TECHOPPR



Twycross Zoo

Gorilla Accommodation

Bat Report

August 2011

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1.0 INTRODUCTION

1.1 This report has been prepared by FPCR Environment and Design Ltd on behalf of Twycross Zoo for the demolition of two existing animal enclosures (chimpanzee and bird) within the grounds of Tywcross Zoo, Atherstone, Warwickshire. The report provides details of a bat survey undertaken during August 2011.

1.2 The zoo is located on the A444 (Burton Road) to the south of the M42 motorway (Figure 1) (Central grid reference SK 316 062). The survey area was situated within the centre of the zoo and included an existing chimpanzee house/enclosure and bird house/aviary. The wider area comprised other animal compounds with associated hard standing and buildings. Beyond the boundaries of the zoo, large expanses of arable and pastoral land were present.

1.3 The survey was commissioned to identify any potential ecological constraints from the presence of a bat roost associated with the demolition of the chimpanzee and aviary buildings and construction of a new gorilla compound which will meet modern welfare requirements. Demolition of the building in which bats have been identified is proposed to be undertaken.as soon as the licence is obtained.

2.0 METHODOLOGY

Desktop Survey

2.1 The National Biodiversity Network (NBN) was consulted for baseline ecological data pertaining to bats in the 10Km grid square in which the site is situated. Records of interest would comprise roost sites, grounded bats or any other incidental observations. Consultations for existing data baseline records for bat species was also undertaken with the Warwickshire Biological Records Centre (WBRC).

Bats

External / Internal visual assessments

2.2 The exterior of the buildings were visually assessed for potential access points and evidence of bat activity. Features such as small gaps under barge/soffit/fascia boards, raised or missing roof/ridge tiles and gaps at gable ends, which have potential as access points, were sought. Evidence that bats actively used potential access points sought included staining within gaps and bat droppings or urine staining under gaps; a note being made wherever such evidence was recorded. Indicators that potential access points had not been recently used include the presence of cobwebs and general detritus within the access. The visual assessment was carried out following periods of dry weather to maximise recording of visible evidence.

2.3 Where safe access was possible the interiors of the buildings, including any accessible roof voids, were also visually assessed for evidence of bat activity and/or for the potential to be used by bats. Evidence of a roost was determined by the presence of a dead or live bat, concentrated piles or scattered droppings, food remains such as insect wing fragments as well as scratch marks and/or staining.

2.4 The internal/external building survey was completed by a licensed bat worker from FPCR in August 2011 (Natural England Licence Reference Number: 20111496).

Nocturnal Surveys

2.5 Nocturnal bat surveys were undertaken by suitably experienced ecologists including Licensed bat workers (Natural England Licence numbers 20111496 and 20110391) on 18th August (dusk survey) and 25th/26th August 2011 (dusk/dawn survey). During the surveys, the surveyors were positioned around the building such that all elevations could be observed.

2.6 Over the dusk surveys surveyors were position from 30 minutes prior to and 90 minutes following sunset. During the dawn survey, surveyors were positioned around the buildings from 90 minutes prior to and 30 minutes following sunrise (this methodology takes into account the BCT guidelines). Over the surveys surveyors recorded the number of animals observed emerging from or returning to roost in the building, the location where the animals emerged from or returned to enter the buildings and the species of bat. General activity such as foraging and commuting activity was also recorded over the surveys. Bat box duet bat detectors were used during the survey to aid species identification

2.7 Weather conditions during the dusk survey on 18th August 2011 were as follows; light wind, no rain, 35% cloud cover and a temperature of 15°C. On 25th August 2011 the weather conditions were as follows; light wind, no rain, 70% cloud cover and a temperature of 15°C. During the dawn survey on 26th August 2011, weather conditions were as follows; light wind, light rain, 100% cloud cover and a temperature of 16°C.

3.0 RESULTS

Desktop Survey

3.1 Consultation results from the WBRC are still pending and this report will be updated on receipt of any salient records. The NBN gateway held records of numerous bat species present within the local area including brown long-eared *Plecotus auritus* bats in Norton-Juxta-Twycross approximately 600m to the north of the site and pipistrelle *Pipistrellus sp.* bat roosts in residential buildings to the south of the site at Orton-on-the-Hill. Records of Daubenton *Myotis daubentonii* and Whiskered *Myotis mystacinus* bats are also held, however, no specific locations or roost/record status (e.g. individual bat, grounded bat or roost site) was available (Figure 1).

