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Kingscroft Farm &
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Method Statement to accompany Natural
England EPS licence application in respect of
bats

Document 1 – Background and Supporting
Information

June 2012

Hampshire Ecological Services Ltd
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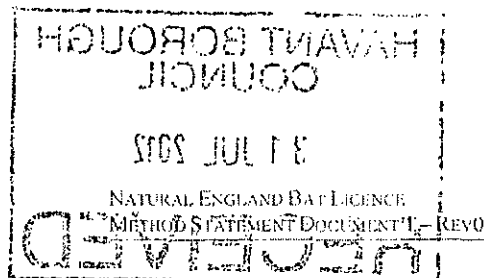
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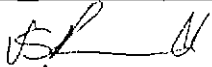
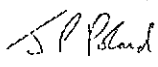
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Method Statement to accompany Natural England EPS licence application in respect of bats

**Document 1 – Background and Supporting Information
Kingscroft Farm, Ranelagh Road, Havant, Hampshire, PO9 1NR
for
Orchard Homes**

Reference: Ranelagh Road, Havant					
Revision & issue date:		Prepared by:	Date:	Reviewed & verified by: Technical QA	Date:
0	16/06/12 (for LPA)		11/06/12		11/06/12
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This report represents sound industry practice; reports and recommends correctly, truthfully and objectively; is appropriate given the local site conditions, scope of works proposed and resources allocated to us by the client; and avoids invalid, biased, and exaggerated statements.

The author disclaims any responsibility to the client and others in respect of any matters outside the scope of the above. This report is confidential to the client and the author accepts no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

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A EXECUTIVE SUMMARY

1. Orchard Homes own the site at Kingscroft Farm and adjacent former allotments, Ranelagh Road, Havant, Hampshire, PO9 1NR (approximate Ordnance Survey Grid Reference SU708062). The site location is shown in *Figures C.4.1. and C.4.2.*; and a site plan is given in *Figure C.4.3.* (see *Section C.4.*).
2. The site is a broadly rectangular plot consisting of the stables and horse paddocks of Kingscroft Farm and the former allotments on Ranelagh Road. There is housing to the north and east, and industrial units to the south. To the west is Meyrick Road, with fields and Hermitage Stream beyond. Further to the west lies a railway line. The site lies on the south-west edge of Havant, to the north of the A27. The surrounding area is principally urban and sub-urban residential housing and industrial units with a small area of farmland to the west and south-west.
3. An internal and external inspection of the buildings (Buildings A-L) was carried out during the daytime on the 9th September 2010 by licensed bat ecologist John Poland CEnv MIEEM CBiol MSB from Hampshire Ecological Services Ltd. The visual inspection identified the majority of the buildings as having high to moderate bat roost potential. Bat emergence surveys were subsequently completed to obtain sufficient information on which bat species were present and the nature of the bat occupancy in order to apply for a European Protected Species Licence.
4. A desk study found records of six bat species, four of which roost in buildings, in the 10km grid square (SU70) according to the National Biodiversity Network website (accessed 07/06/12).
5. Six bat emergence surveys were carried out on the 16th & 28th September 2010 and the 23rd, 24th, 25th & 30th August 2011, using a minimum of four ecologists.
6. A single common pipistrelle was observed emerging from Building B on the 16th September 2010. A common pipistrelle was also observed emerging from Building J on the 30th August 2011. In addition, common pipistrelle, soprano pipistrelle, noctule and a *Myotis* bat were recorded commuting and foraging on site. Bat activity maps showing the locations of emerging bats are given in *Figures C.7.2.1. - C.7.2.6.* and the bat emergence data is tabulated in *Table C.7.2.1.*
7. The level of use of the buildings suggests that Buildings B & J are summer roosts for low numbers of non-breeding common pipistrelles. It is also possible that small numbers of common pipistrelles will hibernate in the area between external and internal wooden cladding. Without mitigation, impacts of the proposed development on bat species would be low.

B INTRODUCTION

B.1 Background to activity/ development

An internal and external inspection of the buildings (Buildings A-L) was carried out during the daytime on the 9th September 2010 by licensed bat ecologist John Poland CEnv MIEEM CBiol MSB from Hampshire Ecological Services Ltd. The visual inspection identified the majority of the buildings as having high to moderate bat roost potential. Bat emergence surveys were subsequently completed to obtain sufficient information on which bat species were present and the nature of the bat occupancy in order to apply for a European Protected Species Licence.

B.2 Full details of proposed works on site that are to be covered by the licence

The development proposes to demolish the existing stable buildings and build new dwellings on the site.

See *Figures C.4.1-3* for the location of the site and buildings (Buildings A-L).

C SURVEY AND SITE ASSESSMENT

C.1 Pre-existing information on the bat species at the survey site

Apart from survey data obtained for the purpose of the planning application and for this licence, the only records available have been from the National Biodiversity Network website (www.nbn.org.uk), accessed on the 7th June 2012. These are given in Table C.1.1 below. Only the most recent records for any given location are listed.

Table C.1.1. Results of data search for bat records within the grid square SU70.

Date	Taxon name	Common name	Grid reference	Precision (m)
30/07/03	<i>Eptesicus serotinus</i>	Serotine	SU7106	1000
25/06/11	<i>Eptesicus serotinus</i>	Serotine	SU7107	1000
07/08/11	<i>Myotis daubentonii</i>	Daubenton's bat	SU7506	1000
24/07/07	<i>Nyctalus noctula</i>	Noctule bat	SU7100	1000
07/07/11	<i>Nyctalus noctula</i>	Noctule bat	SU7106	1000
11/07/00	<i>Nyctalus/Eptesicus</i> agg.	-	SU7100	1000
26/07/09	<i>Nyctalus/Eptesicus</i> agg.	-	SU7106	1000
24/07/07	<i>Pipistrellus pipistrellus</i> sensu lato	Pipistrelle	SU7100	1000
02/07/10	<i>Pipistrellus pipistrellus</i> sensu lato	Pipistrelle	SU7106	1000
18/06/09	<i>Pipistrellus pipistrellus</i> sensu lato	Pipistrelle	SU7705	1000
28/07/11	<i>Pipistrellus pipistrellus</i> sensu stricto	Common pipistrelle	SU7100	1000
30/07/03	<i>Pipistrellus pipistrellus</i> sensu stricto	Common pipistrelle	SU7106	1000
28/07/11	<i>Pipistrellus pygmaeus</i>	Soprano pipistrelle	SU7100	1000
22/07/10	<i>Pipistrellus pygmaeus</i>	Soprano pipistrelle	SU7106	1000
17/09/86	<i>Plecotus</i> species	Long-eared bat species	SU788074	100

C.2 Status of species recorded on site

Common pipistrelles (*Pipistrellus pipistrellus*) were seen emerging from Buildings B & J. In addition, common pipistrelle, soprano pipistrelle (*Pipistrellus pygmaeus*) and noctule (*Nyctalus noctula*) were seen and heard on site.

Pipistrelles (*Pipistrellus pipistrellus* sensu lato, *Pipistrellus pipistrellus* sensu stricto and *Pipistrellus pygmaeus*) are the most common bats in the UK and are widespread across Hampshire. They are not listed on the IUCN Red List of threatened species. No records for the soprano pipistrelle (*Pipistrellus pygmaeus*) exist prior to 1998 because the common pipistrelle (*P. pipistrellus*) and soprano pipistrelle were considered to be the same species.

Noctule (*Nyctalus noctula*) bats are a relatively common species and are particularly widespread in wooded areas across England, as well as Hampshire, but populations have declined as a result of the loss of suitable feeding habitat due to modern intensive agricultural practices. They are listed on the IUCN Red List of threatened species. Although primarily tree dwellers, this species is known to occasionally roost in buildings.

A *Myotis* bat (*Myotis* species) was also heard on site. This is most likely to have been a Daubenton's bat as according to the National Biodiversity Network website, this species has been recorded from the area (and Hermitage Stream is to the west of the site). However, the stables would be more suitable as a roost for a Natterer's bat.

Daubenton's bat (*Myotis daubentonii*) is fairly widespread across England and Hampshire. Although they are on the IUCN Red List of threatened species, they seem to be increasing in parts of their range. Population levels are most affected by the existence of wetland and water ways and extension of their range may be a result of an increase in the number of artificial water bodies. They roost primarily in underground sites near water and are only occasionally found in stone buildings, rendering this species unlikely to be roosting in the buildings affected by the proposed works.

Natterer's bat (*Myotis nattereri*) is an uncommon but widespread bat that is recorded throughout Britain and Hampshire. Populations have declined as a result of the loss of suitable feeding habitat due to modern intensive agricultural practices and woodland clearance. They are listed on the IUCN Red List of threatened species. They have summer roosts in old stone buildings and large timber barns and tree-holes. Where Natterer's bats roost in large timber barns they are vulnerable to the effects of building works (such as barn conversions) and the use of toxic chemicals in remedial timber treatment.

