

**EXTENDED PHASE 1 HABITAT
SURVEY AND BAT SCOPING
REPORT**

at

**Land off Catherine's Walk
Barnsley
South Yorkshire
S71 3BS**

Client:

Leeds and Yorkshire Housing
Association

Client Address:

2 Shire Oak Road
Headingley
Leeds
LS6 2TN

JCA Ref:

13749c/DB

Date of Report:

07/02/2018

Quality Assurance

Version	Desktop Survey Completed:		Site Surveyed:		Report Completed:		Checked:	
	Date	Name	Date	Name	Date	Name	Date	Name
Planning Application	27 th October 2017	Josie Collier	18 th October 2017	Josie Collier	30 th October 2017	Josie Collier	31 st October 2017	Simeon Haigh
Planning Application	27 th October 2017	Josie Collier	30 th January 2018	David Bodenham	2 nd January 2018	David Bodenham	7 th January 2018	Jenny Butler

Summary

A report is required for **Land off Catherine's Walk, Barnsley** to assess the ecological value of the site by documenting the habitat types present and the site's potential for supporting rare and protected species. The development proposed on this site is a residential development.

A desktop study has been undertaken in order to obtain any relevant ecological records that may be present within a 2km radius of the site. This includes protected and notable species records, as well as nature conservation designations. A thorough site assessment was undertaken following the guidelines set out in the JNCC's *Handbook for Phase 1 habitat surveys*. The entire site was walked over by an experienced consultant who mapped and described each habitat type that was present. Whilst conducting the site walk-over, any features that may be of value to or have the potential to support protected species were noted and photographic evidence taken.

After conducting a thorough site investigation and a detailed Desktop Study, we consider the **Land off Catherine's Walk, Barnsley** to contain habitats of low - moderate ecological value (please see **Section 3.2**).

The site is not situated within influencing distance of any nature conservation sites of either statutory or non-statutory designation.

The dominant habitat on site is amenity grassland, which has limited ecological value due to the intensive management of this area. This area will be lost to facilitate the development.

To the west of the site is an area of scrub vegetation with some scattered trees. There is also a hedgerow along the eastern boundary of the site featuring intermittent broad-leaved trees. These features have moderate ecological value, and the loss of these habitats will require mitigation to ensure no net loss in biodiversity on site.

Based on the findings outlined in this report the following recommendations are made:

- **Bats:** Bat emergence/re-entry surveys are required on the hybrid Black Poplar tree (**T13**) to the west of the site prior to its removal to determine if bats are currently using this tree to roost. **T13** will be removed under the current proposed development plans. Tree **T13** has been considered to have a **low** potential of supporting bat roosting sites according to the BCT guidelines. As a precaution, we recommend that dawn/dusk emergence surveys should be carried out to establish the absence/presence of roosting bats. Dawn and dusk bat surveys are conducted between May until September, and are used to determine whether bats are currently roosting at a site. It can also give you an indication of the level of bat activity at a survey site and any specific foraging patterns. Dawn surveys are started around 2 hours before sunrise, when swarming behaviour can be observed around roost sites. Dusk surveys are started around 30 minutes before sunset and up to 2 hours after, and look for the emergence of bats from their roost sites. If bats are then confirmed to be roosting on the site, a **Bat Mitigation Licence** may be applied for from

Natural England, and a mitigation plan devised so development causes as little impact on local bat populations as possible. As tree **T13** has been considered to have a low/moderate potential of supporting bat roosting sites, at least **two emergence/re-entry surveys** will be required as a precaution, with two experienced surveyors needed to cover all aspects of the tree. Both of the surveys should be carried out between May and September, with at least one of the surveys carried out between May and August when bats are most active.

- **Birds:** The Hawthorn Hedge **G2** would need to be removed to make way for the new drainage attenuation tank. Other hedges (**H5**, **H7** and **H8**) are within rear garden areas and their removal is required to allow a new 1.8m timber boundary fence to be erected. **G6** is also required to be removed for this reason. The removal of any vegetation on site should occur outside of the bird nesting season (November- February). If this is not possible, a nesting survey should be conducted immediately prior to any works beginning to ensure that no birds are currently nesting and that any young have fledged.
- **Hedgerows:** As hedges **G2**, **H5**, **H7**, **H8** and **G6** are to be removed under the current scheme, a full evaluation of their importance is required under the criteria of the Hedgerow Regulations 1997.
- The development will result in the loss of some ecological features, specifically the scrub vegetation and scattered trees to the west of the site. The proposals intend to incorporate newly planted trees into the gardens of the residential properties and open public spaces which will include the planting of grassland beneficial to wildlife. Faunal boxes for birds, bats, insects and hedgehogs will also be included in the proposals. These proposals will mitigate the loss of these habitats and increase biodiversity on site post-development. Care should be taken to ensure that these trees are correctly planted and maintained and that suitable, native species are selected.

Contents

1	Introduction and Terms of Reference	7
1.1	Purpose of the Report	7
1.2	Terms of Reference	7
1.3	Scope of the Report	7
1.4	Details of Proposed Development	7
1.5	Site Description	7
2.1	Bats in the UK	8
2.2	Bat Ecology	8
2.3	UK Bat Species	9
2.4	Bats and the Law	12
2	Methodology	14
2.1	Desktop Study Methodology	14
2.2	Site Assessment Methodology	14
2.5	Bat Scoping Survey Methodology	14
3	Results	16
3.1	Desktop Study Results	16
3.2	Site Assessment Results	18
3.3	Scoping Survey Results	21
4	Discussion and Analysis of Results	25
4.1	Nature Conservation Designations	25
4.2	On-site Habitat	25
4.3	Potential for Protected Species	25
5	Conclusions and Recommendations	28
6	References	30
	Appendix 1: Phase 1 Habitat Map	33
	Appendix 2: Photographic Evidence	34
	Appendix 3: Data Search	37
	Appendix 4: Site Map	40
	Appendix 5: Protected Species Information	41
	Appendix 6: Survey Calendar	42

Appendix 7: Bat Survey Calendar	43
Appendix 8: Glossary.....	44
Appendix 9: Author Qualifications	45

1 Introduction and Terms of Reference

1.1 Purpose of the Report

- 1.1.1 A report is required for the **Land off Catherine's Walk, Barnsley** to assess the ecological value of the site by documenting the habitat types present and the site's potential for supporting rare and protected species.

1.2 Terms of Reference

- 1.2.1 I am instructed by **Acanthus WSM Architects** on behalf of **Leeds and Yorkshire Housing Association** to visit the site and prepare my findings in a report.
- 1.2.2 For this purpose I have been supplied with a site map (drawing: 2791.14.002F), and brief details of the proposal.

1.3 Scope of the Report

- 1.3.1 This survey was carried out in accordance with the Joint Nature Conservation Committee's (JNCC's) *Handbook for Phase 1 habitat survey - A technique for environmental audit* (2010).
- 1.3.2 This report is also compiled in accordance with the Bat Conservation Trust's (BCT) '*Bat Surveys - Good Practice Guidelines*', the Joint Nature Conservation Committee's (JNCC) '*Bat Workers Manual*' (3rd Edition) and Natural England's '*Bat Mitigation Guidelines*'.

1.4 Details of Proposed Development

- 1.4.1 The development proposed on this site is a residential development.

1.5 Site Description

- 1.5.1 **The Land off Catherine's Walk** is situated approximately 2.8km north of Barnsley town centre, at grid reference: SE349092.
- 1.5.2 The site contains a large area of amenity grassland, frequented by the general public for dog walking and leisure activities. There is a small woodland copse to the west.
- 1.5.3 The site is surrounded by predominantly residential developments and two primary schools. A map of the site in relation to the surrounding habitats can be seen in **Appendix 4**.

2.1 Bats in the UK

- 2.1.1 In the UK there are thought to be 18 native species of bat (17 known to be breeding), and may account for more than a quarter of mammal species present in the UK. Nearly all UK bat species have experienced serious declines over the last century and all species are protected under UK and European Law.

