



# NORTHSTOWE PHASE 2 PLANNING APPLICATIONS

## **Environmental Statement (Volume II): Appendix F Ecology**

August 2014



## **F1 WSP Bat Building Inspection 2007**

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**Northstowe New Town  
Bat Buildings Inspection 2007 - Final**

Gallagher Longstanton Ltd and English Partnerships

March 2007

**WSP Environmental**

# QM

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## Executive Summary

A preliminary ecological walkover survey of the site of Northstowe New Town in May 2002 identified suitable roosting and foraging habitat for bats. WSP Environmental Ltd were therefore commissioned by Gallagher Longstanton Ltd in March 2003 to undertake presence/absence surveys in the various buildings and trees located at the site. These surveys found no evidence of roosting bats. These surveys are now out of date and therefore require updating to inform a new planning application for the site.

Activity surveys in July 2004 recorded six species of bats foraging within the site including common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*P. pygmaeus*), brown long-eared (*Plecotus auritus*), serotine (*Eptesicus serotinus*), noctule (*Nyctalus noctula*) and a *Myotis* bat. Activity was principally centred on the airfield (and lake), the boundaries of the golf course and Long Lane, Longstanton.

WSP Environmental Ltd were commissioned by Gallagher Longstanton Ltd and English Partnerships to carry out a repeat presence/absence bat survey of the buildings within the red line boundary.

The objectives were to confirm whether bat roosts are present or absent within the buildings, subject to seasonal constraints i.e. bats were hibernating at the time of survey.

The bat surveys were carried out at the Immigration Centre, Oakington Barracks, Larksfield, Brookfield Farm as well as various agricultural buildings, towers, pill boxes and bunkers around the site. The surveys were undertaken between 29<sup>th</sup> January and 1<sup>st</sup> February 2007 during a spell of unusually mild weather (between 9 and 11<sup>°c</sup>).

The surveys were undertaken by two experienced surveyors from WSP under Natural England licence no: 20063162. All floors, walls and exposed surfaces of buildings and suitable built structures were checked both internally and externally for signs of use by bats where access was available.

These internal and external inspections of the buildings within the Northstowe scheme have identified evidence of bat roosts within ten buildings where buildings had potential for roosting supported by the presence of bat droppings and feeding remains. A further eighteen buildings supported features considered to be suitable for roosting bats (both for summer and hibernation roosts). No bats were recorded during the surveys. Internal access to survey was not available for four bunkers and two buildings, as well as a further two structures which were within the ordnance survey and clearance exclusion zone in force at the time of survey and therefore neither were surveyed internally or externally.

Further survey work is required to evaluate the field signs and roosting opportunities recorded, to determine whether bats are roosting within the buildings identified as having potential for roosting bats, and if so, in what numbers and by what species. Internal access should be gained where possible to buildings that were previously locked. Where access cannot be gained to previously inaccessible buildings, further survey work will help to determine whether bats are roosting within these buildings. This will enable a robust mitigation plan to be determined and help to inform the licensing process upon receipt of full planning permission.

Recommendations for mitigation have been provided which involves incorporating bat friendly features into new buildings, conversion of existing structures and appropriate landscaping design and species. Natural England development licenses will be required to demolish any buildings that support potential hibernation opportunities as well as any additional buildings where roosts are confirmed through further survey work.



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# 1 Introduction

## 1.1 BACKGROUND

1.1.1 A preliminary ecological walkover survey in May 2002 identified suitable roosting and foraging habitat for bats at the site of the proposed Northstowe New Town. WSP Environmental Ltd were therefore commissioned by Gallagher Longstanton Ltd in March 2003 to undertake presence/absence surveys in the various buildings and trees located at the site. These surveys found no evidence of roosting bats. These surveys are now out of date and therefore require updating to inform a new planning application for the site.

1.1.2 Activity surveys in July 2004 recorded six species of bats foraging within the site including common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*P. pygmaeus*), brown long-eared (*Plecotus auritus*), serotine (*Eptesicus serotinus*), noctule (*Nyctalus noctula*) and a *Myotis* bat. Activity was principally centred on the airfield (and lake), the boundaries of the golf course and Long Lane, Longstanton.

1.1.3 WSP Environmental Ltd were commissioned by Gallagher Longstanton Ltd and English Partnerships to carry out a repeat presence absence bat survey of all the buildings within the red line boundary (site location detailed in **Figure 1**). The objective of the survey was to confirm whether bat roosts were present or absent within the buildings, subject to seasonal constraints (i.e. bats were hibernating at the time of survey).

1.1.4 Hibernating bats are generally well hidden within the roost sites and therefore the likelihood of identifying hibernating bats during the survey was low. Signs of activity such as fresh droppings internally and externally are also less prevalent. During summer months, when bats are within maternity roosts they are active and therefore more visible within their roost sites and the surrounding environs.

## 1.2 SITE DESCRIPTION

1.2.1 The proposed Northstowe New Town site is located to the north-west of Cambridge city and is approximately 594 hectares in size. The northern part of the site is occupied by Cambridge Golf Course with the remainder consisting of agricultural land. Oakington Barracks and The Oakington Immigration Centre occupy the centre of the site, and comprise the majority of the proposed site area. The southern part of the Core Area is occupied by the former airfield which is currently under pastoral agricultural use. The Infra-structure Area between Northstowe and the A14 comprises agricultural land, the vast majority of which is arable. Other buildings on the site are associated with farm holdings, agricultural buildings towers, pill boxes and bunkers. Longstanton village lies to the west while Oakington village lies to the south.

## 1.3 REPORTING

1.3.1 This report details the methodologies and results of the internal and external inspections of the buildings to look for evidence of bats, provides an evaluation of the results and details recommendations for further survey work as a result of the evidence of bats recorded.



## 2 Methodology

### 2.1 LEGISLATION

2.1.1 All species of bat and their roosts are protected under The Wildlife and Countryside Act 1981 (as amended) and The Conservation (Natural Habitats &c.) Regulations 1994. This makes it an offence to kill, injure or disturb bats or obstruct access to, damage or destroy bat roosts. Under current legislation, a roost in any structure or place used for shelter is protected. As bats tend to reuse the same roosts, the roost is protected whether the bats are present at the time or not.

### 2.2 EXTERNAL/INTERNAL INSPECTION

2.2.1 Bat surveys were carried out at the the Oakington Immigration Centre, Oakington Barracks, Larksfield, Brookfield Farm as well as various agricultural buildings, towers, pill boxes and bunkers around the site. The surveys were undertaken between 29<sup>th</sup> January and 1<sup>st</sup> February 2007 during a spell of unusually mild weather (between 9 and 11°C). All buildings and structures which were surveyed are detailed on **Figure 2**.

2.2.2 The surveys were undertaken by two surveyors from WSP under Natural England licence no: 20063162. All floors, walls and exposed surfaces of buildings and suitable built structures were checked both internally and externally for signs of use by bats including:

- Bat droppings (grouped into small, medium or large to signify type of bat that may be present);
- Prey remains;
- Oil (from fur) and urine stains;
- Scratch marks;
- Bat corpses; and
- Actual sightings.

2.2.3 As bats were hibernating during the survey, all features which were considered to be suitable for roosting bats (both hibernating and summer roosting bats) were recorded.

2.2.4 Buildings were examined using direct observation, binoculars, high power torches, endoscopes and ladders where necessary to enable closer inspection of suitable features.

