

Barnsley College, Belle Vue

Bat Survey Report
August 2014



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BCT)

1. Summary

Capita Ecologists were commissioned by Barnsley College in July 2014 to undertake bat emergence and walked transect surveys at the Belle Vue site on Cockerham Lane in Barnsley. The surveys were recommended following a building inspection that was carried out as part of an Extended Phase 1 Survey by Capita Ecologists on the 4th June 2014. The surveys have been carried out to inform a planning application to convert the current Belle Vue House into executive apartments and to demolish the existing maintenance block on site. A number of new dwellings and two mini-pitches are proposed for the site.

One possible bat dropping was recorded on Building 4 of Belle Vue house during the building inspection, as detailed in Section 2.1 of this report. Emergence and walked transect activity surveys were conducted in July and August 2014, focusing on those buildings / features to be affected by the scheme. **A bat roost containing 7 common pipistrelle *Pipistrellus pipistrellus* bats was found in a bat box attached to a beech *Fagus sylvatica* tree to the south of site.** These were recorded during the first emergence survey, but no bats were recorded emerging from the bat box during the second survey. No bat roosts were found in any of the buildings on site.

Four species of bat were noted during the emergence and activity surveys. These were common pipistrelle, soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctula* and *Myotis* species. A maximum count of nine bats was noted at any one time.

Commuting and foraging activity was noted around the buildings and the majority of the vegetation on site, such as the amenity grassland and trees. The main foraging activity was noted in the wooded area to the south of the Belle Vue buildings and along most of the tree lines on site. The entire perimeter of the site was not accessible for the transect survey; the eastern area of amenity grassland was restricted by Heras fencing (see *Appendix A and B*).

Under current proposals, the tree with the bat box containing the bat roost will not be directly impacted by the scheme and no works are proposed in the vicinity of the tree. As such, a **European Protected Species (EPS) Licence will NOT be required**. However, there is an additional bat box located on an ash *Fraxinus excelsior* tree to the south east corner of the site. Although no bats were noted emerging from this box, it is highly likely that bats could occupy it at any time, in addition to the potential features highlighted on the existing Belle Vue House that were noted during the building inspection. As such, it is advised that works to or adjacent to the tree are avoided. Where works impact upon this tree, it is advised that an internal inspection of the bat box is made by a licensed surveyor. If bats are found to be in occupation, then an EPS licence will be required.

The works may have some negative impacts on foraging and commuting bats on site that currently use the mature trees lines for these purposes. Further details and recommendations have been set in Section 6.4, which includes mitigation and compensatory measures that aim to avoid, reduce or remove negative effects. If adopted, these would help ensure adverse impacts to biodiversity are avoided or limited and beneficial impacts are achieved. They would also ensure that the development is managed in-line with the governing legislation protecting bats.

2. Introduction

2.1 Background

Capita Ecologists were commissioned by Barnsley College in July 2014 to undertake bat emergence and walked transect surveys at the Belle Vue site on Cockerham Lane in Barnsley.

The surveys were recommended following a building inspection that was carried out as part of an Extended Phase 1 Habitat Survey undertaken by Capita Ecologists on Wednesday 4th June 2014. This report should be read in conjunction with the Belle Vue Extended Phase 1 Habitat Survey Report – 20/06/14, which will be referred to and summarised, where necessary, within this report.

The building inspection conducted in June 2014 highlighted that Building 4 has high potential for roosting bats. A possible bat dropping was located on the window ledge of the east elevation. Buildings 1, 2, 3 and 5 were found to have moderate potential and Buildings 6, 7 and the basement were classed as having low potential for roosting bats. Building numbers are shown on the Phase 1 Habitat Map in *Appendix E*.

The survey has been carried out to inform a planning application to convert the current Belle Vue House into executive apartments and to demolish the existing maintenance block that currently exists on site. A number of new dwellings and two mini-pitches are proposed for the site. The proposed layout, Barnsley College Housing Development Sites – Drawing number CS071073/A/003 is provided in *Appendix D*.

2.2 Survey Site

The survey site is located on Cockerham Lane, Barnsley, S75 1AT. The grid reference for the site is SE 434198 407146. *Figure 1* illustrates the indicative red line survey boundary.



Figure 1 - Survey Site with Red Line Boundary

2.3 Legislation and Planning Policy

Bats receive protection in the UK through both legislation and planning policies. This section outlines the primary legislation protecting bats, for the full text please refer to the government website. All of the information, below, is relevant to this bat report and to the work proposed at the development site.

2.3.1 Legislation

Bats are protected under Annex II of the EC Council Directive 92/43/EEC 1992 “Conservation of Natural Habitats and Wild Fauna & Flora” (the Habitats Directive) as a European Protected Species (EPS). This legislation has been transposed into UK legislation through the Conservation of Habitats and Species Regulations 2010.

Regulation 41 of the Conservation of Habitats & Species Regulations 2010 makes it an offence to:

- Deliberately capture, injure or kill bats;
- Deliberately disturb bats; or
- Damage or destroy a breeding site or resting place of a bat. This applies whether bats are present or not. NB - breeding sites and resting places are generally referred to as ‘roosts’.

With regards to the disturbance of bats, an offence includes (in particular) any disturbance that is likely to impair their ability to survive, to breed or reproduce, to rear or nurture their young, hibernate or migrate or to affect significantly the local distribution or abundance of the species to which they belong.

In addition to the above protection, all bat species in the UK are protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). In addition to the above, under this Act, it is an offence to:

- Disturb an animal whilst it is occupying a place that it uses for shelter or protection; or
- Obstruct access to any structure or place which an animal uses for shelter or protection.

In order to permit a development where the above offences are likely to be committed, a European Protected Species (EPS) Licence can be obtained from Natural England if appropriate mitigation is offered to offset the negative impacts to local bat populations (full information on licensing requirements can be found at *Appendix C*).

Section 40 of NERC Act 2006 places a statutory duty on public bodies, such as local authorities, that “every public body must, in exercising its functions have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity”.

2.3.1.1 Purpose of Legislation

The purpose of the legislation is to maintain and restore bat populations within their natural range. This implies that the habitats on which they rely and the ecology of their life cycles should not be compromised by human activities. Where activities have the potential to compromise bat populations, measures are required to be put in place to avoid impacts or compensate and mitigate for those impacts.

2.3.2 Planning Policy

In March 2012, the National Planning Policy Framework (NPPF) was published and replaced the previous detailed Planning Policy Statement 9 (PPS9), although the guidance document “*Planning for Biodiversity and Geological Conservation: A Guide to Good Practice*” ODPM 06/2005 has not been replaced by the framework.

The NPPF promotes plan-making and decision-taking with a presumption in favour of **sustainable development**. Sustainable development is achieved where developments are designed to address the mutually dependent threads of sustainability (i.e. **economic, social and environmental needs**). In terms of biodiversity, sustainable development should **not only achieve no net loss of biodiversity but incorporate proposals that achieve net gains for nature** alongside the other social and economic needs of society.

Protected sites and species are a material consideration in determining planning applications. Therefore, all information relating to protected sites and species must be submitted with planning submissions for determination of the whole application. The NPPF promotes the approval of plans where applications can demonstrate that they are in accordance with up-to-date Local Plans and have addressed material considerations.

2.3.3 Biodiversity Policy

Section 41 of the NERC Act requires the Secretary of State to draw up a list of Habitats and Species of Principal Importance which should be used to guide decision-makers (which include local authorities) in implementing their duty under Section 40. Several species of bat are considered Species of Principal Importance, an important factor when considering proposed developments, in accordance with the Natural Environment and Rural Communities (NERC) Act 2006. These are:

- Soprano pipistrelle *Pipistrellus pygmaeus*
- Brown long-eared *Plecotus auritus*
- Barbastelle *Barbastella barbastellus*
- Bechstein’s *Myotis bechsteinii*
- Noctule *Nyctalus noctula*
- Greater horseshoe *Rhinolophus ferrumequinum*
- Lesser horseshoe *Rhinolophus hipposideros*

In addition, all species of bat are recognised as local Priority Species in the Barnsley Local Biodiversity Action Plan (LBAP).

