HITHER GREEN GOLF COURSE, HITHER GREEN LANE, REDDITCH

PRELIMINARY BAT ROOST ASSESSMENT

A Report to: Barratt David Wilson Homes Mercia

Report No: RT-MME-153160-01

Date: September 2021

MIDDLEMARCH ENVIRONMENTAL

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REPORT VERIFICATION AND DECLARATION OF COMPLIANCE

This study has been undertaken in accordance with British Standard 42020:2013 “Biodiversity, Code of practice for planning and development”.

Report Version	Date	Completed by:	Checked and approved by:
Final	17/09/2021	Carol Flaxman BSc (Hons) ACIEEM (Senior Ecological Consultant) and Stephanie Bradbury BSc (Hons) (Senior Ecological Consultant)	Tom Docker CEcol MCIEEM (Managing Director)

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

DISCLAIMER

The contents of this report are the responsibility of Middlemarch Environmental Ltd. It should be noted that, whilst every effort is made to meet the client’s brief, no site investigation can ensure complete assessment or prediction of the natural environment.

Middlemarch Environmental Ltd accepts no responsibility or liability for any use that is made of this document other than by the client for the purposes for which it was originally commissioned and prepared.

VALIDITY OF DATA

The findings of this study are valid for a period of 12 months from the date of survey. If works have not commenced by this date, it may be necessary to undertake an updated survey to allow any changes in the status of bats on site to be assessed, and to inform a review of the conclusions and recommendations made.

NON-TECHNICAL SUMMARY

In May 2021, Barratt David Wilson Homes Mercia commissioned Middlemarch Environmental Ltd to undertake a Preliminary Bat Roost Assessment at Hither Green Golf Course in Redditch, Worcestershire. This assessment is required to inform a planning application associated with the proposed construction of residential dwellings with associated hard and soft landscaping.

To fulfil the above brief to assess the potential for the existing building and trees on site to support roosting bats, a Preliminary Bat Roost Assessment was undertaken on 8th June 2021 and 5th July 2021.

Multiple features were identified around the building located in the north-eastern corner of the site which could potentially be used by bats to gain access into the building and potential roosting locations. Due to their height and location, many of these features could not be fully inspected. Therefore, the building was classed as having high potential to support roosting bats and further surveys were recommended.

A total of fourteen trees on site were also found to possess potential roosting features. Of these, ten trees had high potential to support roosting bats and four trees had low potential to support roosting bats. It is understood that only two of the trees classed as having high potential to support roosting bats will be impacted by the proposed development: T2 and T13. Therefore, further surveys were recommended for these trees. Although some of the trees with low roosting potential will also be impacted by the proposed works, these trees do not require further surveys.

Following the results of the Preliminary Bat Roost Assessment, the following recommendations have been made:

R1 **Building**: The building has been identified as having high potential to support roosting bats. Bat Surveys: Good Practice Guidelines published by the Bat Conservation Trust (Collins, 2016) recommends that for structures with high bat roosting potential at least three dusk emergence and/or dawn re-entry surveys be undertaken during the bat emergence/re-entry survey season to determine the presence/absence of roosting bats within the structure. The bat emergence/re-entry survey season extends from May to September. At least two of the surveys should be undertaken during the peak season for emergence/re-entry surveys between May and August and one of the three surveys should be a dawn re-entry survey. If a roost is discovered during these surveys, a Natural England licence application may be required.

R2 **Trees T2 and T13**: Trees T2 and T13 have been identified as having high potential to support roosting bats. Bat Survey: Good Practice Guidelines published by the Bat Conservation Trust (Collins, 2016) recommends that for trees with high bat roosting potential at least three dusk emergence and/or dawn re-entry surveys be undertaken during the bat activity season to determine the presence/ absence of roosting bats within the trees. The bat activity season extends from May to September. At least one of the surveys should be a dawn re-entry survey, and at least two of the surveys should be undertaken between May and August. If a roost is discovered during these surveys, a Natural England licence application may be required.

R3 **Trees T4, T6, T7, T8, T9, T10, T11 and T12:** Trees T4, T6, T7, T8, T9, T10, T11 and T12 have been identified as having high potential to support roosting bats. There are no current plans for any works to these trees. However, should plans change to impact these trees, then further surveys will be required in accordance with Bat Survey: Good Practice Guidelines published by the Bat Conservation Trust (Collins, 2016).

R4 **Trees T1, T3, T5 and T14:** Trees T1, T3, T5 and T14 have been identified as having low potential to support roosting bats. The current plans indicate that T1 and T3 will be removed to facilitate the works. It is recommended that these trees should be subject to soft felling under the supervision of a licensed bat worker to ensure that any bats that may have colonised these trees in the interim since the initial inspection are not harmed during the proposed tree removal works.

R5 **Remaining Trees**: The remaining trees on site which are to be removed in accordance with the current proposals were considered to have negligible potential for roosting bats. The survey data obtained for the site is valid for 12 months from the survey date. In the unlikely event that a bat is found during works to the trees all works must immediately cease and a suitably qualified ecologist should be contacted.

