Potential Roost Features Tree Survey

Ashplats House, Holtye Road
East Grinstead
West Sussex
RH19 3EZ

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Contents

LIABILITIES:

Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living animals and plants are capable of migration/establishing and whilst such species may not have been located during the survey duration, their presence may be found on a site at a later date.

This report provides a snap shot of the species that were present at the time of the survey only and does not consider seasonal variation. Furthermore, where access is limited or the site supports habitats which are densely vegetated only dominant species maybe recorded.

The recommendations contained within this document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

1.0 Introduction

Background

1.1 The Ecology Partnership was commissioned by Mr. and Mrs. Bos to undertake a potential roost features assessment on the trees scheduled for removal at Ashplats House, Holtye Road, East Grinstead, West Sussex RH19 3EZ. This survey was recommended based on a preliminary ecological assessment conducted by The Ecology Partnership in Jan 2019.

1.2 This report presents the results of The Ecology Partnership's survey, which aims specifically to assess whether trees located on site have the potential to support roosting bats. If trees which are scheduled for removal are identified as having some potential for bats, then further surveys prior to removal would be required.

Site Context and Status

1.3 The site is located to the east of East Grinstead, West Sussex (TQ 40837 39273). The site covers approximately 1.1ha and consisted of five standing structures including a house and a bungalow. Within the red line boundary were areas of amenity grassland, hard standing ground, hedgerows, trees and shrubs.

1.4 The aerial photograph below (Figure 1) shows the site and its immediate surroundings. The red line depicts the approximate site boundary and survey area.

Figure 1: Approximate red line boundary of the site

Legislation

1.5 Under the Natural Environment and Rural Communities (NERC) Act 2006, it is now the duty of every Government department in carrying out its functions "*to have regard, so far as it is consistent with the proper exercise of those functions, to the purpose of conserving biological diversity in accordance with the Convention*". Seven species of bat (Barbastelle, Bechstein's, Noctule, Soprano pipistrelle, Brown long-eared, Greater horseshoe and Lesser horseshoe) are listed as Species of Principal Importance in England under Section 41 of the NERC Act.

1.6 All bats are covered by the following relevant legislation: Wildlife and Countryside Act (WCA) 1981 (as amended); the Countryside and Rights of Way Act 2000; the Natural Environment and Rural Communities Act 2006; and by the Conservation of Habitats and Species Regulations (CHSR) 2010.

Under the WCA 1981 it is an offence to:

- intentionally, recklessly or deliberately disturb a roosting or hibernating bat i.e. disturbing it whilst it is occupying a structure or place used for shelter or protection)
- intentionally or recklessly obstruct access to a roost (i.e. a structure or place used for shelter or protection)

Under the CHSR 2010 it is an offence to:

- deliberately capture (or take), injure or kill a bat
- intentionally, recklessly or deliberately disturb a bat, in particular (i) any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young; (ii) any disturbance which is likely to impair their ability in the case of hibernating or migratory species, to hibernate or migrate; or (iii) any disturbance which is likely to affect significantly the local distribution or abundance of the species to which they belong
- damage or destroy a breeding site or resting place (roost) of a bat

2.0 Methodology

Tree Assessment for Bats

2.3 Trees on site were assessed for their potential to support roosting bats. Bats can use trees to rest, give birth, raise young and/or hibernate. The trees were assessed visually for evidence of bats as well as for features that increase the likelihood of roosting bats, such as the following:

- Woodpecker holes, natural cracks and rot holes in trunks and branches;
- Frost cracks;
- Trunk and branch splits;
- Hollow sections of trunk and branches;
- Loose bark;

- Cavities beneath old root buttresses and coppice stools;
- Dense epicormic growth;
- Dense ivy cover.

2.4 Veteran trees typically exhibit many of these features and should usually be regarded as sites with clear potential, but any tree possessing one or more such feature, may host bats. Any tree species can be suitable but oak and beech often seem to be the preferred options. However, bats rarely restrict themselves to one tree. They change their roost sites frequently, sometimes every two to three days, looking for small differences in temperature and humidity.

