

Hallam Land Management

Bognor Regis Golf Club

APPENDIX 8.3 - Bat Report

December 2021

FPCR Environment and Design Ltd

Registered Office: Lockington Hall, Lockington, Derby DE74 2RH

Company No. 07128076. [REDACTED]

This report is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without the written consent of FPCR Environment and Design Ltd.

Rev	Issue Status	Prepared / Date	Approved/Date
	Draft	DAH / 20.10.21	DAH / 13.12.21

CONTENTS

1.0	NON-TECHNICAL SUMMARY	3
2.0	INTRODUCTION	4
3.0	METHODOLOGY.....	5
4.0	BASELINE CONDITIONS.....	13
5.0	DISCUSSION & RECOMMENDATIONS.....	26

TABLES

Table 1: Nocturnal Activity / Building B1 Survey Timings and Weather Conditions

Table 2: Static Detector Survey Dates

Table 3: Weather Data Nocturnal Building B1 Surveys 2016/2021

Table 4: Classification and Survey Requirements for Bats in Trees

Table 5: Bat records within 1km of the site

Table 6: Bat Transect Summary of Results 2016/17 and 2021

Table 7: Bat Static Surveys Summary of Results 2021

Table 8: Building Descriptions and Bat Roost Potential Assessment

Table 9: Trees with Bat Potential 2021

FIGURES

Figure 1: Static Detector Locations Plan

Figure 2: Bat Consultation Plan

Figure 3: Bat Transect Plan (North Route) – August 2021

Figure 4: Bat Transect Plan (South Route) – August 2021

Figure 5: Bat Transect Plan (North Route) – September 2021

Figure 6: Bat Transect Plan (South Route) – September 2021

Figure 7: Bat Roost in Trees

APPENDICES

Appendix A: Transect Routes and Contacts 2016/2017

Appendix B: Automated Activity Survey Summary 2016/2017

Appendix C: Bats in Trees Table

1.0 NON-TECHNICAL SUMMARY

- 1.1 The Site consists of a golf course, which is dominated by intensively managed amenity grassland that function as the greens, with edge habitats around the fairways that consist of pockets with broadleaved and mixed plantation woodland species with an understorey of taller semi-improved grassland, that make up the 'rough' areas. There is also a network of ditches that bisect through the site, some linking to the Lidsey Rife in the west.
- 1.2 Initial ecological surveys were undertaken in 2016/2017, which included building and nocturnal activity transects with static detectors completed monthly between July to October 2016 and April to June 2017. These were updated 2021 with surveys in August to September.
- 1.3 All ten buildings were assessed to be of negligible bat roosting potential, with the exception of the reception/club house which had moderate bat roosting potential. Nocturnal emergence/re-entry surveys in July and August 2016, and August and September 2021 recorded no bats emerging from or re-entering the building.
- 1.4 Ground assessments and aerial inspections were carried out in 2016, where no bat roosts in trees and bat boxes were identified. In 2021 there were a number of trees with potential, with one confirmed summer days roost in a bat box on tree T96, which contained four *Pipistrellus* sp.
- 1.5 Activity transects and statics in 2016/2017 recorded a peak of nine species/genera with the majority consisting of common and widespread species, with common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus* the most regularly recorded. 14 registrations of barbastelle *Barbastella barbastellus* were identified, which are an annex II and species of principal importance under Section 41 of the NECR Act (2006) the. This only accounted for 0.46% of the registrations.
- 1.6 In 2021, activity and static surveys ten species/genera were recorded with the majority again comprising of common and soprano pipistrelle. A total of 176 registrations identified as barbastelle was recorded, with a peak of 88 registrations along hedgerow H4 to the east.
- 1.7 Under current proposals, H4 and D11 are to be retained and enhanced, and dark corridors within the north and west of the Site will ensure connectivity to Lidsey Rife and further off site. The areas of GI will have a beneficial effect for barbastelle and the local bat community, particularly in the north and west where new foraging and commuting opportunities will be provided with the structural planting, open grassland areas and areas of SuDs. Furthermore, provision of bat boxes will provide additional roosting opportunities for this species.

2.0 INTRODUCTION

- 2.1 This bat report has been prepared by FPCR Environment and Design Ltd on behalf of Hallam Land Management and forms part of the supporting documentation for an Ecological Chapter referred to as Bognor Regis Golf Course, West Sussex (Central OS grid Ref: SU 95019 01235), hereafter referred to as 'the Site'.
- 2.2 A suite of bat surveys has been conducted across the site in 2016/2017, which provide a baseline data set to inform the development planning process. These surveys have been supplemented by updated bat surveys in 2021. This report cumulates all the data collected during these periods.

Site Location and Context

- 2.3 The Site covers an area of approximately 40ha and currently comprises the existing Bognor Regis Golf Course with associated club house and car parking. Vehicular and pedestrian access is provided from Golf Links Road. The golf course comprises fairways, fairway trees with occasional drainage ditches. A practice green is also located close to the club house.
- 2.4 The Site is located to the north of Felpham and Bognor Regis, and is adjacent to the north-western edge of the built-up area of Felpham. It is bounded to the west by Lidsey Rife, beyond which is the LEC Airfield, a railway line and areas of commercial development. To the north is the A259. To the east is the existing residential environs of Felpham and Downview Primary School; while to the south are open fields extending to the B2259 and further afield Felpham.

Site Proposals

- 2.5 Outline planning application with all matters reserved, except means of access, for the erection of up to 480 new homes (C3), the formation of a new means of access onto Golf Links Road, together with the creation of new surface water drainage, new landscaping and habitat creation, ground works and other infrastructure. The retention and re-purposing of the retained club house.

3.0 METHODOLOGY

3.1 In order to compile existing baseline information, relevant ecological information was requested from both statutory and non-statutory nature conservation organisations including:

- Multi Agency Geographic Information for the Countryside (MAGIC) website (www.magic.defra.gov.uk)¹;
- Sussex Biodiversity Record Centre (SBRC);
- Colour 1:25,000 OS base maps²;
- Aerial photographs from Google Earth³.

Site Survey

Manual Activity Transects

- 3.2 The primary objective of the activity surveys was to identify foraging areas, commuting routes and general species utilisation of the site. Surveys followed Bat Conservation Trust (BCT) guidance (2016)⁴, where survey effort is based on the habitats present. Given the size, proximity to linear features such as the Lidsey Rife, woodlands and ditches, it was concluded that monthly surveys would be required between April to October. The period was completed between two years in 2016 and 2017, with updates started in August 2021.
- 3.3 In line with the BCT guidance the transect routes were predetermined prior to the survey, based on routes adopted in previous surveys. These were implemented to comprehensively cover all areas of the Site and included point counts; in 2016/17 a single transect route was walked each month with point counts three-minutes duration. In 2021 the Site was split into two due to the increased area that needed to be covered, whereby two transects per visit were undertaken with point counts increased to five-minutes in duration. These point counts were strategically located throughout the Site to account for any habitat loss and/or potential impacts from the proposed development, and to further ensure a comprehensive coverage of habitats.
- 3.4 Dusk transects each commenced at sunset and continued for approximately 2-3 hours. Surveys were undertaken in conditions that were as close to optimal as possible, as described within the BCT guidance (2016), where sunset temperatures were 10°C or above, with no rain or strong winds. Dawn surveys commenced two hours before sunrise and ended at sunrise, or later if bat activity continued.
- 3.5 The surveys were undertaken by appropriately experienced/licenced ecologists from FPCR. Each transect was walked at a steady pace using an Apple iPad mini with an Echo Meter Touch (Wildlife Acoustics Version 2.0.4). The associated software identifies and tags sound files that it suggests are bat passes; with the data recorded by the Echo Meter also supplemented by written notes documenting bat activity observed on Site, identifying any key foraging and commuting routes.
- 3.6 Post-survey, bat calls were analysed using Kaleidoscope Viewer (Wildlife Acoustics Version 5.1.3), by taking measurements of the peak frequency, inter-pulse interval, call duration and end frequency of recorded calls. Analysis was undertaken by experienced ecologists from FPCR. From this, the

¹ [Online]. <http://magic.defra.gov.uk/>

² [Online]. www.ordnancesurvey.co.uk

³ [Online]. www.maps.google.co.uk

⁴ Collins, J. (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London

level of bat activity across the Site was assessed, taking into account both the species assemblage and spatial variation in activity found within different habitats.

- 3.7 Details of the nocturnal, manual activity surveys completed during 2016/17 and 2021 are presented in *Table 1* below.

Table 1: Nocturnal Activity / Building B1 Survey Timings and Weather Conditions

Survey Ref/ Date	Survey Type	Start Time	Sunset /Sunrise Time	Finish Time	Weather Conditions (temp °C; cloud cover %; wind; and rain)
2016 Surveys					
Transect 1 – 20 th July 2016	Dusk Transect	21:04	21:04	23:11	21 - 18°C, 0% cloud, moderate breeze, no rain.
Transect 2 – 9 th August 2016	Dusk Transect	20:34	20:34	23:34	17.5 - 14°C, 45-55% cloud, light breeze, no rain.
Transect 3 – 7 th September 2016	Dusk Transect	19:36	19:36	22:39	23°C, 40% cloud, light breeze, no rain.
Transect 4 – 8 th September 2016	Dawn Transect	03:28	06:26	06:22	17°C, 0% cloud, light breeze, no rain.
Transect 5 – 5 th October 2016	Dusk Transect	18:31	18:31	21:31	16 - 14°C, 0% cloud, light wind, no rain.
2017 Surveys					
Transect 6 – 18 th April 2017	Dusk Transect	20:02	20:02	23:02	11°C, 35% cloud, light breeze, no rain.
Transect 7 – 18 th May 2017	Dusk Transect	21:04	21:04	23:46	11-16°C, 100% cloud, light breeze, light rain.
Transect 8 – 21 st June 2017	Dusk Transect	21:17	21:17	00:18	15-18°C, 10% cloud, no wind or rain.
2021 Surveys					
Transect 1 – 31 st August 2021 – Northern Transect	Dusk Transect	19:51	19:51	21:51	18°C, 70% cloud cover, light breeze. No rain
Transect 1 – 31 st August 2021 – Southern Transect	Dusk Transect				
Transect 2 -21 st September 2021 – Northern Transect	Dusk Transect	19:04	19:04	21:04	18°C, no cloud cover with no rain or wind.
Transect 2 – 29 th September 2021 – Southern Transect	Dusk Transect	18:46	18:46	20:46	14-11°C, 10% cloud cover, light breeze. No rain

Automated Activity Surveys

- 3.8 Two static, passive recording, broadband detectors were deployed on Site during the 2016/2017 surveys. In 2021 two static units were installed per transect route, so four on total each month. These automated logging systems, Song Meter SM4BAT FS detectors (from Wildlife Acoustics

Inc.), herein referred to as static detectors, save all recordings onto an internal storage device, which can be collected and analysed following the survey.

- 3.9 The static detectors were deployed each month between in 2016/2017 and 2021, where they were left for a period of five consecutive nights, in line with the current guidance (BCT, 2016).
- 3.10 The static units were programmed to activate 30 minutes before dusk and record continuously until 30 minutes following sunrise. The output from these detectors was subject to computer analysis using the software package Kaleidoscope Viewer (Wildlife Acoustics Version 5.1.3).
- 3.11 The SM4BAT records sound files of up to 12 seconds in length before a new file is created. The analysis of the SM4BAT files recorded can highlight the presence of more than one bat if they are 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 (unlike the transect section above where the number of bats can often be visually identified). Therefore, each sound file is counted as a single bat pass or registration and the number of registrations provides an indication of the relative importance of the site / the detector location for bats.
- 3.12 The timings for each automated activity survey completed, along with descriptions of the locations of static (passive) detector units deployed during each, are detailed in *Table 2* below with the location also shown on the plan in *Figure 1 – Static Location Plan*.

Table 2: Static Detector Survey Dates

Position (Figure 1)	Periods Recorded	Area Covered
2016/2017		
A	21 st – 26 th July 2016	Tree group in centre of Site, east of H11
B	20 th – 25 th July 2016	North east of site, on tree group opposite H3
C	9 th – 14 th August 2016	Eastern side of Site near BT 17/18
D	9 th – 14 th August 2016	Southern end of H8, near BT45
E	7 th – 12 th September 2016	Centre of Site, within tree group west of P1
F	7 th – 12 th September 2016	South west of Site, within tree group west of P3
G	7 th – 12 th October 2016	North of Site on banks of Lidsey Rife
H	9 th – 14 th October 2016	Centre of Site, at southern end of D3
I	18 th – 23 rd April 2017	On the western end of H6
J	18 th – 23 rd April 2017	In the south east corner, close to the clubhouse and BT49
K	16 th – 21 st May 2017	In the northern section of the Site close to BT13
L	16 th – 21 st May 2017	In the southern section of the Site close to BT27
M	14 th – 19 th June 2017	In the central section of H10 in the centre of the Site
N	14 th – 19 th June 2017	In the northern most corner of the Site
2021		
O	August	Backing onto the Lidsay Rife
P		Along woodland strip to on the southern boundary

Position (Figure 1)	Periods Recorded	Area Covered
Q	September	Eastern boundary along ditch D11, near Pond P2
R		Along hedgerow H4 in the north east
S		Within woodland near ditch D2
T		Woodland belt near eastern boundary
U		Northern area of site near ditch D6 and woodland
V		Northern boundary

Building Assessments

Internal / External Surveys

- 3.13 Internal assessments consisted of a systematic search of potential features inside the buildings, including all surfaces, window ledges, floors etc., using high powered torches and endoscopes (where possible and required). During these surveys evidence of bat roosts was sought. This included the presence of live or dead bats, or associated evidence which included droppings, urine staining, feeding remains, and potential roosting/access points.
- 3.14 External building assessments were undertaken from ground level with the aid of a torch and binoculars (where appropriate). During these surveys Potential Roosting Features (PRF) for bats including (but not limited to) the following were sought:
- Broken and missing roof tiles, verge tiles, ridge tiles and crevices between hanging tiles;
 - Access points behind soffits, fascia boards and barge boards;
 - Gaps beneath lifted roofing felt and lead flashing;
 - Openings in to roof voids, such as through eaves and gable ends;
 - Loose mortar between bricks, tiles or cracks in rendering;
 - Crevices between windows and lintels;
 - Chimney stacks, cracks in mortar or lead flashing;
 - Spaces between downpipes or guttering;
 - Timber cladding that may be warped, lifted or have knot holes present;
 - Roof joists and gaps between support beams.
- 3.15 The buildings were then classified as offering negligible, low, moderate or high potential dependent on the features and / or evidence observed, which is based *Table 4.1* within the Bat Conservation Trust's Guidelines, which is detailed in *Table 3* below.

Nocturnal Surveys

- 3.16 In 2016 nocturnal dusk emergence and dawn re-entry surveys were completed on building B1, which needed additional survey effort as no access into the voids was possible. These nocturnal surveys were updated in 2021 and followed methods within the BCT Guidelines (2016).
- 3.17 Surveyors were positioned at various aspects of the building, where features that could potentially support roosting bats were located. Dusk surveys began approximately 15 minutes prior to sunset and lasted two hours after sunset. Dawn surveys commenced c. two hours prior to sunrise and

lasted until 15 minutes after sunrise. The number and species of bat observed emerging from, entering, or passing the buildings was recorded.

- 3.18 Wildlife Acoustics Inc. Echo Meter Touch® bat detectors were utilised in conjunction with Echo Meter Touch® app and Apple Inc. iPad® to aid in identification. Nocturnal surveys were conducted in appropriate conditions, i.e. ambient temperature 10°C or above, with little wind and no rain (see Table 3). Post-survey, bat calls were analysed using AnalookW (Titley Electronics, Version 4.1), by taking measurements of the peak frequency, inter-pulse interval, call duration and end frequency. The analysis was undertaken by appropriate training and experienced ecologists.