2.4 Personnel & Quality Assurance

All ecologists employed by Capita are members of, or are under application for, membership of the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow the Institute's code of professional conduct when undertaking ecological work.

All fieldwork is carried out in accordance with current best practice guidelines and under the supervision of senior staff and appropriately licensed ecologists. Senior Ecologist and licensed bat surveyor Donna Warren led the surveys assisted by Ecologist Neil Page and Suzannah Forshaw, along with Assistant Ecologists Andrea Sarkissian and Samantha Turner.

Senior Ecologist Donna Warren is a full member of CIEEM and holder of a Natural England bat survey license with over 10 years of working within multi disciplinary consultancies. She has gained her experience in bats across a range of sectors and voluntary work, and possesses a broad and fully competent knowledge base in field survey, design and implementation of mitigation, EcIA and associated legislation. She has a broad experience in professional consulting services completing various conservation related projects including habitat surveying and assessment of sites in relation to their nature conservation importance, as well as protected species surveys and managing licensed schemes.

Neil Page is a Full Member of CIEEM and has been an Ecological Consultant for the last seven years. Neil has a broad range of professional experience in consulting services, including ecosystem management, design, planning, protected species mitigation and environmental research projects. Neil also has experience of a range of habitats and species, coupled with habitat creation and management, which has enabled him to mitigate both social and environmental issues on a wide variety projects and schemes. Neil is an experienced surveyor of reptiles and amphibians and he holds a Natural England Science & Education Great Crested Newt Licence.

Suzannah Forshaw is an Associate member of CIEEM. She has over five years experience working in ecology and conservation. Suzannah has worked on a wide range of projects including large infrastructure developments and demolitions. Suzannah's professional experience includes protected species surveys, predominantly bat work, working as an Ecological Clerk of Works, translocation schemes and project management. Suzannah holds a Natural England Science & Education Great Crested Newt Licence and is working towards her bat licence.

Andrea Sarkissian is a GradCIEEM Assistant Ecologist with a years' experience in ecological consultancy. Andrea has experience of organising and undertaking a number of protected species and habitat surveys and writing the associated reports. These include Extended Phase 1 Habitat, bat, breeding bird, great crested newt, barn owl, water vole and otter.

Samantha Turner is a GradCIEEM Assistant Ecologist with 3 years voluntary and paid experience in ecology and nature conservation, including 3 months in ecological consultancy. Experience includes protected species surveys, particularly bats, great crested newt translocation, habitat surveys including Phase 1 and NVC, and practical management work in a range of habitats.

3. Methods

3.1 Survey and Report Objectives

The surveys were carried out to fulfil the following objectives:

1. To survey the features with the potential to support bats that were identified during the building inspection that was carried out in June 2014.
2. To record existing bat roosts on the site.
3. To record any evidence of usage of the site by bats.
4. To provide an assessment of the likely importance of the site for bats and bat conservation.
5. To identify potential impacts of the proposed development on bats.
6. To provide clear advice on any necessary mitigation and enhancement proposals that will enable the development to proceed in full compliance with relevant wildlife and nature conservation legislation.

3.2 Desk-Based Study

A data search was requested from Barnsley Biological Record Centre (BBRC), C/O Sheffield City Council Ecology Service, for bat records located within 2 km of the site in order to inform the June 2014 Extended Phase 1 Report. As such, no additional search was carried out to inform this report.

MAGIC online (MAGIC, 2008) resource was accessed for information on potential habitat links and landscape character. The Barnsley LBAP was also reviewed and used to inform the report.

3.3 Emergence and Re-Entry Surveys

Two emergence surveys were undertaken on 24th July 2014 and 12th August 2014, with five surveyors present on both occasions. The emergence surveys commenced 30 minutes prior to sunset and continued for between 1 and 1.5 hours after sunset.

Surveyors were strategically positioned around the building, focusing on potential access points identified during the building inspection so as to be able to observe any bats leaving or entering roosts. Surveyor locations and a summary of the main activity during both surveys are indicated on the plan at *Appendix A*.

All observed bat passes were recorded on a detailed plan of the site, noting the time, the location and, where possible, the direction of flight, species and behaviour of the bat (i.e. commuting, foraging, social calling). Particular importance was placed on recording the location of any points where bats were observed leaving or entering the building.

Surveyors were equipped with the following bat detectors:

- Pettersson D230 frequency division and heterodyne detector
- Anabat SD1 frequency division detector and PDA
- Bat Box Duet frequency division and heterodyne detector
- Griffin heterodyne, frequency-division and time-expansion recorder

The Pettersson detector was connected to digital recording devices (Edirol and Zoom MP3 recorder) to record bat calls for later analysis of sonograms.

During the survey, the following details were noted:

- Weather and temperature
- Time bat detected/seen
- Frequency (Khz) at which the bat was detected
- Location within the survey area.
- Whether bats emerged from or re-entered the building
- Location of bat emergence/re-entry
- Direction of flight
- Number of bats present
- Whether the bats appeared to be foraging or commuting

After completion of each survey session, digital bat recordings were analysed using Batsound sonogram analysis software to confirm species identification and with Analook software to analyse calls from the Anabat SD1 detector.

3.4 Walked Transect Survey

One walked transect survey was undertaken on 24th July, carried out by two surveyors. The walked transect survey commenced after the emergence survey and lasted approximately 1 hour. The survey aimed to assess levels of bat activity on site, in particular the boundary vegetation, and identify how bats are using the site, including any key foraging or commuting areas. The activity survey route was focused on walking the perimeter of the site, along the tree lines. The route was walked at a steady pace, stopping at intervals for approximately five minutes. The survey results and the transect route is shown in *Appendix B*.

3.5 Evaluation Methods

The BCT Bat Survey Good Practice Guidelines (BCT. 2012) are used as a basis to evaluate the site features for their potential to support bats. Table 1 gives an indication of the value of a variety of features for bats and has been compiled using the guidelines and from the experience of Capita Ecologists.

Table 1 was used as a reference in the building inspections for bats in Section 5 of the Extended Phase 1 Report (Capita June 2014). The potential rating is a guide and can alter depending on species likely to be present; site location and UK bat species distribution.

Table 1 - Roost Potential Characteristics

Roost Potential	Qualifying Characteristics
Negligible	<p><u>Built structures and underground sites</u> No features that could be used by bats as roosts.</p> <p><u>Trees</u> No features that could be used by roosting bats i.e. an immature tree, smooth bark, no crevices and no ivy cladding/vegetation cover.</p> <p><u>Landscape character</u> Lack of vegetation and foraging habitat within vicinity of the site and no connections to semi-natural habitats. Site located in a highly urbanised environment.</p>
Low	<p><u>Built structures and underground sites</u> Small number of potential roosting features that could be used by bats.</p> <p><u>Trees</u> No visible features within tree structure such as crevices, holes in trunk, hazard beam splits. However it may have ivy cladding and hidden features.</p> <p><u>Landscape character</u> Small amount of isolated habitat on site providing a potential foraging resource i.e. a single tree or a patch of introduced shrub. Maybe linked to small amount of adjacent semi-natural habitat surrounding site, however there are no distinct links to habitat further away.</p>
Moderate	<p><u>Built structures and underground sites</u> Several potential roosting features within built structure.</p> <p><u>Trees</u> Several potential roosting features that could be used by roosting bats such as crevices, holes in trunk, lifted bark, hazard beam splits.</p> <p><u>Landscape character</u> Suitable foraging habitat on site such as tree and hedgerows with linear links to wider landscape.</p>
High	<p><u>Built structures and underground sites</u> Building offers a significant number of roosting features including gaps under roof tiles, hanging tiles, gaps beneath weather boarding, soffits, barge boards and fascias, holes in the wall and gaps in mortar, access points into large roof void, potential roosting features for crevice and void roosting bats.</p> <p><u>Trees</u> Several potential roosting features that could be used by roosting bats including, lifted bark, crevices, hazard beam splits, downwards facing holes with obvious staining and scratch marks around hole.</p> <p><u>Landscape character</u> The site habitat is of high quality for foraging bats and includes features such as woodland, tree lined water courses, field margins and hedgerows. The site is well connected within the landscape to surrounding habitats and strong linear features such</p>

Roost Potential	Qualifying Characteristics
	as hedgerows and tree lines extend from the site to the wider landscape.
Confirmed Roost	Presence of field signs indicative of a bat roost including staining and scratch marks around a potential roost entry point combined with the following; urine staining, droppings clustered beneath a potential roosting feature and the presence of live or dead bats.

