-NEG
		8m branch tear out (north)	PRF-NEG
		Knot hole x2	PRF-NEG
T24	Ash	3m vertical crack and knot hole (East)	PRF-NEG
T25	English Oak	8m Hazard Beam (south)	PRF-I
		6m Vertical Split (south-east)	PRF-NEG
T26	Field maple	1m vertical split (south)	PRF-NEG
		1m knot hole (south)	PRF-NEG
T28	English Oak	6m branch tear out x3 (south)	PRF-NEG
T29	Sycamore	5m small knot hole (south)	PRF-NEG
T30	Beech	6m knot hole in main trunk (south)	PRF-NEG
T31	Sycamore	6-8m three small knot holes on trunks (east)	PRF-NEG
		10m knot hole x2 (north)	PRF-M
T32	Sycamore	7m knot hole x2 (west)	PRF-NEG
T33	Sycamore	6m knot holes on limb (west)	PRF-NEG
		8m knot holes on limb (north)	PRF-NEG
T36	English Oak	4m knot hole (south-west)	PRF-M
		4m knot hole (south)	PRF-I
		6m knot hole (south)	PRF-M
		8m woodpecker hole (north-west)	PRF-M
T38	English Oak	2m branch tear out (south-east)	PRF-NEG

Tree Ref.	Species	PRF	PRF Characterisation
		4m horizontal crack in branch (south-west)	PRF-NEG
T39	Ash	5m vertical crack (south)	PRF-NEG
		5m hollow limb (south-west)	PRF-I
		10m branch tear out (north-west)	PRF-NEG
		10m knot hole (south-east)	PRF-M
T40	English Oak	3m knot hole (south)	PRF-I
		4m branch tear (south)	PRF-NEG
		5m knot hole (south)	PRF-I
		7m branch tear out (south)	PRF-I
		7m knot hole (north)	PRF-I
		7m woodpecker hole (south)	PRF-M
T41	Ash	2m knot hole (east)	PRF-I
T44	English Oak	6m branch tear out (east)	PRF-NEG
T45	Ash	2m branch tear out (north-east)	PRF-NEG
T46	English Oak	5m knot hole (west)	PRF-NEG
T48	Sycamore	0m butt rot (west)	PRF-NEG
T49	English Oak	5m knot hole (west)	PRF-I
		5m large branch tear out (north)	PRF-NEG
		5m branch tear out (north-west)	PRF-NEG
		7m branch tear out (south)	PRF-NEG
T50	English Oak	3m knot hole (west)	PRF-M
		3m branch tear out (west)	PRF-M
T51	English Oak	1m butt rot (west)	PRF-NEG
T52	English Oak	2m branch tear out (south)	PRF-I
		3m knot hole (south)	PRF-NEG
		7m knot hole (south)	PRF-NEG
		9m branch tear out (north)	PRF-NEG
T53	English Oak	11m vertical crack in heartwood (north-west)	PRF-M
T54	English Oak	3m knot hole (north)	PRF-I

Nocturnal Tree Surveys

- 5.10 Tree nocturnal surveys were carried out on five trees – T27, T37, T42, T43 & T45.
- 5.11 Three nocturnals were carried out on T27, T37 & T42. Two nocturnals were carried out on T43 & T45 after being deemed unsafe to continue climbing following the initial aerial assessment, they therefore had one climb and two nocturnal surveys.

- 5.12 No bats were recorded emerging from any of the five trees surveyed during any of the survey occasions and so it can be assumed that the trees are not used by roosting bats currently.

Bat Activity Surveys

Night-time Bat Walkover Surveys

- 5.13 During the bat activity surveys, activity was generally low, with common and widespread species dominating and common pipistrelle comprising the majority of contacts (89.7%). Both the April transect and September dawn transects for the northern parcel recorded no bats, whilst the June survey recorded the greatest activity with a total of 30 bat contacts. The southern parcel recorded bats on all transects, with a peak of 30 contacts during the May visit (all comprising common pipistrelle bats). Activity comprised a mixture of both commuting and foraging bats.
- 5.14 Low numbers of soprano pipistrelle, noctule, Myotis species, Nyctalus species and brown long-eared were recorded infrequently across the transects, with generally only one or two contacts on a survey occasion.
- 5.15 Two barbastelle contacts were recorded on the October survey to the very south of the Site along the western Site boundary. These individuals were likely commuting and foraging along this boundary whilst travelling to better quality foraging habitat elsewhere offsite.
- 5.16 Table 9 and 10 provides a summary of the survey results.

Table 9: Bat Transect Survey Summary – Northern parcel

Date (Figure Ref.)	Total Contacts on Site	Activity Summary
26.04.23 (Figure 2)	No contacts	No bats were recorded during this survey.
24.05.23 (Figure 3 & 4)	16 14 common pipistrelle 1 soprano pipistrelle 1 myotis	- The majority of contacts were from common pipistrelle bats, most of which were commuting rather than foraging. - Activity was focused towards the north of the Site, with most activity in the two northern most field boundaries. - A single myotis species was recorded commuting at point count E and a foraging soprano pipistrelle at point count G.
12.06.23 (Figure 6 & 7)	30 27 common pipistrelle 1 Nyctalus species 1 Myotis species 1 soprano pipistrelle	- The majority of contacts were from common pipistrelle bats, most of which were commuting rather than foraging. - Activity was distributed relatively evenly throughout the hedgerows and boundary habitats on the Site. - The single Nyctalus species was recorded commuting along a hedgerow in the north of the Site and the Myotis species was commuting along the southern boundary.
24.07.23 (Figure 9 & 10)	19 18 common pipistrelle 1 soprano pipistrelle	- The majority of contacts were from common pipistrelle bats, with a mixture of foraging and commuting individuals. - A single soprano pipistrelle was recorded commuting along the western Site boundary. - Activity was distributed relatively evenly throughout the hedgerows and boundary habitats on the Site.
17.08.23 (Figure 12 & 13)	20 16 common pipistrelle 3 soprano pipistrelle 1 noctule	- The majority of contacts were from common pipistrelle bats, with most of them recorded commuting through the Site. - Three single soprano pipistrelle were recorded commuting through the Site, all towards the south.

Date (Figure Ref.)	Total Contacts on Site	Activity Summary
		- A single noctule was recorded commuting to the north of the Site. - Activity was distributed relatively evenly throughout the hedgerows and boundary habitats on the Site.
21.09.23 (Figure 15 & 16)	5 5 common pipistrelle	- All contacts were from commuting common pipistrelles, most of which were located more to the north of the Site. - Activity was very low on this survey occasion.
22.09.23 - dawn (Figure 18 & 19)	No contacts	No bats were recorded during this survey.
26.10.23 (Figure 21 & 22)	5 4 common pipistrelle 1 noctule	- The majority of contacts were from common pipistrelles with two recorded commuting, one foraging and one producing social calls. - Most activity was focused along the western Site boundary, including the single commuting noctule.

Table 10: Bat Transect Survey Summary – Southern parcel

Date (Figure Ref.)	Total Contacts on Site	Activity Summary
30.05.23 (Figure 5)	30 30 common pipistrelle	- Activity was well distributed throughout the Site, with a lack of activity along the southern boundary with Redbourn Road. - All activity recorded was from common pipistrelle with a mixture of foraging and commuting bats. - All bats recorded along the central hedgerow (running north to south) were foraging.
19.06.23 (Figure 8)	13 10 common pipistrelle 1 soprano pipistrelle 1 Noctule 1 Myotis	- The majority of activity comprised of commuting common pipistrelle. - Activity was mostly restricted to the centre of the Site, with five bats recorded along the central hedgerow. - The single soprano pipistrelle was recorded commuting along the central hedgerow whilst the Myotis species was recorded commuting along the western boundary and the noctule commuting along a hedgerow within the north of the Site.
24.07.23 (Figure 11)	15 14 common pipistrelle 1 noctule	- Activity was well distributed throughout the Site, little activity along the southern boundary with Redbourn Road. - Most activity was from common pipistrelle, with a mix of foraging and commuting bats. - A single noctule was recorded commuting along the northern hedgerow.
17.08.23 (Figure 14)	18 15 common pipistrelle 1 brown long-eared 1 soprano pipistrelle 1 noctule	- Activity was focused towards the east with only one common pipistrelle recorded on the western boundary. - The majority of activity was from foraging common pipistrelles. - A single noctule and brown long-eared were recorded commuting towards the north at point count G. - Up to three common pipistrelles were recorded foraging along the central hedgerow (running north to south).
25.09.23 (Figure 17)	15 14 common pipistrelle 1 noctule	- Activity was well distributed throughout the Site, with infrequent activity along the southern boundary with Redbourn Road. - Most activity was from common pipistrelle, with a mix of foraging and commuting bats. - A single noctule was recorded along the western Site boundary.
26.09.23 - dawn (Figure 20)	1 1 common pipistrelle	Activity was very limited, with a single common pipistrelle recorded commuting along the western Site boundary.

Date (Figure Ref.)	Total Contacts on Site	Activity Summary
10.10.23 (Figure 23)	17 15 common pipistrelle 2 Barbastelle	- Activity was well distributed throughout the Site, with no activity along the southern boundary with Redbourn Road. - Most activity was from common pipistrelle, with a mix of foraging and commuting bats. - Two barbastelle were recorded commuting and foraging along the western Site boundary.

Static Monitoring

- 5.17 Monthly automated surveys from April to October 2023 recorded 12 bat species/groups across 26 statics and a total of 39,028 registrations:
- Common pipistrelle – 93.99%
 - Barbastelle – 1.81%
 - Soprano pipistrelle – 1.79%
 - Pipistrelle sp. – 0.63%
 - Noctule – 0.49%
 - Myotis – 0.42%
 - Nyctalus sp. – 0.38%
 - Brown long-eared – 0.35%
 - Serotine – 0.05%
 - Nyctalus / Eptesicus – 0.03%
 - Leisler's – 0.03%
 - Nathusius' pipistrelle – 0.02%
- 5.18 *Table 11* provides a summary of the automated detector survey results and *Figure 25* shows the locations of all the statics.
- 5.19 An additional two static bat detectors were placed within the Site boundary by Ramboll Ecology (in August and October 2024) on the land to the south of Redbourn Road. The results of these are also included within *Table 11* and are consistent with what was recorded during the 2023 surveys north of Redbourn Road.
- 5.20 Registrations predominately consisted of common pipistrelle, a common and widespread species, with the other species / species groups recorded much less frequently and not always on all the statics.
- 5.21 There were generally low levels of activity, demonstrating that the Site is of no more than local importance for bats, with relatively small numbers of commuting and foraging bats. Peak activity occurred at statics E and J which were located near Little Revel End Lane and in the north of the Site, respectively, both of which were located near the join of two or more hedgerows with surrounding arable habitat.
- 5.22 Lowest levels of activity were recorded on statics A, D, V, X, Y and Z. The low levels of activity recorded on A, X, Y and Z may be explained by the statics being deployed in April and October (months with generally less activity) rather than the locations having less activity all

throughout the year. Statics D and V were located on the north-eastern boundary and south-eastern boundary, respectively, along hedgerows.

- 5.23 Low numbers of barbastelle registrations were recorded during the static surveys, with the number usually varying between approximately 10 and 60 registrations on a static. Barbastelle registrations consisted of a total of 1.81% registrations overall. A peak of 124 Barbastelle were also recorded on static EH1 along the hedgerow south of Redbourn Road.
- 5.24 A peak of 261 registrations was recorded on a static in August, which comprises over 36% of all barbastelle registrations recorded and likely comprises of a small number of foraging bats. This static was located along hedgerow H23 which is a mature, well-connected hedgerow.

Table 11: Automated Detector Results Summary

Dates	Unit Reference (Figure 1)	Total Registrations	Species & Registration Count	
26 th April – 1 st May 2023	A	175	C pip – 160 Barb – 9 Myo – 6	
24 th – 29 th May 2023	B	2139	C pip – 2106 Myo – 10 S pip – 16	Nyc – 4 BLE – 2 Barb – 1
	C	2633	C pip – 2603 S pip – 21	Myo – 6 Nyc – 3
	D	63	C pip – 60 S pip – 1	Myo – 1 Nyc / Ept – 1
	E	6050	C pip – 5976 S pip – 51 Barb – 11	BLE – 6 Myo – 3 Noc – 3
	F	3129	C pip – 3092 S pip – 14 Noc – 13 Myo – 6	BLE – 6 Barb – 2 N pip – 1 Nyc – 1
19 th – 24 th June 2023	G	1183	C pip – 1155 Nyc – 24 S pip – 13 BLE – 10	Myo – 2 Noc – 1 N pip – 1 Barb – 1
	H	717	C pip – 709 S pip – 5 Nyc – 1	Myo – 1 Lei – 1
	I	2785	C pip – 2711 Barb – 40 S pip – 25 BLE – 4	Nyc – 2 Myo – 2 Nyc / Ept – 1
	J	5221	C pip – 5047 Barb – 69 S pip – 63 Myo – 35	Nyc – 3 BLE – 3 Nyc / Ept – 1
24 th – 29 th July 2023	K	2355	C pip – 2242 Nyc – 50 S pip – 24 BLE – 14 Barb – 9	Noc – 7 Myo – 5 Pip – 3 Sero – 1
	L	661	S pip – 332 C pip – 327	Myo – 1 Nyc – 1
	M	673	C pip – 653 BLE – 12 Myo – 4	S pip – 2 Nyc / Ept – 1 Noc – 1
	N	1962	C pip – 1912 S pip – 27 BLE – 10	Noc – 9 Nyc / Ept – 2 Sero – 2

Dates	Unit Reference (Figure 1)	Total Registrations	Species & Registration Count
	O	708	C pip – 702 Nyc / Ept – 2 BLE – 2 Noc – 1 Myo – 1
17 th – 22 nd August 2023	P	2439	C pip – 2267 S pip – 65 Barb – 33 Myo – 24 Nyc – 15 Noc – 11 Pip – 6 BLE – 6 N pip – 2 Lei – 2 Sero – 2
	Q	209	C pip – 161 Noc – 12 Barb – 11 Myo – 8 Nyc – 7 S pip – 5 BLE – 4 Lei – 1
	R	1353	C pip – 1031 Barb – 261 Myo – 8 Nyc – 7 S pip – 5 BLE – 4 Lei – 1
	S	313	C pip – 235 BLE – 26 Myo – 17 S pip – 10 Barb – 9 Nyc – 6 Noc – 4 Sero – 4 N pip – 1 Nyc / Ept – 1
17 th – 22 nd September 2023	T	399	C pip – 299 Barb – 85 Myo – 7 S pip – 5 Nyc – 1 Noc – 1 BLE – 1
	U	2106	C pip – 1968 Barb – 100 S pip – 13 Myo – 8 BLE – 7 Pip – 3 Nyc – 3 Noc – 2 N pip – 1 Lei – 2
	V	134	C pip – 106 Noc – 13 Nyc – 6 Barb – 6 S Pip – 1 BLE – 1 N pip – 1
	W	1456	C pip – 1017 Pip – 233 Noc – 75 Barb – 51 Nyc – 47 Myo – 11 BLE – 7 Lei – 5 Sero – 4 N pip – 2 Nyc / Ept – 2
26 th – 31 st October 2023	X	28	C pip – 18 Barb – 6 Myo – 1 BLE – 1 S pip – 1 Nyc – 1
	Y	79	C pip – 76 BLE – 2 Myo – 1
	Z	175	C pip – 160 Barb – 9 Myo – 6
August 2024	EH	254	C pip – 233 S pip – 8 Myo – 7 Lei – 6
October 2024		1634	C pip – 1367 Barb – 124 S pip – 57 Noc – 37 BLE – 16 Lei – 15 Sero – 12 Myo – 6

Key: Barb = Barbastelle, BLE = brown long-eared bat, C pip = common pipstrelle, Lei = Leslier's, Myo = Myotis species, Noc = noctule, N pip = Nathusius' pipistrelle, Nyc = Nyctalus species, Nyc / Ept = Ncytalus / Eptesicus species, Pip = pipistrelle species, Sero = serotine, S pip = soprano pipistrelle.

6.0 DISCUSSION AND RECOMMENDATIONS

- 6.1 The common and widespread bat species and relatively low levels of activity recorded onsite reflect the low value of the habitats for bats at the Site. Most foraging and commuting behaviour was recorded along the hedgerows and woodland edge habitat, which will mostly be retained within the proposals.
- 6.2 The proposals include the loss of the various arable habitats within the Site boundary and the loss of the small area of species-poor grassland habitat along the western boundary. Some sections of hedgerow, and a small section of woodland, will also be lost to create vehicular access into the Site and between different development parcels.
- 6.3 The proposals also include extensive areas of habitat creation and enhancement including areas of species-rich grassland are to be created as part of the SANG and Community Park along with scrub, woodland planting and ponds.
- 6.4 Barbastelle were recorded sporadically across activity surveys in low numbers. This species will roam large distances and will roam up to 20km between feeding Sites and so they can be regularly picked up. The Site is moderately well connected to small pockets of ancient woodland in the surrounding landscape, which is likely where these barbastelles are travelling from. The small number of registrations recorded from this species are not consistent with the level that would be expected were the Site to provide an important commuting corridor between foraging sites or for it to provide important foraging habitat for this species and the Site is therefore not considered to be of importance for Barbastelle bats.

