

APPENDIX 15.4

Bat Survey Report

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1. Introduction

1.1 Atkins Limited was commissioned by Portsmouth County Council to undertake ecological surveys of an area of Dunsbury Hill Farm, Havant, Hampshire. This report presents the findings of bat surveys carried out in September 2010 and in spring/summer 2011. Surveys included walked transect surveys, passive monitoring surveys, and tree/building inspections.

1.2 It is intended that this report will advise on the value of the habitats for bats found within the survey area. In addition to forming the basis of baseline data and enabling an appropriate mitigation strategy for bats to be developed, the surveys undertaken will also form part of long term monitoring which will assist in determining if the mitigation measured implemented are successful.

Legislative background

1.3 All UK bats and their roost sites are protected from harm and disturbance under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010 (as amended).

1.4 As bats are European Protected Species licences are required from Natural England for any works that would result in an otherwise unlawful activity (e.g. damage to a bat roost). These licences are issued if Natural England are satisfied that the following three conditions are met:

- Works are for the purpose of 'preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment'.
- There is no satisfactory alternative;
- The action authorised by the licence will not be detrimental to the maintenance of bat populations at a favourable conservation status in their natural range.

1.5 The Natural Environment and Rural Communities Act 2006 also requires Government departments to have regard to the purpose of conserving biological diversity and to promote the action required to further the conservation of habitats and species listed as being of principal importance for the purpose of conserving biodiversity. Barbastelle, Bechstein's, noctule, soprano pipistrelle, brown long-eared, greater horseshoe and lesser horseshoe bats are included on this list as well as being priority species on the UK Biodiversity Action Plan (BAP). Serotines, Bechstein's, barbastelles, pipistrelles and greater horseshoe bats are all Hampshire BAP Priority Species.

2. Methodology

Desk Study

2.1 Existing records of bats within 5 km of the proposed development were obtained from the Hampshire Biodiversity Information Centre.

2.2 A topographical survey was undertaken in spring 2011 whereby trees within the site were marked using metal tags. A tree survey of the site was subsequently carried out in August 2011 and the draft tree survey report was obtained (Atkins, August 2011) and reviewed as it

included information about the trees that would be lost to the proposed link road, based on the latest alignment.

Field Surveys

- 2.3 A combination of walked transect surveys, passive automated surveys and tree/building inspections were undertaken in order to gain an understanding of how bats use the habitat around the site. Methodologies for these different types of surveys are described below.

Transect Surveys

- 2.4 Transect surveys were undertaken within habitats across the proposed development to obtain information on bat species using the habitats around the proposed Scheme and identify commuting routes and foraging areas used by these species along the proposed scheme. The methodology follows BCT's Good Practice Survey Guidelines (2007). The results of these surveys can be found in **Annex 1**.
- 2.5 Based on the size of the site, two transect routes were surveyed in September 2010 and again in June 2011. The chosen routes are shown in **Figure 15D.1** for the survey undertaken in September, 2010 and in **Figure 15D.2** for the survey undertaken in June 2011. These routes incorporated potential foraging and commuting routes such as woodland, woodland edge, hedgerows and field margins. Such features are known to be important habitats for bats.
- 2.6 Each transect was walked by two surveyors who noted any observations of bats or bat calls detected, the species, location and activity (e.g. foraging, commuting, emerging or entering a roost) and the time the bat was recorded. An MP3 recorder (Zoom H2) was used to record the transects, so that the bat calls could be analysed using BatSound v3.31.

Automated Bat Detector Surveys

- 2.7 In order to complement the information gathered during the transect surveys, an automated bat detector (Anabat) was placed at various locations within the survey area as shown on **Figure 15D.3**. The Anabat was formatted to switch on prior to dusk and switch off after dawn. These devices are triggered to automatically record sounds within an appropriate frequency range to record bat calls. Data was analysed using the Anabat software, Analook, to identify bat species recorded in each survey location. The results of these surveys can be found in **Annex 2**.

Inspections

- 2.8 A single storey barn and two sheds currently used by a tenant farmer for his horses, dogs and chickens were inspected externally and internally (where possible) to assess them for their bat roosting potential as it is not known at this stage whether they would be lost to the proposed Scheme (although based on the latest road alignment it is believed that they will be retained). These are located on the eastern edge of Hulbert Road to the south of the site.
- 2.9 The external inspection involved searching for features of potential value to roosting bats such as gaps, crevices or holes that could be used by bats as a point of entry, and any staining and bat droppings on window ledges and walls. The internal inspection involved searching for evidence of bats in the form of bat droppings, urine marks, oil staining from bat fur, scratch marks, insect feeding remains such as moth wings, and actual bats.
- 2.10 An inspection of the trees highlighted as potentially being lost to the proposed link road by the draft tree survey report (Atkins, August 2011) was carried out in September 2011 from the ground to assess them for the bat roosting potential.
- 2.11 The inspections above were aided by binoculars and a powerful torch. The photographs from these inspections can be found in **Annex 3** (barn and sheds) and **Annex 4** (trees).

