

27 Crows Nest Lane, Botley, Hampshire, SO32 2DD

Bat Survey Report

September 2024

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Bat Survey Report
27 Crows Nest Lane, Botley, Hampshire, SO32 2DD
for
Mr & Mrs Russell

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This report represents sound industry practice; reports and recommends correctly, truthfully and objectively; is appropriate given the local site conditions, scope of works proposed and resources allocated to us by the client; and avoids invalid, biased, and exaggerated statements.

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

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1. This report provides information from bat surveys carried out by Hampshire Ecological Services Ltd for Mr & Mrs Russell in connection with a proposal to carry out a two-storey side extension on the south elevation of the house at 27 Crows Nest Lane, Botley, Hampshire, SO32 2DD (approximate Ordnance Survey Grid Reference SU510144). The site consists of a two-storey residential dwelling with a one-storey rear extension and associated front and rear gardens. The location of the site is shown in *Figures 1* and *2* and a plan of the site is shown in *Figure 3* in *Section 6*.
2. The house is a two-storey brick building with a hipped tiled roof. There is a one-storey extension on the west elevation which has a flat roof. Full details of the building are given in *Table 4.2.1* in *Section 4.2*. The locations and details the potential access points and the potential external roost locations are illustrated in *Images 4.3.1.1 – 4.3.1.3*. Due to the presence of suitable roosting features on the building, and good sheltered foraging habitat within close proximity, this building has moderate bat roost suitability.
3. The mature trees in the garden provide good, sheltered bat foraging habitat in the immediate vicinity of the building; the lines of trees, hedges, and shrubs along the boundaries connect a network of linked back gardens. These in turn connect the site to areas of high-quality foraging habitat in the wider landscape such as woodland.
4. Three bat activity (dusk emergence) surveys were carried out. Details of the dates of the surveys, weather and personnel carrying out the surveys is given in *Sections 3.2.1* and *3.2.2*.
5. As part of those surveys, an internal and external survey of the building was carried out by bat ecologist Laura Hardy BSc (Hons) AMRSB accredited under bat licence 2015-11159-CLS-CLS on the 12th August 2024. Bat droppings (two areas of c100 droppings) were found within the main roof void (see *Table 4.2.1* in *Section 4.2*). The droppings were consistent in size, shape, and texture with those of pipistrelle bats. The locations of the bat droppings are illustrated in *Figure 4* in *Section 6*. This indicates that the roost has been in relatively recent use.
6. No bats were seen emerging from the building during the activity surveys. The full data from the surveys is given in *Appendix C* and plans showing the foraging and commuting bats (observations only) are given in *Figures 5-7* in *Section 6*. It should be noted that surveys only ever give a snapshot.
7. Common pipistrelles and noctule bats were observed flying in the vicinity of the building and foraging on the site, indicating the weather was suitable for bat activity on all occasions.
8. Based on the evidence from the internal/ external survey and the emergence surveys, the house is an occasional non-breeding day roost for low numbers of common pipistrelles.

9. The main impact to the roost will be roost disturbance, roost modification and roost loss. Due to the proposed extension, there will be an overall increase in the amount of loft space available to bats following the completion of the work.
10. As the house is a confirmed bat roost, a bat European Protected Species (EPS) licence, Bat Earned Recognition (BER) licence or Bat Mitigation Class Licence (BMCL), if qualifying, site registration from Natural England is required before any work can be undertaken on the roof or roof void. If the former licence is still in force, this may need amendment/ return fulfilling before a new licence application can be made.
11. Changes in lighting can affect foraging and commuting bats. Therefore, no works should take place in the hours of darkness or under artificial lighting. In addition, no lighting should be directed onto planted vegetation (particularly the trees), and security lights should operate on a timer, to avoid any negative impact on bats. Any lighting installed should avoid spillage of greater than 0.1 lux (typical moonlight/ cloudy sky) onto the roost exits and any planted vegetation. Any new lighting should not increase the level currently experienced and, if at all possible, should reduce any light spill due to the type of lighting used and the use of protection such as hoods and cowls. The use of non-UV LED lighting (preferably using warm spectrum wavelengths) is strongly recommended to avoid the most deleterious impacts of lighting on biodiversity and bats in particular.
12. It is a requirement under national planning policy to provide ecological enhancements to sites requiring planning permission in order to provide a net gain in biodiversity. Therefore, the following enhancement measures are proposed:
 - The building will be enhanced for bats using either one integrated bat box/bat brick (*e.g.* a Habibat™ Bat Box, an Ibstock Enclosed Bat Box, a Schwegler Bat Tube, or similar), which provides a cavity that is incorporated into the external build structure to offer roosting space for bats or at least one woodstone style bat box (*e.g.* Vivara Pro WoodStone Bat Box, Beaumaris Woodstone or similar) erected on a suitable mature tree within the site boundary (or on the building). This bat box will be erected as high as possible (ideally between 2.5m and 5m, facing south or south-east) with a clear exit path. It will remain on site permanently (and shall be repaired or replaced as necessary);
 - One 32mm hole bird box, such as a Vivara Pro Seville 32mm Woodstone Nest Box, suitable for blue tits and great tits will be attached to one of the mature trees (or attached to the exterior wall of the building).
One house sparrow nest box, such as a Vivara Pro WoodStone House Sparrow Nest Box, suitable for house sparrows, will be incorporated into the build structure or mounted onto a building. The bird boxes to be erected within the site, with additional details on siting them to increase chances of occupancy, are summarised in *Table 5.6.5.1*.
13. The proposed mitigation, compensation, and enhancement measures are shown in *Figures 8 & 9* in *Section 6*.

14. Other enhancements for wildlife that the owners of the site may choose to employ are given in *Appendix D*. However, these are not proposed as enhancements for the purposes of the planning application, but only for information purposes.
15. This survey data is valid for a maximum of 12 months. Bats frequently move around and adopt new roosting sites, therefore if more than 12 months elapse it may be advisable to conduct further survey work to obtain up-to-date information, thereby ensuring protected species compliance.
16. According to the *Multi-Agency Geographic Information for the Countryside* website (www.magic.gov.uk), the site is neither designated nor immediately adjacent to any designated areas of nature conservation. However, there are designated sites nearby (see *Table 4.1.1.1* in *Section 4.1.1*). None of these will be directly affected by this small-scale development and all links will be maintained.
17. The site is within 5km of the River Itchen SAC, Solent Maritime SAC, and Southampton & Solent Water SPA and Ramsar site. As a result of its proximity to these designated sites, the impacts of this small-scale development on the SACs, SPA, and Ramsar sites must be considered. The works will cause an increase to the building size but not to the number of people occupying the building, as the house is a residential property and is staying under the same ownership. Therefore, there will be no increase in the recreational pressure, or pollution, on the nearby internationally designated sites.
18. There have been two granted bat European Protected Species (EPS) licences within 2km of the site. It is unlikely that the current proposals will impact the same bat populations.

INTRODUCTION

2.1 General

This report provides information from bat surveys carried out by Hampshire Ecological Services Ltd for Mr & Mrs Russell in connection with a proposal to carry out a two-storey side extension on the south elevation of the house at 27 Crows Nest Lane, Botley, Hampshire, SO32 2DD (approximate Ordnance Survey Grid Reference SU510144). The location of the site is shown in *Figures 1 and 2* in *Section 6*.

2.2 Site description

The site consists of a two-storey residential dwelling with a one-storey rear extension and associated front and rear gardens. The building surveyed is shown on the plan in *Figure 3* in *Section 6*.

The site is on the east side of Crows Nest Lane, to the north of the village of Botley. The immediate surroundings consist of residential housing, private gardens, and agricultural fields. In the wider landscape the urban area extends primarily to the south and west; there are extensive areas of arable fields and woodland to the north and east. In addition, there is a river c.224m to the north-east.

2.3 Proposed activities

This survey was carried out in connection with a proposal to carry out a two-storey side extension on the south elevation of the house.

2.4 Current planning status

Planning permission is being applied for at this site.

Comments from Eastleigh Borough Council:

Alex Stone/ Lisa Malter 12/06/24

“The applicant has provided a Bat Mitigation Plan by David Leach Ecology Ltd (January 2019) from the previous application H/17/81111 and photos of the bat roost features that were installed as compensation for the loss of previous bat roost access points. These are three ridge tile access points with gaps in the roofing felt (type 1 bitumen) to allow bats access into the existing and new roof voids, and an externally mounted bat box. The roofing soft strip works were done under the ecological supervision of David Leach the license holder, after a pre-works survey.

Bats move between roosts, so just because they may not have used it yet, does not mean that they may not use it in the future. This is a historic bat roost, and it must continue to be protected. The presence of the compensatory bat access points into the new loft and connection with the existing loft means that there is high potential for bats to be using this building, even if the residents have not seen bats or any evidence.

This proposal would tie into the loft space of the house, which continues to be accessible to bats, so will require bat update surveys from a bat licensed ecologist before determination. A preliminary bat roost appraisal is not needed because the mitigation plan provides the number and locations of the bat roost features that were built in during the previous work. If bats are found to be using these features, then a license may be needed to proceed with this proposal”.

2.5 Objectives of the surveys and report

The surveys by Hampshire Ecological Services Ltd included internal and external inspections of the buildings to identify bat roost suitability and to systematically search for bats and evidence of bats. Subsequently, three bat activity surveys were carried out. The aim was to identify if bats were present or likely to use the site for roosting.

The surveys and the report writing were carried out in accordance with *Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th edition* (Collins, 2023). Any deviations from the guidelines are justified in the relevant sections.

Additionally, all ecological surveys should be completed in line with Natural England’s *Standing Advice for Local Authorities*

(<http://www.naturalengland.org.uk/ourwork/planningdevelopment/spatialplanning/standingadvice/advice.aspx>), which states:

- Natural England will not comment on applications that are submitted without the relevant protected species surveys if there are no other issues (i.e. in relation to SSSIs or landscape).
- Natural England will not comment on scoping surveys that recommend further surveys where these have not been undertaken and submitted with the scoping reports.

2.6 Structure of this report

This report is structured as follows:

- Section 1 contains the executive summary;
- Section 2 contains an introduction;
- Section 3 describes the survey methods;
- Section 4 describes the results;
- Section 5 evaluates the findings;
- Section 6 contains the figures including:
 - Figure 1 gives aerial photographs showing the site location;
 - Figure 2 gives an Ordnance Survey map showing the location of the site;
 - Figure 3 gives a site plan showing the building surveyed;
 - Figure 4 gives the locations of bat droppings;
 - Figures 5-7 illustrate the bat activity recorded during the bat activity surveys;
 - Figures 8-9 give plans of proposed mitigation, compensation, and enhancement measures; and
 - Figure 10 gives an example of a bat access tile.
- Section 7 gives photographs of the site;
- Section 8 lists the references;

- *Appendix A* gives information on relevant legislation;
- *Appendix B* gives information on bat ecology;
- *Appendix C* gives the data from the bat activity surveys; and
- *Appendix D* lists other enhancements for wildlife (for information, not part of the planning application).

METHODS

3.1 Desk study

The *Multi-Agency Geographic Information for the Countryside* website (www.magic.gov.uk) was used to search for designated sites on or adjacent to the site including Local Nature Reserves (LNRs), National Nature Reserves (NNRs), Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites. The search area was 5km for SAC and SPA sites and 2km for LNRs, NNRs, Ramsar sites and SSSIs, as specified in Hampshire's *Biodiversity Checklist*. The search area is also 500m for Sites of Importance to Nature Conservation (SINCs) and ancient semi-natural and ancient replanted woodlands.

In addition, the *Multi-Agency Geographic Information for the Countryside* website (www.magic.gov.uk) was used to search for granted European Protected Species (EPS) licences in relation to bats within 2km of the site.

A data search from the Hampshire Biodiversity Information Centre (HBIC) has not been commissioned by the client in relation to this site.

A bat mitigation plan by David Leach Ecology Ltd was produced in association with a two-storey extension on the north elevation of the house which was carried out in 2019. As part of the mitigation plan, three pairs of ridge tiles access points were installed with gaps in the roofing felt above the new extension. There was also supervision by a licenced ecologist during the soft deconstruction works (removing tiles and other features where bats could be roosting).

3.2 Field survey

3.2.1 Dates, times, and weather

Three bat activity (dusk emergence) surveys were carried out. Details of the weather, dates and times of these surveys are given in *Table 3.2.1.1*.

