



Harworth Group

Dearne Valley Parkway, Rockingham, Barnsley – Phases 2 and 3

ADDENDUM: 2018 BAT REPORT

December 2019

FPCR Environment and Design Ltd

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1.0 INTRODUCTION

- 1.1 This report details the results of a suite of bat surveys undertaken by FPCR Environment and Design Ltd. on behalf of Harworth Group on an area adjacent to Shortwood Business Park, Barnsley.
- 1.2 The surveyed area overlaps with the 2019 development area as detailed within the Ecological Appraisal (FPCR 2019).

Site Location and Context

The site is located adjacent to the west of Shortwood Business Park in Barnsley, to the north of the A6195 dual carriageway, Dearne Valley Parkway. The existing residential development of Birdwell is situated to the north-west and to the south the more extensive residential area of Hoyland. Junction 36 of the M1 Motorway lies less than 600m to the west. The surrounding land use is largely arable and pasture with an area of broad-leaved semi-natural woodland to the north, forming part of the Short Wood and Hay Green LWS. The site largely comprises establishing plantation woodland and semi-improved grassland fields, with associated native hedgerows.

2.0 METHODOLOGY

Field Surveys

General Habitat Suitability

- 2.1 The site was also categorised for its habitat suitability for bats, which would also provide guidance on survey effort. The habitat suitable was assessed using guidance from the bat surveys, good practice guidelines (Bat Conservation Trust, 3rd Edition 2016¹).

Bat Activity Surveys (Transects)

- 2.2 The site was considered to provide low suitability for foraging and commuting bats and therefore seasonal transect surveys were undertaken.
- 2.3 The primary objective of transects was to identify foraging areas, commuting routes and species utilisation of the site. Guidance from the Bat Conservation Trust and Natural England² indicates that such surveys should be applied appropriately and in a proportionate manner, having regard to the area of habitat affected and the likely direct impact on bats.
- 2.4 The transect routes were determined prior to survey in order to sample most areas of the site with those areas considered to be of higher suitability for bat use being the main focus of the survey. The routes included point count stops to identify activity levels around the features of potential value to bats that are to be most affected by proposals (i.e. hedgerows, tree lines, dense scrub etc). Each point count was approximately five minutes long, during which time all bat activity was recorded.
- 2.5 Transects commenced at sunset and were each a minimum of two hours in duration. Each transect was walked at a steady pace and when a bat passed by, the species, time and behaviour was

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

² Mitchell-Jones AJ and McLeish AP (2004). *The Bat Workers' Manual, 3rd Edition*. JNCC, Peterborough

recorded on a site plan. This information provides a general view of the bat activity present on site and identifies the key foraging area/commuting routes.

- 2.6 Surveyors used Wildlife Acoustics Inc. Echo Meter Touch® bat detectors in conjunction with Echo Meter Touch® app and Apple Inc. iPad® during the transect surveys to detect bats and aid species identification.
- 2.7 Post-survey, bat calls were analysed using Wildlife Acoustics, Inc. Kaleidoscope® software package by taking measurements of the peak frequency, inter-pulse interval, call duration and end frequency. From this, the level of bat activity across the site in relation to the abundance of individual species foraging and commuting along habitats was assessed.
- 2.8 Three activity transects were undertaken between June 2018 and September 2018. All transects were undertaken when conditions were suitable, i.e. when the ambient air temperature exceeded 10°C and there was little wind and no rain. Full conditions and timings are listed in Table 1.

Table 1: Activity Transect Survey Conditions

Date	Sunset/Sunrise	Start and Finish Time	Temperature at start and end of survey °C	Rain (0-5)	Wind (0-5)	Cloud %
21.06.18	21:39	21:39-23:48	17-12	0	0	10
02.08.18	21:00	21:00-23:00	24-20	0	0	15
26.09.18	18:55	18:55-20:55	19-16	0	0	5

