global environmental solutions

Micheldever

Appendix 12-4: Bat Survey and Assessment

SLR Ref: 402-03620-00004

June 2012

Version: Rev 1

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1.0 INTRODUCTION

This report presents the findings of a bat survey undertaken at the application site at Micheldever in 2012.

It has been prepared by SLR Consulting Limited (SLR) on behalf of Clean Power Properties Limited to provide further information in support of a planning application and environmental impact assessment.

1.1 Legislative Background

All British bats are protected by their inclusion on Schedule 5 of the Wildlife and Countryside Act (as amended), 1981 (WCA) and Schedule 2 of the Conservation of Habitats and Species Regulations 2010 (Habitats Regulations). In combination, this legislation fully protects bats and their roosts, making it an offence to:

- **(a) deliberately** capture, injure or kill any wild animal of an EPS;
- **(b) deliberately** disturb wild animals of any such species
    - For the purposes of paragraph (1)(b), disturbance of animals includes in particular any disturbance which is likely—
    - to impair their ability—
        - to survive, to breed or reproduce, or to rear or nurture their young; or
        - in the case of animals of a hibernating or migratory species, to hibernate or migrate; or
    - to affect significantly the local distribution or abundance of the species to which they belong.
- **(c) deliberately** take or destroy the eggs of such an animal; or
- **(d)** damage or destroy a breeding site or resting place of such an animal.

Section 9(4) and 9(5) of the WCA offer additional protection to bats, i.e.:

- **intentional or reckless** disturbance any such animal while it is occupying a structure or place which it uses for shelter or protection;
- **intentional or reckless** obstruction of access to any shelter or place which any such animal uses for shelter or protection;
- sells, offers or exposes for sale or has in his possession or transports for the purpose of sale any live or dead animal included in Schedule 5, or any part of, or anything derived from, such an animal; or
- publishes or causes to be published any advertisement likely to be understood as conveying that he buys or sells, or intends to buy or sell, any of those things.

These offences apply to all stages of the life of the animal and roosts are protected at all times, whether bats are present at the time or not.

1.2 Survey Aims

The objectives of the study were to:

- document the bat interest of the site through consultation and survey and to identify any areas of particular significance for bats;
- evaluate the bat interest of the site in a local, regional and national context;
- recommend further survey requirements, if necessary; and

- recommend sensitive design principles and outline mitigation measures to avoid, minimise or compensate for, any identified impacts.

The results of the study are presented within this report.

2.0 SURVEY METHODOLOGY

2.1 Survey Area

The application site boundary is marked by a red line boundary on Drawing 1. The survey area included the application site and land surrounding it, as shown on Drawing 1.

A line of 65 beech (*Fagus sylvatica*) trees were subject to specific assessment for bats. These are located outside the application site boundary, as shown on Drawing 1.

2.2 Ecological Data Collection

Records of bats within 2km of the application site were sought from Hampshire Biological Information Centre (HBIC). These records are reproduced below. Data received from HBIC is presented in Appendix 12-1 of Chapter 12 of the Environmental Statement.

2.3 Field Survey Methods

2.3.1 Bat Tree Assessment

A daylight visual assessment of the mature beech trees located adjacent to the eastern boundary of the site was undertaken on March 29th 2012. March is within the optimal season for on the ground assessments of trees (Table 4.5, page 27 – BCT guidelines)[1]. No specific guidelines for assessing trees in relation to development have been produced and as such, assessment of these trees is based upon the methodologies devised for assessing trees in relation to arboricultural work.

