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PRELIMINARY ROOST ASSESSMENT

Stalley Royd Farm, Jackson Bridge, W. Yorkshire

Report Reference: BG18.344a

November 2018



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1 Summary

- 1.1 Brindle & Green Limited were commissioned by Mr Ivan Conroy to undertake a Preliminary Roost Assessment at Stalley Royd Farm, Jackson Bridge, Holmfirth. The purpose of this assessment was to provide an evaluation of the ecological value of the site, and to identify key ecological constraints to the proposed development in relation to bats and birds. The survey was undertaken on 31st October 2018.
- 1.2 The site is the subject of a full application for the conversion of the existing agricultural building into a two-storey residential dwelling, within the current footprint.
- 1.3 Ecological constraints relating to bats and birds within the building and surrounding environment were considered during the survey. A full description of the recommendations can be found within Chapter 7 (Page 27). Below is a summary of the ecological issues recommended for further consideration as a result of our initial investigations:

Ecological Consideration	Recommendations (e.g. further survey, mitigation)	Timing
Breeding Birds	a) Undertake development works to the building between October and February where possible; b) Any development works proposed between the months of March and September must have a pre works check carried out, 24hrs prior to commencing any activities, by a competent ecologist to ensure that no nesting birds are present. If birds are found to be nesting, works will need to be delayed in those areas until it is confirmed that nesting has been completed; c) Consideration given to replacement nesting provision for breeding swallows through the creation of a lean-to onto the side of the carport within the vicinity of the project area (to be included within the ownership of the barn once developed). Within this area two Schwegler 10 Swallow nests should be installed towards the eaves. A ledge can be fitted beneath to extend beyond the edge of the nest to catch droppings.	October – February (Works outside of the breeding season) If unachievable, follow steps in recommendation. Post – development works

Roosting Bats	<i>High Suitability Building</i> Buildings 1a (B1a) and 1b (B1b) should be subjected to at least three further surveys, one dusk emergence and one dawn re-entry survey, with the third either a dusk or a dawn, should be carried out utilising two surveyors.	May - September (with at least one survey between May and August).
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2 Introduction

- 2.1 Brindle & Green Limited were commissioned by Mr Ivan Conroy to undertake a Preliminary Roost Assessment at Stalley Royd Farm, Jackson Bridge, Holmfirth. The purpose of this assessment was to provide a preliminary appraisal of the ecological value of the site for bats and birds and to identify the key ecological constraints to the proposed development. The survey provides detail on the need for any additional, more detailed protected species surveys, and will allow the development of likely mitigation, compensation and enhancement measures to be developed.
- 2.2 The site is located within the small village of Jackson Bridge, on the southern edge of Holmfirth. The wider landscape comprises a large expanse of agricultural grazing pasture but also features several small villages principally to the south and west of the site. The project area consists of a single storey, semi-detached agricultural building (Building 1). The applicant is seeking permission to convert the existing agricultural building into a two-storey residential dwelling, within the current footprint. Proposed plans have not yet been submitted.
- 2.3 The legislation relevant to protected species within the United Kingdom is summarised within Appendix 2.
- 2.4 Results and recommendations contained within this report have been prepared by an experienced ecologist and are therefore the view of Brindle & Green Limited. The survey is based on information provided by our client, the development proposals, and the results of the desk study and our survey of the site. This report pertains to this information only.

3 Methodology

3.1 Desk Study

- 3.1.1 Table 1 below lists organisations and/or resources used as part of the desk study process. Data regarding any known statutory sites in addition to granted EPS licenses were requested from the following sources:

Table 1. Ecological Data Resources

Consultee	Requested Data	Search Radius	Date Requested
MAGIC Maps	National and International Site Designations Granted EPS Development Licences	2km	02/11/2018

3.2 Surveyor

- 3.2.1 The survey was carried out by Assistant Ecologist, Naomi Parker BSc Hons (Natural England Class 2 Bat Licence: 2018-34600-CLS-CLS).

3.3 Survey Conditions

- 3.3.1 The survey was undertaken at 11:00 on the 31st October 2018.
The external temperature was recorded as 8°C, with dry, sunny conditions and 1/8 cloud cover.

3.4 Field Survey

- 3.4.1 The habitats on site were assessed for their suitability to support protected species following standard survey guidance (Appendix 3). It is important to assess the surrounding habitat, as in some cases the legal protection of a protected species extends to the habitat in which it occupies. Any incidental sightings of field signs were noted at the time of survey. Where evidence of, or the confirmed presence of a Protected Species is identified, further, species specific surveys may be recommended to establish with certainty the presence and extent, or likely absence of a legally protected species prior to the determination of any planning approval.