### 2.3 SURVEY LIMITATIONS

2.3.1 There were several buildings throughout the site where access was not available. These include the majority of the Oakington Immigration Centre buildings, although these were unsuitable as there were no access points or roof voids and were occupied at the time of the survey, four buildings on Oakington Barracks and some agricultural buildings. The majority of these buildings had flat concrete solid roofs and access was not available to check the cavity walls. Information was not available as to whether the cavity walls of many of the buildings had been sealed, indications are that this is variable (Immigration Centre maintenance team *Pers comm.*).

2.3.2 An agricultural shed and a pill box were inaccessible during the survey as they were within the exclusion zone for the ordnance surveys and clearance works in force at the time of survey and these will need to be checked at a later date.

2.3.3 Bats hibernate during the winter months and therefore signs of activity externally may have been washed away. However, potential roosting sites can still be



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noted and where droppings are present, this is a good indication of a hibernation roost. Further surveys are recommended where survey results are inconclusive.

## 3 Survey Results

3.1.1 All survey results are detailed in **Appendix A** and illustrated in **Figure 3**. A total of eighty four buildings or structures within the Core Area, and all buildings at Larkfield and Brookfield Farm were surveyed. A summary of the findings is included in **Table 1** and explained below. Target notes are included on **Figure 2**, but where individual buildings have block numbers e.g. the Immigration Centre, these have been included in Appendix A for reference.

**Table 1: Summary of Evidence Recorded during Building Inspections**

CATEGORY	NUMBER OF BUILDINGS	FURTHER SURVEY REQUIRED
Confirmed/likely roost	10	Yes
Potential for roost	18	Yes
External survey only	6	Yes
No access due to exclusion zone	2	Yes
No evidence (no further survey required)	48	No
Outside red line boundary since 2003 survey	2	No

### Oakington Immigration Centre

3.1.2 A collection of less than 40 medium sized relatively fresh droppings were found in Block 8 (TN 10). The only obvious roosting opportunity above this was a patch of flaking paint on which a bat could perch. No other bat evidence was recorded in this building which supported large numbers of hibernating butterflies. This is therefore a **likely roost**.

3.1.3 Small fresh droppings potentially from a bat were recorded on a window at the Officers' Mess (TN 16) and the window slot immediately above was cobweb free suggesting that this may support a hibernating bat. No other evidence of roosting bats was found at the site. This building is therefore a **likely hibernation roost**.

3.1.4 Security personnel reported that they had seen bats leave and enter the air vents (south east face by porch) of Block 21 (TN 8) on the evening of 29<sup>th</sup> January 2007. The air temperatures that evening were particularly mild and therefore this is a possibility. In addition, it was reported that after turning on the heating in Block 26 (TN 13) in December 2006, a bat was found in one of the upstairs rooms and was thought to have come from the heating system. It has also been reported that many bats are seen foraging around the restaurant and accommodation blocks at dusk.

3.1.5 Fifteen buildings had access points into the cavity wall (which is approximately 2 inches in width and suitable for a hibernating/roosting bat) through air vents and window slots. The maintenance team informed WSP that some of the cavities have been filled and some have not, but there are no records of which have been filled. All fifteen buildings had solid concrete roofs and there were no roof spaces which would provide roosting opportunities for bats.

3.1.6 All the bunkers in the Oakington Immigration Centre have been blocked and sealed, leaving no access for bats.

## Oakington Barracks

3.1.7 Access was available to survey both the interior and exterior of most of the buildings, which were all of a flat-roof structure with no roof voids. The majority of the buildings had no roosting opportunities for bats and no evidence was found. All buildings were derelict and vacant.

3.1.8 Two small, fresh droppings were found on a window on the north face of building TN 22 directly below a clear window slot. Inspection with an endoscope revealed that the slot went right up into the cavity wall and this is considered to be a **confirmed hibernation roost**.

3.1.9 One old medium sized dropping was recorded on a windowsill in building TN 39. Access is available through an open door which would allow bats access into the building. Butterfly wings were recorded and there were no crevices suitable for roosting bats, therefore this is most likely to be an **overnight feeding roost**.

3.1.10 Three old medium-sized droppings were recorded on the table at the back of the building associated with the Firing Range (TN51). Access is available to the building through an open door and there are thick wooden beams throughout. Activity has been recorded at this building during previous surveys and it is considered **likely that this building is a roost**, although the type of roost and species of bat cannot be confirmed.

3.1.11 No access was available to conduct internal surveys at buildings TN 22, 25, 29 and 50. In addition, the bunkers at TN 56 and 60 were not sealed at the chimney but no access was available for internal survey due to health and safety concerns.

3.1.12 Six buildings had access points into the cavity walls through air vents and window slots (TN22, 26, 27, 29, 44 and 50), with the air vent slots at building TN50 being clear of cobwebs and therefore considered to support features suitable for roosting bats, in particular hibernation.

## Other Buildings and Structures

3.1.13 All remaining pill boxes and bunkers (TN61 to 73) were surveyed internally and externally for signs of bats and roosting opportunities. None were found and it was considered generally that these structures are currently too exposed to support bat roosts.


3.1.14 Several agricultural and industrial outbuildings on the southern periphery of the scheme (TN 61 to 64) were surveyed but none had evidence of or potential for roosting bats.

3.1.15 Access was unavailable to two structures on the airfield (TN 72 and 73) as these were within the exclusion zone in force at the time of the survey and therefore no further information on these two buildings is currently available.

## Brookfield Farm

3.1.16 Less than ten old small droppings were recorded at scattered locations throughout the roof space of the farmhouse. The cavities in the walls were filled but in the roof there was access into the geotextile membrane in a few places which may support bats between this and the roof tiles. The presence of suitable roosting features as well as droppings makes this a **likely roost**.

3.1.17 The agricultural buildings consist of cattle sheds, storage sheds (hay, farm equipment and for rental), old stables and used/disused dog kennels of corrugated steel and wooden construction. The majority have wooden beams apart from two storage sheds at the centre which are purely metal construction. All buildings were surveyed internally apart from the cattle sheds which contained calving cattle, and were considered to be too disturbed to support any signs of bats (they are regularly cleared out).



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3.1.18 No evidence of bats was recorded in the majority of the buildings and they were considered to be too exposed or to offer no roosting opportunities in most cases. There were many undisturbed surfaces which all had no evidence of bats.

3.1.19 The old disused dog kennels had scatterings of old bat droppings in both medium and small sizes (<10) as well as occasional butterfly wings. There were occasional gaps in the otherwise cobwebbed beams which may provide roosting opportunities. Two old medium sized droppings were found in the equipment store which had a metal roof with wooden joists. Four old medium sized droppings were recorded in a breeze block shed with a metal roof at the south east of the yard immediately before the hay storage sheds at the bottom. The presence of suitable roosting features as well as droppings makes these three buildings **likely roosts**.

#### Larksfield

3.1.20 Four scattered, small, old bat droppings were recorded within the bungalow roof space, along with many rat and mouse droppings. All beams were heavily cobwebbed and the cavity walls were all filled. The presence of suitable roosting features as well as droppings makes this a **likely roost**.

3.1.21 There were many open agricultural sheds of wood and corrugated steel construction, some with wooden beams within this property. Despite many undisturbed surfaces, no evidence of use by bats was recorded and again the beams were heavily cobwebbed and no roosting opportunities were seen.

3.1.22 The stables were of wooden construction with wooden beams, again which were heavily cobwebbed with no evidence of bat roosting opportunities. No internal inspection was undertaken as the stables are in regular use and any evidence would have been cleared away, but it is considered to be highly unlikely that bats would use these buildings.

