

Orchard House, Orchard
Lane, Itchenor,
Chichester, West Sussex,
PO20 7AD

Ecological Appraisal Report

February 2022

Hampshire Ecological Services Ltd
Consultant Ecologists





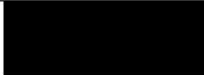
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Ecological Appraisal Report
Orchard House, Orchard Lane, Itchenor, Chichester, West Sussex, PO20 7AD
for
Marc Boughton

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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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1 EXECUTIVE SUMMARY

1. This report provides information from an ecological appraisal and bat surveys carried out by Hampshire Ecological Services Ltd for Marc Boughton in connection with a proposal to demolish and rebuild the house at Orchard House, Orchard Lane, Itchenor, Chichester, West Sussex, PO20 7AD (approximate Ordnance Survey Grid Reference SU800012). The site location is shown in *Figures 1 and 2* (see *Section 6*).
2. An ecological appraisal was carried out during the daytime on the 22nd January 2021 by Nicola Pyle MCIEM.
3. The site consists of a house with a detached garage, a greenhouse and two sheds. There are lawns to the south and east of the house. There is woodland, tree-lines, patches of scrub, and ornamental planting. The habitats are shown in the Phase 1 Habitat Survey map given in *Figure 3* in *Section 6* with vascular plant species listed in *Appendix C*.
4. The majority of the habitats and plant species observed on site are widespread and common; the habitats are of negligible nature conservation value from a botanical perspective. The exception is the mature trees and the woodland. Both would take many decades to replace. These are of high ecological value and should be retained and protected where possible (see *Section 5.6*).
5. 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 in two locations: by the wall to the south of the site; and adjacent to the west of the driveway (*Target Note 10* on *Figure 3*).
6. Five buildings on the site were assessed for their bat roost suitability. The house (*Target Note 1*) is a confirmed bat roost; the garage (*Target Note 2*) has high bat roost suitability; and the shed (*Target Note 3*) has low bat roost suitability. The small shed and the greenhouse (*Target Notes 4 & 5*) have no bat roost suitability.
7. Evidence of bats was found within the roof void of the house - c.775 droppings consistent with those of long-eared bats. Based on the number of droppings, the house has been a maternity roost for long-eared bats in recent years (or a satellite roost during the year of survey).
8. As there are two species of long-eared bat; one widespread (brown long-eared bat) and one very rare (grey long-eared bat), DNA analysis of the bat droppings was carried out to confirm identification. The analysis confirmed they were from brown long-eared bats. The full results are given in *Appendix E*.
9. No bats or evidence of bats were observed within the garage or the shed.

10. The majority of trees on site were identified as having negligible bat roost suitability. However, there are three mature trees on the site that have features that could be used by roosting bats such as rot holes and crevices. These are as follows:

- a mature *Quercus robur* (Pedunculate Oak) tree (*Target Note 9*) with high bat roost suitability;
- a mature *Tilia × europaea* (Common Lime) tree (*Target Note 11*) with moderate bat roost suitability; and
- a mature *Tilia × europaea* (Common Lime) tree (*Target Note 12*) with moderate bat roost suitability.

If any of these trees are to be felled or be subject to tree surgery (*e.g.* pruning or crown-lifting), they will need detailed surveys to establish if bats are using them (see *Section 5.5*). However, it is currently understood that these trees will be retained.

11. The mature trees, woodland on the boundaries and the ornamental planting provide good foraging habitat for bats. They also link to a network of gardens, tree-lines and waterbodies in the wider landscape in all directions. In addition, Chichester Harbour is on the north-east boundary and also provides high quality foraging habitat for a number of different species of bat. Retaining and enhancing connectivity (the hedges, wooded edges and tree-lines) around the site will help minimise any potential impact to bat populations in the local area.

12. There is suitable habitat for dormice on the boundaries of the site and on neighbouring land. The wooded edges (*Target Note 13*) on the east boundary provide suitable habitat for nesting, foraging and hibernating dormice. It is not considered likely that the proposals will directly impact on the suitable habitat and all suitable dormouse habitat is due to be retained. Therefore, no impacts are anticipated on dormice in the area and no further surveys are currently proposed.

13. The grassland is mown short with no cover. This is generally unsuitable terrestrial habitat for great crested newt. According to aerial photographs (GoogleEarth™) and online Ordnance Survey 1:25,000 maps there are five ponds within 500m of the site and suitable terrestrial habitat for great crested newt immediately adjacent to the site (see *Section 4.3.3*). The proposals involve demolishing the house and replace it with a more modern one in the broad footprint of the existing house, this is unlikely to impact any of the areas that are suitable for great crested newt at the edges of the site. Given the low impact of the scheme and lack of suitability, great crested newt surveys are not considered necessary. However, as a precaution any effected vegetation to be removed will be done so using the method described in *Section 5.4.5*.

14. According to aerial photographs (GoogleEarth™) and online Ordnance Survey 1:25,000 maps, the Chichester Harbour SAC SSSI Ramsar is adjacent to the site. Ponds on neighbouring land may be suitable for otter and water vole. However, there is no suitable habitat for either species on the site. No evidence of otter or water voles were found anywhere on the site. Therefore, the proposed development will have no direct impacts on otter or water vole and no further surveys are proposed.

15. As no badger setts were found on site, development works are free to proceed without further regard to this species, although if a badger sett is subsequently discovered within 30m of the proposed works then it may require a licence from Natural England to proceed. Guidance to what may be classed as disturbance to a badger (when occupying a sett) can be found at: <https://www.gov.uk/guidance/badgers-protection-surveys-and-licences>.
16. All trees and bushes, as well as the garage provide suitable habitat for nesting birds. The destruction of active bird nests is prohibited under the *Wildlife and Countryside Act 1981* (as amended). Therefore, all affected vegetation with the potential to support nesting birds should be cut to near ground level (approximately 30cm) outside the bird breeding season (which is late February to August inclusive). If this is not possible, and vegetation has to be removed during the nesting season, then it should be inspected (by an ecologist) for nests immediately prior to removal of the vegetation. As the garage is to be demolished this will need to happen outside of the bird breeding season (which is late February to August inclusive). If this is not possible, and the garage has to be removed during the nesting season, then it should be inspected (by an ecologist) for nests immediately prior to demolition. If any active nests are found 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).
17. Most of the grassland on site is short due to mowing and as such is unsuitable for reptiles due to the lack of cover and risk of predation. There are some patches of low-growing bramble scrub around the site that is suitable foraging and hibernation habitat for reptiles. In addition, the ornamental planting and woodland at the edges of the site provide some hibernation habitat. It is not anticipated that any suitable habitat will be impacted by the proposal, however as a precaution any effected vegetation to be removed will be done so using the method in *Section 5.4.5*.
18. Bat activity surveys were carried out on the house, garage and shed. Details of the dates of the surveys, weather and personnel carrying out the surveys is given in *Sections 3.2.2* and *3.2.3*.
19. Bats were observed emerging from the house and the results are summarised in the table below. A plan summarising the bat emergence locations is given in *Figure 4.3.1.3* in *Section 4.3*.

Date	Species (& number)	Emergence/ re-entry	Emergence location(s)
25/06/21	Common pipistrelle (3)	Emergence	From the top of the southernmost dormer on the east elevation of the house
	Common pipistrelle (1)	Emergence	From the valley between the two dormers on the east elevation of the house
	Long-eared species (1)	Emergence	From the southern gable end of the house
	Long-eared species (1)	Emergence	From under the roof tiles on the western elevation of the house

13/07/21	Common pipistrelle (1)	Emergence	From under the roof tiles on the east side of the house
	Common pipistrelle (1)	Emergence	From under dormer tiles on the east side of the house
	Common pipistrelle (1)	Emergence	From under the roof tiles on the north side of the house
29/07/21	Common pipistrelle (4)	Emergence	From under the hanging tiles on the northern gable end on the east side of the house
	Common pipistrelle (2)	Emergence	From under the hanging tiles/ valley on the south-east corner of the house
	Common pipistrelle (2)	Emergence	From under the hanging tiles on the east elevation of the house
	Common pipistrelle (3)	Emergence	From under the roof tiles on the west side of the house
	Common pipistrelle (1)	Emergence	From a corner eave on the west side of the house

20. The bat roost types and impacts are given below:

Building	Species	Peak count	Roost type	Location	Impact	
House	Common pipistrelle	12	Non-breeding day roost	From the top of the southernmost dormer on the east elevation of the house	Demolition & rebuild resulting in loss of the roosts without mitigation and compensation.	
				From the valley between the two dormers on the east elevation of the house		
				From a corner eave on the west side of the house		
				Under the roof tiles		North elevation
						East elevation
						West elevation
				From under dormer tiles on the east side of the house		
				Hanging tiles		North gable end
	East elevation					

					South-east corner
	Long-eared species	2 bats & c.775 droppings	Maternity or satellite roost	From the southern gable end of the house	Demolition & rebuild resulting in loss of the roost without mitigation and compensation.
				From under the roof tiles on the western elevation of the house	
Garage	n/a	n/a	n/a	n/a	n/a
Shed	n/a	n/a	n/a	n/a	n/a

21. As the house is a confirmed bat roost, a bat European Protected Species (EPS) licence or Bat Mitigation Class Licence (formerly Bat Low Impact Class Licence, if subsequently qualifying) site registration from Natural England is required before any work can be undertaken on the roof, roof void or hanging tiles.
22. No bats were observed emerging from or re-entering the garage or shed. Therefore, a bat EPS licence is not required for these buildings and they can be demolished without further survey or constraints regarding bats (subject to any planning constraints).
23. The full data from the surveys is given in *Appendix D* and plans showing the foraging and commuting bats (observations only) are given in *Figures 6-9* in *Section 6*.
24. Common pipistrelles, soprano pipistrelles, long-eared bats and serotine 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.
25. To minimise the impact on the retained trees and bushes, Heras fencing or similar should be used to protect the roots of the trees and bushes during the works. The guidance provided in *BS 5837 Trees in relation to Construction* provides further advice.
26. Runoff from the proposed works should be prevented from entering the harbour. This can affect the ecology of the water body. Spill kits must be available on site at all times.
27. To comply with the law, the *Schedule 9* species *Cotoneaster horizontalis* (Wall Cotoneaster) should 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. However, if in an area unaffected by the works, the plant can remain in situ with the areas fenced off for the duration of the works. This will prevent machinery, tools or boots accidentally carrying it off site. Further information on the methods of removal is given in *Section 5.6.3*.
28. A detailed method statement with a mitigation strategy aimed at maintaining the conservation status of bats will need to be prepared prior to works to the house as part of a bat licence from Natural England. In brief, this would include the following:

- Two woodstone style bat box (Vivara Pro WoodStone Bat Box, Beaumaris Woodstone or similar) will be erected in a large nearby tree 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). These bat boxes will be erected between 2.5m and 5m, facing south or south-east with a clear exit path. These bat boxes 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, as well as the wooden cladding, will be carried out. Works will ideally commence in either September/October before bats have begun to hibernate; or in March/ April after bat have come out of hibernation. As a maternity roost, works cannot take place between May and the end of August. However, work at other times of year may be acceptable (subject to licensing from Natural England) providing the destructive search is carried out in mild spells (above 5°C) in winter. The tiles, wooden cladding 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 search will be placed within the bat boxes.
- Bats will be captured by hand by the ecologist and, after being checked for injuries, transported immediately in cotton drawstring 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.
- Integrated bat box/bat bricks (*e.g.* a Habibat™ Bat Box, an Ibstock Enclosed Bat Box, a Schwegler Bat Tube, or similar) will be incorporated into the new house. These provide cavities that is incorporated into the external build structure to offer roosting space for bats and will provide replacement roosts for those lost from under the roof tiles, hanging tiles and wooden cladding.
- As it is not possible to create a replacement long-eared roost in the new house, a dedicated bat house will be built under permitted development with a separate lower space used for storage. It will be located in a corner of the property where there will be minimal light spill from the house and nearby vegetation. It will also be close to a proposed new pond to the east of Orchard House, which will enhance the surrounding commuting and foraging habitat for bats, as well as enhance the number of insects in the site to encourage feeding bats. This will act as both compensation and enhancement for bats.
- The roof of the bat house will have a roof void with a minimum of 2.8m high and 5m x 5m, as recommended by Natural England's *Bat Mitigation Guidelines* (2004). It will be uncluttered by beams *etc.* It will be clad with timber shingles to match the main house.
- Access to the interior of the bat house will be provided via gaps under the eaves. There will also be a gap above the door to the building to allow bats to fly straight into the building (and then up into the roof void). The door will be kept locked and only used for monitoring and maintenance purposes.
- A heated maternity bat box will be installed within the new bat house to provide the warm stable temperature that is necessary for breeding bats. The heated maternity box will be set on a timer so that it is only on during the summer when maternity bat roosts are forming and

present to prevent it from interfering with any bats using the new bat house to hibernate. The heated maternity box will be repaired and maintained as necessary.

- To enhance the roost space in the new bat house, two squeeze boxes will be integrated internally into the roof near the ridge. These will create small spaces for bats to roost in.
- The walls will be blockwork with wooden cladding over the top (ideally featherboarding to provide natural gaps as it warps over time). Access will be provided behind the top edge of the wooden cladding on all elevations. The wooden cladding will be mounted on offset battens to allow bats to access the entirety of the area behind the cladding. An example of the offset of battens behind the cladding and access points into the cladding and are given in Images 5.6.4.1 & 5.6.4.2 below.
- The roof lining of the replacement roof void **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 licence from Natural England.
- The roof felt will 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>.

29. It is a requirement under national planning policy to provide ecological enhancements to sites requiring planning permission in order to provide net gain. In addition, National Planning Policy Framework (NPPF 2019) states "opportunities to incorporate biodiversity in and around developments should be encouraged" as part of the consideration for "presumption in favour of sustainable development". Therefore, the following outline enhancements are proposed in addition to the bat house:

- additional woodstone-style bat boxes (e.g. Vivara Pro WoodStone Bat Box, Beaumaris Woodstone or similar) will be erected on trees throughout the site. These bat boxes will be erected as high as possible (ideally between 2.5m and 5m) with a clear exit path. They will remain on site permanently (and shall be repaired or replaced as necessary).
- two swift boxes can be supplied and installed by Hampshire Swifts <https://www.hampshireswifts.co.uk> and a soffit or bespoke designs are available from the Swift Group of the Sussex Ornithological Society swifts@sos.co.uk;
- two swallow nest boxes, such as WoodStone Swallow Nest Bowl (Plywood board mounted), will be add to the interior of the carport; and
- two single chamber bird boxes such as Vivara Pro Seville 32mm Woodstone Nest Box or similar, mounted either on the new building or within vegetation on site.

The proposed bird boxes are summarised in *Table 5.6.5.1*.

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

31. This survey data is valid for a maximum of 12 months. If more than 12 months elapse after completion of all surveys, it may be advisable to conduct further survey work to obtain up-to-date information prior to commencement of construction to ensure protected species compliance.

32. The site is immediately adjacent to designated areas of nature conservation. There are three internationally statutory designated sites within 5km of the site, and one nationally designated site within 2km of the site. None of these will be directly affected by works to the house at this site and all links will be maintained.

33. The site is immediately adjacent to the Chichester and Langstone Harbour SPA and the Solent maritime SAC. These sites are designated due to the types of wetland habitats present and the internationally important populations of birds they support. As a result of its proximity, the impacts of the proposed work on the SAC and SPA must be considered. Should the replacement house be significantly increased in size, for example to provide additional bedrooms to accommodate an increase in the number of people living on site, this may cause increased recreational pressure on the SPA and SAC. As such, the local planning authority may require a financial contribution towards the creation and maintenance of Suitable Alternative Natural Greenspaces (SANGs) in the local area to mitigate for any increase in recreational pressure. If required, this would be agreed by condition of any planning application for the site. However, if the works increase the building size but not the number of people occupying the building (and remains as a residential property under the same ownership) there should be no increase in the recreational pressure, or pollution, on the internationally designated sites.

34. There have been nine bat European Protected Species (EPS) licences granted within 2km of the site, including two adjacent to the site (to the south-west). Due to their close proximity, it is likely that any bats using the site are part of the same meta-population. Therefore, without mitigation the proposed work may impact these nearby bat populations.

2 INTRODUCTION

2.1 Purpose of this report

This report provides information from an ecological appraisal and bat surveys carried out by Hampshire Ecological Services Ltd for Marc Boughton in connection with a proposal to demolish and rebuild the house at Orchard House, Orchard Lane, Itchenor, Chichester, West Sussex, PO20 7AD (approximate Ordnance Survey Grid Reference SU800012). The site location is shown in *Figures 1 and 2 in Section 6*.

2.2 Site description

The site consists of a house with a detached garage, greenhouse and two sheds. There are lawns to the south and east of the house. There is woodland on the boundaries. Also present are tree-lines with patches of scrub, and ornamental. A Phase 1 Habitat Survey map of the habitats on site is given in *Figure 3 in Section 6*.

The site lies at the east end of Orchard Lane, on the northern fringe of Itchenor village. Chichester Harbour is immediately adjacent to the north-east. The immediate surroundings consist of other residential properties to the south and west; a boat yard to the north; and East Itchenor Coastal Marsh LWS to the east. In the wider landscape, Chichester Harbour extends to the north, east and west and includes coastal villages and tidal habitats. To the south, agricultural land is interspersed with small areas of woodland and rural villages, with the coast of the English Channel beyond.

2.3 Proposed activities

This survey was carried out in connection with a proposal to demolish and rebuild the house. There are currently no proposals that affect the other buildings or wider site.

2.4 Current planning status

Planning permission is being applied for.

2.5 *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 Phase 1 Habitat Survey map for the site;
 - *Figure 4* gives a plan showing the bat evidence within the main house;
 - *Figure 5* gives the locations of ponds within 500m of the site boundary;
 - *Figures 6-9* illustrate the bat activity recorded during the dusk emergence surveys; and
 - *Figures 10-12* illustrate the proposed mitigation, compensation, and enhancement measures.
- *Section 7* gives photographs of the site;
- *Section 8* lists the references;
- *Appendix A* lists key legislation and regulations;
- *Appendix B* gives the *Target Notes*;
- *Appendix C* lists vascular plant species recorded on site;
- *Appendix D* gives the data from the dusk emergence surveys;
- *Appendix E* gives the results of the DNA analysis of the bat droppings; and
- *Appendix F* lists additional 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 Chichester's *Protected Species Survey 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 within 2km of the site.

A data search from the Sussex Biodiversity Records Centre (SxBRC) has not been commissioned in relation to this site.

3.2 **Field survey**

3.2.1 *General*

An ecological appraisal was carried out on this site. This type of survey is not designed to prove presence or absence of significant or protected species; it is used to highlight habitat that is suitable and to identify where further work to show presence or absence is required. However, in some circumstances species can be ruled out because there is unsuitable habitat or barriers to inward migration.

Significant species were defined as follows:

- European Protected Species (listed on *Schedules 2 and 5 of the Conservation of Habitats & Species Regulations 2017*);
- nationally protected species under *Schedules 1, 5 and 8 of the Wildlife & Countryside Act 1981*, the *Protection of Badgers Act 1992* (as amended) and the *Deer Act 1991*;
- non-native pest species listed on *Schedule 9 of the Wildlife & Countryside Act 1981* (as amended);
- species listed as Critically Endangered, Endangered or Vulnerable on the *IUCN Red List*;
- all species listed on the *RSPB Birds of Conservation Concern 2015* as Red or Amber; and
- Nationally Rare or Nationally Scarce species.

3.2.2 *Date, time and weather*

An ecological appraisal was carried out during the daytime on the 22nd January 2021. The weather was 8°C with intermittent hail, 100% cloud cover and a light wind (Beaufort scale 1).

Subsequently, activity surveys were carried out on the house, garage and shed. Details of the weather, dates and times of these surveys are given in *Table 3.2.1.1*.

Table 3.2.2.1. Dates, times and weather conditions during the dusk emergence surveys.

Building	Date	Start time	End time	Sunset	Temperature at start & end (°C)	Wind (Beaufort scale)	Cloud Cover (%)
House, garage & shed	25/06/21	21:06	22:51	21:21	15.0 – 12.3	0	5
Garage	12/07/21	20:59	22:44	21:14	16.0 – 15.0	1	100
House	13/07/21	20:58	22:43	21:13	20.4 – 18.0	0	5
House & garage	29/07/21	20:38	22:24	20:54	17.7 – 16.4	2	95

The emergence 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.

