Sandleford Park, Newbury

Appendix F9: Bat Activity Report

Bloor Homes & Sandleford Farm Partnership

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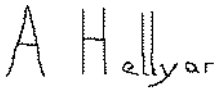
Prepared by:		Alex Hellyar GradCIEEM **Assistant Ecologist**
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1	December 2018	Tam Clark		Update to current proposals
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Contents

Executive Summary

Contents	Summary
Site Location	The site is located at Sandleford Park in Newbury, West Berkshire, centred on OS Grid Reference SU 46847 64550. The site comprises agricultural fields with areas of grassland and several copses of ancient woodland. A central valley runs from the north-western corner of the site towards the River Enborne at the site's southern boundary.
Existing Site Information	WYG completed an initial ecological appraisal in 2008 with update surveys completed in 2011, 2013, 2015, 2016 and 2017. In addition, a number of protected species surveys have been completed at the site.
Scope of this Survey(s)	Manual and automated bat activity surveys were completed between 2012-2017 to determine the extent in which bats utilise the site for foraging and commuting purposes. This report provides a brief summary of the earlier surveys, and more detail regarding the 2016/2017 surveys.
Results	Up to 13 species of bat have been recorded using the habitats across the site. The species recorded were common pipistrelle, soprano pipistrelle, Nathusius pipistrelle, serotine, noctule, brown long-eared, Leisler's, Natterer's, Daubenton's, *Myotis* species (likely whiskered/Brandt's), unidentified myotis species and barbastelle. Common pipistrelles were the most frequently encountered species as they were recorded on all transects on each survey visit, and were most frequently picked up on the remote detectors. Commuting and foraging behaviour was observed throughout the majority of the site but was largely associated with linear and edge habitats, such as along the woodland edges and tracks or along the alignment of hedgerows connecting the woodlands. The value of the site to both foraging and commuting bats is considered to be of **county level** importance.
Recommendations	To help maintain the favourable conservation status of roosting, foraging and commuting bats on site the following measures are being implemented into the design for the site: • Woodlands have been retained within the masterplan, together with a 15m buffer. The majority of hedgerows will be retained with a 3m buffer. • where retention of hedgerows/connective habitat in unavoidable, alternative green continuous corridors have been designed across the site; • ecological input has been ongoing during the development of the masterplan and the landscape plan; • an Ecological Mitigation and Management Plan has been compiled to help ensure that the ecologically valuable habitat continues to function (Appendix F18); • management recommendations of the ecologically valuable habitats will be non-intensive; • SuDS have been incorporated into the design, and ecological input will be included to maximise biodiversity enhancement opportunities;

	• where bat habitat is severed, measures to breach the gap (e.g. hop-overs where hedgerow severed; under-bridges beneath road bridge, etc) have been designed into the scheme; • ecological input has been provided during compilation of the lighting scheme; • lighting across the development has been designed to reduce impacts on bat foraging, commuting and roosting habitat; • it is recommended that construction activity should cease at sunset and the public be deterred from using the majority of the woodlands; and • if possible, measures should be employed to reduce cat predation on bats during the operational phase. In addition to the mitigation measures above, which provide opportunities for biodiversity and enhancement (e.g. through the creation of SuDS), the habitats on site will be enhanced by: • in-fill planting of existing hedgerows • the creation of a large proposed country park / open space. Additional enhancement measures recommended for inclusion in the development plans include the provision of artificial bat roosts across the site, in new buildings and on retained trees, as well as bat friendly planting.

Glossary

AONB	Area(s) of Outstanding Natural Beauty
Badger Act	Protection of Badgers Act 1992
BCT	Bat Conservation Trust
BoCC	Bird(s) of Conservation Concern
BTO	British Trust for Ornithology
CEcol	Chartered Ecologist
CEnv	Chartered Environmentalist
CIEEM	Chartered Institute of Ecology & Environmental Management
CRoW Act	Countryside and Rights of Way Act 2000
EcIA	Ecological Impact Assessment
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
EMP	Ecological Management Plan
EPS	European Protected Species
EPSL	European Protected Species Licence
GCN	Great Crested Newt
Habitat Regulations	Conservation of Habitats and Species Regulations 2017
HAP	Habitat Action Plan
Hedgerow Regulations	Hedgerow Regulations 1997
HPI	Habitat(s) of Principal Importance
HRA	Habitats Regulations Assessment
JNCC	Join Nature Conservancy Council
LERC	Local Ecological Record Centre
LBAP	Local Biodiversity Action Plan
LNR	Local Nature Reserve
LPA	Local Planning Authority
LWS	Local Wildlife Site
MCIEEM	Member of Chartered Institute of Ecology & Environmental Management
Natura 2000 site	A European site designated for its nature conservation value
NE	Natural England
NERC Act	Natural Environment and Rural Communities Act 2006
NNR	National Nature Reserve
NPPF	Revised National Planning Policy Framework
PEA	Preliminary Ecological Appraisal
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SAP	Species Action Plan
SNCO	Statutory Nature Conservation Organisations
SPA	Special Protection Area
SPI	Species of Principal Importance
SSSI	Site(s) of Special Scientific Interest
W&CA	Wildlife & Countryside Act 1981

1.0 Introduction

1.1 Background

WYG was commissioned by Bloor Homes and the Sandleford Farm Partnership in December 2018 to review the findings of bat roost assessments at Sandleford Park, with reference to the current proposals.

This report has been prepared by Assistant Ecologist Alex Hellyar, and updated by Tamsin Clark MCIEEM.

1.2 Site Location

The site is located at Sandleford Park in Newbury, West Berkshire and is centred at Ordnance Survey National Grid Reference SU 46847 64550. The survey area, hereafter referred to as the 'site', is shown on Figure 1 and comprised of agricultural fields with areas of grassland and several copses of ancient woodland dispersed throughout. A central valley runs from the north-western corner of the site towards the River Enborne at the site's southern boundary.

For details of the development description, please see the main ES chapter.

1.3 Purpose of the Report

The ecological investigations for bats undertaken by WYG included the following objectives:

- A suite of bat activity surveys to gain an understanding of bat species' usage of the site and an indication of population numbers; and
- An assessment of the potential ecological constraints to the proposed works at the site relating to bat species and recommendations for further survey, avoidance, mitigation and enhancement where appropriate.