Static Bat Detector Surveys

- 2.9 Static passive recording broadband detectors were deployed on site to supplement the manual transects surveys. Due to the size of the site and the assessment of habitat suitability to support foraging and commuting bats, static units were deployed on site for a minimum of five consecutive nights.
- 2.10 Passive monitoring was undertaken using an automated logging system; either Wildlife Acoustics Inc. Song Meter® SM4BAT-FS bat detectors, with outputs saved to an internal storage device. Bat detectors were placed along linear features considered to be of value to bats, such as hedgerows, woodlands, watercourses and tree lines.
- 2.11 Devices were placed in each location for an extended period of time of suitable weather conditions (little no rain/wind and temperatures above 10°C). The conditions over each of the survey period were however representative for the timing of the survey. Detectors were programmed to activate 30 minutes before dusk and recorded continuously until 30 minutes following sunrise.
- 2.12 For the purposes of analysis if the static detector was out over five nights any additional nights were only assessed for Annex II bat species. The recorded data was analysed using Wildlife Acoustics, Inc. Kaleidoscope© software package to assess the amount of bat activity on site by recording the number of bat passes

Limitations

- 2.13 Although species identification is done to as accurate a level as possible, in some cases the quality of the call is such that full species identification cannot be made. Therefore, in some cases terminology may be general (for example pipistrelle species or *Myotis* species).
- 2.14 The analysis of the SM4BAT FS 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. Therefore, each sound file is counted as a single bat registration. The number of bat registrations does however reflect the relative importance of the location of the detector by calculating the bat registrations per hour. The static detectors record in full spectrum and the full spectrum data is analysed using Kaleidoscope Viewer (v.5.0.3).

3.0 RESULTS

Field Surveys

General Habitat Suitability

- 3.1 The site included several grassland fields providing foraging habitat with associated hedgerows, and woodlands providing further foraging and commuting routes to the wider area.

Bat Activity Surveys (Transects)

- 3.2 The following sections are a summary of the results recorded during the nocturnal transect surveys. A full breakdown of the data, including detailed tables and locations are available in the associated plans (as indicated). Species on site comprised common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus* and unidentified pipistrelle species, noctule *Nyctalus noctule*, unidentified *Nyctalus* species, and unidentified *Myotis* species.

Transect 1: 21st June 2018 (Figure 1a)

- 3.3 A total of eight registrations were recorded during this survey comprising entirely of common pipistrelle. The first registration occurred at 22:26 (47 minutes after sunset) which consisted of one common pipistrelle foraging along the access road on the western site boundary.
- 3.4 Activity was mainly associated with woodland features in the centre of the site and the western boundary. A single registration being recorded in the most north-eastern arable area. The majority of bat behaviour recorded was foraging.

Transect 2: 2nd August 2018 (Figure 1b)

- 3.5 A total of seventeen registrations were recorded during this survey, comprising ten common pipistrelle, two soprano pipistrelle and four noctule. The first bat registration was at 21:30 (nine minutes before sunset), which occurred in central woodland corridor and was a common pipistrelle.
- 3.6 Activity was widespread throughout the site, mostly associated with scattered trees and hedgerows. Bat behaviour recorded was a mix of foraging and commuting.

Transect 3: 26th September 2018 (Figure 1c)

- 3.7 A total of fourteen bat registrations were recorded during this survey comprising seven common pipistrelle, three soprano pipistrelle, one noctule, two *Nyctalus sp.* and one *Myotis sp.* The first registration was a *Nyctalus sp.* At 19:17 (22 minutes after sunset) which was seen above the north-western field compartment.
- 3.8 Activity was recorded throughout the north of the site, along woodland edges, hedgerows and above grassland areas. The *Myotis sp.* registration was restricted to the central woodland corridor where it was recorded commuting. Common pipistrelle and soprano pipistrelle were recorded displaying a range of behaviours; commuting and foraging. *Nyctalus sp.* and noctules were recorded both commuting and foraging.

Static Bat Detector Surveys

- 3.9 The following details the results of static monitoring of bat activity in 2018 with full results in Appendix A and Figure 2 showing locations of units.
- 3.10 Species on site comprised common, soprano and unidentified pipistrelle species, noctule and unidentified *Nyctalus* species, brown long-eared and unidentified *Myotis* species.

Spring 2018

- 3.11 The total amount of survey hours for static detector S1 was 40 hours with the detector deployed on the evening of 21st June 2018 until the morning of 26th June 2018.
- 3.12 A total of 824 bat registrations were recorded by S1 comprising common, soprano and unidentified pipistrelle species, noctule, and unidentified *Myotis* species.
- 3.13 Common pipistrelle made up 85% of all registrations. They had an activity peak from 22:00-23:00 totalling 371 registrations over five nights, and their nightly total varied between 20 and 221 registrations.