R6 **Lighting:** In accordance with best practice guidance relating to lighting and biodiversity (Miles et al, 2018; Gunnell et al, 2012), any new lighting should be carefully designed to minimise potential disturbance and fragmentation impacts on sensitive receptors, such as bat species. Examples of good practice are provided in Chapter 6.

R7 **Habitat Enhancement:** In line with the National Planning Policy Framework, the development should aim to enhance the site for bats. This may include the provision of alternative roosting opportunities through the installation of bat boxes, and the enhancement of foraging areas by planting species which attract night flying insects.

CONTENTS

1. INTRODUCTION

1.1 PROJECT BACKGROUND

In May 2021, Barratt David Wilson Homes Mercia commissioned Middlemarch Environmental Ltd to undertake a Preliminary Bat Roost Assessment at Hither Green Golf Course in Redditch, Worcestershire. This assessment is required to inform a planning application associated with the proposed construction of residential dwellings with associated hard and soft landscaping.

Middlemarch Environmental Ltd has previously carried out the following surveys for Barratt Homes at this site:

- Preliminary Arboricultural Assessment (Report RT-MME-152753-01);
- Arboricultural Impact Assessment (Report RT-MME-152753-02); and,
- Preliminary Ecological Appraisal (Report RT-MME-152753-03 Rev A).

In addition, Middlemarch Environmental Ltd has been commissioned to undertake the following assessments:

- Badger Survey (Report RT-MME-153160-02);
- Great Crested Newt Habitat Suitability Index Assessment and eDNA Survey (Report RT-MME-153160-03);
- Breeding Bird Survey (Report RT-MME-153160-04); and,
- Reptile Survey (Report RT-MME-153160-05).

To fulfil the above brief to assess the potential for the existing building and trees on site to support roosting bats, a Preliminary Bat Roost Assessment was undertaken on 8th June 2021 and 5th July 2021.

All UK bat species are legally protected species and they are capable of being material considerations in the planning process. A summary of the legislation protecting bats is included within Appendix 1. This section also provides some brief information on the ecology of British bat species.

1.2 SITE DESCRIPTION AND CONTEXT

The site under consideration is an irregularly shaped parcel of land that measures approximately 10 ha in size and is located at Hither Green Golf Course in Redditch, Worcestershire. The site is centred at National Grid Reference SP 0437 6937.

At the time of the survey, the eastern half of the site comprised part of a golf course with areas of plantation woodland. The western section of the site mainly consisted of open unmanaged grassland with hedges, scattered trees and scrub. A large pond was situated towards the northern site boundary and there were four smaller ponds which formed part of the golf course.

The site is bordered to the north by Dagnell End Road and to the west by Hither Green Lane. Residential houses and a continuation of the golf course border the site to the east and fields of grassland, residential dwellings and a public house are present to the north and west. The River Arrow corridor is present to the south of the site with fields of grassland, a cemetery and residential dwellings beyond. The wider landscape to the north, east and west is dominated by agricultural fields and small residential areas. Redditch town centre dominates the landscape to the south.

1.3 DOCUMENTATION PROVIDED

The conclusions and recommendations made in this report are based on information provided by the client regarding the scope of the project. Documentation made available by the client is listed in Table 1.1.

Document Name / Drawing Number	Author
Land off Hither Green Lane Redditch, Proposed Site Layout Rev Q	Urban Design

Table 1.1: Documentation Provided by Client

2. METHODOLOGY

2.1 DESK STUDY

As part of the Preliminary Ecological Appraisal (Report RT-MME-152753-03 Rev A) an ecological desk study (which included a search for records of bats) was undertaken within a 1 km radius of the site. The consultee for the desk study was Worcestershire Biological Records Centre.

Middlemarch Environmental Ltd then assimilated and reviewed the desk study data provided by this organisation. Relevant bat data are discussed in Chapter 3. In compliance with the terms and conditions relating to its commercial use, the full desk study data are not provided within this report.

The desk study included a search for statutory nature conservation sites designated for bats within a 10 km radius of the site.

2.2 FIELD SURVEY

In line with the specifications detailed in Bat Mitigation Guidelines (English Nature, 2004) and Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016), a Preliminary Bat Roost Assessment of the building and trees was conducted during daylight hours. A visual assessment was undertaken to determine the presence of any Potential Roost Features (PRFs), together with a general appraisal of the suitability of the site for foraging and commuting. Table 2.1 provides examples of PRFs. Any accessible PRFs were inspected using binoculars, a torch and endoscope for evidence of possible bat presence. The building was surveyed externally and internally. For reasons of health and safety, the survey was only undertaken in areas accessible from 3.5 m ladders.

Based on the PRF's present, the survey area was assessed using the suitability classes detailed within Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016), as detailed in Table 2.2. Trees with features present that are suitable to support roosting bats (high and moderate suitability) are discussed more fully in the report.

A summary of the trees within the survey area without suitable features to support roosting bats (low and negligible suitability) is provided within the report. Due to their negligible potential to support roosting bats, the Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016) recommend no further survey work is required for these tree classes.

Example of Potential Roost Features
Buildings Externally • Access through window panes, doors and walls; • behind peeling paintwork or lifted rendering; • behind hanging tiles; • weatherboarding; • eaves; • soffit boxes; • fascias; • lead flashing; • gaps under felt (even including those of flat roofs); • under tiles/slates; • existing bat and bird boxes; and, • any gaps in brickwork or stonework permitting access into access to cavity- or rubble-filled walls.

