MKA
ECOLOGY

Nocturnal Bat Survey

Water House, Highgate

London

Site	*Water House, Highgate*
Project number	*54615*
Client name / Address	*UK and European Investments Ltd, Woodstock Studios, 13 Woodstock Street, London*

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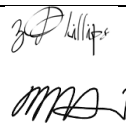
Author(s)	*Zoe Phillips GradCIEEM* *James Heywood CIEEM (student)*	
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Reviewed by	*Will O'Connor MCIEEM*	

Declaration of compliance

This Nocturnal Bat Survey has been undertaken in accordance with British Standard 42020:2013 "Biodiversity, Code of practice for planning and development".

The information which we have provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's (CIEEM) Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

Validity of data

For sites that require a European Protected Species Licence in respect of bats, the licensing authority in England (Natural England) will expect data from the most recent survey season. Where an absence of roosting bat is indicated, data will be valid for a maximum of 24 months.

CONTENTS

1. EXECUTIVE SUMMARY

MKA Ecology Ltd was commissioned to undertake dusk emergence surveys of the trees and Main Building at the Water House in Highgate which was identified as having high potential to support roosting bats during a bat inspection survey (MKA Ecology Ltd, 2017). The surveys were undertaken in order to update data to support a planning application for the development of the Site.

MKA Ecology was commissioned to update nocturnal bat survey results recorded during the 2015 survey effort. During 2015 MKA Ecology Ltd undertook three nocturnal bat surveys of the main building at Water House, Highgate following recommendations made within the Daytime Bat inspection (MKA Ecology Ltd, 2015a). No roosts were identified during these surveys, however the updated Daytime Bat Inspection conducted in 2017 classified the main building as having high potential for supporting roosting bats and the Apple tree and Pedunculate Oak as having moderate risk of supporting roosting bats. As a result, during the updated 2017 nocturnal bat surveys, one nocturnal bat survey was conducted on the main building in order to update the data recorded in 2015. Two surveys were conducted on the Apple tree, as this tree had not previously been surveyed and no surveys were conducted on the Pedunculate Oak as no impacts from the proposed development are expected to affect the Oak during or post development. All surveys were conducted in accordance with best practice guidelines for buildings at risk of supporting roosting bats (BCT 2012). Moderate levels of bat activity were recorded at the Site. Species diversity was considered moderate for the area and included Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared Bat, Noctule and *Myotis sp*.

No bat roosts were identified at the Site during the nocturnal survey effort, and as such it is anticipated that the development can proceed without the need for a Natural England derogation licence.

A provisional mitigation scheme is proposed to ensure that, in the unlikely event of their presence, no bats are harmed during the works. The recommendations made in this report include removing features such as tiles and soffit boxes by hand.

Additionally, a bat enhancement strategy has been recommended with inclusion of a sensitive lighting scheme and bat boxes on the site post-development.

2. INTRODUCTION

2.1. Aims and scope of the report

In June 2017 MKA Ecology Ltd was commissioned to undertake a nocturnal bat survey at the Water House, Highgate by UK and European Investments Ltd in order to support a planning application for demolition of the existing building and construction of a new building. The surveys were to update initial nocturnal bat surveys completed at the Site in 2015 (MKA Ecology Ltd, 2015b).

The aims of the nocturnal bat survey were to:

- Undertake one dusk emergence and one dawn re-entry survey at buildings at the site to confirm the presence/likely absence of roosting bats;
- Where roosting bats are present, identify the species involved, and, where possible, the population size, the type of roost and access points used;
- Assess the need for a European Protected Species Licence (EPSL);
- Outline a suitable mitigation strategy for bats at the site, if required; and
- Propose any suitable habitat enhancements for bat species, if required.

This report must be read in conjunction with the Preliminary Ecological Appraisal (MKA Ecology Ltd, 2015 and 2017) and the daytime bat inspection (MKA Ecology Ltd, 2015 and 2017). With respect to bats, this report supersedes the findings in these reports.

2.2. Site description and context

The survey area is shown on the map in Figure 1. Within this report this area is referred to as the Site or Water House.

The site is located off Millfield Lane in the London Borough of Camden (site centred on OS grid reference TQ 27737 86994). The site comprises naturalised areas of amenity grassland, introduced shrub, scattered trees and a pond, as well as areas of hardstanding, fences and buildings.

The site itself is situated between Hampstead Heath, Highgate cemetery and Waterlow Park. Both Hampstead Heath and Waterlow Park are large, greenspace areas containing woodland, amenity grassland, scattered trees and lakes. Fitzroy Park Allotments are also located nearby to the north. The Hampstead Ponds, which are used for bathing, are situated from just 75m west of the site. The large areas of surrounding open greenspace which border the Site provide suitable foraging and commuting habitat for bats as well as likely providing roosting opportunities for bats in mature trees.

The wider landscape consists of a high density of residential buildings to the south, east and west, and to the north there are large areas of open, green space. To the east there are several reservoirs.

2.3. Proposed development

The proposed development involves a modest extension to the main building which will require the removal of the Apple tree at the north-east of the current building and some impacts on the main building. There is to be a green roof installed on the extended main building.

2.4. Previous survey effort

In 2015 three nocturnal bat surveys were completed at the main building to inform a planning application. Over 24 months have elapsed since the completion of the original Nocturnal Bat survey and as such a contemporary survey was required to update the data.

No roosts were identified at the Site during the previous survey effort. Species observed during the previous survey effort included Common and Soprano Pipistrelle, Brown Long-eared Bat and Noctule, with bat activity being present throughout the Site. This is thought to represent a low to moderate diversity of species for Greater London.