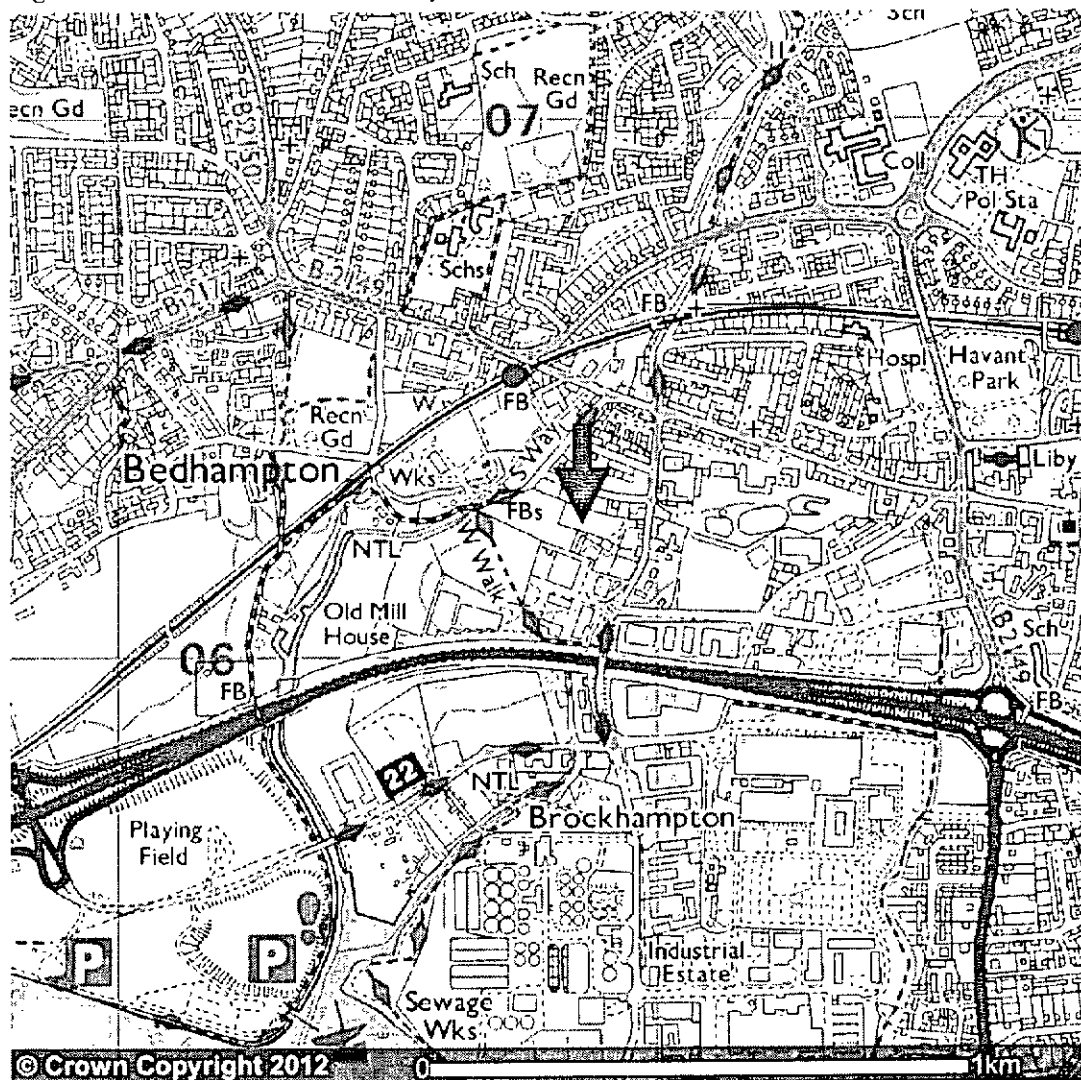
C.3 Objectives of the survey

The initial site assessment aimed to establish if the buildings were suitable for roosting bats and if the surrounding habitat was suitable for foraging and roosting. It also aimed to determine the current and past bat usage of the affected buildings, such as for maternity roosts or hibernation. This entailed internal and external inspections of the structures.

Dusk emergence surveys were carried out on the buildings to determine if bats were emerging from the buildings, and if so, what species were present. The conservation importance of each species status on site was assessed. This information will be used to impose suitable working practices, including timings, to minimise impact on bats during the development, and to provide appropriate and proportional compensatory roosts for bats during and after the development, as proposed in this Method Statement.

C.4 Scaled plan/ map of survey area

Figure C.4.1. Site location indicated by red arrow.



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Figure C.4.2. Aerial photographs showing the location of the site.

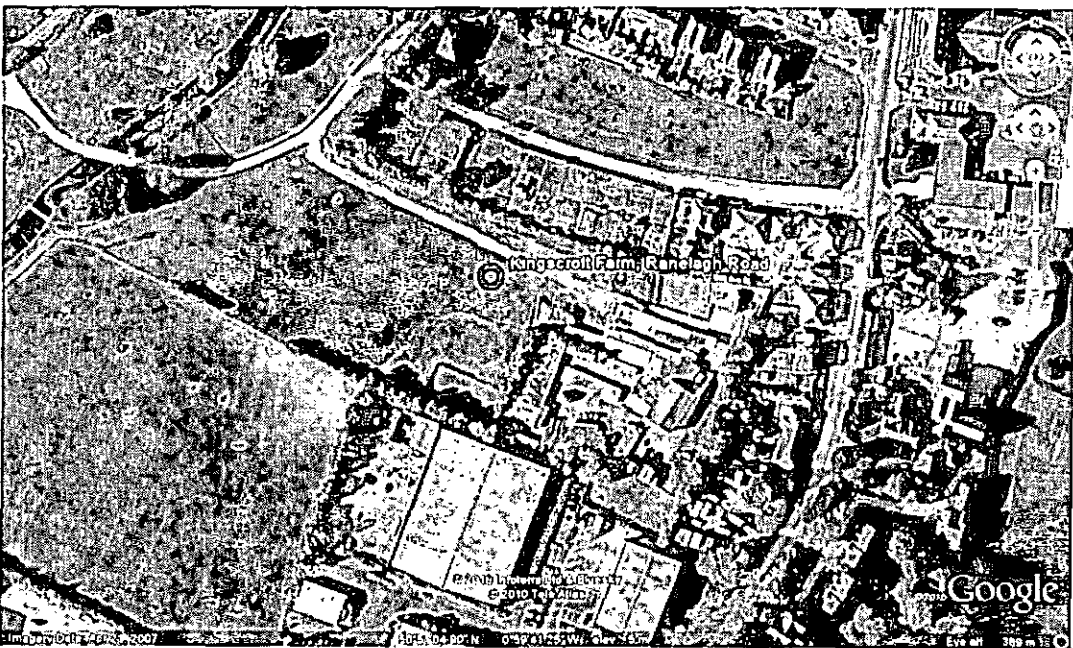
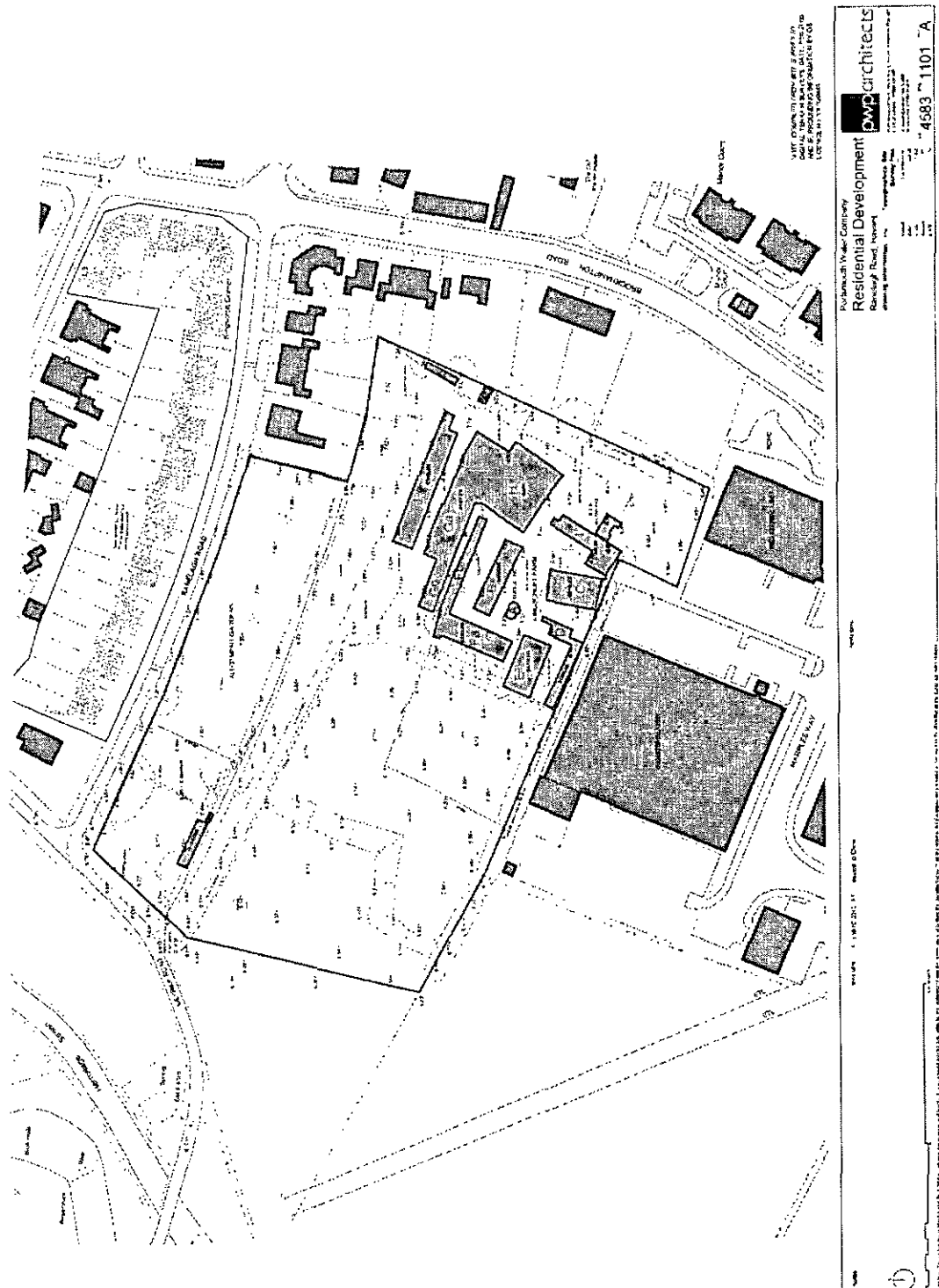


Figure C.4.3. Site plan showing the site boundary outlined in red.



C.5 *Site/ habitat description*

The site is a broadly rectangular plot consisting of the stables and horse paddocks of Kingscroft Farm and the former allotments on Ranelagh Road. It has housing to the north and east, and industrial units to the south. To the west is Meyrick Road, with fields and Hermitage Stream beyond. Further to the west lies a railway line. The site lies on the south-west edge of Havant, to the north of the A27. The surrounding area is principally urban and sub-urban residential housing and industrial units with a small area of farmland to the west and south-west.

The majority of the site is horse-grazed pasture which provides some suitable habitat for foraging bats. In addition, there is good quality foraging habitat along Hermitage Stream to the west of the site; a small pond immediately to the south-east of the site; and around a lake to the east. The area consists of a patch of farmland surrounded by urban and sub-urban residential housing and industrial units to the east and west. However, there are good links to habitat to the west, especially along the hedge dividing the farm and the former allotments, as well as along the stream and the railway further to the west. Bats follow linear landscape features such as lines of trees, hedges, buildings and waterways in order to commute from their roost sites to their feeding grounds. Likewise they use these features to navigate between feeding areas and alternative roosts.