Limitations

- 2.12 Ecological surveys are limited by a variety of factors which affect the presence of flora and fauna such as season, climate, migration patterns and species behaviour. Even if evidence of bats is not discovered during the building and tree inspections, this does not mean that bats are not present, or that they will not be present in the future.
- 2.13 With regards to the transect surveys, it was not possible to monitor the edges of Hubert Road as no footpath is present along this busy road. In addition, it was not possible to fully survey the most southern part of the site currently used by the tenant farmer, as dogs and horses were regularly kept in the first two fields immediately off Hulbert Road. In both cases however, an Anabat was deployed over a period of a week in suitable weather conditions at these approximate locations in order to gather information about what species of bats were using the areas in question.
- 2.14 Due to problems with one of the MP3 recorders during the June and September surveys only one of the transects was recorded on each of these visits. However, the experienced bat surveyors undertaking the surveys were able to identify the majority of bat passes in the field and sufficient data was collected from the transect and anabat surveys to identify species that utilise the site and key areas of bat activity.
- 2.15 With regards to the tree inspection, this was carried out in September 2011 when the alignment of the link road was known. At this time of year the trees were in leaf, which made it difficult for the surveyors to see all the potential features that could be used by bats as some could have been obstructed by foliage. For this reason, a precautionary approach was taken and the trees were generally assessed as having medium to high bat roosting potential, as opposed to low.

3. Results

Desk Study

- 3.1 Data obtained from the Hampshire Biodiversity Information Centre has shown that there are numerous records of bats within 5 km of the proposed development. Species include common pipistrelle, a pipistrelle species not identified down to species level, noctule, serotine, Bechstein's, Brandt's, whiskered, Daubenton's, natterers, brown long-eared and a species of long-eared bats not identified down to species level.
- 3.2 The tree survey divided the trees to be lost into standard arboricultural categories. For example, Category A trees are those of high quality in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested). Category B trees are those of moderate quality and value in such a condition as to make a significant contribution (a minimum of 20 years is suggested). Category B trees might have been included in the higher category, but are downgraded because of impaired condition such as minor storm damage or unsympathetic past management. The draft tree survey report indicated that a minimum of 14 trees of category B would be potentially lost to the proposed link road. No trees that were of the highest category (A) would currently be lost to the Scheme. More details about these trees as well as their tag number can be found in Table 1 below.

Table 1 – Trees with potential to support bats that would be potentially lost to the Scheme according to the tree survey (listed from the southern end to the link road going northward)

Tree tag number	Species	Description of feature providing potential for bats to use as roosts
Group 2 trees (low to moderate bat potential according to the draft tree survey)		
771	English oak	5 % minor deadwood in crown
772	Common ash	5 % minor deadwood in crown
773	English oak	Deadwood
775	English oak	5 % major deadwood in crown
776	English oak	Crown partially suppressed by surrounding trees
782	English oak	5 % major deadwood in crown
783	English oak	Decay on north side of main stem
784	English oak	5 % major deadwood in crown
Group 5 trees		
746	English oak	5 % minor deadwood in crown
749	English oak	5 % minor deadwood in crown
751	English oak	5 % minor deadwood in crown
Individual trees		
678	English oak	Less than 5 % minor deadwood in crown
598	English oak	Less than 5 % minor deadwood in crown
3027	English oak	-

Field Surveys

Transect surveys

3.3 Dusk and dawn transect surveys revealed areas and habitats across the proposed development where bat activity is high. A summary of the results of these surveys is shown on **Figure 15D.3**. This drawing indicates where bats were seen regularly foraging and commuting. The pattern of activity along the transects did not change greatly between seasons (i.e. between the June and September surveys). Full details can be found in **Annex 1**.

3.4 At least five species of bats have been recorded using the site during the transect surveys in 2010 and 2011, namely common and soprano pipistrelles, serotine, noctule, and a myotis species likely to be natterer's¹. The species the most recorded across the site was the common pipistrelle whilst the myotis species was only recorded sporadically.