An updated Preliminary Ecological Appraisal and Daytime Bat inspection undertaken in June 2017 identified the main building as having high potential to support roosting bats; and the mature Pedunculate Oak *Quercus robur* tree and the Apple *Malus domestica* tree as having moderate potential to support roosting bats. As such, it was recommended that one nocturnal bat survey was conducted on the main building to update previous data recorded during the 2015 survey effort (MKA Ecology 2015b). As the apple tree had not previously been surveyed, the updated Daytime Bat Inspection recommended that two nocturnal bat surveys were conducted on the Apple tree. The report also recommended that two nocturnal bat surveys should be conducted on the was only recommended that surveys were conducted on the Pendunculate Oak should this be affected by the development, however, it is expected that the proposed development will not directly or indirectly affect potential bat roosts within the Penduculate Oak.

Additionally, the desktop study returned records of Common Pipistrelle *Pipistrellus pipistrellus,* Soprano Pipistrelle *Pipistrellus pygmaeus*, Nathusius's Pipistrelle *Pipistrellus nathusii,* Brown Long-eared Bat *Plecotus auritus*, Noctule *Nyctalus noctula*, Leisler's Bat *Nyctalus leisleri*, Serotine *Eptesicus serotinus,* Natterer's Bat *Myotis nattereri*, Daubenton's Bat *Myotis daubentonii*, Pipistrelle *Pipistrellus sp.,* unidentified *Nyctalus sp*., unidentified *Myotis sp*, unidentified *Plecotus sp.,* and unidentified Bat *Chiroptera sp.* within 2km of the site.

2.5. Legislation and planning policy

This daytime bat inspection survey has been undertaken with reference to relevant wildlife legislation and planning policy.

Relevant legislation considered within the scope of this document comprised the following:

- The Conservation of Habitats and Species Regulations 2010 (as amended);
- The Wildlife and Countryside Act 1981 (as amended); and
- Natural Environment and Rural Communities (NERC) Act 2006.

Further information is provided in Appendix 2.

In addition to obligations under wildlife legislation, the National Planning Policy Framework (NPPF) issued in 2012 requires planning decisions to act towards conserving and enhancing the local environment. Further details are provided in Appendix 2.

All UK bat species are listed as priority species within the Camden Biodiversity Action Plan. In addition, the Camden Borough Council has produced a proposed Local Plan in 2016 which covers a number of policies relating to biodiversity and habitat conservation. This plan is to be adopted on 26 June 2017. Policy A3 states that all development should not result in the loss or harm of priority habitat and species and that development will incorporate biodiversity enhance measures. Further, all enhancement measures should contribute to the delivery of the Camden Biodiversity Action Plan and green infrastructure strategies. Where relevant these are discussed in further detail in Section 5.

3. METHODOLOGY

3.1. Survey area

The survey area is shown in Figure 2, Appendix 1.

3.2. Dusk emergence/dawn re-entry survey

One nocturnal survey was undertaken on the Main building following guidance set out in *Bat Surveys for Professional Ecologists – Good Practice Guidelines (3rd edition)* (Collins, 2016) and *Bat Workers' Manual (3rd edition)* (Mitchell-Jones and McLeish, 2004) to update the previous data. Two nocturnal surveys were undertaken on the Apple tree and no nocturnal surveys were undertaken on the Pedunculate Oak as no lighting impacts are proposed to affect the tree.

All bat activity observed on site was recorded and the time and species noted, along with behaviour (i.e. emerging from roost, commuting, foraging). The start and finish time of the survey visits were recorded, as well as the date, wind direction and force, temperature, precipitation and cloud cover for each visit. A map of the area to be surveyed was used by each surveyor to show bat emergence locations and flight lines.

Dusk emergence surveys began 15 minutes to half an hour before sunset and continued for 1.5 to 2 hours after sunset.

On the first visit one surveyor with a bat detector and recorder was positioned around the Apple tree to observe all potential access points and suitable roosting locations (surveyor location 6 on Figure 2, Appendix 1). On the second visit six surveyors were located around the main building and Apple tree to observe all potential access points and suitable roosting locations on the building and tree, as well (surveyor locations 1-6 on Figure 2, Appendix 1).

3.3. Equipment and sound analysis

Surveyors used broadband, time expansion, full spectrum and zero-crossings analysis bat detectors (BatBox Duet, Pettersson D240x), and Anabat SD1 with integrated data recording). Edirol R09HR, Peersonic RPA1 and Roland digital recorders were used to record bat call data from BatBox Duet and Pettersson D240x bat detectors. Sound recordings were later analysed using BatSound and AnalookW software. Identification of bat calls was undertaken using the parameters set out by Russ (2012).

3.4. Dates, times and weather conditions

The dates, times and weather conditions are given for each site visit, are given in Table 1, along with the buildings surveyed and the equipment used.

Table 1: Survey dates, times, weather conditions and equipment used

Date of each survey visit	Start and end times, sunset/sunrise times	Building reference	Equipment used	Weather*
06/06/2017 (dusk emergence)	Start: 20:58 End: 22:43 Sunset: 21:13	Apple tree	Bat detectors: BatBox Duet Pettersson D420x Digital recorders: Edirol R09HR	Start temp:12.0 End temp: 11.0 Precipitation: None Wind: 4 W Cloud cover: **2**
Comments: 1 surveyor				
20/06/2017 (dusk emergence)	Start: 21:06 End: 22:51 Sunset: 21:21	Main House and Apple tree	Bat detectors: BatBox Duet Pettersson D420x Digital recorders: Edirol R09HR Peersonic RPA1 Anabat SD1	Start temp: 28.0 End temp: 23.0 Precipitation: None Wind: 1 ESE Cloud cover: **1**
Comments: 6 surveyors				

*Wind as per Beaufort Scale / Cloud cover given in Oktas.