Impact Assessment

- 6.5 There will be a small loss of woodland to facilitate access into the Site along the western Site boundary with Hertsmere End Lane. Two trees within this section supporting PRF-Is (T41 and T42) will require removal to facilitate this access. From the surveys undertaken it was demonstrated that neither of these trees support a roost and so their loss is not considered to pose a constraint to proposals.
- 6.6 A variety of trees with PRF-I or PRF-M have the potential to be impacted by light spill from the development. This has the potential to disrupt roosting bats and to cause these trees not to be utilised by bats.
- 6.7 During construction, there is a risk of accidental damage and / or pruning of retained trees and hedgerows.
- 6.8 This loss of a small area of woodland will lead to a small loss of foraging habitat for bats. However, most of the woodland habitat is to be retained and will continue to provide good foraging habitat, as well as woodland planting within the SANG. Therefore, the loss of woodland will not have a significantly detrimental impact on bats. Loss of this small area of woodland will also lead to fragmentation of the woodland block. However, the woodland either side of the road will continue to serve its function and so fragmentation impacts are unlikely to be significant.
- 6.9 A number of hedgerows within the Site have the potential to be impacted by light spill from the development which would decrease the suitability of them for bats. Statics E and J which were located near Little Revel End Lane and in the north of the Site, respectively, had the greatest bat activity. The hedgerow where static J was located is likely to be impacted by light spill. The

hedgerows in which these statics were located are likely good foraging areas for bat species and so light spill has the potential to have a significant impact.

- 6.10 The static with the peak Barbastelle activity was located along hedgerow H23 which lies within the proposed SANG and so will be retained and buffered, retaining a dark corridor and maintaining this foraging habitat.
- 6.11 Small gaps will also be created in a number of hedgerows throughout the Site to create access routes between development parcels. This has the potential to disrupt commuting routes due to the fragmentation.
- 6.12 The arable habitat and species-poor grassland in the Site will be lost as part of the proposals. These are both low quality habitats for bats, with limited foraging resources, and so will have a very limited impact on the bat populations onsite. Some of the arable habitat in the east of the Site is to be lost to create better quality habitats within the SANG which will include species-rich grassland and scrub. The creation of species-rich grasslands and ponds will provide better foraging opportunities, whilst the creation of more woodland and scrub will improve connectivity throughout the SANG and into the wider landscape.

Mitigation

- 6.13 A sensitive lighting strategy will be implemented across the development to minimise impacts on bats and other wildlife. Best practice measures^{4,5} include:
- The avoidance of unnecessary lighting and direct lighting on boundary habitats.
 - Minimising light spill with the use of directional lighting.
 - Restricting the height of light columns to reduce horizontal spill.
 - Installing low wattage LED security lighting on timers on properties close to green infrastructure during construction to avoid future homeowners installing unsuitable lighting for bats.
 - Maintaining "dark corridors" between roosting and foraging habitats.
- 6.14 Where hedgerows are to be impacted and cut through for the creation of access, 'hop-overs' should be created to help maintain the integrity of the hedgerows as commuting routes for bats.
- 6.15 Hedgerows near the Development footprint that support high bat activity should be maintained as dark corridors to avoid any impacts from light spill and to help maintain the hedgerows as suitable commuting routes and foraging habitat.
- 6.16 To avoid accidental damage to trees, hedgerows and woodland, appropriate fencing should be utilised, in line with Arboriculturist recommendations,.
- 6.17 Two trees, T41 and T42 are to be removed. T42 is not safe to climb and so will need to be soft-felled, whilst T41 will require a pre-felling climb to check for any roosting bats within the features. Any other trees that require removal will also need to be soft-felled. If works are not undertaken within 2 years of these surveys, update surveys will be required.

⁴ Institute of Lighting Professionals (2021) *Guidance Note 01/21 The Reduction of Obtrusive Light*. ILP, Warwickshire.

⁵ Institute of Lighting Professionals (2023) *Guidance Note 8 Bats and Artificial Lighting*. ILP, Bat Conservation Trust, London.

Enhancements

- 6.18 The development should seek to provide further roosting opportunities for the local bat population by installing bat boxes on existing mature trees across the Site, as well as incorporating bat tubes into the built fabric of residential dwellings. Bat boxes and bricks should be arranged around the development close to green infrastructure and on different aspects, to facilitate choice of a variety of alternative roost sites.
- 6.19 The inclusion of SuDS within the Site and improved management of woodland strips and hedgerows onsite will provide further foraging opportunities for bat species onsite.

Conclusion

- 6.20 Surveys have demonstrated that there are low levels of bat activity on Site, with the Annex II species, Barbastelle, recorded. A number of trees with potential roost features were recorded within the Site boundary, but surveys confirmed that no bats were utilising these features.
- 6.21 The proposed development will result in the loss of small sections of hedgerow and woodland which has the potential to impact bats through fragmentation of habitat and disrupting commuting routes.
- 6.22 Light spill from the development has the potential to impact on commuting routes and foraging habitat.
- 6.23 Loss of the arable habitat within the Site boundary is not considered to impact the assemblage of bats as this habitat is of low-value in terms of foraging and commuting.
- 6.24 A sensitive lighting strategy will be provided to reduce light-spill.
- 6.25 The proposed green infrastructure includes the creation of species-rich grassland, scrub, woodland planting and pond creation, much of which will be focused within the proposed SANG. This will provide improved foraging resources for bats and improve connectivity within the Site and to the wider landscape.

FPCR Environment and Design Ltd

Registered Office: Lockington Hall, Lockington, Derby DE74 2RH
Company No. 07128076. [T] 01509 672772 [E] mail@fpcr.co.uk [W] www.fpcr.co.uk

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APPENDIX A: SCREENSHOTS FROM NVA

The following images show a screenshot recorded by each of the Night Vision Aids (NVA's) used taken at the darkest point during the emergence surveys.

T27

Survey Date	Darkest point image
07.08.25	 A night vision image showing a tree trunk and dense foliage. The image is grainy and high-contrast, typical of night vision. A timestamp in the bottom right corner reads "08/07/2025 22:12:44".
07.08.25	 A night vision image showing a tree trunk and dense foliage. The image is grainy and high-contrast, typical of night vision. A timestamp in the bottom left corner reads "08/07/2025 22:13:22".

Survey Date	Darkest point image
26.08.25	
17.09.25	

T37

Survey Date	Darkest point image
07.08.25	 A nighttime photograph of a tree with a timestamp '08/07/2025 22:11:28' in the bottom left corner. The tree is illuminated by a light source, possibly a bat detector, against a dark background. The tree has a thick trunk and several bare branches. The foliage is dense and appears bright white.
26.08.25	 A nighttime photograph of a tree with a timestamp '08/07/2025 21:31:19' in the bottom left corner. The tree is illuminated by a light source, possibly a bat detector, against a dark background. The tree has a thick trunk and several bare branches. The foliage is dense and appears bright white.

Survey Date	Darkest point image
17.09.25	

T42

Survey Date	Darkest point image
07.08.25	
26.08.25	No image

Survey Date	Darkest point image
17.09.25	

T43

Survey Date	Darkest point image
07.08.25	
17.09.25	

T45

Survey Date	Darkest point image
07.08.25	 An infrared photograph of a tree trunk. A bat is visible in a hollow or crevice of the tree. The image is oriented vertically. A yellow timestamp '04-08-2025 22:12:58' is visible in the bottom left corner of the image.
17.09.25	 An infrared photograph of a tree trunk. A bat is visible in a hollow or crevice of the tree. The image is oriented vertically. A yellow timestamp '04-09-2025 20:15:45' is visible in the bottom left corner of the image.

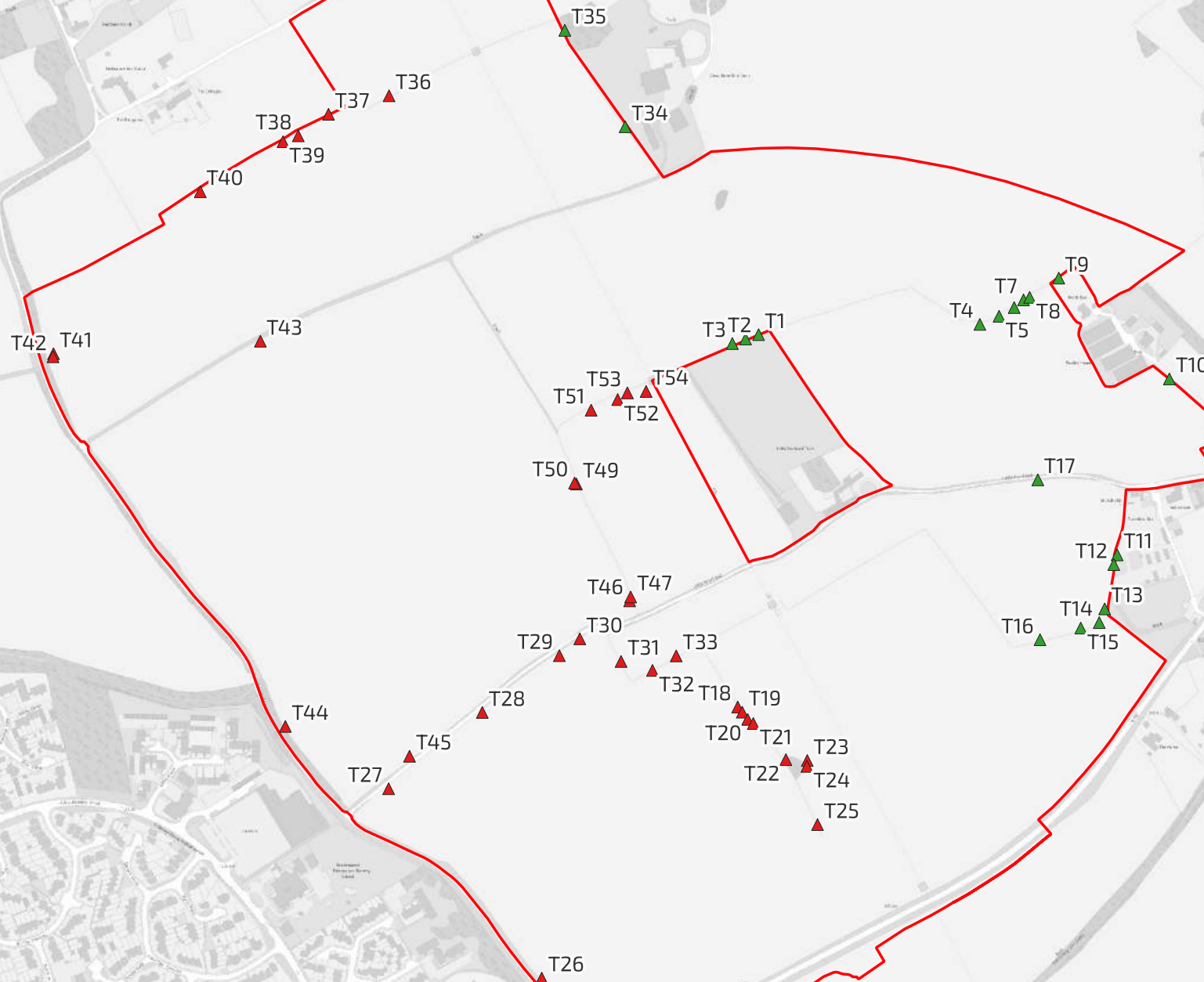
Legend

 Redline Boundary

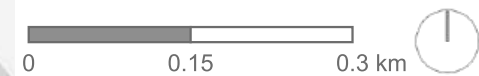
Trees with potential to support bats

 No further surveys (no impacts)

 Surveyed (potential impacts)



**North Hemel Hempstead / Figure 1 -
Locations of trees with potential to
support roosting bats**



Date: November 2025

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DE74 2RH

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West Transect	
Ref.	Time
Start	20:17
PCA	20:22-20:27
PC B	20:36-20:41
PC C	20:58-21:03
PC D	21:14-21:19
PC E	21:28-21:33
PC F	21:41-21:46
PC G	21:51-21:56
PC H	22:14-22:19
Finish	22:23

East Transect	
Ref.	Time
Start	20:17
PC A	20:22-20:27
PC B	20:36-20:41
PC C	20:58-21:03
PC D	21:14-21:19
PC E	21:28-21:33
PC F	21:41-21:46
PC G	21:51-21:56
PC H	22:14-22:19
Finish	22:23

Legend

- Redline Boundary
- Start point
- Finish point
- Point Count Locations
- Transect Route - West
- Transect Route - East

North Hemel Hempstead /Figure 2 - April Bat Transect Plan (Northern Parcel)

00.20.4

km

1

Date: November 2025

Created by: FPCR Environment and Deisgn Ltd.

Scale: 1:9,000 @ A4

FPCR

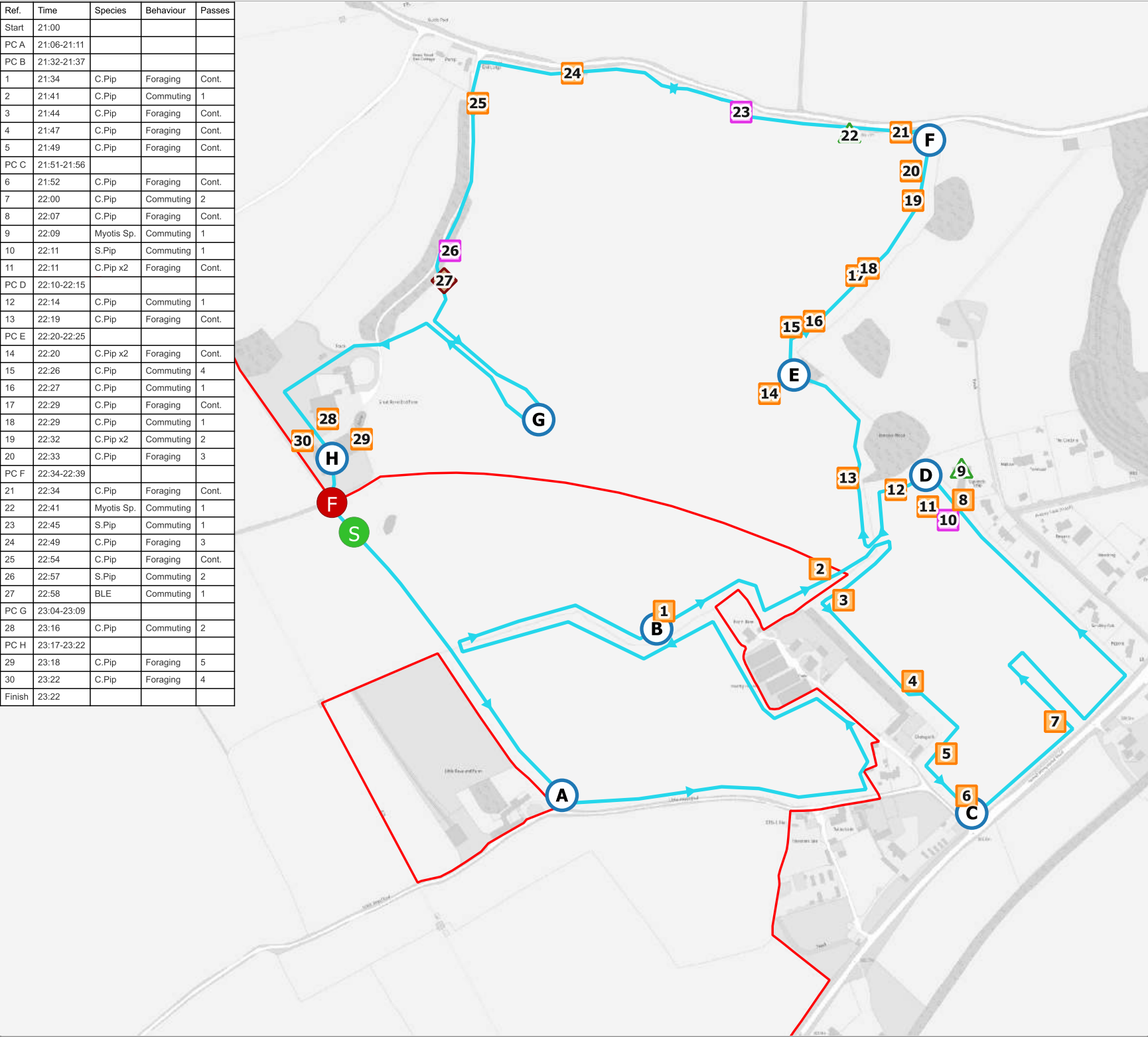
environment & design

Lockington Hall, Derby, DE74 2RH

01509 6727 72

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Ref.	Time	Species	Behaviour	Passes
Start	21:00			
PC A	21:06-21:11			
PC B	21:32-21:37			
1	21:34	C.Pip	Foraging	Cont.
2	21:41	C.Pip	Commuting	1
3	21:44	C.Pip	Foraging	Cont.
4	21:47	C.Pip	Foraging	Cont.
5	21:49	C.Pip	Foraging	Cont.
PC C	21:51-21:56			
6	21:52	C.Pip	Foraging	Cont.
7	22:00	C.Pip	Commuting	2
8	22:07	C.Pip	Foraging	Cont.
9	22:09	Myotis Sp.	Commuting	1
10	22:11	S.Pip	Commuting	1
11	22:11	C.Pip x2	Foraging	Cont.
PC D	22:10-22:15			
12	22:14	C.Pip	Commuting	1
13	22:19	C.Pip	Foraging	Cont.
PC E	22:20-22:25			
14	22:20	C.Pip x2	Foraging	Cont.
15	22:26	C.Pip	Commuting	4
16	22:27	C.Pip	Commuting	1
17	22:29	C.Pip	Foraging	Cont.
18	22:29	C.Pip	Commuting	1
19	22:32	C.Pip x2	Commuting	2
20	22:33	C.Pip	Foraging	3
PC F	22:34-22:39			
21	22:34	C.Pip	Foraging	Cont.
22	22:41	Myotis Sp.	Commuting	1
23	22:45	S.Pip	Commuting	1
24	22:49	C.Pip	Foraging	3
25	22:54	C.Pip	Foraging	Cont.
26	22:57	S.Pip	Commuting	2
27	22:58	BLE	Commuting	1
PC G	23:04-23:09			
28	23:16	C.Pip	Commuting	2
PC H	23:17-23:22			
29	23:18	C.Pip	Foraging	5
30	23:22	C.Pip	Foraging	4
Finish	23:22			