3.6 Survey Constraints

Observations have been limited to one survey in each month of July and August 2014. Limiting the survey period to 2 months does not take account of bat activity throughout the entire active season for bats and during the hibernation season. The surveys were undertaken during the optimal bat survey period of May to September, inclusive, with two surveys conducted three weeks apart, as recommended by current best practice survey guidelines.

To date, surveys have not been undertaken during the hibernation season in order to determine whether the site is used as a hibernation roost.

The entire perimeter of the site was not accessible for the transect survey. The eastern area of amenity grassland was restricted by Heras fencing, as shown in *Appendix A* and *B*.

4. Site Description

4.1 The Site

The Belle Vue site is located approximately 3 km north of Barnsley Town Centre. The habitats on site comprise of the existing Belle Vue House, hard standing, introduced shrub, amenity grassland, scattered, broad-leaved trees, semi-natural broad-leaved woodland and semi-improved neutral grassland. The site also contains two bat boxes attached to mature trees.

4.2 Site Context

The A635 (Huddersfield Road) runs to the left of the site and to the east is a cleared demolition site (where access was restricted). Immediately north of the site is residential housing and a playing field. To the south of site is a railway line.

The wider surrounding areas consist mainly of residential properties that contain associated gardens and hedgerows / tree lines and the railway. The railway lines that run directly south of the site and, approximately, 100 m east of site are both tree lined and connect the site to wider landscapes including a large open area with a mosaic of habitats to the north, through which the River Dearne runs.

4.3 Project Description

At present, the development proposals include the conversion of the Belle Vue House into executive apartments, the demolition of the maintenance block and the construction of a number of new dwellings and two mini-pitches on site. Scheme proposals (current at the time of writing) are provided in *Appendix D*.

5. Results

5.1 Desk Study and Data Search

The Dearne Valley Park Local Nature Reserve (LNR) is located within 2 km of the survey site.

The following non-statutorily designated sites are located within 2 km of the survey site:

- Barnsley Canal at Wilthorpe (Barnsley Natural Heritage Site)
- Cliff Wood (Barnsley Natural Heritage Site)
- Redbrook Pastures (Barnsley Natural Heritage Site)

5.1.1 *Biological Records for Bats*

Information obtained from the local records centre contained records of the following bat roosts within 2 km of the survey site:

Table 2 - Local bat records

Date of Record	Bat Species	Type of Roost	Distance from Survey Site
1987 - 2003	Common pipistrelle	40x records including nine roosts emergence and activity records	Approx. 1.3 km and 800 m north east of site
1990 - 2012	Daubenton's bat	46x records, the majority of which are emergence counts from a roost.	Approx. 800 m and 1.3 km east and 2 km south of site.
2003 - 2005	Leisler's bat	3x records of roosting bats	Within 2 km of site (exact grid reference not provided).
1981 - 1992	Noctule	7x activity records	Approx. 1.3k m north east, 900 m south west and 900 m north west of site.

5.2 Emergence Surveys

Two emergence surveys were undertaken on the 24th July and 12th August in 2014. An indicative map of the main bat flight paths that were recorded during the surveys is illustrated at *Appendix A*.

The glass entrance section of Building 1 was internally well lit for the entirety of the surveys, as was the outside of Building 7. Building 7 had security lights that were on for the duration of the

surveys and illuminated part of the adjacent car park to the south. The south of Building 1 was reasonably well lit due to the street light located just off site to the west. The remainder of the site was generally unlit during the surveys.

5.2.1 24th July 2014 - Survey 1 Emergence

The survey commenced at 20:50 BST and ended at 22:15 BST. Sunset was at 21:15. The weather conditions during the survey were as follows:

Start of survey:

- Temp: 24.7°C
- Humidity: 62%
- Wind speed: 0.02mph
- Cloud cover: 7%

End of survey:

- Temp: 17.8°C
- Humidity: 76%
- Wind speed: 0mph
- Cloud cover: 2%

Weather conditions throughout the survey are considered optimal for bat emergence surveys.

Table 3 - Survey 1 Emergence Results

Time	Species	Activity Description
21:30	4x CP	Emerged from bat box on beech tree , south of main buildings. Headed towards playing fields to east.
21:32	3x CP	Emerged from bat box on beech tree , south of main buildings. Headed towards playing fields to east.
21:33 – 21:43	CP	Foraging over grassland to south of main buildings.
21:35 – 22:00	CP	Heard, not seen to south of Building 1.
21:42 – 21:52	2x CP	Continuous foraging in trees to east of main buildings, south of the car park.
21:43 – 21:48	3x CP	Foraging over grassland to south of main buildings.
21:46	CP	Foraging over grassland to south of main buildings.
21:48	4+ CP	Foraging around canopy of semi-natural woodland to south.
21:51	2x CP	Commute east to west to south of main buildings, then foraging over amenity grassland.
21:51	CP	Heard, not seen, to south of Building 7.
21:52	2x CP	Commuting over car park south of Building 7.
21:52	CP	Commute east to west to south of main buildings, then foraging over amenity grassland.
21:52	CP	Heard, not seen to south of Building 1.
21:53	CP	Foraging to east of main buildings.
21:53	2x CP	Commute west to east along tree line to south of site.
21:55	2 x CP	Commute over car park to south of Building 7, headed east towards tree line.
21:55	CP	Foraging over grassland to south of main buildings.
21:55 -21:57	CP	Foraging, heard but not seen.
21:58	Noctule	Heard, not seen, to south of Building 7.

Time	Species	Activity Description
21:59	2x CP	Feeding over grassland to south of main buildings.
22:00	CP	Commute from north of main buildings to south east.
22:00	CP	Foraging around tree to north east of Building 4.
22:00	CP	Foraging over grassland to south of main buildings.
22:01	CP	Foraging to east of Building 4.
22:02	CP	Foraging over south section of main buildings.
22:04	CP	Heard, not seen, to south of Building 7.
22:06	CP	Foraging to east of Building 4.
22:07	CP	Heard, not seen to south of main buildings.
22:09	CP	Commute over car park to south of Building 7, headed east towards tree line.
22:10	CP	Foraging to south east of Building 4.
22:10	3x CP	Heading north over main buildings, then east.
22:10	CP	Foraging to south of Building 1
22:11	CP	Heard, not seen, to south of Building 7.
22:12	2x CP	Heading north over main buildings, then east.
22:13	CP	Foraging to east of Building 4.
22:14	CP	Heard, not seen, to south of Building 7.
Survey end: 22:15		

NB. CP = Common pipistrelle

No other notable fauna species were recorded during the survey.

5.2.2 12th August 2014 – Survey 2 emergence

The survey commenced at 20:25 BST and ended at 22:05 BST. Sunset was at 20:42. The weather conditions during the survey were as follows:

Start of survey:

- Temp: 18.3°C
- Humidity: 64%
- Wind speed: 0mph
- Cloud cover: 70%

End of survey:

- Temp: 13°C
- Humidity: 78%
- Wind speed: 0mph
- Cloud cover: 90%

Weather conditions throughout the survey are considered optimal for bat emergence surveys.

