

Keymer Road, Hassocks

784-B049054

Bat Roost Assessment and Bat Survey Report

Planning Issues Ltd




November 2023


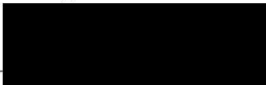
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ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
ACIEEM	Associate Member of the Chartered Institute of Ecology & Environmental Management
BAP	Biodiversity Action Plan
BCT	Bat Conservation Trust
BRA	Bat Roost Assessment
BRM	Breathable Roof Membrane
CIEEM	Chartered Institute of Ecology & Environmental Management
CSZ	Core Sustenance Zone
DBH	Diameter at Breast Height
EPSL	European Protected Species Licence
Habitats Regulations	Conservation of Habitats and Species Regulations 2017 (as amended)
ILP	Institute of Lighting Professionals
LBAP	Local Biodiversity Action Plan
MAGIC	Multi Agency Geographic Information for the Countryside
MCIEEM	Member of the Chartered Institute of Ecology & Environmental Management
NPPF	National Planning Policy Framework
PRF	Potential Roost Feature
OSNGR	Ordnance Survey National Grid Reference
SAC	Special Area of Conservation
SSSI	Site of Special Scientific Interest

EXECUTIVE SUMMARY

Contents	Summary
Site Location	The site is located at 68 and 70 Keymer Road, Hassocks, West Sussex and is centred at Ordnance Survey National Grid Reference (OSNGR) TQ 30967 15408 – refer to Figure 1.
Proposals	The development proposals comprise the demolition of existing buildings on site and the construction of a retirement living facility, car park, and amenity areas as shown in the Site Plan and Elevations Feasibility (20090HK_PL002_P1 - SITE PLAN) (refer to Appendix C).
Scope of this Survey(s)	Undertake a bat roost assessment of the buildings and trees on site and undertake dusk emergence and dawn return-to-roost surveys on buildings and trees that have suitability for roosting bats using survey methods based on the BCT Guidelines.
Results	<p>Bat Roost Assessment:</p> <ul style="list-style-type: none"> Two buildings (houses no. 68 and 70) were assessed as having moderate suitability for roosting bats and therefore further surveys were required to be undertaken. Four trees (T58, T4, T15 and T16) were assessed as having moderate suitability for roosting bats and further surveys were required to be undertaken. One tree (T40) was assessed as having low suitability for roosting bats. No further surveys are required but mitigation is recommended below. <p>Dusk emergence / Dawn return-to-roost Surveys:</p> <p>No evidence of roosting bats was recorded in the two buildings or the four trees on site during the dusk emergence or dawn return-to-roost surveys.</p> <p>Low levels of activity from commuting or foraging bats were recorded, pertaining to five species including:</p> <ul style="list-style-type: none"> Common pipistrelle <i>Pipistrellus pipistrellus</i>; Brown long-eared bat <i>Plecotus auritus</i>; Soprano pipistrelle <i>Pipistrellus pygmaeus</i>; Serotine <i>Eptesicus serotinus</i>; and <i>Myotis</i> sp.
Recommendations	<p>Buildings should be demolished outside of the nesting bird season (March to September) or a nesting bird check should be undertaken by an ecologist 48 hours prior to demolition.</p> <p>Trees T16 (moderate suitability for roosting bats) and T40 (low suitability for roosting bats) are to be removed as part of the development proposals. At the time of this report being issued, T16 has been felled. As T40 is still present on site and has features suitable for roosting bats, it is recommended that this tree is sectionally felled under supervision of a bat licenced ecologist</p> <p>In the highly unlikely event that a bat is found during demolition works and tree removal, all works must cease, and a bat licenced ecologist contacted for advice.</p> <p>Enhancement opportunities include the planting of wildlife attracting seed and fruit bearing species within any soft landscaping designed for the site. Bat boxes may be</p>

	installed upon retained trees or integrated within the building design to provide opportunities for roosting.
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1.0 INTRODUCTION

1.1 BACKGROUND

Tetra Tech was commissioned by Planning Issues Ltd in July 2023 to undertake a bat roost assessment and presence / likely absence bat surveys of Keymer Road, Hassocks, hereafter referred to as “the site”.

This report has been prepared by Consultant Ecologist Hannah Goodenough BSc (Hons) and the conditions pertinent to it are provided in Appendix A.

Bats are protected species, full details of that protection, including types of offences and policy position are provided in Appendix B.

1.2 SITE LOCATION

The site is located at 68 and 70 Keymer Road, Hassocks, West Sussex and is centred at Ordnance Survey National Grid Reference (OSNGR) TQ 30967 15408 – refer to Figure 1. It comprises two detached houses and associated land, including front and rear gardens, patios, and front driveways. The rear gardens primarily comprise well-maintained lawns, ornamental planting beds and shrubs, and mature trees. The site is surrounded by residential development on all sides; a large park (Adastra Park) is also located approximately 30m north of the site, and approximately 500m northeast of the site are agricultural fields.

The wider landscape provides suitable roosting, foraging and commuting habitats for bats within 5 km of the site (which encompasses the core sustenance zones of the majority of UK bat species), such as arable field margins, semi-improved, acid and calcareous grassland, lowland meadows, deciduous and ancient woodland, traditional orchards, wood pasture and parkland Biodiversity Action Plan (BAP) priority habitat, tree lines and hedgerows.

1.3 DEVELOPMENT PROPOSALS

The development proposals comprise the demolition of existing buildings on site and the construction of a retirement living facility, car park, and amenity areas as shown in the Site Plan (Drawing No. 23 SE013_GF_001) (refer to Appendix C).

1.4 PURPOSE OF THE REPORT

The purpose of this report is to:

- Determine if suitable features for roosting bats are present on site;
- Determine if roosting bats are present on site;
- Identify if any additional surveys are required to inform this assessment;
- Determine if any potential impacts on bats are likely to arise from the development; and
- Outline strategies to avoid/mitigate/compensate for any likely impacts on bats.

The details of this report will remain valid until **September 2024** after which the validity of this assessment should be reviewed to determine whether further updates are necessary.

The recommendations within this report should be reviewed (and reassessed if necessary) should there be any changes to the red line boundary or development proposals which this report was based on.

Note that scientific names are provided at the first mention of each species and common names (where appropriate) are then used throughout the rest of the report for ease of reading.

2.0 METHODOLOGY

2.1 DESK STUDY

The desktop study comprised of an online element including a search using: Multi Agency Geographic Information for the Countryside (MAGIC) (<https://magic.defra.gov.uk>) website and Ordnance Survey (OS) and Aerial Imagery (<https://www.bing.com/maps>). This included a search for any designated sites within 5 km supporting bats, and 2 km for records of bat roosts or European Protected Species Licenses (EPSL). The search was conducted in October 2023.

