



**Bat Transect and Remote Detector Survey
Report**

Land North of Summerhill, Wrexham

For Site Plan UK LLP

Delta-Simons Project No. 16-0267.01

Issued: October 2016

EXECUTIVE SUMMARY

INTERIM BAT TRANSECT AND REMOTE DETECTOR SURVEY REPORT

LAND NORTH OF SUMMERHILL, WREXHAM

FOR SITE PLAN UK LLP

DELTA-SIMONS PROJECT No. 16-0267.01

Purpose	Delta-Simons Environmental Consultants Ltd was commissioned by AAH Planning Consultants on behalf of Site Plan UK LLP ('the Client') to undertake seasonal Bat Transect and Remote Detector Surveys of land situated to the east of Bottom Road, and to the north of Summerhill in Wrexham ('the Site').
Current Site Status	The Site is characterised by an improved grassland field, boundary hedgerows, scattered trees and a storage shed.
Proposed Development	It is understood that the proposed development will comprise residential properties with associated hard and soft landscaping. All of the existing hedgerows are due to be retained apart from three short sections where passing places are due to be created along Bottom Road.
Interim Results: <u>Static Bat Detector</u> <u>Bat Transect Survey</u>	The static bat detector (Detector 1) recorded moderate levels of common pipistrelle, soprano pipistrelle and noctule bat activity during both May and June. The greatest species diversity was recorded during May, when both common and soprano pipistrelles, noctule bat, Myotis spp. and Brown Long-Eared (BLE) bat were recorded. The most bat activity was detected at the northern extent of the Site where bats were observed foraging along the hedgerow boundary. Timings from the May and June bat transect surveys and the remote monitoring, indicate that possible noctule and common pipistrelle roosts are located off-Site within close range to the northern extent of the Site.
Recommendations	Recommendation 1 (Construction Phase): In order to limit disturbance to bats potentially roosting off-Site during the construction phase of works lighting to facilitate the works must be directional, and light spill onto off-Site habitats must be avoided. Where possible, works at the Site should be limited to standard daytime working hours in order to prevent disturbance to bats when they emerge from roost sites to forage, or commute to foraging habitats along the Site boundaries. Recommendation 2 (Lighting): In order to prevent any adverse impact upon the potential roosting, and commuting and foraging habitats utilised by bats adjacent to the Site, the lighting plan for the Site must be sensitive to bats such that lighting within public areas of the proposed development is kept to a minimum (as required for safety and security) and that light spill onto vegetation corridors, including boundary hedgerows, is avoided wherever possible. Recommendation 3 (Roosting Habitat Enhancement): Bat boxes should be attached to trees within the hedgerow boundaries at the Site. Alternatively, bat boxes and bat tubes should be installed/ integrated within the garage walls of residential properties on-Site.

	Recommendation 4 (Foraging and Commuting Habitat Enhancement): The hedgerow sections due to be removed during the construction phase of works to create passing places along Bottom Road should be reinstated around the passing places, and where possible, new hedgerows incorporated into the development. These should support a variety of native species to provide food throughout the year for invertebrate species and, therefore, bats (and birds). Tree species planted along pathways and within amenity areas should include a mixture of trees that will develop roosting potential as they mature, together with trees planted in belts and clusters to support foraging and commuting bats.
This Bat Transect Survey Executive Summary is intended as a summary of the assessment of the Site based on information received by Delta-Simons at the time of production. This executive summary should be read in conjunction with the full report.	

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	Purpose and Scope of the Survey	1
1.2	Site Description	1
1.3	Proposed Development	2
2.0	LEGISLATION.....	3
2.1	Bats	3
2.2	Planning	3
3.0	METHODOLOGY	4
3.1	Data Search	4
3.2	Bat Transect Survey	4
4.0	RESULTS.....	7
4.1	Data Search	7
4.2	Nocturnal Bat Surveys	7
4.2.1	Suitability of the Site to Support Bats	7
4.2.2	Static Bat Detector Survey	8
4.2.3	Bat Transect Surveys.....	10
5.0	CONCLUSIONS AND RECOMMENDATIONS	14
5.1	Conclusions.....	14
5.2	Recommendations.....	15
6.0	LIMITATIONS.....	17

Tables

Table 1	Timings and Weather Conditions of Bat Surveys
Table 2	Results of Bat Activity Recorded by the Static Bat Detector
Table 3	Number of Bat Passes Recorded by the Static Detector
Table 4	Results of the dusk transect survey on 25/05/2016
Table 5	Results of the dusk transect survey on 28/06/2016
Table 6	Results of the dusk transect survey on 20/09/2016

Figures

Figure 1	Site Location Map
Figure 2	Site Layout
Figure 3	Proposed Development Plan
Figure 4	Location of Static Detector
Figure 5	Bat Transect Routes
Figure 6	Bat Transect Results (25 th May 2016)
Figure 7	Bat Transect Results (28 th June 2016)
Figure 8	Bat Transect Results (20 th September 2016)

Appendices

Appendix I	References
Appendix II	Guidance on Assessing the Potential Suitability of Development Sites to Support Bats

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FOR SITE PLAN UK LLP
DELTA-SIMONS PROJECT No. 16-0267.01

1.0 INTRODUCTION

1.1 Purpose and Scope of the Survey

Delta-Simons Environmental Consultants Ltd was commissioned by AAH Planning Consultants on behalf of Site Plan UK LLP ('the Client') to undertake seasonal Bat Transect Surveys and Static Detector Surveys of land to the east of Bottom Road, and north of Summerhill in Wrexham (hereafter referred to as the "Site"). The Site Location is shown in Figure 1. This follows the Extended Phase 1 Habitat Survey undertaken by Delta-Simons in May 2016 (Delta-Simons Project no. 16-0267.01), and was undertaken in order to support a planning application for the Site.

The aim of the surveys was to:

- △ Determine the usage of the Site by bats;
- △ Assess the results of the surveys and determine the potential impact of the proposed development works on any bats that might use the Site;
- △ Provide recommendations for working methodologies and further surveys in light of the survey results; and
- △ Make any initial recommendations for mitigation following the survey with respect to bats and to liaise with the Natural Resources Wales (NRW) Local Species Officer, if considered necessary.

1.2 Site Description

The Site is centred at Ordnance Survey (OS) grid reference SJ 30973 54254 to the north of Summerhill, Wrexham. The Site covers an area of approximately three hectares and comprises a single grassland field, boundary hedgerows, scattered trees and a storage shed.

The grassland field extends to the east of Bottom Road with boundary hedgerows around all but the southern and north-eastern boundaries of it. Fencing and a section of wall form the southern boundary of the Site. Scattered trees lie on the north-eastern boundary and

in the north-western extent of the Site. A storage shed is present in the north-west of the Site with small areas of bare ground and a small ruderal covered mound to the north of it.

Bottom Road runs along the west of the Site and continues around the north of the Site. Arable fields extend east of the Site, a small number of scattered trees lie to the north-east, and residential properties are to the south. To the west of the Site is a further grassland field and a residential property and garden, with Top Road and the golf course beyond.

Topographically the Site is relatively flat and well drained and did not support standing water at the time of the survey.

The Site layout is shown in Figure 2.

1.3 Proposed Development

It is understood from the Site Plan provided by the Client (Figure 3) that the Site is proposed for a residential development of 59 dwellings with associated hard and soft landscaping. All of the existing hedgerows are due to be retained apart from where passing places have to be created along Bottom Road.

