

2 Charnwood Gardens, Chandler's Ford, Hampshire, SO53 5QR

Bat Survey Report

October 2022

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Bat Survey Report
2 Charnwood Gardens, Chandler's Ford, Hampshire, SO53 5QR
for
Mr & Mrs Cooke

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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.

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EXECUTIVE SUMMARY

1. This report provides details from an initial bat survey carried out by Hampshire Ecological Services Ltd for Mr & Mrs Cooke in connection with a proposal to extend and renovate the house at 2 Charnwood Gardens, Chandler's Ford, Hampshire, SO53 5QR (approximate Ordnance Survey Grid Reference SU431227). The site consists of a detached house with an attached garage, a driveway and rear garden. The location of the site is shown in *Figures 1 and 2* and a plan of the site is shown in *Figure 3* (see *Section 6*).
2. An internal and external survey of the buildings was carried out by ecologist Chloe Mockridge MSc on the 6th May 2022.
3. The house is a two-storey brick building with a pitched, tiled roof. There is a flat-roof garage attached to the south elevation. Full details of the building are given in *Table 4.2.1*, in *Section 4.2*. Details of potential bat access points are illustrated in *Images 4.3.1.1 – 4.3.1.2*. No evidence of bats was found during the survey. Due to the presence of suitable roosting features on the building, and good sheltered foraging habitat within close proximity, this building has high bat roost suitability.
4. The strip of woodland along the north boundary and the hedge along the east boundary provides good sheltered bat foraging habitat in the immediate vicinity of the building. The woodland connects to a network of hedges and tree-lines through the neighbouring gardens, which in turn connect the site to areas of high-quality foraging habitat in the wider landscape such as nearby ancient woodland and waterways. The connectivity around the edges of the site (the trees) will be retained and as such no impact to commuting and foraging bats (and hence bat populations in the local area) is anticipated.
5. Three bat activity 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*.
6. Bats were observed emerging the house and the results are summarised in the table below. A plan summarising bat emergence locations is given in *Figure 4.6.1* in *Section 4.6*.

Date	Number	Species	Access points
28/07/22	1	Common pipistrelle	From under the roof tiles on the east side of the roof
	1	Common pipistrelle	From under the bargeboard on the north elevation of the house
15/08/22	-	-	-
03/09/22	-	-	-

7. Common pipistrelles, soprano pipistrelles, noctules and serotine, *Myotis* species and long-eared 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 bat activity surveys, 2 Charnwood Gardens is an occasional non-breeding day roost for low numbers of common pipistrelles.
9. As 2 Charnwood Gardens is a confirmed bat roost, a bat European Protected Species (EPS) licence or Bat Mitigation Class Licence (formerly Bat Low Impact Class Licence, if qualifying) site registration from Natural England is required before any work can be undertaken on the roof or roof void.
10. 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 retained vegetation (particularly the woodland), 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 retained vegetation, particularly the woodland. This is because bats are very sensitive to light. 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.
11. One non-native, invasive plant species listed on *Schedule 9* of the *Wildlife and Countryside Act 1981* (as amended) was recorded on the site. This is *Cotoneaster horizontalis* (Wall Cotoneaster), which is located in a flowerbed in the south-west corner of the site. 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 this should be removed to avoid spreading to the remainder of the site or off-site during site works, especially where it is close or in the area of work. However, it is also common ornamental plants and as it is located away from the works, it could remain *in situ* with the area fenced off for the duration of the works. This will prevent machinery or tools or boots accidentally spreading it on site or carrying them off site. Information of the removal of the *Schedule 9* species (should the owners need or choose to do so) is given in *Section 5.6.5*.
12. The hedge on the east boundary provides suitable habitat for nesting birds. The destruction of active bird nests is prohibited under the *Wildlife and Countryside Act 1981* (as amended). As it is away from the works it is not anticipated it will be affected. However, 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).
13. A detailed method statement with a mitigation strategy will need to be prepared for an EPS licence from Natural England. Therefore, in brief, the strategy will include the following mitigation and compensation measures:
 - The roof tiles, hanging 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 ensure bats are not using these areas. This will ideally be completed in September/ October

once maternity colonies have dispersed and before bats have begun to hibernate; or in March/April before bats have returned to form maternity colonies. 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 or a pre-works check does not suggest the status of the roost has changed.

- One woodstone bat box (*e.g.* Vivara woodstone, Beaumaris Woodstone or similar) will be erected on an undisturbed aspect of the building prior to the commencement of the works, with one for each species of bat present on site or roost lost (as per latest Natural England advice). This bat box will remain on site permanently (and shall be repaired or replaced as necessary).
- Any bats found during the destructive searches will be placed within a bat box. Bats will be captured by hand by the ecologist and, after being checked for injuries, transported immediately in cotton drawstring BTO bird 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.
- The existing access points will not be affected. However, to enhance the site a bat access tile or slate will be installed into the roof of the extension to create access into the new void
- The new roof lining **must** consist of bitumen type 1F felt with a hessian matrix (**NOT** a breathable membrane such as Tyvek™ or other non-woven membrane). 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. Only bitumen type 1F felt with a hessian matrix will be permitted under a bat European Protected Species licence from Natural England.
- To allow bats access to the roof void, the roof felt should 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.
- Only timber treatments recommended by Natural England should be used in line with Natural England's *Remedial timber treatment products suitable for use in bat roosts (2013)* available at: <https://www.gov.uk/guidance/bat-roosts-use-of-chemical-pest-control-products-and-timber-treatments-in-or-near-them>.

14. 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 extension 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. Alternatively, if this is not viable (because the construction method), then one additional 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).

- At least one swift box, such as Istock Eco-habitat or similar, will be installed on the exterior of the building. Swift boxes can be supplied and installed by Hampshire Swifts <https://www.hampshireswifts.co.uk> and a new soffit design is also available; and
- At least one insect box (brick, hotel or tower) should be installed in the garden or built into the extension. This should be 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. The boxes suggested in *Table 5.6.7.1* have been chosen so that they form an attractive feature as part of the landscaping.

15. 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.
16. 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.
17. According to the *Multi-Agency Geographic Information for the Countryside* website (www.magic.gov.uk), the site is not designated. However, it is immediately adjacent to a designated area of nature conservation and there are other 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.
18. As a result of its proximity, the impacts of these works on the SACs 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 internationally designated sites.
19. There have been seven bat European Protected Species (EPS) licences granted within 2km of the site, with the closest c.767m west of the site. Due to its close proximity, it is likely that bats roosting and/ or using the site for commuting and/ or foraging are part of the same meta-population.

2 INTRODUCTION

2.1 General

This report provides information from an initial bat survey carried out by Hampshire Ecological Services Ltd for Mr & Mrs Cooke in connection with a proposal to extend and renovate the house at 2 Charnwood Gardens, Chandler's Ford, Hampshire, SO53 5QR (approximate Ordnance Survey Grid Reference SU431227). The location of the site is shown in *Figures 1 and 2* in *Section 6*.

2.2 Site description

The site consists of a detached house with an attached garage, a driveway and rear garden. The building surveyed is shown on the plan in *Figure 3* in *Section 6*.

The site is on the north side of Charnwood Gardens, in the north-west of Chandler's Ford. The immediate surroundings consist of woodland to the north and residential housing on all other sides. In the wider landscape Chandler's Ford extends a little way to the north and west but mostly to the south and east. Beyond Chandler's Ford is a mosaic of small villages, rural housing, arable fields, grassland, woodland and waterways.

