GLENVILLE FARM AND LAND
SITUATED OFF TUTBURY ROAD,
STAFFODSHIRE

DAYTIME BAT SURVEY

A Report to: FIRST CITY ON BEHALF OF
STAFFORDSHIRE COUNTY COUNCIL

Report No: RT-MME-116943

Date: May 2014
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”.

<table>
<thead>
<tr>
<th>Report Version</th>
<th>Date</th>
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<th>Checked by:</th>
<th>Approved by:</th>
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<tr>
<td>Final</td>
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</table>

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 2014 First City Ltd on behalf of Staffordshire County Council commissioned Middlemarch Environmental Ltd to undertake a Daytime Bat Survey at Glenville Farm and the land situated off Tutbury Road in Burton-on-Trent, Staffordshire. This assessment is required to support a planning application associated with the redevelopment of the site. The daytime bat survey was conducted on 15th May 2014 by Sara Rodriguez (Ecological Consultant) and Morgane Coiquil (Health and Safety Assistant).

Of the buildings present on site, the assessment of the farm house revealed a structure that was generally in a good condition however potential ingress and roosting opportunities for bats were identified. Due to the number of suitable access points and roosting locations that could not be fully inspected as well as the presence of suitable foraging habitat in close proximity, this building has been identified as being of high potential for roosting bats.

Bat Surveys: Good Practice Guidelines published by the Bat Conservation Trust (Hundt, 2012) recommends that for buildings with high bat roosting potential at least three nocturnal emergence and/or dawn re-entry surveys be undertaken during the bat activity season to determine the presence/absence of roosting bats within the building. 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 mid-May and August. If a roost is discovered during these surveys, a Natural England licence application may be required.

Seven of the surveyed trees (T1, T2, T3, T4, T5, T6 and T8) had features suitable for roosting bats that could not be fully inspected due their height and location. Therefore, it was not possible to fully ascertain whether or not bats were present. To determine the presence/absence of roosting bats within trees, further survey work is required. If a roost is discovered during these surveys, a Natural England licence application may be required if the trees are to be removed or disturbed as a result of the proposed works. There are two possible survey options available to the client:

- **Option 1: Nocturnal Emergence and Dawn Re-Entry Surveys**
  Bat Survey: Good Practice Guidelines published by the Bat Conservation Trust (Hundt, 2012) recommends that for trees with high bat roosting potential at least three nocturnal 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 mid-May and August.

- **Option 2: Tree Climbing Survey**
  Where safe to do so, trees will be climbed utilising tree climbing equipment. Any suitable features for roosting bats will be internally searched using a torch and endoscope. If a roost is identified, or bat roosting features extend beyond the reach of an endoscope, nocturnal emergence and dawn re-entry surveys will be required (as detailed in Option 1). If any trees are considered unsafe to climb, or cannot be fully inspected for safety reasons, then they should be subject to nocturnal emergence and dawn re-entry surveys, as detailed in Option 1.

Additionally, a minimum three transect surveys are required in order to determine the usage of the site by foraging and commuting bats and to assess the potential impacts of the development of the site. The exact scope of works should be discussed and approved with the County Ecologist.

All the features within the outbuildings were fully inspected and no bats or evidence of bat activity (e.g. droppings, feeding remains, urine staining, grease marks or scratch marks) was found during their assessment. Therefore, it is considered that bats are not currently roosting within these buildings and they do not require further survey work. The survey data obtained for the site is valid for 12 months from the survey date. If development works to the outbuildings have not commenced within this timeframe it will be essential to update the survey effort to establish if bats have colonised the buildings in the interim. It will also be necessary to re-survey tree T7 if this tree is to be affected by the works. In the unlikely event that a bat is found during demolition works all works must immediately cease and a suitably qualified ecologist should be contacted.
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1. INTRODUCTION

1.1 PROJECT BACKGROUND

In May 2014 First City Ltd on behalf of Staffordshire County Council commissioned Middlemarch Environmental Ltd to undertake a Daytime Bat Survey at Glenville Farm and the land situated off Tutbury Road in Burton-on-Trent, Staffordshire. This assessment is required to support a planning application associated with the redevelopment of the site.

Middlemarch Environmental Ltd has carried out an Extended Phase 1 Habitat Survey in September 2011 and May 2013 for First City Ltd on behalf of Staffordshire County Council at this site. The findings of these surveys are detailed in Report Numbers RT-MME-109855 and RT-MME-113587, respectively.

