absolute ecology LLP wildlife surveys

Preliminary Roost Assessment for Bats & Birds

Location: Teanford Mill, off Breach Lane, Upper Tean, Cheadle

Author: Matthew Haydock

Date: 1st March 2017

Notice to Readers

This report has been prepared by Absolute Ecology with all reasonable skill, care and diligence, within the terms of the contract with the client. The actions of the surveyor on site, and during the production of the report were undertaken in accordance with the Code of Professional Conduct for the Chartered Institute of Ecology and Environmental Management (www.cieem.org.uk).

The results of the survey and assessment work undertaken by Absolute Ecology are representative at the time of surveying.

Every endeavour has been made to identify the presence of protected species on site, where this falls within the agreed scope of works.

The flora and fauna detailed within this report are those noted during the field survey and from anecdotal evidence. It should not be viewed as a complete list of flora and fauna species that may frequent or exist on site at other times of the year.

Up to date standard methodologies have been used, which are accepted by Natural England and other statutory conservation bodies. No responsibility will be accepted where these methodologies fail to identify all species on-site.

Absolute Ecology cannot take responsibility where Government, national bodies or industry subsequently modify standards.

Absolute Ecology cannot accept responsibility for data collected from third parties.

Reference to sections or particular paragraphs of this document taken out of context may lead to misrepresentation.

Executive Summary

Absolute Ecology LLP was commissioned to undertake a Preliminary Roost Assessment for the bat roost potential at a site known as Teanford Mill, off Breach Lane, Upper Tean, Cheadle, ST10 4EW, Grid Reference: SK 00615 40594. This report has been prepared with due consideration for various best-practice guidance and methodologies including those of the Chartered Institute of Ecology and Environmental Management (CIEEM (2012), BS 42020, and the Bat Conservation Trust Best Practice 3rd Edition 2016.

The Timber storage piles, ex Lorry Metal containers (B1, B2, B3 & B4) and Building B5 are currently being used for storage and wood cutting.

The proposed works do not involve loss of any bat foraging habitat; therefore, no habitat mitigation measures are required.

The area around the buildings is part of the working yard which is entirely bare ground and has a vehicles and machinery parked around and other buildings.

Although there are no bird nests present during the survey there was bird activity in the area. For this reason, if there is any work to be carried out within the breeding season this is between March and September making it necessary to check the area before any remedial work is carried out.

During the inspection of the timber storage, Ex Lorry Metal containers & Building B5 identified, no constraints during the inspection and the buildings were fully inspected with confidence, no evidence of old or new dropping or any other evidence such as scratch marks were identified during the inspection, it has been confidently concluded that the removal of the structures will not have any impact on roosting bats as no evidence was identified at the time of the inspection.

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1. Introduction

Absolute Ecology was commissioned to undertake a bat activity for the bat roost potential at a site known as Teanford Mill, off Breach Lane, Upper Tean, Cheadle, ST10 4EW, Grid Reference: SK 00615 40594.

Figure 1: Showing Mill location indicated by red pin.

1.1. Proposed Works

It is proposed that the existing timber storage & Ex Lorry Metal containers will be removed off site to make way for a dwelling.

1.2. Best Practice Guidance

The scope of this appraisal has been determined in line with the proportional approach to ecological survey, assessment and subsequent recommendations for avoidance and mitigation of impacts, which is encouraged in the emerging 'BS 42020: Biodiversity – Code of practice for planning and development'. This report has been prepared with du consideration for various best-practice guidance and methodologies including those of the Chartered Institute of Ecology and Environmental Management (CIEEM (2012)1, the emerging BS 42020 and the Bat Conservation Trust Best Practice 2016.

1.3. Aims of the Survey

1.3.1 The aims of the Preliminary Roost Assessment is to provide an ecological evaluation of the following species within the proposed application area:

Bats
• Probability of bats and their roost sites being present at the proposed re/development site.
• To assess the roost status.
• To assess suitable food resources and habitat requirements.
• If a roost site is found, to provide an impact assessment.

Table 1. Aims of survey in relation to bats.