3.2.3 *Personnel*

The initial survey was carried out by Nicola Pyle MCIEEM who is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). She has over 14 years of experience in ecological consultancy and is a highly competent ecologist trained in Phase 1 Habitat Survey and protected species surveys. She is a multi-species licence holder and holds a Natural England licence allowing the disturbance and handling of bats for the purposes of survey in all counties of England (current Bat Class Licence Registration number 2015-18259-CLS-CLS).

Personnel carrying out the dusk emergence surveys are given in *Table 3.2.3.1*. All surveyors are trained in carrying out bat surveys using detectors. John Poland holds a Natural England Class 2 bat survey licences (licence references 2015-11159-CLS-CLS) and Calum Cooper and Chloe Mockridge are also accredited under Bat Class Licence Registration numbers 2015-11159-CLS-CLS and 2015-17894-CLS-CLS respectively.

Table 3.2.3.1. Personnel carrying out the dusk emergence surveys.

Building	Date			
	25/06/21	12/07/21	13/07/21	29/07/21
Main House	John Poland CEnv MCIEEM CBiol MSB	-	Calum Cooper ACIEEM	Calum Cooper ACIEEM
	Chloe Mockridge MSc	-	Hannah Yates BSc (Hons)	Eve Hughes
	Darla Brown	-	Phil Budd BSc	Hannah Yates BSc (Hons)
	Hannah Yates BSc (Hons)	-	Thomas Gray	Nicholas Cutler BSc (Hons)
	Tara Dempsey BA	-	-	-
Garage	Nicola Pyle MCIEEM	Dave Casson MSc	-	Andy Lomas MSc
	Calum Cooper ACIEEM	Hannah Yates BSc (Hons)	-	Thomas Gray
Shed	Andy Lomas MSc	-	-	-

This report was reviewed by John Poland CEnv MCIEEM CBiol MSB, who is a full member of the CIEEM, a Chartered Environmentalist (CEnv), a Chartered Biologist (CBiol) and multi-species licence holder with 20 years of experience in ecological consultancy and Victoria Russell MCIEEM who is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM) 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*.

3.2.4 Botanical surveys - Phase 1 Habitat Survey

The botanical surveys in this report are based on the Phase 1 Habitat Survey methodology (Joint Nature Conservation Committee 2003) and involve the following elements: habitat mapping using a set of standard colour codes to indicate habitat types on a Phase 1 Habitat Survey map; and descriptions of habitats and features of ecological or nature conservation interest relating to locations on the Phase 1 Habitat Survey map.

Basic Phase 1 Habitat Survey methods are described in detail in Joint Nature Conservation Committee (JNCC, 2003). Limits to the method are discussed in Cherrill & McClean (1999).

Plant species lists were compiled for the various habitat types on the site. Subjective estimates of the relative abundance of species were added to the plant species list using a DAFOR scale. The DAFOR scale ranks species according to their relative abundance in a given parcel of land as follows: d – dominant, a – abundant, f – frequent, o – occasional, r – rare. The terms ‘abundant’ and ‘rare’ are used by convention and apply only to relative-abundance within the recorded area. It does not mean that species are ‘rare’ in the general sense.

Plant nomenclature in this report follows Poland & Clement (2009) for native, naturalised and garden species of vascular plant. Plant names in the text are given with scientific names first, followed by the English name in brackets.

3.2.5 *Animal surveys*

General

The habitat was assessed to determine whether or not it is suitable for those protected vertebrates that occur in the region. Initial surveys do not usually confirm species presence or absence, but obvious signs and incidental sightings of protected species would have been noted had they been encountered.

An assessment was made of the likelihood of protected vertebrates using the site. Taking into consideration the geographical region and habitat type, species and groups that might be encountered are:

- bats;
- dormice;
- great crested newts;
- badger;
- otter;
- water vole;
- nesting birds; and
- reptiles.

Details of initial survey methods for each of the relevant species that might have been encountered are given below and an overview of the legal protection of the species and groups is provided in *Appendix A*.

Bats

General

The survey for bats concentrated on identifying foraging opportunities and potential roost locations or hibernation sites.

Building assessment

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, around window frames and behind barge boards. 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 buildings were assessed for their **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 voids, barge boards, 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).
- Modern construction with few gaps or crevices that bats can fly or crawl through (although pipistrelles may still be present).
- Prefabricated of 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.

Tree assessment

Detailed surveys of individual trees were not carried out. However, features such as holes and crevices that could be used by roosting bats were noted and their overall bat roost suitability was assessed. If any mature trees are subsequently to be removed or if tree surgery (*e.g.* crown-lifting) is required, then a bat survey at an appropriate time of year may be required.

Following the visual inspections, the buildings and trees are assigned a level of suitability for being used by roosting bats. This is based on the criteria in *Table 3.2.5.1* (Collins, 2016).

Table 3.2.5.1. 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.

Assessment of commuting and foraging habitat

Bats use a variety of habitats for foraging, in particular hedgerows, woods and water bodies, and roost in a range of structures including buildings, trees, bridges and caves. Areas that could be used for foraging were noted.

Dusk emergence surveys

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

The dusk emergence surveys commenced fifteen minutes before sunset and continued for an hour and a half after sunset.

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.

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 BatBox Duet™ detectors connected to solid-state recorders (Edirol Roland-05) were employed 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.

Dormice

The site was assessed for habitat with the potential to support dormice. Habitats typically suitable for dormice include:

- deciduous woodland, with a dense understory, species-rich shrub-layer and thick ground cover;
- continuous, thick, wide hedgerows over 4m high with connections to nearby suitable woodland;
- hazel or sweet chestnut coppice; or

- thick continuous areas of scrub, particularly bramble, close to hedgerows or woodlands.

Great crested newt

All water bodies on the site or within 500m that could be used as breeding locations for this species were identified, and the suitability of terrestrial habitat for this species was considered. Great crested newts can travel up to 500m from pond to pond, and between ponds and terrestrial habitat. The suitability of terrestrial habitat was assessed with this in mind.

Otter and water vole

Initial surveys centre on identifying suitable habitat. Most watercourses and standing water could support either otter or water vole. Other areas where there is surface water for the majority of the year (including wet heath, marshland, rush-pasture, wetland, bogs, mires, ponds and other water bodies) have some potential to support water vole.

Badger

An initial assessment was carried out to identify areas that might be used by badger for commuting, foraging and sett-building within at least 30m of all areas potentially affected by the works (where access was possible). Evidence of badgers including setts, latrines, feeding signs and paths were searched for.

Birds

Habitat that might be used by nesting birds was identified. Different bird species use buildings, trees and shrubs, undergrowth or even open fields to nest. The suitability of the site for use by a range of bird species was assessed, giving consideration to factors such as cover, food, disturbance and other habitat requirements.

Widespread species of reptile

The site was assessed for widespread species of reptile, with particular attention paid to those features that could be used as basking areas (*e.g.* south-facing slopes), hibernation sites (*e.g.* banks, walls, piles of hardcore) and opportunities for foraging (rough grassland and scrub). The site was assessed for its suitability for each of the four widespread reptile species which have broadly similar habitat requirements. However, more specific requirements include the following (Beebee & Griffiths 2000):

- common lizards (*Zootoca vivipara*) use a variety of habitats from woodland glades to walls and pastures, although one of their favoured habitats is rough grassland;
- slow-worms (*Anguis fragilis*) use similar habitats to common lizards, and are often found in rank grassland, gardens and derelict land;
- grass snakes (*Natrix natrix*) have broadly similar requirements to common lizards with a greater reliance on ponds and wetlands, where they prey on common frogs; and
- adders (*Vipera berus*) use a range of fairly open habitats with some cover, but are most often found in dry heath.

Reptile activity is highly seasonal; they hibernate over the winter (October to March) and are active over the summer months. They become increasingly active as temperatures increase in spring, and in most years they are fully active by mid-April. Reproduction varies between species, but generally peaks in mid-summer when reptiles are at their most active. In late September/ October, activity begins to decrease as reptiles seek frost-free refuges for hibernation.

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, but there are designated site nearby, including adjacent to the site. 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	Chichester and Langstone Harbours	Adjacent to the north
	Ramsar	Chichester and Langstone Harbours	Adjacent to the north
	SAC	Solent Maritime	Adjacent to the north
National	SSSI	Chichester Harbour	Adjacent to the north
	NNR	-	-
County	LNR	Nutborne Marshes	c. 1,615m north-west
Local	LWS	East Itchenor Coastal Marsh	Adjacent to the east
	Ancient woodland	-	-

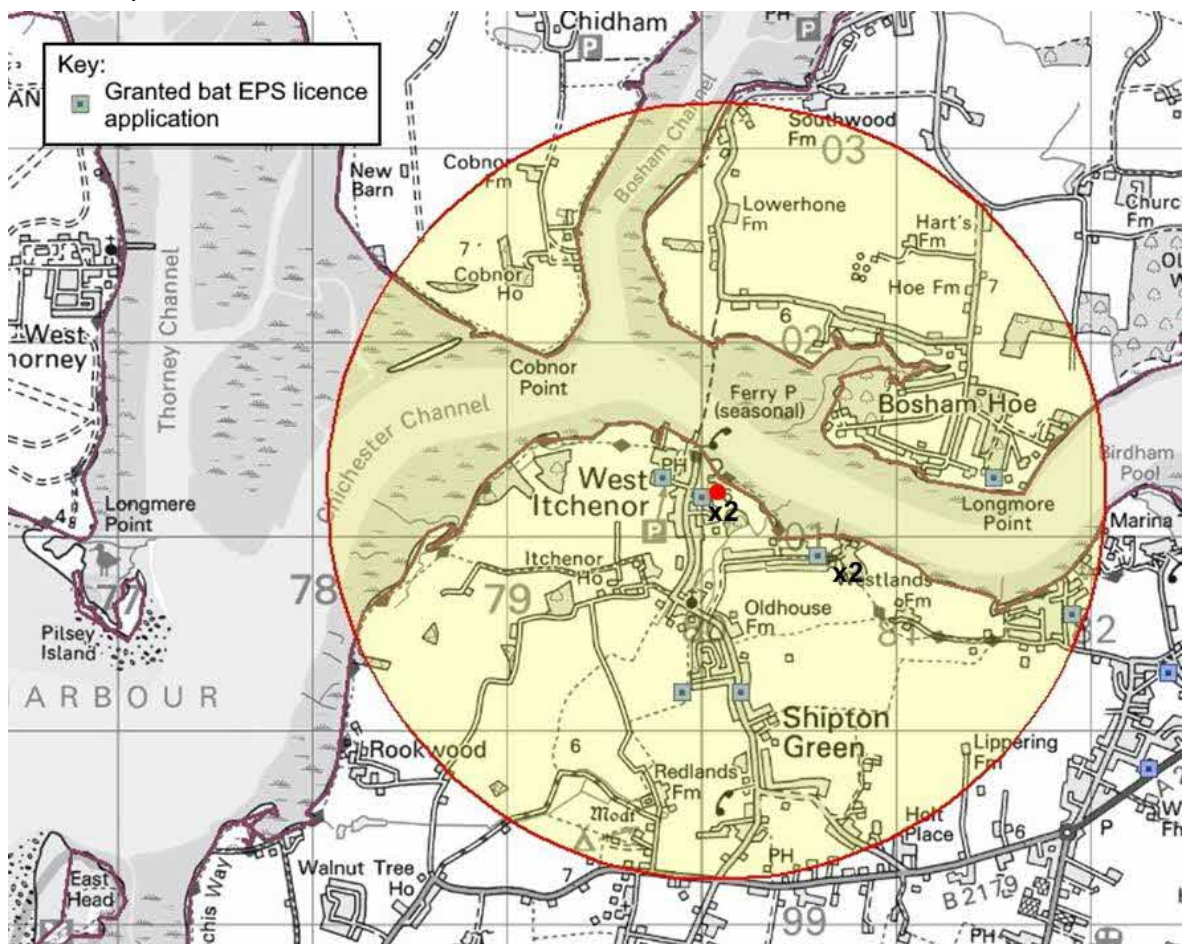
4.1.2 European Protected Species

According to the *Multi-Agency Geographic Information for the Countryside* website (www.magic.gov.uk), there have been nine granted European Protected Species (EPS) licences 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
Common pipistrelle, Brown long-eared	Resting place	06/10/2014	c. 62m south-west
Common pipistrelle, Brown long-eared	Resting place	01/03/2015	
Common pipistrelle, Serotine	Resting place	19/07/2016	c. 247m west
Common pipistrelle, Brown long-eared	Resting place	08/03/2010	c. 618m south-east
Common pipistrelle	Resting place	11/03/2011	
Brown long-eared	Resting place	13/10/2011	c. 1,034m south
Common pipistrelle, Soprano pipistrelle	Resting place	16/09/2013	c. 1,041m south
Common pipistrelle, Soprano pipistrelle, Brown long-eared	Resting place	19/09/2014	c. 1,440m east
Soprano pipistrelle	Resting place	01/11/2017	c. 1,932m south-east

Figure 4.1.2.1. Location of sites with granted EPS licences within 2km of the site. The site location is shown by a red dot.



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WEST SUSSEX

4.2 *Habitats and plant species*

4.2.1 *Habitats*

Most of the site, excluding the buildings and driveway, is short amenity grassland. Other habitats include some scrub, ornamental planting, and woodland along the north and east boundaries. There is also a line of *Tilia × europaea* (Common Lime) trees (*Target Note 8*) along the driveway.

The amenity grassland (*Target Note 6*) has a sward dominated by the grass *Lolium perenne* (Perennial Rye-grass) with smaller amounts of *Holcus lanatus* (Yorkshire-fog). Present throughout are the forbs *Achillea millefolium* (Yarrow), *Bellis perennis* (Daisy), *Ranunculus repens* (Creeping Buttercup) and *Trifolium repens* (White Clover), the shade-tolerant herb *Glechoma hederacea* (Ground-ivy), and the tall semi-ruderals *Senecio jacobaea* (Common Ragwort). There are also small, isolated patches of *Galanthus nivalis* (Snowdrop). At the centre of the lawn, towards the north-east corner of the site, there is also a mature *Quercus robur* (Pedunculate Oak) tree.

The ornamental planting (*Target Note 7*) is mainly adjacent to the west boundary. feature an abundance of *Iris foetidissima* (Stinking Iris) with slightly smaller amounts of the tree *Fraxinus excelsior* (Ash), the bushes *Ilex aquifolium* (Holly) and *Rosa canina* (Dog-rose) and the herb *Fragaria vesca* (Wild strawberry). Also present in small patches are *Berberis vulgaris* (Common Barberry), *Cortaderia selloana* (Pampas Grass), *Cotoneaster horizontalis* (Wall Cotoneaster), *Ficus carica* (Fig) and *Prunus laurocerasus* (Cherry Laurel).

The woodland (*Target Note 13*) on the north and east boundaries has a canopy dominated by *Tilia × europaea* (Common Lime). Other woody species present throughout the canopy and shrub-layer include *Crataegus monogyna* (Hawthorn), *×Cupressus leylandii* (Leyland Cypress), *Eucalyptus* species (a Eucalyptus), *Fraxinus excelsior* (Ash), *Ligustrum ovalifolium* (Garden Privet), *Lonicera nitida* (Wilson's Honeysuckle), *Picea abies* (Norway Spruce), *Quercus robur* (Pedunculate Oak), *Rubus fruticosus* agg. (Bramble) and *Sambucus nigra* (Elder). The field-layer includes the shade-tolerant herbs *Arum maculatum* (Lords and Ladies), *Carex pendula* (Pendulous Sedge), *Galium aparine* (Cleavers), *Iris foetidissima* (Stinking Iris), *Primula veris* (Cowslip), *Vinca major* (Greater Periwinkle) and *Urtica dioica* (Common Nettle). Also present growing across the field-layer and up the trees and bushes is the ever-green creeper *Hedera helix* (Ivy).

There are patches of dense scrub around the site boundaries and around the outbuildings (*Target Notes 3 & 5*), which is in the north-west corner of the site. The scrub is dominated by *Rubus fruticosus* agg. (Bramble) with smaller amounts of young *Fraxinus excelsior* (Ash) and *×Cupressus leylandii* (Leyland Cypress), as well as small amounts of *Crataegus monogyna* (Hawthorn), *Rosa canina* (Dog-rose) and *Ulex europaeus* (Gorse). Also present growing across the field-layer and up the trees and bushes is the ever-green creeper *Hedera helix* (Ivy).

A Phase 1 Habitat Survey map showing the location of the various habitats is given in *Figure 3* (see *Section 6*).

4.2.2 *Plant species*

One non-native, invasive plant species listed on *Schedule 9* of the *Wildlife and Countryside Act 1981* (as amended) was recorded in two locations on the site: by the wall to the south of the site; and adjacent to the west of the driveway. This is *Cotoneaster horizontalis* (Wall Cotoneaster). Its indicative locations are shown as *Target Note 10* on the Phase 1 Habitat Survey map (see *Figure 3* in *Section 6*).

Vascular plant species recorded from each habitat type (along with relative abundance) are given in *Appendix C*.


4.3 *Protected vertebrates*

4.3.1 *Bats*



Bat roost suitability of buildings



Five buildings on the site were assessed for their bat roost suitability. The greenhouse and small shed were assessed as having no bat roost suitability. The construction details and photographs of the house, garage and shed are summarised in *Table 4.3.1.1*.

Table 4.3.1.1. Summary of the buildings' construction details.

Type/Name	Orchard House	Garage	Shed
Description	A two-storey brick building with a loft conversion and a hipped roof. There are single-storey, flat-roof extensions on the north and south elevations.	A two-storey brick and wooden garage with a pitched roof. There is a carport with a sloped roof on the north elevation.	A semi-detached shed attached to the greenhouse, with a pitched tile roof.
No. of storeys	2 (with a loft conversion)	2	1
Roof type	Hipped	Pitched and sloped	Pitched
Roof cladding	Tile	Tile and corrugated metal	Tile
Ridge	Tile	Tile	Tile
Wall type	Brick	Brick with wooden cladding gable ends	Obscured by vegetation
Exterior	Wooden cladding (north, south and west elevations), porch (south and east elevations), hanging tiles (east elevation), dormers (east and west elevations), chimneys, lead-flashing	Wooden cladding (east and west elevations), climbing plants (north elevation)	Obscured by vegetation
Photos	North elevation 	North elevation Obscured by vegetation	North elevation Obscured by vegetation

<p>Photos</p>	<p>East elevation</p> 	<p>East elevation</p> 	<p>East elevation Obscured by vegetation</p>
	<p>South elevation</p> 	<p>South elevation</p> 	<p>South elevation</p> 

<p>Photos</p>	<p>West elevation</p> 	<p>West elevation</p> 	<p>West elevation Obscured by vegetation</p>
<p>Building dimensions</p>	<p>c. 14m wide x c. 26m long</p>	<p>c. 7m wide x c. 12m long</p>	<p>c. 3m wide x c. 3m long</p>
<p>Roof void description</p>	<p>Small loft above and level with the converted loft room and side voids</p>	<p>Uncluttered and open to first-floor</p>	<p>Unknown – No access</p>
<p>Frame</p>	<p>Wooden beams with ridge beam</p>	<p>Wooden rafters</p>	<p>Unknown – No access</p>
<p>Roof lining</p>	<p>Bitumen roofing felt</p>	<p>Wooden sarking boards</p>	<p>Unknown – No access</p>

<p>Roof void dimensions</p>	<p>c.3-4m wide x c.20m long</p> 	<p>Open to rafters</p> 	<p>Unknown – No access</p>
<p>Roof void height</p>	<p>c. 1.5m above the loft room c.4m at side void (south elevation)</p>	<p>Open to rafters</p>	<p>Unknown – No access</p>

Potential roosting locations

Against the ridge beam



Under roof tiles



Under roof tiles





Under hanging tiles



Under wooden cladding and sarking boards



<p>Potential roosting locations</p>	<p>Under wooden cladding</p>  <p>Between roof tiles and roof lining</p> 		
<p>Bat evidence</p>	<p>Yes, c.775 long-eared droppings</p>	<p>None</p>	<p>Unknown – no access</p>
<p>Bat suitability</p>	<p>High (confirmed bat roost)</p>	<p>High</p>	<p>Low</p>

House

Most of the roof of the house appears well-sealed and in good condition. However, there are potential bat access points into the roof void as well as exterior features that also provide potential roosting locations for bats. The locations and details of potential bat access points on the house are illustrated in *Images 4.3.1.1 – 4.3.1.4*.

Image 4.3.1.1. Location of potential bat access points and potential exterior roof features on the north elevation of the house.



Image 4.3.1.2. Location of potential bat access points and potential exterior roof features on the east elevation of the house.



Image 4.3.1.3. Location of potential bat access points and potential exterior roof features on the south elevation of the house.