Table 3.2.1.1. Dates, times, and weather conditions during the bat activity surveys.

Date	Start time	End time	Sunset/ sunrise	Temperature at start & end (°C)	Wind (Beaufort scale)	Cloud Cover (%)
23/07/24	20:48	22:33	21:03	19.0 – 18.0	2	60
12/08/24	20:16	22:01	20:31	21.0 – 18.0	1	10
02/09/24	19:32	21:17	19:47	18.0 – 17.0	0	100

The surveys commenced fifteen minutes before sunset and continued for an hour and a half after sunset (long after bats would have exited). The weather was suitable for bat emergence and foraging during all the surveys.

In addition, an external and internal inspection of the building was conducted on the 12th August 2024. The weather conditions during the survey were 17°C and dry with 60% cloud cover and a slight breeze (Beaufort scale 1).

3.2.2 Personnel

The internal and external inspections were carried out by Laura Hardy BSc (Hons) AMRSB who is experienced in undertaking bat roost surveys and is accredited under Bat Class Licence Registration number 2015-11159-CLS-CLS.

Personnel carrying out the bat activity surveys are given in *Table 3.2.2.1*. All surveyors are experienced in carrying out bat surveys using detectors.

Table 3.2.2.1. Personnel carrying out the activity surveys.

Date	Surveyor		
23/07/24	Finn Parker BSc	Alex Grainger BSc	Bailey Riches
12/08/24	Laura Hardy BSc (Hons) AMRSB	Luke Purnell BSc (Hons)	Jackie Thompson MCIEEM
02/09/24	Finn Parker BSc	Harriet Riches BSc	Bailey Riches BSc

Jackie Thompson MCIEEM is accredited under Bat Class Licence Registration number 2015-17894-CLS-CLS.

This report was reviewed by John Poland CEnv MCIEEM CBiol MRSB, who is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM), a Chartered Environmentalist (CEnv), a Chartered Biologist (CBiol) and multi-species licence holder with 23 years of experience in ecological consultancy and Victoria Russell MCIEEM who is also a full member of the CIEEM and multi-species licence holder with over 25 years of experience in ecological consultancy.

All staff adhere to the Chartered Institute of Ecology and Environmental Management's (CIEEM) *Code of Professional Conduct*.

3.2.3 Assessment of current bat roost suitability

Because bats are crevice-dwelling mammals it is often difficult to thoroughly inspect buildings for bats and evidence of bats without a destructive search, which is not generally practical or acceptable. Examples are where bats roost between the roofing felt and tiles or slates, around window frames and behind bargeboards. These areas cannot be inspected, but a surveyor would know that bats might roost here because there are places where bats could gain entry. A pipistrelle bat is small enough to fit into a match box and can roost in gaps just 14-20mm wide.

The building was assessed for its **bat roost suitability** according to the following factors that influence the likelihood of bat roosting:

- Surrounding habitat: whether there are potential flight-lines and bat foraging areas nearby.
- Construction detail: the type and construction of architectural features such as attics, bargeboards, soffit boxes, lead-flashing, cavity walls and hanging tiles that could be used by roosting bats. Some construction details and materials are more favourable to bat occupation than others.
- Building condition: whether the building has no roof or has a sound roof without any potential bat access points.
- Internal conditions: bats favour sheltered locations with a stable temperature regime, protection from the elements and little wind/light/rain penetration.
- Potential bat access points: whether there is flight and crawl access.
- Potential roosting locations: the presence of bat-accessible voids, cracks and crevices.

The risk of bat roosts being present will be lower where structures have:

- Urban setting with little greenspace.
- Heavy disturbance.
- Small, cluttered roof void (particularly for brown long-eared bats).
- Modern construction with few gaps or crevices that bats can fly or crawl through (although pipistrelles may still be present).
- Prefabricated steel or sheet materials.
- Active industrial premises.

The above list provides generic criteria and there are exceptions to consider. For example, pipistrelle roost sites are often found in modern housing estates and therefore the absence of bats from such locations should not always be assumed.

Some information on bat ecology is included in *Appendix B*.

3.2.4 *Systematic inspection for bats or evidence of bats*

The building was assessed for its suitability to support roosting bats using the following access and inspection equipment: high-quality 10x42 binoculars; a 1,000,000 candlepower Clulite™ CB2 torch; an LED pen torch; an Explorer Premium™ wireless inspection camera with recordable monitor; and a 3.8m surveyors' ladder. Binoculars were employed to view higher areas such as potential access points on the outside of the building. A description of the building was recorded on a survey sheet and digital photographs were taken as a permanent record.

Visual, systematic examinations were made for bats and evidence of bats in the building, both internally and externally, of the following:

- roof beams, especially the ridge beam;
- cracks, crevices and sheltered voids;
- the floors and stored items;

- external features such as cracks and holes in the walls;
- wall and door surfaces;
- window and door frames; and
- wall bases.

Evidence of roosting bats includes droppings, feeding remains and dead bats, but also staining from urine and fur-oils, scratch marks, odour, the presence of bat-fly (Nycteribiid) pupal cases, and in some cases, the absence of cobwebs.

Bat droppings can prove beyond doubt that bats use a building and can help to identify roosting locations because piles often accumulate beneath roosting sites or entrance points. The location, size, shape, texture and colour of the droppings can be used to aid species identification. DNA analysis of droppings is also possible and samples are taken where necessary. The number and condition (age) of droppings can indicate the size of the roost and when it was last used.

Following the internal and external inspections, the building was assigned a level of suitability for being used by roosting bats. This was based on the criteria in *Table 3.2.4.1* (Collins, 2023).

Table 3.2.4.1. Bat Roost Suitability.

Suitability	Description of roosting habitats	Description of commuting and foraging habitats
None	No habitat features on site likely to be used by any roosting bats at any time of the year (<i>i.e.</i> a complete absence of crevices/suitable shelter at all ground/underground levels).	No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (<i>i.e.</i> no habitats that provide continuous lines of shade/protection for flight-lines or generate/shelter insect populations available to foraging bats).
Negligible*	No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.	No obvious habitat features on site likely to be used as flight-paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.

Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. 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>i.e.</i> unlikely to be suitable for maternity and not a classic cool/stable hibernation site, but could be used by individual hibernating bats).	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated stream, but isolated, <i>i.e.</i> not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland) or a patch of scrub.
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Suitability	Description of roosting habitats	Description of commuting and foraging habitats
Moderate	A structure 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, such as maternity and hibernation – the categorisation described in this table is made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for flight-paths, such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure 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. These structures have the potential to support high conservation status roosts, e.g. maternity or classic cool/stable hibernation site.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight-paths such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.
*Negligible is defined as ‘so small or unimportant as to be not worth considering, insignificant’. This category may be used where there are places that a bat could roost or forage (due to one attribute) but it is unlikely that they actually would (due to another attribute).		

3.2.5 Bat activity surveys

The bat activity surveys followed standard survey protocol in *Bat Surveys – Good Practice Guidelines, 4th edition* (Collins, 2023).

The surveyors were located with good views of the potential bat access points identified during the initial site visit. The timing of the visits, from early evening until after dark, was aimed at detecting active bats in the vicinity. When it was too dark for visual observation, electronic bat detectors were used to listen for the ultrasonic sounds produced by bats either flying in the vicinity or emerging from the building. Surveyors were also equipped with a Pulsar Axion XQ38 thermal imager to supplement observations when light levels were too low for human eyesight. This detects heat and is more effective than standard night-vision equipment.

The surveyors recorded all bat activity encountered, but particular attention was focused on any bats emerging or re-entering. The results were documented by noting the time, bat species and behaviour (*e.g.* commuting, foraging, social interaction *etc.*). The surveyors were in constant contact via hand-held radios so that information could be easily exchanged regarding bat activity. The time between all surveyors' devices was synchronised so time data was recorded precisely.

Bat detectors are used so that surveyors can identify most bat species in the field, using the heterodyne output in combination with bat shape, flight pattern and behaviour. Surveyors were equipped with Echo Meter Touch™ detectors for real-time analysis and BatBox Duet™ detectors connected to solid-state recorders (Edirol Roland-05) to record bat calls for later sonogram analysis using BatSound™ computer software (should it be required). Frequency-division, whereby the ultrasound is divided by 10 into an audible range, has a considerable advantage over time-expansion for survey work as it allows recordings to be taken in real time. This ensures that all bat activity is recorded.

Queried recordings were later replayed and analysed through BatSound™ software to ensure that any activity accidentally missed during the survey was recorded and times and location calculated. The species of bat was confirmed at this stage where possible. Bat detector surveys provide one of the most effective methods of identifying bat species and activity patterns. However, it is not always possible to identify bats down to species level, even with subsequent sound analysis.

Sufficient survey effort has been gathered through activity surveys, which have given us a full appreciation of the bat species roosting at the site, and of the type and status of roosts they use on site and in the context of the immediate surrounding area. No further emergence surveys are considered necessary.

The latest *Bat Surveys for Professional Ecologists: Good Practice Guidelines*, 4th edition (September 2023) removes the need for pre-dawn surveys and support the use of night-vision equipment as used above.

4

RESULTS**4.1 Desk study****4.1.1 Designated sites**

According to the *Multi-Agency Geographic Information for the Countryside* website (www.magic.gov.uk), the site is not designated or immediately adjacent to any designated areas of nature conservation. However, there are designated sites nearby. These are listed in *Table 4.1.1.1*.

Table 4.1.1.1. Statutory designated sites; non-statutory designated sites and ancient semi-natural and ancient replanted woodlands within the designated search areas of the site.

Level of designation	Designation	Name	Distance & direction from site
International	SPA	Solent & Southampton Water	c.1990m south-east
	Ramsar	Solent & Southampton Water	c.1990m south-east
	SAC	River Itchen	c.4855m north-west
		Solent Maritime	c.1990m south-east
National	SSSI	Upper Hamble Estuary and Woods	c.1958m south-east
	NNR	-	-
County	LNR	-	-
Local	SINC		c.414m north-west
	Ancient woodland	-	-

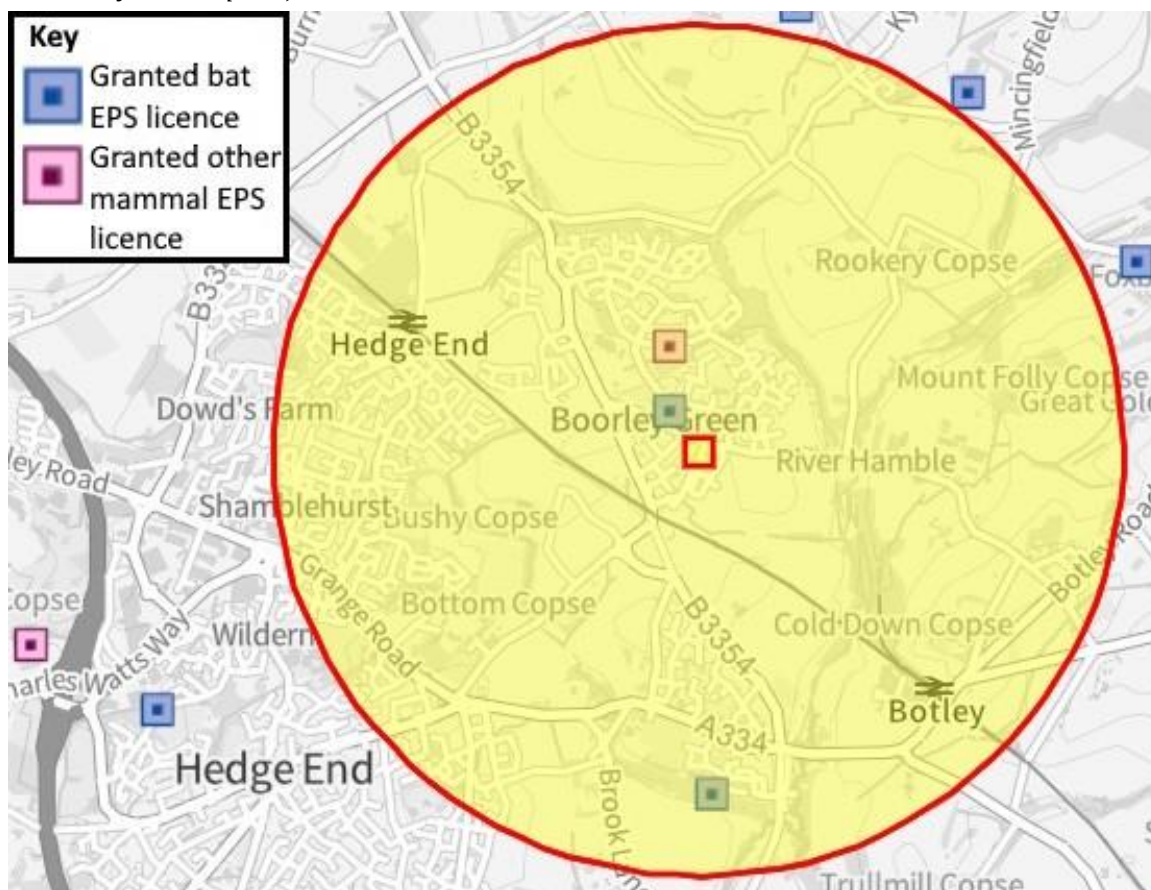
4.1.2 Bats

According to the *Multi-Agency Geographic Information for the Countryside* website (www.magic.gov.uk), there have been two bat European Protected Species (EPS) licences granted within 2km of the site. These are listed in *Table 4.1.2.1* and their locations are shown in *Figure 4.1.2.1*.

