

**baker  
shepherd  
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ECOLOGICAL CONSULTANTS  
Limited Liability Partnership

**Barton Fields, Oxford  
Further Bat and Badger Surveys 2010**

October 2010



Final  
Rev 1



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## Report Contents

<b>1</b>	<b>Introduction.....</b>	<b>1</b>
1.1	Site Description .....	1
1.2	Proposed Works .....	1
1.3	Ecological Background.....	1
1.4	Aims of Study .....	2
<b>2</b>	<b>Methodology .....</b>	<b>3</b>
2.1	Field Survey .....	3
2.1.1	Bat Emergence Survey – Pavilion Building .....	3
2.1.2	Bat Activity Transect Survey.....	3
2.1.3	Inspection of Allotment Building .....	3
2.1.4	Badger Survey – Allotment Area and Nature Park .....	4
<b>3</b>	<b>Results.....</b>	<b>5</b>
3.1	Field Survey .....	5
3.1.1	Bat Emergence Survey – Pavilion Building .....	5
3.1.2	Bat Activity Transect Survey.....	5
3.1.3	Inspection of Allotment Building .....	6
3.1.4	Badger Survey – Allotment Area and Nature Park .....	6
<b>4</b>	<b>Discussion .....</b>	<b>8</b>
4.1	Constraints on Study Information .....	8
4.1.1	Bat Emergence Survey – Pavilion Building .....	8
4.1.2	Bat Activity Transect Survey.....	8
4.1.3	Inspection of Allotment Building .....	8
4.1.4	Badger Survey – Allotment Area and Nature Park .....	8
4.2	Assessment of Results.....	8
4.2.1	Bat Emergence Survey – Pavilion Building .....	8
4.2.2	Bat Activity Transect Survey.....	9
4.2.3	Inspection of Allotment Building .....	9
4.2.4	Badger Survey – Allotment Area and Nature Park .....	9
4.3	Legislation and Policy Guidance .....	10
4.3.1	Bats .....	10
4.3.2	Badgers .....	10
4.4	Potential Impacts .....	10
4.4.1	Pavilion Building .....	10
4.4.2	Bat Activity across the Site .....	11
4.4.3	Allotment Building.....	11
4.4.4	Badgers – Allotment Area and Nature Park .....	11
<b>5</b>	<b>Recommendations .....</b>	<b>12</b>
5.1	Further Survey .....	12
5.1.1	Pavilion Building .....	12
5.1.2	Bat Activity Transects .....	12
5.1.3	Allotment Building.....	12
5.1.4	Badgers .....	12
5.2	Mitigation, Compensation and Enhancement Measures .....	12
5.2.1	Bats .....	12
5.2.2	Badgers .....	13

<b>6 Summary .....</b>	<b>14</b>
<b>7 Appendices .....</b>	<b>15</b>
7.1 Appendix 1: Photographs.....	15
<b>8 Figures.....</b>	<b>16</b>
8.1 Figure 1.....	16
8.2 Figure 2.....	16
8.3 Figure 3.....	16
8.4 Figure 4.....	16

## 1 Introduction

### 1.1 Site Description

An area of safeguarded land to the west of Barton, Oxford (OS grid ref. at approximate centre point of site: SP 545 082) is being considered within land allocation policies to meet future housing demand. At present this land includes areas of grazed pasture, recreation facilities and playing fields, allotments and car-parking areas. An electrical sub-station is located toward the centre of the site and a small nature park (public green space) is located adjacent to the allotments to the east.

The site is bordered by the Barton housing area to the east, the northern bypass road (A40) to the south and farmland to the west and north. The site boundary is shown in Figure 1.

### 1.2 Proposed Works

Oxford City Council is the Local Planning Authority (LPA) responsible for potential development options on the safeguarded land and also owns much of the land within the safeguarded area. Other land-owners include Scottish and Southern Energy (SSE) who control the land occupied by the electrical sub-station and some of the surrounding pasture. It is understood that the electrical sub-station itself will not be included as developable land within the proposed land allocation.

### 1.3 Ecological Background

An extended Phase 1 habitat survey and report was previously completed by Baker Shepherd Gillespie (BSG) in February 2007 (BSG, 2007<sup>1</sup>). The 2007 Phase 1 survey included an assessment of the overall site for its intrinsic value to bats, although specific bat activity surveys were outside the scope of this survey. The assessment included an inspection of mature trees from the ground and an external inspection of two buildings on the site; one within the allotment land and one within the recreation ground. No internal inspections of buildings were completed at this time.

During the extended Phase 1 habitat survey, a number of features of potential value to bats within the site were recorded. These included:

- Areas of semi-improved grassland and scrub likely to support invertebrate communities and therefore provide foraging opportunities for bats
- A network of hedgerows providing potential commuting and foraging opportunities for bats
- A stream corridor (Bayswater Brook) and linear woodland along the northern boundary of the site also providing commuting and foraging opportunities for bats
- A number of mature trees with holes, splits, loose bark and ivy providing potential roosting opportunities for bats.

Areas identified as having high potential to support roosting bats included the numerous apple trees within the allotment area, mature willow trees within the hedgerows, the linear woodland and the Bayswater Brook corridor along the northern boundary of the site.

Badger setts were also recorded on site during the Phase 1 survey in 2007.