All UK bat species are European 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 survey area is located off Tutbury Road and Harehedge Lane in Rolleston on Dove near Burton on Trent in Staffordshire. It is centred at National Grid Reference SK 2367 2633 and occupies an area of approximately 17 hectares in extent. Improved pasture enclosed by a mix of clipped and currently un-clipped thorn hedgerows is the dominant land use. During the survey completed in September 2011, the pasture was closely grazed by cattle whereas in May 2013 the majority of the pasture was long. In 2014, the pasture was similar to that seen in 2013 and both times it has been anticipated that a silage crop would be taken. A complex of farm buildings with areas of tall ruderal vegetation and a slurry pond are present in the north-west of the site.

Abutting the site to the south is Harehedge Lane, along which are located residential dwellings, whilst to the east lies Tutbury Road, again with detached residential properties present along its eastern side and with an amenity grass verge of variable width along its western flank, Rolleston Road forms part of the western site boundary, with residential dwellings along its western side. In addition, an area of land is currently being developed for a new school along the west boundary. To the north land use continues as a series of improved pasture fields.
2. METHODOLOGY

2.1 DESK STUDY
As part of the most recent Extended Phase 1 Habitat Survey (Report RT-MME-113587) (2013) an ecological
desk study was undertaken within a 1 radius from the site. The consultee for the desk study was
Staffordshire Ecological Record.

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.

2.2 BUILDING ASSESSMENT
In line with the specifications detailed in Bat Mitigation Guidelines (English Nature, 2004) and Bat Surveys:
Good Practice Guidelines (Hundt, 2012), a daytime survey of the site was conducted.

A visual assessment was undertaken to determine the potential roosting value of the site, together with a
general appraisal of the suitability of the site for foraging and commuting. Suitable roosting areas and
accessible features which could allow bat access into potential roosting areas were inspected using a torch
and endoscope for evidence of possible bat presence. Buildings were 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 features present, the trees within the survey area were assessed using the categories detailed
within Bat Surveys: Good Practice Guidelines (Hundt, 2012), as detailed in Table 2.1. Trees with features
present that are suitable to support roosting bats (Categories 1* and 1 trees) are discussed more fully in the
report.

Any trees within the survey area without suitable features to support roosting bats (Categories 2 and 3) are
not discussed individually within the report. Due to their negligible potential to support roosting bats, the Bat
Surveys: Good Practice Guidelines (Hundt, 2012) recommend no further survey work is required for these
tree categories.
### Table 2.1: Classification of Trees with Bat Potential (Adapted from Hundt, 2012)

<table>
<thead>
<tr>
<th>BCT Categories</th>
<th>Description</th>
<th>Example of Features</th>
</tr>
</thead>
</table>
| 1*             | Tree with multiple, highly suitable features capable of supporting larger roosts. | - Woodpecker holes.  
- Natural holes (e.g. knot holes).  
- Man-made holes (e.g. old pruning wounds).  
- Cracks/splits in major limbs (both vertical and horizontal).  
- Loose plated bark.  
- Hollows/cavities/tree wounds/butt-rots.  
- Double-leader cavities and rot columns.  
- Matted ivy with stem diameters in excess of 50 mm.  
- Bat and bird boxes. |
| 1              | Tree with definite potential, supporting fewer suitable features than category 1* trees, or with potential for use by single bats. | - A single feature as listed for Category 1* or  
- Few small cracks or crevices.  
- Ivy providing sufficient cover for single bats.  
- Deadwood in canopy or stem providing sufficient cover for single bats. |
| 2              | Trees with no obvious potential for bats, although the tree is of a size and age where suitable features could be present, or where the tree supports features with limited potential to support bats. | - Low ivy cover. |
| 3              | Trees with no potential to support bats. | - No cracks, crevices, hollows, deadwood etc.  
- No flaking bark. |
3. **DESK STUDY**

Records of bat species within a 1 km radius of the survey area provided by the local record centre 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.

