



Elite Ecology

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**128 Thornton Road,
Bradford**



Bat Activity Survey

July 2021



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Bat Activity Survey

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0. Executive Summary

- 0.1 This report has been prepared at the request of Mr. Khuram Ghufur (Proprietor). It relates to the potential presence of bats and birds at the proposed re-development site located at 128 Thornton Road, Bradford, Yorkshire, BD1 2DX (OS Grid Reference: SE 15800 33103). To fulfil this brief, Elite Ecology undertook both a desktop study and a field survey.
- 0.2 Under the current proposals, the structure is to be converted from a carpet mill to a residential dwelling.
- 0.3 Due to the amount of potential ingress/egress points and suitable roosting features, the buildings were deemed as having **low** potential for bats to roost and **confirmed** potential for birds to nest. Therefore, a minimum of one further activity survey was required during the bat survey season (May to September, inclusive). This was subsequently carried out on the 2nd of July 2021.

0.4 Summary

Bat presence/absence

From the survey visit undertaken on the site, it has been concluded that the structures are not currently in use by roosting bats. However, the site is in use by common pipistrelle (*Pipistrellus pipistrellus*) bats for foraging and commuting purposes.

Bird presence/absence

Some bird nests were identified within the structure at the site confirming the presence of birds in the building. In addition to this, birds are likely to be present within the local landscape with ample habitat surrounding the site available to support their presence.

Ecological value of building units

The ecological value of the buildings has been deemed as **negligible** to bats due to no current bat roosts being present. The ecological value of the buildings to birds has been deemed **high** due to the presence of feral pigeon (*Columbus livia domestica*) nests within the structure.

0.5 Recommendations

The recommendations for 128 Thornton Road, Bradford can be summarised as follows (please refer to **Section 5 Recommendations** for a more in-depth description):

- No compulsory recommendations are apparent for this site.
- Artificial lighting should be avoided where possible. If this is not possible, this should be screened for large bodies only and pointed downwards.
- **Optional:** Enhance the site for bats by installing [Eco Bat Boxes](#), [Integrated Eco Bat Boxes](#) or [Bat Access Tiles](#) on appropriate elevations (southern, eastern and/or western) – these must avoid artificial lighting.
- **Optional:** Incorporate a bat friendly planting scheme post development.
- No works can be undertaken during the bird breeding season of March to August (inclusive), unless the structure has been inspected by a suitably qualified ecologist no more than twenty-four hours prior to the commencement of works.
- A professional pest company should be contracted in to remove the pigeon's following the correct protocols, including ensuring all legal obligations are met.
- Install at least two [Large Bird Nest Boxes](#).
- **Optional:** A variety of additional [bird boxes](#) could be included to enhance the nesting opportunities for birds on site.

Bat Activity Survey

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1. Introduction

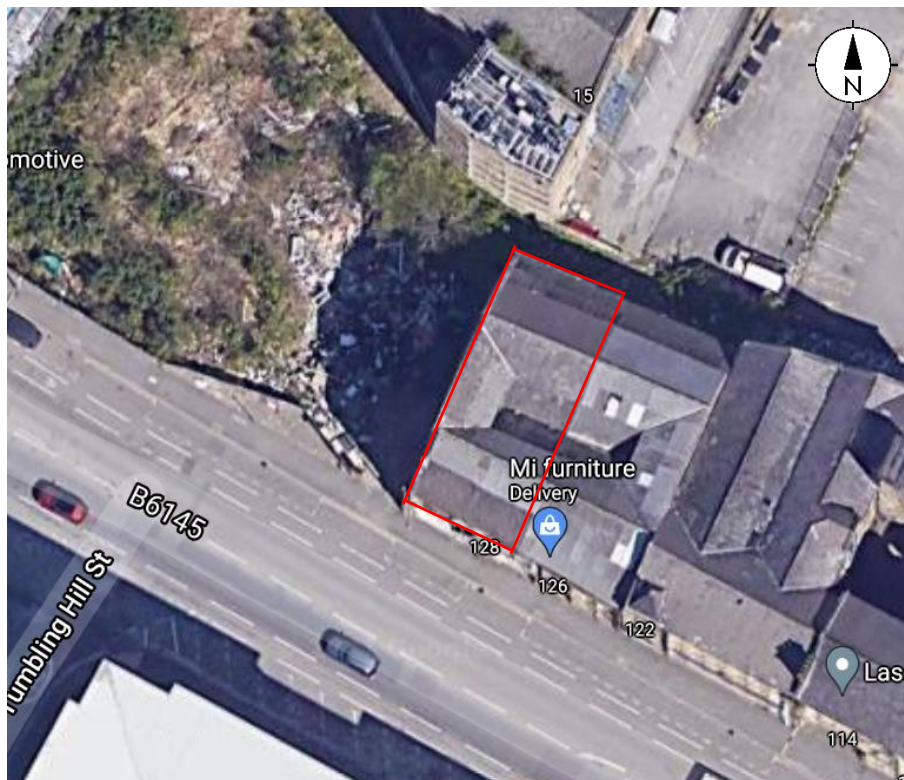
1.1 Report rationale

This report has been prepared at the request of Mr. Khuram Ghufur (Proprietor). It relates to the potential presence of bats and birds at the proposed re-development site located at 128 Thornton Road, Bradford, Yorkshire, BD1 2DX (OS Grid Reference: SE 15800 33103). To fulfil this brief, Elite Ecology undertook both a desktop study and a field survey.