All trees with a diameter at breast height of above 300mm were subject to an assessment under the standard Bat Conservation Trust guidelines[1] of assessing trees for their potential to support bat roosts; this enables each tree to be classified, depending on the features it possesses. Classifications are defined as follows:

- Confirmed Roost – Trees supporting a confirmed bat roost
- Category 1* – Trees with multiple highly suitable features, capable of supporting larger roosts
- Category 1 – Trees with definite potential, supporting fewer features than a Cat 1* or within potential to support single bats
- Category 2 – Trees with no obvious potential but that are of a size and age where elevated survey may result in cracks or crevices being found, or the tree supports some features which may have limited potential to support bats.
- Category 3 – Trees with no potential to support bats

Each tree was examined from the ground using binoculars where appropriate, to search for features which could be used by bats as roost sites, such as rot holes, split and peeling bark, fractured limbs, woodpecker holes and cracks and fissures. In addition, evidence of the presence of bats within each tree was searched for, including presence of bats *in situ* (as evidenced by droppings, urine staining, scratch marks and staining from oil in bat fur around roost entrances).

Each tree was tagged with an aluminium tag and given a unique number, to aid future identification if required.

[1] Hundt, L. (2012) 'Bat Surveys: Good Practice Guidelines' 2nd Edition. Bat Conservation Trust

Where trees have been categorised as Cat 1* or Cat 1, further assessment is required to ascertain whether bat roosts are present or not. At Micheldever, it was determined that a single emergence survey would be sufficient at each of the Cat 1 trees likely to be affected by the development proposals.

2.3.2 Emergence Surveys

Emergence surveys were undertaken at five of the seven trees that had previously been identified as either Category 1* or Category 1. Trees T07, T15, T20, T21 & T26 were subject to emergence surveys. Trees T29 and T45 were considered to be a sufficient distance from the proposed development to be unaffected by proposals and were therefore not surveyed.

Each tree was subject to a single emergence survey by one surveyor. The surveyors were positioned to allow the best view of each tree; specifically, any previously identified potential roost access points. Each tree was closely watched from half an hour before sunset until approximately 1 hour after. After one hour, the low light level was such that actually viewing each tree was not possible and therefore the surveys were terminated at this point.

Each surveyor listened for bat calls on hand-held frequency division Bat Box Duet ‘bat detectors’ and recorded all activity on MP3 players, for later computer analysis, using the ‘BatSound’ program.

2.3.3 Bat Activity Surveys

The application site and surrounding habitats were subject to a daytime walkover to assess potential value to bats, with potential commuting routes and foraging areas identified. The application site was assessed to have a low potential to support foraging and commuting bats, with only a single sheltered commuting route present along the eastern boundary, which terminated at the northern boundary, at the A303.

Each activity survey commenced following completion of the emergence surveys at the beech trees, outlined in section 2.3.2. Each transect route had 10 recording points, at which each surveyor stopped for 5 minutes. Transects and transect points were focused on areas that had previously been identified as having potential for use by bats for commuting and/or foraging. Transect routes are marked on Drawing 1. Each transect took approximately 1 hr 30 mins to complete, with all data recorded within 2-3 hours of sunset, as recommended in the BCT guidelines (section 7.6.1 , page 46)[1].

Surveyors recorded all bat activity using time expansion Bat Box Duet bat detector equipment, identifying bats to species where possible. In addition, recordings were also made of all calls for later computer analysis using the ‘Bat Sound’ computer program.

2.4 Personnel

The daylight bat tree assessment was undertaken by Rebecca Hendry, Senior Ecologist at SLR. Rebecca is a licensed bat worker with over eight years experience of bat survey. Rebecca was assisted in the bat transects surveys by Laura Gravestock, Senior Field Ecologist at SLR (also an experienced, licensed bat ecologist) and Gregor Neeve, Ecologist at SLR (trained to undertake bat surveys to a high standard, but not yet licensed).

2.5 Survey Constraints

Survey visits were carried out between March and April 2012, which is an optimal season for bat survey, as stated in the relevant guidance.

When using computer analysis to determine species, it is generally not possible to differentiate between calls made by different species of *Myotis* bats; as a consequence, all calls from this group of bats have been referred to in this report to as belonging to *Myotis* sp.