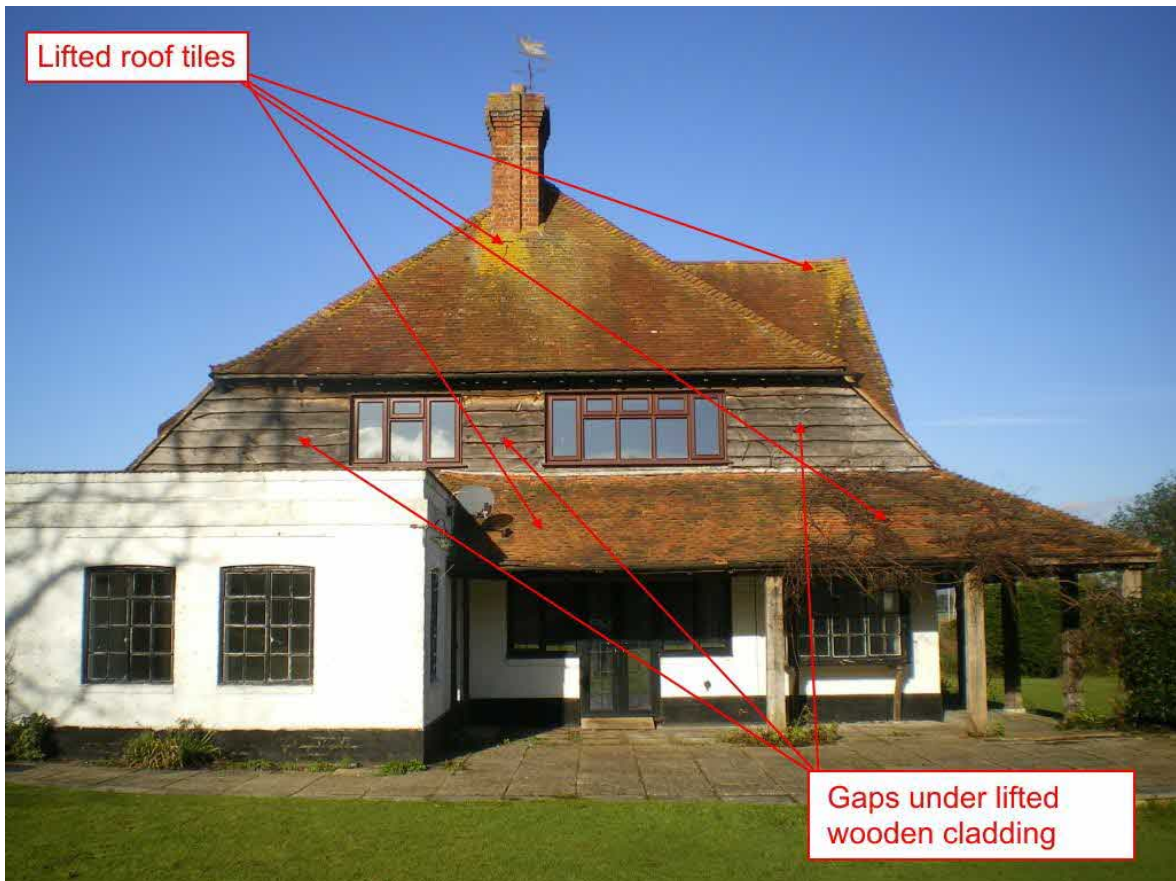
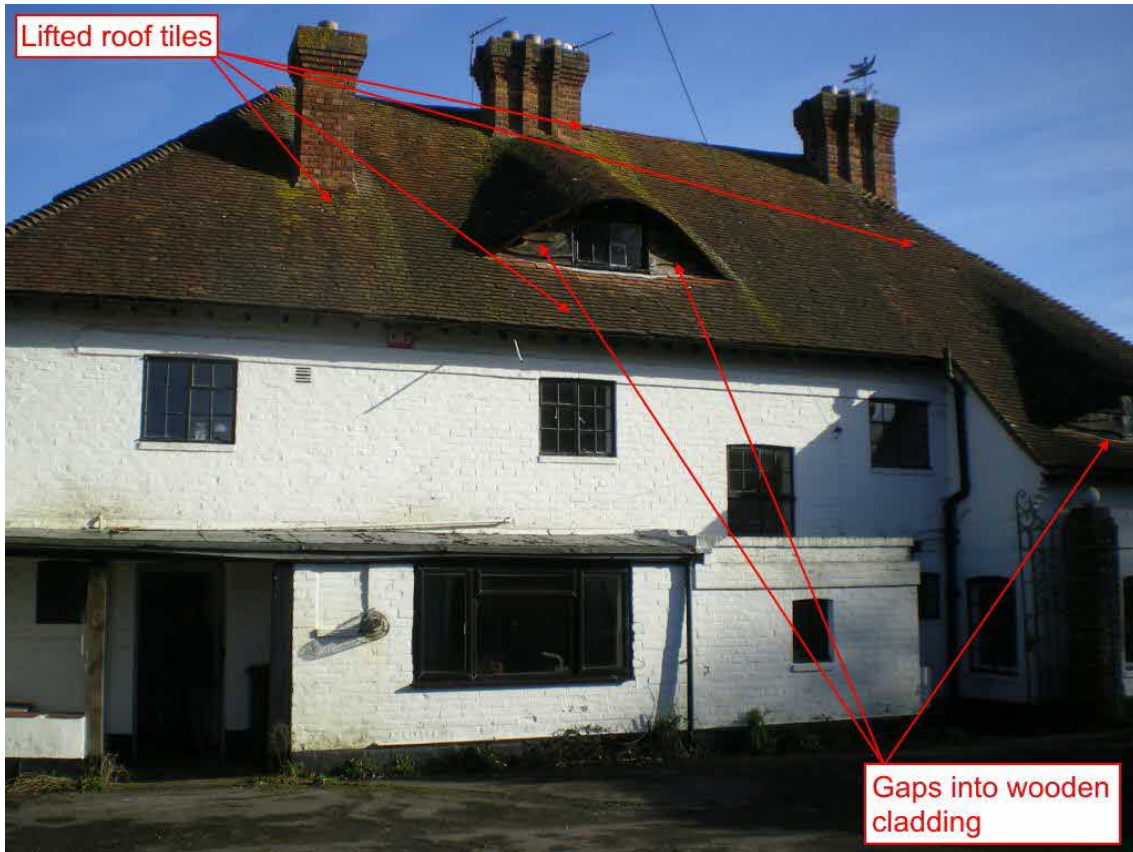


Image 4.3.1.4. Location of potential bat access points and potential exterior roof features on the west elevation of the house.



Due to the presence of these potential access points, and suitable roosting locations, the house is classed as having high suitability to be used by roosting bats, following the criteria in *Table 3.2.4.1*.

Garage

Most of the roof of the garage appears well-sealed and in good condition. However, there are potential bat access points into the first-floor space as well as exterior features that also provide potential roosting locations for bats. The locations and details of potential bat access points are illustrated in *Images 4.3.1.5 – 4.3.1.6*

Image 4.3.1.5. Location of potential bat access points and potential exterior roof features on the east elevation of the garage.



Image 4.3.1.6. Location of potential bat access points and potential exterior roof features on the south and west elevations of the garage.



Due to the presence of these potential access points, and suitable roosting locations, the garage is classed as having high suitability to be used by roosting bats, following the criteria in *Table 3.2.4.1*.

Evidence of bats

There are approximately 775 bat droppings (see *Table 4.3.1.1* in *Section 4.3*) in the main roof void of the house. They are consistent in size, shape and texture with those of long-eared bats.

As there are two species of long-eared bat; one widespread (brown long-eared bat) and one very rare (grey long-eared bat), DNA analysis of the bat droppings was required to confirm identification. The analysis confirmed the droppings to be from brown long-eared bats. The full results are given in *Appendix E*.







The locations of the bat droppings are illustrated in *Figure 4* in *Section 6*.

In addition, there are three woodcrete bat boxes mounted on a mature tree overhanging the west boundary (mitigation or enhancements from a neighbouring property).

Bat roost suitability of trees

Most trees on site were identified as having negligible bat roost suitability. However, three mature trees have features that could be used by roosting bats such as broken limbs and crevices. These trees are detailed in *Table 4.3.1.2*. The locations of the trees are shown on the Phase 1 Habitat Survey map (see *Figure 3* in *Section 6*).

Table 4.3.1.2. Summary of tree features and bat roost suitability.

Target Note	Species	Photograph	Bat Roost Suitability
9	<i>Quercus robur</i> (Pedunculate oak)		At least three rot holes.  It has high bat roost suitability .
11	<i>Tilia × europaea</i> (Common Lime)		At least one rot hole  It has moderate bat roost suitability .
12	<i>Tilia × europaea</i> (Common Lime)		At least two rot holes and two woodpecker holes.  It has moderate bat roost suitability .

Commuting and foraging habitat

The mature trees, woodland on the boundaries and the ornamental planting provide good foraging habitat for bats. They also link to a network of gardens, tree-lines and waterbodies in the wider landscape in all directions. In addition, Chichester Harbour is on the north-east boundary and also provides high quality foraging habitat for a number of different species of bat.

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.

Dusk emergence surveys

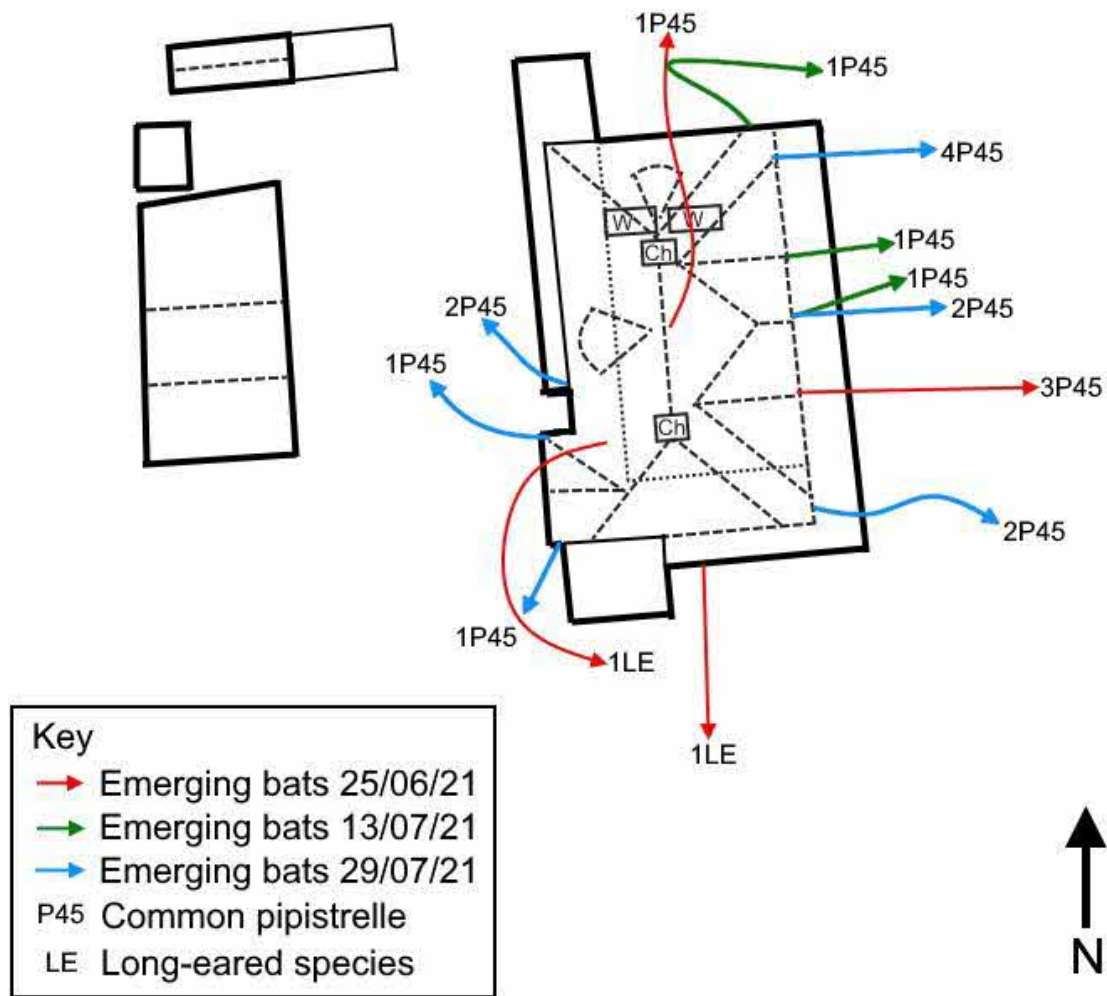
Bats were observed emerging from the house during the dusk emergence surveys. The results are summarised in *Table 4.3.1.3* and *Figure 4.3.1.3*.

No bats were observed emerging from or re-entering the garage or shed.

Table 4.3.1.3. Summary of bats emerging during the surveys.

Date	Species (& number)	Emergence/ re-entry	Emergence location(s)
25/06/21	Common pipistrelle (3)	Emergence	From the top of the southernmost dormer on the east elevation of the house
	Common pipistrelle (1)	Emergence	From the valley between the two dormers on the east elevation of the house
	Long-eared species (1)	Emergence	From the southern gable end of the house
	Long-eared species (1)	Emergence	From under the roof tiles on the western elevation of the house
13/07/21	Common pipistrelle (1)	Emergence	From under the roof tiles on the east side of the house
	Common pipistrelle (1)	Emergence	From under dormer tiles on the east side of the house
	Common pipistrelle (1)	Emergence	From under the roof tiles on the north side of the house
29/07/21	Common pipistrelle (4)	Emergence	From under the hanging tiles on the northern gable end on the east side of the house
	Common pipistrelle (2)	Emergence	From under the hanging tiles/ valley on the south-east corner of the house
	Common pipistrelle (2)	Emergence	From under the hanging tiles on the east elevation of the house
	Common pipistrelle (3)	Emergence	From under the roof tiles on the west side of the house
	Common pipistrelle (1)	Emergence	From a corner eave on the west side of the house

Figure 4.3.1.7. Summary plan of bats emerging during the surveys.



Common pipistrelles, soprano pipistrelles, long-eared bats and serotine bats were observed 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 dusk emergence surveys is given in *Appendix D* and plans illustrating the bat activity (observations only) during the surveys are given in *Figures 6- 9* in *Section 6*.

4.3.2 Dormice

There is suitable habitat for dormice on the boundaries of the site and on neighbouring land. The woodland (*Target Note 13*) on the east boundary provides suitable habitat for nesting, foraging and hibernating dormice. It contains a mixture of plants producing flowers and berries such as *Crataegus monogyna* (Hawthorn) and *Rubus fruticosus* agg. (Bramble). This mixture of different species provides food sources throughout the year and as such provide good foraging habitat.

4.3.3 *Great crested newt*

Ponds

According to aerial photographs (GoogleEarth™) and online Ordnance Survey 1:25,000 maps there are five ponds within 500m of the site. These are as follows:

- Pond 1, immediately adjacent to the site to the east;
- Pond 2, c.30m south-east of the site;
- Pond 3, c.80m west of the site;
- Pond 4, c.370m south of the site; and
- Pond 5, c.420m west of the site.

The locations of these ponds are shown in *Figure 5* in *Section 6*.

Terrestrial habitat

Most of the site is short, mown grassland (amenity grassland), with no cover. This is unsuitable terrestrial habitat for great crested newt. However, the bases of woodland, scrub, trees and ornamental planting, particularly on the boundaries provides some suitable terrestrial habitat for amphibians, including great crested newt.

4.3.4 *Otter and water vole*

According to aerial photographs (GoogleEarth™) and online Ordnance Survey 1:25,000 maps, the Chichester harbour SAC SSSI Ramsar is adjacent to the site.

Ponds and wetland on neighbouring land may be suitable for otter and water vole, however there is no suitable habitat for either species on the site.

No evidence of otter or water voles were found anywhere on the site.

4.3.5 *Badger*

No evidence of badger setts was found during the survey. A small number of scrapes and mammal paths were observed on the lawns and on the boundaries of the site. However, they had scattered rabbit droppings associated with them.

4.3.6 *Birds*

All the trees and bushes on the site have the potential to support nesting birds during the breeding season. A disused bird nest was observed within the carport section of the garage.

There are many bird species on the UK and Local BAP (or in the RSPB *Birds of Conservation Concern*) that could be using this site for nesting and foraging.

4.3.7 *Widespread species of reptile*

Most of the grassland on site is short due to mowing and as such is unsuitable for reptiles due to the lack of cover and risk of predation.

There are some patches of low-growing bramble scrub around the site that is suitable foraging and hibernation habitat for reptiles. In addition, the ornamental planting and woodland at the edges of the site provide some hibernation habitat.

5 *INTERPRETATION AND EVALUATION*

5.1 *Constraints on the survey*

5.1.1 *Constraints on survey data*

The initial site visit was undertaken in January, outside the optimum survey season for protected species and plants. However, it is possible to assess the habitats present and their suitability for protected species. It should also be noted that, January is not an appropriate time of year to detect some non-native invasive species.

Sufficient survey effort has been gathered through emergence 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 social and ecological justifications:

1. The surveys were undertaken during a time when concerns over work/travel and social distancing were still high (it is easier to set-up surveyors with minimum interaction in daylight than total darkness).
2. 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.
3. 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.
4. Having spoken with Natural England about EPSL applications using dusk emergences, as the guidelines are only advisory we were referred back to C5a of the method statement "*confirming how you have obtained 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*". Our conclusions have not been diluted by emergence surveys and have tailored the mitigation/compensation accurately. We have successfully obtained EPS licences/BMCL site registrations using similar emergence data.

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

The new house will have vaulted ceilings for most of the rooms. For those that do not it is not viable to create a suitably high roof void as a replacement roost for brown long-eared bats without raising the ridge. It is not possible to raise the ridge as there are constraints on how high the new house will be to avoid it being too visually prominent. In addition, the new house will be of a timber frame construction and as such it was not possible to provide replacement roosts behind the new timber cladding. Therefore, integrated bat bricks/ boxes will be used to provide replacement roosts for those lost under the wooden cladding and hanging tiles.

Both the carport and new garage will have flat green roofs. Therefore, these buildings cannot be used to provide replacement bat roosts.

The enhancement measures are only limited in terms of the roofs, as described above. However, there is a lot of scope within the wider site to enhance it for biodiversity.

5.2 *Survey report expiry*

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

Given the mobility of bats (and the presence of bats in the main roof void), it is recommended that a walkover of the site to update the survey information is undertaken prior to the development commencing, if this does not occur before the end of February 2023.

5.3 *Legal context*

Habitat has been identified on site that is suitable for protected species. Different species are afforded different levels of protection as detailed in *Appendix A*.

The site is not designated for its wildlife interest at an international, national or local scale.

5.4 *Potential impacts of the proposed development*

5.4.1 *Desk study*

According to the *Multi-Agency Geographic Information for the Countryside* website (www.magic.gov.uk), the site is immediately adjacent to designated areas of nature conservation. There are three internationally statutory designated sites within 5km of the site, and one nationally designated site within 2km of the site. None of these will be directly affected by works to the house at this site and all links will be maintained.

The site is immediately adjacent to the Chichester and Langstone Harbour SPA and the Solent maritime SAC. These sites are designated due to the types of wetland habitats present and the internationally important populations of birds they support. As a result of its proximity, the impacts of the proposed work on the SAC and SPA must be considered. Should the replacement house be significantly increased in size, for example to provide additional bedrooms to accommodate an increase in the number of people living on site, this may cause increased recreational pressure on the SPA and SAC. As such, the local planning authority may require a financial contribution towards the creation and maintenance of Suitable Alternative Natural Greenspaces (SANGs) in the local area to mitigate for any increase in recreational pressure. If required, this would be agreed by condition of any planning application for the site. However, if the works increase the building size but not the number of people occupying the building (and remains as a residential property under the same

ownership) there should be no increase in the recreational pressure, or pollution, on the internationally designated sites.

There have been nine bat European Protected Species (EPS) licences granted within 2km of the site, including two adjacent to the site (to the south-west). Due to their close proximity, it is likely that any bats using the site are part of the same meta-population. Therefore, without mitigation the proposed work may impact these nearby bat populations.

5.4.2 Habitats and plants

The habitats and plant species observed on site are widespread and common and as such have no conservation importance from a botanical point of view. The exceptions are the mature and semi-mature trees and the woodland. Both would take many decades to replace. These are of high ecological value and should be retained and protected (see *Section 5.6*).

