11 Brookmans Ave, Brookmans Park, Hatfield, Hertfordshire AL9 9QH

Alan Cox

Bat Survey - Preliminary Roost Assessment

14th November 2016

Status	Issue	Name of Author/Reviewer	Date
Draft	1.1	Natalie Evans MA, MRSB	10/11/16
Reviewed	1.2	Jo Gregory BA (Hons) MSc GradCIEEM – Senior Consultant	11/11/16
Final (draft minus records)	1.3	Natalie Evans MA, MRSB	14/11/16

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Executive Summary

Arbtech Consulting Ltd. undertook a Preliminary Roost Assessment at 11 Brookmans Avenue, Brookmans Park, Hatfield, Hertfordshire AL9 9QH. The aim of the assessment was to consider the value and suitability of the structures for roosting bats. The development proposals comprise demolition of the existing building to be replaced with a block of five flats.

Building reference	Likelihood of bats being present	Recommendations for further survey and assessment
B1	Confirmed roost	Two dusk emergence and one dawn re-entry surveys are required in order to characterise the roost. The surveys should take place within the active bat season between May and September and be spaced at least two weeks apart. At least two of the surveys should take place during the optimal survey period between mid-May and August. Three surveyors are required to provide full coverage of the building. Bat droppings should be sent for DNA analysis.

The survey concluded that B1 is a confirmed roost. Further surveys are required between May and September.

1.0 Introduction and Context

1.1 Background

Arbtech were commissioned by Alan Cox to undertake a Preliminary Roost Assessment (PRA) at 11 Brookmans Avenue, Hertfordshire AL9 9QH. The assessment is informed by the Bat Conservation Trust publication *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins 2016).

This is the first assessment carried out by Arbtech for this site.

1.2 Scope of the Report

This report provides a description of all structural features suitable for roosting bats, and evaluates those features in the context of the site and wider environment. It further documents any physical evidence collected or recorded during the site survey that establishes the presence of roosting bats. It provides information on constraints to the proposals as a result of roosting bats, and summarises the requirements for any further surveys, to inform subsequent mitigation proposals, achieve Planning or other statutory consent, and to comply with wildlife legislation.

The aim of the assessment was to determine the presence or evaluate the likelihood of presence of roosting bats, and to gain an understanding of how they could use the building or structure. To achieve this, the following steps have been taken:

- A desk study has been carried out including a bat records request from Hertfordshire Environmental Records Centre (HERC).
- A field survey has been undertaken, including an external and internal inspection of the building
- An outline of likely impacts on any known roosts has been provided, based on current development proposals
- Recommendations for further survey and assessment have been made, along with advice on European Protected Species Mitigation Licensing.

A survey plan is presented in Appendix 1, the proposed Project Plan can be found in Appendix 2 and photographs taken during the site survey are included in Appendix 3. A summary of relevant legislation is included in Appendix 4, and desk study results are provided in Appendix 5.

1.3 Site Context

The site is located at National Grid Reference TL244041. There is one building subject to survey within the site boundaries. The site is in a residential area adjacent to a golf course.

1.4 Project Description

This report is prepared in support of a planning application.

The development proposals comprise demolition of the existing building to be replaced with a block of five flats.

All works areas, storage and haul routes will be included within the site boundaries; access will be provided by existing roads and as such, no additional working footprints are anticipated.

2.0 Methodology

2.1 Desk Study

Existing bat records have been requested from HERC.

A review of the following information sources has also been undertaken to inform the assessment:

- Landscape structure using aerial images from Google Earth
- Designated sites, habitat and species data held on Magic.gov.uk.
- Designated sites information found on Natureonthemap.naturalengland.org.uk
- Information on the surrounding area using OS Opendata 2010

2.2 Site Survey

The survey was undertaken by Natalie Evans, (Natural England Bat Licence Number: 2015-11257-CLS-CLS) on 7th November 2016.

All buildings that will be impacted by the project proposals (the survey area) were assessed for their potential to support roosting bats. The surveyor systematically searched for features suitable for roosting bats and signs of bat activity, by conducting a non-intrusive visual appraisal from the ground using binoculars, inspecting the external features of the buildings for potential access/egress points, and for signs of bat use. An internal inspection of the building was also made, including the living areas of derelict or abandoned buildings and the roof spaces of all buildings, using an endoscope, torch and ladders. The surveyor paid particular attention to the floor and flat surfaces, window shutters and frames, lintels above doors and windows, and carried out a detailed search of numerous features within the roof space.