Table 2.1: Potential Roost Features (Adapted from Collins 2016 and BSI 2015) (cont)

Example of Potential Roost Features
Internally • behind wooden panelling; • in lintels above doors and windows; • behind window shutters and curtains; • behind pictures, posters, furniture, peeling paintwork; • peeling wallpaper, lifted plaster and boarded-up windows; • inside cupboards and in chimneys accessible from fireplaces. • within attic voids: • the top of gable end or dividing walls; • the top of chimney breasts; • ridge and hip beams and other roof beams; • mortise and tenon joints; • all beams (free-hanging bats); • the junction of roof timbers, especially where ridge and hip beams meet; • behind purlins; • between tiles and the roof lining; and, • under flat felt roofs. **Trees** • Bat, bird and dormouse boxes on trees; • Cankers (caused by localized bark death) in which cavities have developed; • Compression forks with included bark, forming potential cavities; • Cracks/splits in stems or branches (both vertical and horizontal); • Crossing stems or branches with suitable space between for roosting; • Ivy stems with diameters in excess of 50 mm with suitable roosting space behind (or where a roosting space can be seen where a mat of thinner stems has left a gap between the mat and the trunk); • Man-made holes (e.g. cavities that have developed from flush cuts); • Natural holes (e.g. knot holes) arising from naturally shed branches, or cavities created by branches tearing out from parent stems; • Other hollows or cavities, including rot holes and butt rots; • Partially detached or loose, platy bark; • Woodpecker holes; or, • Other features that offer a place of shelter.

Table 2.1 (cont'd): Potential Roost Features (Adapted from Collins 2016 and BSI 2015)

Suitability	Description
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. A tree 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.
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 – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed). A tree 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 – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
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.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.
Negligible	Negligible habitat features on site likely to be used by roosting bats.

Table 2.2: Classification of Buildings and Trees with Bat Potential (Adapted from Collins, 2016)

3. DESK STUDY

3.1 STATUTORY NATURE CONSERVATION SITES

The site is not located within 10 km of any statutory nature conservation sites designated for the presence of bats.

3.2 SPECIES RECORDS

The data search was carried out in July 2020 by Worcestershire Biological Records Centre. Records of bat species within a 1 km radius of the survey area provided by the consultee are summarised in Table 3.1. It should be noted that the absence of records should not be taken as confirmation that a species is absent from the search area.

Species	No. of Records	Most Recent Record	Proximity of Nearest Record to Study Area	Species of Principal Importance?	Legislation
Common pipistrelle *Pipistrellus pipistrellus*	8	2014	10 m north	-	ECH 4, WCA 5, WCA 6
Soprano pipistrelle *Pipistrellus pygmaeus*	6	2017	210 m west	✓	ECH 4, WCA 5, WCA 6
Noctule *Nyctalus noctula*	2	2014	490 m south	✓	ECH 4, WCA 5, WCA 6
Unidentified Myotis *Myotis* sp.	2	2014	570 m south-east	#	ECH 2 #, ECH 4, WCA 5, WCA 6
Brown long-eared bat *Plecotus auritus*	1	2014	570 m south-east	✓	ECH 4, WCA 5, WCA 6

Key:
#: Dependent on species.

ECH 2: Annex II of the European Communities Council Directive on the Conservation of Natural Habitats and Wild Fauna and Flora. Animal and plant species of community interest whose conservation requires the designation of Special Areas of Conservation.
ECH 4: Annex IV of the European Communities Council Directive on the Conservation of Natural Habitats and Wild Fauna and Flora. Animal and plant species of community interest in need of strict protection.
WCA 5: Schedule 5 of Wildlife and Countryside Act 1981 (as amended). Protected animals (other than birds).
WCA 6: Schedule 6 of Wildlife and Countryside Act 1981 (as amended). Animals which may not be killed or taken by certain methods.

Species of Principal Importance: Species of Principal Importance for Nature Conservation in England.

Table 3.1: Bat Species Records Within 1 km of Survey Area

4. SURVEY RESULTS

4.1 INTRODUCTION

The Preliminary Bat Roost Assessment was conducted on 8th June 2021 and 5th July 2021 by Carol Flaxman (Senior Ecological Consultant) and Dorothy Dunne (Ecological Project Officer). Drawing C153160-01-01, illustrating the results of the survey, is provided in Chapter 7.

Weather conditions were recorded and are presented in Table 4.1.

Parameter	Conditions	
	08/06/2021	05/07/2021
Temperature (°C)	21	19
Cloud Cover (%)	10	40
Precipitation	Nil	Nil
Wind Speed (Beaufort)	F0	F1

Table 4.1: Weather Conditions During the Preliminary Bat Roost Assessment

4.2 CONSTRAINTS

No constraints were experienced during the survey.