3.5 Protected Species

3.5.1 Breeding Birds

3.5.1.1 The building to be impacted by the proposed development has been the subject of a search for active or previously used bird nests, and identification of features considered conducive to breeding birds, alongside noting the activity and behaviour of birds on site during the survey. Following standard techniques, as recommended by

Gilbert G, Gibbons DW, Evans J. (1998) *Bird Monitoring Methods: Breeding Bird Survey* (pages 389-393). RSPB.

3.5.2 Roosting Bats

3.5.2.1 The structure on site was assessed for its suitability to support roosting bats following Collins, J (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines*, (3rd edition), Bat Conservation Trust, London. The potential suitability of each structure and the resulting survey effort to establish confidence in a result is summarised within Table 2.

During the external and internal (where possible) assessment of the structure potential roosting features (PRF's) such as slipped or missing roof tiles, gaps in brickwork, points in roof timbers and the presence of suitable soffits and fascia boards were recorded to evaluate the potential suitability of a structure to support roosting bats. Evidence of bat presence was also recorded including feeding remains, bat droppings and staining around potential access points. Bats often use different roosting sites at different times of the year, and the absence of evidence does not always equate to the absence/ or lower suitability of a structure to support a bat roost.

3.5.2.2 If bats are discovered emerging or re-entering any structure, the survey schedule should be appropriately adjusted to increase the survey effort so that sufficient information for roost characterisation can be collected to advise the planning application or EPS development licence.

Table 2. Classification of roosting habitat within structures (Buildings and trees), to be applied to each structure using professional judgement. Adapted from Collins J (2016)

Category	Description of roosting habitat	Minimum number of presence / absence surveys required
Negligible Suitability	Suitable cavities may exist, but these are less than ideal.	None
Low Suitability	A structure with one or more potential roost sites that could be used by individual bats opportunistically. The feature and surrounding habitat do not provide enough shelter, conditions* space for larger roost types such as a maternity or hibernation roost. A tree of sufficient size and age to support roosting bats, but with no features observed from the ground, or the features only have a limited potential to support roosting bats.	One survey between May and August Trees – No further surveys required
Moderate Suitability	A structure or tree considered to have one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions* and surrounding habitat but are unlikely to support a roost of high conservation status (With regard to roost type only – assessments are made irrespective of species conservation status, which is established after presence is confirmed).	Two surveys between May and September (with at least one survey undertaken between May and August) One Dusk emergence and One Dawn re-entry survey to ideally be undertaken at least two weeks apart.
High Suitability	A structure or 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.	Three surveys between May and September (with at least two surveys undertaken between May and August) One Dusk emergence and One Dawn re-entry survey to be undertaken. The third survey can be either Dusk or Dawn, undertaken at least two weeks apart.
Confirmed	This category is where positive evidence of bats has been recorded. For example, bats are found; bat droppings may be present at a suitable location for roosting bats; existing bat records may be associated with the structure.	

(* in this context conditions refers to the level of disturbance, light, height above ground, temperature, and humidity etc)

3.5.3 Foraging and Commuting Bats

3.5.3.1 Habitat features on site were assessed for their suitability to support foraging and commuting bat populations. This assessment was independent from the suitability of the site to support roosting bats and provides information on the likeness of bat foraging activity within the local environment, and the dependence of individuals on these features for commuting to alternative roosting sites, foraging and migration. The suitability of the site's commuting and foraging habitat was assessed and evaluated against the proposed impacts to the site and Table 3 (below) to allow categorisation of the habitat.

Table 3. Potential suitability of foraging and commuting habitat within an application boundary. Features should be assessed following this guide and professional judgement. Adapted from Collins J (2016)

Category	Description of commuting and foraging habitat	Survey effort to establish the value of commuting and foraging habitat**
Negligible Suitability	Negligible habitat features on site likely to be used by commuting or foraging bats.	None
Low Suitability	Habitat which could be used by low numbers of commuting bats such as an isolated gappy hedgerow, or an unvegetated stream unconnected to suitable habitat in the wider environment. Suitable, yet isolated habitat that could be used by foraging bats such as individual trees, or a patch of scrub.	Transect /spot count/ timed search survey: One survey visit per active season AND Static automated surveys: One location per transect, over a five-night period, per season. In weather conditions conducive to finding bats.
Moderate Suitability	Continuous habitat connected to the wider landscape that could be used by commuting bats, notably tree lines, hedgerows or linked back gardens. Habitat that is connected to the wider landscape which could be used by bats for foraging such as trees, open water, scrub or grassland.	Transect /spot count/ timed search survey One survey visit per month At least one survey should comprise dusk and pre-dawn (or dusk to dawn) within one 24-hour period. AND Static automated surveys: Two locations per transect, over a five-night period, per month (April to October) In weather conditions conducive to finding bats.