2.2.1 Breeding birds and other incidental observations

The surveyor also made note of any other ecological constraints observed during the survey, notably the likelihood of presence or signs of breeding birds, and the suitability of the site for breeding barn owls *Tyto alba*.

2.3 Suitability Assessment

The buildings were categorised according to the likelihood of bats being present, in line with best practice guidelines (Collins 2016); the features of the building that dictate the likelihood of roosting bats are summarised in Table 1. Roost suitability is classified as high, moderate, low and negligible and dictates any further surveys required before works can proceed.

Table 1: Features of a building that are correlated with use by bats during the summer

Likelihood of bats being present	Feature of building and its context
Higher	Buildings/structures with features of particular significance for roosting bats e.g. mines, caves, tunnels, icehouses and cellars. Habitat on site and surrounding landscape of high quality for foraging bats e.g. broadleaved woodland, tree-lined watercourses and grazed parkland. Site is connected with the wider landscape by strong linear features that would be used by commuting bats e.g. river and or stream valleys and hedgerows. Site is proximate to known or likely roosts (based on historical data).
Lower	A small number of possible roost sites/features, used sporadically by more widespread species. Habitat suitable for foraging in close proximity, but isolated in the landscape. Or an isolated site not connected by prominent linear features. Few features suitable for roosting, minor foraging or commuting.

2.4 Limitations

It should be noted that whilst every effort has been made to describe the features on site in the context of their suitability for roosting bats, this does not provide a complete characterisation of the site.

Where only four figure grid references are provided for bat records, it is not possible to determine their precise location as they could be present anywhere within the given 1km x 1km National Grid square.

This survey provides a preliminary view of the likelihood of bats being present. This is based on suitability of the habitats on the site and in the local area, the ecology and biology of bats as currently understood, and the known distribution of bats as recovered during the desk study.

There were no limitations specific to the survey.

3.0 Results and Evaluation

3.1 Desk Study Results

A summary of desk study results are provided below.

3.1.1 Designated sites

There are two statutory designated sites within the study area. Their location and extent are illustrated in Appendix 5.

Water End Swallow Holes Site of Special Scientific Interest (SSS) lies approx. 1km north west. The willow carr/swamp community adjacent to the sinkholes is of biological importance. Pure stands of Reed Sweet-grass Glyceria maxima in deep water are replaced by a mixture of this species with Great Willowherb Epilobium hirsutum, Meadowsweet Filipendula ulmaria and Water Plantain Alisma plantago-aquatica in more silted areas. Willow carr, on the more stable ground, is dominated by Willow Salix spp. and Hawthorn Crataegus monogyna with Lesser Pond-sedge Carex acutiformis, Bulrush Typha latifolia and Yellow Iris Iris pseudacorus beneath. Also integral with the sinkhole group are semi-natural woodland, scrub and semi-improved grassland (Natural England).

Furzefield Wood and Lower Halfpenny Bottom Local Nature Reserve (LNR) lies approx. 1.8km south west. Woodland & Meadow provide varied age structure and light levels support a range of wildlife and plants. (Natural England)

3.1.2 Landscape

The Magic database shows the following notable habitats are present within a 2km radius of the site: deciduous woodland, ancient woodland, woodpasture and parkland, lowland meadows, floodplain grazing marsh and good quality semi improved grassland. The nearest deciduous woodland lies adjacent to the site to the north west. The closest ancient woodland is approx. 550m to the north west. These are likely to be considered as habitats of principal importance and are of particular value to bats.

A review of aerial photographs (Figure 1) and OS maps shows the site has excellent connectivity to valuable resources in the local environment via tree lined gardens and roads and woodland edges.

Figure 1: Aerial photo of site, showing landscape structure

3.1.3 Historical records

Bat records from HERC have been requested and will be summarised in Table 2 below when received. A search of the Magic database for granted European Protected Species Mitigation Licences (EPSML) has been included. Records are summarised below.

BAT RECORDS NOT YET RECEIVED

Table 2: Historical records of bats within 2km of the site

Species	**Record type**
Common pipistrelle *Pipistrellus pipistrellus*	EPSL destruction of a resting place 2013 approx. 1.7km north east (Magic). EPSL destruction of a resting place 2009 approx. 1.9km north east (Magic).
Brown long eared *Plecotus auritus*	EPSL destruction of a resting place 2013 approx. 1.7km north east (Magic). EPSL destruction of a resting place 2009 approx. 1.9km north east (Magic).