<table>
<thead>
<tr>
<th>Species</th>
<th>No. of Records</th>
<th>Most Recent Record</th>
<th>Proximity of Nearest Record to Study Area</th>
<th>Species of Principal Importance?</th>
<th>Local BAP?</th>
<th>Legislation / Conservation Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common pipistrelle</td>
<td>5</td>
<td>1991</td>
<td>95 m east</td>
<td>-</td>
<td>Yes</td>
<td>ECH 4 WCA 5, WCA 6</td>
</tr>
<tr>
<td><em>Pipistrellus pipistrellus</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soprano pipistrelle</td>
<td>3</td>
<td>2004</td>
<td>650 m north</td>
<td>Yes</td>
<td>Yes</td>
<td>ECH 4 WCA 5, WCA 6</td>
</tr>
<tr>
<td><em>Pipistrellus pygmaeus</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key:**
- WCA 5: Protected animals (other than birds).
- WCA 6: Animals which may not be killed or taken by certain methods.
- Species of Principal Importance: Species of principal importance for nature conservation in England.
- Local BAP: Staffordshire Biodiversity Action Plan
- Note. This table does not include reference to the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats), the Bonn Convention on the Conservation of Migratory Species of Wild Animals or the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

**Table 3.1: Bat Species Records Within 1 km of Survey Area**
4. **SURVEY RESULTS**

4.1 **INTRODUCTION**

The daytime bat survey was conducted on 15th May 2014 by Sara Rodriguez (Ecological Consultant) and Morgane Coiquil (Health and Safety Assistant). The results of the Daytime Bat Survey are presented in the following sections. Drawing C116943-01, illustrating the location of the buildings on site and trees identified as having potential for roosting bats is provided in Chapter 7.

Weather conditions at the time of the daytime bat survey were recorded and are presented in Table 4.1.

<table>
<thead>
<tr>
<th>Parameter</th>
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<tr>
<td>Temperature (°C)</td>
<td>18</td>
</tr>
<tr>
<td>Cloud Cover (%)</td>
<td>30</td>
</tr>
<tr>
<td>Precipitation</td>
<td>Dry</td>
</tr>
<tr>
<td>Wind Speed (Beaufort)</td>
<td>F1</td>
</tr>
</tbody>
</table>

Table 4.1: Weather Conditions During the Daytime Survey

4.2 **CONSTRAINTS**

The loft space within the house farm could not be fully surveyed due to the reduced size of the roof void and the presence of thick layers of fibre insulation which made unsafe to go into the loft.

4.3 **SURVEY RESULTS**

4.3.1 **House**

*External Assessment*

The surveyed building comprised a two-storey, rendered structure with a multi-pitched, clay-tiled roof with gable ends (Plates 3.1 & 3.2). Double-glazed windows set in tightly fitted uPVC frames were present along the elevations.

Whilst the structure appeared to be generally in good condition with no cracks or crevices within the walls, a survey of the roof revealed a number of potential suitable ingress points and roosting opportunities for bats. These included missing, broken and dislodged roof tiles (Plate 3.3). In addition gaps where mortar had degraded were recorded at the eaves of the gable ends and between and below ridge tiles (Plate 3.4). It is considered that such features could provide ingress opportunities for bats in particular crevice-dwelling...
species such as pipistrelles *Pipistrellus* spp. into the roof void. Due to the height and location of these features, a full inspection (using a clu-light and an endoscope) was not possible.

A metal flue pipe was present within the roof and was sealed with lead flashing at the base. Whilst the lead flashing was tightly fitted, broken roof tiles were noted around the flue pipe, providing potential ingress points for bats. Two brick chimneys were also recorded within the structure. Gaps were noted between bricks where mortar had degraded, creating potential roosting opportunities and access points for bats. Again, these features could not be fully inspected due to their height and location.

Wooden soffit box and fascia boarding were present along a section of the southern elevation. These were generally in good condition and well flushed to the adjacent wall however a gap was noted between the soffit and the fascia (Plate 3.5). Upon closer inspection with a torch and an endoscope, this feature was found to be heavily cobwebbed indicating no recent access by bats and no bats or evidence of bats (e.g. droppings, urine staining, feeding remains or scratch marks) was found within or around the gap. Along the rest of the building, the roof rafters extended beyond the eaves. Gaps were noted between the rafters and the walls (Plate 3.6), providing potential access points for bats into the loft space. Due to the height and location of these features, a full inspection (using a clu-light and an endoscope) was not possible.