- Legend
- Redline Boundary

Transect Route

S

Start point

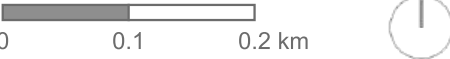
F

Finish point

Point Count Locations

- Bat Contacts
- Common Pipistrelle
- Soprano Pipistrelle
- Myotis Species

North Hemel Hempstead / Figure 3 - May Bat Transect Plan (Northern Parcel East Transect)

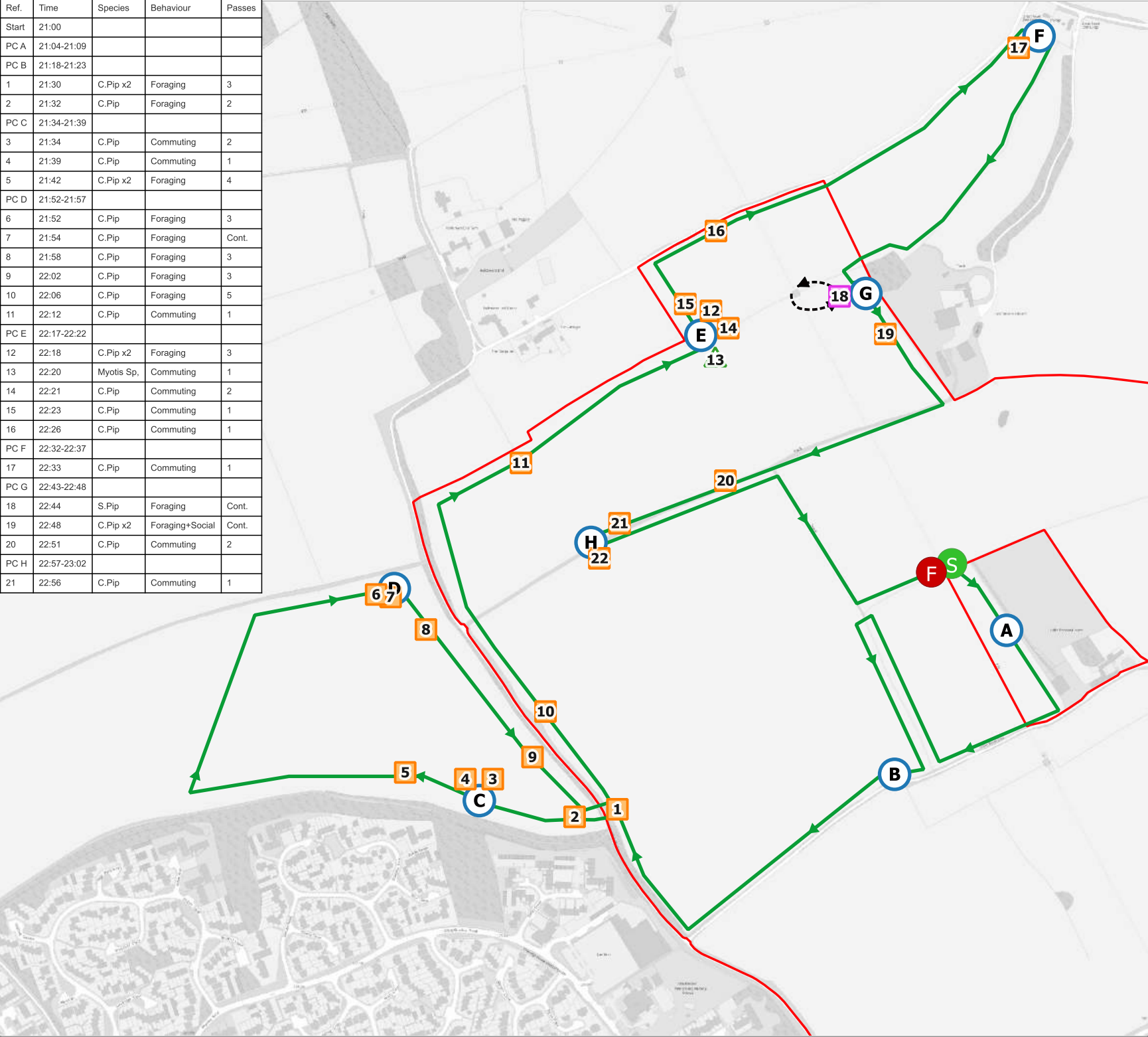


Date: November 2025

Created by: FPCR
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Scale: 1:6,000 @ A4

Ref.	Time	Species	Behaviour	Passes
Start	21:00			
PC A	21:04-21:09			
PC B	21:18-21:23			
1	21:30	C.Pip x2	Foraging	3
2	21:32	C.Pip	Foraging	2
PC C	21:34-21:39			
3	21:34	C.Pip	Commuting	2
4	21:39	C.Pip	Commuting	1
5	21:42	C.Pip x2	Foraging	4
PC D	21:52-21:57			
6	21:52	C.Pip	Foraging	3
7	21:54	C.Pip	Foraging	Cont.
8	21:58	C.Pip	Foraging	3
9	22:02	C.Pip	Foraging	3
10	22:06	C.Pip	Foraging	5
11	22:12	C.Pip	Commuting	1
PC E	22:17-22:22			
12	22:18	C.Pip x2	Foraging	3
13	22:20	Myotis Sp.	Commuting	1
14	22:21	C.Pip	Commuting	2
15	22:23	C.Pip	Commuting	1
16	22:26	C.Pip	Commuting	1
PC F	22:32-22:37			
17	22:33	C.Pip	Commuting	1
PC G	22:43-22:48			
18	22:44	S.Pip	Foraging	Cont.
19	22:48	C.Pip x2	Foraging+Social	Cont.
20	22:51	C.Pip	Commuting	2
PC H	22:57-23:02			
21	22:56	C.Pip	Commuting	1



Legend

- Redline Boundary
- Transect Route
- Flight Arrow
- Point Count Locations
- Start point
- Finish point
- Bat Contacts
 - Common Pipistrelle
 - Soprano Pipistrelle
 - Myotis Species

North Hemel Hempstead / Figure 4 - May Bat Transect Plan (Northern Parcel West Transect)

0 0.1 0.2 km

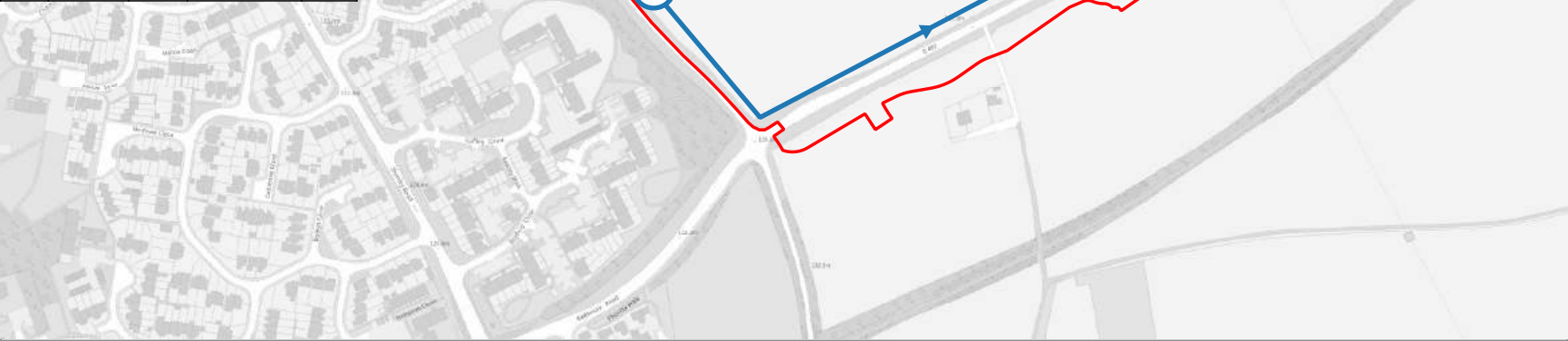
Date: November 2025 Created by: FPCR Environment and Deisgn Ltd.

Scale: 1:7,000 @ A4

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Ref.	Time	Species	Behaviour	Passes
Start	21:08			
1	21:10	C. Pip		1
PC A	21:11-21:16			
2	21:11	C. Pip		3
PC B	21:22-21:27			
3	21:34	C. Pip	Foraging	Cont.
PC C	21:35-21:40			
4	21:35	C. Pip	Foraging	Cont.
5	21:35	C. Pip	Foraging	Cont.
6	21:41	C. Pip	Foraging	Cont.
7	21:41	C. Pip	Foraging	Cont.
8	21:44	C. Pip		2
PC D	21:47-21:52			
PC E	22:02-22:07			
9	22:02	C. Pip		1
10	22:07	C. Pip		Cont.
11	22:10	C. Pip	Commuting	2
12	22:16	C. Pip	Commuting	4
PC F	22:19-22:24			
13	22:29	C. Pip		3
14	22:31	C. Pip	Foraging	2
15	22:31	C. Pip	Foraging	2
16	22:33	C. Pip	Foraging	Cont.
17	22:33	C. Pip	Foraging	Cont.
18	22:36	C. Pip	Foraging	Cont.
19	22:36	C. Pip	Foraging	Cont.
PC G	22:38-22:43			
20	22:38	C. Pip	Foraging + Social	Cont.
21	22:38	C. Pip	Foraging + Social	Cont.
22	22:45	C. Pip	Foraging	Cont.
23	22:45	C. Pip	Foraging	Cont.
24	22:50	C. Pip	Foraging	Cont.
25	22:50	C. Pip	Foraging	Cont.
26	22:53	C. Pip	Commuting	2
PC H	22:55-23:00			
27	22:57	C. Pip	Commuting	1
28	23:00	C. Pip	Commuting	1
29	23:02	C. Pip	Commuting	1
30	23:05	C. Pip	Foraging	7
Finish	23:08			



Legend

- Redline Boundary
- Transect Route
- Flight Arrow
- Start point
- Finish point
- Point Count
- Bat Contacts
 - Common Pipistrelle

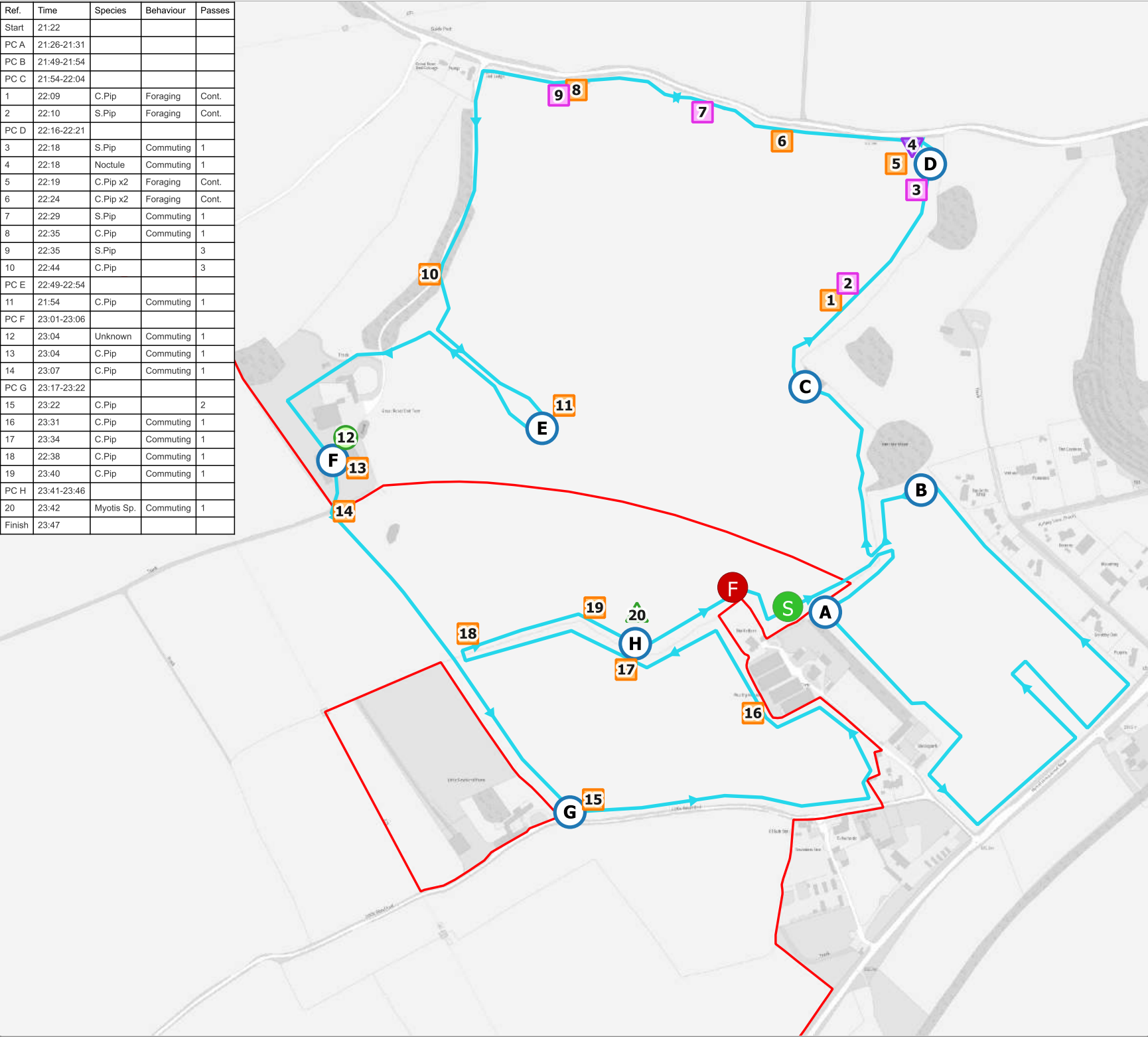
North Hemel Hempstead / Figure 5 - May Bat Transect Plan (Southern Parcel)



Date: November 2025 Created by: FPCR Environment and Design Ltd.