2.0 LEGISLATION

2.1 Bats

All bats are protected under Section 9(4)(b) and (c) of the Wildlife and Countryside Act (WCA) 1981 (as amended) and by the Conservation of Habitats and Species Regulations 2010 (as amended).

It is an offence to destroy or damage a breeding site or resting place of a bat, to intentionally or recklessly obstruct access to any place of shelter or protection for bats, to deliberately disturb bat species, to intentionally or recklessly disturb a bat whilst it is in its place of shelter or protection, or deliberately capture, injure or kill a bat. It should be noted that a breeding site or resting place of a bat is protected whether or not bats are present, as long as it is likely that they will return, and any activity or works damaging or destroying such a breeding site or resting place are likely to require a Natural Resource Wales European Protected Species Licence (EPSL). All bats and their roosts are protected under Section 9 of the WCA 1981 (as amended) and Annex IV of the Habitats and Species Regulations 2010 (as amended).

2.2 Planning

The Office of the Deputy Prime Minister (ODPM) Circular (2005) advises that ecological surveys are undertaken before planning permission is determined. The circular states *“The need to ensure that ecological surveys are carried out should therefore only be left to coverage under planning conditions in exceptional circumstances”* (see References, Appendix I).

3.0 METHODOLOGY

3.1 Data Search

The results of the data search received from the North Wales Environmental Information Service (COFNOD), for the initial Extended Phase 1 Habitat Survey (Delta-Simons Project no. 16-0267.01), were reviewed.

In addition, a search for designated sites, specifically designated for bats, on or within 10 km of the Site was performed using the Multi-Agency Geographic Information for the Countryside (MAGIC).

3.2 Bat Transect Survey

Suitability of the Site to Support Bats

An assessment of habitats beyond the Site boundary was undertaken to identify potential commuting/ foraging corridors and suitable foraging sites. This enabled the suitability of the wider area for bats to be determined, as well as the accessibility of the Site to bats.

Details of the Surveyors and Surveys

The survey was undertaken by the following ecologists:

- Δ Pete Morrell (Natural England licence number: 2015-13512-CLS-CLS Class Survey Licence WML CL18 (Bat Survey Level 2));
- Δ Jonathan Spencer (Natural England licence number: 2015-14407-CLS-CLS Class Survey Licence WML CL18 (Bat Survey Level 2));
- Δ Rachel Bentley (Graduate Ecologist and bat surveyor); and
- Δ Adam Hicks (Graduate Ecologist).

Static Detector

An SM2BAT+ bat detector was positioned on-Site in order to record bat activity between sunset on 26th May 2016 and sunrise on 31st May 2016, sunset on the 28th June 2016 and sunrise on the 3rd July 2016, and sunset on 20th September 2016 and sunrise on 25th September 2016. The detector was placed on the edge of a hawthorn hedgerow situated along the northern Site boundary. The location of the static bat detector is shown in Figure 4. The results of the recordings were analysed using Analook software v.4.1. Each

recording was assessed and, where possible, identified to species level. The number of bat passes for each species was recorded.

Bat Transect Surveys

The bat transect survey was undertaken with reference to Natural England's Bat Mitigation Guidelines (2004) and the BCT Guidelines (Collins (ed.), 2016). As the Site was rated as low value to bats, a transect survey is required per season (spring, summer and autumn). Dusk nocturnal surveys were carried out in spring and summer to assess bat activity associated with the Site. The autumn transect survey is yet to be completed before this Report is finalised.

The dusk surveys commenced approximately fifteen minutes prior to sunset and ceased two hours following sunset. Two surveyors walked the predetermined route shown in Figure 5. The bat transect was walked at a steady pace and included six listening station stops. The location of each stop was chosen in order to incorporate aspects of the different habitats around the Site, and lasted for a period of three minutes. The transect route and locations of the listening stations are shown in Figure 5. The surveyors were equipped with Duet bat box detectors, Edirol recording equipment and high powered torches. Records were made of any bats seen and/ or heard and the species, the time, location and direction of flight.

Table 1 below details timings and weather conditions at the time of surveys:

Table 1 - Timings and Weather Conditions of Bat Surveys

Survey	Date	Timing	Weather
Nocturnal Bat Survey – Dusk	25/06/2016	21:00 – 23:20 (sunset 21:20)	10.0 °C, dry, intermittent light rain, Bf 1 (light air / light breeze), 8/8 cloud cover
Nocturnal Bat Survey – Dusk	28/06/2016	21:25 – 23:40 (sunrise 21:40)	12 °C, dry, heavy rain prior to survey during day, 1 Bf (light air / light breeze), 7/8 cloud cover
Nocturnal Bat Survey – Dusk	20/09/2016	19:00 – 21:00 (sunset 19:15)	14 °C, dry, 1 Bf (light air / light breeze), 7/8 cloud cover

With reference to the Bat Mitigation Guidelines (2004) the weather conditions during both of the dusk transect surveys were considered suitable for bat activity.

4.0 RESULTS

4.1 Data Search

Three records of soprano pipistrelle *Pipistrellus pygmaeus*, two records of Daubenton's bat *Myotis daubentonii*, and three records of pipistrelle *Pipistrellus* sp. have been identified within 10 km between 2008 and 2010, the closest of each species was from 825 m east of the Site in Alyn Waters Country Park. One record of Brown Long-Eared (BLE) bat *Plecotus auritus*, two records of common pipistrelle *Pipistrellus pipistrellus* and one record of a *Myotis* sp. were identified in 2008, with the closest record of each species 1 km north-east of the Site. One record of noctule bat *Nyctalus noctula* was identified 1.3 km north of the Site boundary in 2008.

The MAGIC data search did not reveal any statutory designated sites for bats within 10 km of the Site.

4.2 Nocturnal Bat Surveys

4.2.1 Suitability of the Site to Support Bats

Trees on-Site were considered to have negligible bat roosting potential as they supported no features suitable for roosting bats. The hedgerows at the Site offer good connectivity to the surrounding habitat, and provide commuting and foraging opportunities. However, the Site offers a limited range of habitat, with improved grassland offering a low floral species diversity, such that invertebrate prey diversity and density at the Site is anticipated to be low, furthermore, there are a lack of waterbodies, both on, and in proximity to, the Site. An assessment of habitats beyond the Site boundary revealed that it offers suitable habitat for roosting and foraging/ commuting bats being largely agricultural land, which is predominantly pasture, with hedgerows and mature trees and limited areas of woodland habitat. The River Alyn runs north-south, approximately 0.9 km to the east of the Site.

Urban development comprising buildings (commercial and residential) and road networks lie within 2 km to the east, west and immediately south, with the town of Wrexham extending over 6 km to the south-east. Relatively small villages are sparsely interspersed between the agricultural fields to the north-east. On-Site, the smaller field boundary was relatively well-lit as a result of street lighting along Bottom Road, adjacent to the eastern field, and lights from residential buildings adjacent to the southern and western field

margin, therefore, it is anticipated that light-sensitive bat species such as BLE and *Myotis* spp will avoid these locations.

The foraging and commuting habitats within the Site boundary, and those surrounding habitats that are considered suitable to support bats, are assessed as having a low value to bats.

4.2.2 Static Bat Detector Survey

Figure 4 shows the locations of the static bat detector which was positioned along a hawthorn hedgerow along the northern Site boundary.

A summary of the bat activity results from the static bat detector are presented in Table 2 below.

