



**Buildings and land at Lodematic, Primrose Works, Primrose Road,
Clitheroe, BB7 1BS**

Bat, Barn Owl & Breeding Bird Survey & Assessment

September-December 2014

Ribble Ecology ref: RB-14-147

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A SUMMARY

This report presents the methodologies and results of ecological survey work that has been undertaken at the Lodematic site, Primrose Works, Clitheroe. The survey and assessment has been commissioned in preparation for a planning application, to change the land use from industry to residential.

The scope of the survey has considered roosting and/or hibernating bats, Barn owl and breeding birds. It has also assessed habitat value for foraging and commuting bats, plus it has checked for notable ecological considerations such as rare or invasive plant species.

In summary, the survey outcome has given **evidence of low numbers of active and roosting Common pipistrelle and Soprano pipistrelle bats** and has identified potential habitat value for roosting bats at additional locations on the buildings, though no roost potential in association with trees on the land. There is **potential value for small breeding birds**, primarily in association with shrubs, trees and Ivy, but there is **no evidence of Barn owl** and negligible likelihood of occurrence.

The presence of roosting bats indicates that a mitigation and compensation scheme must be incorporated into the planning proposal. After securing planning permission, a **European Protected Species (EPS) mitigation licence will be required**. An **EPS mitigation method statement** must demonstrate how bats can be protected and how roost habitat can be retained or reinstated. **Section E.1** provides further information and **Appendix 1** provides an outline mitigation and compensation scheme. It is respectfully recommended that the Local Planning Authority (LPA) should enforce implementation of bat mitigation measures by means of a planning condition.

In relation to breeding birds, **Section E.2** specifies appropriate mitigation measures and it is again recommended that the LPA enforces implementation by means of a planning condition.

Section F of the report also suggests practical and achievable biodiversity retention measures. If implemented they would contribute towards would demonstrate accordance with paragraph 118 of the National Planning Policy Framework (NPPF) 2012: thus they should be adopted where possible.

B INTRODUCTION

B.1 Background to proposed activity/ development/ works on site

The Lodematic factory site is a complex of functional industrial buildings, accompanied by hard-standings and small pockets of unmanaged vegetated land. It spans approx. 0.2 hectares (ha) and there is a proposal to cease manufacturing and apply for planning permission for residential land-use. This will entail demolishing some existing buildings and converting one into apartments. The proposal prompts a requirement for a bat survey, plus consideration of Barn owl and nesting birds, plus a check for other ecological considerations like invasive plants or other protected species.

A plan showing the red-line boundary and existing layout was given in September 2014. Proposals drawings were then supplied in December 2014, along with tree survey paperwork.

Hereafter, the land and buildings encompassed by the red-line boundary are termed '**the Site**' or '**the Application Site**' throughout the rest of this report.

C METHODOLOGIES, PLUS INFORMATION FROM EXISTING RECORDS

C.1 Objectives of the survey & assessment

Ribble Ecology identified the objectives of the survey and assessment to be as follows:-

- Determine the potential value for roosting and/or hibernating bats and identify any field signs indicative of the current or former presence of bats, by means of daylight survey.
- Assess the potential value for nesting birds and record evidence of current or former use.
- Determine the presence or absence of Barn owl, as indicated by field signs such as splashing and regurgitated pellets.
- Investigate all vegetation and habitat types and identify any occurrences of rare and/or protected plant species, plus any non-native invasive plant species.
- Where appropriate conduct additional surveys (e.g. undertake nocturnal bat work), to determine information about species, abundance and locations of occurrence.
- Identify any ecological concerns or constraints in relation to the results and the planning proposal, providing guidance on mitigation and compensation measures where necessary.

C.2 Pre-existing information on species at the survey site / in the locality.

Desk study resources:

Prior to attending the Site, desk and internet based resources were used to obtain background information about known bat and bird occurrences in an approx. 10km surrounding radius. The resources used for the desk study were as follows:

- Bing Maps (www.bing.com/maps) and Google Earth 5 (<http://earth.google.co.uk>) for aerial photographs, including historic photographs in the case of Google Earth.
- Multi-Agency Geographic Information for the Countryside (MAGIC) collaborative database website (<http://magic.defra.gov.uk/MagicMap.aspx>), for information on statutory designations.
- National Biodiversity Network (NBN) Gateway (www.nbn.org.uk), for collated low-resolution records of protected and priority species occurrence.
- Bing Maps (www.bing.com/maps) for a 1:25,000 Ordnance Survey map extract.

Desk study results:

The Application Site is centred at grid reference **SD 73714 40751** and desk study results from the NBN Gateway collation dataset, combined with in-house knowledge and records at Ribble Ecology