Table 3: Weather Data Nocturnal Building B1 Surveys 2016/2021

Date	Sunset	Sunrise	Start	Wind	Temperature °C	Cloud Cover	Rain
20.07.16	21:04	-	20:49	1	22	0	0
23.08.16		06:03	04:03	0	10	20	0
23.08.21	20:07	-	19:52	1	21	15	0
30.09.21	-	07:01	05:31	2	10 - 12	40%	0

Tree Roost Assessments

- 3.19 Tree assessments were undertaken from ground level, with the aid of a torch and binoculars (where appropriate). These surveys were undertaken in 2016/2017 and then updated in 2021 by an experienced ecologist from FPCR. During the survey PRF for bats, such as the following, were sought (Based on p.16, British Standard 8596:2015 Surveying for bats in trees and woodland, October 2015⁵):
- Natural holes (e.g., knot holes) arising from naturally shed branches or branches previously pruned back to a branch collar
 - Man-made holes 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 or loose bark, or bark plates
 - 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; and
 - Other suitable places of rest or shelter.

⁵ Surveying for Bats in Trees and Woodland – Guide. British Standards Institution. BS8596:2015, UK.

- 3.20 Certain factors such as orientation of the feature, its height from the ground, its immediate surroundings, and its location in respect to other features, may enhance or reduce the potential value.
- 3.21 Trees were classified into general bat roost potential groups based upon the presence of these features. *Table 4* (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 the BCT guidance.
- 3.22 Although the British Standard 8596:2015 document groups trees with moderate and high potential, these have been separated below (as per Table 4.1 in BCT Guidelines) to allow more specific survey criteria to be applied, particularly with reference to the definition of a breeding site or resting place as described in the Habitat Regulations.

Table 4: Classification and Survey Requirements for Bats in Trees

Classification of Tree / Building	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
Confirmed Roost	Evidence of roosting bats in the form of live / dead bats, droppings, urine staining, mammalian fur oil staining, etc.	A Natural England derogation licence application will be required if the tree or roost site is affected by the development or proposed arboricultural works. This will require a combination of aerial assessment by roped access bat workers (where possible, health and safety constraints allowing) and nocturnal survey during appropriate periods (e.g. nocturnal survey - May to August) to inform on the licence. Works to tree undertaken under supervision in accordance with the approved good practice method statement provided within the licence. However, where confirmed roost site(s) are not affected by works, work under a precautionary good practice method statement may be possible.
High Potential	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. Examples include (but are not limited to); woodpecker holes, larger cavities, hollow trunks, hazard beams, etc.	Aerial assessment by roped access bat workers (if appropriate) and / or nocturnal survey during appropriate period (May to August). Following additional assessments, tree/buildings may be upgraded or downgraded based on findings. If roost sites are confirmed and the 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.

Classification of Tree / Building	Description of Category and Associated Features (based on Potential Roosting Features listed above)	Likely Further Survey Work / Actions
Moderate Potential	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.	A combination of aerial assessment by roped access bat workers (trees) and / or nocturnal survey during appropriate period (May to August). Following additional assessments, roost may be upgraded or downgraded based on findings. After completion of survey work (and the presence of a bat roost is discounted), a precautionary working method statement may still be appropriate. If a roost site/s is confirmed a licence from Natural England will be required.
Low Potential	Contain Potential Roosting Features but with none seen from ground or features seen only very limited potential. Examples include (but are not limited to); loose/lifted bark/tiles, shallow splits exposed to elements or upward facing holes/cavities.	No further survey required but a precautionary working method statement may be appropriate.
Negligible / No potential	Negligible/no habitat features likely to be used by roosting bats	None.

* The Conservation of Habitats & Species Regulations (Amendment) (EU Exit) (2019) affords protection to "breeding sites" and "resting places" of bats. The EU Commission's Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC, February 2007 states that these are places "where there is a reasonably high probability that the species concerned will return".

Constraints

- 3.23 Due to the variable properties of bat echolocation calls and the properties of zero-crossed frequency division recordings, it is not always possible to identify a series of echolocation calls down to species level. In the majority of cases, it was possible to identify to genus level, which was suitable to allow potential affects to be assessed and appropriate mitigation designed. The lower amplitude of calls from species such as brown long-eared bat *Plecotus auritus* or barbastelle *Barbastella barbastellus*, or the higher-pitched calls of species such as horseshoe bats *Rhinolophus* sp. are more difficult to detect and as such calls from these species may not have been received by the directional microphone at the time of recording. Therefore, these species may be under recorded.
- 3.24 The passive recording units do not discern between large numbers of individual bats, or a single bat passing the microphone several times, and therefore the data recorded can only provide an indication of bat activity, measured as bat registrations per unit time.
- 3.25 During the September 2021 survey, the transects within the northern and southern areas were not undertaken at the same time, this was a result of a Covid case with one of the surveyors who had to isolate pending a PCR test. As the season was particularly busy, we continued with one transect route and did the other a few days later.
- 3.26 Internal surveys to inspect the void within building B1 was not possible, as a result additional nocturnal surveys were undertaken to strengthen the assessment, which is in line with BCT guidelines.

- 3.27 Owing to technical issues, no data was recorded during the transect activity survey undertaken within the northern extent of the Site during September, therefore no analysis could be undertaken to accurately identify the species. It is considered however, that due to the large amounts of data collected over the 2016/17 and 2021 survey periods, the four unidentified contacts will not affect the evaluation of the overall dataset, and therefore does not pose a constraint to the assessment

4.0 BASELINE CONDITIONS

Desk Study

- 4.1 Four records from SBRC were returned which were located within 1km of the Site boundary and were recorded within the last 10 years (*Table 5*). See *Figure 2* for locations.

Table 5: Bat Records within 1km of the Site

Species	Most Recent Recorded Date	Conservation Status	Approx. Location Relative to Site
Bat species <i>Chiropter sp.</i>	2015	Hab Reg Sch2, WCA Sch5, NERC S41.	Single record, 922m South-West.
Brown Long-eared Bat <i>Plecotus auritus</i>	2014	Hab Reg Sch2, WCA Sch5, NERC S41.	Single record, 656m West.
Common pipistrelle <i>Pipistrellus pipistrellus</i>	2016	Hab Reg Sch2, WCA Sch5, NERC S41.	Single record, 724m North-West.
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	2014	Hab Reg Sch2, WCA Sch5, NERC S41.	Single record, 986m West.
Key: NERC S41 – Natural Environment & Rural Communities Act 2006 Section 41, Hab reg Sch2 – Conservation of Habitats & Species Regulations 2019, Schedule 2, WCA – Wildlife & Countryside Act 1981.			

Field Surveys

- 4.2 The following section provides an overview of results from field surveys, including transects and static detector deployment for bats, undertaken in 2016/17 and 2021.

Bat Transect Surveys 2016/2017 (*Appendix A*)

- 4.3 Over the course of the manual activity surveys undertaken during 2016/2017, there was a total of 191 contacts, which averaged approximately 24 contacts per survey undertaken. Activity peaked in August 2016 with 36 contacts, which were all identified as common and widespread species, with common pipistrelles accounting for 21 contacts.
- 4.4 Through the entire survey period of 2016/17 common pipistrelles were the most frequently recorded bat species during the manual activity surveys, comprising 75% of the total contacts, with soprano pipistrelles the next most frequent at 10%, followed by *Myotis* species (9%), *Pipistrellus* species (2%), *Plecotus* species (2%), *Nyctalus* species (2%) *Nathusius* pipistrelle (0.5%), and barbastelle *Barbastella barbastellus* (0.5%).
- 4.5 In 2016/2017 activity was not concentrated in one area, with activity alternating between the northern and southern areas, with the Lidsey Rife recording frequent contacts. The single barbastelle contact occurred along the northern boundaries. See *Table 6* below.

Bat Transects Surveys 2021 (*Figures 3 to 6*)

- 4.6 In 2021 a total of 79 contacts were recorded in August and September, with August recording 51 contacts. During the current surveys the most frequently recorded species are, common pipistrelle (59%), soprano pipistrelle (11%), *Myotis* species (9%), noctule *Nyctalus noctula*, *Nyctalus* species and the unidentified *Chiropter* species (5% each), serotine and *Pipistrelle* species (5% each), and *Plecotus* species and *Nathusius* pipistrelle (1% each).

- 4.7 The 2021 transects recorded activity in a range of areas, but there were concentrates in the south and along the eastern boundary, *Table 6* summarises the results.

Table 6: Bat Transect Summary of Results 2016/17 and 2021

Date	Total Contacts () indicate during point counts	Species Recorded (No. Contacts)	Activity Summary
2019 Surveys (Appendix A)			
20 th July 2016	21 (2)	<u>Transect</u> 17 common pipistrelle, 2 <i>pipistrelle</i> sp. <u>Point Count</u> 2 common pipistrelle,	<u>Transect</u> 19 contacts were made during the walked transect with all the activity concentrated along the Lidsey Rife or in close proximity along adjacent ditches (D1 and D7). All activity recorded was foraging, with 10 contacts with bats recorded continuously. <u>Point Count</u> Two contacts, both common pipistrelles, were made during the point counts. The first during PC3 at the northern end of the Site on Ditch 1 and the second on PC4
9 th August 2016	36 (6)	<u>Transect</u> 18 common pipistrelle, 8 <i>Myotis</i> sp. and 4 soprano pipistrelle <u>Point Count</u> 3 common pipistrelle, 2 <i>Myotis</i> sp., 1 soprano pipistrelle	<u>Transect</u> Contacts for all species were spread across the Site with concentrations along the south eastern boundary (along hedgerows H8 and H12), in the centre of the Site near building B2 and in the centre of the northern section within the tree groups.. <u>Point Count</u> Six contacts were made with common pipistrelles recorded at PC1 and 2 in the south / centre of the Site. A soprano pipistrelle was recorded at PC3 on the north eastern boundary and two unidentified <i>Myotis</i> species contacts at PC5 adjacent to the Lidsey Rife.
7 th September 2016 (Dusk)	29 (4)	<u>Transect</u> 16 common pipistrelle, 3 <i>Myotis</i> sp, 3 soprano pipistrelle and 3 <i>Nyctalus</i> sp. <u>Point Count</u> 3 common pipistrelle, 1 <i>Nyctalus</i> sp.	<u>Transect</u> The majority of the contacts (17) were recorded in the northern half of the site, along ditch 1 and the Lidsey Rife. Contacts included foraging common pipistrelles (continuous) as well as passes from the other three species recorded. There was also a concentration of activity recorded in the south east of the Site with passes from all four species. <u>Point Count</u> All four contacts were made during PC2 which was located at the northern end of the Site adjacent to ditch 1. Contacts included continuous foraging activity from common pipistrelle and a single <i>Nyctalus</i> sp. pass.
8th September 2016 (Dawn)	15 (0)	<u>Transect</u> 13 common pipistrelle and 2 soprano pipistrelle	<u>Transect</u> Activity was widespread across the north and west with no activity recorded along the south western boundaries. No foraging activity was confirmed with contacts consisting

Date	Total Contacts () indicate during point counts	Species Recorded (No. Contacts)	Activity Summary
		<u>Point Count</u> None recorded	generally of single passes and on occasion multiple passes. The soprano pipistrelle contacts were in the north with one adjacent to ditch 1. <u>Point Count</u> None Recorded.
5 th October 2016	11 (1)	<u>Transect</u> 5 common pipistrelle, 4 soprano pipistrelle and 1 barbastelle <u>Point Count</u> 1 <i>Myotis</i> sp.	<u>Transect</u> Activity was mostly in the north / east / centre of the site with no activity along the western or southern boundaries. Social calls from common and soprano pipistrelles were confirmed on site. The barbastelle contact was in the northern protrusion. <u>Point Count</u> The only contact during a point count was a pass from a <i>Myotis</i> sp. bat at PC4 in the northern end of the site.
18 th April 2017	10 (2)	<u>Transect</u> 6 common pipistrelle, 1 soprano pipistrelle and 1 <i>Myotis</i> sp. <u>Point Count</u> 1 Nathusius' pipistrelle and 1 common pipistrelle	<u>Transect</u> Activity was predominantly in the north and west, with no activity identified on the south western boundaries. One contact from a soprano pipistrelle and one from a <i>Myotis</i> sp. were detected along the central treeline of the site. Two instances of foraging were identified.. <u>Point Count</u> The only contacts made during point counts were passes from a Nathusius' pipistrelle from PC2 at the northern end of the site, and a pass from a common pipistrelle at PC3 located on the western boundary.
16 th May 2017	24 (0)	<u>Transect</u> 18 common pipistrelle, 1 soprano pipistrelle, 3 <i>Plecotus</i> sp. and 2 <i>Myotis</i> sp. <u>Point Count</u> None Recorded.	<u>Transect</u> Activity was predominantly in the north and south-west from common pipistrelles, with little activity identified in-between. One contact from a soprano pipistrelle and <i>Plecotus</i> sp. was noted in the south west and two from a <i>Plecotus</i> sp. and another two from <i>Myotis</i> sp. were detected in the northern section. Four instances of foraging were identified, with most activity comprised of passes in the south west corner of the Site. <u>Point Count</u> None Recorded.
14 th June 2017	35(4)	<u>Transect</u> 29 common pipistrelle, 1 soprano pipistrelle and 1 <i>Pipistrelle</i> sp. <u>Point Count</u> 4 common pipistrelle.	<u>Transect</u> Activity was predominantly in the north-west and south, with little activity identified elsewhere. One contact from a soprano pipistrelle was noted along the Rife running along the west of the site and one call from a <i>Pipistrelle</i> sp. was recorded close to the clubhouse. Three instances of foraging were identified in both the southern and north western areas. <u>Point Count</u>

Date	Total Contacts () indicate during point counts	Species Recorded (No. Contacts)	Activity Summary
			Four common pipistrelle contacts , two calls were noted during point count B, one at point count C and the final call from point count A.
2021 Surveys			
31 st August 2021 North Transect <i>Figure 3</i>	8	Common Pipistrelle 7 <i>Pipistrelle sp 1</i>	Activity occurred along hedgerow H12 near buildings B1 at the entrance to the golf course, with six contacts recorded with a mixture of social and foraging calls. There was little activity in central areas.
31 st August 2021 South Transect <i>Figure 4</i>	43	Common Pipistrelle 23 Soprano pipistrelle 6 <i>Myotis sp 5</i> Noctule 4 <i>Nyctalus sp 4</i> Serotine 1	Activity seemed to be spread in three areas, to the east nearer the Site entrance, central regions around ditch D7 and to a lesser extent the south/south western habitats. Most of the behaviours recorded.
21 st September 2021 North Transect <i>Figure 5</i>	13	Common pipistrelle 7 <i>Chiropter sp 4</i> <i>Myotis sp 1</i> Serotine 1	The east and north west had the concentration of the bat activity, with continuous foraging recorded from common pipistrelles along hedgerow H4, along Lidsay Rife and hedgerow H1.
29 th September 2021 South Transect <i>Figure 6</i>	15	Common pipistrelle 8 Soprano pipistrelle 3 <i>Pipistrelle sp 1</i> <i>Myotis sp 1</i> <i>Plecotus sp 1</i> Nahusius pipistrelle 1	The central regions of the southern transect had the majority of the activity with continuous foraging recorded by soprano and common pipistrelles, this was associated with ditch D7.

Bat Static Surveys (Figure 2)

- 4.8 The following paragraphs detail the findings of the automated activity surveys. In this context, the term 'registration' refers to a unique sound file created over the course of a number of seconds. Based on this, numerous 'registrations' does not necessarily refer to multiple bats (unlike the manual activity survey section covered above, where the number of bats can often be visually identified), as one bat may create a number of registrations, for example an individual foraging near the microphone for a sustained period of time.