Table 2 - Results of Bat Activity Recorded by the Static Bat Detector

Date (night of) (dusk / dawn time)	Detector 1	
	Time of First Bat & Species	Time of Last Bat & Species
May		
26/05/2016 (21:19 / 04:58)	21:33 C pip	04:36 C pip
27/05/2016 (21:21 / 04:57)	21:22 C. pip	04:39 C.pip
28/05/2016 (21:22 / 04:56)	21:34 C.pip	05:00 Noc
29/05/2016 (21:24 / 04:55)	21:36 C.pip	04:28 C.pip
30/05/2016 (21:26 / 04:54)	21:47 C.pip	04:20 C.pip
June – July		
28/06/2016 (21:40 / 04:49)	21:30 Noc	04:30 C.pip
29/06/2016 (21:40 / 04:51)	22:03 Noc	04:30 C.pip
30/06/2016 (21:40 / 04:51)	21:43 C.pip	04:34 Noc
01/07/2016 (21:39 / 04:52)	21:56 Noc	04:23 Noc
02/07/2016 (21:39 / 04:53)	22:04 C.pip	04:30 C.pip
September		
20/09/2016 (19:15 / 06:57)	19:49 S.pip	06:32 S.pip

21/09/2016 (19:11 / 06:59)	19:36 C.pip	06:25 C.pip
22/09/2016 (19:08 / 07:01)	19:31 S.pip	05:02 S.pip
23/09/2016 (19:06 / 07:02)	19:41 S.pip	06:09 S.pip
24/09/2016 (19:03 / 07:04)	19:53 C.pip	06:35 C.pip
<u>Key</u> C.pip Common pipistrelle S.pip Soprano pipistrelle Noc Noctule		

Spring Survey

Detector 1 recorded frequent activity throughout the nights between 26th and 29th May. Common pipistrelle were always the species to be detected first and last each night, with the exception of the night of 28th May when a noctule was the last bat species to be detected. The earliest bats were recorded on average approximately 10 minutes after sunset, with the earliest recorded 1 minute after sunset on 27th May. The latest bats were recorded on average approximately 19 minutes before sunrise, with the last bat recorded 4 minutes after sunrise on 28th May. These timings suggest bats, specifically common pipistrelle, are roosting within proximity to the north-eastern area of the Site.

Summer Survey

Detector 1 recorded frequent activity throughout each night of recordings. Notably, 29th June was one of the most active nights with 207 bat passes recorded in total. On 30th June, activity was frequent with common pipistrelle and soprano pipistrelle recorded every few minutes from 03:33. The first bats were detected on average approximately of 15 minutes after sunset, with a noctule on 28th June detected 10 minutes beforehand. The last bats were detected an average of approximately 23 minutes before sunrise. Either common pipistrelle or noctule were the first or last bat species to be detected.

Again, these timing suggest bats that there are possible noctule and common pipistrelle roosts near to the northern boundary of the field.

Autumn Survey

Whilst bat activity levels were consistent with the spring and summer surveys, the activity levels displayed by the different species of bats did vary. Higher numbers of soprano pipistrelle passes, and lower numbers of common pipistrelle passes, were recorded when

compared to the previous surveys (see Table 3). The number of noctule passes recorded had decreased significantly from before, with only a single pass recorded, however, *Myotis* bat species were recorded more frequently than before, with a total of 73 passes.

The number of bat passes for each species is shown in Table 3, below.

Table 3 - Number of Bat Passes Recorded by Detector 1

Species	Number of Bat Passes		
	May	June – July	September
Common pipistrelle	410	580	184
Soprano Pipistrelle	45	31	252
Noctule	25	36	1
Natterer's bat <i>Myotis nattereri</i>	4	0	0
<i>Myotis</i> spp.	12	2	73
Brown Long-Eared (BLE) bat	5	0	2
Total	501	649	512

Overall, the greatest diversity of bat species were detected in May, which included common pipistrelle, soprano pipistrelle, noctule, *Myotis* spp. (other than Natterer's bat), BLE bat, and Natterer's bat. During June-July common pipistrelle, soprano pipistrelle and noctule were recorded, and two passes of *Myotis* spp. bat. As anticipated, the highest activity levels were recorded in mid-summer.

4.2.3 Bat Transect Surveys

Dusk Survey – 25th May 2016

The results of the dusk transect survey on 25th May 2016 are detailed in Table 4, and are illustrated in Figure 6.

Table 4 – Results of the dusk transect survey on 25/05/2016

Time	Species	Location	Activity/Comments
21:59	Common pipistrelle	Repeated passes over hedgerow along northernmost field margin.	Foraging
22:04	Common pipistrelle	Repeated passes over hedgerow along northernmost field margin.	Foraging
22:08	Noctule	At Station 3.	Heard not seen
22:32	Common pipistrelle	Along hedgerow on western side of narrowest part of the field.	Foraging
22:45	Common pipistrelle	Along hedgerow between Stations 3 and 4.	Foraging
23:10	Common pipistrelle	Near to Station 5, along hedgerow.	Foraging

Two species of bat, common pipistrelle and noctule, were detected during the survey. The first species to be detected was a common pipistrelle, at 21:59, at the northern extent, 39 minutes after sunset. The most bat activity was detected at the northern extent where bats were observed foraging along the hedgerow boundary. The last bat, a common pipistrelle, was detected at 23:10, 1 hour and fifty minutes after sunset, near to the buildings at the north-western extent of the Site.

Dusk Survey – 28th June 2016

The results of the dusk transect survey on June 2016 are detailed in Table 5, and are illustrated in Figure 7.

Table 5 – Results of the dusk transect survey on 28/06/2016

Time	Species	Location	Activity/Comments
22:16	Common pipistrelle Soprano pipistrelle	At northern extent of Transect	Foraging
22:24	Common pipistrelle Soprano pipistrelle	Feeding buzzes heard at northern extent of Transect	Foraging
22:28	Common pipistrelle	Continuous foraging over hedge at Station 5	Foraging

22:28	Common pipistrelle	Two passes along lane to west of the narrowest section of the field	Commuting
22:43	Common pipistrelle	Flying from south to north along lane near Station 5	Commuting
22:44	Noctule	At Station 5	Heard not seen
22:50	Common pipistrelle Soprano pipistrelle	Flying from south to north along lane, near Station 5, towards trees	Commuting
22:57	Common pipistrelle	At Station 5	Heard not seen
22:57	Common pipistrelle Soprano pipistrelle	8 passes counted along hedgerow on eastern boundary, between Stations 1 and 2.	Commuting
22:57	Common pipistrelle Soprano pipistrelle	At northern extent from south-east to north, near Station 3	Commuting
23:00	Soprano pipistrelle	From north to south along hedgerow at north-easternmost extent	Commuting
23:03	Common pipistrelle	Flew into field, from south of Station 3	Commuting
23:04	Noctule	At Station 3	Heard not seen
23:06	Common pipistrelle	Flew into field, from south of Station 3	
23:07	Common pipistrelle	At Station 3	Heard not seen
23:17	Common pipistrelle	Flying along road adjacent to hedgerow at Station 6.	Commuting Heard not seen
23:38	Common pipistrelle	Flying north-south along road adjacent to hedgerow, between Stations 5 and 6.	Foraging Heard not seen

Three species of bat, common pipistrelle, soprano pipistrelle, and noctule, were detected during the survey. A common pipistrelle was the first bat species to be detected at 22:16 at the northernmost extent of the Site, 36 minutes after sunset. Both foraging and commuting activity was recorded.