1.3.2 A bat roost is interpreted as 'any structure or place, which any wild bat uses for shelter or protection'. Bats tend to show a high fidelity to roosts. Subsequently, legal opinion regards a roost to be protected whether or not the bats are present at the time. There are many types of roost used by temperate bats during their annual cycle: Any structures found having evidence of bats will be further evaluated to assess which of the following roost categories may be present onsite (if any):

Status	Description
Maternity / Nursery Roost	*used by breeding bats, where pups are born and raised to independence (Anecdotal evidence may support this prospect despite sub-optimal survey period).*
Hibernation Site	*where bats may be found during the winter. (This is assessed within the context of this report).*
Daytime Summer Roost	*used by males and/or non-breeding females (Seasonal limitations prevent robust analysis of this).*
Night Roost	*where bats rest between feeding bouts during the night but are rarely present during the day.*
Feeding Roost	*where bats temporarily utilize feeding perches and stations to eat an item of prey.*
Transitional (or Swarming) Site	*where bats may be present during the spring or autumn (This cannot be assessed within the context of this report).*

Table 2. Bat roost status definitions

Birds
• Establish if birds are using the site.
• Locate nest sites, if present.
• Assess what types of activities were shown within the redevelopment site.
• Assess suitable food resources and habitat requirements.

• Provide an impact assessment, if nests are found.

Table 3. Aims of survey in relation to birds.

Barn Owl (*Tyto alba)*
• Establish presence onsite.
• Establish potential nest sites (PNS).
• Locate any active roost sites (ARS).
• Locate any temporary roost sites (TRS)
• Assess potential feeding and dispersal habitats (PFH)
• Provide an impact assessment, should barn owl(s) be present

Table 4. Aims of survey in relation to Barn Owl.

1.3.2 Assessment also considers potential effects on valued ecological receptors (VERs) and zones of influence (ZoI) during pre-and post-development, both onsite and off- site. The term Zone of Influence is used to describe the geographic extent of potential impacts of a proposed development. Should a likely significance of negative impacts be identified, further surveys, mitigation and enhancement measures will then be determined accordingly; to prevent, offset or reduce the degree of impact that may occur should development commence.

1.3.3 should bats be present or evidence of bats identified onsite or that constraints are identified during the Preliminary Roost Assessment, then further survey would be required, if bats are identified then a European Protected Species (EPS) development license issued by Natural England (NE) may be required prior to any works taking place. If required, further presence/absence survey's should be undertaken and a mitigation strategy be implemented with Natural England and the Local Planning Authority. Should no further surveying effort be considered, then the PEA report will include full justification and evaluation.

2. Methods

2.1. Summary of Survey Methods

All bat species resident in the UK have been recorded using trees, buildings and built structures, e.g. bridges, at some time during the year (Bat Conservation Trust, 2016 3rd Edition). The buildings were inspected externally and internally, where access was available, for signs of bat activity. These typically include bat presence, droppings, feeding remains, urine stains and grease marks. Notes were made on the following in accordance with the guidelines published by the BCT (Bat Conservation Trust, 2016 3rd Edition) for the surveying of buildings and built structures:

- Type and age of building
- Type of construction
- Presence of potential roost features, e.g. hanging tiles, raised tiles, roof voids
- Information or evidence of work having been undertaken that could affect use of the structure by bats
- Amount and location of evidence of bats such as presence of live or dead bats, droppings, grease marks, urine stains, characteristic smell of bats.

In the absence of any evidence, trees and structures have been assigned a rating of suitability from negligible to high potential for supporting bats. The rating is based on the location of the structure in the surrounding landscape, the number and type of features suitable for use by bats and the surveyor's experience. For example, a structure with a high level of regular disturbance and few opportunities for access by bats that is in a highly-urbanised area with few or no mature trees, parkland, woodland or wetland would have negligible potential. Conversely, a pre-20th-century or early 20th-century building with many features suitable for use by bats close to good foraging habitat would have high potential.

Survey methodology also utilized a number of passive monitoring techniques including an infra-red night-vision camera (XLT Bushnell Trophy CamTM: USA) inside the building during surveying periods. Further equipment included a NVMT-12x24 night vision scope (Yukon: USA), a SeeSnake 2 video endoscope, a GPS eTrex Venture HC, and a CB2 Clubman Deluxe high-power lamp with filter.