Soprano pipistrelle *Pipistrellus pygmaeus*	EPSL destruction of a resting place 2013 approx. 1.7km north east (Magic).

3.2 Survey Results

The building covered in this report comprises an occupied dwelling. The building is referenced, as illustrated in the map in Appendix 1.

Weather conditions at the time of the survey:

Temperature	8°C
Humidity	65%
Cloud	50%
Wind	3/8
Rain	0

B1 – occupied dwelling

Building description

External:

The building is a detached dwelling of brick construction (photo 1). The roof is hipped with a twin pitch and valley structure to the rear (photo 15). There are gaps under the ridge tiles on the southern elevation which could be used by crevice dwelling bats species (photo 2). This does not provide access into the loft areas for void dwelling bat species. There are dormer windows on the southern and eastern elevations which have tight fitting clay hanging tiles. Those on the eastern elevation could only be viewed from the footpath with binoculars so it is possible small gaps may have been missed which could provide roosting habitat for crevice dwelling bats species or access into the loft spaces for void dwelling bat species. There are three brick chimneys with tight fitting lead flashing around the bases. There is a flat roofed section on the northern elevation of the southern roof pitch which could not be investigated due to its position on the building as it is blocked from view by the two northern roof pitches. The section that can be viewed through the valley appeared to be clad in clay hanging tiles which could provide roosting crevices (photo 17). There is a gap in the roof on the north east corner at the rear which could provide access into the eastern loft space (photo 16).

Internal:

There are two loft spaces within the building, one in each of the rear roof pitches. The loft area to the south has been converted and is used for storage.

Loft 1

The eastern pitch (photo 7). When entering the loft there is a small section which is distinct from the rest of the loft. This area is at the south of the building and is lined with timber sarking (photo 5). There

were heavy cobwebs floor to ceiling indicating that this area is not regularly used as the bat roost and is unlikely to be the access point. Past the trusses the loft opens out into a large open area lined with bitumen felt. Modern timber ridge beam and rafters are present for bat roosting. The lining of the roof has some holes and loose areas where bat access could be possible (photo 10). Very few cobwebs were present indicating regular bat use. Loft dimensions are approx. 12m long by 5m wide with a ridge height of approx. 3m. The internal conditions were 11.7^{o}C and 58.8% humidity, warmer and less humid than external conditions.

Bat evidence:

Five bat droppings were found scattered in the small southern section (photo 6). 150-200 droppings were found scattered under the ridge of the main loft area (photo 8). The droppings were quite fresh, some older, indicating this is a long standing roost that was also used in the recent 2016 active season. There were also clusters under rafters of around 50 droppings where separate roosting areas have been located (photo 9). The size, shape and location of the droppings suggest a brown long-eared bat roost. The number of droppings is indicative of a non-breeding roost.

Loft 2

The western pitch (photo 13). The loft is lined with bitumen felt with loose areas that could potentially be used for bat access. Modern timber ridge beam and rafters are present for bat roosting. Heavy cobwebs were present along the ridge in the southern half of the loft but the northern half is clear where the roost has been present. Loft dimensions are approx. 8m long by 4m wide with a ridge height of approx. 2.5m. The internal conditions were 11.7^{o}C and 58.8% humidity, warmer and less humid than external conditions.

The lofts are connected by a narrow space which runs under the valley between the roof pitches (photo 11).

Bat evidence:

Around 50-75 droppings were located scattered under the ridge, mostly at the northern end of the loft under the apex of the roof timbers (photo 14). The droppings were mixed age, indicating this is a long standing roost that was also used in the recent 2016 active season. The size, shape and location of the droppings suggest a brown long-eared bat roost. The number of droppings is indicative of a non-breeding roost.

3.2.1 Breeding birds and other incidental observations

No evidence of bird nesting or suitable habitat was found.

3.3 Evaluation – Likelihood of bats being present

Taking the desk based assessment and site survey results into account, the following value for roosting bats has been placed on the building (Table 3).

Table 3: Evaluation of buildings/structures on site

Building reference	Likelihood of bats using the building for roosting	Brief summary of justification
B1	Confirmed	Bat presence has been confirmed by bat droppings in lofts 1 and 2. The droppings suggest a long standing, non-breeding roost of brown long-eared bats. The building also has features suitable to support crevice dwelling bat species. The site lies adjacent to a golf course and in close proximity to ancient woodland which provide valuable foraging resources for bats.