Dusk Survey – 20th September 2016

The results of the dusk transect survey on September 2016 are detailed in Table 6, and are illustrated in Figure 8.

Table 6 – Results of the dusk transect survey on 20/09/2016

Time	Species	Location	Activity/Comments
19:49	Common pipistrelle	Flying along western hedgerow	Commuting
19:58	Soprano pipistrelle	Flying south down Bottom Lane past point 1	Commuting
20:06	Common pipistrelle	Flying along hedgerow between point 2 and 3	Foraging
20:09	Common pipistrelle	Flying along hedgerow between point 2 and 3	Foraging
20:19	Common pipistrelle	HNS within tree near to point 4	Foraging
20:21	Myotis (Natterer's)	Along Hedgerow at Station 4	Commuting
20:26	BLE	Brief pass, heard not seen, west of point 4	Commuting
20:28	Common pipistrelle Soprano pipistrelle	Flying along western hedge	Foraging
20:35	Common pipistrelle	Flying along western hedge	Commuting
20:36	Myotis sp.	To the east of the building	Foraging
20:45	Common pipistrelle	Flying south past point 2	Commuting
20:55	Common pipistrelle	At Station 3	Commuting
21:04	Common pipistrelle	Flying along western hedge	Foraging
21:11	Common pipistrelle	Flying along western hedge	Foraging

Four species of bat, common pipistrelle, soprano pipistrelle, BLE and a Myotis sp., were detected during the survey. A common pipistrelle was the first bat species to be detected at 19:49 along the western extent of the Site, 34 minutes after sunset. Both foraging and commuting activity was recorded and was associated with the hedgerows and trees that border the Site.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

There are no statutory designated Sites for bats within 10 km of the Site centre.

The Site is set in a relatively rural location and is well-connected to the wider landscape through an extensive network of hedgerows, with occasional woodland rides and watercourses. Habitats similar to those on the Site itself occur within the surrounding, and wider area, however, land to the south is developed.

The static bat detector consistently recorded moderate levels of common pipistrelle, soprano pipistrelle and noctule bat activity during both May and June, whilst changes were noted in September. Other species of bats (noctule, BLE, *Myotis*, Natterer's bat) were recorded at a low frequency, or as with Natterer's bat, just during the May survey, although this could be a result of data interpretation as *Myotis* bat species can be difficult to differentiate between. The static detector recorded the greatest species diversity during May, when common and soprano pipistrelles, noctule bat, Natterer's bat and another *Myotis* sp., and BLE, were all recorded. However, the frequency of passes of the different species was recorded to vary notably between the summer months and autumn. Passes by common pipistrelle bats decreased considerably from 580 in June/ July to 184 in September, whilst those by soprano pipistrelle bats were noted to increase considerably (31- 252 across the same months). Noctule bat passes, although generally low throughout all surveys, decreased significantly from a peak of 36 in June/ July to a single pass in September, whilst *Myotis* sp. passes increased from 2 in mid-summer to 73 in September. Whilst we can infer that the individual bat species rely on habitats and features within the local area surrounding, and incorporating, the Site, for different purposes throughout their active season, without further detailed survey information we cannot draw any detailed conclusions.

Timings from both the bat transect surveys and the remote monitoring infer noctule and common pipistrelle roosts within close range of Detector 1, which was located at the northern extent of the Site.

Common pipistrelle and soprano pipistrelle were recorded on during all three transect visits, whereas noctule bat was only recorded during dusk transect surveys in May and June. BLE and Myotis species were only recorded during the dusk transect in September. Both foraging and commuting activity was observed over the hedgerows, parallel to Bottom Road and at the northern extent on-Site.

Overall, given its size and its location within the wider landscape, the Site is considered to represent low value habitat in respect to bats, in particular due to the low grassland species diversity, the low habitat diversity and lack of waterbodies on or adjacent to the Site. Furthermore, it does not offer any roosting opportunities.

It is anticipated, that without mitigation in place during the construction phase of works that there is the potential to disturb possible roosting bats off-Site both as a result of lighting to facilitate the construction works, and the noise/ vibration resulting from those works. Any impact upon bats will be temporary and localised to the area immediately surrounding the works. The overall adverse impact upon the local bat population during the construction phase without mitigation in place is considered to be minor and, therefore, non-significant.

5.2 Recommendations

Recommendation 1 (Construction Phase):

- △ In order to limit disturbance to bats during the construction phase of works lighting to facilitate the works must be directional, and light spill onto off-Site habitats must be avoided; and
- △ Where possible, works at the Site should be limited to standard daytime working hours in order to prevent disturbance to bats when they emerge from roost sites to forage, or commute to foraging habitats along the Site boundaries.

Recommendation 2 (Lighting):

- △ In order to prevent any adverse impact upon the roosting, commuting and foraging habitats utilised by bats adjacent to the Site, the lighting plan for the Site must be sensitive to bats such that lighting within public areas of the proposed development is kept to a minimum (as required for safety and security) and that light spill onto vegetation corridors, including boundary hedgerows, is avoided wherever possible; and

- △ There are several methods by which light can be targeted and light trespass avoided in order to minimize adverse impacts to bats. Lamps with a low UV component should be used. Insects are particularly sensitive to UV light and are attracted in large numbers to lights with a high UV component. This has the effect of reducing insect availability in adjacent dark areas impacting the ability of light-avoiding bats to forage. Lighting should be directed to the target area only and light trespass onto linear vegetation avoided. Design of the luminaire, the luminaire aiming angles and optical control should be such as to minimize glare. If appropriate, physical barriers such as cowls, hoods, louvers and shields should be considered to avoid light trespass onto vegetative corridors, and, the use of highly directional Light Emitting Diodes (LEDs) should be considered.

Recommendation 3 (Roosting Habitat Enhancement):

- △ Bat boxes should be attached to trees within the hedgerow boundaries at the Site. Alternatively, bat boxes and bat tubes should be installed/ integrated within the garage walls of residential properties on-Site; and
- △ Delta-Simons can advise on the type, number and proposed location of the bat boxes once the plans for the Site have been finalised.

Recommendation 4 (Foraging and Commuting Habitat Enhancement):

The hedgerow sections due to be removed during the construction phase of works to create passing places along Bottom Road should be reinstated around the passing places, and where possible, new hedgerows incorporated into the development. These should support a variety of native species to provide food throughout the year for invertebrate species and, therefore, bats (and birds). Tree species planted along pathways and within amenity areas should include a mixture of trees that will develop roosting potential as they mature, together with trees planted in belts and clusters to support foraging and commuting bats.

6.0 LIMITATIONS

The behaviour of animals can be unpredictable and may not conform to characteristics recorded in current scientific literature. This Report, therefore, cannot predict with absolute certainty that animal species will occur in apparently suitable locations or habitats or that they will not occur in locations or habitats that appear unsuitable.

The recommendations contained in this Report represent Delta-Simons' professional opinions, based upon the information referred to in Section 4 of this Report, exercising the duty of care required of an experienced Ecology Consultant. Delta-Simons does not warranty or guarantee that the Site is free of Bats or other protected species.

No part of the survey included an assessment of the materials and conditions of the building. No part of the survey included an asbestos assessment, nor did it represent an appraisal of other deleterious materials or hazardous substances.