High Suitability	Continuous, high-quality habitat that is well connected to the wider landscape which is considered to be highly conducive to commuting bats including river valleys, stream, hedgerows, and woodland edge High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree lined watercourses, and grazed parkland. Site is close to and connected to known roosts.	Transect /spot count/ timed search survey Up to two survey visit per month (April to October) At least one survey should comprise dusk and pre-dawn (or dusk to dawn) within one 24-hour period. AND Static automated surveys: Three locations per transect, over a five-night period, per month (April to October) In weather conditions conducive to finding bats.
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*(** This is only a guide for survey effort required, the complexity of the site and the proposed disturbance / loss of features will determine the extent of works required on a site by site basis).*

3.6 Limitations

3.6.1 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no investigation could ensure the complete characterisation and prediction of the natural environment. The protected species assessment provides a preliminary view of the likelihood of these species occurring on site, based upon the suitability of the habitats, known distribution of the species in the local area and any direct evidence on site. It should not be taken as providing a full and definitive survey of any protected species group.

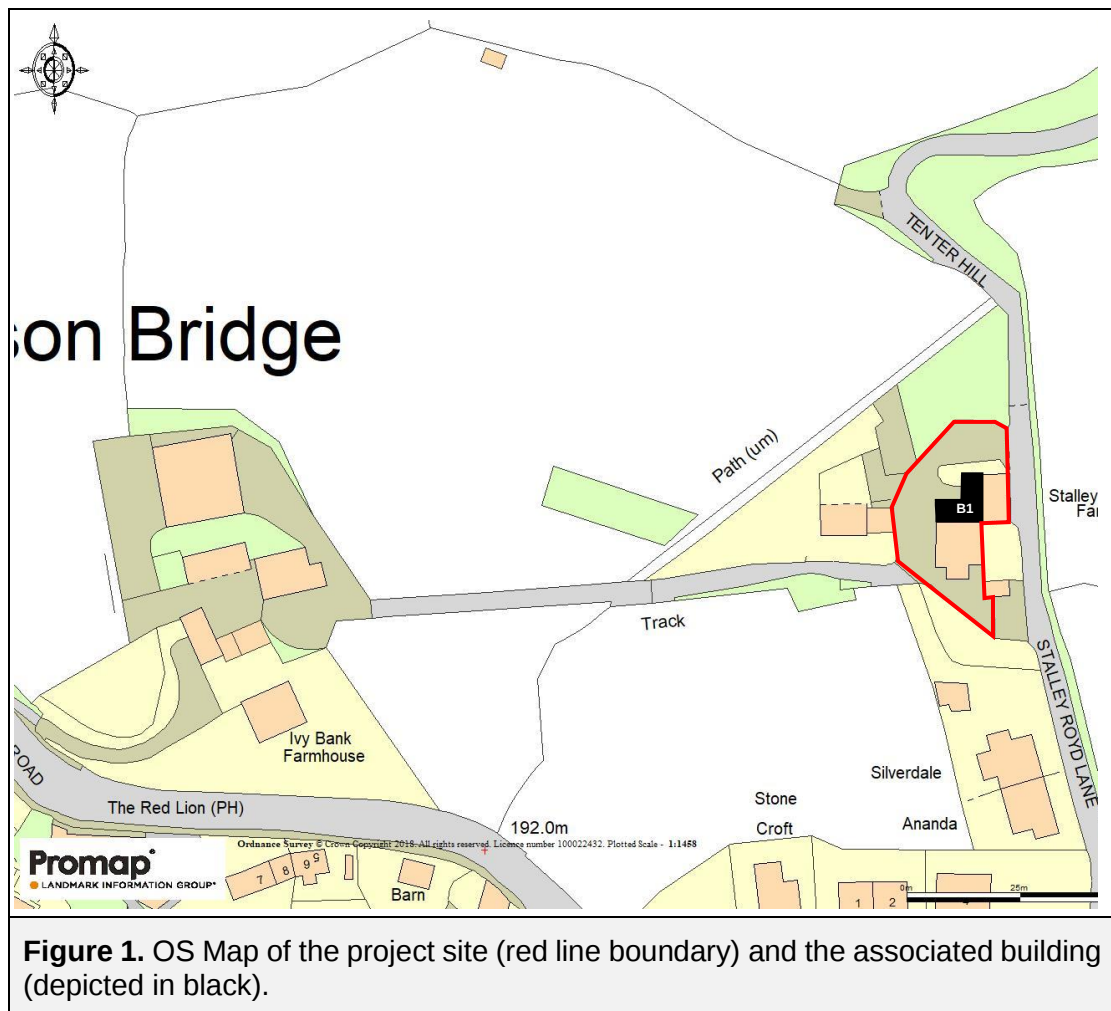
3.7 Report Lifespan

3.7.1 Given the transient nature of the subject we would consider the survey results contained to be accurate for 2 years.