Transect 1 (northern parts of the site)

3.5 Incidental recordings of bats were made during the great crested newts surveys carried out on site by Atkins ecologists between April and May 2011. These indicated that the bridleway that runs perpendicular to Park Lane and that leads into Dunsbury Hill Wood to

¹ It is difficult to distinguish myotis species from each other using calls alone. A combination of calls and behaviour in relation to the local site setting was used to identify the probable species.

the north east of the site is an important commuting route for common pipistrelles, as up to 16 bats were seen on the 3rd May 2011, soon after sunset, mostly flying in a west to east direction. The fact that the bats were seen early in the evening indicates the presence of a nearby roost (which could possibly be in a veteran oak tree located outside the site boundary within a hedgerow, however this has not been confirmed).

- 3.6 This was supported by the findings of the transect surveys at this location. Foraging activity was recorded around several mature oak trees located along this bridleway, but also along Park Lane. The majority of the recordings made along this transect route were of common pipistrelles.

3.7 *Transect 2 (southern parts of the site)*

- 3.8 Recordings along this transect were more species diverse than the northern transect and included noctules and probable natterer's. It showed that the woodland edges and field margins provided important foraging grounds for bats, especially Cherry Tree Row SINC. Occasional bat activity was recorded at the most southern part of the transect and bats were usually either seen flying high in the sky/above tree canopy, or were only heard and not seen, indicating that they were mostly commuting above the area although some foraging was observed around two mature oak trees located within the pasture to the west of the Hermitage Stream.

Automated Bat Detector Surveys

- 3.9 A summary table including the locations, dates of survey and results is included in **Annex 2**. This data supplements the information collected during the transect surveys by highlighting the foraging activity which takes place at specific locations and provided more information on the species using the site throughout the night.

- 3.10 The anabat deployed half way along the Long Hedge which crosses the site between Beech Wood East and Park Lane recorded a total of 272 calls on the night of the 21st June 2011, all of which were from common pipistrelles. This indicates that this hedgerow is an important commuting route, and that the field margins either side of it are likely to provide good foraging habitat.

- 3.11 The anabat located between Hulbert Road and the tenant farmer's fields (and in close proximity to tree 0770) recorded passes of common pipistrelle, soprano pipistrelle, noctule, serotine, and an unidentified Myotis species on most nights, with the highest number of passes in one night being 111. The recordings started on most night either on or soon after sunset, and the earliest recordings were of common pipistrelles. These were also the species last recorded in the following morning, suggesting the presence of a roost(s) of common pipistrelles nearby.

Barn and Shed Inspections

- 3.12 The barn and two small sheds are located on the edge of Neville's Park East Wood SINC, which is ancient semi-natural broadleaved woodland. The buildings are in the shade most of the day due to the fact that they are in such a close proximity to the woodland edge. Several gaps were noted that bats could potentially use, such as between the corrugated roof and the timber boarding underneath, and under the timber cladding making up the external walls, although cobwebs were observed in many of these. No signs of bats were found during the internal and external inspection of the barn and the two small sheds. Based on this, the barn and its sheds are deemed as having low bat roosting potential. Photographs of the barn and sheds can be found in **Annex 3**.

Tree inspection

- 3.13 The tree inspection concentrated on the trees that are most likely to be lost as part of the Scheme (i.e. the southern section of the proposed link road), and was based on the trees listed in Table 1 above. Due to the fact that the inspection was carried out in September

when trees are still in full foliage, it was not possible to rate the trees for their bat roosting potential accurately. Based on the fact that the trees highlighted in Table 1 above all have certain features that could be suitable for bats to roost in (for instance dead wood (which is often accompanied by localised peeling bark in oak trees) and/or wood pecker holes), and the fact that anabat recordings at this location indicated that the area was well used by bats (and their close proximity to ancient woodland), these trees have all been given a “medium to high” bat roosting potential.

- 3.14 In addition to these, three other trees were noted as having high bat roosting potential. These are three other trees that were noted as having high roosting potential during the walkover surveys of the new link road proposed footprint. Two of these trees are located in close proximity to the new roundabout off Hulbert Road where the proposed link road connects to: a standing dead oak with tag number 794 (with several woodpecker holes and peeling bark), and a silver birch with tag number 795 (several wood pecker holes). There is also another silver birch which is covered with ivy and which has a deep crevice into its bark which is located on the woodland edge further north; however, this tree does not have a tag number so it is believed that it will not be lost as part of the scheme. Photographs of these trees can be found in **Annex 4**.