## 4 Evaluation and Recommendations

### 4.1 EVALUATION

4.1.1 Evidence of bats was recorded at ten buildings (**Appendix A**) including two within the Oakington Immigration Centre, three within Oakington Barracks, four in Brookfield Farm and one at Larksfield. These buildings all support features suitable for roosting bats and therefore are considered to be confirmed roosts but the type of roosts and species (and numbers of these species) are still to be confirmed through further survey. Suitable roosting features such as cracks, crevices and other cavities were recorded in a further eighteen of the buildings within the Oakington Immigration Centre and Oakington Barracks (**Appendix A**) although no evidence was recorded at the time of survey. Anecdotal evidence from the security staff reported emerging bats, a bat in a dwelling area and bats seen flying around the site at night at the Immigration Centre.

4.1.2 Access was unavailable to four buildings and two bunkers within Oakington Barracks and the airfield for internal survey and therefore their status cannot be confirmed at this stage. The pill boxes, towers and bunkers outside Oakington Barracks did not show any potential for roosting bats or any such evidence and therefore do not need to be considered further.

4.1.3 Access was unavailable to two structures on the airfield as these were within the exclusion zone in force at the time of survey and therefore no further information is currently available.

### 4.2 RECOMMENDATIONS

#### Further Survey Work

4.2.1 Further survey work is required where bat evidence has been recorded and where buildings have been identified that support features suitable for roosting bats. This survey work will identify where bats are present, to confirm the species using the roost (where present) as well as the numbers and to identify the type of roost for mitigation design and to determine conservation status.

4.2.2 All intrusive surveys should be undertaken by a licensed ecologist and all surveys should follow best practice methodologies (English Nature 2004).


#### Internal Surveys

4.2.3 Access should be gained, where possible, to the four buildings (and two within the exclusion zone) where access has not been possible to survey them internally for evidence of roosting bats. Where this isn't possible, the buildings should be subject to evening emergence surveys as below.

#### Evening Emergence Surveys

4.2.4 Two evening emergence surveys should be carried out at all buildings where evidence of bats has been recorded or where features such as air vents and window slots lead to cavity walls to determine whether summer roosts are present. These surveys should be carried out between mid-June and early August to ensure that any maternity roosts are recorded. To reduce survey effort i.e. to reduce the number of surveyor nights, these emergence surveys can be complemented with dawn swarming surveys which record bats swarming outside their roosts at the end of the night.

4.2.5 Activity surveys such as those carried out in 2004 will also need to be repeated to determine any presence of new roosts and species supported by these roosts. This would allow any bats that are recorded close to emergence time could be back tracked to find their roost i.e. record the time of the bat and the direction in which it was coming from at emergence time (note: this will vary for different species) to lead back towards



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the roost. The next activity survey should start from where the bat was heading, or suitable buildings in this area could be checked by emergence surveys. This would avoid emergence surveys of all sixteen suitable buildings by reducing them to the area within which early emerging bats were recorded.

4.2.6 A recommended path of action would be carefully routed activity transect surveys and dawn emergence to pinpoint likely roost locations over one week, followed by two emergence surveys of all likely roosts (i.e. where bats were recorded nearby at emergence, where bats were recorded swarming and where the buildings have evidence or bats or suitable features for bat roosts) which will be likely to take a further two weeks.

#### Suggested Mitigation

4.2.7 It is considered possible that bats, in particular pipistrelle, could hibernate in many if not all of the buildings which have air vents and window slots leading into the cavity walls (already one confirmed and one likely hibernation roost). These are common places for pipistrelle bats to hibernate on Ministry of Defence sites (I. Davidson -Watts, Head of Defence Estates Conservation Team *pers com.*). As single hibernating bats are difficult to locate, it is suggested that a Natural England licence is applied for prior to demolition of any of these buildings and that demolition is timed to avoid hibernation i.e. autumn (September/October) at a preference or late spring (April/May). Licences in respect of bats are usually only issued where schemes have full planning permission.

4.2.8 Mitigation in new buildings to promote bat roosting with the intention of enhancing biodiversity should involve the inclusion of ridge ventilators (without wire mesh), bat bricks/boxes or access points into soffits within design of the new buildings to replace current roosting opportunities to be lost. New roosting opportunities can be contained to prevent bats gaining access into the roof space/dwelling space. Consideration needs to be given to the fact that following demolition of buildings holding hibernation sites, new hibernation roosting opportunities should be in place prior to the next hibernation season to avoid any effect on the favourable conservation status of bats.

4.2.9 Opportunities exist to convert the existing bunkers, towers and pill boxes into hibernaculum and occasional summer roost sites (A.J.Mitchell-Jones 2004) using grills, bricking up of some of the sides where necessary and placing bat boxes or attaching wooden battens and tiles to the walls to create roosting places. Air would be trapped in the pill box creating more stable humid conditions which are perfect for roosting bats. Where development plans allow such measures should be taken.

4.2.10 Natural England licences may be required if further roost sites are identified, but this will be determined following additional summer survey work and mitigation requirements will depend on species and numbers of bats and type of roost. Mitigation can range from bat boxes and accesses into cavities/roof spaces as above (which can be contained to prevent access into the roof space/dwelling space in some cases) to specially designed bat houses where large numbers of bats are present. The latter is considered to be unlikely to be required from this survey and previous survey work. Any licensing required careful programming of works to meet the seasonal requirements of bats and a method statement will need to be produced and agreed with Natural England and the Local Planning Authority Ecologist or equivalent.

4.2.11 All UK bat species are insectivorous and predominantly feed on insects, which are often associated with trees and water. Trees and hedgerows provide shelter for flying insects and focal points of insect swarms. Masterplan design should consider:

- Retaining as much existing on-site tree planting, hedgerows and water features as possible within the development design;
- New planting and habitat creation should ensure that there are continuous tree lines or similar linear features linking the new areas to woodland and tree lines to be retained or outside the development boundary; and



- Bats favour native species such as oak, beech and ash. New planting for wildlife that could be incorporated into the landscaping of the site can be seen at **Appendix B**.

4.2.12 Where bat roosts are recorded and are to be retained, or where bat roosts/opportunities are installed as part of mitigation, careful consideration should be given to lighting design as some species of bats are intolerant to lighting and this would deter use of the roosting site or affect emergence from the roost. Therefore the bat mitigation should be designed in close liaison with the lighting design team and Ecologists should be consulted in the lighting design for Northstowe.





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## 5 Conclusions

5.1.1 Internal and external inspections of the buildings within the proposed Northstowe development have recorded evidence of bats in ten buildings throughout the site which included droppings and feeding remains. The surveys also identified bat roosting potential within a further eighteen buildings (both for summer and hibernation roosts). No bats were recorded during the surveys which were undertaken by licensed and experienced members of WSP Environmental. Access was not available to four bunkers and two buildings as well as two buildings within the exclusion zone.

5.1.2 Further survey work is required to evaluate the field signs and roosting opportunities recorded, to determine whether bats are roosting within these buildings, and if so, in what numbers and by what species. Where access cannot be gained to previously inaccessible buildings, further emergence and activity survey work will also help to determine whether bats are roosting within these buildings. Licences to demolish buildings containing bat roosts are required and this survey work will enable a robust mitigation plan to be determined and help to inform the licensing process upon receipt of full planning permission.

5.1.3 Recommendations for mitigation have been provided which involve incorporating bat friendly features into new buildings, conversion of existing structures and appropriate landscaping design and species. Natural England development licenses will be required to demolish any buildings that support potential hibernation opportunities as well as any further buildings where roosts are confirmed through further emergence and activity survey work during summer 2007.