C.6 *Field surveys*

C.6.1 *Dates, times and personnel*

An internal and external inspection of the buildings (Buildings A-L) was carried out during the daytime on the 9th September 2010 by licensed bat ecologist John Poland CEnv MIEEM CBiol MSB from Hampshire Ecological Services Ltd.

John Poland CEnv MIEEM CBiol MSB is a full member of the Institute of Ecology and Environmental Management (IEEM), a Chartered Environmentalist (CEnv) and a Chartered Biologist (CBiol) with 12 years experience in ecological consultancy and has held a Natural England licence allowing the disturbance and handling of bats for the purposes of survey in all counties of England since 2004 (current survey licence number 20121144).

The project was led by John Poland CEnv MIEEM CBiol MSB and Victoria Russell MIEEM who is also a full member of IEEM with over 13 years experience in ecological consultancy. Victoria also holds a Natural England licence allowing the disturbance and handling of bats for the purposes of survey in all counties of England (current survey licence number 20113626).

Subsequently, six bat emergence surveys were carried out on the 16th & 28th September 2010 and the 23rd, 24th, 25th & 30th August 2011, using a minimum of four ecologists (the buildings were too numerous to cover in one evening).

The emergence surveys were led by John Poland CEnv MIEEM CBiol MSB and Victoria Russell MIEEM. They were accompanied by Louise Fairless BSc (Hons) GradIIEEM who is experienced in carrying out bat surveys using detectors as well as undertaking roost surveys with licensed bat ecologists as part of her PhD research work; and Martyn Drabik-Hamshare BSc (Hons) GradIIEEM, Joseph Jenkins MSc GradIIEEM, Jade Revan BSc (Hons), Katie Senson BSc (Hons), Rebecca Spake BSc (Hons) and Peter Jones who are all trained in carrying out bat surveys using detectors.

Personnel carrying out the emergence surveys are given in *Table C.6.1.1.* below.

Table C.6.1.1. Personnel carrying out the bat emergence surveys.

Date	Personnel				
16/09/10	John Poland	Victoria Russell	Louise Fairless	Martyn Drabik-Hamshare	Peter Jones
28/09/10	Victoria Russell	Louise Fairless	Martyn Drabik-Hamshare	Peter Jones	
23/08/11	John Poland	Louise Fairless	Martyn Drabik-Hamshare	Joe Jenkins	Jade Revan
24/08/11	John Poland	Victoria Russell	Katie Senson	Joe Jenkins	
25/08/11	Victoria Russell	Louise Fairless	Martyn Drabik-Hamshare	Joe Jenkins	Rebecca Spake
30/08/11	Victoria Russell	Louise Fairless	Martyn Drabik-Hamshare	Joe Jenkins	

All staff adhere to IIEEM's *Code of Professional Conduct*.

This Method Statement was written by Victoria Russell MIEEM and reviewed by John Poland CEnv MIEEM CBiol MSB (who is the proposed Licensee Ecologist). John Poland has been responsible for 19 other bat EPS licences as the licensee ecologist in the past three years.

The surveys commenced at least fifteen minutes before sunset and continued for at least an hour and a half after sunset (long after bats would have exited). The weather was suitable conditions for bat emergence and foraging on all occasions. Details of the weather, air temperature and times are given in *Table C.7.2.1.*

C.6.2 Visual inspection

The buildings were subjected to a thorough inspection for evidence of bat roosts. Access and inspection equipment including a 3.8m surveyors ladder, high-quality 10x42 binoculars, angled mirror, 1,000,000 candlepower torches (Clulite CB2™) and a fibrescope (ProVision100™) were available as necessary.

The buildings were examined outside using the high-powered torch to illuminate all areas. It involved looking for bat droppings on the ground or adhering to walls and potential bat entry and exit points.

Signs of the principal species of bat that habitually roost and breed in buildings were searched for. These are pipistrelle species, long-eared bat species and serotine bats. Previous records show that all four of these bat species (long-eared bat, common pipistrelle, soprano pipistrelle and serotine) have been sighted within the 10km grid square in which the site lies, indicating that they might be roosting within the buildings.

In addition, details of the building's construction were also noted and these are summarised in *Section C.7.1*.

C.6.3 Emergence surveys

Surveyors were equipped with ultrasonic frequency-division and heterodyne bat detectors (BatBox Duet™) and observed the buildings for emerging bats. Bat detectors are used so that surveyors can identify most bat species in the field, using the heterodyne output in combination with bat shape, flight pattern and behaviour. In addition, solid-state recorders (Tascam® DR-07 and Roland™R-05) were employed to record bat calls for later sonogram analysis using BatSound™ (v4.0) computer software. Frequency-division (BatBox Duet™), whereby the ultrasound is divided by 10 into an audible range, has a considerable advantage over time-expansion for survey work as it allows recordings to be taken in real time. This ensures that all bat activity is recorded.

The surveyors were located with good views of potential bat access points identified during the initial site visit. The timing of the visits, from early evening until after dark, was aimed at detecting active bats in the vicinity. When it became too dark for visual observation, electronic bat detectors were used to listen for the ultrasonic sounds produced by bats either flying in the vicinity or emerging from within the buildings.

The surveyors recorded all bat activity encountered but particular attention was focussed on bats emerging from the buildings. The results were documented by noting the time, bat species and behaviour (*e.g.* commuting, foraging, social interaction *etc.*). Surveyors were in constant contact via *hand held radios so that information could be easily exchanged regarding bat emergences and activity.*

The buildings have good lines of sight for bat surveying, so it is unlikely that even quietly echolocating bats were missed.

C.6.4 Constraints

Evidence for some crevice-dwelling bats can be difficult to find and evidence for bats could exist hidden under roof panels and frames, therefore emergence surveys would have been necessary regardless. Emergence surveys covering all potential access points are considered reasonable survey effort for a summer roost licence application.

C.7 Survey results

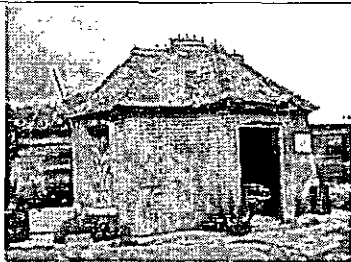
C.7.1 Visual inspection

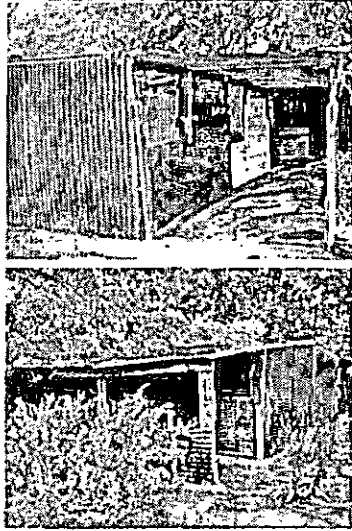
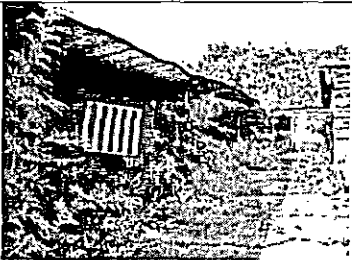
Building assessment and bat roost potential

The building construction details and bat roost potential are summarised in *Table C.7.1.1.* below.

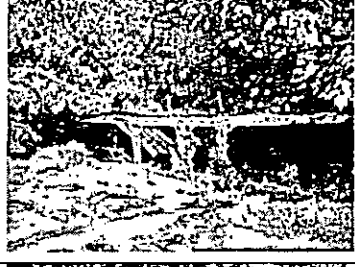
The floors of all the buildings were covered in debris making searching for bat droppings extremely difficult.

Table C.7.1.1. Summary of building construction details, the bat roost potential of the buildings and any evidence of bats observed.

Building	Photograph	Bat Roost Potential
A		A two-storey oval shaped brick outbuilding with an unlined pitched tile roof on a wooden frame. It has high bat roost potential .
B		A single-storey wooden stable with an unlined sloping roof of corrugated iron. It is double-skinned with wooden cladding on the external wall and bargeboards. It has moderate bat roost potential .

C		A single-storey wooden stable with an unlined sloping roof of corrugated iron. It is double-skinned with wooden cladding on the external wall and bargeboards. It has moderate bat roost potential.
D		A single-storey wooden stable with an unlined sloping roof of corrugated iron. It is double-skinned with wooden cladding on the external wall and bargeboards. It has moderate bat roost potential.
E		A single-storey wooden stable with an unlined sloping roof of corrugated iron. It is double-skinned with wooden cladding on the external wall and bargeboards. It has moderate bat roost potential.
Fa		A single-storey wooden stable with an unlined sloping roof of corrugated iron. It is single-skinned with wooden cladding on the external wall and bargeboards. It has moderate bat roost potential.

Fb		A single-storey wooden stable with an unlined sloping roof of corrugated iron. It is single-skinned with wooden cladding on the external wall and bargeboards. It has moderate bat roost potential .
Ga		A single-storey wooden stable with a pitched corrugated iron roof and a wooden ridge beam. It is double-skinned with wooden cladding on the external wall and bargeboards. It has high bat roost potential .
Gb		A single-storey corrugated iron stable with a shallowly pitched corrugated iron roof and a wooden ridge beam. It has low bat roost potential .
H		A large metal framed barn with no roof. It has some wooden cladding on the sides giving it low bat roost potential .

I		A single-storey wooden shed with an unlined sloping roof of corrugated iron. It has wooden cladding on the external wall. It has moderate bat roost potential .
J		A single-storey wooden stable with an unlined sloping roof of corrugated iron. It has wooden cladding on the external wall. It has moderate bat roost potential .
K		A single-storey wooden shed with an unlined sloping roof of corrugated iron. It has wooden cladding on the external wall. It has low bat roost potential .
L		A single-storey wooden shed with an unlined sloping roof of corrugated iron. It has wooden cladding on the external wall. It has low bat roost potential .

C 7.2 Emergence surveys

A single common pipistrelle (*Pipistrellus pipistrellus*) was observed emerging from Building B on the 16th September 2010 and a single common pipistrelle was observed emerging from Building J on the 30th August 2011.

In addition, bats were observed flying in the vicinity of the buildings and foraging around the buildings and over the horse pastures. Species recorded include common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*P. pygmaeus*), noctule (*Nyctalus noctula*) and a *Myotis* bat (*Myotis* species).