2.2. Pre-Survey Data Search

Ecological data searches supplied by Staffordshire Ecological records were acquired to establish whether any notable protected bat species have been recorded within a 2-km radius of the proposed re/development area. Furthermore, a desktop study of the area using online resources was undertaken independently to corroborate the current overview of the site and its importance in the landscape. A number of electronic sources were consulted, including www.magic.gov.uk, www.naturalengland.org.uk and Google Earth.

2.3. Surveyor Information

Surveyor 1

Matthew Haydock – HND, ND, MIEEM, Natural England Bat Survey Class Licence CL18, Registration Number CLS01637. Matthew is an ecologist with four years' experience of environmental consultancy work. He holds a HND in Environmental Management with distinction. Matthew is an experienced bat surveyor with competency in activity surveys, dawn and dusk bat roost assessments, daytime surveys for bat field signs, assessments of trees as potential bat roosts and the production of reports providing advice on best practice, mitigation and compensation works relating to bats as may be required. Matthew holds a Natural England and Countryside Council for Wales licence, since 1997, to disturb bats for the purposes of science and education or conservation and has held Development Licences to permit development works affecting bats. Matthew has been an active bat group worker with the Staffordshire Bat Group since 1997, conducting various surveys throughout Staffordshire and Derbyshire. He also works alongside the Bat Conservation Trust with various projects such as the National Bat Monitoring Project, and is now a corporate member of the Bat Conservation

2.4 Field Surveys

2.4.1. Habitat Survey

The area around the site is hard standing.

2.4.2. Roost Surveys

Equipment used to aid the survey included low and high-powered torches, ladders, binoculars and an endoscope.

Equipment used to aid the survey included low- and high-powered torches, ladders, binoculars and an endoscope. A preliminary bat and bird roost assessment of the building was undertaken on 1st March 2017. Such scoping exercises can be undertaken throughout

the year. Other than when assessing trees, environmental factors such as the weather do not have an impact upon the overall assessment survey results (see Table 5).

Table 5. Annual survey optimality for bats

Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Inspection of hibernation roosts – semi-optimal survey period			Limited activity – sub-optimal for surveys	Summer roost emergence & re-entry surveys – optimal survey period					Limited activity – sub-optimal survey period	Inspection of hibernation roosts – semi-optimal survey period	
Internal roost surveys are possible/trees are best surveyed during winter											

The survey focused predominantly on the barn which is to be converted, the building on site was assessed during a less than optimal survey period, The inspection incorporated a visual assessment with the use of binoculars, torch, endoscope and ladders in full daylight to ascertain the following:

The internal & external inspection incorporated visual assessment with the use of torch, endoscope and ladders to undertake the following:

- To locate any potential roost/nest sites
- To listen for any bats and birds
- To examine floors, walls and structural elements for anecdotal evidence, i.e. droppings, urine stains, corpses and feeding remains.

3. Results

3.1. Pre-Survey Data Search

3.1.1. Designated Sites

No designated sites identified adjacent to the site.

3.1.2. Protected Species.

Seven British bat species are currently given UK BAP (2007) Priority Species Status: Eleven of the seventeen resident UK bat species occur in Staffordshire. Staffordshire Eco Records Centre (SERC), show three Bat species being recorded within 2km of the proposed application area.

UKBAP	Common name	Species	
☑	Brown long-eared bat	*Plecotus auritus*	☑
☑	Barbastelle bat	*Barbastella barbastellus*	☒
☑	Bechstein's bat	*Myotis bechsteinii*	☒
☑	Noctule	*Nyctalus noctula*	☒
☑	Greater horseshoe bat	*Rhinolophus ferrumequinum*	☒
☑	Lesser horseshoe bat	*Rhinolophus hipposideros*	☒
☑	Soprano pipistrelle	*Pipistrellus pygmaeus*	☑