2.3 Proposed activities

This survey was carried out in connection with a proposal to carry out the following works:

- leveling the drive;
- extending the house over the garage;
- making internal alterations;
- removing the hanging tiles; and
- replacing the windows.

2.4 Current planning status

Planning permission is being applied for at this site.

2.5 Objectives of the surveys and report

The surveys by Hampshire Ecological Services Ltd included internal and external inspections of the building 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, 3rd edition* (Collins, 2016). 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; and
 - *Figures 4-6* illustrate the bat activity recorded during the bat activity surveys.
- *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).

3 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.

3.2 Field survey

3.2.1 Dates, times and weather

An external and internal inspection of the building was carried out during the daytime on the 6th May 2022. The weather conditions during the survey were 17°C and dry with 10% cloud cover and a light breeze (Beaufort scale 2).

Subsequently, three bat activity 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 (%)
28/07/22	20:43	22:28	20:54	21 - 17	1	5
15/08/22	20:12	21:57	20:27	27 -20	1	50
03/09/22	19:33	21:18	19:48	18 -17	1	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.

3.2.2 Personnel

The initial survey was carried out by Chloe Mockridge MSc who is a member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and has over four years of post-qualification experience in ecological consultancy. She is experienced in undertaking roost surveys and accredited under level 2 class bat licence 2015-17894-CLS-CLS.

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

Table 3.2.2.1. Personnel carrying out the bat activity surveys.

Date	Surveyor	
28/07/22	Finlay Parker	Oliver Swarder
15/08/22	Andrew Lomas MSc	Laura Godleman BSc
03/09/22	Mark Ison	Ben Robson BSc

This report was reviewed by John Poland CEnv MCIEEM CBiol MSB, 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 over 22 years of experience in ecological consultancy and Victoria Russell MCIEEM who is a full member of the CIEEM and multi-species licence holder with over 23 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, 2016).

Table 3.2.4.1. Bat Roost Suitability.

Suitability	Description of roosting habitats	Description of commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats	Negligible habitat features on site likely to be used by commuting or foraging bats
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (<i>i.e.</i> unlikely to be suitable for maternity or hibernation).	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.
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)	Continuous habitat connected to the wider landscape that could be used by bats for commuting, 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.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats 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. The site is close to and connected to known roosts.

3.2.5 Bat activity surveys

The bat activity surveys followed standard survey protocol in *Bat Surveys – Good Practice Guidelines*, 3rd edition (Collins, 2016).

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 bat 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 pre-dawn surveys or further emergence surveys are considered necessary. The more appropriate weather conditions for either dusk or pre-dawn survey on those dates was selected. In addition, the reasons for undertaking a third emergence survey rather than a pre-dawn survey can be summarised in the following ecological justifications:

1. Pre-dawn temperatures are much lower than those of emergence surveys and often below 10°C. Bat activity on pre-dawn surveys has been significantly less with frequent negative surveys from known or suspected roosts. The most suitable conditions between a dusk or dawn survey were chosen.

2. Experience has shown that where there are only low numbers of bats using a site they often return to the roost well in advance of any pre-dawn surveys starting, resulting in a negative survey with some smaller roosts missed.
3. As stated above, 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.

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. However, it is immediately adjacent to a designated area of nature conservation and there are other 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	-	-
	Ramsar	-	-
	SAC	Emer Bog	c.3,224m south-west
		River Itchen	c.3,655m east
National	SSSI	Ratlake Meadows	c.1,778m north-west
		Trodds Copse	c.957m west
	NNR	-	-
County	LNR	Hocombe Mead	Adjacent to the north boundary
Local	SINC	Hocombe Mead	Adjacent to the north boundary
	Ancient woodland	Windmill/Strowdens Copses	c.449m north-east
		Greenclose Copse	c.468m north

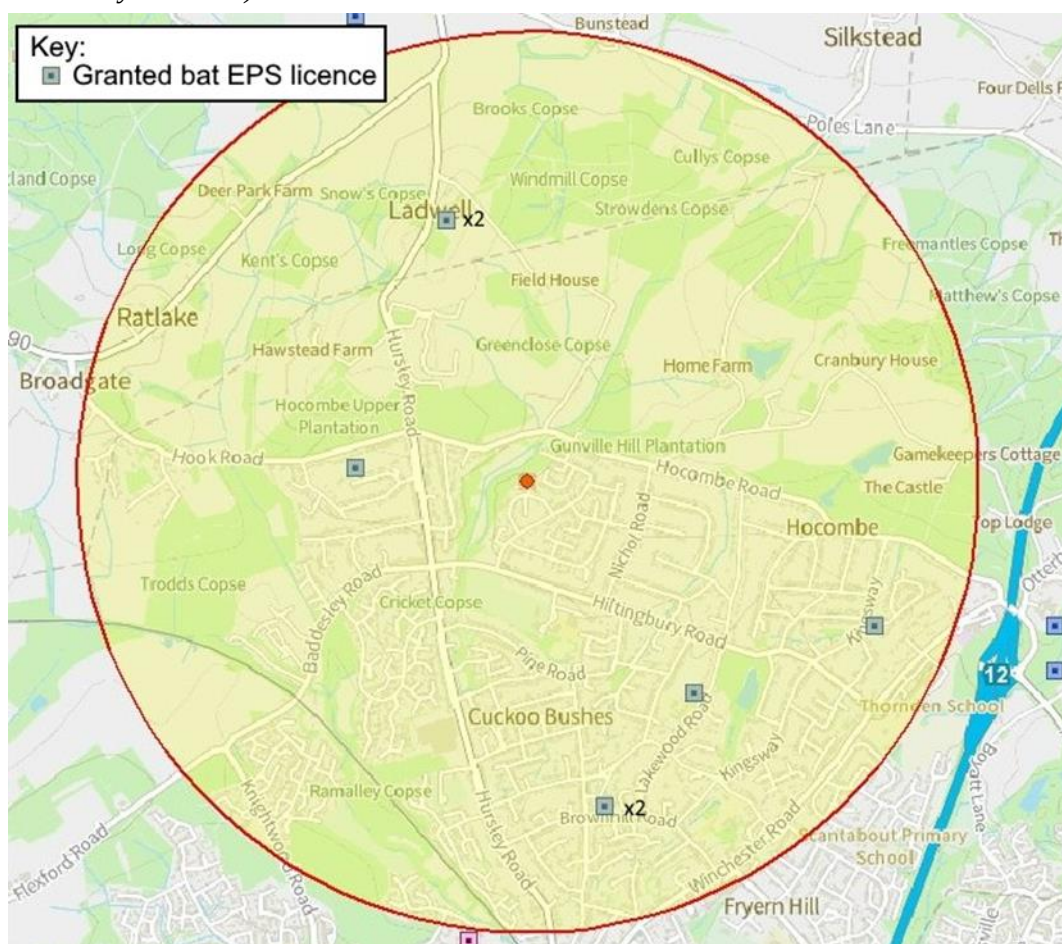
4.1.2 Bats

According to the Multi-Agency Geographic Information for the Countryside website (www.magic.gov.uk), there have been seven 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 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
Brown long-eared bat	Resting place	16/04/2018	c.767m west
Brown long-eared bat, Common pipistrelle	Resting place	22/03/2018	c.1,156m north
Brown long-eared bat, Common pipistrelle	Resting place	01/02/2017	
Soprano pipistrelle	Resting place	02/01/2021	c.1,166m south-east
Brown long-eared bat, Common pipistrelle, Serotine, Soprano pipistrelle	Resting place	22/03/2017	c.1,481m south
Brown long-eared bat, Common pipistrelle, Serotine, Soprano pipistrelle	Resting place	04/01/2018	
Common pipistrelle, Soprano pipistrelle	Resting place	01/03/2016	c.1,616m south-east