2.2 Bat Ecology

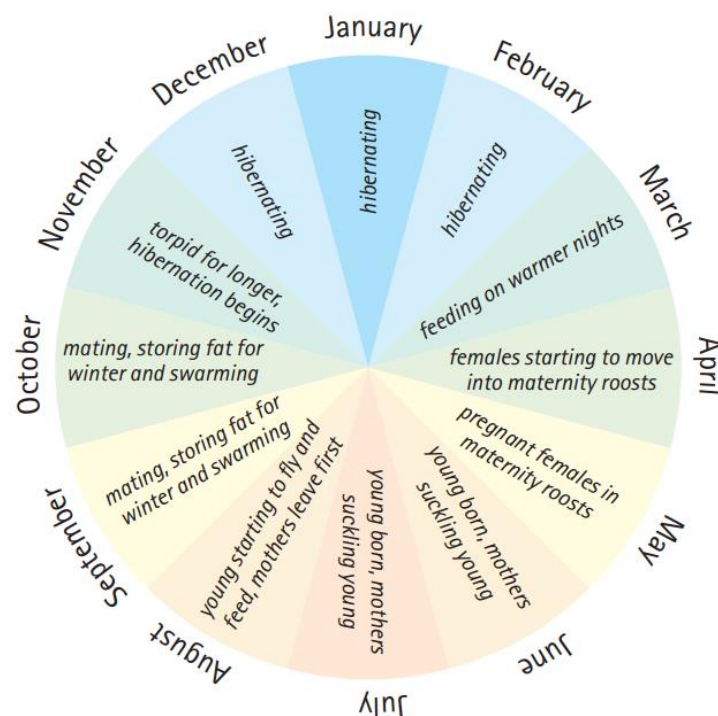
- 2.2.1 All species of bat in the UK are insectivorous and have evolved to hunt a different set of insects, present in different habitat types. Preferred bat habitats include woodland, grassland, agricultural land, wetland and rivers.
- 2.2.2 Bats typically roost close to foraging sites, and use linear features such as hedgerows, tree lines and rivers to navigate. Removal of these linear features is thought to have a significant negative impact on their movement, which could be contributing to their decline.
- 2.2.3 Bats will roost in a wide range of different sites including built structures, underground sites and mature trees. Due to bats ecology different roost sites will be used at different times of the year. Known roost types include:
- Night Roosts: A place where individual bats, or sometimes the colony, rest or shelter in the night, but are rarely found in the day. Can be used throughout the year.
 - Day Roosts: A place where individual bats, or small groups of males, rest or shelter during the day but are rarely found by night in the summer months.
 - Feeding Roosts: A place where individual or a few individuals rest or feed during the night, but are rarely found in the day during the summer months.
 - Transitional/Occasional Roosts: Used by a few individuals or occasionally by small groups for short periods of time on waking from hibernation, or in the period prior to hibernation. Usually found during February-April or during September to November.
 - Swarming Sites: Where large numbers of males and females gather during late summer to autumn. Appear to be important mating sites. September – November.
 - Mating Sites: Where mating takes place from late summer and can continue through the winter. August – March.
 - Maternity Roosts: Where female bats give birth and raise their young to independence. May-September.
 - Hibernation Roosts: Where bats may be found individually or together during the winter. They have a constant cool temperature and high humidity. December-February.

- **Satellite Roosts:** An alternative roost found in close proximity to the main nursery colony used by a few individual breeding females to small groups of breeding females throughout the breeding season. May-September.

2.2.4 The three main roosts to be considered, with respect to buildings and development, are maternity roosts, satellite and hibernation roosts. Disturbance of these roosts can have significant negative impacts on local bat populations.

2.2.5 **Figure 1** below provides a visual representation of the life cycle of a bat; showing the life cycle on a month by month basis.

Figure 1: Diagram of a bat's life-cycle (taken from the BCT: Bat surveys for professional Ecologists, Good Practice Guidelines; 3rd Edition).



2.3 UK Bat Species

2.3.1 Within the UK there are 17 species of bat known to be breeding, with a further one species listed as a resident, non-breeding species within the UK. **Table 1** below details the roosting preferences of the non-breeding species of bats currently listed as being found within the UK.

Table 1: Roosting preferences of the known UK breeding resident bat species (taken from the BCT: Bat surveys for professional Ecologists, Good Practice Guidelines; 3rd Edition).

Species Common Name	Species Scientific Name	Species Roosting Preferences
Greater Horseshoe Bat	<i>Rhinolophus ferrumequinum</i>	During the summer females use large, old, undisturbed buildings including coach houses, stable blocks and barns. This species prefers to fly directly into the roost and to their roosting position and bats hang freely. Maternity sites are often found in large spaces at least 3–4m high, providing a sufficiently large flight area. This species generally uses night roosts to rest whilst foraging, which are found in a variety of structures, for example outbuildings, garages, stables, milking sheds, porches and trees. In winter, both male and female bats choose underground sites for hibernation, including tunnels, mines, caves or cold building basements.
Lesser Horseshoe Bat	<i>Rhinolophus hipposideros</i>	Roost sites include attics, chimneys and boiler rooms of buildings, rural houses and outbuildings in the summer, and cellars, tunnels, disused mines and caves for hibernation. Also found in industrial buildings. This species prefers to fly directly into roost sites and into their roosting position. Maternity sites are often found in large roof spaces at least 3–4m high providing a large flight area. A range of conditions is required throughout the year but this may be found in one building with, for example, an attic for the summer and a cellar for the winter. Summer and winter roost sites are generally no more than 5–10km apart. The lesser horseshoe bat also uses alternative roost sites during the night and day.
Daubenton's Bat	<i>Myotis daubentonii</i>	Roosts are found in hollow trees, bridges or sometimes buildings and generally close to water. Nursery roosts are not exclusively female – males may make up 25% or more of the colony and large male-only colonies have also been recorded. This species selected oaks over beech trees and preferred roosts on the edges of woodlands in a study in the Netherlands. Hibernation sites are usually underground including caves, mines and suitable tunnels where bats are found both in crevices and on open walls. They may also hibernate in tree cavities.
Bandt's Bat, Whiskered Bat and Alcahthoe's Bat	<i>Myotis Brandtii</i> , <i>Myotis mystacinus</i> , <i>Myotis alcathoe</i>	These species can roost in trees and a wide range of buildings in the summer. These species hibernate in caves or other underground sites, where they can be found in the open or in cracks and crevices.
Natterer's Bat	<i>Myotis nattereri</i>	Roost sites include tree holes and different types of buildings but has also been found in bridges. Usually roost in attics between late May and mid-July and often roosts have enough space for internal flight (Swift, 1997). This species also breeds in bat boxes. Timber-framed barns built between the 12th and 19th centuries may be particularly important to this species, with roosts found in mortise joints in both the summer and winter. Hibernates in cracks and crevices in caves and mines. Other hibernation sites recorded are canal and railway tunnels, ice houses and tree cavities.

Bechstein's Bat	<i>Myotis bechsteinii</i>	Maternity roosts are found in tree holes in the canopy, generally in old trees with dead branches. May be found in woodpecker holes in old oaks. Recorded switching roosts frequently. One study recorded roosts in rot holes, woodpecker holes and in a gap behind thick ivy. A study of ten colonies across the Isle of Wight found 90% of maternity roosts in woodpecker holes in ash trees. Another study found a maternity roost in a woodpecker hole in an oak tree on a golf course. Hibernates in trees and sometimes caves or other underground sites. Chilmark Quarry is an example of Bechstein's bats using an abandoned mine for hibernation.
Noctule	<i>Nyctalus noctula</i>	Roosts almost exclusively in tree holes, but sometimes found in bat boxes or buildings. One Netherlands study found that woodpecker holes are preferred, in trees close to woodland edge. Hibernates in trees but sometimes found in buildings.
Leisler's Bat	<i>Nyctalus leisleri</i>	Roosts in trees, bat boxes and buildings such as houses; for example, around the gable end of lofts, under tiles, under soffit boards and in disused chimneys. Often uses a variety of sites in the summer. Hibernates in tree holes, buildings and sometimes underground sites.
Common Pipistrelle and Soprano Pipistrelle	<i>Pipistrellus pipistrellus</i> , <i>Pipistrellus pygmaeus</i>	Maternity colonies are found mainly in buildings, usually roosting out of sight in crevices. Colonies may use a number of sites through the summer but are often loyal to the same sites for many years. Maternity colonies are extremely variable in terms of numbers, from 20 to over 1,000 bats. Soprano pipistrelle colonies tended to be larger than those of the common pipistrelle. Common pipistrelle shift roosts between pregnancy and lactation. Roost selection is based on temperature for common pipistrelle and on surrounding habitats (woodland and water) for both species. Males roost singly or in small groups in the summer, in buildings or trees. Bat boxes are used by both males and females but generally only males use them during the summer. These species do not use underground sites for hibernation but are sometimes found in the cracks and crevices of buildings in the winter.
Nathusius' Pipistrelle	<i>Pipistrellus nathusii</i>	The very few known British nursery roosts are in buildings, with hibernation roosts in hollow trees and crevices in cliffs, walls and caves. One study recorded males roosting under lead flashing and roof tiles.
Serotine	<i>Eptesicus serotinus</i>	Roosts in buildings in small cavities or crevices with high access points such as gables but occasionally also found in trees. Recorded hibernation sites include cavity walls, disused chimneys and occasionally caves.

Barbastelle	<i>Barbastella barbastellus</i>	In summer, breeding females move regularly between large numbers of different tree roosts. One study found that they preferred dead trees surrounded by holly under-storey and another found them in tree crevices and cavities, between overlapping limbs and behind ivy, on average 6.9m above ground level. Tree roosts are in relatively undisturbed places and frequently in thick cover, although cracks much higher up in trees were used at the time of birth. Bat boxes are also used. Almost all roosts found in two studies were behind loose bark and in mixed locations not always surrounded by under-storey. Winter roosts include deep, hollow trees (usually dead and among holly under-storey) and sometimes buildings or underground sites. Other winter roosts recorded are flaking bark and splits less than 2m above the ground and disused railway tunnels, barns, outbuildings, church porches and lime kilns. Chilmark Quarry is an example of barbastelle bats using an abandoned mine for hibernation. 24 Spring and autumn roosts have been recorded behind loose bark, in dead tree stumps and in splits in limbs mainly less than 2m above ground level.
Brown Long-Eared Bat	<i>Plecotus auritus</i>	Maternity roosts found in trees, in the voids of large, old buildings and bat boxes in woodland. Usually roosts against wooden beams at the roof apex in attics or farm buildings. Bats often cluster at the highest part of the roof and require enough space for unobstructed, internal flight. Shows high roost fidelity. Commonly uses feeding perches and night roosts in porches or outbuildings separate from the main roost. Hibernates in underground sites, tree holes and buildings.
Grey Long-Eared Bat	<i>Plecotus austriacus</i>	Frequently roosts on ridge beam in spaces between rafters. Maternity colonies show high roost fidelity. Number of males in maternity colony increases through summer. Many males are, however, solitary.