One non-native, invasive plant species that is listed on *Schedule 9* of the *Wildlife and Countryside Act 1981* (as amended) was recorded in two locations on the site. This is *Cotoneaster horizontalis* (Wall Cotoneaster). Its indicative locations are shown as *Target Note 10* on the Phase 1 Habitat map (see *Figure 3* in *Section 6*).

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. However, it is also a common ornamental plant and as such if the areas are unaffected by the works, (by the driveway and by the southern wall), they could remain *in situ* with the areas fenced off for the duration of the works. This will prevent machinery, or tools or boots accidentally spreading it on site or carrying it off site.

5.4.3 Bats

Bat roost suitability of buildings

The house (*Target Note 1*) has high bat roost suitability. This was confirmed by the presence of *c.775* long-eared bat droppings within the roof void. DNA analysis confirmed these to be from brown long-eared bats. The results of the DNA analysis are given in *Appendix E*.

There was a peak count of twelve common pipistrelles and two brown long-eared bats emerging from the house on any one survey. The level of usage, combined with the number of bat droppings, suggests that the house has been s a maternity roost for brown long-eared bats in recent years (or a satellite roost during the year of survey) and a non-breeding day roost for low numbers of common pipistrelles.

As a confirmed bat roost, the house will require a bat licence from Natural England before any works can take place on the roof, roof void or hanging tiles.

As part of a licence, works need to be carried out in line with a method statement detailed in the Natural England bat licence. Mitigation and compensation measures will be required to be

incorporated into the building. The proposed mitigation and compensation measures are given in *Section 5.6*.

The garage (*Target Note 2*) has high bat roost suitability due to the number of potential bat access points and external roosting features. However, no bats were recorded emerging and no bats or evidence of bats was found during the initial survey. Therefore, a bat EPS licence from Natural England is not required and this building can be demolished without further survey or constraints regarding bats (subject to any planning constraints).

The shed (*Target Note 3*) has low bat roost suitability due to the small number of potential bat access points. No bats were recorded emerging from the building and no bats or evidence of bats was found during the initial survey. Therefore, a bat EPS licence from Natural England is not required and this building can be demolished without further survey or constraints regarding bats (subject to any planning constraints).

The greenhouse and small shed were assessed as having no bat roost suitability. Both have no bat roost suitability and therefore can be demolished without further survey or constraints regarding bats (subject to any planning constraints), if required.

Enhancement measures will be incorporated into the new buildings and on the wider site in order 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*.

The impacts (where present) to the surveyed buildings are summarised in *Table 5.4.3*.

Table 5.4.3. Impacts (where present) to the buildings with bat roost potential.

Building	Species	Peak count	Roost type	Location	Impact	
House	Common pipistrelle	12	Non-breeding day roost	From the top of the southernmost dormer on the east elevation of the house	Demolition & rebuild resulting in loss of the roosts without mitigation and compensation.	
				From the valley between the two dormers on the east elevation of the house		
				From a corner eave on the west side of the house		
				Under the roof tiles		North elevation
						East elevation
						West elevation
				From under dormer tiles on the east side of the house		
	Hanging tiles	North gable end				
East elevation						
South-east corner						
Brown long-eared bat	2 bats (& c.775 droppings)	Maternity or satellite roost	From the southern gable end of the house	Demolition & rebuild resulting in loss of the roost without mitigation and compensation.		
			From under the roof tiles on the western elevation of the house			
Garage	N/A	N/A	N/A	N/A	N/A	
Shed	N/A	N/A	N/A	N/A	N/A	

Bat roost suitability of trees

Most of the trees on site have negligible bat roost suitability. However, three mature trees have features with bat roost suitability. Of these, one has high bat roost suitability, and two have moderate bat roost suitability. These are detailed in *Table 4.3.1.2* and are labelled on *Figure 3* in *Section 6*.

It is understood that the *Quercus robur* (Pedunculate Oak) tree with high bat roost suitability will be retained. However, it is not yet known whether the two *Tilia × europaea* (Common Lime) trees will be affected. If any of the trees are subsequently to be removed or be subject to tree surgery *e.g.* crown-lifting, they will need detailed surveys to establish if bats are using them (see *Section 5.5*).

All retained trees should be protected (where appropriate) during construction (see *Section 5.6*).

Foraging and commuting habitat

There is good quality foraging habitat for bats on and adjacent to the site. Bats are using the site for foraging and/ or commuting. This includes over the house, garage and shed, as well as the lawn to the east of the house and the tree-lines along the boundaries. Retaining and enhancing connectivity (the woodland and tree-lines) around the site will help minimise any potential impact to bat populations in the local area.

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 trees and wooded edges), 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 trees. 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.

5.4.4 Dormice

There is suitable habitat for dormice around the edges of the site.

It is not considered likely that the proposals will directly impact on the suitable habitat and all suitable dormouse habitat is due to be retained. Therefore, no impacts are anticipated on dormice in the area and no further surveys are currently proposed.

5.4.5 Great crested newt

The grassland is mown and therefore has a very short sward with no cover. This is generally unsuitable terrestrial habitat for great crested newt. There are ponds and suitable terrestrial habitat for great crested newt immediately adjacent to the site.

The proposals involve demolishing the house and replacing it with a more modern one in the broad footprint of the existing house, this is unlikely to impact any of the areas that are suitable for great crested newt as they are at the edges of the site. Given the low impact of the scheme and lack of suitability, great crested newt surveys are not considered necessary. However, as a precaution any effected vegetation to be removed will be done so using the method in the following paragraphs.

Initial ground clearance will be carried out at a time of year when great crested newts are active (March-October), ideally prior to them potentially leaving the nearby ponds to disperse into the surrounding vegetation.

The upper layer (c.15cm) of topsoil will be stripped by a machine using a wide, toothed bucket (to minimise injury to animals). If any great crested newts are uncovered, an ecologist will be contained and a licence will be applied for.

5.4.6 *Otter and water vole*

Although the Chichester Harbour is adjacent to the site to the north-east, there is no suitable habitat for otter or water vole on the site.

No evidence of otter or water vole was found on site.

It is considered unlikely that otters would traverse the site to reach ponds further inland. Therefore, this proposed development should have no direct impacts on otter or water vole and no further surveys are proposed.

5.4.7 *Badger*

Areas within 30m of development activities are usually searched for setts (where access is possible) as former guidelines suggest badgers and their setts could be disturbed by work using heavy machinery within 30m of a badger sett, light machinery within 20m, and light work (such as digging) within 10m.

As no badger setts were found on site, development works are free to proceed without further regard to this species, although if a badger sett is subsequently discovered within 30m of the proposed works then it may require a licence from Natural England to proceed. Guidance to what may be classed as disturbance to a badger (when occupying a sett) can be found at:

[https://www.gov.uk/guidance/badgers-protection-surveys-and-licences.](https://www.gov.uk/guidance/badgers-protection-surveys-and-licences)

5.4.8 *Birds*

All trees and bushes, as well as the garage provide suitable habitat for nesting birds. The destruction of active bird nests is prohibited under the *Wildlife and Countryside Act 1981* (as amended). Therefore, all affected vegetation with the potential to support nesting birds should be cut to near ground level (approximately 30cm) outside the bird breeding season (which is late February to August inclusive). If this is not possible, and vegetation has to be removed (or works on the garage)

during the nesting season, then it should be inspected (by an ecologist) for nests immediately prior to removal of the vegetation or the works on the garage start.

As the garage is to be demolished this will need to happen outside of the bird breeding season (which is late February to August inclusive).

If any active nests are found 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).

5.4.9 *Widespread species of reptile*

Most of the grassland on site is short due to mowing and as such is unsuitable for reptiles due to the lack of cover and risk of predation.

There are some patches of low-growing bramble scrub around the site that could be used as foraging habitat for reptiles. In addition, the ornamental planting and woodland on edges of the site provide some hibernation habitat. It is not anticipated that any suitable habitat will be impacted by the proposal, however if small areas are to be affected, vegetation should be cleared using the method in *Section 5.4.5*.

5.5 *Further survey*

5.5.1 *Bats*

If any of the trees with bat roost suitability are to be removed or otherwise affected by the development, they will require dusk emergence and/or pre-dawn re-entry surveys during the bat active season (between May and August) to establish whether bats are using them. The number of surveys depends on the tree.

Presence or likely absence of bats is normally advised by a combination of internal and emergence surveys (*Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd edition* (Collins, 2016)).

5.6 *Outline mitigation & 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 June 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 2021 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 be in the form of the following:

- new bat roost provision;
- lighting restrictions (for both bats and other wildlife); and
- new bird nesting provision.

These enhancements are detailed in the following sections.

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

As the house is a confirmed bat roost, a bat licence from Natural England must be obtained before works commence on this building. A detailed method statement, with a mitigation strategy aimed at maintaining the conservation status of bats, will be prepared as part of the bat licence. The proposed mitigation and compensation measures are described in *Section 5.6.4*.

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

5.6.2 *Habitats*

Heras fencing or similar should be used to protect the roots of the mature trees during construction. The guidance provided in BS 5837 *Trees in relation to Construction* provides further advice on minimising the impact to retained trees on a development site.

Runoff from the building site should also be prevented from entering the harbour. This can lead to pollution, siltation, deoxygenation, high levels of nitrogen and affect the ecology of this designated site. Spill kits must be available on site at all times.

5.6.3 *Schedule 9 species*

To comply with the law, the *Schedule 9* species *Cotoneaster horizontalis* (Wall Cotoneaster) 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. However, if in an area unaffected by the works, the plant can remain in situ with the areas fenced off for the duration of the works. This will prevent machinery, tools or boots accidentally carrying it off site.

The 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.

5.6.4 *Bats*

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.

Two woodstone style bat boxes (Vivara Pro WoodStone Bat Box, Beaumaris Woodstone or similar) will be erected in a large nearby tree 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). These bat boxes will be erected between 2.5m and 5m, facing south or south-east with a clear exit path. They 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, as well as the wooden cladding, will be carried out. Works will ideally commence in either September/ October before bats have begun to hibernate; or in March/ April after bat have come out of hibernation. As a maternity roost works cannot take place between May and the end of August. However, work at other times of year may be acceptable (subject to licensing from Natural England) providing the destructive search is carried out in mild spells (above 5°C) in winter. The tiles, wooden cladding 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 one of the bat boxes erected on a nearby tree. 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 boxes.

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.

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.

Integrated bat box/bat bricks (*e.g.* a Habibat™ Bat Box, an Ibstock Enclosed Bat Box, a Schwegler Bat Tube, or similar) will be incorporated into the new house. These provide cavities that is incorporated into the external build structure to offer roosting space for bats and will provide replacement roosts for those lost from under the roof tiles, hanging tiles and wooden cladding.

The proposed work will involve demolishing and rebuilding the house. As it is not possible to create a replacement long-eared roost in the new house, a dedicated bat house will be built under permitted development with a separate lower space used for storage. It will be located in a corner of the property where there will be minimal light spill from the house and nearby vegetation. It will also be close to a proposed new pond to the east of Orchard House, which will enhance the surrounding commuting and foraging habitat for bats, as well as enhance the number of insects in the site to encourage feeding bats. This will be both compensation and enhancement.

The roof of the bat house will have a roof void with a minimum of 2.8m high and 5m x 5m, as recommended by Natural England's *Bat Mitigation Guidelines* (2004). It will be uncluttered by beams *etc.* and as such as trussed construction is unlikely to be suitable.

The roof will be clad with timber shingles to match the main house and will have a roof lining of bituminous roofing felt type 1F, which is hessian reinforced. A lining containing polypropylene/polyethylene filaments (breathable membrane such as Tyvek) **will not be used**. All sections of roofing felt will be overlapped to create gaps which bats can crawl through.

Access to the interior of the bat house will be provided via gaps under the eaves. There will also be a gap above the door to the building to allow bats to fly straight into the building (and then up into the roof void). The door will be kept locked and only used for monitoring and maintenance purposes.

A heated maternity bat box will be installed within the new bat house to provide the warm stable temperature that is necessary for breeding bats. The heated maternity box will be set on a timer so that it is only on during the summer when maternity bat roosts are forming and present to prevent it from interfering with any bats using the new bat house to hibernate. The heated maternity box will be repaired and maintained as necessary.

To enhance the roost space in the new bat house, two squeeze boxes will be integrated internally into the roof near the ridge. These will create small spaces for bats to roost in.

The walls will be blockwork with wooden cladding over the top (ideally featherboarding to provide natural gaps as it warps over time). Access will be provided behind the top edge of the wooden cladding on all elevations. The wooden cladding will be mounted on offset battens to allow bats to access the entirety of the area behind the cladding. An example of the offset of battens behind the cladding and access points into the cladding and are given in *Images 5.6.4.1 & 5.6.4.2* below.

Image 5.6.4.1. Examples of the battens behind the cladding.

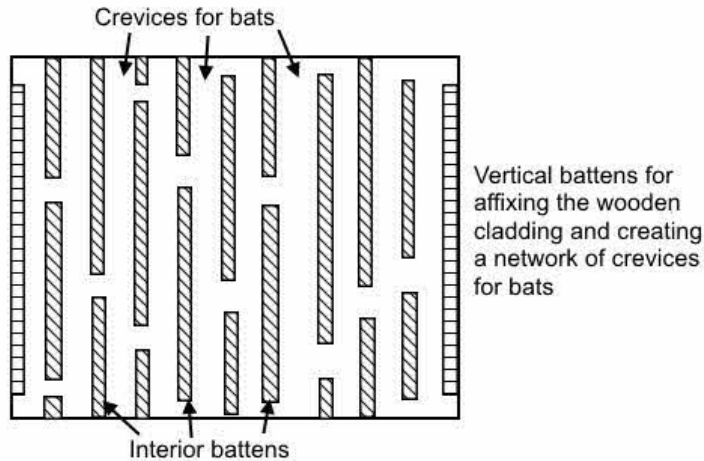
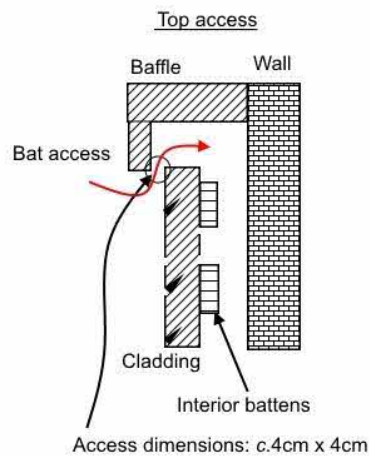


Image 5.6.4.2. Example of access at the top of the wooden cladding.



The roof lining and any used behind the timber cladding **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 will 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>.

New bat roost locations

Due to the rural location of the site and good connecting foraging and commuting habitat, it is recommended that the site be enhanced for bats. Therefore, additional woodstone-style bat boxes (e.g. Vivara Pro WoodStone Bat Box, Beaumaris Woodstone or similar) will be erected on trees throughout the site. These bat boxes will be erected as high as possible (ideally between 2.5m and 5m) with a clear exit path. They will remain on site permanently (and shall be repaired or replaced as necessary).

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 the new roosts (particularly their exit points) and retained 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 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 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.

5.6.5 *Birds*

Mitigation and compensation

All affected vegetation with the potential to support nesting birds will be cut to near ground level (approximately 30cm) outside the bird breeding season (which is late February to August inclusive). If this is not possible, and vegetation has to be removed during the nesting season, then it should be inspected (by an ecologist) for nests immediately prior to removal of the vegetation.

As the garage is to be demolished this will need to happen outside of the bird breeding season (which is late February to August inclusive). If this is not possible, and it has to be removed during the nesting season, then it should be inspected (by an ecologist) for nests immediately prior to the garage being demolished.

If any active nests are found 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).




The loss of potential nesting sites (on the buildings or in any affected vegetation) will be compensated for through the provision of new nest boxes.

Enhancement measures

The site will be enhanced for birds. It is not advisable to place many boxes with identical dimensions, because individuals of the same species would not tolerate each other's presence, especially in built-up areas with limited food resources.

Two swift boxes will be built into or attached to the exterior wall of the new house to provide a new nest site. Swift boxes can be supplied and installed by Hampshire Swifts <https://www.hampshireswifts.co.uk> or the Swift Group of the Sussex Ornithological Society swifts@sos.co.uk and a new soffit or bespoke designs are available. In addition, two swallow nest bowls will be installed inside the new carport. There will also be two single-chamber woodstone bird boxes erected in suitable locations in the wider site. These are summarised in *Table 5.6.5.1*.

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

Type / example	Typical species	No.	Height	Additional information
Istock Eco-habitat 	Swifts, sparrows	2	≥ 5m	<ul style="list-style-type: none"> • Can either be incorporated into the build structure or mounted onto a building. • Position out of direct sunlight (below eaves on the north elevation), away from windows and in a straight line. • Should be in an open area so that it is less accessible to predators and birds are not obstructed as they leave the nest.
Vivara Pro Seville 32mm Woodstone Nest Box 	Blue tits, great tits	2	2-4m	<ul style="list-style-type: none"> • 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.
WoodStone Swallow Nest Bowl (Plywood board mounted) 	Swallows	2	≥ 2m	<ul style="list-style-type: none"> • 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.

5.7 Requirement for Natural England licences

5.7.1 Habitat Regulations licences

As the house is a confirmed bat roost, a bat licence from Natural England will be required before any works to the house can commence.

A bat licence is not necessary before work commences on the garage or shed. In the unlikely event that bats are subsequently found in these buildings, work will stop immediately and a bat licence will be applied for.

A licence from Natural England permits activities that may otherwise be offences under the *Conservation of Habitats & Species Regulations 2017*.

Evidence is required from surveys in order to gather enough information about populations to support a licence application.

Survey data supporting licence applications must be up-to-date *i.e.* have been conducted within the current or most recent optimal survey season (May to September for bats). Therefore, if any 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. The latter includes a detailed mitigation strategy to eliminate or reduce impacts.

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.

5.7.2 *Protection of Badgers Act (1992) licences*

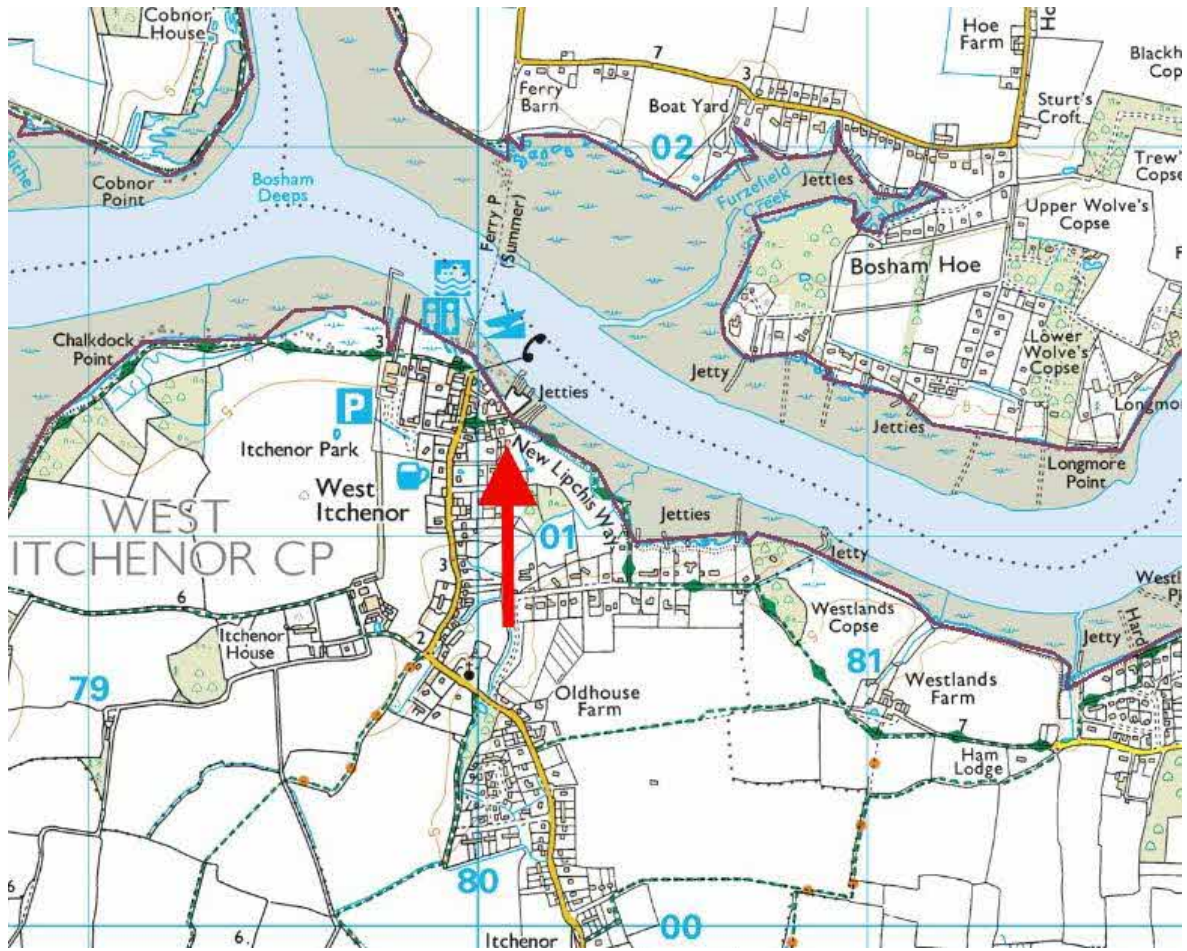
As no setts have been identified within (or close to) the site boundary, a licence is currently not required.