2.2 FIELD SURVEYS

2.2.1 Bat Roost Assessment

The Bat Roost Assessment (BRA) was undertaken on 24th July 2023 by Senior Ecologist Jon D'Arcy BSc (Hons) MCIEEM (Natural England Class 2 Bat Licence no: 2018-37285-CLS-CLS). The weather conditions were mild, cloudy and no precipitation.

Any suitable buildings or trees on site were assessed from the ground for their suitability to support breeding, resting and hibernating bats using survey methods based on the BCT *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins, 2016) – hereafter referred to as the 'BCT Guidelines'.

Buildings

The BRA was completed to assess the likelihood of bats using the buildings within the site for summer roosting and winter hibernation.

The buildings were systematically inspected during daylight, and any features suitable for bats were noted such as hanging tiles, gaps in soffit boxes or fascia boards, gaps in brickwork, cracks, crevices, lifted lead flashing and slipped or broken tiles. Features located at height were viewed from the ground using binoculars. Any potential bat access points were inspected for signs of bat presence such as:

- Bat droppings on the ground outside, on the floor inside or stuck to walls;
- Other evidence of bats such as feeding remains;
- Suitable entry and exit points around cladding, eaves, flashing, under tiles or gaps in mortar;
- Live bats, bat corpses or skeletons; and
- Oily marks (from fur) or localised clean spots around possible access points and roost areas.

Trees

All trees were inspected from the ground using binoculars, high-powered torches and endoscope during daylight hours, and any features suitable for bats were noted, such as tear outs, knot holes, transverse snaps, basal cavities and lifting bark. Any potential bat access points or roost areas were identified and inspected for signs of bats such as:

- Bat droppings on the ground outside the feature or stuck to the tree;

- Other evidence of bats such as feeding remains; and
- Oily marks (from fur) or localised clean spots around possible access points and roost areas.

All buildings and trees on site were then categorised using the table below (refer to Table 1).

Table 1: Categories of Bat Roost Suitability (BCT Guidelines)

Suitability	Typical Roosting Features
Negligible	Negligible habitat feature on site likely to be used by roosting bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain potential roost features but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A structure or 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 (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis & potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

2.2.2 Presence / Likely Absence Surveys – Buildings and Trees

Where the BRA identified building/ trees with suitability for roosting bats, further surveys were designed following industry standard best practice guidance as outlined in the BCT Guidelines (Collins, 2016).

As per BCT guidelines for buildings or trees of moderate suitability for roosting bats, one dusk emergence and one dawn return-to-roost survey were undertaken on each tree or building where possible (refer to 2.3 Limitations). The dusk surveys began at least 30 minutes prior to sunset and continued for 1.5 hours after sunset. The dawn surveys began 1.5 hours prior to sunrise and continued until at least 15 minutes after sunrise or until there were no more bats recorded in flight, following the best practice in the BCT guidelines. Surveyor details, dates and weather conditions are detailed in Table 2 below.

Surveyor locations were positioned around the buildings and trees so that all potential bat access points or potential roosting features (PRFs), could be clearly observed. Surveyor locations were covered either by individual Tetra Tech personnel or an infrared night vision camera. The building and tree locations and surveyor positions are provided in Figure 2.

Surveyors used Elekon Batlogger M detectors. This detector uses a broad-spectrum microphone and uses a heterodyne mode to make bat calls audible while recording full spectrum data for subsequent analysis. All bat activity heard and / or seen was noted by surveyors including time of observation.

Where cameras were used in the place of a surveyor, regular checks were conducted throughout the survey period to ensure full coverage and proper visibility of PRFs, to account for the changing light levels during the survey.

Canon XA60 cameras mounted on tripods were used in combination with infrared torches. The cameras were set up ahead of the survey start time and directed at the previously identified PRFs on the buildings and trees. The cameras and lighting were switched on and set to record at the start of the survey and switched off at the end. Where cameras were used, the recorded files were processed after the survey using MotionMeerkat (Weinstein, 2015) software to detect any movement in the footage, and any registered motion events were then reviewed to check for emerging bats. The corresponding recording device was then analysed using Bat Explorer software (Version 2.1.11.2) to establish the species of any bats recorded emerging from or returning to roosts, where necessary.

Table 2: Surveyors, date and weather conditions for bat emergence/return-to-roost surveys. Wind speed uses Beaufort scale.

Date of survey	Building / Tree No.	Sunrise / sunset	Start (S)	Finish (F)	Temperature (in °C) S/F	Rain S/F	Wind speed S/F	Cloud cover (%) S/F
(1 st Survey) 14.08.2023	House no. 68	20:24	19:54	21:54	18 / 16	None	1 / 0	80 / 80
(1 st Survey) 15.08.2023	House no. 70	05:47	04:17	06:17	13 / 13	None	2 / 3	0 / 40
Surveyor names	All four surveyors / cameras were positioned around one building per survey. <ul style="list-style-type: none"> • Consultant Ecologist Jesse Ross; • Graduate Ecologist Charlie Lee; • Infrared camera SECAM2; and • Infrared camera SECAM4. 							
(1 st Survey) 16.08.2023	Trees T58 & T4	20:20	19:50	21:50	18 / 14	None	1 / 1	0 / 40
(1 st Survey) 17.08.2023	Trees T15 & T16	05:45	04:15	06:00	16 / 14	None	0 / 0	20 / 0
Surveyor names	Trees T58 and T16 were surveyed by Field Ecologist Conor Barron and infrared camera SECAM3. Trees T4 and T15 were surveyed by Senior Ecologist Jon D’Arcy (Natural England Class 2 Bat Licence no: 2018-37285-CLS-CLS).							
(2 nd Survey) 07.09.2023	Trees T58, T4, T15 & T16	19:33	19:03	21:03	24 / 21	None	0 / 1	20 / 40
Surveyor names	T58 was surveyed by Consultant Ecologist Rorie Hather and infrared camera SECAM1. T4 was surveyed by Field Ecologist Thomas White. T15 was surveyed by Field Ecologist Quinn Cuff. T16 was surveyed by Consultant Ecologist Katie Hepburn and infrared camera SECAM3.							
(2 nd Survey) 08.09.2023	House no. 68 and 70	06:24	04:54	06:39	16 / 16	None	1 / 1	20 / 40

Surveyor names	House no. 68 was surveyed by: <ul style="list-style-type: none">• Consultant Ecologist Rorie Hather;• Field Ecologist Quinn Cuff;• Infrared camera SECAM1; and• Infrared camera SECAM3 House no. 70 was surveyed by: <ul style="list-style-type: none">• Consultant Ecologist Katie Hepburn;• Field Ecologist Thomas White;• Infrared camera SECAM2; and• Infrared camera SECAM4
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2.3 LIMITATIONS

The recommended timings to undertake bat presence/likely absence surveys for buildings is between May and August. The surveys were completed in August and September, which is inside the recommended survey window and are therefore compliant with the levels of survey effort required for the suitability assigned to these buildings. Each survey was separated by a period of at least two weeks and weather conditions were suitable for the entirety of each survey. Therefore, there were no constraints associated with survey timing or weather conditions.