2.3.2 Greater Mouse-eared bats (*Myotis myotis*) are extremely rare in Britain and little is known about where they roost in the summer or winter, they are listed as a resident, non-breeding species within the UK within this species currently found at one site in Sussex.

2.4 Bats and the Law

2.4.1 All bat species and their roosts in the UK are protected under European and UK law. The main piece of legislation protecting UK bats is the Conservation of Habitats and Species Regulations 2017.

2.4.2 In addition to this, bats and their roosts are also protected in England and Wales under the Wildlife and Countryside Act 1981 and The Countryside and Rights of Way Act 2000.

2.4.3 Under these legislations, it is an offense to:

- Deliberately capture, injure or kill a bat.

- Deliberately disturb a bat in a way that would affect its ability to survive, breed or rear young (or hibernate or migrate in England, Wales and Northern Ireland) or (significantly in England, Wales and Scotland) affect the local distribution or abundance of the species.
- Damage or destroy a roost (this is an 'absolute' offence).
- Possess, control, transport, sell, exchange or offer for sale/exchange any live or dead bat or any part of a bat.
- Intentionally or recklessly disturb a bat at a roost.
- Intentionally or recklessly obstruct access to a roost.

If it is discovered that development may impact upon bat roosts (thus leading to an offence being committed) a **Mitigation Plan** should be devised and a **Bat Mitigation Licence** applied for from the relevant government department (i.e. Natural England). Gaining a licence will depend on many variables, such as the bat species present, roost type, roost size and its local/regional/national importance.

2 Methodology

2.1 Desktop Study Methodology

- 2.1.1 A desktop study was undertaken on 27th October 2017 in order to obtain any relevant ecological records that may be present within a 2km radius of the site. This includes protected and notable species records, as well as nature conservation designations. For this information, the Sheffield Biological Records Centre was contacted.
- 2.1.2 The Multi-Agency Geographic Information for the Countryside (MAGIC) website was used to locate any designated sites, both statutory and non-statutory, such as Local Nature Reserves (LNRs), Ramsar Sites, Special Areas of Conservation (SACs), Special Protection Areas (SPAs) or Sites of Special Scientific Interest (SSSIs) that may be present within 2km of the survey site.

2.2 Site Assessment Methodology

- 2.2.1 A thorough site assessment was undertaken on 18/10/2017 by Josie Collier, *BSc (Hons), GradCIEEM* and on 30/01/2018 by David Bodenham *BSc Ind (Hons) Zoology, MSc Biodiversity and Conservation* following the guidelines set out in the JNCC's *Handbook for Phase 1 habitat surveys*.
- 2.2.2 The entire site was walked over by an experienced consultant who mapped and described each habitat type that was present. The dominant floral species of each habitat were noted as well as any faunal species that were encountered.
- 2.2.3 Whilst conducting the site walk-over, any features that may be of value to or have the potential to support protected species were noted and photographic evidence taken (please refer to **Appendix 2**). Such protected species include, but are not limited to, Badgers, Bats, Dormice, Great Crested Newts, Nesting Birds, Otters, Reptiles, Water Voles, White-Clawed Crayfish (please see **Appendix 5**).
- 2.2.4 Limitations: The survey was conducted during the sub-optimal time for botanical surveys. Therefore, many of the plant species encountered were either not in flower/leaf or were dead. This limitation made floral identification more difficult, meaning this report will not represent a comprehensive indication of the site's biodiversity. However, this constraint will not affect the overall conclusion of the report, as habitat types can still be classified and the potential for protected species can still be accurately assessed.

2.5 Bat Scoping Survey Methodology

- 2.5.1 The site was surveyed for foraging, commuting and roosting potential. A detailed search of habitat, buildings and trees was conducted during daylight hours in order to

identify potential bat roosting sites and look for evidence of bat activity. Potential roost sites and features deemed to be of value to bats were documented on the site map (please refer to **Appendix 1**) and photographic evidence was taken (please refer to **Appendix 2**).

2.5.2 All surveys are conducted by experienced surveyors using the following equipment to ensure an accurate assessment; a printed site map, camera, 1 million candlelight torch, binoculars, ladders and a duet heterodyne bat detector.

2.5.3 Signs that bats have previously or are currently using a potential roost site include:

- Scratch marks, urine and oil stains around holes in buildings or trees.
- Droppings, carcasses and/or food remains found around the site.
- Bats observed flying in/out of a hole in a building or tree.
- Bats heard 'chattering' within a potential roost site, especially on warm summer days.

2.5.4 Limitations: It must be highlighted that the absence of any of these signs is not proof that the site is not being used by bats. Weathering and other factors will often remove any signs of bat activity, especially when present on the exterior of a building or a tree. As previously explained, many bat species will have several roost sites which they regularly move between and therefore an absence during a survey visit does not exclude their presence at a later date.

3 Results

3.1 Desktop Study Results

3.1.1 Local Data Centre Records: Sheffield Biological Records Centre and South Yorkshire Bat Group have been commissioned to provide the records held for protected and notable species within a 2km radius of the survey site. The results have been summarised below. It should be noted that the absence of records should not be taken as confirmation that a species is absent from the search area. Please see **Appendix 3** for full desktop study results.

Legally Protected Species

3.1.2 Legally protected species are those protected under EU and UK legislation such as the Wildlife and Countryside Act (1981), Countryside and Rights of Way Act (2000), Protection of Badgers Act 1992 and the EU's Habitats Directive.

3.1.3 Amphibians: The data search revealed records of common toad, common frog, great-crested newt and smooth newt within 2km of the site. No records were obtained from within 500m.

3.1.4 Badgers: The data search revealed four records of badgers within 2km of the site. No records were obtained from within 500m.

3.1.5 Bats: The records obtained from the South Yorkshire Bat Group are as follows:

Table 2: Summary of bat records held by the South Yorkshire Bat Group within 2km of the site. Those marked with an asterisk * were recorded with 500m of the site.

Common Name	Scientific Name	Number of Records	Most Recent Record
Daubenton's bat	<i>Myotis daubentonii</i>	30	2017
Whiskered Bat	<i>Myotis mystacinus</i>	2	2014
Noctule*	<i>Nyctalus noctula</i>	2	2014
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	17	2013
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	1	2011
Pipistrelle Bat Species*	<i>Pipistrellus sp.</i>	11	2011
Unknown Bat Species	Vespertilionidae	13	2014

3.1.6 The data search revealed records of Daubenton's bat, whiskered bat, noctule, common pipistrelle, soprano pipistrelle and other unidentified bat species within 2km of the site. Of these, common pipistrelle and noctule were recorded within 500m. The closest record is that of a noctule, dating from 2014 located 324m northwest of the proposed

development site. The closest roost was recorded is that of a Daubenton's bat recorded in 2017 and located over 1900m from the proposed development site.

3.1.7 Nesting Birds: The data search revealed records of 66 bird species within 2km of the site. Of these, goldfinch, house sparrow, dunnock, starling and blackbird were recorded within 500m.

3.1.8 Otters: The data search revealed four records of otters within 2km of the site. No records were obtained from within 500m.

3.1.9 Reptiles: The data search revealed a single record of a slow worm within 2km of the site. This record was obtained from 2000 and was not recorded within 500m of the site. No other reptile species were recorded within 2km.

3.1.10 Water Voles: The data search revealed numerous records of water voles within 2km of the site. The majority of these records were obtained from a fishing pond approximately 900m northeast of the site. No records were obtained from within 500m.

3.1.11 White-clawed Crayfish: The data search revealed two records of white-clawed crayfish within 2km of the site. No records were obtained from within 500m.

Notable Species

3.1.12 Notable species are those listed in the UK Biodiversity Action Plan (BAP), local BAP, NERC Act (2006) S.41 or any other relevant policies.

3.1.13 Invertebrates: The data search revealed records of three UK BAP butterfly and four UK BAP moth species within 2km of the site. No records were obtained from within 500m.

3.1.14 Mammals: The data search revealed two records of hedgehogs (a UK BAP species) within 2km of the site. No records were obtained from within 500m.

Statutory Nature Conservation Sites

3.1.15 There are no statutory nature conservation sites within the boundary of the site.

3.1.16 The search revealed one designated conservation site within 2km of the site, which can be seen in **Table 3** below.

Table 3: Statutory designated sites with 2km of the site.

Name	Designation	Description	Distance from Site
Dearne Valley Park	Local Nature Reserve	An area of mixed-use habitats around a river valley. The site contains a children's play area, plus two large ponds, acidic woodland, amenity grassland and wetland habitats.	1.8km S

Non-Statutory Nature Conservation Sites

3.1.17 There are no non-statutory nature conservation sites within the boundary of the site.

3.1.18 The search revealed two non-statutory conservation sites within 2km of the site, which can be seen in **Table 4** below.

Table 4: Non-statutory designated sites with 2km of the site.