4. Conclusion

- 4.1 The field margins, hedgerows, woodland (particularly Cherry Tree Row and Beech Wood East SINC), grassland and Hermitage Stream provide good habitats for bats. These habitats attract insects which encourage foraging bats. In addition tree lines, woodland edges and hedgerows in particular are used as flight lines for both commuting and foraging. Areas of woodland have the potential for roosting and hibernating bats, particularly where mature trees have features, such as cracks, woodpecker holes, loose bark and dense ivy covered limbs.
- 4.2 Numerous trees across the site have been identified as having bat roosting potential. These include mature/veteran oak trees within all surrounding SINC, mature oak trees along Park Lane and along the bridleway to the north of the site that leads into Dunsbury Hill Wood, and individual mature trees located within the footprint of the proposed link road.
- 4.3 Two important commuting routes have been identified during the transect surveys, namely the long hedgerow that crosses the site between Park Lane and the edge of Beech Wood East SINC, and along the bridleway that runs west to east from Park Lane into Dunsbury Wood SINC (immediately north of Phase 2).
- 4.4 Mitigation measures are discussed in the Ecology chapter of the Environmental Statement.

5. References

Bat Conservation Trust (2007). *Bat Surveys: Good Practice Guidelines*.

Atkins (2011). *Dunsbury Hill Farm Development, Havant, Portsmouth. Draft Tree Survey Report* dated 24th August 2011.

Annex 1: Transect survey results 2010/2011

Date	20 th September 2010	Project number	5099849.509
Site	Dunsbury Hill Farm, Havant, Hampshire		
Surveyors	SG + DW		
Transect/Location of surveyor	Transect A (top of site)	Start Time	19:00
Weather (Temp, rain, cloud, wind etc.)	Partial cloud, dry, light breeze. 19°C at start of survey, 16°C at the end	End time	21:10
		Sunset time	19:00

Station Number / location	Time	MP3 recorder file no and time	Bat species / size	Bat passes heard / description of activity
SN1	19:02	000		Strange sound from electricity pylons – no bats
Transect 1-2		001		No bats
SN2	19:17	002		No bats
Transect 2-3		003		No bats
SN3	19:27	004		No bats
Transect 3-4		005		No bats
SN4	19:35	006		No bats
Transect 4-5		007		No bats
SN5	19:44	008 – 00:32	Common Pipistrelle	Bat not seen but probably commuting along tree line
Transect 5-6		009 – 02:14; 04:12; 05:36	Common Pipistrelle	19:53 – Feeding, not seen 19:55 – Heard, not seen 19:57 – Foraging around tree. One bat seen, going East to South
SN6		010	Common Pipistrelle	Bats at start of recording; possibly more than one. At least 2 bats, one seen coming across open field (East to the trees) and another Northward (South to West). Circling in open field. Foraging
Transect 6-7		011 – 00:42; 01:26; 05:32	Common Pipistrelle	20:03 – one pass 20:04 – At least 2 bats circling over trees 20:07 – Commuting, not seen

SN7	20:13	013		No bats
Transect 7-8		014		No bats
SN8	20:20	015		No bats
Transect 7-8		016		No bats
SN9	20:30	017		No bats
Transect 9-10		018		No bats
SN10	20:39	019		No bats
Transect 10-11		020		No bats
SN11	20:46	021		No bats
Transect 11-12		022		No bats
SN12	20:54	023 – 01:20	Pipistrelle species?	20:55 – one bat, too brief and faint to tell species. Probably a pipistrelle
Walking back to meet other team				No bats

Date	20 th September 2010	Project number	5099849.509
Site	Dunsbury Hill Farm, Havant, Hampshire		
Surveyors	KOT + CD		
Transect/Location of surveyor	Transect B (bottom of site)	Start Time	19:00
Weather (Temp, rain, cloud, wind etc.)	Partial cloud, dry, light breeze. 19°C at start of survey, 16°C at the end	End time	21:09
		Sunset time	19:00

Station number / location	Time	Bat species / size	Bat passes heard / description of activity
SN1	19:08-19:13	-	No bats
SN2	19:18-19:24	-	No bats
Transect 2-3	19:25	Pipistrelle species	Half way between 2 and 3 along field boundary
Transect 2-3	19:28	Unidentified bat	Under bigger pylon, heard not seen
SN3	19:37-19:42	-	No bats
	19:40	Common pipistrelle	Foraging nearby. Heard not seen. Seen foraging along tree line. Constantly foraging for 3 minutes (same bat)
Transect 3-4	19:45	Common pipistrelle/ Noctule	Heard not seen
Transect 3-4	19:46	Common pipistrelle/ myotis/bigger bat	Constant foraging of at least 3 bats along hedge.
Transect 3-4	19:53	Unidentified bat	Corner between ancient woodland edge field
SN4/5	19:54-19:59	Unidentified bat	3 brief passes
	19:59	Unidentified bat	One bat pass
Transect 5-6	20:01	Common pipistrelle + possible soprano pipistrelle	At least 2 bats. Heard not seen, foraging
SN6	20:05-20:09	Common pipistrelle	Seen flying in the tree canopy. Constant foraging through file 009