Summer 2018

- 3.14 The total survey hours for static detector S2 was 48 hours with the detector deployed on the evening of 2nd August 2018 until the morning of 7th August 2018.
- 3.15 A total of 747 bat registrations were recorded by S2 comprising common, soprano and unidentified pipistrelle species, noctule and unidentified *Nyctalus* species, brown long-eared and unidentified *Myotis* species.
- 3.16 Common pipistrelle made up 79% of all registrations. They had an activity peak from 22:00-23:00 totalling 151 registrations over five nights, and their nightly total varied between 39 and 161 registrations.

Autumn 2018

- 3.17 The total survey hours for static detector S3 was 67 hours with the detector deployed on the evening of 28th September 2018 until the morning of 3rd October 2018.
- 3.18 A total of 2190 bat registrations were recorded by S3 comprising common, soprano and unidentified pipistrelle species, noctule, brown long-eared and unidentified *Myotis* species.

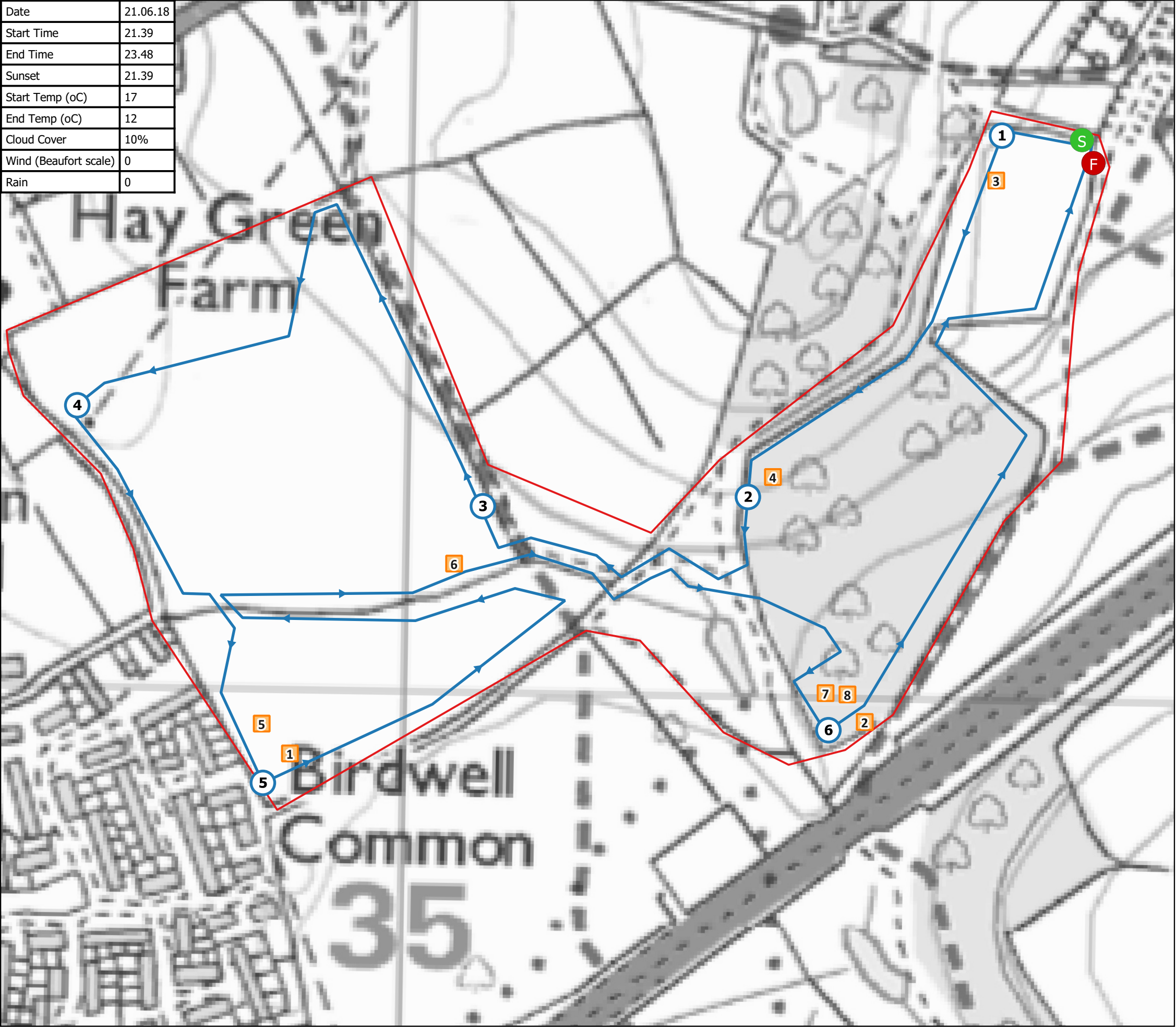
- 3.19 Common pipistrelle made up 94% of all registrations. They had an activity peak from 19:00-20:00 totalling 530 registrations over five nights, and their nightly total varied between 79 and 988 registrations.