1.2 Site description

The site itself is situated within an urban setting due to its location in the settlement of Bradford in Yorkshire. Hard standing ground is situated in the immediate vicinity of the surveyed structure. The building of interest measures a total of approximately 229m². Therefore, the site is considered to contain potential to support the local bat and bird populations by offering roosting/nesting, commuting and foraging opportunities.

Figure 1: An aerial photograph of the surveyed site at 128 Thornton Road, Bradford (as shown by the red outline).



1.3 Proposed works

Under the current proposals, the structure is to be converted from a carpet mill to a residential dwelling.

1.4 **Aims of surveys**

The aims of the surveys were to undertake an assessment of the building(s), vegetation and surrounding area to establish whether any bats and birds may be present and, if so, in what way they are using the site. The actions of the surveyors on the site and during the production of this report were conducted in accordance with Bat Conservation Trust (BCT) guidelines (3rd edition).

1.4.1 This survey effort considered the potential for all **bat and bird species (including barn owls)** onsite:

- To establish the possibility of bat roosts and bird nests being present at the proposed development site.
- To assess any roost/nest status (i.e. what type and numbers of individuals).
- To assess suitable food, resources and habitat requirements on site and in the local landscape.

1.4.2 The information will subsequently be used in conjunction with the knowledge of the proposed works at the site to determine the potential need for further survey effort, the impacts of the proposed scheme of works, to establish whether a Natural England Development Licence is required along with species-specific mitigation and compensation. This is done in order to keep any protected species at a favourable conservation status on site.

2. Survey Methodology

2.1 Desktop Survey Methodology

2.1.1 A variety of resources were independently consulted to assess the known local records within the nearby area and the importance of the site within the local landscape from an ecological perspective. The resources used were the Local Records Centre, www.naturalengland.org.uk, www.ordnancesurvey.co.uk, Google Maps, Google Earth and Bing Maps. A search of other relevant nature conservation information was made through the use of the Multi-Agency Geographic Information for the Countryside (MAGIC) database.

2.1.2 The local records centre was contacted to provide data on all bat and bird species within 2km of the proposed development site at this point. West Yorkshire Ecology (WYE) were the relevant local records centre for this project.

2.2 Field Survey Methodology

2.2.1 Initial Site Survey

This is done by assessing the site by visually inspecting all building/s/structures and any trees/vegetation to be impacted by the proposed works. This is done to assess the resource availability for protected species on site and in the immediate area. Particular reference is made to:

- The presence or absence of bats and bird onsite.
- Any evidence of potential bat roosts and bird nests onsite.
- Whether any additional survey effort will be required.

During the initial survey, an internal and external inspection of the building(s) is undertaken to look for signs of bat activity. This is done in accordance with BCT guidelines for the assessment of building(s) and built structures.

2.2.2 External Inspection

This survey method is used to locate potential ingress and egress points around the structures that both bats and birds could use to gain access into the building. It also aims to identify any areas where cracks and crevices are present to be used as roosting/nesting features. This visual inspection is carried out in full daylight using binoculars, endoscopes, torches, and ladders. This will allow for the determination of the following information:

- The type of building(s) surveyed.
- The approximate age of building(s) surveyed.
- The construction type and materials used.
- The presence of potential roost features (e.g. missing roof tiles, raised ridge tiles, air vents, cracks and crevices within the mortar).
- The presence of suitable ingress and egress points (e.g. missing windows and doors, missing mortar, lifted tiles).
- The location of any anecdotal evidence for the presence of protected species (e.g. nests, droppings or food remains).

2.2.3 Internal Inspection

This survey method aims to locate and examine areas which potentially provide suitable environmental conditions for bats. This visual inspection was undertaken by using binoculars, endoscopes, torches, ladders, and bat detectors to inspect internal features of the building(s). This will allow for the determination of the following information:

- The presence of warm areas, dark areas, joints, crevices, beams and cavities that could be used for roosting and nesting purposes by bats and birds.
- To locate possible bat roost and bird nest sites.
- To listen for social calling bats.
- To locate any evidence of bat and bird presence through the identification of live or dead specimens, grease marks, droppings, food remnants, urine stains and/or the characteristic smell of bats.