6 **FIGURES**

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



Figure 2. Ordnance Survey map showing the location of the site (as indicated by the red arrow).



Reproduced with permission of Ordnance Survey under licence no. 100049977.

Figure 3. Phase 1 Habitat Survey map.

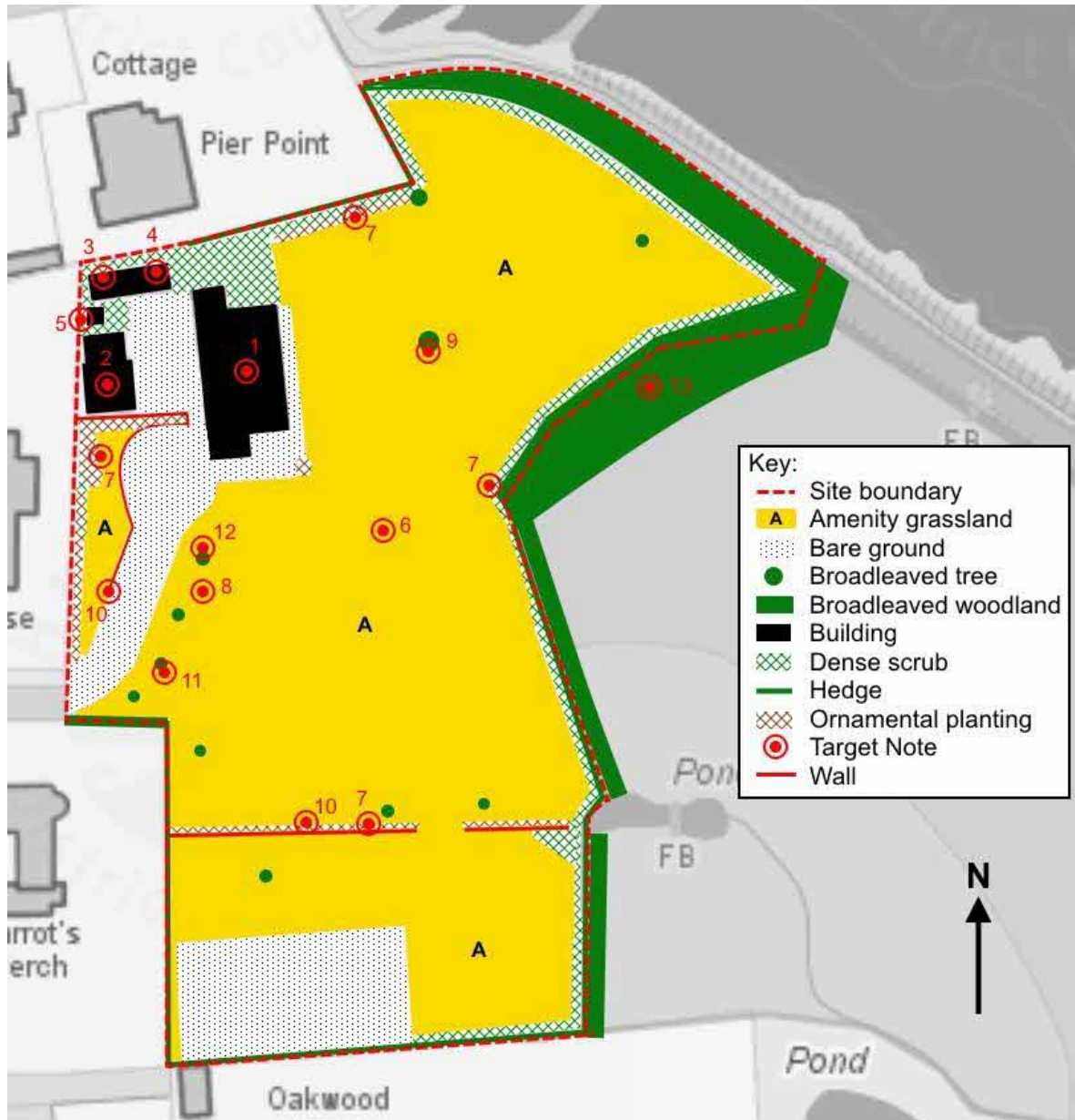


Figure 4. Plan showing the location of bat evidence (droppings).

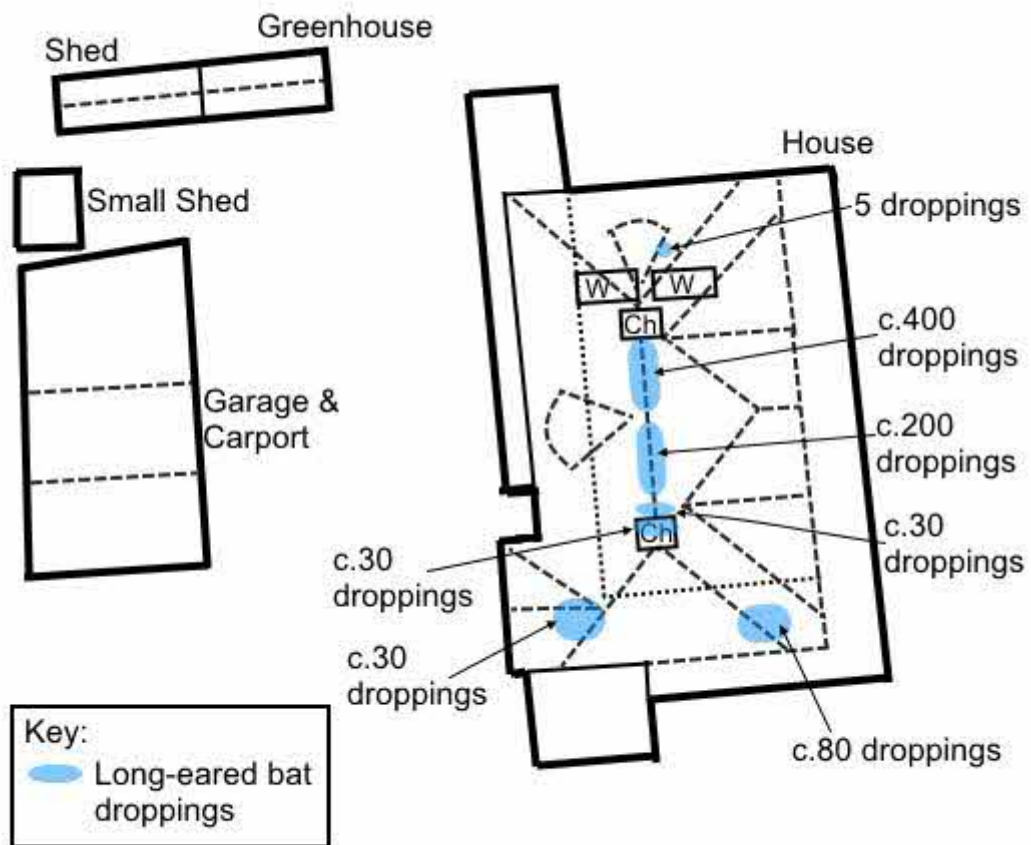


Figure 5. Aerial photograph showing the location of ponds within 250m and 500m of the site boundary.

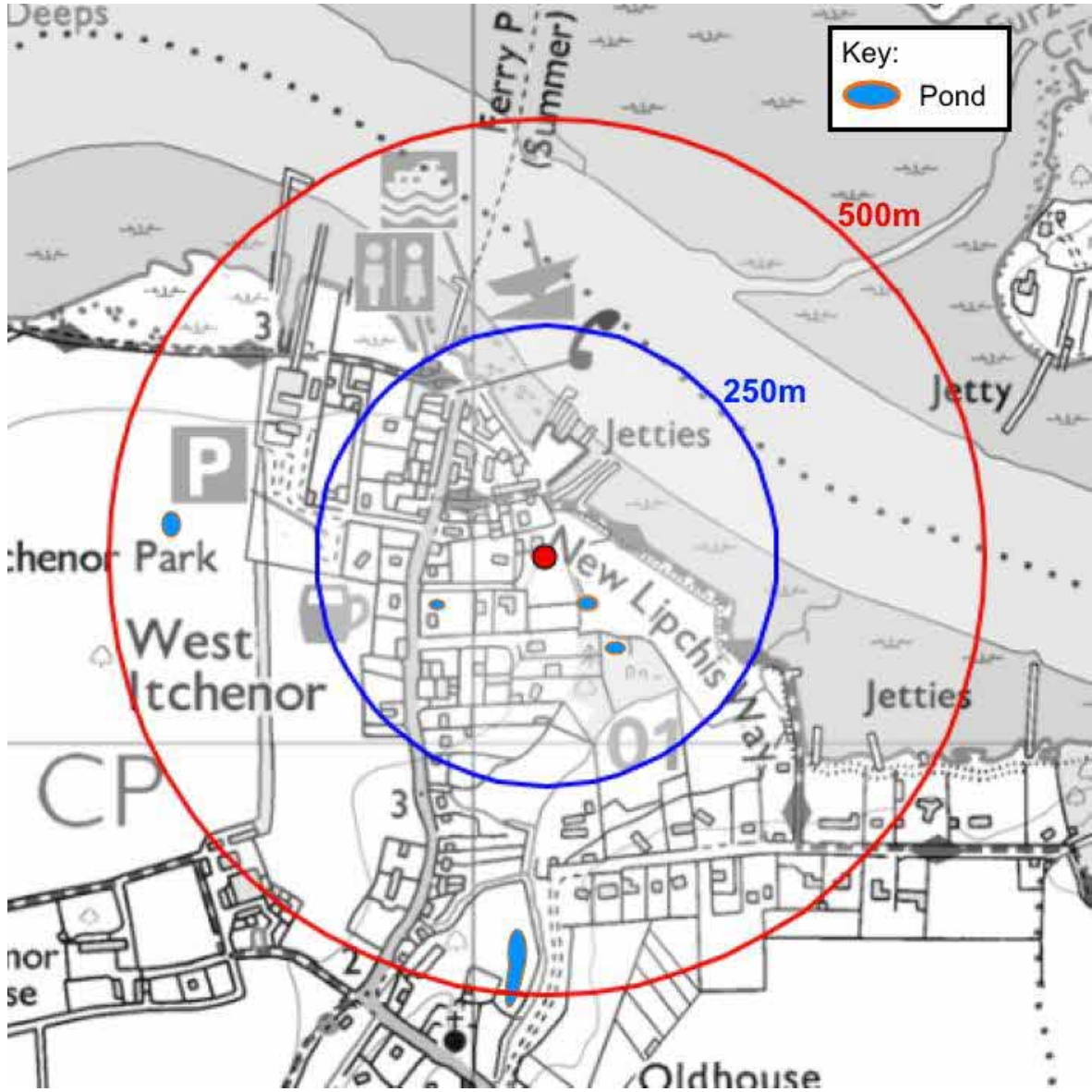


Figure 6. Plan showing bat activity (observations only) for the dusk emergence survey on the house, garage and shed carried out on the 25th June 2021. Arrows show direction of flight (where known).

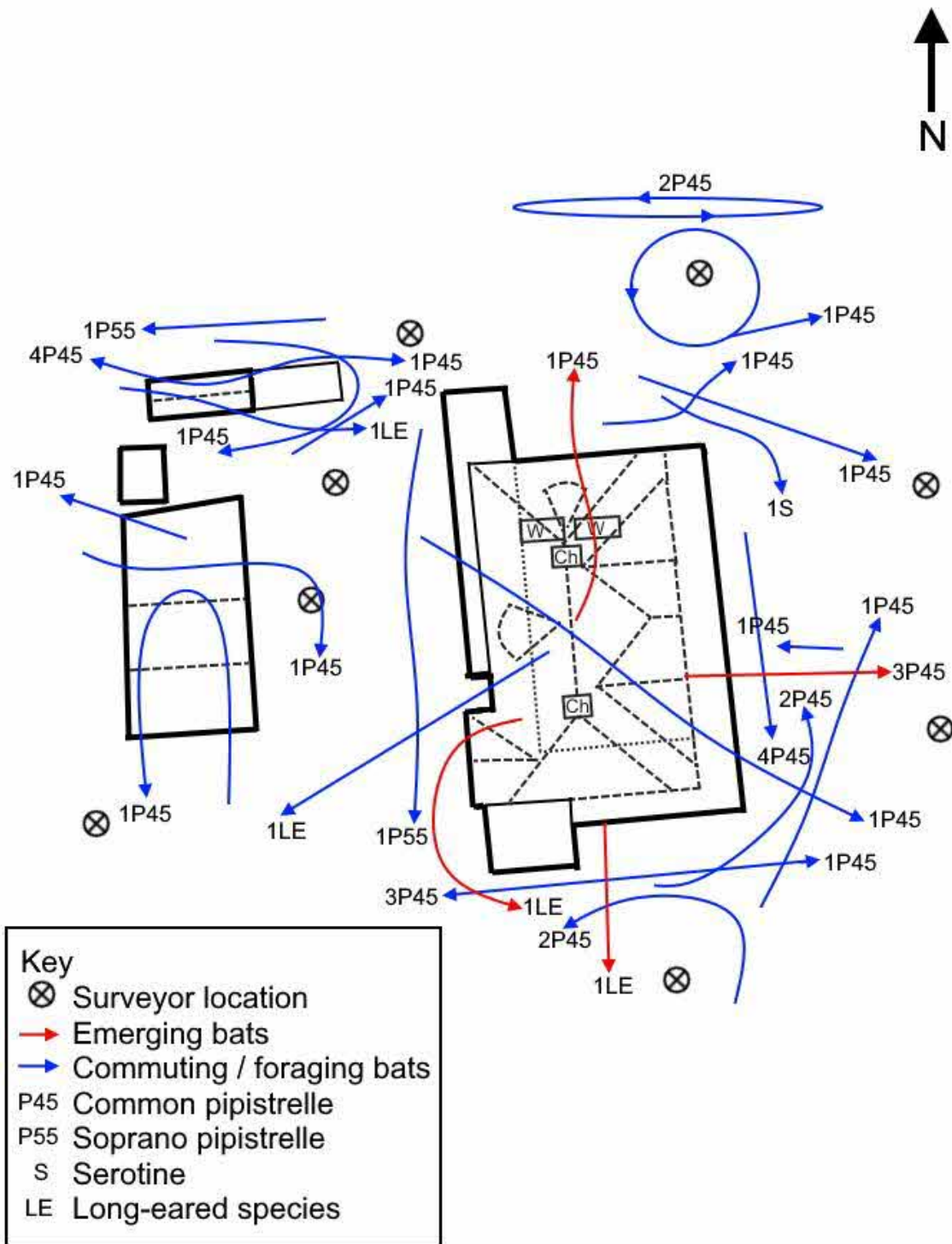


Figure 7. Plan showing the surveyor locations for the dusk emergence survey carried out on the garage on the 12th July 2021.

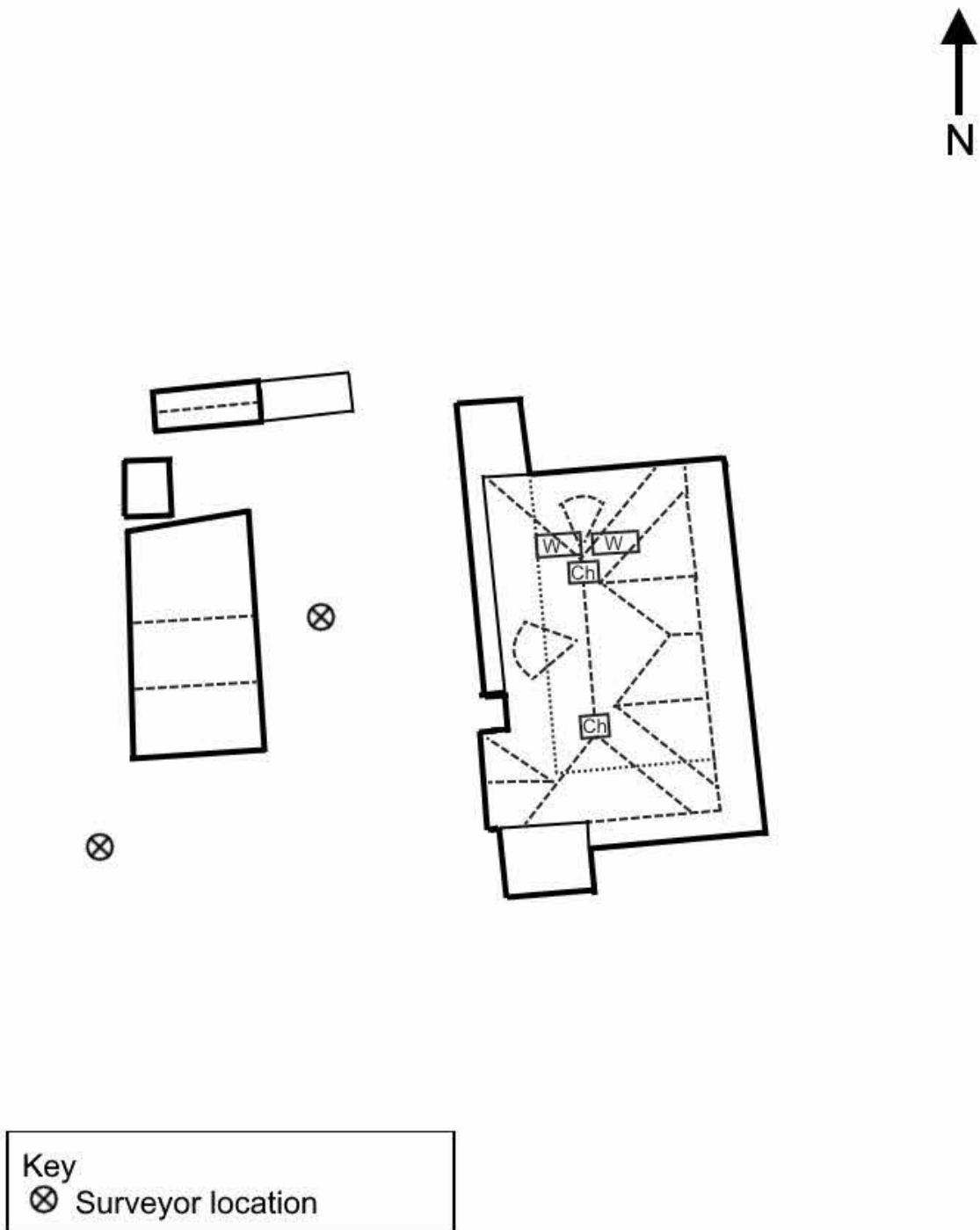


Figure 8. Plan showing bat activity (observations only) for the dusk emergence survey carried out on the house on the 13th July 2021. Arrows show direction of flight (where known).