<sup>1</sup> Baker Shepherd Gillespie (2007) Safeguarded Land West of Barton Biodiversity Assessment. Unpublished report for Oxfordshire City Council. BSG reference: 2755\_X001\_Report\_MF\_Final

[REDACTED]

An ecological desk study was also completed as part of the 2007 extended Phase 1 habitat survey. The Oxford Bat Group provided one record of a pipistrelle bat *Pipistrelle* sp. roost located over 1km from the site beyond a built-up area. The Oxfordshire Badger Group provided two records of setts and a road casualty.

[REDACTED]

The 2007 Phase 1 report (BSG, 2007) recommended further survey work in relation to bats and also recommended that a full badger survey be completed in order to inform any constraints relating to badgers within subsequent development.

To satisfy part of the recommendations with regards to further bat surveys, a detailed internal and external inspection of the existing pavilion building on site was completed in December 2009 by a licenced bat surveyor from BSG. This did not find any evidence of roosting bats. However, the pavilion building was considered to have low to medium potential to support roosting bats due to numerous potential access/egress points and a dry and open roof space. Access to the allotment areas was not permitted at this time, so a survey of a second building located within the allotment fence was not possible. The report of this survey work (BSG, 2010) <sup>2</sup>recommended that the allotment buildings should also be subject to inspection and that the pavilion building should be subject to emergence/re-entry surveys to provide confidence in the findings of the building inspection.

A repeat badger survey was also undertaken in December 2009 within the main site. Access to the allotment area and along the boundary of an adjacent nature park was not possible at this time.

[REDACTED]

Given the changes in patterns of badger activity through the rest of the site the report of this survey work (BSG, 2010) <sup>3</sup>recommended that further survey work for badgers should be carried out within the allotment area.

## 1.4 Aims of Study

A series of further bat and badger surveys were commissioned by Oxford City Council on 31<sup>st</sup> August 2010 to begin to fulfil the recommendations of both the 2007 and 2009 reports outlined above. These included the following:

1. An evening bat emergence survey at the pavilion building to gather further information on any evidence of use of this building by bats.
2. A bat transect survey around the entire site to gather information on general levels of bat activity and bat species using the site.
3. A detailed inspection of the building located within the allotment area of the site.
4. An updated badger survey within the previously inaccessible allotment area and adjacent nature park.

This report presents the findings of these surveys and provides an initial assessment of bat and badger use within the site based on the findings. The report goes on to determine likely impacts arising from development within the area of safeguarded land and provides recommendations for further survey, mitigation, compensation and enhancement, as appropriate.

<sup>2</sup> Baker Shepherd Gillespie (2010) Barton Fields Further Surveys: Bat Building Survey. Unpublished report for Oxfordshire City Council. BSG reference: 2755.02\_X001\_bat\_rep\_FINAL\_EAHEKG\_240101

<sup>3</sup> Baker Shepherd Gillespie (2010) Barton Fields Further Surveys: Badger Survey. Unpublished report for Oxfordshire City Council. BSG reference: 2755.02\_X001\_badger\_rep\_FINAL\_EAHEKG\_240101

## 2 Methodology

### 2.1 Field Survey

#### 2.1.1 Bat Emergence Survey – Pavilion Building

A dusk bat emergence survey was carried out at the pavilion building on 2<sup>nd</sup> September 2010 by Laura Jennings AIEEM and Dr Sam Hill MIEEM of BSG following established survey guidelines<sup>4</sup>. The ecologists were positioned at two separate locations on either side of the pavilion during survey giving different views of possible egress points to see if any bats emerged from the building. These locations are shown on Figure 2. The dusk emergence survey began approximately 15mins before sunset and continued until around 2 hours after sunset. In addition to making notes of any bats emerging from the building, the surveyors also made note of any bat activity noted around the building and its immediate surroundings during the survey.

Electronic bat detector equipment was used to facilitate the survey. Each ecologist used an Anabat SD1 CF bat detector to record any bat calls for later analysis using Analook software. A Batbox Duet bat detector (frequency division) was also used by each ecologist to enable the audible identification of bat calls.

Sunset on the date of the survey was at 19:49. Weather conditions during the survey were dry, clear (1/8 cloud cover) and calm (Beaufort Scale 1) with an air temperature of 14°C.

#### 2.1.2 Bat Activity Transect Survey

A bat activity survey was carried out by Ed Austin MIEEM and Dr Sam Hill MIEEM within the entire site boundary on 9<sup>th</sup> September 2010. This involved slowly walking a predetermined transect route across the site whilst continually recording any bat passes using electronic bat detector equipment. Three minute stops were also made at 11 sampling points spread across the site to give further information on bat activity. The walked transect route is shown in Figure 3. Survey effort focused on areas offering the highest potential bat foraging, commuting or roosting habitat, such as hedgerows, woodland edge and field margins.

The surveys were undertaken during a 2.5 hour period starting just before sunset. During the transect survey, the surveyors worked in a pair using a Batbox Duet detector to listen to calls in the field. An Anabat SD1 CF bat detector was used to record any bat calls for later analysis using Analook software. Notes were made during the survey on bat species heard, including time, location and, where seen, the direction of flight.

Sunset on the date of survey was at 19:29. Weather conditions were dry with partial cloud (5/8 cloud cover) and a light breeze (Beaufort Scale 2). Air temperature was around 15°C.

