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**Barton Fields Further Surveys
Bat Building Survey**

January 2010

Final

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	Signed	Name	Position	Date
Originated		Ed Austin	Senior Ecologist	05-01-10
Reviewed		Helen Evriviades	Principal Ecologist	24-01-10

ISSUING OFFICE:

Worton Rectory Park
Oxford
OX29 4SX
TEL: 01865 883833
FAX: 01865 887055



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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.

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 was previously carried out by an ecologist from Baker Shepherd Gillespie (BSG) on the 20th February 2007; a report was written for Oxford City Council presenting the results of the survey and providing recommendations relating to potential impacts of development and further survey work that would be required to elucidate these impacts (BSG, 2007¹). The 2007 Phase 1 survey included an assessment of the site overall for its intrinsic value to bats; although specific bat activity surveys were outside the scope of the Phase 1 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, plus mature willow trees within the hedgerows, the linear woodland and Bayswater Brook corridor along the northern boundary of the site.

An ecological desk study was also completed as part of the 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.

¹ Baker Shepherd Gillespie (2007) Safeguarded Land West of Barton Biodiversity Assessment. Unpublished report for Oxfordshire City Council. BSG reference: 2755_X001_Report_MF_Final

1.4 Aims of Study

To provide more detailed information on any evidence of the use of buildings on the site by roosting bats, Oxford City Council commissioned BSG on 12th December 2009 to undertake an external and internal inspection of the building located within the recreation ground (pavilion).

The aim of the study was to determine the overall potential of the pavilion building to support roosting bats and to undertake a search for any signs of past or present occupation by roosting bats.

Oxford City Council requested that the building previously identified located within the allotments area in the south-eastern part of the site be excluded from this survey, with the intention of securing access permission and extending this survey at a later date.

2 Methodology

2.1 Desk Study

Records of bat species and bat roost sites were requested for the site and land within a surrounding 1km buffer area from the following:

- Thames Valley Environmental Records Centre (TVERC)
- Oxford Bat Group

Information requests were sent out on the 9th December 2009. Due to the completion of the desk study to inform the report completed in 2007 (BSG, 2007), any recent records (i.e. different to those previously collated) were given particular preference.

2.2 Field Survey

The bat building survey was undertaken by Helen Evriviades MIEEM and Ed Austin MIEEM from Baker Shepherd Gillespie on 17th December 2009. 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, clear and cold with a light breeze. The location of the pavilion building included in the survey is shown in Figure 1 with an approximate outline plan shown in Figure 2.

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 completed an internal inspection was undertaken of those areas of the roof space where access was possible. 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.

3 Results

3.1 Desk Study

The Thames Valley Environmental Records Centre (TVERC) did not hold any records of bat species for the site or surrounding area. No response to the data request was received from the Oxford Bat Group. The National Biodiversity Network (NBN) gateway does not hold records of bats specifically within the area covered by the site itself or the surrounding 1km buffer. However, records of seven species of bat are available within the surrounding landscape at a distance of between approximately 2km and 10km from the site. These include records of brown long-eared *Plecotus auritus*, barbastelle *Barbastella barbastellus*, Daubenton's *Myotis daubentonii*, Natterer's *Myotis nattereri*, noctule *Nyctalus noctula*, pipistrelle species and serotine *Eptesicus serotinus* bats. Although not specific to the site and collected on a variety of dates, these records do provide background information on the bat species which can be expected to be present within the local area.

3.2 Field Survey

The locations of features of interest recorded during the bat building survey are shown in the indicative map of the building provided in Figure 1. Photographs supporting the field notes are shown in Appendix 1.

3.2.1 Building Description

The pavilion building is a single storey T-shaped building with a brick/breeze-block construction and tiled roof. It was not possible to determine during the survey whether cavity walls were present, although the general construction suggested solid walls with no cavity. The walls are generally in good repair both externally and internally with no significant cracks or cavities present. Anti-climbing paint has been applied to the upper parts of the walls on the outside of the building.