Two dusk emergence surveys were undertaken on trees T58 and T4, and two dawn return-to-roost surveys were undertaken on house no. 70, which deviates from BCT guidelines. Usually, one dusk emergence survey and one dawn return-to-roost survey for trees and buildings with moderate suitability are recommended, however this is not a requirement. Bat activity was low during the peak emergence period on the dusk surveys undertaken the same night as the dawns for house no. 70 which suggests that bats were not emerging from this building. As all surveys were completed in the optimum survey window, with night vision aids (infrared cameras) and in optimal weather conditions, it is not considered a significant limitation.

The surveys were completed with the assistance of bat detectors. All survey techniques are subject to bias, and bat detector surveys may under-record species with weak echolocation calls, such as brown long-eared bats. However, these biases were considered when interpreting the results. (It is also of note that Batloggers are very effective at picking up quiet calls from brown long-eared bats). Some bat calls are variable dependent on the habitats they fly in and on their activity (commuting, foraging, social interaction, etc) and extremely similar between species. In these cases, it is accepted that species are identified to genus level or group level (e.g. *Myotis*, *Myotis / Plecotus* and *Nyctalus / Eptesicus*) (Collins, 2023). Where call parameters are inconclusive the species has been labelled as 'unknown'. This allows the dataset to be interpreted accurately and transparently.

Notwithstanding the limitations highlighted above, the survey effort applied is considered sufficient to meet the aims of the survey and this report.

The details of this report will remain valid for a period of one year from the date of the survey, after which the validity of this assessment should be reviewed to determine whether further updates are necessary. Note that the recommendations within this report should be reviewed (and reassessed if necessary) should there be any changes to the red line boundary or development proposals which this report was based on.

3.0 RESULTS

3.1 DESK STUDY

No Special Areas of Conservation (SACs) or Sites of Special Scientific Interest (SSSIs) which are designated for bats are present within a 5 km radius of the site. The Mens SAC is the closest to the site and lies 29 km northwest of the site boundary. This site is designated for the population of Barbastelle bat *Barbastelle barbastellus* it supports. The Core Sustainance Zone (CSZ) for this species is understood to be approximately 6.5 km on average and the full extent of the range of foraging areas required by these bats is 12 km (Bat Conservation Trust, 2016). Due to the distance between the site and The Mens SAC exceeding this, it is unlikely that the works would have an effect on the integrity of the bat population at the SAC.

MAGIC returned two EPSLs granted for bats within a 2 km radius of the site boundary, as shown in Table 3.

Table 3: Bat EPSLs within 2 km radius of the site boundary

Reference	Distance and Direction	Species*	Licensable Actions
2014-1269-EPS-MIT	270 m southwest	Pp	Destruction of a resting place
EPSM2011-3479	1.4 km east	Pp and Pa	Destruction of a resting place

*Pa = brown long-eared bat and Pp = common pipistrelle.

3.2 FIELD SURVEYS

3.2.1 External Building Inspection

Summaries of the external building inspections of the two buildings (house no. 68 and no. 70) on site are listed below. Detailed results of the PRFs identified during the external building assessment are given in Appendix D.

House no. 68

A detached bungalow on site with a loft conversion and a single storey garage. The bungalow was built in approximately 1920 and is currently used as an occupied residential property. It was a one-storey building constructed of brick with plastic soffit boxes and a pitched peg tiled roof in overall good condition. The building was assessed as offering **moderate suitability** for use by roosting bats due to PRFs such as lifted lead flashing, gaps behind barge boards, gaps under tiles and hanging tiles.

House no. 70

A detached house on site with two adjoining single storey garages. The house was built in approximately 1920 and has historically been used as a residential property (unoccupied at the time of survey). It was a two-storey building constructed of brick with timber soffit boxes, air vents and lead flashing with a hip roof clad in peg tiles in overall good condition. The building was assessed as offering **moderate suitability** for use by roosting bats due to PRFs such as air vents, lifted lead flashing, hanging tiles and slipped tiles.

3.2.2 Ground Level Tree Inspection

The trees on site consisted of linear rows of semi-mature / mature trees along the boundaries of each property (refer to Appendix C). Five of the trees on site provided suitable features for roosting bats, refer to Table 4 below. For standardisation across reports, the tree numbering is consistent with the tree constraints report produced by Barrell Tree Consultancy (Barrell Tree Care, 2023) . The rest of the trees on site had negligible suitability for roosting bats. Detailed results of the ground level tree assessment are given in Appendix D.

Table 4: Results of Ground Level Tree Inspection

Tree No.	Species	Grid Reference	Description including height (m) and diameter at breast height (DBH) (cm)	Bat Roost Suitability
T58	Horse chestnut <i>Aesculus hippocastanum</i>	TQ30977 15420	A mature horse chestnut tree approximately 16 m high and a DBH of 120 cm.	Moderate
T4	Broad leaved lime <i>Tilia platyphyllos</i>	TQ30997 15418	A mature broad leaved lime tree approximately 14 m high and a DBH of 120 cm.	Moderate
T40	Pear <i>Pyrus</i> sp.	TQ30952 15365	A semi-mature pear tree approximately 4 m high and a DBH of 45 cm.	Low
T15	Oak <i>Quercus</i> sp.	TQ 30994 15388	A mature oak tree approximately 12 m high and a DBH of 90 cm.	Moderate
T16	Horse chestnut <i>Aesculus hippocastanum</i>	TQ 30985 15388	A mature horse chestnut tree approximately 14 m high and a DBH of 100 cm.	Moderate

3.2.3 Presence / Likely Absence Surveys

No bats were observed emerging or returning to roost during the surveys of the buildings and trees on site. A summary of the bat activity from each survey is described a below.

House no. 68

1st survey 14.08.2023 (dusk emergence survey)

No bats were recorded emerging from the building during this survey. The first bat recorded was a serotine *Eptesicus serotinus* at 20:51 (27 minutes after sunset) and the last bat was a common pipistrelle *Pipistrellus pipistrellus* at 21:52 (88 minutes after sunset). During the survey there were at least three species of bats recorded commuting which included: three passes of common pipistrelle, one pass of a *Myotis* sp. and one pass of a serotine.