2.2.4 Building/Vegetation Classification

A building/vegetation classification will be assigned to each surveyed feature that is proposed to be impacted by the scheme of works. This classification is based on the features potential to support roosting bats. The rating is also influenced by the location of the structure(s) in the local landscape, along with the number of suitable alternative roosting features, the type of features present in the landscape and the surveyor's experience. For example:

A structure that has a high level of anthropogenic disturbance with limited opportunities for access by bats, that is also situated within an urbanised area with few, or no mature trees, parkland, woodland or wetland would generally equate to having **negligible/low** potential.

Conversely, an older structure (e.g. pre 20th century or early 20th century) with multiple features suitable for use by bats that is close to optimal foraging habitat would equate to having **high** potential.

The amount of additional survey effort required for each feature will depend on its rating:

- **Negligible** – No further survey effort is required.
- **Low** – One further activity survey is required (structures only).
- **Moderate** – Two further activity surveys are required.
- **High** – Three further activity surveys are required.

2.2.5 Roost Categories

Any structures with evidence of bats will be further evaluated to assess which of the following roost categories may be present onsite:

➤ **Day Roost:**

A place where individual bats or small groups of males, rest or shelter during the daytime. These bats are rarely found at night at these sites.

➤ **Feeding Roost:**

A place where individual bats rest or feed during the night, but are rarely present in the day.

➤ **Hibernation Roost:**

A place where bats may be found either individually or together during the winter months. These roosts often have a constant cool temperature and high humidity.

➤ **Maternity Roost:**

A place where female bats give birth and raise their young to independence.

➤ **Mating Roost:**

A place where mating/copulation takes place between male and female bats. These can continue through the winter months.

➤ **Night Roost:**

A place where bats rest and/or shelter during the night, but will rarely be found here during the day. These can be used colonially or individually by the bats.

➤ **Satellite Roost:**

These are alternative roosting sites that are found within close proximity to the main nursery colony within the maternity roost. These are used throughout the breeding season by individual or small groups of female bats.

➤ **Swarming Site:**

A place where large numbers of bats come together during the latter summer months through until autumn. These sites are classed as being important mating areas.

➤ **Transitional/Occasional Roost:**

A place that is used by individuals or small groups of bats for a small period of time. These are used by the bats prior to hibernation and/or shortly after hibernation.

2.2.6 Bat Detector Survey (presence/absence survey)

If required, the object for this survey method is to detect any bats leaving or returning to their roost sites within the surveyed features. This is achieved by undertaking dusk and dawn activity surveys under the following protocol:

- Commencing the survey fifteen minutes before sunset (dusk survey) and two hours before sunrise (dawn survey).
- Listening for any social calls at potential roost sites using bat detectors.
- Standing at different survey points around the building(s) and/or vegetation using bat detectors to hear the bat echolocation.
- The survey will attempt to witness the first bats emerging (dusk) and the bats returning (dawn) to their roosts.
- Standing at different transect points at foraging/commuting areas around the site.
- Carrying out this survey methodology for up to two hours after sunset (dusk) and up to fifteen minutes after sunrise (dawn). This will cover the emergence and re-entry of the bats at the potential roost site, for some bat species.

2.2.7 In order to comply with the required legislation, the results from the surveys will be collated to establish whether a European Protected Species (EPS) development licence will be required. If required, project appropriate species-specific compensation and mitigation measures will be devised to ensure the species remains at a favourable conservation status at the impacted site.

2.3 Surveyors Information

2.3.1 The survey was undertaken by licensed bat ecologist/s, members of the Chartered Institute of Ecology & Environmental Management (CIEEM) and members of Elite Ecology staff:

Mr. Matthew Hodgson: Ecologist, Natural England Bat Survey Licence Number: 2019-41695-CLS-CLS Bat Survey Level 2.

Mr. Clifford Webb: BSc (Hons), Assistant Ecologist.

Ms. Kira Lovatt: BSc (Hons), Assistant Ecologist.

Bat Activity Survey

2.4 Field surveys**2.4.1 Site Surveys**

Elite Ecology were not made aware of any previous site surveys.

2.4.2 Roost Surveys

The structure at 128 Thornton Road, Bradford was externally and internally inspected for the presence of bats and birds with the use of various types of equipment (including binoculars, torches, endoscopes, and ladders) in full daylight. Subsequent activity surveys use a variety of bat detectors that include Bat Box Duet, SSF Bat2 and the EcoObs Batcorder. The following table outlines the environmental variables from the survey visits:

Environmental variables	PRA Survey of the Building – 19th of May 2021. Daytime	Activity Survey of the Building – 2nd of July 2021. Dusk
Temp Start:	17.1°C	18°C
Temp Finish:	17°C	17°C
Humidity Start:	70%	76%
Humidity Finish:	70%	79%
Cloud Cover Start:	100%	50%
Cloud Cover Finish:	100%	80%
Wind Speed Average:	None	None
Precipitation:	None	None

3. Results

3.1 Desktop Survey Results

The ecological data search provided by West Yorkshire Ecology (WYE) revealed multiple bat and bird species within the 2km search radius of the structure at 128 Thornton Road, Bradford.