4 Site Context

4.1 Site Description

The application site can be found at Grid Ref. SE 16656 07536 located off Stalley Road Lane, within the small village of Jackson Bridge, south of Holmfirth. The site was situated within a rural landscape, dominated by a network of agricultural grazing pasture, interspersed with pockets of woodland, hedgerows and a number of waterbodies. In addition, a number of villages lie within close proximity to the site such as the village of Scholes, 400m to the west. Beyond this to the south, lies the High Peak area of the Peak District National Park. Here the undulating topography was dominated by moorland interspersed with areas of open water in the form of lakes.



4.2 **Zone of Influence**

The zone of Influence is used to describe the geographic extent of potential impacts of a proposed development in relation to the target species, in this case bats and breeding birds. Due to the scale and nature of the proposals, it is not considered that the impacts of the proposed works would extend beyond the scheme footprint and its immediate surroundings.

5 Results

5.1 Desk Study

5.1.1 Designated Sites

The site was subjected to a search for designated sites within a 2km radius using data supplied by the online desk-based resource MAGIC.

5.1.2 Magic maps found there to be no reported statutory designations within 2km of the site.

5.1.3 Protected Species

Magic maps also provides details of granted EPS licences within 2km from the application area. No granted EPS licences were identified.

5.2 Field Survey

5.2.1 Building 1 is a semi-detached, single-storey agricultural building used for storage. The building is surrounded by an area of hardstanding. For the purpose of this report, the building was split into sections (B1a – B1b), as shown in Figure 2. The applicant is seeking permission to convert the existing agricultural building into a two-storey residential dwelling, within the current footprint.

5.3 Protected Species

5.3.1 Breeding Birds

A survey in October 2018 was considered to be outside of the breeding bird season. Four swallow *Hirundo rustica* nests were noted on the framework within Building 1a (B1a). Through discussion with the client, it is recognised that these nests are used annually and were active during the breeding season of 2018. In addition, a single swallow nest was noted within the first floor of B1b. Furthermore, no vegetation or other features considered suitable for nesting were found associated within or around the building.

5.3.2 Roosting Bats

5.3.2.1 B1a was assessed as having high suitability to support roosting bats. The extent of the roosting potential was identified both externally and internally, principally under the overlap of roof slates and within wall cavities. In particular, the numerous internal wall cavities provide conditions that could be used by roosting bats, supporting a roost of high conservation status (i.e. maternity/breeding roost). A heavy concentration of pipistrelle and brown long-eared type droppings (approx. 300-400) found alongside the northern gable wall indicates usage by a significant number of bats (possible maternity roost). At the time of the survey, this evidence could not be associated with any one roosting feature, albeit many cavities were present throughout the gable wall. This could indicate possible swarming to an independent roost feature.

5.3.2.2 In addition, a concentration of approximately seven pipistrelle type droppings were noted high up on the internal southern gable wall. This is indicative of opportunistic roosting of a single number of bats at the wall top.

5.2.2.3 Many of the low-level wall cavities were thoroughly inspected by use of an endoscope. There were no roosting bats or evidence supporting the presence of roosting bats associated with these features. The higher-level wall cavities, particularly at the northern end could not be subject to an endoscopic search due to lack of access.

5.3.2.4 The presence of a light scattering of pipistrelle and brown long-eared type droppings throughout the barn indicates use of the building for light sampling and/or foraging activities.

5.3.2.5 Access into the barn could be obtained through both the open western doorway and the northern, high-level window.

5.3.2.6 Building 1b (B1b) was assessed as having high suitability to support roosting bats. The extent of the suitability was identified both externally and internally, within the gaps and voids under roof slates and beside internal timbers within the first floor room.

5.3.2.7 Sections of the tiled roof on the western elevation that could be accessed via a ladder were inspected through use of an endoscope. This identified many gaps and deep voids within the roof, that could support large numbers of bats, whilst providing conditions suitable for roosts of a high conservation status. However, the areas inspected did not contain associated evidence of roosting bats indicating that these features were not in use. The presence of bats and such roosts within the higher-level roof that could not be investigated by way of an endoscopic survey and therefore, cannot be discounted.

5.3.2.8 Within the first floor of B1b, potential for roosting bats was provided beside the roof timbers. Possible roost types, however, were confined to night roosts for species such brown long-eared, due to the area being well lit by sunlight during the day. A small number of brown long-eared type droppings were noted scattered on the floor. The number and location of these droppings do not directly correlate with roosting at the timbers and are more indicative of foraging. The presence of a dropping on the windowsill of the northern open window indicates the use of this feature as an access point.