4.3 SURVEY RESULTS – BUILDING

External Assessment
A single-storey building was located in the north-eastern corner of the site. It was constructed from red brick and had a half pitched, clay tiled roof with plastic roof edging and painted, wooden soffits (Plate 4.1). The building was generally in good condition, with no cracks or crevices in the walls. The roof was largely intact and well-sealed; however, there was a dislodged ridge tile at the western end of the roof and the roof edging had lifted slightly in some areas, providing potential ingress points for bats into the building and potential roosting locations (Plate 4.2). Whilst the soffits were tightly fitted against the walls, several holes were present which provide access into potential roosing locations (Plates 4.3 and 4.4). In addition, the paint on the soffits was peeling (Plate 4.5). These features were inspected using an endoscope and found to be clear of cobwebs, possibly indicating recent use by fauna. No evidence of bats was recorded.

Plate 4.1: Eastern and northern elevations

Plate 4.2: Lifted roof edging

Plate 4.3: Holes in soffit

Plate 4.4: Hole in soffit

Plate 4.5: Peeling paint on soffit

A set of double wooden doors was present on the eastern gable end of the building. It is understood that these are left open during the day, but they are closed at night. Nevertheless, a narrow gap was noted along the top of the door, providing access into the building when the doors are closed (Plate 4.6). The gap was inspected and found to be filled with cobwebs, indicating no recent use by fauna. No evidence of bats was recorded. The wooden framed windows were mostly in good condition and tightly fitted, except for a boarded-up window on the western gable end, which consisted of an internal board and an external board with a cavity between them (Plate 4.7). A hole in the external board provided access into the cavity, but closer inspection revealed no evidence of bats inside the cavity.

Plate 4.6: Gap above doors

Plate 4.7: Boarded-up window with cavity

Ivy was growing on the south-western corner of the building, but the stems did not form any potential roosting features, and the wall behind was in good condition (Plate 4.8).

Plate 4.8: Ivy growing on south-western corner

A lean-to was attached to the western half of the northern elevation, which was open on two sides (Plate 4.9). It had a half-pitched, clay tiled roof with plastic roof edging at the eastern and western ends. A wooden soffit was present along the northern elevation, which was damaged in sections providing ingress points into potential roosting locations.

Plate 4.9: Lean-to

Internal Assessment
The eastern two thirds of the building comprised a workshop and associated storage areas (Plate 4.10). These areas had breezeblock walls internally, which were in good condition with no cracks or crevices. Wooden boards were present along the wall tops, which were well-sealed. The building was largely open to the roof, with exposed timber trusses (Plate 4.11). The roof was lined with bitumen felt, which was in good condition. Crevices between the felt and tiles provide suitable roosting locations for bats, but these could not be inspected as it would have resulted in their destruction/disturbance. No evidence of bats was recorded inside the building; however, the building is subject to frequent disturbance and machinery is frequently moved, which could potentially destroy evidence of bat activity.

The western third of the building was divided into office spaces by partition walls (Plate 4.12). This part of the building had a boarded ceiling with a roof void above, which was accessible via a small access hatch. The roof in this area was lined with bitumen felt, which was in good condition (Plate 4.13). No evidence of bats was recorded within the void, but rat droppings were present throughout (Plate 4.14).

A section in the middle of the building had a false ceiling, but there was no access to the roof void above (Plate 4.15).

Plate 4.10: Interior of workshop

Plate 4.11: Roof structure above workshop

Plate 4.12: Interior of office space

Plate 4.13: Roof structure above offices

Plate 4.14: Rat droppings inside roof void

Plate 4.15: Section of building with inaccessible roof void

The lean-to formed a covered storage area for machinery. It had steel posts and supports, with timber roof trusses. The roof was lined with bitumen felt, which was damaged along the northern edge providing access for bats into the crevices between the felt and tiles (Plate 4.16). Other sections of worn/damaged roofing felt were present, with occasional holes noted. The roof crevices could not be inspected due to their height and as it would have resulted in the destruction/disturbance of potential roosting locations.

Wooden boarding was present along the western wall inside the lean-to, which was lifted in one section. This could not be fully inspected as access directly below the feature was not possible due to stored materials, but it appeared to be clear of cobwebs, possibly indicating recent use by fauna.

Plate 4.16: Damaged roof lining

4.4 SURVEY RESULTS – TREES

An area of semi-natural woodland was present along the southern boundary of the site, adjacent to the River Arrow. The canopy was open in places with the remaining areas dominated by mature crack willow *Salix fragilis* and semi-mature alder *Alnus glutinosus* and elder *Sambucus nigra*. The willow trees were in poor condition with hollow trunks and split branches.

A small patch of semi-natural woodland was also present in the centre of the site between the golf course and adjacent fields. The canopy was composed of even-aged, semi-mature trees including goat willow *Salix caprea*, silver birch *Betula pendula* and two mature English oaks *Quercus robur*.

Linear strips of plantation woodland were present towards the eastern boundary of the site, forming part of the golf course, and a series of smaller patches of plantation woodland were present within the golf course. The canopy comprised a mixture of mature and semi-mature trees including alder, ash *Fraxinus excelsior*, common whitebeam *Sorbus aria*, cypress *Cupressus* sp., English oak, field maple *Acer campestre*, goat willow, grey willow *Salix cinerea*, large-leaved lime *Tilia platyphyllos*, Norway maple *Acer platanoides*, Norway spruce *Picea abies*, rowan *Sorbus aucuparia*, silver birch, small-leaved lime *Tilia cordata*, Swedish whitebeam *Sorbus intermedia*, sycamore *Acer pseudoplatanus*, weeping willow *Salix babylonica*, white poplar *Populus alba* and wild cherry *Prunus avium*.