4.0 DISCUSSION

General Habitat Assessment

- 4.1 Overall the site was considered to be of low value for bats with the hedgerows and woodland edges providing the most valuable onsite habitat providing opportunities for foraging and commuting. The grassland provided some limited foraging habitat due to the open nature of the fields which also provided habitat for larger species of bat (e.g. *Nyctalus* species).
- 4.2 Based on the habitat assessment, seasonal transects were undertaken between April and September. Bat activity levels averaged at 13 bat registrations per visit (a maximum of 17 during the August 2018 transect and a low of eight in the June 2018 survey). In addition, the species assemblage was limited to five species, two of which could only be identified to genus level, comprising (in order of abundance); common pipistrelle, noctule, soprano pipistrelle, *Nyctalus* sp., and *Myotis* sp.
- 4.3 Activity for most species focused along boundary features and the central woodland. *Myotis* sp. were only recorded within the central woodland.
- 4.4 A total of seven species/species groups recorded by the static detectors (common pipistrelle, soprano pipistrelle, pipistrelle sp., noctule, *Nyctalus* sp., *Myotis* sp., and brown long-eared). Common pipistrelle were by far the most frequently recorded species, accounting for just over 89% of all records. Soprano pipistrelle were the next most abundant, accounting for just over 7% of all records.
- 4.5 At least five of the recorded species were registered at all statics. The highest activity levels were recorded on S3 with 2190 registrations in Autumn 2018 dominated by common pipistrelle. The activity level varied by more than a factor of ten from night to night which suggests variation may be linked to foraging conditions. Static S3 was located in the north east of the site, in proximity to Short Wood and Hay Green LWS which is a large area of mature woodland from which bats could easily commute.

Date	21.06.18
Start Time	21.39
End Time	23.48
Sunset	21.39
Start Temp (oC)	17
End Temp (oC)	12
Cloud Cover	10%
Wind (Beaufort scale)	0
Rain	0



