



Preliminary Roost Assessment Survey

Dower House, Dunthorp Road, Heythrop, Chipping Norton, Oxfordshire OX7 5TL

Richard Barker

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Executive summary

Arbtech Consulting Limited was commissioned by Richard Barker to undertake a Preliminary Roost Assessment (PRA) at Dower House. An initial survey was completed on 12th December 2019, with a second survey covering additional buildings taking place on 9th March 2020. The aim of the assessment was to search for bats and field signs of bats and to consider the value and suitability of the structures for roosting bats. 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 barn owls.

The development proposals are for alterations to include demolition, conversion and replacement of various outbuildings. A planning application is being prepared for submission to West Oxfordshire District Council.

Recommendations - This is work you will need to commission (if any) to obtain planning permission and comply with legislation

Buildings B1, B2 and B3 all have moderate habitat value for roosting bats. Interior spaces within B1 are too well illuminated to be suitable as a day roost for void dwelling bats, and no evidence of a night feeding roost was present. However, numerous gaps in the rear stone wall could provide roosting space for crevice dwelling bats, while the space beneath the corrugated roof and interior timber lining is also of limited suitability. While B2 does have suitable interior conditions for void dwelling bats, no evidence of roosting bats was present in the building interior. However, multiple exterior features are present which could be utilised by crevice dwelling bats including raised tiles, gaps under the eaves of the building, gaps in stonework and gaps occurring around a doorframe. B3 has well illuminated interior conditions and no evidence of void dwelling bats, although again, numerous raised tiles as well as mortar gaps on the building exterior could be utilised by crevice dwelling bats. Excellent foraging and commuting resources are present in close proximity, increasing the likelihood that roosting features identified on these buildings are in use.

Two bat emergence or re-entry surveys are required in the 2020 optimal bat season (mid-May to August) to confirm the presence or absence of roosting bats in each of these buildings. At least one of these must be a dawn re-entry survey. If the presence of roosting bats is confirmed in any of the buildings, an additional survey will be required between May and September to inform a licence application to Natural England.

Building B4 has low habitat value for roosting bats. The building interior is suitable for void dwelling bats, although no internal evidence of roosting bats was present. However, gaps suitable for crevice dwelling bats occur beneath the eaves of the building. Raised tiles are also present, although their suitability is limited by the lack of an internal roof lining on all but one elevation, which is lined with a breathable membrane. One bat emergence or re-entry survey is required during the 2020 optimal bat season (mid-May to August) to confirm the presence or absence of roosting bats in this building. If the presence of roosting bats is confirmed, two additional surveys will be required to inform a licence application to Natural England.

Building B2 contains evidence of nesting birds, and birds could also use the vegetation on site for nesting. Any works affecting B2 or the vegetation on site should therefore either be carried out outside of nesting bird season (1st March-31st August), or a check for nesting birds completed by an ecologist immediately prior to works commencing, with any nests retained until the young have fledged.

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1.0 Introduction and Context

1.1 Background

Arbtech Consulting Limited was commissioned by Richard Barker to undertake a Preliminary Roost Assessment (PRA) at Dower House. An initial survey was completed on 12th December 2019, with a second covering additional buildings taking place on 9th March 2020. The assessment is informed by the Bat Conservation Trust publication, *Bat Surveys for Professional Ecologists – Good Practice Guidelines* (Collins, J. (Ed) 2016).

No previous reports have been produced for this site by Arbtech.

1.2 Site Context

The site is located at National Grid Reference SP 35192 27776 and has an area of approximately 1.4ha. There are 6 buildings within the site boundary. A total of four buildings were surveyed across the two visits as these will be affected by the proposed development.

1.3 Scope of the report

This report provides a description of all 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 the presence of roosting bats, and to gain an understanding of how they could use the site. To achieve this, the following steps have been taken:

- A desk study has been carried out.
- A field survey has been undertaken, including an external survey and internal inspection where possible.
- 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 the requirements of a European protected species mitigation licence (EPSML) application if appropriate.

A survey plan is presented in Appendix 1, proposed plans in Appendix 2, desk study results in Appendix 3 and a summary of relevant legislation is presented in Appendix 4.

1.4 Project Description

The development proposals are for alterations to include demolition, conversion and replacement of various outbuildings. A planning application is being prepared for submission to West Oxfordshire District Council.

2.0 Methodology

2.1 Desk Study methodology

The desk study included a 2km radius review of statutory and non-statutory designated sites, Biodiversity Action Plan (BAP) Priority Habitats and granted EPSML records for bats held on Magic database. An assessment of the surrounding landscape structure was also completed using aerial images from Google Earth and OS maps.

Existing bat records relating to the site and a surrounding 2km radius are required to conform to national guidelines. The data search is confidential information that is not suitable for public release and has been analysed and summarised for presentation in this report.

2.2 Site Survey methodology

Both surveys were undertaken by David Kent (accredited agent on Natural England Bat licence Number: 2016-22119-CLS-CLS).

All features that will be impacted by the project proposals were assessed for their bat roosting and/or commuting habitat. The surveyor systematically surveyed all features suitable for-bats and signs of bat activity.

For any surveyed buildings:

A non-intrusive visual appraisal from the ground using binoculars, inspecting the external features of the building(s) for potential access and 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 accessible 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.

For any surveyed trees:

A visual inspection from ground level using binoculars and where accessible and safe to do so, an internal inspection of potential roosting features using an endoscope, torch and ladders.

2.3 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 barn owls *Tyto alba*.

2.4 Suitability Assessment

All affected survey features on site were categorised according to the likelihood of bats being present, in line with best practice guidelines (Collins, J. (ed) 2016). The features that dictate the likelihood of roosting bats are summarised in Tables 1 and 2 below. 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

Likelihood of bats being present	Feature of building and its context
Higher	Buildings or 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 or 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.

Table 2: Features of a tree that are correlated with use by bats

Likelihood of bats being present	Feature of tree and its context
Higher	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.
Lower	A tree of sufficient size and age to contain potential roosting features but with none seen from the ground or features seen with only very limited roosting potential.

2.5 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. This survey provides a preliminary view of the likelihood of bats being present. This is based on suitability of the habitats on 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 specific limitations to the survey regarding internal access, exterior visibility, safety from biotic (e.g. wasps) or abiotic (e.g. asbestos) sources or adverse weather.

3.0 Results and Evaluation

3.1 Desk Study Results

A summary of desk study results is provided below, full details are presented in Appendix 3.

3.2 Designated sites

Details of any statutory and non-statutory designated sites within a 2km radius of the survey site, including their reasons for notification, are provided in Table 3 below.

Table 3: Designated sites within 2km radius of the site

Designated Site Name	Distance from Site (approx.)	Reasons for Notification from Natural England and/or BRD or LPA policy maps
Statutory Sites		
None		
Non-statutory Sites		
None known		

3.3 Landscape

A review of the designated sites, aerial photographs (Figure 1), the Magic database and OS maps has been undertaken. Collated together, the site's local bat habitat is described below:

The site is situated within the village of Heythrop in a rural area of west Oxfordshire. The landscape is dominated by arable fields. A linear stretch of woodland starts at the south east boundary of the site and runs south east for over 1.5km, passing close to an area of ancient woodland ~1.3km east of the site which may be important local bat habitat. Scattered woodland also occurs to the north west and south of the site, with a second ancient woodland habitat located ~600m to the north west. Additional habitat connectivity between these woodland areas is provided by hedgerows and trees forming field boundaries. Three small ponds are situated in the woodland immediately south east of the site, the closest being ~75m south east, while a stream passes ~250m to the north east. These water sources are likely to provide abundant insect foraging for bats in the local vicinity.

Priority habitats within 2km of the site are listed in Table 4.

Table 4: Priority Habitat Inventory within 2km (Magic.gov.uk):

Habitat	Closest distance from site
Ancient woodland	660m north east
Good quality semi-improved grassland (non-priority)	740m south west
Deciduous woodland	Occurs on south east side of site
National forest inventory	Occurs on south east side of site
Traditional orchards	Occurs on north west side of site
Woodpasture and parkland	Adjacent to south west boundary
No main habitat but additional habitat exists	360m south west



Figure 1: Aerial photo of site, showing landscape structure

3.4 Historical records

Thames Valley Environmental Records Centre has provided bat records within a 2km radius of the site. These are analysed and summarised in Table 5. The biological records show that there are roosts of common crevice dwelling and void dwelling bat species present within the study area.