The roof is of pitched construction with gable ends supported on a modern truss frame with wooden beams beneath slate tiles. The internal height of the roof from the boards to the ridge beam is around 1.5 to 2m. Internally, underfelt is present beneath the tiles with loft insulation material largely covering the attic floor. The roofing underfelt was found to be in various states of repair with some loose hanging felt present. Occasional broken asbestos roofing tiles were also found in the central part of the building in the roof space. Three internal walls are present within the roof-space, built up to the ridge, effectively dividing the roof of the building into four separate attic spaces, each accessed via an inspection hatch (see Figure 1).

Externally, the roof is surrounded by boxed soffits constructed from wood. Ten holes of differing sizes were recorded within the soffits at various places around the roof (see Figure 1). Daylight could be seen entering the roof-space through these holes from the inside. In addition, daylight was seen entering through gaps under the roof tiles themselves. From the outside, it could be seen that the ridge tiles in one area in the north-west part of the building (see Figure 1) had been replaced by lead flashing which had become loose. Lead flashing was also present at the roof join toward the centre of the building and at the southern end of the building (see Figure 1). Despite gaps and holes, the roof was found to be uniformly dry inside, although fairly draughty and open.

Other features observed inside the roof included various heating and water pipes with a large polystyrene insulated water-tank located close the inspection hatch in the central part of the southern roof-space. Various debris and stored objects have been accumulated close to some of the hatches.

The building is currently used as sports facilities for the associated playing fields. Internally, it is divided into areas used for sports changing facilities including toilets and showers with a bar and

club-room in the north-west part. Storage cupboards, kitchen facilities and small office/staff rooms are also present.

3.2.2 Evidence of Bats

No evidence of current or past occupation of the building by roosting bats was found within the accessible roof spaces inside the building or on external parts of the building during the survey.

3.2.3 Incidental Records

Numerous house mouse *Mus musculus* droppings were identified throughout the roof space. Brown rat *Rattus norvegicus* droppings were also found, although these were less frequent than the mouse droppings. A hole in the soffit board in the north-west corner of the building leading into the roof space was found to have a build-up of bird droppings scattered both inside and outside. This indicates a regular roosting site for at least one bird; thought to be a feral pigeon *Columba livia* (domest.). Old bird nesting material was also seen within a hole in the eaves on the north-east corner of the building, indicating recent (most likely previous summer) breeding or attempted breeding. The species of bird involved could not be identified from this evidence alone.

The wings of a dead small tortoiseshell butterfly *Aglais urticae* was found close to the water-tank in the central part of the southern roof. This species seeks cool and dark places to hibernate in the winter² and it may be that the insect was eaten by one of the rodents using the roof-space.

² http://www.ukbutterflies.co.uk/species.php?vernacular_name=Small%20Tortoiseshell

4 Discussion

4.1 Constraints on Study Information

The presence of broken asbestos roofing tiles close to the hatch in the central part of the building (see Figure 1) meant that full access to the roof space from this hatch could not be gained for health and safety reasons. Entering the roof via this hatch would have required climbing over the tiles with an associated risk of disturbing dust that could contain asbestos or breaking the tiles further. However, an inspection of this area was made from the hatch using a torch as far as was possible and all other areas of roof-space were accessed fully. Nevertheless, this constraint presents some limitations on the assessment as not all areas could be searched thoroughly. Recommendations are given with this in mind.

At ground level, access to the majority of the rooms within the pavilion was possible once the doors had been unlocked. However, one small room thought to be the staff-room or storage area associated with the bar could not be accessed as a key was not available at the time of survey. It is not considered that this presents any limitations to the assessment, as bats would be very unlikely to use this room.