Table 4 - Survey 2 emergence results

Time	Species	Activity Description
20:46	CP	Heard, not seen near trees to south of main car park.
20:55	CP	Commute from south of main buildings to south of main car park.
20:59	CP	Heard, not seen near trees to south of main car park.
21:00	CP	Heard, not seen near trees to south of main car

Time	Species	Activity Description
		park.
21:04	CP	Heard, not seen near trees to south of main car park.
21:05	CP	Foraging over trees and grassland to south of main car park.
21:06	CP	Commute passed south of main car park, then south towards railway line.
21:07	CP	Foraging to south of main car park.
21:08	CP	Commuting from road to the west passed the tree line north of the railway line.
21:09	CP	Foraging by the tree line north of the railway line.
21:09	CP	Heard on Batbox Duet, not seen, to south of Building 1.
21:11	CP	Foraging in trees to east of main buildings.
21:11	CP	Foraging by the tree line north of the railway line.
21:12	CP	Commute and foraging along tree line to south of site.
21:13	CP	Foraging by the tree line north of the railway line.
21:16	CP	Foraging to south of main car park.
21:20	CP	Commuting to east of main buildings.
21:20	CP	Commuting passed the tree line north of the railway line, heading east towards playing field.
21:22	CP	Foraging to east of main buildings.
21:26	CP	Commute near south of main car park.
21:29	CP	Heard, not seen near trees to south of main car park.
21:30	CP	Commuting to east of main buildings.
21:30	Soprano pipistrelle	Commuting to east of main buildings.
21:30	CP	Heard, not seen near trees to south of main car park.
21:32	CP	Heard, not seen near trees to south of main car park.
21:36	Soprano pipistrelle	Foraging to east of main buildings.
21:36	CP	Commuting by the tree line north of the railway line, headed west towards the road.
21:39	CP	Heard, not seen near trees to south of main car park.
21:40	CP	Commuting to east of main buildings.
21:40	CP	Foraging to east of main buildings.
21:40	Soprano pipistrelle	Commuting to east of main buildings.
21:40	CP	Heard, not seen near trees to south of main car park.
21:40	CP	From east over main buildings, west towards road.

Time	Species	Activity Description
21:45	Myotis species	Heard, not seen commuting near trees to south of main car park.
21:48	CP	Foraging in trees to east of main buildings.
21:56	CP	Commute high in canopy of trees to south of main car park.
22:01	CP	Commute heard, not seen near trees to south of main car park.
Survey end: 22:05		

NB. CP = Common pipistrelle

Other notable fauna species recorded during the survey, included the following:

- Tawny owl *Strix aluco* in ash tree containing bat box to south of main car park, recorded at 21:00, then flew out of tree.
- Hedgehog *Erinaceus europaeus* foraging to the south of site.

5.3 Walked Transect Survey

The transect survey commenced after the first emergence survey on the 24th July 2014 at 22:15 BST and ended at 23:10 BST. Sunset was at 21:15. The bat records are summarised, below. The Target Notes relate to the map at *Appendix B*.

Table 5 - Walked transect survey results

Time	Species	Target Note	Activity Description
22:16	CP	1	3 x commutes, heard not seen along tree line.
22:28	CP	2	Heard, not seen along tree line.
22:30	CP	3	Commute over grassland, heading west across site.
22:32	CP	4	Heard, not seen along tree line.
22:40	CP	5	Commute from north of main buildings, headed west over the road.
22:46	CP	6	Commuting along tree line.
22:48	Myotis species	6	Heard, not seen.
22:48	CP	6	Commuting along railway line vegetation.
22:51	CP	6	Heard, not seen.
22:52	CP	7	Heard, not seen.
22:58	CP	8	Heard, not seen commuting along tree line.
23:00 - 23:01	CP	9	3 x Heard, not seen commuting along tree line and road.
Survey end: 23:10			

NB. CP = Common pipistrelle

No other notable fauna species were recorded during the survey.

5.4 Results Summary

Bat species recorded on site include common pipistrelle, soprano pipistrelle, noctule and myotis species. A total of seven common pipistrelle bats were recorded emerging from the bat box on the beech tree located adjacent to the fencing, to the south of the main building (see plan at *Appendix A*). It is considered that this is a summer roost (not confirmed as a maternity roost). No bats were recorded emerging from the buildings on site.

The main bat activity recorded consisted of foraging and commuting by common pipistrelle bats. The woodland and tree lines to the south and east of the main buildings were the primary areas utilised for this activity, although bat activity was recorded on the majority of site.

Other notable fauna species recorded on site during the surveys included hedgehog and tawny owl.

6. Interpretation and Advice

6.1 Advice

Bats and their roosts are protected under the Conservation of Habitats & Species Regulations 2010 and the Wildlife & Countryside Act 1981 (as amended). It is illegal to intentionally or recklessly: i) kill, injure or take a bat; ii) damage, destroy or obstruct access to any place that a bat uses for shelter or protection (i.e. all bat roosts regardless of whether bats are present or not); and iii) disturb a bat while it is occupying a structure or place that it uses for shelter or protection.

It is advised that, although the works (under current scheme proposals) will not result in the loss of a known bat roost (the bat box located on the beech tree as shown on the Figure in *Appendix A*), there will be indirect disturbance due to a change in land used for foraging and commuting activities. For example, street lighting is likely to be positioned around the new housing development that will impact on bat foraging and commuting activity and there may be the loss of trees as a result of site clearance during construction. In addition, there is another bat box located on an ash tree to the south east corner of the site. Although no bats were noted emerging from this bat box, it is highly likely that bats could occupy it at any time. This also applies to the features with the potential to support bats as highlighted on the existing Belle Vue House noted during the initial building inspection.

It is advised that the development will need to be designed to avoid impacts to bats and their roosts. If this is not possible, the development will need to incorporate working methods and/or mitigation measures that will minimise any impacts to the bats and/or the bat roosts present and ensure that roosting features are maintained at the site (sufficient to support the existing population of bats).

6.2 Development Impacts

6.2.1 *Direct Impacts – Roost Loss*

From the current development plans (Barnsley College Housing Development Sites – Drawing number CS071073/A/003 provided in *Appendix D*), the beech tree with the bat box that contains an active bat roost will not be removed or affected by the housing development. If the scheme changes and the bat roost is to be disturbed, an EPS Licence for bats will need to be obtained prior to any affecting works starting on site.

6.2.2 *Indirect Impacts*

As a result of the development, it is considered that there will be a number of indirect impacts to local bat (i.e. common and soprano pipistrelle, noctule and myotis species) populations. These are discussed in more detail, below.

6.2.2.1 Disturbance - Construction

The main impact to bats in the short term would be associated with the construction and redevelopment of the site. There would be an increased human activity on site and associated increase in noise, vibration and dust levels. The disturbance to bats would be greatest during

the bat active season and where works occur in close proximity to the existing bat boxes. Measures have been recommended in Section 6.4 that, if adopted, may reduce the potential disturbance during the construction period.

6.2.2.2 Lighting

The site is currently subject to the lighting regime noted during the bat surveys. The glass entrance section of Building 1 is well lit, internally, as is the outside of Building 7. Building 7 also has security lighting that illuminates part of the adjacent car park to the south. The south of Building 1 is reasonably well lit by the street lighting located just off site to the west. The remainder of the site is generally unlit.

The proposed housing development will likely include street lighting, as well as domestic lighting, which will result in the majority of the houses and surrounding areas (including the existing tree lines) being illuminated to a greater extent than at present. This could result in a negative impact on local bat populations by making the current bat foraging and commuting habitat less suitable for bats. It also has the potential of disturbance to the bats currently roosting on site where lighting is placed in close proximity to existing roosts. This may result in the abandonment of the roost.

Measures have been recommended in Section 6.4 that, if adopted, may reduce the amount of light spill in those areas currently utilised by bats.

6.2.2.3 Loss of Commuting Habitat

Bats are using the majority of the trees and the Belle Vue House on site as commuting habitat. Tree removal or disruption to tree lines appears minimal (based upon current plans) and the Belle Vue House is due to remain *in situ* following the internal conversion works. In addition, the existing tree belts located outside of the site boundary, including the tree lined railway, will remain, these provide additional commuting habitat. As such, the potential impacts upon commuting habitat are considered to be low and would not have a significant impact upon the local bat community in the long term.