A single-storey, breezeblock extension with a shallow sloping corrugated plastic roof was present adjacent to the front (north) elevation of the building (Plate 3.7). Gaps were noted along the eaves of the roof where the corrugated plastic sheets did not meet the walls. These features provide potential ingress points into the structure however these were covered in cobwebs, indicating no recent access by bats. The structure was in good condition and no further features suitable as ingress points or roosting opportunities for bats were noted.
A toilet extension was present attached to the west elevation, comprising a single-storey, brick-built structure with a half-pitched, clay-tiled roof (Plate 3.8). Tightly fitted wooden bargeboard was noted along the western elevation. An open window provided ingress points for bats into the toilet room. The structure was in good condition and no further features suitable as ingress points or roosting opportunities for bats were noted.

Whilst no bats, or evidence of bat activity (such as droppings, feeding remains, urine staining, grease marks or scratch marks) were found during the external inspection of the house, it was not possible to fully survey all of the features identified due to their height and location.

**Internal assessment**

The internal assessment of the house revealed a loft space which measured approximately 1 m from floor to apex and comprised exposed wooden framework with a ridge beam (Plate 3.9). A visual assessment was undertaken from the loft hatch however the full extent of the loft could not be surveyed due to the reduced size of this void and the presence of thick layers of fibre insulation which made unsafe to go into the loft.

The loft was not internally lined with sarking and the external roof tiles were exposed. No external light was noted between the roof tiles within the area surrounding the loft hatch. Cobwebs were noted along sections of the ridge beam and rafters, indicating no recent usage by bats. The layers of fibre insulation were lifted around the loft hatch in order to find any physical evidence of bats (e.g. droppings, urine staining, feeding remains or scratch marks). None was found.
No bats or evidence of bats were noted during the internal assessment of the house however the full extent of the loft space could not be fully inspected due to health and safety issues.

The internal assessment of the front extension structure revealed no suitable features to be use by roosting bats. The toilet room had an internal false ceiling creating a void between this and the external roof tiles (Plate 3.10). Whilst this crevice could not be fully surveyed due to the absence of suitable access points, this was not considered a survey constraint as no ingress points into that crevice were noted during the external assessment. No bats or evidence of bats were noted during the internal assessment of any of the extensions.

Plate 3.10: Internal view of the toilet extension

4.3.2 Greenhouse

The greenhouse comprised a glass structure with a pitched roof supported by metal framework and a concrete base (Plate 3.11). This structure was considered to be unsuitable for bats with no features bat could use for roosting purposes.

Plate 3.11: Greenhouse (15/05/2014)

No bats or evidence of bat activity (such as droppings, feeding remains, urine staining, grease marks or scratch marks) were found during the inspection of the greenhouse.
4.3.3 Outbuilding 1

External assessment
Outbuilding 1 comprised a single-storey, asbestos structure with a pitched corrugated asbestos roof (Plate 3.12). The structure appeared to be in poor condition, with gaps on the gable ends (Plate 3.13) and between the asbestos roof sheets and the walls. The structure had boarded up windows however there was a significant gap where the board was not tightly fitted. Additionally, gaps were also noted between the wooden door frame and the surrounding wall. All these features were fully inspected with a torch and an endoscope and whilst the majority were covered in cobwebs, others were free of such debris. These gaps were considered to offer suitable ingress points for bats into the actual structure however they did not lead into any internal cavity.

Plate 3.12: Outbuilding 1 (15/05/2014)  Plate 3.13: Gap within the gable end (15/05/2014)

No bats or evidence of bat activity (such as droppings, feeding remains, urine staining, grease marks or scratch marks) were found during the external inspection of Outbuilding 1.

Internal assessment
The internal assessment of Outbuilding 1 revealed an exposed asbestos roof and wooden framework (Plate 3.14). The structure was used for storage and external light was visible from the gaps along the eaves of the roof and gaps associated with the walls, making internal conditions light and therefore suboptimal for certain bat species (such as long eared bats Plecotus spp.). Furthermore, dense cobwebs were recorded covering the walls roof and framework, indicating no recent usage by bats.

Plate 3.14: Internal view of Outbuilding 1 (15/05/2014)

No further features suitable for roosting bats were noted and no bats or evidence of bat activity (such as droppings, feeding remains, urine staining, grease marks or scratch marks) were found during the internal inspection of Outbuilding 1.
4.3.4 Outbuilding 2

External assessment

Outbuilding 2 comprised a single-storey, brick-built barn with a corrugated asbestos pitched roof (Plates 3.15 & 3.16). The structure appeared to be in good condition, with no cracks or crevices in the brickwork or areas of significant damage to the roof. Tightly fitted wooden bargeboard was present along the southern elevation. Open doors and broken windows allowed access direct flight for bats into the structure.