4.0 Conclusions and Recommendations

4.1 Conclusions and Impact Assessment

The survey concluded that the building has been recently used by brown long-eared bats, mainly roosting in loft 1, but also in loft 2 to a lesser extent. The number of droppings suggests a long standing non-breeding roost. It is not possible to identify access points at this stage, and further investigation is required. The building also has features suitable to support crevice dwelling bat species.

As the building will be demolished, the bat roosts will be destroyed and bats may be killed or injured.

Bats are protected under the Wildlife and Countryside Act and Conservation Regulations; see Appendix 3 for a summary of legislation protecting bats in the UK.

4.1.1 Breeding birds and other incidental observations

No evidence of bird nesting or suitable habitat was found.

4.2 Recommendations

4.2.1 Survey and assessment

Best practice survey guidelines (Collins, 2016) recommend additional surveys for all buildings assessed as having low to high suitability for roosting bats. The survey effort recommended at this stage will provide sufficient information to inform European Protected Species Mitigation licensing (EPSML). Appropriate justification for this assessment is provided in Section 3.0 and Table 3 of this report.

Recommendations for further survey or assessment associated with the building are provided in Table 4.

Table 4: Survey recommendations

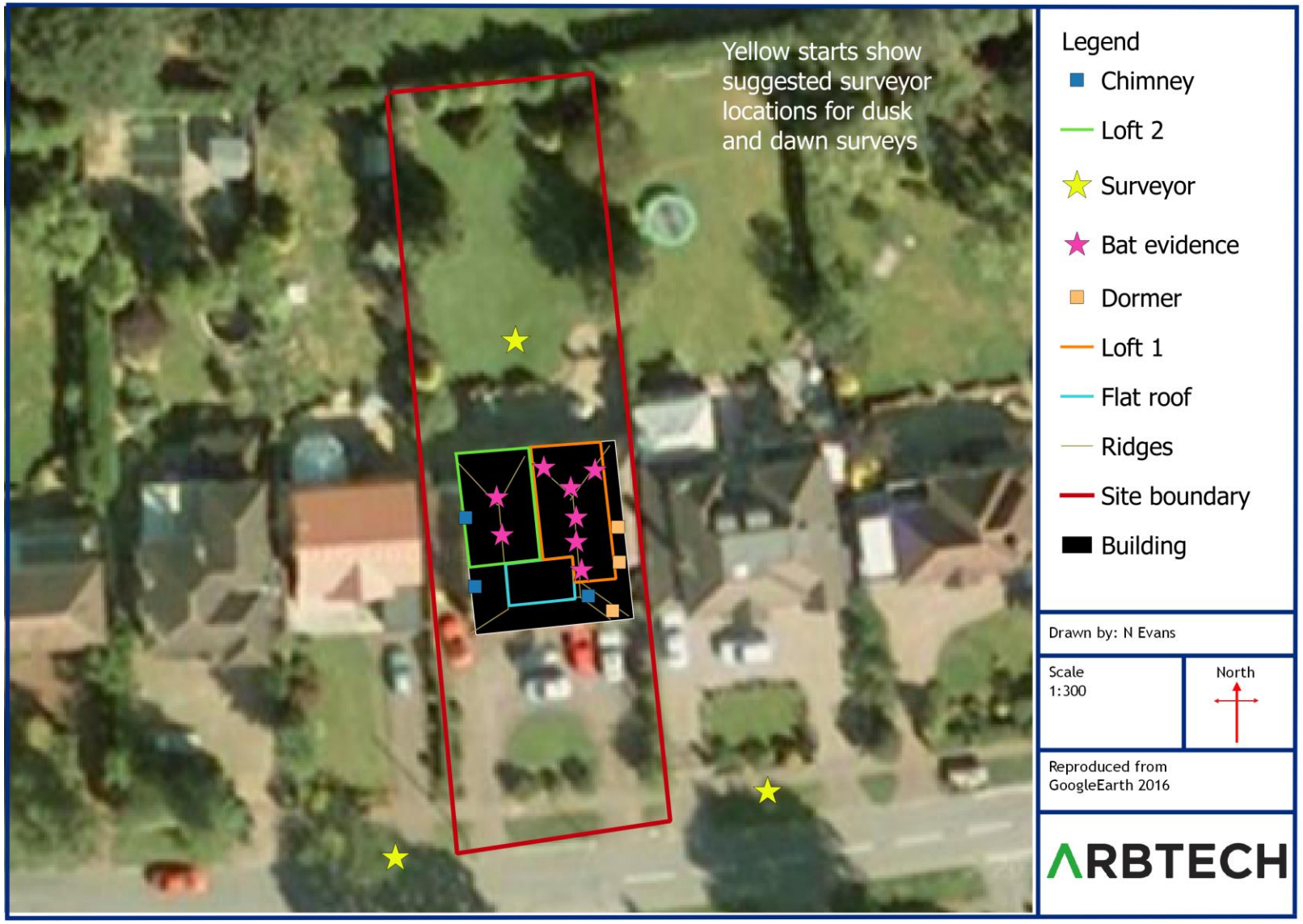
Building reference	Likelihood of bats being present	Recommendations for further survey and assessment
B1	Confirmed roost	Two dusk emergence and one dawn re-entry surveys are required in order to characterise the roost. The surveys should take place within the active bat season between May and September and be spaced at least two weeks apart. At least two of the surveys should take place during the optimal survey period between mid-May and August. Three surveyors are required to provide full coverage of the building. Droppings should be sent for DNA analysis.