Scale: 1:5,500 @ A4

Ref.	Time	Species	Behaviour	Passes
Start	21:22			
PC A	21:26-21:31			
PC B	21:49-21:54			
PC C	21:54-22:04			
1	22:09	C.Pip	Foraging	Cont.
2	22:10	S.Pip	Foraging	Cont.
PC D	22:16-22:21			
3	22:18	S.Pip	Commuting	1
4	22:18	Noctule	Commuting	1
5	22:19	C.Pip x2	Foraging	Cont.
6	22:24	C.Pip x2	Foraging	Cont.
7	22:29	S.Pip	Commuting	1
8	22:35	C.Pip	Commuting	1
9	22:35	S.Pip		3
10	22:44	C.Pip		3
PC E	22:49-22:54			
11	21:54	C.Pip	Commuting	1
PC F	23:01-23:06			
12	23:04	Unknown	Commuting	1
13	23:04	C.Pip	Commuting	1
14	23:07	C.Pip	Commuting	1
PC G	23:17-23:22			
15	23:22	C.Pip		2
16	23:31	C.Pip	Commuting	1
17	23:34	C.Pip	Commuting	1
18	22:38	C.Pip	Commuting	1
19	23:40	C.Pip	Commuting	1
PC H	23:41-23:46			
20	23:42	Myotis Sp.	Commuting	1
Finish	23:47			



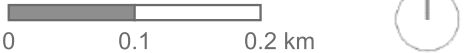
Legend

- Redline Boundary
- Transect Route
- Start point
- Finish point
- Point Count Locations

Bat Contacts

- Common Pipistrelle
- Soprano Pipistrelle
- Myotis Species
- Noctule
- Serotine

North Hemel Hempstead / Figure 6 - June Bat Transect Plan (Northern Parcel East Transect)



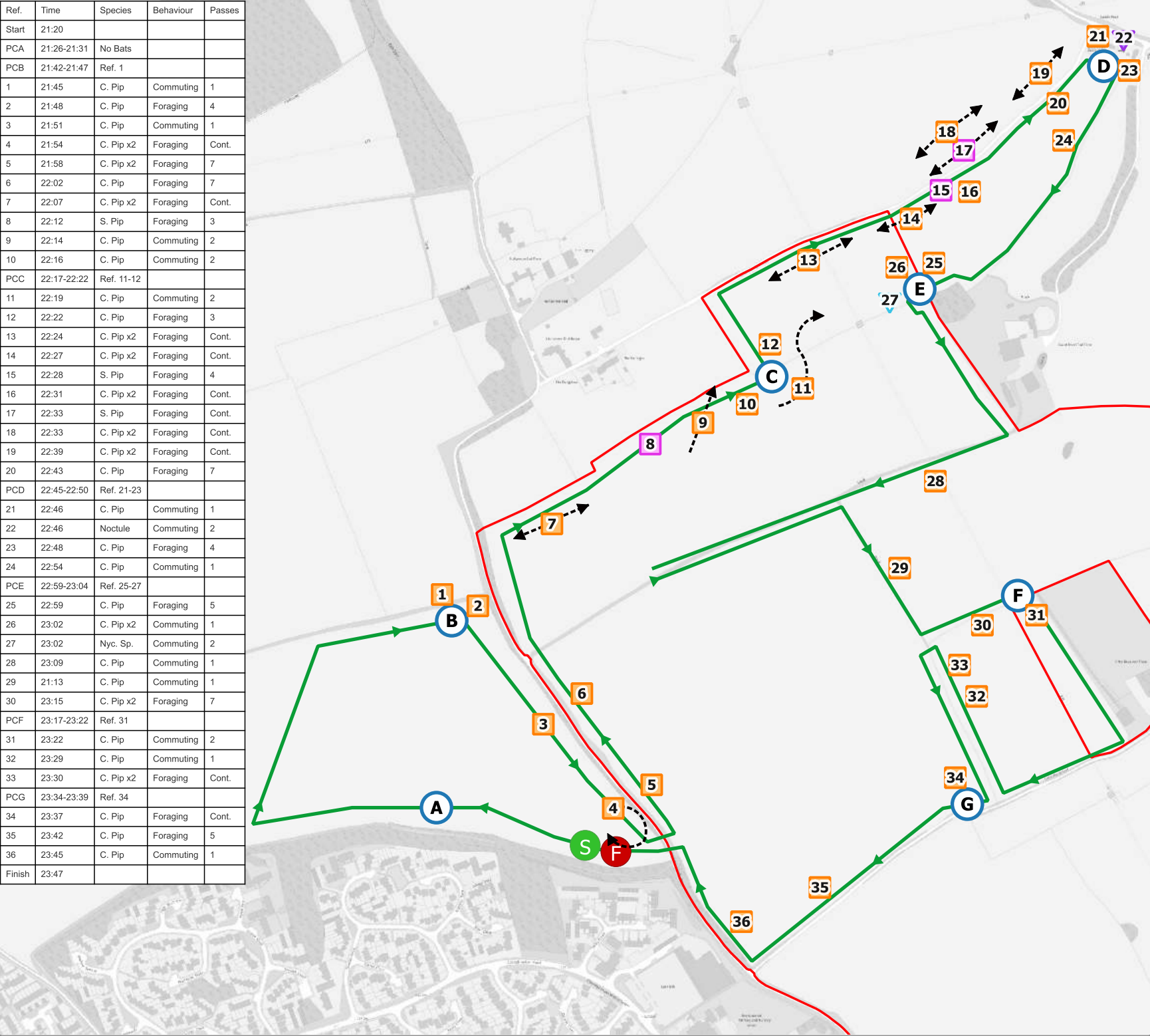
Date: November 2025 Created by: FPCR Environment and Deisgn Ltd.

Scale: 1:6,000 @ A4

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Ref.	Time	Species	Behaviour	Passes
Start	21:20			
PCA	21:26-21:31	No Bats		
PCB	21:42-21:47	Ref. 1		
1	21:45	C. Pip	Commuting	1
2	21:48	C. Pip	Foraging	4
3	21:51	C. Pip	Commuting	1
4	21:54	C. Pip x2	Foraging	Cont.
5	21:58	C. Pip x2	Foraging	7
6	22:02	C. Pip	Foraging	7
7	22:07	C. Pip x2	Foraging	Cont.
8	22:12	S. Pip	Foraging	3
9	22:14	C. Pip	Commuting	2
10	22:16	C. Pip	Commuting	2
PCC	22:17-22:22	Ref. 11-12		
11	22:19	C. Pip	Commuting	2
12	22:22	C. Pip	Foraging	3
13	22:24	C. Pip x2	Foraging	Cont.
14	22:27	C. Pip x2	Foraging	Cont.
15	22:28	S. Pip	Foraging	4
16	22:31	C. Pip x2	Foraging	Cont.
17	22:33	S. Pip	Foraging	Cont.
18	22:33	C. Pip x2	Foraging	Cont.
19	22:39	C. Pip x2	Foraging	Cont.
20	22:43	C. Pip	Foraging	7
PCD	22:45-22:50	Ref. 21-23		
21	22:46	C. Pip	Commuting	1
22	22:46	Noctule	Commuting	2
23	22:48	C. Pip	Foraging	4
24	22:54	C. Pip	Commuting	1
PCE	22:59-23:04	Ref. 25-27		
25	22:59	C. Pip	Foraging	5
26	23:02	C. Pip x2	Commuting	1
27	23:02	Nyc. Sp.	Commuting	2
28	23:09	C. Pip	Commuting	1
29	21:13	C. Pip	Commuting	1
30	23:15	C. Pip x2	Foraging	7
PCF	23:17-23:22	Ref. 31		
31	23:22	C. Pip	Commuting	2
32	23:29	C. Pip	Commuting	1
33	23:30	C. Pip x2	Foraging	Cont.
PCG	23:34-23:39	Ref. 34		
34	23:37	C. Pip	Foraging	Cont.
35	23:42	C. Pip	Foraging	5
36	23:45	C. Pip	Commuting	1
Finish	23:47			



Legend

Redline Boundary

Transect Route

Flight Arrow

S

Start point

F

Finish point

Point Count Locations

Bat Contacts

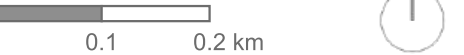
Common Pipistrelle

Soprano Pipistrelle

Nyctalus Species

Noctule

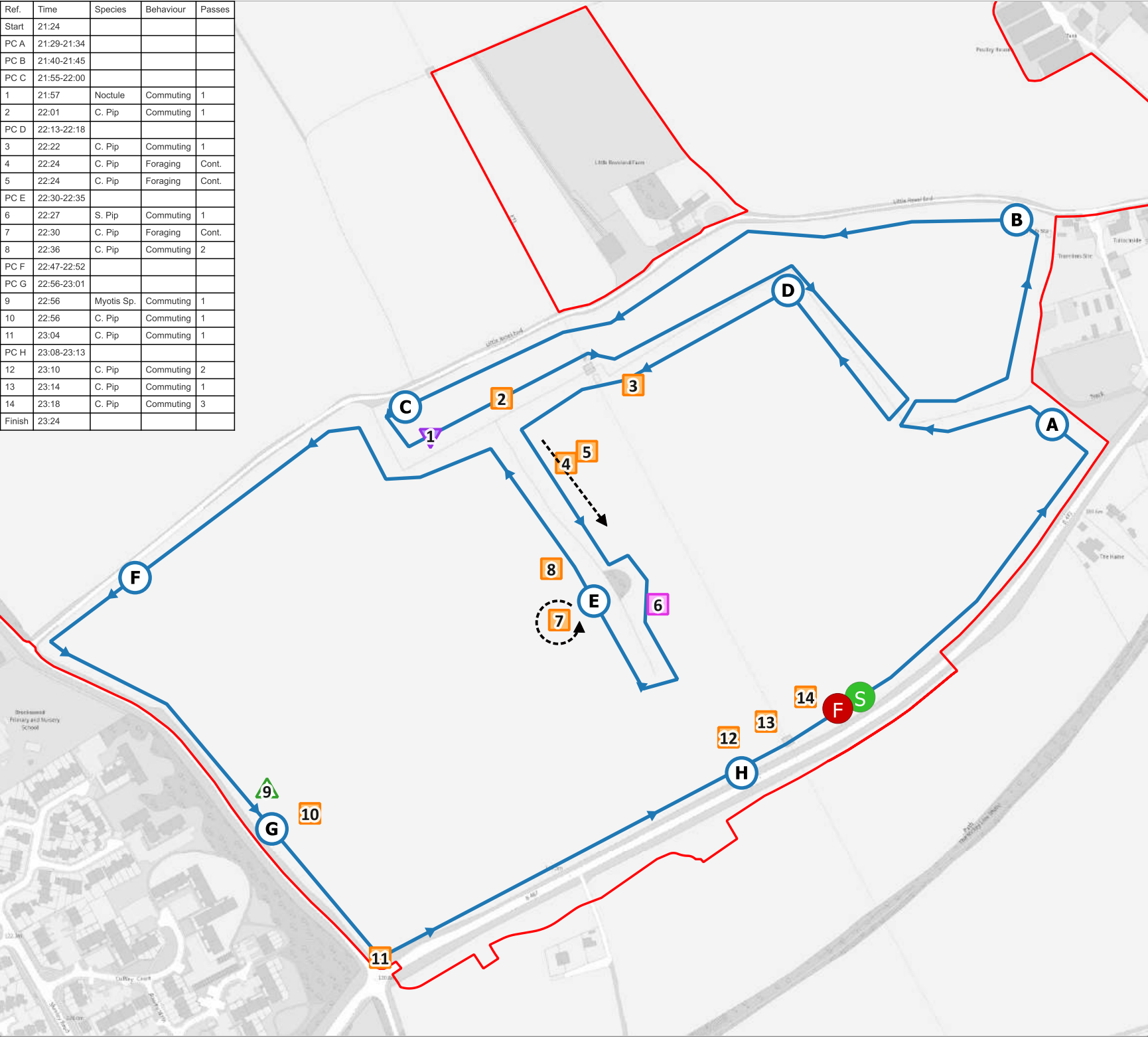
North Hemel Hempstead / Figure 7 - June Bat Transect Plan (Northern Parcel West Transect)



Date: November 2025 Created by: FPCR Environment and Deisgn Ltd.

Scale: 1:7,000 @ A4

Ref.	Time	Species	Behaviour	Passes
Start	21:24			
PC A	21:29-21:34			
PC B	21:40-21:45			
PC C	21:55-22:00			
1	21:57	Noctule	Commuting	1
2	22:01	C. Pip	Commuting	1
PC D	22:13-22:18			
3	22:22	C. Pip	Commuting	1
4	22:24	C. Pip	Foraging	Cont.
5	22:24	C. Pip	Foraging	Cont.
PC E	22:30-22:35			
6	22:27	S. Pip	Commuting	1
7	22:30	C. Pip	Foraging	Cont.
8	22:36	C. Pip	Commuting	2
PC F	22:47-22:52			
PC G	22:56-23:01			
9	22:56	Myotis Sp.	Commuting	1
10	22:56	C. Pip	Commuting	1
11	23:04	C. Pip	Commuting	1
PC H	23:08-23:13			
12	23:10	C. Pip	Commuting	2
13	23:14	C. Pip	Commuting	1
14	23:18	C. Pip	Commuting	3
Finish	23:24			



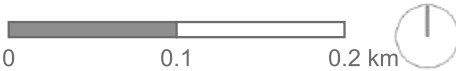
Legend

- Redline Boundary
- Transect Route
- Flight Arrow
- Start point
- Finish point
- Point Count

Bat Contacts

- Common Pipistrelle
- Soprano Pipistrelle
- Myotis Species
- Noctule

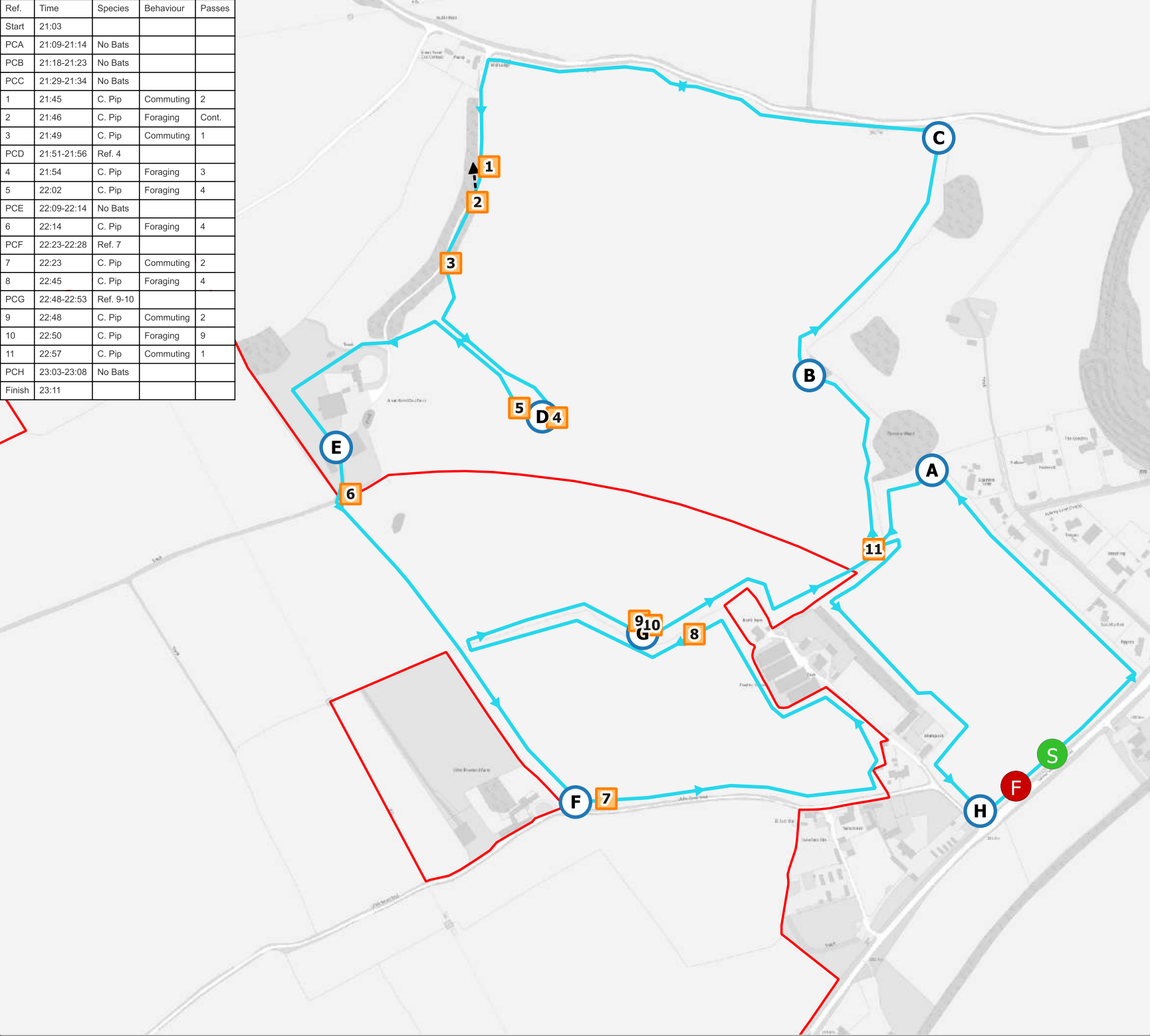
North Hemel Hempstead / Figure 8 - June Bat Transect Plan (Southern Parcel)



Date: November 2025 Created by: FPCR Environment and Deisgn Ltd.