SN7	20:14-20:19	Probable common pipistrelle	Going West to East
SN8	20:21-20:26	Unidentified bat	By dead tree
Transect 8-9	20:22	Pipistrelle species	Brief pass, heard not seen
SN9	20:28-20:32	Pipistrelle species	Brief pass (about 20m South of fence)
SN10	20:35-20:39	Unidentified bat	Opposite 2 mature oak trees
Transect 10-11	20:42	Probable common pipistrelle	Edge of stream about to cross over. Heard not seen
SN11	20:48-20:52	-	No bats
SN12	20:55-20:59	-	No bats
Transect 12-13	20:59	Unidentified bat	Very brief bat pass
SN13	21:05-21:09	-	No bats

Date	1 st June 2011	Project number	5099849.509
Site	Dunsbury Hill Farm, Havant, Hampshire		
Surveyors	DW + SG		
Transect/Location of surveyor	Transect A (top of site)	Start Time	21:00
Weather (Temp, rain, cloud, wind etc.)	Dry, still, sunny, calm all day (some rain the day before), 16°C at start of survey	End time	23:40
		Sunset time	21:08

Station number / location	Time	Bat species / size	Bat passes heard / description of activity
SN1	20:45-20:50		No bats
Transect 1-2	20:50-20:56		No bats
SN2	20:56-21:02		No bats
Transect 2-1 (walking back to try to pick up commuting route detected during newt surveys)	21:01	Common pipistrelles	21:24 – Common pipistrelle (West to East) on South side of track 21:25 – Common pipistrelle (West to East) 21:30 – Common pipistrelle (West to East) from mature trees along path. 21:30 – Common pipistrelle (West to East) 21:30 – Common pipistrelle x3 (West to East) 21:31 – Common pipistrelle x3, small amounts of foraging around mature trees 21:35 – Common pipistrelle x3 21:37 – Common pipistrelle x2 21:41 – Common pipistrelle x3
SN2	21:43-21:48	Common pipistrelles	21:43 – Common pipistrelle, foraging 21:43 – Common pipistrelle (West to East) commuting into wood 21:47 – Pipistrelle (West to East) x2 21:48 – Common pipistrelle foraging
Transect 2-3	21:48-21:56	Pipistrelle species	21:50 – Pipistrelle foraging along hedge x2 21:54 – Foraging pipistrelle (South to North) flying at least 10m into field.
SN3	21:56-22:01	Common pipistrelle	Common pipistrelle, faint bat call, foraging/circling (South to East)
Transect 3-4	22:01	Common pipistrelle / noctule	Common pipistrelle + noctule, foraging around mature treat point 3. Not seen
Transect 4-5	22:06-22:11	Common pipistrelles/ pipistrelle species	22:06 – Pipistrelle going East to West (Commuting) and Common pipistrelle going East into Woodland 22:09 – Common pipistrelle (West to East) + Common pipistrelle (East to West) 22:10 – Common pipistrelle x2 (West to East) 22:11 – Pipistrelle, not seen 22:21 – Pipistrelle
SN5	22:23-22:28	Common pipistrelle	Foraging around big tree (single bat for whole 5 minutes)

Transect 5-6	22:28-22:35		No bats
SN6	22:35-22:40	Pipistrelle species	Pipistrelle (commuting) + brief pipistrelle calls (not seen)
Transect 6-7	22:40-22:48	Pipistrelle species	Bat heard, but too hard to hear species about noise of walking
SN7	22:48-22:53	Pipistrelle species	Faint, distant call
Transect 7-8	22:53-22:56	Pipistrelle species	Brief pass
SN8	22:56-23:01	Pipistrelle specie?	Very faint call (pipistrelle?)
Transect 8-9	23:01-23:06		No bats
SN9	23:06-23:11		No bats
Transect 9-10	23:11-23:15		No bats
SN10	23:15-23:20		No bats
Transect 10-11	23:20-23:23		No bats
SN11	23:23-23:27		No bats
Transect 11-12	23:27-23:30		No bats
SN12	23:30-23:35		No bats
Transect 12-13	23:35-23:37		No bats
SN13	23:37-23:42	Pipistrelle species	Brief call

Date	1 st June 2011	Project number	5099849.509
Site	Dunsbury Hill Farm, Havant, Hampshire		
Surveyors	CD + PW		
Transect/Location of surveyor	Transect B (bottom of site)	Start Time	21:00
Weather (Temp, rain, cloud, wind etc.)	Dry, still, sunny, calm all day (some rain the day before), 16°C at start of survey	End time	23:40
		Sunset time	21:08