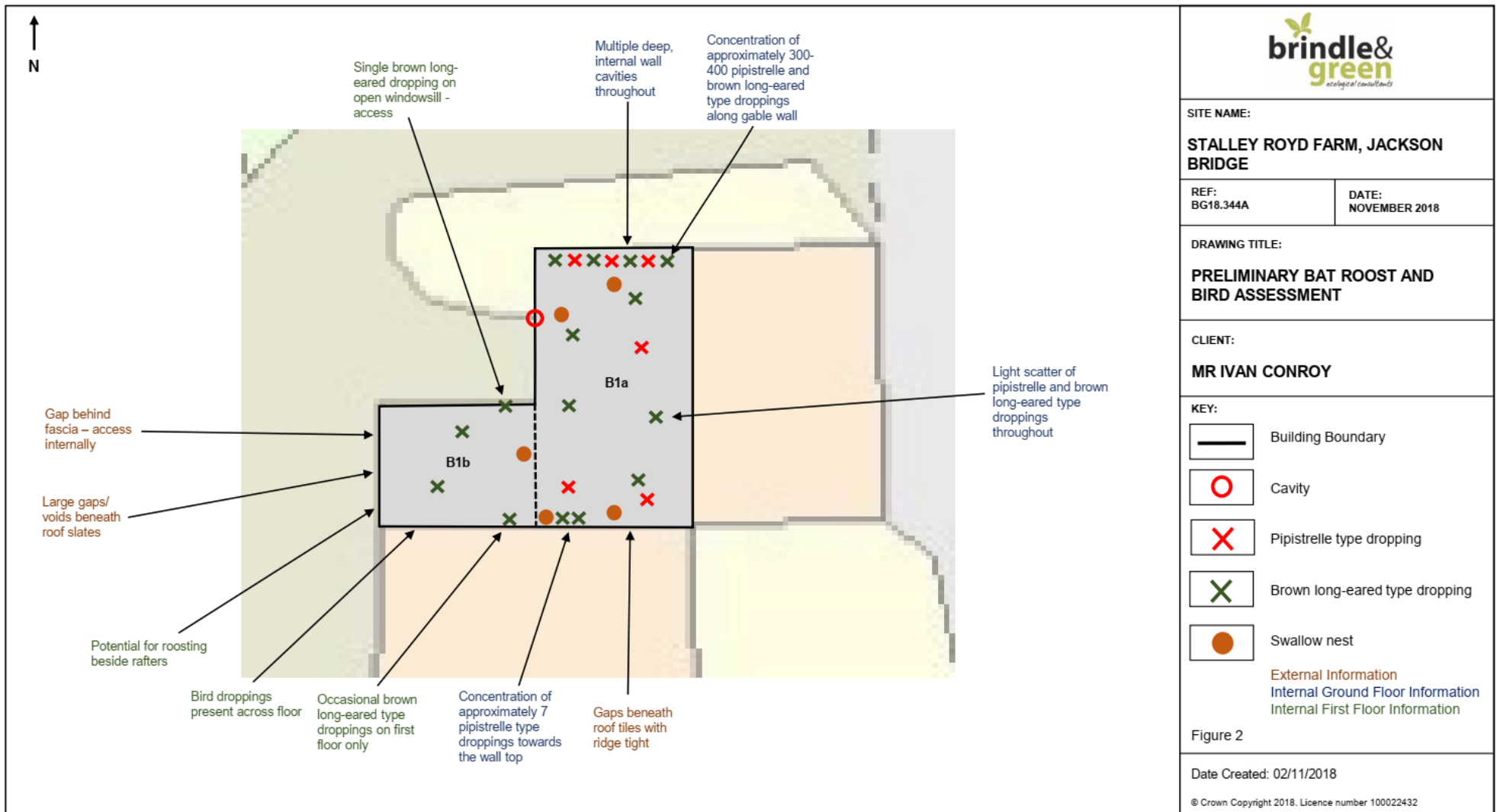
5.3.2.9 The main structural features of the building, and their suitability to support roosting bats are summarised below (Table 6 and Figure 2), and associated figures can be found within Section 5.4.

5.3.2.10 **Foraging and Commuting Bats**

The building was positioned within a rural landscape. The direct surroundings comprised agricultural grazing pasture interspersed with pockets of woodland, hedgerows and a number of waterbodies. This was broken up by a number of small villages, principally to the west. Beyond this, 4.12km to the south, lies the High Peak area of the Peak District National Park. Here the undulating topography was dominated by moorland interspersed with areas of open water in the form of lakes. Vegetative linear features connected the project area to these important foraging areas, although these became sparser and were largely replaced by dry stone walls to the south.

Table 6. Summary of Bat Roost potential and evidence found within each of the buildings/structures on site (Supporting Figures within Section 5.4).