Scale: 1:4,500 @ A4

Ref.	Time	Species	Behaviour	Passes
Start	21:03			
PCA	21:09-21:14	No Bats		
PCB	21:18-21:23	No Bats		
PCC	21:29-21:34	No Bats		
1	21:45	C. Pip	Commuting	2
2	21:46	C. Pip	Foraging	Cont.
3	21:49	C. Pip	Commuting	1
PCD	21:51-21:56	Ref. 4		
4	21:54	C. Pip	Foraging	3
5	22:02	C. Pip	Foraging	4
PCE	22:09-22:14	No Bats		
6	22:14	C. Pip	Foraging	4
PCF	22:23-22:28	Ref. 7		
7	22:23	C. Pip	Commuting	2
8	22:45	C. Pip	Foraging	4
PCG	22:48-22:53	Ref. 9-10		
9	22:48	C. Pip	Commuting	2
10	22:50	C. Pip	Foraging	9
11	22:57	C. Pip	Commuting	1
PCH	23:03-23:08	No Bats		
Finish	23:11			



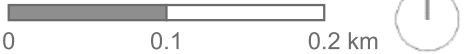
Legend

- Redline Boundary
- Transect Route
- Flight Arrow
- Start point
- Finish point
- Point Count Locations

Bat Contacts

- Common Pipistrelle

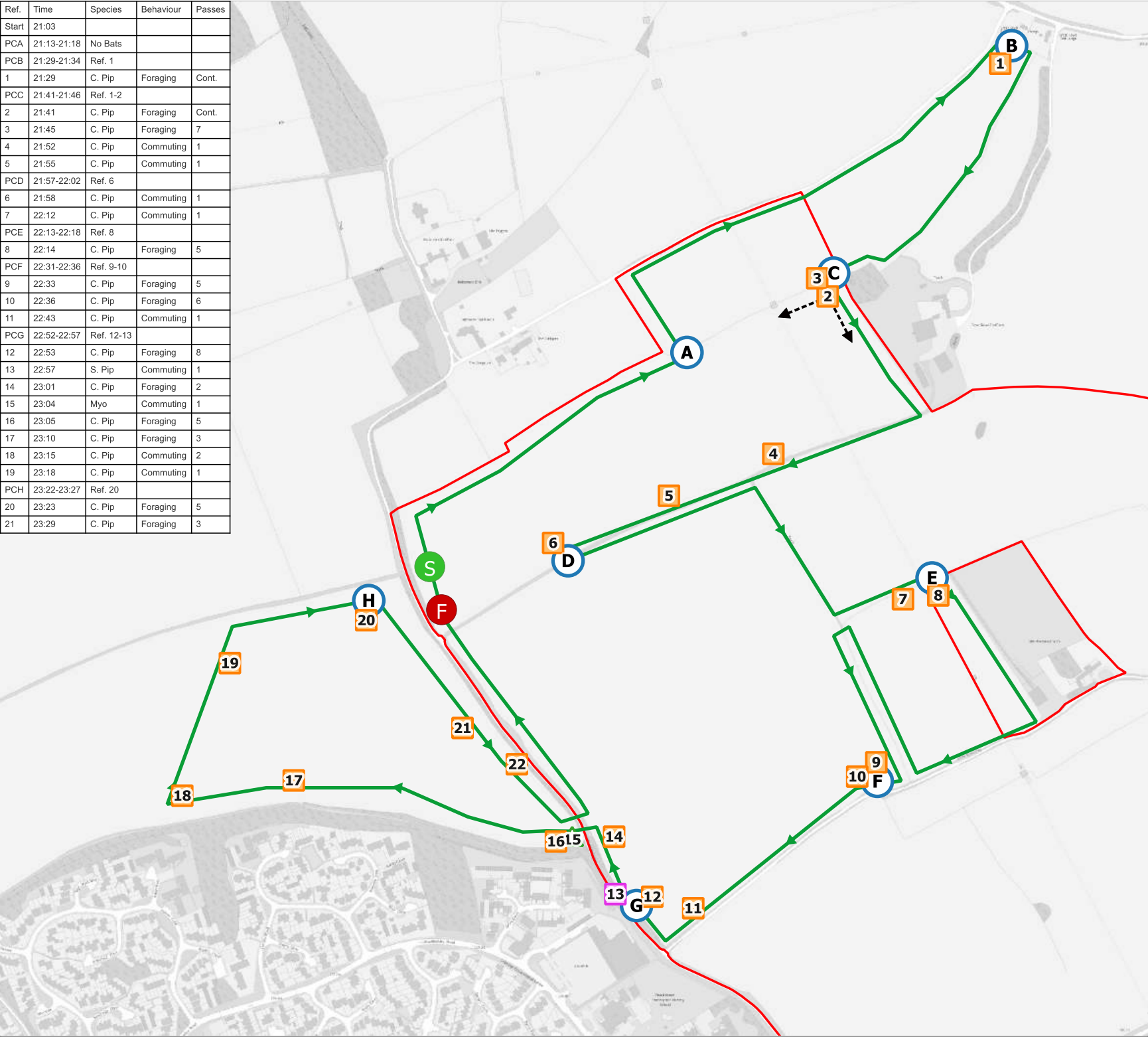
North Hemel Hempstead / Figure 9 - July Bat Transect Plan (Northern Parcel East Transect)



Date: November 2025 Created by: FPCR Environment and Deisgn Ltd.

Scale: 1:6,000 @ A4

Ref.	Time	Species	Behaviour	Passes
Start	21:03			
PCA	21:13-21:18	No Bats		
PCB	21:29-21:34	Ref. 1		
1	21:29	C. Pip	Foraging	Cont.
PCC	21:41-21:46	Ref. 1-2		
2	21:41	C. Pip	Foraging	Cont.
3	21:45	C. Pip	Foraging	7
4	21:52	C. Pip	Commuting	1
5	21:55	C. Pip	Commuting	1
PCD	21:57-22:02	Ref. 6		
6	21:58	C. Pip	Commuting	1
7	22:12	C. Pip	Commuting	1
PCE	22:13-22:18	Ref. 8		
8	22:14	C. Pip	Foraging	5
PCF	22:31-22:36	Ref. 9-10		
9	22:33	C. Pip	Foraging	5
10	22:36	C. Pip	Foraging	6
11	22:43	C. Pip	Commuting	1
PCG	22:52-22:57	Ref. 12-13		
12	22:53	C. Pip	Foraging	8
13	22:57	S. Pip	Commuting	1
14	23:01	C. Pip	Foraging	2
15	23:04	Myo	Commuting	1
16	23:05	C. Pip	Foraging	5
17	23:10	C. Pip	Foraging	3
18	23:15	C. Pip	Commuting	2
19	23:18	C. Pip	Commuting	1
PCH	23:22-23:27	Ref. 20		
20	23:23	C. Pip	Foraging	5
21	23:29	C. Pip	Foraging	3



Legend

- Redline Boundary
- Transect Route
- Flight Arrow
- Start point
- Finish point
- Point Count Locations

Bat Contacts

- Common Pipistrelle
- Soprano Pipistrelle
- Myotis Species

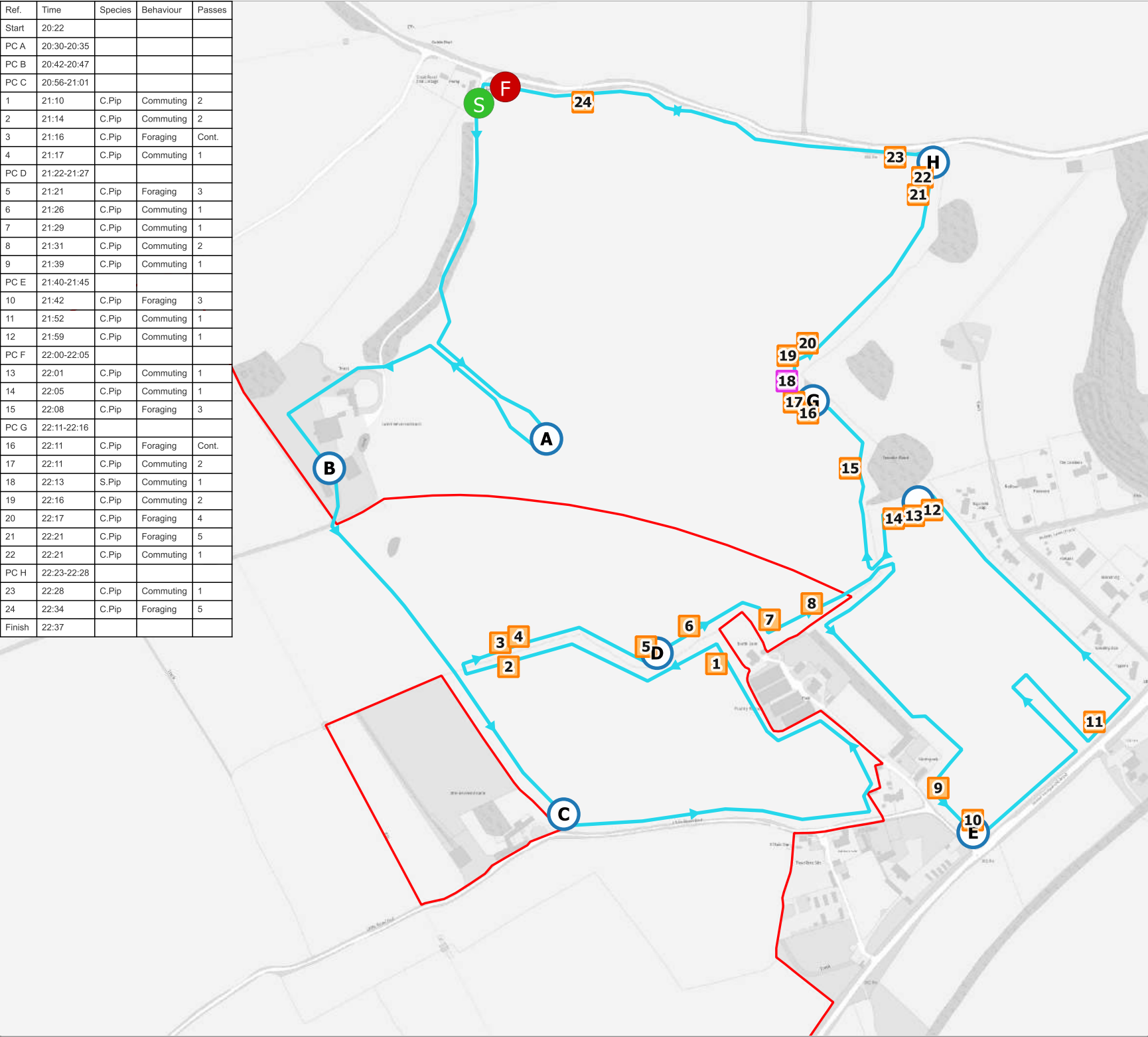
North Hemel Hempstead / Figure 10 - July Bat Transect Plan (Northern Parcel West Transect)



Date: November 2025 Created by: FPCR Environment and Deisgn Ltd.

Scale: 1:7,000 @ A4

Ref.	Time	Species	Behaviour	Passes
Start	20:22			
PC A	20:30-20:35			
PC B	20:42-20:47			
PC C	20:56-21:01			
1	21:10	C.Pip	Commuting	2
2	21:14	C.Pip	Commuting	2
3	21:16	C.Pip	Foraging	Cont.
4	21:17	C.Pip	Commuting	1
PC D	21:22-21:27			
5	21:21	C.Pip	Foraging	3
6	21:26	C.Pip	Commuting	1
7	21:29	C.Pip	Commuting	1
8	21:31	C.Pip	Commuting	2
9	21:39	C.Pip	Commuting	1
PC E	21:40-21:45			
10	21:42	C.Pip	Foraging	3
11	21:52	C.Pip	Commuting	1
12	21:59	C.Pip	Commuting	1
PC F	22:00-22:05			
13	22:01	C.Pip	Commuting	1
14	22:05	C.Pip	Commuting	1
15	22:08	C.Pip	Foraging	3
PC G	22:11-22:16			
16	22:11	C.Pip	Foraging	Cont.
17	22:11	C.Pip	Commuting	2
18	22:13	S.Pip	Commuting	1
19	22:16	C.Pip	Commuting	2
20	22:17	C.Pip	Foraging	4
21	22:21	C.Pip	Foraging	5
22	22:21	C.Pip	Commuting	1
PC H	22:23-22:28			
23	22:28	C.Pip	Commuting	1
24	22:34	C.Pip	Foraging	5
Finish	22:37			



Legend

Redline Boundary

Transect Route

S

Start point

F

Finish point

Point Count Locations

Bat Contacts

Common Pipistrelle

Soprano Pipistrelle

North Hemel Hempstead / Figure 12 - August Bat Transect Plan (Northern Parcel East Transect)

00.10.2 km

Date: November 2025

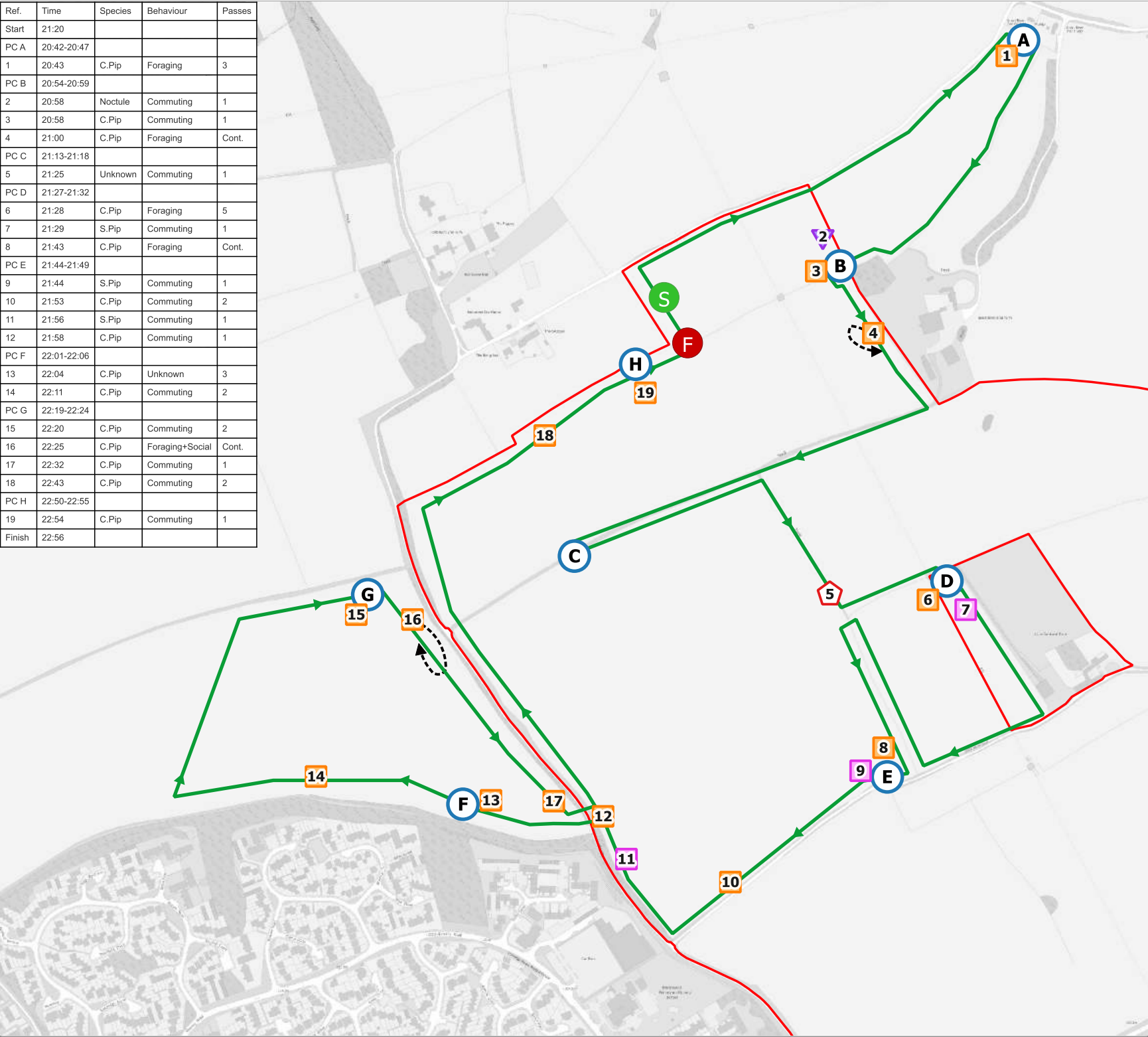
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Scale: 1:6,000 @ A4

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Ref.	Time	Species	Behaviour	Passes
Start	21:20			
PC A	20:42-20:47			
1	20:43	C.Pip	Foraging	3
PC B	20:54-20:59			
2	20:58	Noctule	Commuting	1
3	20:58	C.Pip	Commuting	1
4	21:00	C.Pip	Foraging	Cont.
PC C	21:13-21:18			
5	21:25	Unknown	Commuting	1
PC D	21:27-21:32			
6	21:28	C.Pip	Foraging	5
7	21:29	S.Pip	Commuting	1
8	21:43	C.Pip	Foraging	Cont.
PC E	21:44-21:49			
9	21:44	S.Pip	Commuting	1
10	21:53	C.Pip	Commuting	2
11	21:56	S.Pip	Commuting	1
12	21:58	C.Pip	Commuting	1
PC F	22:01-22:06			
13	22:04	C.Pip	Unknown	3
14	22:11	C.Pip	Commuting	2
PC G	22:19-22:24			
15	22:20	C.Pip	Commuting	2
16	22:25	C.Pip	Foraging+Social	Cont.
17	22:32	C.Pip	Commuting	1
18	22:43	C.Pip	Commuting	2
PC H	22:50-22:55			
19	22:54	C.Pip	Commuting	1
Finish	22:56			



Legend

- Redline Boundary
- Transect Route
- Flight Arrow
- Start point
- Finish point
- Point Count Locations

Bat Contacts

- Common Pipistrelle
- Soprano Pipistrelle
- Noctule
- Bat Species

North Hemel Hempstead / Figure 13 - August Bat Transect Plan (Northern Parcel West Transect)

0 0.1 0.2 km

Date: November 2025 Created by: FPCR Environment and Deisgn Ltd.