Overall Summary

- 4.9 During the automated surveys in 2016/17, 14 successful units were deployed (two per month), with a total of 7660 registrations were recorded, consisting of common pipistrelle (comprising 82.8%), soprano pipistrelle (12.8%), *Pipistrellus* species (0.1%), *Plecotus* sp (0.3%), *Nyctalus* species (1.1%), noctule (0.3%), barbastelle (0.2%), *Myotis* species (1.6%), *Nathusius'* pipistrelle (0.2%), and serotine (0.6%).
- 4.10 Barbastelle, an Annex II species, was recorded in August and October with a total of 14 registrations.
- 4.11 *Appendix B* provides a summary of the activity levels recorded in 2016/2017 and describes the position on-site in which each of the units were deployed; with two units deployed per survey, covering each the features within the golf course and boundary habitats.
- 4.12 During the automated surveys in 2021, during which 8 successful units have been deployed to date (four each between August and September 2021), a total of 12529 registrations were recorded, consisting of common pipistrelle (comprising 69.58% of total data), soprano pipistrelle (15.54%), *Myotis* species (8.51%), *Pipistrellus* species (1.64%), barbastelle (1.40%), *Plecotus* sp (1.22%), noctule (1.05%), *Nyctalus* species (0.82%), *Nathusius'* pipistrelle (0.11%), serotine *Eptesicus* serotinus (0.11%) and *Nyctalus/Eptesicus* species (0.02%).
- 4.13 The highest numbers of registrations recorded during 2021 occurred during August along the southern boundary (static unit P) whereby 4080 registrations were recorded over five nights. In comparison, unit V was deployed in September 2021 in the north eastern extent, along the southern edge of a parcel of mixed woodland plantation, where 147 registrations were recorded.

Table 7: Bat Static Surveys Summary of Results for 2021

Survey Period	Unit Reference / Location (Figure 1)	Total Registrations Over Five Nights	Species Recorded (in Order of Abundance)	Summary of Activity	Barbastelle Activity
25 th – 30 th August 2021	O – Located along the western boundary, adjacent to the Lidsey Rife	409	9 species / species groups: common pipistrelle (295), soprano pipistrelle (35), <i>Myotis</i> species (27), <i>Nyctalus</i> species (19), barbastelle (16), noctule (13), <i>Plecotus</i> species (2), <i>pipistrellus</i> species (1) and serotine (1)	Bat activity was recorded on every night with common pipistrelles the most commonly recorded species, with a peak nightly count of 114 registrations on the 29/08/21. Soprano pipistrelle were the next frequently recorded with a peak of 15 registration. Low numbers of barbastelle, <i>Myotis sp.</i> , <i>Nyctalus</i> species and noctule were each recorded on four out of the five survey nights.	16 registrations Recorded on three nights with a peak of 13 during the 29/08/21 – 30/08/21
25 th – 30 th August 2021	Q – Located in eastern extent, along hedgerow H5	3144	11 species / species groups: common pipistrelle (1715), soprano pipistrelle (828), <i>Myotis</i> species (460), barbastelle (88), noctule (16), <i>Nyctalus</i> species (13), <i>Plecotus</i> species (11), serotine (6), <i>Nathusius'</i> pipistrelle (3), <i>pipistrellus</i> species (2) and <i>Nyctalus/Eptesicus</i> species (2)	Common pipistrelles were the most commonly recorded species with a peak nightly count of 876 registrations on the 29/08/21 – 30/08/21. There were smaller peaks in soprano pipistrelle activity on the same night with 475 registrations respectively. <i>Myotis</i> species registrations peaked on the 25/08/21 – 26/08/21 with 213 registrations. Other species were recorded sporadically throughout the survey period which accounted for less than 5% of all registrations.	88 registrations Recorded on each night with a peak of 48 during the 29/08/21 – 30/08/21. Remaining registrations: 12 during 25/08/21 – 26/08/21 13 during 26/08/21 – 27/08/21 14 during 27/08/21 – 28/08/21 1 during 28/08/21 – 29/08/21

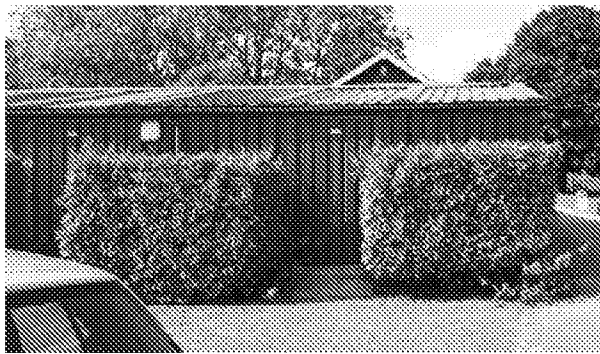
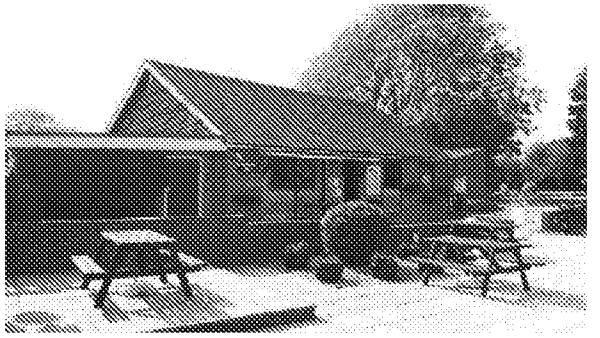
Survey Period	Unit Reference / Location (Figure 1)	Total Registrations Over Five Nights	Species Recorded (in Order of Abundance)	Summary of Activity	Barbastelle Activity
25 th – 30 th August 2021	R – Located in the eastern extent adjacent to D4 and H4	454	8 species / species groups: common pipistrelle (324), <i>Myotis</i> species (64), noctule (22), soprano pipistrelle (14), <i>Nyctalus</i> species (13), <i>Plecotus</i> species (10), barbastelle (5), serotine (2)	Common pipistrelles were the most commonly recorded species with 71.36% of all registrations. Soprano pipistrelles accounted for 14.09%. The peak number of registrations occurred on the 28/08/21 – 29/08/21 with 125 registrations where 7 species / species groups were recorded, including 5 registrations from barbastelle.	5 registrations Recorded on three nights with a peak of 3 registrations on the 28/08/21 – 29/08/21. Remaining registrations: 1 during 26/08/21 – 27/08/21 1 during 27/08/21 – 28/08/21
25 th – 30 th August 2021	P – Located on the southern boundary of the site	4080	9 species / species groups: common pipistrelle (3077), soprano pipistrelle (581), <i>Myotis</i> species (148), <i>Pipistrellus</i> species (120), noctule (69), <i>Plecotus</i> species (45), <i>Nyctalus</i> species (24), barbastelle (12), serotine (4)	Common pipistrelles were the most frequently recorded species with a peak count of 1272 registrations recorded on the 29/08/21 – 30/08/21. Soprano pipistrelle, <i>Pipistrellus</i> species and <i>Myotis</i> species were also frequently recorded throughout the survey period with a peak of 581, 120 and 148 registrations, respectively. Other species were recorded in low numbers sporadically throughout the survey period.	12 registrations Recorded on four of the five nights with a peak of 6 registrations on the 28/08/21 – 29/08/21 Remaining registrations: 4 during 26/08/21 – 27/08/21 1 during 27/08/21 – 28/08/21 1 during 29/08/21 – 30/08/21
21 st – 26 th September 2021	S – Located in the south-western extent of the site, adjacent to P3 and D7	728	9 species / species groups: common pipistrelle (612), soprano pipistrelle (80), <i>Plecotus</i> species (14), <i>Myotis</i> species (12), <i>Pipistrellus</i> species (6), noctule (2), <i>Nyctalus</i> species (1) and barbastelle (1)	Common pipistrelles were the most frequently recorded with a peak of 342 registrations during the 22/09/21 – 23/09/21. Low numbers of registrations occurred during the first two nights of the survey period from an additional 7 species / species groups, and no registrations were recorded from any bat species during the last three nights of the survey period.	1 registration between 0:00 – 01:00 on the 22/09/21

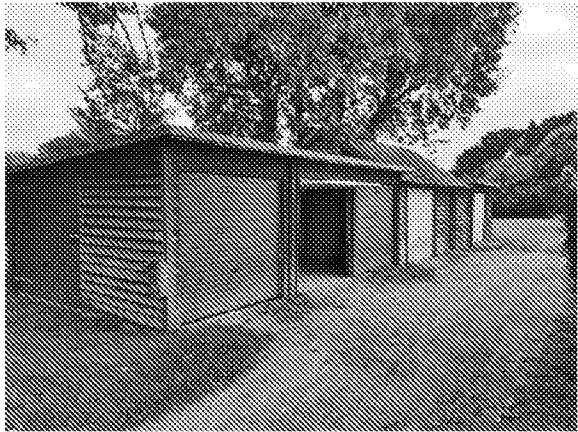
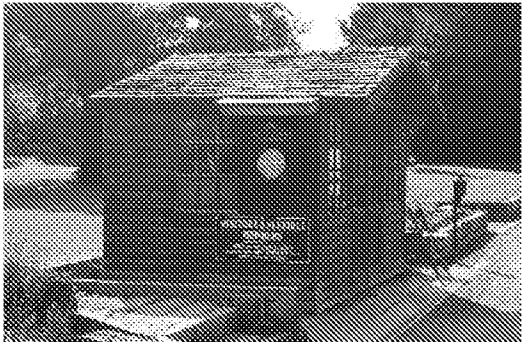
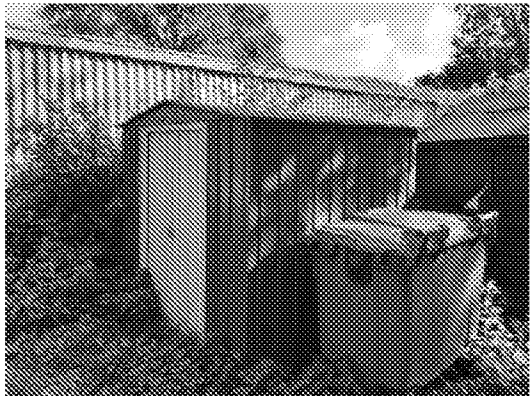
Survey Period	Unit Reference / Location (Figure 1)	Total Registrations Over Five Nights	Species Recorded (in Order of Abundance)	Summary of Activity	Barbastelle Activity
21 st – 26 th September 2021	T – Located within a tree group in the south-eastern extent of the site	1434	9 species / species groups: common pipistrelle (991), soprano pipistrelle (192), <i>Myotis</i> species (134), <i>Pipistrellus</i> species (54) <i>Nyctalus</i> species (21), <i>Plecotus</i> species (21). barbastelle (14), noctule (4) and Nathusius' pipistrelle (3)	Common pipistrelles were the most frequently recorded species with a peak of 500 during the 25/09/21 – 26/09/21. Soprano pipistrelle were the next frequently recorded followed by <i>Myotis</i> species. The majority of registrations occurred sporadically throughout the night from 19:00 – 07:00.	14 registrations Recorded on four of the five nights with a peak of 11 registrations on the 25/09/21 – 26/09/21. Remaining registrations: 1 during 22/09/21 – 23/09/21 1 during 23/09/21 – 24/09/21 1 during 24/09/21 – 25/09/21
21 st – 26 th September 2021	U – Located within a tree group in the northern extent of the site, adjacent to D6	1465	9 species / species groups: common pipistrelle (1224), soprano pipistrelle (140), <i>Myotis</i> species (51), <i>Plecotus</i> species (25). <i>Nyctalus</i> species (8), barbastelle (6), Nathusius' pipistrelle (5), <i>Pipistrellus</i> species (4) and noctule (2)	Common pipistrelles were the most frequently recorded species with 83.55% of all registrations, with activity fairly consistent throughout the survey period with a peak count of 347. The majority of common pipistrelle registrations occurred between the hours of 19:00 – 23:00.	6 registrations Recorded on three of the five nights with a peak of 3 on the 25/09/21 – 26/09/21. Remaining registrations: 2 during the 21/09/21 – 22/09/21 1 during 24/09/21 – 25/09/21
21 st – 26 th September 2021	V – Located in a tree group in the north-eastern extent of the site, adjacent to D5	147	9 species / species groups: common pipistrelle (71), soprano pipistrelle (15), <i>Pipistrellus</i> species (15), <i>Plecotus</i> species (15), <i>Myotis</i> species (14), barbastelle (10), <i>Nyctalus</i> species (3), Nathusius' pipistrelle (2) and noctule (9)	Low activity levels were recorded with common pipistrelle the most frequently recorded with a total of 71 registrations comprising a peak count of 22 on the 23/09/21 – 24/09/21. Activity was consistent throughout the survey period with the majority of activity recorded during 19:00 – 01:00.	10 registrations Recorded on four nights with a peak of 5 on the 21/09/21 – 22/09/21 Remaining registrations: 3 during 22/09/21 – 23/09/21 1 during 23/09/21 – 24/09/21 1 during 24/09/21 – 25/09/21

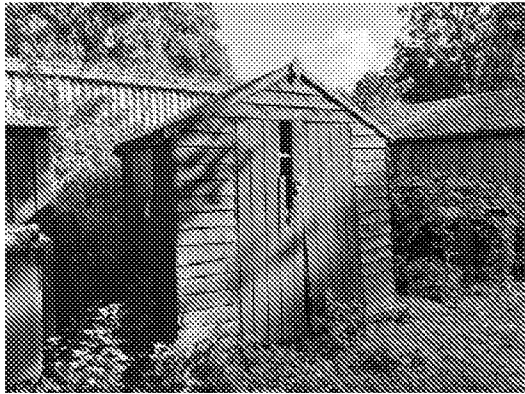
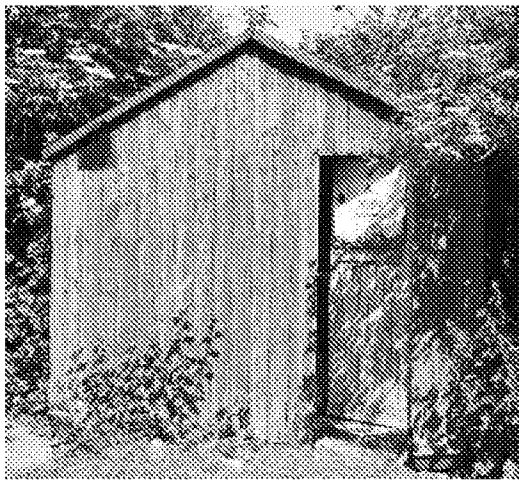
Building Assessment

- 4.14 The ten buildings within the red line boundary were surveyed as a part of the 2016/2017 surveys, the results of which were used to inform the updated building surveys in 2021. *Table 8* below outlines each buildings description and if any potential roosting features were recorded, as a combination of both surveys.