**WSP Environmental Ltd**



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The Wildlife and Countryside Act 1981. HMSO London.

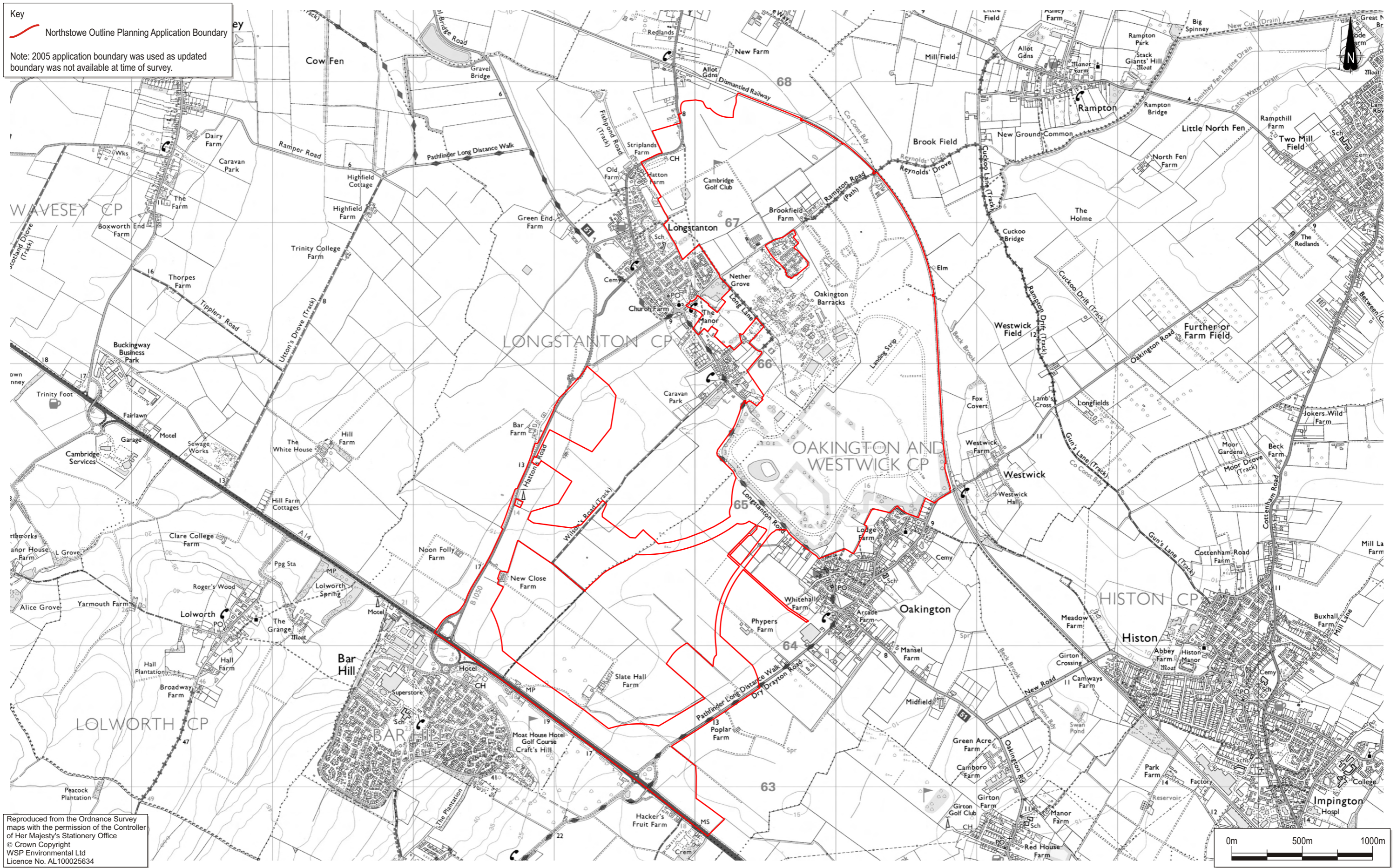
WSP Environmental Ltd (2004) Northstowe New Town Bat Survey. Gallagher Estates.



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## Figure 1 Site Location Plan