Table 5: Historical records* of bats within 2km of the site

Common name	Scientific binomial	Number of field records	Number of roost records	Maternity roost records
Unidentified myotis bat.	<i>Myotis sp.</i>	1 field record only	None	None
Noctule bat	<i>Nyctalus noctula</i>	1 field record only	None	None
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	1 field record	3 roost records from the same location	None
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	1 field record only	None	None
Brown long-eared bat	<i>Plecotus auritus</i>	1 field record	None	4 records from the same location (numbers indicative of maternity roost)

*Records from the past 10 years

A search of the Magic database for granted European protected species mitigation licences (EPSMLs) within a 2km radius of the site has been completed. Displaced bats from licenced sites >1km away from the survey site will find alternative habitat either within the mitigation measures implemented as part of the licence or will relocate to other known roosts sites in close proximity to the licenced site. The EPSML records show that no bat roosts have been destroyed within 2km.

Table 6: Granted EPSMLs (bats) within 2km of the site

Case reference of granted application	Approx. distance from site	Bat Species Effected	licence Start Date:	licence End Date:	Impacts allowed by licence
None					

3.5 Field Survey Results

One building on site was surveyed on 12/12/2019, designated as B1 and illustrated in the map in Appendix 1. Three additional buildings on site were surveyed on 09/03/2020, designated as B2, B3 and B4 and are also illustrated in the map in Appendix 1. The weather conditions recorded at the time of each survey are shown in Table 7.

Table 7: Weather conditions during the surveys

Date: 12/12/2019 (first visit)		Date: 09/03/2020 (second visit)	
Temperature	8°C	Temperature	10°C
Humidity	93%	Humidity	62%
Cloud Cover	100%	Cloud Cover	100%
Wind	17 mph	Wind	10 mph
Rain	Light rain	Rain	None

3.6 Site Feature descriptions and photos

B1 Exterior

B1 – south east elevation (pictured opposite).

B1 is a detached timber, stone and breezeblock constructed barn building with a shed style roof. Much of the south east elevation is covered by timber cladding, although gaps beneath the cladding are generally insufficient to allow access for crevice dwelling bats. The building has timber framed windows, one of which is boarded, with no large gaps around any of the frames, although one window has a broken pane. Three timber doors are present, with minor gaps occurring below the top of the frame while the doors are closed. The outer roof is corrugated plastic, with small gaps beneath the corrugations that may provide roosting space for crevice dwelling bats.



B1 – south east elevation (pictured opposite).

The photo opposite shows a close-up of corrugations on the plastic roof, which are unsealed and could provide roosting space for crevice dwelling bats, although temperature conditions beneath the plastic roof may not be ideal for bats. Some of the corrugations are cobwebbed, indicating disuse, although others, such as the examples shown, are open.



B1 – north east elevation (pictured opposite).

The north east elevation is also covered by timber cladding, although again, gaps in the cladding were generally too narrow to allow for bat access, and many were cobwebbed. The lower part of this wall is of painted breezeblock construction and in good condition, with no gaps. A timber fascia board is also present, although space under the fascia is not deep enough to be utilised by crevice dwelling bats. A gap occurs where the timber wall adjoins the stone wall of the north west elevation, which could allow bat access to the interior.



B1 – north east elevation (pictured opposite).

The photo opposite shows a close-up of a gap between the timber and stone walls, which could allow void dwelling bats access to the interior of B1.



B1 – north west elevation (pictured opposite).

The rear elevation of the building is constructed from stone and is in poor condition, with numerous gaps created by missing mortar that could be utilised by crevice dwelling bats.



B1 – north west elevation (pictured opposite).

The photo opposite shows a close-up of some of the gaps towards the south west end of the rear wall which crevice dwelling bats could utilise.



B1 – north west elevation (pictured opposite).

The photo opposite shows additional examples of gaps further north east along the wall, which again could be utilised by crevice dwelling bats. Similar gaps were also present lower down on the wall, although some of these may be situated too low down to be utilised by bats.



B1 Interior

B1 – north east interior, facing south (pictured opposite).

The interior of B1 is divided into three separate spaces accessed via the barn doors. The walls of all three interior spaces are a combination of timber and stone. The interior roof is also timber lined below the corrugated plastic outer roof and supported by timber beams. Narrow gaps along the top of the interior walls are present which link the three spaces together. The three spaces also appear to be linked by a ventilation duct along the rear wall. Approximate dimensions: 5m x 4m

Internal conditions:

Temperature: 8.4°C

Relative humidity: 80%

B1 – north east interior, facing north (pictured opposite).

The north east interior space is used for storage, and the presence of stored items made it easier to search for evidence of bats, which often accumulates on exposed surfaces where present. The circled corner corresponds with the gap between the stone and timber walls on the north east elevation, and shows daylight coming through which could allow bats access to the interior. However, the presence of a window results in the space being moderately well lit and therefore unlikely to be suitable as a day roost. No evidence indicative of a night feeding roost was present.



B1 – middle interior, facing north west (pictured opposite).

The middle interior space is used as a wood store and is similar in construction to the other two spaces. As with the other two spaces, open access to a ventilation duct was present. However, the space within the duct is likely to be too open to be used by crevice dwelling bats, and too enclosed to be suitable for void dwelling bats.

Approximate dimensions: 3m x 4m

Internal conditions:

Temperature: 10.2°C

Relative humidity: 76%

B1 – middle interior, facing south east (pictured opposite).

The middle interior space is dimly lit by one small window, limiting its suitability as a day roost for void dwelling bats. A small gap is present along the top of the barn door which could possibly allow for bat access to the interior, although no evidence of roosting bats was present.



B1 – south west interior, facing north east (pictured opposite).

The south west interior is used for general storage as well as for storage of straw bales. Again, the presence of stored items made it easier to search for evidence of roosting bats.

Approximate dimensions: 2m x 4m

Internal conditions:

Temperature: 12.4°C

Relative humidity: 63.7%



B1 – south west interior, facing south east (pictured opposite).

A broken windowpane was present which could allow void dwelling bats access to the south west interior space. However, the presence of two windows result in the space being well lit by daylight and therefore unsuitable as a day roost, and no evidence indicative of a night feeding roost was present.



B1 Evidence of bats

There was no evidence of bat activity located internally in B1, and no evidence of bat use (e.g. bat droppings) was found on external features.

B1 Breeding birds and other incidental observations

There was no evidence of nesting birds located internally or externally on the survey building.

B2 Exterior

B2 – north east elevation (pictured opposite).

B2 is a stone-built barn with an attached stone and timber-built garage on its north west side. The barn has an open gable roof, while the garage has separate hip roof, with both roofs clad in clay tiles and raised tiles occurring on all roof pitches. Mortar gaps also occur between the wall tops and the roof structure beneath the eaves of the main barn. The barn has timber doors on its upper and lower floors. The upper door has a gap leading into the building interior, while the lower door has gaps occurring between the door frame and the surrounding wall. A set of double doors provide access to the attached garage, with gaps between the door and the frame providing interior access. Timber framed windows occur on the two long elevations, with no gaps around the frames, although a dislodged windowpane occurs on the side of the attached garage.



B2 – north east elevation (pictured opposite).

The photo opposite shows a close up of the north eastern roof pitch of the main barn, which is heavily moss covered. Raised tiles occur along the roof edge, as well as further up on the roof, all of which may provide roosting space for crevice dwelling bats.



B2 – north east elevation (pictured opposite).

The photo opposite shows an example of a gap occurring beneath the eaves of the building which may provide additional roosting space for crevice dwelling bats.



B2 – north east elevation (pictured opposite).

The photo opposite shows a close-up of the north eastern roof pitch of the attached garage, with several raised tiles highlighted which may provide additional roost space for crevice dwelling bats within this roof structure.



B2 – north east elevation (pictured opposite).

The photo opposite shows a close up of doors and windows on the attached garage, with a gap above the door and dislodged window pane highlighted, both of which might provide access to the garage interior for void dwelling bats.



B2 – south east elevation (pictured opposite).