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



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4.2 Survey of building

The construction details and photographs of the building are summarised in *Table 4.2.1*. Additional photographs showing the garden and nearby woodland 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 pitched, tiled roof. There is a flat-roof garage attached to the south elevation.	
No. of storeys	2	
Roof type	Pitched	
Roof cladding	Tile	
Ridge	Tile	
Wall type	Brick	
Exterior	Hanging tiles (south elevation), bargeboards (on the garage), soffits (on the house), lead-flashing	
Photos	North elevation 	South elevation 
	East elevation  	West elevation  
	Building dimensions	
	c.12.5m wide x c.13m long	
Roof void description	Partially cluttered apart from a few stored items and trusses. The floor is either boarded or lined with fibreglass insulation.	
Frame	Wooden beams	

Roof lining	Bitumen roofing felt
Roof void dimensions	Main roof void: c.12m wide x c.7m long 
Roof void height	c.1.5m at tallest point with long slopes either side
Potential roosting locations	Against the beams and between the roof tiles and the internal lining. 
Bat evidence	None
Bat suitability	High

4.3 *External potential bat access points*

The roof appears well-sealed and in good condition with very few potential bat access points into the roof void. However, the hanging tiles provide potential roosting locations for bats on the exterior of the building. Therefore, the building is classed as having high 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 potential external roost locations are illustrated in *Images 4.3.1.1 – 4.3.1.2*.

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

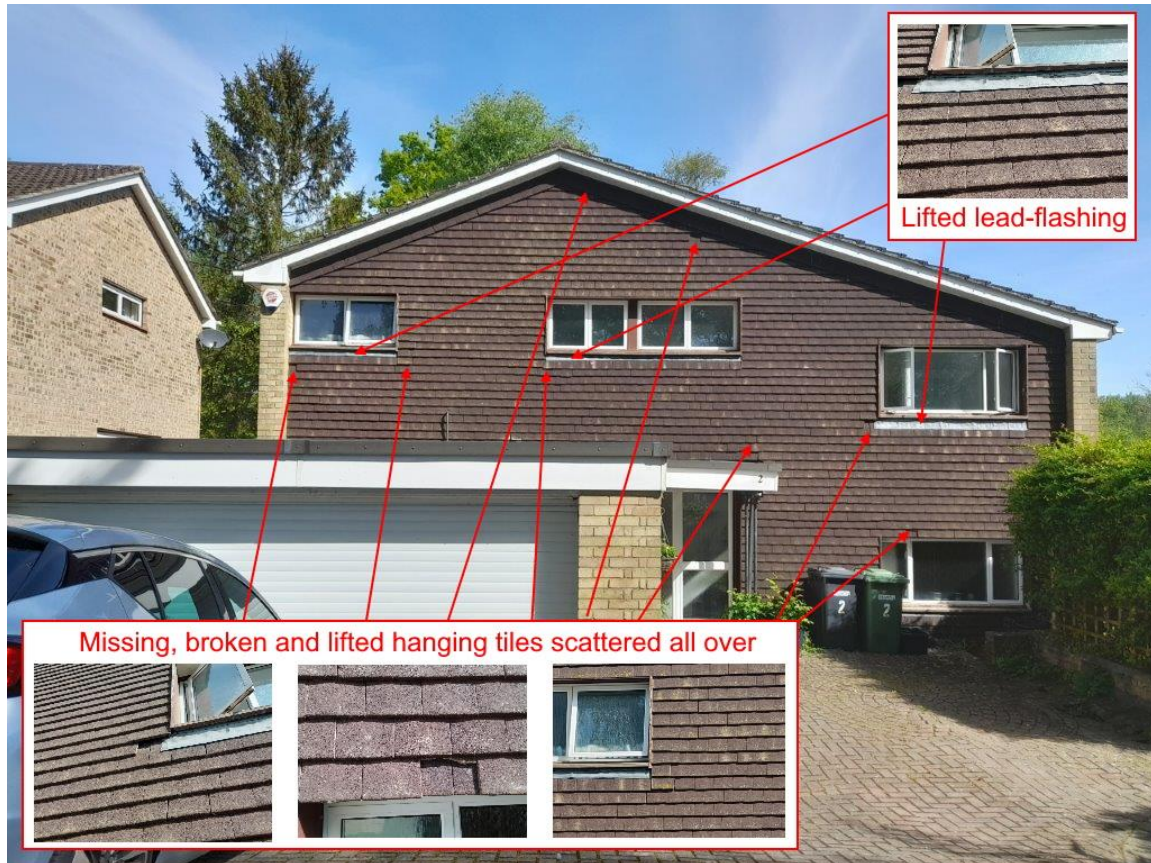


Image 4.3.1.2. Location of potential bat access points and potential external roost locations on the west elevation of the house.



4.4 *Commuting and foraging habitat*

The strip of woodland along the north boundary and the hedge along the east boundary provide good, sheltered bat foraging habitat in the immediate vicinity of the building. The woodland connects to a network of hedges and tree-lines through the neighbouring gardens, which in turn connect the site to areas of high-quality foraging habitat in the wider landscape such as nearby ancient woodland and waterways.

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*

No bats or evidence of bats was found.