Although a survey of buildings for their potential to support bats can be undertaken at any time of year, evidence of roosting bats within buildings is usually greater in the summer months, when they are more likely to be roosting in buildings. It is possible that any signs of bats roosting within external features of the buildings, such as droppings clinging to the outside wall or staining, may have been removed by weathering since they were last occupied. Nevertheless, it is considered that any significant evidence of bats within the internal parts of the building would have been recorded if present, subject to the access limitation described above.

At the instruction of Oxford City council, another building on site located within the allotment area was not included within the survey as access was not permitted. No assessment of the building on the allotment site has been made at this time.

The records derived from the desk study may be generated from ad hoc surveys or information supplied by volunteers. Such data may therefore be incomplete or historical and cannot always be verified for accuracy. The absence of records does not necessarily indicate the absence of a species from a particular area. However, it provides useful background information on the likely distribution and/or presence of bats within the study area.

4.2 Assessment/Evaluation of Results

4.2.1 Bats

The results of the external and internal inspection of the pavilion building do not indicate any direct evidence of past or present use of the building by roosting bats. The presence of butterfly wings, such as those found close to the water-tank, can sometimes indicate feeding remains left by bat species such as brown long-eared. However, it is considered in this case that the single pair of wings is more likely to be the result of a hibernating butterfly that has died or possibly been eaten by mice or rats. Regular feeding perches used by bats tend to have a number of invertebrate wings piled beneath them.

The building was found to have features of potential value to roosting bats. These include:

- Gaps beneath roof tiles and under loose lead flashing on ridge
- Numerous holes into soffits
- Loose hanging felt inside roof

The features identified would potentially allow access into the roof by bats to possible roosting places between the tiles and roofing felt, in the roof-space and/or the soffits. Overall, the building is considered to have between **low to medium potential** to support roosting bats. This is due to the presence of possible access/egress points for bats and potential roosting sites within a dry roof space. However, the relatively draughty and light nature of the roof (due to the numerous holes and gaps beneath tiles and in soffits) limits its potential value to roosting bats, as demonstrated by the lack of evidence of use by this species group.

4.2.2 Birds

Evidence of birds includes evidence of nesting material which indicates breeding, or attempting to breed by certain species. This has implications for any work to the building which are discussed in the following sections.

4.3 Legislation and Policy Guidance

4.3.1 Bats

All bat species in the UK are fully protected under both UK and EU legislation. This includes the Wildlife and Countryside Act 1981 (as amended) and the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended 2007), commonly referred to as the Habitats Regulations.

The inclusion of bats on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) makes it illegal to:

- Intentionally kill, injure or take a wild bat
- To be in possession or control of any live or dead wild bat or any part of, or anything derived from a wild bat
- Intentionally or recklessly damage, destroy or obstruct access to any place that a wild bat uses for shelter or protection
- Intentionally or recklessly disturb any wild bat while it is occupying a structure or place that it uses for shelter or protection.

Bats are included on Schedule 2 of the Habitat Regulations 1994 (as amended) making it an offence to:

- Deliberately capture, injure or kill any bat species;
- Deliberately disturb bat species in such a way as to be likely to significantly affect;
 - the ability of any significant group of that species to survive, breed, or rear or nurture their young; or
 - the local distribution or abundance of that species.
- Damage or destroy a breeding site or resting place used by 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.

Although the law provides strict protection to bats, it also allows this protection to be set aside (derogation) under Section 39 of the Habitats Regulations 1994 through the issuing of licences. In England, applications for such a licence to permit development works affecting bats and their roosts are currently determined by Natural England. However, in accordance with the

requirements of the Habitats Regulations 1994, a licence can only be issued where the following requirements are satisfied:

- The proposal is necessary 'to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment';
- 'There is no satisfactory alternative';
- The proposals 'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range'.

A recent case in the High Court has determined that these tests should be taken into consideration by a planning authority when determining their decision in relation to proposed development that could affect bats.³

Certain species of bat are listed as priority species in the UK Biodiversity Action Plan (UK BAP). 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).