Several mortar gaps occur beneath the fascia board on the south east gable end which might be utilised by crevice dwelling bats. A ventilation gap occurs towards the roof apex, and a hole also occurs at the base of a timber door leading to the upper floor. Interior inspection found the former to be sealed, although mesh blocking the latter has become dislodged and may provide interior access for void dwelling bats and nesting birds. Finally, gaps occur around the edges of the timber frame of the ground floor door, which may provide additional roosting space for crevice dwelling bats.



B2 – south east elevation (pictured opposite).

The photo opposite shows a close up of a gap occurring beneath the fascia board on the south west side of the gable end.



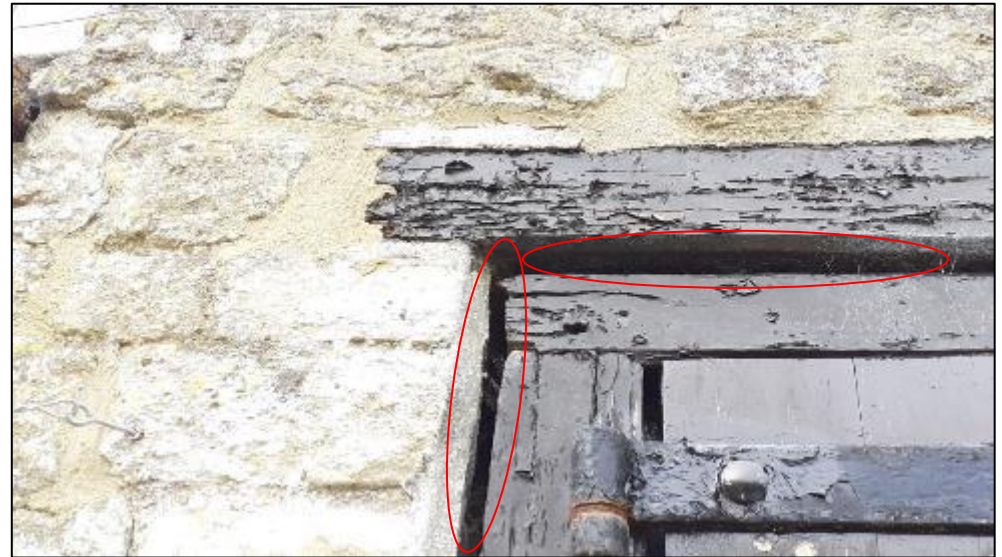
B2 – south east elevation (pictured opposite).

The photo opposite shows a close-up of a larger apparent gap beneath the fascia board on the north east side of the gable end.



B2 – south east elevation (pictured opposite).

The photo opposite shows a close-up example of gaps around the door frame on the ground floor barn door. Close inspection of these gaps showed many of them to be cobwebbed and infilled with debris, possibly indicating disuse.



B2 – south west elevation (pictured opposite).

The barn wall on the south west elevation adjoins a stone wall which forms the south west wall of the garage and continues east as a boundary wall. Gaps are present in the stonework of this wall, one of which occurs on the side of the garage, and a gap also occurs in the stone wall of the barn on this elevation. Raised and warped tiles also occur on the south western roof pitches of both the barn and garage roof, and one additional gap is present beneath the eaves of the barn roof. All of these features might provide roost space for crevice dwelling bats.



B2 – south west elevation (pictured opposite).

The photo opposite shows a close-up of the south western roof pitch of the barn, with several raised tiles highlighted. This roof pitch is free from moss, resulting in these features being more clearly visible.



B2 – south west elevation (pictured opposite).

The photo opposite shows additional raised tiles as well as a gap occurring beneath the eaves of the barn roof.



B2 – south west elevation (pictured opposite).

The photo opposite shows a close-up of a gap in the stonework of the main barn wall.



B2 – south west elevation (pictured opposite).

The photo opposite shows several slightly warped and raised tiles occurring on the south western roof pitch of the adjoining garage.



B2 – south west elevation (pictured opposite).

The photo opposite show gaps between mortar and underlying stonework occurring on the wall forming the south west elevation of the attached garage.



B2 – north west elevation (pictured opposite).

The north west elevation of the building adjoins a chicken run. No mortar gaps or gaps beneath the fascia board were noted on the roof of the main barn, although the north western roof pitch of the garage roof has several minor raised tiles present which may provide space for crevice dwelling bats. Gaps also occur on both sides of the wall between the garage and the adjoining chicken run, although these are situated fairly low down and on the north west side the wall occurs under a wire mesh covering, making it less likely that these features would be utilised by bats.



B2 – north west elevation (pictured opposite).

The photo opposite shows examples of several slightly raised tiles on the north western roof pitch of the garage.



B2 – north west elevation (pictured opposite).

The photo opposite shows examples of mortar gaps in the stone wall between the garage and chicken run. Similar gaps also occur on the opposite side of the wall.



B2 Interior

B2 – ground floor interior, facing south east (pictured opposite).

The ground floor of the barn has been converted into habitable space and is currently used as a gym. The area is well lit by external windows, making it unsuitable as a day roost for void dwelling bats. A ladder and open hatch in the north corner lead to the upper floor.



B2 – first floor interior, facing north west (pictured opposite).

The upper floor of the barn is open to roof height. The roof is constructed from timber beams and lined with bitumen felt which is intact, with no tears or gaps. The space has a timber floor and is used for storage. The floor, stored items, exposed beams and gable end walls were all searched for evidence of bats.



B2 – first floor interior, facing south east (pictured opposite).

Daylight enters the barn through a ventilation gap towards the apex as well as a hole at the base of the barn door. A mesh covering on the latter has become dislodged, allowing bat and bird access to the barn interior.



B2 – garage interior, facing south west (pictured opposite).

The adjoining garage is open to roof height, with an interior roof lining of timber beams present. The space is well lit by windows, reducing its suitability as a day roost for void dwelling bats, and no crevices were present within the interior space.



B2 – garage interior, facing north east (pictured opposite).

Void dwelling bats could gain access to the interior space via a dislodged windowpane as well as gaps above the main door. The interior space is used to store gardening equipment, and all exposed surfaces were searched for evidence of bats.



B2 Evidence of bats

There was no evidence of bat activity located internally in B2, and no evidence of bat use (e.g. bat droppings) was found on external features.

B2 Breeding birds and other incidental observations

A large, sprawling bird nest was located in the east corner on the upper floor of the barn, and an egg was observed to be present within the nest at the time of the survey. The size of the nest and appearance of the egg suggest that this may be jackdaw nest. Other evidence of birds was present on the upper floor of the barn, including bird droppings on beams and the skeleton of a deceased bird.



B3 Exterior

B3 – north east elevation (pictured opposite).

B3 is a stone-built gardeners' cottage with an open gable roof, with its northern corner adjoining the southern corner of B2. Stonework on the building is in good condition, with no gaps observed. The roof is covered with clay tiles, many of which have become warped and raised. No gaps are present beneath fascia boards present on the buildings gable ends, although a minor mortar gap occurs at the north east edge of the north western roof pitch, and gaps occur between the fascia board and overlying mortar on the south west gable end. Doors and windows on the building are timber framed and in good condition, with no gaps occurring around the frames.

B3 – north east elevation (pictured opposite).

The photo opposite shows a close up of the minor mortar gap occurring at the edge of the north western roof pitch, which could provide a small amount of space for crevice dwelling bats.



B3 –south east elevation (pictured opposite).

Multiple warped and raised tiles occur on the south east elevation, creating space which crevice dwelling bats could utilise. Damage has also occurred to ridge tiles near the chimney, although it was unclear from the ground whether this damage creates any additional roosting space. Stonework on this elevation is in good condition, and no gaps occur beneath the eaves of the building.



B3 –south east elevation (pictured opposite).

The photo opposite shows a close-up of the south eastern roof pitch, with warping creating multiple gaps under roof tiles.



B3 –south west elevation (pictured opposite).

Gaps occur beneath the fascia board and overlying mortar on the south west elevation. From the ground it was unclear whether these gaps go back far enough to provide any roosting space for bats. No other features were present on this elevation.



B3 –south west elevation (pictured opposite).

The photo opposite shows a close-up of the gaps beneath the fascia board and overlying roof.



B3 – north west elevation (pictured opposite).