Station number / location	Time	MP3 recorder file no and time	Bat species / size	Bat passes heard / description of activity
SN1	21:00	STE 000	-	No bats
SN1A	21:07	STE 001	-	No bats
SN2	21:15	STE 004	-	No bats
SN2A	21:24	STE 006 – 02:50	Common pipistrelle and a larger bat	Common pipistrelle (heard not seen) Flying slower than a pipistrelle, picked up on 20kHz, about 7m height
SN2B	21:32	STE 008 (end of file)	Common pipistrelle	Flying low, approximately 2m off the ground in corner of field.
		STE 009 – 02:20	Common pipistrelle	Went up and down the hedgerow and flew east along woodland edge
SN3	21:42	STE 010 – 03:40	Common pipistrelle	Brief bat pass. Low pass of hedge, about 2.3m (Came in from the North and looped near surveyors)
SN4	21:51	STE 012 – beginning of file; 02:45	Common pipistrelle / Possible Noctule	Bat heading North, but not along hedge. Was about 5m from hedge on the west side of the “finger” Bat pass (not seen). Picked up at 20kHz, sloppy sound. Probably noctule
Transect 4-5		STE 013 – 02:45	Common pipistrelle	On West side of “finger” – circling around willow, feeding buzz
SN5	22:02	STE 014 – 01:00	Common pipistrelle	2 bats heard
Transect 5-6		STE 014/015	Common pipistrelles	Around top of large oak in the corner of field. At least 4 bats
		STE 016	Common pipistrelles	Going into woods; at least 2 bats heard
SN6				Did not stop due to bonfire and people nearby

Transect 6-7	22:20	STE 017 – 03:30	Common pipistrelle	Brief pass, head along HA edge
SN7	22:25	STE 018 – 00:30	Noctule	Bat pass, clear chip-chop at 20kHz
Transect 7-9	22:31	STE 019 – end of track	Common pipistrelle	One bat seen fly over the river where the proposed new bridge will go
	22:37	STE 021 – 02:30	Myotis species, possible natterer's / Soprano pipistrelle	Several bat passes inside wood, about to come out. One heard at 46kHz, another at 20kHz
SN9	22:42	STE 022 – start of track; 03:10	Common pipistrelle	Faint pass at 45kHz
SN10	22:51	STE 023 – 04:40	Common pipistrelle	Bat pass (brief) at 42kHz
Transect 10-11		STE 024 – 02:30	Common pipistrelle	Irregular call, heard at 45kHz, brief pass
SN11	23:00	STE 025 – 05:25	Myotis species, possible natterer's	One bat pass, thought to be flying along hedge, adjacent to pylon in field.
SN12	23:09	STE 027 – 02:40	Possible serotine	Irregular call – very different to sloppy 'chip chop' heard earlier
SN13	23:23	STE 029 – end of track	Possible serotine	Heard at 20kHz – faint but possibly a 'wet' call.
Walking back to meet other team	23:40	ENDED	Common pipistrelle	Walked back along Park Lane, one bat pass.

Date	2 nd June 2011	Project number	5099849.509
Site	Dunsbury Hill Farm, Havant, Hampshire		
Surveyors	SG + DW		
Transect/Location of surveyor	Transect A (top of site) (transect walked in reverse to the dusk survey)	Start Time	03:04
Weather (Temp, rain, cloud, wind etc.)	Dry, still, clear sky, 13°C at start of survey	End time	04:55
		Sunset / Sunrise time	04:55

Station number / location	Time	Bat species / size	Bat passes heard / description of activity
SN13	03:04-03:09	Pipistrelle	03:09 - Not seen, commuting
Transect 13-12	03:09-03:11		No bats
SN12	03:11-03:16		No bats
Transect 12-11	03:16-03:24	Common Pipistrelle	03:16 - Faint call (possibly foraging on wood edge)
SN11	03:24-03:29		No bats
Transect 11-10	03:29-03:32		No bats
SN10	03:32-03:37		No bats
Transect 10-9	03:37-03:41		No bats
SN9	03:41-03:46		No bats
Transect 9-8	03:46-03:50		No bats
SN8	03:50-03:55	Soprano Pipistrelle	03:51
Transect 8-7	03:55-04:00	Pipistrelle species	03:55 - heard not seen 03:57 – flying North to South down path
SN7	04:00-04:05	Soprano Pipistrelle	04:00 - Circling/foraging around tree (almost all of five minutes – single bat)

Transect 7-6	04:05-04:10		No bats
SN6	04:10-04:15	Pipistrelle	04:14 - Flew in South-East direction (3 on map)
Transect 6-5	04:15-04:19		No bats
SN5	04:19-04:24		No bats
Transect 5-4-3	04:19-04:29		No bats (Did not stop at 4)
SN3	04:26-04:31		No bats
Transect 3-2	04:31-04:32		No bats
SN2	04:32-04:37		No bats
Transect 2-1	04:35-04:40		No bats
SN1	04:40-04:45		No bats
Walked back to meet other team	04:45-04:55		No bats