#### 2.1.3 Inspection of Allotment Building

A detailed inspection of the building in the allotment area was undertaken by Helen Evriviades MIEEM and Ed Austin MIEEM from Baker Shepherd Gillespie on 10<sup>th</sup> September 2010. Helen Evriviades holds a licence granted by Natural England that allows her to legally enter known or potential bat roosts for survey purposes (NE licence number 20093492).

Weather conditions were dry and overcast with a light breeze. The location of the allotment building included in the survey is shown in Figure 1.

The building inspection survey involved identifying external features with the potential to be used as roost access points by bats, and the identification of potential roosting sites, such as: holes and cracks in walls, cavity walls, gaps beneath the windows, lifted lead flashing and roofing felt, or gaps between the eaves, barge boarding, soffits and the wall. Once the external inspection was

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<sup>4</sup> Bat Conservation Trust (2007). *Bat Surveys – Good Practice Guidelines*. Bat Conservation Trust, London.

completed an internal inspection was undertaken. During the survey, searches were made for evidence of the presence of bats including droppings, feeding remains, characteristic staining, scratch marks and live and dead bats.

#### *2.1.4 Badger Survey – Allotment Area and Nature Park*

A badger survey was undertaken by Ed Austin MIEEM and Helen Evriviades MIEEM from Baker Shepherd Gillespie on 10<sup>th</sup> September 2010. Weather conditions were dry and overcast with a light breeze.

The survey area on this occasion included only the allotment area and adjacent nature park (see Figure 1). The badger survey involved walking across this entire survey area and searching for evidence of badgers and badger activity. Signs searched for included sett entrances, latrine pits, foraging holes, footprints, pathways in vegetation and badger hairs caught on fencing or vegetation.

Although the whole survey area was walked over, particular attention was given to areas most likely to be used by badgers. 

### 3 Results

#### 3.1 Field Survey

##### 3.1.1 Bat Emergence Survey – Pavilion Building

No bats were directly observed emerging from the pavilion building during the survey. A single soprano pipistrelle bat was seen flying north-east from the direction of the roof by the surveyor at position 1 (at 28 minutes after sunset). The origins of this bat were unclear, although this individual bat was not seen by the surveyor at position 2. Based on this survey, this bat is therefore not thought to have emerged from the building.

Whilst no bats were seen emerging from the pavilion building, three bat species were recorded by the surveyors commuting and/or foraging in the vicinity of the building. These were common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus* and noctule *Nyctalus noctula*. Less than 2% of the recorded bat passes were of noctule bats and these were both faint recordings indicative of distant bats. The results of the emergence survey are summarised in Table 1.

Table 1: Bat Passes Recorded During Emergence Survey at Pavilion Building

Common Name	Species Name	Position 1	Position 2	Total Number of Passes
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	3	60	63
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	13	23	36
Pipistrelle (undetermined)	<i>Pipistrellus spp</i>	3	1	4
Noctule	<i>Nyctalus noctula</i>	0	2	2
<b>Total</b>		<b>19</b>	<b>86</b>	<b>105</b>

Pipistrelle (undetermined) = pipistrelle bats which, from recorded call parameters, could be either common or soprano

The flight lines of pipistrelle bats directly observed are shown on Figure 2. A higher level of activity was recorded from position 2 to the south-west of the pavilion with eighty-six passes compared to sixteen from position 1 to the north.

The earliest bat passes at both positions were recorded at approximately 15 minutes after sunset. Both positions recorded a soprano pipistrelle at this time within a few seconds of each other, so it is possible this was the same individual.

##### 3.1.2 Bat Activity Transect Survey

A total of 130 individual bat passes were recorded during the transect survey. These are summarised in Table 2 below:

Table 2: Bat Passes Recorded During Transect Survey

Common Name	Species Name	Total Number of Passes
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	112
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	5
Pipistrelle (undetermined)	<i>Pipistrellus spp</i>	8
Noctule	<i>Nyctalus noctula</i>	2
Myotis spp	<i>Myotis spp</i>	2
Myotis/Long-eared (undetermined)	<i>Myotis/Plecotus spp</i>	1
<b>Total</b>		<b>130</b>

Pipistrelle (undetermined) = pipistrelle bats which, from recorded call parameters, could be either common or soprano

Myotis spp = closely related bat species of the *Myotis* genus which cannot be reliably differentiated from calls alone

Myotis/Long-eared = bat calls within range of both *Myotis* species and long-eared bats which cannot be reliably differentiated from calls alone (undetermined)

The results indicate at least 4 bat species are using the site (common and soprano pipistrelle, noctule and at least one *Myotis* species) for commuting and/or foraging. However, by far the most

common species recorded on the transect route was the common pipistrelle, with over 85% of the recorded passes being of this species. In addition, the first bat pass (of a soprano pipistrelle) was recorded at 7 minutes after sunset in the allotment area. This timing suggests this bat had recently emerged from its roost, indicating the roost location was close by<sup>5</sup>. It is also possible that brown long-eared bats use the site. However the calls of this species are difficult to detect so the single recording could not be reliably differentiated from a *Myotis* species.