This Report was prepared by Delta-Simons for the sole and exclusive use of the Client and for the specific purpose for which Delta-Simons was instructed as defined in Section 1 of this Report. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Delta-Simons does not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Delta-Simons from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

This Report was prepared by:



Jonathan Spencer
Senior Ecologist

Date 26th October 2016

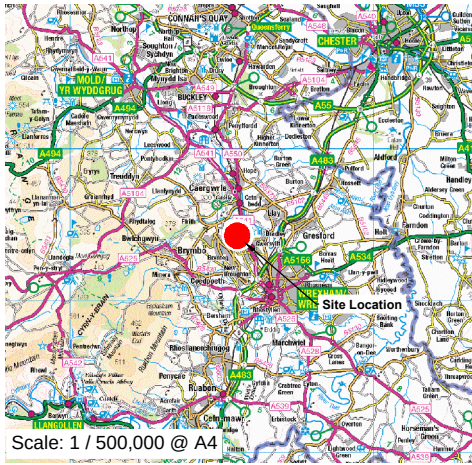
This Report was reviewed and authorised by:



Charlotte Sanderson
Associate and Ecology Team Leader

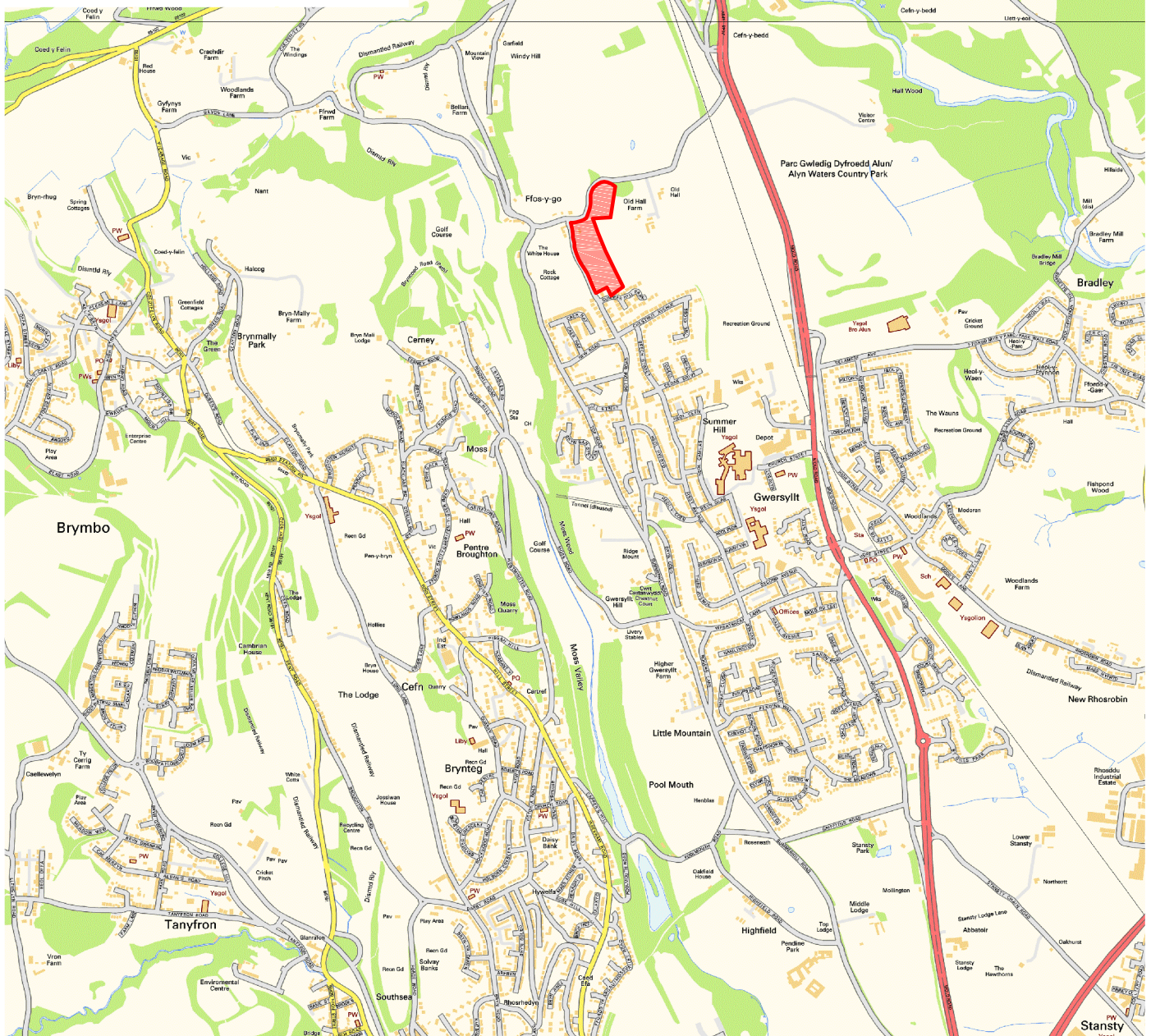
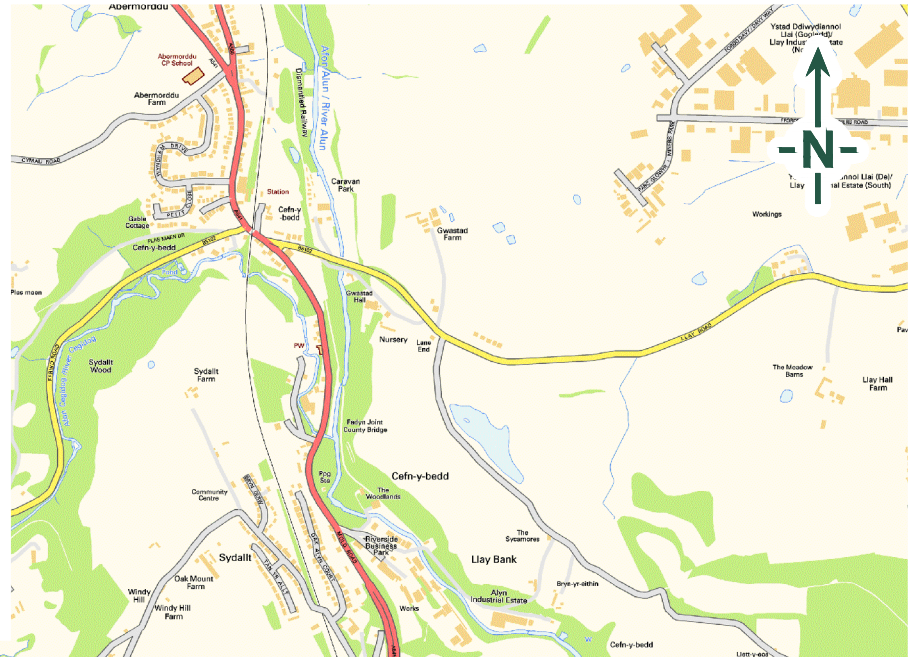
Date 26th October 2016





LEGEND

 Site Boundary



Scale: 1 / 10,000 @ A4

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TITLE:
Site Location Map
Land North of Summerhill
Wrexham