The data is tabulated in *Table C.7.2.1.* and the bat activity maps are shown in *Figures C.7.2.1. - C.7.2.9.*

Table C.7.2.1. Bat activity results (bats emerging are shown in **bold**).

Date	16/09/2010		
Temp	13°C		
Weather	Scattered clouds		
Ecologists	John Poland, Victoria Russell, Louise Fairless, Peter Jones, Martyn Drabik-Hamshare		
Observer	Time	Species	Observation
-	19:00	-	Ecologists commenced observations
-	19:16	-	Sunset
MDH	19:27	Common Pipistrelle	Commuting west
JP	19:30	Common Pipistrelle	Heard but not seen
MDH	19:32	Common Pipistrelle	Commuting west
MDH	19:33	Common Pipistrelle	Commuting north-west
MDH	19:36	Noctule	Seen but not heard. Commuting north-west high overhead
JP	19:37	Noctule	Commuting north-west high overhead
MDH	19:37	Pipistrelle sp.	Commuting west
JP	19:38	Noctule	Commuting west-northwest high overhead
MDH	19:38	Common Pipistrelle	Two bats foraging
PJ	19:39	Common Pipistrelle	Commuting south across barn
PJ	19:41	Common Pipistrelle	Seen but not heard. Commuting south-west
JP	19:41	Common Pipistrelle	Commuting
VR	19:41	Common Pipistrelle	Commuting west over stables
JP	19:42	Common Pipistrelle	Emerging from Building B (stables), commuting east
VR	19:42	Common Pipistrelle	Commuting north-east in open
LF	19:43	Common Pipistrelle	Heard but not seen
PJ	19:46	Common Pipistrelle	Commuting west
PJ	19:47	Common Pipistrelle	Heard but not seen
MDH	19:48	Pipistrelle sp.	Heard but not seen
VR	19:50	Common Pipistrelle	Commuting, foraging and feeding in front of stables, until 19:52
MDH	19:50	Common Pipistrelle	Commuting west
LF	19:51	Common Pipistrelle	Commuting west across yard
JP	19:52	Common Pipistrelle	Foraging
LF	19:53	Common Pipistrelle	Commuting west across yard
MDH	19:53	Common Pipistrelle	Commuting east
MDH	19:55	Common Pipistrelle	Commuting north-west

VR	19:56	Common Pipistrelle	Heard but not seen
JP	19:57	Common Pipistrelle	Heard but not seen
VR	19:57	Common Pipistrelle	Heard but not seen. Feeding
PJ	19:58	Common Pipistrelle	Heard but not seen
JP	19:58	Common Pipistrelle	Commuting west
LF	19:59	Pipistrelle sp.	Heard but not seen
PJ	20:02	Common Pipistrelle	Heard but not seen
LF	20:04	Pipistrelle sp.	Heard but not seen
JP	20:06	Common Pipistrelle	Commuting north
LF	20:06	Pipistrelle sp.	Heard but not seen
MDH	20:07	Common Pipistrelle	Heard but not seen
PJ	20:07	Common Pipistrelle	Heard but not seen
MDH	20:16	Common Pipistrelle	Heard but not seen
MDH	20:20	Noctule	Heard but not seen
MDH	20:23	Noctule	Heard but not seen
VR	20:25	Soprano Pipistrelle	Heard but not seen. Feeding with social calls
LF	20:25	Common Pipistrelle	Heard but not seen
JP	20:26	Common Pipistrelle	Heard but not seen. Social calls
VR	20:26	Soprano Pipistrelle	Heard but not seen. Foraging and feeding
JP	20:27	Common Pipistrelle	Two bats. Heard but not seen. Social calls
LF	20:28	Pipistrelle sp.	Heard but not seen
JP	20:28	Soprano Pipistrelle	Heard but not seen. Social calls
MDH	20:29	Common Pipistrelle	Heard but not seen
PJ	20:30	Common Pipistrelle	Heard but not seen
LF	20:30	Pipistrelle sp.	Heard but not seen
VR	20:31	Noctule	Heard but not seen
VR	20:32	Common Pipistrelle	Heard but not seen
PJ	20:33	Common Pipistrelle	Heard but not seen
LF	20:33	<i>Myotis</i> sp.	Heard but not seen
LF	20:33	Soprano Pipistrelle	Heard but not seen
JP	20:33	<i>Myotis</i> sp.	Heard but not seen
MDH	20:33	Soprano Pipistrelle	Heard but not seen
MDH	20:34	Common Pipistrelle	Heard but not seen
PJ	20:35	Common Pipistrelle	Heard but not seen
JP	20:36	Common Pipistrelle	Heard but not seen
LF	20:36	Pipistrelle sp.	Heard but not seen
VR	20:36	<i>Myotis</i> sp.	Heard but not seen
PJ	20:37	Common Pipistrelle	Heard but not seen

PJ	20:38	Common Pipistrelle	Heard but not seen
JP	20:38	Soprano Pipistrelle	Heard but not seen
JP	20:41	Pipistrelle sp.	Heard but not seen. Social calls
PJ	20:42	Pipistrelle sp.	Heard but not seen
PJ	20:46	Pipistrelle sp.	Heard but not seen
PJ	20:50	Pipistrelle sp.	Heard but not seen
-	20:50	-	Ceased observations
Date	28/09/2010		
Temp	15°C		
Weather	Scattered clouds		
Ecologists	Victoria Russell, Peter Jones, Louise Fairless, Martyn Drabik-Hamshare		
Observer	Time	Species	Observation
-	18:35	-	Ecologists commenced observations
-	18:49	-	Sunset
LF	18:54	Pipistrelle sp.	Heard but not seen
MDH	18:58	Pipistrelle sp.	Seen but not heard. Commuting
VR	19:01	Pipistrelle sp.	Heard but not seen
MDH	19:04	Common Pipistrelle	Two bats commuting west
VR	19:05	Common Pipistrelle	Two bats commuting west. One bat commuting east
VR	19:13	Pipistrelle sp.	Heard but not seen
PJ	19:18	Common Pipistrelle	Heard but not seen
PJ	19:22	Common Pipistrelle	Commuting past Building H (roofless barn)
VR	19:22	Common Pipistrelle	Heard but not seen
MDH	19:33	Common Pipistrelle	Commuting
PJ	19:35	Common Pipistrelle	Commuting
LF	19:36	Pipistrelle sp.	Heard but not seen
PJ	19:39	Common Pipistrelle	Commuting past Building H (roofless barn)
MDH	19:45	Common Pipistrelle	Heard but not seen
MDH	19:45	Common Pipistrelle	Heard but not seen
LF	19:47	Common Pipistrelle	Heard but not seen
VR	19:47	Common Pipistrelle	Heard but not seen. Feeding with social calls
MDH	19:49	Common Pipistrelle	Heard but not seen
MDH	19:50	Pipistrelle sp.	Heard but not seen. Foraging and feeding
MDH	19:51	Common Pipistrelle	Commuting
VR	19:51	Common Pipistrelle	Heard but not seen. Foraging
PJ	19:53	Common Pipistrelle	Heard but not seen
LF	19:55	Common Pipistrelle	Heard but not seen
VR	19:55	Common Pipistrelle	Heard but not seen. Foraging

PJ	19:58	Common Pipistrelle	Heard but not seen
MDH	19:59	Pipistrelle sp.	Heard but not seen
PJ	20:07	Common Pipistrelle	Heard but not seen
PJ	20:11	Common Pipistrelle	Heard but not seen
PJ	20:15	Common Pipistrelle	Foraging around Building H (roofless barn)
PJ	20:21	Common Pipistrelle	Heard but not seen
PJ	20:26	Common Pipistrelle	Heard but not seen
-	20:26	-	Ceased observations
Date	23/08/2011		
Temp	14°C		
Weather	Scattered clouds		
Ecologists	John Poland, Louise Fairless, Martyn Drabik-Hamshare, Joseph Jenkins, Jade Revan		
Observer	Time	Species	Observation
-	19:56	-	Ecologists commenced observations
-	20:11	-	Sunset
LF	20:06	Pipistrelle sp.	Commuting west over building D
MDH	20:07	Pipistrelle sp.	Heard but not seen
JJ	20:12	Pipistrelle sp.	Seen but not heard, commuting north-west over building I
LF	20:14	Pipistrelle sp.	Commuting west over building D
JJ	20:17	Pipistrelle sp.	Seen but not heard, commuting north-west over building I
LF	20:18	Pipistrelle sp.	Commuting west over building D
LF	20:22	Pipistrelle sp.	Commuting west over building D
LF	20:23	Soprano pipistrelle	Foraging between buildings D and E
JJ	20:25	Pipistrelle sp.	Seen but not heard, commuting north-west over building I
LF	20:26	Soprano pipistrelle	Foraging above building D, travelling south
JJ	20:32	Soprano pipistrelle	Commuting south-east, to the south of buildings B and H
LF	20:34	Soprano pipistrelle	Foraging above building D, travelling north
MDH	20:34	Soprano pipistrelle	Commuting north-east towards east of building B
LF	20:38	Soprano pipistrelle	Foraging above building E, travelling east
JJ	20:38	Soprano pipistrelle	Commuting south-east, to the south of buildings B and H
MDH	20:39	Soprano pipistrelle	Commuting north above building B, and then south-east

LF	20:40	Soprano pipistrelle	Foraging above building D, travelling north
JJ	20:41	Soprano pipistrelle	Foraging, travelling south-east, to the south of buildings B and H
MDH	20:41	Soprano pipistrelle	Commuting north-east towards east of building B
JJ	20:42	Soprano pipistrelle	Seen but not heard, foraging above the north of building I
LF	20:43	Soprano pipistrelle	Foraging above building D, travelling south
JP	20:49	Common pipistrelle	Heard but not seen, feeding buzzes
MDH	20:50	Common pipistrelle	Heard but not seen
LF	20:51	Pipistrelle sp.	Heard but not seen
JP	20:53	Common pipistrelle	Commuting west between buildings B and Fb
MDH	20:53	Common pipistrelle	Heard but not seen
LF	20:54	Common pipistrelle	Heard but not seen
MDH	20:58	Soprano pipistrelle	Commuting west between buildings A and B, and then east
LF	20:59	Pipistrelle sp.	Heard but not seen, feeding buzzes
JJ	20:59	Common pipistrelle	Heard but not seen, feeding buzzes and social calls
LF	21:05	Soprano pipistrelle	Heard but not seen
LF	21:06	Noctule	Heard but not seen
JP	21:07	Pipistrelle sp.	Heard but not seen
JJ	21:08	Common pipistrelle	Heard but not seen
JJ	21:09	Pipistrelle sp.	Heard but not seen
JJ	21:09	Soprano pipistrelle	Heard but not seen
LF	21:10	Pipistrelle sp.	Heard but not seen
LF	21:12	Noctule	Heard but not seen
LF	21:13	Pipistrelle sp.	Heard but not seen
MDH	21:14	Common pipistrelle	Heard but not seen
LF	21:19	Soprano pipistrelle	Heard but not seen
LF	21:20	Soprano pipistrelle	Heard but not seen
JJ	21:21	Pipistrelle sp.	Heard but not seen, feeding buzzes
MDH	21:21	Soprano pipistrelle	Heard but not seen
LF	21:22	Soprano pipistrelle	Heard but not seen
MDH	21:23	Soprano pipistrelle	Heard but not seen
LF	21:24	Soprano pipistrelle	Heard but not seen
JJ	21:25	Soprano pipistrelle	Heard but not seen, feeding buzzes
MDH	21:25	Soprano pipistrelle	Heard but not seen, feeding buzzes
LF	21:26	Common pipistrelle	Heard but not seen
JR	21:26	Pipistrelle sp.	Heard but not seen