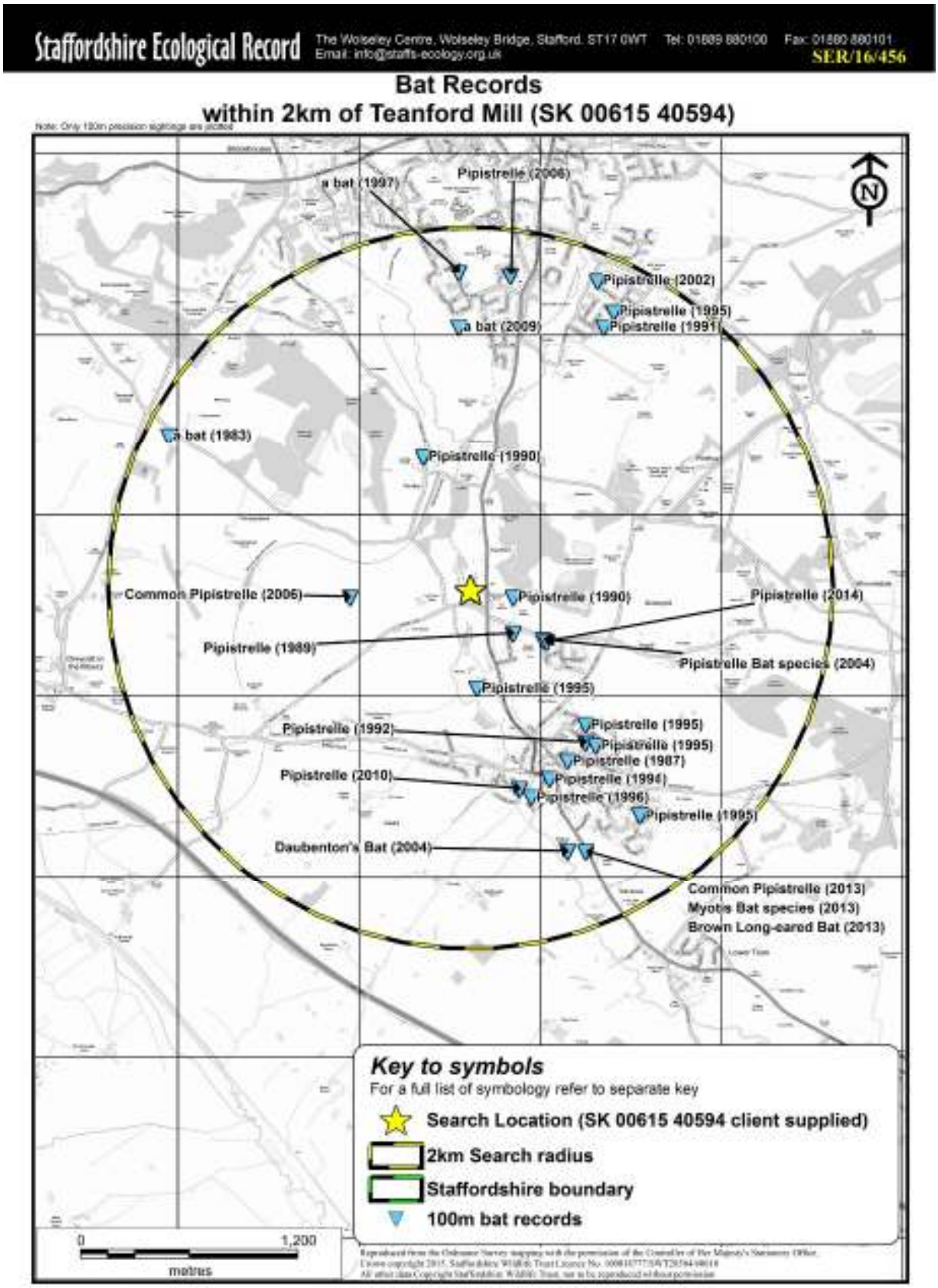
UKBAP Bat species recorded within Staffordshire.

A further four/five bat species that are not currently given UK BAP consideration are also recorded within the county.

UKBAP	Common name	Species	Recorded within the county
☒	Natterer's bat	*Myotis Nattereri*	☒
☒	Daubenton's bat	*Myotis daubentonii*	☑
☒	Whiskered/ brandt bat	*Myotis mystacinus/brandtii*	☒
☒	Common pipistrelle	*Pipistrellus pipistrellus*	☑

Non UKBAP Bat species recorded within Staffordshire.

Staffordshire Ecological Records Data Search Map 2Km.



3.2. Field Surveys

3.2.1. Habitat Description

The habitat surrounding the buildings were hard standing.