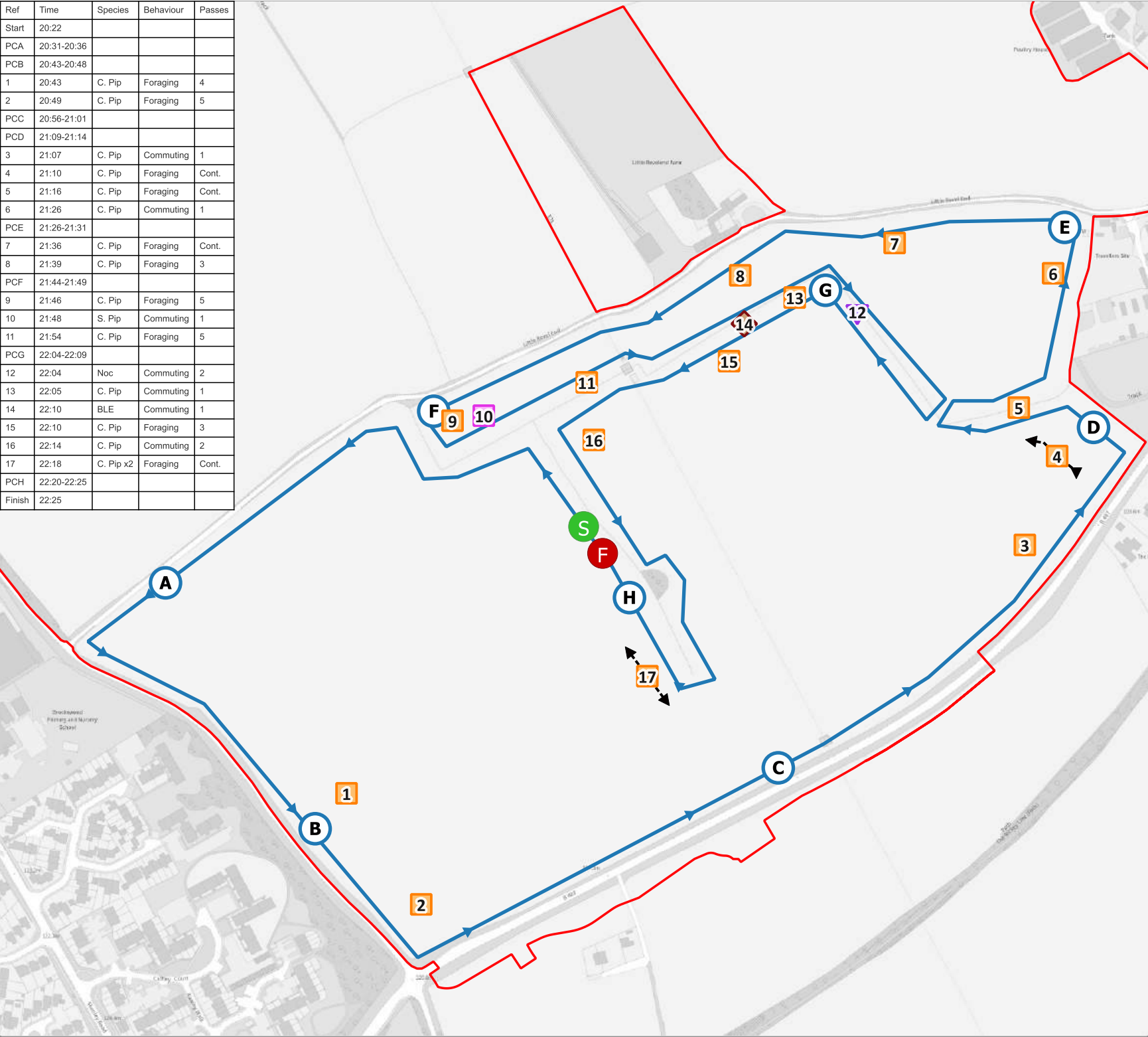
Scale: 1:7,000 @ A4

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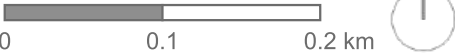
Ref	Time	Species	Behaviour	Passes
Start	20:22			
PCA	20:31-20:36			
PCB	20:43-20:48			
1	20:43	C. Pip	Foraging	4
2	20:49	C. Pip	Foraging	5
PCC	20:56-21:01			
PCD	21:09-21:14			
3	21:07	C. Pip	Commuting	1
4	21:10	C. Pip	Foraging	Cont.
5	21:16	C. Pip	Foraging	Cont.
6	21:26	C. Pip	Commuting	1
PCE	21:26-21:31			
7	21:36	C. Pip	Foraging	Cont.
8	21:39	C. Pip	Foraging	3
PCF	21:44-21:49			
9	21:46	C. Pip	Foraging	5
10	21:48	S. Pip	Commuting	1
11	21:54	C. Pip	Foraging	5
PCG	22:04-22:09			
12	22:04	Noc	Commuting	2
13	22:05	C. Pip	Commuting	1
14	22:10	BLE	Commuting	1
15	22:10	C. Pip	Foraging	3
16	22:14	C. Pip	Commuting	2
17	22:18	C. Pip x2	Foraging	Cont.
PCH	22:20-22:25			
Finish	22:25			



- Legend**
- Redline Boundary
 - Transect Route
 - Flight Arrow
 - Start point
 - Finish point
 - Point Count Locations

- Bat Contacts**
- Common Pipistrelle
 - Soprano Pipistrelle
 - Brown Long-eared
 - Noctule

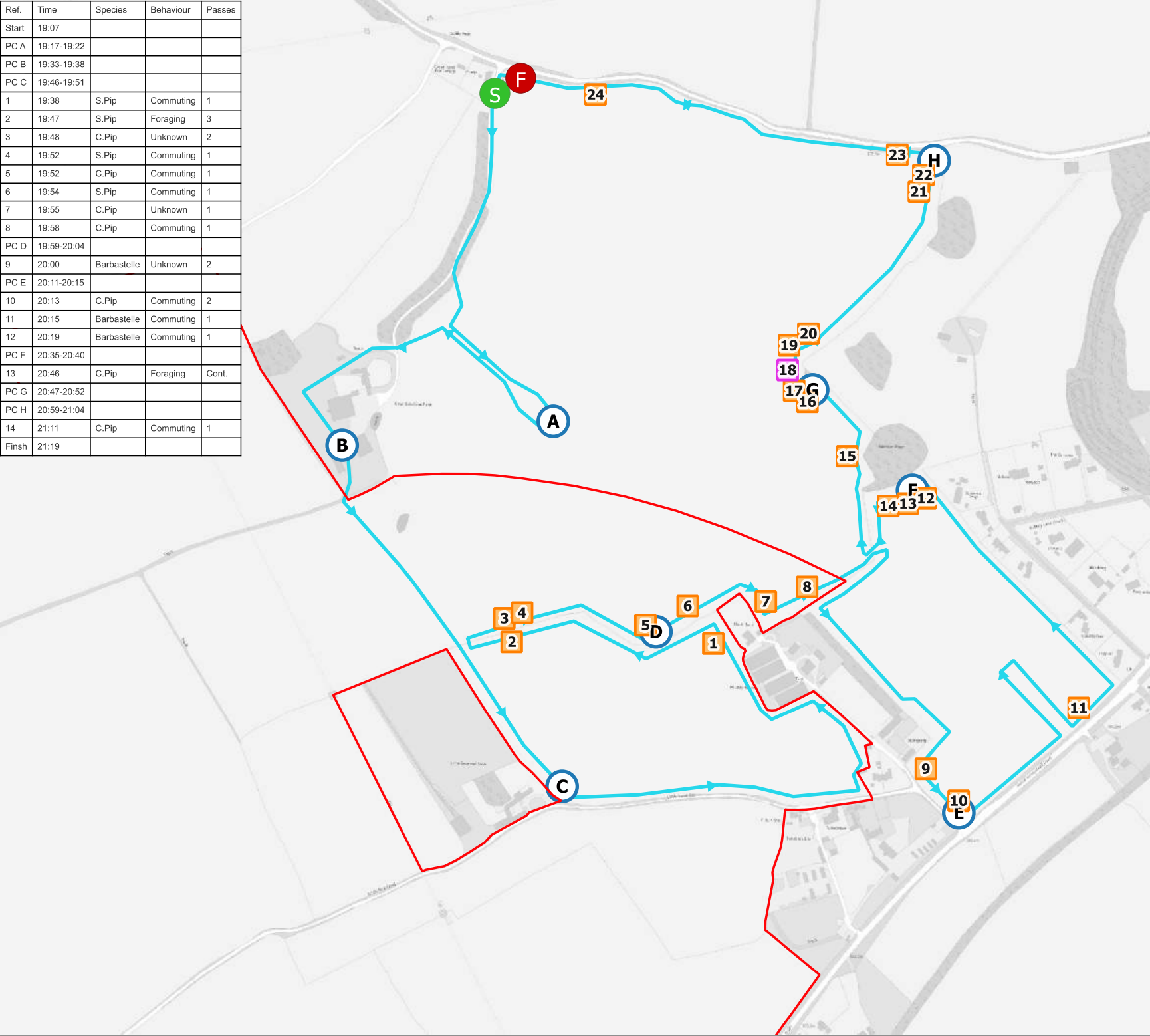
North Hemel Hempstead / Figure 14 - August Bat Transect Plan (Southern Parcel)



Date: November 2025 Created by: FPCR Environment and Deisgn Ltd.

Scale: 1:4,500 @ A4

Ref.	Time	Species	Behaviour	Passes
Start	19:07			
PC A	19:17-19:22			
PC B	19:33-19:38			
PC C	19:46-19:51			
1	19:38	S.Pip	Commuting	1
2	19:47	S.Pip	Foraging	3
3	19:48	C.Pip	Unknown	2
4	19:52	S.Pip	Commuting	1
5	19:52	C.Pip	Commuting	1
6	19:54	S.Pip	Commuting	1
7	19:55	C.Pip	Unknown	1
8	19:58	C.Pip	Commuting	1
PC D	19:59-20:04			
9	20:00	Barbastelle	Unknown	2
PC E	20:11-20:15			
10	20:13	C.Pip	Commuting	2
11	20:15	Barbastelle	Commuting	1
12	20:19	Barbastelle	Commuting	1
PC F	20:35-20:40			
13	20:46	C.Pip	Foraging	Cont.
PC G	20:47-20:52			
PC H	20:59-21:04			
14	21:11	C.Pip	Commuting	1
Finish	21:19			



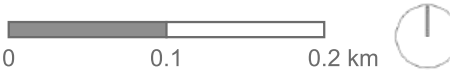
Legend

- Redline Boundary
- Transect Route
- Start point
- Finish point
- Point Count Locations

Bat Contacts

- Common Pipistrelle
- Soprano Pipistrelle

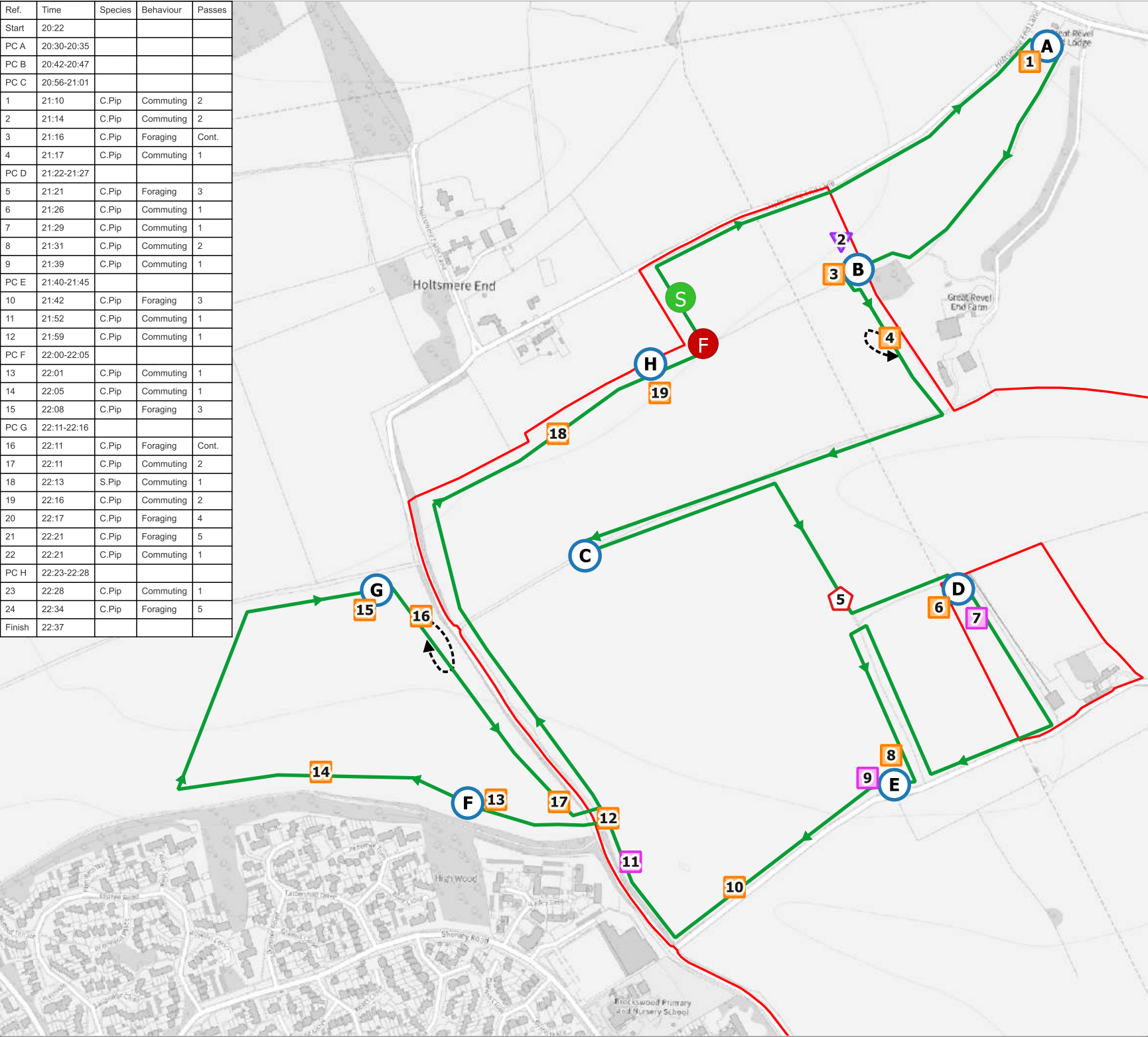
North Hemel Hempstead / Figure 15 - September Bat Transect Plan (Northern Parcel East Transect) (Dusk)



Date: November 2025 Created by: FPCR Environment and Design Ltd.

Scale: 1:6,000 @ A4

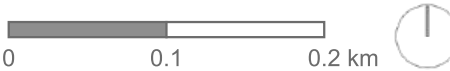
Ref.	Time	Species	Behaviour	Passes
Start	20:22			
PC A	20:30-20:35			
PC B	20:42-20:47			
PC C	20:56-21:01			
1	21:10	C.Pip	Commuting	2
2	21:14	C.Pip	Commuting	2
3	21:16	C.Pip	Foraging	Cont.
4	21:17	C.Pip	Commuting	1
PC D	21:22-21:27			
5	21:21	C.Pip	Foraging	3
6	21:26	C.Pip	Commuting	1
7	21:29	C.Pip	Commuting	1
8	21:31	C.Pip	Commuting	2
9	21:39	C.Pip	Commuting	1
PC E	21:40-21:45			
10	21:42	C.Pip	Foraging	3
11	21:52	C.Pip	Commuting	1
12	21:59	C.Pip	Commuting	1
PC F	22:00-22:05			
13	22:01	C.Pip	Commuting	1
14	22:05	C.Pip	Commuting	1
15	22:08	C.Pip	Foraging	3
PC G	22:11-22:16			
16	22:11	C.Pip	Foraging	Cont.
17	22:11	C.Pip	Commuting	2
18	22:13	S.Pip	Commuting	1
19	22:16	C.Pip	Commuting	2
20	22:17	C.Pip	Foraging	4
21	22:21	C.Pip	Foraging	5
22	22:21	C.Pip	Commuting	1
PC H	22:23-22:28			
23	22:28	C.Pip	Commuting	1
24	22:34	C.Pip	Foraging	5
Finish	22:37			



Legend

- Redline Boundary
- Transect Route
- Flight Arrow
- Start point
- Finish point
- Point Count Locations
- Bat Contacts
 - Common Pipistrelle
 - Soprano Pipistrelle
 - Noctule
 - Bat Species