2nd survey 08.09.2023 (dawn return-to-roost survey)

No bats were recorded returning to the building during this survey. The first bat recorded was a brown long-eared *Plecotus auritus* at 05:02 (82 minutes before sunrise) and the last bat recorded was a common pipistrelle at 05:46 (38 minutes before sunrise). During the survey there were two species of bats recorded foraging and commuting which included: six passes of common pipistrelle and three passes of brown long-eared bat. Bat activity was low during the dusk survey the same night.

House no. 70

1st survey 15.08.2023 (dawn return-to-roost survey)

No bats were recorded returning to the building during this survey. The first bat and last bat recorded was a common pipistrelle at 04:06 (101 minutes before sunrise) and 05:15 (32 minutes before sunrise) respectively. During the survey there were at least two species of bats recorded foraging and commuting which included: 47 passes of common pipistrelle and one pass of *Myotis* sp. Bat activity was also low during the dusk survey the same night.

2nd survey 08.09.2023 (dawn return-to-roost survey)

No bats were recorded returning to the building during this survey. The first bat recorded was a brown long eared at 05:11 (73 minutes before sunrise) and the last bat was a common pipistrelle at 05:57 (27 minutes before sunrise). During the survey there were at least three species of bats recorded foraging and commuting which included: three passes of common pipistrelle, two passes of brown long-eared bat and one pass of soprano pipistrelle *Pipistrellus pygmaeus*. Bat activity was also low during the dusk survey the same night.

Trees T58 and T4

1st survey 16.08.2023 (dusk emergence survey)

No bats were recorded emerging from the trees during this survey. The first bat recorded was a *Myotis* sp. at 20:35 (15 minutes after sunset) and the last bat was a common pipistrelle at 21:36 (76 minutes after sunset). During the survey there were at least three species of bats recorded foraging and commuting which included: 24 passes of common pipistrelle, eight passes of soprano pipistrelle and five passes of *Myotis* sp.

2nd survey 07.09.2023 (dusk emergence survey)

No bats were recorded emerging from the trees during this survey. The first bat and last bat recorded was a common pipistrelle at 19:54 (21 minutes after sunset) and 21:01 (88 minutes after sunset) respectively. During the survey there were at least four species of bats recorded foraging and commuting which included: 26 passes of common pipistrelle, three passes of serotine and *Myotis* sp. and one pass by a soprano pipistrelle.

Trees T15 and T16

1st survey 17.08.2023 (dawn return-to-roost survey)

No bats were recorded returning to the trees during this survey. The first and last bat recorded was a common pipistrelle at 04:44 (61 minutes before sunrise) and at 05:25 (20 minutes before sunrise) respectively. During the survey common pipistrelle was the only bat recorded with 32 passes.

2nd survey 07.09.2023 (dusk emergence survey)

No bats were recorded emerging from the trees during this survey. The first bat recorded was a common pipistrelle at 19:57 (24 minutes after sunset) and the last bat was a serotine at 21:01 (118 minutes after sunset). During the survey there were two species of bats recorded foraging and commuting which included: 51 passes of common pipistrelle and 29 passes of serotine.

4.0 DISCUSSION

4.1 IMPACTS

During the external BRA, the buildings on site (houses no. 68 and no.70) were both assessed as having moderate suitability to support roosting bats. The ground level bat assessment of the trees on site identified five trees with having suitability for roosting bats. T58, T4, T15 and T16 had moderate suitability for roosting bats and T40 had low suitability.

No bats were observed emerging from or re-entering the buildings (houses no. 68 and no.70) or the trees surveyed (T58, T4, T15 and T16) during the dusk emergence and dawn return surveys.

Roosting bats are therefore considered likely-absent from the houses and trees surveyed and the development can proceed without further survey or licensing, recommendations for mitigation can be seen in Section 4.2.

In the unlikely event bats or evidence of roosting bats (e.g. droppings) are discovered prior to or during these works, then works must cease immediately to avoid an offence being committed and a licensed bat ecologist consulted to determine an appropriate course of action.

If works do not begin by **September 2024** an update bat roost assessment and / or nocturnal surveys may be needed to update site conditions, under the guidance of a licensed bat ecologist.

4.1.1 Loss of Habitats and Connectivity

The site contains suitable grassland and linear features of scattered trees and linear which may be used by foraging and commuting bats. Within the wider landscape, a large park (Adastra Park) is located approximately 30m north of the site which is likely to have value for foraging and commuting bats.

Based on the Site Plan (refer to Appendix C) the proposed development will retain most of the trees on site. However, the construction of a retirement living facility will result in a net loss of grassland, and the removal of some trees, including T40 (low suitability for roosting bats) and T16 (moderate suitability for roosting bats).

4.1.2 Construction-phase Disturbance

Despite no roosts being recorded on site, low bat activity was recorded during the nocturnal surveys and there were two EPSL's returned from the desk study therefore bats and bat roosts are known to be in the immediate area. Disturbance may be an impact to foraging bats if temporary artificial lighting at night is required during the demolition or construction phase of the development, along with construction traffic and machinery resulting in increased noise levels.

The Institution of Lighting Professionals (ILP) suggest that the impacts from artificial lighting on bats are likely to have significant impacts on some species, potentially affecting reproductive, foraging and roosting opportunities (ILP, 2023).

Noise disturbance may cause displacement of bats from roosts and important foraging areas, which can potentially result in reduced survivability of individuals due to an increased susceptibility to predation, reduced quality and availability of habitats and reduced foraging opportunities (California Department of

Transportation, 2016). Bats are also susceptible to acute acoustic trauma and hearing damage which impairs their ability to passively listen (i.e., for other bats and predators) and echolocate to navigate within their environment and find prey. This therefore has implications for both their immediate and long-term survival (California Department of Transportation, 2016). Bats may also be caused to allocate more time to vigilance behaviour due to loud or sudden noise disturbance, resulting in less time spent on other vital behaviours such as breeding and foraging which is ultimately detrimental to their physical condition and reproductive capabilities.

Recommendations to reduce these impacts are within the Mitigation Section (4.2).

4.1.3 Operational-phase Disturbance

Permanent artificial lighting at night in the form of external fixtures on the proposed buildings and access roads pose a risk of illuminating bats in flight and thus making them more vulnerable to predation. The same is true for additional light spill which occurs from the headlights of moving vehicles and parking areas around the development. In addition, increased lighting also affects prey distribution, which influences the relative dispersal of bats in the area. Lighting a commuting or foraging route can potentially impact a nearby bat roost, even if the roost itself is not directly affected.