3.2.2. Roost Surveys

Internal/External

Table 1: Building inspection results

Building	Description	Evidence found or potential for bats
B1, B2, B3, B4 External	No access constraints were encountered during the site survey. The Ex Lorry Metal containers were inspected and found that the containers were tightly fitted providing no potential to access the internal areas of the containers except for B1 which had a curtain type shutter which did show some potential of access to the internal, the only time the containers have accessibility is during the day when each one maybe need to be open to store materials, during the inspection no bat droppings or other field signs were identified, the external environmental factors could remove such evidence.	The building showed B2, B3, & B4 Negligible potential for access. Full inspection obtained
Internal	The internal inspection of the building identified the containers. Found that the areas were relatively dry with areas which were fairly dark which most bats prefer, the inspection concentrated on the steel walling which was in good condition providing negligible potential due to the lack of crevices the roofing of the contains were also made of steel which provided no potential roosting opportunities for bats. All the floors and were inspected also showing no evidence of bats or birds. The containers itself was fully inspected with confidence and no constraints preventing inspection.	B1, B2, B3, B4 were fully inspected with no constraints to the buildings.

Plate1: Showing B1

Plate 2: Showing B2

Plate 3: Showing B3

Plate 4: Showing B4

Building	Description	Evidence found or potential for bats
B5 External	A single asbestos roof, with lower one side walling being brick and the remainder tin, the building is open fronted allowing sufficient access to the internal.	No evidence of bats found, The building is assessed to have **Negligible potential** for roosting bats.
B5 Internal	The inspection of B5 which has some storage material showed limiting potential for bats due to the lack of crevices for bats to use for roosting, also it was noted that due to the open front of the building this would potentially cause unstable temperatures from the external environments which may deter bats from using it as bats tend to roost in environments where temperatures are anywhere between 30ºC to 40ºC approx, this may change slightly for maternity colonies and summer roosts therefore the micro climate would be unsuitable for roosting bats though individual bats. No nesting birds were observed.	No evidence of bats or birds found, The building is assessed to have **Negligible potential** for roosting bats.

Plate 5: Showing B5 internal & external

Building	Description	Evidence found or potential for bats
Timber Storage Piles External	The three timber storage piles that are located on site showed negligible potential for roosting bats due to the amount of disturbance to the piles of wood which are used for cutting and burning, also the open front to the timber also it was noted that due to the open front of the timber piles this would potentially cause unstable temperatures from the external environments which may deter bats from using it as bats tend to roost in environments where temperatures are anywhere between 30ºC to 40ºC approx, this may change slightly for maternity colonies and summer roosts therefore the micro climate would be unsuitable for roosting bats though individual bats. No nesting birds were observed.	No evidence of bats found, The building is assessed to have **Negligible potential** for roosting bats.

Plate 6: Showing timber storage pile

Plate 7: Showing timber storage pile.

4. Assessment

4.1. Constraints on Survey Information

During the inspection of the timber storage, Ex Lorry Metal containers (B1, B2, B3, & B4) & B5 showed no inspection constraints.

4.2. Constraints on Equipment Used

There were no constraints upon the equipment when used.

4.3. Potential Impacts of Development

4.3.1. Designated Sites

Given the size of the re/development and lack of land intake, it is considered unlikely to have any impact on any protected sites.

4.3.2. Roosts

Given the inspection identified no evidence of bat and all crevices were inspected with confidence with no constraints it is considered that the proposed re/development is unlikely to have a impact on bats.

4.4. Legislation and Policy Guidance

Unlike many smaller mammals, bats have low fecundity with a long and complex life cycle, which is played out over a large spatial landscape. Bats show a strong fidelity to different types of roosts throughout their annual cycle i.e. hibernacula, maternity, bachelor, satellite roosts and feeding perches. Linear features within the landscape such as hedgerows and tree lines are often used by bats for commuting, predator avoidance and foraging. Bats are highly social animals and loss of a single habitat alone can have a serious impact on populations. The status of many bat populations is tentative, being based on relatively few records and are highly susceptible to habitat loss and fragmentation. As such bats are given protected consideration within the following legislation and policy guidelines:

Policy guidelines

PAS 2010	The published 'PAS 2010' 'Planning to halt the loss of biodiversity' which is the government's new policy aimed at all authorities and developers involved in the planning process in the UK to halt biodiversity decline by 2010 and deliver net biodiversity gains as part of the green infrastructure provisions.
National Planning Policy Framework, Section 11:	The recently 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, aims to improve the quality of the natural environment, and halt declines in

	species and habitats, protects and enhances biodiversity and promotes wildlife corridors.
Article 10 of the EC Habitats Directive:	The published Article requires government to develop features such as 'stepping stones' on the landscape, such as clusters of ponds, tracts of rough grassland or scrubland and vegetated railway line embankments.
Wildlife and Countryside Act 1981:	All species of bat are fully protected under the Wildlife and Countryside Act 1981, the European Conservation (Natural Habitats etc.) Regulations 1994, and the Countryside and Rights of Way Act 2000. This legislation 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.
Conservation of Habitats and Species Regulations (2010)	The Conservation of Habitats and Species Regulations 2010 consolidate all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994, in respect of England and Wales. It is an offence to possess, sell or offer, or transport for sale any European species of bat or any part derived from such a species. These Regulations also remove the 'incidental result defence'. In other words, it is no longer a defence to show that the killing, capture or disturbance of a species covered by the Regulations or the destruction or damage of their breeding sites or resting places was the incidental and unavoidable result of a lawful activity. Natural England can grant European Protected Species (EPS) licences in respect of development to permit activities that would otherwise be unlawful.
Natural Environment and Rural Communities Act (2006)	Under Section 40 of the Natural Environment and Rural Communities Act (2006), public bodies, including Local and Regional Planning Authorities, have a duty to 'have regard' to the conservation of biodiversity in England when carrying out their normal functions, which includes consideration of planning applications. In compliance with Section 41 of the Act, the Secretary of State has published a list of species considered to be of principal importance for conserving biodiversity in England. This is known as The England Biodiversity List, all of which make up the UK BAP Priority Species. Regional Planning Bodies and Local Planning Authorities will use it to identify the species that should be afforded priority to maintain, restore and enhance species and habitats.
Bird legislation	Most resident nesting birds are protected under the Wildlife and Countryside Act 1981, which protects birds, nests, eggs and nestling's. Some rarer species, such as barn owls, are afforded extra protection.

Please note: If bat species are present at the site, the purpose of this report will only summarize the potential requirements for a bat mitigation package or project. A separate mitigation report or project will include the necessary compensation measures to maintain the conservation status of a European Protected Species.

5. Recommendations and Mitigation

5.1. Further Surveys

The timber storage, Ex Lorry Metal containers & Building B5 was thoroughly inspected throughout and there were no constraints up on the survey inspection, during the inspection we found that there were no signs of Bats or their droppings therefore it is recommended that no further surveys on the buildings is need to be conducted, in accordance with the Bat Conservation Trust guidelines (BCT, 2016) 3rd addition.

5.2. Mitigation Measures

5.2.1. Proposed Mitigation for Roost Sites

Proposed Biodiversity Enhancement

Bat Boxes

1.1 The development will incorporate a total of four 1FR Bat Tube will be incorporated into two of the buildings to be installed on the external walls of buildings, either flush or beneath a rendered surface. Further information about providing access for roosting bats can be found on the Bat Conservation Trust website at http://www.bats.org.uk/pages/new_build.html. It is recommended that bat boxes, such as the 1FR Bat Tube are to be installed south facing position, the installed bat boxes will be sited at least 7–8 metres above the ground.

- One Schwegler 1FR Bat Tube boxes will be installed to provide summer and hibernation opportunities, and six Schwegler 2F bat boxes will be installed for regular and mixed use.
- Boxes will not be placed in an overly exposed position on the dwellings. Crucially, the box entrances should face south.
- Once discovered, a bat roost is protected by law and must not be disturbed.
- It is envisaged that bat box monitoring should be undertaken by the site owners who will require a licensed bat worker to inspect the boxes in order to conform with current guidance and legislation.

Table 1: Bat box to be incorporated into the re/development

Bat boxes	Type and Quantity	Location
	**1 x 1FR Bat Tube**	The 1FR bat tube system meets the behavioural characteristics of bat species that inhabit buildings. The tube has been designed to maintain ideal climate conditions inside. This allows the animals to either hang onto the wooden rear, or from the wood-crete front.