Table 8: Building Descriptions and Bat Roost Potential Assessment

Ref	Photo	Assessment
B1		Large irregular shaped brick building used as the golf club reception / club house. Central section is of stone construction with hipped tiled roof. On the western aspect is a timber cladded. The northern section is a newer brick building with an irregular shaped pitched tiles roof connecting to a large barn on the eastern end of similar construction. The sections are all linked together either directly or with short sections of flat roof. Occasional lifted tiles, gaps under the timber cladding (with evidence of nesting birds) and louvre vents in the clock tower offer possible roosting opportunities. Moderate Bat Roost Potential
B2		Shed building made of corrugated metal with pitched roof also made of corrugated metal sheets offering no suitable roosting opportunities. Negligible Bat Roost Potential
B3		Single storey brick building with pitched tiled roof and wooden cladding in the pitches. Smaller flat roofed extension on the southern side. Building well sealed with no roosting opportunities recorded. Negligible Bat Roost Potential

Ref	Photo	Assessment
B4		Single storey garage block with timber clad walls, metal doors, and a roof comprising a shallow mono-pitched, pitched and flat roof combination. Small, heavily cobwebbed void present, with no evidence of bats recorded. Negligible Bat Roost Potential
B5		Small summer house with single skinned wooden cladding on walls and pitched roof with wooden tiles. Superficial gaps under roof tiles present but not large enough to offer roosting opportunities. Internally no roosting evidence seen. Negligible Bat Roost Potential
B6		Large shed used by grounds / maintenance. Concrete base with bonded concrete fibre sheet walls and pitched corrugated roof. Open to ceiling inside with skylights. Offers no suitable roosting features. Negligible Bat Roost Potential
B7		Small, corrugated metal shed, with corrugated metal pitched roof. Well-sealed with no access points. Negligible Bat Roost Potential

Ref	Photo	Assessment
B8		Small, timber clad shed with pitched felt covered roof. No void present, and split in door allowing light ingress. Negligible Bat Roost Potential
B9		Small shed with vertical timber cladding and pitched felt roof. No suitable roosting features recorded. Negligible Bat Roost Potential
B10		Small single storey concrete and brick building used as a café. Hipped tiled roof with wooden soffits and timber cladding on walls. Well-sealed with no suitable roosting features recorded. Negligible Bat Roost Potential

- 4.15 Building B1 was initially identified as having low bat roosting potential, as it is in a generally sound/well maintained condition, with limited roosting opportunities. However, no internal access was possible, so in accordance with BCT guidelines survey effort was increased to account for this, effectively doing the survey effort for a moderate potential building.

Nocturnal Surveys: Building B1

- 4.16 In 2016, during the nocturnal survey undertaken on the 20th of July and the dawn re-entry survey undertaken on the 23rd August, no bats were observed emerging from, or re-entering the building.

- 4.17 During the nocturnal survey undertaken on the 23rd August, and the dawn re-entry survey undertaken on the 30th September, no bats were seen to be emerging from, or entering any features within building B1. There was generally low bat activity within the vicinity of the building, with only a few common and soprano pipistrelle species recorded.

Trees

Bat Tree Surveys 2021 (Figure 7)

- 4.18 There are a large number of trees throughout the site, the majority of which were healthy and provided no features with obvious potential to support roost bats. There were also a number of trees that had bat boxes installed, these were spread around the Site. In 2016, 40 trees were aerially assessed, this included trees with natural features but also those with bat and bird boxes. During these surveys no roosting bats were identified. In 2021 aerial assessments were updated, during which four common pipistrelles were found in a 2FN bat box on tree T96.
- 4.19 A total of 97 trees were identified with some degree of roosting features and/or bat/bird boxes. These were classified as having high, moderate, or low bat roost suitability. Below is a summary of the bat roost potential of trees identified during ground-based surveys in 2021, a full breakdown of the trees with associated features can be found in *Appendix C*. In addition to T96 with a confirmed roost, 20 trees were assessed as having low potential: 41 moderate and 35 high roosting potential.

Table 9: Trees with Bat Potential 2021

Roost Suitability	Ecology Tree Reference
Low	2, 5, 7, 9, 35, 45, 50, 51, 52, 54, 56, 58, 59, 65, 69, 70, 73, 83, 85, 95
Moderate	4, 8, 11, 12, 13, 14, 17, 18, 20, 21, 23, 24, 27, 28, 29, 31, 32, 33, 34, 37, 40, 55, 57, 60, 62, 63, 64, 66, 67, 72, 74, 76, 78, 79, 80, 81, 82, 87, 88, 89, 90
High	1, 3, 6, 10, 15, 16, 19, 22, 25, 26, 30, 36, 38, 39, 41, 42, 43, 44, 46, 47, 48, 49, 53, 61, 68, 71, 75, 77, 84, 86, 91, 92, 93, 94, 97
Confirmed Roost	T96

5.0 DISCUSSION & RECOMMENDATIONS

- 5.1 The broadleaved and mixed plantation woodlands, hedgerows and treelines within the Site provided foraging and commuting opportunities for bats in the local area, with numerous trees provided roosting opportunities as natural features and attached bat boxes.

Activity Surveys

- 5.2 The activity transect undertaken have confirmed that common and soprano pipistrelle are the most frequently recorded bat species, which are widespread species. The most bat activity was recorded during August 2021 within the southern extent of the Site with 43 contacts. Bat activity during the 2016/17 survey period also recorded the most contacts during August with 36 contacts across the Site.
- 5.3 Bat activity recorded during the 2016/17 transect surveys activity was not concentrated in one area, with activity alternating between the northern and southern areas, with the Lidsey Rife recording frequent contacts.
- 5.4 In contrast, activity during the 2021 transects was focused in the southern and eastern extents, with lower levels of activity along the west and in association with the Lidsey Rife.
- 5.5 The automated activity surveys have confirmed all three pipistrelle species utilising the Site as well as barbastelle, noctule and serotine. Four genera of bats which could not be identified to species level: *Myotis*, *Plecotus*, *Nyctalus* and *Nyctalus/Eptesicus* species were also recorded. The results from 2016/7 and 2021 illustrate that the periphery habitats within the southern and eastern extents of the Site, along with the central woodland patches provide commuting and foraging areas.
- 5.6 There were 14 registrations identified as barbastelle during the activity surveys undertaken in 2016/17. During the surveys undertaken in 2021, a total of 176 registrations identified as barbastelle was recorded, with a peak of 88 registrations along hedgerow H4 and D11 to the east.
- 5.7 Barbastelle bat are Annex II species of the Habitats Directive and are species of Principal Importance under S41 of the NERC Act (2006). The Joint Nature Conservation Committee (JNCC)⁶ UK status and distribution information for barbastelles shows that there are records of these species in the vicinity of the Site, although this is not in sufficient detail to accurately assess, and specific consultations recorded no such species within 1km of the site; JNCC note that:
- "The barbastelle is widely distributed across southern England and across Wales but is likely to have been significantly under-recorded within its range."*
- 5.8 Barbastelle bats are known to utilise woodland, streams and rivers; the immediate habitats around the development are lacking significant woodland areas, with the closest located c. 6km away north, in Arundel with connectivity to the site via an extensive network of hedgerows. The Lidsey Rife, which abuts the western boundary, could provide foraging opportunities for this species, but this is not purely located in the Site boundary although it will remain unaffected by the development proposals.
- 5.9 The majority of barbastelle registrations occurred in the eastern extent of the site. The residential areas of Felpham and Bognor Regis are found to the south, west and east of the Site, with increases in light pollution due the proximity to the urban landscapes. Barbastelle tend to avoid such areas where light levels increase, so it is not expected that the barbastelles came from those

⁶ The Joint Nature Conservation Committee UK Status & Trends: Barbastelle. <http://jncc.defra.gov.uk/publications/JNCC312/species.asp?FeatureIntCode=S1308>. Assessed 06.08.16

area, but instead it is considered likely that they utilise habitats to the north, possibly commuting from the woodland in Arundel and north of Fontwell.

- 5.10 Barbastelles are known to forage over large distances, with foraging routes changing during the season in response to life stages and food availability, it is therefore likely that the Site falls within the home range of barbastelles; but due to the low registration numbers, the Site does not function as an important resource.
- 5.11 Under current proposals, H4 and D11 are to be retained and enhanced, and dark corridors within the north and west of the Site will ensure connectivity is maintained, particularly along Lidsey Rife. The inclusion of extensive GI will have a beneficial effect for barbastelle and the local bat community, particularly in the north and west where new foraging and commuting opportunities will be provided with the structural planting, open grassland areas and a number of SuDs, that will provide invertebrate breeding opportunities, thus increasing prey items for bats.

Building Surveys

- 5.12 Ten buildings were identified on-site. One of which, building B1, had moderate potential to support roosting bats. During nocturnal surveys undertaken in 2016 and during 2021, no bats were observed emerging from, or re-entering the building.
- 5.13 Under current proposals, building B1 is proposed to be retained and repurposed, whereby there are no current constraints as bats are absent. However, if a long period of time elapses from these surveys, and new features are created, then updated surveys might be required.

Trees

- 5.14 As of 2021, 97 trees within the site have potential to support roosting bats. The proposed development will see the potential loss of twelve tree with some varying degree of bat potential, these are listed below in *Table 10* and can be seen in *Figure 7*. None of these were confirmed as having confirmed roosts, but they will require additional survey prior to their removal.

Table 10: Tree Potentially Lost to Development

Roost Suitability	Trees Potentially lost
Low	T69, T70
Moderate	T32, T40, T72, T94
High	T36, T71, T91, T92, T93, T94,

- 5.15 A Corsican pine *Pinus nigra* tree (T96) supported a bat box which contained a small summer *Pipistrellus day* roost with four individuals. The confirmed roost will be retained within GI and a sensitive lighting scheme will be implemented to ensure there will be no impacts from development, if this is likely to change at reserve matters and illumination is likely, then the bat box should be moved under an appropriate licence from Natural England to a tree away from any lighting.

- 5.16 The majority of the remaining potential roost trees will be retained and buffered from the build environment and will not be impacted by lighting. GI close to roads and/or houses will be adequately buffered from lighting through measures outlined in best practice guidance^{7,8}, including:
- The avoidance of direct lighting and light spillage on nearby GI using directional lighting;
 - The use of low-pressure sodium lights, which emit one light wavelength and attract less insects;
 - Restricting the height of light columns to reduce horizontal spill;
 - Installing low wattage LED security lighting on properties close to GI during construction to avoid future homeowners installing unsuitable lighting for bats.

⁷ Bat Conservation Trust (2018) *Guidance Note 08/18 – Bats and artificial lighting in the UK*. BCT, London.

⁸ Institute of Lighting Professionals (2021) *Guidance Note 01/21 - The Reduction of Obtrusive Light*. ILP, Warwickshire.



This drawing is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without written consent of FPCR Environment and Design Ltd.

Ordnance Survey material - Crown Copyright. All rights reserved.
Licence Number: 100019980

Key

- Site Boundary
- Tree with Confirmed Roost
- Tree with High Potential
- Tree with Moderate Potential
- Tree with Low Potential



This drawing is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without written consent of FPCR Environment and Design Ltd.

Ordnance Survey material - Crown Copyright. All rights reserved.
Licence Number: 100019980

Key

-  **Site Boundary**
-  **Additional Survey Area Boundary**
-  **Static Detector Locations**

- A & B - July 2016**
- C & D - August 2016**
- E & F - September 2016**
- G & H - October 2016**
- I & J - April 2017**
- K & L - May 2017**
- M & N - June 2017**
- O, P, Q & R - August 2021**
- S, T, U & V - September 2021**
- W & X - October 2021**



Hallam Land Management

Bognor Regis Golf Club,
Bognor Regis

STATIC LOCATIONS PLAN

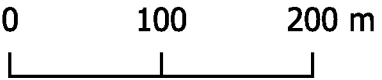
scale @ A3
1:5000

drawn
EH

issue
13/12/2021

drawing / figure number
Figure 1

rev
7338-E-01





This drawing is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without written consent of FPCR Environment and Design Ltd.

Ordnance Survey material - Crown Copyright. All rights reserved.
Licence Number: 100019980

Key

-  **Site Boundary**
-  **1km Buffer**

Bats

-  **Brown Long-eared Bat**
-  **Common Pipistrelle**
-  **Soprano Pipistrelle**
-  **Unidentified Bat sp.**

FPCR Environment and Design Ltd, Lockington Hall, Lockington, Derby, DE74 2RH ✉ t:01509 672 772 ✉ f:01509 674 565 ✉ e: mail@fpcr.co.uk ✉ w: www.fpcr.co.uk

masterplanning ✉ environmental assessment ✉ landscape design ✉ urban design ✉ ecology ✉ architecture ✉ arboriculture

0 250 500 m



Hallam Land Management

Bognor Regis Golf Club,
Bognor Regis

BAT CONSULTATION PLAN

scale
1:13000

drawn
LC

issue
30/11/2021

drawing / figure number

Figure 2

rev

7338-E-02



This drawing is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without written consent of FPCR Environment and Design Ltd.

Ordnance Survey material - Crown Copyright. All rights reserved.
Licence Number: 100019980

Key:

Site Boundary

Start point

Finish point

Point Count (with ref.)

Transect Route

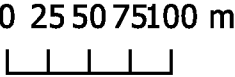
Flight Arrow

Bat Species (contacts)

Common Pipistrelle

Pipistrelle Species

Plan Reference	Time	Species	Passes	Behaviour
Start	19:51			
PCA	19:54-19:59			
1	20:13	Common Pipistrelle	1	Commuting
2	20:16	Common Pipistrelle	4	Foraging
3	20:21	Common Pipistrelle	1	Socialising
PCB	20:23-20:28			
PCC	20:40-20:45			
4	20:40	Common Pipistrelle	4	Foraging
5	20:41	Common Pipistrelle	1	Socialising
6	20:59	Common Pipistrelle	Continuous	Foraging
PCD	21:09-21:14			
PCE	21:22-21:27			
7	21:24	Common Pipistrelle	1	Commuting
PCF	21:30-21:35			
8	21:34	Pipistrellus species	1	Commuting
PCG	21:39-21:44			
Finish	21:51			



Client
Bognor Regis Golf Club,
Boanor Regis
BAT TRANSECT PLAN NORTH (31.08.21)