Site Description

3.2 The areas for survey comprised two animal enclosures with associated internal and external areas. Habitats surrounding the buildings comprised a network of paths, other enclosures and occasional mature trees / shrub planting (Figure 2).

Building Assessment

3.3 Building B1 comprised two distinct areas which included a smaller building which housed cages for the animals (B1b) and a larger external paddock on the northern aspect of B1b with a mesh roof (B1a) (Photo 1). B1b was a single storey brick built structure with a flat felted roof. B1a was also single-storey and brick built with an 'open' caged roof. Features of note were limited to uPVC soffits and fascias and occasional areas of lead flashing. Both structures contained large viewing windows on all aspects. The exterior of the building was well maintained and potential access points into the building were limited comprising one hole in the soffit board on the eastern elevation. Over the survey, no external evidence of occupation was identified associated to this building. Safe internal access to this building was not possible over the survey period.

Photo 1. View of the south-western aspect of the aviary, left – external paddock (B1b), right – keepers area (B1b).



Photo: FPCR Environment and Design Ltd 2011

3.4 Building B2 was similar in construction to B1 with two distinct areas which included a smaller internal area for the animals (B2b) and a larger external paddock on the eastern aspect with a mesh roof (B2a). B2b was a single storey brick built structure with a pitched/hipped concrete tile roof. Structural features of note included overhanging eaves, gables, soffit boxes and lead flashing. Potential bat access/roost points included large gaps in the soffits on the eastern wall where B2a and B2b join and occasional gaps at the eaves. Approximately 50 brown long-eared *Plecotus auritus* bat droppings were noted scattered on the floor and adhered to the wall within the northern porch area of the building directly below the gap in the soffits between B2a and B2b (Photo 2). In addition, two brown long-eared droppings were noted adhered to the wall in a similar place but on the southern aspect. No other evidence of bat occupation was observed. Safe internal access to this building was not possible over the survey period.

Photo 2. View of northern aspect of B2 showing bat access location



Photo: FPCR Environment and Design Ltd 2011

Nocturnal Survey

3.5 In order to determine the presence/absence of bats using potentially suitable bat roosting features and confirm the number of animals roosting in the buildings, nocturnal surveys were undertaken on 18th August 2011 (dusk) and 25th/26th August 2011 (dusk/dawn). The following provides a summary of the results.

18th August 2011 (dusk survey)

3.6 During the survey, nine brown long-eared bats were observed to emerge from the gap on the northern aspect at soffit level between the B2a and B2b from 21.00 to 21.20. Following this, brown long-eared bats were noted foraging in front of B2 on the north, south and eastern aspects between 21.00 and 21.35. Over this survey no bats were identified emerging from building B1.

3.7 Over the course of the survey, a number of common pipistrelle *Pipistrellus pipistrellus* were also observed foraging and commuting around the survey area and a noctule *Nyctalus noctula* bat was also noted commuting over B2 at 21.15. A corridor of movement was observed to the south of the buildings where it was suspected bats were commuting to the wetland areas in the south-eastern sector of the site. Activity was recorded for approximately 45 minutes (between 20.49 and 21.35); after this time, no further activity was observed. Table 1 and Figure 3a provide a summary of all the bat activity recorded on site.

Table 1. Bats recorded during the bat nocturnal survey (18th August 2011)

Ref No.	Time	Species/Behaviour
1	20.49	Common pipistrelle – commute
	20.54	Common pipistrelle - commute (no visual)
2	20.57	Common pipistrelle – forage
3	21.00	9 x Brown long-eared emerge
2	21.00	Common pipistrelle – forage
2	21.03	Common pipistrelle – forage
4	21.09	Brown long-eared – commute
5	21.11	Common pipistrelle – commute
2	21.11	Common pipistrelle – forage
6	21.15	Noctule – commute
	21.20	Common pipistrelle – commute (no visual)
5	21.35	Common pipistrelle – commute
5	21.35	Brown long-eared - commute

25th/26th August 2011 (Dusk and Dawn Surveys)

3.8 During the emergence survey, two brown long-eared bats were observed to emerge from the gap at soffit level on the northern aspect between the B2a and B2b at 20.40. No bats were identified emerging from building B1.

3.9 Following emergence of the brown long eared from building B2, frequent common pipistrelle activity was observed around B1 and B2, and a noctule bat was observed commuting over the buildings at 21.01. Activity was recorded for approximately 85 minutes (between 2025 and 2150); after this time, no further activity was observed. Table 2 and Figure 3b provide a summary of all the bat activity recorded on site.