3.1.1 Bats:

The ecological data search revealed several bat records within the 2km search radius. These were of bats (*Vespertilionidae*), brown long-eared (*Plecotus auritus*) bats, common pipistrelle (*Pipistrellus pipistrelleus*), Leisler's (*Nyctalus leisleri*) bats, pipistrelle bat species (*Pipistrellus* sp.) and vesper bat species (*Vespertilionidae*).

The closest record to the site were of pipistrelle bat species (*Pipistrellus* sp.) and vesper bat species (*Vespertilionidae*) that were located approximately 1,061m away.

3.1.2 Birds:

WYES was not commissioned to carry out an ecological data search for protected bird species. All birds in the UK can be split into three categories of conservation importance (red, amber and green – please refer to the [RSPB](#) for more information).

3.1.3 Designated sites

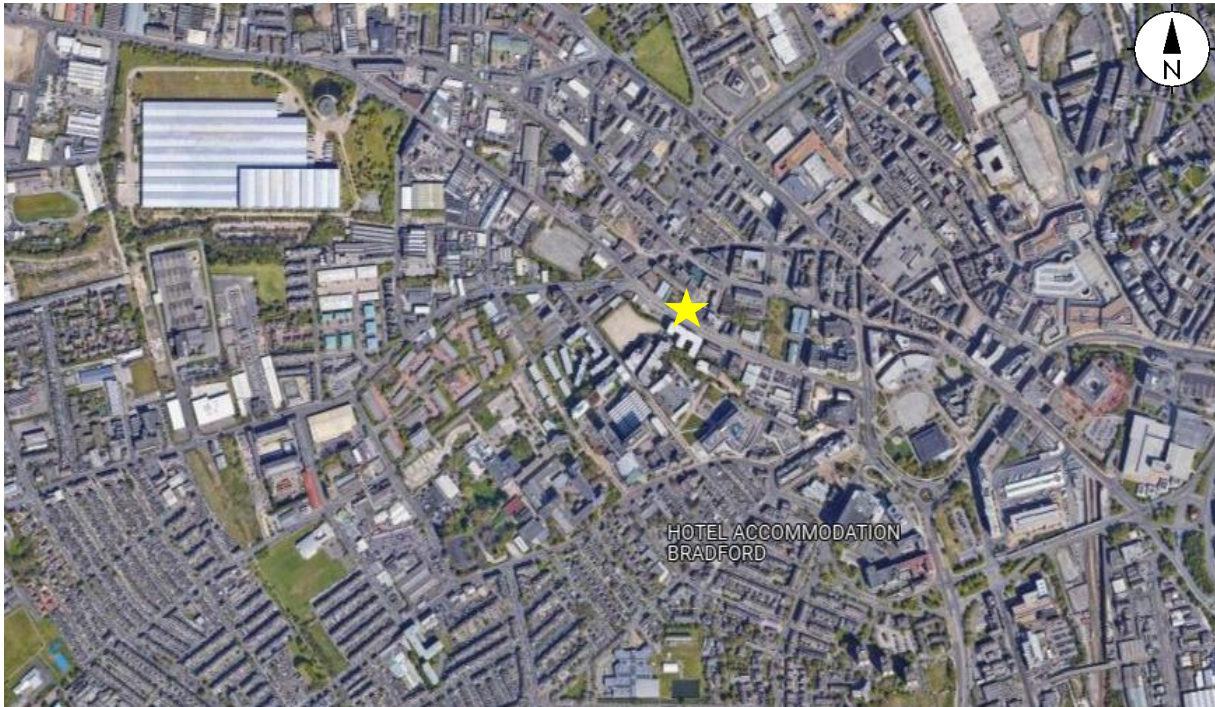
As the current proposals remain within the site boundary, it was not necessary to obtain any further information regarding both Statutory and Non-Statutory Nature Conservation Designations. This is due to the proposed works not altering any of the landscape surrounding the site.

3.2 Field surveys

3.2.1 Habitat description

The site itself is situated within an urban setting due to its location in the settlement of Bradford in Yorkshire. On site, there is hard standing ground. Within the wider landscape, arable land, hedgerows, parkland, pastureland, residential dwellings (with their associated gardens) and scattered trees are all evident. Therefore, the habitats that are present in and around the site contains all the elements that are considered critical in both bat and bird life cycles

Figure 2: An aerial photograph of the surveyed site (yellow star) and some of the nearby habitats to 128 Thornton Road, Bradford.



3.2.2 Building survey

External Inspection:

The surveyed structure is constructed of solid brick walls, with a pitched roof made up of slate tiles and corrugated steel. The building was found to have some missing doors and windows allowing potential access for nesting birds. Other windows, largely on the ground floor, are boarded up or filled in with breeze block. In addition to this, several slipped and missing roof tiles were identified (including some gaps under the ridge tiles), creating potential access points for crevice-dwelling bats. The roof has some skylights, and one small section of the roof is missing completely, with a plastic sheet covering some of this. There are also a few cracks and crevices in the external walls. The structure's location is in an urban area but has a number of features that make it suitable for roosting bats. No evidence of nesting birds was identified externally.