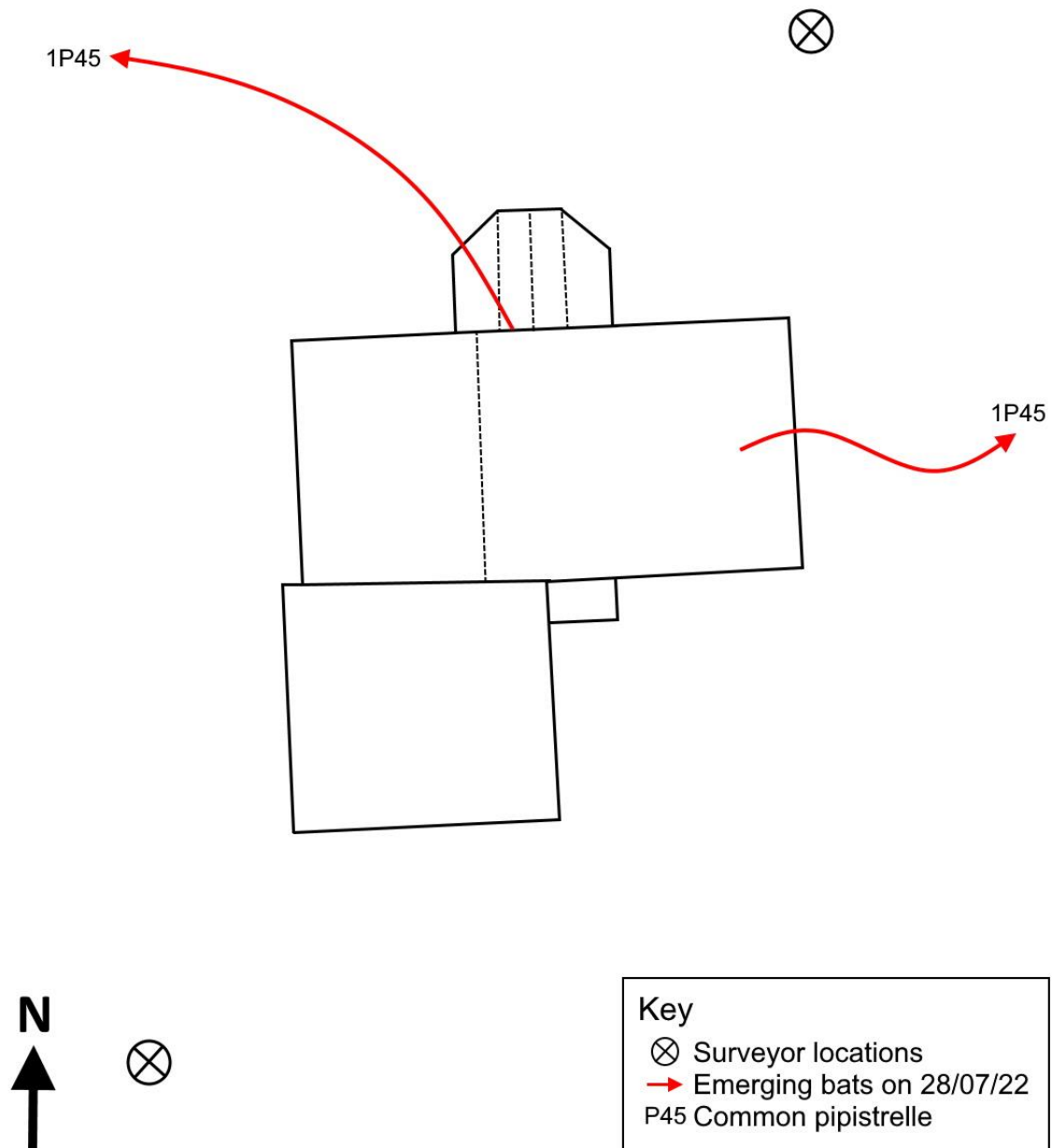
4.6 *Bat activity surveys*

Bats were observed emerging from the building during the bat activity surveys. The results are summarised in *Table 4.6.1* and *Figure 4.6.1*.

Table 4.6.1. Summary of bats emerging and re-entering during the surveys.

Date	Species & number	Emergence / re-entry	Roost location/ access point(s)
28/07/22	Common pipistrelle (1)	Emergence	From under roof tiles on the east side of the roof
	Common pipistrelle (1)	Emergence	From under the bargeboard on the north elevation of the house
15/08/22	-	-	-
03/09/22	-	-	-

Figure 4.6.1. Summary plan of bats emerging during the surveys.



Common pipistrelles, soprano pipistrelles, noctules and serotine, long-eared bats and *Myotis* species 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 4 - 6* in *Section 6*.

4.7 Other ecological constraints

4.7.1 Schedule 9 species

One non-native, invasive plant species listed on *Schedule 9* of the *Wildlife and Countryside Act 1981* (as amended) was recorded on the site. This is *Cotoneaster horizontalis* (Wall Cotoneaster), which is located in a flowerbed in the south-west corner of the site.

4.7.2 Birds

The hedge along the east boundary has the potential to support nesting 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).

Evidence of crevice-dwelling bats, such as pipistrelles, is often not discovered on preliminary roost appraisals.

The east end of the roof void could not be fully accessed due the deep insulation covering the structural beams, meaning there was nowhere safe to stand. Also, the way the roof slopes more on the east side requires it to have more structural beams, which at the far end were blocking the view of the floor.

Externally the east side of the roof could not be assessed visually due to the angle of the road.

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

There is a limit to the amount of enhancement measures that are possible (and reasonable) on such a small householder site. In addition, there are no trees on site that would be suitable for bird and/ or bat boxes to be attached. No proposed plans have been provided.

It should be noted that the site potentially qualifies for a Bat Mitigation Class Licence (should a Registered Ecologist wish to use it). This does not require compensation to be provided if the roost cannot be retained *in situ* (unless serotine or lesser horseshoe bats are affected) however this does not preclude the local planning authority requiring additional enhancement for any of the species affected. A bat box would need to be erected prior to works as a condition of the licence.

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 not designated. However, it is immediately adjacent to a designated area of nature conservation and there are other 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.

The site is within 5km of Emer Bog SAC (c.3,224m south-west) and the River Itchen SAC (c.3,655m east). Both of these sites are designated due to the internationally important types of wetland habitats they include. As a result of its proximity, the impacts of these works on the SACs 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 internationally designated sites.

According to the *Multi-Agency Geographic Information for the Countryside* website (www.magic.gov.uk), there have been seven bat European Protected Species (EPS) licences granted within 2km of the site, with the closest c.767m west of the site. Due to its close proximity, it is likely that bats roosting and/ or using the site for commuting and/ or foraging are part of the same meta-population.

5.2.2 *Commuting and foraging bats*

The strip of woodland along the north boundary provides good sheltered bat foraging habitat in the immediate vicinity of the building. The woodland connects to a network of hedges and tree-lines through the neighbouring gardens, which in turn connect the site to areas of high-quality foraging habitat in the wider landscape such as nearby ancient woodland and waterways. Woodland and waterways provide 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 (the trees) 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 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 retained vegetation (particularly the woodland), 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 retained vegetation, particularly the woodland. This is because bats are very sensitive to light.

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 *Building*

Due to the number of suitable exterior roosting features on the building (*e.g.* lifted roof and hanging tiles), the building has high bat roost suitability. This was confirmed by bats emerging from the roof. Therefore, the building is a confirmed bat roost.

There was a peak count of two common pipistrelles emerging from the building on any one survey. The level of usage show that 2 Charnwood Gardens is a non-breeding day roost for low numbers of common pipistrelles.

The proposed works will affect a small section of roof tiles on the west half of the south elevation and the roof void (where the south elevation is extended) as well as the hanging tiles on the south elevation (where they will be removed). The rest of the roof tiles will not be affected.

As a confirmed bat roost, a bat European Protected Species (EPS) licence or Bat Mitigation Class Licence (formerly Bat Low Impact Class Licence, if qualifying) site registration from Natural England will be required before any work can take place on the roof, roof void or hanging tiles.

Without mitigation, the main impacts to the roost will be disturbance while the works take place and roost modification due to the alternation to the roof void. The existing access points under the roof tiles and bargeboard are being retained and will not be affected by the proposed works.

The works to the house will be carried out in line with methods detailed in a Natural England bat EPS licence. Mitigation and compensation measures will be incorporated into the extended building. However, it should be noted that the site potentially qualifies for a Bat Mitigation Class Licence (should a Registered Ecologist wish to use it). This does not require compensation to be provided if the roost cannot be retained *in situ* (unless serotine or lesser horseshoe bats are affected) however this does not preclude the local planning authority requesting additional enhancement for any of the species affected.

A brief summary of the proposed mitigation and compensation measures is given in *Section 5.6*.

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*.

5.3 Other ecological constraints

5.3.1 Schedule 9 species

One non-native, invasive plant species listed on *Schedule 9* of the *Wildlife and Countryside Act 1981* (as amended) was recorded on the site. This is *Cotoneaster horizontalis* (Wall Cotoneaster), which is located in a flowerbed in the south-west corner of the site.

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 this should be removed to avoid spreading to the remainder of the site or off-site during site works, especially where it is close or in the area of work. However, it is also common ornamental plants and as it is located away from the works, it could remain *in situ* with the area fenced off for the duration of the works. This will prevent machinery or tools or boots accidentally spreading it on site or carrying them off site.

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.

Information of the removal of the *Schedule 9* species (should the owners need or choose to do so) is given in *Section 5.6.5*.