The Government's Planning Policy Statement 9 (PPS9) on Biodiversity and Geological Conservation, states that SPI should be protected from the adverse effects of development through the planning system. Such species are therefore deemed a material consideration within the planning process, and their conservation requirements should be promoted through the incorporation of beneficial biodiversity designs within development proposals.

4.3.2 Nesting Birds

All wild birds are protected from killing and injury under the Wildlife and Countryside Act 1981 (as amended). Furthermore, this Act makes it an offence to damage or destroy the eggs or nest of a bird while it is in use or being built.

4.4 Potential Impacts

4.4.1 Bats

At this stage, no detailed plans for any development proposal on the site that would affect the pavilion building have been prepared. However, should development works lead to the demolition or alteration/refurbishment of the pavilion this could affect roosting bats, should they be present. The same would be true of any other potential roost sites such as those in the building within the allotment area or mature trees around the site. However, no detailed assessment of these has been undertaken to date.

The areas of hedgerow, scrub, woodland, brook corridor and semi-improved pasture on site represent potential foraging and/or commuting habitat for bat species within the site. Although no information on bat species using the site has yet been gathered, it is likely that development within the site (without mitigation) would lead to a reduction in the area of potential foraging and commuting habitat available to bats. This could therefore lead to a reduction in the size of any population of bats using the area.

³ R (on the application of Simon Woolley) v Cheshire East Borough Council (2009)

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.

4.4.2 Nesting Birds

It was noted during the survey that parts of the roof have been used as a nesting site by birds. Damage and destruction of bird's nests or eggs could therefore occur if works are undertaken on the building when nests might be in use. In practice, it is unlikely that adult birds would be at risk of killing or injury as they are alert and highly mobile. However, there is a chance that birds could be killed or injured if they became trapped inside the building prior to demolition or major structural works. Young birds and nestlings would be at much higher risk of killing or injury during such activities as they may be unable to move away from danger.

5 Recommendations

5.1 Further Survey

5.1.1 Buildings

It is recommended that a full internal and external inspection of the building in the allotment area is undertaken should access be gained and if this building will be affected by development.

Given that it was not possible to access fully the roof-space within the pavilion building, and given that potential for roosting bats has been identified, a bat emergence/ re-entry survey is recommended for the pavilion building to determine the presence or likely absence of roosting bats within this building during the summer months. The Bat Conservation Trust (BCT) good practice guidelines⁴ indicate three surveys should be carried out between May to August inclusive, including at least one covering both dusk (emergence) and dawn (re-entry) periods. Each dusk survey would commence 15mins before sunset until 2hrs after sunset; each dawn survey would start 2hrs before sunrise and finish at sunrise. Surveyors using bat detector equipment would be required and any bat calls would be recorded and retained for subsequent analysis. This survey would have the aim of determining if bats are using the building during summer and, if so, which species are present and in what numbers. This information would be used to determine and evaluate the type of roost.

The allotment building will also require survey in this way if the internal and external inspection identifies the building as being suitable to support bats.

5.1.2 Trees

A number of trees with medium or high potential to support roosting bats were recorded within the site during the previous extended Phase 1 habitat survey. It is recommended that any trees with high or medium potential that are likely to be affected by development works are subject to a climbing survey. This allows a closer inspection of features evident from the ground, such as holes, cavities and ivy cover, to determine if they are suitable for roosting bats and if any evidence indicating use by roosting bats is present. Trained tree-climbers holding Natural England bat survey licences would be required for this work, with endoscopes used to investigate features within the tree.

5.1.3 Bat Activity Surveys

A bat activity survey is recommended to identify any bat species using the wider site for foraging or commuting. This involves walking pre-determined transects across the site using bat detectors to record bat activity. The survey should follow the BCT guidelines indicating three visits between

⁴ Bat Conservation Trust (2007). Bat Surveys – Good Practice Guidelines. Bat Conservation Trust, London.