scale @ A3
1:4600

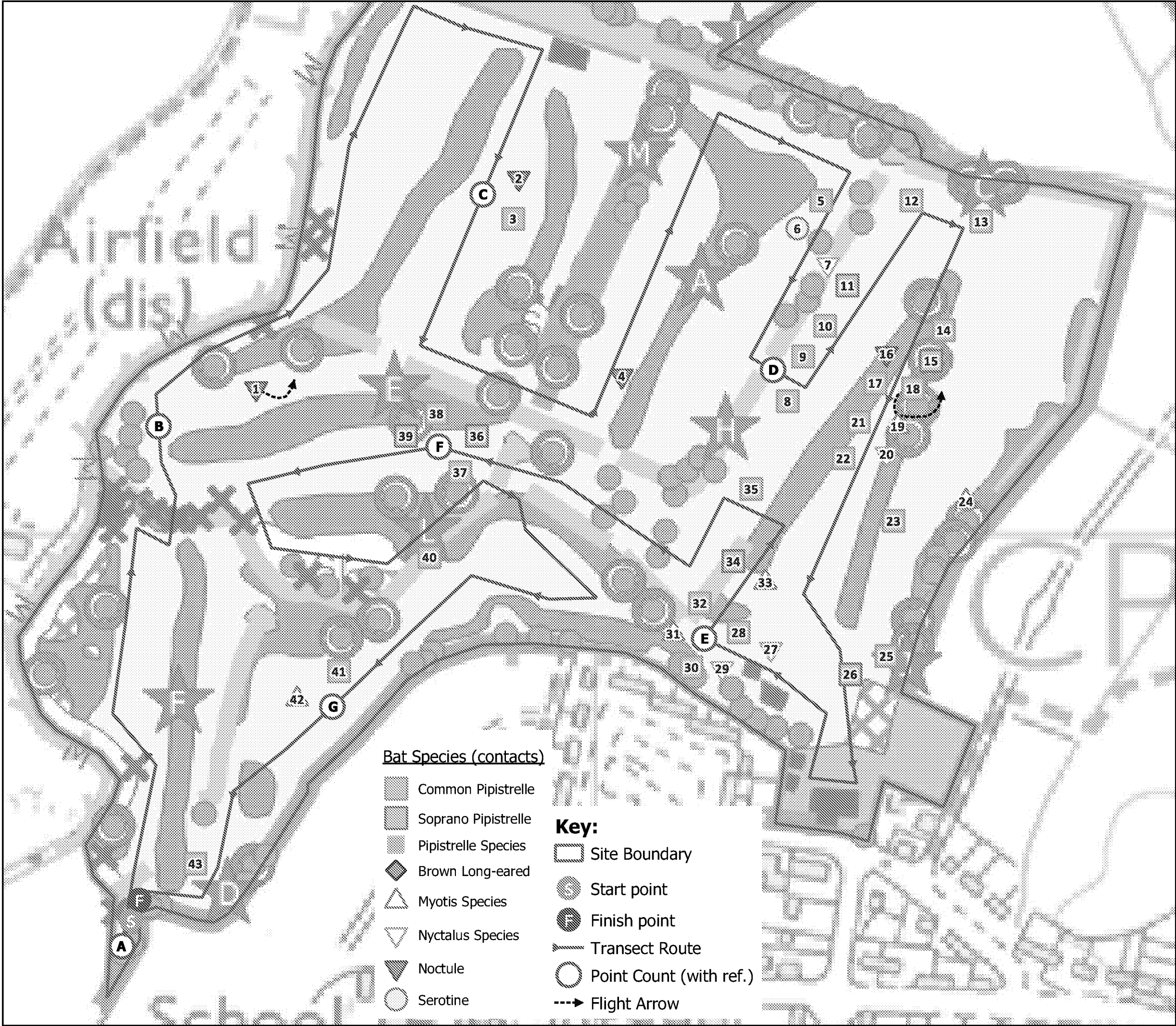
drawn
RM

issue
30/11/202

drawing / figure number
Figure 3

rev
7338-E-03

Plan Reference	Time	Species	Passes	Behaviour
Start	19:51			
PCA	19:51-19:56			
PCB	20:02-20:07			
1	20:09	Noctule	2	Commuting
PCC	20:16-20:21			
2	20:18	Noctule	2	Commuting
3	20:18	Common Pipistrelle	Continuous	Foraging
4	20:25	Noctule	2	Commuting
5	20:28	Common Pipistrelle	2	Commuting
6	20:28	Serotine	1	Commuting
7	20:28	Nyctalus species	1	Commuting
PCD	20:31-20:36			
8	20:34	Common Pipistrelle	1	Commuting
9	20:35	Common Pipistrelle	1	Commuting
10	20:38	Common Pipistrelle	5	Foraging
11	20:39	Soprano Pipistrelle	1	Commuting
12	20:42	Common Pipistrelle	3	Foraging
13	20:43	Common Pipistrelle	Continuous	Foraging
14	20:54	Common Pipistrelle	Continuous	Foraging
15	20:55	Soprano Pipistrelle	1	Commuting
16	20:58	Noctule	1	Commuting
17	20:59	Common Pipistrelle	Continuous	Foraging
18	20:59	Common Pipistrelle	1	Commuting
19	21:01	Myotis species	1	Commuting
20	21:01	Nyctalus species	Continuous	Foraging
21	21:03	Common Pipistrelle	Continuous	Foraging
22	21:04	Common Pipistrelle	3	Foraging
23	21:10	Common Pipistrelle	1	Commuting
24	21:12	Myotis species	1	Commuting
25	21:14	Common Pipistrelle	5	Foraging
26	21:15	Soprano Pipistrelle	1	Commuting
27	21:20	Nyctalus species	1	Commuting
PCE	21:21-21:26			
28	21:21	Common Pipistrelle	Continuous	Foraging
29	21:21	Nyctalus species	1	Commuting
30	21:22	Common Pipistrelle	3	Foraging
31	21:22	Myotis species	1	Commuting
32	21:26	Common Pipistrelle	1	Commuting
33	21:27	Myotis species	1	Commuting
34	21:27	Soprano Pipistrelle	1	Commuting
35	21:28	Common Pipistrelle	2	Commuting
PCF	21:33-21:38			
36	21:33	Soprano Pipistrelle	4	Foraging
37	21:34	Common Pipistrelle	1	Commuting
38	21:35	Common Pipistrelle	3	Foraging
39	21:35	Soprano Pipistrelle	4	Foraging
40	21:40	Common Pipistrelle	4	Foraging
PCG	21:43-21:48			
41	21:43	Common Pipistrelle	2	Commuting
42	21:46	Myotis species	1	Commuting
43	21:49	Common Pipistrelle	Continuous	Foraging
Finish	21:51			



Hallam Land Management

Bognor Regis Golf Club,
Boanor Reais

BAT TRANSECT PLAN SOUTH (31.08.21)

scale @ A3
1:2700

drawn
RM

issue
2/12/2021

drawing / figure number

Figure 4

rev

7338-E-04



This drawing is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without written consent of FPCR Environment and Design Ltd.

Ordnance Survey material - Crown Copyright. All rights reserved.
Licence Number: 100019980

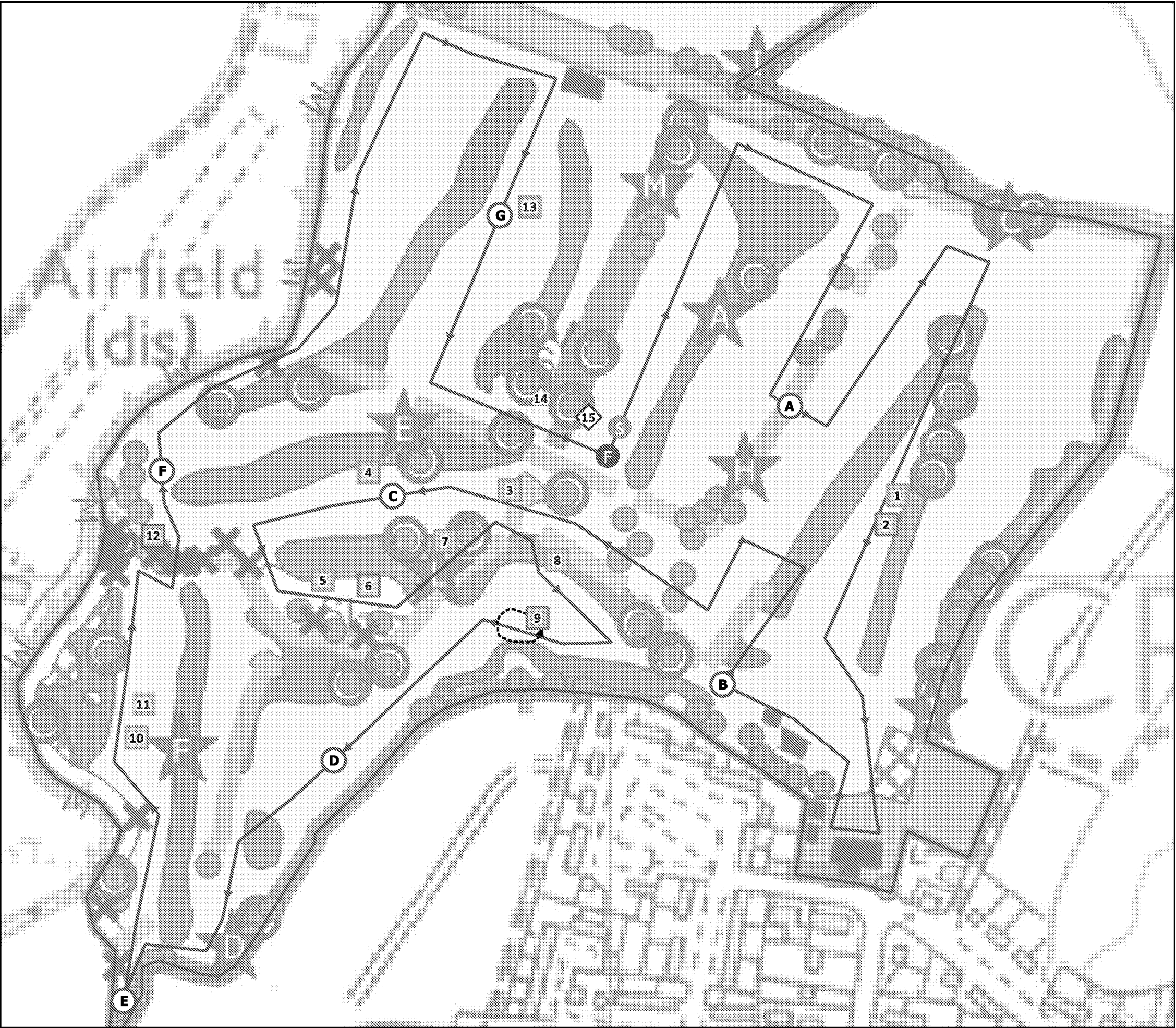
Key:

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

Bat Species (contacts)

- Common Pipistrelle
- Myotis Species
- Serotine
- Bat Species

Plan Reference	Time	Species	Passes	Behaviour
Start	19:04			
PCA	19:15-19:20			
1	19:25	Common Pipistrelle	2	Commuting
PCB	19:30-19:35			
2	19:38	Bat species	2	Commuting
3	19:42	Common Pipistrelle	Conitnuous	Foraging
PCC	19:54-19:59			
4	20:02	Bat species	4	Foraging
5	20:04	Common Pipistrelle	Conitnuous	Foraging
PCD	20:09-20:14			
6	20:09	Common Pipistrelle	Conitnuous	Foraging
7	20:12	Myotis species	1	Commuting
8	20:15	Bat species	1	Commuting
9	20:18	Serotine	1	Commuting
10	20:24	Bat species	4	Foraging
11	20:30	Common Pipistrelle	1	Commuting
PCE	20:31-20:36			
PCF	20:43-20:48			
PCG	20:50-20:55			
12	20:52	Common Pipistrelle	2	Commuting
13	21:01	Common Pipistrelle	Conitnuous	Foraging
Finish	21:04			



This drawing is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without written consent of FPCR Environment and Design Ltd.

Ordnance Survey material - Crown Copyright. All rights reserved.
Licence Number: 100019980

Key:

Site Boundary

Start & Finish Points

Start point

Finish point

Point Count (with ref.)

Transect Route

Flight Arrow

Bat Species (contacts)

Bat Contacts

Common Pipistrelle

Soprano Pipistrelle

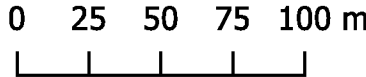
Nathusius Pipistrelle

Pipistrelle Species

Myotis Species

Plecotus Species

Plan Reference	Time	Species	Passes	Behaviour
Start	18:46			
PCA	18:59-19:09			
1	19:08	Common Pipistrelle	Continuous	Foraging
2	19:08	Soprano Pipistrelle	2	Commuting
PCB	19:13-19:18			
3	19:20	Common Pipistrelle	2	Commuting
PCC	19:24-19:29			
4	19:27	Common Pipistrelle	Continuous	Foraging
5	19:30	Common Pipistrelle	Continuous	
6	19:31	Soprano Pipistrelle	Continuous	
7	19:33	Common Pipistrelle	Continuous	
8	19:35	Common Pipistrelle	2	Commuting
9	19:38	Soprano Pipistrelle	Continuous	Foraging
PCD	19:43-19:48			
10	19:52	Common Pipistrelle	Continuous	Foraging
11	19:52	Pipistrelle species	4	Foraging
12	19:56	Nathusius' Pipistrelle	2	Commuting
PCF	19:57-20:02			
PCG	20:10-20:15			
13	20:13	Common Pipistrelle	1	Commuting
14	20:30	Myotis species	3	Foraging
15	20:39	Plecotus species	2	Commuting
Finish	20:46			



Hallam Land Management

Bognor Regis Golf Club,
Bognor Regis

BAT TRANSECT PLAN SOUTH (21.09.21)