Table 4.1.2.1. Granted bat European Protected Species (EPS) licences within 2km of the site.

Species subject of licence	Type of habitat affected	Date licence was granted	Distance & direction from site
Common pipistrelle	Resting place	20/05/2016	c.213m north-west
Common pipistrelle	Resting place	24/10/2012	c.1630m south

Figure 4.1.2.1. Location of sites with granted bat EPS licences within 2km of the site (site location marked by a red square).



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4.2 Survey of buildings

The construction details and photographs of the building are summarised in *Table 4.2.1*. Additional photographs showing the gardens are given in *Section 7*.

Table 4.2.1. Summary of the building's construction details.

Type/Name	House
Description	A two-storey brick building with a hipped tiled roof. There is a one-storey extension on the west elevation which has a flat roof.
No. of storeys	2
Roof type	Hipped
Roof cladding	Tile
Ridge	Tile
Wall type	Brick
Exterior	Soffits, chimney, lead flashing.

Photos

North elevation



East elevation



South elevation



	West elevation 
Building dimensions	c.12.6m wide x c.10.55m long
Roof void description	The main roof void above the original house has cluttered construction with open fiberglass insulation. There is a newer section of roof void above a previously done extension to the north elevation which had a much less cluttered construction and open fiberglass insulation. The roofing felt was ripped in the main roof void in many places and had also been ripped to provide bat access in the new roof void.
Frame	Wooden rafters and ridge beam
Roof lining	Bitumen roofing felt
Roof void dimensions	Main roof void: c.9.2m wide x c.3.4m long 

Roof void dimensions cont.	New roof void: c.9.2m wide x c.7.15m long 
Roof void height	Main roof void: c.2m New roof void: c.1.8m
Potential roosting locations	• Against the ridge beam and between the roof tiles and the internal lining. • Within the brickwork where there is missing mortar. • The bitumen roof lining has ripped in many places and could allow bats to access the roof void. 
Bat evidence	Yes (e.g. pipistrelle sp. droppings) 
Bat roost suitability	Moderate (confirmed bat roost)

4.3 *Potential bat access points and potential external roost locations*

4.3.1 *House*

The majority of the roof appears in fairly good condition, although due to the shape of the tiles there are many potential access points into the roof void. There are also some exterior features that provide potential roosting locations for bats. Therefore, the building is classed as having moderate suitability to be used by roosting bats, following the criteria in Table 3.2.4.1.

The locations and details of the potential bat access points and exterior roosting features are illustrated in Images 4.3.1.1 – 4.3.1.3.

Image 4.3.1.1. Location of potential bat access points and potential external roost locations on the west elevation of the house.



Image 4.3.1.2. Location of potential bat access points and potential external roost locations on the east elevation of the house.



Image 4.3.1.3. Location of potential bat access points and potential external roost locations on the south elevation of the house.



4.4 *Commuting and foraging habitat*

The mature trees in the garden provide good, sheltered bat foraging habitat in the immediate vicinity of the building; the lines of trees, hedges, and shrubs along the boundaries connect a network of linked back gardens. These in turn connect the site to areas of high-quality foraging habitat in the wider landscape such as woodland. Therefore, the site has moderate commuting and foraging habitat, following the criteria in *Table 3.2.4.1*.

Bats follow linear landscape features such as lines of trees, hedges, buildings, and waterways in order to commute from their roost sites to their feeding grounds. Likewise, they use these features to navigate between feeding areas and alternative roosts.

4.5 *Evidence of bats*

Bat droppings were found within the main roof void (see *Table 4.2.1* in *Section 4.2*). The droppings were consistent in size, shape, and texture with those of pipistrelle bats. The locations of the bat droppings are illustrated in *Figure 4* in *Section 6*.

4.6 *Bat activity surveys*

No bats were observed emerging from the house.

Common pipistrelles and noctule bats were recorded flying in the vicinity of the building and on the site indicating the weather was suitable for bat activity on all occasions. The full data from the bat activity surveys is given in *Appendix C* and plans illustrating the bat activity (observations only) during the surveys are given in *Figures 5-7* in *Section 6*.

4.7 Other ecological constraints

4.7.1 Schedule 9 species

Two non-native invasive plant species listed on *Schedule 9* of the *Wildlife and Countryside Act 1981* (as amended) were recorded on the site. These are:

- *Cotoneaster horizontalis* (Wall Cotoneaster) + on the east elevation of the house on site (*Target Note 1*); and
- *Rhododendron ponticum* (Rhododendron) + on the south boundary of the site (*Target Note 2*).

4.7.2 Birds

The trees, shrubs and hedges provide suitable nesting habitat for birds.

Robins were observed coming in and out of a Woodstone bat box installed on the west elevation of the house, showing that the house provides suitable nesting habitat for birds.

5 **INTERPRETATION AND EVALUATION**

5.1 **Constraints**

5.1.1 *Constraints on survey data*

Detailed searches often result in the discovery of evidence of bats. However, although such surveys can identify the presence of bats it is more difficult to prove absence due to the crevice-dwelling nature of these elusive mammals. Bat droppings may be missed where there is debris to obscure them (and also, very old droppings generally crumble away to dust).

It is often difficult to thoroughly inspect buildings for bats and evidence of bats without a destructive search, which is not generally legal, practical, or acceptable.

There was limited access into the part of the roof void due to the presence of stored items and cluttered wooden beams. Observation was still possible through the use of a Clulite™.

5.1.2 *Constraints on the mitigation, compensation, and enhancement measures*

The proposed work will involve extending the house. Therefore, the mitigation, compensation and enhancement measures are limited to these areas.

5.2 **Potential impacts of the proposed development on bat roosts**

5.2.1 *Desk study*

According to the *Multi-Agency Geographic Information for the Countryside* website (www.magic.gov.uk), the site is neither designated nor immediately adjacent to any designated areas of nature conservation. However, there are designated sites nearby (see *Table 4.1.1.1* in *Section 4.1.1*). None of these will be directly affected by these small-scale works and all links will be maintained.

The site is within 5km the River Itchen SAC (c.4855m north-west). The River Itchen SAC is designated because it is a watercourse with *Ranunculus fluitantis* as well as the presence otter and of several protected invertebrates, fish including southern damselfly, freshwater crayfish, brook lamprey, Atlantic salmon, and bullhead.

The site is within 5km Solent Maritime SAC (c.1990m south-east) and the Southampton & Solent Water SPA and Ramsar site (c.1990m south-east). The SAC is designated for its marine and estuarine habitats (including sandbanks, estuaries, mudflats, coastal lagoons, drift lines, stoney banks, Salicornia and other annuals colonising mud, Spartina swards, Atlantic salt meadows, dunes and Desmoulin's whorl snail) while the SPA is designated for its waterbird assemblage as well as specific bird species (black-tailed godwit, common tern, little tern, mediterranean gull, ringed plover, roseate tern, sandwich tern, teal) and in particular for its populations of dark-bellied Brent goose, which are

10-13% of the world's population. The Ramsar is designated for the same birds and bird assemblages as the SPA, but also its wetland invertebrate assemblage and wetland plant assemblage. As a result of its proximity, the impacts of these small-scale works on the SAC and SPA & Ramsar must be considered.

As a result of its proximity, the impacts of these small-scale works on the SPA, SACs, and Ramsar sites must be considered.

While the works will cause an increase to the building size, the number of people occupying the building will remain the same, as the house is a residential property and is staying under the same ownership. Therefore, there will be no increase in the recreational pressure, or pollution, on the internationally designated sites.

According to the *Multi-Agency Geographic Information for the Countryside* website (www.magic.gov.uk), there have been two bat European Protected Species (EPS) licences granted c.2km of the site. Due to their close proximity, it is likely that the bats roosting on site are part of the same meta-population. However, due to the small-scale of the proposed works and proposed mitigation, any impacts are considered to be minimal.

5.2.2 *Commuting and foraging bats*

The mature trees in the garden provide good, sheltered bat foraging habitat in the immediate vicinity of the building; the lines of trees, hedges, and shrubs along the boundaries connect a network of linked back gardens. These in turn connect the site to areas of high-quality foraging habitat in the wider landscape such as woodland. Woodland provides high-quality foraging habitat for a number of different species of bat. These areas will be unaffected by the development and all links will be maintained. The connectivity around the edges of the site will be retained and as such no impact to commuting and foraging bats (and hence bat populations in the local area) is anticipated.

Changes in lighting can affect foraging and commuting bats. Therefore, no works should take place in the hours of darkness or under artificial lighting. In addition, no lighting should be directed onto retained vegetation (particularly the trees), and security lights should operate on a timer, to avoid any negative impact on bats.

Any lighting installed should avoid spillage of greater than 0.1 lux (typical moonlight/ cloudy sky) onto any retained vegetation. However, it is in a highly lit area and as such this may not be possible due to existing light spill. If this is the case any new lighting should not increase the level currently experienced and, if at all possible, should reduce any light spill due to the type of lighting used and the use of protection such as hoods and cowls.

The use of non-UV LED lighting (preferably using warm spectrum wavelengths) is strongly recommended to avoid the most deleterious impacts of lighting on biodiversity and bats in particular.

5.2.3 *Buildings*

Due to the number of suitable roosting features on the building, the building has high bat roost suitability. This was confirmed by the presence of bat droppings characteristic in size, shape, and texture with those of pipistrelle bats. Therefore, the building is a confirmed bat roost.

As the house is a confirmed bat roost, a European Protected Species (EPS) licence or Bat Earned Recognition (BER) licence site registration from Natural England must be obtained before works commence. A detailed method statement, with a mitigation strategy aimed at maintaining the conservation status of bats, will be prepared as part of the bat licence from Natural England.

A summary of the bat roost in the building, including the proposed mitigation and compensation measures are described in *Table 5.2.3.1*.

Table 5.2.3.1. Summary of the bat roosts and the proposed impacts.

Building	House	
Species (& peak count)	Common pipistrelle	
Roost type	Occasional non-breeding day roost	
Roost location(s)	Common pipistrelle	In the main roof void
Impacts without mitigation	Bats could be injured or killed when the roof tiles (and other features that could be used by bats) are removed to “tie-in” the roof of the new two-storey extension. The bat access under the roof tiles on the south elevation will be lost when the new two-storey extension is “tied-in” to the existing roof. However, the access from the roof tiles on the gable ends on the south elevation at the front of the house will be retained, although their options for a flight-path when entering or existing will be reduced due to the new extension. Without mitigation the bat access points on the south elevation will be lost, such as under the roof tiles. This could impact the common pipistrelles using the roof void as a non-breeding day roost. No bats were recorded emerging from the house. However, the presence of bat droppings suggest that bats are using the roof void and therefore are likely to be disturbed when the new two-storey extension is “tied-in” to the existing roof.	
Mitigation/compensation	The roof tiles and other features with bat roost suitability (such as soffits and lead-flashing) will be removed carefully by hand (under strict ecological supervision) to mitigate the potential for individual bats to be injured or killed.	