Name	Designation	Distance from Site
Old Mill Lane	Local Wildlife Site	1.3km S
Barnsley Canal at Wilthorpe	Local Wildlife Site	1.35km SW

3.2 Site Assessment Results

3.2.1 The site was surveyed on 18/10/2017 by Josie Collier, *BSc (Hons), GradCIEEM* and on the 30/01/2018 by David Bodenham *BSc Ind (Hons) Zoology, MSc Biodiversity and Conservation*

3.2.2 The site comprises a large area of amenity grassland in the centre of a residential area. There is a footpath along the southern and western boundary of the site. To the west is a small woodland copse, predominantly made up of small, self-seeded specimens. There is a small area of hard standing to the north of the site, in which an electrical substation is proposed.

Habitats Present

3.2.3 The following habitat types are present at the Land off Catherine's Walk (in alphabetical order):

- Amenity grassland
- Dense/continuous scrub
- Hard standing
- Hedgerow
- Scattered broad-leaved trees

3.2.4 Amenity grassland: The majority of the site is occupied by amenity grassland, which is easily accessed from Catherine's Walk. The site was frequented by pedestrians and dogs during the site survey. Species present here include Perennial Ryegrass (*Lolium perenne*), Dandelion (*Taraxacum officinale*), Herb Robert (*Geranium robertianum*), Ribwort Plantain (*Plantago lanceolata*) and Clover (*Trifolium sp.*).

- 3.2.5 Dense/continuous scrub: To the west of the site is a larger area of scrub vegetation, which is predominantly made up of tree saplings, including Silver Birch (*Betula pendula*), Oak (*Quercus sp.*), Rowan (*Sorbus aucuparia*) and Ash (*Fraxinus excelsior*).
- 3.2.6 Hard standing: There are a small number of hard standing areas around the south, west and northern boundaries of the site. These form footpaths and connect to roads that surround the site.
- 3.2.7 Hedgerow: The eastern boundary of the site comprises of a defunct hedgerow, which screens the site from the neighbouring gardens. This divides into several sections: **G2** is found at the northeast of the site and is dominated by Hawthorn (*Crataegus monogyna*). **H5** is also found at the northeast of the site Sycamore (*Acer pseudoplatanus*) and Hawthorn (*Crataegus monogyna*). **H7** is located at the southeast of the site and is dominated by Hawthorn (*Crataegus monogyna*). **H8** is also located at the southeast of the site and is dominated by Hawthorn (*Crataegus monogyna*). Finally **G6** is also located at the southeast of the site and is made up of two Eurasian Aspen (*Populus tremula*).
- 3.2.8 Scattered broad-leaved trees: There are a number of large broad-leaved trees scattered throughout the site. The most significant of these are two Sycamore (*Acer pseudoplatanus*) within the eastern boundary and a Willow (*Salix sp.*) and two hybrid Black Poplar (*Populus x canadensis*) within the scrub to the west. Below the hedgerow where management is more difficult floral species have colonised and grown. Species here include Nettle (*Urtica dioica*), Bramble (*Rubus fruticosus*), Rosebay Willowherb (*Chamerion angustifolium*) and Ragwort (*Jacobaea vulgaris*).

Target Notes

- 3.2.9 Target Note 1: Tree with bat roost potential; **T13** (*Populus x canadensis*).
- 3.2.10 Target Note 2: Large hybrid Black Poplar with numerous birds foraging in the canopy.
- 3.2.11 Target Note 3: Small area in which the proposed substation will be positioned.

Fauna Species Encountered

- 3.2.12 The following species were either seen, heard or evidence of their presence was found during the site investigation:
- Wood Pigeon (*Columba palumbus*)
 - Crow (*Corvus corone*)
 - Robin (*Erithacus rubecula*)
 - Sparrow (*Passer sp.*)

- Magpie (*Pica pica*)
- Blackbird (*Turdus merula*)

3.2.13 Over 20 birds were positioned high in the canopy of a tree to the west of the site (Target Note 2). As this tree was approached, the birds dispersed and therefore the list above may not include all the bird species present at the time of the survey.

Invasive Plant Species

3.2.14 No invasive plant species were found at this site whilst conducting the site investigation.

3.3 Scoping Survey Results

3.3.1 The site was surveyed on the 30/01/2018 by lead surveyor David Bodenham *BSc Ind (Hons), MSc*, NE Level 2 Class Licence – 2016-26848-CLS-CLS. Survey conditions are summarised in **Table 5**.

Table 5: Survey times and weather conditions.

Survey date	Lead surveyor	Temp	Humidity	Wind speed/Direction		Cloud Cover	Precipitation
30/01/2018	David Bodenham	0°C	63%	BF0	N/A	0%	None

3.3.2 Habitats and Features Present

The site as a whole is a large amenity field, surrounded by residential properties. The main section of the site consists of an amenity field. On its eastern boundary is a row of fragmented sections of hedgerow, described in **section 3.2.7** above. This forms an irregular corridor of commuting habitat which leads to more substantial hedgerow south of the site. The field itself is sparse, with little value for foraging bats. At the west of the site, a scrubby area with trees provides some valuable foraging and commuting habitat, as well as a tree (**T13**) with bat roosting potential. This is well connected to other patches of trees and scrub to the south, which forms a network of habitat within the local area.

3.3.3 Tree Assessment

There are several stand-alone trees, as well as groups of trees found on site. The majority have no bat roosting potential. However, **T13** has bat roosting potential. All trees on site are described in detail below:

Table 6: Trees and hedgerows surveyed for bat roosting potential. Trees scheduled for removal under proposals are highlighted in red.

Tree Ref.	Age Common Name <i>Botanical Name</i>	Diameter (cm)	Bat Roosting Features	Actual Evidence of Bats	Bat Roosting Potential
G 1	Semi-mature Leyland Cypress <i>X Cupressocyparis leylandii</i>	20#	None	None	Negligible

G	2	Semi-mature Hawthorn <i>Crataegus monogyna</i>	4 x 8	None	None	Negligible
T	3	Early-mature Sycamore <i>Acer pseudoplatanus</i>	54#	None	None	Negligible
T	4	Early-mature Sycamore <i>Acer pseudoplatanus</i>	38#	None	None	Negligible
H	5	Semi-mature Mixed species <i>Acer pseudoplatanus</i> and <i>Crataegus monogyna</i>	10	None	None	Negligible
G	6	Semi-mature Aspen <i>Populus tremula</i>	14	None	None	Negligible
H	7	Young Hawthorn <i>Crataegus monogyna</i>	10	None	None	negligible
H	8	Semi-mature Hawthorn <i>Crataegus monogyna</i>	10	None	None	negligible

T	9	Mature Hybrid Black Poplar <i>Populus x canadensis</i>	106	Some broken limbs in canopy. No significant cavities.	None	negligible
T	10	Semi-mature Downy Birch <i>Betula pubescens</i>	15 12	None	None	negligible
T	11	Young Hybrid Black Poplar <i>Populus x canadensis</i>	14	None	None	negligible
G	12	Semi-mature Mixed Species <i>Salix caprea, Fraxinus excelsior and Populus sp.</i>	18	None	None	negligible
T	13	Mature Hybrid Black Poplar <i>Populus x canadensis</i>	91	Large tear wound on main trunk and some broken branches in canopy.	None	Low
G	14	Semi-mature Mixed Species <i>Quercus robur and Acer platanoides</i>	27	None	None	negligible
G	15	Semi-mature Mixed Species <i>Quercus robur, Acer platanoides, Fraxinus excelsior,</i>	22	None	None	negligible

	Sorbus aucuparia, Corylus avellana and Prunus padus				
--	---	--	--	--	--

4 Discussion and Analysis of Results

4.1 Nature Conservation Designations

- 4.1.1 No designated nature conservation sites are located within the boundary of the site.
- 4.1.2 There is one statutorily designated conservation site within 2km of the site. Dearne Valley Park is a local nature reserve located approximately 1.8km south of the development site. The proposed development will not have an effect on this site as there is significant distance between the sites and connectivity is poor.
- 4.1.3 There are two non-statutorily designated sites within 2km of the site. Old Mill Lane and the Barnsley canal at Wilthorpe are Local Wildlife Sites located over 1.3km south of the development site. The proposed development will not have an effect on these sites as there is significant distance between the sites and connectivity is poor.

4.2 On-site Habitat

- 4.2.1 The majority of the site is made up of amenity grassland, which has limited ecological value due to the high management levels in this area. This habitat will be lost to facilitate the development, which will have negligible effect on local biodiversity.
- 4.2.2 The hedgerow on the eastern boundary of the site provides nesting and foraging opportunities for birds. The hedgerow is relatively species poor but it is in good condition, giving it moderate ecological value. This hedge is marked as **G2, H5, H7, H8** and **G6**. They are within rear garden areas and their removal is required to allow a new 1.8m timber boundary fence to be erected.
- 4.2.3 The scrub vegetation and the scattered trees to the west of the site provide good nesting and foraging habitat for birds, and this type of behaviour was observed during the site survey. There is also a tree in this area that has high potential to support roosting bats. This area has moderate ecological value and will be lost to facilitate the development, which could have a negative effect on local biodiversity if not adequately mitigated. The scattered trees within the eastern boundary also provide nesting and roosting opportunities for birds and bats, though these trees are situated on adjacent land and likely to be retained.