2.0 Methodology

2.1 Desk Study

2.1.1 Previous Reports

WYG completed an initial ecological appraisal in 2008 with update surveys completed in 2011, 2013, 2015, 2016 and 2017 which identified habitat suitable for foraging and commuting bats (Appendix F1). Following these assessments bat activity surveys were completed according to relevant BCT guidelines and within the proposed site boundary of the time.

2.1.2 Local Ecological Records Centre

Up to date information was requested from the Hampshire Biodiversity Information Centre (HBIC) and the Thames Valley Environmental Records Centre (TVERC) in November 2017 for information on any nature conservation designations and protected or notable species records within 2 km of the site.

The data search covers:

- Statutory designated sites for nature conservation, namely SACs, SPAs, Ramsar sites, SSSIs, NNRs and LNRs;
- Non-statutory designated sites for nature conservation, namely LWS;
- Legally protected species, such as great crested newts, bats and badger;
- Notable habitats and species, such as those listed as Habitats or Species of Principal Importance; and,
- Priority habitats or species within both HBIC and TVERC areas.

2.1.3 Online Resources

A search for relevant information was also made on the following websites:

- MAGIC www.magic.gov.uk - DEFRA's interactive, web-based database for statutory designations and information on any EPSL applications that have been granted in the local area since 2015.

2.2 2011 Activity Surveys

Six bat activity surveys were completed across Sandleford Park, Newbury between July and September 2011 in accordance with Bat Conservation Trust's *Bat Surveys: Good Practice Guidelines* (2007) (BCT, 2007). See Figure 2 for the survey transect route and position of static detectors.

2.3 2013 Activity Surveys

2013 surveys took place according guidance set out in the BCT's *Bat Surveys: Good Practice Guidelines, 2nd Edition* (Hundt, 2012). The Sandleford Park site was classified as a 'Large' site, which is proposed for major infrastructure developments (site area >15ha) and the habitats on site were considered to be of 'high habitat quality'. Based on this, one visit per transect per month (April to September) was carried out, with at least one survey comprising a dusk and dawn survey. Surveys

were completed on 24th April, 22nd May, 26th June, 24th July, 22nd August, 23rd August and 26th September 2013. See Figure 3 for the survey transect route and position of static detectors.

2.4 2016/2017 Activity Surveys

According to the guidance set out in BCT's *Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd Edition* (Collins, 2016), the site is considered to be of *Moderate suitability* for foraging and commuting bats. As such, one survey visit following a single transect was completed each month between April to October. Bat activity surveys were completed following the below methodology:

- Dusk surveys commenced 15 minutes prior to and concluded approximately two and one quarter hours after sunset.
- Dawn surveys commenced two and a half hours before sunrise and concluded at sunrise.
- Weather conditions (temperature, precipitation and wind speed) were recorded at the start and end of each survey.
- Surveyors made a note of bat activity, using both visual observation and audio bat detectors to identify foraging and / or commuting behaviour. Surveyors recorded the time and a description of any activity. Additionally, where bats could be seen, the patterns / directions of the bats' flight were also recorded.
- Surveyors were qualified ecologists and were experienced at undertaking bat surveys.
- All surveyors used an Elekon Batlogger detector and walked along the transect route at a steady pace.
- The direction in which transects were walked varied between survey visits to record activity in different locations at different times. Surveyors also stopped in a number of places along the transect route.
- All bat calls were analysed using specialist software (Elekon Bat Explorer). The recordings and the field notes were used to help build a picture of bat use across the site and to identify areas of relatively higher use.

See Figure 4 for survey transect routes and position of static detectors.

2.5 Automated Activity Survey

Automated bat detectors (Song Meter SM2 and Anabat Express) were installed on site during each year surveys were completed to record bat activity over long periods of time. The detectors were placed within features (such as hedegrows and woodland boundaries) which were deemed likely to be utilised by foraging and commuting bats. Data was collected for a minimum of five nights and analysed using acoustics software.

2.6 Value of the On-site Bat Population in a Wider Ecological Context

The assessment of the value of the bat population on site and in the wider area is based on the article in the Institute of Ecology and Environmental Management (IEEM) In Practice magazine – Valuing Bats in Ecological Impact Assessment, No. 70, December 2010. Where bats (species and number) are found using certain habitats (to roost, commute or forage) their population is assigned a relative ecological value. The value to the species is partly based upon how well used a habitat is and also upon how rare the bat species is. In the case of commuting routes or foraging areas, the number

of roosts nearby is also a factor. Once the value of the bat population has been calculated, robust mitigation for any impact on the bats can be determined.

British bat species have been subdivided into groups, dependant on how common they are; common, rarer and rarest. These were further subdivided based upon the location surveyed, as shown in the table below. Tables have been adapted from Valuing Bats in Ecological Impact Assessment (Wray et al., 2010).

Table 1 Categorising bats by distribution and rarity in England

Rarity	Country
	England
Rarest	Greater horseshoe Bechstein's Alcathoe Greater mouse-eared Barbastelle Grey long-eared
Rarer	Lesser horseshoe Whiskered Brandt's Daubenton's Natterer's Leisler's Noctule Nathusius' pipistrelle Serotine
Common	Common pipistrelle Soprano pipistrelle Brown long-eared

To calculate the score for either commuting routes or foraging areas the numerical values from each column below are added together. These are detailed in the tables below.

Table 2 Valuing commuting routes

Species	Number of bats	Roosts/potential roosts nearby	Type and complexity of linear features
Common (2)	Individual bats (5)	None (1)	Absence of (other) linear features (1)
-	-	Small number (3)	Unvegetated fences and large field sizes (2)
Rarer (5)	Small number of bats (10)	Moderate number/Not known (4)	Walls, gappy or flailed hedgerows, isolated well grown hedgerows, and moderate field sizes (3)
-	-	Large number of roosts or close to a SSSI (5)	Well grown and well connected hedgerows, small field sizes (4)
Rarest (20)	Large number of bats (20)	Close to or within a SAC for the species (20)	Complex network of mature well-established hedgerows, small fields and rivers/streams (5)

Table 3 Valuing foraging areas

Species	Number of bats	Roosts/potential roosts nearby	Foraging habitat characteristics
Common (2)	Individual bats (5)	None (1)	Industrial or other site without established vegetation (1)
-	-	Small number (3)	Suburban areas or intensive arable land (2)
Rarer (5)	Small number of bats (10)	Moderate number/Not known (4)	Isolated woodland patches less intensive arable and/or small towns and villages (3)
-	-	Large number of roosts or close to a SSSI (5)	Larger or connected woodland blocks, mixed agriculture and small villages/hamlets (4)
Rarest (20)	Large number of bats (20)	Close to or within a SAC for the species (20)	Mosaic of pasture, woodlands and wetland areas (5)

Finally, for commuting and foraging areas, ecological value is based on the following scoring system.