JP	21:27	Pipistrelle sp.	Heard but not seen
JJ	21:27	Common pipistrelle	Heard but not seen feeding buzzes
LF	21:28	Pipistrelle sp.	Heard but not seen
MDH	21:28	Common pipistrelle	Commuting south-east from between buildings A and B
JJ	21:29	Soprano pipistrelle	Heard but not seen, feeding buzzes
MDH	21:29	Common pipistrelle	Heard but not seen
JJ	21:34	Pipistrelle sp.	Heard but not seen feeding buzzes
LF	21:35	Common pipistrelle	Foraging above building D, travelling south
JP	21:35	Pipistrelle sp.	Heard but not seen
JJ	21:35	Common pipistrelle	Heard but not seen, feeding buzzes
MDH	21:35	Pipistrelle sp.	Heard but not seen
LF	21:36	Two Pipistrelle sp.	Foraging, travelling west
JJ	21:36	Common pipistrelle	Heard feeding but not seen
MDH	21:36	Common pipistrelle	Heard but not seen
LF	21:37	Pipistrelle sp.	Foraging, travelling west
MDH	21:37	Pipistrelle sp.	Heard but not seen
JP	21:38	Common pipistrelle	Heard but not seen, feeding buzzes
JP	21:38	Soprano pipistrelle	Heard but not seen, feeding buzzes
MDH	21:39	Common pipistrelle	Heard but not seen
LF	21:40	Soprano pipistrelle	Heard but not seen
LF	21:40	Common pipistrelle	Heard but not seen
JJ	21:40	Common pipistrelle	Heard but not seen, feeding buzzes
JJ	21:40	Soprano pipistrelle	Heard but not seen, feeding buzzes
MDH	21:40	Common pipistrelle	Commuting south-east from between buildings A and B
JR	21:41	Pipistrelle sp.	Heard but not seen
-	21:41	-	Ceased observations
Date	24/08/2011		
Temp	15°C		
Weather	Scattered clouds		
Ecologists	John Poland, Victoria Russell, Joseph Jenkins, Katie Stenson		
Observer	Time	Species	Observation
-	19:54	-	Ecologists commenced observations
VR	20:05	Pipistrelle sp.	Commuting west past ash tree
KS	20:07	Pipistrelle sp.	Heard but not seen
-	20:09	-	Sunset
VR	20:14	Pipistrelle sp.	Heard but not seen

KS	20:15	Two common pipistrelles	Commuting north-east over building E
VR	20:17	Pipistrelle sp.	Heard but not seen
KS	20:18	Common pipistrelle	Commuting north-east over building E
JP	20:20	Noctule	Heard but not seen
VR	20:20	Noctule	Seen but not heard over horse pasture
VR	20:20	Common pipistrelle	Heard but not seen
KS	20:23	Common pipistrelle	Commuting north-east over building E
JP	20:25	Noctule	Heard but not seen
VR	20:25	Common pipistrelle	Commuting west past ash tree
VR	20:25	Noctule	Heard but not seen
KS	20:25	Noctule	Heard but not seen
VR	20:26	Common pipistrelle	Heard but not seen
KS	20:26	Common pipistrelle	Commuting north and then south-west between buildings D and E
VR	20:27	Common pipistrelle	Commuting north-west past building A
KS	20:27	Common pipistrelle	Commuting north-east over building E
VR	20:28	Noctule	Heard but not seen
VR	20:29	Two common pipistrelles	Commuting north over building C and then west
KS	20:29	Common pipistrelle	Heard but not seen
KS	20:30	Common pipistrelle	Commuting north-east over building E
JP	20:34	Noctule	Heard but not seen
KS	20:34	Noctule	Heard but not seen
VR	20:35	Common pipistrelle	Foraging south-west past building I
VR	20:35	Noctule	Heard but not seen
KS	20:35	Pipistrelle sp.	Commuting north and then south-west over building E
VR	20:37	Common pipistrelle	Foraging south-east past building B
KS	20:37	Common pipistrelle	Commuting east towards building B
VR	20:40	Pipistrelle sp.	Heard but not seen
KS	20:41	Common pipistrelle	Heard but not seen
KS	20:42	Common pipistrelle	Commuting south-east towards building C
KS	20:44	Common pipistrelle	Commuting south-east towards building C
JJ	20:45	Soprano pipistrelle	Foraging to the west of building Fa
JP	20:45	Common pipistrelle	Heard but not seen
VR	20:45	Common pipistrelle	Heard but not seen
JJ	20:47	Pipistrelle sp.	Heard but not seen, feeding buzzes
KS	20:47	Pipistrelle sp.	Commuting south-east over buildings E and D

JP	20:50	Common pipistrelle	Heard but not seen
JJ	20:51	Common pipistrelle	Heard but not seen, feeding buzzes
KS	20:55	Common pipistrelle	Heard but not seen
JJ	20:56	Common pipistrelle	Heard but not seen, feeding buzzes
JP	20:56	Common pipistrelle	Heard but not seen
VR	20:56	Common pipistrelle	Heard but not seen
VR	20:58	Common pipistrelle	Heard but not seen, feeding buzzes
KS	20:58	Common pipistrelle	Heard but not seen
KS	20:58	Common pipistrelle	Heard but not seen
KS	20:59	Common pipistrelle	Heard but not seen
KS	21:00	Common pipistrelle	Heard but not seen
KS	21:01	Pipistrelle sp.	Heard but not seen
JJ	21:02	Common pipistrelle	Heard but not seen, feeding buzzes
JJ	21:07	Soprano pipistrelle	Heard but not seen, feeding buzzes
VR	21:09	Common pipistrelle	Foraging and feeding with social calls, travelling south west
KS	21:09	Common pipistrelle	Commuting south over buildings B and C
KS	21:09	Common pipistrelle	Heard but not seen
VR	21:10	Common pipistrelle	Heard but not seen
JP	21:13	Pipistrelle sp.	Heard but not seen
KS	21:13	Common pipistrelle	Heard but not seen
JJ	21:14	Soprano pipistrelle	Heard but not seen, feeding buzzes
VR	21:14	Soprano pipistrelle	Heard but not seen
KS	21:14	Pipistrelle sp.	Heard but not seen
VR	21:15	Soprano pipistrelle	Heard but not seen
KS	21:15	Common pipistrelle	Heard but not seen
JJ	21:19	Pipistrelle sp.	Heard but not seen, feeding buzzes
KS	21:19	Pipistrelle sp.	Heard but not seen
JP	21:20	Common pipistrelle	Heard but not seen
VR	21:20	Pipistrelle sp.	Heard but not seen
KS	21:20	Soprano pipistrelle	Heard but not seen
KS	21:22	Common pipistrelle	Heard but not seen
JJ	21:25	Common pipistrelle	Heard but not seen, feeding buzzes
KS	21:25	Common pipistrelle	Commuting and social calling, travelling east over buildings D and C.
VR	21:26	Common pipistrelle	Heard but not seen, social calling
JJ	21:27	Common pipistrelle	Heard but not seen, feeding buzzes
KS	21:28	Common pipistrelle	Heard but not seen

JJ	21:29	Soprano pipistrelle	Heard but not seen, feeding buzzes
KS	21:30	Pipistrelle sp.	Heard but not seen
JJ	21:31	Common pipistrelle	Heard but not seen, feeding buzzes
VR	21:31	Common pipistrelle	Heard but not seen
KS	21:31	Common pipistrelle	Heard but not seen
VR	21:32	Pipistrelle sp.	Heard but not seen
VR	21:32	Common pipistrelle	Heard but not seen
KS	21:32	Common pipistrelle	Heard but not seen
KS	21:33	Pipistrelle sp.	Heard but not seen
VR	21:34	Soprano pipistrelle	Heard but not seen
KS	21:35	Common pipistrelle	Heard but not seen
KS	21:37	Common pipistrelle	Heard but not seen
-	21:39	-	Ecologists ceased observations
Date	25/08/2011		
Temp	15°C		
Weather	Partly cloudy		
Ecologists	Victoria Russell, Louise Fairless, Martyn Drabik-Hamshare, Joseph Jenkins, Rebecca Spake		
Observer	Time	Species	Observation
-	19:51	-	Ecologists commenced observations
-	20:06	-	Sunset
JJ	20:05	Pipistrelle sp.	Heard but not seen
LF	20:06	Soprano pipistrelle	Commuting south-west from building H. Believed to have emerged from nearby due to timing
RS	20:08	Soprano pipistrelle	Heard but not seen
MDH	20:08	Soprano pipistrelle	Commuting west over building C
VR	20:09	Soprano pipistrelle	Commuting south-west from building H
JJ	20:11	Pipistrelle sp.	Heard but not seen
LF	20:11	Pipistrelle sp.	Heard but not seen
LF	20:13	Soprano pipistrelle	Heard but not seen
VR	20:13	Soprano pipistrelle	Heard but not seen, social calls
VR	20:14	Soprano pipistrelle	Commuting west over building I
JJ	20:16	Soprano pipistrelle	Heard but not seen
LF	20:16	Pipistrelle sp.	Heard but not seen
RS	20:16	Soprano pipistrelle	Heard but not seen
MDH	20:17	Soprano pipistrelle	Commuting south-east over building I
VR	20:17	Soprano pipistrelle	Commuting east to the south of building H
JJ	20:18	Noctule	Heard but not seen