The largest number of bat passes during the survey were recorded around the northern and western edges of the playing fields (between points 2 and 3 on Figure 2) and along the hedgerow running north to south in the central part of the site (between points 4 and 5 on Figure 2). Twenty-nine and twenty-eight pipistrelle bat passes were recorded between these locations respectively. Sixteen common pipistrelle passes were also recorded along the Bayswater Brook corridor on the northern edge of the site (points 5 to 6) with a further 14 passes of this species during the stop at point 6 itself. Far fewer bat passes were recorded along the southern part of the site, with only 6 in total recorded between the far eastern end of the site (point 8) right back to the end of the transect (point 11) following the southern boundary. The patterns in bat activity are discussed further in section 4.

### 3.1.3 Inspection of Allotment Building

The building located within the allotment area is single storey and of solid brick-wall construction with a pitched corrugated asbestos roof (see Figure A and B; Appendix 1).

Externally, barge boarding is present although this was found to be well-sealed and fitted flush with the walls (Figure D; Appendix 1). The ridge tiling of the roof also appears to be asbestos; an opening at both ends of the ridge has been filled by chicken wire and other items, e.g. a small wheel (Figure C; Appendix 1).

Internally, the building is open from floor to apex, with around 4m from floor to apex; the building is around 11m long and 5m wide and consists of a single open space accessed via two large metal doors (Figure E; Appendix 1). Three windows are present along the north-facing wall; these are fitted with security grills. The roof has a modified modern truss structure with closely paired trusses linked by wooden rafters (Figure F; Appendix 1). Asbestos roofing material is secured to the eaves with cement. At present the building is used for the storage of gardening tools and equipment and also as a small office space used by the allotment committee.

No evidence of roosting bats was found anywhere within this building. Potential access into the building for bats is limited to the opening on the ridge of the roof at the apex. However, as these are presently sealed with various materials they are unlikely to be usable by bats in their current state. Furthermore, no obvious cavities that could offer potential roosting sites for bats were identified within the building.

Based on the above observations the allotment building is considered to have no potential to support roosting bats.

During the survey it was incidentally noted that a number of mature fruit trees are present within the allotment area. Some have features of potential value to roosting bats such as split branches, peeling bark and holes in the trunks. However, please note that a full tree survey was not carried out at this time.

### 3.1.4 Badger Survey – Allotment Area and Nature Park

During the badger survey in the allotment area, it was noted that only the northern half of the allotment site (between the access gates from the recreation ground up to the position of the allotment building) is currently in active use. Beyond this point, the southern half of the site is

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<sup>5</sup> BCT guidance indicates the soprano pipistrelle most frequently emerges from around 30 minutes after sunset, although earlier emergence times can occur. Bat Conservation Trust (2007). *Bat Surveys – Good Practice Guidelines*. Bat Conservation Trust, London.

largely covered in scrub and ruderal vegetation. The nature park was found to consist of areas of dense scrub and woodland with tall grassland and ruderal vegetation between. At present, it appears that the park is predominantly used by local dog walkers. This has resulted in a network of paths created by people through the vegetation.

No badger setts were found within the allotment area or adjacent nature park. 


Secondary information was gained through conversation with allotment holders who did not report having seen any badgers within the part of the site in active allotment use.

Evidence of other mammal fauna was found within the allotment area. This included both muntjac deer *Muntiacus reevesi* prints (slots) and droppings of red fox *Vulpes Vulpes*. Animal pathways through the vegetation were observed around much of the southern margin of the allotment site. Coupled with 'push-throughs' under fences and associated prints, the majority of these are considered most likely to have been created by deer.

## 4 Discussion

### 4.1 Constraints on Study Information

#### 4.1.1 Bat Emergence Survey – Pavilion Building

The emergence survey at the pavilion building was conducted at the beginning of September (2<sup>nd</sup>) which is considered just outside the optimal time of year for this type of survey (BCT, 2007)<sup>6</sup>. However, the optimal period includes the up to the end of August, so a survey within 2 days of this date conducted in appropriate weather conditions is still considered to be acceptable.

No other significant constraints were encountered on the night of the survey.

A single emergence survey in September is considered insufficient to fully determine the status of bats within a building. However, additional surveys to complete an assessment have been recommended (see section 5).

#### 4.1.2 Bat Activity Transect Survey

The September activity transect survey was conducted at an optimal time of year and during good weather conditions. The original planned transect route had to be altered slightly to avoid livestock in the fields in the eastern part of the site. This resulted in some areas with bat foraging and commuting potential (e.g. along the hedgerows) not being accessed directly during the survey. However, as the activity transect is designed to give a snapshot of bat activity at a given time, it is still deemed that the transect route provided appropriate coverage to fulfil the aims of the study.

A single activity survey in September is not deemed sufficient to give a full picture of bat activity on a site as bat breeding colonies tend to disperse by autumn. However, additional surveys to complete an assessment are recommended (see section 5).

#### 4.1.3 Inspection of Allotment Building

Good access was possible to both the external and internal parts of the allotment building. There were therefore no significant constraints associated with this survey.

#### 4.1.4 Badger Survey – Allotment Area and Nature Park

The badger survey was completed in good weather and at a time of year when vegetation has begun to die back making both access and observation easier. Dense vegetation such as bramble scrub in the overgrown part of the allotment site and along the edges of the nature park still made access difficult in some areas. However, sufficient access or viewpoints into all areas deemed to have the potential to support badger setts or other features was possible.