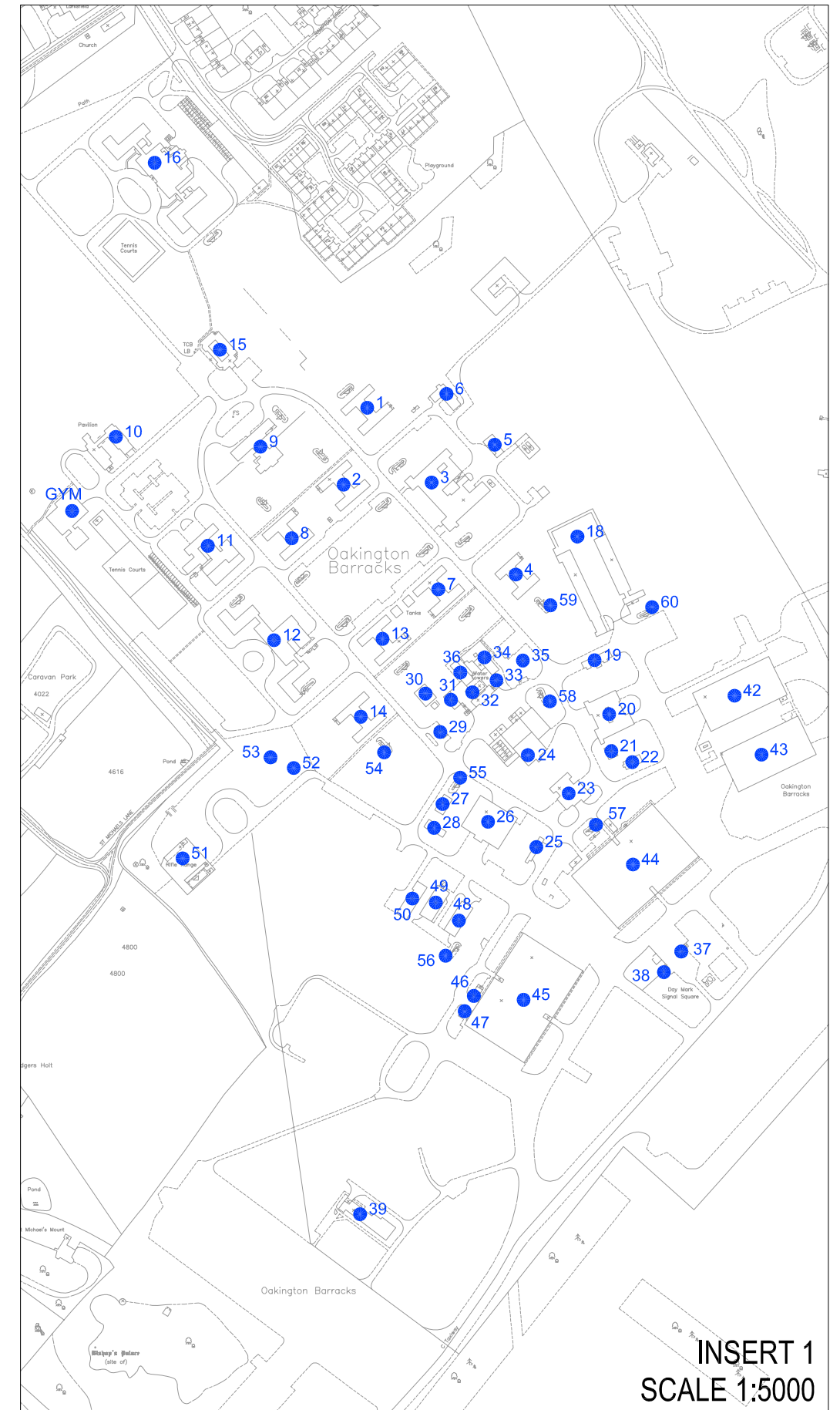
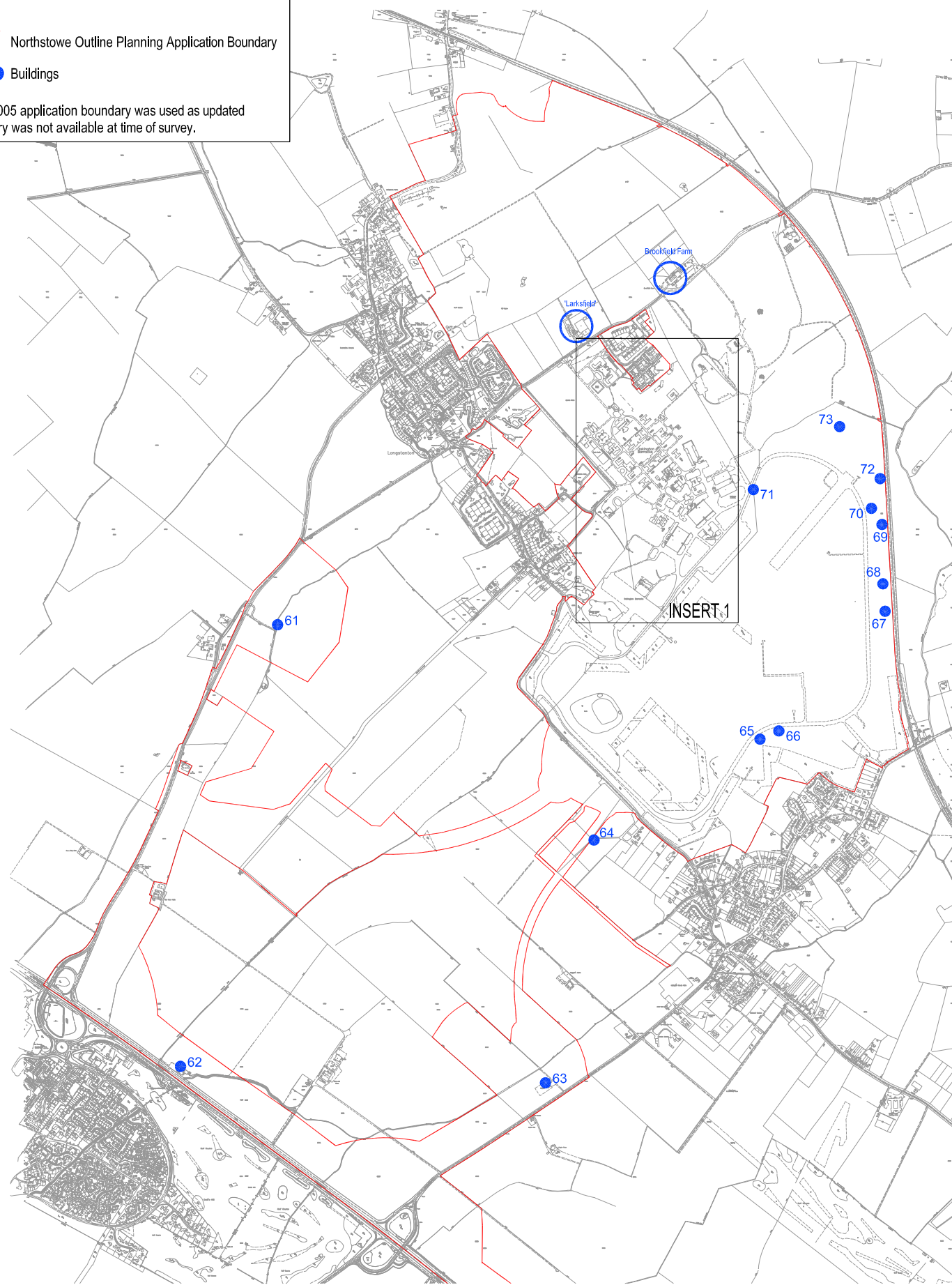




**Key**

-  Northstowe Outline Planning Application Boundary
-  Buildings

Note: 2005 application boundary was used as updated boundary was not available at time of survey.