LF	20:19	Noctule	Heard but not seen
RS	20:19	Noctule	Heard but not seen
MDH	20:19	Noctule	Seen but not heard, commuting south
VR	20:19	Noctule	Foraging to the east of building I and south of building F
LF	20:20	Pipistrelle sp.	Heard but not seen
LF	20:22	Pipistrelle sp.	Heard but not seen
VR	20:23	Soprano pipistrelle	Heard but not seen
VR	20:25	Soprano pipistrelle	Heard but not seen
LF	20:26	Noctule	Heard but not seen
VR	20:26	Noctule	Heard but not seen
JJ	20:29	Soprano pipistrelle	Heard but not seen
JJ	20:29	Common pipistrelle	Heard but not seen
LF	20:29	Pipistrelle sp.	Heard but not seen
RS	20:29	<i>Soprano pipistrelle</i>	Heard but not seen
LF	20:30	Soprano pipistrelle	Commuting south through building C
MDH	20:30	Soprano pipistrelle	Commuting between buildings I and C
MDH	20:30	<i>Common pipistrelle</i>	<i>Commuting east over south side of building E</i>
VR	20:30	Common pipistrelle	Foraging to the east of building I
LF	20:31	Pipistrelle sp.	Heard but not seen
JJ	20:33	Pipistrelle sp.	Heard but not seen
RS	20:33	Pipistrelle sp.	Heard but not seen
MDH	20:34	Pipistrelle sp.	Heard but not seen
LF	20:35	Soprano pipistrelle	Heard but not seen
LF	20:37	Soprano pipistrelle	Flying inside building C
RS	20:37	Pipistrelle sp.	Heard but not seen
JJ	20:38	Common pipistrelle	Heard but not seen
MDH	20:38	Pipistrelle sp.	Heard but not seen
VR	20:38	Pipistrelle sp.	Foraging to the east of building I
JJ	20:41	Pipistrelle sp.	Heard but not seen
RS	20:41	Soprano pipistrelle	Heard but not seen
MDH	20:41	Soprano pipistrelle	Foraging over building I
JJ	20:42	Soprano pipistrelle	Heard but not seen
VR	20:43	<i>Soprano pipistrelle</i>	Foraging to the south of building H
JJ	20:44	Pipistrelle sp.	Heard but not seen
MDH	20:45	Soprano pipistrelle	Foraging over building I
VR	20:46	Common pipistrelle	Heard feeding but not seen until 20:58
LF	20:47	Common pipistrelle	Heard but not seen

RS	20:47	Soprano pipistrelle	Heard but not seen
MDH	20:47	Soprano pipistrelle	Commuting east from trees between buildings I and C
VR	20:55	Soprano pipistrelle	Heard but not seen
LF	20:58	Soprano pipistrelle	Heard but not seen
VR	21:01	Common pipistrelle	Heard but not seen
JJ	21:03	Pipistrelle sp.	Heard but not seen
LF	21:03	Pipistrelle sp.	Heard but not seen
VR	21:03	Noctule	Heard but not seen
RS	21:04	Soprano pipistrelle	Heard but not seen
MDH	21:04	Soprano pipistrelle	Heard but not seen
LF	21:05	Pipistrelle sp.	Heard but not seen
VR	21:05	Common pipistrelle	Heard but not seen, social calls
LF	21:06	Common pipistrelle	Heard but not seen
VR	21:06	Soprano pipistrelle	Heard but not seen, social calls
LF	21:07	Pipistrelle sp.	Commuting north through building C
MDH	21:07	Pipistrelle sp.	Heard but not seen
RS	21:08	Soprano pipistrelle	Heard but not seen
MDH	21:09	Common pipistrelle	Heard but not seen
RS	21:11	Soprano pipistrelle	Heard but not seen
MDH	21:11	Soprano pipistrelle	Heard but not seen
LF	21:12	Pipistrelle sp.	Heard but not seen
VR	21:12	Common pipistrelle	Heard but not seen, social calls
LF	21:13	Pipistrelle sp.	Heard but not seen
RS	21:13	Pipistrelle sp.	Heard but not seen
JJ	21:14	Soprano pipistrelle	Heard but not seen
MDH	21:14	Pipistrelle sp.	Heard but not seen
VR	21:14	Soprano pipistrelle	Heard but not seen
RS	21:15	Soprano pipistrelle	Heard but not seen
RS	21:15	Soprano pipistrelle	Heard but not seen
MDH	21:15	Soprano pipistrelle	Heard but not seen
LF	21:16	Soprano pipistrelle	Heard but not seen
RS	21:16	Pipistrelle sp.	Heard but not seen
MDH	21:16	Soprano pipistrelle	Heard but not seen
VR	21:16	Soprano pipistrelle	Heard but not seen
LF	21:19	Pipistrelle sp.	Heard but not seen
JJ	21:20	Soprano pipistrelle	Heard but not seen
MDH	21:20	Pipistrelle sp.	Heard but not seen
LF	21:21	Common pipistrelle	Heard but not seen

LF	21:21	Soprano pipistrelle	Heard but not seen
RS	21:22	Soprano pipistrelle	Heard but not seen
MDH	21:22	Soprano pipistrelle	Heard but not seen
MDH	21:22	Soprano pipistrelle	Commuting south-east over building I
VR	21:22	Soprano pipistrelle	Heard but not seen, social calls
JJ	21:23	Pipistrelle sp.	Heard but not seen
RS	21:23	Pipistrelle sp.	Heard but not seen
MDH	21:23	Pipistrelle sp.	Heard but not seen
VR	21:27	Common pipistrelle	Heard but not seen, social calls
JJ	21:28	Common pipistrelle	Heard but not seen
LF	21:28	Pipistrelle sp.	Heard but not seen
RS	21:28	Common pipistrelle	Heard but not seen
MDH	21:28	Two common pipistrelles	Commuting north-east towards building H
JJ	21:29	Soprano pipistrelle	Heard but not seen
MDH	21:29	Soprano pipistrelle	Heard but not seen
LF	21:31	Soprano pipistrelle	Heard but not seen
MDH	21:32	Soprano pipistrelle	Heard but not seen
VR	21:32	Soprano pipistrelle	Heard but not seen
JJ	21:35	Pipistrelle sp.	Heard but not seen
-	21:36	-	Ecologists ceased observations
Date	30/08/2011		
Temp	14°C		
Weather	Partly cloudy		
Ecologists	Victoria Russell, Louise Fairless, Martyn Drabik-Hamshare, Joseph Jenkins		
Observer	Time	Species	Observation
-	19:41	-	Ecologists commenced observations
-	19:56	-	Sunset
LF	19:46	Noctule	Commuting west high above the site
JJ	20:00	Noctule	Heard but not seen
MDH	20:00	Noctule	Heard but not seen
LF	20:01	Noctule	Commuting west high above the site
VR	20:01	Noctule	Heard but not seen
MDH	20:01	Noctule	Heard but not seen
LF	20:06	Pipistrelle sp.	Commuting south over buildings J and Ga
LF	20:06	Noctule	Commuting west high above the site
VR	20:06	Noctule	Heard but not seen
JJ	20:06	Noctule	Heard but not seen

MDH	20:06	Pipistrelle sp.	Commuting south over building J
MDH	20:07	Noctule	Commuting west high above the site
MDH	20:07	Pipistrelle sp.	Commuting south-east to the east of building J
LF	20:08	Pipistrelle sp.	Heard but not seen
JJ	20:08	Pipistrelle sp.	Heard but not seen
MDH	20:09	Pipistrelle sp.	Commuting west and then north above building J
MDH	20:15	Pipistrelle sp.	Heard but not seen
LF	20:16	Noctule	Commuting west high above the site
JJ	20:16	Noctule	Heard but not seen
VR	20:17	Noctule	Heard but not seen
MDH	20:17	Noctule	Commuting west high above the site
MDH	20:17	Common pipistrelle	Commuting north to the east of building J
VR	20:19	Common pipistrelle	Emerging from south-west corner of building J
JJ	20:19	Common pipistrelle	Foraging to the west of building A
JJ	20:22	Soprano pipistrelle	Heard but not seen
JJ	20:25	Pipistrelle sp.	Heard but not seen
LF	20:29	Common pipistrelle	Heard but not seen
MDH	20:30	Soprano pipistrelle	Heard but not seen, feeding buzzes
VR	20:33	Common pipistrelle	Heard but not seen
JJ	20:33	Common pipistrelle	Heard but not seen, feeding buzzes
JJ	20:39	Common pipistrelle	Heard but not seen, feeding buzzes
JJ	20:40	Common pipistrelle	Heard but not seen, feeding buzzes
LF	20:45	Pipistrelle sp.	Heard but not seen
VR	20:45	Soprano pipistrelle	Heard but not seen
JJ	20:46	Pipistrelle sp.	Heard but not seen, feeding buzzes
MDH	20:46	Soprano pipistrelle	Foraging to the east of building J, travelling north
JJ	20:47	Common pipistrelle	Heard but not seen, feeding buzzes
VR	20:48	Soprano pipistrelle	Heard but not seen
MDH	20:48	Pipistrelle sp.	Heard but not seen
JJ	20:50	Common pipistrelle	Heard but not seen, feeding buzzes
MDH	20:50	Pipistrelle sp.	Heard but not seen
VR	20:51	Common pipistrelle	Heard but not seen
LF	20:52	Common pipistrelle	Heard but not seen
MDH	20:52	Common pipistrelle	Heard but not seen
JJ	20:53	Pipistrelle sp.	Heard but not seen, feeding buzzes
JJ	20:54	Common pipistrelle	Heard but not seen, social calls
MDH	20:55	Soprano pipistrelle	Commuting east to the north of building J