May to September inclusive, with each visit starting at sunset and finishing 2-3hrs after sunset. The purpose of this survey would be to determine what bat species are using the site and which habitats comprise the most valuable foraging and commuting areas for bats.

5.2 Mitigation, Compensation and Enhancement Measures

5.2.1 Bats

Specific mitigation, compensation and enhancement measures for bats should be devised following the surveys recommended above (section 5.1). At present, no evidence of the use of the pavilion building by roosting bats has been identified. However, this could change following the suggested emergence/re-entry survey.

Should the pavilion building be found to contain a bat roost, a European Protected Species (EPS) licence would be required from Natural England to allow any works affecting the roost to proceed legally. The licence application would need to be accompanied by a method statement and reasoned statement detailing the approach that would be taken and how the proposed works would meet the three tests indicated in section 4.3.1. Should the building be found to support bats and the proposed development would result in demolition of the building, provision of an alternative roost site will almost certainly be required, preferably on the same site or close-by.

If no bats are found to be present within the pavilion following recommended further surveys, any refurbishment of the existing building or the construction of a new building would still present opportunities for enhancement to benefit bat species. This could include:

- The provision of potential roost sites within the roof space together with appropriate access points such as specially designed roof tiles or other openings
- The installation of bat bricks (essentially a bat box within a brick) into the walls of the building or new buildings

Specific recommendations for mitigation, compensation and enhancement of the wider site can be made following the recommended tree climbing and bat activity surveys and other building surveys indicated in section 5.1 and once detailed development proposals have been prepared. However, general recommendations include:

- 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 planting of wide buffer strips or corridors of vegetation (such as 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 or buildings around the site
- The installation of bat bricks or new roosting opportunities within new buildings where possible
- 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 Nesting Birds

To avoid the risk of damaging or destroying active nests and eggs or killing or injuring nesting birds, it is recommended that any demolition or structural works affecting the pavilion building is undertaken outside the main breeding season of most bird species. In practice, works should be

undertaken in the period from late September to the end of February inclusive. If this timing is not possible, the building should be checked for nesting birds by an ecologist prior to the commencement of works. However, if a nesting bird is found during this time, the works will need to be delayed until the bird has finished nesting and the young have fledged, to avoid contravention of the law.

6 Summary

A bat building survey was undertaken of the pavilion building on a site to the north-west of Barton, Oxford. An external and internal inspection (full internal access not possible) of this building did not find any evidence of past or current use of the building by roosting bats. Evidence of mice and rats was found within the roof-space. Overall, however, the building was considered to have low to medium potential to support roosting bats as it offers numerous potential access/egress points that could be used by bats and the roof-space itself is dry and open. However, the relatively draughty nature of the roof and the amount of daylight entering through holes in the soffit boards and under tiles is likely to limit its potential to support bats.

Given the potential of the building to support roosting bats identified and that not all areas of the roof-space could be accessed, a bat emergence/re-entry survey of the pavilion building is recommended during the summer (May to August) in order to determine if bats are using the building at this time. Furthermore, bat activity surveys and surveys of mature trees also offering bat roost potential are also recommended for the wider site. The aim of these surveys would be to gather information on bat usage of the site and to inform planning and any subsequent mitigation, compensation and enhancement that may be required.

Outline recommendations for mitigation, compensation and enhancement for bats within the site include the on-going provision of bat roosting, foraging and commuting opportunities. Should bats be found to be using the pavilion building during summer, a European Protected Species licence would be required from Natural England to allow works to proceed legally.