## 4.2 Assessment of Results

### 4.2.1 Bat Emergence Survey – Pavilion Building

Based on the results of the single September visit alone there is no clear evidence of bats roosting in the pavilion building. However, it should be noted that additional survey visits are recommended before the status of bats in this building can be fully assessed (see section 5).

The survey results indicate that both common and soprano pipistrelle bats use the area around the pavilion for both foraging and commuting. The area to the west in particular was associated with relatively high levels of bats activity (compared to the area to the north) on the evening of survey. From this study alone it is unclear if this is the usual pattern. However, the area south-west of the building represents a fairly sheltered corner when compared to the northern side which faces the open playing field area.

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<sup>6</sup> Bat Conservation Trust (2007). *Bat Surveys – Good Practice Guidelines*. Bat Conservation Trust, London.

The bat species recorded during the emergence survey at the pavilion are all fairly common and widespread. The majority of passes were of common pipistrelle which is the commonest bat in the UK and often found near suburban and urban areas<sup>7</sup>. The closely related soprano pipistrelle which was the next most frequently encountered bat during the survey is also a common and widespread species. However, the soprano pipistrelle is listed as a priority species in the UK Biodiversity Action Plan (UK BAP) and a Species of Principal Importance (SPI) due to a population decline in the UK of over 40%.<sup>8</sup>

Noctule bats are also UK BAP priority species and SPI due to a decline in the UK population of over 20%.<sup>9</sup> However, only 2 distant passes of this species were recorded so it is not considered that the pavilion building or immediate surrounding area is of particular value to this species in the local area based on these survey results.

#### 4.2.2 Bat Activity Transect Survey

The bat species recorded during the September activity transect survey are largely the same as those recorded in the pavilion emergence survey. These are all relatively common and widespread species. As discussed in section 4.2.1 the soprano pipistrelle and noctule bat are both of conservation concern due to recent decline. Despite this, both are relatively common and widespread in the UK. At least one *Myotis* bat species was also recorded. Reliable identification of these species usually involves physical capturing of bats, so it is unclear exactly which species is present. However, only up to 3 passes of *Myotis* bats were recorded, so based on this survey alone the site does not appear to be of particular importance to *Myotis* bats. It is possible that brown long-eared bats use the site, although only a single pass that could not be determined as either a *Myotis* or long-eared species was recorded.

Patterns of bat activity around the site during the transect survey suggest that the hedgerows and more tree-lined areas are of particular value to bats compared to the more open habitats (grassland). However, noctule bats were recorded flying over the more open areas of the site. This is a strong flying species that will forage over more open habitats, particularly permanent pasture<sup>10</sup>. Cattle-grazed pasture does occur on site, with cattle being present in the eastern fields at the time of survey. This habitat is therefore likely to have value to noctules locally, although only small numbers of these bats were recorded.

Large parts of the site are currently fairly dark and undisturbed relative to the more built-up areas close by (Barton and Oxford). The northern and western areas of the site in particular are largely free from artificial lighting. The eastern part of the site has some light spill from the adjacent housing areas and artificial lighting is present around the playing fields and pavilion area. The southern boundary of the site is adjacent to the northern by-pass road, which is a busy dual-carriageway at this point. Although street lighting is not used along this section of the road, it is subject to fairly high levels of noise, air disturbance and light spill from passing cars, which may explain the patterns of bat activity observed during the transect survey.

#### 4.2.3 Inspection of Allotment Building

Based on this survey there is no evidence of the allotment building having been used as roosting site by bats. Furthermore, the building is considered to offer no potential for roosting bats based on its structure and features.

#### 4.2.4 Badger Survey – Allotment Area and Nature Park



<sup>7</sup> Bat Conservation Trust (BCT) [www.bats.org.uk](http://www.bats.org.uk)

<sup>8</sup> <http://www.jncc.gov.uk/speciespages/519.pdf>

<sup>9</sup> <http://www.jncc.gov.uk/speciespages/2459.pdf>

<sup>10</sup> Bat Conservation Trust (2007). *Bat Surveys – Good Practice Guidelines*. Bat Conservation Trust, London.

The absence of badger setts from both the allotment area and nature park indicates that badgers are not resident in either location at this time. There are therefore no issues relating to badger setts in the allotment area and nature park at the time of this survey.

## 4.3 Legislation and Policy Guidance

### 4.3.1 Bats

All species of bat and their roosts are protected under the Wildlife and Countryside Act (WCA) 1981 (as amended by the Countryside and Rights of Way Act 2000) and by the Conservation of Habitats and Species Regulations 2010 (the Habitats Regulations). Jointly these pieces of legislation make it an offence to:

- Intentionally or deliberately kill, injure or take a bat
- Intentionally or recklessly obstruct access to, damage or destroy a breeding site or resting place used by bats (even if bats are not occupying the roost at the time)
- Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection;
- Deliberately disturb a bat, in particular any disturbance which is likely to:
  - impair the ability of bats to survive, breed or reproduce, or to rear or nurture their young; or
  - impair the ability of bats to hibernate or migrate; or
  - affect significantly the local distribution or abundance of bats

A bat roost can be defined as any structure a bat uses for breeding, resting, shelter or protection. It is important to note that since bats tend to re-use the same roost sites, current legal opinion is that a bat roost is protected whether or not the bats are present at the time.