Lack of evidence of a protected species does not necessarily preclude their being present at a later date.

3.0 SURVEY RESULTS

3.1 Contextual Survey: Local Distribution of Bats

Records for common pipistrelle (*Pipistrellus pipistrellus*) and brown long-eared (*Plecotus auritus*) bat roosts were provided by HBIC as part of the background data search. Both of these records where located in the village of Micheldever Station, which lies approximately 0.7km south of the application site. The records did not indicate if these were roosts, grounded bats or simply recorded calls.

No further records of bats were provided by HBIC.

3.2 Habitats

The site comprises predominantly calcareous grassland and scrub. A line of mature beech trees borders the eastern boundary of the site and an area of woodland is present outside the north-eastern boundary. A sheltered 'commuting corridor' is therefore present for bats along the inner eastern edge of the site. The railway line to the west has some artificial lighting, although this alters illumination levels within the site minimally and is unlikely to affect bats.

3.3 Tree Assessment

3.3.1 Daylight Inspection

Survey and assessment results are detailed in Appendix 1 and shown on Drawing 2. In summary:

- No trees showed positive evidence of use by bats or multiple features of high suitability to support bats (Confirmed roost or Category 1*);
- 7 trees showed definite potential to support bats (Category 1);
- 20 trees showed no obvious potential to support bats (Category 2); and
- 38 trees showed negligible potential to support bats (Category 3).

3.4 Dusk Emergence and Transect Surveys

3.4.1 Weather

Table 1 below shows prevailing weather during each survey session; conditions were slightly cool, but suitable for conducting bat surveys during all visits. Suitable weather conditions are defined as 'avoiding very heavy rain, strong winds, mist and dusk temperatures of below 10°C' (section 10.5.1, BCT guidelines)[1].

Table 1 Survey Weather Conditions

Date	Temperature	Cloud	Wind	Precipitation
12/04/2012	10°C	70%	Light breeze	None
27/05/2012	12°C	50%	Light warm breeze	None

3.4.2 Results - Emergence surveys

Table 2 summarises the results of the tree emergence surveys:

Table 2 – Emergence Survey Results

Date	Tree	Method	Sunset	Start	Finish	Result
24/04/12	T07	Surveyor	19.25	19.55	21.20	No bats recorded
	T15	Surveyor				No bats recorded
17/05/12	T20	Surveyor	8.52	8.20	10.50	No bats recorded
	T21	Surveyor				No bats recorded
	T26	Surveyor				No bats recorded

No bats were recorded emerging from any of the trees surveyed by surveyors. In addition, no bat activity was recorded at all in the areas around the trees, during either of the two nights survey work.

3.5 Survey Results – Activity Surveys

Immediately following completion of each of the emergence surveys, activity transect surveys were undertaken. Two defined routes were surveyed on both nights, as detailed in Table 3. The results of the activity surveys are presented on Drawing 2. A summary of results of the activity surveys is presented below:

Transect Route 1

No bats were recorded on either date on transect route 1.

Transect Route 2

No bats were recorded on transect route 2 on 12/04/12.

Two species of bat were recorded on transect route 2 on 17/05/12. Soprano pipistrelle (*Pipistrellus pygmaeus*) and an unidentified species of *Myotis* bat. Both species were recorded between points 2 and 4 on the transect route. The *Myotis* was recorded briefly commuting through the site in a southerly direction; the pipistrelle was recorded foraging along the scrub and tree line edge at the eastern margin of the site for the entire of the transect between points 2 and 4. No more than a single bat was recorded at any one time.

4.0 DISCUSSION AND EVALUATION

Evaluation of bat species / bat assemblages follows guidelines set out by the Institute of Ecology and Environmental Management (2006)[2] and assessment criteria determined by Wray et al[3].

No records of roosting bats were provided by HBIC; either within the site or in the adjacent area, although this is likely to be the result of under-recording as bats will certainly use the area. No evidence of roosting bats was recorded during the 2012 tree surveys.