Table 2. Bats recorded during the emergence survey (25th August 2011)

Ref No.	Time	Species/Behaviour
1	21.25	Common pipistrelle – commute
2	20.33	Common pipistrelle - commute
3	20.35	Common pipistrelle – commute
	20.40	Common pipistrelle – forage (no visual)
4	20.40	2 x Brown long-eared emerged
3	20.41	Common pipistrelle – commute
2	20.48	Common pipistrelle – commute
	21.01	Noctule commute (no visual)
2	2151	Common pipistrelle - commute

3.10 Over the roost survey two brown long-eared bats were observed to return to roost at B2b within a gap at soffit level on the southern aspect between the B2a and B2b at 05.47. No bats were identified returning to roost in the building B1.

3.11 Activity identified over the roost survey comprised, frequent common pipistrelle and brown long-eared activity was noted around the site. Over the survey activity was recorded between 04.43 and 05.47; after which no further activity was identified. Table 3 and Figure 3 provide a summary of the bat activity recorded on site.

Table 3. Bats recorded during the roost survey (26th August 2011)

Ref No.	Time	Species/Behaviour
1	04.43	3 x Brown long-eared - forage
	04.46	Brown long-eared – commute (No visual)
1	05.23	Common pipistrelle – commute
	05.25	Brown long-eared – commute (No visual)
2	05.34	Common pipistrelle – commute
3	05.37	Common pipistrelle – commute
3	05.41	Common pipistrelle – commute
2	05.46	Common pipistrelle – commute
4	05.47	2 x Brown long-eared to roost

4.0 DISCUSSION & RECOMMENDATIONS

4.1 Proposals covered under the planning application include the demolition of the chimpanzee (B2) and aviary (B1) buildings to create opportunity to build a larger modern gorilla compound improving the existing animal welfare facilities and creating a more naturalistic habitat.

4.2 Over the survey period approximately 50 brown long-eared bat droppings were noted on the floor and adhered to the wall directly below the bat access point on the northern aspect of B2. Two further bat droppings were noted adhered to the wall on the southern aspect on B2. In addition to this, during the emergence surveys, nine brown long-eared bats were observed to emerge from a gap at soffit level on the northern aspect between buildings B2a and B2b on 18th August and two bats were observed to emerge from the same point during the emergence survey on 25th August. Following this, two bats were observed to return to the roost during the 26th August 2011. These animals entered the roost via the southern aspect of the building. These results have confirmed the presence of a small brown long eared roost in building B2. Given the number of brown long eared bats identified using the building, the presence of a small maternity roost of brown long eared bats is suspected in this building.

4.3 During the external surveys on building B1 only one potential access point was identified through a hole in the soffit board on the eastern elevation of the building. No external evidence of bat occupation was identified associated with the building and no bats were identified emerging from or returning to roost in building B1.

4.4 All species of bats are listed on the Conservation of Habitats and Species Regulations 2010 making it illegal to deliberately disturb any such animal or damage/destroy a breeding site or nesting place of any such animal. Bats are also afforded full legal protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is illegal to recklessly or intentionally kill, injure or take a species of bat or recklessly or intentionally damage or obstruct access to or destroy any place of shelter or protection or disturb any animal whilst they are occupying such a place of shelter or protection.

4.5 Given the level of protection afforded to all bats and their areas of shelter or protection the presence of the brown long eared roost in building B2 is a statutory constraint to the proposed development. From the current survey results, the presence of a bat roost has not been identified as a statutory constraint to the proposed demolition of building B1 and re-development on this site.

4.6 To legitimise demolition of building B2 and re-development on the current footprint, a licence from Natural England will be required. To ensure the 'favourable conservation status' of the species affected is maintained on completion of the works, this licence will require the provision of mitigation and compensation within the new building and temporary mitigation for loss of the roost site in other areas of the site to provide areas of shelter or rest for displaced animals over the construction period.

4.7 Mitigation for loss of the roost site over the existing gorilla compound will be provided over the new compound. The design will provide a roof space of 2.5m in height x 4.45m in width and 7.75m in length and incorporate ridge beams for roosting (Refer Architect Drawings Referenced: 6209 D 101, 103-105, 0201 and 0301). Access points will be provided on the north elevation via holes in the cladding and a total of four roof access points will be provided, which would also be suitable for pipistrelle bats. Please refer to Figure 4 for more information. This building will be constructed following demolition of the existing buildings and will be provided prior to the end of April 2012 to ensure an alternative roost is operational for the bat active period of May to September 2012.