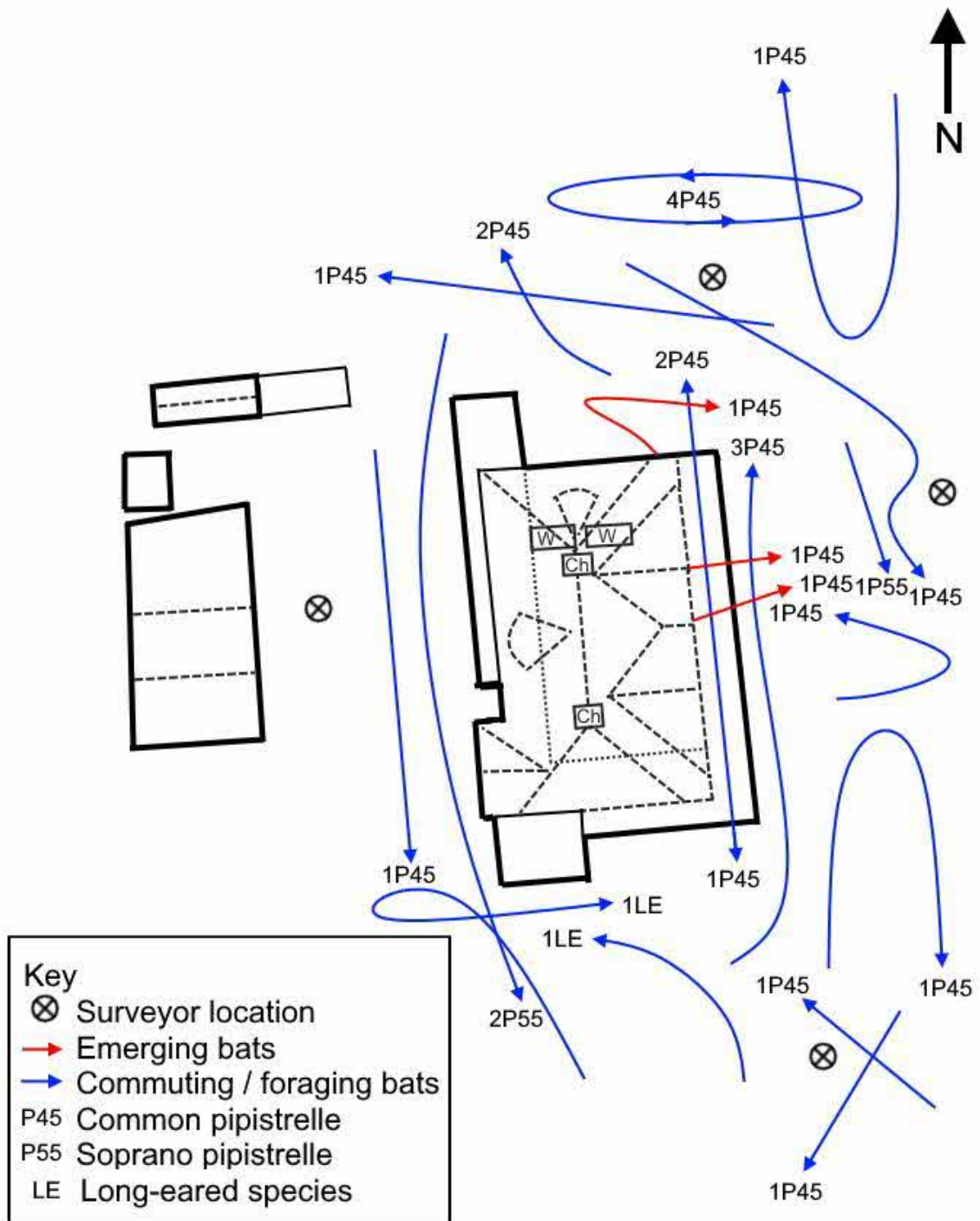


Figure 9. Plan showing bat activity (observations only) for the dusk emergence survey carried out on the house and garage on the 29th July 2021. Arrows show direction of flight (where known).

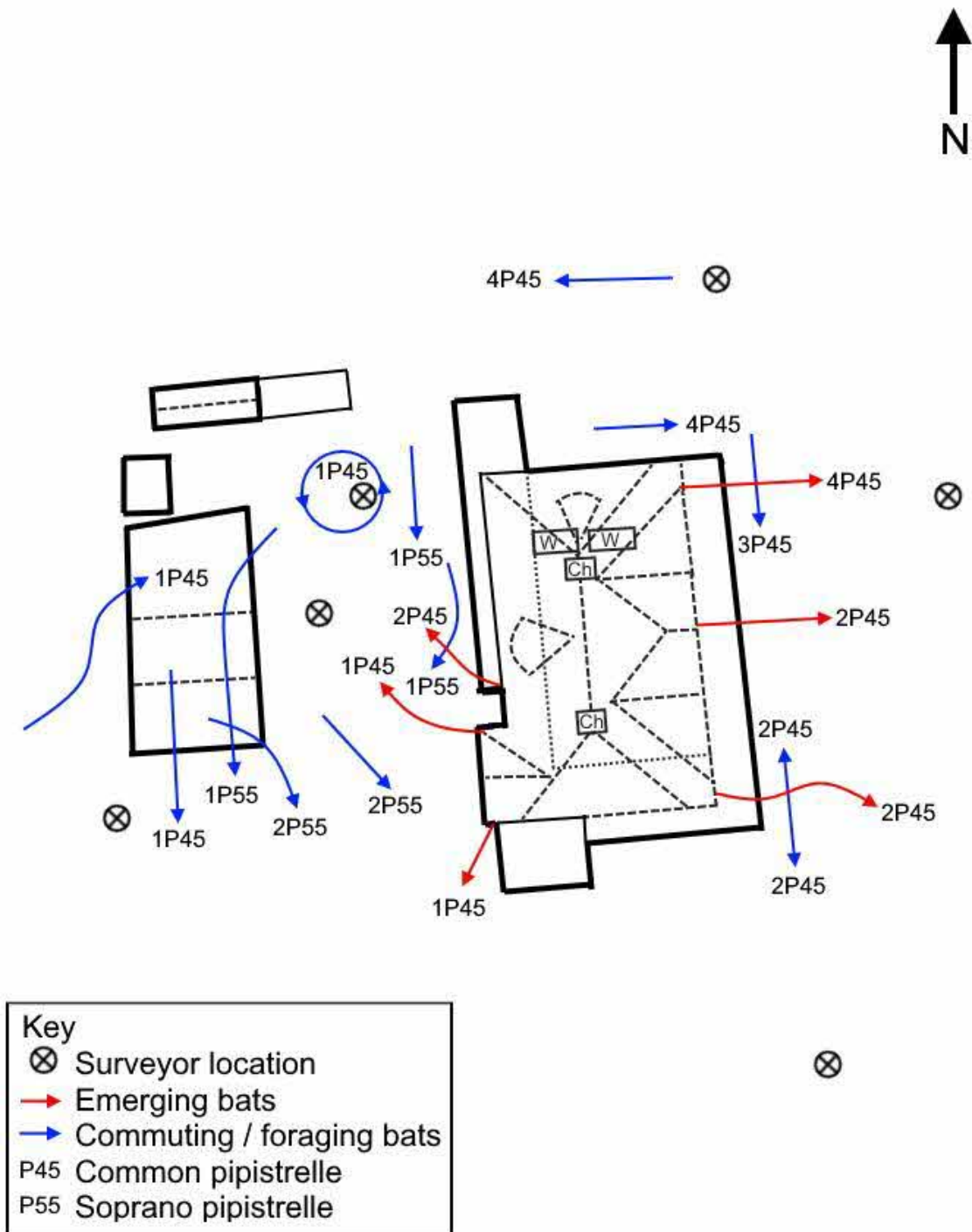


Figure 10. Plan showing the indicative locations of the mitigation, compensation and enhancement measures on Orchard House and the carport (not to scale).

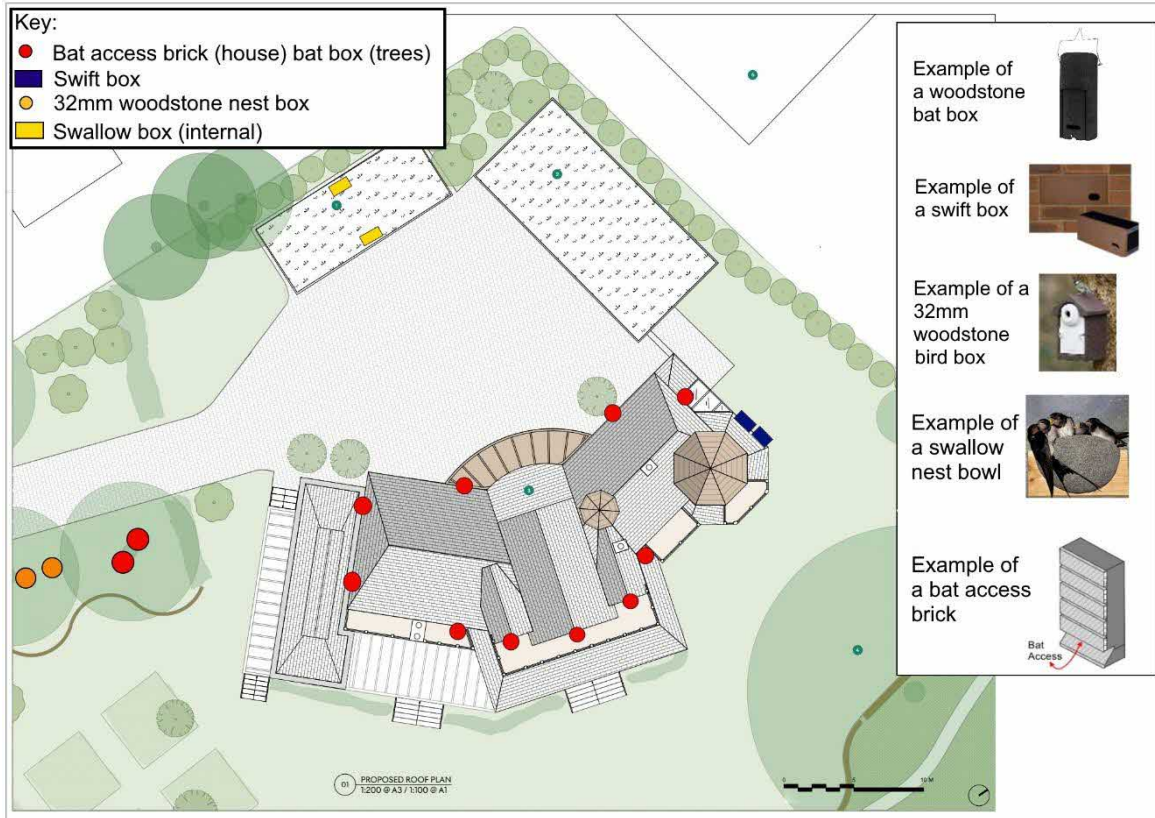


Figure 11. Plan showing the indicative locations of the mitigation, compensation and enhancement measures on the external elevations of Orchard House and the carport (not to scale).

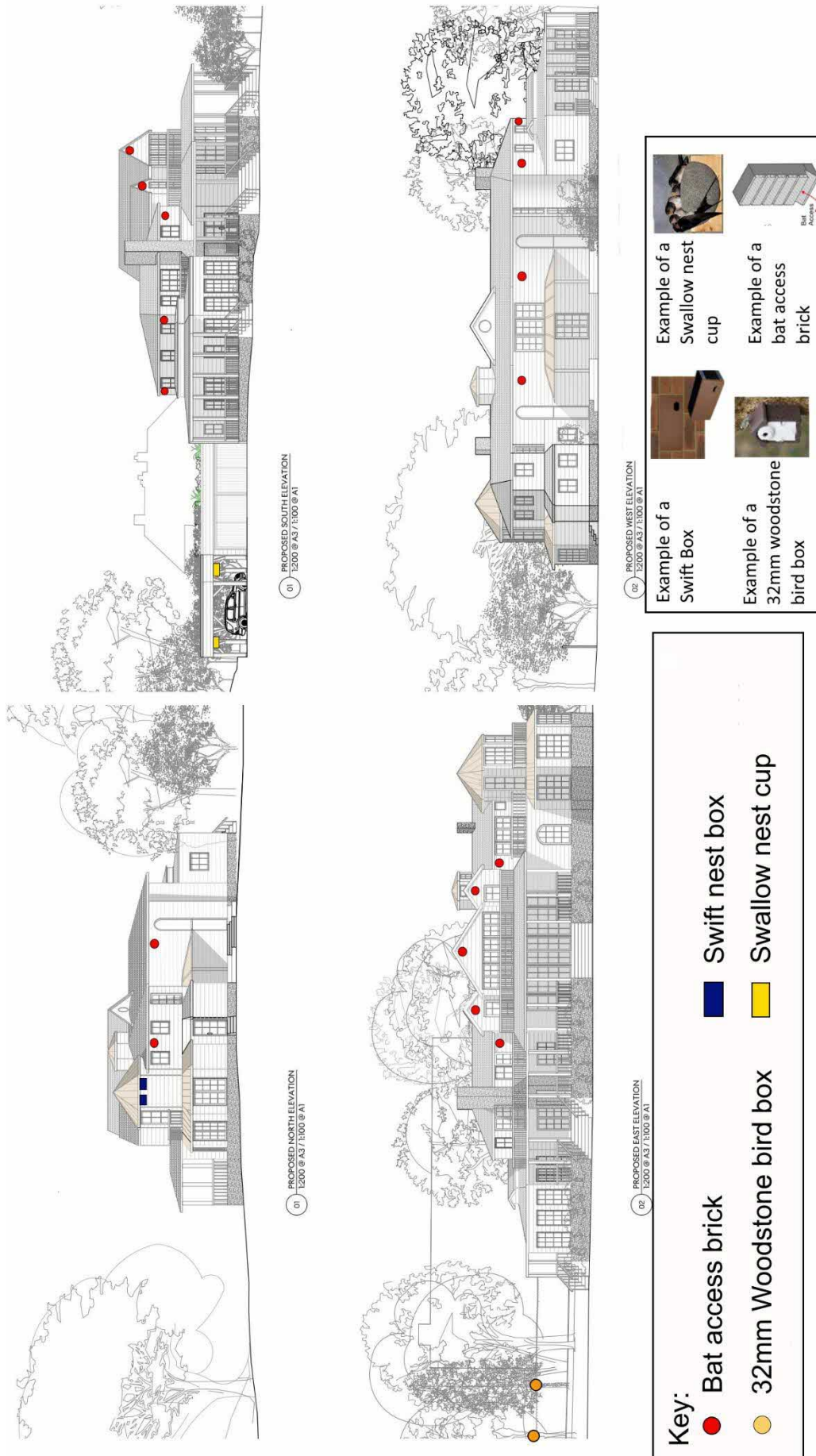
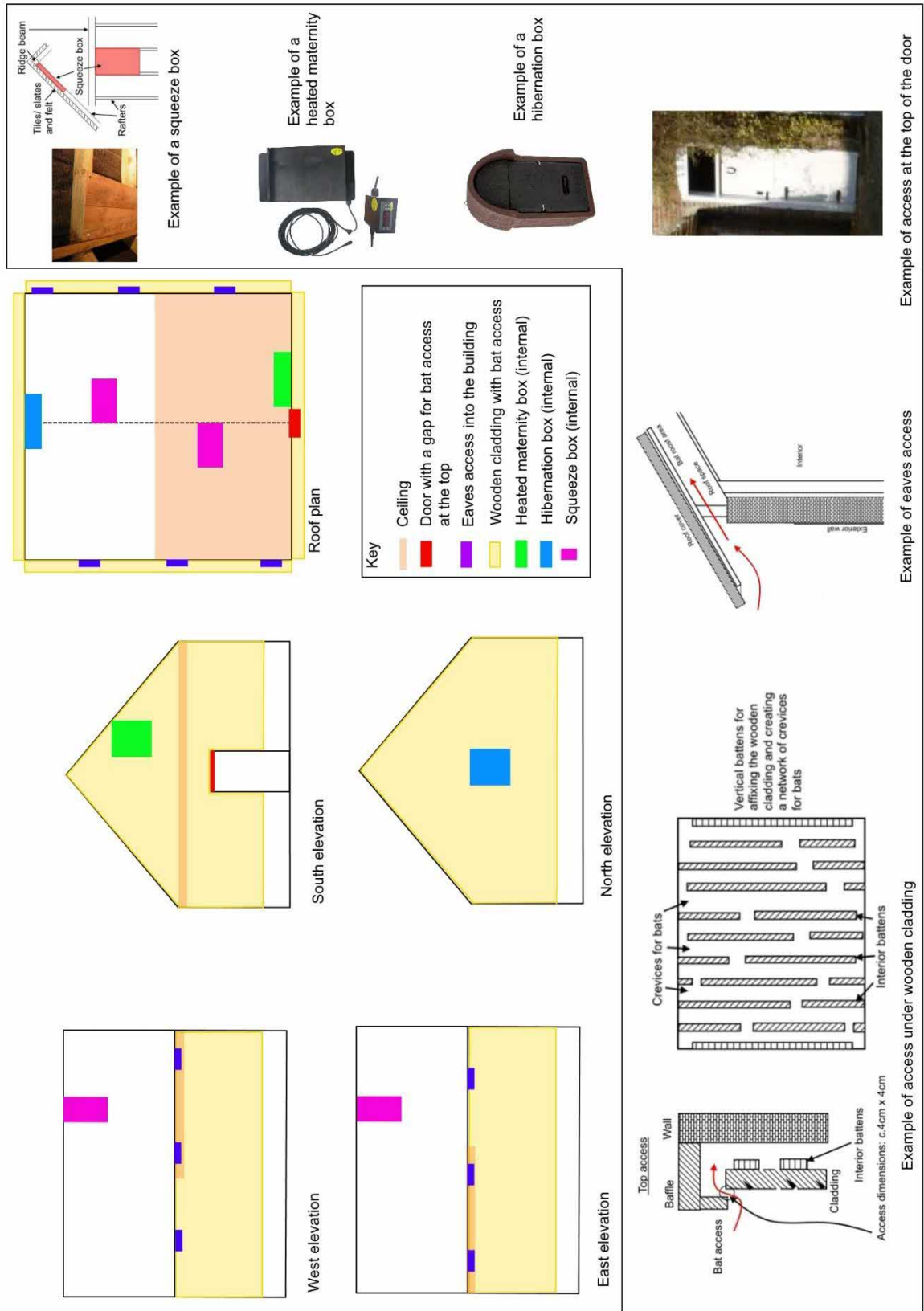


Figure 12. Plan showing the mitigation and compensation measures on the new bat house (not to scale).



7 **PHOTOGRAPHS**

Photo 1. Lawn (Target Note 6) to the south and east of the house, viewed from the 2nd floor window (taken 22/01/2021).



Photo 2. Cotoneaster horizontalis (Wall Cotoneaster) a Schedule 9 species located at Target Note 10 on Figure 3 (taken 22/01/2021).



Photo 3. Lawn (Target Note 6) to the south and east of the house, facing north (taken 22/01/2021).



Photo 4. Example of rabbit scrapes in the grassland (taken 22/01/2021).



Photo 5. Pond 1, adjacent to the east boundary (taken 22/01/2021).



Photo 6. The house, from the south, showing the tree-line along the driveway (Target Note 8) (taken 22/01/2021).



Photo 7. Chichester Harbour on the boundary of the site, facing north-east (taken 22/01/2021).



Photo 8. East Itchenor Coastal Marsh LWS on the east boundary of the site (taken 22/01/2021).



Photo 9. The greenhouse (Target Note 4), which is attached to the shed (taken 22/01/2021).



Photo 10. The small shed (Target Note 5) between the garage and the shed (taken 22/01/2021).



Photo 11. Bat boxes on a tree overhanging the west boundary from a neighbouring property (taken 22/01/2021).

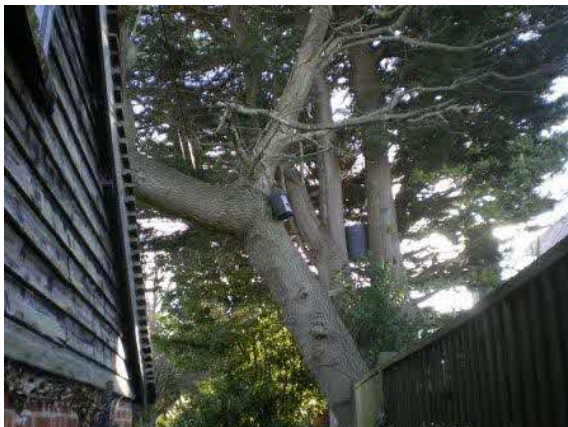


Photo 12. Dense Rubus fruticosus agg. (Bramble) scrub to the north of the house and surrounding some of the outbuildings (Target Notes 3&5) (taken 22/01/2021).



Cherrill, A. & McClean, C. (1999). *Between-observer variation in the application of a standard method of habitat mapping by environmental consultants in the UK*. *Journal of Applied Ecology*, **36**, 989-1000.

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

English Nature (2006). *The Dormouse Conservation Handbook, 2nd edition*. English Nature, Peterborough.

HMSO (1981). *Wildlife and Countryside Act 1981*. HMSO, London.

HMSO (1992). *The Protection of Badgers Act*. HMSO, London.

HMSO (1996). *Wild Mammals (Protection) Act 1996*. HMSO, London.

HMSO (2000). *Countryside and Rights of Way Act*. HMSO, London.

HMSO (2006). *Natural Environment and Rural Communities Act*. HMSO, London.