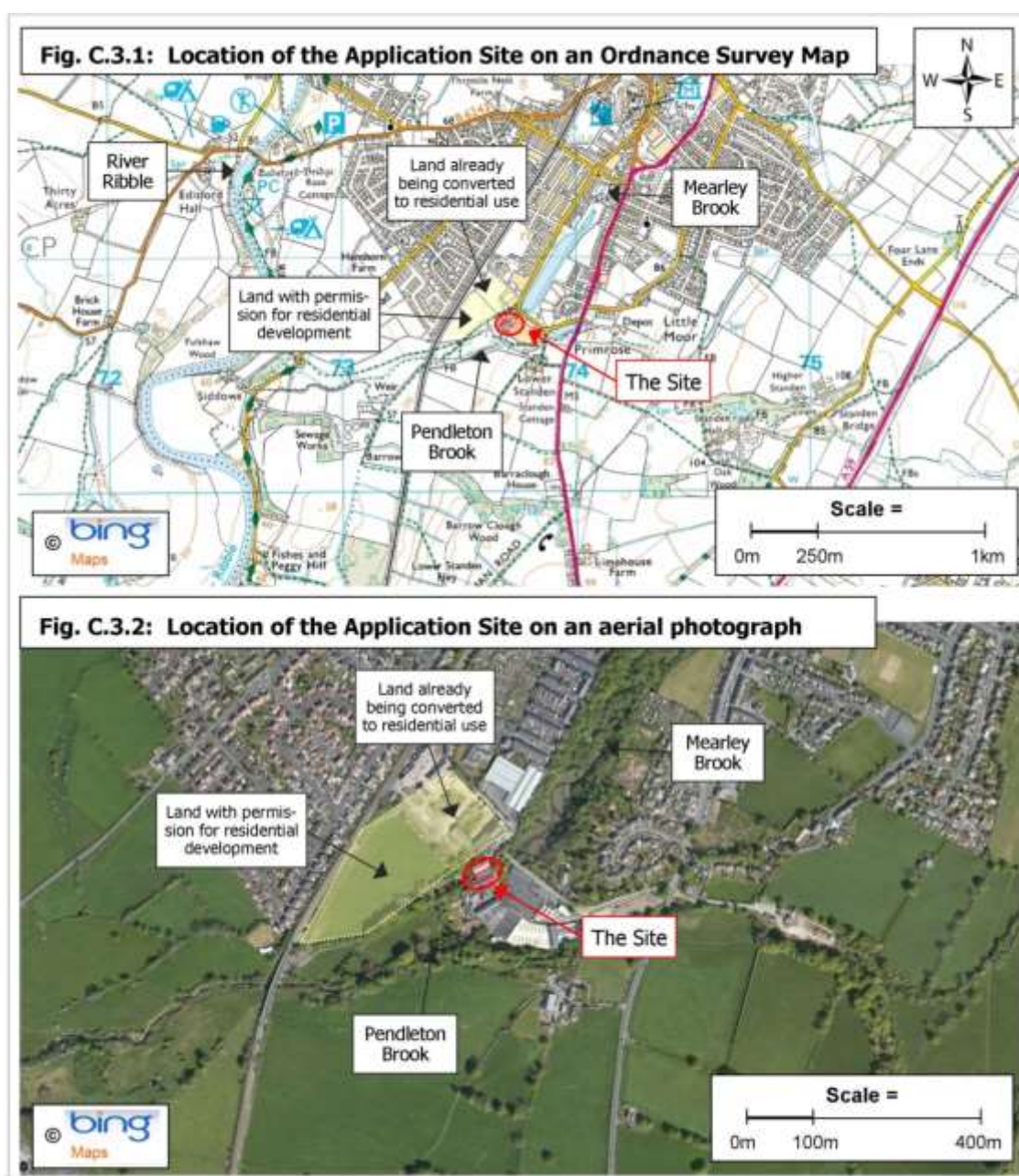
(submitted to Lancashire Environmental Records Network annually) reveal that within the last 20 years the following bat species have been recorded within 5.0km range:

- Brown long-eared (*Plecotus auritus*)
- Daubenton's (*Myotis daubentonii*)
- Noctule (*Nyctalus noctula*)
- Common pipistrelle (*Pipistrellus pipistrellus*)
- Soprano pipistrelle (*Pipistrellus pygmaeus*)
- Whiskered / Brandt's (*Myotis mystacinus* / *M. brandtii*)

Barn owl (*Tyto alba*) is also confirmed to be present throughout rural Lancashire and a range of other bird species will nest in association with buildings, including Swallow (*Hirundo rustica*), House Martin (*Delichon urbica*), Blackbird (*Turdus merula*), Wren (*Troglodytes troglodytes*), House Sparrow (*Passer domesticus*), Starling (*Sturnus vulgaris*) and several other garden passerine species. All such species have been given consideration during the survey and assessment work.

C.3 Location of survey area

An Ordnance Survey map and an aerial photograph have been labelled to create **Fig. C.3.1** and **Fig. C.3.2** (see below), showing the location of the Site in the context of its surroundings.



As shown on **Fig C.3.1** and **Fig C.3.2**, the Application Site is located at the south-western edge of a small industrial area associated with the town of Clitheroe. There is continuation of industrial and commercial land use to the south and east, whilst former industrial land to the north is currently being replaced with a residential estate. An agricultural field to the north also has permission for residential development, whilst further west and south-west there are undisturbed fields, hedgerows and trees. There are also the water channels of Pendleton Brook and Mearley Brook to the south-west and north-east respectively, flanked by broadleaf trees and shrubs. Similarly, a tree-lined waterbody is present, located immediately to the north-east of the Site. These landscape features all give good potential value for bats and other wildlife within close range of the Site.

C.4 Field survey methodologies

C.4.1 Personnel:

The daylight survey work was undertaken by **Ms Lorna Bousfield BSc (Hons) MCIEEM**, who is Principal Ecologist at Ribble Ecology Ltd and is an experienced bat worker and an active member of local bat groups. She holds class survey license **registration number CLS001700** and specifically class licence **WML CL18 (Bat Survey - Level 2)** in respect of bats.

The nocturnal survey work was led by Ms Bousfield and undertaken with the assistance of Mr M. Barnes, Ms D. Rollin, Ms C. Edmondson and Mr S. Taylor. All assistant surveyors were suitably experienced in the undertaking of nocturnal surveys in a range of environments in north-west England.