4.3 Potential for Protected Species

- 4.3.1 Amphibians: The site does not contain the required aquatic habitat to support amphibians during the juvenile and breeding stages of their life-cycle. The scrub vegetation to the west of the site could provide some suitable terrestrial habitat for amphibians; however, there are no suitable breeding ponds within 800m of the site, making it unlikely that amphibians will enter this area. The data search did not reveal any records of amphibians within 500m of the site.

- 4.3.2 **Badgers:** The site does not contain the required level of vegetation to support a badger sett and foraging habitat on site is sub-optimal. The close proximity to humans would further deter badgers from entering this site. The data search did not reveal any records of badgers within 500m of the site and there was no evidence of any badger activity observed during the site visit.
- 4.3.3 **Barn Owls:** The site does not contain the required foraging or roosting habitat to support barn owls and close proximity to humans would deter them from passing through this site. The data search did not reveal any records of barn owls within 2km of the site.
- 4.3.4 **Bats:** There is one tree on site that has cracks and cavities that have some potential to support roosting bats. This is **T13** (*Populus x canadensis*). This tree has some cracks which could provide bat roosting opportunities, these are not appropriate to support large numbers of bats or on a long term basis. See **Table 7** below for details of assessment. The site is located within a residential area, which is well lit by street lighting and could deter bats from the area. There is some foraging habitat on site around the periphery of the site and to the west of the site, which could be utilised by foraging and commuting bats. This is well-connected to surrounding linear features such as treelines and hedgerows. The data search revealed records of five bat species within 2km of the site, with common pipistrelle and noctule also recorded within 500m.

Table 7: Guidelines used for assessing the bat roosting suitability of a site (taken from the BCT: Bat surveys for professional Ecologists, Good Practice Guidelines; 3rd Edition).

Roosting Suitability	Roosting Features Present
Negligible	No visible features on the site likely to be used by roosting bats. No signs of bats found during the initial assessment.
Low	A structure with one or more potential roosting opportunities that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough shelter, protection, surrounding habitats, or the appropriate conditions to be used on a regular basis by larger numbers of bats e.g. unlikely to support hibernation or maternity roosts. A tree of sufficient size and age to contain features suitable for bat roosting, but with no features seen from the ground. No signs of bat use found during the initial assessment.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to the size of the potential roosting feature which is sufficient to provide: shelter, protection, optimal conditions and surrounding habitats. The feature(s) are unlikely to support a roost of high conservation status. Signs (potential signs) of bat use found during the initial assessment.
High	A structure or tree with one or more potential roost sites that could be used by bats due to the size of the potential roosting feature which is sufficient to provide: shelter, protection, optimal conditions and surrounding habitats. The features have the potential to support large colonies of bats (e.g. maternity or hibernation) for long periods of time. Signs of bat use present.

- 4.3.5 Dormice: The site does not contain the required floral habitat to support dormice and their distribution in the UK is largely limited to the south of England. The data search did not reveal any records of dormice within 2km of the site.
- 4.3.6 Nesting Birds: The site contains hedgerows, trees and scrub vegetation that could be utilised by nesting birds. High levels of bird activity were encountered around a tree to the west of the site during the site survey and the data search revealed numerous records of bird species.
- 4.3.7 Otters, Water Voles and White-clawed Crayfish: The site does not contain the required aquatic habitat to support otters, water voles or white-clawed crayfish and the site is fragmented from areas of superior quality. The data search did not reveal records of any of these species within 500m of the site.
- 4.3.8 Reptiles: The site does not contain the required mosaic of habitats to support reptiles and close proximity to humans would deter them from entering this site. The data search did not reveal any records of reptiles within 500m of the site.

*The absence of any signs of or features considered valuable for supporting protected species, can **not** be considered evidence that these species are absent from a site, or that these species will not occupy the site in the future. It must therefore always be recommended that work be conducted with care and vigilance. Should any protected species be encountered during work (please see **Appendix 5**), work should stop immediately and JCA or Natural England contacted.*

5 Conclusions and Recommendations

- 5.1 After conducting a thorough site investigation and a detailed Desktop Study, we consider the **Land off Catherine's Walk, Barnsley** to contain habitats of low - moderate ecological value (please see **Section 3.2**).
- 5.2 The site is not situated within influencing distance of any nature conservation sites of either statutory or non-statutory designation.
- 5.3 The dominant habitat on site is amenity grassland, which has limited ecological value due to the intensive management of this area. This area will be lost to facilitate the development.
- 5.4 To the west of the site is an area of scrub vegetation with some scattered trees. There is also a hedgerow along the eastern boundary of the site featuring intermittent broad-leaved trees. These features have moderate ecological value, and the loss of these habitats will require mitigation to ensure no net loss in biodiversity on site.
- 5.5 Based on the findings outlined in this report the following recommendations are made:
 - **Bats:** Bat emergence/re-entry surveys are required on the hybrid Black Poplar tree (**T13**) to the west of the site prior to its removal to determine if bats are currently using this tree to roost. **T13** will be removed under the current proposed development plans. Tree **T13** has been considered to have a **low** potential of supporting bat roosting sites according to the BCT guidelines. As a precaution, we recommend that dawn/dusk emergence surveys should be carried out to establish the absence/presence of roosting bats. Dawn and dusk bat surveys are conducted between May until September, and are used to determine whether bats are currently roosting at a site. It can also give you an indication of the level of bat activity at a survey site and any specific foraging patterns. Dawn surveys are started around 2 hours before sunrise, when swarming behaviour can be observed around roost sites. Dusk surveys are started around 30 minutes before sunset and up to 2 hours after, and look for the emergence of bats from their roost sites. If bats are then confirmed to be roosting on the site, a **Bat Mitigation Licence** may be applied for from Natural England, and a mitigation plan devised so development causes as little impact on local bat populations as possible. As tree **T13** has been considered to have a low/moderate potential of supporting bat roosting sites, at least **two emergence/re-entry surveys** will be required as a precaution, with two experienced surveyors needed to cover all aspects of the tree. Both of the surveys should be carried out between May and September, with at least one of the surveys carried out between May and August when bats are most active.
 - **Birds:** The Hawthorn Hedge **G2** would need to be removed to make way for the new drainage attenuation tank. Other hedges (**H5**, **H7** and **H8**) are within rear garden areas and their removal is required to allow a new 1.8m timber boundary fence to be erected.

G6 is also required to be removed for this reason. The removal of any vegetation on site should occur outside of the bird nesting season (November- February). If this is not possible, a nesting survey should be conducted immediately prior to any works beginning to ensure that no birds are currently nesting and that any young have fledged.

- **Hedgerows:** As hedges **G2, H5, H7, H8** and **G6** are to be removed under the current scheme, a full evaluation of their importance is required under the criteria of the Hedgerow Regulations 1997.
- The development will result in the loss of some ecological features, specifically the scrub vegetation and scattered trees to the west of the site. The proposals intend to incorporate newly planted trees into the gardens of the residential properties and open public spaces which will include the planting of grassland beneficial to wildlife. Faunal boxes for birds, bats, insects and hedgehogs will also be included in the proposals. These proposals will mitigate the loss of these habitats and increase biodiversity on site post-development. Care should be taken to ensure that these trees are correctly planted and maintained and that suitable, native species are selected.

JCA Ltd. can provide these and other ecological surveys if required, please do not hesitate to contact us for further information.

6 References

Guidelines for surveys and report writing:

British Standards Institute (BSI), (2013) *BS 42020:2013, Biodiversity - Code of practice for planning and development*. London.

Chartered Institute of Ecology and Environmental Management (CIEEM), (2015) *Guidelines for Ecological Report Writing*. Winchester.

Joint Nature Conservation Committee (JNCC), (2010) *Handbook for Phase 1 habitat survey: A technique for environmental audit*.

Websites:

Advice on protected species is consolidated at:

Environmental management: Wildlife and habitat conservation - GOV.UK (2016) *Gov.uk*. Available at: <https://www.gov.uk/topic/environmental-management/wildlife-habitat-conservation> (Accessed: 21 September 2016).

Magic Map Application (2016) *Magic.defra.gov.uk*. Available at: <http://magic.defra.gov.uk/MagicMap.aspx> (Accessed: 21 September 2016).

The RSPB (2016). Available at: <http://www.rspb.org.uk/> (Accessed: 21 September 2016).

Surveys and mitigation plans: protected species - Detailed guidance (2015) *Gov.uk*. Available at: <https://www.gov.uk/guidance/surveys-and-mitigation-plans-protected-species> (Accessed: 21 September 2016).

Within this detailed guidance on surveys and mitigation information is available on the following protected species:

- Bats
- Natterjack toads
- Otters
- Reptiles
- Water voles
- White-clawed crayfish
- Wild birds
- Hazel dormice
- Great crested newts
- Badgers

Wildlife licences: when you need to apply - Detailed guidance (2014) *Gov.uk*. Available at: <https://www.gov.uk/guidance/wildlife-licences> (Accessed: 21 September 2016).

Within this detailed guidance on licensing information is available on licences for the following protected species:

- Bats
- Natterjack toads
- Otters
- Reptiles
- Water voles
- White-clawed crayfish
- Wild birds
- Hazel dormice
- Great crested newts
- Badgers

As well as:

- Non-native Bumblebee species
- Deer
- Freshwater fish
- Invertebrates
- Mink, coypu, muskrat and grey squirrel
- Plants

Species specific information:

Badgers:

Natural England, (2007) *Badgers and Development: A Guide to Best Practice and Licensing*.