High Moderate Low Negligible None				
Building Section	Description	Bat evidence / Potential Roosting Features (PRFs)		Roost Suitability
B1a	A large, single storey, dressed stone built barn. A two-storey extension was attached to the west (B1b). A plastic soffit was present at the eaves and was tight fitting. The walls supported a large open doorway to the west and a mixture of open and modern PVC windows. Yorkshire stone slates covered the pitched roof and were supported on a modern timber frame with steel ceiling joists. There was an absence of felt under the tiles. Internally, the building was being used for storage. The northern end of the barn was sectioned off by breezeblock walls forming two small storage rooms. Wooden boarding covered the ceiling. This was exposed to the rest of the barn.	External - Gaps beneath roof slates; - External wall cavity on the north-western elevation; Internal - Multiple deep, wall cavities throughout; - Potential for roosting at the ridge; - Light scatter of pipistrelle and brown long-eared type droppings throughout; - Concentration of approximately seven pipistrelle type droppings towards southern wall top; - Concentration of approximately 300 – 400 pipistrelle and brown long-eared type droppings along the floor of the northern gable wall – confirmed roosting.		High - Confirmed roost
B1b	A small, single storey, dressed stone built extension. A wooden fascia was present at the eaves supporting guttering. Lead flashing covered the wall top adjoining the western elevation of B1a. Yorkshire stone slates covered the sloping roof and were supported by wooden rafters and purlins. These were underlain by bitumen felt. Internally, the ground floor comprised a mixture of plastered, brick and breezeblock walls. Wooden boarding supported on wooden rafters comprised the ceiling. The first floor room comprised brick and stone walls. At its highest, the roof was approximately two metres high, decreasing in height westwards.	External - Gap behind fascia on western elevation; - Large gaps/voids beneath roof slates. Internal - Potential for roosting beside rafters; - Brown long-eared type dropping on northern open windowsill indicating access point; - Occasional brown long-eared type droppings within the first floor room.		High



5.4 Site Photographs

- 5.4.1 Photographs were taken to provide evidence of the survey findings and support the classification of the building's potential to support protected species.

Figure 3:

Western Elevation of B1a

Western elevation of B1a, showing the dressed stone walls and large open doorway.



Figure 4:

Internal View of B1a

Yorkshire stone slates covered the pitched roof. These were supported on a modern timber frame with steel ceiling joists. The tiles were not underlain with felt.



Figure 5:

General internal view of B1a looking south, showing the high-level walls.



Figure 6:

Internal view of B1a looking north, showing the two small storage rooms comprising breezeblock walls and a wooden boarded ceiling.



Figure 7:

B1a PRFs

Internal concentration of approximately 300 – 400 pipistrelle and brown long-eared type droppings at the base of the northern gable wall. This is indicative of a significant number of roosting bats (possible maternity roost).



Figure 8:

Western Elevation of B1b

External view of B1b showing the dressed stone walls and Yorkshire stone slate covered sloping roof.



Figure 9:

Internal View of B1b and PRFs

Internal view of B1b, showing the internal wooden rafters and purlins. Potential for roosting was provided beside the timbers. Possible roost types, however, were confined to night roosts for species such as brown long-eared, due to the area being well lit by sunlight during the day.



Figure 10:

Single brown long-eared type dropping on the windowsill of the northern open window, indicating use of this feature as an access point for foraging.



6 Evaluation

6.1 Development Proposals

- 6.1.1 The site is the subject of a full application for the conversion of the existing agricultural building into a two-storey residential dwelling, within the current footprint.

6.2 Desk Study Impacts

Direct impacts on nearby designated sites as a result of the proposed development are considered unlikely. No designated sites were recorded within 2km of the development site. The extent of the development is to be contained within the application boundary. On the basis that the proposed development is to have minimal effect on vegetative habitats within the application site boundary, the likelihood of indirect impacts to designated sites is considered negligible.

6.3 Breeding Birds

- 6.3.1 All wild birds, their eggs and nests are protected under the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure, or take any wild bird whilst nesting, or take, damage or destroy the nest of any such bird while in use or being built. In addition, species listed on Schedule 1 of the Wildlife and Countryside Act 1981 or their dependant young are afforded additional protection from disturbance whilst they are at their nests.
- 6.3.2 The survey demonstrated that B1a and B1b was used by breeding swallows. No vegetation or other features considered suitable for nesting were found associated within or around the building. This report sets out important guidance in Section 7 to safeguard nesting birds, their nests, eggs and young during the development phase of this work if these vegetative features are to be affected.

6.4 Bats

- 6.4.1 All bat species are protected under the Wildlife and Countryside Act (1981) and Habitat Regulations (2017) making it an offence to, intentionally kill, injure, or take any species of bat, intentionally or recklessly disturb bats, intentionally or recklessly damage destroy or obstruct access to bat roosts.

6.4.2 *Roosting bats*

6.4.2.1 The building was separated into two sections (B1a and B1b) of which were individually assessed for their potential to support roosting bats. These are discussed below.