LF	20:56	Pipistrelle sp.	Heard but not seen
MDH	20:57	Common pipistrelle	Heard but not seen
JJ	20:58	Common pipistrelle	Heard but not seen, feeding buzzes
MDH	20:59	Common pipistrelle	Heard but not seen
LF	21:00	Pipistrelle sp.	Heard but not seen, social calls
MDH	21:00	Common pipistrelle	Heard but not seen
MDH	21:03	Pipistrelle sp.	Heard but not seen
JJ	21:05	Pipistrelle sp.	Heard but not seen, feeding buzzes
JJ	21:06	Common pipistrelle	Foraging and social calling to the west of building A
LF	21:08	Pipistrelle sp.	Foraging east between buildings Ga and J
VR	21:09	Soprano pipistrelle	Heard but not seen
MDH	21:09	Common pipistrelle	Heard but not seen
JJ	21:10	Soprano pipistrelle	Heard but not seen, feeding buzzes
LF	21:11	Pipistrelle sp.	Foraging south over buildings J and Ga
JJ	21:11	Common pipistrelle	Heard but not seen, feeding buzzes
MDH	21:11	Pipistrelle sp.	Heard but not seen
LF	21:12	Common pipistrelle	Heard but not seen
JJ	21:12	Common pipistrelle	Heard but not seen, feeding buzzes
VR	21:13	Common pipistrelle	Heard but not seen, social calls
MDH	21:13	Pipistrelle sp.	Heard but not seen
LF	21:14	Common pipistrelle	Heard but not seen, social calls
JJ	21:14	Common pipistrelle	Heard but not seen, feeding buzzes and social calls
JJ	21:15	Common pipistrelle	Foraging and social calling travelling south-east between buildings A and B
MDH	21:15	Soprano pipistrelle	Heard but not seen
MDH	21:15	Soprano pipistrelle	Heard but not seen
LF	21:16	Common pipistrelle	Heard but not seen
JJ	21:17	Common pipistrelle	Heard but not seen, feeding buzzes
MDH	21:17	Common pipistrelle	Heard but not seen
MDH	21:17	Common pipistrelle	Heard but not seen
JJ	21:18	Common pipistrelle	Heard but not seen, feeding buzzes
MDH	21:18	Common pipistrelle	Foraging to the east of building J
LF	21:20	Common pipistrelle	Heard but not seen, social calls
MDH	21:20	Common pipistrelle	Heard but not seen
MDH	21:21	Common pipistrelle	Heard but not seen
LF	21:23	Common pipistrelle	Heard but not seen, social calls
MDH	21:24	Common pipistrelle	Heard but not seen
LF	21:25	Common pipistrelle	Heard but not seen

JJ	21:25	Common pipistrelle	Foraging and social calling to the west of building A
MDH	21:25	Pipistrelle sp.	Heard but not seen
LF	21:26	Common pipistrelle	Heard but not seen, social calls
JJ	21:26	Common pipistrelle	Heard but not seen
MDH	21:26	Common pipistrelle	Heard but not seen, social calls
-	21:26	-	Ecologists ceased observations

Figure C.7.2.1. Plan showing bat activity, including emerging bat (red line) and foraging and commuting bats (solid blue lines – approximate due to erratic flight paths), for the emergence survey carried out on the 16th September 2010. Arrows show direction of flight (where known).

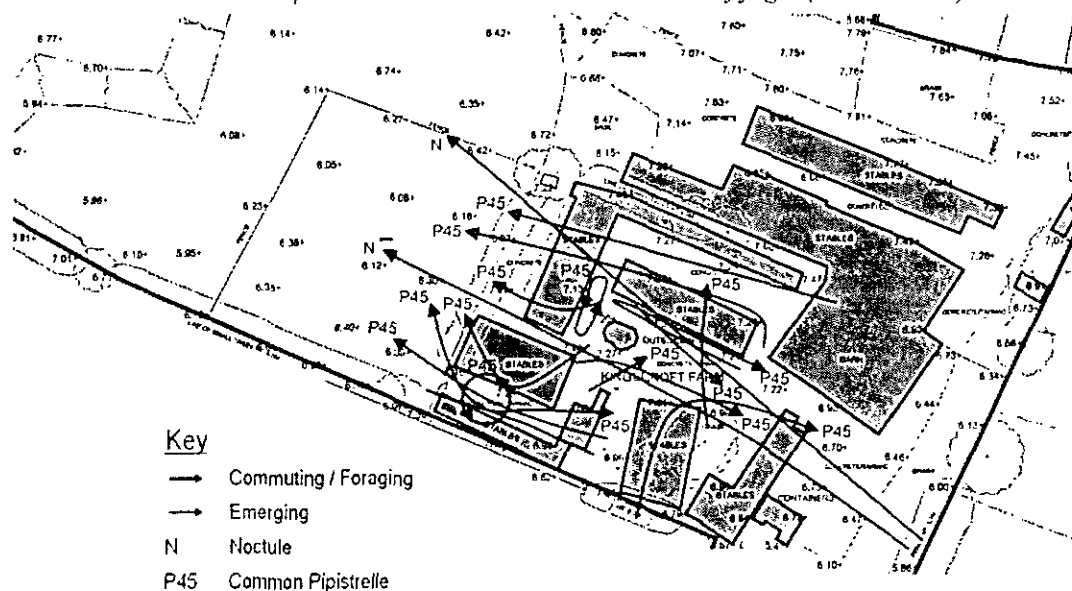


Figure C.7.2.2. Plan showing bat activity, including foraging and commuting bats (solid blue lines – approximate due to erratic flight paths), for the emergence survey carried out on the 28th September 2010. Arrows show direction of flight (where known).

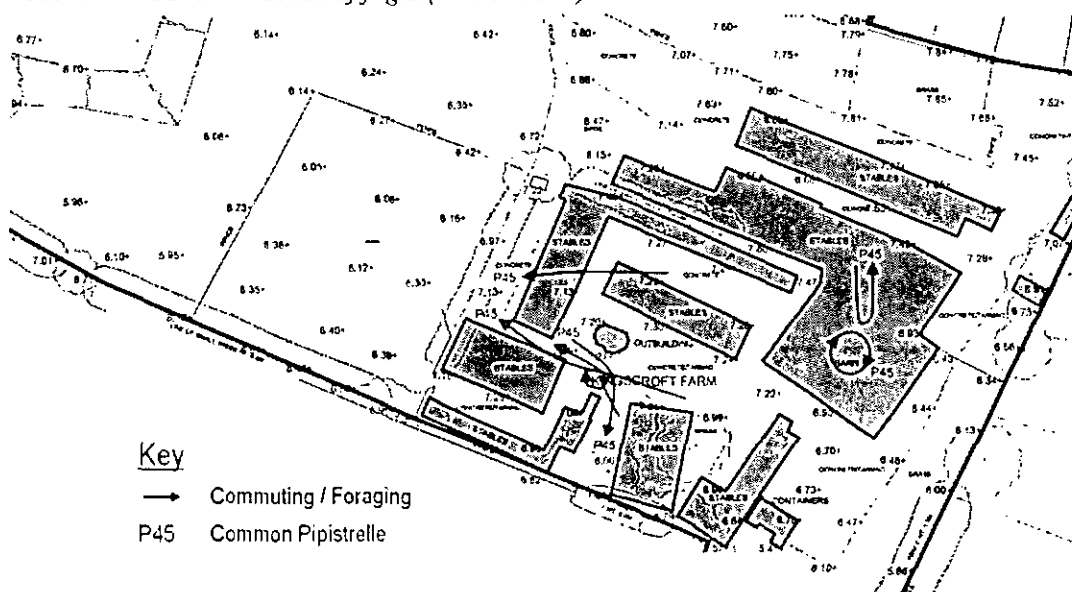


Figure C.7.2.3. Plan showing bat activity, including foraging and commuting bats (solid blue lines – approximate due to erratic flight paths), for the emergence survey carried out on the 23rd August 2011. Arrows show direction of flight (where known).

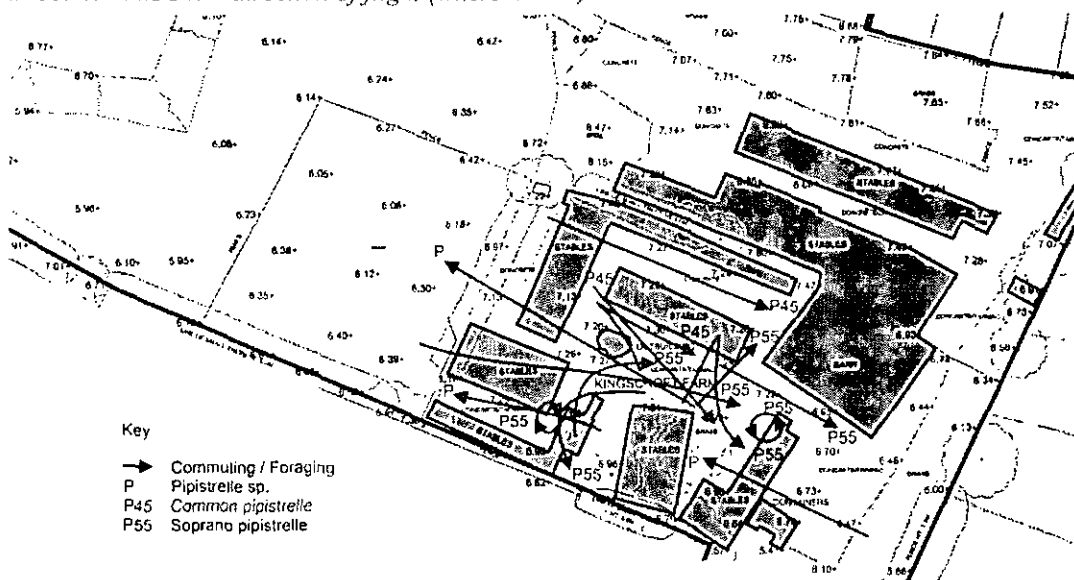


Figure C.7.2.4. Plan showing bat activity, including foraging and commuting bats (solid blue lines – approximate due to erratic flight paths), for the emergence survey carried out on the 24th August 2011. Arrows show direction of flight (where known).