Roof tiles on the north west elevation are partially moss covered although a similar number of warped and raised tiles occur, both at the roof edge and further back on the roof, both of which may provide roosting space for crevice dwelling bats.



B3 – north west elevation (pictured opposite).

The photo opposite shows raised tiles occurring at the roof edge, with gaps occurring between the tiles and underlying mortar.



B3 – north west elevation (pictured opposite).

The photo opposite shows raised tiles occurring further up on the north western roof pitch.



B3 Interior

B3 – north east interior, facing north east (pictured opposite).

The interior space is divided into two rooms. The north eastern room is used to store gardening supplies and equipment and is well lit by an exterior window, reducing its suitability as a day roost for void dwelling bats. A minor gap occurring above the door is insufficient to allow bat access, and no other gaps were apparent.



B3 – north east interior, facing north east (pictured opposite).

The interior space is open to roof height, and the roof is constructed from timber beams and lined with timber boards.



B3 – south west interior, facing south (pictured opposite).

The south west interior space is used for tool storage and is similarly well lit by an external window.



B3 – south west interior roof (pictured opposite).

Damaged ridge tiles on the exterior have led to damage and warping of a timber board below the roof apex, with exposed roof tiles visible above, providing a possible route of access to the interior for void dwelling bats. However, a thorough search of all walls and exposed surfaces in both rooms found no evidence of bats being present.



B3 Evidence of bats

There was no evidence of bat activity located internally in B3, and no evidence of bat use (e.g. bat droppings) was found on external features.

B3 Breeding birds and other incidental observations

There was no evidence of nesting birds located internally or externally on the survey building.

B4 Exterior

B4 – south elevation (pictured opposite).

B4 is a detached stone-built oil store with a hip roof clad in clay tiles. Warped and raised tiles occur on all roof pitches, although only one roof pitch has interior lining present. Gaps also occur beneath the eaves of the building on all elevations. The building has no windows and a single door on the east elevation, which is timber framed with no gaps occurring around the doorframe.



B4 – south elevation (pictured opposite).

The photo opposite shows an area of damaged roof tiles on the southern roof pitch. This may create a small amount of space for crevice dwelling bats where tiles overlap, although the lack of interior lining limits the available space. This feature may also provide access to the interior for void dwelling bats. Less pronounced examples of raised tiles occur elsewhere on this roof pitch.



B4 – south elevation (pictured opposite).

The photos opposite show gaps occurring beneath the eaves of the building on the south elevation, which may provide space for crevice dwelling bats.



B4 – east elevation (pictured opposite).

Minor warped and raised roof tiles occur on the roof pitch of the east elevation, although again no interior lining is present, reducing the available roosting space. Gaps suitable for crevice dwelling bats again occur at the eaves of the building, both above the wall tops and beneath the edge of a rafter.



B4 – east elevation (pictured opposite).

The photo opposite shows examples of minor warped and raised tiles on the eastern roof pitch.



B4 – east elevation (pictured opposite).

The photo opposite shows a close-up of gaps occurring beneath the eaves on the east elevation.



B4 – north elevation (pictured opposite).

Several raised tiles are present on the northern roof pitch of the building. Unlike the other pitches, the interior of this roof is lined, increasing the available space for crevice dwelling bats. However, the lining present appears to be a breathable roofing membrane, and research has shown that such membranes can lead to entanglement and a reduced suitability of microclimate conditions for crevice dwelling bats (Bat Conservation Trust, 2020). Gaps present beneath the eaves on this elevation are narrow and cobwebbed and appear to be unsuitable for roosting bats.



B4 – north elevation (pictured opposite).

The photo opposite shows a close up of several raised tiles present on the northern roof pitch, with examples highlighted.



B4 – west elevation (pictured opposite).

The west elevation of B4 is partially obscured by an overhanging tree. Roosting features for crevice dwelling bats are present which are similar to those seen on the other elevations, with several raised tiles on the western roof pitch and gaps occurring under the eaves.



B4 – west elevation (pictured opposite).

The photo opposite shows examples of raised tiles occurring on the western roof pitch.



B4 – west elevation (pictured opposite).

The photo opposite shows an example of gaps occurring beneath the eaves on the west elevation.



B4 Interior

B4 – interior, facing west (pictured opposite).

The interior of B4 is divided into a small bathroom and a large area in which an oil tank is situated. Some parts of the interior space behind the tank were not accessible but a visual search of all areas (including the top of the oil tank) for evidence of roosting bats was carried out.



B4 – interior, facing west (pictured opposite).

The interior of B4 is open to roof height, with the roof constructed from timber beams. As previously noted, all but one of the roof pitches is unlined, with the undersides of roof tiles visible.

**B4 Evidence of bats**

There was no evidence of bat activity located internally in B4, and no evidence of bat use (e.g. bat droppings) was found on external features.

B4 Breeding birds and other incidental observations

There was no evidence of nesting birds located internally or externally on the survey building.

4.0 Conclusions, Impacts and Recommendations

4.1 Informative guidelines

Bats are protected under the Wildlife and Countryside Act and Conservation Regulations (see Appendix 4 for a summary of legislation protecting bats in the UK). Legislation protects all wild birds whilst they are breeding, and prohibits the killing, injuring or taking of any wild bird or their nests and eggs. Certain species of bird, including the barn owl, are subject to special provisions; it is an offence to disturb any bird or their young during the breeding season.

There are three possible outcomes of this survey, each with specific recommendations. These are outlined below:

Confirmed bat roost

Best practice survey guidelines (Collins, 2016) recommends additional surveys for confirmed roosts. Three further surveys are required to characterise the bat roost present including species, roost type and access points to inform a European protected species mitigation licence (EPSML) application with Natural England. Surveys must be completed during the active bat season (May – September). At least two of the surveys should be completed during the optimal survey period mid-May to August, and at least one of the surveys should be a dawn re-entry survey (Collins, J. 2016).

Low, moderate or high likelihood of a bat roost present

Best practice survey guidelines (Collins, 2016) recommends additional surveys for features assessed as having low to high suitability for roosting bats. One, two or three further surveys are required to confirm the presence or likely absence of a bat roost, based on a low, medium or high roost likelihood evaluation. Surveys must be completed during the active bat season (May – September). If more than one survey is recommended, at least one of them should be completed during the optimal survey period mid-May to August, and at least one of the surveys should be a dawn re-entry survey (Collins, J. 2016). If two or one further survey is recommended these surveys must be completed during the optimal survey period (mid-May to August). For low and moderate roost likelihood evaluation the survey effort recommended at this stage is iterative and if bats roosts are confirmed in the building, a further survey will be required to provide sufficient information to inform an EPSML application to Natural England.

Negligible likelihood of a bat roost present

Buildings assessed as comprising negligible suitability for roosting bats do not normally require further surveys. However, if bats are found during any stage of the development, work should stop immediately, and a suitably qualified ecologist should be contacted for further advice.

4.2 Evaluation

Taking the desk-based assessment and site survey results into account, the following value for roosting bats has been placed on each site survey feature.