In addition, a number of semi-mature and mature scattered trees were located across the site. These included ash, English oak, fir *Abies* sp., hawthorn *Crataegus monogyna* and hazel *Corylus avellana*. In the north-eastern corner of the site was a row of immature field maple with the occasional semi-mature Scots pine *Pinus sylvestris*. Occasional semi-mature to mature trees were also present within the hedgerows, comprising English oak and grey willow. The majority of these scattered trees were in good condition; however, some of the mature oak trees contained rot holes, woodpecker holes and split branches.

Some areas of woodland are to be retained, and therefore not all of the trees in these locations were surveyed in detail. This includes the woodland in the south of the site. All trees that are to be removed, as indicated on the Proposed Site Layout, and trees marked as Category U in the Preliminary Arboricultural Assessment (Report RT-MME-152753-01) were surveyed in detail. The majority of the surveyed trees held no potential roosting features. However, a small number possessed features that could potentially support roosting bats. The trees considered to have potential for use by roosting bats are further described in Table 4.2.

Tree No.	Species	Description	BCT Suitability Class
T1	Apple	A partially dead tree with a split in the main stem and multiple holes leading to the hollow cavity of the entire trunk (Plate 4.17). It was open at the top, meaning it was exposed to rain ingress. The hollow was inspected with an endoscope and no sheltered cavities were noted throughout the hollow of the tree. A small cavity was present on the eastern aspect of the tree at 0.5 m above ground level, which extended inwards by 10 cm, but the entrance was cluttered by scrub and no evidence of roosting bats was present (Plate 4.18).	Low
T2	White poplar	Holes were present on the northern aspect (10 cm diameter) and southern aspect (2 cm diameter) of the tree between 2 – 2.5 m above ground level. These were connected through the tree and a sheltered cavity was present in the centre of the tree, which extended upwards by 10 cm. This was inspected with an endoscope and some light cobwebs were noted with no signs of bat usage at the time of the survey. A stub from an old branch was present on the western aspect, which was blind and did not extend into a cavity. There was a hole on the eastern aspect at 3 m above ground level, which measured 5 cm in diameter and extended 10 cm into the tree and downwards by 10-15 cm (Plates 4.19 and 4.20). No signs of bat usage were noted, but this feature may have been used by nesting birds.	High
T3	White poplar	Two holes were present in the eastern branch at 2 m above ground level. The feature facing north extended inwards by 2 cm and multiple slugs were present (Plate 4.21). The feature facing south was 5-10 cm wide and extended inwards by 10 cm into a small cavity which held limited roosting potential. A vertical split was present in the main stem, but it did not provide suitable opportunities for roosting bats (Plate 4.22).	Low
T4	English oak	Mature tree with multiple dead branches in canopy with splits / holes present, some of which are open / exposed but some may lead into small, sheltered cavities (Plate 4.23). These features could not be inspected due to their height. There was also a barn owl box present, but it was not possible to confirm if it was in use at the time of the survey due to its height.	High
T5	English oak	Mature tree of sufficient size and age to contain potential roosting features, but none were seen from the ground. Some ivy cover was present.	Low
T6	English oak	Mature tree with dead, split and twisted branches in canopy, and some peeling bark (Plate 4.24). A hole was present in a twisted branch on the southern aspect but it was not possible to confirm if it extended into a cavity from ground level. There was also a knot hole on an eastern branch 3 m above ground level which was 5 cm in diameter (Plate 4.25). It did not appear to extend into a cavity from the ground.	High
T7	English oak	Mature tree with knot hole on northern aspect of main stem, which measured 10 cm in diameter (Plate 4.26). It was not possible to see if it extended into a suitable cavity from the ground. Also, some small dead branches were present in the canopy but they did not appear to extend into cavities.	High
T8	English oak	A knot hole was present on the northern aspect, which measured 5 cm in diameter, at 8 m above ground level (Plate 4.27). It was not possible to see if it extended into a suitable cavity. Butt rot was noted at the base of the tree, which extended into the trunk for at least 0.5 m (Plate 4.28). Some cobwebs were present when inspected but one side was clear of cobwebs/debris internally, possibly indicating recent use by fauna. No evidence of bats noted.	High
T9	English oak	A woodpecker hole was present on the southern aspect, measuring 5 cm in diameter, at 5 m above ground level (Plate 4.29). There were minor dead limbs and peeling bark but it was not possible to see if these extended into suitable cavities.	High
T10	Ash	A young tree with a damaged / hollow main stem measuring 1.5 m long, with access points into the cavity noted at the top and bottom which were clear of cobwebs / debris (Plate 4.30).	High
T11	Ash	Mature tree with multiple woodpecker holes / knot holes in canopy branches (Plate 4.31). It was not possible to inspect these features due to their height.	High
T12	White poplar	A split was present on the southern aspect of the main stem, measuring 0.4 m long and 0.1 m wide (Plate 4.32). It appeared to extend into a cavity but it could not be fully inspected.	High
T13	Ash	Woodpecker holes were present on the northern and southern aspects at 8 m above ground level (Plate 4.33). They measured 3-5 cm in diameter but could not be fully inspected due to their height. Other potential woodpecker holes (1 cm diameter) were present but may not extend into suitable cavities.	High
T14	White poplar	A woodpecker hole (4 cm diameter) was present on the southern aspect at 4 m above ground level, but there was a split behind the woodpecker hole which obstructed the hole cavity (Plate 4.34).	Low