2.5 Roosts of bats in trees may be identified from the following field signs:

- Black stains beneath cracks, splits and other features where bat droppings have fallen;
- Dark marks at entrance points where bats have rubbed against the wood and left natural body oils;
- Feeding remains beneath roosts, such as insect wings;
- Chattering of bats;
- Bat droppings under access points;
- Scratch marks around a feature (cavity or split) caused by bat claws;
- Urine stains below the entrance or end of split;
- Large roosts or regularly used sites may produce an odour;
- Flies around the entrance, attracted by the smell of guano.

2.6 Trees which may be affected by arboricultural work should also be assessed, and may be categorised to relate the value of their features to recommended actions (Table 1). This approach allows trees to be graded according to their potential to support bat roosts. Trees may be assessed as having the potential to support bats (from an individual to a larger roost) even if no bats have been found.

Table 1: Protocol for visual inspection of trees to assess their value to bats - taken from Table 4.1 within the 'Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd edition' (Bat Conservation Trust 2016)

Suitability	Roosting habitat description
Negligible	Negligible habitat features on-site likely to be used by roosting bats.
Low	A tree of sufficient size and age to contain potential roosting features but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
High	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

Limitations

2.7 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no single investigation could ensure the complete characterisation and prediction of the natural environment.

3.0 Results

Tree Survey for Roosting Bats

3.19 A large number of mature trees were present on-site. Some of these trees possessed suitable features for roosting bats. The trees on-site were assessed individually and are listed in the table below. Each tree is marked individually on figure 2 and detailed in table 2 below. Trees or tree groups that were not assessed, due to them either being retained or not present, are labelled with "N/A" for bat potential.

Table 2: Bat Potential Trees Recorded on Site

Plant ID	Bat Potential	Species	Notes and features
T1	Low Potential	Sweet gum	Upwards facing hole in stem, letting water in
T2	N/A		
T3	N/A		
T4	Negligible	Ash	
T5	Negligible	Ash	
T6	Negligible	Willow leaved pear	
T7	Negligible	Ash	
T8	Negligible	Ash	
T9	Negligible	Ash	
T10	Negligible	Cherry	
T11	Low Potential	Douglas fir	Sufficient age and size to support bats although no specific features present / visually recorded
T12	Low Potential	Douglas fir	Could not fully see whole tree as obscured by surrounding trees. Sufficient age and size to support bats although no specific features present / visually recorded
T13	Low Potential	Douglas fir	Could not fully see whole tree as obscured by surrounding trees. Sufficient age and size to support bats although no specific features present / visually recorded
T14	Low Potential	Silver birch	Sufficient age and size to support bats, although no specific features present / visually recorded
T15	Low Potential	Apple	Sufficient age and size to support bats although no specific features present / visually recorded
T16	Moderate Potential	Apple	large rot hole in trunk. Endoscope survey revealed no signs of bat presence, but hole extended further than endoscope could reach. Hole was also open at the top to some degree which could allow some water ingress
T17	Low Potential	Apple	Upward facing rot hole. Endoscope survey revealed nothing further and hole could not be fully accessed with endoscope due to height off ground
T18	Moderate Potential	Oak	Multiple dead and cracked limbs
T19	Moderate Potential	Ash	Large crack from missing limb that extended up into the trunk
T20	Low Potential	Douglas fir	Some ivy on trunk, sufficient age and size to support bats although no specific features present / visually recorded
T21	Low Potential	Douglas fir	Sufficient age and size to support bats although no specific features present / visually recorded

Plant ID	Bat Potential	Species	Notes and features
T22	Low Potential	Douglas fir	Sufficient age and size to support bats although no specific features present / visually recorded
T23	Low Potential	Douglas fir	Sufficient age and size to support bats although no specific features present / visually recorded
T24	Low Potential	Oak	Some ivy on trunk, Sufficient age and size to support bats although no specific features present / visually recorded
T25	Low Potential	Douglas fir	Sufficient age and size to support bats although no specific features present / visually recorded
T26	Low Potential	Douglas fir	Sufficient age and size to support bats although no specific features present / visually recorded
T27	Low Potential	Ash	Sufficient age and size to support bats although no specific features present / visually recorded
T28	Low Potential	Douglas fir	Sufficient age and size to support bats although no specific features present / visually recorded
T29	Low Potential	Douglas fir	Sufficient age and size to support bats although no specific features present / visually recorded
T30	Low Potential	Douglas fir	Not ash as listed on report. Sufficient age and size to support bats although no specific features present / visually recorded
T31	Low Potential	Plum	Hole in trunk with top opening, allows for water ingress.
T32	N/A	Hazel	Tree had been removed
T33	Negligible	Norway spruce	Sufficient age and size to support bats although no specific features present / visually recorded
T34	Negligible	Norway spruce	Sufficient age and size to support bats although no specific features present / visually recorded
T35 – T49	N/A		
T50	Low Potential	Red horse chestnut	Small rot holes in trunk, uncertain of depth, but appears to be superficial
T51, T52, T53	N/A		
T54	Negligible	Hawthorn	
T55	Negligible	Silver birch	
T56	Negligible	Cider gum	
T57 – T62	N/A		
T63	Negligible	Chanticleer Pear	
Plant ID	**Bat Potential**	**Species**	**Notes and features**