3.5. Surveyors

The 2017 nocturnal bat surveys were undertaken by the following surveyors:

- Will O'Connor MCIEEM, Director and Principal Ecologist at MKA Ecology Ltd. Will holds a Natural England Bat Licence WML-CL18 (Natural England Bat Class Licence Number CLS0599, MKA Ecology Ltd) and has over 10 years' bat survey experience.
- Zoe Phillips GradCIEEM, Graduate Ecologist at MKA Ecology Ltd. Zoe has over two years' bat survey experience.
- Gabrielle Horne GradCIEEM, Graduate Ecologist at MKA Ecology Ltd. Gabrielle has over two years' bat survey experience.
- Joseph Grainger GradCIEEM, Graduate Ecologist at MKA Ecology Ltd. Joe has over one year of bat survey experience.
- James Heywood, Seasonal Ecologist at MKA Ecology Ltd. James has one year of bat survey experience.
- Lee Talbot, Sub-contractor at MKA Ecology Ltd. Lee has one year of bat survey experience.

3.6. Constraints

The results taken from bat detector recordings are biased towards bats that use louder echolocation calls. Therefore quiet bats, such as Brown Long-eared Bat, may be under-recorded due to the limited recording range of the equipment. This was not considered to present a significant constraint as surveyors were vigilant to ensure that visual cues indicating the presence of quiet species were recorded.

In some circumstances it is not possible to confirm that species of bat with absolute confidence using sound analysis techniques. In particular some calls of Common Pipistrelle and Soprano Pipistrelle overlap making species identification difficult. In these circumstances the bat can be identified as a *Pipistrellus* sp. only. Within this report where *Pipistrellus* sp. is used this refers only to Common Pipistrelle and Soprano Pipistrelle. This should not be interpreted as other species of the *Pipistrellus* genus, such as Nathusius' Pipistrelle *Pipistrellus nathusii* which, although it occurs relatively frequently within the UK is not commonly recorded. Where Pipistrelle species other than Common or Soprano Pipistrelle are suspected this will be directly referenced and discussed within the report. Similarly calls of *Myotis* species can demonstrate a large number of overlapping parameters making identification difficult. Where this is the case a bat has been identified as *Myotis* sp.

No other constraints were present at the time of survey.

3.7. Assessment

The guidelines for categorisation of bats in England by distribution and rarity (adapted from Wray *et al*., 2010) are shown in the tables below.

Table 2: Rarity of bat species within England

Rarity within range (England)	Species
Rarest (population under 10,000)	Greater Horseshoe Bat Bechstein's Bat Alcathoe Bat Greater Mouse-eared Bat Barbastelle Grey Long-eared Bat
Rarer (population 10,000 to 100,000)	Lesser Horseshoe Bat Whiskered Bat Brandt's Bat Daubenton's Bat

Rarity within range (England)	Species
	Natterer's Bat Leisler's Bat Noctule Nathusius' Pipistrelle Serotine
Common (population over 100,000)	Common Pipistrelle Soprano Pipistrelle Brown Long-eared Bat

Table 3: Level of importance of roost type

Geographic frame of reference	Roost type
District, Local or Parish	Feeding perches (common species) Individual bats (common species) Small numbers of non-breeding bats (common species) Mating sites (common species)
County	Maternity sites (common species) Small numbers of hibernating bats (common and rarer species) Feeding perches (rarer/rarest species) Individual bats (rarer/rarest species) Small numbers of non-breeding bats (rarer/rarest species)
Regional	Mating sites (rarer/rarest species) including well-used swarming sites Maternity sites (rarer species) Hibernation sites (rarest species) Significant hibernation sites for rarer/rarest species or all species assemblages
National/UK	Maternity sites (rarest species) Sites meeting SSSI guidelines*
International	SAC sites

*Sites meeting SSSI (Sites of Special Scientific Interest) selection guidelines include Barbastelle maternity roosts and mixed species hibernacula assemblages

4. RESULTS

4.1. Results summary

Common Pipistrelle, Soprano Pipistrelle, Noctule, Brown Long-eared and *Myotis sp.* were recorded during the survey visits.

No roosts were identified at the Site.

Annotated site photographs are provided in Appendix 3. Raw survey data are provided in Appendix 4.

4.2. Dusk emergence survey 1

The first dusk emergence survey was completed on 06 June 2017. Sunset was at 21:13. The first bat (a Soprano Pipistrelle) was recorded at 21:41, commuting over the site towards Hampstead Heath.

Moderate levels of bat activity were recorded from Common Pipistrelle and low levels of Soprano Pipistrelle, Noctule and Brown Long-eared Bat were recorded during the survey visit.

4.3. Dusk emergence survey 2

The second dusk emergence survey was completed on 19 June 2017. Sunset was at 21:21. The first bat (a Soprano Pipistrelle) was heard but not seen in the south of the Site at Position 2.

Moderate levels of bat activity were recorded from Common Pipistrelle and low levels of Soprano Pipistrelle, Noctule and Brown Long-eared Bat were recorded during the survey visit.

5. EVALUATION AND MITIGATION PROPOSALS

The following evaluation is based on the combined information from the daytime bat inspection on 06 June 2017 and the dusk emergence surveys undertaken during July and August 2015 and updated surveys undertaken on 06 and 19 June 2017.

5.1. Evaluation

During the nocturnal bat surveys, no roosting bats were recorded. As such, it is considered that development will have a negligible impact on roosting bats and do not present any constraints to development.