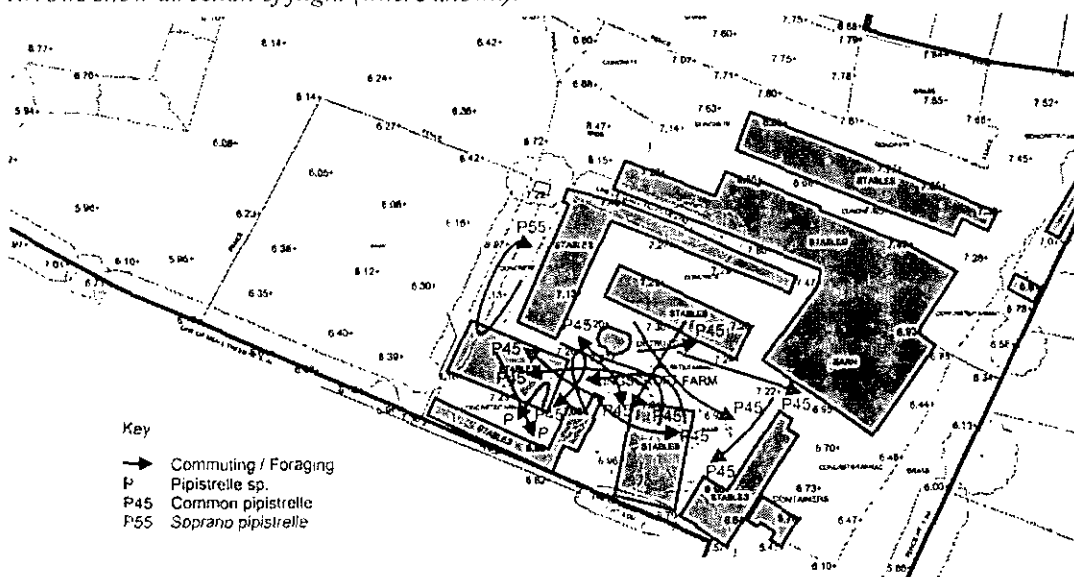


Figure C.7.2.5. Plan showing bat activity, including foraging and commuting bats (solid blue lines – approximate due to erratic flight paths), for the emergence survey carried out on the 25th August 2011. Arrows show direction of flight (where known).

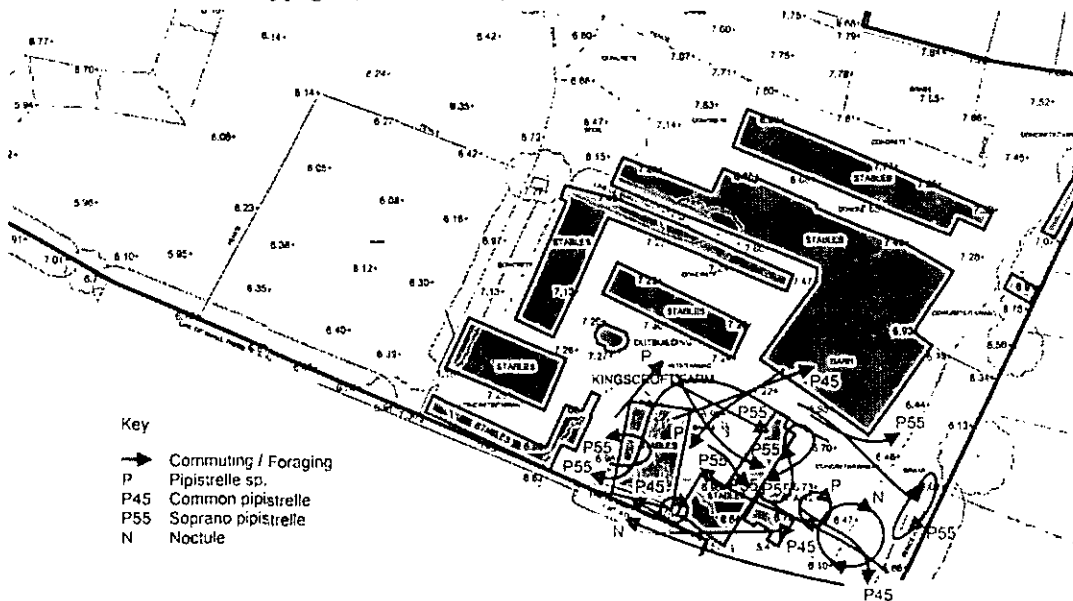
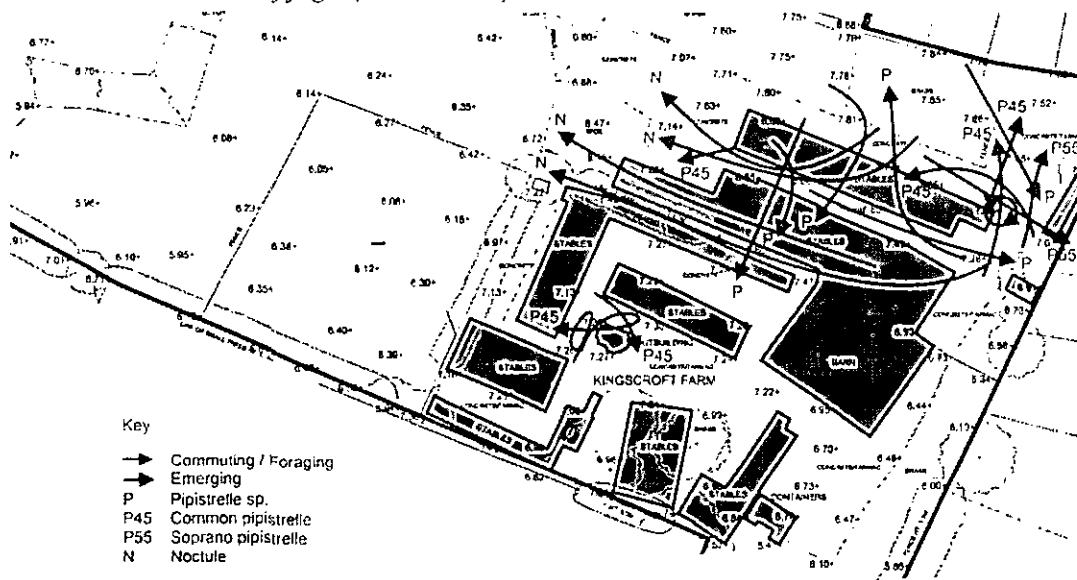


Figure C.7.2.6. Plan showing bat activity, including foraging and commuting bats (solid blue lines – approximate due to erratic flight paths), for the emergence survey carried out on the 30th August 2011. Arrows show direction of flight (where known).



C.8 Interpretation/ evaluation of survey results

C.8.1 Habitat suitability

The majority of the site is horse-grazed pasture which provides suitable habitat for foraging bats, as does the hedge between the farm and the former allotments. In addition, there is good quality foraging habitat along Hermitage Stream to the west of the site; a small pond immediately to the south-east of the site; and around a lake to the east.

Although there is urban and sub-urban residential housing and industrial units to the east and west, there are good links to habitat to the west, especially along the hedge dividing the farm and the former allotments, as well as along the stream and the railway further to the west. Bats follow linear landscape features such as lines of trees, hedges, buildings and waterways in order to commute from their roost sites to their feeding grounds. Likewise they use these features to navigate between feeding areas and alternative roosts.

C.8.2 Bat roost potential

The buildings have numerous potential bat access points. These primarily consist of gaps under wooden cladding, particularly into voids between internal and external wooden cladding. In addition, Building A has lifted and slipped tiles.

Gaps allowing access to the space between internal and external wooden cladding on buildings with this feature (Buildings B, C, D, E & Ga) mean that they could also be used by low numbers of hibernating bats.

C.8.3 Evidence of bats

Exterior

No bat droppings were found on the exterior of the buildings.

Interior

No bat droppings were found in the interior of the buildings.

Emergence surveys

Buildings B and J have evidence of roosting bats (one common pipistrelle emerging from both buildings). The level of use suggests that these buildings are summer roosts for low numbers of non-breeding bats.

Although there was eye-witness accounts of a baby bat being rescued on site earlier in the year, the emergence surveys showed no evidence of a maternity colony on site.

D IMPACT ASSESSMENT IN ABSENCE OF MITIGATION

D.1 Short term impacts: disturbance

Subject to a successful EPS licence application and suitable weather conditions (night time temperature above 7°C), the works will involve the removal of roof tiles and other roof cladding, wooden cladding and any other features that could be used by bats (under strict ecological supervision). The demolition of the buildings will result in the loss of a summer (non-breeding) roost for small numbers of common pipistrelles in Buildings B & J. However, due to the timing of the works any bats using the buildings as a roost will not be disturbed. The impact on bats, on a local scale, is low.

D.2 Long term impacts: modification

Subject to a successful EPS licence application and suitable weather conditions (night time temperature above 7°C), the works will involve the removal of roof tiles and other roof cladding, wooden cladding and any other features that could be used by bats (under strict ecological supervision). The demolition of the buildings will result in the loss of a summer (non-breeding) roost for small numbers of common pipistrelles in Buildings B & J. However, due to the timing of the works any bats using the buildings as a roost will not be disturbed. The impact on bats, on a local scale, is low.

D.3 Long term impacts: loss

The demolition of the buildings will result in the loss of a summer (non-breeding) roost for small numbers of common pipistrelles in Buildings B & J. However, due to the timing of the works any bats using the buildings as a roost will not be disturbed. The impact on bats, on a local scale, is low.

D.4 Long term impacts: fragmentation and isolation

It is not anticipated that the works will result in fragmentation or isolation of common pipistrelle populations, as the roost is a small summer (non-breeding) roost. There will be no loss of flight-lines around the edges of the site associated with this proposal.

In addition, there are several nearby buildings which may be used by roosting bats (see *Figures C.4.1.* and *C.4.2.*).

D.5 Post development interference impacts

The development will not make a significant difference to human presence in the area as it is surrounded by occupied dwellings and there is a lot of human activity relating to the use of the stables.

D.6 Predicted scale of impact

A summer (non-breeding) roost for small numbers of common pipistrelles will be lost. Therefore, the impact of the development without mitigation is predicted to be low.

Due to the timing of the works any bats using the buildings as a roost will not be disturbed. The impact on bats, on a local scale, is low.

E LAND OWNERSHIP

E.1 Mitigation site ownership

Until all bat mitigation has been completed, the new buildings will be owned by Orchard Homes.

Following sale, each of the new buildings will be in private ownership.

F REFERENCES

National Biodiversity Network website. www.nbn.org.uk. Accessed on the 7th June 2012.

Hampshire Ecological Services Ltd (2012). *Kingscroft Farm & adjacent former allotments, Ranelagh Road, Havant, Hampshire, PO9 1NR: Ecological Assessment Report*. Unpublished.

G ANNEXES

G.1 *Pre-existing survey reports*

Other than the work carried out by Hampshire Ecological Services Ltd for the purposes of planning and this EPS licence application, there is no information on bats available for this site. An earlier ecological assessment report for the site was produced by Hampshire Ecological Services Ltd in 2012 (see Section F for reference). All the information contained in that report is included in the relevant sections of this EPS licence.

G.2 *Raw survey data*

Other than the data within this document there is no additional emergence data.