	This will ideally be completed in September/ October once roosting bats have dispersed and before bats have begun to hibernate; or in March/ April before bats have returned to roost. However, work at any time of year may be acceptable (subject to licensing from Natural England) providing the destructive search is carried out in mild spells (above 5°C at night) in winter. One woodstone bat box (<i>e.g.</i> Vivara woodstone, Beaumaris Woodstone or similar) will be erected on a large nearby tree prior to the commencement of the works to provide a safe location to put any bats found during the destructive searches. Bats will be captured by hand by the ecologist and, after being checked for injuries, transported immediately in cotton holding bags. In the event that an injured bat is encountered during the destructive search, it will be taken to a veterinary surgeon so that the extent of its injuries can be assessed. If not life-threatening, it will be taken to one of the local bat group's designated carers. Bat access tiles (see <i>Figure 10</i> in <i>Section 6</i>) will be used to provide replacement access into the roof void where access points in the roof are lost. To create access for bats into the new roof void above the new two-storey extension (and where any replacement bat access tiles are used), the roofing felt must be cut near the proposed bat access points so that a gap of 50mm wide by 40mm high is present allowing bat access. Additionally, all sections of roofing felt should be overlapped to create gaps which bats can crawl through. Ideally access points should be by rafters to facilitate bat movement. The roof lining of both the existing and the new extension <u>must</u> consist of bitumen type 1F felt with a hessian matrix (<u>NOT</u> a breathable membrane such as Tyvek™ or other non-woven membrane), unless a certificate can be provided showing proof that the roofing membrane has passed a 'snagging propensity test' for any non-bitumen coated roofing membranes. This is currently a Natural England licence requirement whilst a safe alternative is being researched. This is because bats can become entangled in breathable membranes and die. Although breathable membranes appear smooth, crawling or hanging bats may become tangled in the fibres as a result of their claws catching on the membrane. A struggling bat may also puncture the membrane, thus invalidating the guarantee of the material and causing water ingress. The building contractor or client may be liable for both damage of the property and killing or injuring bats.
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	Only timber treatments recommended by Natural England should be used in line with Natural England's <i>Remedial timber treatment products suitable for use in bat roosts (2013)</i> available at: https://www.gov.uk/guidance/bat-roosts-use-of-chemical-pest-control-products-and-timber-treatments-in-or-near-them .
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Enhancement measures will be required to be incorporated into the building and/ or wider site to comply with national and local planning policy that requires a net gain in biodiversity. The proposed enhancement measures are given in *Section 5.6*.

All proposed mitigation, compensation, and enhancement measures are subject to supplied plans.

5.2.4 *Schedule 9 species*

Two non-native invasive plant species listed on *Schedule 9* of the *Wildlife and Countryside Act 1981* (as amended) were recorded on the site. These are:

- *Cotoneaster horizontalis* (Wall Cotoneaster) + on the east elevation of the house on site (*Target Note 1*); and
- *Rhododendron ponticum* (Rhododendron) + on the south boundary of the site (*Target Note 2*).

It is an offence under the *Wildlife and Countryside Act 1981* (as amended) to cause any species listed on *Schedule 9* to spread in the wild. Therefore, ideally these should be removed to avoid spreading to the remainder of the site or off-site during site works, especially where they are close to or in the area of work.

Cotoneaster horizontalis (Wall Cotoneaster) is mostly spread by berries, which may be retained for much of the following year. It can also potentially spread via cuttings and can re-sprout from cut stumps and shallow roots. There are various options for its removal including hand-pulling, physical cutting, excavation (hand tools or mechanical), and herbicide application.

Rhododendron ponticum (Rhododendron) is mainly spread through seeds, which are dispersed by wind. Each flower head can produce between three and seven thousand seeds. However, the plant itself also grows laterally with branches extending out and where they touch the ground they root. This allows for further lateral spread than with other species. This lateral spreading also allows the plant to out compete other species by shading out the area and stopping any growth from below.

Information of the removal of the *Schedule 9* species (should the owners need or choose to do so) is given in *Section 5.6.4*.

5.2.5 *Birds*

All trees, shrubs, hedges, and buildings provide suitable habitat for nesting birds. The destruction of active bird nests is prohibited under the *Wildlife and Countryside Act 1981* (as amended). Therefore, any affected vegetation with the potential to support nesting birds should be cut to near ground level

(approximately 30cm) outside the bird breeding season (which is late February to August inclusive). If this is not possible, and vegetation has to be removed during the nesting season, then it should be inspected (by an ecologist) for nests immediately prior to removal of the vegetation.

All works to the building/ roof should take place outside the breeding bird season (which is late February to August inclusive). If this is not possible and works have to take place during the nesting season, the building should be checked for nests (by an ecologist) immediately prior to works.

If any active nests are found prior to or during works, a 5m buffer zone should be established around them and be temporarily fenced off to prevent plant or personnel disturbing the nest until the end of the breeding bird season (or until the nest is no longer in use). Any active nests must be retained, and work must be delayed in that area until the young have fledged and left the nest.

5.3 *Alternative roosting potential*

There are buildings nearby that could provide alternative roosting for bats (see *Figure 1* in *Section 6*). In addition, there are several mature trees in the vicinity that could provide bat roosting opportunities.

Bats were observed emerging from a neighbouring house to the south of the site, indicating that there are nearby buildings with roosting potential for bats.

5.4 *Survey report expiry*

This survey data is valid for a maximum of 12 months. Bats frequently move around and adopt new roosting sites, therefore if more than 12 months elapse it may be advisable to conduct further survey work to obtain up-to-date information to advise work, thereby ensuring protected species compliance.

Given the mobility of bats (and evidence of bats in the main roof void), it is recommended that a walkover of the site to update the survey information is undertaken prior to the development commencing if this does not occur before the end of September 2025.

5.5 *Further survey*

No further surveys are proposed.

5.6 *Enhancement measures*

5.6.1 *General*

Under the Environment Act 2021, all planning permissions granted in England (with a few exemptions) except for small sites will have to deliver at least 10% biodiversity net gain (BNG) from January 2024. BNG will be required for small sites from April 2024. BNG will be measured using Defra's biodiversity metric and habitats will need to be secured for at least 30 years. This sits alongside:

- a strengthened legal duty for public bodies to conserve and enhance biodiversity,

- new biodiversity reporting requirements for local authorities, and mandatory spatial strategies for nature: Local Nature Recovery Strategies or ‘LNRS’.

From the 20th July 2021, the Government published the revised National Planning Policy Framework (Ministry of Housing, Communities and Local Government, 2021). The document sets out the government’s planning policies for England and how these are expected to be applied. This replaces a previous version which was published in February 2019. It states: *"at the heart of the Framework is a presumption in favour of sustainable development (paragraph 11)."*

It also states *"opportunities to incorporate biodiversity in and around developments should be encouraged"* as part of the consideration for *"presumption in favour of sustainable development"*.

The updated National Planning Policy Framework (NPPF) also states (paragraph 170) that: *"Planning Policies and decisions should contribute to and enhance the natural and local environment by... minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures."*

The updated Planning Policy Guidance (PPG) for the Natural Environment, updated in July 2019 states (paragraph 020) that:

"Net gain in planning describes an approach to development that leaves the natural environment in a measurably better state than it was beforehand."

The updated PPG provides examples of how biodiversity net gain can be achieved. Measures suggested include *"creating new habitats"* and *"enhancing existing habitats"*.

It is proposed that the enhancements to provide biodiversity net gain will also be in the form of the following:

- removing *Schedule 9* species, where required;
- new bat roost provision;
- sensitive lighting (for bats and other wildlife); and
- new bird nesting provision.

These enhancements are detailed in the following sections.

Other enhancements for wildlife that the owners of the site may choose to employ are given in *Appendix D*. However, these are not proposed as enhancements for the purposes of the planning application, but only for information purposes.

All proposed enhancement measures are subject to supplied plans.

5.6.2 Lighting

Changes in lighting can affect foraging and roosting bats. Therefore, no works should take place in the hours of darkness or under artificial lighting. In addition, no lighting should be directed onto new roost exit points (see *Section 5.6.3*) and planted vegetation (particularly the hedges and bushes) and

any lighting installed should avoid spillage of greater than 0.1 lux (typical moonlight/ cloudy sky) near to or directly onto the new roost entrances and vegetation so that light disturbance is not a problem. However, it is in a highly lit area and as such this may not be possible due to existing light spill. If this is the case any new lighting should not increase the level currently experienced and, if at all possible, should reduce any light spill due to the type of lighting used and the use of protection such as hoods and cowls. This is because lighting can impact bat populations directly by disturbing roosts and reducing their foraging area, or indirectly by severing commuting routes from roosts. Therefore, the following (modified from *Bats and lighting in the UK* (ILP 2023)) should be undertaken:

- **Aim of light** The light should be aimed to illuminate only the immediate area required by using as sharp a downward angle as possible. This lit area must avoid being directed at, or close to, any retained vegetation. A shield or hood can be used to control or restrict the area to be lit. Avoid illuminating at a wider angle as this will be more disturbing to foraging and commuting bats, as well as people and other wildlife.

For any security lighting, the following should also apply:

- **Power** It is rarely necessary to use a lamp of greater than 2000 lumens (150W) in security lights. The use of a higher power is not as effective for the intended function and will be more disturbing for bats.
- **Movement sensors** Many security lights are fitted with movement sensors which, if well installed and aimed, will reduce the amount of time a light is on each night. This is more easily achieved in a system where the light unit and the movement sensor are able to be separately aimed.
- **Timers** If the light is fitted with a timer this should be adjusted to the minimum to reduce the amount of 'lit time'.
- **Alternatives** The requirement for security lighting in each instance should be carefully considered and only used where absolutely necessary to deter crime.

The use of non-UV LED lighting (preferably using warm spectrum wavelengths) is strongly recommended to avoid the most deleterious impacts of lighting on biodiversity and bats in particular.

5.6.3 New bat roost locations

A minimum of one woodstone style bat box (*e.g.* Vivara Pro WoodStone Bat Box, Beaumaris Woodstone or similar) will be erected in a large nearby tree or on an undisturbed aspect of the building prior to the commencement of the works, with one required for each species present on site or roost feature lost (as per latest Natural England advice). This bat box will be erected between 2.5m and 5m, facing south or south-east with a clear exit path. This bat box will remain on site permanently (and shall be repaired or replaced as necessary).

The building will be enhanced for bats using either one integrated bat box/bat brick (*e.g.* a Habibat™ Bat Box, an Istock Enclosed Bat Box, a Schwegler Bat Tube, or similar), which provides a cavity that is incorporated into the external build structure to offer roosting space for bats. Alternatively, if this is not viable (because of the construction methods), then one woodstone style

bat box (e.g. Vivara Pro WoodStone Bat Box, Beaumaris Woodstone or similar) will be erected on an undisturbed aspect of the building. This bat box will be erected as high as possible (ideally between 2.5m and 5m, facing south or south-east) with a clear exit path. This bat box will remain on site permanently (and shall be repaired or replaced as necessary).

5.6.4 *Schedule 9 species*

General

To comply with the law, the *Schedule 9* species listed in *Section 5.2.4* will be controlled and eradicated so not to cause the plant to spread on this or other sites as a result of earth moving, soil/rubble removal or other operations. Otherwise, they will be fenced off for the duration of the works.

Cotoneaster horizontalis (Wall Cotoneaster)

The *Cotoneaster horizontalis* (Wall Cotoneaster) plants on site are mature (berry bearing) and therefore, a combination of methods will be used - cutting them down to stumps and then either digging them out or treating the stumps with herbicide during winter (November to February). The cut material will be placed on plastic sheeting to dry and burn to ash on site or will be disposed for incineration or disposed to a suitably licensed waste-disposal facility. This may be done in advance of planning or as part of site preparation works prior to clearance and demolition. If herbicide is used then an appropriately qualified worker and/ or contractor will be used. A suitably qualified ecologist will identify the plants to the contractors as needed.

Rhododendron ponticum (Rhododendron)

Rhododendron ponticum (Rhododendron) needs to be removed a combination of methods will be used - cutting them down to stumps and then either digging them out or treating the stumps with herbicide during winter (November to February). The cut material will be placed on plastic sheeting to dry and then burnt to ash on site or will be disposed for incineration or disposed to a suitably licensed waste-disposal facility. This may be done in advance of planning or as part of site preparation works. If herbicide is used then an appropriately qualified worker and/ or contractor will be used. A suitably qualified ecologist will identify the plants to the contractors as needed.

5.6.5 *Birds*

One multi-chamber box suitable for house sparrows, such as a Schwegler 1SP sparrow terrace or Vivara Pro WoodStone House Sparrow Nest Box will be built into the exterior wall of the new extension. In addition, one 32mm woodstone bird box (suitable for use by blue tits and great tits) will be erected within vegetation on the site or attached to the exterior wall of the building. These bird boxes will provide new nest sites. The bird boxes are detailed in *Table 5.6.5.1*.