The nocturnal surveys in July and August of 2015 revealed a moderate level of bat activity at the site with no bat roosts identified. Common Pipistrelle, Soprano Pipistrelle, *Pipistrellus sp.,* Brown Long-eared Bat, Noctule, unidentified *Nyctalus/Eptesicus sp.* bat and unidentified bats were recorded at the site.

The nocturnal bat surveys undertaken on 06 and 19 June 2017 revealed a moderate level of bat activity with no bat roost identified. The findings during the two nocturnal surveys suggest that Common Pipistrelles, Soprano Pipistrelle and Brown Long-eared Bats are using the garden to as foraging grounds, as well as commuting across the Site to forage within Hampstead Heath to the south of the Site. It is considered that Noctule and *Myotis sp*. are also commuting across the Site between roosting and foraging grounds within Hampstead Heath.

5.2. Ecological impacts in absence of mitigation

The proposed development is to extend the building to the north west of the House, with the removal of the Apple tree. As such, there is not expected to be any direct impacts to locally roosting bats from loss of roosts, fragmentation or isolation. Indirect impacts may occur due to lighting or landscape strategies of the proposed development.

6. RECOMMENDATIONS

The following recommendations are made based on the combined information from the daytime bat inspection on 06 June 2017 and the dusk emergence surveys undertaken on 06 and 19 June 2017.

The proposed development at the Water House, Highgate will involve removal of the Apple tree present to the north-east of the Site and the construction of an extension to the main building. Although no roosts were identified at the site it is recommended that best-practice methodologies are employed to ensure that in the unlikely event of a bat being present they are not harmed during the development works. It is recommended that where removal of any potential bat roosting features is undertaken (e.g. tiles and soffit boxes), that this should be undertaken carefully by hand. If a bat is found during works MKA Ecology Ltd (01763 262211) or Natural England (0845 600 3078) should be consulted immediately for further advice.

Recommendation 1

Removal of features such as tiles and soffit boxes should be undertaken carefully by hand. All on site contractors should be made aware of the potential presence of bats. In the unlikely event of a bat being discovered at the site works should cease and advice be sought immediately either from Natural England (0845 600 3078) or MKA Ecology Ltd (01763 262211).

A sensitive lighting strategy should be incorporated in the final site design. The guidance provided by the ILP (2011) provides suitable designs of downward facing lighting and examples of cowls on lights. In addition to the use of downward facing lighting and fitting lights with cowls, lights should be also fitted with short timers.

Recommendation 2

Incorporate a sensitive lighting scheme on the site post-development. This should include using downward facing lighting, as well as fitting lights with hoods and short timers.

Following the issue of the National Planning Policy Framework (NPPF, see Appendix 2), all planning decisions should aim to maintain, and enhance, restore or add to biodiversity conservation interests. To provide improved provisions for roosting bats on site, it is recommended that bat boxes are included within the design scheme. A minimum of six bat boxes should be included in the final site design. These should be integrated into the new building, or attached to trees. Examples of suitable bat boxes are provided in Appendix 2.

Recommendation 3

Include a minimum of six bat boxes in the final site design. Examples of suitable bat boxes are included in Appendix 2.

Summary of recommendations

Table 7 below summarises the requirement for further work at the site in relation to bats and the stage of development at which the work should be undertaken.

Table 7: Summary of further work required at the Water House, Highgate

Species	Pre-planning action required?	Pre-construction action required?	Construction phase mitigation required?	Enhancements proposed?
Bats	No	No	Yes- Remove potential roosting feature by hand	Yes – bat box provisions and sensitive lighting scheme

7. CONCLUSIONS

On 06 and 19 June 2017 MKA Ecology Ltd undertook dusk emergence surveys to identify any roosting bats at the Main Building and Apple tree at the Water House in Highgate. These were to update nocturnal bat surveys undertaken between July and August 2015.

The nocturnal surveys revealed moderate levels of bat activity at the Site. No roosts were identified at the site. Species observed included Common and Soprano Pipistrelle, as well as Brown Long-eared Bat, Noctule and *Myostis sp,,* with bat activity being present throughout the Site. This is thought to represent a moderate diversity of species for Greater London.

Best-practice methodologies have been recommended to ensure that no bats are harmed incidentally as a product of the development. These include removing any potential bat roosting features by hand. A bat enhancement strategy is recommended which incorporates a sensitive lighting strategy and bat boxes.

8. REFERENCES

British Standards Institution (2013) *British Standard 42020:2013, Biodiversity – Code of practice for planning and development.* British Standards Institution: London.

Chartered Institute of Ecology and Environmental Management (2013) Code of Professional Conduct.

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

Institute of Lighting Professionals (2011) *Guidance Notes for the Reduction of Obtrusive Light*. [ONLINE]. Available at: https://www.theilp.org.uk/documents/obtrusive-light/

MKA Ecology Ltd. (2015a) *Water House, Highgate, Daytime Bat inspection*. MKA Ecology: Cambridge.

MKA Ecology Ltd. (2015b) *Water House, Highgate, Nocturnal Bat surveys*. MKA Ecology: Cambridge.

MKA Ecology Ltd. (2015b) *Water House, Highgate, Preliminary Ecological Appraisal*. MKA Ecology: Cambridge.

MKA Ecology Ltd. (2017) *Water House, Highgate, Preliminary Ecological Appraisal and Daytime Bat Inspection*. MKA Ecology: Cambridge.

Mitchell-Jones, A.J. & McLeish, A.P. (2004) *Bat Workers' Manual (3rd edition)*. Joint Nature Conservation Committee: Peterborough.

Russ, J. (2012) *British Bat Calls – A Guide to Species Identification*. Pelagic Publishing: Exeter.