5.0 Bibliography

- Collins, J. (Ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.
- Mitchell-Jones, A.J. (2004). Bat Mitigation Guidelines. English Nature, Peterborough.
- Magic http://www.magic.gov.uk/ accessed 10th November 2016
- Google Maps https://www.google.co.uk/maps accessed 10th November 2016

Appendices

Appendix 1: Survey Plan



Appendix 2: Proposed Site Plan

Appendix 3: Photographs

Photo 1: southern elevation.

Photo 2: gaps under hip tiles on the southern elevation.

Photo 3: western roof elevation.

Photo 4: eastern roof elevation.

Photo 5: southern area of loft 1.

Photo 6: bat dropping in the southern area of loft 1.

Photo 7: main area of loft 1.

Photo 8: bat droppings of mixed ages under the ridge of loft 1.

Photo 9: cluster of bat droppings under the rafters at the northern end of loft 1.

Photo 10: hole in the roof lining of loft 1.

Photo 11: space under the valley which connects the two loft spaces.

Photo 12: the valley and roof pitches (photograph taken from inside the building).

Photo 13: loft 2.

Photo 14: bat droppings beneath the northern apex of loft 2.

Photo 15: northern elevation.

Photo 16: hole in the north east corner where bats could access the loft void.

Photo 17: small section of the flat roof and hanging tiles that is visible from the northern elevation.

Appendix 4: Legislation and Planning Policy related to bats

LEGAL PROTECTION

All species of bat are fully protected under The Conservation of Habitats and Species Regulations 2010 (as amended) through their inclusion on Schedule 2.

Regulation 41 prohibits:

- Deliberate killing, injuring or capturing of Schedule 2 species (e.g. all bats)
- Deliberate disturbance of bat species as:

  a) to impair their ability:

  (i) to survive, breed, or reproduce, or to rear or nurture young

  (ii) to hibernate or migrate

  b) to affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place

Bats are also protected under the Wildlife and Countryside Act 1981 (as amended) through their inclusion on Schedule 5. Under this Act, they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection
- Selling, offering or exposing for sale, possession or transporting for purpose of sale

Effect on development works:

A European Protected Species Mitigation (EPSM) Licence issued by the relevant statutory authority (e.g. Natural England) will be required for works likely to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficiency/success to be monitored.

The legislation may also be interpreted such that, in certain circumstances, important foraging areas and/or commuting routes can be regarded as being afforded *de facto* protection, for example, where it can be proven that the continued usage of such areas is crucial to maintaining the integrity and long-term viability of a bat roost (Garland & Markham, 2008)

NATIONAL PLANNING POLICY (ENGLAND)

National Planning Policy Framework

The National Planning Policy Framework promotes sustainable development. The Framework specifies the need for protection of designated sites and priority habitats and species. An emphasis is also made on the need for ecological infrastructure through protection, restoration and re-creation. The protection and recovery of priority species (considered likely to be those listed as UK Biodiversity Action Plan priority species) is also listed as a requirement of planning policy.