Table 5.6.5.1. Bird boxes to be erected within the site with additional details on siting them to increase chances of occupancy.

Type & quantity	Typical species	No.	Height	Additional information
Vivara Pro Seville 32mm Woodstone Nest Box 	Blue tits, great tits	1	2-4m	- Position on a building or tree, angled north-east (away from prevailing winds) and tilt forward slightly. - Chances of occupation can be increased by positioning boxes near vegetation.
Vivara Pro WoodStone House Sparrow Nest Box  	House sparrows	1	≥ 2m	- Can either be incorporated into the build structure or mounted onto a building. - Should be fixed onto a sturdy building, not onto fences or garden sheds due to its weight. - Position away from windows. Position out of direct sunlight (below eaves on the north elevation), especially if not built into the build structure.

5.7 Requirement for Habitats Regulations licence

A bat European Protected Species (EPS) licence or Bat Earned Recognition (BER) licence site registration from Natural England is necessary before work commences on the house. A licence from Natural England permits activities that may otherwise be offences under the *Conservation of Habitats & Species Regulations 2017*, such as the destruction of roost sites.

Evidence is required from bat activity surveys (emergence and/ or re-entry surveys) during the bat active season between May and September in order to gather enough information about bat populations (including species, numbers and status of roost sites) to support a bat licence application.

Survey data supporting licence applications must be up-to-date *i.e.* have been conducted within the current or most recent optimal survey season (May to September). Therefore, if surveys show bats are present and licensable work is delayed until, during or after the next survey season, updated survey(s) will be required to support an application.

Natural England takes a minimum of 30-60 working days to process licence applications following receipt of all the relevant documentation. This includes an application form and a Method Statement. This includes a detailed mitigation strategy to eliminate or reduce impacts on bats.

It is not possible to apply for a licence until full planning permission has been granted and any conditions relating to wildlife fulfilled, although Local Planning Authorities usually request the information prior to determining a planning application request. Additional time will be required where any revisions to a proposed mitigation strategy are necessary to obtain the licence.

Figure 1. Aerial photographs showing the location of the site.



Figure 2. An Ordnance Survey map showing the site location, as indicated by the red arrow.



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Figure 3. Plan of the site with the building surveyed and the indicative locations of other ecological constraints (not to scale).

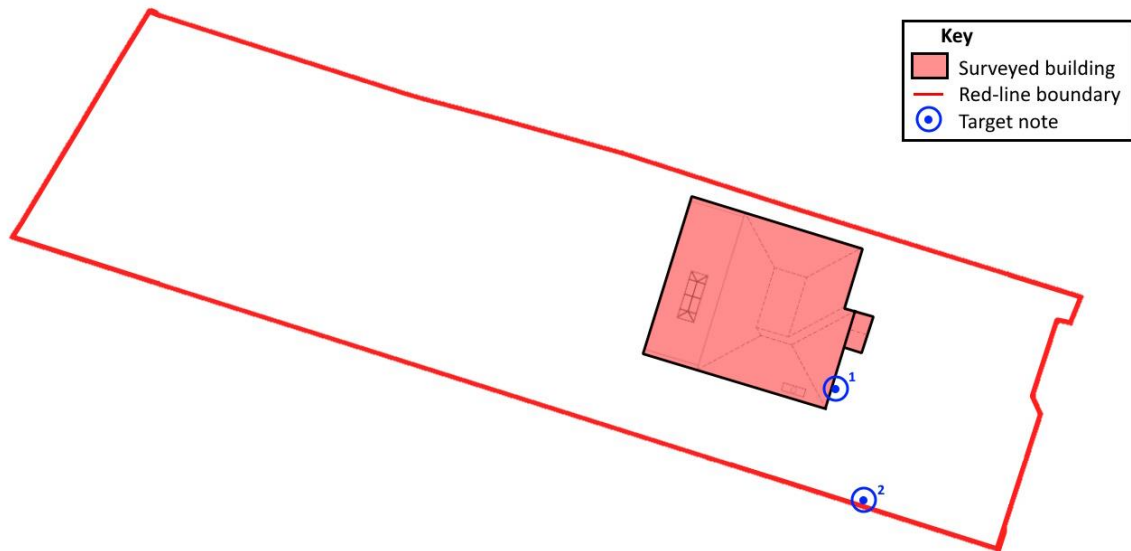


Figure 4. Plan showing the indicative locations of bat droppings within the roof void (not to scale).

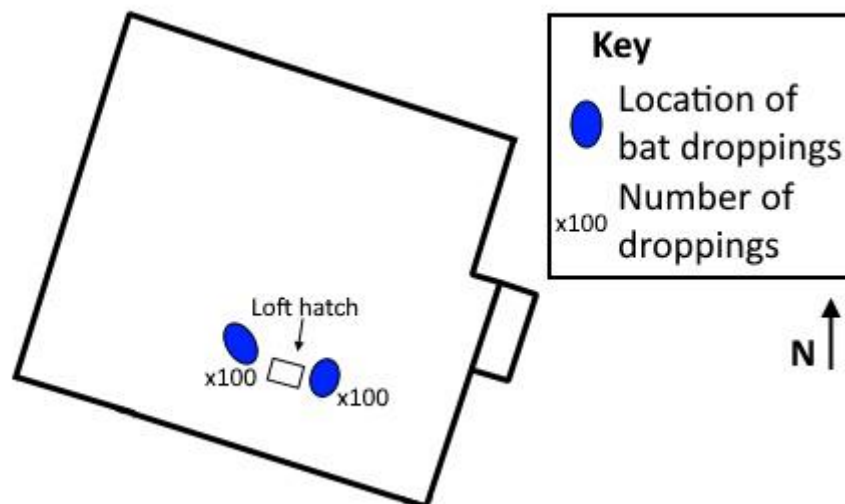


Figure 5. Plan showing bat activity (observations only) for the bat activity survey carried out on the 23rd July 2024. Arrows show direction of flight (where known).

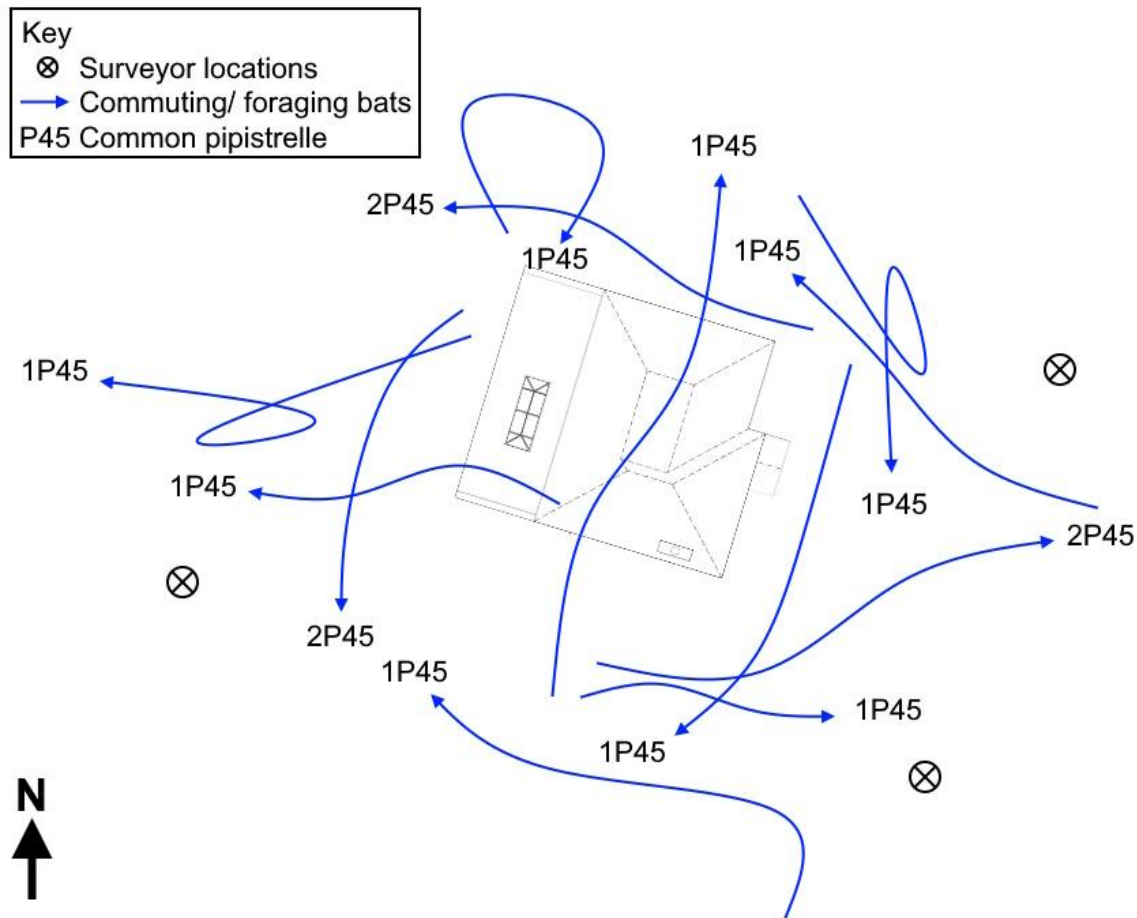


Figure 6. Plan showing bat activity (observations only) for the bat activity survey carried out on the 12th August 2024. Arrows show direction of flight (where known).

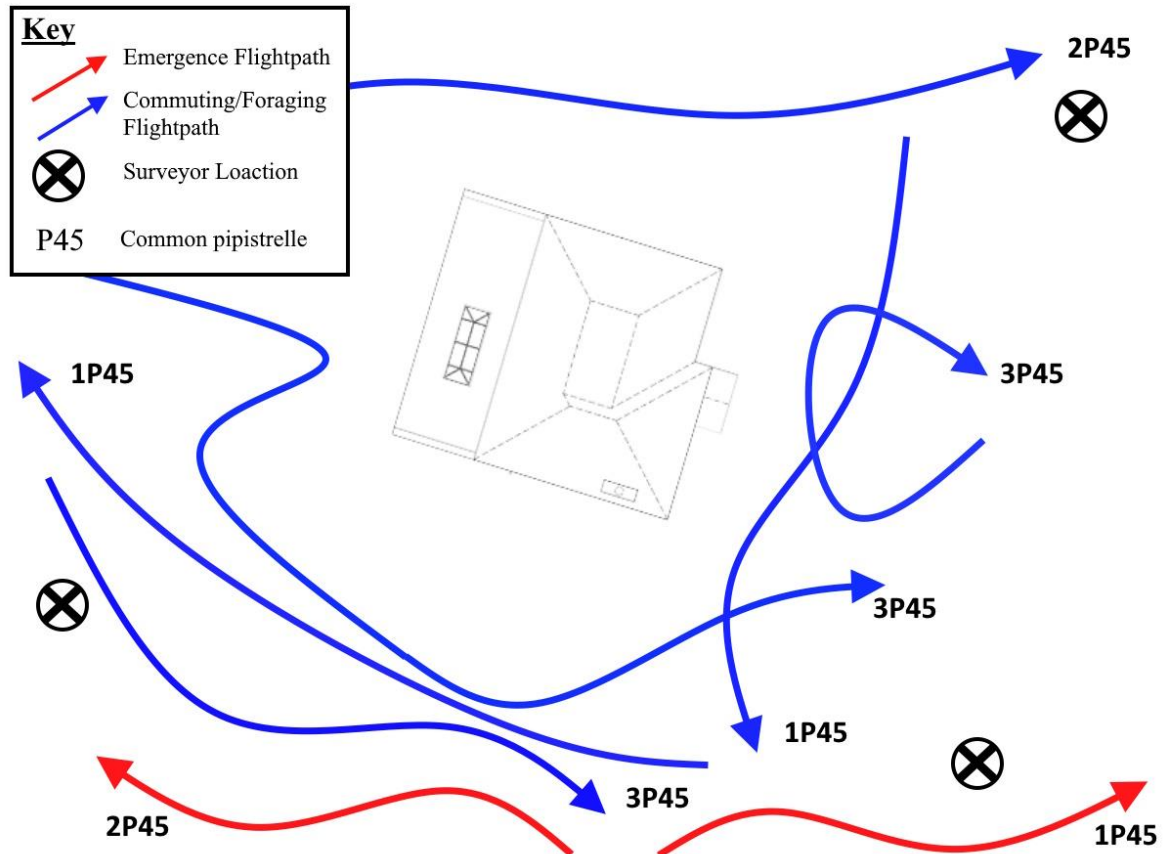


Figure 7. Plan showing bat activity (observations only) for the bat activity survey carried out on the 2nd September 2024. Arrows show direction of flight (where known).