Wray, S., Wells, D., Long, E. and Mitchell-Jones, T. (2010) Valuing bats in Ecological Impact Assessment. *In Practice*, 70: 23 – 25.

9. APPENDICES

9.1. Appendix 1: Site maps

Figure 1: Site boundary and location

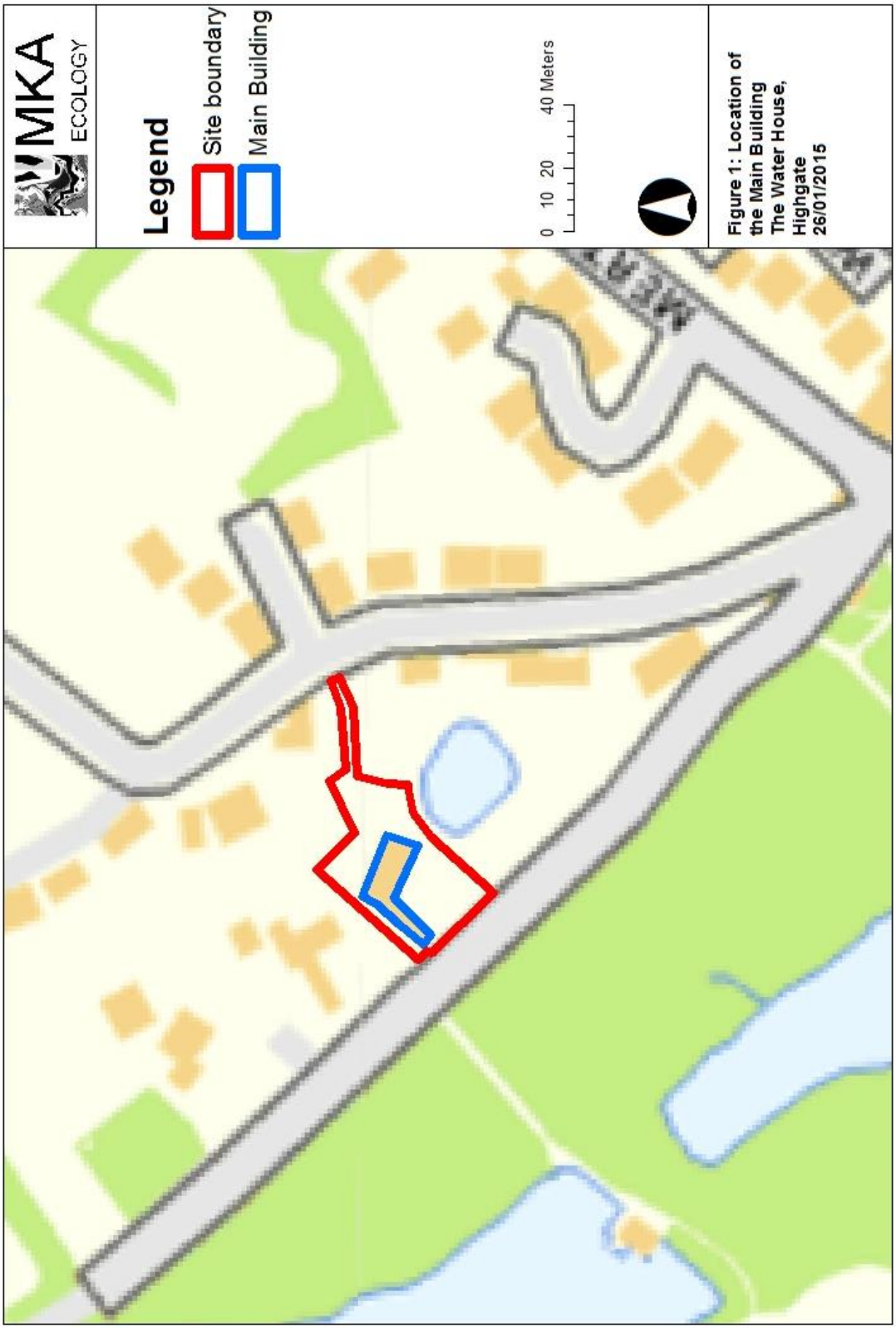
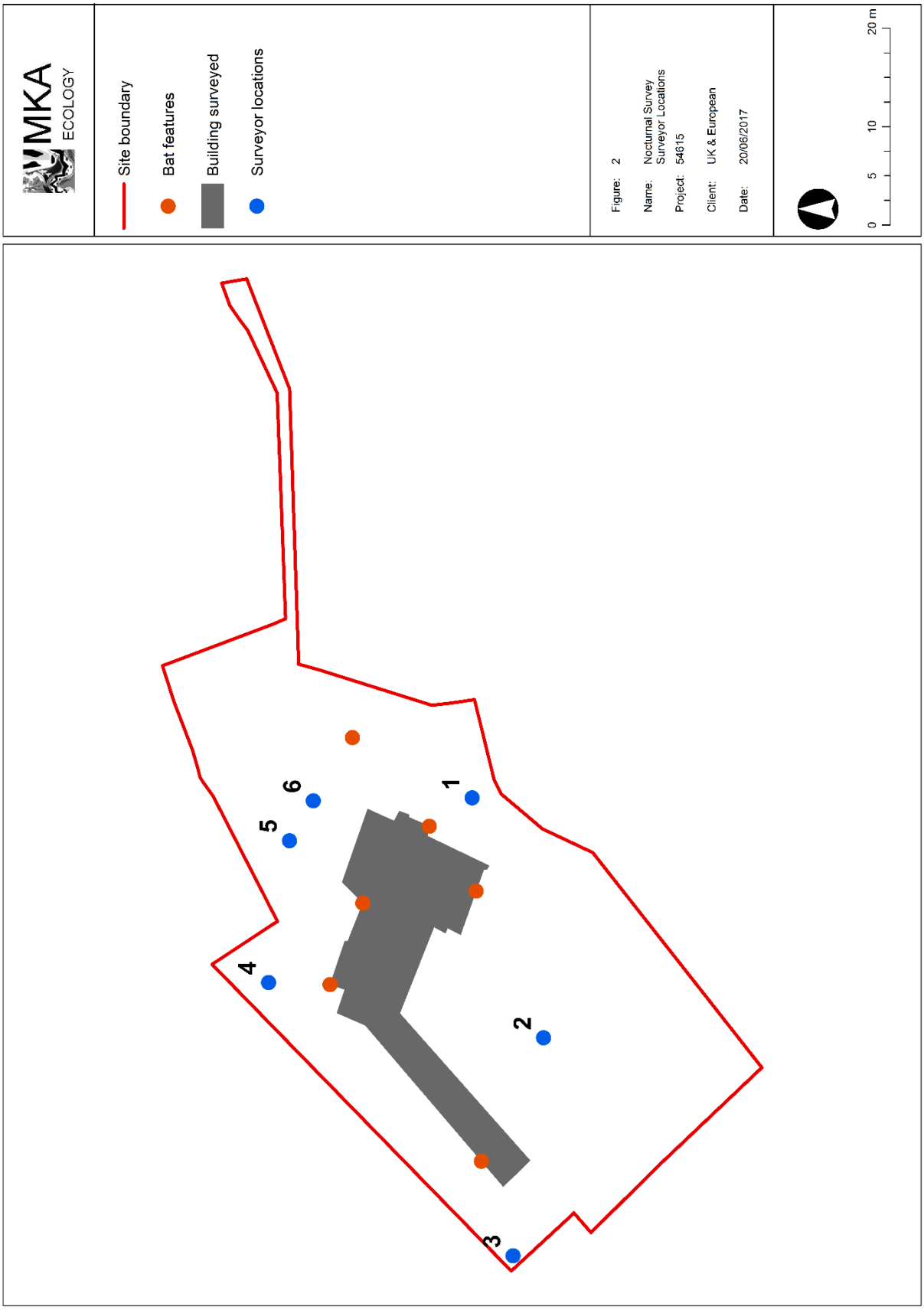