The asbestos roof was noted to extend along the eaves and gaps were noted between the roof sheets and the walls. Whilst some of these features were free of cobwebs, upon closer inspection (using a clu-light and an endoscope) no evidence of bats was noted within or around these gaps.

Swallows *Hirundo rustica* were noted entering and exiting this building. No bats or evidence of bat activity (such as droppings, feeding remains, urine staining, grease marks or scratch marks) were found during the external inspection of Outbuilding 2.

Internal assessment

The internal assessment revealed the barn to be divided in several sections by internal brick walls. The different sections are described below:

- **Room used for storage** (Plate 3.17): Located on the north western corner of the barn. This room had exposed asbestos roof and metal framework. The internal walls appeared to be in good condition with no gaps or crevices. A swallow was found to be nesting within the room however no bats or evidence of bat activity was recorded within the room.

- **Boiler room** (Plate 3.18): This room was located on the south western corner of the barn and had false ceiling creating a void between this and the external roof. Whilst this void could not be inspected due to the absence of a suitable access point, all the potential ingress points had been fully endoscope during the external assessment of the outbuilding and no bats or evidence of bats had been found. As such, this was not considered a survey constraint. No further features suitable as ingress points or roosting opportunities for bats were noted and no bats or evidence of bat activity was recorded within the boiler room.

- **Crib area** (Plate 3.19): This section of the barn comprised exposed asbestos roof with skylights and metal framework. Skylights were present on both pitches of the roof, which increase interior lighting levels. The internal walls appeared to be in good condition and no potential features to be used by roosting bats were noted. Furthermore, no bats or evidence of bat activity was noted during the internal assessment of the crib area.

- **Stables** (Plate 3.20): The stables area comprised the eastern half of the barn and comprised exposed asbestos roof and metal frameworks. The stables were divided as well by internal brick walls. These were in painted in white and in good condition, with no gaps bat could use for roosting.
purposes. In addition, dense cobwebs were recorded covering the corners of the walls. No bats or evidence of bat activity was noted during the internal assessment of the stables.

Plate 3.17: Internal view of the storage room
(15/05/2014)

Plate 3.18: Internal view of the boiler room
(15/05/2014)

Plate 3.19: Internal view of the crib area
(15/05/2014)

Plate 3.20: Internal view of one of the stables
(15/05/2014)

4.3.5 Outbuilding 3

External assessment
This outbuilding was a barn comprising breezeblock walls up to 1 m high from the ground with corrugated asbestos walls above them and a corrugated asbestos pitched roof. The structure appeared to be generally in good condition with no cracks or crevices within the walls or areas of significant damage to the roof. The structure was open on the north elevation, allowing direct access flight for bats. No features suitable for roosting bats were noted during the external assessment of structure and no bats or evidence of bats (such as droppings, feeding remains, urine staining, grease marks or scratch marks) were recorded.

Internal assessment
The internal assessment of Outbuilding 3 revealed an exposed asbestos roof and steel framework with a ridge beam (Plate 3.21). Ivy Hedera helix was noted growing on the south western corner however the ivy was light in nature with no features suitable for roosting bats. No further features suitable for roosting bats were noted within the structure and no bats or evidence of bats (such as droppings, feeding remains, urine staining, grease marks or scratch marks) were recorded during the internal assessment of Outbuilding 3.
4.3.6 Outbuilding 4

*External assessment*

This outbuilding comprised an open barn structure with a corrugated asbestos dome-shaped roof and steel framework and pillars (Plate 3.22). The structure appeared to be generally in good condition with no areas of significant damage to the roof. No features suitable for roosting bats were noted during the external assessment of structure and no bats or evidence of bats (such as droppings, feeding remains, urine staining, grease marks or scratch marks) were recorded.

*Internal assessment*

The internal assessment of Outbuilding 3 revealed an exposed asbestos roof. No features suitable for roosting bats were noted within the structure and no bats or evidence of bats (such as droppings, feeding remains, urine staining, grease marks or scratch marks) were recorded during the assessment of Outbuilding 4.