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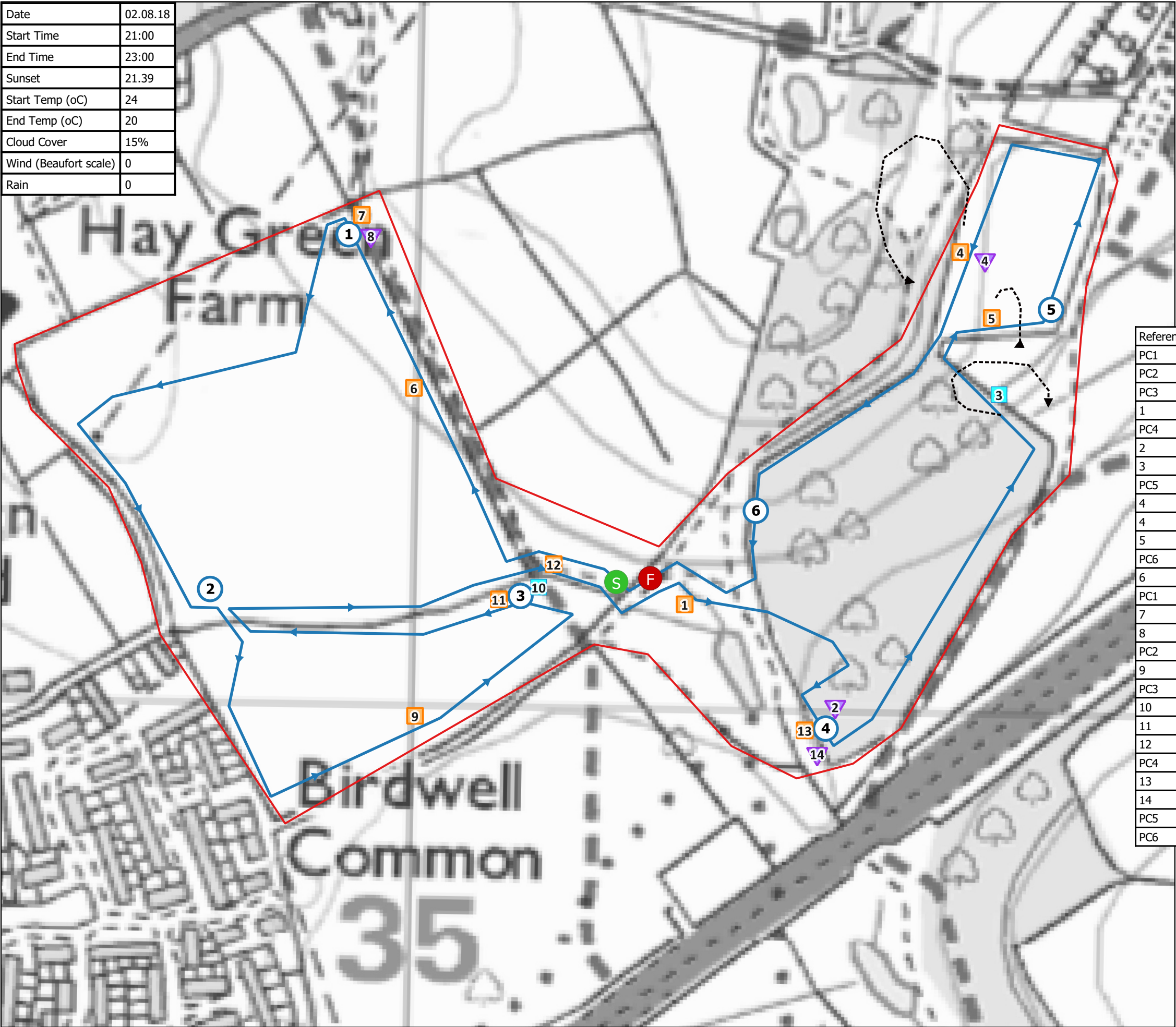
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Key:

- Site Boundary
- Start point
- Finish point
- Point Count (with ref.)
- Transect Route
- Flight Path
- Bat Contacts**
 - Common Pipistrelle

Reference No.	Time	Species	Behaviour	Passes	Comments
PC1	21.41-21.46				
PC2	21.52-21.57				
PC3	22.00-22.05				
PC4	22.13-22.18				
PC5	22.22-22.27				
1	22.26-22.27	C.Pip	Foraging	4	
PC6	22.39-22.44				
2	22.40-22.42	C.Pip	Foraging	6	2 Bats
PC1	22.50-22.55				
3	22.51-22.55	C.Pip	Foraging	Cont.	5 Bats
PC2	22.58-23.03				
4	23.01	C.Pip	Commuting	1	Flying high
PC3	23.06-23.11				
PC4	23.16-23.21				
PC5	23.24-23.29				
5	23.27	C.Pip	Unknown	1	Non Visual
6	23.38	C.Pip	Foraging	3	
PC6	23.39-23.44				
7	23.4	C.Pip	Foraging	1	Non Visual
8	23.42	C.Pip	Foraging	1	Non Visual

Date	02.08.18
Start Time	21:00
End Time	23:00
Sunset	21.39
Start Temp (oC)	24
End Temp (oC)	20
Cloud Cover	15%
Wind (Beaufort scale)	0
Rain	0



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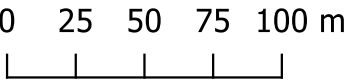
Key:

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

Bat Contacts

- Common Pipistrelle
- Common / Soprano Pipistrelle
- Noctule

Reference No.	Time	Species	Behaviour	Passes	Comments
PC1	21.05-21:08				
PC2	21:15-21:18				
PC3	21:26-21:29				
1	21:30	C. Pipistrelle	U	1	Non Visual
PC4	21:34-21:37				
2	21:35	Noctule	U	1	Non Visual
3	21:40	C. Pipistrelle/S. Pipistrelle			
PC5	21:46-21:49				
4	21:50	C. Pipistrelle	F	3	Along tree line
4	21:53	Noctule	U	1	Non Visual
5	21:54	C. Pipistrelle	F	2	Non Visual
PC6	21:57-22:00				
6	22:04	C. Pipistrelle	F	4	Non Visual
PC1	22:07-22:10				
7	22:07	C. Pipistrelle	F	2	Non Visual
8	22:08	Noctule	F	1	Non Visual
PC2	22:16-22:19				
9	22:23	C. Pipistrelle	F	3	Non Visual
PC3	22:30-22:33				
10	22:30	C. Pipistrelle/S. Pipistrelle	F	2	Non Visual
11	22:33	C. Pipistrelle	F	Cont.	Non Visual
12	22:36	C. Pipistrelle	F	1	Non Visual
PC4	22:39-22:42				
13	22:39	C. Pipistrelle	F	3	Non Visual
14	22:40	Noctule	F	1	Non Visual
PC5	22:48-22:51				
PC6	22:56-22:59				



client

Harworth Group

project

Dearne Valley Parkway, Rockingham, Barnsley

drawing title

BAT TRANSECT PLAN (02.08.18)

scale @ A3

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drawn

ERW/JD

issue

6/12/2019

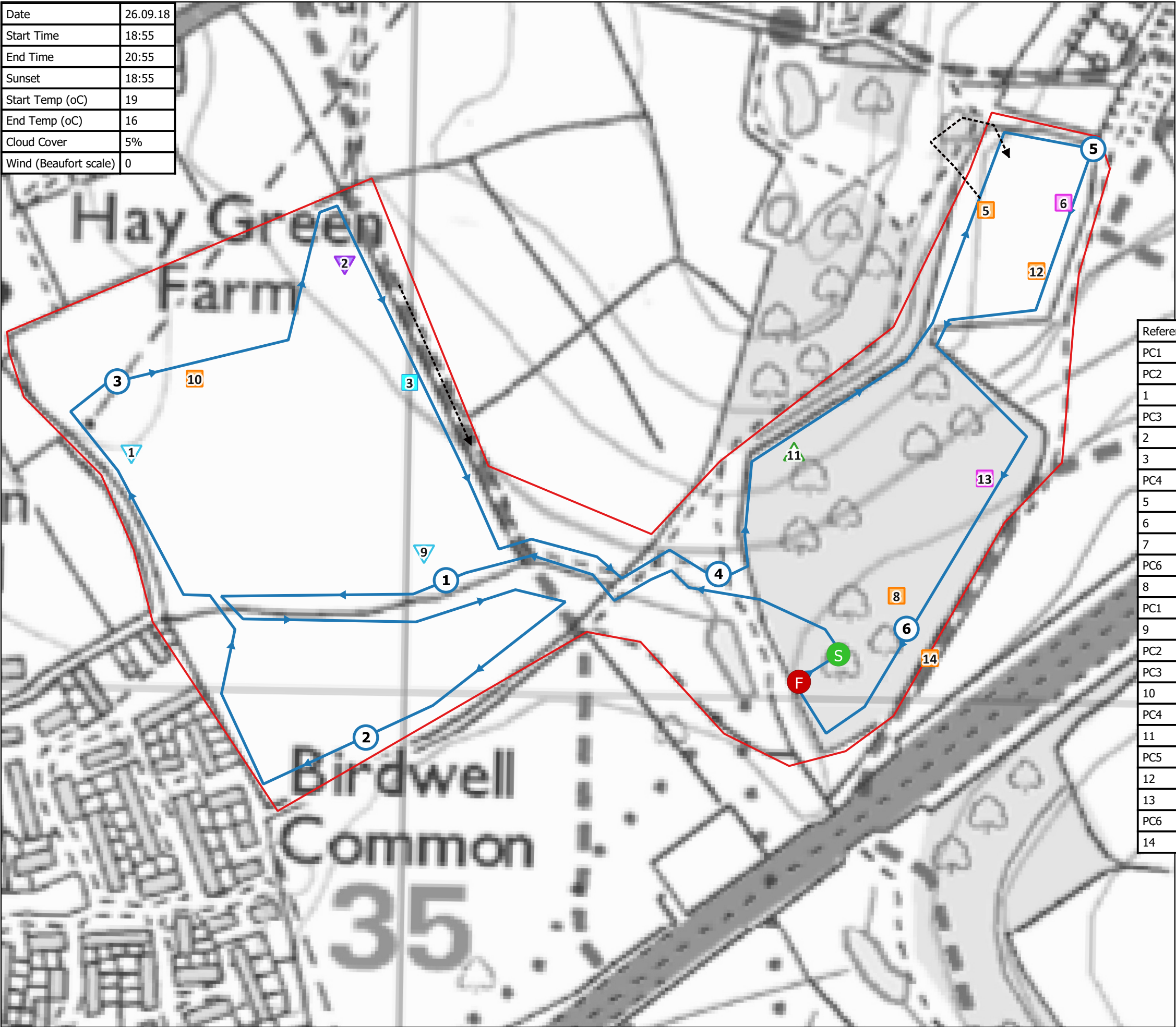
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Figure 1b