T64	Negligible	Chanticleer Pear	
T65	Negligible	Ash	
T66	Negligible	Bay	
T67	Negligible	Cherry	
T68	Negligible	Box elder	
T69	Negligible	Apple	
T70	Negligible	Corkscrew willow	
T71	Low Potential	Lawson's cypress	Sufficient age and size to support bats although no specific features present / visually recorded
G1	Low Potential	Norway spruce, oak, larch, holly, ash, hazel, Leyland cypress, Lawson's cypress	Sufficient age and size to support bats although no specific features present / visually recorded
G2 – G7	N/A		
G8	Negligible	Lawson's cypress, hawthorn	
G9	N/A		
G10	Low Potential	Lawson's cypress	Sufficient age and size to support bats although no specific features present / visually recorded
G11	Low Potential	Magnolia, Norway maple, yew, ash	Maple low and others negligible potential. Maple of sufficient size and age to support roosting bats
G12	Low Potential	Lawson's cypress	Sufficient age and size to support bats although no specific features present / visually recorded
G13	Low Potential	Leyland cypress, Lawson's cypress	Sufficient age and size to support bats although no specific features present / visually recorded
G14	Low Potential	Lawson's cypress	Sufficient age and size to support bats although no specific features present / visually recorded

Figure 2: Locations of all of the trees on site

4.0 Discussion

Tree Assessment

Bats

4.1 Numerous large and mature trees were identified across the site. A large proportion of these trees, or groups of trees, were considered to have negligible potential to support bats. These trees are not considered to be constrained by potential presence of bats. However, consideration for nesting birds must always be made.

4.2 Many of the trees to be removed as part of the development had low potential to support roosting bats. It is recommended that these trees are "soft felled", and that if any bat features or individual bats are encountered then works should cease and an ecologist be contacted to assess the tree further.

4.3 Any tree which is considered to be a 'low' potential does not require any further survey works. However, all trees with 'low' potential roost features are to be felled in accordance with specific advice provided by the batworker ensuring that reasonable avoidance measures are followed. This includes;

- Ideally carrying out work on likely trees in autumn this avoids periods when bats are particularly vulnerable – during hibernation or when non-flying young are present
- Re checking the tree and any features for evidence of bats
- Areas of ivy and loose bark should be re checked and carefully removed to reveal the tree trunk below and if any features or bats present
- If evidence of bats is present then works should stop and the advice of an ecologist sought immediately
- Cavities in the trees should not be sawn through but cut above and below cavities
- Sections which support cavities should be soft felled and roped carefully down to the ground

- Sections which contain cavities should be left undisturbed on site for 24 hours before removing to allow any animals, including bats, time to move out of the cavity naturally
- If a bat is found and is injured the advice of an ecologist should be sought
- If a roost is discovered and no bats are harmed, no further works should be undertaken and the advice of an ecologist sought.

4.4 It is recommended that log piles from the felling of the trees are maintained on site and stacked for enhancement purposes.

4.5 Three of the trees on site had moderate potential to support roosting bats. It is understood that one of these trees (T16) is to be removed as part of the development. It is recommended that two surveys consisting of an emergence and re-entry survey are undertaken, prior to any works to the tree to assess whether the tree is used by bats and if so to what extent. These surveys should be undertaken between May - September, with at least one survey being undertaken between May - August. If the development plans are altered then a qualified ecologist must be contacted to assess any other trees marked for removal for potential bat roosting features.

Nesting Birds

4.5 Birds are likely to use the trees and hedgerow on site for foraging and breeding. It is recommended that any vegetation clearance be undertaken outside of the breeding bird season (March-September inclusive) or immediately after a nesting bird check by a suitably qualified ecologist. If an active nest is identified, works in the vicinity of the nest must cease until the birds have fledged the nest.