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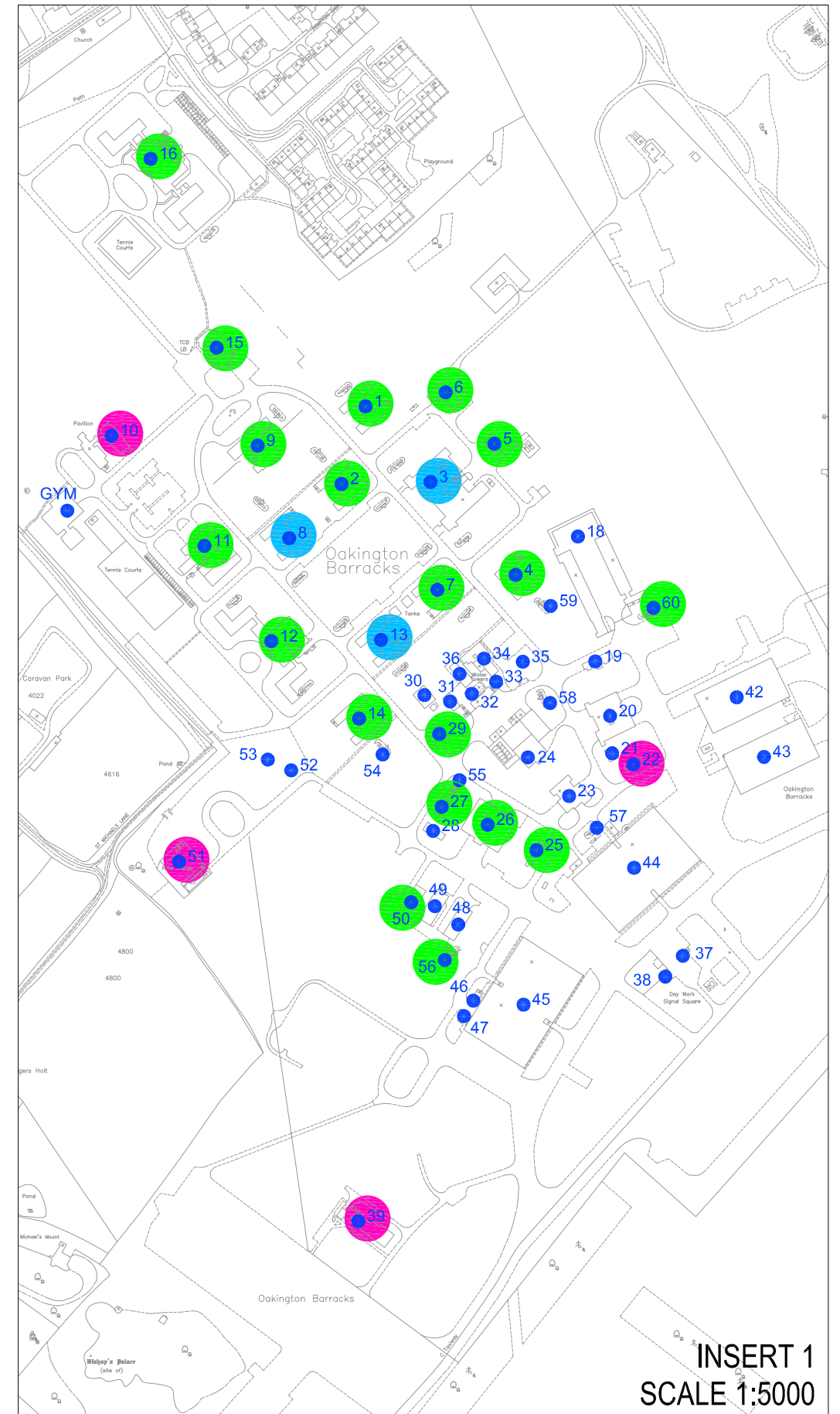
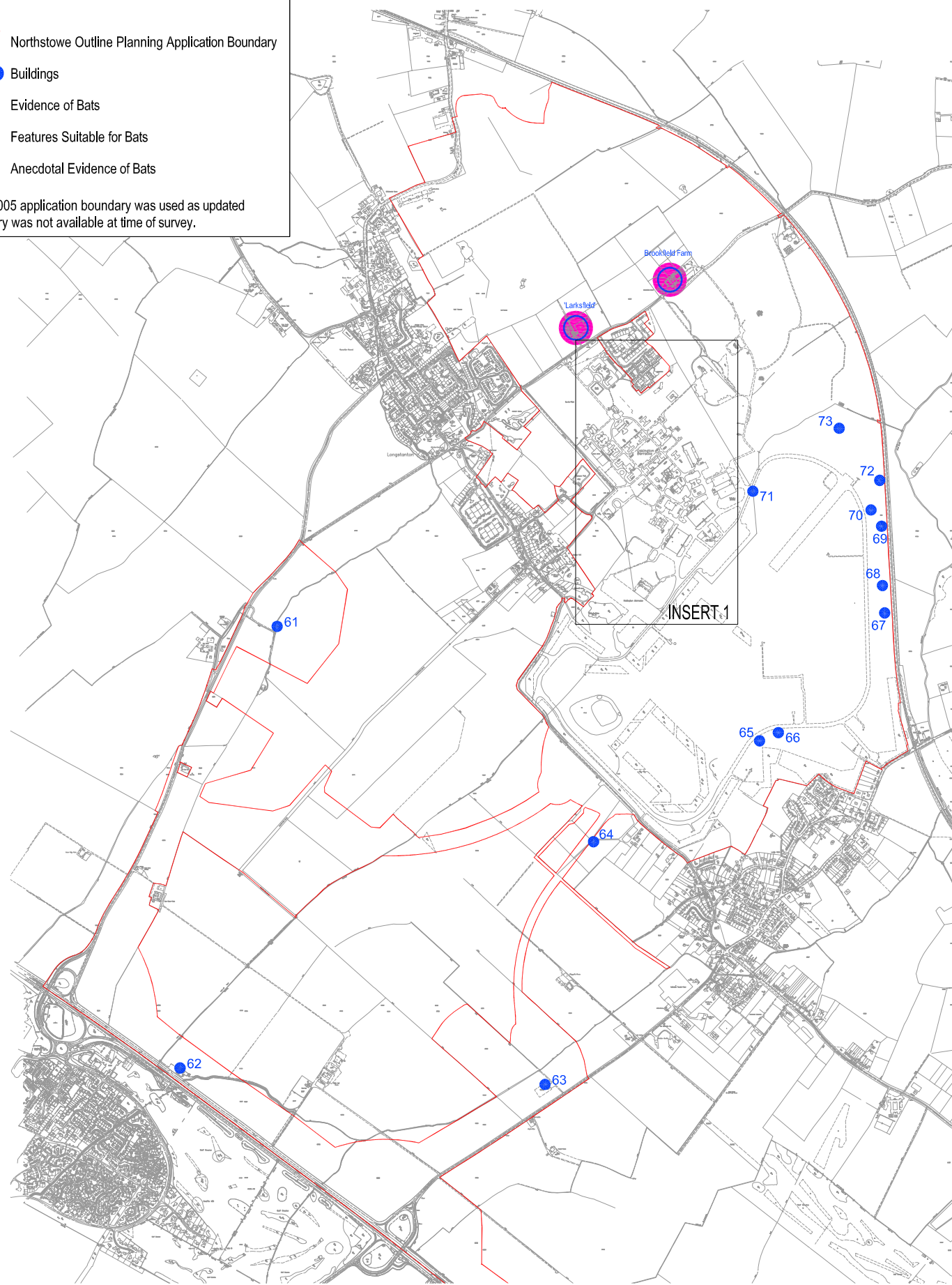
## Figure 3 Survey Results January 2007



**Key**

-  Northstowe Outline Planning Application Boundary
-  Buildings
-  Evidence of Bats
-  Features Suitable for Bats
-  Anecdotal Evidence of Bats

Note: 2005 application boundary was used as updated boundary was not available at time of survey.





## Appendix A Survey Results January 2007

Building Reference Number	Block number or Name of Building	Description	Comments
Immigration Centre			
1	19 Accommodation Block	Two storey brick building with flat concrete roof and modern PVC windows. Cavity walls, slots above windows and air vents (some grilled). Crack between concrete roof and wall join.	Access for bats into cavity wall via vents, slots and crack. No roof void. No evidence of bats recorded. No access for surveyors was possible, but building in use.
2	20 Accommodation Block	Two storey brick building with flat concrete roof and modern PVC windows. Cavity walls, slots above windows and air vents (some grilled).	Access for bats into cavity wall via vents and slots. No roof void. No evidence of bats recorded. No access for surveyors was possible, but building in use.
3	31 Restaurant	Three storey brick building with concrete roof. Many gaps in bricks and vents. Water tower present with vents and a large crack. Open storage shed to rear with no potential for bats. This is the only building within the immigration centre with a false ceiling.	Access for bats into cavity wall via vents and slots. No roof void. No evidence of bats recorded. No access for surveyors was possible, but building in use.  <b>Security reported bats foraging in the courtyard of this building in summer.</b>
4	Accommodation Block (block number unknown)	Two storey brick building with flat concrete roof and modern PVC windows. Cavity walls, slots above windows and air vents (some grilled).	Access for bats into cavity wall via vents and slots. No roof void. No evidence of bats recorded. No access for surveyors was possible, but building in use.
5	32 Storage Block	One storey brick building with flat concrete roof.	Access for bats into cavity wall via vents and slots.