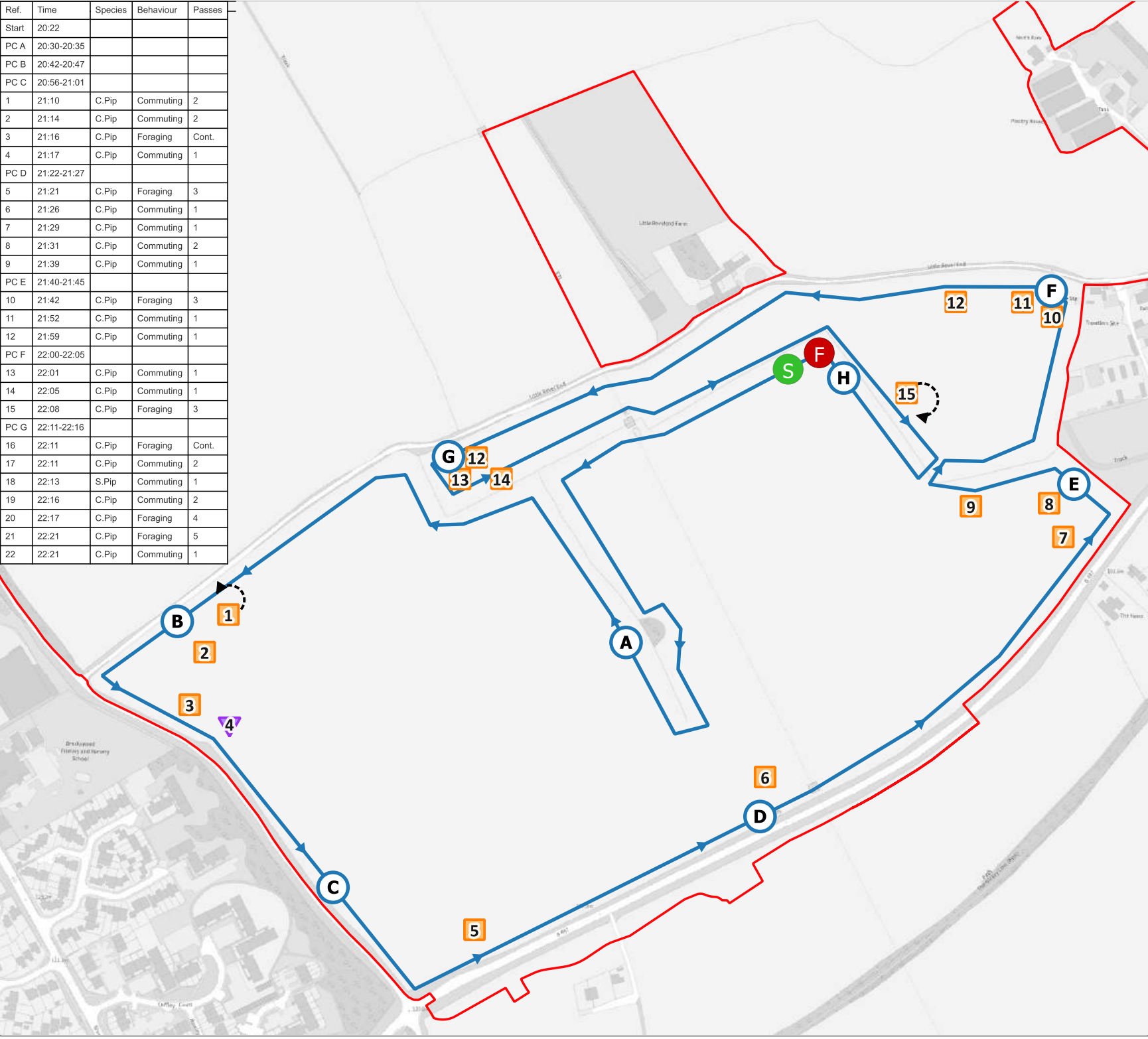
North Hemel Hempstead / Figure 16 - September Bat Transect Plan (Northern Parcel West Transect) (Dusk)



Date: November 2025 Created by: FPCR Environment and Design Ltd.

Scale: 1:7,000 @ A4

Ref.	Time	Species	Behaviour	Passes
Start	20:22			
PC A	20:30-20:35			
PC B	20:42-20:47			
PC C	20:56-21:01			
1	21:10	C.Pip	Commuting	2
2	21:14	C.Pip	Commuting	2
3	21:16	C.Pip	Foraging	Cont.
4	21:17	C.Pip	Commuting	1
PC D	21:22-21:27			
5	21:21	C.Pip	Foraging	3
6	21:26	C.Pip	Commuting	1
7	21:29	C.Pip	Commuting	1
8	21:31	C.Pip	Commuting	2
9	21:39	C.Pip	Commuting	1
PC E	21:40-21:45			
10	21:42	C.Pip	Foraging	3
11	21:52	C.Pip	Commuting	1
12	21:59	C.Pip	Commuting	1
PC F	22:00-22:05			
13	22:01	C.Pip	Commuting	1
14	22:05	C.Pip	Commuting	1
15	22:08	C.Pip	Foraging	3
PC G	22:11-22:16			
16	22:11	C.Pip	Foraging	Cont.
17	22:11	C.Pip	Commuting	2
18	22:13	S.Pip	Commuting	1
19	22:16	C.Pip	Commuting	2
20	22:17	C.Pip	Foraging	4
21	22:21	C.Pip	Foraging	5
22	22:21	C.Pip	Commuting	1



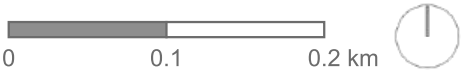
Legend

- Redline Boundary
- Transect Route
- Flight Arrow
- Start point
- Finish point
- Point Count Locations

Bat Contacts

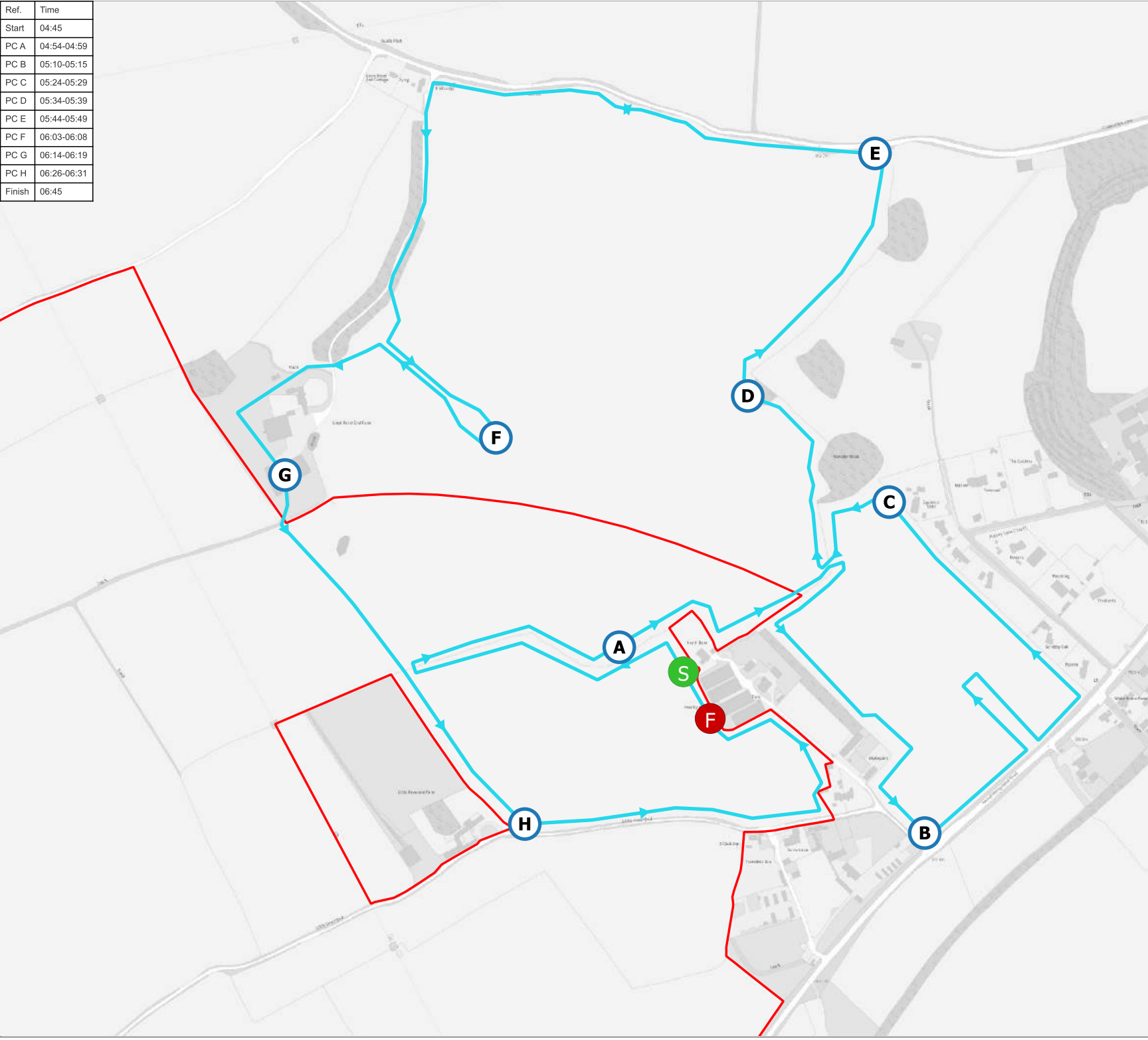
- Common Pipistrelle
- Noctule

North Hemel Hempstead / Figure 17 - September Bat Transect Plan (Southern Parcel) (Dusk)



Date: November 2025 Created by: FPCR Environment and Design Ltd.

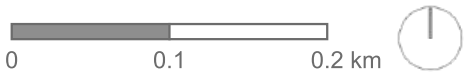
Scale: 1:4,500 @ A4



Ref.	Time
Start	04:45
PC A	04:54-04:59
PC B	05:10-05:15
PC C	05:24-05:29
PC D	05:34-05:39
PC E	05:44-05:49
PC F	06:03-06:08
PC G	06:14-06:19
PC H	06:26-06:31
Finish	06:45

- Legend**
- Redline Boundary
 - Transect Route
 - Start point
 - Finish point
 - Point Count Locations

North Hemel Hempstead / Figure 18 -
September Bat Transect Plan (Northern
Parcel East Transect) (Dawn)



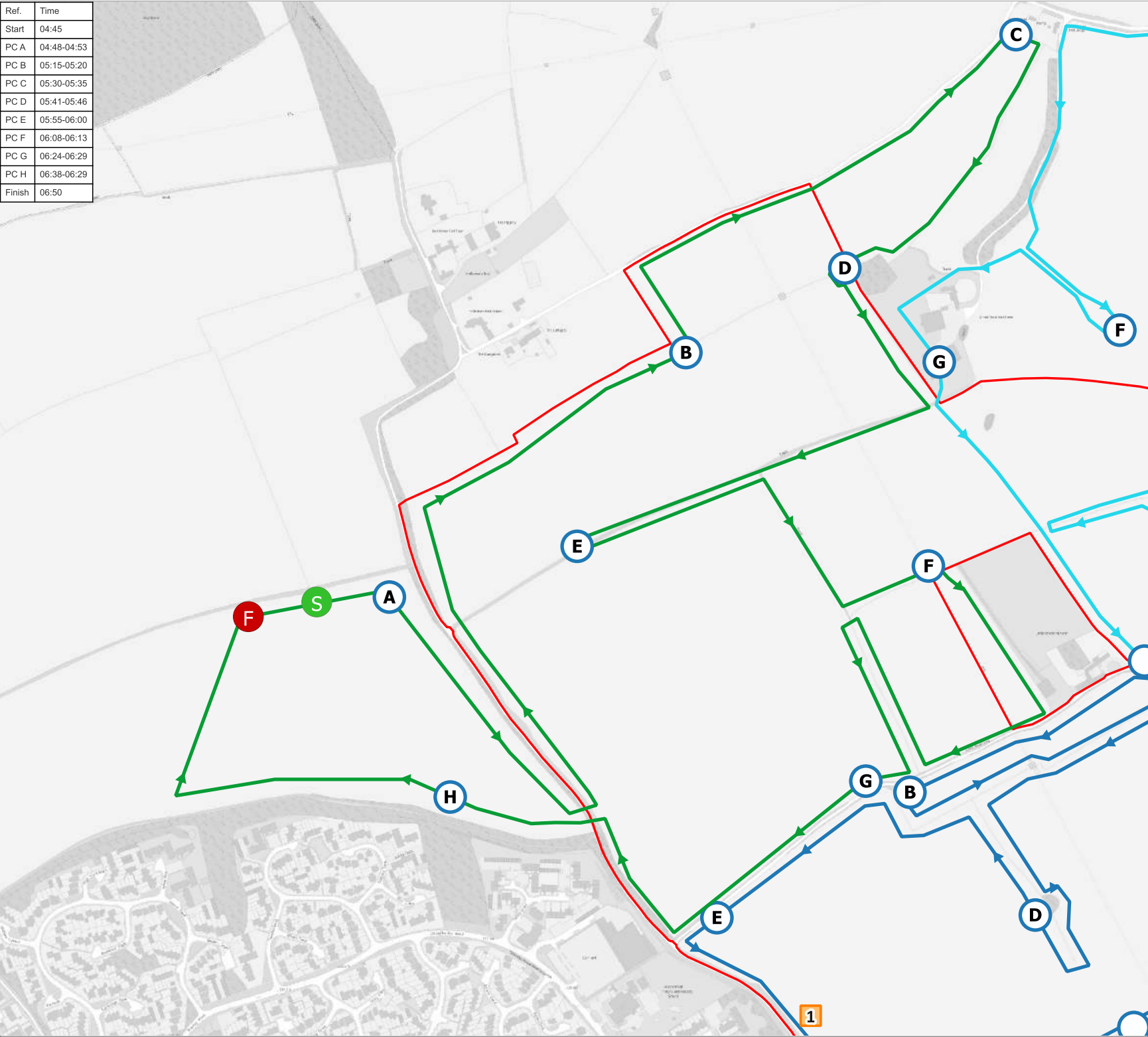
Date: November 2025 Created by: FPCR
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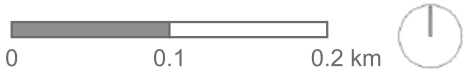
Ref.	Time
Start	04:45
PC A	04:48-04:53
PC B	05:15-05:20
PC C	05:30-05:35
PC D	05:41-05:46
PC E	05:55-06:00
PC F	06:08-06:13
PC G	06:24-06:29
PC H	06:38-06:29
Finish	06:50



Legend

- Redline Boundary
- Transect Route - Middle
- Start point
- Finish point
- Point Count Locations Middle

North Hemel Hempstead / Figure 19 - September Bat Transect Plan (Northern Parcel West Transect) (Dawn)



Date: November 2025 Created by: FPCR Environment and Design Ltd.

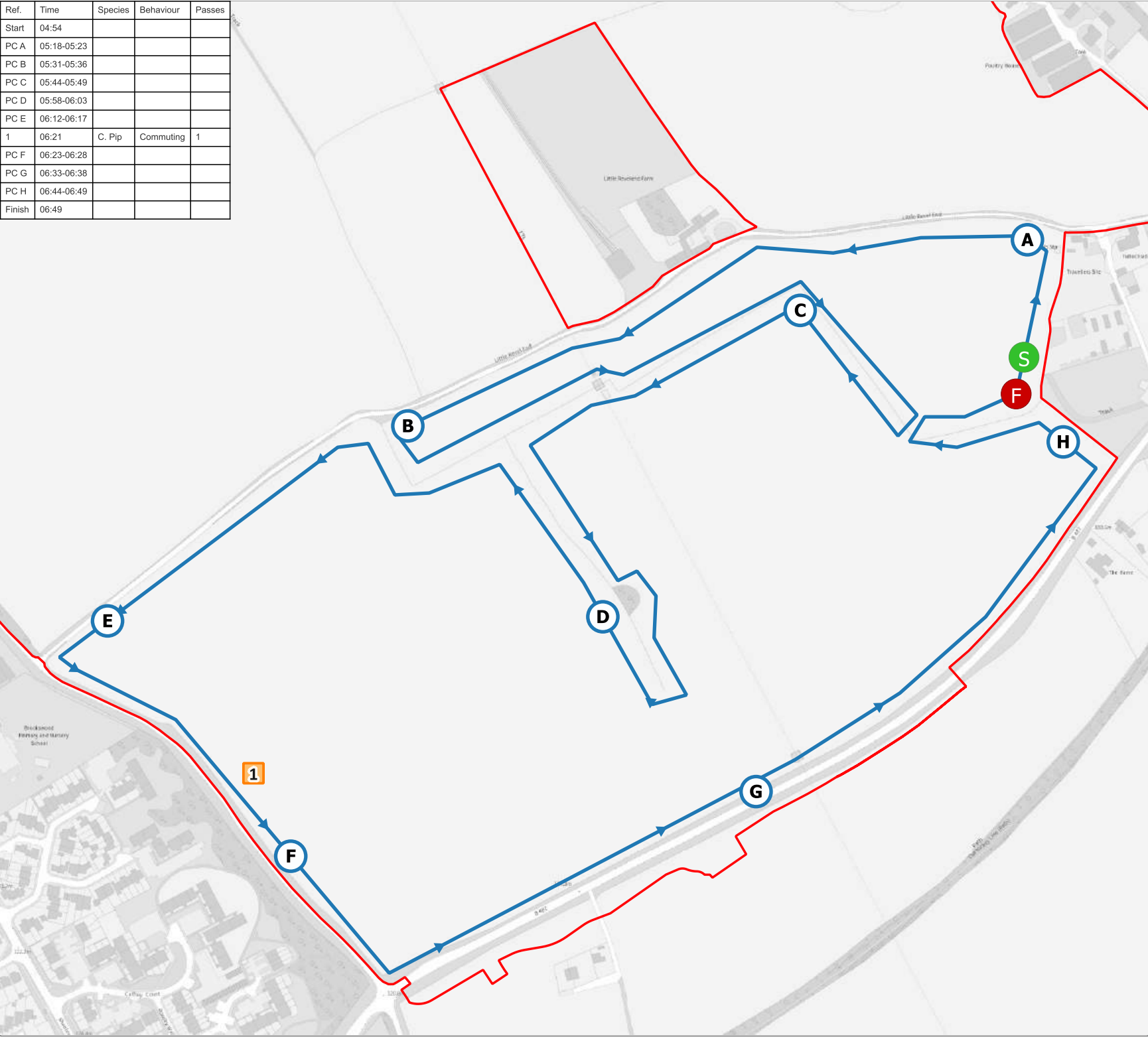
Scale: 1:7,000 @ A4

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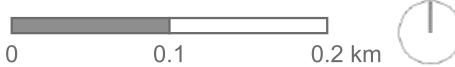
Ref.	Time	Species	Behaviour	Passes
Start	04:54			
PC A	05:18-05:23			
PC B	05:31-05:36			
PC C	05:44-05:49			
PC D	05:58-06:03			
PC E	06:12-06:17			
1	06:21	C. Pip	Commuting	1
PC F	06:23-06:28			
PC G	06:33-06:38			
PC H	06:44-06:49			
Finish	06:49			