DRAWN BY:
EN
CHECKED BY:
PM
DATE:
04 July 2016

SCALE:
To Scale@A4
REVISION:
1

PROJECT NO:
16-0267.01
FIGURE NO:
1



LEGEND

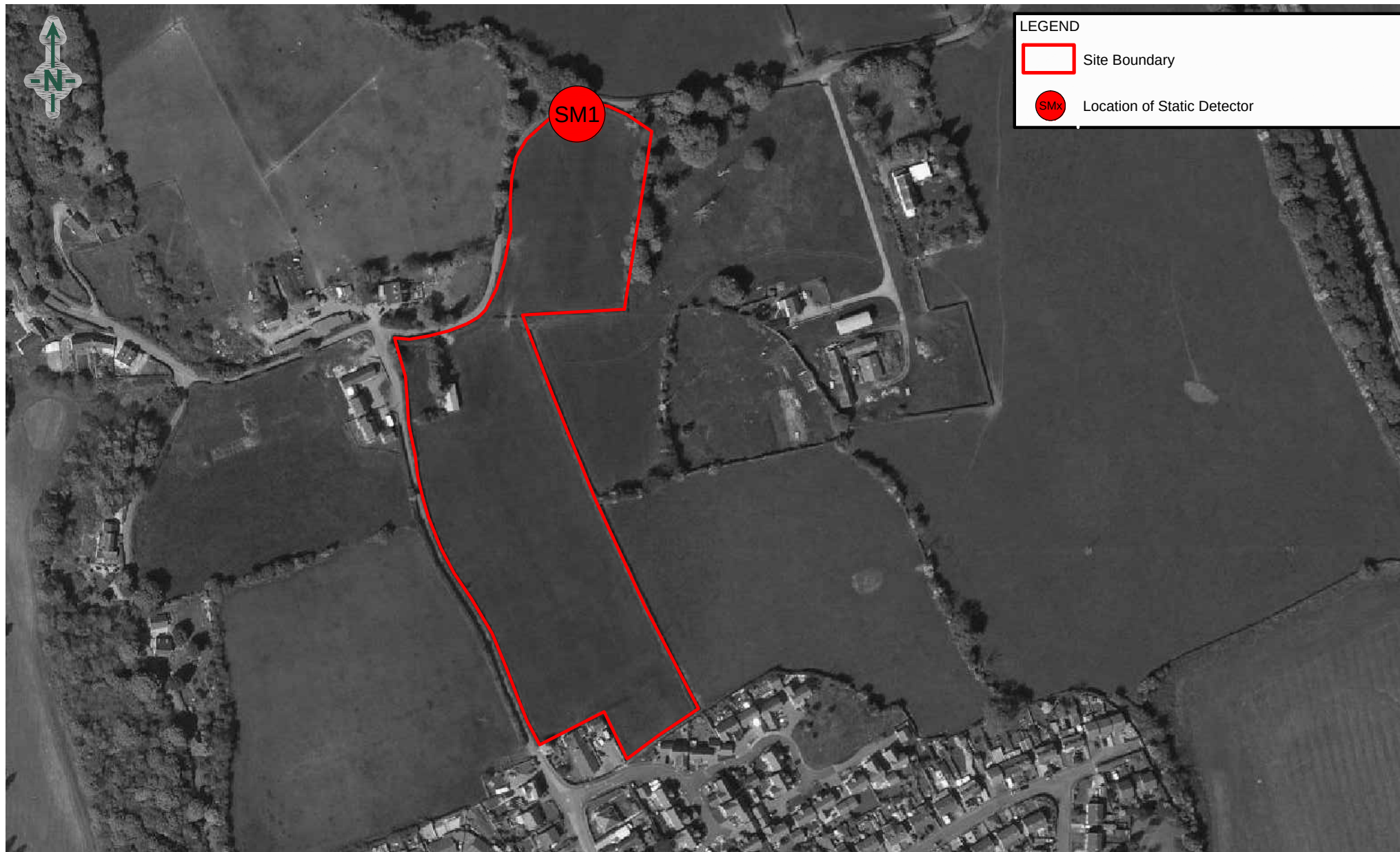
- Site Boundary
- Broadleaved Scattered Trees (A3.1)
- I Improved Grassland (B4)
- Tall Ruderals (C3.1)
- Intact Species - Poor Hedgerow (J2.1.2)
- Defunct Species - Poor Hedgerow (J2.2.2)
- +++ Fence (J2.4)
- Wall (J2.5)
- Building (J3.6)
- Bare Ground (J4)
- TN Target Note

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KEY LEGEND

- Site Boundary
- Residential Garden Space
- Pavement
- Public Highway
- Public Open Space
- Trees/Vegetation
- Farm Fields
- Existing Private Curtilage
- Existing Building/Structure
- Proposed Building



LEGEND

Site Boundary

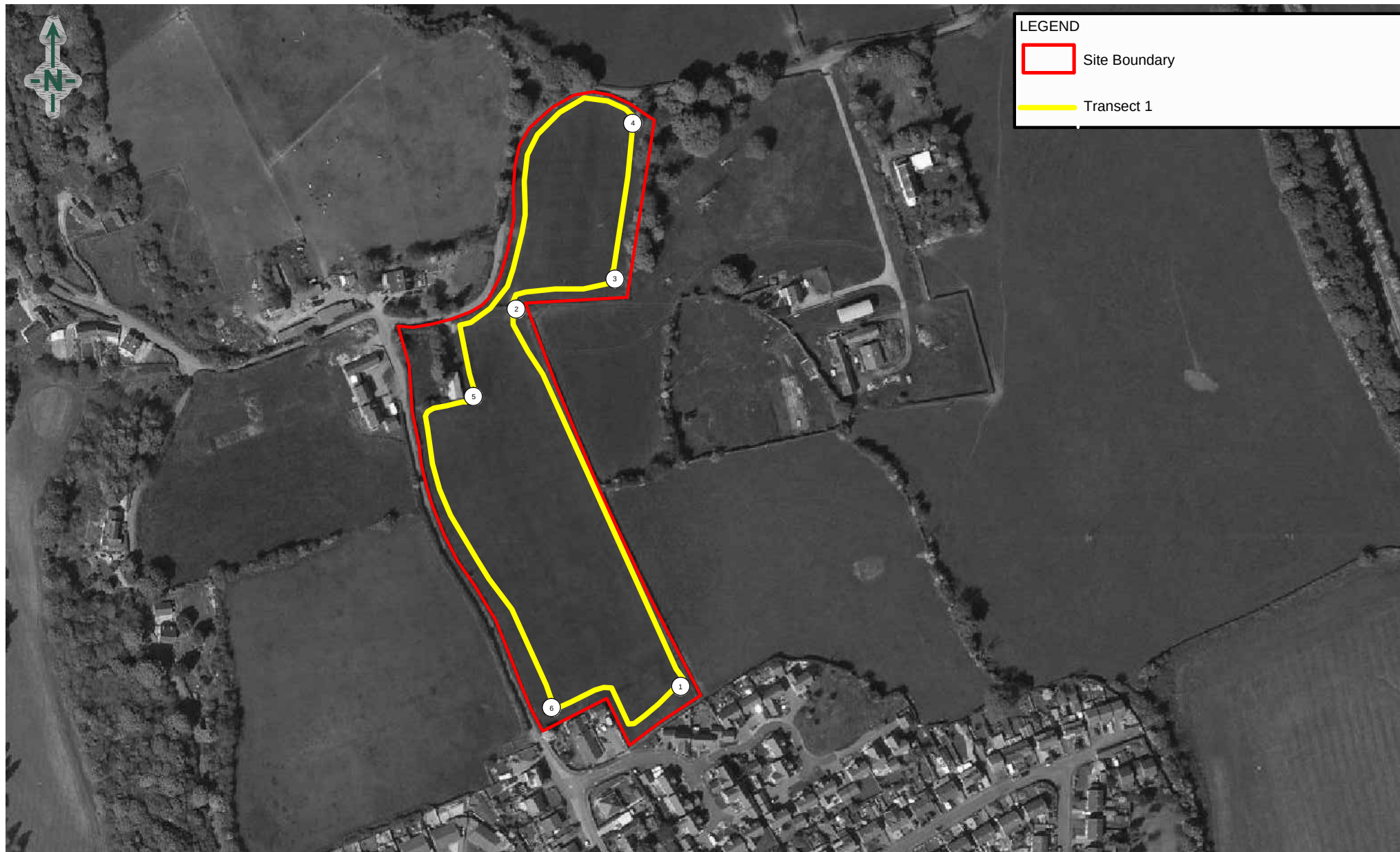
SMx Location of Static Detector

Base map from Bing Maps (c) 2016. All rights reserved.