4.3.7 Outbuilding 5

*External assessment*

Outbuilding 5 was a barn which comprised a corrugated asbestos pitched roof (Plate 3.23). Breezeblock walls were present measuring up to 1.5 m high and wooden boarding was noted above them. Gaps were noted between the boards and no walls were present on the western or eastern elevation, allowing direct access flight for bats into the outbuilding. Plyboards were noted along the western elevation (Plate 3.24), creating gaps between the wooden boards and the plyboards. All of these gaps were fully inspected with a torch and an endoscope and no bats or evidence of bat activity (such as droppings, feeding remains, urine staining, grease marks or scratch marks) were recorded.
**Internal assessment**
The internal assessment of this barn revealed an exposed asbestos roof and steel framework. No features suitable for roosting bats were noted within the structure and no bats or evidence of bats (such as droppings, feeding remains, urine staining, grease marks or scratch marks) were recorded during the assessment of Outbuilding 5.

![Plate 3.23: Outbuilding 5 (15/05/2014)](image1)

![Plate 3.24: Plyboard along western elevation (15/05/2014)](image2)

### 4.3.8 Outbuilding 6

**External assessment**
Outbuilding 6 was a small wooden shed which had a pitched roof covered in felt (Plate 3.25). Gaps were noted between the door and the surrounding wooden wall and at the bottom of the structure. The felt roof was in poor condition with loose areas noted, these features did not lead into a suitable gap that roosting bats could use. All these features were fully inspected with a torch and an endoscope and no bats or evidence of bat activity (e.g. droppings, feeding remains, urine staining, grease marks or scratch marks) were noted.

**Internal assessment**
The internal assessment of the shed revealed it was used for storage and comprised exposed wooden boards and framework with a ridge beam (Plate 3.26). No features suitable for bat roosting purposes were noted within the structure and no bats or evidence of bat activity was found during the internal assessment of Outbuilding 6.

![Plate 3.25: Outbuilding 6 (15/05/2014)](image3)

![Plate 3.26: Internal view of Outbuilding 6 (15/05/2014)](image4)
4.3.9 Trees
Several mature oaks *Quercus* sp. and ashes *Fraxinus excelsior* were present within the field boundaries along the hedgerows. Eight of the larger specimens possessed features that could potentially be used by roosting bats. These trees are further described in Table 4.2 and their location can be found annotated on Middlemarch Environmental Ltd Drawing C116943-01 in Appendix 1.

<table>
<thead>
<tr>
<th>Tree Ref.</th>
<th>Species</th>
<th>Age</th>
<th>Approx. Height &amp; Diameter At Breast Height (m)</th>
<th>Potential Roost Feature, Height And Elevation</th>
<th>Category Of Bat Roost Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>H  DBH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>Oak</td>
<td>M</td>
<td>12  1.2</td>
<td>- Holes in broken branches (south side; 8 and 9 m up). - Gap in broken bran with no bark (north side; 6 m up). -Not possible to fully inspect northern side due to the presence of fencing and adjacent properties.</td>
<td>1*</td>
</tr>
<tr>
<td>T2</td>
<td>Ash</td>
<td>M</td>
<td>7   0.5</td>
<td>- Broken branch (western side; 6 m up). - Tree open at the top</td>
<td>1</td>
</tr>
<tr>
<td>T3</td>
<td>Ash</td>
<td>M</td>
<td>12  0.7</td>
<td>- Light ivy <em>Hedera helix</em> on trunk - Gap in broken branch (over the road on south side; 7 m up)</td>
<td>1</td>
</tr>
<tr>
<td>T4</td>
<td>Ash</td>
<td>M</td>
<td>13  0.6</td>
<td>- Light ivy on trunk. - 4 gaps where broken had broken (western side; 8 m up)</td>
<td>1*</td>
</tr>
<tr>
<td>T5</td>
<td>Ash</td>
<td>M</td>
<td>13  0.6</td>
<td>- Light ivy on trunk. - Gap in branch (western side; 5 m up) - Gap in branch (eastern side; 5 m up)</td>
<td>1*</td>
</tr>
<tr>
<td>T6</td>
<td>Oak</td>
<td>M</td>
<td>10  1.0</td>
<td>- Gap in branch (north eastern side; 4 m up)</td>
<td>1</td>
</tr>
<tr>
<td>T7</td>
<td>Oak</td>
<td>M</td>
<td>13  1.0</td>
<td>- 2 rot holes in broken branch (western side; 3 m up). Covered in cobwebs. Fully inspected and no evidence of bats.</td>
<td>1</td>
</tr>
<tr>
<td>T8</td>
<td>Ash</td>
<td>M</td>
<td>13  0.6</td>
<td>- Gap on trunk (north face; 4 m up) - Gap in branch (S side; 4 m up, covered in cobwebs). - Gap in branch (eastern side, 6 m up)</td>
<td>1*</td>
</tr>
</tbody>
</table>