Certain species of bat are listed as priority species in the UK BAP (e.g. the soprano pipistrelle and noctule). Under section 41 of the Natural Environment and Rural Communities Act 2006 (NERC), these species are also considered to be Species of Principal Importance (SPI) for the conservation of biodiversity in England. Under NERC, the Secretary of State must take such steps as appear to be reasonable practicable to further the conservation of such species or promote the taking of such steps by others. In practice, the Local Planning Authority can use the SPI lists as a guide when implementing its duty under section 40 of NERC (to have regard to the conservation of biodiversity when carrying out its normal functions).

### 4.3.2 Badgers

All badgers in the UK are protected under the Protection of Badgers Act 1992. In essence this Act makes it an offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to intentionally or recklessly interfere with a sett.

## 4.4 Potential Impacts

### 4.4.1 Pavilion Building

Additional surveys are recommended to fully assess any potential impacts on bats as a result of activities affecting the pavilion building (see section 5). Potential impacts on bats resulting from works affecting the pavilion building should therefore be reviewed following further surveys in the earlier part of the season when bats are active.

At this stage it is known that pipistrelle bat species use the areas around the pavilion building for foraging and commuting. Redevelopment of the pavilion building or the area currently occupied by this building could therefore lead to impacts on these bats in the absence of mitigation. Impacts could include displacement of bats from this area due to the use of artificial lighting around the building or the loss/reduction of suitable foraging habitat as a result of re-landscaping or increased development footprint.

#### 4.4.2 *Bat Activity across the Site*

It is uncertain at this stage how the site will be affected by future proposals. However, it is likely that development (in the absence of mitigation) would lead to a reduction in the area of high quality foraging and commuting habitat available to bat species. This could therefore lead to a reduction in the size of the population of bats using the area. The majority of the bats recorded using the site are common and widespread and often found close to suburban and urban areas (i.e. pipistrelle species). However, based on the initial survey results, the linear semi-natural habitats (e.g. hedgerows and tree-lined areas) appear to be well-used by these species. Loss of all or part of these habitats would therefore likely result in negative impacts on pipistrelle bats.

The noctule bat favours foraging over permanent pasture, woodland edge and hedgerow habitats. Therefore, should the majority of the site be developed as urban extension (e.g. housing and other infrastructure) it is likely that much of this area would no longer be used by these bats.

Additional impacts on bat species within the site could include disturbance as a result of the use of artificial lighting after dark. This could also effectively reduce the area of suitable foraging and commuting habitat available to bat species should well-lit areas be avoided by them.

#### 4.4.3 *Allotment Building*

It is unclear whether the allotment building itself will be directly affected by any development proposals. However, based on this survey the demolition or redevelopment of this building in itself is unlikely to lead to significant impacts on bats as it is not considered to offer roosting opportunities in its current state.

#### 4.4.4 *Badgers – Allotment Area and Nature Park*

It is unclear at this stage how works would affect the allotment area and nature park. However, should these areas be re-developed as part of an urban extension, there should be no significant impacts on badgers in terms of sett loss/damage or disturbance of badgers occupying setts as these features do not occur here.

Loss or changes to this area could potentially result in changes to badger distribution locally (i.e. if the area becomes unsuitable) or a reduction in foraging habitat.

Conversely, the creation of green space or landscaping in the allotment or nature park areas could lead to an increase in suitable foraging habitat for badgers in these parts of the site (e.g. grassland). The current nature park is becoming rather overgrown with scrub and ruderal vegetation (e.g. brambles and nettles). This provides cover but is gradually reducing the areas of grassland that badgers may use for foraging. The opening up of these areas or creation of new areas of grassland could lead to positive impacts on badgers.

This is considered within the previous badger report covering the wider site (BSG, 2010).<sup>11</sup>

<sup>11</sup> Baker Shepherd Gillespie (2010) Barton Fields Further Surveys: Badger Survey. Unpublished report for Oxfordshire City Council. BSG reference: 2755.02\_X001\_badger\_rep\_FINAL\_EAHEKG\_240101

## 5 Recommendations

### 5.1 Further Survey

#### 5.1.1 Pavilion Building

The Bat Conservation Trust (BCT) recommends that a total of three surveys are carried out on buildings with the potential to support bats to provide confidence to a negative result where potential to support roosting bats has been identified<sup>12</sup>. Therefore, in order to fully assess whether there is any possibility of bats using the pavilion building it is recommended that a further two surveys are completed in 2011. At least one of these should cover both dusk (emergence) and dawn (re-entry) periods. As the initial survey detailed in this report was completed in the later part of the season when bats are active, it is recommended that subsequent surveys are undertaken from the earlier part of this season (e.g. one in May and one in June or July). This will enable information to be gathered as to whether bats are using this building earlier in the year.

#### 5.1.2 Bat Activity Transects

In line with the established guidelines, a further two bat activity transect surveys are recommended to give more detailed information on the use of the site by bats. As it was only possible to complete a single survey in September 2010, it is recommended that the additional surveys are carried from May 2011, with the two visits spread out (e.g. one in May and one in June or July). The method should follow that used for the September 2010 survey detailed in this report; the start point on the transect should be rotated to avoid bias in the data collected.