5.3.2 *Birds*

The hedge on the east boundary provides suitable habitat for nesting birds. The destruction of active bird nests is prohibited under the *Wildlife and Countryside Act 1981* (as amended). As it is away from the works it is not anticipated it will be affected. However, 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).

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, 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 2023.

5.5 *Further survey*

No further surveys are proposed.

5.6 *Outline mitigation, compensation and enhancement measures*

5.6.1 *General*

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, if required;
- new bat roost provision;
- sensitive lighting (for bats and other wildlife);
- new bird nesting provision; and
- insect boxes.

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.

As the building is a confirmed bat roost, a European Protected Species (EPS) licence or Bat Mitigation Class (formerly Bat Low Impact Class Licence, if qualifying) 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 European Protected Species (EPS) licence from Natural England. The proposed mitigation and compensation measures are described in *Section 5.6.2*.

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

5.6.2 *Mitigation and compensation*

A toolbox talk will be given to the contractors, prior to any work commencing, to inform them on how to protect bats during the works. It will include an overview of the ecological issues and licensing implications on site; the precautions to be taken and the method of hand demolition in sensitive areas.

At least one woodstone style bat box (Vivara Pro WoodStone Bat Box, Beaumaris Woodstone or similar) will be erected 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 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. It will remain on site permanently (and shall be repaired or replaced as necessary).

A destructive search (tile strip) of the affected areas of the roof and hanging tiles will be carried out. Works should ideally commence in either September/ October before bats have begun to hibernate; or in March/ April after bat have come out of hibernation. 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 and a pre-works check does not suggest the status of the roost has changed (works to a maternity roost cannot take place between May and the end of August/ September). The tiles, hanging tiles and other affected features with bat roost suitability (such as soffits and lead-flashing) will be removed carefully by hand under strict ecological supervision to ensure bats are not using these areas.

Any bats found during the destructive searches will be placed within the bat box. Bats will be captured by hand by the ecologist and, after being checked for injuries, will be transported immediately in cotton drawstring holding bags to the bat box.

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 Hampshire Bat Group's designated carers.

Once the supervising ecologist is satisfied that all affected structures that may provide bat roosting opportunities have been safely searched and removed or made unsuitable for further bat habitation, the remaining works will proceed without further supervision by a suitably qualified ecologist. The action to take if any bats are discovered during unsupervised works will also be made clear.

The proposed works to the house will involve building an extension over the garage, removing the hanging tiles and replacing the windows. This will affect the hanging tiles on the south elevation and a small section of roof tiles on the west half of the south elevation (where the extension will "tie-in"), as well as other suitable bat roosting features. The existing access points will not be affected. To enhance the site a bat access tile or slate (see *Image 5.6.2.1.*) will be installed in the roof of the extension to create access into the new void.

Image 5.6.2.1. Examples of a Bat Access Tile and a Bat Access Slate.



To create access for bats into the roof voids, the roofing felt must be cut near the proposed bat access point so that a gap of 50mm wide by 40mm high is present. Additionally, all sections of roofing felt should be overlapped to create gaps which bats can crawl through. Ideally the access point should be by a beam to facilitate bat movement.

The new roof lining **must** consist of bitumen type 1F felt with a hessian matrix (**NOT** a breathable membrane such as Tyvek™ or other non-woven membrane). 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. Only bitumen type 1F felt with a hessian matrix will be permitted under a bat European Protected Species licence from Natural England.

Only timber treatments recommended by Natural England should be used in line with Natural England's *Remedial timber treatment products suitable for use in bat roosts (2013)* available at: <https://www.gov.uk/guidance/bat-roosts-use-of-chemical-pest-control-products-and-timber-treatments-in-or-near-them>.

5.6.3 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 or retained roost exit points (see *Section 5.6.3*) and retained or planted vegetation (particularly the trees). Any lighting installed should avoid spillage of greater than 0.1 lux (typical moonlight/ cloudy sky) near to or directly onto the new or retained roost entrances and vegetation so that light disturbance is not a problem. 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 2018)) 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.

5.6.4 *New bat roost locations*

The extension 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. Alternatively, if this is not viable (because the construction method), then one additional 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).

5.6.5 *Schedule 9 species*

General

To comply with the law, the *Schedule 9* species listed in *Section 5.3.1* 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, the area where it is present 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.

5.6.6 *Birds*

At least one swift box will be built into the new extension (preferable) or attached to the exterior wall of the house to provide a new nest site. Swift boxes can be supplied and installed by Hampshire Swifts <https://www.hampshireswifts.co.uk> and a new soffit design is also available (this box is also

suitable for sparrows). The box should be positioned out of direct sunlight (ideally below eaves on the north elevation), away from windows and in a straight line. It should be in an open area so that it is less accessible to predators and birds are not obstructed as they leave the nest.

5.6.7 *Insects*

At least one insect box (brick, hotel or tower) should be installed in the garden or built into the extension. This should be 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 5.6.7.1* (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 5.6.7.1. Examples of insect boxes that could be erected on site.

Type	Species	Height	Additional information
Bee Brick 	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
BeePot Bee Hotel 	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
Insect Tower 	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.
Urban Bee Nester 	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.
Urban Insect Hotel 	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.
Bee and Bug Biome 	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.

5.7 ***Requirement for Habitats Regulations licence***

A bat European Protected Species (EPS) licence or Bat Mitigation Class Licence (formerly Bat Low Impact Class Licence, if qualifying) site registration from Natural England is necessary before work commences on the roof, roof void or hanging tiles. This permits activities that may otherwise be offences under the *Conservation of Habitats & Species Regulations 2017*, such as the destruction of roost sites.

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 licensable work is delayed until, during or after the next survey season, updated survey(s) will be required to support an application.

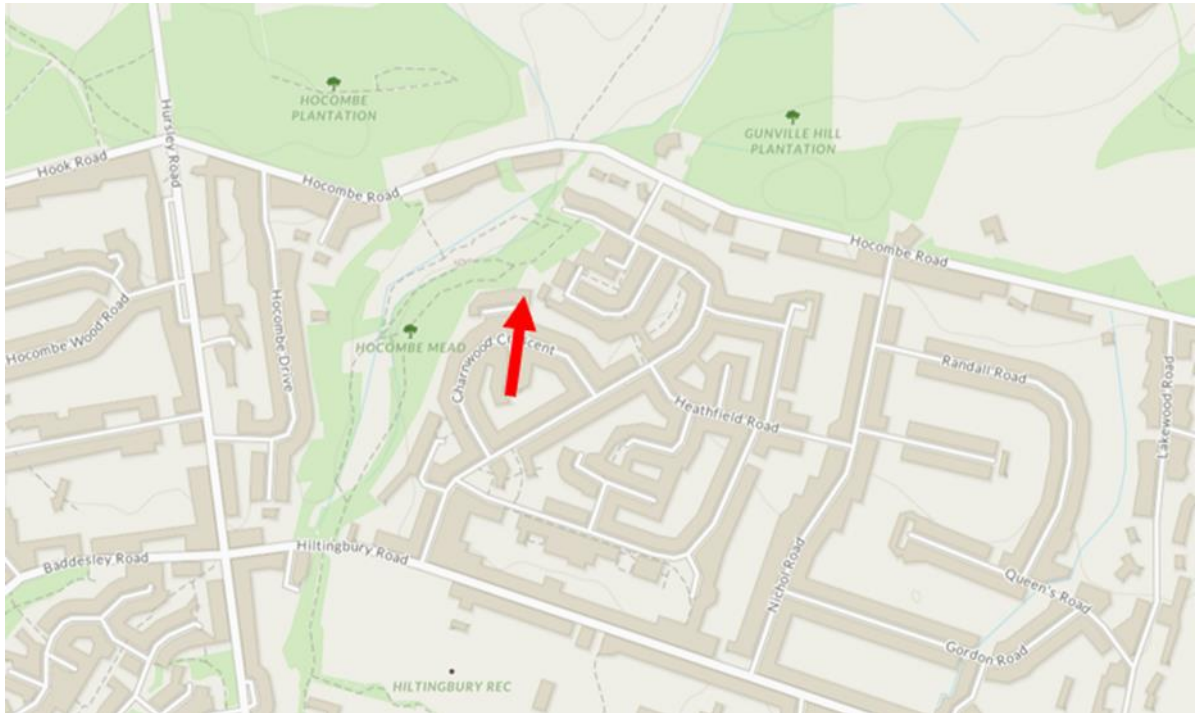
Natural England takes a minimum of 30-60 working days to process licence applications following receipt of all the relevant documentation. This includes an application form and a Method Statement. This includes a detailed mitigation strategy to eliminate or reduce impacts on bats.