Internal Inspection:

The internal inspection revealed that the structure is derelict. The internal inspection revealed bitumen felt underlining on a small section on the north-western rear roof, otherwise, there is no underlay in most sections. Several gaps are apparent allowing some daylight from the outside. The building is made up of timber and steel beams and there are cracks and crevices in the walls that could be used for roosting purposes. There are lots of cobwebs in the building and some pigeon (*Columba livia domestica*) nests were found.

3.2.3 Summary of the building inspection

Due to the amount of potential ingress/egress points and suitable roosting features, the buildings were deemed as having **low** potential for bats to roost and **confirmed** potential for birds to nest.

Therefore, a minimum of one further activity survey was required during the bat survey season (May to September, inclusive). This was subsequently carried out on the 2nd of July 2021.

Table 1: Low/Moderate/High potential building(s) survey recommendations. The full guidance can be found in the Bat Conservation Trust Good Practice Survey Guidelines. These guidelines are what all local authorities abide by.

Bat Conservation Trust

Table 7.3 Recommended minimum number of survey visits for presence/absence surveys to give confidence in a negative result for structures (also recommended for trees but unlikely to give confidence in a negative result).

Low roost suitability	Moderate roost suitability	High roost suitability
One survey visit. One dusk emergence or dawn re-entry survey ^a (structures). No further surveys required (trees).	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey. ^b	Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either dusk or dawn. ^b

^a Structures that have been categorised as low potential can be problematic and the number of surveys required should be judged on a case-by-case basis (see Section 5.2.9). If there is a possibility that quiet calling, late-emerging species are present then a dawn survey may be more appropriate, providing weather conditions are suitable. In some cases, more than one survey may be needed, particularly where there are several buildings in this category.

^b Multiple survey visits should be spread out to sample as much of the recommended survey period (see Table 7.1) as possible; it is recommended that surveys are spaced at least two weeks apart, preferably more. A dawn survey immediately after a dusk one is considered only one visit.

3.2.4 DNA Results

No DNA Results were obtained for the site as no droppings were identified from the survey visit.

3.2.5 Activity surveys

Activity Survey 1 (2nd of July 2021):

The activity survey was undertaken at dusk on the 2nd of July 2021, with sunset time recorded at 21:40. During this survey, no bats were seen to emerge from the building. However, some commuting and foraging bats were witnessed on site to the east, west and south of the surveyed structure. These were common pipistrelle (*Pipistrellus pipistrellus*) bats. No other bats were detected during the survey.

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Figure 3: An aerial photograph of the surveyed site (red line boundary), the surveyor locations (yellow stars) and the identified bat flight paths (blue lines).



4. Impact Assessment

4.1 Constraints

Constraints on:	Survey Information	Equipment Used
Constraint (Yes or No):	No	No
Explanation of Constraints:	N/A	N/A
Action Taken:	N/A	N/A

4.2 Potential Impacts of the re-development

Under the current proposals, the structure is to be converted from a carpet mill to a residential dwelling. The potential impacts have been identified as follows:

4.2.1 Designated sites

As the proposed works are due to remain within the site boundary, the presence of any designated sites nearby is not applicable to this project. This, therefore, means that any building works would be of no detriment to the surrounding habitats and landscape.

4.2.2 Bat Roosts

Impact	Short-term Impacts: Disturbance	Long-term Impacts: Roost Modification	Long-term Impacts: Roost Loss
Classification:	Negligible	Negligible	Negligible
Justification:	The structures were found to contain no roosting bats during the site survey. Therefore, it can be assumed that no bat roosts are present within the surveyed property.	The structures were found to contain no roosting bats during the site survey. Therefore, it can be assumed that no bat roosts are present within the surveyed property.	The structures were found to contain no roosting bats during the site survey. Therefore, it can be assumed that no bat roosts are present within the surveyed property.
Any further action:	No further action is required.	No further action is required.	No further action is required.

4.2.3 Bird Nests

Due to the presence of bird nests in relation to the surveyed structure, the proposed scheme of works will be of a **high** effect to the local bird populations. Please see **Section 5** for more details.

4.2.4 Foraging and commuting habitat

It is considered that the re-development of the site would have a **negligible** effect on potential foraging and commuting habitat. The site itself offers little foraging habitat, with the adjacent land containing better opportunities for bats and birds to use. Post development, all foraging and commuting habitats will be maintained, thus not negatively affecting the local landscape.

5. Recommendations

5.1 Bats

From the site survey, it has been established that 128 Thornton Road, Bradford has **no current bat roosts**. Despite this, it has been confirmed that common pipistrelle (*Pipistrellus pipistrellus*) bats are foraging and commuting within the area.