The lighting across the development therefore must be sensitively designed with bats in mind, so that light spill is reduced and foraging and commuting habitat is retained where possible and protected.

Suggestions for limiting the impact of artificial light are discussed further below.

4.2 MITIGATION

4.2.1 Loss of Habitat

Roosting bats are considered to likely be absent from the two buildings on site and the demolition of these may be undertaken without further survey or licensing. Both surveyed buildings, however, still possess suitable features that could be utilised in the future by roosting bats. As these will be demolished and features will be lost, it is recommended that at least two bat boxes are incorporated either into the building design (e.g. integrated bat boxes) or installed on external walls of new buildings.

Roosting bats are considered to likely be absent from surveyed trees T58, T4, T15 and T16. See Site Plan provided (refer to Appendix C) indicating that T58, T4 and T15 are to be retained, however T16 (moderate suitability for roosting bats) and T40 (low suitability for roosting bats) are to be removed. At the time this report version being issued, T16 has been felled and removed from the site. This was done after all bat surveys had taken place and a likely absence of bats was assumed. No bats were discovered during the removal of this tree. As T40 is still present on site and has features suitable for roosting bats, it is recommended that this tree is sectionally felled under supervision of a bat licenced ecologist. As the features will be lost, it is recommended that at least two bat boxes are incorporated into the landscaping plans for the site (e.g. bat boxes installed upon trees).

Examples of bat boxes for buildings and trees are provided in Appendix E. The exact positions will be determined in consultation with a suitably licensed ecologist.

4.2.2 Breathable Roof Membranes

In new buildings, best practice should be considered and the use of breathable roof membranes (BRM) avoided. Instead, Type 1F bitumen and hessian under-felt should be considered as an alternative. Ongoing research has confirmed that no BRM are bat-friendly and all pose a risk to bats. As the membranes wear over time the fibres in the membrane become loose. Bats become entangled in the fibres and, unable to escape, dehydrate, and starve to death. Therefore, the use of BRMs within bat roosts is not permitted.

As well as posing a risk to bats, BRMs are also degraded by bats and the efficiency of the membrane is impaired (i.e. the use of BRMs in situations where bats are present is detrimental to the efficient functioning of the BRM as well as to bats. Further detail is provided in Waring *et al.* (2013).

4.2.3 Lighting Strategy

Low bat activity was recorded during the nocturnal surveys and bat roosts are known to be in the immediate area. It is therefore recommended that a low impact lighting scheme should be considered for the development. Where installation of new artificial lighting is necessary the following measures must be considered to reduce adverse effects:

During Construction / Demolition phase:

- It is advised that no night-time working (externally) is undertaken between the months of April to October, inclusive (during the bat active season), where possible; and
- If security lighting is necessary, lights should be triggered by motion sensors and their coverage kept to a minimum (e.g. through use of lighting cowls).

During Operational Phase:

- Consideration of the available lighting technology to minimise impacts on bats, i.e. use of LED lighting as it emits little UV light, and these can be programmed to switch off, or dim at certain times (as opposed to high pressure sodium, mercury and white SON). These have been shown to have the least impact on bats (as well as invertebrates);
- Lights switched off at night (particularly during the months of April to October, inclusive when bats are active), or at least motion censored; and
- Directional lighting so spillage onto sensitive ecological features is avoided (e.g trees along the north, east and southern boundaries of the site). Hoods / cowls can be used to direct light below the horizontal plane (ideally at an angle less than 70 degrees).

When designing a suitable low impact to bats lighting strategy, reference should be made to the Institute of Lighting Professionals (ILP, 2023) Guidance Note 08/23 *Bats and artificial lighting at night*.

4.3 ENHANCEMENT

It is a requirement of the Nation Planning Policy Framework (NPPF) to provide enhancements for biodiversity as part of development (refer to Appendix B). Therefore, to enhance the habitats on site, it is recommended that nectar rich and seed / fruit production plant species are incorporated into the landscape plan and should be implemented on site wherever possible (wildlife and bat friendly suggestions are provided in Appendix F).

5.0 CONCLUSION

No bat roosts were identified in the buildings or trees on site from the dusk and dawn surveys, therefore works may proceed without further survey or licensing. Due to the presence of bats in the local area, however, mitigation includes the need for an appropriate lighting strategy, installation of bat boxes integrated into the building design and installed upon retained tree, and the avoidance of BRM.

At the time this report version being issued, T16 has been felled and removed from the site. This was done after all bat surveys has taken place and a likely absence of bats was assumed. No bats were discovered during the removal of this tree. T40 is still present on site and has features suitable for roosting bats. Therefore as a precautionary measure it is recommended that this tree is sectionally felled under supervision of a bat licenced ecologist.

In the unlikely event bats or evidence of roosting bats (e.g. droppings) are discovered prior to or during the proposed works, then works must cease immediately to avoid an offence being committed and a licensed bat ecologist consulted to determine an appropriate course of action.

To comply with NPPF, recommendations for enhancement include planting of species of benefit to bats.

If works do not begin by September 2024, an update bat roost assessment and / or nocturnal surveys may be needed to update site conditions, under the guidance of a licensed bat ecologist.

Provided the measures within this report for mitigation are adopted, it is anticipated that the works can be undertaken and will be compliant with current local and national biodiversity planning policy.

6.0 REFERENCES

- Bat Conservation Trust, 2015. Encouraging bats – Gardening for bats.
- Bat Conservation Trust, 2016. Core Sustainance Zones: Determining zone size.
- Collins, J. (ed.), 2016. Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd Edition, The Bat Conservation Trust: London.
- Collins, J. (ed.), 2023, Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th Edition, The Bat Conservation Trust: London.
- Institute of Lighting Professionals (ILP), 2023. Bat and artificial lighting at night. Guidance Note 08/23.
- Ministry of Housing Communities and Local Government, 2021. National Planning Policy Framework.
- The California Department of Transportation, 2016. Technical Guidance for the Assessment and Mitigation of the Effects of Traffic Noise and Road Construction Noise on Bats. July. (Contract 43A0306.) Sacramento, CA. Prepared by ICF International, Sacramento, CA, and West Ecosystems Analysis, Inc., Davis, CA.
- Waring, S., et al, 2013. Double Jeopardy: The Potential for Problems when Bats Interact with Breathable Roof Membranes in the UK.

Please note that the legislation which is relevant to this report is not included in the list above, but details are included in Appendix B below.