Legend

- Redline Boundary
- Transect Route
- Start point
- Finish point
- Point Count Locations
- Bat Contacts
 - Common Pipistrelle

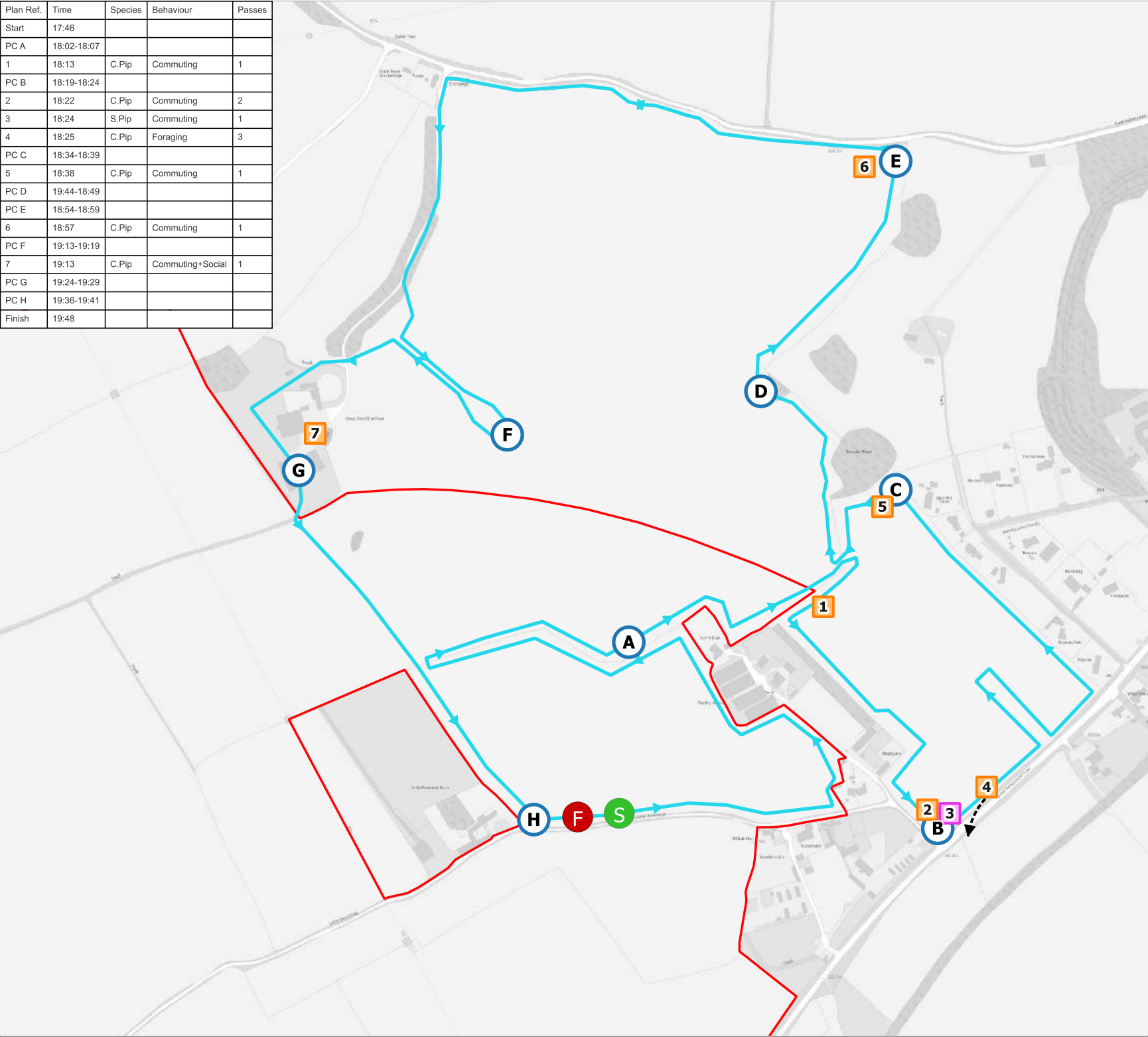
North Hemel Hempstead / Figure 20 - September Bat Transect Plan (Southern Parcel) (Dawn)



Date: November 2025 Created by: FPCR Environment and Design Ltd.

Scale: 1:4,500 @ A4

Plan Ref.	Time	Species	Behaviour	Passes
Start	17:46			
PC A	18:02-18:07			
1	18:13	C.Pip	Commuting	1
PC B	18:19-18:24			
2	18:22	C.Pip	Commuting	2
3	18:24	S.Pip	Commuting	1
4	18:25	C.Pip	Foraging	3
PC C	18:34-18:39			
5	18:38	C.Pip	Commuting	1
PC D	19:44-18:49			
PC E	18:54-18:59			
6	18:57	C.Pip	Commuting	1
PC F	19:13-19:19			
7	19:13	C.Pip	Commuting+Social	1
PC G	19:24-19:29			
PC H	19:36-19:41			
Finish	19:48			



Legend

- Redline Boundary
- Transect Route
- Flight Arrow
- Start point
- Finish point
- Point Count Locations
- Bat Contacts
 - Common Pipistrelle
 - Soprano Pipistrelle

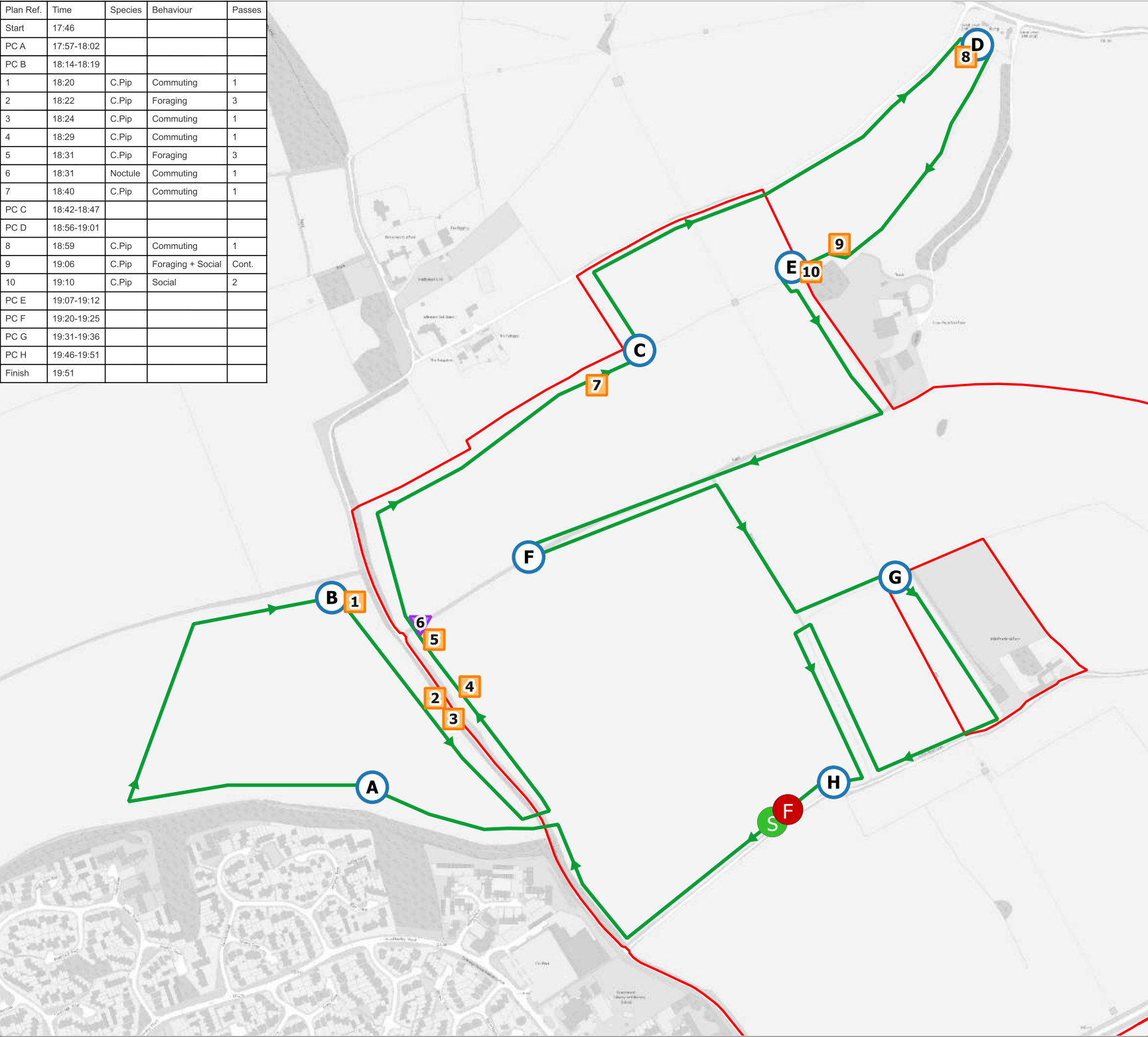
North Hemel Hempstead / Figure 21 - October Bat Transect Plan (Northern Parcel East Transect)



Date: November 2025 Created by: FPCR Environment and Deisgn Ltd.

Scale: 1:6,000 @ A4

Plan Ref.	Time	Species	Behaviour	Passes
Start	17:46			
PC A	17:57-18:02			
PC B	18:14-18:19			
1	18:20	C.Pip	Commuting	1
2	18:22	C.Pip	Foraging	3
3	18:24	C.Pip	Commuting	1
4	18:29	C.Pip	Commuting	1
5	18:31	C.Pip	Foraging	3
6	18:31	Noctule	Commuting	1
7	18:40	C.Pip	Commuting	1
PC C	18:42-18:47			
PC D	18:56-19:01			
8	18:59	C.Pip	Commuting	1
9	19:06	C.Pip	Foraging + Social	Cont.
10	19:10	C.Pip	Social	2
PC E	19:07-19:12			
PC F	19:20-19:25			
PC G	19:31-19:36			
PC H	19:46-19:51			
Finish	19:51			



Legend

- Redline Boundary
- Transect Route
- Start point
- Finish point
- Point Count Locations
- Bat Contacts
 - Common Pipistrelle
 - Noctule

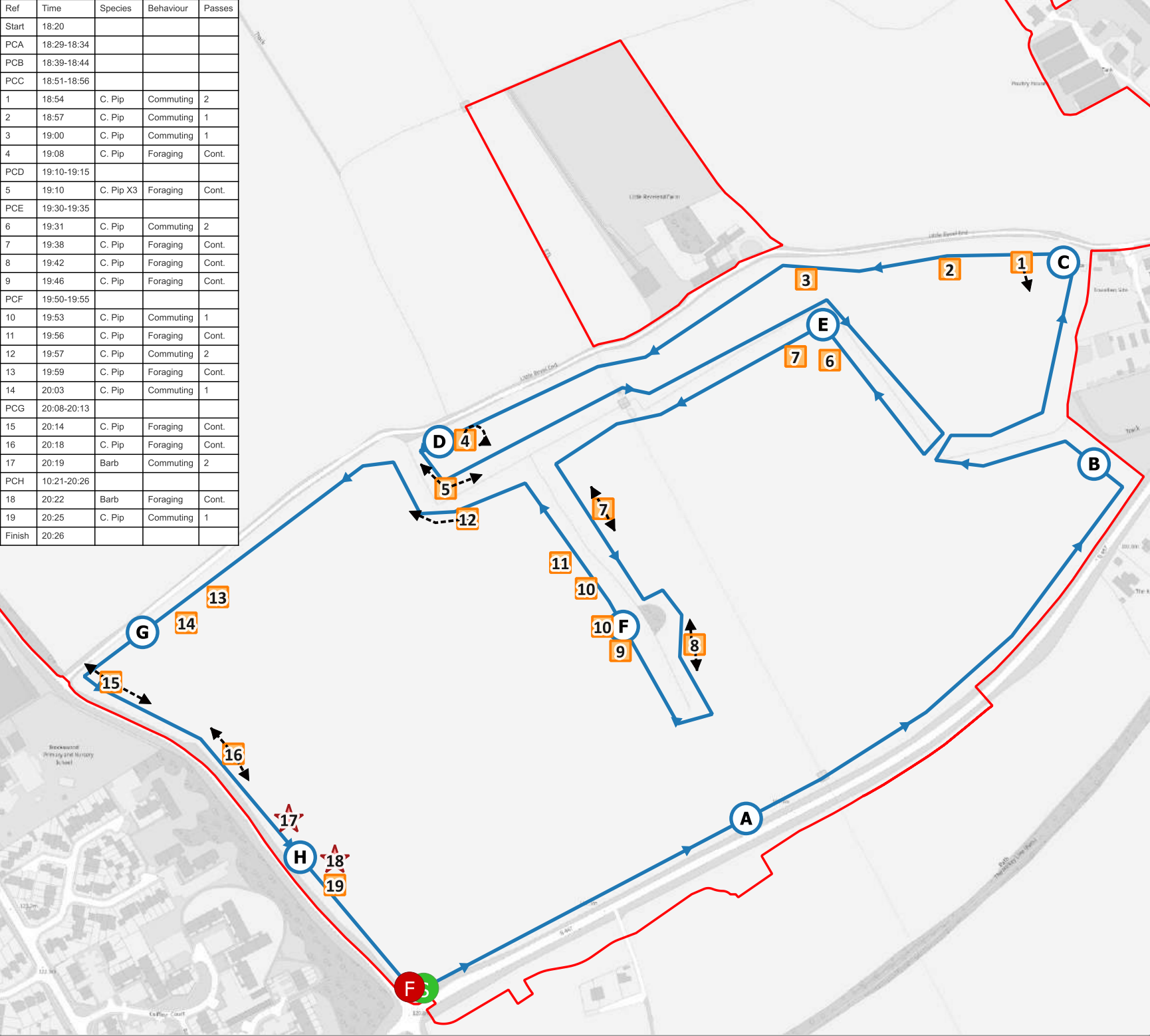
North Hemel Hempstead / Figure 22 - October Bat Transect Plan (Northern Parcel West Transect)



Date: November 2025 Created by: FPCR Environment and Deisgn Ltd.

Scale: 1:7,000 @ A4

Ref	Time	Species	Behaviour	Passes
Start	18:20			
PCA	18:29-18:34			
PCB	18:39-18:44			
PCC	18:51-18:56			
1	18:54	C. Pip	Commuting	2
2	18:57	C. Pip	Commuting	1
3	19:00	C. Pip	Commuting	1
4	19:08	C. Pip	Foraging	Cont.
PCD	19:10-19:15			
5	19:10	C. Pip X3	Foraging	Cont.
PCE	19:30-19:35			
6	19:31	C. Pip	Commuting	2
7	19:38	C. Pip	Foraging	Cont.
8	19:42	C. Pip	Foraging	Cont.
9	19:46	C. Pip	Foraging	Cont.
PCF	19:50-19:55			
10	19:53	C. Pip	Commuting	1
11	19:56	C. Pip	Foraging	Cont.
12	19:57	C. Pip	Commuting	2
13	19:59	C. Pip	Foraging	Cont.
14	20:03	C. Pip	Commuting	1
PCG	20:08-20:13			
15	20:14	C. Pip	Foraging	Cont.
16	20:18	C. Pip	Foraging	Cont.
17	20:19	Barb	Commuting	2
PCH	10:21-20:26			
18	20:22	Barb	Foraging	Cont.
19	20:25	C. Pip	Commuting	1
Finish	20:26			



Legend

- Redline Boundary
- Transect Route
- Flight Arrow
- Start point
- Finish point
- Point Contacts
- Bat Contacts
 - Common Pipistrelle
 - Barbastelle

North Hemel Hempstead / Figure 23 - October Bat Transect Plan (Southern Parcel)

00.10.2 km

Date: November 2025

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Legend

 Redline Boundary

 Static Bat Detector Locations

April - A

May - B-F

June - G-J

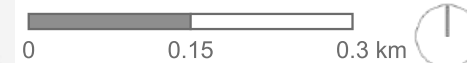
July - K-O

August - P-S

September T-W

October - X-Z

North Hemel Hempstead / Figure 24 -
Locations of Static Bat Detectors



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Created by: FPCR
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