Bird Nests

1.2 Similar to bats, bird habitats, including nesting and roosting sites, are diminishing or have disappeared altogether due to changes in the landscape, environment and building techniques. Consequently, the provision of boxes for birds will provide supplementary nesting sites that are relatively safe from predators, close to feeding areas, and give essential winter protection for roosting birds. A range of designs are available to suit most species, including garden species, birds of prey and colonial nesting species, for both trees and buildings. Colonial nesting species, such as House Sparrows, which are currently facing a dramatic decline, suffer from a lack of suitable buildings in which to nest. Moulded woodcrete boxes can be used to form a network of contiguous boxes favoured by the species. Additionally, nesting baskets can be used to encourage birds of prey to areas where they have not previously nested. Health risks from breeding birds generally relate to Feral Pigeons and Starlings, and require direct contact with nesting material, dried faeces etc., within confined spaces. Consequently, the public health risk relating to encouraging nesting birds on the new development is considered to be negligible.

- The Sparrow terrace nest boxes and the 1B nest boxes will be positioned on the new building
- Schwegler Swallow Nest will also be positioned on the existing cattle sheds
- All the bird boxes will be positioned at least 4 metres high, or more.
- Nesting birds may be present in the buildings during the bird breeding season (March to August inclusive). If works on these areas are planned during these months, then a prior check for nesting birds should be undertaken by an ecologist. Any active nests that are found must not be moved until fledglings have dispersed.

Table 2: Bird boxes to be incorporated into the new development

Bird Boxes	Type and Quantity	Information
	**1 x Sparrow Terrace**	The Sparrow Terrace will attract Sparrows, but also Tits and Redstarts.
	**2 x Swallow Nest boxes**	10 Schwegler Swallow Nest will attract Swallows as well as House martins

6. References

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D2698BA05B9D%7D&CTRY=%7B7C884413%2D1AC7%2D48B6%2DADCD%2D23CBA1482CD6%7D&WES= [accessed on 20th October 2010].

Wildlife and Countryside Act 1981 (and amendments) (c.69). London: HMSO.

Appendix 1 Annual cycle of a temperate bat

January

February

March

Jan: Bats spend most of the winter hibernating, a state of inactivity characterised by lower body temperature, slower breathing, and lower metabolic rate. **Feb:** Bats are still hibernating. They have little fat left to live off of now. They may leave the roost on warmer nights to find food and a drink of water. **March:** Bats may begin to emerge and signs of limited activity can be seen. There are small numbers feeding as it gets warmer. In bad weather, they may become torpid.

April

May

June

April: Bats have mainly come out of hibernation and are hungry and active, feeding on most nights. They may be moving between several roost sites. They may become torpid (cool and inactive) again when cold. **May:** Bats are fully active and feeding. Females start forming maternity colonies and looking for suitable nursery sites, such as buildings or trees. Males will roost on their own or in small groups. **June:** Female bats usually give birth to a single pup, which they feed on their milk. Young bats are very small (less than an inch) with thin, slightly grey fur. Adult bats will catch thousands of insects each in a night.

July

August

September

July: Mothers continue to suckle young. Some young are growing fast and almost full-size; others are still very small. At around three weeks old, young bats are sometimes found on the ground as they learn to fly. **Aug:** At six weeks old, the young bats begin to catch insects for themselves and no longer need their mothers' milk. The summer maternity colonies begin to disperse and bats may move to mating roosts. **Sept:** Mating season begins, with males of most species using special mating calls to attract females, which can include purrs, clicks, and buzzing. Bats are also concentrating on building up fat stores for the coming months.

Oct: More mating is taking place, and building up fat reserves is becoming crucial to survive the winter season. Bats are seeking suitable hibernation sites, and beginning periods of torpor. **Nov:** Periods of torpor are lasting longer. Some begin hibernation, to save energy over the colder months, when insects are harder to find. They are using stored fat as fuel. **Dec:** Bats are hibernating. They may roost on their own or in small groups, often in cool, quiet places like disused buildings, old trees or caves, where they hopefully won't be disturbed. **(Source: Bat Conservation Trust).**