Habitats comprise predominantly scrub and calcareous grassland and there is an area of woodland, scrub and mature trees that fringes the eastern boundary. Apart from possible tree roosts in the latter (marginal) habitat, the site itself does not offer any opportunities for roosting and save for the sheltered corridor along the inside of the eastern boundary, there is no other commuting or foraging habitat of any quality.

Of the 65 trees subject to visual assessment along the eastern boundary, seven were recorded as Cat 1, which means they possess features suitable for roosting. A single emergence survey of five of these trees, located in closest proximity to the development proposals was undertaken; no emerging bats were recorded. The presence of roosting bats within these trees cannot be discounted however and as such for the purpose of the EcIA, they are considered to be present. Dependant on roost type and species (maternity roosts of rarer species would hold a higher value than low numbers or individual bats of commoner species); the potential exists for tree roosts to be an ecological receptor of up to County value.

Very little bat activity was noted during the activity surveys; indeed only two species were recorded, both at low levels. As a result, habitats within the site were assessed as being of only very limited value to local bat populations. Also, it should be noted that there is abundant higher-quality foraging habitat in the locality, away from the site. Wray et al set out criteria of assessment for valuing habitats in relation to bats. An assessment using these criteria has been undertaken for foraging and commuting bats (see Appendix B) and the foraging and commuting bat assemblage at the application site is considered to be an ecological receptor of Parish value.

[2] Institute of Ecology and Environmental Management (2006) *Guidelines for Ecological Impact Assessment in the United Kingdom*

[3] Wray, S., Wells, D., Long, E. and Mitchell-Jones, T. Valuing Bats in Ecological Impact Assessment December 2010. IEEM In Practice. Vol 70. Pages 23-25.

APPENDIX A – TREE ASSESSMENT RESULTS

Tree	Category	Features	Tree	Category	Features
T01	2	Dead crown	T34	3	
T02	3		T35	2	Canker damage
T03	2	Dead crown, split limb	T36	3	
T03	3		T37	2	Numerous rot holes
T05	3		T38	2	Canker damage
T06	3		T39	3	
T07	1	Rot hole @2m,	T40	3	
T08	2	Canker damage	T41	2	Rot hole @4m
T09	3		T42	3	
T10	3		T43	2	Broken limbs, canker
T11	3		T44	3	
T12	3		T45	1	Large split @15m
T13	2	Areas of canker	T46	2	Canker damage
T14	3		T47	2	Crack @5m, wasp nest
T15	1	Large split, canker	T48	3	
T16	3		T49	3	
T17	3		T50	2	Canker damage
T18	2	Rot hole at base	T51	3	
T19	3		T52	3	
T20	1	Large split and holes	T53	3	
T21	1	Woodpecker hole	T54	2	Split limbs
T22	3		T55	3	
T23	3		T56	2	Canker, rot holes
T24	2	Canker, rot holes	T57	3	
T25	2	Broken limb, rot hole	T58	2	Canker, rot holes, ivy
T26	1	Large hole @10m	T59	3	
T27	3		T60	3	
T28	3		T61	3	
T29	1	Rot hole @3m, staining	T62	3	
T30	3		T63	2	Canker, rot hole, ivy
T31	3		T64	3	
T32	2	Large dead branch	T65	3	
T33	3				

APPENDIX B – DETERMINATION OF COMMUTING AND FORAGING HABITAT FOR BATS

Wray et *al* have set out the following assessment of foraging and commuting habitat for bats, using four key factors of each habitat. The four scores are added together to give and overall score which is then used to determine the ecological value. The four key factors are species rarity, number of bats recorded using the habitat, proximity of known bat roosts and quality/type of habitat present in commuting route **OR** foraging habitat. Of the four key factors, species rarity has been defined (see Table 1). The scores for the remaining key factors are to be assigned using survey data and professional judgement.