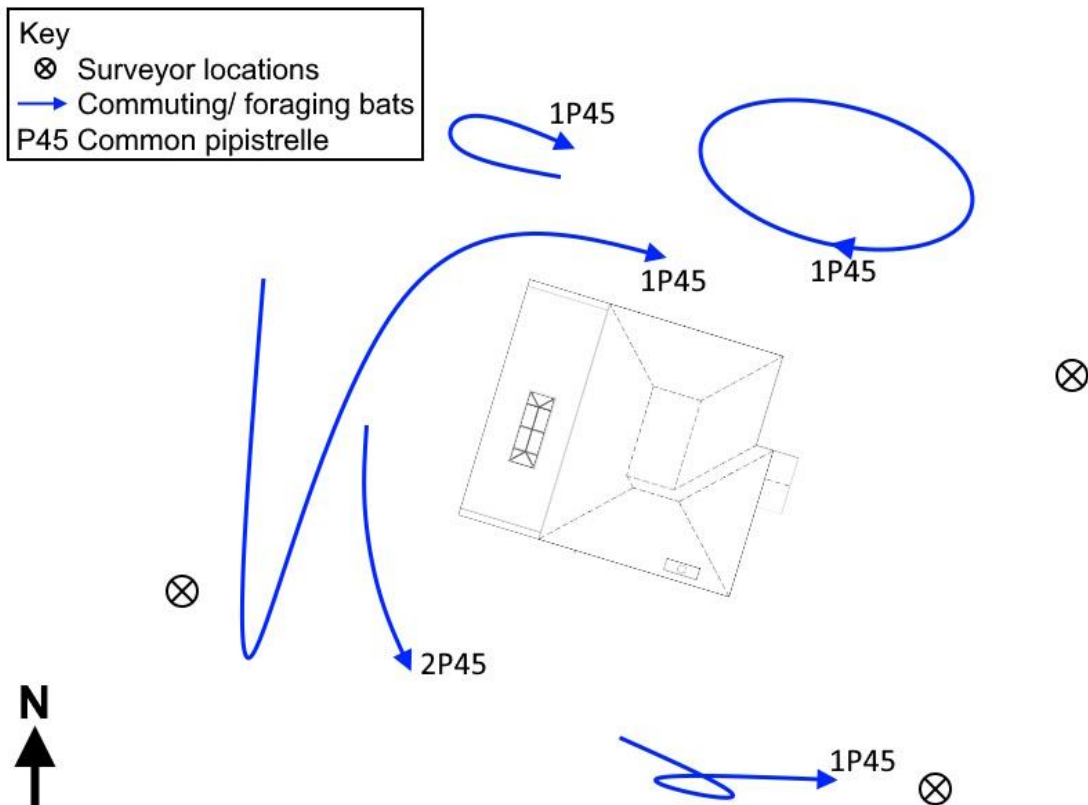


Figure 8. Plan showing the indicative locations of the proposed mitigation, compensation and enhancement measures (not to scale).

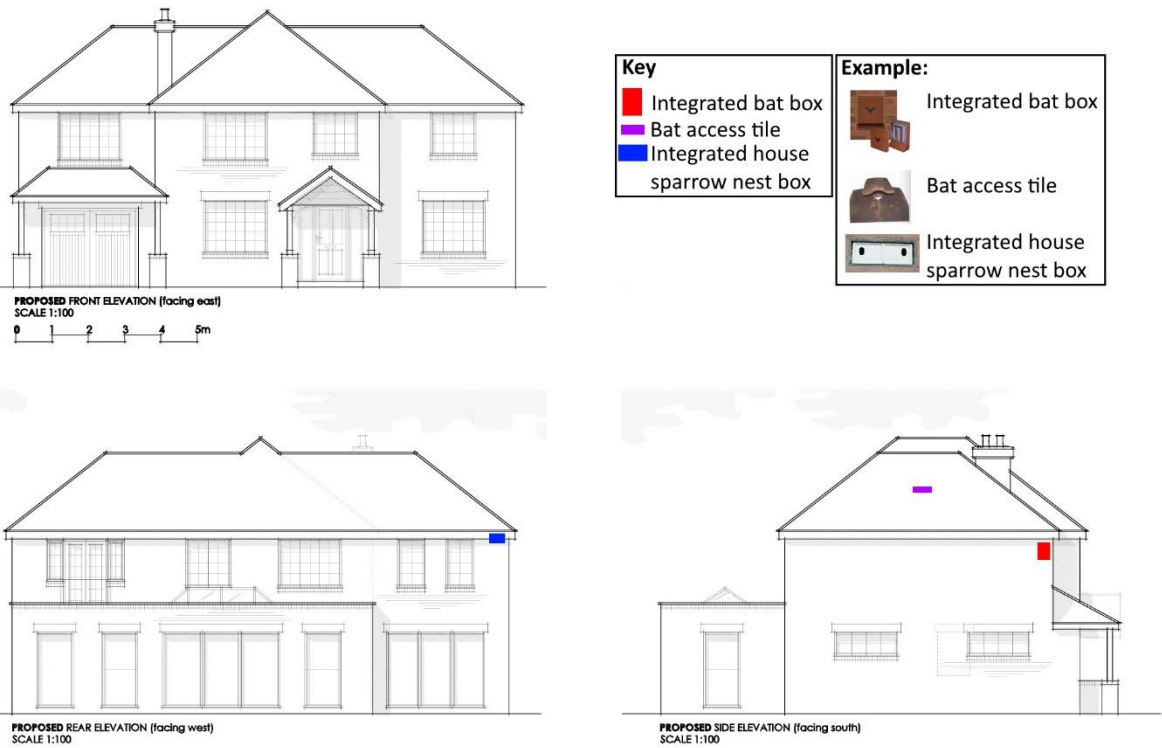


Figure 9. Plan showing the indicative locations of the proposed mitigation, compensation and enhancement measures (not to scale).

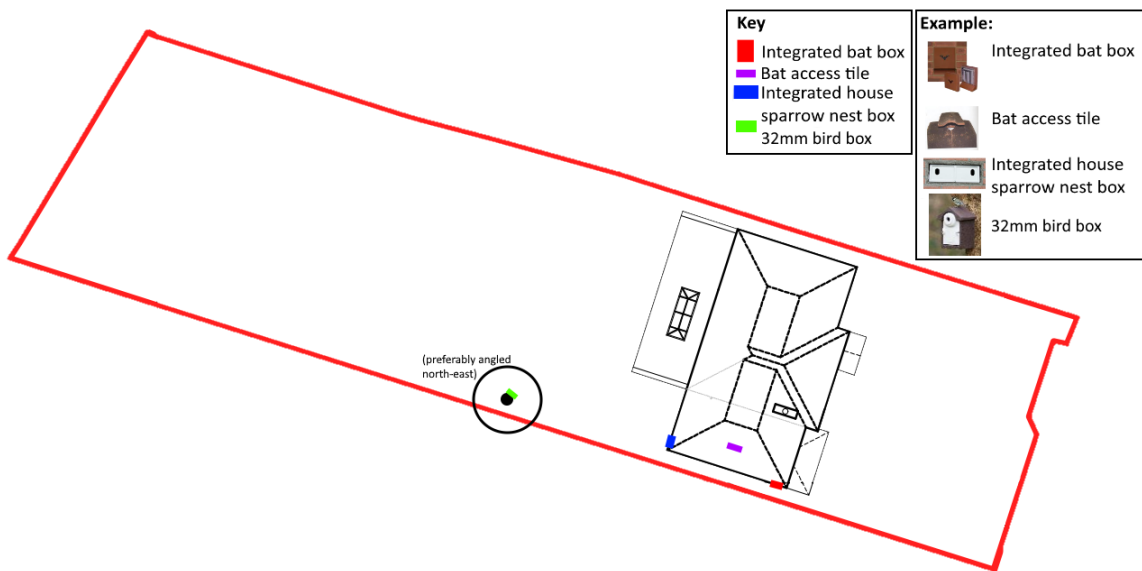


Figure 10. An example of a Bat Access Tile Set from the Tudor Roof Tile Co. Limited is given below (taken from Biodiversity for Low and Zero Carbon Buildings: A Technical Guide for New Build (Williams, 2010)).



PHOTOGRAPHS

Photo 1. Cotoneaster horizontalis (Wall Cotoneaster) on the east elevation of the house on site (Target Note 1)



Photo 2. Rhododendron ponticum (Rhododendron) to the south of the site (Target Note 2).



Photo 3. Woodstone bat box installed on the west elevation of the house



Photo 4. Mature tree on site where 32mm bird box is proposed to be attached



Photo 5. Pond situated in the rear garden



Photo 6. Rear garden



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9.1 *Legal context*

All species of British bat are protected by the *Wildlife and Countryside Act 1981* (as amended) extended by the *Countryside and Rights of Way Act 2000*. This legislation makes it an offence to:

- intentionally kill, injure or take a bat;
- possess or control a bat;
- intentionally or recklessly damage, destroy or obstruct access to a bat roost; and
- intentionally or recklessly disturb a bat whilst it occupies a bat roost.

Bats are also European Protected Species listed on the *Conservation of Habitats & Species Regulations 2017*. This legislation makes it an offence to:

- deliberately capture, injure or kill a bat;
- deliberately disturb a bat (in such a way as to be likely to significantly affect: (i) the ability of a significant group of bats to survive, breed or rear/nurture their young; or (ii) the local distribution or abundance of the species concerned);
- damage or destroy a breeding site or resting place of a bat; and
- possess, control, transport, sell, exchange a bat, or offer a bat for sale or exchange.

All bat roosting sites receive legal protection even when bats are not present (bats tend to reuse the same roost).

Where it is necessary to carry out an action that could result in an offence under the *Conservation of Habitats & Species Regulations 2017* it is possible to apply for a European Protected Species (EPS) licence from Natural England. Licences are only issued where Natural England are satisfied that three derogation tests are met. These are: that the activity is for **imperative reasons of overriding public interest**; that there must be **no satisfactory alternative**; and that **favourable conservation status of the species must be maintained**.

Consideration of these three derogation tests was previously left to Natural England as part of their deliberations on whether to grant a licence for the development activity after a planning consent has been issued. However, the regulations now require that **all** public bodies, i.e. **Local Planning Authorities** (LPAs), have regard to the requirements of the European Habitats Directive when carrying out their functions. As a result, LPAs **must** address the three derogation tests when considering a planning application that could impact upon any European Protected Species (EPS).

9.2 *National planning context*

9.2.1 *General*

Surveys should be completed in line with Natural England's *Standing Advice for Local Authorities* (<http://www.naturalengland.org.uk/ourwork/planningdevelopment/spatialplanning/standingadvice/default.aspx>), which states:

- Natural England will not comment on applications that are submitted without the relevant protected species surveys if there are no other issues (*i.e.* in relation to SSSIs or landscape).
- Natural England will not comment on scoping surveys that recommend further surveys where these have not been undertaken and submitted with the scoping reports.

In addition to the above, *Section 40* of the *Natural Environment and Rural Communities Act* (2006) imposes a new duty on all public authorities to have regard for biodiversity.

9.2.2 *Biodiversity Net Gain (BNG)*

Under the Environment Act 2021, all planning permissions granted in England (with a few exemptions) except for small sites will have to deliver at least 10% biodiversity net gain (BNG) from January 2024. BNG will be required for small sites from April 2024. BNG will be measured using Defra's biodiversity metric and habitats will need to be secured for at least 30 years. This sits alongside:

- a strengthened legal duty for public bodies to conserve and enhance biodiversity,
- new biodiversity reporting requirements for local authorities, and mandatory spatial strategies for nature: Local Nature Recovery Strategies or 'LNRS'.

From the 20th July 2021, the Government published the revised National Planning Policy Framework (Ministry of Housing, Communities and Local Government, 2021). The document sets out the government's planning policies for England and how these are expected to be applied. This replaces a previous version which was published in June 2019. It states: "*at the heart of the Framework is a presumption in favour of sustainable development (paragraph 11).*"

Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):

- an economic objective;
- a social objective; and
- an environmental objective.