C.4.2 Dates & weather conditions:

The work was undertaken as follows:

Date	Survey method applied	Weather conditions
12/09/14	Daylight survey, undertaken in the late morning to early afternoon.	14.0° Celsius, sunny, dry and with light breeze (Beaufort 2).
15/09/14	Dawn re-entry survey	13.6 – 13.7°Celsius, with light to gentle breeze (Beaufort 2 - 3) and with high humidity and drizzle in the last 7 minutes of the survey.

C.4.3 Methods:

Daylight Appraisal for Bats & Birds:

An external and internal examination of the buildings was made from the ground, using binoculars and a high-powered torch where appropriate. The roofs and walls were inspected for potential access points and roost features for both bats and birds.

In relation to bats, the survey entailed searching any features of interest for current and/or historic evidence of bat occupation, including droppings, remains of invertebrate prey, grease marks from repeated contact with surfaces, and/or occurrences of bats themselves.

In respect of Barn owl the survey of the buildings was to entail searching for suitable access points, and where access was available it would then entail searching for evidence of faecal splashing, old nest sites, regurgitated pellets, feathers and/or roosting Barn owls themselves.

In relation to breeding birds, habitat appraisal was applied in relation to access points and potential nest sites, and all evidence of active nests and/or old nests was to be noted.

Any trees within the red-line boundary were also inspected from the ground, using close-focus binoculars and a high powered torch where necessary, to identify potential roost habitats such as rot holes, crevices and lifting bark. All were categorised in accord with the 'protocol for visual inspection of trees', presented in Table 8.4 (page 60) in the *Bat Surveys. Good Practice Guidelines – 2nd Edition. Bat Conservation Trust. 2012*. In brief, the categorisation is summarised as follows:

Tree Assessment categories	
Known or confirmed roost	As determined from current or historic evidence.
Category 1* trees	Trees with multiple highly suitable features, feasibly capable of supporting larger roosts.
Category 1 trees	Trees with definite potential for the support of bats, but <i>either</i> with fewer suitable features than Category 1* trees <i>or</i> with potential for use by single bats, rather than groups.
Category 2 trees	These have no obvious / clear potential for bat use, but <i>either</i> the size and age is such that cracks or crevices may be present at elevation, <i>or</i> there is visible occurrence of features which may have limited potential to support bats, particularly lone bats.
Category 3 trees	This accounts for trees that have no potential to support bats.

Vegetation & Habitats:

An Extended Phase 1 Habitat Survey was also carried out throughout the vegetated parts of the Application Site. The Phase 1 Habitat Survey is a standardised method used to record habitat types and characteristic vegetation, as set out in the "Handbook for Phase 1 Habitat Survey – a technique for Environmental Audit" published by the Joint Nature Conservation Committee (JNCC 2003). The methodology is 'Extended' through the additional recording of any features indicating the presence of protected species or other species of nature conservation significance.

As part of this, a search was carried out for invasive plant species, as covered by Section 14 and listed on Schedule 9 in the *Wildlife and Countryside Act 1981* (as amended) (Schedule 9 as updated April 2010).

All higher plant nomenclature within this report is written in accord with *Stace's New Flora of the British Isles* (Stace, C. A. 1997).

Pre-dawn Re-entry Survey:

This commenced approximately 1.5hrs before the official time of sunrise and continued until official sunrise itself.

The surveyors monitored all elevations of the buildings, plus nearby trees and air-space.

All surveyors used heterodyne on their bat detectors, whilst two additionally used real time expansion bat detectors in order to capture bat sonograms throughout the survey. One surveyor also used frequency division detection, to ensure that the full range of ultrasound bat calls was being detected throughout the survey.

C.4.4 Equipment:

The following equipment was used:

- Ladders
- LED Lenser P14 torch
- Digital camera
- Short-focus binoculars

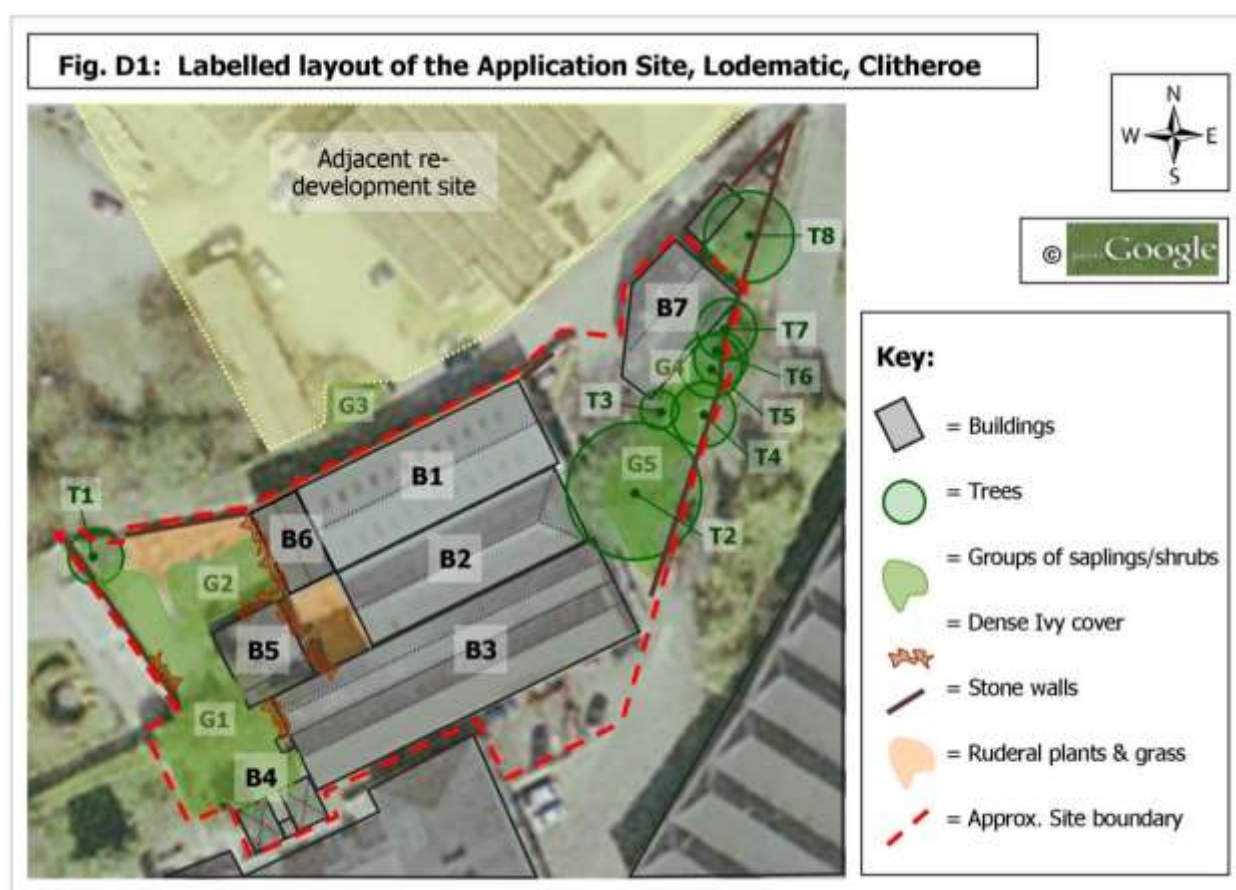
- Echo Meter EM3 bat detectors x2
- Batbox Duet bat detectors x4
- Magenta 4 bat detector
- Head torches
- Thermometer
- Binatone two-way radios

D SURVEY RESULTS

D.1 Overview

Within the Application Site, the buildings and features have been illustrated and labelled as shown on **Fig. D.1**. Descriptions and assessments in relation to bats, birds and vegetation have been presented under sub-headings **D.2** and **D.3**. Nocturnal bat survey results are further presented under sub-heading **D.4** and finally an overall summary of the results is presented in Section **D.5**.

As shown in **Fig. D.1**, the buildings, trees and groups of saplings and shrubs have all been numbered. In the case of the trees and the groups of younger/smaller woody specimens, the numbering is in accord with that used by Bowland Tree Consultancy within the documents titled *'Tree Constraints Plan' (September 2014)* and *'Tree Survey Schedule for Arboricultural Constraints Appraisal' (September 2014)*.



D.2 Daylight appraisal for bats & birds

Building B1:

This large and functional factory building has sturdy stone walls, internally whitewashed, but not clad or insulated. Its ridge-line runs south-west to north-east and the roof has a timber and metal frame, finished with corrugated metal sheets that are not lined. There are large sliding doors and a circular window with ventilation grill at the north-eastern gable end, plus a large parapet wall (see **Photo 1**, next page). The long north-western elevation has many windows that are covered with

metal grids, as shown in **Photo 2**. The south-eastern and south-western aspects meet with building components B2 and B6 respectively. The mortar and stonework is in good condition.



Photo 1

Windows overlaid with metal grids along north-west elevation



Photo. 2

There is only low-moderate potential value for crevice-dwelling bats at B1 via possible access under the gutter and onto the wall-tops along the north-west elevation. There is very low or negligible potential value for breeding birds and there is no access and no habitat value for Barn owl.

Building B2:

This is another elongate, large and functional factory building, again with a south-west to north-east aligned ridge-line. It is flanked by B1 and B3 along its elevations, so only its gable end walls are externally visible. The roof is pitched and externally finished with slates, laid onto bitumen felt and a traditional timber frame, but with a large expanse of skylights along the ridge (see **Photo 3**).



Interior timber roof frame, bitumen under slates and skylights along ridge line

Photo 3

The roof of B2 finishes with a gable at the south-west end, but it is hipped at the north-east end, as exemplified in **Photo 4**. Here there is a small parapet wall concealing the edge of the roof, below which there are many intact windows, still with glass panes, plus one set of large old doors. There are also many windows at the south-western gable end, but all upper windows have been sealed with breeze-blocks and mortar, as shown in **Photo 5**.



Photo 4

North-eastern end, with hipped roof & many intact windows

South-western end, with blocked up windows



Photo 5

Again, mortar and stonework associated with B2 is intact. Additionally there are no visible access gaps for bats or birds around the window frames. There is moderate potential value for crevice-roosting bats under slates and ridge tiles on the roof, but there is negligible potential value for hibernating bats, due to a lack of frost protection at such locations. There is also no visible access and no potential value for Barn owl or other breeding birds.

Building B3 (plus chimney):

This is the largest of the factory buildings, displaying substantial height, a double pitched roof with valley gutter and also a former factory chimney attached at its south-western end, as illustrated in **Photo 6**. Its south-western gable supports very few windows and no parapet walls, whilst approx. 50% is clad with Ivy, as exemplified below. By comparison, the south-eastern elevation has very many intact and functional windows (see **Photo 7**) and the north-eastern gable end has multiple glass-paned windows, one personnel door and also one circular window with ventilation grill near the apex. The north-eastern gable end also has a parapet wall.