Table 8: Evaluation of building on site

Ref	Survey assessment conclusions (with justification)	Foreseen impacts	Recommendations	Enhancements The Local Planning Authority has a duty to ask for enhancements under the NPPF (July 2018)
B1 Bats	<p>The building has moderate habitat value for supporting roosting bats. While interior spaces are generally unsuitable as a day roost for void dwelling bats, there are numerous gaps in external stonework which could be utilised by crevice dwelling bats. Crevice dwelling bats could also utilise gaps allowing access to space between the corrugated roof and interior timber roof lining, although this space is deemed to be of limited roosting suitability.</p> <p>There are excellent foraging and commuting resources in close proximity and the biological records data indicates the presence of common crevice dwelling bat roosts in the local vicinity.</p>	<p>As the proposals include the demolition of B1, any bat roosts present would be destroyed. This could result in death, injury or disturbance of bats.</p>	<p>Two bat emergence or re-entry surveys are required during the active bat season (May – September) to confirm presence or likely-absence of a bat roost in the building. Both surveys should be completed during the optimal survey period mid-May to August inclusive.</p> <p>Sub-optimal: early May and September.</p> <p>One of these surveys must be a dawn re-entry survey.</p> <p>Two surveyors are required to provide full coverage of the building.</p> <p>If bat roosts are confirmed in the building one additional survey will be required to inform a European protected species mitigation licence application to Natural England once planning permission has been granted.</p>	<p>To be confirmed following further surveys.</p>
B2 Bats	<p>Building B2 has moderate habitat value for supporting roosting bats. Raised tiles are present on all of the roof pitches of the building, and gaps are present beneath the eaves on three elevations. Additional gaps occur in stonework on some of the exterior walls and around the doorframe of the main barn door. All of these features could be utilised by crevice dwelling bats.</p> <p>Gaps are also present leading into the building interior and conditions on the upper floor of the main barn are suitable for void dwelling bats, although no evidence of a bat roost was found to be present, implying a likely absence of void dwelling bats.</p>	<p>As the proposals involve the conversion of B2, any bat roosts present in the roof space would be destroyed. This could result in death, injury or disturbance of bats.</p>	<p>Two bat emergence or re-entry surveys are required during the active bat season (May – September) to confirm presence or likely-absence of a bat roost in the building. Both surveys should be completed during the optimal survey period mid-May to August inclusive.</p> <p>Sub-optimal: early May and September.</p> <p>One of these surveys must be a dawn re-entry survey.</p> <p>Two surveyors are required to provide full coverage of the building.</p> <p>If bat roosts are confirmed in the building one additional survey will be required to inform a European protected species mitigation licence application to Natural England once planning permission has been granted.</p>	

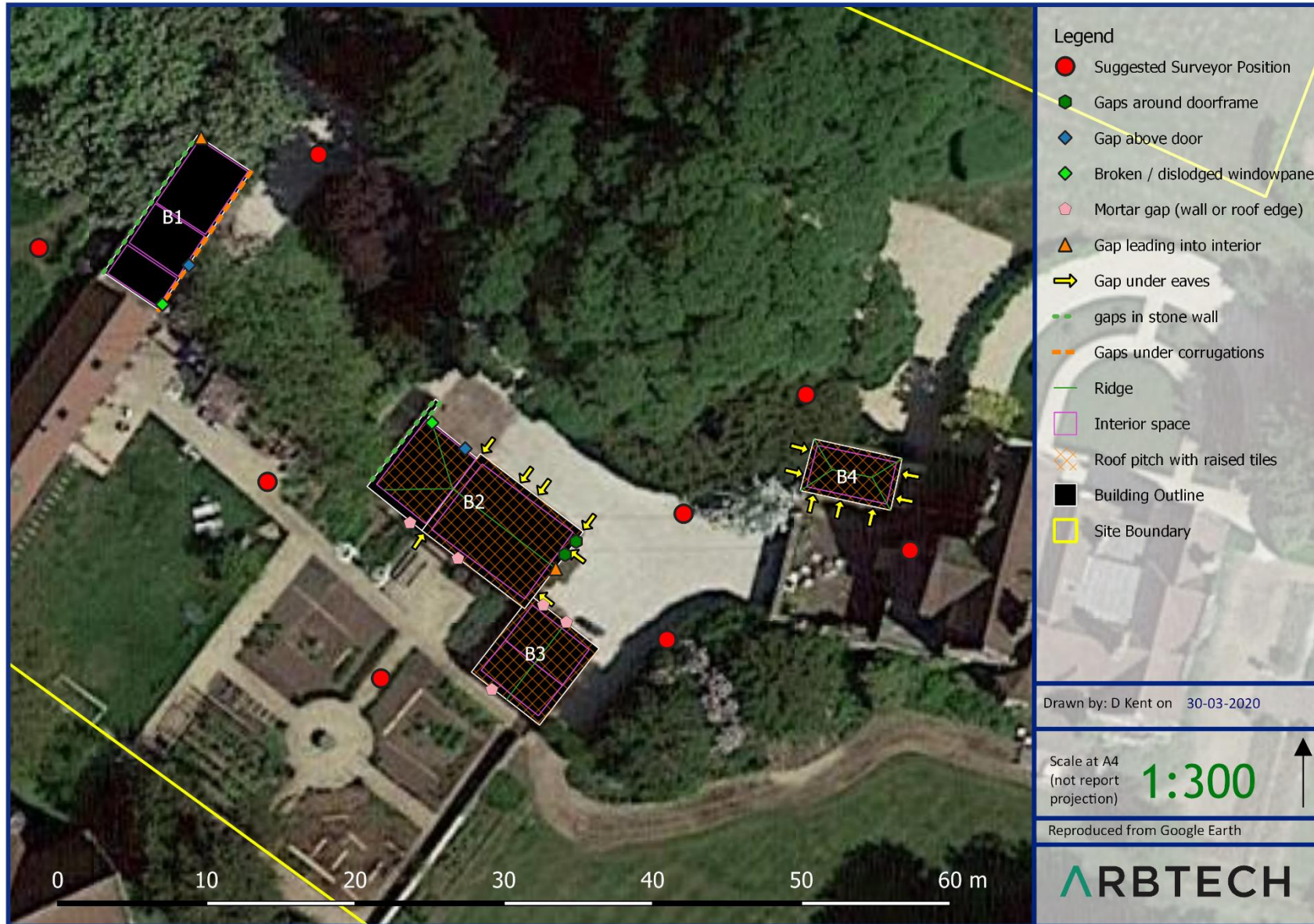
B3 Bats	<p>Building B3 has moderate habitat value for supporting roosting bats. A large number of raised tiles are present on both roof pitches and mortar gaps occur at the gable ends, all of which could be utilised by crevice dwelling bats. Although damage has occurred to an interior timber board which would allow internal access to B3 via roof tiles, internal conditions are well lit and generally unsuitable for void dwelling bats, and no evidence of roosting bats was found to be present.</p>	<p>As the proposals involve the conversion of B3, any bat roosts present in the roof space would be destroyed. This could result in death, injury or disturbance of bats.</p>	<p>Two bat emergence or re-entry surveys are required during the active bat season (May – September) to confirm presence or likely-absence of a bat roost in the building. Both surveys should be completed during the optimal survey period mid-May to August inclusive. Sub-optimal: early May and September. One of these surveys must be a dawn re-entry survey. Two surveyors are required to provide full coverage of the building. If bat roosts are confirmed in the building one additional survey will be required to inform a European protected species mitigation licence application to Natural England once planning permission has been granted.</p>	
B4 Bats	<p>Building B4 has low habitat value for supporting roosting bats. Although multiple raised and missing tiles occur on all roof pitches, three of the four roof pitches are unlined, reducing the available space for crevice dwelling bats. The lining, where present, is also not bitumen felt and is therefore likely to be of lower than normal suitability. However, gaps suitable for crevice dwelling bats occur beneath the eaves of the building on three of the four elevations. The building has interior conditions suitable for void dwelling bats, although no evidence of a bat roost was found to be present, implying a likely absence of void dwelling bats.</p>	<p>As the proposals include the demolition of B4, any bat roosts present would be destroyed. This could result in death, injury or disturbance of bats.</p>	<p>One bat emergence or re-entry survey are required during the active bat season (May – September) to confirm presence or likely-absence of a bat roost in the building. The survey should be completed during the optimal survey period mid-May to August inclusive. Sub-optimal: early May and September. Two surveyors are required to provide full coverage of the building. If bat roosts are confirmed in the building, two additional surveys will be required to inform a European protected species mitigation licence application to Natural England once planning permission has been granted. At least one of these will need to take place during the optimal period, and at least one of the three surveys must be a dawn re-entry survey.</p>	
B2 Nesting Birds	<p>Building B2 contains evidence of nesting birds. A possibly active nest was located in the north corner of the upper floor of the barn at the time of the survey.</p>	<p>Active nests could be destroyed during the development.</p>	<p>Works should be undertaken outside the period 1st March to 31st August. If this timeframe cannot be avoided, a close inspection of the building should be undertaken immediately prior to the commencement of works. All active nests will need to be retained until the young have fledged.</p>	<p>Install a minimum of three nestbox company bird boxes (or equivalent) on new and retained buildings or trees on site e.g. Apex bird box Small bird nest box</p>

				Large bird nest box Bird boxes should be positioned approximately 3m above ground level where they will be sheltered from prevailing wind, rain and strong sunlight. Small-hole boxes are best placed approximately 1-3m above ground on an area of the tree trunk where foliage will not obscure the entrance hole.
B1, B3 and B4 Nesting Birds	No evidence of nesting birds was found during the survey. However, birds could use the vegetation on site for nesting. No evidence of barn owls was found during the survey. However, the site provides suitable foraging habitat for barn owls.	Works that affect the vegetation on site could have an impact on nesting birds.	Any works affecting the vegetation on site should be undertaken outside the period 1st March to 31st August. If this timeframe cannot be avoided, a close inspection of the vegetation should be undertaken immediately prior to the commencement of work. All active nests will need to be retained until the young have fledged.	