Recommendations and Enhancements

4.6 It is recommended that as much of the habitat, in terms of mature trees, tree lines and hedgerows, as possible be retained as part of the proposals. Mature trees have intrinsic value and should be maintained where possible. These can be incorporated into gardens as part of the development design. Any mature trees that need to be removed should be

replaced elsewhere on site with native species such as oak, ash, hazel, beech, cherry, hornbeam or rowan.

4.7 It is likely that bats use the site for foraging and commuting purposes. Therefore, it is recommended that hedgerows, treelines and mature trees are maintained post-development, where possible, to allow bats to continue to use the site and retain connectivity across the landscape.

4.8 Oak trees (*Quercus robur*) are present on-site. Oak trees are known for their ability to support a range of invertebrates. They provide habitats for more organisms than any other tree in the UK. Large numbers of moth larvae feed on oak trees including micro moths. Beetles and weevils are also associated with the oak, boring into the wood or using acorns as nurseries. Therefore, it is recommended that these are retained on site where possible and sensitively managed to ensure their longevity to support good levels of invertebrates, which are prey items for bats.

4.9 It is recommended that a sensitive lighting scheme is conditioned as part of the planning permission. Any proposed lighting scheme as part of any development will also have to take into account bats in the surrounding area as well as on the site. All bat species are nocturnal, resting in dark conditions in the day and emerging at night to feed. Bats are known to be affected by light levels, which can affect both their roosting and foraging behaviour. This needs to be considered and addressed with a sympathetic lighting scheme. The following guidance is taken from The Bat Conservation Trust guidance. Recommendations include, but are not limited to:

- Installing lighting only if there is a significant need, avoid lighting all together if there is no specific need or requirement;
- Balance the need for bats with lighting objectives and requirements;
- Directing light to where it is needed and avoiding light spillage;
- Dark buffers, illuminance limits and zonation, can be employed;
- Avoid putting lighting near treelines or hedgerows and angling light away from these linear features which are used by commuting and foraging bats;
- Do not light known roost features;
- Dimming and part time lighting can be employed;

- Planting a barrier or using man-made features required within the scheme to form a barrier;
- All luminaires should lack UV elements when manufactured. Metal halide, fluorescent sources should not be used;
- An ecologist should be consulted when designing the scheme to ensure that important habitat and features are adequately considered;
- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability;
- A warm white spectrum (ideally <2700Kelvin) should be adopted to reduce blue light component;
- Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012);
- Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill;
- Column heights should be carefully considered to minimise light spill;
- Luminaires should always be mounted on the horizontal, i.e. no upward tilt;
- External security lighting should be set for a minimum timing of 1 minute; and
- As a last resort, using baffled lighting where light is directed towards the ground.

4.10 To enhance the local bat population and provide roosting opportunities within the new development, integrated bat boxes/tubes should be incorporated into the structure of the new buildings (Figure 3). These provide good opportunities for crevice-dwelling species such as pipistrelles. The opening of the bat tube will be the only section visible. Several of these tubes can be installed in a row together to provide a good-sized roost space. The bat tubes should be inserted as high up as possible in the brickwork. Habibat, in association with the Bat Conservation Trust, provide a range of boxes which are unfaced for render or designed to match the brickwork of the building (Figure 3).

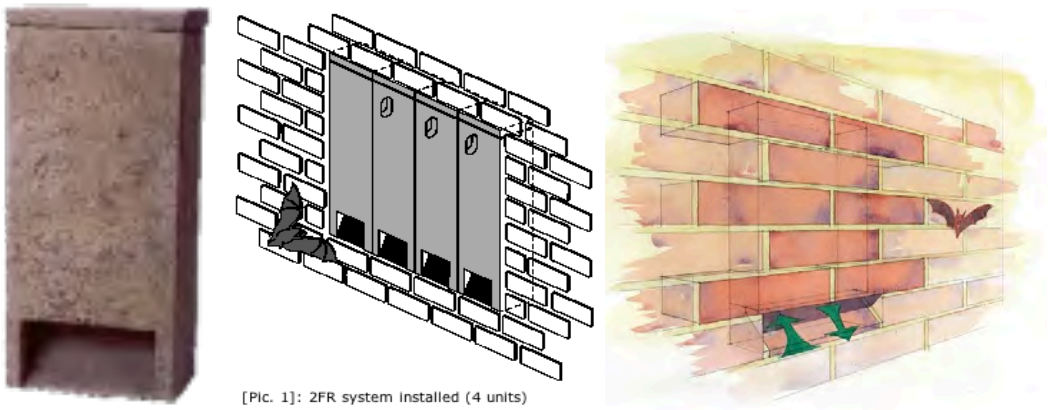

Figure 3: Bat tubes incorporated into the wall of a building to provide roosting space