FIGURES

FIGURE 1: SITE LOCATION PLAN

FIGURE 2: BUILDING / TREE LOCATIONS AND SURVEYOR LOCATION PLAN

FIGURE 1: SITE LOCATION PLAN

Site Location Plan
Keymer Road, Hassocks
Planning Issues Ltd



Legend

 Site Boundary

Notes:

Drawn by: DYLAN GUSSMAN
Checked by: HG
Office: Southampton

Figure No. 1
Revision No. A
20 October 2023

0 4.5 9 13.5 18 Meters
Scale 1:400 @A3
British National Grid
NGR: 530966E 115386N

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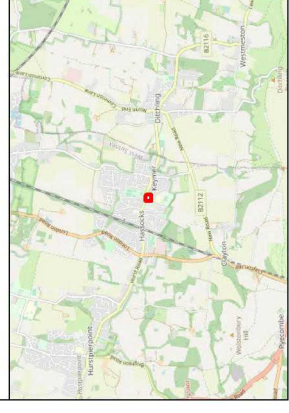







FIGURE 2: BUILDING / TREE LOCATIONS AND SURVEYOR LOCATION PLAN

Building/Tree Locations and Surveyor Location Plan

Keymer Road, Hassocks

Planning Issues Ltd

Legend

-  Site Boundary
- Buildings**
-  Moderate Suitability for Bats
- Trees**
-  Low Suitability for Bats
-  Moderate Suitability for Bats
-  Surveyor Locations



Notes:

Drawn by: DYLAN GUSSMAN

Figure No. 2

Revision No. A

30 October 2023

Office: Southampton

British National Grid

Scale 1:400 @A3

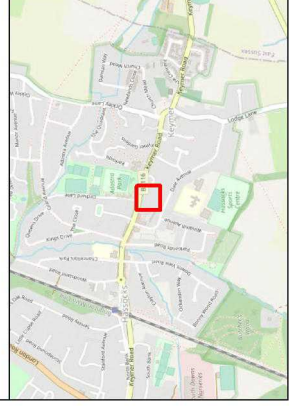
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NGR: 530965E 115392N

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Hampshire, SO30 2AF



APPENDICES

APPENDIX A: REPORT CONDITIONS

APPENDIX B: PLANNING POLICY & LEGISLATION

APPENDIX C: SITE PLAN AND EVALUATIONS FEASIBILITY

APPENDIX D: DETAILED SURVEY NOTES

APPENDIX E: BAT BOXES

APPENDIX F: BAT FRIENDLY PLANTING

APPENDIX A: REPORT CONDITIONS

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The report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections'. Environmental conditions can vary and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times. No investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather-related conditions. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions. The “shelf life” of the Report will be determined by a number of factors including; its original purpose, the Client’s instructions, passage of time, advances in technology and techniques, changes in legislation etc. and therefore may require future re-assessment.

The whole of the report must be read as other sections of the report may contain information which puts into context the findings in any executive summary.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. Tetra Tech accept no liability for issues with performance arising from such factors.

APPENDIX B: PLANNING POLICY & LEGISLATION

Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019

The 2018 amendments mainly related to the impact of the *People Over Wind* decision and some implications arising for neighbourhood plan development and a range of other planning tools including Local Development Orders and Permission in Principle – see here for full details:

<https://www.legislation.gov.uk/ukxi/2018/1307/note/made>

The 2019 amendments related to the EU exit. Most of these changes involved transferring functions from the European Commission to the appropriate authorities in England and Wales. All other processes or terms in the 2017 Regulations remain unchanged and existing guidance is still relevant. The obligations of a competent authority in the 2017 Regulations for the protection of sites or species do not change.– see here for full details:

<https://www.legislation.gov.uk/ukdsi/2019/9780111176573>

The Regulations make it an offence to deliberately capture, kill, disturb or trade bats (including dead animals).

Wildlife & Countryside Act 1981 (as amended)

This is the principal mechanism for the legislative protection of wildlife in the UK. Since it was first introduced, the Act has been amended several times. All bats are protected through inclusion under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and benefit from various levels of protection. This legislation makes it an offence to:

- Intentionally or recklessly kill or injure these animals; and
- Sell, offer for sale, possess or transport for the purpose of sale of publish advertisement to buy or sell individual reptiles.

All are also listed under Schedule 5 Section 9.4b and 9.4c which makes it an offence to:

- Intentionally disturb while occupying a structure or place used for shelter or protection; and
- Obstruct access to such a site.

Natural Environment and Rural Communities Act 2006

Section 41 (S41) of this Act requires the Secretary of State to publish a list (in consultation with Natural England) of Habitats and Species which are of Principal Importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers such as public bodies including local and regional authorities, in implementing their duty under Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal (e.g. planning) functions. The S41 list includes 65 Habitats of Principal Importance and 1,150 Species of Principal Importance.

Seven species of bat are listed under Section 41 of the NERC Act 2006; soprano pipistrelle, brown long-eared bat, greater horseshoe bat, lesser horseshoe bat, barbastelle, Bechstein's bat and noctule.

National Planning Policy Framework

A revised NPPF was issued on 20th July 2021 (Ministry of Housing Communities and Local Government, 2021) and currently supplements government Circular 06/2005, Biodiversity and Geological Conservation: Statutory Obligations and their Impact within the Planning System (Office of the Deputy Prime Minister, 2005).

Circular 06/2005 states that the presence of protected species is a material consideration in the planning process. Paragraph 180 then goes on to confirm that: When determining planning applications, local planning authorities should apply the following principles:

- a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- b) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

Local Biodiversity Action Plan (LBAP)

Local Biodiversity Action Plans (LBAP) identify habitat and species conservation priorities at a local level (typically at the County level) and are usually drawn up by a consortium of local Government organisations and conservation charities.

Some LBAP's may also include Habitat Action Plans (HAP) and/or Species Action Plans (SAP), which are used to guide and inform the local decision-making process.

West Sussex Tree Plan (West Sussex County Council, 2020)

The Plan seeks to ensure that the trees within our ownership are maintained, protected, and improved for current and future generations. It also seeks to influence how the wider tree resource within the County is managed and improved. Accordingly, it has three strategic aims:

- to maintain the trees and woodlands in the County Council's ownership;
- to protect trees and woodlands from new development and other threats; and
- to improve tree cover in West Sussex through natural regeneration, the planting of new trees, and the creation of new woodlands.

Mid Sussex District Plan 2014 – 2031 (Mid-Sussex District Council, 2018)

The following policies should be noted from within this plan:

DP29: Noise, Air and Light Pollution

Light pollution:

- The impact on local amenity, intrinsically dark landscapes and nature conservation areas of artificial lighting proposals (including floodlighting) is minimised, in terms of intensity and number of fittings;
- The applicant can demonstrate good design including fittings to restrict emissions from proposed lighting schemes

DP37: Trees, Woodland and Hedgerows

The District Council will support the protection and enhancement of trees, woodland and hedgerows, and encourage new planting. In particular, ancient woodland and aged or veteran trees will be protected.