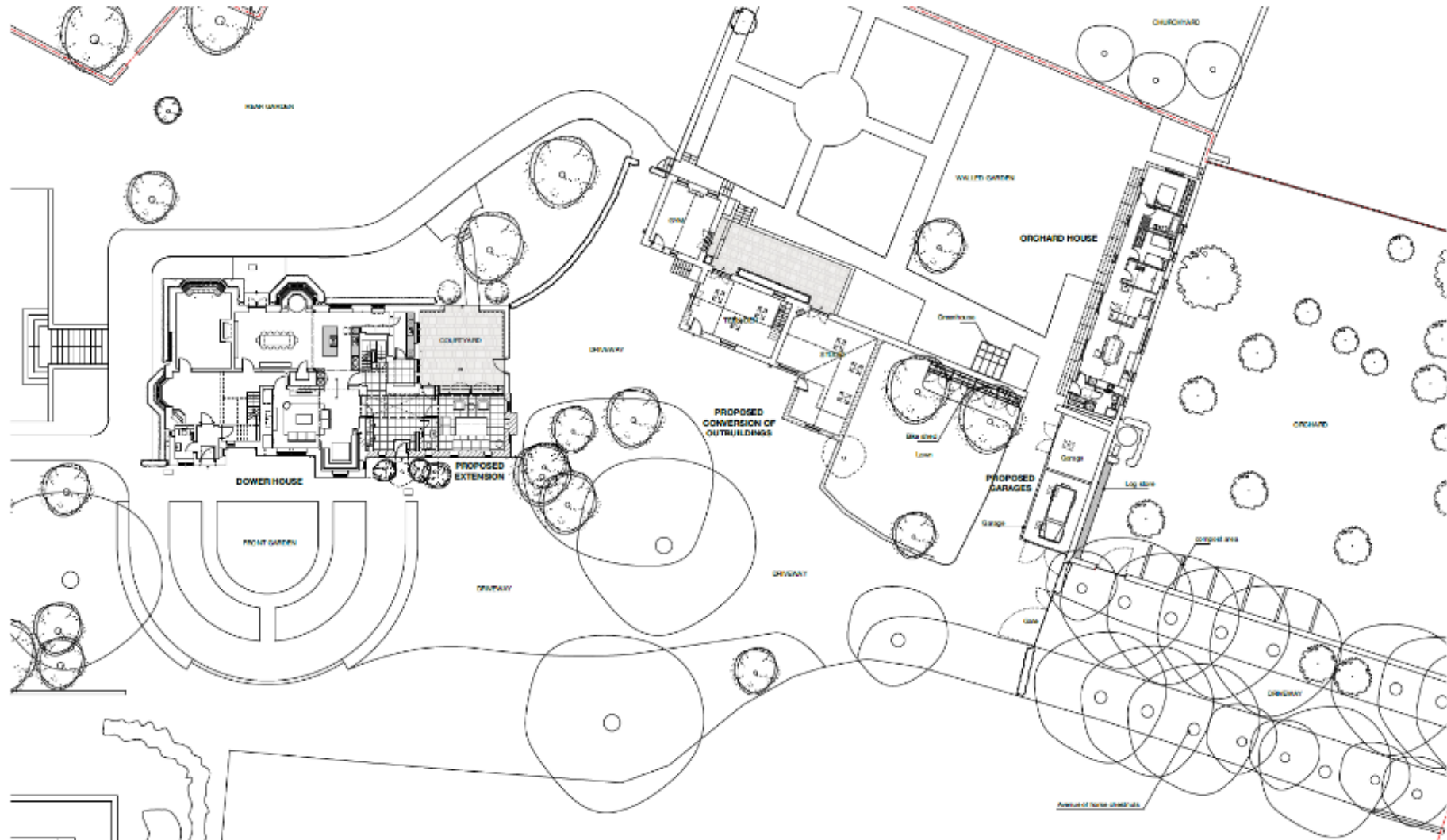
5.0 Bibliography

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- British Trust for Ornithology (2016) www.bto.org/about-birds/nbw/putting-up-a-nest-box
- Collins, J. (ed.) (2016). Bat Surveys for Professional Ecologists — Good Practice Guidelines, 3rd edition, Bat Conservation Trust, London.
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- Google Earth (2019) accessed on 30/03/2020.
- Magic database (2019) <http://www.magic.gov.uk/MagicMap.aspx> accessed on 06/01/2020.
- Mitchell-Jones, A.J. (2004). Bat Mitigation Guidelines. English Nature, Peterborough.

Appendix 1: Survey Plan



Appendix 2: Proposed Site Plan



SITE PLAN (as proposed)
Scale 1:500 @ A2

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t: 020 8724 9027 f: 020 8863 0885
e: char@charclay.co.uk w: www.charclay.co.uk

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New Construction

AS PROPOSED

NO.	DATE	BY
X	00/00/00	
X	00/00/00	

CHARLES BARCLAY ARCHITECTS

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Project Name: Haythrop Castle Master Plan, Haythrop, OXF OX1

Project No: 1000000000

Scale: 1:500 @ A2 AM LM

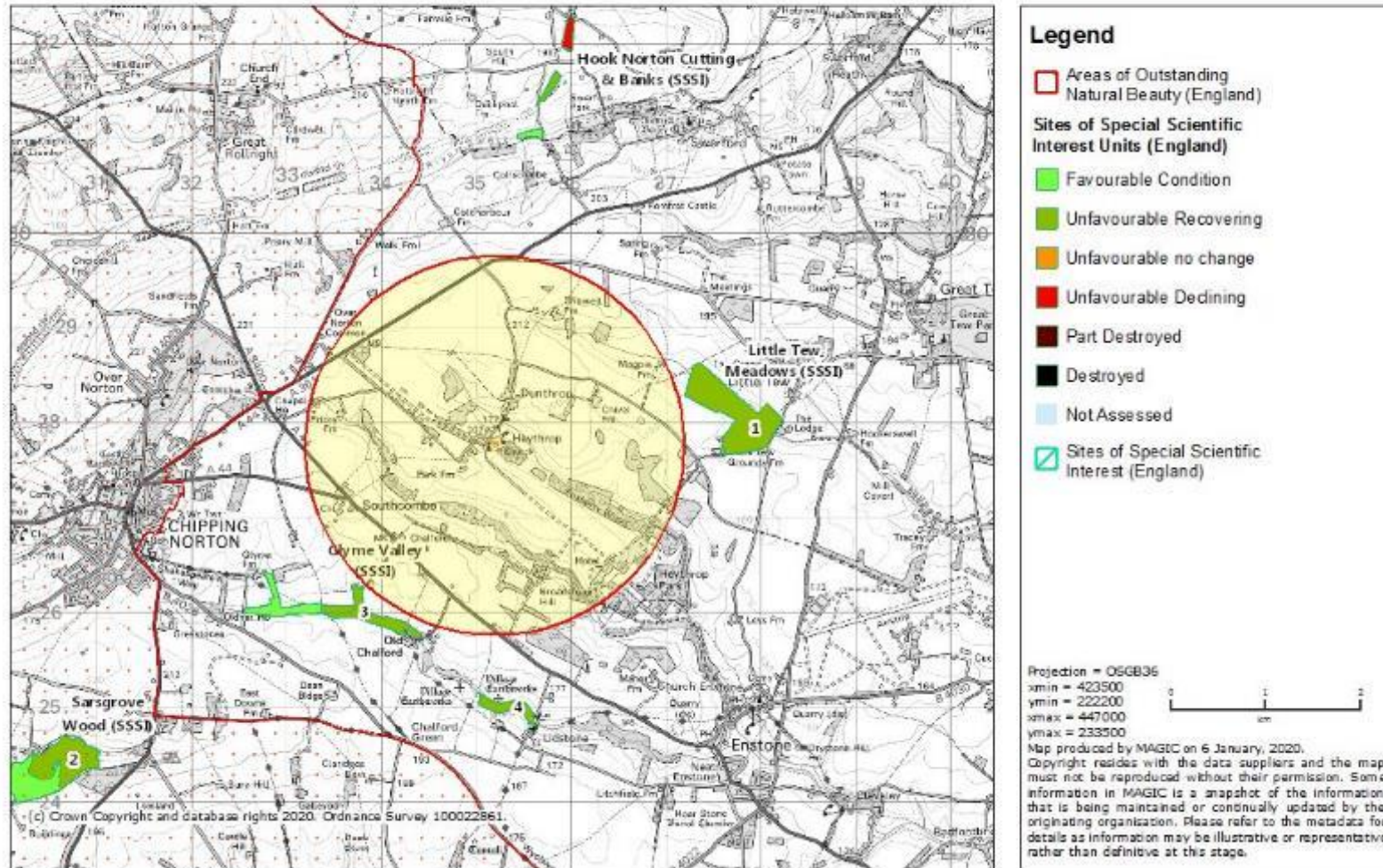
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Appendix 3: Desk Study Information

Full historical records can be provided on request.