6.4.2.2 Building 1a (B1a) was identified as having high suitability to support roosting bats, due to the presence of external and internal PRFs, principally within wall cavities and between roof tiles. Roosting bats were confirmed within the barn due to the presence and location of droppings, indicative of a roost of possible high conservation status (maternity roost).

6.4.2.3 Building 1b (B1b) was identified as having high potential to support roosting bats, due to the presence of external and internal PRFs, principally under roof tiles. These features had the potential to support a roost of high conservation status.

6.4.2.4 The proposed plans show that the current building is to be converted. If the development was to continue as planned, it will lead to the destruction of a roosting site of a protected species, and increased disturbance, injury or harm to individual bats and/or their young. The recommendations section of this report sets out important guidance on measures to avoid impacts on this species and measures to support its conservation status through ecological enhancement.

6.4.3 *Foraging and Commuting Bats*

The application boundary consisted of Building 1 and an area of hardstanding, located on the southern edge of Holmfirth. The rural landscape consisted principally of agricultural land interspersed with hedgerows, pockets of woodland and waterbodies. This provided connectivity to the wider landscape such as the High Peak of the Peak National Park, 4.12km to the south. This provided good foraging opportunities in the form of moorland and reservoirs. The local surroundings are therefore considered to be of high potential for foraging and commuting bats, whilst the application area itself was considered to have negligible suitability for foraging and commuting bats. Due to the application building being surrounded by areas of hardstanding, the proposed redevelopment is considered unlikely to have any significant impacts upon local bat populations.

7 Recommendations

As with all development sites; efforts should be made to support National and Local Biodiversity Action Plans and seek opportunities to incorporate ecological enhancement schemes within the proposed development. Such site enhancements should be viewed positively in light of the NPPF (2012) which seeks biodiversity enhancements and net gain through the planning process.

7.1 Breeding Birds

Breeding Birds	Timing
Recommendations	
Swallow nests were identified within B1a and B1b. These are recognised as being annually utilised by breeding swallows. Given their protection, development must be sympathetic to the value of this habitat and potential impacts on breeding birds, their eggs, nests and young. The breeding bird season is generally accepted as being between March and September. If these trees are to be affected, consideration and implementation must be given to the following options most appropriate to the scheme; a) Undertake development works to the building between October and February where possible; b) Any works proposed between the months of March and September must have a pre works check carried out, 24hrs prior to commencing any activities, by a competent ecologist to ensure that no nesting birds are present. If birds are found to be nesting, works will need to be delayed in those areas until it is confirmed that nesting has been completed.	October – February (Works outside of the breeding season) If unachievable, follow steps in recommendation.,
Enhancement Prescriptions	
Due to a significant decline within the European population, swallows are included on the Amber List of Species of Conservation Concern. Swallows are faithful to their nest sites, returning most years to breed. It is therefore recommended that alternative nesting provision is put in place for breeding swallows under guidance of an ecologist. Such provisions require a sheltered area in which to nest and could include the following;	Post – development works

a) Creation of a lean-to onto the side of the carport within the vicinity of the project area (to be included within the ownership of the barn once developed). Within this area two Schwegler 10 Swallow nests should be installed towards the eaves. A ledge can be fitted beneath to extend beyond the edge of the nest to catch droppings.		
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7.2 Roosting Bats

Roosting Bats	Timing
Recommendations According to Bat Conservation Trust Guidelines, buildings that provide potential to support roosting bats should be subject to further survey work in order to establish the presence or likely absence of bats within the building. The requirement of this is described below. <i>High Suitability Building</i> As Building 1a (B1a, with confirmed roosting) and 1b (B1b) have been deemed to hold high potential to support roosting bats, at least three further surveys, one dusk emergence and one dawn re-entry survey with the third either a dusk or a dawn, should be carried out utilising two surveyors.	
Enhancement Prescriptions In light of the need for additional surveys, enhancement prescriptions would be set out within a Bat Emergence Survey Report as a separate document.	May - September (with at least one of the surveys between May and August)

Appendix 1. General References

Bat Conservation Trust's 'Good Practice Survey Guidelines' (Rev 2012).

Bell, S. McGillivray, D. (2006) *Environmental Law*. 6th ed. Oxford University Press.

Byron, H (2000) *Biodiversity and Environmental Impact Assessment: A Good Practice Guide for Road Schemes*. The RSPB, WWF-UK, English Nature and the Wildlife Trusts, Sandy.

Collins, J (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines*, (3rd edition), Bat Conservation Trust, London

Gilbert G, Gibbons DW, Evans J. (1998) *Bird Monitoring Methods: Breeding Bird Survey* (pages 389-393). RSPB.

Harris S, Cresswell P and Jefferies D (1989). *Surveying Badgers*.

Mitchell-Jones A.J. McLeish, A.P. (2004) *Bat Workers Manual* (3rd Edition). Joint Nature Conservation Committee.