Table 4.2: Summary of Trees with Suitability for Bats Within the Survey Area

Plate 4.17: Tree T1, split in main stem

Plate 4.18: Tree T1, small cavity on eastern aspect

Plate 4.19: Tree T2, hole on eastern aspect

Plate 4.20: Tree T2, close-up of cavity

Plate 4.21: Tree T3, north facing hole in eastern branch

Plate 4.22: Tree T3, vertical split

Plate 4.23: Tree T4, dead branches in canopy

Plate 4.24: Tree T6, dead/split branches in canopy

Plate 4.25: Tree T6, knot hole

Plate 4.26: Tree T7

Plate 4.27: Tree T8, knot hole

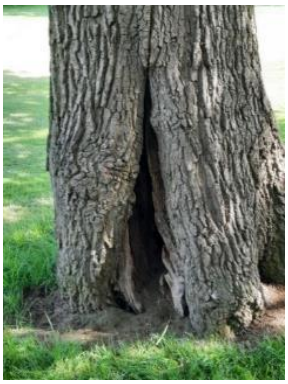

Plate 4.28: Tree T8, butt rot at base

Plate 4.29: Tree T9

Plate 4.30: Tree T10

Plate 4.31: Tree T11

Plate 4.32: Tree T12

Plate 4.33: Tree T13

Plate 4.34: Tree T14

The remaining trees on site have negligible potential to support roosting bats.

4.5 SITE AND SURROUNDING HABITATS

The woodland, scattered trees, hedgerows, scrub and open grassland on site, as well as the waterbodies, provide high quality habitat for commuting and foraging bats. There were good links to alternative roosting, commuting and foraging features in the surrounding area, and therefore it was considered that the habitats on site have high potential to be used by bats.

Habitats within 1 km of the site suitable for roosting, commuting and foraging include:

- Residential houses and associated gardens;
- Farmhouses and associated agricultural buildings;
- Running water and standing waterbodies including the River Arrow and associated trees to the south of the site;
- Pockets of woodland;
- Agricultural fields with tree and hedge lined boundaries;
- Golf courses with associated open grassland habitats; and,
- Railway lines with vegetated banks.

5. DISCUSSION AND CONCLUSIONS

5.1 SUMMARY OF PROPOSALS

The proposals for the site involve the construction of residential dwellings with associated hard and soft landscaping.

5.2 ASSESSMENT OF BUILDINGS

Multiple features were identified around the building located in the north-eastern corner of the site which could potentially be used by bats to gain access into the building and potential roosting locations. Features included a dislodged ridge tile at the western end of the roof, holes in the soffits, lifted roof edging on the eastern gable end, cavities between a boarded window, a gap along the top of the door, damaged roofing felt on the lean-to leading into crevices beneath the roof tiles, and damaged timber boards inside the lean-to. Due to their height and location, many of these features could not be fully inspected. Therefore, the building was classed as having high potential to support roosting bats and further surveys were recommended.

5.3 ASSESSMENT OF TREES

A total of fourteen trees on site were found to possess potential roosting features. Of these, ten trees had high potential to support roosting bats (Trees T2, T4, T6, T7, T8, T9, T10, T11, T12 and T13) and four trees had low potential to support roosting bats (Trees T1, T3, T5 and T14).

The remaining trees all had negligible potential to support roosting bats.

5.4 POTENTIAL IMPACTS ON BATS

The proposed demolition works have the potential to disturb or destroy a bat roost if bats are found to be roosting within the building. Therefore, further survey effort, in the form of dusk emergence and dawn re-entry bat surveys, is required to establish the presence/absence of roosting bats within the building. A recommendation regarding this further survey work is made in Chapter 6.

It is understood that only two trees classed as having high potential to support roosting bats will be impacted by the proposed development: T2 and T13. Two other trees adjacent to T2 are to be removed (including T3) and removal of trees in close proximity to T2 may have an indirect impact on any roosting bats, if present. Tree T13 is to be removed to facilitate the work. Works to these trees have the potential to disturb or destroy a bat roost if bats are found to be roosting within the trees. Therefore, further survey effort, in the form of dusk emergence and dawn re-entry bat surveys, is required to establish the presence/absence of roosting bats within these trees. A recommendation regarding this further survey work is made in Chapter 6.

Although some of the trees with low roosting potential will also be impacted by the proposed works, these trees do not require further surveys. However, a recommendation regarding how the proposed tree removal works should proceed is made in Chapter 6.

The Proposed Site Layout shows that areas of plantation woodland, hedgerows, dense scrub and scattered trees are to be removed to facilitate the proposals as well as some of the smaller ponds. It is proposed to enhance the retained areas of woodland, create a new SUDs feature and plant wildflower grassland within the site. Habitat connectivity will be retained around the site boundaries, particularly the eastern boundary where large areas of plantation woodland will be retained. Therefore, the impact on foraging and commuting habitat is likely to be temporary with an eventual beneficial effect. To increase the value of the site for bats, a recommendation is made in Chapter 6 regarding suitable plant species to incorporate into the soft landscaping to attract night flying insects.