HMSO (2017). *The Conservation of Habitats and Species Regulations 2017*. HMSO, London.

Institute of Lighting Professionals (2018). *Bats and artificial lighting in the UK*. Institute of Lighting Professionals, Warwickshire.

Joint Nature Conservation Committee (2003). *Handbook for Phase 1 Habitat Survey - a Technique for Environmental Audit* (revised reprint). Joint Nature Conservation Committee, Peterborough.

Mitchell-Jones, A.J. (2004) *Bat Mitigation Guidelines*. English Nature, Peterborough.

Ministry of Housing, Communities & Local Government (2021). *National Planning Policy Framework*. London

Multi-Agency Geographic Information for the Countryside (2008). www.magic.gov.uk. Accessed 12/01/2021.

Natural England (2011). *Standing Advice for Protected Species*. Natural England, Peterborough. <http://www.naturalengland.org.uk/ourwork/planningtransportlocalgov/spatialplanning/standingadvice/advice.aspx>

Poland, J. and Clement, E. J. (2009). *The Vegetative Key to the British Flora*. John Poland in association with the Botanical Society of the British Isles, Southampton.

9 APPENDIX A: PROTECTED SPECIES LEGISLATION

9.1 General

This section briefly describes the legal protection afforded to the protected species identified in this report. It is for information only and is not intended to be comprehensive or to replace specialised legal advice. It is not intended to replace the text of the legislation, but summarises the salient points.

9.2 Bats

All species of British bat are listed on *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended), and receive full protection under *Section 9*. Protection was extended by the *Countryside and Rights of Way Act 2000* (the CRoW Act). 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 *Schedule 2* of the *Conservation of Habitats & Species Regulations 2017* which gives them full protection under *Regulation 43*. 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).

Several species of bat are included as a Priority Species in the UK Biodiversity Action Plan (UKBAP - JNCC (2003)) and also as species of principal importance for the conservation of biological diversity in England under *Section 74* of the CRoW Act.

All species of British bat are also protected under *Schedule 6* of the *Wildlife and Countryside Act 1981* (as amended). This protection relates specifically to trapping and direct pursuit of the species.

9.3 Dormice

Dormouse (*Muscardinus avellanarius*) is listed on *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended), and receives full protection under *Section 9*. This species is also listed as a European Protected Species on *Schedule 2* of the *Conservation of Habitats & Species Regulations*

2017, which gives it full protection under *Regulation 43*. Protection was extended by the *Countryside and Rights of Way Act 2000* (the CRow Act).

Under the above legislation it is an offence to:

- kill, injure or take an individual of such a species;
- possess any part of such species either alive or dead;
- intentionally or recklessly damage, destroy or obstruct access to any place or structure used by such species for shelter, rest, protection or breeding;
- intentionally or recklessly disturb such a species whilst using any place of shelter or protection;
- or
- sell or attempt to sell any such species.

9.4 Great crested newt

Great crested newt (*Triturus cristatus*) is listed on *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended), and receives full protection under *Section 9*. This species is also listed as a European Protected Species on *Schedule 2* of the *Conservation of Habitats & Species Regulations 2017*, which gives it full protection under *Regulation 43*. Protection was extended by the *Countryside and Rights of Way Act 2000* (the CRow Act).

Under the above legislation it is an offence to:

- kill, injure or take an individual of such a species;
- possess any part of such species either alive or dead;
- intentionally or recklessly damage, destroy or obstruct access to any place or structure used by such species for shelter, rest, protection or breeding;
- intentionally or recklessly disturb such a species whilst using any place of shelter or protection;
- or
- sell or attempt to sell any such species.

The great crested newt is included as a Priority Species in the UK Biodiversity Action Plan (UKBAP) and also as a species of principal importance for the conservation of biological diversity in England under *Section 74* of the CRow Act.

9.5 Otter

Otter (*Lutra lutra*) is listed on *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended), and receives full protection under *Section 9*. This species is also listed as a European Protected Species on *Schedule 2* of the *Conservation of Habitats & Species Regulations 2017* which gives it full protection under *Regulation 43*. Protection was extended by the *Countryside and Rights of Way Act 2000* (the CRow Act).

Under the above legislation it is an offence to:

- kill, injure or take an individual of such a species;
- possess any part of such species either alive or dead;

- intentionally or recklessly damage, destroy or obstruct access to any place or structure used by such species for shelter, rest, protection or breeding;
- intentionally or recklessly disturb such a species whilst using any place of shelter or protection; or
- sell or attempt to sell any such species.

The otter is included as a Priority Species in the UK Biodiversity Action Plan (UKBAP) and also as a species of principal importance for the conservation of biological diversity in England under *Section 74* of the CRow Act.

The otter is also protected under *Schedule 6* of the *Wildlife and Countryside Act 1981* (as amended). This protection relates specifically to trapping and direct pursuit of the species.

The European sub-species is also listed as globally threatened on the IUCN/WCMC RDL.

9.6 **Water vole**

Water vole (*Arvicola amphibius*) is protected under *Section 9 (4)* of *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended), which affords protection to its places of shelter. This protection was extended by the CRow Act 2000. Under this legislation, it is an offence to intentionally or recklessly damage, destroy or obstruct access to any structure or place that water voles use for shelter or protection, or to intentionally or recklessly disturb water voles while they are using such a place.

The water vole is included as a Priority Species in the UK Biodiversity Action Plan (UKBAP) and also as a species of principal importance for the conservation of biological diversity in England under *Section 74* of the CRow Act.

9.7 **Badger**

Badger (*Meles meles*) is protected in Britain under the *Protection of Badgers Act 1992* (as amended) and *Schedule 6* of the *Wildlife and Countryside Act 1981* (as amended).

The legislation affords protection to badgers and badger setts, and makes it a criminal offence to:

- wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so;
- interfere with a sett by damaging or destroying it;
- to obstruct access to, or any entrance of, a badger sett; or
- to disturb a badger when it is occupying a sett.

Guidance to what may be classed as disturbance to a badger (when occupying a sett) can be found at: <https://www.gov.uk/guidance/badgers-protection-surveys-and-licences>

9.8 *Birds*

9.8.1 *Birds - general protection*

All species of bird are protected under *Section 1* of the *Wildlife and Countryside Act 1981* (as amended). The protection was extended by the CRoW Act.

The legislation makes it an offence to intentionally:

- kill, injure or take any wild bird;
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; or
- take or destroy an egg of any wild bird.

9.8.2 *Birds - specially protected species*

Certain species of bird are listed on *Schedule 1* of the *Wildlife and Countryside Act 1981* (as amended) and receive protection under *Sections 1(4)* and *1(5)* of the Act. The protection was extended by the CRoW Act. The legislation confers special penalties where the above mentioned offences are committed for any such bird and also make it an offence to intentionally or recklessly:

- disturb any such bird, whilst building its nest or it is in or near a nest containing dependant young; or
- disturb the dependant young of such a bird.

9.9 *Widespread species of reptile*

Common lizard (*Zootoca vivipara*), grass snake (*Natrix natrix*), slow-worm (*Anguis fragilis*), and adder (*Vipera berus*) are listed under *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended), in respect of *Section 9(5)* and part of *Section 9(1)*. This protection was extended by the CRoW Act.

Under the above legislation it is an offence to:

- intentionally or deliberately kill or injure any individual of such a species; or
- sell or attempt to sell any part of the species alive or dead.

9.10 *European Protected Species Licences*

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).

9.11 *National planning context*

9.11.1 *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.

9.11.2 *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 February 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.

10 APPENDIX B: TARGET NOTES

Target Note 1. The house, which is a two-storey brick and render building with a hipped and pitched tile roof and two single-storey, flat-roof extensions. This building is a confirmed bat roost due to the presence of bat droppings.

Target Note 2. The garage. A two-storey brick and timber building with a pitched tile roof and a sloped roof carport on the north elevation. This building has high bat roost suitability and a disused bird nest was observed within the carport section of the garage.

Target Note 3. The shed. A single-storey building attached to the greenhouse (*Target Note 4*), with a pitched tile roof. It is mostly obscured by dense *Rubus fruticosus* agg. (Bramble) scrub with smaller amounts of young *Fraxinus excelsior* (Ash) and \times *Cupressus leylandii* (Leyland Cypress), as well as small amounts of *Crataegus monogyna* (Hawthorn), *Rosa canina* (Dog-rose) and *Ulex europaeus* (Gorse). Also present growing across the field-layer and up the trees and bushes is the ever-green creeper *Hedera helix* (Ivy). This building has low bat roost suitability and the scrub provides suitable habitat for birds, reptiles and amphibians.

Target Note 4. The greenhouse. A single-storey glass building attached to the shed described in *Target Note 3*. This building has no bat roost suitability.

Target Note 5. The small shed. A single-storey corrugated iron building with a sloped roof. It is mostly obscured by the same dense *Rubus fruticosus* agg. (Bramble) scrub described in *Target Note 3*. This building has no bat roost suitability and the scrub provides suitable habitat for birds, reptiles and amphibians.

Target Note 6. Amenity grassland. The sward is dominated by the grass *Lolium perenne* (Perennial Rye-grass) together with smaller amounts of *Holcus lanatus* (Yorkshire-fog). Present throughout are the forbs *Achillea millefolium* (Yarrow), *Bellis perennis* (Daisy), *Ranunculus repens* (Creeping Buttercup) and *Trifolium repens* (White Clover), the shade-tolerant species *Glechoma hederacea* (Ground-ivy), and the tall semi-ruderal *Senecio jacobaea* (Common Ragwort). There are also small isolated patches of *Galanthus nivalis* (Snowdrop).

Target Note 7. The ornamental planting around the edges of the site features a mixture of ornamental and native species. There is an abundance of *Iris foetidissima* (Stinking Iris) with slightly smaller amounts of the tree *Fraxinus excelsior* (Ash), the bushes *Ilex aquifolium* (Holly) and *Rosa canina* (Dog-rose) and the herb *Fragaria vesca* (Wild strawberry). Also present in small patches are *Berberis vulgaris* (Common Barberry), *Cortaderia selloana* (Pampas Grass), *Cotoneaster horizontalis* (Wall Cotoneaster), *Ficus carica* (Fig) and *Prunus laurocerasus* (Cherry Laurel). This provides suitable habitat for birds, reptiles and amphibians.

Target Note 8. A line of *Tilia \times *europaea* (Common Lime) trees along the driveway. Two of the trees, described in *Target Notes 11* and *12* have bat roost suitability.*

Target Note 9. A mature *Quercus robur* (Pedunculate Oak) tree in the centre of the lawn to the east of the house. This tree has high bat roost suitability.

Target Note 10. The invasive, non-native plant *Cotoneaster horizontalis* (Wall Cotoneaster), which is present in two locations: by the southern wall, and by the driveway. This species is listed on *Schedule 9 of the Wildlife and Countryside Act 1981* (as amended).

Target Note 11. A mature *Tilia × europaea* (Common Lime) within the tree-line along the driveway (*Target Note 8*). This tree has moderate bat roost suitability.

Target Note 12. A mature *Tilia × europaea* (Common Lime) within the tree-line along the driveway (*Target Note 8*). This tree has moderate bat roost suitability.

Target Note 13. Woodland on and adjacent to the north and east boundaries. It has a canopy dominated by *Tilia × europaea* (Common Lime). Other woody species present throughout the canopy and shrub-layer include *Crataegus monogyna* (Hawthorn), *×Cupressus leylandii* (Leyland Cypress), *Eucalyptus* species (a Eucalyptus), *Fraxinus excelsior* (Ash), *Ligustrum ovalifolium* (Garden Privet), *Lonicera nitida* (Wilson's Honeysuckle), *Picea abies* (Norway Spruce), *Quercus robur* (Pedunculate Oak), *Rubus fruticosus* agg. (Bramble) and *Sambucus nigra* (Elder). The field-layer includes the shade-tolerant herbs *Arum maculatum* (Lords and Ladies), *Carex pendula* (Pendulous Sedge), *Galium aparine* (Cleavers), *Iris foetidissima* (Stinking Iris), *Primula veris* (Cowslip), *Vinca major* (Greater Periwinkle) and *Urtica dioica* (Common Nettle). Also present growing across the field-layer and up the trees and bushes is the ever-green creeper *Hedera helix* (Ivy). This provides suitable habitat for birds, dormice, reptiles and amphibians.

11 APPENDIX C: PLANT SPECIES LISTS

Species	Scrub (TN3 & 5)	Amenity Grassland (TN6)	Planted borders (TN7)	Tree- line (TN8)	Wooded edges (TN13)
Woody species					
<i>Acer pseudoplatanus</i> (Sycamore)	-	-	-	-	O
<i>Berberis</i> spp (Barberry)	-	-	R	-	-
<i>Cotoneaster horizontalis</i> (Wall Cotoneaster)	-	-	R	-	-
<i>Crataegus monogyna</i> (Hawthorn)	R	-	-	-	O
× <i>Cupressus leylandii</i> (Leyland Cypress)	R	-	-	-	O
<i>Eucalyptus</i> species (Eucalyptus species)	-	-	-	-	R
<i>Ficus carica</i> (Fig)	-	-	R	-	-
<i>Fraxinus excelsior</i> (Ash)	R	-	O	-	R
<i>Hedera helix</i> (Ivy)	F	-	-	-	A
<i>Ilex aquifolium</i> (Holly)	-	-	O	-	-
<i>Ligustrum ovalifolium</i> (Garden Privet)	-	-	-	-	R
<i>Lonicera nitida</i> (Wilson's Honeysuckle)	-	-	-	-	R
<i>Picea abies</i> (Norway Spruce)	-	-	-	-	R
<i>Prunus laurocerasus</i> (Cherry Laurel)	-	-	R	-	-
<i>Quercus robur</i> (Pedunculate Oak)	-	R	-	R	O
<i>Rosa canina</i> (Dog-rose)	R	-	O	-	-
<i>Rubus fruticosus</i> agg. (Bramble)	D	-	-	-	F
<i>Sambucus nigra</i> (Elder)	-	-	-	-	R
<i>Tilia</i> × <i>europaea</i> (Common Lime)	-	-	-	D	D
<i>Ulex europaeus</i> (Gorse)	R	-	-	-	-
Herbs					
<i>Achillea millefolium</i> (Yarrow)	-	R	-	-	-
<i>Arum maculatum</i> (Lords and Ladies)	-	-	-	-	R
<i>Bellis perennis</i> (Daisy)	-	R	-	-	-
<i>Carex pendula</i> (Pendulous Sedge)	-	-	-	-	R
<i>Cortaderia selloana</i> (Pampas Grass)	-	-	R	-	-
<i>Fragaria vesca</i> (Wild strawberry)	-	-	O	-	-
<i>Galanthus nivalis</i> (Snowdrop)	-	R	-	-	-
<i>Galium aparine</i> (Cleavers)	-	-	-	-	R
<i>Glechoma hederacea</i> (Ground-ivy)	-	R	-	-	-
<i>Holcus lanatus</i> (Yorkshire-fog)	-	O	-	-	-
<i>Hypericum androsaemum</i> (Tutsan)	-	-	O	-	-

<i>Iris foetidissima</i> (Stinking Iris)	-	-	A	-	F
<i>Lolium perenne</i> (Perennial Rye-grass)	-	D	-	-	-
<i>Oenothera</i> spp (Evening Primrose)	-	-	-	-	R
<i>Primula veris</i> (Cowslip)	-	-	-	-	R
<i>Prunella vulgaris</i> (Self Heal)	-	R	-	-	-
<i>Ranunculus repens</i> (Creeping Buttercup)	-	O	-	-	-
<i>Senecio jacobaea</i> (Common Ragwort)	-	R	-	-	-
<i>Trifolium repens</i> (White Clover)	-	O	-	-	-
<i>Urtica dioica</i> (Common Nettle)	-	-	-	-	F
<i>Vinca major</i> (Greater Periwinkle)	-	-	-	-	O
D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare					

APPENDIX D: DUSK EMERGENCE SURVEY DATA

House, garage & shed				
Date	25/06/2021			
Temp	15.0°C at start and 12.3°C at the end			
Weather	Dry with 5% cloud cover and calm (Beaufort scale 0)			
Ecologists	John Poland, Nicola Pyle, Calum Cooper, Chloe Mockridge, Darla Brown, Andrew Lomas, Hannah Yates & Tara Dempsey			
Observer	Time	No.	Species	Observation
-	21:06	-	-	Ecologists commenced observations
-	21:21	-	-	Sunset
TD	21:28	1	Common pipistrelle	Heard but not seen
JP	21:36	1	Pipistrelle species	Heard but not seen
DB, JP, TD	21:40	2	Common pipistrelle	Emerging from the top of the most southern dormer on the east elevation of the house then commuting west
JP	21:42	1	Common pipistrelle	Heard but not seen
JP	21:45	1	Common pipistrelle	Emerging from the valley between the two dormers on the east elevation of the house, then commuting north
CC	21:45	1	Common pipistrelle	Foraging north then south over the garage
CC	21:47	1	Common pipistrelle	Heard but not seen
DB, CC	21:50	1	Common pipistrelle	Heard foraging but not seen
CC	21:51	1	Common pipistrelle	Heard foraging but not seen
TD	21:51	1	Common pipistrelle	Commuting west in the east side of the garden
CC	21:52	1	Common pipistrelle	Heard foraging and feeding intermittently until 22:05, but not seen
TD	21:52	1	Common pipistrelle	Heard but not seen
JP	21:53	1	Common pipistrelle	Heard but not seen
DB	21:53	1	Common pipistrelle	Foraging over the northern part of the garden then foraging east
TD	21:56	1	Common pipistrelle	Commuting south along the east elevation of the house
DB	21:57	1	Common pipistrelle	Foraging west to east continuously until 21:59 along the northern part of the garden
DB	21:59	1	Common pipistrelle	Heard foraging but not seen
DB	21:59	1	Common pipistrelle	Foraging west to east continuously along the northern part of the garden
DB, TD	22:00	1	Common pipistrelle	Heard foraging and feeding but not seen
DB	22:01	1	Common pipistrelle	Heard foraging and feeding but not seen
CM	22:03	1	Common pipistrelle	Commuting north-east around the shed

DB	22:03	1	Serotine	Commuting south around the north-east corner of the house
HY	22:04	1	Common pipistrelle	Heard but not seen
NP, CM	22:04	1	Common pipistrelle	Foraging east over the garage then foraging south
DB, JP	22:04	1	Common pipistrelle	Heard foraging and feeding constantly until 22:15 but not seen
HY	22:05	1	Long-eared bat	Seen emerging from the southern gable end of the house and commuting south, but not heard
CC	22:05	1	Common pipistrelle	Heard but not seen
AL	22:06	1	Pipistrelle species	Commuting east over the shed
TD, NP, CM	22:06	1	Common pipistrelle	Heard but not seen
CM, CC	22:07	1	Common pipistrelle	Heard but not seen
JP, HY	22:07	1	Common pipistrelle	Commuting north-east over the east side of the garden
NP, CM	22:08	1	Common pipistrelle	Heard but not seen
DB	22:08	1	Common pipistrelle	Foraging and feeding north-east around the northern part of the garden
JP	22:08	2	Common pipistrelle	Foraging west around the south side of the garden
CM	22:09	1	Common pipistrelle	Heard but not seen
HY	22:09	2	Common pipistrelle	Commuting north along the eastern elevation of the house
CC	22:10	1	Common pipistrelle	Heard foraging until 22:13 but not seen
CM	22:11	1	Long-eared bat	Seen commuting south-west over the house but not heard
TD	22:13	1	Common pipistrelle	Heard but not seen
HY	22:14	1	Common pipistrelle	Commuting west along the southern elevation of the house
JP, NP, CM	22:14	1	Common pipistrelle	Heard but not seen
CM	22:15	1	Common pipistrelle	Heard but not seen
CM	22:16	1	Long-eared bat	Emerging from under the roof tiles on the western elevation of the house, then heading around the south-west corner of the house
DB	22:17	1	Common pipistrelle	Heard social calls but not seen
JP	22:18	1	Common pipistrelle	Heard but not seen
DB, NP, AL, CM	22:19	1	Common pipistrelle	Heard social calls but not seen
AL	22:21	1	Common pipistrelle	Foraging east then west high over the shed