In determining a planning application, planning authorities should aim to conserve and enhance biodiversity by ensuring that: designated sites are protected from harm; there is appropriate mitigation or compensation where significant harm cannot be avoided; opportunities to incorporate biodiversity in and around developments are encouraged; and planning permission is refused for development resulting in the loss or deterioration of irreplaceable habitats including aged or veteran trees and also ancient woodland.

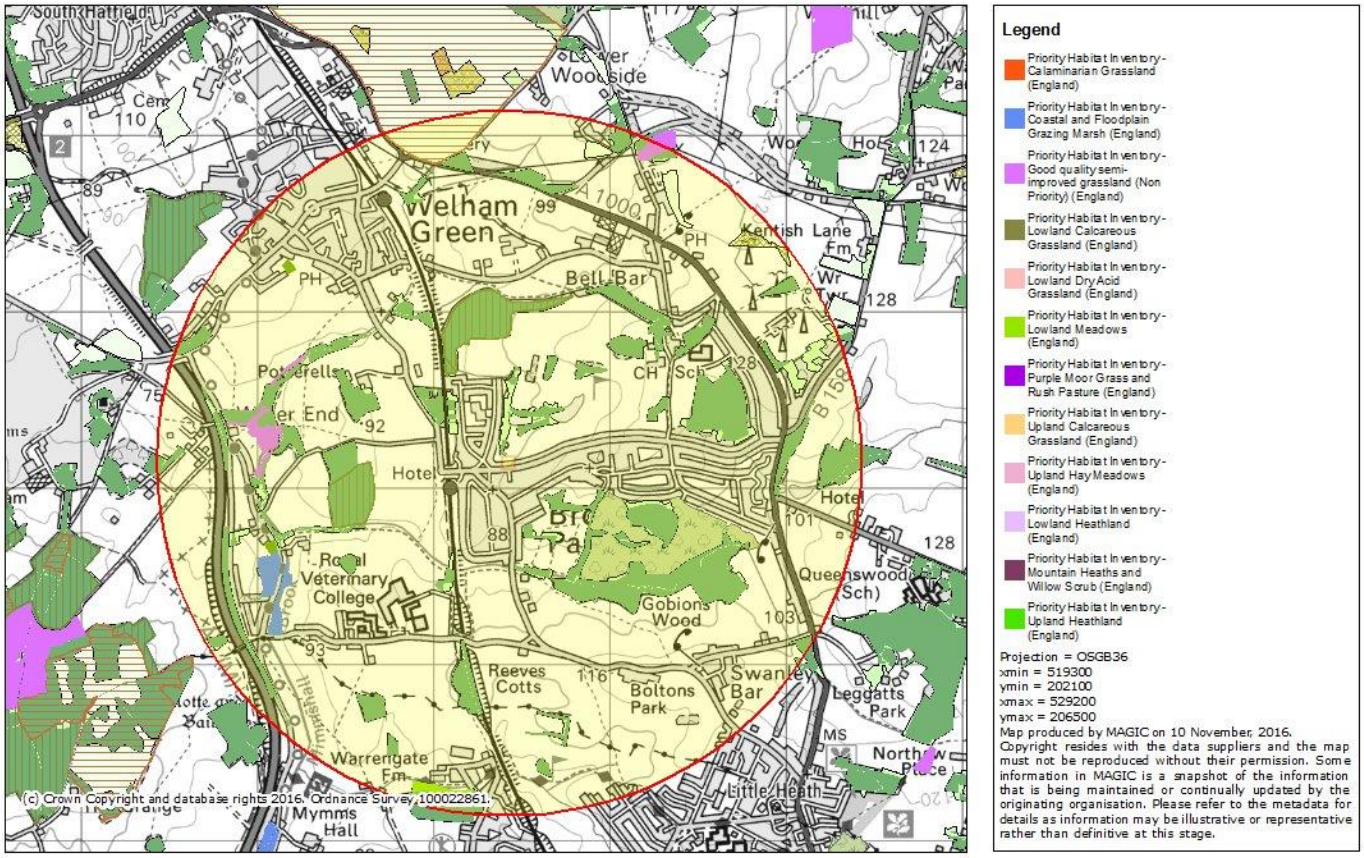
The Natural Environment and Rural Communities Act 2006 and The Biodiversity Duty

Section 40 of the Natural Environment and Rural Communities (NERC) Act, 2006, requires all public bodies to have regard to biodiversity conservation when carrying out their functions. This is commonly referred to as the 'biodiversity duty'.