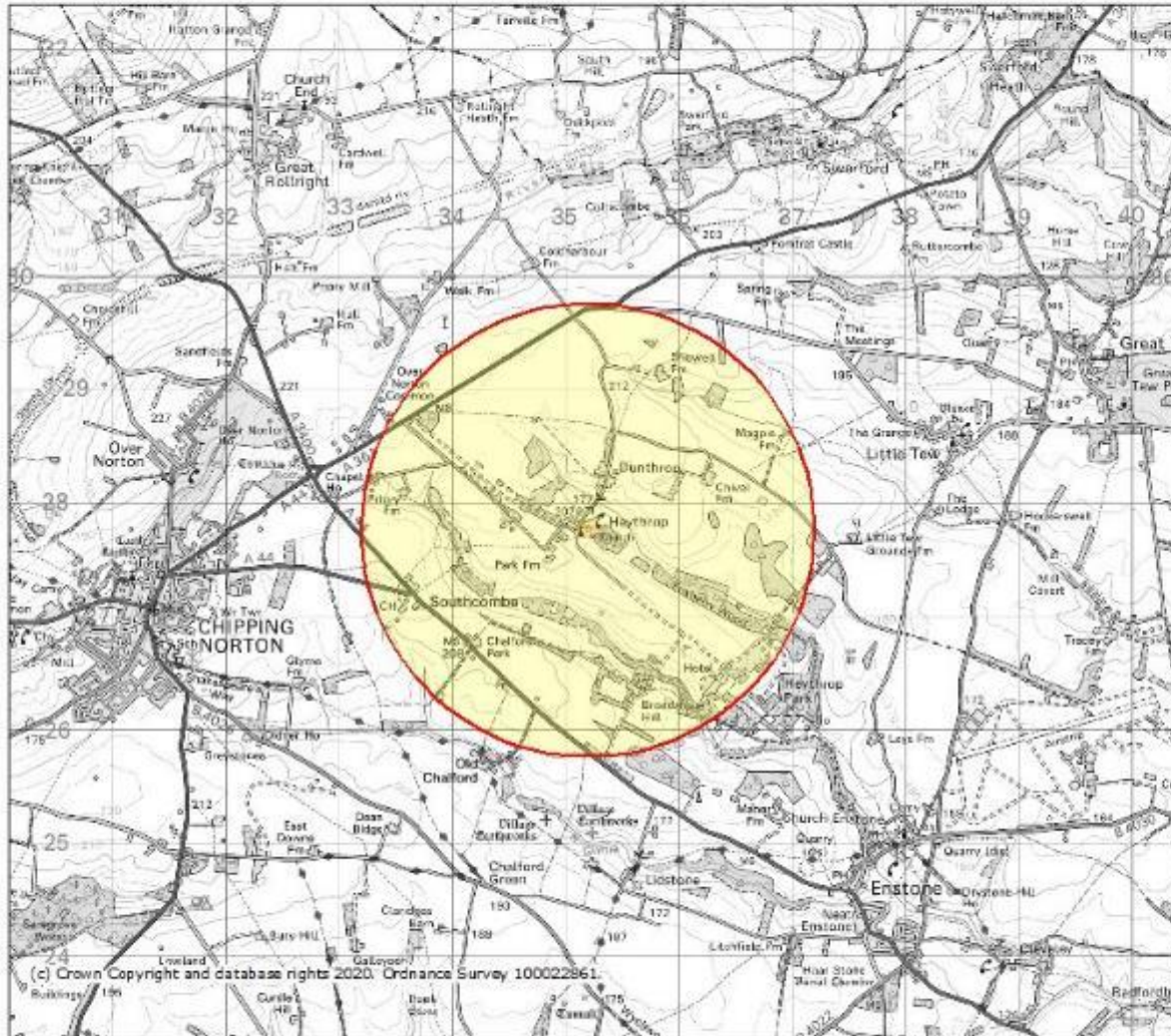
MAGiC

Designated Sites




MAGiC

Non-statutory Sites



Legend

-  Land Management Initiatives (England)

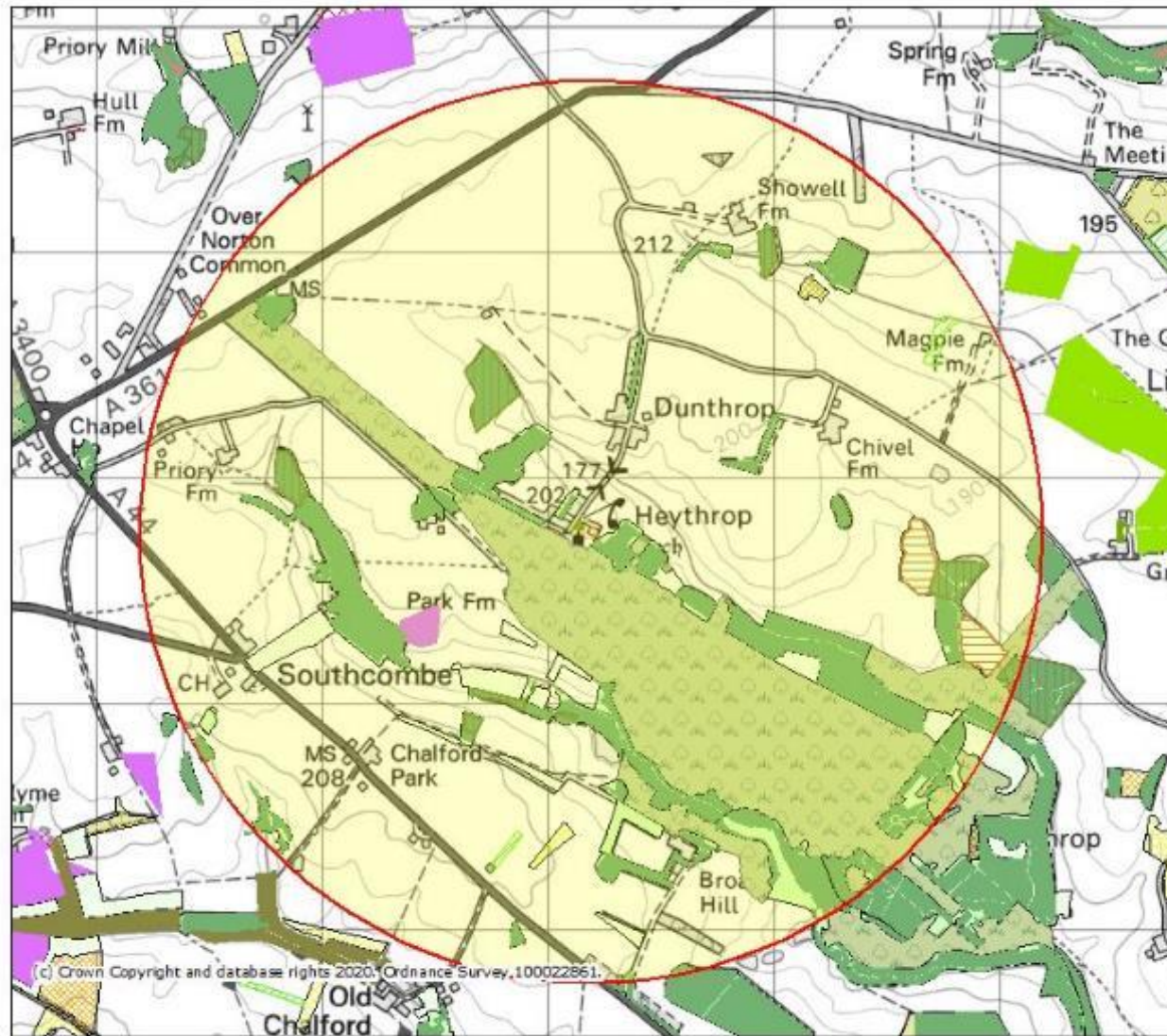
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xmin = 423500
ymin = 232200
xmax = 447000
ymax = 233500