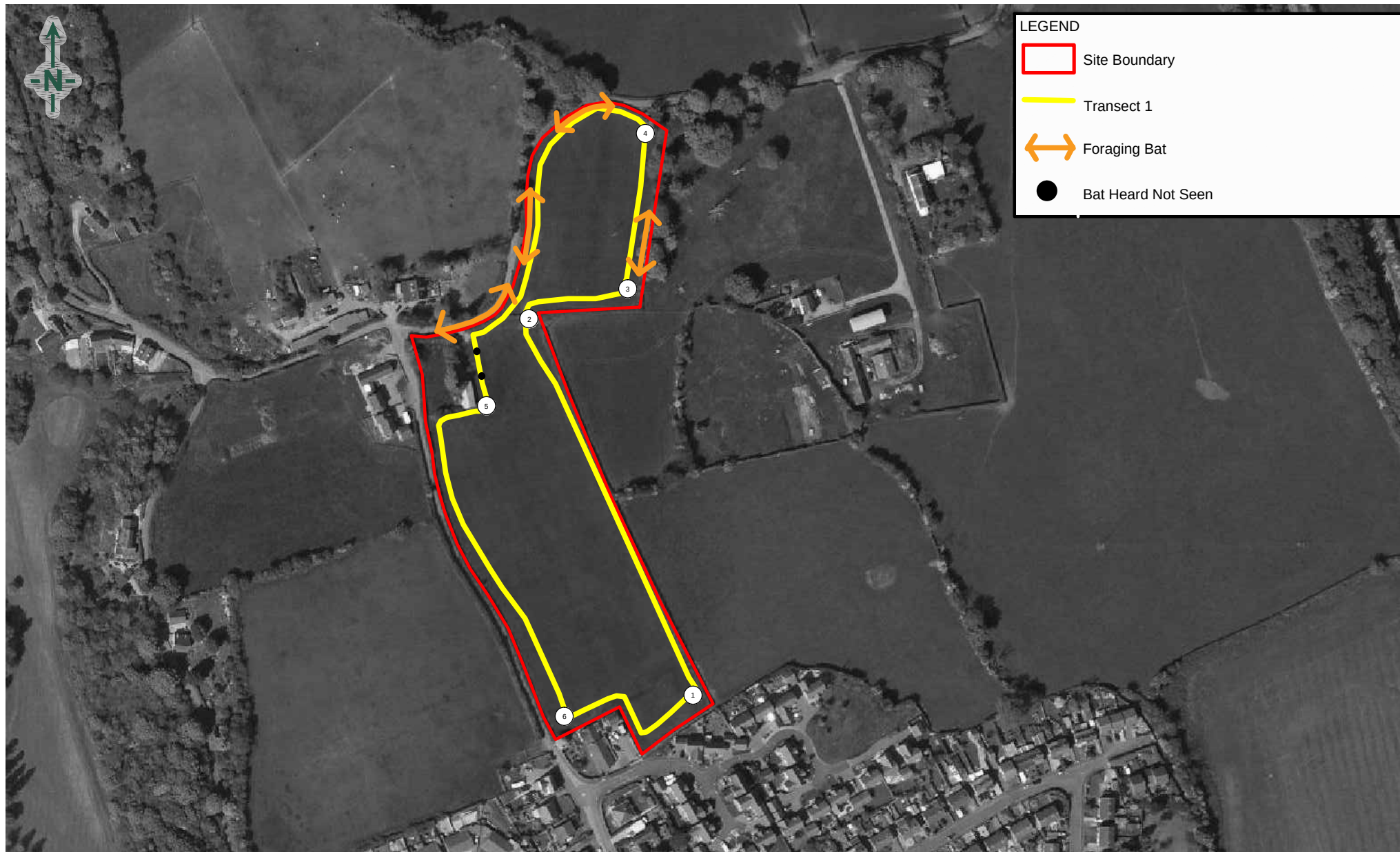


TITLE:
 Location of Static Detector
 Land North of Summerhill
 Wrexham

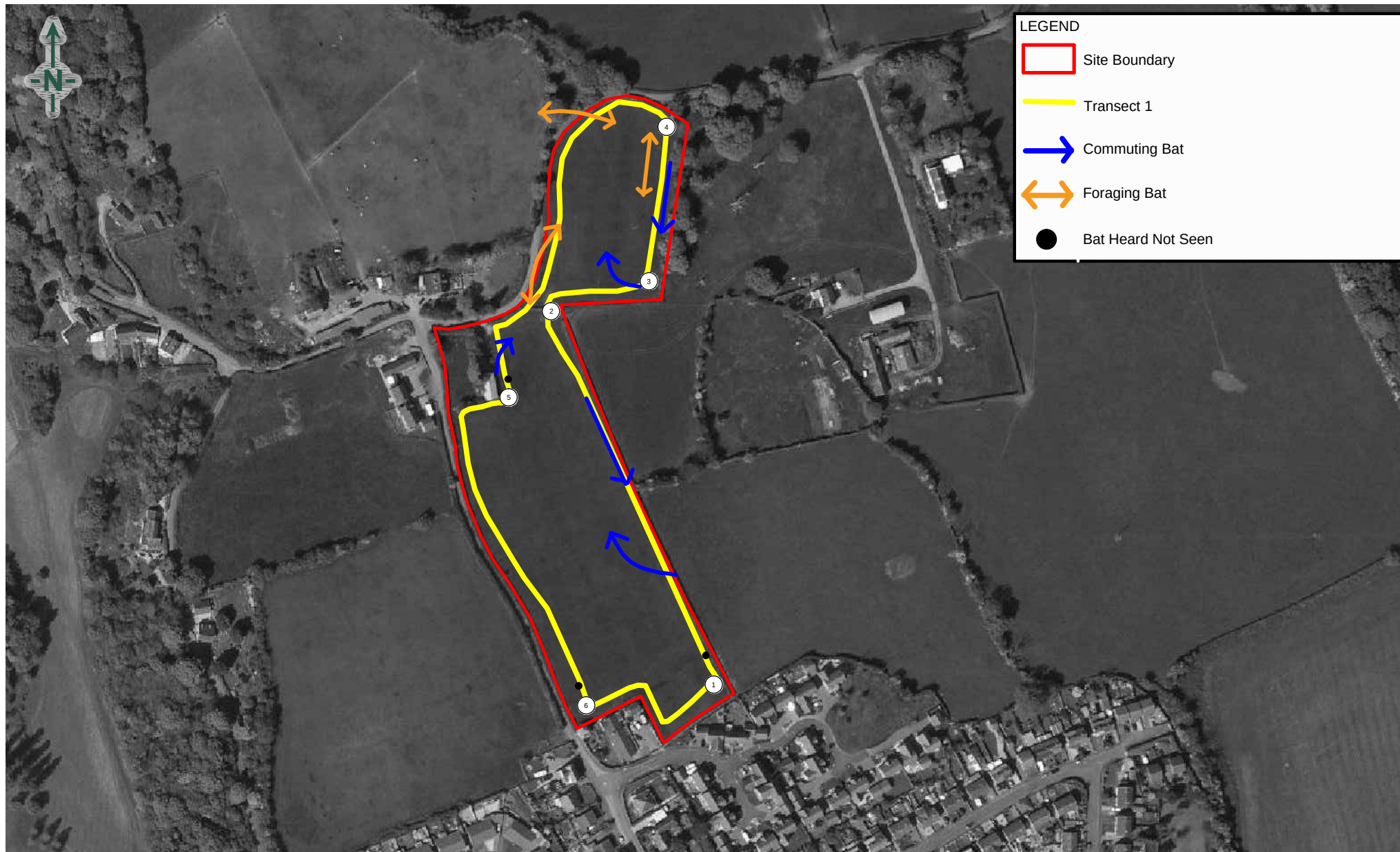
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CHECKED BY: RB	REVISION: 1	FIGURE NO: 4
DATE: 27 June 2016		