Section 41 of the Act (Section 42 in Wales) requires the Secretary of State to publish a list of habitats and species which are of 'principal importance for the conservation of biodiversity.' This list is intended to assist decision makers such as public bodies in implementing their duty under Section 40 of the Act. Under the Act these habitats and species are regarded as a material consideration in determining planning applications. A developer must show that their protection has been adequately addressed within a development proposal.

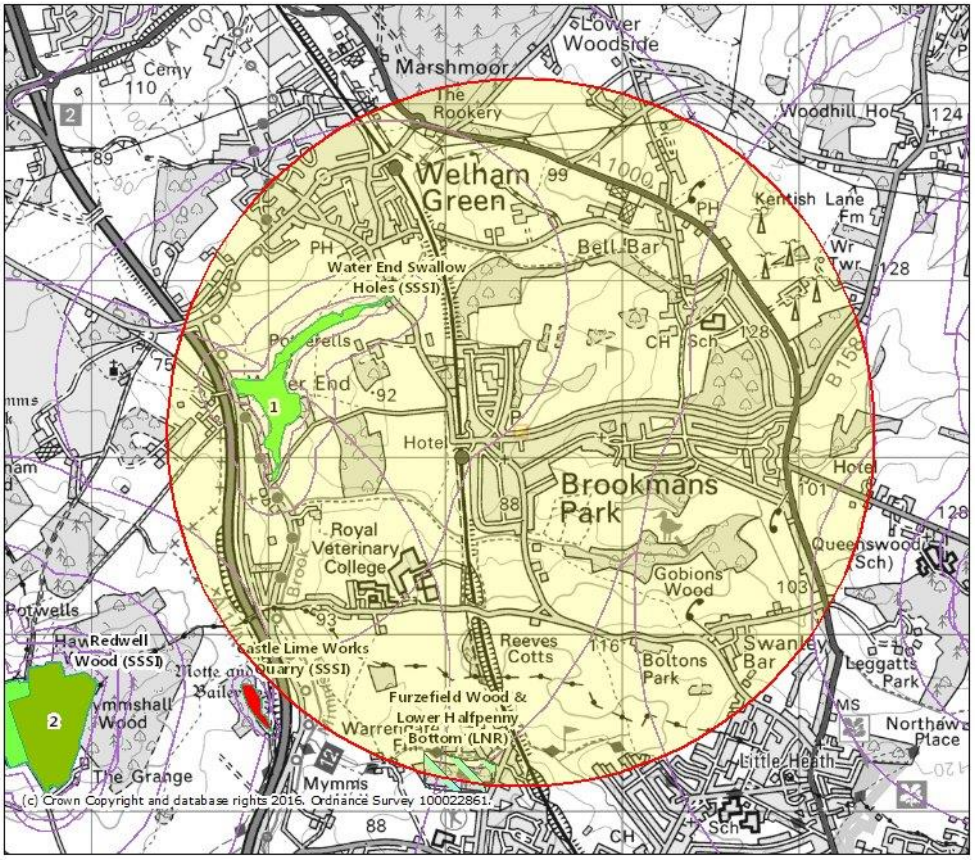
Appendix 5: MAGIC maps

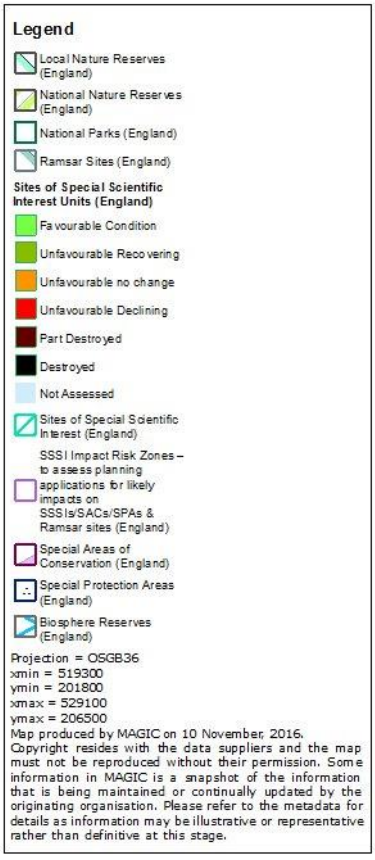
Priority habitats:



Designated sites:

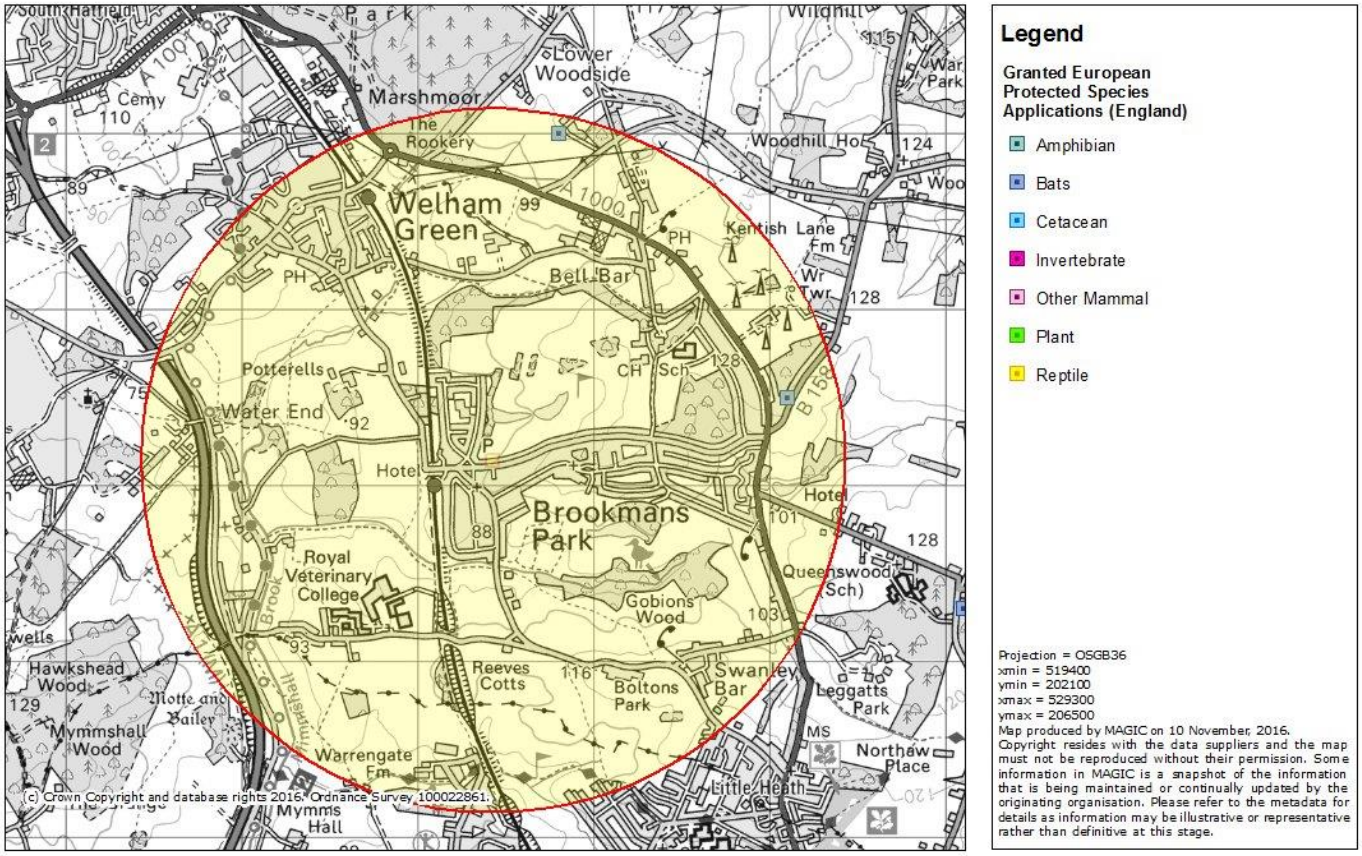
MAGIC





EPSL's

MAGIC


Legend
Granted European Protected Species Applications (England)
Amphibian
Bats
Cetacean
Invertebrate
Other Mammal
Plant
Reptile
Projection = OSGB36
xmin = 519400
ymin = 202100
xmax = 529300
ymax = 206500
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Brookmans Park
Lower Woodside
Marshmoor
Potterells
Water End
Hawkshead Wood
Mymmshall Wood
Royal Veterinary College
Gobions Wood
Reeves Cotts
Boltons Park
Swanley Bar
Leggatts Park
Northaw Place
Little Heath
Warrengate Fm
Bell Bar
Kentish Lane Fm
Woodhill Ho
Queenswood (Sch)

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