scale @ A3
1:2627

drawn
RM

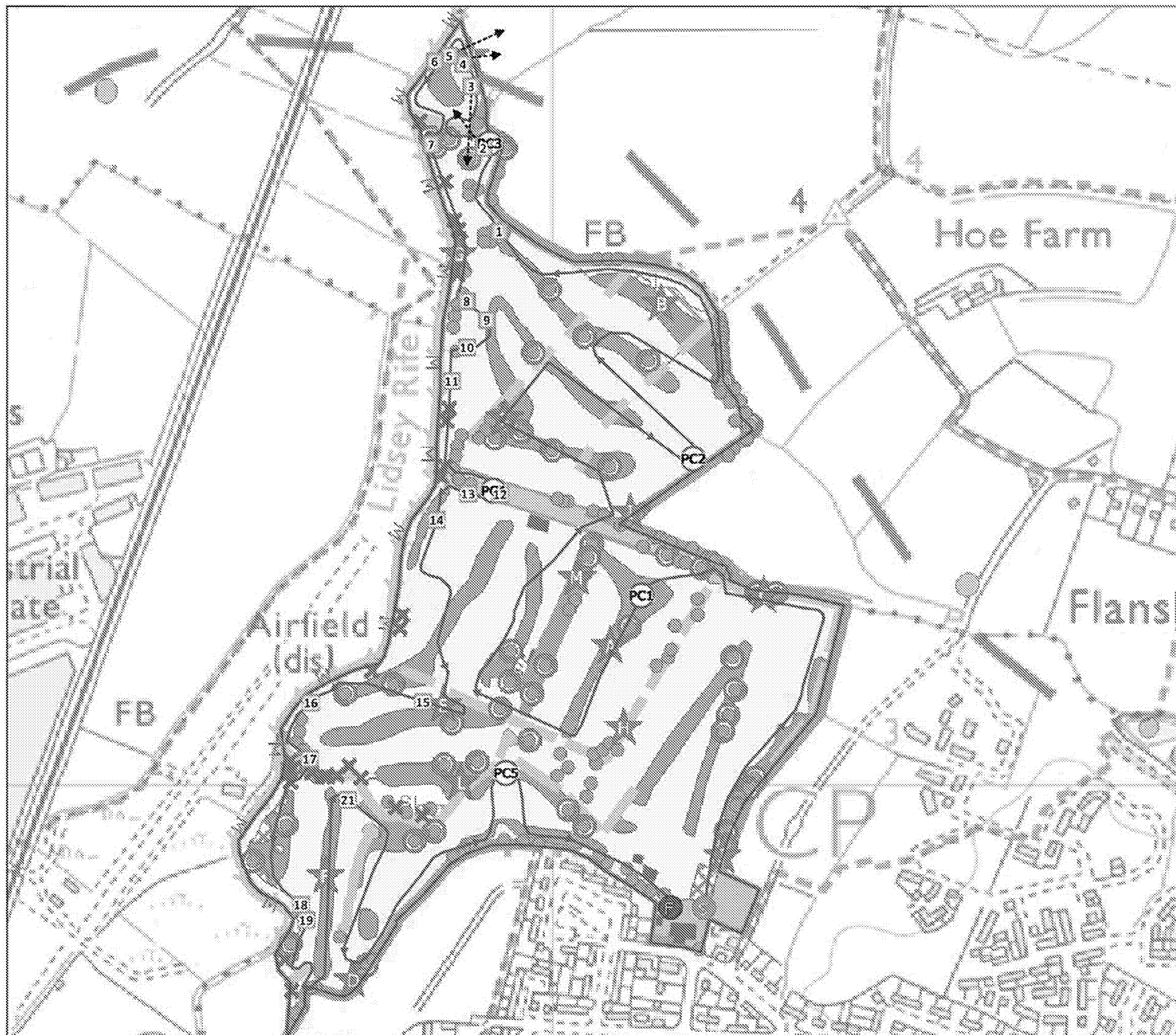
issue
2/12/2021

drawing / figure number

Figure 6

rev

7338-E-01



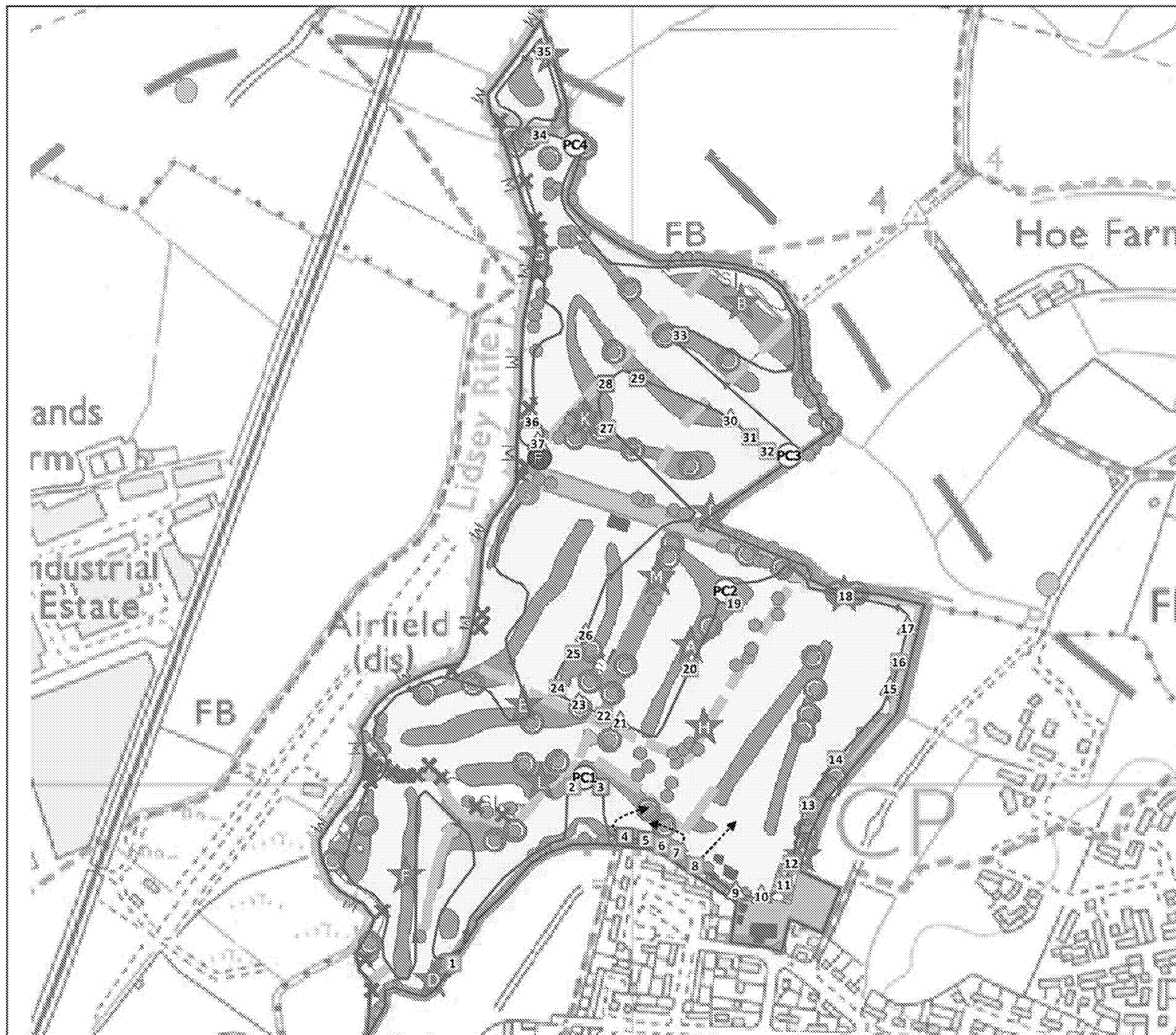
This drawing is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without written consent of FPCR Environment and Design Ltd.

Ordnance Survey material - Crown Copyright. All rights reserved.
Licence Number: 100019980

Key:

- Site Boundary
- Bat Species (contacts)
- Point Count (with ref.)
- Transect Route
- Flight Path

Plan Reference	Time	Species	Passes	Behaviour
Start	20:52			
PC1	21:03-21:06	No Bats		
PC2	21:25-21:28	No Bats		
1	21:43	Common Pipistrelle	Continuous	Foraging
PC3	21:50-21:53	Ref 2		
2	21:53	Common Pipistrelle	1	Foraging
3	21:55	Common Pipistrelle	2	Foraging/Communing
4	21:58	Common Pipistrelle	Continuous	Foraging
5	22:02	Common Pipistrelle x2	Continuous	Foraging
6	22:03	Common Pipistrelle	1	Foraging
7	22:06	Common Pipistrelle	Continuous	Foraging
8	22:12	Common Pipistrelle	3	Foraging
9	22:13	Common Pipistrelle	Continuous	Foraging
10	22:16	Common Pipistrelle	Continuous	Foraging
11	22:18	Common Pipistrelle	Continuous	Foraging
PC4	22:22-22:25	Ref 12		
12	22:24	Common Pipistrelle	Continuous	Foraging/Communing
13	22:28	Common Pipistrelle	1	Foraging
14	22:30	Common Pipistrelle	Continuous	Foraging/Communing
15	22:35	Common Pipistrelle	Continuous	Foraging
16	22:39	Common Pipistrelle	1	Foraging/Communing
17	22:42	Common Pipistrelle	3	Foraging/Communing
18	22:45	Common Pipistrelle	1	Foraging/Communing
19	22:49	Common Pipistrelle	1	Foraging
20	22:50	Common Pipistrelle	1	Foraging
21	22:52	Common Pipistrelle	Continuous	Foraging
PCS	23:02-23:05	No Bats		
End	23:11			



This drawing is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without written consent of FPCR Environment and Design Ltd.

Ordnance Survey material - Crown Copyright. All rights reserved.
Licence Number: 100019980

Key:

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

Plan Reference	Time	Species	Passes	Behaviour
Start	20:34			
1	21:05	Common Pipistrelle	1	Pass
PC1	21:11-21:14	Ref 2 & 3		
2	21:14	Common Pipistrelle	Continuous	Pass
3	21:14	Soprano Pipistrelle	1	Pass
4	21:16	Soprano Pipistrelle	Continuous	Pass/Foraging
5	21:17	Soprano Pipistrelle	2	Pass/Foraging
6	21:17	Common Pipistrelle	1	Pass/Foraging
7	21:20	Common Pipistrelle	3	Pass/Foraging
8	21:22	Common Pipistrelle	Continuous	Pass/Foraging
9	21:22	Myotis	1	Pass
10	21:24	Myotis	1	Pass
11	21:29	Common Pipistrelle	2	Pass
12	21:31	Common Pipistrelle	1	Pass
13	21:33	Common Pipistrelle	2	Pass
14	21:35	Common Pipistrelle	1	Pass
15	21:37	Myotis	1	Pass
16	21:42	Common Pipistrelle	1	Pass
17	21:45	Myotis	1	Pass
18	21:49	Common Pipistrelle	2	Pass
PC2	21:51-21:54	Ref 19		
19	21:54	Common Pipistrelle	4	Pass
20	22:00	Common Pipistrelle	2	Pass
21	22:01	Myotis	1	Pass
22	22:03	Common Pipistrelle	2	Pass
23	22:11	Myotis	2	Pass
24	22:11	Common Pipistrelle	Continuous	Pass
25	22:20	Common Pipistrelle	Continuous	Pass
26	22:21	Myotis	1	Pass
27	22:32	Common Pipistrelle	1	Pass
28	22:34	Soprano Pipistrelle	2	Pass
29	22:40	Soprano Pipistrelle	1	Pass
30	22:42	Myotis	1	Pass
31	22:43	Common Pipistrelle	1	Pass
32	22:46	Common Pipistrelle	1	Pass
PC3	22:48-22:51	Ref 33		
33	22:50	Soprano Pipistrelle	1	Pass
PC4	23:13-23:16			
34	23:18	Common Pipistrelle	4	Pass
35	23:21	Common Pipistrelle	3	Pass
PC5	23:31-23:36	Ref 36 & 37		
36	23:31	Myotis	3	Pass
37	23:33	Myotis	1	Pass
Finish	23:34			

Hallam Land Management

Bognor Regis Golf Club

Bognor Regis

BAT TRANSECT PLAN (09.08.16)

Figure 6

7338-E-06



This drawing is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without written consent of FPCR Environment and Design Ltd.

Ordnance Survey material - Crown Copyright. All rights reserved.
Licence Number: 100019920

Key:

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

Plan Reference	Time	Species	Passes	Behaviour
Start	19:36			
PC1	20:05-20:08	No Bats		
1	20:10	Common Pipistrelle	3	Pass
2	20:12	Nyctalus species	4	Pass
3	20:16	Soprano Pipistrelle	1	Pass
4	20:18	Common Pipistrelle	2	Pass
5	20:23	Common Pipistrelle	2	Pass
6	20:25	Common Pipistrelle	Continuous	Foraging
7	20:40	Common Pipistrelle	3	Pass
8	20:47	Common Pipistrelle	1	Pass
9	20:49	Common Pipistrelle	1	Pass
10	20:50	Myotis Species	1	Pass
PC2	20:52-20:55	Ref 11		
11	20:53	Common Pipistrelle	4	Pass
12	20:56	Nyctalus species	1	Pass
13	20:57	Common Pipistrelle	Continuous	Foraging
14	21:09	Common Pipistrelle	Continuous	Pass
15	21:13	Common Pipistrelle	Continuous	Pass
16	21:15	Myotis Species	1	Pass
17	21:16	Common Pipistrelle	3	Pass
18	21:18	Common Pipistrelle	Continuous	Pass
19	21:21	Common Pipistrelle	2	Pass
20	21:28	Soprano Pipistrelle	1	Pass
21	21:34	Common Pipistrelle	Continuous	Foraging
PC3	21:39-21:42	No Bats		
22	21:54	Common Pipistrelle	Continuous	Foraging
23	21:58	Common Pipistrelle	1	Pass
24	22:19	Common Pipistrelle	2	Pass
25	22:19	Nyctalus species	3	Pass
26	22:21	Soprano Pipistrelle	1	Pass
27	22:22	Noctule	1	Pass
28	22:25	Myotis Species	1	Pass
PC4	22:00-22:03	No Bats		
PC5	22:33-22:36	No Bats		
29	22:37	Common Pipistrelle	1	Pass
Finish	22:39			

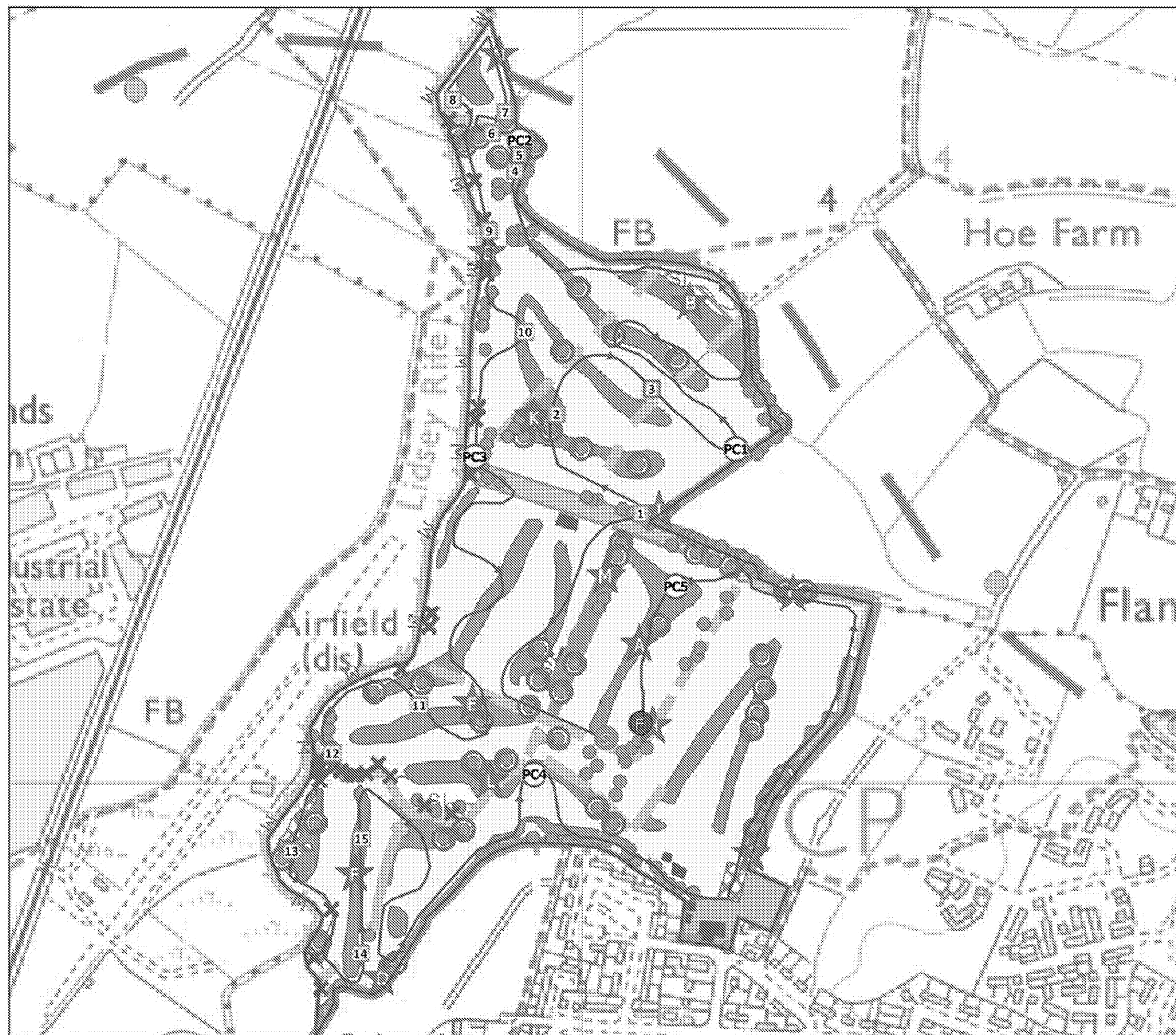
Hallam Land Management

Bognor Regis Golf Club,
Bognor Regis

fpcr BAT TRANSECT PLAN (07.09.16)

1:3.000

Figure 7 7338-E-07



This drawing is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without written consent of FPCR Environment and Design Ltd.