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MAGiC

Habitats



Legend

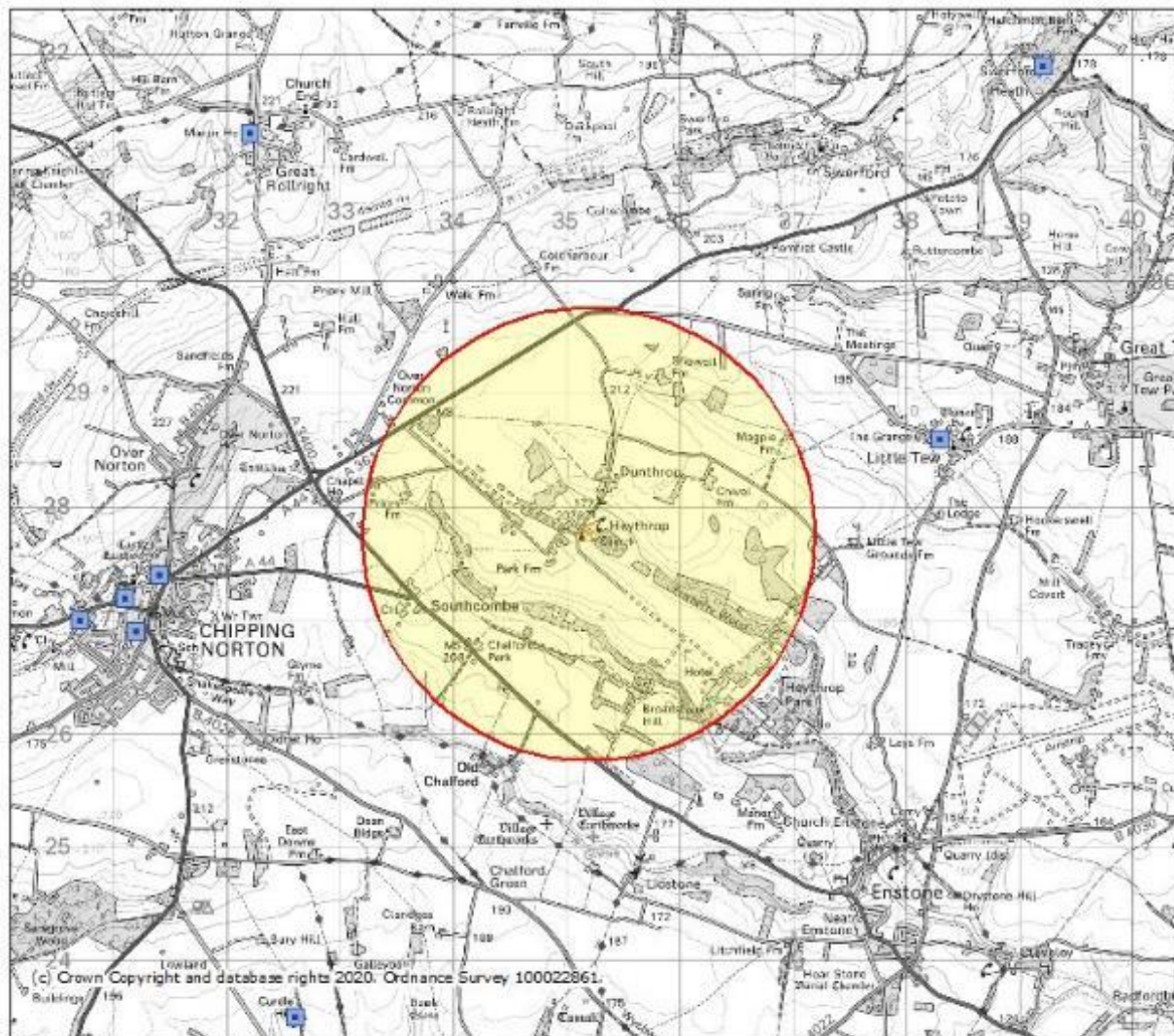
Priority Habitat Inventory - Good quality semi-improved grassland (Non Priority) (England)	Coppice
Priority Habitat Inventory - Lowland Calcareous Grassland (England)	Coppice with standards
Priority Habitat Inventory - Lowland Meadows (England)	Failed
Priority Habitat Inventory - Lowland Fens (England)	Felled
Ancient Woodland (England)	Ground prep
Ancient and Semi-Natural Woodland	Low density
Ancient Replanted Woodland	Mixed mainly broadleaved
Priority Habitat Inventory - Deciduous Woodland (England)	Mixed mainly conifer
National Forest Inventory (GB)	Shrub
Assumed woodland	Uncertain
Broadleaved	Windthrow
Cloud / shadow	Young trees
Conifer	Priority Habitat Inventory - Traditional Orchards (England)
	Woodpasture and Parkland BAP Priority Habitat (England)
	Priority Habitat Inventory - No main habitat but additional habitat exists (England)

Projection = OSGB36
 xmin = 429300
 ymin = 225000
 xmax = 441100
 ymax = 230700

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MAGiC

EPSLs



Legend

Granted European Protected Species Applications (England)

- Amphibian
- Bat
- Cetacean
- Invertebrate
- Other Mammal
- Plant
- Reptile

Projection = OSGB36

xmin = 423500

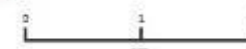
ymin = 222200

xmax = 447000

ymax = 233500

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Appendix 4: Legislation and Planning Policy related to bats

LEGAL PROTECTION

New legislation (2020)

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 came into force when Britain left the European Union on 31st January 2020. It covered amendments relevant to this survey to:

Wildlife and Countryside Act 1981: England and Wales (x1 amendment)

Conservation of Habitats and Species Regulations 2017 (x29 amendments)

All species of bat are fully protected under *The Conservation of Habitats and Species Regulations 2017* through their inclusion on Schedule 2.

Regulation 43: Protection of certain wild animals - offences

(1) A person is guilty of an offence if they:

- (a) Deliberately captures, injures or kills any wild animal of a European protected species,
- (b) Deliberately disturbs wild animals of any such species,
- (c) Deliberately takes or destroys the eggs of such an animal, or
- (d) Damages or destroys a breeding site or resting place of such an animal,

(2) For the purposes of paragraph (1) (b), disturbance of animals includes in particular any disturbance which is likely —

- (a) To impair their ability:
 - (i) To survive, to breed or reproduce, or to rear or nurture their young; or
 - (ii) In the case of animals of a hibernating or migratory species, to hibernate or migrate; or
- (b) To affect significantly the local distribution or abundance of the species to which they belong.

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

NATIONAL PLANNING POLICY (ENGLAND)

National Planning Policy Framework 2017

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 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.

Effect on development works:

A European protected species mitigation (EPSM) licence issued by 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).

There are 17 species of bat breeding in England and Natural England issues licences under Regulation 55 of the Habitats Regulations to allow you to work within the law.

Licences are issued for specific purposes stated in the Regulations, if the following three tests are met:

- The purpose of the work meets one of those listed in the Habitats Regulations (see below);
- That there is no satisfactory alternative;
- That the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status (FCS) in their natural range

The Habitats Regulations permits licences to be issued for a specific set of purposes including:

- 1. include preserving public health or public safety or other imperative reasons of over-riding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment;***

2. scientific and educational purposes,
3. ringing or marking
4. conserving wild animals

Development works fall under the first purpose and Natural England issues bat mitigation licences for developments.