Date	2 nd June 2011	Project number	5099849.509
Site	Dunsbury Hill Farm, Havant, Hampshire		
Surveyors	CD + PW		
Transect/Location of surveyor	Transect B (bottom of site) (transect walked in reverse to the dusk survey)	Start Time	03:04
Weather (Temp, rain, cloud, wind etc.)	Dry, still, clear sky, 13°C at start of survey	End time	04:55
		Sunset / Sunrise time	04:55

Station number / location	Time	MP3 recorder file no and time	Bat species / size	Bat passes heard / description of activity
SN14	03:05	STE 000 – 01:50	Common pipistrelle	Brief bat pass
SN14		STE 001 – 01:00	common pipistrelles	2 bats foraging along Park Lane (several passes)
Transect 14-13			common pipistrelle	Foraging around mature oak and flew West to East towards Park Lane along hedge
SN13	03:15	STE 002	Common pipistrelle	Foraging up and down long hedgerow Bat was seen again flying South to North a couple of meters to the East of the hedgerow
SN12	03:25	STE 004	-	No activity
SN11	03:35	STE 005	Common pipistrelle	1 bat pass
SN11		STE 006 – 02:00	Common pipistrelles	High along tree line – approximately 10m height (foraging). Another common pipistrelle, foraging continuously around tree tops.
SN10	03:44	STE 008	-	No activity
SN9	03:54	STE 009 – end of track	Unidentified bat	Faint bat heard at 20kHz (sound analysis indicated peak frequency at approx. 35kHz)
SN7	04:00	STE 011 – 03:30	Common pipistrelle	Bat heard, not seen
Transect 7-6		STE 012 – 03:35	Common pipistrelle	Briefly foraging
SN5	04:19	STE 014 – 01:50; 05:00	Common pipistrelle	Brief pipistrelle pass (not seen) Pipistrelle flew South from hedgerow and flew into woodland – possibly roosting?
SN2A	04:26	STE 017	-	No activity

SN2	04:34	STE 018		No activity
SN1	04:45			No bat activity

Annex 2 – Results of automated bat detector surveys

Date	Sound analysis details (number of passes and species recorded)
Anabat located half way along the Long Hedgerow crossing the site between Beech Wood East and Park Lane	
21/06/2011	272 calls recorded, all of which were common pipistrelles
22/06/2011	Equipment failure (did not record)
Anabat located on the edge of Cherry Tree Row (south of adder hedge)	
05/07/2011	7 common pipistrelles
06/07/2011	122 common pipistrelles
07/07/2011	12 common pipistrelles
08/07/2011	No recordings of bats
09/07/2011	1 common pipistrelle
11/07/2011	43 common pipistrelle
12/07/2011	34 common pipistrelles, 4 possible noctules and 3 possible serotines
13/07/2011	32 common pipistrelles, 3 possible <i>Myotis</i> sp.
14/07/2011	37 common pipistrelles
15/07/2011	653 common pipistrelles, 6 soprano pipistrelles
Anabat located on the northern edge of Neville's Park West Wood, on the western edge of Hulbert Road	
12/08/2011	No recordings of bats
13/08/2011	No recordings of bats
14/08/2011	No recordings of bats
15/08/2011	No recordings of bats
16/08/2011	No recordings of bats
Anabat located in close proximity to tree with tag no 0770 on Highways Agency land to the east of Hulbert Road	
12/08/2011	47 passes, species included Common Pipistrelle (first and last recordings), Soprano Pipistrelle, Noctule, Possible Serotine
13/08/2011	58 passes, species included Common Pipistrelle (first and last recordings), Noctule, Possible <i>Myotis</i> Sp.
14/08/2011	53 passes, species included Common Pipistrelle (first and last recordings), Soprano Pipistrelle, Noctule, Possible <i>Myotis</i> Sp., Possible Serotine
15/08/2011	75 passes, species included Common Pipistrelle (first and last recordings), Soprano Pipistrelle, Noctule, <i>Myotis</i> Sp.
16/08/2011	111 passes, species included Common Pipistrelle (first and last recordings), Soprano Pipistrelle, Noctule, Possible Serotine, <i>Myotis</i> Sp.
17/08/2011	50 passes, species included Common Pipistrelle (first recording), Soprano Pipistrelle (last recording), Noctule

Annex 3 – Photographs taken during the barn and shed inspections



General view of the tenant farmer's barn. The first part of the barn (right-hand side) is made of a corrugated roof with timber boarding as external walls. The second part of the barn (left-hand side) has an asbestos roof with timber boarding as external walls.