Development that will damage or lead to the loss of trees, woodland or hedgerows that contribute, either individually or as part of a group, to the visual amenity value or character of an area, and/ or that have landscape, historic or wildlife importance, will not normally be permitted.

Proposals for new trees, woodland and hedgerows should be of suitable species, usually native, and where required for visual, noise or light screening purposes, trees, woodland and hedgerows should be of a size and species that will achieve this purpose. Trees, woodland and hedgerows will be protected and enhanced by ensuring development:

- incorporates existing important trees, woodland and hedgerows into the design of new development and its landscape scheme; and
- prevents damage to root systems and takes account of expected future growth; and
- where possible, incorporates retained trees, woodland and hedgerows within public open space rather than private space to safeguard their long-term management; and
- has appropriate protection measures throughout the development process; and
- takes opportunities to plant new trees, woodland and hedgerows within the new development to enhance on-site green infrastructure and increase resilience to the effects of climate change; and
- does not sever ecological corridors created by these assets.

Proposals for works to trees will be considered taking into account:

- the condition and health of the trees; and
- the contribution of the trees to the character and visual amenity of the local area; and
- the amenity and nature conservation value of the trees; and
- the extent and impact of the works; and
- any replanting proposals.

The felling of protected trees will only be permitted if there is no appropriate alternative. Where a protected tree or group of trees is felled, a replacement tree or group of trees, on a minimum of a 1:1 basis and of an appropriate size and type, will normally be required. The replanting should take place as close to the felled tree or trees as possible having regard to the proximity of adjacent properties.

Development should be positioned as far as possible from ancient woodland with a minimum buffer of 15 metres maintained between ancient woodland and the development boundary.

DP38: Biodiversity

Biodiversity will be protected and enhanced by ensuring development:

- Contributes and takes opportunities to improve, enhance, manage and restore biodiversity and green infrastructure, so that there is a net gain in biodiversity, including through creating new designated sites and locally relevant habitats, and incorporating biodiversity features within developments; and
- Protects existing biodiversity, so that there is no net loss of biodiversity. Appropriate measures should be taken to avoid and reduce disturbance to sensitive habitats and species. Unavoidable damage to biodiversity must be offset through ecological enhancements and mitigation measures (or compensation measures in exceptional circumstances); and
- Minimises habitat and species fragmentation and maximises opportunities to enhance and restore ecological corridors to connect natural habitats and increase coherence and resilience; and • Promotes the restoration, management and expansion of priority habitats in the District; and
- Avoids damage to, protects and enhances the special characteristics of internationally designated Special Protection Areas, Special Areas of Conservation; nationally designated Sites of Special Scientific Interest, Areas of Outstanding Natural Beauty; and locally designated Sites of Nature Conservation Importance, Local Nature Reserves and Ancient Woodland or to other areas identified as being of nature conservation or geological interest, including wildlife corridors, aged or veteran trees, Biodiversity Opportunity Areas, and Nature Improvement Areas.

APPENDIX C: SITE PLAN



0 2m
20m



REVISIONS
No. Description Date
1/1 Approved 01/23 AS

PROPOSED PALETTE

1-BED	2-BED
060	11
18	12
216	04
27	14
TOTAL - 41 units (24 1-Bed)	

- BOUNDARY TREATMENT
- A-1 1200 Slating
 - A-2 1200 Slating
 - C-1 1200 Slating
 - C-2 1200 Slating
 - E-1 1200 Slating
 - E-2 1200 Slating
 - G-1 1200 Slating
 - G-2 1200 Slating

Churchill Retirement Living
Specialist Retirement Living and Care Services

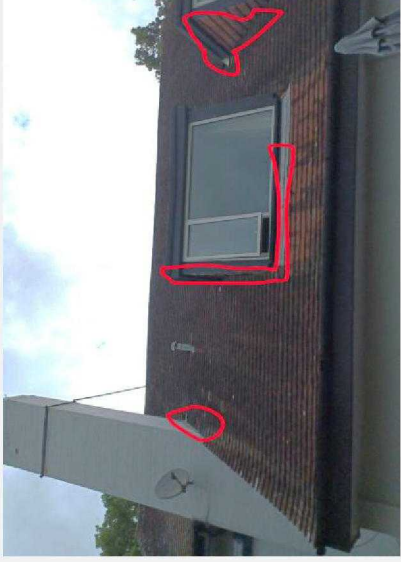

planningissuess
Specialist Retirement Living and Care Services

Project title
PROPOSED RETIREMENT LIVING APARTMENTS
68 & 70 Keymer Road
HASSOCKS, WEST SUSSEX
BN6 8QP



Client
Churchill Retirement Living

Drawn: L1208/241 Date: 05/23
Checked: AS Date: 05/23
20090-HK-PL-002 PI


APPENDIX D: DETAILED SURVEY NOTES

Building Name/Number	PRF	Location of PRF(s)	Photograph
House no. 68	<ul style="list-style-type: none">• Lifted lead flashing;• Gaps behind barge boards;• Gaps under tiles; and• Hanging tiles.	Southern aspect	
House no. 70	<ul style="list-style-type: none">• Hanging tiles; and• Slipped tiles.	Southern aspect	



Keymer Road, Hassocks
 Bat Roost Assessment and Bat Survey Report

Building Name/Number	PRF	Location of PRF(s)	Photograph
	<ul style="list-style-type: none"> • Lifted lead flashing around chimney; and • Slipped tile. 	Western aspect	
	<ul style="list-style-type: none"> • Air vents; and • Slipped tile. 	Northern aspect	



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Tree No.	Species	Grid Reference	Potential Roosting Features with height and orientation	Tree / PRF Photograph
T58	Horse chestnut <i>Aesculus hippocastanum</i>	TQ30977 15420	<ul style="list-style-type: none"> • A knot hole on the stem, located on the southern aspect, approximately 7 m high and 6 cm wide; and • Pruning cuts on the stem, located on the northern aspect, approximately 7 m high and 3 cm wide. <p>These PRFs provide moderate suitability for roosting bats.</p>	