Photo 6

South-western end, with high stone walls and chimney

South-east elevation, with many windows



Photo 7

Inside, as shown in **Photo 8**, B3 is mostly open from floor to ridge, except for an enclosed office area, plus a lower-ground floor area, which is another functional part of the factory. The roof comprises traditional timber frames, overlaid with bitumen and then slates and ridge tiles. There are no skylights and there is no internal cladding or insulation to the roof or walls.



Interior of B3, open from floor to ridge, the same as B1 and B2

Photo 8

Mortar and stonework associated with B3 is predominantly intact, but to the exterior there are occasional deep gaps where mortar is missing. Additionally it is possible that there will be access to the wall-tops along the elevation walls. There is also potential habitat value for crevice-roosting bats to the rear of the dense Ivy at the south-western end. It is assessed that aforementioned gaps/features afford low-moderate potential value for crevice-dwelling bats. There is also moderate-high potential value for crevice-roosting bats under slates and ridge tiles on the large double-pitched roof of B3, but there is negligible potential value for hibernating bats, due to a lack of frost protection at such locations.

There is no potential value for Barn owl, but there is low potential for other breeding birds such as Wren to use the Ivy cover at the south-western end of the building.

Building B4:

B4 is single-storey, stone walled and has two small hipped roofs that are finished with slates and ridge tiles. These are connected by a small section of low single-pitched roof of corrugated plastic sheets, plus a section of this single-pitch roof extends in front of the hipped areas (see **Photo 9**).



Two small hipped roofs, both with a narrow section of corrugated sheet roofing in front of them, at the south-east elevation

Photo 9

There is low-moderate potential value for bats under the slates and ridge tiles, plus on the wall-tops of B4. The surrounding air-space is 'cluttered' by saplings and young trees. There is low

potential value for opportunistic small breeding birds, but there is no potential value for Barn owl.

Building B5:

This is a derelict outbuilding. It is partly attached to B3, but it is defunct. Its exterior walls are rendered, whilst its former windows and doors are sealed with breeze-blocks, as shown in **Photo 10**. There is no evidence of cracks or gaps into the visible walls, but there is dense Ivy over approx. 30% of the walls and also over a former chimney, as shown below. The roof is pitched and finished with slates, several of which appear to be missing (see **Photo 11**)

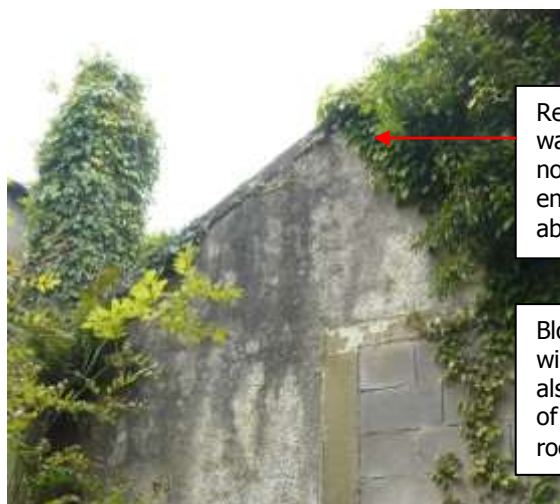


Photo 10

Rendered walls at the north-eastern end, with abundant Ivy

Blocked up windows and also evidence of missing roof slates



Photo 11

Although it was not possible to undertake an internal inspection of B5, it appears there is low-moderate potential value for crevice-roosting bats in association with gaps behind Ivy cover and gaps under roof slates. There is also low-moderate potential value for small nesting birds, again in association with Ivy and potentially under slates or within the roof space where missing slates have facilitated access. It is assessed that there is negligible potential value for Barn owl.

Building B6:

This is a derelict and burnt-out former house. Its rendered walls are still largely intact and its windows are sealed with breeze-block, as illustrated in **Photo 12**, but its former pitched roof has predominantly collapsed so there are only a few remnant stone tiles visible at the wall-tops. There is abundant Ivy along the south-western elevation wall.



Photo 12

The south-west elevation overgrown with Ivy. The roof above is mostly missing

There is only local low potential value for crevice-roosting bats along the south-western wall top of

B6 and beneath remnant stone tiles and Ivy stems. There is no habitat value for hibernating bats. There is moderate potential value for nesting birds, but there is negligible value for Barn owl.

Building B7:

This is a detached and more modern structure, comprising breeze-block walls that are externally rendered and internally whitewashed (see **Photo 13**). The roof is pitched, with a metal frame and corrugated concrete-asbestos type sheets, plus plastic skylights. The interior is open from floor to ridge and the walls and roof are not lined or insulated. There are concrete-asbestos type verge caps at both gable ends, behind which there are small gaps.



Rendered breeze-block walls, plus concrete-asbestos verge cap

Photo 13

There is low-moderate potential value for crevice-roosting bats at the wall-tops along the elevations and there is low potential value for crevice-roosting to the rear of the verge caps, but there is negligible potential value for hibernating bats. There is also negligible potential value for nesting birds or Barn owl.

Stone walls:

There are several stone walls at the Site. These are of variable heights and widths, with examples shown in **Photo 14**.



An array of stone walls (these in the photograph are at the south-western end of the Site)

Photo 14

The largest wall displays mortar that is in good condition. The lower walls have many mortar gaps, but being only 1 – 1.8m high they are judged to have very low or negligible potential value for bats. The largest gaps have low potential for use by nesting birds.