Table 4 Scoring system for valuing commuting and foraging habitats

Geographic frame of reference	Score
International	>50
National	41-50
Regional	31-40
County	21-30
District, local or parish	11-20
Not important	1-10

2.7 Limitations

All surveys were carried out within time periods considered suitable for bat activity as recommended in the relevant bat survey guidelines at the time. Surveys were completed during periods of suitable weather conditions (i.e. not during heavy rain, low temperatures or strong winds). As such, survey timing and on-site conditions are not considered to represent a limitation to the data presented.

Limitations arising from livestock or health and safety issues hindering access are listed in detail in the relevant reports. However, these are not considered to be significant limitations to the findings of the surveys, particularly given the number of years over which bat activity surveys have been completed.

The results of the surveys are considered to remain valid for 18 months (i.e. until Autumn 2019). Beyond this period, if works have not yet been undertaken, A review of the conditions on site is recommended to inform the need for any update surveys.

3.0 Results

3.1 Desk Study

A total of 185 records of bats within 2km of the site were returned including the following species: Daubenton's; Whiskered bat; Natterer's bat; noctule; common pipistrelle; soprano pipistrelle; brown long-eared bat and serotine. In addition to this, records were returned for unidentified bats from the *Pipistrellus* genus; *Myotis* genus and *Plecotus* genus. The nearest bat records are of a daubenton's, whiskered, brown long-eared and pipistrelle spp. >0.48km NNE from site, though the location is sensitive. The nearest recorded roost is of a brown long-eared roost which contained 12 individuals approximately 1.7km WNW along Enborne Street, Newbury. Both noctule and brown-long eared bats are Priority species under the NERC Act and noctule, brown long-eared and soprano pipistrelle bats are listed on the Berkshire Biodiversity Strategy 2014-2020.

3.2 Activity Surveys

2011 Survey

At least eight species of bats were recorded using the habitats at the Sandleford Park site. The species comprised common pipistrelle, soprano pipistrelle, Nathisius' pipistrelle, brown long-eared, noctule, serotine, Leisler's and *Myotis* bat species. Based on the locality of the site (in central southern England) and the habitats present (watercourses, farmland, hedgerows and woodland blocks), the *Myotis* bats recorded could have been any combination of the following six species: Natterer's, Daunbenton's, whiskered, Brandt's, or possibly (although unlikely) Alcathoe or Bechstein's.

Common pipistrelle bats were the most frequently encountered species, followed by soprano pipistrelles, then *Myotis* species, followed by the larger bats (*Nyctalus* species and serotine). The more infrequent brown long-eared and Nathusius' pipistrelle bat records made up the total.

Over the six survey visits, the area found to support the highest frequency of bat activity/number of bats encountered was the hedgerow corridor between Gorse Covert and the River Enborne, and the wooded River Enborne corridor itself, which was 'busy' during five of the six surveys. The various habitat features associated with High Wood (northern and eastern woodland edges, the clearing and the pheasant pen) collectively recorded a high level of bat activity during five of the six surveys. The woodland edge to the east of Crook's Copse and the central track across the site, were found to be the 'busiest' habitats/features on site with high frequency of activity during four of the six surveys.

In-depth detail of each survey can be found within the original report (WYG, 2012).

2013 Survey

Up to 13 species of bat were recorded using the habitats across the site. The species recorded were common pipistrelle, soprano pipistrelle, Nathusius pipistrelle, serotine, Leisler's, noctule, Natterer's, Daubenton's, a *Myotis* species (most likely a whiskered / Brandt's), an unidentified *Myotis* bat and a long-eared bat (considered most likely to be brown long-eared). It is considered likely that the long-eared bat recordings were brown long-eared as grey long-eared bats are primarily confined to the extreme south of the British Isles. A barbastelle bat was also potentially recorded, however due to the quality of the recording and the fact it was only a single file it was difficult to determine whether it was a barbastelle or long-eared bat had been recorded on one of the remote detectors.

Common pipistrelles were the most frequently encountered species as they were recorded on all transects on each survey visit, and were most frequently picked up on the remote detectors.

Over the seven survey visits, the majority of the site seemed to support commuting or foraging bats to some extent as there are a number of commuting and foraging routes along hedgerows, woodland edges, between woodlands and along field margins. Although the majority of the survey area was used by bats there was generally found to be a higher level of bat activity within the northern and eastern parts of the site, in particular, the areas around and between Crook's Copse, High Wood and Slockett's Copse and between Barn Copse and Dirty Ground Copse. These woodlands and the marshy area between Slockett's Copse and High Wood are being retained within the proposals, which will maintain areas which have been found to support the highest density of bat activity.

In-depth detail of each survey can be found within the original report (WYG, 2014).

2016/2017 Survey

Main Site - Southern Transect

Activity surveys recorded low numbers of bats, with observed bats distributed predominantly around the southern edge of Barn Copse and Dirty Ground Copse and several bats heard but not seen along the western and southern boundaries. Common and soprano pipistrelles were mainly seen early during each survey foraging along the edges of the two copses. Bats recorded around the centre of the site were predominantly found to be commuting. The data collected during the overall survey effort suggests that the areas of the site used most by foraging and commuting bats are around the edges of Barn Copse and Dirty Ground Copse, with a small number of bats foraging along the western side of the site close to the entrance on to Warren Road and on southern boundary of the transect above Gorse Covert.

The majority of bats recorded were common species; common and soprano pipistrelle. The rarer species noctule, brown long-eared, *Myotis* species and serotine were recorded both foraging and commuting only occasionally.