Keymer Road, Hassocks
 Bat Roost Assessment and Bat Survey Report

Tree No.	Species	Grid Reference	Potential Roosting Features with height and orientation	Tree / PRF Photograph
T4	Broad leaved lime <i>Tilia platyphyllos</i>	TQ30997 15418	<p>A transverse snap with ram horns and four knot holes on the stem, located on the northern aspect and approximately 2 m high.</p> <p>This PRF provides moderate suitability for roosting bats.</p>	
T40	Pear <i>Pyrus</i> sp.	TQ30952 15365	<p>A tear out on the stem, located on the southeastern aspect approximately 4 x 6 x 40 cm.</p> <p>This PRF provides low suitability for roosting bats.</p>	

Keymer Road, Hassocks
Bat Roost Assessment and Bat Survey Report

Tree No.	Species	Grid Reference	Potential Roosting Features with height and orientation	Tree / PRF Photograph
T15	Oak <i>Quercus</i> sp.	TQ 30994 15388	<p>Welds on the stem, located approximately 5 m high on the western aspect.</p> <p>This PRF provides moderate suitability for roosting bats.</p>	
T16	Horse chestnut <i>Aesculus hippocastanum</i>	TQ 30985 15388	<ul style="list-style-type: none"> • A tear out full of water on the stem, located on the southern aspect, approximately 2 m high; • A knot hole on the stem, located on the southwestern aspect, approximately 2.5 m high and 5 cm wide; • A transverse snap on a limb, located approximately 6 m high on the northern aspect (potential squirrel drey); and • A desiccation fissure on a limb, located approximately 3 m high on the southern aspect. <p>These PRFs provide moderate suitability for roosting bats.</p>	

APPENDIX E: BAT BOXES

Introduction

The information in this appendix relates to bat and bird boxes that can be easily incorporated into building and landscape plans. The information provided is not exhaustive and provides examples of some of the types of boxes available.

Including bat boxes throughout the development site has a number of benefits:

- Any roosting or resting places lost as a result of the work will be replaced;
- The ecological value of the site will be enhanced;
- Priority species within the UK and local Biodiversity Action Plans (BAPs) will be encouraged.

For Buildings

Schwegler 1FF bat box



Schwegler 1MF bat and swift box



Schwegler 1WQ Summer & hibernation box



For Trees

2FN Schwegler Bat Box



Vivara Pro Large Multi Chamber WoodStone Bat Box



APPENDIX F: BAT FRIENDLY PLANTING

Table F1: Trees, shrubs and climbers

Common name	Scientific name
Bramble	<i>Rubus fruticosus</i>
Buddleia	<i>Buddleja sp.</i>
Common alder	<i>Alnus glutinosa</i>
Dog rose	<i>Rosa canina</i>
Elder	<i>Sambucus sp.</i>
English oak	<i>Quercus robar</i>
Gorse	<i>Ulex sp.</i>
Guelder rose	<i>Viburnum opulus</i>
Hawthorn	<i>Crataegus sp.</i>
Hazel	<i>Corylus sp.</i>
Honeysuckle	<i>Lonicera periclymenum</i>
Hornbeam	<i>Carpinus sp.</i>
Ivy	<i>Hedera sp.</i>
Jasmine	<i>Jasminum sp.</i>
Rowan	<i>Sorbus sp.</i>
Silver birch	<i>Betula pendula</i>

Table F2: Flowers for borders

Common name	Scientific name
Aubretia*	<i>Aubrieta sp.</i>
Candytuft*	<i>Iberis sp.</i>
Cherry pie*	<i>Heliotropium arborescens</i>
Corncockle	<i>Agrostemma githago</i>
Cornflower	<i>Centaurea cyanus</i>
Corn marigold	<i>Glebionis segetum</i>
Corn poppy	<i>Papaver rhoeas</i>
Echinacea*	<i>Echinacea sp.</i>
English Bluebell	<i>Hyacinthoides non-scripta</i>
Evening primrose*	<i>Oenothera sp.</i>
Field poppies	<i>Papaver rhoeas</i>
Honesty*	<i>Lunaria annua</i>
Ice plant 'Pink lady'*	<i>sedum spectabile</i>
Knapweed	<i>Centaurea sp.</i>
Mallow	<i>Malva sp.</i>
Mexican aster*	<i>Cosmos bipinnatus</i>
Michaelmas daisy*	<i>Aster novi-belgii</i>

Night-scented stock*	<i>Matthiola longipetala</i>
Ox-eye daisy	<i>Leucanthemum vulgare</i>
Phacelia*	<i>Phacelia tanacetifolia</i>
Poached egg plant*	<i>Limnanthes douglasii</i>
Primrose	<i>Primula vulgaris</i>
Red campion	<i>Silene dioica</i>
Red valerian*	<i>Centranthus ruber</i>
Scabious	<i>Scabiosa sp.</i>
St John's wort	<i>Hypericum perforatum</i>
Sweet William*	<i>Dianthus barbatus</i>
Tobacco plant*	<i>Nicotiana</i>
Verbena*	<i>Verbena sp.</i>
Wallflowers*	<i>Erysimum sp.</i>
Wood forget-me-not	<i>Myosotis sylvatica</i>
Yarrow	<i>Achillea millefolium</i>

Plants marked * are hybrids or exotics

Table F3: Herbs

Common name	Scientific name
Angelica	<i>Angelica sp.</i>
Bergamot	<i>Monarda sp.</i>
Borage	<i>Borago officinalis</i>
Coriander	<i>Caroiandrum sp.</i>
English marigolds	<i>Calendula officinalis</i>
Fennel	<i>Foenicululm sp.</i>
Feverfew	<i>Tanacetum parthenium</i>
Hyssop	<i>Hyssopus officinalis</i>
Lavenders	<i>Lavandula</i>
Lemon balm	<i>Melissa officinalis</i>
Marjoram	<i>Origanum majorana</i>
Rosemary	<i>Rosmarinus officinalis</i>
Sweet cicely	<i>Myrrhis odorata</i>
Thyme	<i>Thymus vulgaris</i>

Table F4: Wildflowers for pond edges and marshy areas

Common name	Scientific name
Bog bean	<i>Menyanthes sp.</i>
Bugle	<i>Ajuga sp.</i>
Creeping Jenny	<i>Lysimachia nummularia</i>
Flag iris	<i>Iris pseudacorus</i>
Hemp agrimony	<i>Eupatorium cannabinum</i>

Lady's smock	<i>Cardamine pratensis</i>
Marsh mallow	<i>Althaea officinalis</i>
Marsh marigold	<i>Caltha palustris</i>
Marsh woundwort	<i>Stachys palustris</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Water avens	<i>Geum rivale</i>
Water forget-me-not	<i>Myosotis scorpioides</i>
Water mint	<i>Mentha citrata</i>

(Source: 'Encouraging bats – Gardening for bats', Bat Conservation Trust, 2015)