Trees:

There is one mature tree associated with the Site (labelled T2) and one nearby (T8), which is outside the red-line boundary. Additionally there are six large young and semi-mature specimens in the Site, plus there are groups of young trees and saplings, all of which are labelled on **Fig. D.1** and all of which have been assessed, as accounted for below:

- **T1:** A multi-stemmed large young Sycamore, with no value for roosting or hibernating bats, hence Category 3 status.
- **T2:** A mature and substantially sized Sycamore, with bifurcate trunk from 3m upwards. There are small dead and rotten branches, but there are no rot holes or crevices to provide value for roosting or hibernating bats and there is no Ivy cover, thus the tree has Category 3 status.
- **T3:** This spindly semi-mature Hawthorn appears to be in relatively poor condition but has no value for roosting or hibernating bats so it has Category 3 status.
- **T4:** A semi-mature Sycamore with no value for bats, thus Category 3 status.
- **T5:** This is a young English Elm, which is a poor quality specimen and has sparse Ivy on its trunk, but has no value for roosting or hibernating bats and Category 3 status.
- **T6:** A large young Sycamore, again a poor quality specimen but with no rot or crevices and no value for roosting or hibernating bats, hence Category 3 status.
- **T7:** A bifurcate semi-mature Sycamore, with no evidence of rot holes or crevices and therefore no potential value for roosting or hibernating bats and Category 3 status.
- **T8:** Outside the red-line boundary, this comprises a mature Sycamore with no evidence of rot holes, crevices or Ivy, thus with no value for roosting or hibernating bats and Category 3 status.
- **G1, G2, G4, and G5:** These groups all comprised an array of young to semi-mature, naturally colonised specimens, of a range of species and including Sycamore, Goat Willow, Ash, English elm, Norway maple and Damson. All were too small and structurally unsuitable for roosting or hibernating bats, hence all were of Category 3 status.
- **G3:** This comprises a small group of semi-mature Sycamore, rooted on adjacent land and outside the red-line boundary. The specimens have Category 3 status.

In relation to foraging and/or commuting bats, the trees provide sheltered air-space and are likely to attract a range of flying insects. The proximity to standing water near the north-eastern red-line boundary is also favourable in the attraction of insects, along with the abundance of Ivy. There is good habitat value for foraging bats in the north-east and south-west vegetated regions of the Site, as part of wider foraging habitat areas. This will require further consideration.

All trees, saplings and locally associated Ivy cover are judged to have low-moderate potential for opportunistic use by nesting birds.

D.3 Vegetation & habitats

Beneath trees T2 – T8, the elevated ground to the east of buildings B1, B2 and B3 also supports a shrub layer and ground cover, as illustrated in **Photo 15** (next page). This comprises abundant Bramble and Snowberry, plus locally frequent Ivy and occasional ruderal 'weed' species such as Common nettle and Yorkshire fog. This vegetation appears to comprise a combination of landscape planting and natural colonisation. It does not represent an NVC community or a rare or fragile plant composition. This vegetation is not botanically noteworthy.

To the west of the buildings there is a shrub layer and ground flora associated with tree groups G1 and G2. Here there are mixed ruderal plants, ferns and grasses that appear to have naturally colonised (see **Photo 16**). Bramble, Ivy, mosses and Male fern occupy the most shaded areas and common grasses, Rosebay willowherb and Dandelion are prominent in the areas that are not

shaded by woody vegetation. There are no rare plant species, there are no examples of an NVC community and again the vegetation is not botanically noteworthy.



Photo 15

North-east
part of the
Site

South-
western part
of the Site



Photo 16

D.4 Other wildlife

There is no evidence of a Badger sett within the Site and there is no evidence of Badger dispersing through or foraging within the Site. With the buildings and hard-standings of the Site still being in use flanking land that has a combination of buildings and hard-standings it is judged there is no reasonable likelihood of future colonisation and Badgers do not require further consideration.

There were no field signs of other mammals such as Rabbit, Brown hare, Hedgehog or Red fox within the Site at the time of survey. It is judged that there is negligible potential for occurrence and there is no requirement for further consideration of these species.

In relation to reptiles, there are no records of reptile occurrence within dispersal range of the Site and the habitat structure and extent within the Site is of very limited potential value. There is no reasonable likelihood of reptile occurrence and no requirement for further survey or precautions.

Since there are no water features within the Site or immediately flanking its boundaries there is no habitat value for Water vole. There is also no reasonable likelihood of Otter seeking shelter within or alongside the red-line boundary. Water vole and Otter do not require further consideration.

In relation to Great crested newt (GCN) and other amphibians, there are no ponds within dispersal range of the red-line boundary. The only water-body is the man-made feature situated directly north-east and this is judged to be unsuitable for GCN because of its substantial size and heavy shading. Whilst it is possible that Common toad may use such a water feature, there is no substantive risk of terrestrial toads utilising terrestrial habitat within the red-line boundary. No further survey, assessment or precautions are required in relation to GCN and other amphibians.

D.5 Pre-dawn re-entry survey

The weather was good throughout the survey, with deterioration to drizzle at 7 minutes prior to official sunrise, but with no adverse conditions overnight. A summary of the results is given below:-