6.2.2.4 Loss of Foraging/Feeding Ground

The housing development scheme will involve the loss of some of the amenity grassland and introduced shrubs on site that bats are using for foraging / feeding. The main impacts would occur during the bat active season.

The housing development plans include gardens and some amenity planting, along with the retention of the majority of trees on site, and, as such, the loss of foraging / feeding habitat is likely to be short-term and become neutral once new planting becomes established. As such, the impact from the temporary loss of commuting habitat is considered to be low and would not significantly impact upon local bat populations.

6.3 Licensing Requirements

If the current scheme proposals change and the bat roost located in the bat box on the Belle Vue site is to be affected, an EPS Licence will need to be applied for and in place prior to commencement of the development (to permit it to proceed legally).

In addition, where works impact upon the bat box where no roost was identified, but there is a high risk of use by bats, then it is advised that an internal inspection is made by a licensed surveyor. If bats are found to be in occupation, then an EPS licence will be required.

In order to ensure a successful application of an EPS Licence, the three point test under the Habitats Regulations must be satisfied (see *Appendix C* for more detail). The licence is applied from Natural England by the landowner/occupier, with assistance from an appointed ecologist who should hold a Science & Education Bat Survey Licence and have sufficient experience to advise the client on suitable measures to mitigate for impacts from development. The licence application consists of an Application Form, Reasoned Statement and Method Statement (2 parts). The Method Statement, usually written by the appointed ecologist, must contain details of the project impacts to bats and their roosts and how these will be managed to avoid unnecessary damage and destruction to the roosts or disturbance or injury to the bats themselves.

The overall mitigation will need to include compensation for the loss of roosts (i.e. replacement roosts as near to the existing roosts (in location and character) as possible), habitat and mitigate for disturbance throughout the project.

6.4 Recommendations, Mitigation and Compensation

6.4.1 *Further Surveys*

No further surveys are required at this stage. However, if the works are delayed for more than a year from the date of the last survey (12th August 2014), then it is advised that the surveys are repeated. In addition, if the scheme details change significantly, in particular if any major structural changes are required to the existing Belle Vue House (including works inside existing roof voids) then further surveys may be required depending on the extent of structural works proposed.

It is recommended that the ash tree and the attached bat box that wasn't confirmed as a roost during the surveys are retained. If this tree is to be removed, an inspection of the bat box for bats will be required. Bats are likely to use similar roosting features on site and as another bat box on site was being used by bats during the surveys, it is highly likely that this currently unused bat box will be used at some point during the bats active season. Furthermore, this bat box was only surveyed during one emergence survey which is not an accurate representation of the use of the box over the bats active season. If evidence of bat use is found, a European Protected Species Licence will be required prior to any works disturbing the roost as detailed in Section 6.3.

6.4.2 *Mitigation and Compensation Measures - Direct Impacts: Roost Loss*

From the current scheme proposals, no roosts will be lost as a result of scheme. However, as stated in Section 6.3 and 6.4.1 where the bat boxes are to be impacted further surveys and a licence will be required. The refurbishment works to the existing Belle Vue should aim to retain features that may support bats (e.g. the existing access points detailed in Table 2 of the Extended Phase 1 Report). Consideration should also be given to incorporating bat friendly

features into the building (e.g. installing external bat boxes, or access tiles, especially where any slipped, cracked or missing tiles need to be replaced).

6.4.3 *Mitigation and Compensation Measures – Indirect Impacts*

6.4.3.1 Disturbance - Construction

In order to mitigate for bats which currently use the site, construction works could be timed to avoid the bats main active season. This means timing the works between the months of 1st September to the 1st May. If works are carried out within the bats active period, then no works must be carried out between the hours of dusk and dawn. No construction activity or materials should be stored in the vicinity of the bat boxes.

6.4.3.2 Lighting

It is advised that lighting is kept to a minimum and directed away from any areas of planting. This includes the proposed soft landscaping works and all the existing planting to be retained, in particular the tree lines to the south and east. This is especially important near the bat box with a confirmed roost (i.e. to the south west of site). If these areas need to be lit for reasons of overriding public interest, the impact on bats can be minimised by the following:

- Using low-level, directional lighting directed to where it is needed and light spillage avoided. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvres and shields to direct the light to the intended area only.
- Using LED lighting or low-pressure sodium lamps with UV filters.
- The height of lighting columns if required on site should be as short as is possible as light at a low level reduces the ecological impact (limited to less than 8 m).

6.4.3.3 Loss of foraging/feeding grounds

From current plans, it appears that the majority of trees on site are to be retained. To mitigate for the effects of any vegetation removal / loss and to aid in the support of local bat species, all planting schemes should be targeted to be beneficial to bat species. The Bat Conservation Trust (August 2012) have produced a plant species list for encouraging bats (see *Appendix F*).

6.5 Method of Working

Whilst the likelihood of encountering bats during the conversion of Belle Vue House into apartments is considered to be low, the following Reasonable Avoidance Measures (RAMS) are recommended:

- If any works are to be conducted to the roof, the roof void and the fascia boards these should be inspected for bat activity prior to works commencing.
- If at any time bats are noted during the demolition works, all works must stop and a bat ecologist contacted.

7. References

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<http://www.barnsleybiodiversity.org.uk/BarnsleyBAP2008.html>

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Bat Conservation Trust (2012). *Bat Surveys Good Practice Guidelines*. Bat Conservation Trust, London.

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Communities and Local Government (2012) *National Planning Policy Framework* March 2012

Communities and Local Government (2005) *Circular 06/05: Biodiversity and Geological Conservation - Statutory Obligations and Their Impact within the Planning System*.

English Nature (2004). *Bat Mitigation Guidelines*

Fure A (2006) *Bats and Lighting* The London Naturalist No 85, 2006

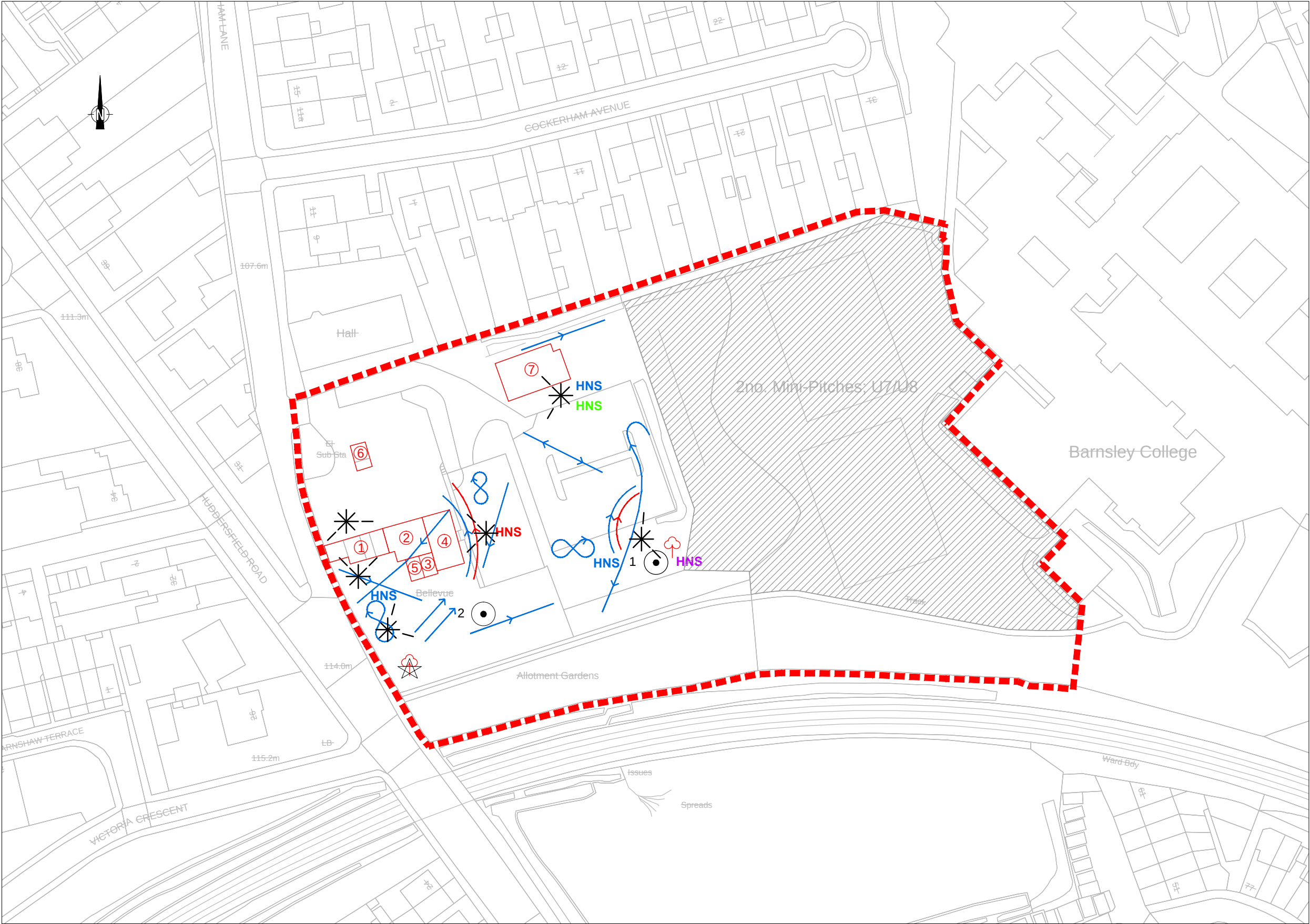
Multi Agency Geographic Information for the Countryside (MAGIC)