7 Appendices

7.1 Appendix 1: Photographs

Figure A: Overview of Pavilion building from outside (facing north-east)



Figure B: External view of Pavilion facing north-west



Figure C: Structure of roof from inside showing beams and internal wall



Figure D: Attic floor showing pipes and insulation



Figure E: Loose hanging felt inside northern roof section



Figure F: Broken asbestos roofing tiles inside northern roof hatch



Figure G: Holes into soffit board and vents at gable end



Figure H: Well-used bird roost at soffit hole with build-up of droppings



Figure I: Hole in soffit board, also with bird droppings



Figure J: Hole in soffit board with old bird nesting material present



Figure K: Lead flashing at roof join



Figure L: Loose lead flashing along ridge at north-west end of roof



8 Figures

8.1 Figure 1



Office: Oxford
Tel: 01865 883833

**baker
shepherd
gillespie**

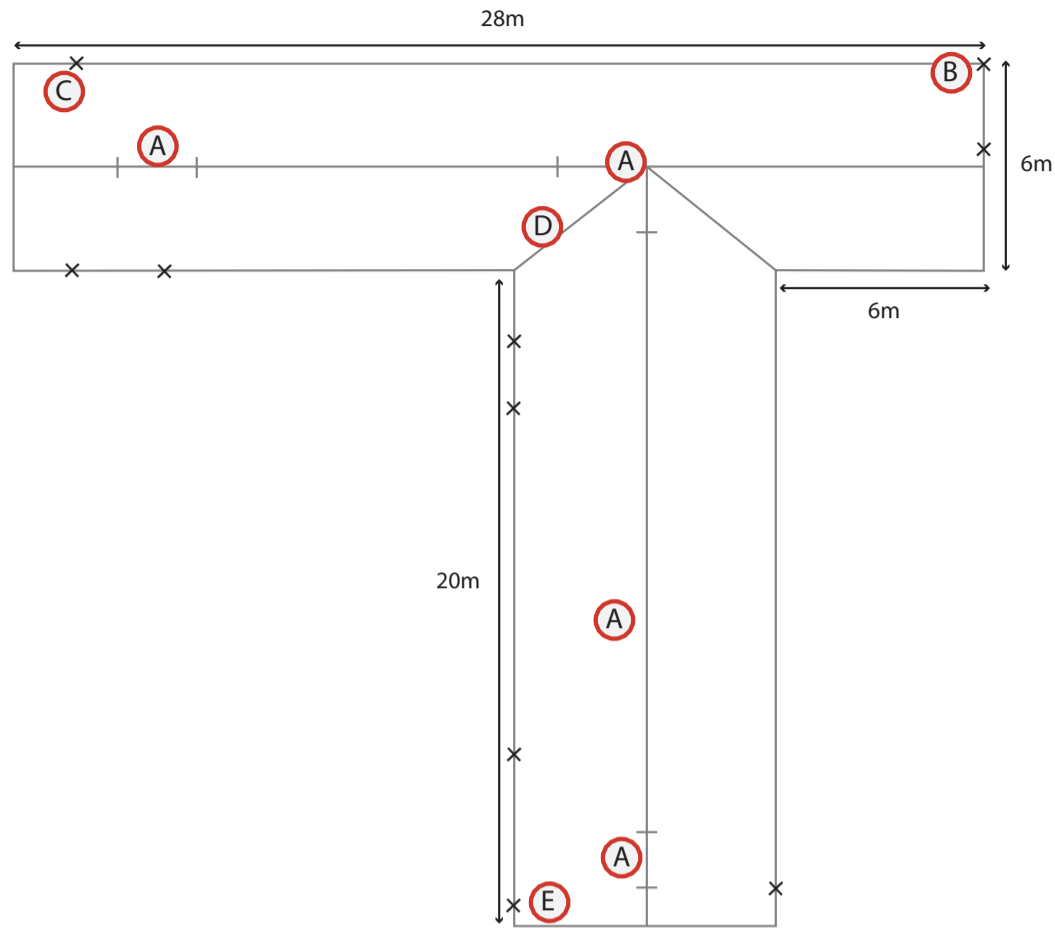
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Date	JAN'10	Checked	EA	Scale	NTS
Drawn	SW	Approved	EA	Job Ref	2755.02
Status	FINAL				