Main Site - Northern Transect

Relatively higher numbers of bats and activity levels were recorded on the northern transect, compared to the southern, with observed bats distributed predominantly around the edge of Crook's Copse and northern edge of Slockett's Copse. A smaller number of bats were observed foraging and commuting along Monks Lane on the northern site boundary and on the northern edge of High Wood. Common pipistrelles were observed foraging around Crook's Copse during all surveys, whilst foraging common and soprano pipistrelles were generally recorded foraging and commuting around Slockett's Copse and High Wood earlier in the surveys. Noctules were also regularly recorded, and were predominantly observed foraging around the northern edge of Crook's Copse. *Myotis* species including Natterer's bat and serotine were recorded rarely and utilised the northern edge of Slockett's Copse, but their passes were mostly only heard and not seen.

The data collected suggests that the most well used area of the northern and southern survey transects (during the surveys) for both foraging and commuting bats is around Crook's Copse, with bats also utilising the edges of Slockett's Copse and High Wood.

The majority of the bats recorded were common species; common and soprano pipistrelle. The rarer species, noctule, was also regularly recorded foraging and commuting. The common species brown long-eared bat, the rarer species serotine, Leisler's bat, Natterer's bat and the rarest species barbastelle were also recorded during automated activity surveys around the southern edge of Crook's Copse.

Area South of Newbury College

Up to six species of bat were recorded foraging and/or commuting around the site during manual activity surveys and up to eight species of bat were recorded during automated activity surveys. The majority of bats recorded foraging on site were common species (predominantly common pipistrelle and soprano pipistrelle), whilst rarer bats were occasionally recorded commuting over the site. Bat activity was particularly concentrated around the eastern tree lined boundary, the tree-lined southern boundary and High Wood.

In-depth detail of each survey can be found within the original reports (WYG, 2017 & 2018)

3.3 Automated Survey

2011 Survey

The static detectors deployed within the north-western corner of Gorse Covert and north-eastern corner of Slockett's copse recorded a total of 499 calls of seven species. The most commonly recorded call was of common pipistrelle (70% of records) with the least frequent recording being of Leisler's bat with a total of 2 calls from both detectors (0.4% of records). The data obtained by the automated surveys can be found within the original reports (WYG, 2012).

2013 Survey

A total of nine species were recorded by the static detectors placed throughout the site. The species and relative abundance of total calls are as follows: common pipistrelle (79%), soprano pipistrelle (17%), Nathusius' pipistrelle (<1%), brow long-eared/barbastelle (<1%), noctule (<1%), serotine (<1%), Leisler's (<1%), myotis species (likely Natterer's and whiskered/Brandt's) and unidentified myotis species (1.1%). The data obtained by the automated surveys can be found within the original reports (WYG, 2014).

2016/2017 Survey

Eight species of bat were recorded on the automated bat detectors including; common pipistrelle, soprano pipistrelle, noctule, Leisler's, barbastelle and brown long eared bat. In addition to this, bats from the *Myotis* genus (considered likely to be Daubenton's and Natterer's) were recorded on several nights during autumn months and on many nights during summer months.

Two passes attributed to barbastelle one of the rarest bat species in England and listed under Section 41 of 2006 Natural Environment and Rural Communities (NERC) Act, was recorded at the site. This species was were recorded by the static detector situated within the south-eastern corner of Crook's Copse on one night (29th September 2016).

Over the 29 total days of recording in summer and autumn months (between August and October 2016), 2,679 passes were recorded. Bat activity was highest on the 24th August 2016, with 923 passes recorded. Over the six days of recording in spring (April 2017) no bats were recorded. In the

summer months (between May and July 2017) over the 29 days of recording, 1,191 passes were recorded. The highest activity was recorded on the 23th May 2017, with 301 common pipistrelle passes recorded on the southern transect.

Automated surveys in the southern transect yielded particularly low levels of activity during autumn and spring. This may usually be explained by bats not using the surveyed area at particular times. However, as a large amount of activity was recorded in the same area during the transect surveys, it is considered more likely that the lack of data was due to technical problems with recording equipment or through the automated detector being placed in a cluttered environment.

The data obtained by the automated surveys can be found within the original reports (WYG, 2017 & 2018).

4.0 Legislation

All British bat species are listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and under Schedule 2 of the *Conservation of Habitats and Species Regulations 2017* as European protected species. Furthermore, the *Countryside and Rights of Way Act 2000* (Schedule 12, Paragraph 5) has amended Section 9 of the 1981 Act. They are, therefore, fully protected under Section 9 of the 1981 Act and under Regulation 41 of the *Conservation of Habitats and Species Regulations 2017* which transposes the Habitats Directive into UK law.

This makes it an offence to:

- Deliberately capture, injure or kill any bat;
- Deliberately disturb bats, in particular where it is likely to:
  - Impair their ability to breed or reproduce, or to rear or nurture their young;
  - Impair their ability to hibernate or migrate; or
  - Affect significantly the local distribution or abundance of bats.
- Intentionally or recklessly damage, destroy or obstruct the access to the place of shelter or protection; and
- Damage or destroy a bats breeding site or resting place.

The removal of trees within the site without prior surveys and pre-commencement checks may result in the direct destruction of bat roosts, whilst unmitigated removal of linear corridors such as sections of hedgerows and increases in habitat disturbance (through lighting, noise and vibration impacts) during construction and operational phases of a proposed development could indirectly impact bats that use the site to forage and commute. For example, lighting impacts could potentially sever a commuting route between a nursery roost and foraging ground such that it impairs bats' ability to rear young.

Such indirect and direct impacts could result in an offence being committed.

5.0 Discussion

5.1 Evaluation of Results

5.1.1 Interpretation

Up to 13 species of bat were recorded using the habitats across the site. The species recorded were common pipistrelle, soprano pipistrelle, Nathusius pipistrelle, serotine, noctule, brown long-eared, Leisler's, Natterer's, Daubenton's, *Myotis* species (likely whiskered/Brandt's), unidentified myotis species and barbastelle. Common pipistrelles were the most frequently encountered species as they were recorded on all transects on each survey visit, and were most frequently picked up on the remote detectors. Bat activity was particularly concentrated around the eastern tree lined boundary, the tree-lined southern boundary and around the edges of woodland copses on site.