4.8 Further temporary mitigation installed to ensure alternative roost sites are present within the site over the winter period will include five bat boxes placed on three suitable trees around the site/site boundary, to enhance the conservation value of the area (this would be particularly effective within the wetland area of the zoo). The bat boxes should be a variety of designs to encourage different environmental conditions. All the boxes should be suitable for both common pipistrelle but also a range of British species, both common and uncommon. The following box is therefore suggested:

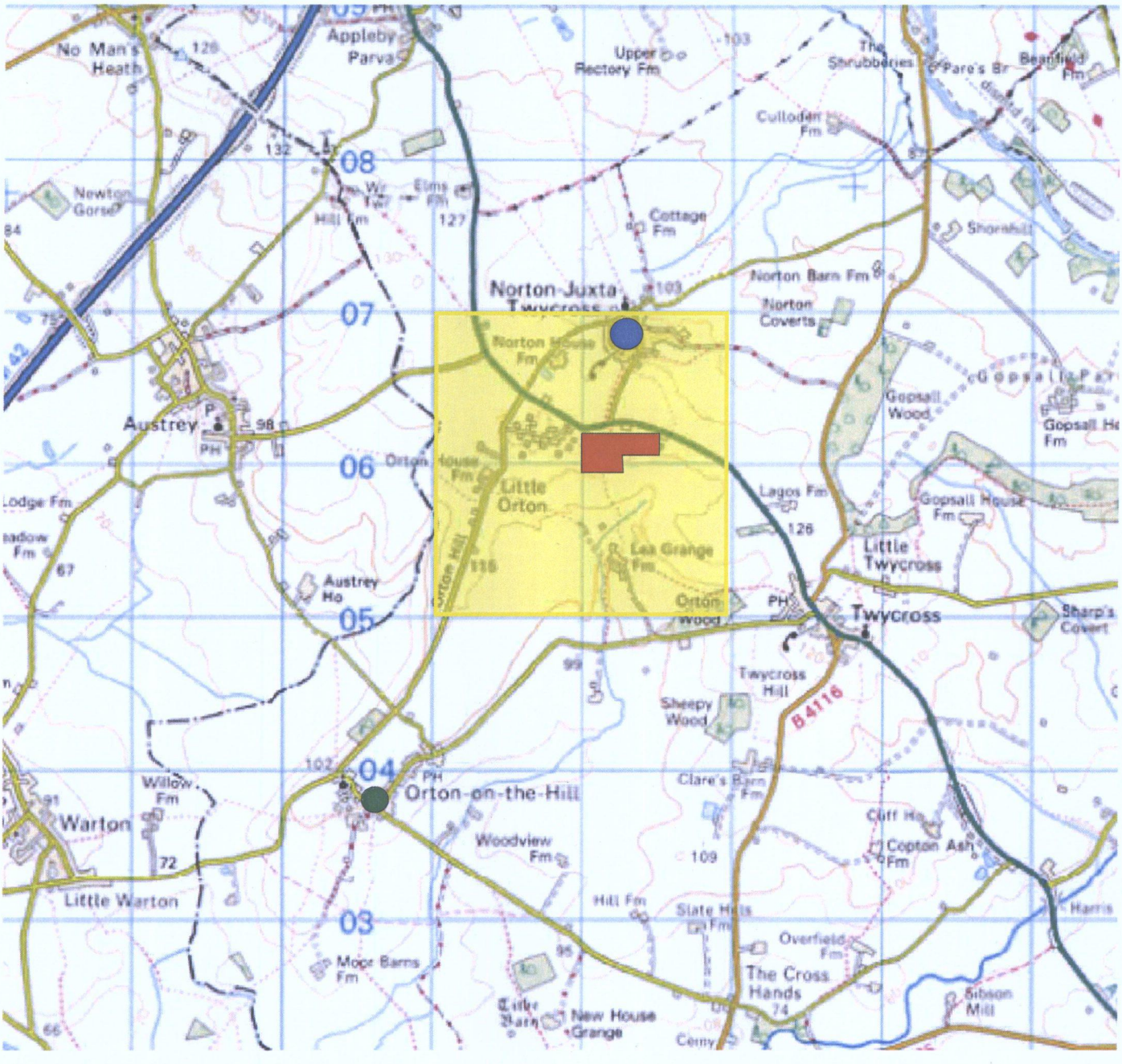
- 5 x Schwegler 2F boxes, good for smaller British bats including pipistrelle and long-eared bats.