Therefore, it is recommended that site enhancement measures could be included into the scheme of works. This could include the installation of [Eco Bat Boxes](#), [Integrated Eco Bat Boxes](#) or [Bat Access Tiles](#) on the redeveloped structure. These features should avoid any artificial lighting, with **no modern breathable felt** to be used around any bat access tiles.

A sensitive artificial lighting plan is required for the site. An artificial lighting plan should be drawn up to illustrate the spill of light. This is to include the proposed security lighting on the structure as well as all street lighting. This document should then be approved by a licenced bat ecologist. Any lighting should avoid key habitat features, such as trees, hedgerows and linear landscapes. This lighting must include sensors that are triggered by large bodies only, to prevent moths or bats themselves setting them off. More information on bats and artificial lighting can be found within **Appendix C**.

A soft landscaping plan should incorporate some wildlife attracting species. The table below outlines species recommended by the Bat Conservation Trust, all of which could be incorporated into the site post development.

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Flowers for borders	Trees, shrubs & climbers
Aubretia	Bramble
Candytuft	Buddleia
Cherry pie	Common alder
Corncockle	Dogrose
Corn marigold	Elder
Corn poppy	English oak
Echniacea	Gorse
English bluebell	Guelder rose
Evening primrose	Hawthorn
Field poppies	Hazel
Honesty	Honeysuckle (native)
Ice plant 'pink lady'	Hornbeam
Knapweed	Ivy
Mallow	Jasmine
Mexican aster	Pussy willow
Michaelmas daisy	Rowan
Night-scented stock	Silver birch
Ox-eye daisy	Herbs
Phacelia	Angelica
Poached egg plant	Bergamot
Primrose	Borage
Red campion	Coriander
Red valerian	English marigolds
Scabious	Fennel
St. John's Wort	Feverfew
Sweet William	Hyssop
Tobacco plant	Lavenders
Verbena	Lemon balm
Wallflowers	Marjoram
Wood forget-me-not	Rosemary
Yarrow	Sweet Cicely
	Thyme

5.2 Birds

Due to the presence of nesting birds, no works can be undertaken on the structures during the bird breeding season (March to August, inclusive). If this timescale cannot be achieved, the structures are required to be assessed by a suitably qualified ecologist to confirm the presence or absence of active nests. If active nests are located, exclusion zones around the nest will be required until the chicks have fledged the nest.

To enable works to commence, it is recommended that a professional pest control company is contracted to ensure that the pigeon's on site are removed following the correct protocols, including ensuring all legal obligations are met.

To compensate for the loss of the bird nests, it is recommended that two [Large Bird Nest Boxes](#) are installed on the site post-development.

In addition to this, a variety of [bird boxes](#) can be installed around the site to enhance the nesting opportunities for several additional species within the local landscape.

6. Summary

6.1 Bat presence/absence

From the survey visit undertaken on the site, it has been concluded that the structures are not currently in use by roosting bats. However, the site is in use by common pipistrelle (*Pipistrellus pipistrellus*) bats for foraging and commuting purposes.

6.2 Bird presence/absence

Some bird nests were identified within the structure at the site confirming the presence of birds in the building. In addition to this, birds are likely to be present within the local landscape with ample habitat surrounding the site available to support their presence.

6.3 Ecological value of building units

The ecological value of the buildings has been deemed as **negligible** to bats due to no current bat roosts being present.

The ecological value of the buildings to birds has been deemed **high** due to the presence of feral pigeon (*Columbus livia domestica*) nests within the structure.

6.4 Recommendations

The recommendations for 128 Thornton Road, Bradford can be summarised as follows (please refer to **Section 5 Recommendations** for a more in-depth description):

- No compulsory recommendations are apparent for this site.
- Artificial lighting should be avoided where possible. If this is not possible, this should be screened for large bodies only and pointed downwards.
- **Optional:** Enhance the site for bats by installing [Eco Bat Boxes](#), [Integrated Eco Bat Boxes](#) or [Bat Access Tiles](#) on appropriate elevations (southern, eastern and/or western) – these must avoid artificial lighting.
- **Optional:** Incorporate a bat friendly planting scheme post development.
- No works can be undertaken during the bird breeding season of March to August (inclusive), unless the structure has been inspected by a suitably qualified ecologist no more than twenty-four hours prior to the commencement of works.
- A professional pest company should be contracted in to remove the pigeon's following the correct protocols, including ensuring all legal obligations are met.
- Install at least two [Large Bird Nest Boxes](#).
- **Optional:** A variety of additional [bird boxes](#) could be included to enhance the nesting opportunities for birds on site.