Barbastelle bats were recorded on site during automated surveys, with two passes were recorded on one night (27th September 2016) by the static detector situated at the south-eastern edge of Crook's Copse. A possible barbastelle call was also recorded by a static detector situated at the north-eastern corner of Brickklin Copse (which is no longer part of the proposed development site at Sandleford Park) on 18th September 2013. The call was too brief to enable confirmation of the species; therefore, the call was recorded as a possible long-eared bat or barbastelle call (WYG, 2016). As these are the only two noted incidents of a barbastelle activity recorded on or within the vicinity of the site over all surveys since 2011, it is not considered likely that barbastelle bats are regularly using the site, and as such the 'rarest' bats score has **not** been incorporated into the assessments below.

5.1.2 Commuting Activity

Within the proposed development site, multiple common species (common pipistrelle) were recorded at any one time in a number of locations across the site. Commuting occurred over the majority of the site but was largely associated with linear and edge habitats, such as along the woodland edges or along the alignment of hedgerows connecting the woodlands. The majority of bats recorded were common species including common and soprano pipistrelles but a number of the 'rarer' bats were also recorded intermittently on an individual basis. Based on the assessment in Table 3, the commuting bat score on site is 21; therefore, the commuting bat value on site is considered to be of **county level**.

5.1.3 Foraging Activity

Within the proposed development site there was a mixture of both foraging and commuting throughout the surveys. The areas of peak foraging activity again coincided with the tracks and edge habitats, such as along the woodland edges and hedgerows connecting woodlands. Whilst the majority of foraging bats heard were common species (i.e. common pipistrelles and soprano pipistrelles), a number of 'rarer' bats, such as noctule, serotine, Leisler's, and *Myotis* species were also recorded. Based on the assessment in Table 4, the foraging bat score on site is 24; consequently, the foraging bat value on site is considered to be of **county level**.

5.2 Potential Impact of the Development on Bats

5.2.1 Effects on Foraging / Commuting Habitat

The development proposals include the construction of up to 1,000 residential dwellings; commercial sites, and the provision of a new two form primary school. In addition to the aforementioned, the site will also include measures to improve accessibility by non-car modes of transport, particularly to Newbury town centre and along the A339 route to Basingstoke and provide a network of green infrastructure which will conserve the areas of ancient woodland and respect the landscape significance of the site on the A339 approach road into Newbury.

The majority of development will occur in the more 'open' habitats such as the arable fields at the northern and western extents of the site. Woodland blocks will be retained with a 15m buffer. The majority of the bat activity recorded was noted along the woodland edges. The majority of the tree lines / hedgerows will also be retained with a 3m buffer, with the exception of breaches where access will be required, although these will be kept to a minimum. A single hedgerow will be lost to the development.

The following impacts are considered likely as a result of the development.

5.2.2 Direct Loss of Foraging / Commuting Habitat e.g. through removal of tree lines

All woodland blocks will be retained and this is where higher levels of bat activity was noted. There will also be a 15m buffer surrounding the woodlands. The majority of hedgerows will be retained within the site layout, although there will be breaches within some of the hedgerows where the proposed access roads will go and the hedgerow which lies to the south of Dirty Ground Copse will be removed.

Indirect impacts to the commuting / foraging habitat through habitat degradation and disturbance could reduce the value of the commuting / foraging habitat during the operational phase.

5.2.3 Disturbance of Bats e.g. through lighting of commuting / foraging habitat

Some common bats, such as pipistrelle species, are attracted to certain types of lighting as it attracts their invertebrate prey. However, the lighting can illuminate the bats themselves and make them more vulnerable to being predated upon. A number of the bat species recorded on site are more sensitive to lighting impacts and will actively avoid illuminated areas. Long-eared bats which were recorded and bats from the *Myotis* genus are more sensitive to ambient lighting and may be deterred from using areas of the site, if the lighting is not sensitively designed.

5.2.4 Disturbance of Bats e.g. through noise, vibration, etc

Loud noise and vibrations in the construction phase could potentially disturb roosting bats, where they occur in close proximity to the development footprint. Furthermore noise in the operational phase e.g. from increased public pressure in woodlands where pedestrian access is proposed, could further disturb roosting bats and lead to habitat degradation.

5.2.5 Direct Mortality of Bats e.g. through road traffic collisions

Commuting and / or foraging bats may be killed when flying across roads, in particular those that sever linear corridors and woodland.

Mitigation recommendations to offset the potential development impacts are provided in Section 6.

6.0 Mitigation and Enhancement Recommendations

6.1 Mitigation

An Ecological Mitigation and Management Plan (Appendix F18) has been produced to provide advice regarding routine maintenance of the site and to enhance areas of the site for biodiversity, including for bats.

The proposals have evolved with ongoing ecological input, and, as such, valuable habitats have been retained, and mitigation and enhancement measures have been incorporated into the masterplan.

6.1.1 Hedgerow Retention and Replacement

Ideally, it is recommended that all hedgerows are retained and protected within the development, and indeed the majority will be. However there will be some breaches in the hedgerows to accommodate the proposed access roads and the hedgerow to the south of Dirty Ground Copse is being removed. It is recommended that where breaches in the hedgerows are required these are through natural gaps where possible. Mitigation and compensation for the loss of hedgerows has been incorporated within the landscape plan in the form of tree planting along the roads and throughout the residential development on the site to recreate the foraging and commuting value of this habitat. In-fill planting of retained hedgerows with native species has also been incorporated to increase the ecological value of the hedgerows and enhance them for bats.

Where breaches are located, hop-over's for bats will be created to allow for continued commuting and foraging.

6.1.2 Ecological Input to Landscape Plan

A diverse collection of tree and shrub planting has been incorporated into the landscaping design (refer to Appendix A for recommended 'bat' plants). The planting at the site will comprise native species.

6.1.3 Lighting

The lighting across the development footprint has been sensitively designed with bats in mind (Appendix F20, Lighting Assessment), so that valuable foraging and commuting areas are retained and existing / new roost sites are not impacted by ambient light.

Lighting within the development has been designed so that no vegetated boundary including hedgerow, woodland or the central valley area will exceed 1 lux and hence it is unlikely to impact foraging barn owls. Lighting mitigation comprising the installation of cowls, hoods or louvers into those lamps located close to hedgerows (Appendix F20, Lighting Assessment).