Figure 2: Survey area and surveyor locations



9.2. Appendix 2: Relevant legislation and planning policy

Please note that the following is not an exhaustive list, and is solely intended to cover the most relevant legislation pertaining to species commonly associated with development sites.

Subject	Legislation (England)	Relevant criminal offences
Bats (all species)	The Conservation of Habitats and Species Regulations 2010 (as amended) All bat species are listed on Schedule 2, which designates them as European Protected Species. European Protected Species are subject to the provisions of Part 3, Regulation 41 (Protection of certain wild animals).	• Deliberate capture, injury or killing of a bat; • Deliberate disturbance of a bat; • Damage or destruction of a bat roost; • To possess, control, transport, sell or exchange, or to offer for sale or exchange, any live or dead bat or part of a bat, or anything derived from a bat or any part of a bat. **Notes** In this interpretation, a bat roost is "*a breeding site or resting place of a bat*". Because bats tend to reuse the same roosts, bat roosts are considered to be protected whether or not the bats are present at the time. In this interpretation, disturbance of animals includes *in particular* any disturbance which is likely – (a) to impair their ability: • to survive, to breed or reproduce, or to rear or nurture their young, or • in the case of animals of a hibernating or migratory species, to hibernate or migrate; or

Subject	Legislation (England)	Relevant criminal offences
		• (b) to affect significantly the local distribution or abundance of the species to which they belong.
	Wildlife and Countryside Act 1981 (as amended) All bat species are listed on Schedule 5 and are therefore subject to parts of the provisions of Section 9 (Sections 9(4)(b) and (c) and Section 9(5)).	• Intentional or reckless disturbance of a bat while it is occupying a roost; • Intentional or reckless obstruction of access to a roost; • To sell, expose for sale, possess or transport for the purpose of sale, any live or dead bat or any part of, or anything derived from a bat; or • Publishing or causing to be published any advertisement likely to be understood as conveying that an individual buys or sells, or has an intention to buy or sell bats. In this interpretation, a bat roost is "*any structure or place which any wild [bat]...uses for shelter or protection*". Because bats tend to reuse the same roosts, bat roosts are considered to be protected whether or not the bats are present at the time.

The Wildlife & Countryside Act 1981 (as amended)

Full legislation text available at: http://www.legislation.gov.uk/ukpga/1981/69

Conservation of Habitats and Species Regulations 2010 (as amended)

Full legislation text available at: http://www.legislation.gov.uk/uksi/2010/490/regulation/61/made

Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006

Full legislation text available at: http://www.legislation.gov.uk/ukpga/2006/16/contents

Several bat species are listed as species of principal importance for the purpose of conserving biodiversity under Section 41 of the NERC Act 2006.

The NERC Act 2006 places a legal obligation on public bodies, including those considering planning applications, to maintain, and where possible enhance, the conservation status of any Section 41 species found on a site. Species included on Section 41 were also included on the UK Biodiversity Action Plan (BAP) and remain an integral part of the Post-2010 Biodiversity Framework.

These species are:

- Barbastelle *Barbastella barbastellus*;
- Bechstein's Bat *Myotis bechsteinii*;
- Brown Long-eared Bat *Plecotus auritus*;
- Greater Horseshoe Bat *Rhinolophus ferrumequinum*;
- Lesser Horseshoe Bat *Rhinolophus hipposideros*;
- Noctule *Nyctalus noctula*; and
- Soprano Pipistrelle *Pipistrellus pygmaeus*.