NP, CM	22:21	1	Common pipistrelle	Heard foraging but not seen
TD	22:22	1	Common pipistrelle	Emerging from the top of the most southern dormer on the east elevation of the house then commuting west
NP	22:22	1	Common pipistrelle	Commuting west over the garage
HY, CC	22:22	1	Common pipistrelle	Heard but not seen
AL	22:23	1	Common pipistrelle	Foraging west over the shed
AL	22:23	1	Common pipistrelle	Foraging west over the shed
DB	22:23	1	Common pipistrelle	Foraging east passing the south-east corner of the house
DB, JP	22:24	1	Common pipistrelle	Heard but not seen
AL	22:24	1	Common pipistrelle	Foraging east over the shed
AL	22:24	1	Common pipistrelle	Foraging west over the shed
JP	22:24	1	Common pipistrelle	Foraging south-east over the house
TD	22:24	1	Common pipistrelle	Foraging south along the east elevation of the house
HY	22:24	1	Common pipistrelle	Commuting east along the southern elevation of the house
HY	22:24	1	Common pipistrelle	Heard but not seen
TD	22:25	1	Common pipistrelle	Foraging south along the east elevation of the house
HY	22:25	1	Common pipistrelle	Commuting west along the southern elevation of the house
TD	22:26	1	Common pipistrelle	Foraging south along the east elevation of the house
DB, NP, AL, CM	22:26	1	Common pipistrelle	Heard but not seen
DB	22:26	1	Soprano pipistrelle	Heard but not seen
DB	22:27	1	Common pipistrelle	Heard but not seen
CM	22:27	1	Soprano pipistrelle	Foraging south along the western elevation of the house
AL	22:27	1	Soprano pipistrelle	Foraging west along the northern elevation of the shed
HY	22:28	1	Common pipistrelle	Commuting west along the southern elevation of the house
DB, NP, AL, CM, CC	22:29	1	Common pipistrelle	Heard foraging but not seen
AL, CM	22:30	1	Common pipistrelle	Heard foraging but not seen
AL	22:31	1	Common pipistrelle	Heard but not seen
TD	22:32	1	Common pipistrelle	Heard but not seen
HY	22:35	2	Soprano pipistrelle	Heard but not seen
JP	22:35	1	Soprano pipistrelle	Heard but not seen

TD	22:41	1	Common pipistrelle	Heard but not seen
DB	22:42	1	Soprano pipistrelle	Heard but not seen
AL	22:45	1	Common pipistrelle	Foraging west over the shed
NP, CM, CC	22:45	1	Common pipistrelle	Heard but not seen
DB, CM	22:46	1	Common pipistrelle	Heard commuting but not seen
-	22:51	-	-	Ecologists ceased observations
Garage				
Date	12/07/2021			
Temp	16.0°C at start and 15.0°C at the end			
Weather	Light rain with 100% dark cloud cover and a slight breeze (Beaufort scale 1)			
Ecologists	Dave Casson & Hannah Yates			
Observer	Time	No.	Species	Observation
-	20:59	-	-	Ecologists commenced observations
-	21:14	-	-	Sunset
HY	21:27	1	Common pipistrelle	Heard but not seen
HY	21:29	1	Common pipistrelle	Heard feeding but not seen
DC, HY	21:34	1	Common pipistrelle	Heard but not seen
DC, HY	21:47	1	Soprano pipistrelle	Heard but not seen
DC, HY	21:50	1	Common pipistrelle	Heard but not seen
DC	21:51	1	Common pipistrelle	Heard but not seen
DC	21:56	1	Common pipistrelle	Heard but not seen
HY	22:29	1	Soprano pipistrelle	Heard but not seen
HY	22:37	1	Common pipistrelle	Heard but not seen
DC, HY	22:40	1	Common pipistrelle	Heard but not seen
-	22:44	-	-	Ecologists ceased observations
House				
Date	13/07/2021			
Temp	20.4°C at start and 18.0°C at the end			
Weather	Dry with 5% cloud cover and calm (Beaufort scale 0)			
Ecologists	Calum Cooper, Phil Budd, Tom Gray & Hannah Yates			
Observer	Time	No.	Species	Observation
-	20:58	-	-	Ecologists commenced observations
-	21:13	-	-	Sunset
CC, HY	21:25	1	Common pipistrelle	Emerging from under the roof tiles on the east side of the house, heading east
CC, HY	21:28	1	Common pipistrelle	Emerging from under the dormer tiles on the east side of the house, heading east
PB	21:35	1	Common pipistrelle	Commuting south along the west side of the house
TG	21:40	1	Common pipistrelle	Emerging from under the roof tiles on the north side of the house, turning and heading east

CC	21:40	1	Common pipistrelle	Foraging north over the east side elevation
HY	21:40	2	Common pipistrelle	Foraging north along the east side of the house
PB	21:40	1	Soprano pipistrelle	Foraging south close to the west side of the house
CC, TG	21:42	2	Common pipistrelle	Foraging in circles over fence to the north of the house
CC, TG	21:43	1	Common pipistrelle	Foraging in circles over fence to the north of the house
CC, TG	21:46	1	Common pipistrelle	Foraging in circles over fence to the north of the house
CC, TG	21:48	1	Common pipistrelle	Foraging in circles over fence to the north of the house
HY	21:52	1	Common pipistrelle	Heard but not seen
HY	21:53	1	Common pipistrelle	Heard but not seen
PB	21:54	1	Common pipistrelle	Heard foraging but not seen
CC, TG	21:55	1	Common pipistrelle	Foraging south-east in front of the east side of the house
CC, TG	21:56	1	Common pipistrelle	Foraging in circles over fence to the north of the house
CC, TG	21:56	1	Soprano pipistrelle	Commuting north in front of the north side of the house
PB	21:57	1	Soprano pipistrelle	Foraging south close to the west side of the house
HY	21:58	1	Long-eared bat	Commuting north-west by the south side of the house
HY	21:59	1	Common pipistrelle	Heard but not seen
HY	22:00	1	Common pipistrelle	Heard but not seen
CC, TG	22:01	1	Common pipistrelle	Foraging south alongside the east side of the house
CC, TG	22:01	1	Common pipistrelle	Foraging east then west in front of the south side of the house
CC, TG	22:03	1	Common pipistrelle	Foraging in circles over fence to the north of the house
CC	22:05	1	Common pipistrelle	Foraging south over the east side elevation
PB, HY	22:05	1	Soprano pipistrelle	Heard foraging and feeding but not seen
CC, TG	22:05	1	Common pipistrelle	Foraging around the north and east side of the house before heading south
PB	22:07	1	Soprano pipistrelle	Heard foraging but not seen
HY	22:07	1	Common pipistrelle	Commuting north-west by the south side of the house
HY	22:09	1	Common pipistrelle	Heard but not seen
PB, HY	22:10	1	Common pipistrelle	Heard but not seen

HY	22:12	1	Common pipistrelle	Foraging north along the east side of the house
CC	22:12	1	Common pipistrelle	Foraging north then south in front of the east side of the house
HY	22:12	1	Common pipistrelle	Heard but not seen
CC	22:14	1	Common pipistrelle	Foraging north over the east side elevation
PB	22:14	1	Long-eared species	Foraging around the south-west corner of the house before heading east
HY	22:17	1	Common pipistrelle	Heard but not seen
CC	22:18	1	Common pipistrelle	Foraging south then north in front of the north side of the house
PB	22:20	1	Long-eared bat	Heard foraging but not seen
HY	22:21	1	Soprano pipistrelle	Heard but not seen
TG	22:22	1	Common pipistrelle	Commuting north in front of the north side of the house
PB, HY	22:22	1	Common pipistrelle	Heard but not seen
PB, HY	22:24	1	Common pipistrelle	Commuting south-west by the south-east side of the house
PB	22:25	1	Soprano pipistrelle	Heard foraging but not seen
-	22:43	-	-	Ecologists ceased observations
House & garage				
Date	29/07/2021			
Temp	17.7°C at start and 16.4°C at the end			
Weather	Damp with light rain periodically throughout the survey with 95% dark cloud cover and light breeze (Beaufort scale 2)			
Ecologists	Calum Cooper, Andrew Lomas, Tom Gray, Nicolas Cutler & Hannah Yates			
Observer	Time	No.	Species	Observation
-	20:38	-	-	Ecologists commenced observations
-	20:54	-	-	Sunset
CC, HY	21:07	1	Common pipistrelle	Emerging from under the hanging tiles on the northern gable end on the east side of the house, heading east
CC, HY	21:08	1	Common pipistrelle	Emerging from under the hanging tiles on the northern gable end on the east side of the house, heading east
CC, HY	21:11	1	Common pipistrelle	Emerging from under the hanging tiles / valley on the south-east corner of the house, heading east
CC, HY	21:12	1	Common pipistrelle	Emerging from under the hanging tiles on the northern gable end on the east side of the house, heading east
CC	21:13	1	Common pipistrelle	Heard foraging but not seen

CC	21:15	1	Common pipistrelle	Heard foraging constantly until 21:21 but not seen
CC, HY	21:19	1	Common pipistrelle	Emerging from under the hanging tiles on the east elevation of the house, heading east
NC	21:20	1	Common pipistrelle	Feeding east along the north side of the house
CC, HY	21:21	1	Common pipistrelle	Emerging from under the hanging tiles on the east elevation of the house, heading east
TG	21:24	1	Common pipistrelle	Foraging south from over the garage
CC	21:25	1	Common pipistrelle	Heard foraging but not seen
NC	21:25	1	Common pipistrelle	Foraging west over by the northern boundary of the site
NC	21:26	1	Common pipistrelle	Foraging and feeding west over by the northern boundary of the site
EH, AL	21:26	1	Soprano pipistrelle	Commuting south along the west side of the house
CC, HY	21:27	1	Common pipistrelle	Heard but not seen
EH, AL	21:27	2	Soprano pipistrelle	Commuting south-east along the east side of the garage
HY	21:28	1	Common pipistrelle	Emerging from under the hanging tiles on the northern gable end on the east side of the house, heading east
AL, EH	21:28	1	Soprano pipistrelle	Commuting south over the garage
TG	21:29	1	Common pipistrelle	Foraging north-east over the garage
AL, EH	21:29	2	Soprano pipistrelle	Commuting south-east over the garage
CC, HY	21:30	1	Common pipistrelle	Heard but not seen
NC	21:30	1	Common pipistrelle	Feeding east along the north side of the house
CC, HY	21:31	1	Common pipistrelle	Heard foraging but not seen
CC, TG	21:32	1	Soprano pipistrelle	Heard but not seen
NC	21:33	1	Common pipistrelle	Foraging west over by the northern boundary of the site
CC, AL, EH	21:34	1	Common pipistrelle	Heard but not seen
EH	21:35	1	Common pipistrelle	Emerging from under the roof tiles on the west side of the house, heading west
NC	21:35	1	Common pipistrelle	Foraging west over by the northern boundary of the site
CC, HY	21:35	1	Common pipistrelle	Heard foraging and feeding but not seen
CC, HY	21:36	1	Common pipistrelle	Heard foraging and feeding but not seen

NC	21:37	1	Common pipistrelle	Foraging west over by the northern boundary of the site
NC	21:38	1	Common pipistrelle	Foraging west over by the northern boundary of the site
CC, HY, TG	21:38	1	Common pipistrelle	Heard but not seen
NC	21:39	1	Common pipistrelle	Foraging west over by the northern boundary of the site
CC, HY	21:40	1	Common pipistrelle	Heard foraging but not seen
EH, AL	21:40	1	Common pipistrelle	Emerging from a corner eave on the west side of the house, heading north
EH, AL	21:41	1	Common pipistrelle	Commuting south along the west side of the house
AL, EH	21:41	1	Common pipistrelle	Foraging in circles before heading north-west of the house
HY	21:42	2	Common pipistrelle	Commuting south along the east side of the house
CC	21:42	1	Common pipistrelle	Heard foraging and feeding until 21:46 but not seen
NC	21:42	1	Pipistrelle species	Commuting south along by the north-east corner of the house
NC	21:43	1	Common pipistrelle	Commuting south along by the north-east corner of the house
HY	21:43	1	Common pipistrelle	Emerging from under the hanging tiles / valley on the south-east corner of the house, heading east
NC	21:44	1	Common pipistrelle	Foraging west over by the northern boundary of the site
HY	21:45	1	Common pipistrelle	Heard foraging and feeding but not seen
NC	21:45	1	Common pipistrelle	Feeding east along the north side of the house
EH, AL	21:46	1	Soprano pipistrelle	Commuting south-west along the east side of the garage
HY	21:47	2	Common pipistrelle	Commuting north along the east side of the house
CC	21:47	1	Common pipistrelle	Heard foraging constantly until 21:48 but not seen
NC	21:47	1	Common pipistrelle	Foraging west over by the northern boundary of the site
NC	21:49	1	Common pipistrelle	Commuting south along by the north-east corner of the house
NC	21:50	1	Common pipistrelle	Foraging west over by the northern boundary of the site

CC, HY	22:04	1	Common pipistrelle	Heard foraging and feeding but not seen
EH, AL	22:05	1	Soprano pipistrelle	Heard but not seen
NC	22:05	1	Common pipistrelle	Foraging west over by the northern boundary of the site
CC, HY	22:07	1	Common pipistrelle	Heard but not seen
CC, HY	22:08	1	Common pipistrelle	Heard foraging and feeding but not seen
NC	22:09	1	Common pipistrelle	Heard but not seen
CC, HY	22:10	1	Common pipistrelle	Heard foraging but not seen
CC	22:12	1	Long-eared bat	Heard but not seen
EH, AL	22:12	1	Soprano pipistrelle	Heard but not seen
CC, HY	22:13	1	Common pipistrelle	Heard foraging and feeding but not seen
NC	22:13	1	Common pipistrelle	Foraging west over by the northern boundary of the site
CC	22:15	1	Common pipistrelle	Heard but not seen
NC	22:17	1	Common pipistrelle	Feeding east along the north side of the house
EH, AL	22:19	2	Common pipistrelle	Emerging from under the roof tiles on the west side of the house, heading west
EH, AL, TG	22:20	1	Long-eared bat	Heard but not seen
NC	22:20	1	Common pipistrelle	Foraging west over by the northern boundary of the site
HY	22:23	1	Common pipistrelle	Heard feeding but not seen
-	22:24	-	-	Ecologists ceased observations



15 July 21

Re: Identification Results for Nicola Pyle, Hampshire Ecological Services Ltd

Job number 16806, received 01 July 2021

Sample labelled: Orchard House, Orchard Lane, Itchenor, Chichester, West Sussex, PO20 7AD. 22/01/2021.

PCR amplification successful. DNA sequence:

ATGACCAACATTTCGAAAGTCCCACCCTCTCATAAAAATTATCAATGACTCATTTCATTG
ACTTACCTGCTCCCTCAAATATTTTCATCATGATGAAACTTTGGATCTCTTCTAGGCATT
TGCCTAGC

Phylogenetic analysis identification: *Plecotus auritus*

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

Professor Robin Allaby

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

Professor Robin Allaby

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14 APPENDIX F: OTHER ENHANCEMENTS FOR WILDLIFE

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

14.1 Seed mix composition

The seed mixes in *Table 14.1.1.* 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, some 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.

The EM8 seed mixture contains species suitable for seasonally wet soils and is based on the vegetation of traditional floodplain and water meadows. Soils in wet meadows may flood for short periods in winter, but are usually well drained in summer.

The EP1 pond edge mixture contains wild flowers and grasses suitable for sowing at the wet margins of ponds, streams and ditches.

Table 14.1.1. 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
EPI	
Species	Common Name
Flowering Species	
<i>Achillea millefolium</i>	Yarrow
<i>Agrimonia eupatoria</i>	Agrimony
<i>Angelica sylvestris</i>	Wild Angelica
<i>Centaurea nigra</i>	Common Knapweed
<i>Chaerophyllum temulum</i>	Rough Chervil
<i>Cruciata laevipes</i>	Crosswort
<i>Dipsacus fullonum</i>	Wild Teasel
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Galium album (Galium mollugo)</i>	Hedge Bedstraw
<i>Galium verum</i>	Lady's Bedstraw
<i>Leucanthemum vulgare</i>	Oxeye Daisy (Moon Daisy)
<i>Lythrum salicaria</i>	Purple Loosestrife
<i>Malva moschata</i>	Musk Mallow
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Rumex acetosa</i>	Common Sorrel
<i>Silaum silaus</i>	Pepper Saxifrage
Grasses	
<i>Agrostis capillaris</i>	Common Bent
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass
<i>Briza media</i>	Quaking Grass
<i>Cynosurus cristatus</i>	Crested Dogstail
<i>Deschampsia cespitosa</i>	Tufted Hair-grass
<i>Festuca rubra</i>	Red Fescue
<i>Schedonorus pratensis (Festuca pratensis)</i>	Meadow Fescue
EM8	
Species	Common Name
Flowering Species	
<i>Achillea millefolium</i>	Yarrow

<i>Agrimonia eupatoria</i>	Agrimony
<i>Angelica sylvestris</i>	Wild Angelica
<i>Betonica officinalis (Stachys officinalis)</i>	Betony
<i>Centaurea nigra</i>	Common Knapweed
<i>Cruciata laevipes</i>	Crosswort
<i>Daucus carota</i>	Wild Carrot
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Galium verum</i>	Lady's Bedstraw
<i>Leontodon hispidus</i>	Rough Hawkbit
<i>Leucanthemum vulgare</i>	Oxeye Daisy - (Moon Daisy)
<i>Malva moschata</i>	Musk Mallow
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Rhinanthus minor</i>	Yellow Rattle
<i>Rumex acetosa</i>	Common Sorrel
<i>Silaum silaus</i>	Pepper Saxifrage
<i>Taraxacum officinale</i>	Dandelion
Grasses	
<i>Agrostis capillaris</i>	Common Bent
<i>Alopecurus pratensis</i>	Meadow Foxtail
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass
<i>Briza media</i>	Quaking Grass
<i>Cynosurus cristatus</i>	Crested Dogstail
<i>Deschampsia cespitosa</i>	Tufted Hair-grass
<i>Festuca rubra</i>	Red Fescue
<i>Hordeum secalinum</i>	Meadow Barley

14.2 Planting

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 14.2.1. and 14.2.2.* Approximate flowering periods are listed in the tables.

Tables 14.2.1. 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</i> species	Mallow	Summer to autumn
<i>Matthiola longipetala</i>	Night-scented stock	Summer
<i>Myosotis sylvatica</i>	Wood forget-me-not	Spring
<i>Nicotiana</i> species	Tobacco plant	Summer
<i>Oenothera</i> species	Evening primroses	Summer to autumn
<i>Papaver rhoeas</i>	Corn poppy	Summer
<i>Phacelia</i> species	Phacelia	Summer to autumn
<i>Primula vulgaris</i>	Primrose	Spring
<i>Rosa</i> species	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</i> species	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</i> species	Vervain	Summer to autumn
<i>Viburnum lantana</i>	Wayfaring-tree	Spring to summer
<i>Viburnum opulus</i>	Guelder-rose	Summer

Table 14.2.2. 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</i> species	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</i> species	Bergamot	Summer to early autumn
<i>Nicotiana</i> species	Tobacco-plant	Spring to autumn
<i>Oenothera</i> species	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 could 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 14.2.3*.

Table 14.2.3. 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 Dogstail
<i>Deschampsia cespitosa</i>	Tufted Hair-grass
<i>Festuca rubra</i>	Red Fescue
<i>Poa nemoralis</i>	Wood Meadow-grass

14.3 Bird boxes

It is not advisable to place many boxes with identical dimensions on a site, because individuals of the same species may not tolerate each other's presence.

Table 14.3.1. Bird boxes with additional details on siting them to increase chances of occupancy.






Type / example	Typical species	Height	Additional information
Vivara Pro Seville 28mm Woodstone Nest Box 	Blue tits, coal tits	2-4m	<ul style="list-style-type: none"> Position on a building or tree, angled north-east (away from prevailing winds) and tilt forward slightly. Chances of occupation can be increased by positioning boxes near vegetation.
Vivara Pro WoodStone House Sparrow Nest Box  	House sparrows	≥ 2m	<ul style="list-style-type: none"> 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.

14.4 Insects

Insect boxes (hotels or towers) should be installed in a sunny location close to vegetation. Bee-friendly and insect friendly plants should be located nearby so that the bees and insects using the

boxes have food. Lavender, honeysuckle and buddleia are all pollinator-friendly plants. The boxes suggested in *Table 14.4.1* (especially the BeePot planter) have been chosen so that they form an attractive feature as part of the landscaping. Solitary bees are non-aggressive and as such are suitable for gardens with pets and children.

Table 14.4.1. Examples of insect boxes that could be erected on site.

Type	Species	Height	Additional information
 <p>BeePot Bee Hotel</p>	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
 <p>Insect Tower</p>	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.
 <p>Urban Bee Nester</p>	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.
 <p>Urban Insect Hotel</p>	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.
 <p>Bee and Bug Biome</p>	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.