Ordnance Survey material - Crown Copyright. All rights reserved.
Licence Number: 100019980

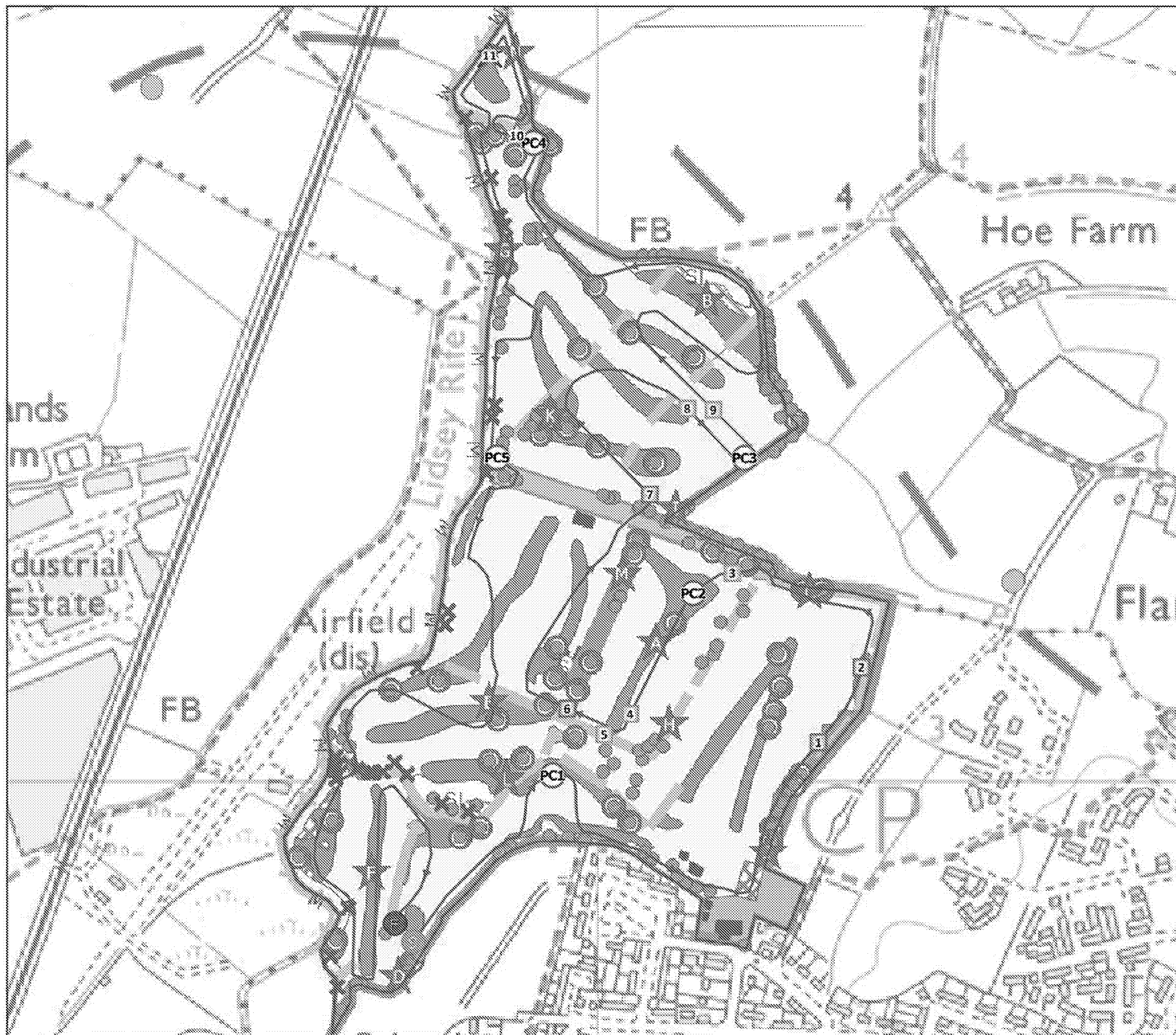
Key:

- Site Boundary
- Transect Route
- Point Count Locations
- Flight Arrow
- Common Pipistrelle
- Soprano Pipistrelle

Start & Finish Points

- Start point
- Finish point

Plan Reference	Time	Species	Passes	Behaviour
Start	03:28			
1	03:42	Common Pipistrelle	1	Pass
2	03:48	Common Pipistrelle	2	Pass
3	03:54	Soprano Pipistrelle	1	Pass
PC1	04:00-04:03	No Bats		
4	04:26	Common Pipistrelle	2	Pass
5	04:28	Soprano Pipistrelle	1	Pass
PC2	04:30-04:33	No Bats		
6	04:40	Common Pipistrelle	2	Pass
7	04:41	Common Pipistrelle	1	Pass
8	04:53	Common Pipistrelle	Continuous	Pass
9	05:01	Common Pipistrelle	1	Pass
10	05:06	Common Pipistrelle	2	Pass
PC3	05:12-05:15	No Bats		
11	05:28	Common Pipistrelle	1	Pass
12	05:34	Common Pipistrelle	1	Pass
13	05:38	Common Pipistrelle	Continuous	Pass
14	05:44	Common Pipistrelle	1	Pass
15	05:46	Common Pipistrelle	1	Pass
PC4	06:03-06:06	No Bats		
PC5	06:27-06:30	No Bats		
Finish	06:32			



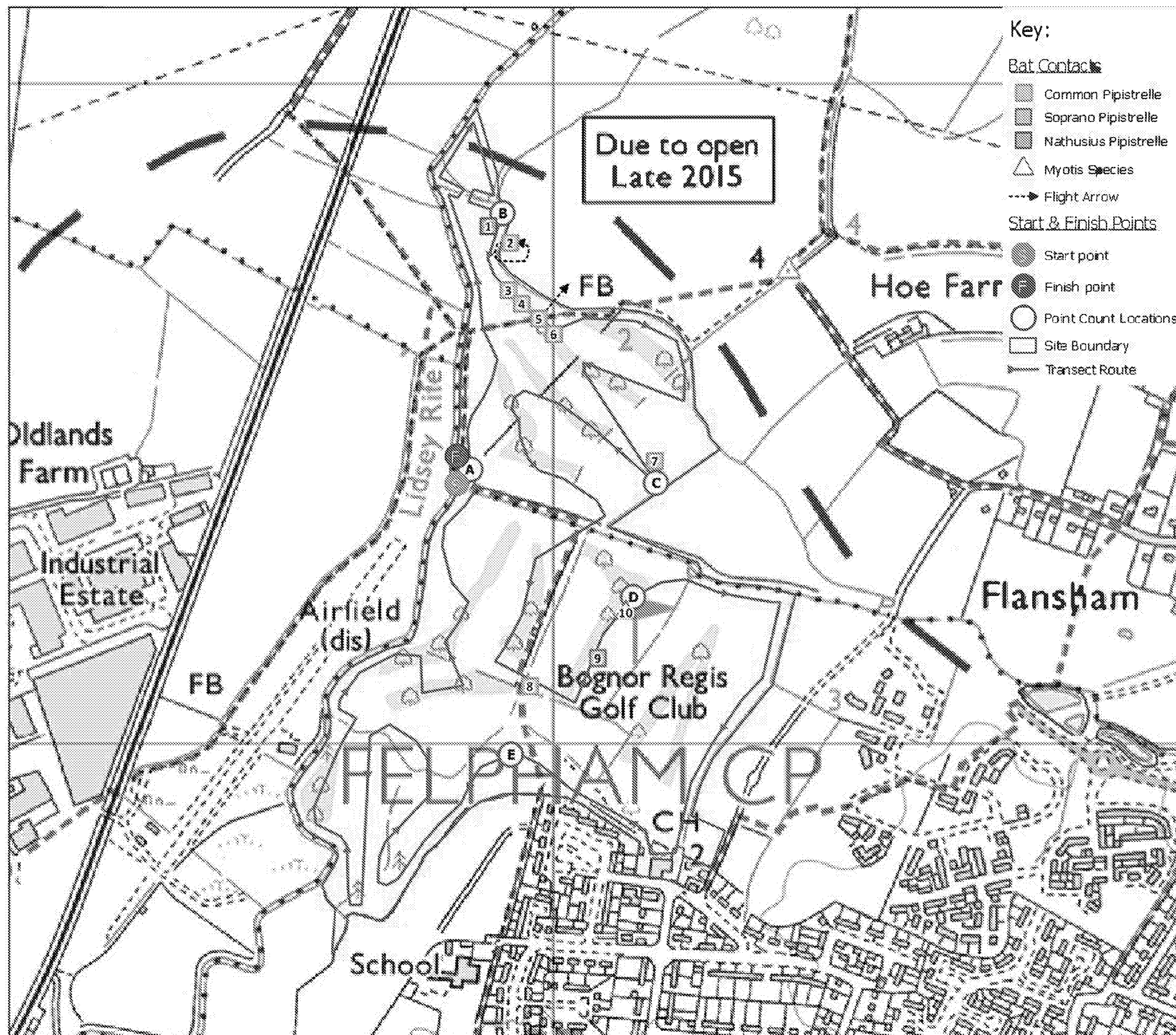
This drawing is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without written consent of FPCR Environment and Design Ltd.

Ordnance Survey material - Crown Copyright. All rights reserved.
Licence Number: 100019920

Key:

- Site Boundary
- Transect Route
- Point Count Locations
- Flight Arrow
- Start & Finish Points
- Start point
- Finish point
- Bat Contacts
- Common Pipistrelle
- Soprano Pipistrelle
- Myotis Species
- Barbastelle

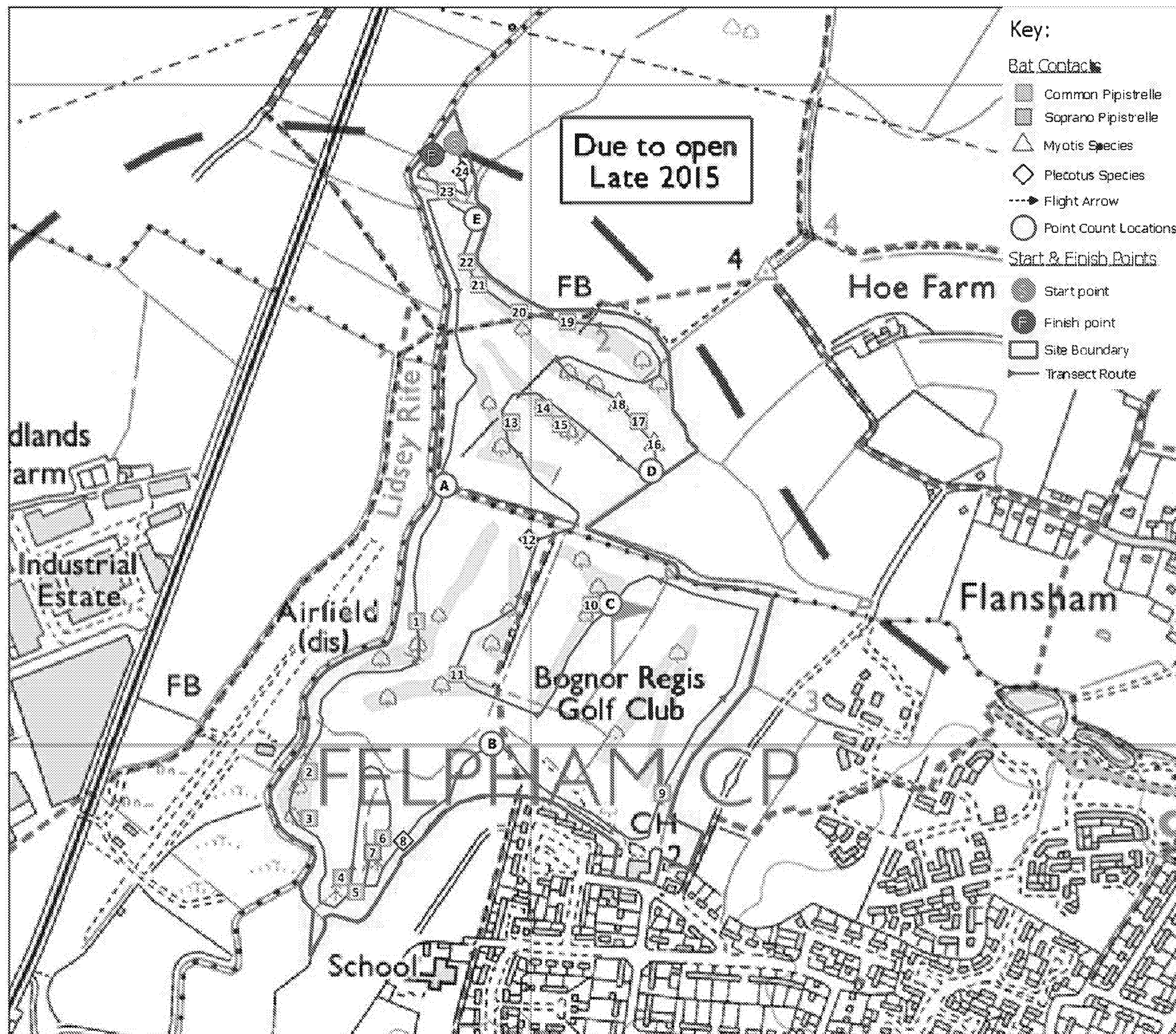
Plan Reference	Time	Species	Passes	Behaviour
Start	18:31			
PC1	18:43-18:46	No Bats		
1	18:59	Soprano Pipistrelle	1	
2	19:02	Soprano Pipistrelle	3	
3	19:12	Common Pipistrelle	1	
PC2	19:15-19:18	No Bats		
4	19:25	Common Pipistrelle	Continuous	
5	19:28	Common Pipistrelle	2	
6	19:31	Soprano Pipistrelle	3	
7	19:35	Soprano Pipistrelle	3	
8	19:46	Common Pipistrelle	2	
PC3	19:48-19:51	No Bats		
9	19:53	Common Pipistrelle	1	
PC4	20:16-20:19	Ref 10		
10	20:18	Myotis species	2	
11	20:21	Barbastelle	2	
PC5	20:45-20:48	No Bats		
Finish	21:31			



This drawing is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without written consent of FPCR Environment and Design Ltd.

Ordnance Survey material - Crown Copyright. All rights reserved.
Licence Number: 100019920

Point Count	Contact Ref	Time	Species	Passes	Behaviour
A		20:02-20:05			
B	Ref 1	20:27-20:40			
	1	20:39	Nathusius Pipistrelle	2	Pass
	2	20:41	Common Pipistrelle	3	Pass
	3	20:45	Common Pipistrelle	2	Pass
	4	20:48	Common Pipistrelle	3	Pass
	5	20:49	Common Pipistrelle	3	Pass
	6	20:51	Common Pipistrelle	3	Forage
C	Ref 7	21:05-21:08			
	7	21:05	Common Pipistrelle	1	Pass
	8	21:16	Common Pipistrelle	1	Pass
	9	21:27	Soprano Pipistrelle	Continuous	Forage
	10	21:37	Common Pipistrelle	1	Pass
D		21:48-21:43			
E		22:16-22:19			
Finish		22:35	(detector crash)		



Key:

Bat Contacts

- Common Pipistrelle
- Soprano Pipistrelle
- Myotis Species
- Plecotus Species
- Flight Arrow
- Point Count Locations
- Start & Finish Points
- Start point
- Finish point
- Site Boundary
- Transect Route

This drawing is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without written consent of FPCR Environment and Design Ltd.

Ordnance Survey material - Crown Copyright. All rights reserved.
Licence Number: 100019920

Point Count	Contact Ref	Time	Species	Passes	Behaviour
A	0	21:04 - 21:07			
	1	21:13	Common Pipistrelle	1	Pass
	2	21:24 - 28	Common Pipistrelle	Continuous	Forage
	3	21:29	Common Pipistrelle	Continuous	Forage
	4	21:30 - 33	Common Pipistrelle	Continuous	Forage
	5	21:36 - 39	Common Pipistrelle	Continuous	Pass
B	6	21:41 - 42	Common Pipistrelle	Continuous	Pass
	7	21:41 - 42	Soprano Pipistrelle	Continuous	Pass
	8	21:41	Plecotus Sp.	3	Pass
	9	21:48 - 21:51			
	10	21:58	Common Pipistrelle	1	Pass
	11	22:10 - 22:13			
C	12	22:14	Common Pipistrelle	1	Pass
	13	22:20	Common Pipistrelle	1	Pass
	14	22:24	Plecotus Sp.	4	Forage
	15	22:28 - 30	Common Pipistrelle	Continuous	Pass
	16	22:38	Common Pipistrelle	4	Pass
	17	22:41	Common Pipistrelle	2	Pass
D	18	22:47 - 22:50			
	19	22:54	Myotis Sp.	1	Pass
	20	22:56	Common Pipistrelle	4	Pass
	21	23:00	Myotis Sp.	1	Pass
	22	23:10	Common Pipistrelle	1	Pass
	23	23:17	Common Pipistrelle	3	Pass
E	24	23:19	Common Pipistrelle	1	Pass
	25	23:21	Common Pipistrelle	1	Pass
	26	23:23 - 23:26			
	27	23:28	Common Pipistrelle	1	Pass
	28	23:33	Plecotus Sp.	2	Pass
	29	23:46			