Available: www.magic.gov.uk

UK Biodiversity Action Plan

Available: www.ukbap-reporting.org.uk/plans/national.asp

Appendix A - Bat Emergence Surveys Summary Map



NOTES:-

KEY:

--- SITE BOUNDARY

MYOTIS SPECIES

COMMON PIPISTRELLE

SOPRANO PIPISTRELLE

NOCTULE

HNS HEARD NOT SEEN

SURVEYOR LOCATIONS & VIEWSHED

COMMUTE

FORAGING

BAT BOX IN TREE

BAT ROOST

1 TAWNY OWL

2 HEDGEHOG

ACCESS RESTRICTED

1 BUILDING NUMBERS

REV	DESCRIPTION	DRAWN	CHK	APP	DATE

REV	DESCRIPTION	DRAWN	CHK	APP	DATE

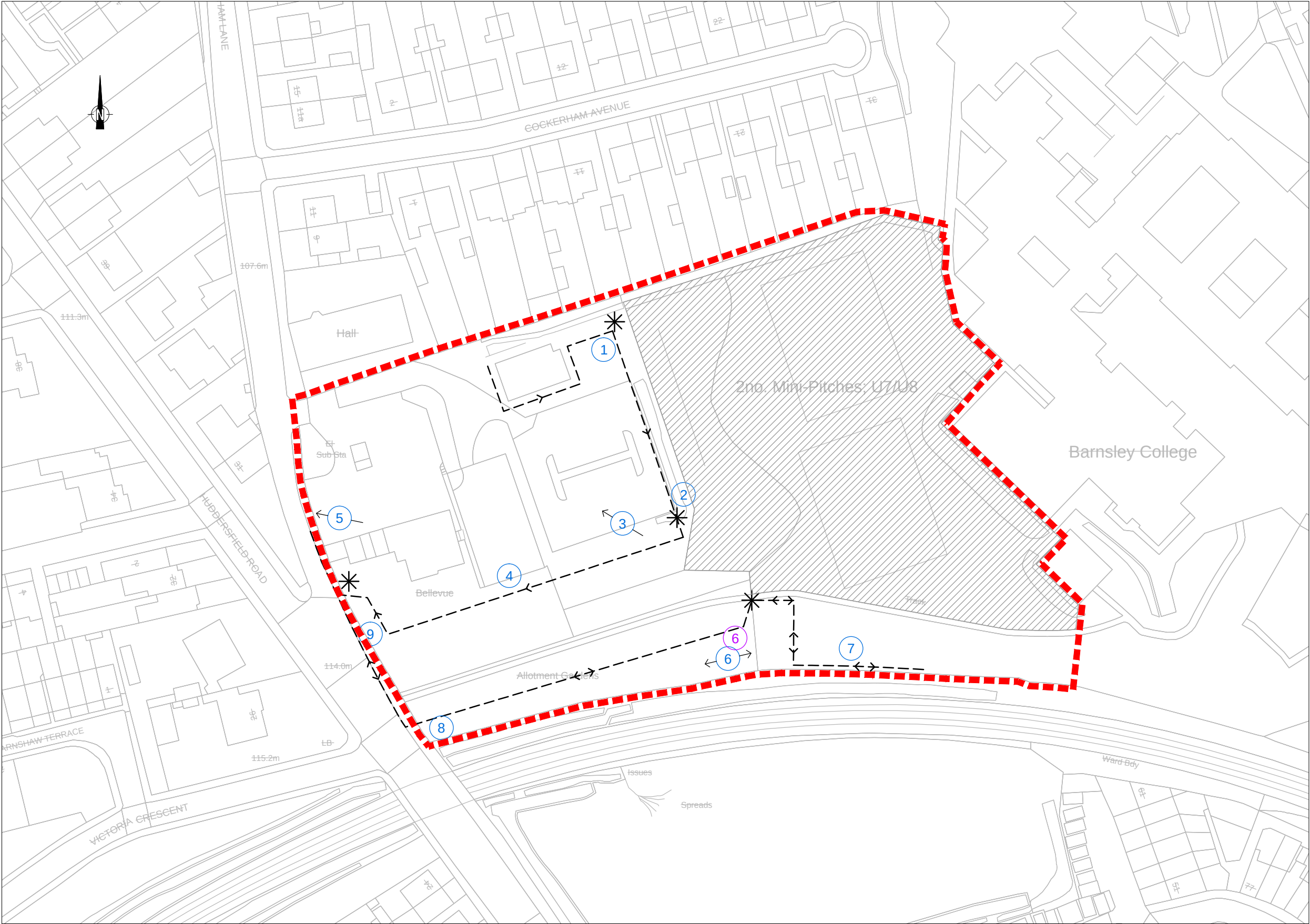
REV	DESCRIPTION	DRAWN	CHK	APP	DATE

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status	INFORMATION
client	BLACKBURN WITH DARWEN B.C. TOWN HALL BLACKBURN BB1 7DY
project title	BELLE VUE

drawing title BAT EMERGENCE SURVEYS SUMMARY MAP 24/07/14 & 12/08/14					
scale @ A3 1:1000	designed by AS	drawn by DR	checked by AS	approved by	date drawn AUG 14
project no. CS071073-15					
drawing no.					revision 101
Do Not Scale From This Drawing					

Appendix B - Bat Walked Transect Map



NOTES:-

KEY:

--- SITE BOUNDARY

--- TRANSECT WALKED

* 5 MINUTE STOP POINTS

BAT RECORDS DURING TRANSECT
(TARGET NOTES 1-9)



MYOTIS SPECIES



COMMON PIPISTRELLE

--- COMMUTE



ACCESS RESTRICTED

REV	DESCRIPTION	DRAWN	CHK	APP	DATE	REV	DESCRIPTION	DRAWN	CHK	APP	DATE	REV	DESCRIPTION	DRAWN	CHK	APP	DATE
-----	-------------	-------	-----	-----	------	-----	-------------	-------	-----	-----	------	-----	-------------	-------	-----	-----	------

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status		INFORMATION	
client	BLACKBURN WITH DARWEN B.C. TOWN HALL BLACKBURN BB1 7DY		
project title	BELLE VUE		

drawing title					
WALKED TRANSECT MAP 24/07/14					
scale @ A3 1:1000	designed by AS	drawn by DR	checked by AS	approved by DW	date drawn AUG 14
project no. CS071073-15					
drawing no.					revision 101

Do Not Scale From This Drawing

Appendix C - Licensing for Bats

C.1 Licences

Presence of bats does not necessarily prevent a development from proceeding as long as suitable, approved mitigation is incorporated within the scheme whereby exemptions can be granted from the protection afforded to bats under Regulation 41 by means of a “*European Protected Species Licence*” issued by the Statutory Nature Conservation Organisation (SNCO) which, in England, is Natural England. Before Natural England can issue a licence to permit otherwise prohibited acts, three aspects have to be considered (these are generally known as the ‘Three Tests’. The three aspects fall under Regulation 53 of the Conservation of Habitats and Species Regulations 2010 and are as follows:

- Licences may be granted by the SNCO to ‘preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment’.
- A licence may not be granted unless the SNCO is satisfied ‘that there is no satisfactory alternative’.
- A licence cannot be issued unless the SNCO is satisfied that the action proposed ‘will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range’.