Pre-dawn re-entry survey: Date: 15 th September 2014	
Official sunrise time: 06:42hr Survey start time: 05:08hr Survey end time: 06:42hr	
Surveyor locations:	
Surveyor 1	05:35hrs = 1x Common pipistrelle feeding overhead, audio-only detection. 06:05 – 06:07hrs = 1x Soprano pipistrelle, regular passes around trees south-west of surveyor. 06:10hrs = 1 x Common pipistrelle pass east, up and out of sight over the roof of building B3. 06:15 – 06:21hrs = 3 – 4x Soprano pipistrelles individually entering air-space over the surveyor and in the 'courtyard' framed by B2, B3 and B5, with <u>1x bat investigating the roof of B2 and with all then passing east /south-east up between B2 and B3, presumed to a roost on the roof of B3</u> because Surveyors 2 and 3 did not detect them re-emerging from the roof. <u>In summary there was a likely Soprano pipistrelle roost high on the roof of the eastern half of B3, but roost entry was not visible due to height and this would remain the case for future surveys unless substantial scaffolding or a large elevated platform was to be made available.</u>
Surveyor 2	05:12 – 05:57hrs = Occasional Common and Soprano pipistrelle passes detected, audio-only, with two occurrences of possible faint <i>Myotis sp.</i> detections. 06:07hrs = 2x bats flying high at tree tops and near south-west gable of building B3. Unsure of species, owing to limited echo-location and substantial height. 06:32hrs = <u>1x bat (likely pipistrelle, but limited echo-location) re-entered a roost</u> high in the south-west gable end of building B3, on the section located south of the chimney. 06:33hrs = <u>1x bat (again, likely pipistrelle, but limited echo-location) re-entered a roost</u> in a mortar gap high in the south-east elevation wall of building B3. Flight observation suggested that these bats were pipistrelles, though <u>it remains uncertain as to precisely which species. The precise roost entry locations were also very difficult to discern because of the height and angle of observation.</u>
Surveyor 3	05:12 – 05:41hrs = Intermittent passes and social calling of Common and Soprano pipistrelle. 05:52hrs = 1x Common pipistrelle passing north-east along the track by the surveyor. 06:14hrs = <u>Possible re-entry of 1x Common pipistrelle near the eaves of the south-east elevation of building B3, but very difficult to discern due to the height.</u> 06:14hrs = 1x Soprano pipistrelle passing north-east along the track by the surveyor. 06:22 – 06:31hrs = Three occurrences of brief circling of 1x silent bat over the north-east end of the roof of Building B3, near to the south-east elevation wall-top, but then out of sight. Flight appeared to be that of pipistrelle. <u>No detection of the bat/bats flying off, hence believed it/they entered a roost on B3</u> (probably tying-in with the observations of Surveyor 1).

Pre-dawn re-entry survey: Date: 15th September 2014

	Continued ...
Surveyor 4	05:20hrs = 1x Common pipistrelle foraging around vegetation cover to north-east of the red-line boundary. 05:45 – 05:55hrs = Occasional social calling recorded, with no sightings. 05:55hrs = 1x Common pipistrelle passing by large Sycamore, between buildings. 06:20hrs = <u>Silent bat visually seen circling above chimney of building B6, but no audio detection due to distance – the bat appeared to be investigating the roof/chimney as a potential roost site.</u>
Surveyor 5	05:59hrs = 1x Common pipistrelle brief pass, audio-only. 06:07 – 06:10hrs = Occasional passes east and west of 1x Common pipistrelle, along the track 06:14hrs = 1x Common pipistrelle feeding around trees to west of B6, then out of visual and audio detection – unsure where (note, this probably ties-in with the observations of Surveyor 4, who could see the bat high above B6, probably out of audio and visual range of Surveyor 5).
Summary:	Both Common pipistrelle and Soprano pipistrelle bats appear to utilise the air-space and also components of the buildings associated with the Site. Approx. 5 - 6 pipistrelles appeared likely to be utilising features associated with the upper walls and roofs of buildings B2, B3 and B6, predominantly for lone-roosting, which would be typical in mid-September. However, the roof of B3 is situated at a substantial height and has two ridge lines. This roof of B3, plus the roof of B2, cannot be visually monitored by surveyors stood on the ground. The likely re-entry to roost sites on such roofs can therefore only be estimated, with no means of obtaining precise details. Precautions will therefore have to be incorporated into the risk assessment and guidance, allowing for certain information about roost sites being unobtainable. This is demonstrated in Section E.

D.5 Summary of all results

The results show that there are the following ecological considerations at the Application Site:

- Bats (in relation to the buildings) = Habitat appraisal indicates there is potential value for crevice roosting bats in association with upper walls and roofs of all of the buildings within the Site. By comparison there is only localised potential for hibernating bats to use certain parts of the structures and the potential value for breeding bats appears limited but unconfirmed. There is conclusive evidence of lone-roosting by a low number of Common and Soprano pipistrelle bats (the most resilient and opportunistic two of the UK bat species), but owing to the height of the roofs on B2 and B3 it has been impossible to obtain detail about the roost locations and access points. Since habitat value and evidence of roosting bats has been detected, it is necessary to refer to the legislation and recommendations in **Section E.1** of this report to determine what further actions are required.
- Bats (in relation to trees) = All trees have '*Category 3*' status, i.e. no potential value for roosting and/or hibernating bats. However, the assemblage of trees and locally abundant Ivy at the Site is suitable for use by foraging bats, which will also require consideration, as accounted for in **Section E**.
- Breeding birds = The shrubs, trees and locally abundant Ivy are suitable for use by breeding birds and to a lesser extent there is also potential for parts of the buildings and gaps within stone walls to support nesting birds. Further consideration of nesting birds is therefore required, with the legislation and recommendations in **Section E.2** being applicable.
- Other wildlife = There are no concerns or constraints in relation to Badger, reptiles, GCN and other amphibians, Hedgehog or Brown hare. There is also no evidence of common species such as Rabbit and Red fox. No further actions are required.

E LEGISLATION, ASSESSMENT & RECOMMENDATIONS

E.1 Bats

E.1.1 Legislation & Assessment:

All UK bat species are provided full legal protection under Schedule 5 (section 9) of the *Wildlife and Countryside Act 1981 (as amended)* and under *The Conservation of Habitats and Species Regulations 2010*, making them European Protected Species. In combination this legislation make it illegal to intentionally kill, injure, harm or disturb bats and illegal to damage, disturb or obstruct access to bat roosts.