Whilst no significant impacts on commuting and foraging habitats are anticipated, any new lighting, either temporary or permanent, at the site has the potential to impact commuting and foraging bats by illuminating suitable habitats. Therefore, a recommendation regarding sensitive lighting is made in Chapter 6.

6. RECOMMENDATIONS

All recommendations provided in this section are based on Middlemarch Environmental Ltd's current understanding of the site proposals, correct at the time the report was compiled. Should the proposals alter, the conclusions and recommendations made in the report should be reviewed to ensure that they remain appropriate.

R1 Building

The building has been identified as having high potential to support roosting bats. Bat Surveys: Good Practice Guidelines published by the Bat Conservation Trust (Collins, 2016) recommends that for structures with high bat roosting potential at least three dusk emergence and/or dawn re-entry surveys be undertaken during the bat emergence/re-entry survey season to determine the presence/absence of roosting bats within the structure. The bat emergence/re-entry survey season extends from May to September. At least two of the surveys should be undertaken during the peak season for emergence/re-entry surveys between May and August and one of the three surveys should be a dawn re-entry survey. If a roost is discovered during these surveys, a Natural England licence application may be required.

These surveys have been commissioned by the client and are ongoing at the time of preparation of this report.

R2 Trees T2 and T13

Trees T2 and T13 have been identified as having high potential to support roosting bats. Bat Survey: Good Practice Guidelines published by the Bat Conservation Trust (Collins, 2016) recommends that for trees with high bat roosting potential at least three dusk emergence and/or dawn re-entry surveys be undertaken during the bat activity season to determine the presence/ absence of roosting bats within the trees. The bat activity season extends from May to September. At least one of the surveys should be a dawn re-entry survey, and at least two of the surveys should be undertaken between May and August. If a roost is discovered during these surveys, a Natural England licence application may be required.

These surveys have been commissioned by the client and are ongoing at the time of preparation of this report.

R3 Trees T4, T6, T7, T8, T9, T10, T11 and T12

Trees T4, T6, T7, T8, T9, T10, T11 and T12 have been identified as having high potential to support roosting bats. There are no current plans for any works to these trees. However, should plans change to impact these trees including pruning and crown lifting, then further surveys will be required in accordance with Bat Survey: Good Practice Guidelines published by the Bat Conservation Trust (Collins, 2016).

R4 Trees T1, T3, T5 and T14

Trees T1, T3, T5 and T14 have been identified as having low potential to support roosting bats. The current plans indicate that T1 and T3 will be removed to facilitate the works. It is recommended that these trees should be subject to soft felling under the supervision of a licensed bat worker to ensure that any bats that may have colonised these trees in the interim since the initial inspection are not harmed during the proposed tree removal works.

R5 Remaining Trees

The remaining trees on site which are to be removed in accordance with the current proposals were considered to have negligible potential for roosting bats. The survey data obtained for the site is valid for 12 months from the survey date. If proposed site works have not commenced within this timeframe, it will be essential to update the survey effort to establish if the trees have developed features that could be used by roosting bats in the interim. In the unlikely event that a bat is found during works to the trees all works must immediately cease and a suitably qualified ecologist should be contacted.

R6 Lighting

In accordance with best practice guidance relating to lighting and biodiversity (Miles et al, 2018; Gunnell et al, 2012), any new lighting should be carefully designed to minimise potential disturbance and fragmentation impacts on sensitive receptors, such as bat species. Examples of good practice include:

- Avoiding the installation of new lighting in proximity to key ecological features, such as trees, hedgerows, woodland edges and waterbodies.
- Using modern LED fittings rather than metal halide or sodium fittings, as modern LEDs emit negligible UV radiation.
- The use of directional lighting to reduce light spill, e.g. by installing bespoke fittings or using hoods or shields. For example, downlighting can be used to illuminate features such as footpaths whilst reducing the horizontal and vertical spill of light.
- Where the use of bollard lighting is proposed, columns should be designed to reduce horizontal light spill.
- Implementing controls to ensure lighting is only active when needed, e.g. the use of timers or motion sensors.
- Use of floor surface materials with low reflective quality. This will ensure that bats using the site and surrounding area are not affected by reflected illumination.
- For internal lights, recessed light fittings cause significantly less glare than pendant type fittings. The use of low-glare glass may also be appropriate where internal lighting has the potential to influence sensitive ecological receptors.

R7 Habitat Enhancement

In line with the National Planning Policy Framework, the development should aim to enhance the site for bats. Bat boxes should be installed to provide roosting habitat for species such as pipistrelle. In general, bats seek warm places and for this reason boxes should be located where they will receive full/partial sun, although installing boxes in a variety of orientations will provide a range of climatic conditions. Position boxes at least 4 m above ground to prevent disturbance from people and/or predators. The planting of species which attract night flying insects is encouraged as this will be of value to foraging bats, for example: evening primrose *Oenothera biennis*, goldenrod *Solidago virgaurea*, honeysuckle *Lonicera periclymenum* and fleabane *Pulicaria dysenterica*.