7. References

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8. Appendices

Appendix A: Site Plans

Appendix B: Eco Data Map

Appendix C: Artificial Light and Bats

Appendix D: Photographic Records

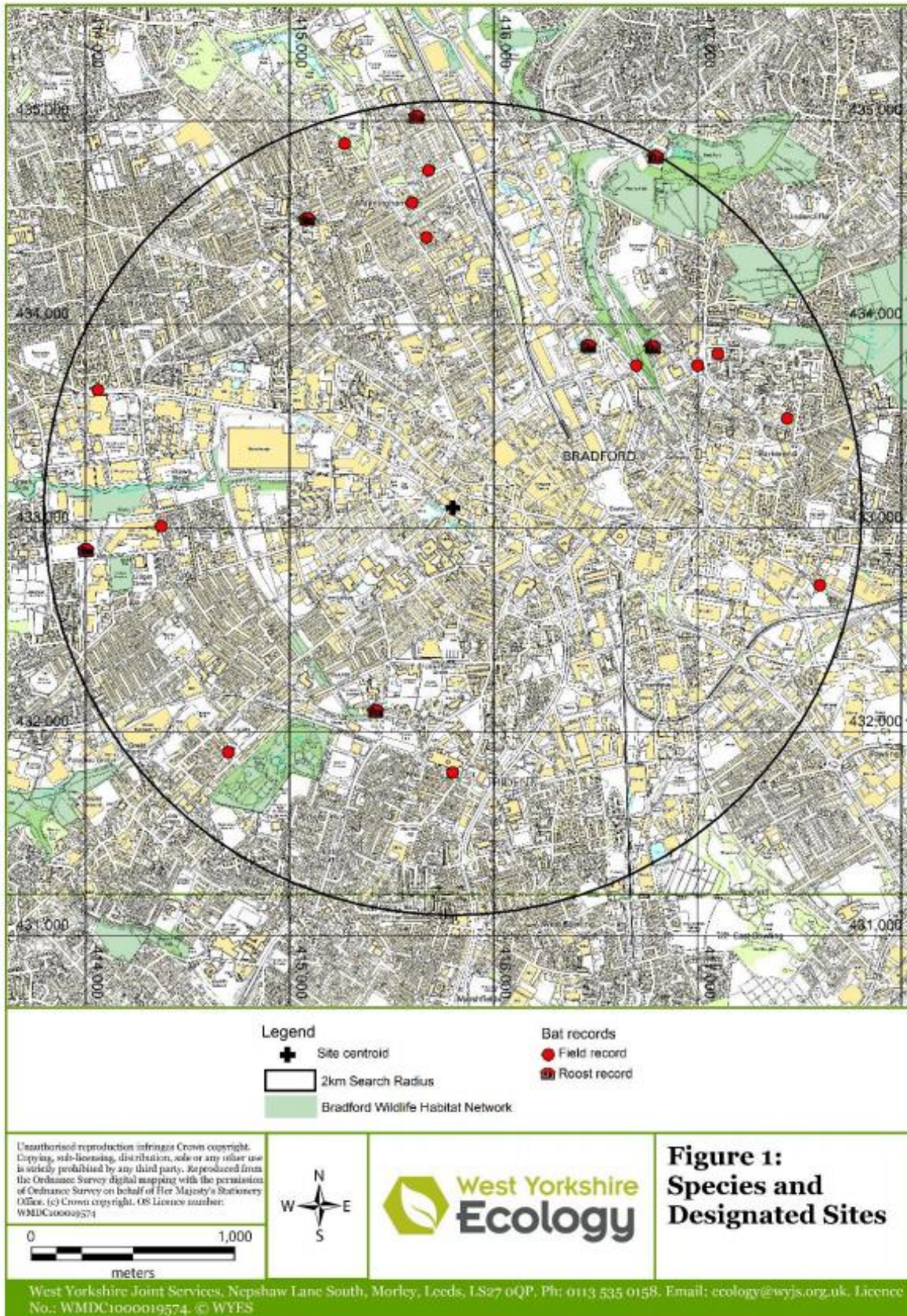
Appendix E: The Annual Bat Year (BCT)

Appendix F: Legislation

Appendix A: Site Plans

No site plans have been provided to Elite Ecology at the production of this report.

Appendix B: The Ecological Data Search Map



Appendix C: Artificial Lighting and Bats

Artificial lighting is known to affect bat's roosting and foraging behaviour, with lighting resulting in a range of impacts that includes roost desertion (BCT, 2009), delayed emergence of roosting bats (Downs et al., 2003), increased activity of some bat species and decreased activity by others (Stone et al., 2012).

An experimental approach using LED units, demonstrated that relatively fast-flying bat species, including the common pipistrelle, showed no significant impacts as a result of new artificial lighting, even when lighting was set at relatively high levels close to 50 lux.

In contrast, slow flying bats such as the myotis bats (*Myotis* spp.) showed sharp reductions in presence, even at low light levels of 3.6 lux (Stone et al., 2012).

Current recommendations for all bat species specifies that no bat roost should be directly illuminated.