Key:
Tree age: M= Mature

**Table 4.1: Trees with bat roosting features**

The features identified within one of the oak trees located on the eastern boundary (T7) could be fully inspected with a torch and an endoscope and no bats or evidence of bats (e.g. droppings, feeding remains, urine staining, grease marks or scratch marks were noted were identified within them.
4.3.10 Site and Surrounding Habitats
The development site is located within a rural area in Burton-on-Trent, Staffordshire. The farm buildings are surrounded by improved pasture fields with associated hedgerows and scattered trees. The presence of hay and animal faeces on site will attract numerous insects, providing a suitable source of food for bats. In addition, the hedgerows on site linked directly with the wider agricultural land and pastures located to the north of the site. The house farm, trees and hedgerow habitats on site were considered to have high potential (Hundt, 2012) to be used by bats.

Habitats within 1 km of the site suitable for roosting, commuting and foraging include:
- Farm houses and associated agricultural buildings;
- Residential houses and associated gardens;
- Running and standing water bodies;
- Agricultural fields with tree and hedge lined boundaries; and,
- Schools with associated grounds.

Whilst roads border the site to the south, east and west, the presence of hedgerows along the boundaries links the site to arable and open fields which provide suitable foraging, commuting and roosting opportunities (i.e. running and standing water and agricultural buildings) and also provides bats with a valuable commute corridor in close proximity to the surveyed buildings. Therefore, the surrounding and wider landscape is considered as high value in term of foraging, commuting and roosting opportunities for bats (Hundt, 2012).
5. DISCUSSION AND CONCLUSIONS

5.1 SUMMARY OF PROPOSALS

This assessment is required to support a planning application associated with the redevelopment of the site for a mixed use development including up to 500 dwellings; local centre providing up to 500 sq metres of floor space; or public house together with associated car parking and servicing, specialist care housing; public open space; structural landscaping and provision of drainage; and internal highway network to include the provision of access junctions to the A511 Tutbury Road and Rolleston Road with public realm works to Tutbury Road to replace the existing traffic lights with a roundabout and realignment of Harehedge Lane and formation of two mini-roundabouts together with the construction of an off-street car park (Application number P/2013/01406).

The exact layout of the proposed plans is unknown and the discussion and recommendations should be reviewed and amended, where appropriate, once the proposals are finalised.

5.2 ASSESSMENT OF BUILDINGS

5.2.1 House

The external assessment of the house revealed a structure that was generally in a good condition. However, potential ingress and roosting opportunities for bats were identified. These included:

- Missing, broken and dislodged roof tiles;
- gaps where mortar had degraded at the eaves of the gable ends;
- gaps where mortar had degraded between and below ridge tiles;
- Gaps were within the chimney brickwork; and
- Gaps were between the rafters and the walls.

In addition, the full extension of the loft could not be surveyed due to the reduced size of this void and the presence of thick layers of fibre insulation which made it unsafe to go into the loft.

Due to the number of suitable access points and roosting locations that could not be fully inspected as well as the presence of suitable foraging habitat in close proximity, this building has been identified as being of high potential for roosting bats. Recommendations are therefore made within Section 6.

5.2.2 Outbuildings 1, 2, 5 and 6

During the external assessment of these structures a number of potential ingress points and roosting opportunities for bats were noted. As such, these outbuildings were considered as having low potential for roosting bats. Nevertheless, all these features were fully inspected and no bats or evidence of bat activity (e.g. droppings, feeding remains, urine staining, grease marks or scratch marks) was found during their assessment. Therefore, it is considered that bats are not currently roosting within these buildings and they do not require further survey work.

5.2.3 Greenhouse, Outbuilding 3, Outbuilding 4

No features suitable for roosting bats were noted within these structures and no bats or evidence of bats (such as droppings, feeding remains, urine staining, grease marks or scratch marks) were recorded during the assessment of these structures. These buildings do not require further survey work.

5.3 ASSESSMENT OF TREES

Of the trees present within the survey area, eight trees were considered as Category 1 or 1* as they had features suitable for roosting bats. Of these trees, T7 could be fully inspected and no bats or evidence of bats was found.