Bats:

Bat Conservation Trust, (2007) *Bats, Development & Planning in England*. London.

Mitchell-Jones, A. and McLeish, A. (ed.). (2004) *Bat Workers' Manual*. 3rd ed. JNCC.

Dormice:

Bright, P., Morris, P. and Mitchell-Jones, A. (1996) *The dormouse conservation handbook*. Peterborough: English Nature.

Great crested newts:

Langton, T., Beckett, C. and Foster, J. (2001) *Great Crested Newt Conservation Handbook*. Halesworth: Froglife.

Otters:

Natural England, (2007) *Species Information Note SIN006, Otter: European protected species*.

Reptiles and Amphibians:

Baker, J., Beebee, T., Buckley, J., Gent, T. and Orchard, D. (2011) *Amphibian Habitat Management Handbook*. 1st ed. Bournemouth: Amphibian and Reptile Conservation.

Edgar, P., Foster, J. and Baker, J. (2010) *Reptile Habitat Management Handbook*. 1st ed. Bournemouth: Amphibian and Reptile Conservation.

English Nature, (2004). *Reptiles: guidelines for developers*. Peterborough.

Gent, T. and Gibson, S. (ed.) (2003) *Herpetofauna Workers Manual*. Bournemouth: JNCC.

Water voles:

Natural England, (2008) *Water voles - the law in practice. Guidance for planners and developers*.

White-clawed crayfish:

Peay, S. (2002) *Guidance on Habitat for White-clawed Crayfish and its Restoration*. Kendal: English Nature

Relevant Legislation:

Wildlife and Countryside Act 1981, (c. 69) (as amended). Available at: <http://www.legislation.gov.uk/ukpga/1981/69> (Accessed: 21 September 2016)

Countryside and Rights of Way Act 2000 (c.37). Available at: <http://www.legislation.gov.uk/ukpga/2000/37/contents> (Accessed: 21 September 2016)

The Conservation of Habitats and Species Regulations 2010 (No. 490). Available at: <http://www.legislation.gov.uk/uksi/2010/490/contents/made> (Accessed: 21 September 2016)

Conservation of natural habitats and of wild fauna and flora Council Directive (92/43/EEC) (The Habitats Directive) (as amended) Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31992L0043> (Accessed: 21 September 2016)

Protection of Badgers Act 1992 (c. 51). Available at: <http://www.legislation.gov.uk/ukpga/1992/51/contents> (Accessed: 21 September 2016)

The Hedgerow Regulations 1997 (No. 1160). Available at: <http://www.legislation.gov.uk/uksi/1997/1160/contents/made> (Accessed: 21 September 2016)

Appendices

Appendix 1: Phase 1 Habitat Map

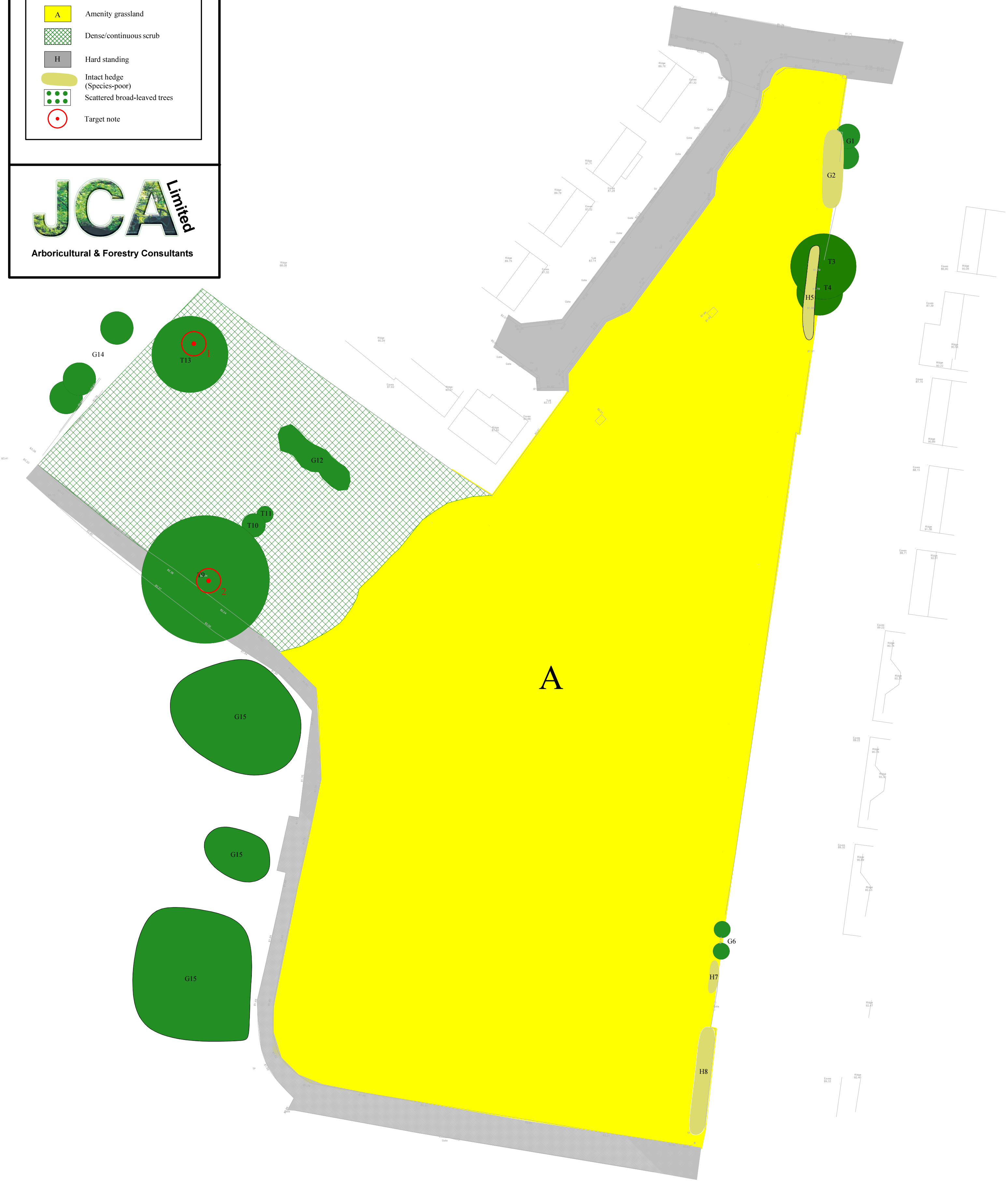
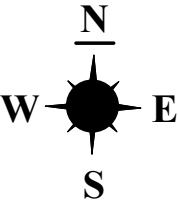
The Land off Catherines Walk
Barnsley, S71 3BS
JCA Ref: 13749c/DB

SCALE : 1:500

PAPER SIZE : A2

KEY

- A Amenity grassland
- Dense/continuous scrub
- H Hard standing
- Intact hedge (Species-poor)
- Scattered broad-leaved trees
- Target note



Appendix 2: Photographic Evidence

Photo 1: Amenity grassland, which occupies the majority of the site.



Photo 2: Hybrid Black Poplar, in which numerous birds were observed.



Photo 3: Hybrid Black Poplar with bat roost potential.



Photo 4: Scrub vegetation to the west of the site.



Photo 5: Location of the proposed electrical substation.



Appendix 3: Data Search

Table 8: Sheffield Biological Records Centre's records of protected and notable species within a 2km radius of the site. An asterisk * denotes records that are within 500m of the site.

Group	Common Name	Scientific Name	No. of Records	Most Recent Record
Amphibian	Common Toad	<i>Bufo bufo</i>	10	2016
	Common Frog	<i>Rana temporaria</i>	4	2012
	Great-crested Newt	<i>Triturus cristatus</i>	11	2016
	Smooth Newt	<i>Triturus vulgaris</i>	17	2016
Bird	Skylark	<i>Alauda arvensis</i>	24	2012
	Kingfisher	<i>Alcedo atthis</i>	19	2015
	Shoveler	<i>Anas clypeata</i>	1	1987
	Teal	<i>Anas crecca</i>	22	2016
	Wigeon	<i>Anas penelope</i>	2	2010
	Gadwall	<i>Anas strepera</i>	15	2016
	Pink-footed Goose	<i>Anser brachyrhynchus</i>	9	2014
	Meadow Pipit	<i>Anthus pratensis</i>	14	2011
	Tree Pipit	<i>Anthus trivialis</i>	2	2011
	Pochard	<i>Aythya ferina</i>	2	1990
	Lesser Redpoll	<i>Carduelis cabaret</i>	3	2011
	Linnet	<i>Carduelis cannabina</i>	17	2016
	Goldfinch*	<i>Carduelis carduelis</i>	51	2015
	Twite	<i>Carduelis flavirostris</i>	1	1987
	Little Ringed Plover	<i>Charadrius dubius</i>	7	2010
	Ringed Plover	<i>Charadrius hiaticula</i>	1	1988
	Stock Dove	<i>Columba oenas</i>	1	2009
	Cuckoo	<i>Cuculus canorus</i>	17	2013
	Mute Swan	<i>Cygnus olor</i>	8	2012
	House Martin	<i>Delichon urbica</i>	19	2015
	Corn Bunting	<i>Emberiza calandra</i>	1	2009
	Yellowhammer	<i>Emberiza citrinella</i>	22	2013
	Reed Bunting	<i>Emberiza schoeniclus</i>	30	2013
	Peregrine	<i>Falco peregrinus</i>	1	2010
	Hobby	<i>Falco subbuteo</i>	1	2008
	Kestrel	<i>Falco tinnunculus</i>	20	2016
	Snipe	<i>Gallinago gallinago</i>	39	2015
	Oystercatcher	<i>Haemotopus ostralegus</i>	5	2011
	Swallow	<i>Hirundo rustica</i>	12	2014
	Common Gull	<i>Larus canus</i>	1	2013
	Lesser Black-backed Gull	<i>Larus fuscus</i>	2	2012
	Grasshopper Warbler	<i>Locustella naevia</i>	14	2011
	Jack Snipe	<i>Lymnocyptes minimus</i>	14	2014
	Red Kite	<i>Milvus milvus</i>	1	2011
	Grey Wagtail	<i>Motacilla cinerea</i>	3	2010
	Yellow Wagtail	<i>Motacilla flava</i>	3	2009