4.9 Demolition of the existing roost site in building B2 will only be completed following the granting of a Natural England Development Licence. To minimise potential incidental killing or injury of bats the following outline working methods will be applied during demolition of the building. Prior to commencing demolition operations a licensed bat worker will complete a thorough inspection of the building and in the event any bats are observed, demolition of the building will be delayed until confirmation that there are no bats present in the building. Standard exclusion devices may have to be fitted to the building. Once the licensed bat worker has confirmed that no bats are present in the building, the demolition can proceed. The licensed bat worker will be present during removal of the existing roof covering and other sensitive areas such as removal of soffit boards. All of the existing roof tiles will be removed by hand and both sides of the tiles checked prior to disposal or stacking. In the event individual bats are found in the building during the works, operations will be stopped and re-commenced the next day to allow time for the animals to naturally disperse. Further details on working methods and timings will be detailed in the licence application which will be submitted to the Natural England's licensing department.

4.10 Derogation licences for operations affecting protected species can only be obtained if the competent licensing authority is satisfied that the requirements of the tests as stated in Regulations 53 (1)(e), 53 (9)(a) and 53 (9)(b) of the Conservation of Habitats & Species Regulation 2010 have been met. Considerations of Regulations 53 (1)(e) and 53 (9)(a) are provided in the planning statement which accompanies the planning application.

4.11 Regulation 53 (9)(b) of the Conservation of Habitats & Species Regulation 2010 requires '*that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range*'. With the implementation of the above mentioned mitigation in the new building, the proposed temporary mitigation and the outline working method statement will be adequate to meet the requirements of Regulation 53 (9)(b).

4.12 Given the presence of a bat roost has not been confirmed in building B1 this building can be demolished following the granting of planning permission and prior to the granting of the Natural England Development Licence. Other works which will be undertaken following the granting of planning permission and prior to granting of the licence include demolition of the outer wall comprising B1a and preparatory works including the formation of the moat.



Site location

Brown long-eared *Plecotus auritus*

Pipistrelle *Pipistrellus sp.*

Daubenton *Myotis daubentonii*
Whiskered *Myotis mystacinus*

Twycross Zoo

Gorrila Accomodation

LOCATION AND CONSULTATION PLAN

NTS @ A4 KJB 02.09.2011

Figure 1

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masterplanning ▪ environmental assessment ▪ landscape design ▪ urban design ▪ ecology ▪ architecture ▪ arboriculture ▪

Figure 2

BLK

A3 @ 1NTS

BUILDING PLAN

Proposed Gorilla Accommodation

Twycross Zoo

11.09.20

KEY:

- Proposed extent of new gorilla accommodation
- Tree
- Hardstanding
- Existing animal enclosures
- Shrub planting
- B1a — Building surveyed with reference
- Direction of roof slope
- Amenity grassland

B2a
Extensive enclosure
(Chimpanzee)

B2p
Internal area

B1a
Extensive enclosure
(Aviary)

B1p
Internal area

N

tpct

Figure 3a

KLB A3 @ NTS 02.08.10

BAT MONITORING RESULTS
(Emergence over 18dB)

Proposed Gorilla Accommodation

Tawstock

KEY:

Bat flight path

Reference number

Bat emergence location

Survey position

Building/s surveyed with reference

Direction of roof slope

BSp

BSa

1

2

3

4

5

6

Internal view
BSp

External ecophone
BSa
(Churchyard)

External ecophone
BSp
(Vista)

Internal view
BSp

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Figure 3p

KLB | NTS @ A3 | 02.09.2011

Twycross Zoo

Proposed Gorilla Accommodation

BAT INCURSIONAL RESULTS

(Emergence / Roost 25-28/08/11)

KEY:

EMERGENCE (25th August 2011)

- Bat flight path
- Reference number
- Bat emergence location
- Surveyor position

ROOST (28th August 2011)

- Bat flight path
- Reference number
- Bat roost location
- Surveyor position

- B1a Buildings surveyed with reference
- Direction of roost slope

B1a External aspects (Visual)

B1a Internal area

B2a External aspects (Crepuscular)

B2a Internal area

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Section AA

Section BB

Plan
(not to scale)

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- 9 SEP 2011
DEVELOPMENT SERVICES

Figure 4

Planning