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Date	26.09.18
Start Time	18:55
End Time	20:55
Sunset	18:55
Start Temp (oC)	19
End Temp (oC)	16
Cloud Cover	5%
Wind (Beaufort scale)	0



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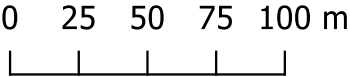
Key:

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- Start point
- Finish point
- Point Count (with re
- Transect Route
- Flight Path

Bat Contacts

- Common Pipistrelle
- Common / Soprano Pipistrelle
- Soprano Pipistrelle
- Myotis Species
- Nyctalus Species
- Noctule

Reference No.	Time	Species	Behaviour	Passes	Comments
PC1	19:00-19:03				
PC2	19:02-19:05				
1	19:17	Nyctalus sp.	C	1	Non Visual
PC3	19:20				
2	19:25	Noctule	F	Cont.	Non Visual
3	19:28	C. Pipistrelle/S. Pipistrelle	F	2	Non Visual
PC4	19:33-19:36				
5	19:47	C. Pipistrelle	F	3	Non Visual
6	19:49	S. Pipistrelle	F	1	
7	19:51	C. Pipistrelle	F	4	
PC6	19:53-19:56				
8	19:56	C. Pipistrelle	F	Cont.	Non Visual
PC1	20:01-20:04				
9	20:01	Nyctalus sp.	C	1	Non Visual
PC2	20:09-20:12				
PC3	20:15-20:18				
10	20:21	C. Pipistrelle	F	4	Non Visual
PC4	20:26-20:29				
11	20:30	Myotis sp.	C	2	Non Visual
PC5	20:34-20:37				
12	20:38	C. Pipistrelle	F	Cont.	Non Visual
13	20:41	S. Pipistrelle	F	2	Non Visual
PC6	20:44-20:47				
14	20:45	C. Pipistrelle	F	1	Non Visual



client
Harworth Group
project
Dearne Valley Business Park,
Rockingham, Barnslev
drawing title
BAT TRANSECT PLAN (26.09.18)