Permanent lighting on site is minimised in proximity to the following habitats:

i) woodlands (including edges and woodland buffers);

ii) hedgerows;

iii) mature trees;

iv) boundary vegetation;

v) marshy grassland; and

vi) any new roost sites (e.g. bat boxes installed as part of the scheme)

6.1.4 Construction Recommendations

It is recommended that construction activity in the vicinity of hedgerows and woodland ceases at sunset, if not before, to avoid delaying the emergence of locally roosting bats.

6.1.5 Reducing the Risk of Traffic Collisions

The measures detailed to help offset the impacts of severance should help to permit bats access across habitat breaches. Trees will be retained and / or planted, to a height greater that 3m, which will be above the height of the average car are planted at locations where the road bisects hedgerows. These trees will provide 'hop-overs' for bats, guiding them over the roads and reducing the risk of traffic collisions. These will guide bats over the road maintaining connectivity between the woodland blocks. Such measures include the guiding of bats over a road, following existing vegetated/riparian corridors and supplementing gaps with landscaped planting.

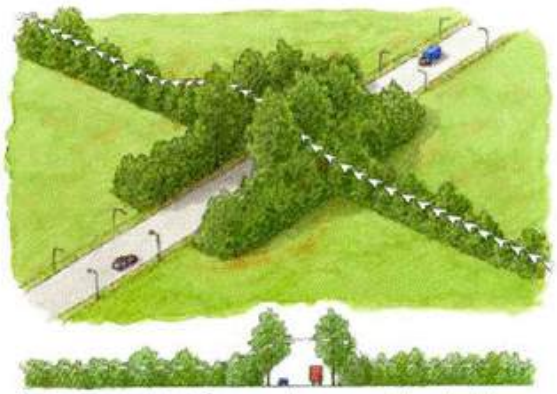

Figure 1 planting to encourage bats to fly over roads or, on a smaller scale, hedgerow gaps. Photo © Peter Twisk www.standardsforhighways.co.uk

The main access road through the site passes across the marshy grassland between Slockett's Copse and Dirty Ground Copse, connecting two blocks of residential development. As bat foraging was noted in this area, the valley will be bridged to maintain the marshy habitat and bat foraging activity. The road crossing to the south of Crook's Copse will remain unlit, and proposals have been designed with ecological input.

6.2 Enhancement

Enhancement is required in accordance with the revised *National Planning Policy Framework* (NPPF, 2018).

A number of the measures in the mitigation section, such as the creation of additional open space areas, and the planting of 'bat-friendly' plants have the potential to enhance the site for bats.

It is recommended that cattle are removed from the marshy grassland between Slockett's Copse and Dirty Ground Copse and that the grassland is managed as tall grassland, which will enhance the area for invertebrates and, hence, bats.

6.2.1 Artificial Roost Provision

Additional measures to enhance the site for bats include the provision of artificial bat roosts in suitable habitat across the site.

Numerous types of artificial bat roost and access provision are available and can be easily installed onto retained trees to benefit local bats. Information regarding commonly used bat boxes is provided in Appendix B. Artificial roosts should face to the south-west or south-east if possible and should not be illuminated.

Tree bat boxes should be sited as high as possible (no lower than 2m) and clear of any overhanging branches so that the bats have direct and easy access to them. Ideally several boxes should be erected across the site facing in differing directions around the trunk of the tree, so that if one box gets too hot or cold the bats can move to another. Boxes should be attached to the tree using an aluminium nail or tied in position using wire/leather. The following Schwegler bat boxes (or similar) can be installed on retained trees: General Purpose Bat Box 2F, Bat Box 1FF and Bat Box 1FD, which are suitable for brown long-eared, noctule, common pipistrelle and soprano pipistrelle bats. There are many other alternative suitable bat boxes, of varying price, on the market. Bat box products can be sourced directly from the supplier (e.g. Schwegler) or can be obtained through wildlife equipment websites such as Wildcare: http://www.wildcareshop.com/index.php

7.0 References

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FIGURES

Figure 1 – Site Location Plan
Figure 2 – 2011 Activity Survey
Figure 3 – 2013 Activity Survey
Figure 4 – 2016/2017 Activity Survey

Rev	Date	Notes
A	09/03/18	Initial map production

Legend

SiteBoundary

0 100 200 400 Meters

N

Site Plan - March 2018

Sandleford Park, Newbury
Bloor Homes & Sandleford Farm Partnership

Scale at A3:	Project No:	Drawing No:	Revision:
1:10,000	A070660-23	Figure 1	A

Drawn by:	Drawn date:	Approved by:
Alex Hellyar	09/03/2018	Tamsin Clark

Rev	Date	Notes
A	09/03/18	Initial map production

Legend

- SiteBoundary
- Static Detector
- Transect route

Basemap provded by Bloor Homes, drawing title SOxxx-SL-301 (Merged Masterplan Layouts 1-2000) - DL.jpg