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 buildings surveyed highlighted in red and the indicative locations of other ecological constraints (not to scale).

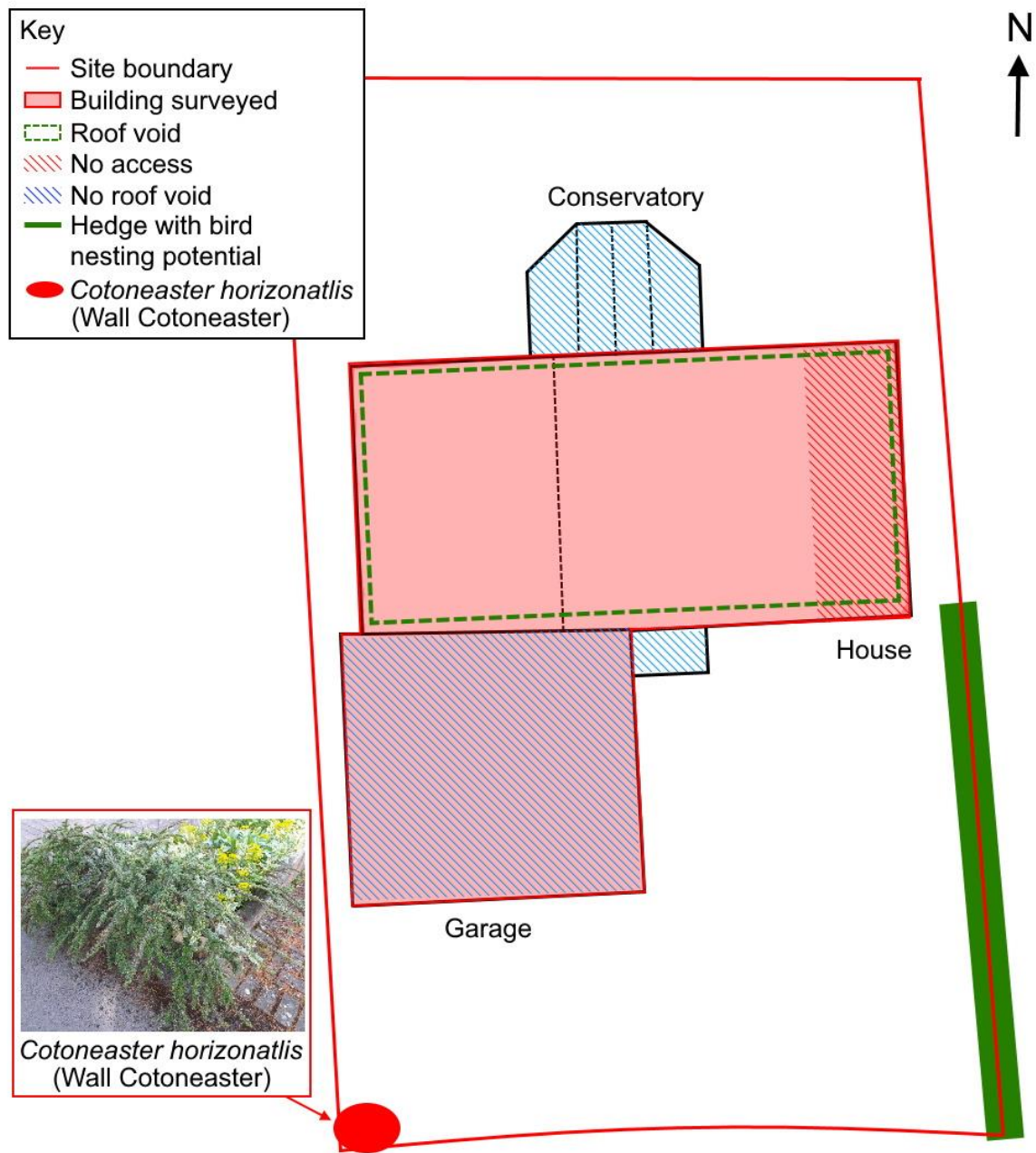
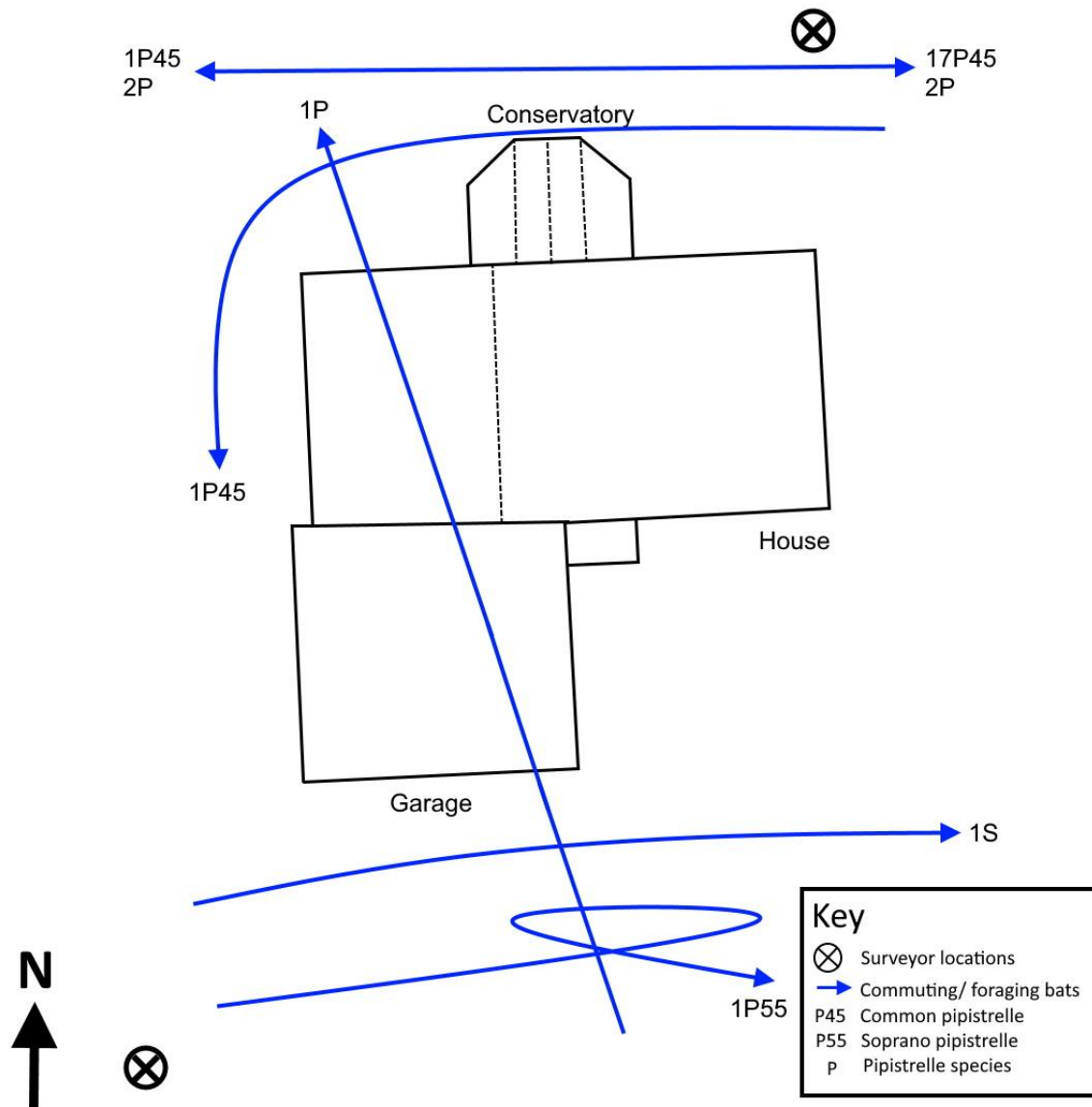