National Planning Policy Framework (NPPF)

Full text available at:
http://www.communities.gov.uk/planningandbuilding/planningsystem/planningpolicy/planningpolicyframework

The NPPF was published in late March 2012; setting out the Government's planning policies for England and the process by which these should be applied. The policies within the NPPF are a material consideration in the planning process.

The key principle of the NPPF is a presumption in favour of sustainable development, with sustainable development defined as a balance between economic, social and environmental needs.

Policies 109 to 125 of the NPPF address conserving and enhancing the natural environment, stating that the planning system should:

- Contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes;
- Recognise the wider benefits of ecosystem services; and
- Minimise impacts on biodiversity and provide net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity.

Furthermore there is a focus on re-use of existing brownfield sites or sites of low environmental value as a priority, and discouraging development in National Parks, Sites of Specific Scientific Interest, the Broads or Areas of Outstanding Natural Beauty other than in exceptional circumstances.

Where possible, planning policies should also "promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan".

9.3. Appendix 3: Site photographs

Photograph 1: Main house (south aspect)

Photograph 2: Main House (west aspect)

Photograph 3: Main house (north aspect)

Photograph 4: Apple Tree

9.4. Appendix 4: Raw survey data

Time	Species	Position	Comments
21:41	Soprano Pipistrelle	6	Commuting towards heath
21:47	Soprano Pipistrelle	6	briefly foraged then flew towards heath
21:59	Soprano Pipistrelle	6	briefly foraged then flew towards heath
22:03	Soprano Pipistrelle	6	came from direction of house,
22:20	Common Pipistrelle	6	2 passes and foraging
22:26	Common Pipistrelle	6	Not seen
22:33	Common Pipistrelle	6	Not seen
22:36	Common Pipistrelle	6	Not seen
21:31	Pipistrelle sp.	1	Not seen, very distant
21:33	Soprano Pipistrelle	2	Not seen
21:44	Noctule	3	Not seen
21:44	Noctule	4	Flying over site
21:44	Noctule	1	Not seen
21:50	Common Pipistrelle	1	Direct flight
21:50	Common Pipistrelle	5	Flying from E to W over building
21:52	Common Pipistrelle	2	Seen to east of garden, flying N to S
21:53	Soprano Pipistrelle	1	East of garden, N-S
21:54	Soprano Pipistrelle	5	Not seen
21:54	Soprano Pipistrelle	6	not seen, 1 pass
21:55	Soprano Pipistrelle	2	Seen to east of garden, flying N to S
21:57	Soprano Pipistrelle	2	Not seen
21:57	Pipistrelle sp.	5	Flying over trees to N
21:58	Soprano Pipistrelle	1	From position #5
21:58	Pipistrelle sp.	4	3 passes with 2 bats
22:04	Pipistrelle sp.	4	over site towards east
22:04	Soprano Pipistrelle	5	Flying W to E over garden to N

Time	Species	Position	Comments
22:04	Soprano Pipistrelle	6	Heading away from heath, one pass
22:07	Pipistrelle sp.	4	over site towards east
22:07	Soprano Pipistrelle	5	Flying W to E over garden to N
22:07	Soprano Pipistrelle	6	Foraging, travelling N
22:08	Bat indet.	3	Not seen
22:10	Soprano Pipistrelle	5	Foraging
22:10	Soprano Pipistrelle	6	Foraging, travelling N
22:13	Pipistrelle sp.	3	Travelling 2 over position #3
22:15	Brown Long-eared Bat	3	Flying around position #3
22:15	Soprano Pipistrelle	5	Flying W to E over garden to N
22:15	Soprano Pipistrelle	6	From position #1, heading NW
22:16	Pipistrelle sp.	4	2 passes
22:18	Brown Long-eared Bat	3	Flying around position #3
22:18	Soprano Pipistrelle	6	From position #1, heading NW
22:19	Myotis sp.	5	Flying from postion 1 to N
22:19	Myotis sp.	6	From near apple tree over location
22:20	Myotis sp.	1	To position #5
22:20	Pipistrelle sp.	4	Not seen
22:22	Soprano Pipistrelle	6	Travelling S towards position #1
22:23	Soprano Pipistrelle	1	From position #5
22:23	Soprano Pipistrelle	5	Not seen
22:24	Pipistrelle sp.	3	Flying around position #3
22:29	Pipistrelle sp.	4	not seen
22:30	Brown Long-eared Bat	2	Not seen
22:30	Pipistrelle sp.	3	3 passes
22:32	Common Pipistrelle	2	Not seen
22:32	Common Pipistrelle	3	Not seen
22:33	Noctule	4	not seen

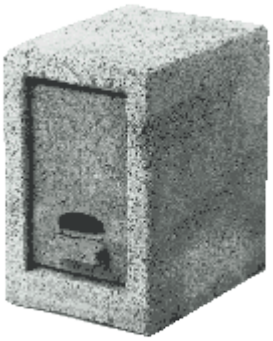
Time	Species	Position	Comments
22:36	Common Pipistrelle	1	not seen
22:36	Noctule	5	Not seen
22:38	Common Pipistrelle	1	not seen
22:38	Common Pipistrelle	3	Not Seen
22:39	Bat indet.	6	Not seen
22:40	Common Pipistrelle	2	Not seen
22:40	Noctule	3	Not Seen
22:41	Noctule	2	Not seen
22:42	Bat indet.	6	Not seen
22:43	Bat indet.	1	not seen
22:43	Common Pipistrelle	5	Not seen
22:44	Pipistrelle sp.	2	Not seen
22:45	Brown Long-eared Bat	4	not seen
22:46	Common Pipistrelle	5	Not seen
22:47	Common Pipistrelle	1	not seen
22:47	Common Pipistrelle	3	Not Seen
22:48	Soprano Pipistrelle	2	Not seen
22:55	Pipistrelle sp.	4	Towards position 3