Table 2 – Determining rarity of species

Rarity within range	England	Wales	Scotland	Northern Ireland
Rarest Popn below 10,000 Score - 20	greater horseshoe, Bechstein's, Barbastelle, grey long-eared	greater horseshoe, Bechstein's, Barbastelle, Whiskered, Brandt's, noctule, Nathusius pipistrelle, serotine	whiskered, Brandt's, noctule, Nathusius pipistrelle, Leisler's	whiskered
Rarer Popn 10,000 – 100,000 Score - 5	lesser horseshoe, whiskered, Brandt's, Daubenton's, Natterer's, Leisler's, noctule, Nathusius pipistrelle, serotine	lesser horseshoe, Daubenton's, Natterer's, brown long-eared	Daubenton's, Natterer's, brown long-eared	Daubenton's, Natterer's, Leisler's, Nathusius pipistrelle, brown long-eared
Common Popn over 100,000 Score - 2	common pipistrelle, soprano pipistrelle, brown long-eared	common pipistrelle, soprano pipistrelle	common pipistrelle, soprano pipistrelle	common pipistrelle, soprano pipistrelle

NB. Where more than one bat species is recorded within a particular habitat, the value of the rarest species recorded should be used.

Once the value of the species is assigned, the other three factors can be determined using the tables below, either for commuting or foraging.

Table 3 – Valuing commuting habitat

Species	No of Bats	No of roosts nearby	Complexity of Linear Features
Common (2)	Individual bats (5)	None (1)	Absence of (other) linear features (1)
		Small number (3)	Unvegetated fences and large field sizes (2)
Rarer (5)	Small number (10)	Moderate number/ not known (4)	Walls, gappy or flailed hedgerows, isolated well grown hedgerows and moderate field sizes (3)
		Large number, or close to bat SSSI (5)	Well grown and well connected hedgerows, small field sizes (4)
Rarest (20)	Large number (20)	Close to or within a SAC for bats (20)	Complex network of mature establishes hedgerows, small fields and rivers/streams (5)

Table 4 – Valuing Foraging Habitat

Species	No of Bats	No of roosts nearby	Foraging habitats characteristics
Common (2)	Individual bats (5)	None (1)	Industrial or other site without established vegetation (1)
		Small number (3)	Suburban areas or intensive arable land (2)
Rarer (5)	Small number (10)	Moderate number/ not known (4)	Isolated woodland patches, less intensive arable and/or small towns and villages (3)
		Large number, or close to bat SSSI (5)	Larger or connected woodland blocks, mixed agriculture and small villages/hamlets (4)
Rarest (20)	Large number (20)	Close to or within a SAC for bats (20)	Mosaic of pasture woodland and wetland (5)

Once you have the total value for each foraging or commuting habitat it should be cross referenced with the table below to give ecological receptor value for that habitat.

Table 5 – Scoring system

Value of ecological receptor	Score
International	>50
National	41 – 50
Regional	31 – 40
County	21 – 30
District, local or parish	11 – 20
Not important	1 – 10

Evaluation

Myotis and soprano pipistrelle were recorded during the survey. Myotis species are defined as rarer than soprano pipistrelle in England, and therefore the value of '**5**' is assigned

Only individual bats were recorded at any one time, which is assigned the value '**5**'.

Potentially, low numbers of roosts are recorded nearby, which is assigned the value '**3**'

The habitats within the site are not easily placed within either the commuting or foraging categories, but fit best within the following

Commuting – Score '**3'** – a single line of woodland belt acts as an 'isolated well grown hedgerow'

Foraging – Score '**3'** – small patches of woodland within and around the site acts as 'isolated woodland patches'.

The equations for commuting and foraging both contain the same values:-

5 + 5 + 3 + 3 = **16**

A total of '16' denotes an ecological receptor of 'Parish' value in terms of both commuting and foraging habitat.