Figure 6. Plan showing bat activity (observations only) for the activity survey carried out on the 3rd September 2022. Arrows show direction of flight (where known).



7 PHOTOGRAPHS

Photo 1. Driveway with shrubs and hedge along the east boundary (facing north).



Photo 2. Rear garden consisting of decking due to a steep slope (facing south-west).



Photo 3. Woodland adjacent to the north boundary of the site (facing north-west).



Photo 4. Charnwood Gardens (facing west), with a tree-line along the south side of the road and houses on the north side with the woodland behind them.



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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 *National Planning Policy Framework (NPPF)*

From the 20th July 2021, the Government published the revised National Planning Policy Framework. 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.

Date	28/07/2022			
Temp	21°C at start and 17°C at the end			
Weather	Dry with 5% cloud cover and light air (Beaufort scale 1)			
Ecologists	Finlay Parker, Oliver Swarder			
Observer	Time	No.	Species	Observation
-	20:43		-	Ecologists commenced observations
OS	20:54	1	Common pipistrelle	Emerging from the east side of the roof then commuting east
-	20:58		-	Sunset
FP, OS	21:00	1	Common pipistrelle	Commuting north-west over the rear garden
FP, OS	21:04	1	Common pipistrelle	Commuting north along the western elevation of the house
FP	21:13	1	Common pipistrelle	Heard but not seen
FP	21:16	1	Common pipistrelle	Heard foraging but not seen
FP, OS	21:19	2	Common pipistrelle	Chasing each other north along the eastern elevation of the house and social calling
FP	21:23	1	Common pipistrelle	Heard but not seen
FP	21:24	2	Soprano pipistrelle	Chasing each other east over the rear garden
FP	21:24	1	Common pipistrelle	Feeding over the rear garden fence between the house and the neighbouring house
OS	21:25	1	Common pipistrelle	Heard foraging but not seen
OS	21:28	1	Common pipistrelle	Foraging west over the garage then over the neighbouring house
FP	21:28	1	Common pipistrelle	Feeding over the rear garden fence between the house and the neighbouring house
OS	21:29	1	Common pipistrelle	Heard foraging but not seen
FP	21:31	1	Soprano pipistrelle	Commuting east over the rear garden
OS	21:32	1	Common pipistrelle	Foraging around the south-east corner of the house then along the eastern elevation of the house
FP	21:32	1	Common pipistrelle	Commuting west over the rear garden
OS	21:33	1	Common pipistrelle	Heard foraging but not seen
FP	21:34	1	Common pipistrelle	Commuting west over the rear garden
OS	21:36	1	Common pipistrelle	Heard foraging but not seen

FP	21:37	1	Common pipistrelle	Feeding over the rear garden fence between the house and the neighbouring house
OS	21:37	1	Common pipistrelle	Foraging around the south-east corner of the house then along the eastern elevation of the house
FP	21:38	1	Common pipistrelle	Commuting west over the rear garden
OS	21:39	1	Common pipistrelle	Foraging over the roof of the house
OS	21:41	1	Common pipistrelle	Foraging around the south-east corner of the house
OS	21:41	1	Soprano pipistrelle	Heard foraging but not seen
FP	21:42	1	Common pipistrelle	Commuting west over the rear garden
FP	21:42	1	Common pipistrelle	Foraging along the hedge to the west of the rear garden
OS	21:44	1	Common pipistrelle	Foraging around the south-east corner of the house then along the eastern elevation of the house
FP	21:45	1	Common pipistrelle	Foraging along the western elevation of the house
OS	21:46	1	Common pipistrelle	Foraging east over the garage
FP	21:47	1	Common pipistrelle	Commuting west over the decking
FP	21:48	1	Common pipistrelle	Commuting west over the decking
OS	21:49	1	Common pipistrelle	Foraging over the roof of the house
FP, OS	21:49	1	Common pipistrelle	Foraging in circles around the house until 21:57
FP	21:49	1	Common pipistrelle	Commuting west over the decking
FP	21:51	1	Common pipistrelle	Commuting west over the decking
FP	21:55	1	Common pipistrelle	Emerging from under the bargeboards at the north end of the house then commuting west
OS	21:56	1	Soprano pipistrelle	Heard foraging but not seen
OS	21:56	1	Serotine	Foraging along the western elevation of the house then west over neighbours' front garden
OS	21:57	1	Soprano pipistrelle	Heard foraging but not seen
FP	21:57	1	Common pipistrelle	Foraging along the hedge to the west of the rear garden
FP	21:58	1	Common pipistrelle	Foraging west over the rear garden
FP, OS	21:59	1	Noctule	Commuting east high over the front of the property
OS	22:00	1	Noctule	Heard but not seen
FP	22:08	1	Common pipistrelle	Heard foraging but not seen

FP, OS	22:09	1	Common pipistrelle	Foraging along the western elevation of the house then over the neighbours' garden
FP	22:12	1	Noctule	Heard but not seen
FP	22:12	1	Common pipistrelle	Commuting west over the decking
FP, OS	22:14	1	Serotine	Heard but not seen
OS	22:14	1	Soprano pipistrelle	Heard but not seen
OS	22:17	1	Common pipistrelle	Commuting south-west high over the house
FP, OS	22:22	1	Common pipistrelle	Heard but not seen
OS	22:24	1	Common pipistrelle	Heard foraging but not seen
-	22:28	-	-	Ecologists ceased observations
Date	15/08/2022			
Temp	27°C at start and 20°C at the end			
Weather	Dry with 50% cloud cover and light air (Beaufort scale 1)			
Ecologists	Andrew Lomas, Laura Godleman			
Observer	Time	No.	Species	Observation
-	20:12		-	Ecologists commenced observations
-	20:27		-	Sunset
AL	20:46	1	Common pipistrelle	Commuting west over the decking
AL	20:51	1	Long-eared bat	Commuting east around the trees and the decking on the north side of the house
LG	20:55	1	Soprano pipistrelle	Foraging east then north by the west side of the garage
LG	20:56	1	Soprano pipistrelle	Foraging east then north by the west side of the garage
LG	20:56	1	Soprano pipistrelle	Heard but not seen
LG	20:58	1	Soprano pipistrelle	Commuting east over the roof of the house
LG	20:58	1	Soprano pipistrelle	Heard until 21:00 but not seen
AL	20:59	2	Common pipistrelle	Foraging around the north-west corner of the house
AL	21:00	1	Common pipistrelle	Commuting north then west by the north-west corner of the house
AL	21:00	1	Common pipistrelle	Commuting east then south by the north-west corner of the house
LG	21:02	1	Common pipistrelle	Foraging east then west, then north by the west side of the garage
AL	21:03	1	Common pipistrelle	Commuting east then south by the north-west corner of the house
AL	21:04	1	Common pipistrelle	Commuting north then west by the north-west corner of the house