APPENDIX B: AUTOMATED ACTIVITY SURVEY SUMMARY 2016/2017

Survey Period	Unit Reference / Location	Total Registrations Over 5 nights	Species recorded (in order of abundance)	Summary of Activity	Barbastelle Activity
21 st – 26 th July 2016	A Tree group in centre of site, east of H11	220	4 species: common pipistrelle (194), soprano pipistrelle (12), serotine (8) and <i>Myotis</i> species (6).	Common pipistrelles were the most commonly recorded species with a peak nightly count of 118 registrations on 24 th July. No bats were recorded on 25 th July. Low numbers of soprano pipistrelle (peak of 6 registrations on 24 th July), <i>Myotis sp.</i> (peak of 3 registrations on 24 th July) and serotine (peak of 4 passes on 22 nd July) were also recorded.	-
20 th – 25 th July 2016	B Located on edge of tree group in north east of the site opposite H3	693	6 species: common pipistrelle (607), soprano pipistrelle (54), serotine (15), <i>Nyctalus</i> species (11), <i>Myotis</i> species (4) and Nathusius' pipistrelle (2).	Common pipistrelles were the most commonly recorded species with a peak nightly count of 182 registrations on 24 th July and a drop to 54 registrations on 23 rd July. There were smaller peaks in soprano pipistrelle activity on the 20 th and 23 rd with 18 and 23 registrations respectively. Other species were recorded sporadically throughout the survey period with nightly peaks of no more than 6 registrations.	-

Survey Period	Unit Reference / Location	Total Registrations Over 5 nights	Species recorded (in order of abundance)	Summary of Activity	Barbastelle Activity
9 th – 14 th August 2016	C On woodland edge alongside D6, eastern side of site	1147	9 species: common pipistrelle (856), soprano pipistrelle (140), <i>Myotis</i> species (96), <i>Nyctalus</i> species (28), barbastelle (11), serotine (12), noctule (1), Nathusius' pipistrelle (1) and <i>Plecotus</i> species (2).	Common pipistrelles were the most commonly recorded species with a peak nightly count of 257 registrations on 9 th August and a drop to 59 on 10 th August. Soprano pipistrelles has a smaller peak of 82 registrations on 13 th August. <i>Myotis</i> species had two peaks in activity on 9 th and 12 th with 41 and 32 registrations respectively. 11 barbastelle registrations were recorded with 9 on the 9 th August.	11 registrations 9 th Aug (9) first at 22:14, last at 02:01 with others sporadically in between 11 th (1) at 01:13 13 th (1) at 23:41
9 th – 14 th August 2016	D Southern end of H8, near BT45	389	8 species: common pipistrelle (344), soprano pipistrelle (14), <i>Plecotus</i> species (8), <i>Nyctalus</i> species (7), <i>Myotis</i> species (5), serotine (6), noctule (4) and barbastelle (1),	Common pipistrelles were the most frequently recorded species with fairly constant activity levels of 62 – 68 registrations on 4 of the nights and a small peak to 86 registrations on 11 th August. Other species were recorded in low numbers sporadically throughout the survey period with no more than 4 registrations from any one species in a night.	1 registration 11 th August (1) at 00:59
7 th – 12 th September 2016	E Centre of site, western end of dry ditch heading west from south of D3	504	6 species: common pipistrelle (433), soprano pipistrelle (49), Nathusius' pipistrelle (13), <i>Myotis</i> species (3), <i>Nyctalus</i> species (5) and <i>Plecotus</i> species (1).	Common pipistrelles were the most frequently recorded with a peak of 154 registrations on 9 th September and a drop to 28 registrations on 10 th . Soprano pipistrelle activity was higher on the 10 th and 11 th with 14 and 17 passes respectively. A peak of 8 Nathusius' pipistrelle passes were recorded on 9 th September. Other species were recorded sporadically in low numbers.	-

Survey Period	Unit Reference / Location	Total Registrations Over 5 nights	Species recorded (in order of abundance)	Summary of Activity	Barbastelle Activity
7 th – 12 th September 2016	F Centre of linear tree group in south west of site, roughly opposite P3	271	6 species: common pipistrelle (246), noctule (9), soprano pipistrelle (8), <i>Nyctalus</i> species (6), <i>Myotis</i> species (1) and Nathusius' pipistrelle (1).	Common pipistrelles were the most frequently recorded species with a peak of 100 registrations on 07 th September and a low of 28 on 9 th . Other species were recorded in low numbers sporadically throughout the survey period with no more than 4 registrations from any one species in a night.	-
7 th – 12 th October 2016	G Near northern end of site on banks of Lidsey Rife	53	6 species: common pipistrelle (37), soprano pipistrelle (5), <i>Myotis</i> species (5), <i>Nyctalus</i> species (3), barbastelle (2), and Nathusius' pipistrelle (1).	Activity levels were significantly lower than in previous months with a peak count of 17 common pipistrelle registrations on 7 th October and a low of 0 on 11 th . Other species were all recorded sporadically and in low numbers	2 registrations 8 th Oct (1) at 01:56 9 th Oct (1) at 23:09
9 th – 14 th October 2016	H Southern end of D3	6	9 species: <i>Myotis</i> species (3), common pipistrelle (1), soprano pipistrelle (1), Nathusius' pipistrelle (1).	Very low activity levels were recorded with <i>Myotis</i> species the most frequently recorded with a total of 3 registrations, 2 on 9 th and 1 on 10 th . All other bats were recorded on the night of 10 th with no bats recorded on the nights of 11 th to 13 th .	-
18 th – 23 rd April 2017	I On the western end of H6	203	7 species: common pipistrelle (172), soprano pipistrelle (24), <i>Pipistrelle</i> species (2), noctule (2), <i>Myotis</i> species (1), <i>Nyctalus</i> species (1), and <i>Plecotus</i> species (1).	Activity levels were significantly lower in the morning than in the evening period, with a peak count of 71 common pipistrelle registrations on 21 st April and a low of 3 on 19 th . Soprano pipistrelle followed a similar trend, with a peak on the 21 st of 19 registrations as well, but a drop to 0 on the 18 th , 19 th and 22 nd . Remaining species were all recorded sporadically and in low numbers.	-

Survey Period	Unit Reference / Location	Total Registrations Over 5 nights	Species recorded (in order of abundance)	Summary of Activity	Barbastelle Activity
18 th – 23 rd April 2017	J In the south east corner, close to the clubhouse and BT49	113	5 species: common pipistrelle (108), serotine (2) soprano pipistrelle (1), <i>Plecotus</i> species (1) and noctule (1).	Activity levels were fairly low with a peak count of 42 common pipistrelle registrations on 21 st April and a low of 1 on 19 th . Other species were all recorded sporadically and in low numbers.	-
16 th – 21 st May 2017	K In the northern section of the site close to BT13	1044	3 species: common pipistrelle (1010), soprano pipistrelle (29) and <i>Pipistrelle</i> species (5).	Activity levels were split between the first night (16 th) and the last night (20 th) with zero contacts on any nights in-between. Registrations were higher on the last night, peaking at 856 common pipistrelle registrations, with soprano pipistrelle registrations peaking at 25 on the same night. Remaining registrations were all registered on the first night in lower numbers.	-
16 th – 21 st May 2017	L In the southern section of the site close to BT29	1380	5 species: common pipistrelle (1127), soprano pipistrelle (242), <i>Plecotus</i> species (7), <i>Myotis</i> species (3) and <i>Nyctalus</i> species (1).	Activity levels were significantly higher than in previous months. Common pipistrelle were recorded each night, with a peak count of 497 registrations on 20 th May and a low of 13 registrations on the 18 th . Soprano pipistrelle were also recorded each night but in much lower numbers, with a peak of 112 registrations on the 19 th May. Other species were all recorded sporadically and in low numbers.	-

Survey Period	Unit Reference / Location	Total Registrations Over 5 nights	Species recorded (in order of abundance)	Summary of Activity	Barbastelle Activity
14 th – 19 th June 2017	M In the central section of H10 in the centre of the site	1176	6 species: common pipistrelle (745), soprano pipistrelle (408), <i>Nyctalus</i> species (11), noctule (8), serotine (2), <i>Pipistrelle</i> species (2).	Activity levels were relatively high again with common and soprano pipistrelle recorded each night. Common pipistrelle had a peak count of 407 registrations on 15 th June and a low of 57 on 18 th . Soprano pipistrelle followed the same trend, with a peak count of 246 on the 15 th June and a low of 20 registrations on the 18 th . Other species were all recorded sporadically and in low numbers.	-
14 th – 19 th June 2017	N In the northern most corner of the site	562	4 species: common pipistrelle (545), <i>Nyctalus</i> species (9), soprano pipistrelle (5) and serotine (3).	Activity levels were lower than in previous months with common pipistrelle responsible for the vast majority of calls. This species was recorded every night with a peak count of 137 common pipistrelle registrations on 15 th June and a low of 65 on 18 th . Other species were all recorded sporadically and in low numbers	-

APPENDIX C: ROOSTING BAT POTENTIAL TREES

Tree Ref.	Species	Surveys completed	Potential Roost Features (PRF)	Bat Potential Assessment
T1	Leyland Cypress <i>Cupressocyparis leylandii</i>	Ground, aerial	Bat box	High
T2	Leyland Cypress	Ground, aerial	Bird box	Low
T3	Leyland Cypress	Ground, aerial	2 bat boxes	High
T4	Ash <i>Fraxinus excelsior</i>	Ground, aerial	Woodpecker hole	Moderate
T5	Scots Pine <i>Pinus sylvestris</i>	Ground, aerial	Bird box	Low
T6	English Oak <i>Quercus robur</i>	Ground, aerial	Bird box, woodpecker hole, occluded union	High
T7	Ash	Ground, aerial	Bird box	Low
T8	Leyland Cypress	Ground, aerial	Bird box, bat box (low height)	Moderate
T9	Hawthorn <i>Crataegus monogyna</i>	Ground, aerial	Natural knot hole	Low
T10	Scots Pine	Ground, aerial	Bat box	High
T11	Hawthorn	Ground, aerial	Natural knot hole	Moderate
T12	Crack Willow <i>Salix fragilis</i>	Ground	Woodpecker hole	Moderate
T13	Crack Willow	Ground, aerial	2 woodpecker holes, crack or split	Moderate
T14	Crack Willow	Ground, aerial	Woodpecker hole	Moderate
T15	Crack Willow	Ground, aerial	Woodpecker hole	High
T16	Scots Pine	Ground, aerial	2 bat boxes	High
T17	Wild Cherry <i>Prunus avium</i>	Ground, aerial	Bird box	Moderate
T18	Crack Willow	Ground, aerial	Branch tear out	Moderate
T19	Crack Willow	Ground, aerial	2 bat boxes, 5 woodpecker holes	High
T20	Crack Willow	Ground, aerial	Bird box	Moderate
T21	Crack Willow	Ground, aerial	Knot hole, crack or split	Moderate
T22	Scots Pine	Ground, aerial	5 woodpecker holes	High
T23	Poplar sp.	Ground, aerial	Bird box	Moderate
T24	Crack Willow	Ground, aerial	Woodpecker hole	Moderate
T25	Scots Pine	Ground, aerial	Bat box	High
T26	Scots Pine	Ground, aerial	Bat box	High
T27	Purple Plum <i>Prunus cerasifera Pissardii</i>	Ground, aerial	Woodpecker hole	Moderate
T28	Crack Willow	Ground, aerial	Woodpecker hole	Moderate
T29	Wild Cherry	Ground, aerial	Natural knot hole	Moderate
T30	Scots Pine	Ground, aerial	2 woodpecker holes	High
T31	Scots Pine	Ground, aerial	Woodpecker hole	Moderate
T32	Scots Pine	Ground, aerial	Bird box	Moderate
T33	Scots Pine	Ground, aerial	Natural knot hole	Moderate
T34	Wild Cherry	Ground, aerial	Bird box	Moderate
T35	English Oak	Ground, aerial	Bird box	Low

Tree Ref.	Species	Surveys completed	Potential Roost Features (PRF)	Bat Potential Assessment
T36	Crack Willow	Ground, aerial	4 woodpecker holes, knot hole, crack or split	High
T37	Crack Willow	Ground, aerial	2 woodpecker holes	Moderate
T38	Crack Willow	Ground, aerial	2 woodpecker holes, branch tear out, knot hole, occluded union	High
T39	Crack Willow	Ground, aerial	4 woodpecker holes, branch tear out	High
T40	Silver birch <i>Betula pendula</i>	Ground, aerial	Woodpecker hole, rot hole	Moderate
T41	Scots Pine	Ground, aerial	Bat box	High
T42	Scots Pine	Ground, aerial	2 bat boxes	High
T43	Scots Pine	Ground, aerial	Bat box	High
T44	Scots Pine	Ground, aerial	2 bat boxes	High
T45	Wild Cherry	Ground, aerial	Bird box	Low
T46	Sycamore <i>Acer pseudoplatanus</i>	Ground, aerial	Bat box	High
T47	Scots Pine	Ground, aerial	Bat box	High
T48	Scots Pine	Ground, aerial	2 bat boxes	High
T49	Scots Pine	Ground, aerial	Bird box	High
T50	Ash	Ground	Occluded union, platey bark	Low
T51	Ash	Ground	Branch cavity	Low
T52	Scots Pine	Ground	Bird box	Low
T53	Hornbeam <i>Carpinus betulus</i>	Ground	Woodpecker hole, rot hole	High
T54	Crack Willow	Ground	Crack or split	Low
T55	Crack Willow	Ground	Crack or split	Moderate
T56	Crack Willow	Ground	Branch tear out	Low
T57	Crack Willow	Ground	2 knot holes	Moderate
T58	Hawthorn	Ground	Rot hole	Low
T59	Leyland Cypress	Ground	Bird box	Low
T60	Crack Willow	Ground	Rot hole, crack or split	Moderate
T61	Hornbeam	Ground	2 woodpecker holes	High
T62	Crack Willow	Ground	Woodpecker hole, crack or split	Moderate
T63	Crack Willow	Ground	Woodpecker hole	Moderate
T64	Hawthorn	Ground	Rot hole	Moderate
T65	Hawthorn	Ground	Branch tear out, platey bark	Low
T66	Hawthorn	Ground	Rot hole	Moderate
T67	Crack Willow	Ground	Crack or split	Moderate
T68	Crack Willow	Ground	2 woodpecker holes, butt rot, knot hole, ivy	High
T69	Ash	Ground	Canker cavity	Low
T70	Crack Willow	Ground	Ivy cover	Low
T71	Crack Willow	Ground	Woodpecker hole	High

Tree Ref.	Species	Surveys completed	Potential Roost Features (PRF)	Bat Potential Assessment
T72	Wild Cherry	Ground	Bird box	Moderate
T73	Scots Pine	Ground	Bird box	Low
T74	Hornbeam	Ground	Woodpecker hole	Moderate
T75	Scots Pine	Ground	2 bat boxes	High
T76	Black poplar <i>Populus nigra</i>	Ground	Bat box	Moderate
T77	Lombardy poplar <i>Populus nigra Italica</i>	Ground	Woodpecker hole	High
T78	Black poplar	Ground	Bat box	Moderate
T79	Black poplar	Ground	Bat box	Moderate
T80	Crack willow	Ground	Woodpecker hole, butt rot	Moderate
T81	Crack willow	Ground	Woodpecker hole	Moderate
T82	Aspen <i>Populus tremula</i>	Ground	2 knot holes, branch tear out	Moderate
T83	Hawthorn	Ground	Ivy cover	Low
T84	Wild Cherry	Ground	2 woodpecker holes	High
T85	Hawthorn	Ground	Branch tear out	Low
T86	Scots Pine	Ground, aerial	Bat box	High
T87	Scots Pine	Ground	Bat box	Moderate
T88	Crack Willow	Ground	Woodpecker hole	Moderate
T89	Crack Willow	Ground	Woodpecker hole	Moderate
T90	Crack Willow	Ground	Woodpecker hole	Moderate
T91	Scots Pine	Ground	Woodpecker hole, branch tear out	High
T92	White Poplar <i>Populus alba</i>	Ground	Woodpecker hole, branch tear out	High
T93	Scots Pine	Ground	Bat box	High
T94	Unidentified	Ground	3 woodpecker holes	High
T95	Scots Pine	Ground	Bird box	Low
T96	Corsican Pine <i>Pinus nigra Laricio</i>	Ground, aerial	2 bat boxes (3-4 pipistrelle sp.)	Confirmed Roost
T97	Scots Pine	Ground	Bat box	High