The environmental objective is to "*contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy*".

Planning policies and decisions should contribute to and enhance the natural and local environment by *“protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan)”* and *“minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures”*.

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.

Development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted.

Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists.

It states that *“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”*.

It should be noted that the *“presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site”*.

The NPPF also encourages *“minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures”* and aims to *“promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity”*. This applies to non-statutory designated sites including Sites of Importance for Nature Conservation (SINCs) and equivalent county wildlife sites.

Early engagement with all necessary stakeholders, including expert bodies, is encouraged by the NPPF.

Bats use different roosting sites throughout the year according to their life cycle requirements.

Hibernation during the winter months requires roosting sites that are cool and humid. As conditions improve through the spring, bats become increasingly active and tend to use transitional roosting sites. During the summer months, females give birth in maternity roosts. Maternity roosts tend to be warm and temperature-stable, which aids rapid development of the young, which are weaned in late summer. In the autumn, adult bats congregate in mating roosts and also use transitional roosting sites. Autumn is the time when both adults and juveniles have to build up fat reserves in preparation for hibernation through the winter months.

Bats also use roosts during the night as feeding perches. Species that catch large prey items such as moths (*e.g.* brown long-eared bat) often enter buildings to hang up and eat their prey before emerging again to forage. Such feeding perches tend to be obvious from scatterings of bat droppings with moth wings, which the bats discard.

Bats are at their most vulnerable during the summer in their maternity roosts, when disturbance can jeopardise their breeding success. Bats give birth to only one pup per year and young do not breed until the second or third year after birth. This means that if maternity colonies are disturbed there can be serious implications for the conservation status of populations.

Bats are also vulnerable during the winter hibernation period, when disturbance can reduce their chance of survival through the winter at a time when food is in short supply.

This is why there are often only narrow timeframes for bat survey and mitigation work.

APPENDIX C: BAT ACTIVITY SURVEY DATA

Date	23/07/2024				
Temp at start (°C)		19	Temp at end (°C)		18
Weather	Cool with a light breeze and hazy skies (Beaufort scale 2)				
Ecologists	Finn Parker, Alex Grainger, Bailey Riches				
Observer	Time	No.	Species	Observation	
-	20:48	-	-	Ecologists commenced observations	
-	21:03	-	-	Sunset	
AG	21:10	1	Common pipistrelle	Commuting south over house	
AG	21:17	1	Common pipistrelle	Foraging north-east of the house	
AG, FP	21:18	2	Common pipistrelle	Commuting north along the eastern elevation of the house	
BR	21:18	1	Common pipistrelle	Commuting east along the northern elevation of the house	
BR	21:19	1	Common pipistrelle	Commuting south-west over the house	
BR	21:26	1	Common pipistrelle	Heard but not seen	
AG	21:26	1	Common pipistrelle	Commuting west along the northern elevation of the house	
FP, AG, BR	21:30	1	Common pipistrelle	Commuting east along the southern elevation of the house	
BR	21:31	1	Common pipistrelle	Foraging east away from the house	
AG	21:32	1	Common pipistrelle	Commuting west along the northern elevation of the house	
AG	21:35	1	Common pipistrelle	Foraging north-west of the house	
AG	21:36	1	Common pipistrelle	Foraging south-east of the house	
AG	21:39	1	Common pipistrelle	Foraging north-west of the house	
FP	21:45	1	Common pipistrelle	Heard but not seen	
AG	21:46	1	Common pipistrelle	Commuting south towards the northern elevation of the house	
BR	21:47	1	Common pipistrelle	Foraging east over the rear garden	
FP	21:47	1	Common pipistrelle	Commuting north-west over the front garden	
FP	21:48	1	Common pipistrelle	Commuting north around the east end of the house	
FP	21:52	1	Common pipistrelle	Commuting north around the east end of the house	
BR	21:53	1	Common pipistrelle	Heard but not seen	
AG	21:54	1	Common pipistrelle	Foraging south along the eastern elevation of the house	
FP	21:59	1	Common pipistrelle	Heard but not seen	
FP	22:02	1	Common pipistrelle	Heard but not seen	
FP	22:09	1	Common pipistrelle	Heard but not seen	
BR	22:10	1	Common pipistrelle	Heard but not seen	
AG	22:13	1	Common pipistrelle	Foraging north-east of house	
BR	22:16	1	Common pipistrelle	Heard but not seen	
FP, AG	22:18	1	Noctule	Heard but not seen	
FP	22:23	1	Common pipistrelle	Heard but not seen	
-	22:33	-	-	Ecologists ceased observations	

Date	12/08/2024			
Temp at start (°C)	21	Temp at end (°C)		18
Weather	Clear Skies, 0-10% cloud cover, slight breeze (Beaufort scale 1)			
Ecologists	Laura Hardy, Luke Purnell, Jackie Thompson			
Observer	Time	No.	Species	Observation
-	20:16	-	-	Ecologists commenced observations
-	20:31	-	-	Sunset
LP	20:48	1	Common pipistrelle	Emergence from house nextdoor
LP	20:52	1	Common pipistrelle	Heard not seen
LH	20:57	1	Common pipistrelle	Foraging over front garden, leaving to the south
LP	20:57	1	Common pipistrelle	Commuting eastward
LP	20:58	1	Common pipistrelle	Foraging on south side of site, leaving to the east
LH	20:59	1	Common pipistrelle	Foraging over front garden, leaving to the south
LH	20:59	1	Common pipistrelle	Foraging over front garden, leaving to the south
LP	20:59	1	Common pipistrelle	Emergence from house nextdoor
LH	21:00	2	Common pipistrelle	Foraging over front garden
LP	21:00	1	Common pipistrelle	Emergence from house nextdoor
JT	21:00	1	Common pipistrelle	Heard not seen
LP	21:01	1	Common pipistrelle	Commuting eastward
LH	21:03	1	Common pipistrelle	Heard not seen
JT	21:03	2	Common pipistrelle	Foraging over north of site
JT	21:11	1	Common pipistrelle	Commuting southward
JT	21:13	1	Common pipistrelle	Foraging over north of site, leaving to the east
LH	21:20	1	Common pipistrelle	Heard not seen
LP	21:20	1	Common pipistrelle	Commuting eastward
LH	21:21	1	Common pipistrelle	Foraging in neighbouring garden to the south
LP	21:21	1	Common pipistrelle	Foraging over north of site, leaving westward
JT	21:30	1	Common pipistrelle	Heard not seen
LH	21:32	1	Common pipistrelle	Heard not seen
LP	21:32	1	Common pipistrelle	Heard not seen
LH	21:37	1	Common pipistrelle	Heard not seen
LP	21:50	1	Common pipistrelle	Heard not seen
JT	21:57	1	Common pipistrelle	Heard not seen
LH	21:58	1	Common pipistrelle	Heard not seen
-	22:01	-	-	Ecologists finished observations
Date	02/09/2024			
Temp at start (°C)	18	Temp at end (°C)		17
Weather	Overcast (100%), Beaufort scale 0			
Ecologists	Finn Parker, Bailey Riches, Harriet Riches			
Observer	Time	No.	Species	Observation
-	19:32	-	-	Ecologists commenced observations
HR	19:36	1	Noctule	Heard not seen
-	19:47	-	-	Sunset

FP	19:55	1	Common pipistrelle	Heard not seen
BR	19:56	1	Common pipistrelle	Foraging in neighbouring garden south of site
HR	19:57	1	Common pipistrelle	Heard not seen
BR	19:57	1	Common pipistrelle	Commuting south around the house
HR	19:59	1	Common pipistrelle	Heard not seen
BR	19:59	1	Common pipistrelle	Foraging in garden by west elevation before commuting east along the north elevation
HR	20:00	1	Common pipistrelle	Foraging along north elevation and around neighbouring garden for 17 minutes
BR	20:00	1	Common pipistrelle	Heard not seen
BR	20:01	1	Noctule	Heard not seen
FP	20:02	1	Common pipistrelle	Heard not seen
BR	20:05	1	Common pipistrelle	Commuting south around the house
BR	20:05	1	Noctule	Heard not seen
BR	20:06	1	Common pipistrelle	Foraging in neighbouring garden north of site
BR	20:09	1	Common pipistrelle	Heard not seen
FP	20:10	1	Common pipistrelle	Heard not seen
FP	20:16	1	Common pipistrelle	Heard not seen
HR	20:39	1	Common pipistrelle	Heard not seen
HR	20:40	1	Common pipistrelle	Heard not seen
FP	20:41	1	Common pipistrelle	Heard not seen
HR	20:43	1	Common pipistrelle	Heard not seen
FP	20:47	1	Common pipistrelle	Heard not seen
HR	20:48	1	Noctule	Heard not seen
FP	20:55	1	Common pipistrelle	Heard not seen
HR	20:58	1	Common pipistrelle	Heard not seen
FP	21:00	1	Common pipistrelle	Heard not seen
HR	21:01	1	Common pipistrelle	Heard not seen
BR	21:01	1	Common pipistrelle	Heard not seen
HR	21:03	1	Common pipistrelle	Heard not seen
BR	21:03	1	Common pipistrelle	Heard not seen
BR	21:04	1	Common pipistrelle	Heard not seen
FP	21:05	1	Common pipistrelle	Heard not seen
HR	21:07	1	Common pipistrelle	Heard not seen
-	21:17	-	-	Ecologists finished observations

These are not proposed as enhancements for the purposes of the planning application, but only for information purposes.

12.1 Seed mix composition

The seed mixes in *Table 12.1.1.* are from Emorsgate Seeds and are suitable for lawns. Emorsgate are only given as an example and a local supplier is preferable. The mixes contain slow growing grasses with a selection of wildflowers that respond well to regular short mowing. The EG9 grass mixture for hedges and woodland contains a selection of grasses that are tolerant of a degree of shade.

Table 12.1.1. Emorsgate seed mix species composition.

EL1	
Species	Common Name
Flowering Species	
<i>Galium verum</i>	Lady's Bedstraw
<i>Leontodon hispidus</i>	Rough Hawkbit
<i>Leucanthemum vulgare</i>	Oxeye Daisy
<i>Lotus corniculatus</i>	Birdsfoot Trefoil
<i>Primula veris</i>	Cowslip
<i>Prunella vulgaris</i>	Selfheal
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Trifolium pratense</i>	Wild Red Clover
Grasses	
<i>Agrostis capillaris</i>	Common Bent
<i>Cynosurus cristatus</i>	Crested Dogtail
<i>Festuca rubra</i>	Slender-creeping Red-fescue
<i>Phleum bertolonii</i>	Smaller Cat's-tail
EG1	
Species	Common Name
<i>Agrostis capillaris</i>	Common Bent
<i>Cynosurus cristatus</i>	Crested Dogtail
<i>Festuca rubra</i>	Slender-creeping Red-fescue
<i>Phleum bertolonii</i>	Smaller Cat's-tail
<i>Poa pratensis</i>	Smooth-stalked Meadow-grass
EG9	
Species	Common Name
<i>Agrostis capillaris</i>	Common Bent
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass
<i>Brachypodium sylvaticum</i>	False Brome
<i>Cynosurus cristatus</i>	Crested Dogtail

<i>Deschampsia cespitosa</i>	Tufted Hair-grass
<i>Festuca rubra</i>	Red Fescue
<i>Poa nemoralis</i>	Wood Meadow-grass

12.2 *Planting to attract wildlife*

Plants that attract insects are generally helpful and trees, shrubs and flowering plants can provide cover for wildlife. Therefore, to enhance the ecological value of the site, any replacement landscaping in the gardens should incorporate a mixture of native and non-native species of value to wildlife. This mixture will be planted to encourage a diversity of insects, which in turn will attract different species. Flowers that bloom throughout the year, including both annuals and herbaceous perennials, are beneficial. Night-flowering blossoms attract night-flying insects, which in turn provide prey for bats. Examples of suitable plant species that could be planted to encourage wildlife include those in *Tables 12.2.1. and 12.2.2.* Approximate flowering periods are listed in the tables.

Table 12.2.1. Native and non-native species that could be incorporated into the landscaping.