In order to meet the Tests, the SNCO first expects the planning position to be fully resolved; if planning permission is required for a development, Local Planning Authorities are required to consider, and make a judgement about, all three aspects before the SNCO will make their decision. Full planning permission, if applicable, will need to have been granted and any planning conditions relating to wildlife fully discharged before an EPS Licence will be granted.

The consideration of the three tests by the local planning authority as a Section 28G body (as identified in the Wildlife & Countryside Act 1981 (as amended)), must be formally recorded as evidence to demonstrate that the local authority has addressed their duties under the Habitats Directive. This duty extends to the consideration of the impacts of the development on local bat populations and that the proposed mitigation incorporated within a development satisfies the three tests above and conserves local bat populations at favourable conservation status within their natural range. Planning applications should not be determined unless this is the case and bat surveys and mitigation strategies cannot be requested as planning conditions as protected species are a material consideration in determining planning applications.

Natural England assesses Licence Applications in relation to the third element (regarding Favourable Conservation Status) and will expect to see information from the local authority about the other elements before they will determine any licence application. The whole licence application process can take over two months before a licence is issued. Natural England will normally take approximately 30 working days to determine an application.

Appendix D - Proposed plans



NOTES
1 Do not scale this drawing.
2 Site dimensions to be taken.
3 Contract administrator to be notified of any discrepancies prior to ordering of equipment and/or materials.

Rev	By	Chk'd	Date	Description

Client
Barnsley College

CAPITA

property design
North Tyneside Council, Quadrant, The
Silverlink North, Colbalt Business Park,
North Tyneside, NE27 0BY
Tel: 0191 643 4809

Project
**Barnsley College Housing
Development Sites**

Drawing Title
**Belle Vue -
Proposed Layout Plan**

Drawn By SM	Date 20.06.14
Checked By SD	Date 20.06.14
Approved By AA	Date 20.06.14

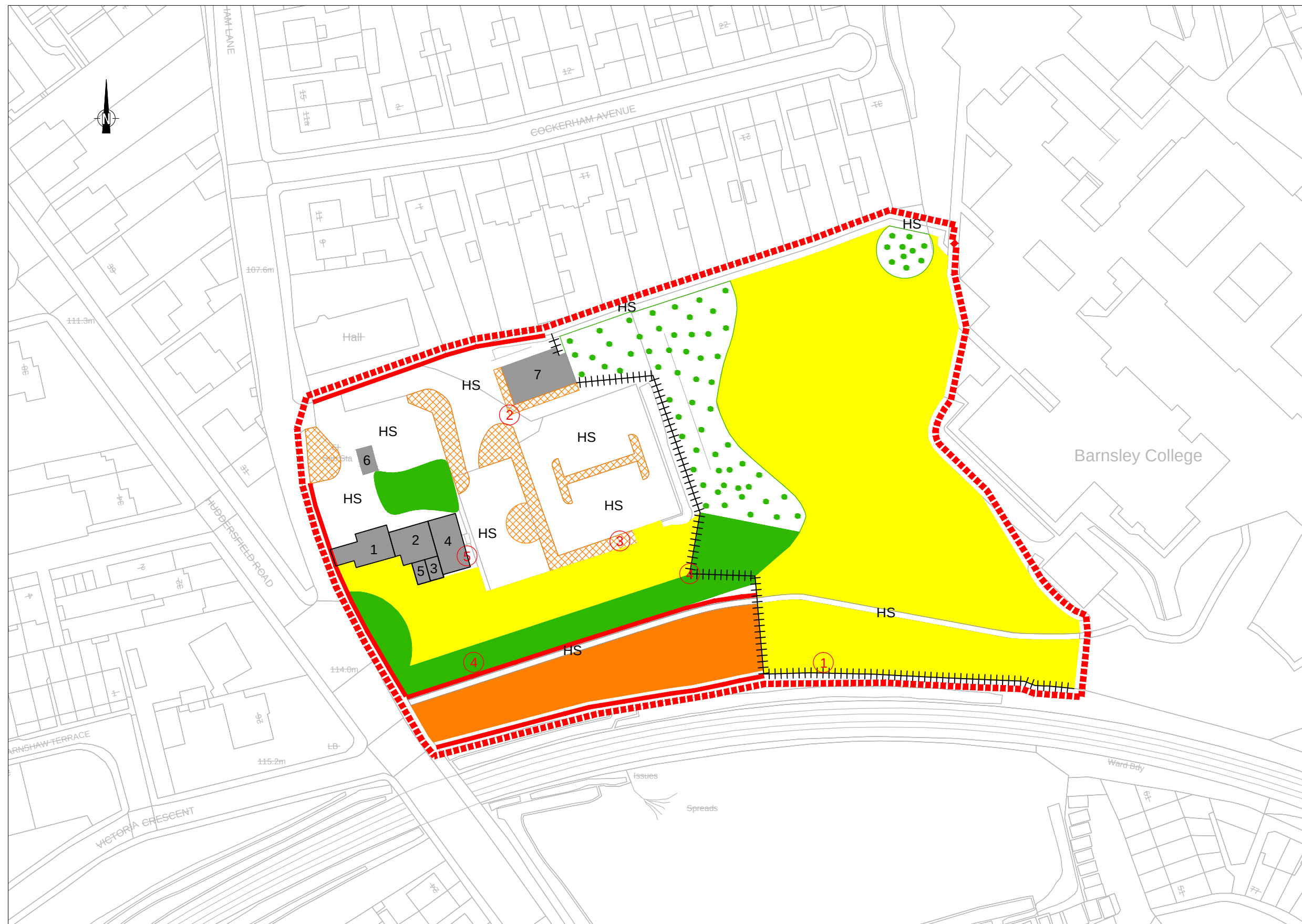
Drawing Number CS071073 / A / 003	Rev -
---	-----------------

Drawing Scale **1:500 @ A1**

Drawing Status
**FEASIBILITY/ TENDER/
CONTRACT/AS BUILT**

CS071073-PLANNING.dwg

Appendix E - Phase 1 Habitat Map



NOTES:-

KEY:

-  SITE BOUNDARY
 BUILDINGS
 HS HARDSTANDING
 A AMENITY GRASSLAND
 INTRODUCED SHRUB
 SCATTERED (BROAD-LEAVED) TREES
 SEMI NATURAL WOODLAND (BROAD LEAVED)
 SEMI IMPROVED NEUTRAL GRASSLAND
 WALL
 FENCE
 ① TARGET NOTES

[illegible]

Appendix F - Planting Species List for Encouraging Bats (Source BCT)

The following table is a suggested species list of plants that can provide benefit for bats either by providing a food source for insects or roost potential. The plants listed are predominantly native to Britain. The small group of non-native plants is included for their documented value for wildlife. This list has been checked against Natural England list of invasive non-native plants¹. Also refer to the Non-Native Species Secretariat (NNSS) website.²