#### 5.1.3 Allotment Building

No further surveys for bat species are deemed necessary at the allotment building at this time. However, it is recommended that the building is rechecked if no development takes place on the building for a prolonged period following the survey detailed in this report. This would be particularly recommended if the building becomes disused. As a guide, it is suggested that the status of the building is re-checked if more than two years passes between the date of this survey and the commencement of any development activities affecting the allotment building.

#### 5.1.4 Badgers

No further survey for badgers is deemed necessary within the allotment area. However, it is recommended that the area is re-checked for evidence of badgers ahead of works if more than two years passes between the date of this survey (September 2010) and commencement of any subsequent development within the allotment area.

### 5.2 Mitigation, Compensation and Enhancement Measures

#### 5.2.1 Bats

Section 4.4 above described potential impacts which could arise from development within the safeguarded land on both the potential roosts (pavilion building) and areas used by commuting/foraging bats.

Specific mitigation, compensation and enhancement measures for bats should be devised following the additional surveys recommended above (section 5.1) and once any detailed proposals for the site have been established. However, general recommendations proposed to minimise potential impacts on bats and to provide compensation and/or enhancement for both roosting and foraging/commuting bats could include the following:

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<sup>12</sup> Bat Conservation Trust (2007). *Bat Surveys – Good Practice Guidelines*. Bat Conservation Trust, London.

- The retention of hedgerows within the site wherever possible to provide both foraging and commuting corridors within the site itself and linkage to the surrounding countryside (particularly to the north and west)
- The retention of mature trees across the site wherever possible
- The planting of new native trees and hedgerows along boundaries where possible
- The retention of wide buffer strips or corridors of vegetation (to be planted with trees, scrub, tall ruderal vegetation or species-rich grassland), possibly in combination with retained hedgerows, to provide additional foraging and commuting habitat for bats
- The installation of bat boxes on trees within the site
- The installation of bat bricks or other roosting opportunities within new buildings where appropriate
- The avoidance of using artificial lighting after dark close to key bat roosting, foraging or commuting areas
- Designing lighting schemes to minimise light spill and other ecological impacts

### 5.2.2 Badgers

No specific mitigation for badgers is considered necessary at this stage within the allotment area or nature park. It is possible that opportunities to enhance these areas for badgers (and other wildlife) could be taken as part of overall proposals for the site. This could include the creation of new areas of species-rich grassland and planted fruit-bearing shrubs and trees. However, it is unclear at this stage whether this would be possible in areas accessible to badgers.

Recommendations relating to badgers in the wider site are provided in the badger report provided following the 2009 surveys<sup>13</sup>.

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<sup>13</sup> Baker Shepherd Gillespie (2010) Barton Fields Further Surveys: Badger Survey. Unpublished report for Oxfordshire City Council. BSG reference: 2755.02\_X001\_badger\_rep\_FINAL\_EAHEKG\_240101

## 6 Summary


A series of ecological surveys were commissioned by Oxford City Council to provide information on bats and badgers within an area of safeguarded land at Barton, Oxford. This included:

- A dusk bat emergence survey of an existing pavilion building
- An evening bat activity transect survey of the overall site
- An external and internal inspection of an existing building within an allotment area to search for signs of use by roosting bats and features of potential value to bats
- A badger survey within the allotment area and adjacent nature park to search for evidence of badger activity and any badger setts

All the above surveys were undertaken in September 2010. The emergence surveys at the pavilion did not reveal any firm evidence of bats using this building as a roost site. Two common and widespread bat species (common and soprano pipistrelles) were recorded foraging and commuting around the building.

At least four bat species were recorded using the overall site. This included common and soprano pipistrelle, noctule and at least one *Myotis* bat species. It is also possible that brown long-eared bats are present, although this is unclear as this species can be hard to detect. The majority of bats were recorded close to hedgerows in the centre of the site and along the northern tree-lined corridor of the Bayswater Brook.

The inspection of the allotment building did not find any evidence of roosting bats. The overall suitability of this building to support bats was considered to be negligible.

No badger setts were found within the allotment area or nature park. 

Two further bat emergence/re-entry surveys are recommended in 2011 to further inform the status of bats in the pavilion building. In addition, two further bat activity transect surveys are recommended in 2011 to give more complete information on the use of the site by bats.

It is recommended that both bats and badgers are taken into account in the design of any subsequent development proposals. This could include the retention of hedgerows corridors across the site or the creation of new foraging habitat for bats and badgers (e.g. species-rich grassland and new areas of tree and shrub planting). In addition, the use of artificial lighting could be minimised to prevent excessive light spill.