Mitchell-Jones A.J. *Bat Mitigation Guidelines* 2004. English Nature.

Sutherland, W.J. (1996) *Ecological Census Techniques*. Cambridge University Press.

Treweek, J. (1999) *Ecological Impact Assessment*. Blackwell Science.

Williams, C. (2010) *Biodiversity for Low and Zero Carbon Buildings, A Technical Guide for New Build*. Riba Publishing.

Appendix 2. Legislation and Guidance Sources

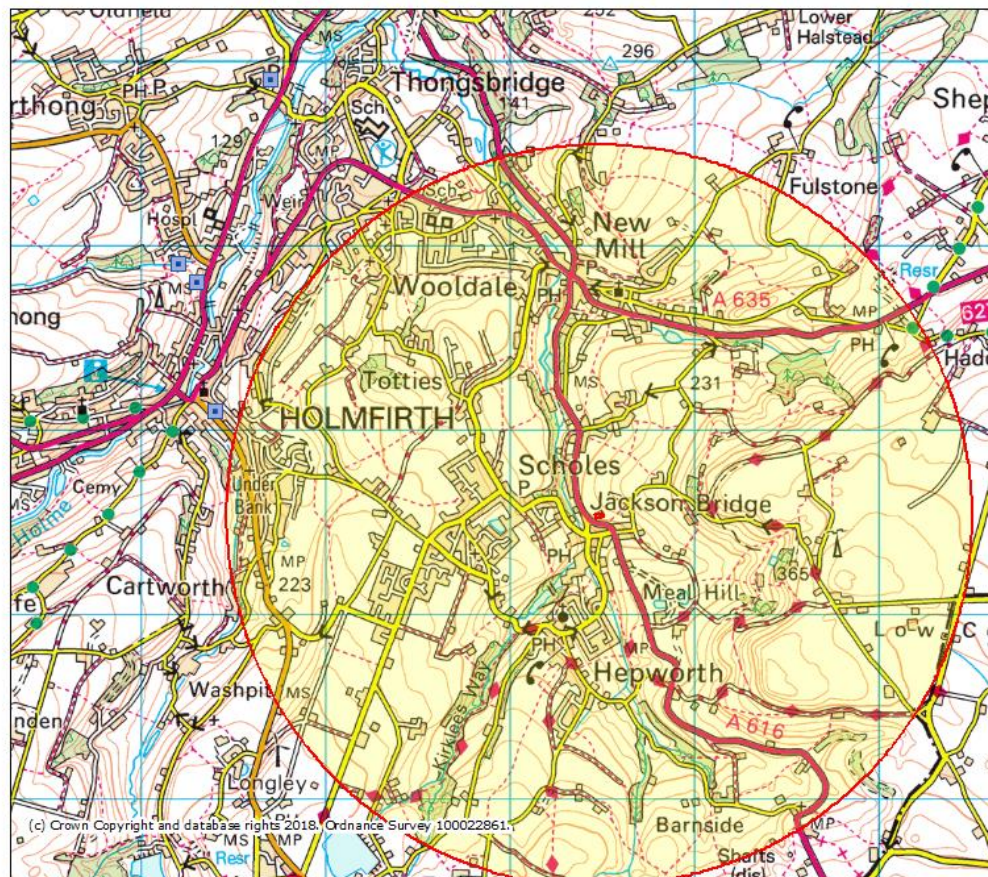
Articles of British wildlife and countryside legislation, policy guidance and both Local and National Biodiversity Action Plans (BAPs) are referred to. The articles of legislation are:

- The Wildlife and Countryside Act 1981 (as amended)
- The Conservation of Habitats and Species Regulations 2017 (as amended)
- Department for Communities and Local Government. National Planning Policy Framework. March 2012
- EC Council Directive on the Conservation of Wild Birds 79/409/EEC
- National Parks and Access to the Countryside Act 1949
- The Protection of Badgers Act 1992
- Land Drainage Act 1991
- The Countryside and Rights of Way Act 2000
- The Natural Environment and Rural Communities Act 2006
- The United Kingdom Biodiversity Action Plan 2006
- Hedgerow Regulations 1997
- Town and Country Planning Act 1990
- Local Biodiversity Action Plan (LBAP).

Appendix 3. MAGIC Maps

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Magic Map



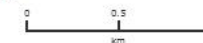
Legend

- Local Nature Reserves (England)
- National Nature Reserves (England)
- National Parks (England)
- Ramsar Sites (England)
- Sites of Special Scientific Interest (England)
- Special Areas of Conservation (England)
- Special Protection Areas (England)
- Plant
- Reptile

Granted European Protected Species Applications (England)

- Amphibian
- Bat
- Cetacean
- Invertebrate
- Other Mammal

Projection = OSGB36
xmin = 410300
ymin = 405500
xmax = 421600
ymax = 410300



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