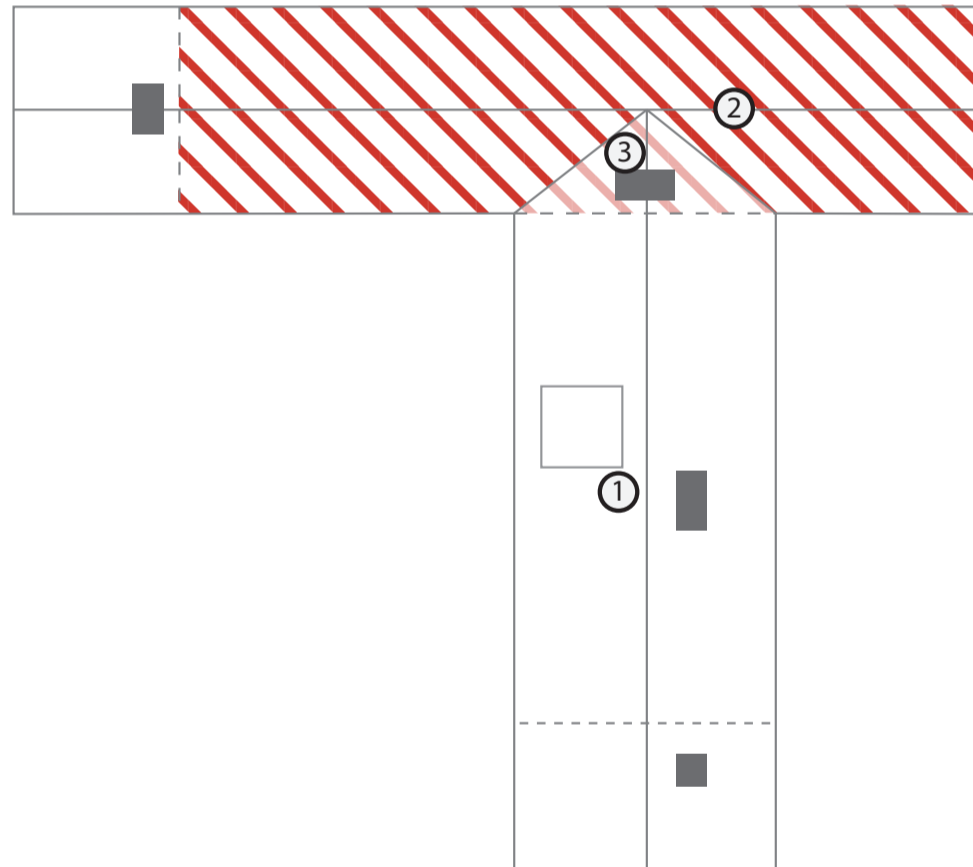
Dwg No. **FIGURE 1**

8.2 Figure 2

External sketch



Internal sketch



Legend

- | | | | |
|--|--|--|---|
| | Holes in soffit | | Butterfly wings. Scattered mouse droppings throughout. Rat droppings present. |
| | Ridge tiles replaced by lead flashing - loose | | Loose, hanging felt |
| | Bird nesting material evident in hole | | Broken asbestos tiles |
| | Lots of bird droppings inside and outside hole of soffit | | Hatch |
| | Lead flashing in valley | | Water tank |
| | Large hole in soffit | | Internal wall to ridge |
| | | | Not accessed fully. Daylight observed through holes at eaves and through holes in roof. |

**baker
shepherd
gillespie**

ECOLOGICAL CONSULTANTS
Limited Liability Partnership

Office: Oxford Tel: 01865 883833

BARTON FIELDS

Results of Bat Building Survey (Pavilion)

Date	JAN'10	Checked	EA	Scale	NTS
Drawn	SW	Approved	EA	Job Ref	2755.02
Status	FINAL	Dwg No.			FIGURE 2