Nevertheless, the rest of the surveyed trees (i.e. T1, T2, T3, T4, T5, T6 and T8) had features suitable for roosting bats that could not be fully inspected due their height and location. Therefore, it was not possible to fully ascertain whether or not bats were present.
The remaining trees on site had no features deemed suitable for roosting bats (in the form of rot-holes, woodpecker-holes, split limbs, dense ivy cover or areas of delaminated bark). As such, they were considered to have no potential for roosting bats. Nevertheless, they provided good foraging and commuting habitat and may therefore be of importance to any bats which may be roosting within the surrounding landscape.

5.4 POTENTIAL VALUE OF SITE TO BATS

An assessment of the development site concludes that the site has a high value for bats (Hundt, 2012) due to the presence of strong linear features (hedgerows with standard trees) which provide connectivity between the site and the wider landscape. It is therefore considered that bats would use the site in some capacity.
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 House
The house building has been identified as having high potential to support roosting bats. Bat Surveys: Good Practice Guidelines published by the Bat Conservation Trust (Hundt, 2012) recommends that for buildings with high bat roosting potential at least three nocturnal emergence and/or dawn re-entry surveys be undertaken during the bat activity season to determine the presence/absence of roosting bats within the building. 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 mid-May and August. If a roost is discovered during these surveys, a Natural England licence application may be required.

R2 Trees (T1, T2, T3, T4, T5, T6 and T8)
These trees have been identified as being Category 1 or 1*, and thus have high potential to support roosting bats.

To determine the presence/absence of roosting bats within trees, further survey work is required. There are two possible survey options available to the client: the trees can be subject to nocturnal emergence and dawn re-entry surveys or the trees can be subject to a daytime inspection using tree climbing equipment to access features that were inaccessible during this survey; both options are detailed further below. If a roost is discovered during these surveys, a Natural England licence application may be required.

- Option 1: Nocturnal Emergence and Dawn Re-Entry Surveys
  Bat Survey: Good Practice Guidelines published by the Bat Conservation Trust (Hundt, 2012) recommends that for trees with high bat roosting potential at least three nocturnal 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 mid-May and August.

- Option 2: Tree Climbing Survey
  Where safe to do so, trees will be climbed utilising tree climbing equipment. Any suitable features for roosting bats will be internally searched using a torch and endoscope. If a roost is identified, or bat roosting features extend beyond the reach of an endoscope, nocturnal emergence and dawn re-entry surveys will be required (as detailed in Option 1) and a Natural England licence application may be required. If any trees are considered unsafe to climb, or cannot be fully inspected for safety reasons, then they should be subject to nocturnal emergence and dawn re-entry surveys, as detailed in Option 1.

Additionally, a minimum three transect surveys are required in order to determine the usage of the site by foraging and commuting bats and to assess the potential impacts of the development of the site. The exact scope of works should be discussed and approved with the County Ecologist.

R2 Outbuildings and Tree T7
The survey data obtained for the site is valid for 12 months from the survey date. If development works to the outbuildings have not commenced within this timeframe it will be essential to update the survey effort to establish if bats have colonised the buildings in the interim. It will also be necessary to re-survey tree T7 if this tree is to be affected by the works.

In the unlikely event that a bat is found during demolition works all works must immediately cease and a suitably qualified ecologist should be contacted.
7. **DRAWINGS**

Drawing C116943-01 – Daytime Bat Survey
REFERENCES AND BIBLIOGRAPHY


Middlemarch Environmental Ltd (2011) *Extended Phase 1 Habitat Survey: Land off Tutbury Lane/Harehedge Lane*. RT-MME-109855.

Middlemarch Environmental Ltd (2013) *Extended Phase 1 Habitat Survey: Land off Tutbury Lane/Harehedge Lane*. RT-MME-113587-01.

APPENDIX 1

LEGISLATION

Bats and the places they use for shelter or protection (i.e. roosts) receive European protection under The Conservation of Habitats and Species Regulations 2010, as amended (Habitats Regulations 2010, as amended). 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 2010 (as amended), 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 2010 (as amended) 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.

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 (rather than deliberately) 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 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*.

Common pipistrelle and noctule bat are listed on the Staffordshire Biodiversity Action Plan.

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

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 classified 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, including 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 to 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.