0 50 100 200 300 Meters

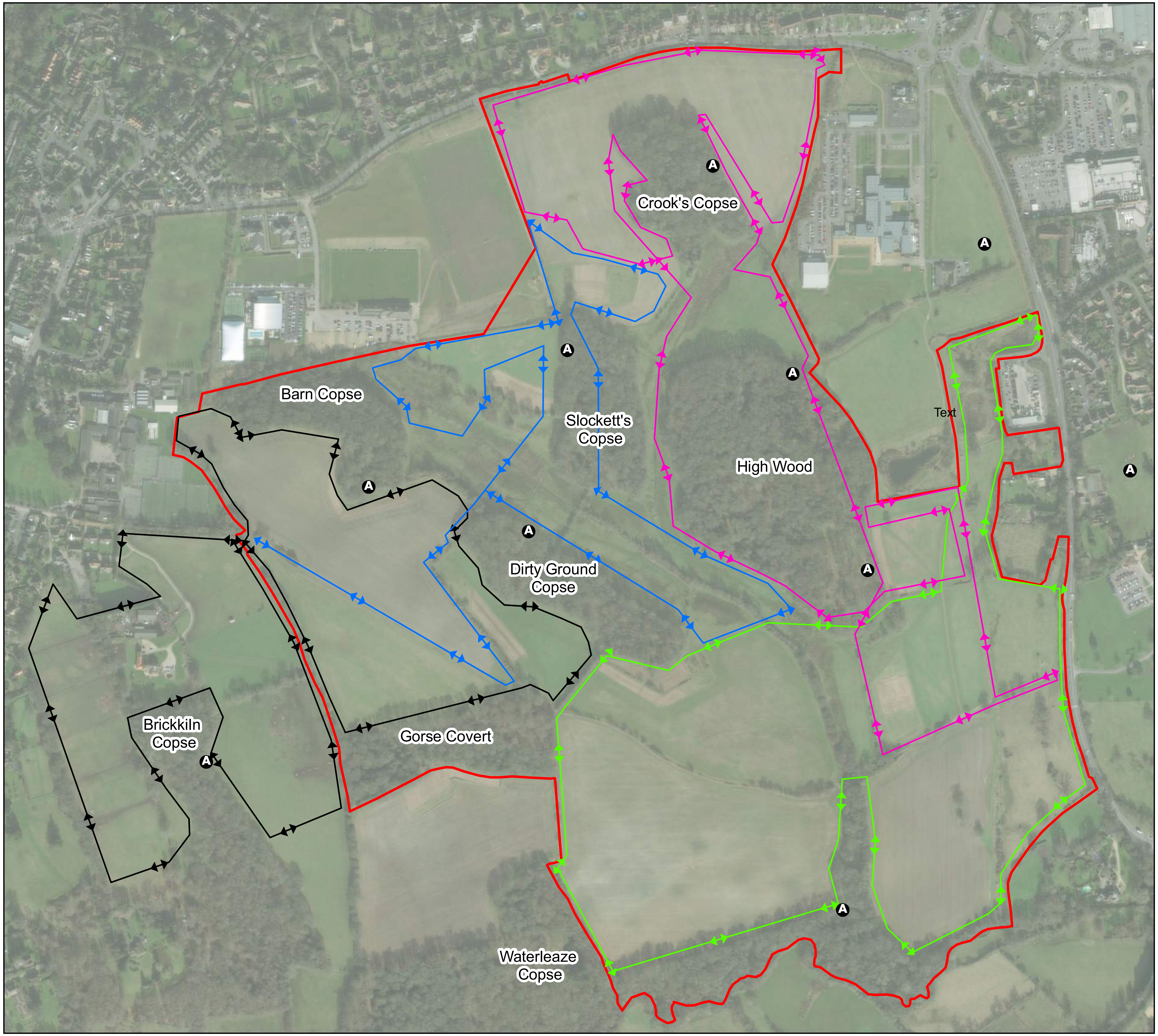
N

2011 Activity Survey

Sandleford Park, Newbury
Bloor Homes & Sandleford Farm Partnership

Scale at A3:	Project No:	Drawing No:	Revision:
1:5,500	A070660-23	Figure 2	A

Drawn by:	Drawn date:	Approved by:
Alex Hellyar	09/03/2018	Tamsin Clark



Rev	Date	Notes
A	09/03/18	Initial map production

Legend

- SiteBoundary
- StaticDetector
- Transect 1
- Transect 2
- Transect 3
- Transect 4

Basemap provded by Bloor Homes, drawing title SOxxx-SL-301 (Merged Masterplan Layouts 1-2000) - DL.jpg

0 50 100 200 300 Meters

N

2013 Activity Survey

Sandleford Park, Newbury
Bloor Homes & Sandleford Farm Partnership

Scale at A3: 1:5,500	**Project No:** A070660-23	**Drawing No:** Figure 3	**Revision:** A
Drawn by: Alex Hellyar	**Drawn date:** 09/03/2018	**Approved by:** Tamsin Clark	

Rev	Date	Notes
A	09/03/18	Initial map production

Legend

- SiteBoundary
- Static Detector
- Northern Transect
- Southern Transect
- South of Newbury College Transect

Basemap provded by Bloor Homes, drawing title SOxxx-SL-301 (Merged Masterplan Layouts 1-2000) - DL.jpg

0 50 100 200 300 Meters

N

2016 & 2017 Activity Survey

Sandleford Park, Newbury
Bloor Homes & Sandleford Farm Partnership

Scale at A3:	Project No:	Drawing No:	Revision:
1:5,500	A070660-23	Figure 4	A

Drawn by:	Drawn date:	Approved by:
Alex Hellyar	09/03/2018	Tamsin Clark

Appendix A – Native/Wildlife Friendly Plant Species

Gardening for bats

Aim at having flowers in bloom through the year, including both annuals and herbaceous perennials.
Below are some suggestions, but this is by no means an exhaustive list. See what grows well in YOUR garden, and what seems most attractive to insects.
Flowering times are approximate, varying in different areas. Regular dead-heading extends flowering period in many flowers. A=annual, HA=hardy annual, HHA=half-hardy annual, P=perennial, W=wild flower,

Flowers for borders			
St John's Wort	*Hypericum*	P	March-
marigolds	*Calendula*	H/A	March – Oct.
aubretia	*a. deiltoidea*	P	March-June
honesty	*Lunaria rediva*	HB	March
forget-me-not	*Myosotis sp.*	A/P	March - May
elephant ears	*Bergenia*	P	April
Wallflowers	*Erysimum*	B	April - June
Cranesbills	*Geranium sp*	P	May – Sept.
Yarrow	*Achillea*	P	May -
Poppies	*Papaver sp.*	A	May - July
Dames violet	*Hesperis matronalis*	P	May - August
Red Valerian	*Centranthus ruber*	P	May – Sept.
Poached egg plant	*Limnanthes*	HA	June – Aug.
Knapweed	*Centaurea nigra*	P	June- Sept.
Phacelia		HA	June – Sept.
Ox-eye daisy	*Leucanthemum vulgare*	P	June – Aug.
Evening primrose	*Oenathera biennis*	B	June-Sept.
Candytuft	*Iberis umbellata*	HA	June – Sept.
Sweet William	*Dianthus barbatus*	B	June - July
Blanket flowers	*Gaillardia*	P	June -
Verbena	*V.bonariensis*	HHA	June – Oct.
Scabious	*knautia arvensis*	P	July-Aug.
Night-scented stock	*mattiola bicornia*	HA	July-Aug
Pincushion flower	*Scabious sp.*	A/P	July – Sept.
Cherry pie	*heliotrope*	HHA	July – Oct.
Mexican aster	*Cosmos sp.*	A/P	July – Oct.
Cone flower	*Rudbeckia sp.*	A/P	August-Nov.
Mallow	*lavatera sp.*	P	August-Oct.
Michaelmas daisy	*Aster sp.*	P	August-Sept.
Ice plant 'Pink lady'	*Sedum spectabile*	P	Sept.
Herbs – both leaves and flowers are fragrant			
Fennel	*Foeniculum vulgare*		July – Sept.
Bergamot	*Monarda didyma*		June - Sept
Sweet Cicely	*Myrrhis odorata*		April - June
Hyssop	*Hyssopus officianlis*		July - Sept
Feverfew	*Tanacetum parthenium*		June – Sept.
Borage	*Borago officinalis*		May – Sept.
Rosemary	*Rosemary officinalis*		March - May
Lemon balm	*Melissa officinalis*		
Coriander	*Copriantrum sativum*		June - August
Lavenders	*Lavendula sp.*		
Marjoram	*Origanum sp*		