scale @ A3
1:2750

drawn
ERW/JD

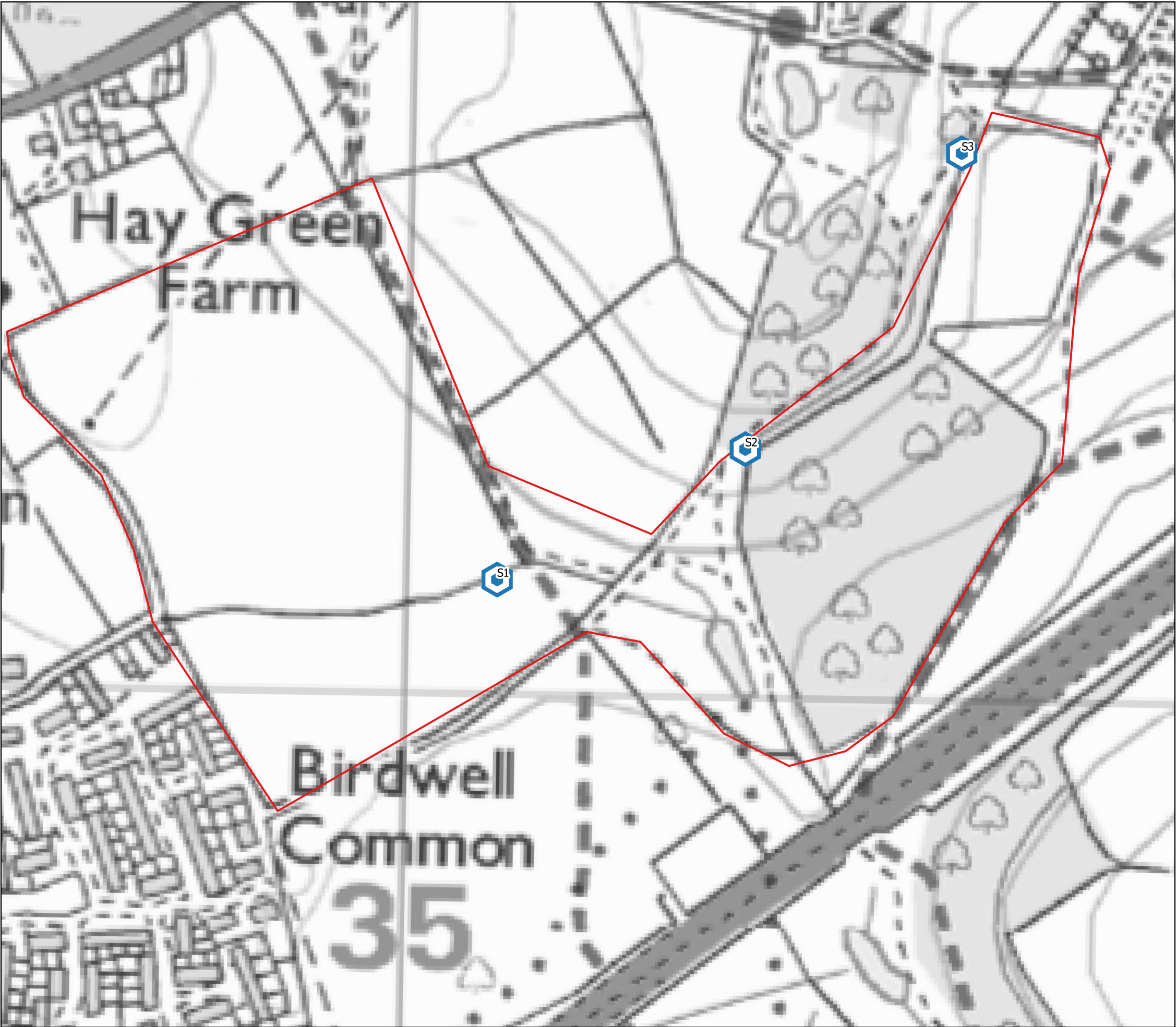
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Figure 1c

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Key:

-  Site Boundary
-  Static Detector Locations



APPENDIX A: STATIC DETECTOR RESULTS

Ordering Period	Unit No.	Start Date	End Date	Survey Hours	Avg. per Hour	Registrations	Common Pipistrelle			Soprano Pipistrelle			Noctule			Pipistrelle Species			Myotis Species			Brown Long-eared			Nyctalus Species		
							Period Total	Peak Count	Avg. Per Hour	Period Total	Peak Count	Avg. Per Hour	Period Total	Peak Count	Avg. Per Hour	Period Total	Peak Count	Avg. Per Hour	Period Total	Peak Count	Avg. Per Hour	Period Total	Peak Count	Avg. Per Hour	Period Total	Peak Count	Avg. Per Hour
Spring	1	21/06/2018	26/06/2018	39:53:30	20.656	824	699	221	17.522	91	44	2.281	20	7	0.501	13	8	0.326	1	1	0.025	0	0	0	0	0	0
Summer	2	02/08/2018	07/08/2018	47:54:25	15.593	747	591	161	12.336	99	25	2.067	26	10	0.543	15	6	0.313	9	4	0.188	6	4	0.125	1	1	0.021
Autumn	3	28/09/2018	03/10/2018	67:10:54	32.598	2190	2066	988	30.752	80	36	1.191	2	2	0.03	13	6	0.194	27	16	0.402	2	1	0.03	0	0	0
Totals:				154:58:50	24.268	3761	3356	988	21.654	270	44	1.742	48	10	0.31	41	8	0.265	37	16	0.239	8	4	0.052	1	1	0.006