7. DRAWINGS

Drawing C153160-01-01 – Preliminary Bat Roost Assessment

C153160-01-01

Legend

- Tree surveyed: high bat roosting potential
- Tree surveyed: low bat roosting potential
- Building surveyed: high bat roosting potential
- Other trees
- Other groups of trees
- Site boundary

N

Project	Hither Green Golf Course, Hither Green Lane, Redditch
Drawing	Preliminary Roost Assessment
Client	Barratt Homes
Drawing Number: C153160-01-01	Revision: 00
Scale @ A3: 1:2,000	Date: July 2021
Approved By: CF	Drawn By: RP

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The Conservation of Habitats and Species Regulations 2017.

APPENDIX 1

LEGISLATION

Bats and the places they use for shelter or protection (i.e. roosts) receive legal protection under the Conservation of Habitats and Species Regulations 2017 (Habitats Regulations 2017) and the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) Regulations 2019 (Habitats Regulations 2019). They receive further legal protection under the Wildlife and Countryside Act (WCA) 1981, as amended. This protection means that bats, and the places they use for shelter or protection, are capable of being a material consideration in the planning process.

Regulation 41 of the Habitats Regulations 2017, states that a person commits an offence if they:

- deliberately capture, injure or kill a bat;
- deliberately disturb bats; or
- damage or destroy a bat roost (breeding site or resting place).

Disturbance of animals includes in particular any disturbance which is likely 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 to affect significantly the local distribution or abundance of the species to which they belong.

It is an offence under the Habitats Regulations 2017 for any person to have in his possession or control, to transport, to sell or exchange or to offer for sale, any live or dead bats, part of a bat or anything derived from bats, which has been unlawfully taken from the wild.

Changes have been made to parts of the Habitats Regulations 2017 so that they operate effectively from 1st January 2021. The changes are made by the Habitats Regulations 2019, which transfer functions from the European Commission to the appropriate authorities in England and Wales.

All other processes or terms in the 2017 Regulations remain unchanged and existing guidance is still relevant.

The obligations of a competent authority in the 2017 Regulations for the protection of species do not change. A competent authority is a public body, statutory undertaker, minister or department of government, or anyone holding public office.

Whilst broadly similar to the above legislation, the WCA 1981 (as amended) differs in the following ways:

- Section 9(1) of the WCA makes it an offence to *intentionally* kill, injure or take any protected species.
- Section 9(4)(a) of the WCA makes it an offence to *intentionally or recklessly** damage or destroy, *or obstruct access to*, any structure or place which a protected species uses for shelter or protection.
- Section 9(4)(b) of the WCA makes it an offence to *intentionally or recklessly** disturb any protected species *while it is occupying a structure or place which it uses for shelter or protection*.

*Reckless offences were added by the Countryside and Rights of Way (CRoW) Act 2000.

As bats re-use the same roosts (breeding site or resting place) after periods of vacancy, legal opinion is that roosts are protected whether or not bats are present.

The reader should refer to the original legislation for the definitive interpretation.

The following bat species are Species of Principal Importance for Nature Conservation in England: barbastelle bat *Barbastella barbastellus*, Bechstein's bat *Myotis bechsteinii*, noctule *Nyctalus noctula*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared bat *Plecotus auritus*, greater horseshoe bat *Rhinolophus ferrumequinum* and lesser horseshoe bat *Rhinolophus hipposideros*. Species of Principal Importance for Nature Conservation in England are material considerations in the planning process. The list of species is derived from Section 41 list of the Natural Environmental and Rural Communities (NERC) Act 2006.

ECOLOGY

At present, 18 species of bats are known to live within the United Kingdom, of which 17 species are confirmed as breeding. All UK bat species are classed as insectivorous, feeding on a variety of invertebrates including midges, mosquitoes, lacewings, moths, beetles and small spiders.

Bats will roost within a variety of different roosting locations, included houses, farm buildings, churches, bridges, walls, trees, culverts, caves and tunnels. At different times of the year the bats roosting requirements alter and they can have different roosting locations for maternity roosts, mating roosts and hibernation roosts. Certain bat species will also change roosts throughout the bat activity season with the bat colony using the site to roost for a few days, abandoning the roost and then returning a few days or weeks later. This change can be for a variety of reasons including climatic conditions and prey availability. Bats are known live for several years and if the climatic conditions are unfavourable at a particular roost, they may abandon it for a number of years, before returning when conditions change. Due to the matriarchal nature of bat colonies, the locations of these roosts can be passed down through the generations.

Bats usually start to come out of hibernation in March and early April (weather dependent), when they start to forage and replenish the body weight lost during the hibernation period. The female bats then start to congregate together in maternity roosts prior to giving birth and a single baby is born in June or July. The female then works hard to feed her young so that they can become independent and of a sufficient weight to survive the winter before the weather gets too cold and invertebrate activity reduces. Males generally live solitary lives, or in small groups with other males, although in some species the males can be found living with the females all year. The mating season begins in the autumn. During the winter bats hibernate in safe locations which provide relatively constant conditions, although they may venture outside to forage on warmer winter nights.