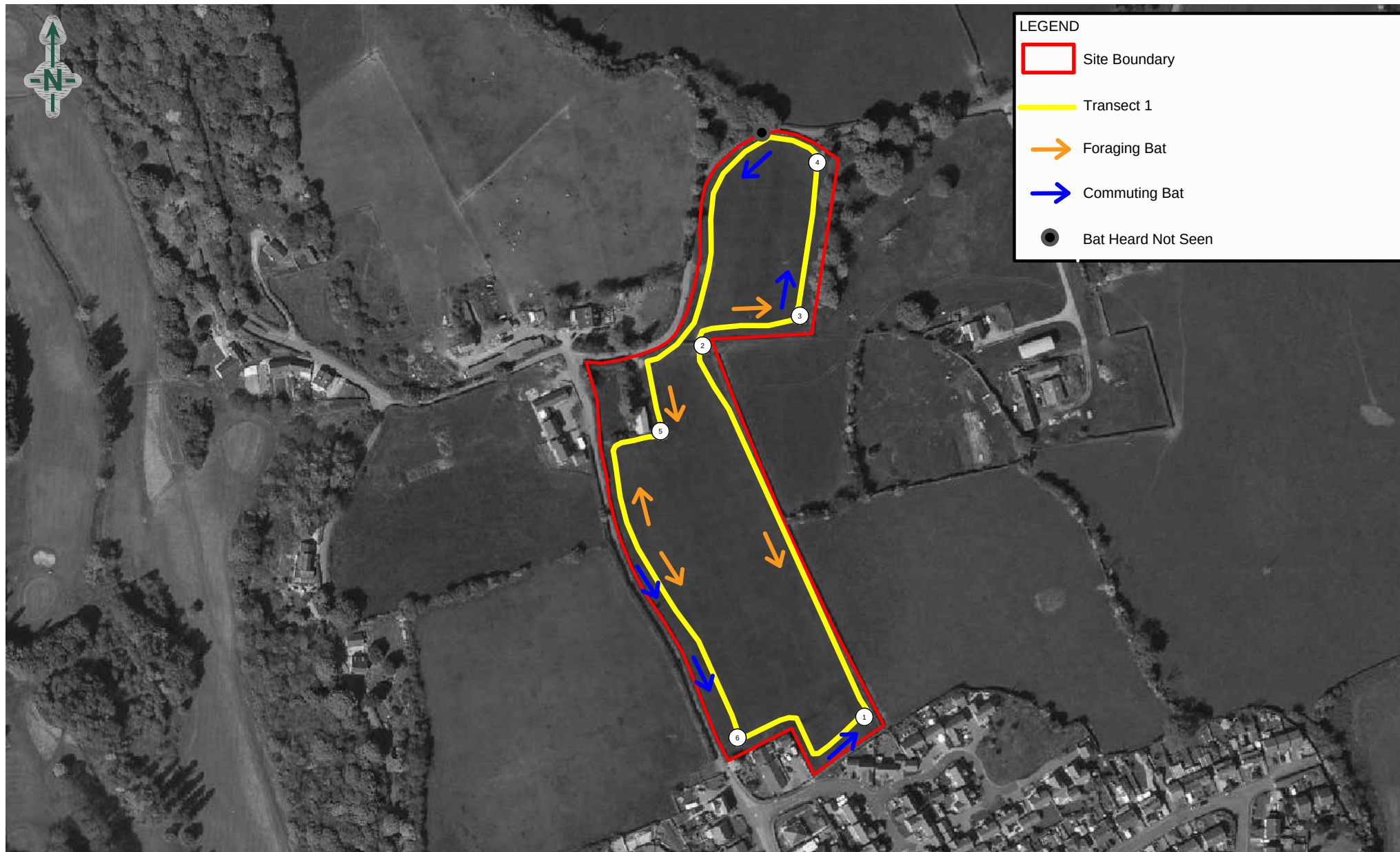
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References

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English Nature (now Natural England) (2004) Bat Mitigation Guidelines. English Nature, UK

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

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The Conservation of Habitats and Species Regulations 2010 (as amended) HMSO

Wildlife and Countryside Act 1981 (as amended), HMSO.





Guidance on Assessing the Potential Suitability of Development Sites to Support Bats
(adapted from Collins, J. (ed)).

Suitability	Description	
	Roosting	Commuting and Foraging
Negligible	An inspected structure or tree which is considered to have no features of importance for roosting bats. No further constraints apply to the method or timing of proposed works.	Negligible habitat features on-Site to support commuting or foraging bats
Low	A structure with at least one or more features suitable to support opportunistic individual bats. However, inadequate space, shelter, protection and conditions, and the low suitability of surrounding habitats means that it is unlikely to be used as a maternity or hibernation roost site. A tree of adequate age and stature to support potential roosting features, however, either no features, or only features of limited potential recorded from the ground.	Habitat with potential to support low numbers of commuting bats due to its quality and connectivity. For example, a gappy hedgerow or unvegetated stream that is isolated from the surrounding landscape. Alternatively, suitable but isolated habitats suitable to support low numbers of foraging bats such as a lone tree or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that are of adequate size, shelter and protection, with suitable conditions and surrounding habitat to support a bat roost not of high conservation status (with respect to roost type not individual species conservation status).	Linear habitat continuity connecting to the wider landscape offering potential to support commuting bats, such as rows of trees and scrub or linked back gardens. Habitat such as trees, scrub, grassland or a waterbody with connectivity to the wider landscape offering foraging opportunities for bats.
High	A structure or tree with one or more potential roost sites that are suitable for use by large numbers of bats on a regular basis and for long periods of time due to their size, shelter, protection, conditions and the surrounding habitat.	Continuous high-quality habitat with strong connectivity to the wider landscape that is likely to be used by commuting bats on a regular basis, such as flowing waterbodies, hedgerows, rows of trees and woodland edges. High quality habitat with strong connectivity to the wider landscape that is likely to be regularly used by foraging bats, such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to, and connected to, known roost sites