AL	21:05	1	Common pipistrelle	Commuting north then west by the north-west corner of the house
LG	21:05	1	Noctule	Foraging west then south-east, south-east of the house
LG	21:06	1	Noctule	Heard for 1 minute but not seen
LG	21:06	1	Common pipistrelle	Commuting east over the roof of the house
AL	21:06	1	Common pipistrelle	Commuting east then south by the north-west corner of the house
AL	21:07	1	Common pipistrelle	Commuting west over the decking
LG	21:07	1	Soprano pipistrelle	Heard until 21:08 but not seen
AL	21:09	1	Long-eared bat	Heard but not seen
LG	21:09	1	Long-eared bat	Commuting east over the roof of the house
AL	21:10	1	Common pipistrelle	Foraging north-west over the decking
LG	21:10	1	Common pipistrelle	Heard but not seen
LG	21:10	1	Long-eared bat	Heard but not seen
AL	21:12	1	Common pipistrelle	Foraging around the north-west corner of the house
AL	21:14	1	Noctule	Heard commuting but not seen
LG	21:14	1	Common pipistrelle	Commuting south along the west side of the house and garage
LG	21:15	1	Common pipistrelle	Commuting east over the roof of the house
LG	21:15	1	Common pipistrelle	Foraging east then west, then north by the west side of the garage
AL	21:16	1	Common pipistrelle	Commuting south-west over the west neighbouring house
LG	21:16	2	Common pipistrelle	Foraging east then west, then north by the west side of the garage
AL	21:17	1	Common pipistrelle	Commuting north then west by the north-west corner of the house
LG	21:17	1	Common pipistrelle	Heard but not seen
AL, LG	21:19	1	Common pipistrelle	Commuting south over the east side of the house
LG	21:19	1	Long-eared bat	Heard until 21:21 but not seen
AL	21:20	2	Common pipistrelle	Foraging north over the hedge line north-east of the house
AL	21:23	1	Common pipistrelle	Heard but not seen
LG	21:22	1	Long-eared bat	Heard but not seen
AL	21:25	1	Common pipistrelle	Heard but not seen
LG	21:25	1	Long-eared bat	Heard until 21:26 but not seen
LG	21:29	1	<i>Myotis</i> species	Heard but not seen

LG	21:30	1	Long-eared bat	Heard but not seen
LG	21:30	1	Common pipistrelle	Heard but not seen
LG	21:31	1	Long-eared bat	Heard but not seen
LG	21:32	1	Common pipistrelle	Heard until 21:33 but not seen
AL	21:33	1	Common pipistrelle	Heard but not seen
LG	21:33	1	Long-eared bat	Heard but not seen
LG	21:34	1	Common pipistrelle	Heard but not seen
LG	21:36	1	Long-eared bat	Heard but not seen
LG	21:38	1	Long-eared bat	Heard until 21:40 but not seen
AL	21:39	1	Common pipistrelle	Heard but not seen
LG	21:41	1	Common pipistrelle	Heard feeding but not seen
LG	21:42	1	Common pipistrelle	Heard but not seen
LG	21:43	1	Soprano pipistrelle	Heard feeding until 21:44 but not seen
LG	21:47	1	Common pipistrelle	Heard feeding but not seen
LG	21:51	1	Common pipistrelle	Heard feeding but not seen
AL	21:53	1	Common pipistrelle	Heard but not seen
AL, LG	21:54	1	Common pipistrelle	Heard foraging but not seen
AL	21:54	1	Noctule	Heard briefly but not seen
-	21:57	-	-	Ecologists ceased observations
Temp	18°C at start and 17°C at the end			
Weather	Warm and dry with 100% cloud cover and light air (Beaufort scale 1)			
Ecologists	Mark Ison & Ben Robson			
Observer	Time	No.	Species	Observation
-	19:33		-	Ecologists commenced observations
-	19:48		-	Sunset
BR	19:49	1	Pipistrelle species	Heard but not seen
MI, BR	20:04	1	Common pipistrelle	Commuting north over the house
BR	20:08	1	Common pipistrelle	Seen but not heard
MI	20:09	1	Soprano pipistrelle	Foraging in the garden to the south of the house
MI	20:14	1	Common pipistrelle	Heard but not seen
BR, MI	20:15	1	Pipistrelle species	Commuting west past the north side of the house
BR	20:16	1	Pipistrelle species	Commuting west past the north side of the house
BR	20:16	1	Pipistrelle species	Commuting east past the north side of the house
MI	20:16	1	Common pipistrelle	Heard but not seen
MI	20:25	1	Serotine	Commuting east to the south of the house
MI	20:28	1	Common pipistrelle	Heard but not seen
MI	20:32	1	Common pipistrelle	Heard foraging but not seen
BR	20:33	1	Common pipistrelle	Commuting south around the north-west corner of the house

MI	20:35	1	Common pipistrelle	Heard foraging but not seen
BR	20:36	1	Common pipistrelle	Commuting east past the north side of the house
BR	20:38	1	Common pipistrelle	Commuting east past the north side of the house
BR	20:39	3	Common pipistrelle	Commuting east past the north side of the house
MI	20:40	1	Common pipistrelle	Heard foraging but not seen
BR	20:40	1	Common pipistrelle	Commuting east past the north side of the house
BR	20:41	2	Common pipistrelle	Commuting east past the north side of the house
BR	20:42	2	Common pipistrelle	Commuting east past the north side of the house
BR	20:42	1	Common pipistrelle	Commuting west past the north side of the house
BR	20:43	1	Common pipistrelle	Heard feeding but not seen
BR	20:43	1	Common pipistrelle	Commuting east past the north side of the house
BR	20:44	1	Common pipistrelle	Heard but not seen
MI	20:45	1	Noctule	Heard but not seen
BR	20:46	2	Common pipistrelle	Commuting east past the north side of the house
BR	20:48	2	Common pipistrelle	Commuting east past the north side of the house
BR	20:49	1	Common pipistrelle	Commuting east past the north side of the house
MI	20:52	1	Common pipistrelle	Heard intermittently until the end of survey but not seen
BR	20:52	1	Common pipistrelle	Commuting east past the north side of the house
MI	20:54	1	Noctule	Heard but not seen
BR	20:54	1	Common pipistrelle	Heard but not seen
BR	20:58	1	Common pipistrelle	Heard but not seen
BR	21:07	1	Pipistrelle species	Commuting east past the north side of the house
-	21:18	-	-	Ecologists ceased 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 12.3.1. Bird boxes with additional details on siting them to increase chances of occupancy.

Type	Typical species	Height	Additional information
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.