Bird	Spotted Flycatcher	<i>Muscicapa striata</i>	4	1987
	Curlew	<i>Numenius arquata</i>	3	2013
	Willow Tit	<i>Parus montanus</i>	26	2014
	House Sparrow*	<i>Passer domesticus</i>	77	2015
	Tree Sparrow	<i>Passer montanus</i>	5	2015
	Grey Partridge	<i>Perdix perdix</i>	12	2013
	Cormorant	<i>Phalacrocorax carbo</i>	4	2013
	Redstart	<i>Phoenicurus phoenicurus</i>	5	2009
	Wood Warbler	<i>Phylloscopus sibilatrix</i>	1	1987
	Willow Warbler	<i>Phylloscopus trochilus</i>	24	2011
	Green Woodpecker	<i>Picus viridis</i>	13	2014
	Golden Plover	<i>Pluvialis apricaria</i>	4	2011
	Dunnock*	<i>Prunella modularis</i>	57	2015
	Bullfinch	<i>Pyrrhula pyrrhula</i>	34	2016
	Water Rail	<i>Rallus aquaticus</i>	38	2015
	Goldcrest	<i>Regulus regulus</i>	8	2016
	Sand Martin	<i>Riparia riparia</i>	4	2011
	Woodcock	<i>Scolopax rusticola</i>	2	2013
	Turtle Dove	<i>Streptopelia turtur</i>	1	1986
	Starling*	<i>Sturnus vulgaris</i>	50	2014
	Shelduck	<i>Tadorna tadorna</i>	2	2010
	Greenshank	<i>Tringa nebularia</i>	2	1987
	Green Sandpiper	<i>Tringa ochropus</i>	6	2011
	Redshank	<i>Tringa totanus</i>	4	2009
	Redwing	<i>Turdus iliacus</i>	20	2016
	Blackbird*	<i>Turdus merula</i>	96	2015
	Song Thrush	<i>Turdus philomelos</i>	28	2016
	Fieldfare	<i>Turdus pilaris</i>	9	2015
	Mistle Thrush	<i>Turdus viscivorus</i>	21	2016
	Lapwing	<i>Vanellus vanellus</i>	14	2016
Crustacean	White-clawed Crayfish	<i>Austropotamobius pallipes</i>	2	2010
Insect - Butterfly	Small Heath	<i>Coenonympha pamphilus</i>	9	2013
	Dingy Skipper	<i>Erynnis tages</i>	5	2013
	Wall	<i>Lasiommata megera</i>	1	2009
Insect - Moth	Dusky Brocade	<i>Apamea remissa</i>	1	2016
	Small Square-spot	<i>Diarsia rubi</i>	1	2016
	Buff Ermine	<i>Spilosoma luteum</i>	1	2016
	Cinnabar	<i>Tyria jacobaeae</i>	1	2013
Reptile	Slow Worm	<i>Anguis fragilis</i>	1	2000
Terrestrial Mammal	Water Vole	<i>Arvicola terrestris</i>	71	2012
	Unknown Bat Species	<i>Chiroptera</i>	2	1994
	Hedgehog	<i>Erinaceus europaeus</i>	2	2012
	Otter	<i>Lutra lutra</i>	4	2012
	Badger	<i>Meles meles</i>	4	2012
	Harvest Mouse	<i>Micromys minutus</i>	1	1992
	Myotis Bat Species	<i>Myotis sp.</i>	1	1988

Terrestrial Mammal	Daubenton's Bat	<i>Myotis daubentonii</i>	53	2013
	Noctule	<i>Nyctalus noctula</i>	7	2013
	Common Pipistrelle*	<i>Pipistrellus pipistrellus</i>	20	2012
	Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	1	2011

Appendix 4: Site Map

Figure 2: Google Maps image of **Land off Catherine's Walk, Barnsley**, showing the survey site in relation to the surrounding landscape and habitats.



Appendix 5: Protected Species Information

The following species are protected under EU law, such as the Conservation (Natural Habitats, &c.) Regulations (2010):

- All UK bat species
- Dormouse
- Great Crested Newt and Natterjack Toad
- Large Blue Butterfly
- Otter
- Pine Marten
- Polecat
- Scottish Wild Cat
- Smooth Snake and Sand Lizard
- Various aquatic and plant species

These species are afforded the highest protection in the UK. Under this protection it is an offence to; deliberately capture, injure or kill any wild animal of a European protected species; deliberately disturb wild animal of any such species; deliberately take or destroy the eggs of such an animal, or damage or destroy a breeding site or resting place of such an animal.

In addition to this it is an offence to be in possession of, or to control, transport, sell or exchange, or to offer for sale or exchange, a European Protected species.

The following species are protected under UK law, such as the Wildlife and Countryside Act 1981:

- Badger
- Nesting birds
- Red Squirrel
- Reptiles (Adder, Common lizard, Grass snake, Slow worm)
- Water Vole
- White Clawed Crayfish
- Various bird species i.e. Barn Owl
- Various plant species

Therefore under this protection it is an offence to; kill, injure or take any of the above species.

Nesting birds are only protected during the breeding season whilst on their nest. In addition to the adults being protected, the eggs, young and nest itself whilst in use are protected.

The Wildlife and Countryside Act 1981 also contains measures to prevent the establishment of non-native species which may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in Schedule 9 in England and Wales (e.g. Japanese Knotweed and Himalayan Balsam).

Badgers are protected under The Protection of Badgers Act 1992. Under this legislation it is an offence to; take, injure, kill, or cruelly ill-treat a badger; interfere with a badger sett; sell or possess a live badger; or mark or ring a badger.

The following habitat types are protected under UK Law:

- Habitats that are used by protected species
- Habitats that fall within designated sites
- Hedgerows
- Individual trees/woods can be protected under Tree Preservation Orders

Appendix 6: Survey Calendar

Figure 2: Survey calendar for protected species and habitat surveys.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Extended Phase 1 Habitat												
Botanical												
Bat Scoping												
Bat Activity												
Bat Hibernation												
Great Crested Newt (Habitat Assessment)												
Great Crested Newt (Presence/Absence)												
Reptiles												
Badger Initial												
Badger Bait-marking												
Water Vole												
Otter												
Birds (winter)												
Birds (nesting)												
White Clawed Crayfish Night-torching												
White Clawed Crayfish Trapping												
White Clawed Crayfish Manual search												
Dormouse												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

	Optimal Survey Time
	Sub-optimal Survey Time
	Survey Not Possible

Appendix 7: Bat Survey Calendar

Figure 3: Survey timings calendar (taken from BCT: Bat surveys for professional Ecologists, Good Practice Guidelines; 3rd Edition).

Survey type	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
Preliminary ecological appraisal – fieldwork												
Preliminary roost assessment – structures ^a												
Emergence/re-entry survey for maternity or summer roosts ^b												
Emergence/re-entry ^c survey for transitional roosts ^b												
Emergence survey for mating roosts ^b												
Hibernation survey – structures ^a												
Preliminary ground level roost assessment – trees ^d												
Potential roost feature (PRF) inspection survey – trees												
Ground level bat activity survey – transects and automated/static												
Pre-, during and post-hibernation – automated/static bat activity survey												
Swarming survey												
Back-tracking survey												
Trapping survey ^e												
Radio tagging and tracking survey ^e												

 = optimal period

 = sub-optimal period

 = weather or location dependent (i.e. may not be suitable due to spring and autumn conditions in any one year or in more northerly latitudes). Note that October surveys are not acceptable in Scotland.

^a Not including trees

Appendix 8: Glossary

Activity surveys - are used to assess the level of bat activity at a site. This can be done either by using equipment such as an AnaBat device, or manually walking around a site with a heterodyne detector, documenting the number of bat passes and interceptions.

Dawn surveys - begin around 2 hours before and up to sunrise when bats are returning to their roosts from foraging, and swarming behaviour can be seen close to roost entrances.

Dusk surveys - begin around 30 minutes before sunset and up to 2 hours afterwards. These are done in order to see bats emerging from their roost sites at night.

Echolocation - is a system similar to sonar that allows bats to travel and forage even in total darkness. Bats make a call and then listen to the returning echoes in order to build up a map of their surrounding area. This allows bats to gauge the identity and distance of an object by how long the echo takes to return to them.