Interior view of the roof from the first section of the barn (with the corrugated roof)



Interior view of the roof from the second section of the barn (with the asbestos roof)



Gap between the corrugated roof and the timber boards below



Gap between timber cladding



Horse shed



Innaccessible shed

Annex 4 – Photographs of trees with potential to support bats



Photos of tree line along Dunsbury Hill Wood bridleway (seen in the background to the right of this photograph) and along Park Lane (seen on the left of this photograph) which both have several mature oak trees with bat roosting potential



Photo of veteran oak tree with broken limb and peeling bark to the east of the site, on the edge of Dunsbury Hill grassland (to be retained)



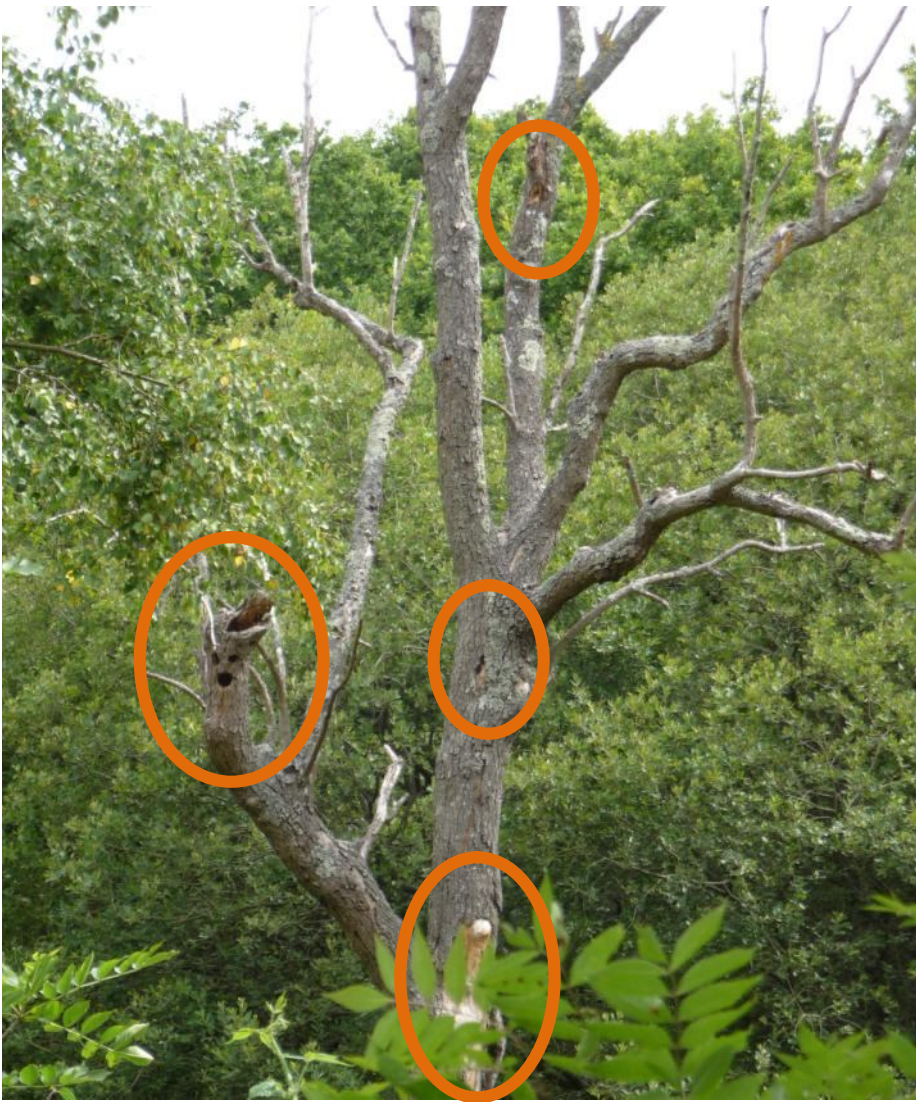
Overall view of mature oak trees that will potentially be lost to the link road (south of site off Hulbert Road)



Woodpecker hole observed on tree with tag no 774 in the wood pasture



Cavity in trunk of silver birch with tag no 789 on the edge of Neville's Park



Woodpecker holes and peeling bark on standing dead tree (tag no 794) located in front of the tenant farmer's barn, off Hubert Road



Woodpecker holes in silver birch (tag no 795) located in front of the tenant farmer's barn, off Hubert Road (this tree does not have a tag as it will be currently retained)