Due to the impacts of lighting, mitigation and sensitive lighting design schemes are required for projects where bats are present. These should include bat friendly lighting plans that should aim to avoid lighting wherever possible. If this is not possible, then the minimisation of any lighting impacts is required by adopting the following measures:

➤ **To introduce lighting curfews or use of PIR sensors.**

Lighting curfews can be an effective way of avoiding impacts on bats. These curfews may involve either turning off lighting or dimming light units at specific times of the night, dimming units at key times of the year, providing the luminaire allows for this option via a control unit. Lighting to be triggered by PIR sensors can be expected to be illuminated only when required and for a low proportion of time.

➤ **To consider no lighting solutions where possible.**

Options such as white lining, good signage and LED cats eyes should be considered as preferable. Reflective fittings may help make use of headlights to provide any necessary illumination in some areas.

➤ **To use only high pressure sodium or warm white LED lamps where possible.**

High pressure sodium and warm white LED lamps emit lower proportions of insect attracting UV light than mercury, metal halide lamps and white LED lighting. Generally, lamps should have a lower proportion of white or blue wavelengths, with a colour temperature <4200 kelvin recommended (BCT, 2014).

➤ **To minimise the spread of light.**

The light spread should be kept at or near horizontal to ensure that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required. Baffles, hoods, louvres and shields should be used where necessary to reduce light spill.

➤ **To consider the height of the lighting column.**

While downward facing bollard lighting is often preferable, it should be noted that a lower mounting height does not automatically reduce impacts to bats as bollard lighting can often be designed to provide up-lighting. Where bollard lighting is considered to be the most appropriate system, bollard spacing or unit density should be kept to a minimum and units should be fitted with the appropriate hoods/deflectors to reduce any up-lighting.

➤ **To avoid reflective surfaces below lights.**

The polarisation of light by shiny surfaces attracts insects increasing bat activity (BCT, 2012). Consequently, surface materials around lighting require consideration.

Appendix D: Photographic Records

Plate 1: A photograph of the surveyed structure.



Plate 2: An image showing some of the missing/ lifted tiles and broken windows.



Plate 3: Photograph showing lifted and missing roof tiles.



Plate 4: Another photograph showing lifted and missing roof tiles.



Plate 5: Image showing the internal structure of roof.















Plate 6: Another image showing the internal structure of roof.



Plate 7: An image showing the gaps between the roof and walls.



Appendix E: The Annual Bat Year (BCT)

January		February	
	Hibernating; using up fat reserves.		Still hibernating; few fat reserves left.
March		April	
	Some activity; occasional bat seen feeding.		Awake and feeding at night.
May		June	
	Females looking for nursery sites.		Young born, usually only one.
July		August	
	Young still suckling.		Young start catching insects; females leave nursery to find males.
September		October	
	Mating season begins; start building fat reserves for hibernation.		Search for suitable hibernation site.
November		December	
	Hibernation begins although still some activity in warm weather.		Hibernating.

Appendix F: Legislation and Policy

All species of bat are fully protected under a variety of domestic, European and international legislation and conventions. These include:

- Bern Convention (Appendix II)
- Bonn Convention (Appendix II)
- Conservation Regulations (Northern Ireland) 1995
- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019
- Countryside Rights of Way Act 2000
- Eurobats Agreement
- Habitats Directive (Annexes IV and II)
- Habitats Regulations 1994 (as amended) Scotland
- NERC Act 2006
- Wildlife and Countryside Act 1981 (as amended)
- Wild Mammals Protection Act

In addition to this, some species have additional protection by being listed on the UK Biodiversity Action Plan (UKBAP).

The legislation afforded to bats makes it illegal to possess or control any live or dead specimens, to damage, destroy or obstruct access to any structure or place used for shelter, protection or breeding, and to intentionally disturb a bat while it is occupying a structure or place which it uses for that purpose.

All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended), which protects birds, nests, eggs and nestlings from harm. In addition to this, some rarer species, such as barn owls are afforded extra protection.

National Planning Policy Framework, Section 11:

The published framework in 2012 replaces the previous Planning Policy Statement 9.

Section 11: Conserving and enhancing the natural environment reaffirms the government's commitment to maintaining green belt protections and preventing urban sprawl, retains the protection of designated sites and preserves wildlife. It also aims to improve the quality of the natural environment and halt declines in species and habitats, protects and enhances biodiversity and promotes wildlife corridors.

Biodiversity 2020:

This sets out to halt overall biodiversity loss and support healthy well-functioning ecosystems by establishing coherent ecological networks, with more and better places for nature, to the benefit of wildlife and people. The government's policy is aimed at individuals, communities, local authorities, charities, business and government, which all have a role to play in delivering Biodiversity 2020.

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The survey results purport the current status of the site and its potential for protected species utilisation at the time of surveying. It should not be viewed as a complete list of the possible flora and fauna species that could be using the site at different times of the year.

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No reliance should be made on any such comments in relation to the structural integrity of the features located on the surveyed site. All information within the report is based solely on evidence that has been found on site during the service provided. No individual opinion or inference will be made other than that of the suitably qualified ecologist appointed to the project.