Species	Common Name	Approximate flowering period
<i>Achillea millefolium</i>	Yarrow	Early summer
<i>Aubretia</i> species	Aubretia	Spring to early summer
<i>Berberis darwinii</i>	Darwin's Barberry	Spring
<i>Iberis sempervirens</i>	Candytuft	Summer to autumn
<i>Centaurea montana</i>	Cornflower	Spring to summer
<i>Centaurea scabiosa</i>	Knapweed	Summer to autumn
<i>Centranthus ruber</i>	Red valerian	Summer to autumn
<i>Cornus sanguinea</i>	Dogwood	Summer
<i>Dianthus barbatus</i>	Sweet William	Summer
<i>Echinacea</i> species	Echinacea	Summer to autumn
<i>Erysimum</i> species	Wallflowers	Spring to early summer
<i>Glebionis segetum</i>	Corn marigold	Spring to summer
<i>Hebe</i> species	Hebes	Summer to autumn
<i>Hedera helix</i>	Ivy	Autumn
<i>Hesperis matronalis</i>	Dame's-violet	Spring to summer
<i>Hyacinthoides non-scripta</i>	English Bluebell	Spring
<i>Hylotelephium spectabile</i>	Ice plant 'Pink lady'	Early autumn
<i>Hypericum</i> species	St John's wort	Spring
<i>Ilex aquifolium</i>	Holly	Spring to summer
<i>Jasminum officinale</i>	Common White Jasmine	Summer to autumn
<i>Lavandula angustifolia</i>	Garden Lavender	Summer
<i>Leucanthemum vulgare</i>	Ox-eye daisy	Summer
<i>Limnanthes douglasii</i>	Poached egg plant	Summer
<i>Lonicera caprifolium</i>	Perfoliate Honeysuckle	Summer
<i>Lonicera etrusca</i>	Italian Honeysuckle	Summer to autumn
<i>Lonicera japonica</i>	Japanese Honeysuckle	Spring

<i>Lonicera periclymenum</i>	Honeysuckle	Summer to autumn
<i>Lunaria annua</i>	Honesty	Spring
<i>Malus domestica</i>	Apple	Spring
<i>Malus sylvestris</i>	Crab Apple	Spring
<i>Malva species</i>	Mallow	Summer to autumn
<i>Matthiola longipetala</i>	Night-scented stock	Summer
<i>Myosotis sylvatica</i>	Wood forget-me-not	Spring
<i>Nicotiana species</i>	Tobacco plant	Summer
<i>Oenothera species</i>	Evening primroses	Summer to autumn
<i>Papaver rhoeas</i>	Corn poppy	Summer
<i>Phacelia species</i>	Phacelia	Summer to autumn
<i>Primula vulgaris</i>	Primrose	Spring
<i>Rosa species</i>	Rose	Summer
<i>Rubus fruticosus</i> agg.	Bramble	Spring to summer
<i>Saponaria officinalis</i>	Soapwort	Summer
<i>Saxifraga fortunei</i>	Cherry pie	Summer to autumn
<i>Scabiosa species</i>	Scabious	Summer
<i>Silene dioica</i>	Red campion	Spring
<i>Silene noctiflora</i>	Night-scented Catchfly	Summer to autumn
<i>Silene vulgaris</i>	Bladder Campion	Summer
<i>Verbena species</i>	Vervain	Summer to autumn
<i>Viburnum lantana</i>	Wayfaring-tree	Spring to summer
<i>Viburnum opulus</i>	Guelder-rose	Summer

Table 12.2.2. Examples of suitable garden herbs that could be planted in and around the site to encourage wildlife.

Species	Common Name	Approximate flowering period
<i>Angelica species</i>	Angelica	Summer to autumn
<i>Borago officinalis</i>	Borage	Spring to early autumn
<i>Calendula officinalis</i>	English marigolds	Summer to autumn
<i>Foeniculum vulgare</i>	Fennel	Summer to early autumn
<i>Hesperis matronalis</i>	Dame's-violet, often sold as Sweet Rocket	Spring to summer
<i>Hyssopus officinalis</i>	Hyssop	Summer to early autumn
<i>Matthiola bicornis</i>	Night-scented Stock	Spring to autumn
<i>Melissa officinalis</i>	Lemon balm	Summer
<i>Monarda species</i>	Bergamot	Summer to early autumn
<i>Nicotiana species</i>	Tobacco-plant	Spring to autumn
<i>Oenothera species</i>	Evening-primroses	Summer
<i>Origanum vulgare</i>	Marjoram	Summer
<i>Rosmarinus officinalis</i>	Rosemary	Spring

<i>Saponaria officinalis</i>	Soapwort	Summer to autumn
<i>Silene noctiflora</i>	Night-scented Catchfly	Summer to autumn
<i>Silene vulgaris</i>	Bladder Campion	Spring to summer
<i>Tanacetum parthenium</i>	Feverfew	Summer to early autumn
<i>Thymus</i> species	Thyme	Summer

New hedges could be planted around the edges of the site. These should consist of a mixture of native species such as *Acer campestre* (Field Maple), *Carpinus betulus* (Hornbeam), *Cornus sanguinea* (Dogwood), *Corylus avellana* (Hazel), *Crataegus monogyna* (Hawthorn), *Fagus sylvatica* (Beech), *Fraxinus excelsior* (Ash), *Prunus spinosa* (Blackthorn), *Quercus robur* (Pedunculate Oak), *Viburnum lantana* (Wayfaring-tree) and *Viburnum opulus* (Guelder-rose). These species will provide a mixture of leaf shapes and colours through the seasons. In addition, the hedges will contain *Ilex aquifolium* (Holly) and *Taxus baccata* (Yew) to provide an evergreen component for the winter months, and to provide a contrast to the colours of the other plants during the spring, summer and autumn.

Under-sowing new hedges with Emorsgate seed mix EH1 Hedgerow mixture (or equivalent) provides cover for wildlife such as hedgehogs as well as providing an attractive feature while the new hedges become established. Seed mixes suitable for shade are given in Table 12.2.3.

Table 12.2.3. Seed mixes suitable for shaded areas.

EH1	
Species	Common Name
Wild Flowers	
<i>Alliaria petiolate</i>	Garlic Mustard
<i>Arctium minus</i>	Lesser Burdock
<i>Centaurea nigra</i>	Common Knapweed
<i>Chaerophyllum temulum</i>	Rough Chervil
<i>Galium album</i>	Hedge Bedstraw
<i>Geum urbanum</i>	Wood Avens
<i>Lathyrus sylvestris</i>	Narrow-leaved Everlasting-pea
<i>Leucanthemum vulgare</i>	Oxeye Daisy
<i>Primula veris</i>	Cowslip
<i>Prunella vulgaris</i>	Selfheal
<i>Saponaria officinalis</i>	Soapwort
<i>Silene dioica</i>	Red Campion
<i>Silene latifolia</i>	White Campion
<i>Silene vulgaris</i>	Bladder Campion
<i>Torilis japonica</i>	Upright Hedge-parsley
Grasses	
<i>Agrostis capillaris</i>	Common Bent
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass

<i>Brachypodium sylvaticum</i>	False Brome
<i>Cynosurus cristatus</i>	Crested Dogtail
<i>Deschampsia cespitosa</i>	Tufted Hair-grass
<i>Festuca rubra</i>	Slender-creeping Red-fescue
<i>Poa nemoralis</i>	Wood Meadow-grass
EW1	
Species	Common name
<i>Alliaria petiolata</i>	Garlic Mustard
<i>Allium ursinum</i>	Ramsons
<i>Anthriscus sylvestris</i>	Cow Parsley
<i>Arctium minus</i>	Lesser Burdock
<i>Arum maculatum</i>	Lords-and-Ladies
<i>Chaerophyllum temulum</i>	Rough Chervil
<i>Cruciata laevipes</i>	Crosswort
<i>Digitalis purpurea</i>	Foxglove
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Geum urbanum</i>	Wood Avens
<i>Hyacinthoides non-scripta</i>	Bluebell
<i>Iris foetidissima</i>	Gladdon
<i>Prunella vulgaris</i>	Selfheal
<i>Silene dioica</i>	Red Campion
<i>Teucrium scorodonia</i>	Wood Sage
<i>Torilis japonica</i>	Upright Hedge-parsley
Grasses	
<i>Agrostis capillaris</i>	Common Bent
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass
<i>Brachypodium sylvaticum</i>	False Brome
<i>Cynosurus cristatus</i>	Crested Dogtail
<i>Deschampsia cespitosa</i>	Tufted Hair-grass
<i>Festuca rubra</i>	Red Fescue
<i>Poa nemoralis</i>	Wood Meadow-grass

12.3 Bird boxes

It is not advisable to place many boxes with identical dimensions, because individuals of the same species may not tolerate each other's presence, especially in built-up areas with limited food resources.

Table 12.2.1. Bird boxes with additional details on siting them to increase chances of occupancy.

Type	Typical species	Height	Additional information
Ibstock Eco-habitat  or Swift boxes from Hampshire Swifts 	Swifts	$\geq 5\text{m}$	- Can either be incorporated into the build structure or mounted onto a building. - Position out of direct sunlight (below eaves on the north elevation), away from windows and in a straight line. - Should be in an open area so that it is less accessible to predators and birds are not obstructed as they leave the nest.
Vivara Pro WoodStone House Sparrow Nest Box  	House sparrows	$\geq 2\text{m}$	- Can either be incorporated into the build structure or mounted onto a building. - Should be fixed onto a sturdy building, not onto fences or garden sheds due to its weight. - Position away from windows. - Position out of direct sunlight (below eaves on the north elevation), especially if not built into the build structure.
Vivara Pro Seville 28mm Woodstone Nest Box 	Blue tits, coal tits	2-4m	- Position on a building or tree, angled north-east (away from prevailing winds) and tilt forward slightly. - Chances of occupation can be increased by positioning boxes near vegetation.
Vivara Pro Seville 32mm Woodstone Nest Box 	Blue tits, great tits	2-4m	- Position on a building or tree, angled north-east (away from prevailing winds) and tilt forward slightly. - Chances of occupation can be increased by positioning boxes near vegetation.
Vivara Pro Barcelona WoodStone Open Nest Box 	Robins, wrens	$\leq 2\text{m}$	- Mount on a tree or large shrub - Conceal amongst foliage to keep well-hidden from predators.

WoodStone Swallow Nest Bowl (Plywood board mounted) 	Swallows	$\geq 2\text{m}$	• Mount within a building with an open door or window • Leave a distance of at least 6cm between the top of the nest and the ceiling.
Integrated barn owl roost/ false dormer box 	Barn Owl	$\geq 3\text{m}$	• Integrated into the sloped roof ideally as a false dormer. • The base of the internal space must be flat and at least 45cm below the entrance hole. • There must be an easy-to-grip platform outside the hole for fledglings to stand. • The box must not allow owls access into the garage/ carport inside the building to prevent disturbance by human activity. • A closed access hatch into the box from inside the building is advised, to allow essential clearance of built up nest material or waste.
Barn Owl Trust Nest Box 	Barn Owl	$\geq 5\text{m}$	• Mounted on a 'telegraph style' pole. • Best positioned facing open grassland for foraging opportunities and away from the prevailing weather.

12.4 Insects

Insect boxes (hotels or towers) should be installed in a sunny location close to vegetation. Bee-friendly and insect friendly plants should be located nearby so that the bees and insects using the boxes have food. Lavender, honeysuckle and buddleia are all pollinator-friendly plants. The boxes suggested in *Table 12.4.1* (especially the BeePot planter) have been chosen so that they form an attractive feature as part of the landscaping. Solitary bees are non-aggressive and as such are suitable for gardens with pets and children.

Table 12.4.1. Examples of insect boxes that could be erected on site.

Type	Species	Height	Additional information
	Solitary bees	>1m from the ground	The Bee Brick should be positioned in a warm sunny spot, in a south-facing wall, with no vegetation in front of the holes
	Solitary bees	>1m from the ground	The BeePot should be positioned in a warm sunny spot, preferably on a south-facing wall, with no vegetation in front of the holes
	Butterflies, solitary bees, lacewings and ladybirds	>1m from the ground	The different sections of the Insect Tower have been designed to provide a habitat for a variety of insect species. Suitable for mounting on buildings, trees or fences.
	Solitary bees and a range of other insects	Between 0.75m and 1.5m above ground	The selected canes and the holes are the optimum size for solitary bees but other insects may overwinter in the nester.
	A wide range of insects	Between 0.75m and 1.5m above ground	Adding natural materials such as drilled canes, hollow stems or bark in the triangular spaces will encourage more insects to the hotel.
	A wide range of insects	>1m from the ground	Best placed near vegetation. Provides plenty of nooks and crannies for insects such as ladybirds, earwigs and lacewings.