Plant species	Common name	Native (N)	Type	Benefit	Soil	Light	Extensive Green Roofs	Living walls	Rain gardens	Hedges /Trees	Beds /Borders
<i>Acer campestre</i>	Field maple	N	T/S	C	Any	Sun/shade				Y	
<i>Acer platanoides</i>	Norway maple		T	S	Well drained / alkaline	Sun/shade				Y	
<i>Acer saccharum</i>	Sugar maple		T	S	Any	Sun/shade				Y	
<i>Achillea millefolium</i>	Yarrow	N	HP	C,F	Well drained	Sun	Y				
<i>Ajuga reptans</i>	Bugle	N	HP	C,F	Any	Sun/shade	Y		Y		
<i>Anthyllis vulneraria</i>	Kidney vetch	N	HP	F	Well drained	Sun	Y				
<i>Aubrieta deltoidea</i>	Aubrieta		H	F	Well drained	Sun/shade		Y			
<i>Betula pendula</i>	Silver birch	N	T	C	Sandy/Acid	Sun				Y	
<i>Cardamine pratensis</i>	Cuckoo-flower	N	HP	F	Moist	Sun/shade			Y		Y
<i>Carpinus betulus</i>	Hornbeam	N	T	C	Clay	Sun				Y	
<i>Centaurea nigra</i>	Common knapweed	N	HP	C,F	Dry, not acid	Sun	Y				Y
<i>Centranthus ruber</i>	Red valerian		HP	F	Well drained / alkaline	Sun	Y				Y
<i>Clematis vitalba</i>	Old man's beard	N	C	F	Well drained / alkaline	Sun				Y	
<i>Corylus avellana</i>	Hazel	N	S	C	Any dry	Sun/shade		Y		Y	
<i>Crataegus monogyna</i>	Hawthorn	N	S	S,C	Any	Sun/shade				Y	
<i>Daucus carota</i>	Wild carrot	N	Bi	S,C,F	Any	Sun	Y				Y
<i>Dianthus</i> spp.	Pinks	N	A-Bi	F	Well drained	Sun	Y	Y			Y
<i>Digitalis purpurea</i>	Foxglove	N	Bi	C	Well drained	Shade / partial shade				Y	Y
<i>Erica cinerea</i>	Bell heather	N	S	F	Sandy	Full sun					Y
<i>Erysimum cheiri</i>	Wallflower		Bi-P	F	Well drained	Sun		Y			
<i>Eupatorium cannabinum</i>	Hemp agrimony	N	H	F	Moist	Sun/shade			Y		Y
<i>Fagus sylvatica</i>	Beech	N	T	C,R	Well drained alkaline	Sun/shade				Y	
<i>Foeniculum vulgare</i>	Fennel		H	F	Well drained	Sun					Y

¹ Natural England: <http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/threats/Horizon-scanning-plants.aspx>

² NNSS: <https://secure.frea.defra.gov.uk/nonnativespecies/home/index.cfm>

<i>Fraxinus excelsior</i>	Common ash	N	T	C,R	Any	Sun/shade				Y	
<i>Hebe</i> spp.	Hebe species		S	F	Well drained	Sun/shade				Y	Y
<i>Hedera helix</i>	Ivy	N	C	F,C	Any	Sun/shade		Y	Y	Y	Y
<i>Hesperis matronalis</i>	Sweet rocket		H	F	Well drained / dry	Sun/shade					Y
<i>Hyacinthoides non-scripta</i>	Bluebell	N	B	F	Loam	Shade/ partial shade		Y		Y	Y
<i>Ilex aquifolium</i>	Holly	N	T	C	Any	Sun/shade				Y	
<i>Jasminum officinale</i>	Common jasmine		C	F	Well drained	Sun		Y			Y
<i>Lavandula</i> spp.	Lavender species		S	F	Well drained / sandy	Sun		Y			Y
<i>Linaria vulgaris</i>	Toadflax	N	HP	C	Well drained /alkaline	Sun	Y				Y
<i>Lonicera periclymenum</i>	Honeysuckle	N	C	F	Well drained	Sun		Y		Y	
<i>Lotus corniculatus</i>	Bird's foot trefoil	N	HP	F	Well drained /dry	Sun	Y				Y
Plant species	Common name	Native (N)	Type	Benefit	Soil	Light	Extensive Green Roofs	Living walls	Rain gardens	Hedges /Trees	Beds /Borders
<i>Lunaria annua</i>	Honesty		Bi	F	Any	Sun/ partial shade	Y				Y
<i>Malus</i> spp.	Apple		T	C	Any	Sun				Y	Y
<i>Matthiola longipetala</i>	Night-scented stock		A	F	Well drained /moist	Sun			Y		Y
<i>Myosotis</i> spp	Forget-me-not species	N	A	F	Any	Sun	Y	Y			Y
<i>Nicotiana glauca</i>	Ornamental tobacco		A	F	Well drained /moist	Sun/ partial shade			Y		Y
<i>Oenothera</i> spp.	Evening primrose species		Bi	F	Well drained /dry	Sun	Y				Y
<i>Origanum vulgare</i>	Marjoram	N	HP	F	Well drained /dry	Sun	Y	Y			Y
<i>Populus alba</i>	White poplar	N	T	C	Clay loam	Sun				Y	
<i>Primula veris</i>	Cowslip	N	HP	F	Well drained /moist	Sun/ partial shade	Y				Y
<i>Primula vulgaris</i>	Primrose	N	HP	F	Moist	Partial shade	Y	Y		Y	Y
<i>Prunus avium</i>	Wild cherry	N	T	C	Any	Sun				Y	Y
<i>Prunus domestica</i>	Plum		T	C	Well drained /moist	Sun				Y	Y
<i>Prunus spinosa</i>	Blackthorn	N	S	C	Any	Sun/ partial shade				Y	
<i>Quercus petraea</i>	Sessile oak	N	T	C,R	Sandy loam	Sun/shade				Y	
<i>Quercus robur</i>	Common oak	N	T	C,R	Clay loam	Sun/shade				Y	
<i>Rosa canina</i>	Dog rose	N	S	C	Any	Sun			Y	Y	Y
<i>Salix</i> spp.	Willow species	N	S	S,C	Moist	Sun/shade			Y	Y	
<i>Sambucus nigra</i>	Elder	N	T	C	Clay loam	Sun				Y	
<i>Saponaria officinalis</i>	Soapwort	N	HP	F	Any	Sun					Y

<i>Saxifraga oppositifolia</i>	Saxifrage	N	HP	C	Well drained	Sun	Y	Y			Y
<i>Scabiosa columbaria</i>	Small scabious	N	HP	F	Well drained /alkaline	Sun	Y				Y
<i>Sedum spectabile</i>	Ice plant		HP	F	Well drained /dry	Sun	Y				Y
<i>Silene dioecia</i>	Red campion	N	HP	F	Any	Shade/ partial shade		Y	Y	Y	Y
<i>Sorbus aucuparia</i>	Rowan	N	T	C	Well drained	Sun				Y	
<i>Stachys lanata</i>	Lamb's ears		HP	F	Well drained /dry	Sun	Y				Y
<i>Symphotrichum</i> spp.	Michaelmas daisies		HP	F	Any	Sun					Y
<i>Tagetes patula</i>	French marigold		A	F	Well drained /moist	Sun					Y
<i>Thymus serpyllum</i>	Creeping thyme	N	HP/S	F	Well drained /dry	Sun	Y	Y			Y
<i>Tilia x europaea</i>	Common lime		T	C	Any	Sun/shade				Y	
<i>Trifolium</i> spp.	Clover species	N	H	F	Any	Sun	Y				Y
<i>Valeriana</i> spp.	Valerian species	N	HP	F	Moist	Sun/ partial shade			Y		Y
<i>Verbascum</i> spp	Mulleins	N	Bi,HP	C	Well drained	Sun	Y				Y
<i>Verbena bonariensis</i>	Verbena		HP	F	Well drained /moist	Sun					Y
<i>Viburnum lantana</i>	Wayfaring tree	N	S	C	Any	Sun/shade				Y	Y
<i>Viburnum opulus</i>	Guelder rose	N	S	C	Moist	Sun/shade			Y	Y	
<i>Viola tricolor</i>	Pansy	N	A	F	Well drained /moist		Y	Y			Y

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