## 7 Appendices

### 7.1 Appendix 1: Photographs

**Figure A: Allotment building – south-east aspect**



**Figure B: Allotment building – north-west aspect**



**Figure C: Allotment building – blocked cavity at gable end of ridge**



**Figure D: Allotment building – detail of flush barge boarding**



**Figure E: Allotment building – internal space**



**Figure F: Allotment building – detail of internal roof construction**



## **8 Figures**

### **8.1 Figure 1**





### **8.2 Figure 2**

### **8.3 Figure 3**

### **8.4 Figure 4**

Site Boundary and Survey Area

Legend

-  Site boundary
-  Allotment area
-  Nature park area
-  Buildings



Pavilion Building

Allotment Area

Location of Allotment Building

Nature Park Area

Main Site Area



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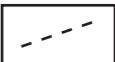
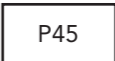
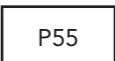
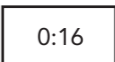
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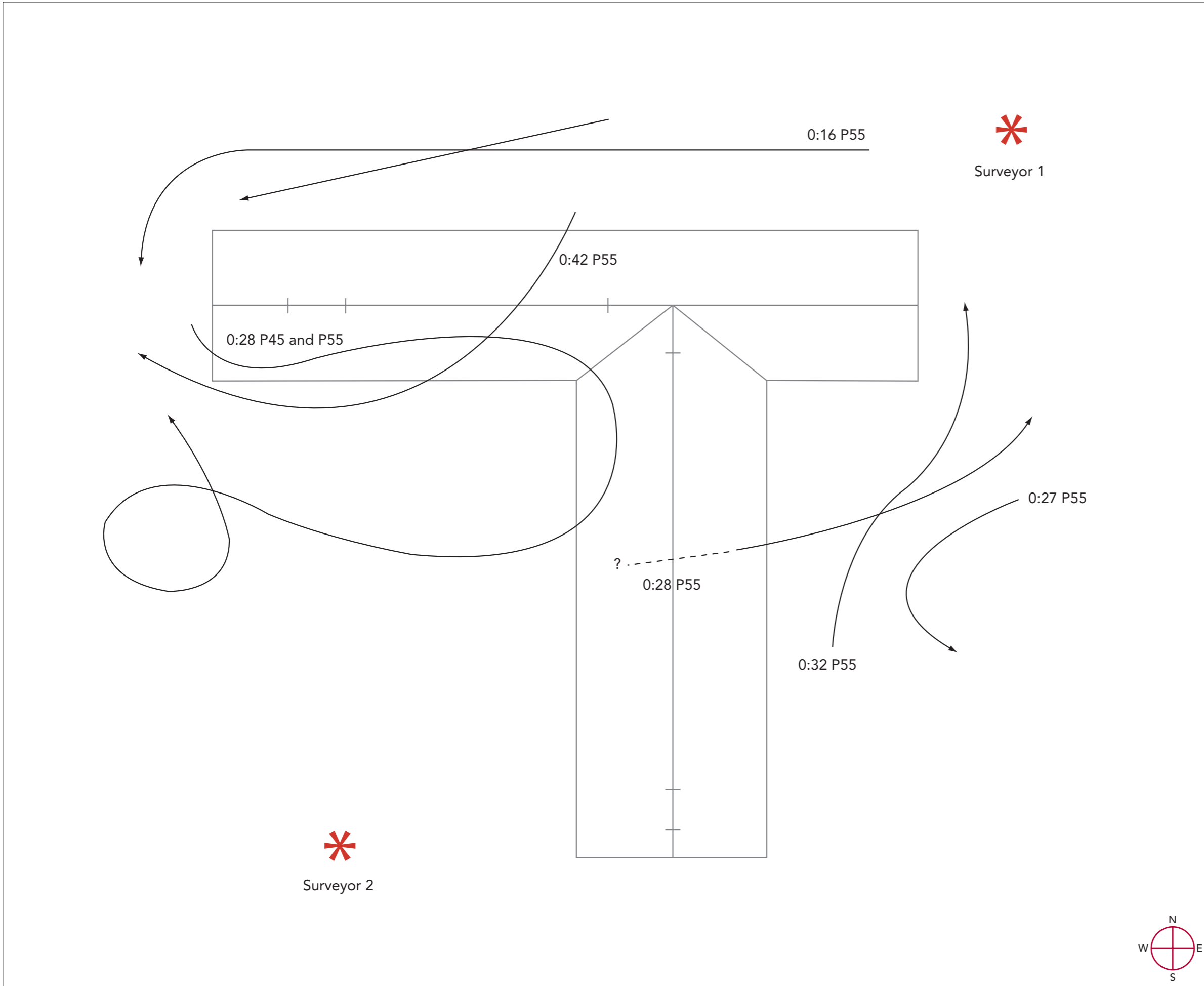
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Drawn	<b>SW</b>	Approved	<b>EA</b>	Job Ref	<b>2755.03</b>
Status	<b>FINAL</b>				

Dwg No. **FIGURE 1**

Results of Bat Emergence Survey  
(Pavilion Building)

Legend

-  Surveyor location
-  Approximate path of bat flight lines observed
-  Uncertain origin of bat flight lines observed
-  Common pipistrelle (45khz)
-  Soprano pipistrelle (55khz)
-  Time after sunset (e.g 0:16 = 16mins after sunset)



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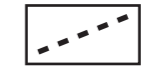
Dwg No. **FIGURE 2**

Transect Route Used for Evening Bat Activity Survey

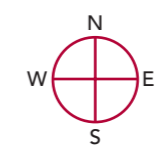
Legend



Stop points



Transect route



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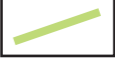
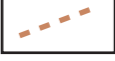
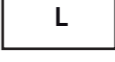

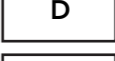
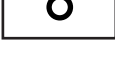
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Dwg No. **FIGURE 3**

Results of Badger Survey

Legend

-  Allotment area
-  Nature park
-  Animal pathways
-  Badger latrine
-  Fox droppings
-  Deer tracks
-  Disused hole (origin unclear)



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Dwg No. **FIGURE 4**