Habitat - the ecological or environmental area that is inhabited by a particular species of animal, plant or other type of organism.

Hibernation - is a state of inactivity and metabolic depression characterized by lower body temperature, slower breathing, and lower metabolic rate. Hibernating animals conserve energy, especially during winter when food is short, tapping energy reserves, i.e. body fat, at a slow rate.

Hibernacula - typically consist of underground sites, such as caves and cellars, which remain relatively cold and humid. Bats will hibernate to conserve energy over the winter months when falling temperatures cause a drop in the abundance of insects. These will typically be colonised around November to around March.

Insectivorous - is when an organism feeds exclusively on insects.

Nocturnal - a behaviour characterized by being active during the night and sleeping during the day.

Maternity roosts - colonised around late May early June and consist of mature females and their young. These roosts need to be warm and quiet, and are used up until around August, with females typically leaving first and then the young.

Mating roosts - mating begins around late October to November. Males of most species use special mating calls to attract females. These can include purrs, clicks and buzzing.

Roost - a site where bats live during the day, rear young and hibernate. These can be in man made structures, such as buildings, bridges, tunnels, cellars and mines, or natural features such as mature trees and caves.

Roosts in buildings - many types of buildings will be used by bats. The most likely sites are agricultural buildings (e.g. farmhouses and barns), buildings with exposed wooden beams (greater than 20cm thick), buildings with weather boarding and/or hanging tiles, and buildings close to woodland and/or water.

Roosts in trees - these are typically in mature trees with deep sheltered cracks, under loose sections of bark, or in woodpecker holes.

Species - a group of organisms in which all members can interbreed and produce viable offspring.

Summer roosts (non-breeding) - these are generally occupied by groups of males and immature females during the summer, and are usually only occupied for a short period before the group moves to another location.

Swarming - a behaviour exhibited by bats returning to their roost sites at dawn. Bats can be seen repeatedly flying to and from the roost entrance, making it much easier for consultants to identify where roosts are on a building or structure.

Temporary/Transitory roosts - These are used after hibernation (March - April) before mature females disperse to maternity roosts and male/immature females colonise summer (non-breeding) roosts. Similarly, temporary roosts form before hibernation (August -October).

Underground Roosts - these are typically used during the winter and can be mines, caves, tunnels or cellars.

Appendix 9: Author Qualifications

Principal Consultant and Managing Director

Jonathan Cocking *F.R.E.S., Tech. Cert. (Arbor.A), PDipArb (RFS) FArborA CBiol MSB. MICFor.* Jonathan is a Registered Consultant and Fellow of the Arboricultural Association and sits on its Professional Committee. He has 31 years experience in the Arboricultural profession and served for eight years as Senior Arboriculturist with a large local authority before establishing JCA in 1997. Jonathan has since developed JCA's portfolio of services and its extensive client base. He is a Chartered Biologist, a Chartered Arboriculturalist and an Expert Witness with much experience of litigation work.

Technical Director

Toby Thwaites *BSc (Hons), HND (Arboriculture).* Toby joined JCA in 1998 after graduating in Ecology at the University of Huddersfield and has since graduated in Arboriculture at the University of Central Lancashire. A former JCA team leader and Consulting Arboriculturist, Toby is now Technical Director and oversees all office and on-site activities at JCA and is on hand to offer technical support and advice.

Consulting Staff: Arboriculture

Toby Parsons *Cert. Arb. (RFS), Tech. Cert. (Arbor.A).* Toby joined JCA after spending 6 years working as a senior climber for various Arboricultural contractors in the East Midlands and the South-West. He has gained the Level 2 Certificate in Arboriculture (RFS) and an Arboricultural Technicians Certificate. Toby is LANTRA certified in Professional Tree Inspection.

Scott Reid ND *(Arboriculture and Forestry).* Scott joined JCA after working with other consultancy companies in the south of England. He specialises in trees in relation to development and holds a National Diploma, various NPTC qualifications and is currently studying for his Level 4 Diploma in Arboriculture.

Andrew Bussey. Andrew joined JCA having spent 12 years working as a tree surgeon for various private companies and a Local Authority. He has various NPTC qualifications, is QTRA qualified and is currently studying for his Arboricultural Technicians Certificate.

Phil Humeniuk FdSc (Arboriculture). Phil joined JCA having spent 3 years working for various tree surgery companies and as a Tree Officer for a Local Authority. He also has several years experience working as a consultant both for JCA and for another consultancy. Phil obtained his foundation degree in Arboriculture at the University of Central Lancashire and has various NPTC's and is LANTRA certified in Professional Tree Inspection.

Emily Wilde FdSc (Arboriculture). Emily joined JCA having previously worked for various private tree surgery and consultancy companies over the past 8 years. She initially obtained a ND in Forestry & Arboriculture, followed by a FdSc in Arboriculture at Askham Bryan College, York. Emily has various NPTC certificates and is QTRA qualified.

Mick Eltringham ND (Forestry). Mick joined JCA after spending 12 years working in the industry for various private companies in the north and south of England. He has also spent the last five years working as a consultant for two canopy research projects in the Amazon Rainforest, working with Oxford University and the University of Arizona. He has various NPTC Qualifications.

Charles Cocking (FdSc Arboriculture). Charles joined JCA in January 2014 as an Apprentice having previously worked for the company on a part time basis during 2013. Charles obtained his Foundation Degree in Arboriculture at Askham Bryan College, York, and is now part of our qualified Arboricultural consultancy team.

Consulting Staff: Ecology

David Bodenham BSc Ind (Hons) Zoology, MSc Biodiversity and Conservation. An advocate of evidence based conservation, he studied Zoology (Ind) at University and moved onto an MSc in Biodiversity and Conservation where he gained the myriad of skills needed as an ecologist. With over 7 years of experience, David specialises in bat and amphibian ecology. More information on qualifications can be requested.

Jenny Butler Bsc (Hons) Environmental Science. Jenny joined JCA's ecology department in 2017, bringing with her a bachelor degree in Environmental Science from Bangor University. Jenny has previously worked as an Environmental Consultant for an Agri-Environment company and as a freelance ecological consultant. Jenny specialises in great crested newt and bat ecology. More information on qualifications can be requested.

Amanda Beck Cert He in Field Ecology. Amanda joined JCA's ecology department in 2018, previously working as a freelance Ecological Consultant in North Wales and Liverpool and as a trainee Ecologist in South Wales. Amanda has extensive practical experience in surveying for botanical, amphibians, terrestrial and marine mammals along with invertebrate research work. She has practical experience in habitat management and creation and is a CIEEM student member. More information on qualifications can be requested.

Josie Collier BSc (Hons) Ecology. Josie joined JCA's ecology department and brings with her a degree in Ecology and Environmental Biology from the University of Leeds. Josie has gained experience from working with a local authority and is seeking to become a member of the Chartered Institute of Ecology and Environmental Management (CIEEM). More information on qualifications can be requested.

We confirm that the opinions expressed are our true and bona fide opinions.

Signed



David Bodenham *BSc Ind (Hons) Zoology, MSc Biodiversity and Conservation*

07/02/2018

Proofread by



Jenny Butler *BSc (Hons) Environmental Science*

07/02/2018

For and on behalf of **JCA Ltd**

Registered Office:

**Unit 80
Bowers Mill
Branch Road
Barkisland
Halifax
HX4 0AD**

**Tel. 01422 376335
Fax. 01422 376232
Email: jon@jcaac.com**

www.jcaac.com

JCA Ltd. Arboricultural and Ecological Consultants

Professional Tree and Ecology Advice nationwide

ARBORICULTURAL SERVICES

Guidance for Architects and Developers

- British Standard 5837 Tree Surveys
- Arboricultural Implication Assessments (AIA)
- Arboricultural Method Statements (AMS)

Tree Advice for the Legal Profession

- Subsidence Litigation
- Personal Injury and Accident Investigation
- Expert Witness, Planning Inquiries and Appeals

Advice for Engineers, Loss Adjusters and Insurers

- Tree Surveys for Subsidence
- Heave Assessment
- Tree Root Identification

Advice for Local Authorities and Social Housing

- Tree Safety Surveys
- Specialist Decay Detection
- Landscape and Orchard Design

Veteran Tree Management

- Ancient Woodland Management
- Veteran Tree Management

Tree Health and Pest and Disease Management

- Pest and Disease Surveys
- Tree Health Checks
- Disease Mitigation and Control

ECOLOGICAL SERVICES

Ecological Pre-Planning Services

- Phase 1 Habitat Surveys
- Great Crested Newt eDNA Sampling
- Protected Species: Bat, Wintering and Nesting Bird, Badger, Amphibian, Otter, Water Vole, White-Clawed Crayfish, Dormice and Reptile Surveys.
- Preparation for Environmental Impact Assessment (EIA)
- Invasive Species Surveys
- Code for Sustainable Homes

Ecological Post-Planning Services

- Biodiversity Enhancement Plans
- Protected Species Mitigation
- Ecological Management (Bat and Bird box installation and inspection)

HEAD QUARTERS:

Unit 80 Bowers Mill,
Branch Road,
Barkisland,
Halifax, HX4 0AD.

Tel: 01422 376335
Mobile: 07778 391986
Email: jon@jcaac.com
Website: www.jcaac.com