		Vents present, some not gridded.	No roof void. No evidence of bats recorded. No access for surveyors was possible, but building in use.
6	17 Storage Block	One storey brick building with flat concrete roof. Vents present, some not gridded.	Access for bats into cavity wall via vents and slots. No roof void. No evidence of bats recorded. No access for surveyors was possible, and building no longer in use.
7	30 Accommodation Block	Two storey brick building with flat concrete roof and modern PVC windows. Cavity walls, slots above windows and air vents (some gridded).	Particularly clean grills along the western walls. Access for bats into cavity wall via vents and slots. No roof void. No evidence of bats recorded. No access inside, building in use.
8	21 Accommodation Block	Two storey brick building with flat concrete roof and modern PVC windows. Cavity walls, slots above windows and air vents (some gridded).	<b>Security staff recorded bats emerging from central grill and re-entering through top grill on the evening of 29<sup>th</sup> January 2007 (TN8).</b> Access for bats into cavity wall via vents and slots. No roof void. No evidence of bats recorded. No access for surveyors was possible, building in use.
9	14 Administration Office	Two storey brick building with flat concrete roof. Cavity walls, slots above windows and air vents (some gridded).	Access for bats into cavity wall via vents and slots. No roof void. No evidence of bats recorded. No access for surveyors was possible, building in use.
10	8 Mortuary and 10 Dental Surgery	Two storey brick building with flat concrete roof. Cavity walls, slots above windows and air vents	<b>&lt; 40 medium sized droppings on floor in Block 10 (TN10).</b> Bats likely to have perched on



		(some grilled). This building is disused.	flaking paint. No bats present. Access available through vents. Access for bats into cavity wall via vents and slots. No roof void.
Gym		Modern 1 storey brick building with open pitched roof.	No obvious access points or suitable roosting opportunities. Internal and external inspection undertaken and no evidence found.
11	22 Medical Centre	Two storey brick building with flat concrete roof. Cavity walls, slots above windows and air vents (some grilled).	Access for bats into cavity wall via vents and slots. No roof void. No evidence of bats recorded. No access for surveyors was possible, building in use.
12	Sergeants Mess	Two storey brick building with flat concrete roof. Cavity walls, slots above windows and air vents (most grilled).	Access for bats into cavity wall via vents and slots. No roof void. No evidence of bats recorded. No access for surveyors was possible, building recently disused.
13	26 Office Block	Two storey brick building with flat concrete roof. Cavity walls, slots above windows and air vents (some grilled).	<b>A bat was found by Immigration Centre staff in an upstairs room shortly after switching heating on in December (TN13).</b> Access for bats into cavity wall via vents and slots. No roof void. No evidence of bats recorded. No access for surveyors was possible, building in use.
14	25 Accommodation Block	Two storey brick building with flat concrete roof. Cavity walls, slots above windows and air vents (some grilled).	Access for bats into cavity wall via vents and slots. No roof void. No evidence of bats recorded. No access for surveyors was

			possible, building in use.
15	7 Guard House	Two storey brick building with flat concrete roof. Cavity walls, slots above windows and air vents (some grilled).	Access for bats into cavity wall via vents and slots. No roof void. No evidence of bats recorded. No access for surveyors was possible inside, building recently disused.
16	Officers Mess	Two storey brick building with flat concrete roof. Cavity walls, slots above windows. Bricked, in tact chimney. Basement present, possibly with low water level and access points through hole in mesh – suitable for hibernating bats but no access available.	<b>Possible dropping recorded on window with cobweb-free window slot above (TN16).</b> Access for bats into cavity wall via slots and access into basement. No roof void. No access for surveyors was possible inside, building recently disused.
17	Guard Room	Portacabin-style building.	No access points or roosting opportunities noted. Negligible potential for roosting bats.
<b>Oakington Barracks</b>			
18	N/a	Two storey garages.	No potential for roosting bats and no evidence recorded. Internal surveys undertaken.
19	N/a	One storey brick building with flat concrete roof and double glazing. No slots or air vents and no access into cavity wall.	No potential for roosting bats and no evidence recorded. Internal surveys undertaken.
20	N/a	One storey brick building with flat concrete roof and double glazing. No slots or air vents and no access into cavity wall.	No potential for roosting bats and no evidence recorded. Internal surveys undertaken.
21	N/a	One storey brick building with corrugated roof.	No potential for roosting bats and no evidence



		Access through open door.	recorded. Internal surveys undertaken.
22	N/a	One storey brick building with flat concrete roof. Window slots and vents present.	<b>Two small bat droppings recorded above window (TN22).</b> Access for bats into cavity wall via slots and vents. No roof void. No access for surveyors was possible inside, building disused.
23	N/a	Two storey brick building with flat concrete roof. Vent bricks present.	No evidence of bats externally or internally and vent bricks heavily cobwebbed. Negligible potential for bats.
24	N/a	Two storey brick building with flat concrete roof. Vent bricks present.	No evidence of bats externally or internally and vent bricks heavily cobwebbed. Negligible potential for bats.
25	N/a	One storey brick building with flat concrete roof and double glazing with access potential through louvre windows.	No evidence of bats externally but access into building through louvre windows, and no access for surveyors was possible into building so further check required.
26	N/a	One storey brick building with flat concrete roof. Window slots and vents present.	Access for bats into cavity wall via slots and vents. No roof void. No evidence recorded during external and internal survey.
27	N/a	One storey brick building with flat concrete roof. Window slots and vents present.	Access for bats into cavity wall via slots and vents. No roof void. No evidence recorded during external and internal survey.
28	N/a	One storey brick building with asbestos roof. No air vents or window slots.	No roof void and no other opportunities for roosting bats. No evidence

			recorded during external and internal survey.
29	52	One storey brick building with flat concrete roof. Window slots and vents present.	Access for bats into cavity wall via slots and vents. No roof void. No evidence recorded during external survey, internal access was unavailable for surveyors.
30	N/a	Steep sided water tank	No evidence of bats and no roosting potential.
31	N/a	One storey brick building with asbestos roof. No air vents or window slots.	No evidence of bats and no roosting potential.
32	N/a	Two steel sided water towers.	No evidence of bats and no roosting potential.
33	N/a	One storey brick building with flat roof. No air vents or window slots.	No evidence of bats and no roosting potential. Internal survey undertaken.
34	N/a	Three storage buildings with no air vents or window slots.	No evidence of bats and no roosting potential. Internal survey undertaken.
35	N/a	One storey brick building with flat roof. No air vents or window slots.	No evidence of bats and no roosting potential. Internal survey undertaken.
36	N/a	Four concrete storage sheds with corrugated roofs.	No evidence of bats and no roosting potential. Internal survey undertaken.
37	N/a	Brick storage building with panelled roof.	No evidence of bats and no roosting potential. Internal survey undertaken.
38	N/a	Brick storage building with panelled roof.	No evidence of bats and no roosting potential. Internal survey undertaken.
39	Teaching Block	One storey brick building with flat roof. No air vents or window slots.	No opportunities for bats to gain access to cavity wall but access to building



			through broken windows and open doors, with many internal roosting opportunities. <b>One old medium sized dropping recorded on windowsill (TN39).</b> No other evidence recorded.
40	N/a	Not surveyed as outside red line.	
41	N/a	Not surveyed as outside red line.	
42	N/a	Corrugated hangar. Very exposed and open with no roof void and limited roosting opportunities.	No evidence of bats and no roosting potential. Internal survey undertaken.
43	N/a	Corrugated hangar. Very exposed and open with no roof void and limited roosting opportunities.	No evidence of bats and no roosting potential. Internal survey undertaken.
44	N/a	Corrugated hangar. Very exposed and open with no roof void and limited roosting opportunities. Brick adjacent building has access into cavity wall.	No evidence of bats but potential access into cavity wall. Internal survey undertaken.
45	N/a	No access due to confirmed asbestos.	N/A
46	N/a	Cylindrical double-skinned storage units of corrugated sheeting. Open-ended and very exposed.	No evidence of bats and no roosting potential. Internal survey undertaken.
47	N/a	Cylindrical double-skinned storage units of corrugated sheeting. Open-ended and very exposed.	No evidence of bats and no roosting potential. Internal survey undertaken.
48	N/a	Newly built single storey building with aluminium sheet roof and no access points.	No evidence of bats and no roosting potential. Internal survey undertaken.
49	N/a	Newly built single storey building with aluminium	No evidence of bats and no roosting potential. Internal survey