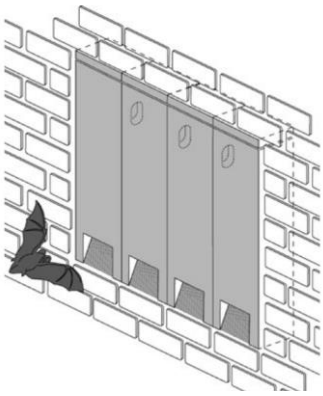
9.5. Appendix 5: Bat box recommendations

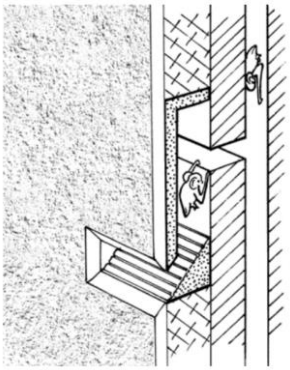
A wide range of bat boxes are available to suit a variety of species and design requirements. Bat boxes can be mounted externally on buildings, built directly into the wall structure or mounted on trees (dependent on box design).

Boxes are more likely to be inhabited if they are located where bats feed and it may help to place the box close to features such as tree lines or hedgerows, which bats are known to use for navigation and can provide immediate cover for bats leaving the roost. Boxes should be placed in areas sheltered from strong winds and are exposed to the sun for part of the dat. Access to any bat roosting features should not be lit and should also be at a reasonable height to avoid predation (at least 2m if possible, preferably 4-5m).

Example	Description	Picture
Schwegler General Purpose Bat Box 2F	www.schwegler-nature.com Height: 33 cm Weight: approx. 3.8 kg External diameter: 16 cm Installation: Hanging A general purpose box, suitable for all species.	
Schwegler General Purpose Bat Box 2F with Double Front Panel	www.schwegler-nature.com Height 33 cm Weight: approx. 4.1 kg External diameter: 16 cm Installation: Hanging This box is suitable for crevice dwellers, such as Nathusius´ Pipistrelle, Daubenton`s Bat and Common Pipistrelle.	

Example	Description	Picture
Schwegler 1FF	www.schwegler-nature.com Dimensions: 14(d) x 27(w) x 43(h) cm Weight: 9.9 kg Installation: Hanging This box is suitable for crevice dwellers, such as Nathusius´ Pipistrelle, Daubenton`s Bat and Common Pipistrelle. This box minimises temperature fluctuations in spring and autumn and is self-cleaning.	
Schwegler 1FQ	www.schwegler-nature.com Dimensions: 60(h) x 35(w) x 9(d) cm Weight: 15.8kg Installation: Attached to most external brick, timber or concrete walls at least 3m high. Can also be placed inside roof space This box is ideal for all types of bats that inhabit buildings. The box is weather-resistant and is also temperature controlled and self-cleaning. The front panel of the box can also be painted during manufacture, to match an existing colour.	
Brick Box Type 27	www.schwegler-nature.com Dimensions: 26.5(h) x 18(w) x 24(d) cm Weight: 9.5kg Installation: Can be flush with outside wall and rendered or covered so only the entrance hole is visible. This box is ideal for all types of bats that inhabit buildings.	

Example	Description	Picture
Schwegler 2FR	www.schwegler-nature.com Dimensions: 47(h) x 20(w) x 12.5(d) Weight: 9.8kg Installation: Can be installed on external walls – either flush or beneath a rendered surface in concrete and, during renovation work, under wooden panelling or in building cavities. Several tubes should be installed together (recommended three). This box is ideal for all types of bats that inhabit buildings. By installing boxes side by side a colony roosts can be created with any size requirement. This box has three different environmental partitions inside, attracting different species. The box is self-cleaning.	 
Schwegler 1WI	www.schwegler-nature.com Dimensions: 55(h) x 35(w) x 9.5(d) cm Weight: 15kg Installation: Attached to most types of external brick, timber or concrete walls. It can be installed flush-mounted and rendered over or simply against the wall. It should be installed at a height of at least 3m. This box typically attracts building-inhabiting bat species like Pipistrelle or Serotine Bat. This box is weather-resistant and designed for both winter hibernation and larger colonies in summer, including nursery roosts.	

Example	Description	Picture
Schwegler 1MF (Swift and Bat)	www.schwegler-nature.com Dimensions: 46(h) x 43(w) x 22.5(d) cm. Weight: approx. 24 kg Installation: The box can be hung against any types of wall of any type of building, between 6-7m above ground level. This box is designed for nesting swifts, however the recess in the rear panel creates a space between the wall of the building and the box, making it ideal for bats that inhabit building, such as Common Pipistrelle. Whilst the box may require cleaning, the back recess for bats requires no maintenance.	
Schwegler 1FE	www.schwegler-nature.com Dimensions: 30(h) x 30(w) x 8(d) cm. Weight: approx. 5.1 kg. Installation: Installation of multiple units is recommended. The box can be integrated into insulation or masonry. It can also be attached to the underlying structure to cover existing cavities, allowing bats to still sue them. Install at least 3m above the ground. This is a general purpose box, suitable for all species. There is a maintenance-free access panel for installing on or in the surface of exterior walls. The open rear enables bats to continue to use existing nesting sites in walls.	 

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