Trees, shrubs and climbers important to insects		
Oak	*Quercus sp.*	large gardens only
Silver birch	*Betula pendula*	
Common alder	*Alnus glutinosa*	Suitable for coppicing
Hazel	*Corylus avellana*	Suitable for coppicing
Elder	*Sambucus nigra*	Small
Pussy willow	*Salix caprea*	Suitable for coppicing
Hawthorn	*Crataegus monogyna*	Suitable for coppicing
Honeysuckle	*Lonicera sp.*	grow a variety for succession.
Dog rose	*Rosa canina*	Climber
Bramble	*Rubus fruticosus*	Climber
Ivy	*hedera helix*	Climber
Buddleia	*Buddleia davidii*	shrub
Guelder rose	*Vibernum opulus*	shrub
Gorse	*Ulex sp.*	shrub

Plants for pond edges and marshy areas			
Purple loosestrife	*Lythrum salicaria*	W	June – Aug.
Meadow sweet	*Filipendula ulmaria*	W	June – Sept.
Lady's smock	*Cardamine pratensis*	W	April - June
Water mint	*mentha aquatica*	W	July – Sept.
Angelica	*Angeliica sylvestris*	W	July – Sept
Hemp agrimony	*Eupatorium cannabinum*	W	July – Sept.
Marsh marigold	*Caltha palustris*	W	March – May
Creeping Jenny	*Lysimachia nummularia*	W	May - August
Fringed water lily	*Nymphoides peltata*	W	June – Sept.
Water forget-me-not	*Myosotis scorpioides*	W	June – Sept.

Allow part of your lawn to grow long in summer and cut in autumn, removing the clippings. Avoid using fertilizers.
Compost heaps are good producers of insects too.

Add a seat to watch your garden come to life!

Appendix B – Bat Boxes, Bricks and Tubes

BAT BOXES FOR TREES

Woodcrete boxes have the highest rates of occupation of all box types. The 75% wood sawdust, concrete and clay mixture allows natural respiration, stable temperature, and durability. They are long lasting (approx. 25 years) and are rot- and predator-proof. Hang from a tree branch near the trunk, or fix to a trunk with the supplied 'tree-friendly' aluminium nail. This box is attractive to the smaller British bats.

Material: Woodcrete (75% wood sawdust, concrete and clay mixture)
Diameter: 16cm

Height: 33cm

Weight: 4kg

HIBERNATION BOX FOR CREVICE DWELLING SPECIES

This box is designed to provide a protected environment, particularly through the cold winter months when bats hibernate. It has three internal wooden panels imitating crevices.

Schwegler woodcrete boxes have the highest rates of occupation of all box types. The 75% wood sawdust, concrete and clay mixture allows natural respiration, stable temperature, and durability. They are extremely long lasting and rot- and predator-proof.

This very heavy box (30kg) is supplied complete with special fixing brackets. It is important to fit it very securely if mounting above the ground, and to site it well away from public areas.

BAT BOXES FOR BUILDINGS

Bat access and roost bricks

Bat Access and Bat Roost Bricks

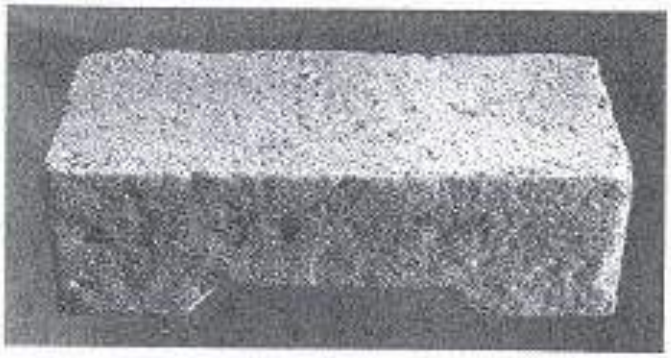
Approved by the Bat Conservation Trust

Over recent years Marshalls Clay Products has become almost as well known for the success of its award winning environmental work as it is for the quality of its brick products. Our land restoration and nature conservation schemes, first developed by Yorkshire Brick Company, have become an integral part of our activities over the years and have been recognised as some of the most successful of their kind anywhere.

As part of this ongoing philosophy, Marshalls Clay Products have been producing a special Bat Access Brick, specially designed to help the country's badly depleted bat population by providing access to wall cavities or roof spaces where most bat colonies tend to be. *(see diagram)*

In recent years bats have been declining at an alarming rate, lestimates suggest as much as 60%) loss of habitat being a key factor in this decline. Nearly all colonies tend to be on the outside of houses, in wall cavities, under slates, flashing or tiles, etc.

Contrary to popular opinion bats do not make nests and do absolutely no damage to buildings or roof timbers, indeed many people encourage bat colonies in their area because of the large number of insect pests, woodworm, etc. which they eat. Most colonies will use a house for only a few weeks in summer before dispersing by the autumn.



Marshall's Bat Access Brick, which is now also available in stone

A Bat Brick should ideally be placed as high as possible, at the gable apex or close to the soffit.