4.11 Additional roosting opportunities can be provided by hanging bat boxes on retained mature trees with clear flight paths for bat access. Schwegler boxes have been recommended as these are long-lasting and require no maintenance. The following are examples of boxes which can be used on site:

- Schwegler 2F Bat Box – This box is attractive to small bats, such as pipistrelles, and can be hung on trees (Figure 4).
- Schwegler 2FN Bat Box – This box is slightly larger than the 2F and provides opportunities for the larger bat species such as noctules.
- Schwegler 1FD Bat Box – This box has been designed specifically for smaller bats and provides opportunities as a maternity roost (Figure 4).
- Schwegler Improved Cavity Bat Box – This box is designed for cavity-dwelling species such as brown long-eared bats.

Figure 4: Schwegler 2F (left) and 1FD (right) bat boxes

4.12 The siting of bat boxes is important, bat boxes are best located, and have the best rate of occupancy, when they are situated within or adjacent to bat-friendly features, such as hedgerows or woodland, providing connectivity to the wider landscape. The bat boxes should be situated where they are sheltered from strong winds, and should be exposed to the sun for most of the day. Therefore, southern aspects are favourable. Multiple boxes may be hung on one large tree, facing different aspects. Bat boxes should be hung as high as possible, preferably around 5m high, although lower boxes may also be used by brown long-eared bats.

5.0 Conclusions

5.1 The habitats found during the survey are locally common and widespread. However, these habitats provide opportunities for foraging and commuting bats. The hedgerows and tree lines form a network of habitat across the site, providing connectivity with other suitable habitat areas within the local landscape.

5.2 All trees to be removed as part of the development on site were assessed for their potential to support roosting bats. Many of the large and mature trees around the site had low potential to support roosting bats. It is recommended that these trees are "soft felled", and that if any bat features or individual bats are encountered then works should cease and an ecologist be contacted to assess the tree further. One tree with moderate bat roosting potential (T16) is to be removed as part of the development plan. It is recommended that two surveys are undertaken on this tree, prior to commencement of any works on the tree to assess whether the tree is in use by bats and if so to what extent. This survey should take place between May and September.

5.3 Recommendations and enhancements have been outlined within this report, aimed at maintaining the ecological value of the site post-development. Additionally, mitigation measures such as the use of native species in any planting scheme and the creation of a sensitive lighting scheme are recommended to provide new opportunities on site and to limit any impacts from the development on local wildlife.

5.4 It is considered that the development would not impact upon the favourable conservation status of bats in the local area if mature trees are to be retained where possible and that the recommended enhancements are undertaken.

6.0 References

Bat Conservation Trust (2018) *Bats and artificial lighting in the UK – Bats and the built environment series.* Bat Conservation Trust, London.

Collins, J. (ed.) (2016) *Bat surveys for Professional Ecologists: Good Practice Guidelines (3rd edition).* The Bat Conservation Trust, London.

Internet resources:

Magic Interactive Map: www.magic.gov.uk

Google Maps: www.google.co.uk/maps

Appendix 1: Site Photographs

Photo 1: Image of T1 showing the upward facing hole in its trunk	
Photo 2: Image of T16 showing the large rot hole in the stem	

Photo 3: Image of T25-T29 along the western edge of the site	
Photo 4: Image of T50 with a small rot hole on the trunk	

Photo 5: Image of G8 with dead conifers also present	
Photo 6: Image of T56	

Photo 7: Image of T66 with G10 behind	
Photo 8: Image of T71 flanked by G13 and G14	

Photo 9: Image of T6-T9 in the foreground	
Photo 10: Image of T18 with multiple dead and cracked limbs	

Photo 11: Image of T19 showing the large crack extending up into the trunk	

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