		sheet roof and no access points.	undertaken.
50	Storage Block	One storey brick building with flat concrete roof. Window slots and vents present.	Ventilation slot above porch clean of cobwebs. Access for bats into cavity wall via slots and vents. No roof void. No evidence recorded during external survey, internal access unavailable to surveyors.
51	Firing Range	Brick walls with some frost shattering but no roosting potential. Single storey flat roofed storage building adjacent with open door. Thick wooden beams.	<b>Three very old medium sized droppings on table in storage shed, not thought to be this seasons (TN51).</b> Access through open door. Needs further survey in summer to confirm usage as bat usage has been recorded in previous surveys.
52	Pill Box	Sunken structure with concrete capped roof.	Very exposed with no roosting opportunities. No evidence recorded.
53	Tower	Open two storey concrete tower. Limited roosting opportunities on second level in wooden beams and shelving.	Very exposed, evidence of use by nesting barn owls. No evidence recorded.
54	Bunker	Underground structure with grass covering and bat access through door and chimney.	Capped and sealed. No access for bats.
55	Bunker	Underground structure with grass covering and bat access through door and chimney.	Capped and sealed. No access for bats.
56	Bunker	Underground structure with grass covering and access through door and chimney.	Sealed but chimney not capped. Access for bats but no access for survey.
57	Bunker	Underground structure with grass covering and access through door and chimney.	Capped and sealed. No access for bats.
58	Bunker	Underground structure	Capped and sealed. No



		with grass covering and access through door and chimney.	access for bats.
59	Bunker	Underground structure with grass covering and access through door and chimney.	Capped and sealed. No access for bats.
60	Bunker	Underground structure with grass covering and access through door and chimney.	Sealed but chimney not capped. Access for bats but no access for survey.
<b>Other Buildings</b>			
61	Tower	Open two storey concrete tower. Limited roosting opportunities on second level in wooden beams and shelving.	Very exposed, evidence of use by nesting barn owls. No evidence recorded.
62	Cement Works	Heavily used concrete works consisting of open corrugated steel sheds. Some wooden beams but heavily disturbed. Buildings sealed up at night.	Too disturbed for potential bat roosts (items stored above wood beams which are disturbed regularly) and no evidence of bats recorded.
63	Agricultural Shed	Warehouse corrugated steel storage shed.	No access to this building but due to no access points and lack of roosting opportunities, it is not considered that this building would be suitable for roosting bats.
64	Farm Outbuilding	Small open farm storage shed.	No roosting opportunities and no evidence recorded. Internal surveys conducted.
65	Pill Box	Sunken structure with concrete capped roof.	Very exposed with no roosting opportunities. No evidence recorded.
66	Bunker	Sunken brick structure with grass covering. Access in through open archway.	Internal survey revealed no potential roosting opportunities as bricks sealed and painted.
67	Pill Box	Sunken structure with concrete capped roof.	Very exposed with no roosting opportunities. No

			evidence recorded.
68	Pill Box	Sunken structure with concrete capped roof.	Very exposed with no roosting opportunities. No evidence recorded.
69	Pill Box	Sunken structure with concrete capped roof.	Very exposed with no roosting opportunities. No evidence recorded.
70	Bunker	Sunken brick structure with grass covering. Access in through open archway.	Internal survey revealed no potential roosting opportunities as bricks sealed and painted.
71	Pill Box	Sunken structure with concrete capped roof.	Very exposed with no roosting opportunities. No evidence recorded.
72	Pill Box	Pill box with wall	No access as within exclusion zone
73	Animal Shed	Single storey open animal shed	No access as within exclusion zone
<b>Brookfield Farm</b>			
	Bungalow	Large roof void above this brick built property with wooden beams and geotextile lining. Loft insulation present and no storage in loft may all signs clearly visible.	<b>Less than ten old small droppings were recorded at scattered locations throughout the roof space.</b> The cavities in the walls were filled but there was access into the geotextile membrane in a few places which may support bats between this and the roof tiles.
	Brookfield Farm House	A wooden portacabin style building with no obvious access points and no roof void.	No evidence was recorded externally and it was not considered that this building provided crevices or voids suitable for roosting bats. No internal inspection undertaken.
	Agricultural Buildings	A variety of wooden, corrugated steel and	Access available to all buildings except where



		breeze-block buildings with no roof voids, but many with wooden joists.	cattle were calving. <b>Old droppings were found in the disused kennels (&lt;ten medium and small), the equipment store (two medium) and the breeze block store (four medium)</b>
<b>Larksfield</b>			
	Bungalow	Large roof void above this brick built property with wooden beams and geotextile lining. Loft insulation present.	<b>Four scattered small old bat droppings were recorded within the bungalow roof space, along with many rat and mouse droppings.</b> All beams were heavily cobwebbed and cavity walls were all filled.
	Agricultural sheds	Open agricultural sheds of wood and corrugated steel construction, some with wooden beams	No evidence of use by bats was recorded and the beams were heavily cobwebbed. No roosting opportunities were seen.
	Stables	Wooden construction with wooden beams.	Beams heavily cobwebbed and no roosting opportunities seen. No internal survey undertaken as stables in use.

## Appendix B Landscaping Species for Bats

Planting to enhance a site for bats should aim to provide a habitat rich in insects, and with the potential for alternative roosting sites. The construction of shelter belts, especially around a pond will create areas with high densities of insects.

### **Trees and Shrubs**

Oak	<i>Quercus robur</i> & <i>Q. petraea</i>
Ash	<i>Fraxinus excelsior</i>
Silver Birch	<i>Betula pendula</i>
Field Maple	<i>Acer campestre</i>
Hawthorn	<i>Crataegus monogyna</i>
Alder	<i>Alnus glutinosa</i>
Goat Willow	<i>Salix caprea</i>
Guelder Rose	<i>Viburnum opulus</i>
Hazel	<i>Coryllus avellana</i>
Blackthorn	<i>Prunus spinosa</i>
Elder	<i>Sambucus nigra</i>
Buddleia	<i>Buddleja davidii</i>

### **Night-scented flowers**

As bats usually feed at dusk and dawn it is advantageous to use night-scented flowers which will attract moths and other night-flying insects.

Nottingham catchfly	<i>Silene nutans</i>
Night-scented catchfly	<i>S.noctiflora</i>
Bladder campion	<i>S. vulgaris</i>
Night-scented stock	<i>Matthiola bicornis</i>
Sweet rocket	<i>Hesperis matronalis</i>
Evening primrose	<i>Oenothera biennis</i>
Tobacco plant	<i>Nicotiana affinis</i>
Cherry pie	<i>Heliotopum x hybridum</i>
Soapwort	<i>Spanoria officinalis</i>

### **Scented herbs**

Chives	<i>Allium schoenoprasum</i>
Sage	<i>Salvia officinalis</i>
Marjoram	<i>Origanum vulgare</i>
Borage	<i>Borago officinalis</i>
Mint	<i>Mentha</i> sp.



**Climbers**

European Honeysuckle	<i>Lonicera caprifolium</i>
Italian Honeysuckle	<i>L. etrusca superba</i>
Japanese Honeysuckle	<i>L. japonica halliana</i>
Honeysuckle (native)	<i>L. periclymenum</i>
White jasmine	<i>Jasminium officinale</i>
Dogrose	<i>Rosa canina</i>
Sweetbriar	<i>R. rubiginosa</i>
Field rose	<i>R. arvensis</i>
Ivy	<i>Hedera helix</i>
Bramble	many species

Leaving areas of grass uncut allows larval stages of these insects to develop.