Since the daylight appraisal identified potential habitat value ranging from low-moderate to moderate-high, plus the nocturnal survey in September 2014 identified evidence of Soprano pipistrelle and Common pipistrelle bats active in the environs and using / investigating roosts associated with buildings B2, B3 and B6, there is a legal requirement to give further consideration to bats in relation to the planning proposal.

The planning application must incorporate due consideration of bats, so that upon receipt of planning permission it will be possible to obtain a European Protected Species (EPS) mitigation licence from Natural England. An EPS licence permits derogation from the law (e.g. destruction of known bat roosts), provided the actions are in accord with an approved Method Statement.

An EPS mitigation licence Method Statement must demonstrate exactly how mitigation and compensation will be implemented so that bats are not harmed or permanently displaced by the intended works. This will include retention and/or reinstatement of roost habitats, plus protection of air-space near to the roosts, so that bats can still safely enter and exit without deterrence or greater risk of predation.

The roosts recorded during the September 2014 nocturnal survey supported lone bats or low numbers of bats of Common pipistrelle and Soprano pipistrelle species. The roosts all had **low conservation significance** in accord with the classification used by Natural England¹. Their classification would need to be further investigated in summer before applying for an EPS licence (it is necessary to demonstrate a good understanding of roost status, so that the mitigation and compensation is accurately tailored to their requirements), but notably both pipistrelle species are resilient and respond well to mitigation schemes, so the results to date provide a good basis on which to assess impacts and design appropriate mitigation.

In relation to assessing impacts, proposals drawings for the Application Site show that building B3 will be retained, but all other buildings will be removed. B3 will undergo invasive work to convert it into apartments. Trees will also be removed because these are in poor condition and have short projected life-spans. Based on this information about the proposals, coupled with the survey results to date, it is predicted that without any bat mitigation or compensation the work would have the following impacts:

- A) Permanent roost loss in relation to the removal of building B2, which is judged likely to be supporting a pipistrelle roost on the roof (though roost location and specifications are uncertain);
- B) Permanent roost loss in relation to the removal of building B6, where a pipistrelle displayed investigative behaviour around the chimney at dawn and it is likely there is a pipistrelle roost (again, roost details are unclear, but roost loss would be unavoidable);
- C) Likely short-term displacement and loss from roosts on building B3 whilst invasive work takes place, additionally with a risk of roost modification and/or permanent roost loss if the work alters or closes crevices that bats are currently using (e.g. work to insulate the roof or re-point the walls could cause such impacts);

¹ Ref: Figure 4 (page 39) in the *Bat Mitigation Guidelines (2004)*

- D) Potential killing and/or injury of bats (depending on the time of year and the methodology of the work), during the removal of B2 and B6 (confirmed roosts), plus potentially in relation to invasive work on B3 (confirmed roosts). Additionally there would be a degree of potential for harm when removing other buildings because these also have habitat value and pipistrelles are very opportunistic and will readily utilise multiple roost sites during the active season.
- E) Slight risk of long-term displacement due to inappropriate use of outdoor lighting and/or removal of trees that provide sheltered flight lines and foraging habitat for the bats (if such trees are not replaced).

With reference to Table 6.1 on page 37 of the Bat Mitigation Guidelines (2004), the above-listed impacts would constitute **multiple 'low scale' impacts on the local bat populations** because the identified roosts are of **low conservation significance**. As previously stated, this assessment would have to be supported by additional survey work prior to applying for a licence.

E.1.2 Recommendations:

The design of the re-development needs to incorporate mitigation and compensation measures that address the potential impacts listed as A) to E). All impacts must be addressed so that the local bat populations are not detrimentally affected by the work. The process for achieving this will be as follows:

- At least one supplementary nocturnal survey will be implemented before applying for an EPS mitigation licence, optimally conducted between mid-May and the end of June. This will provide more information about the roosts that were detected in September 2014, to ensure that the EPS mitigation licence Method Statement is based on a good understanding of the roost statuses.
- It will then be essential to obtain the European Protected Species Mitigation (EPS) licence from Natural England before invasive work can take place (with a possible exception in relation to localised interior strip-out).
- **Appendix 1** presents an Outline Mitigation Method Statement, indicating what measures are required and demonstrating that mitigation is achievable, though the scheme will have to be supplemented and/or amended before submission to Natural England.
- Notably, additional to retaining and/or reinstating roost habitat in the buildings, the landscaping for the Site must demonstrate that foraging and commuting habitat value is retained or reinstated, in the form of sheltered air-space and trees and shrubs. Again, this is accounted for in **Appendix 1**.

Consideration of **'the three tests' of the Habitats Regulations** is also necessary in order to obtain an EPS mitigation licence. These 'three tests' are specified below, along with reasons as to how and why the Application Site meets the tests:

- 1) The proposed work must be serving the purpose of:

"preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment" [Regulation 44(2)(e)]. **The factory premises are old and out-dated for their current purpose. The current tenants are re-locating to other premises and there is no reasonable prospect of selling the premises to another industrial occupier. Assessment of the options has concluded that the only realistic and viable economic potential for the site is its redevelopment for (as proposed) conversion of part of the premises for residential. The conversion proposal would allow for retention of part of the B3 part of the existing structure. Without such investment long-term dereliction would prevail. Accordingly, the first test is satisfied.**

2) The licence can only be granted if:

"There is no satisfactory alternative" [Regulation 44(3)(a)]. **This must take into consideration whether it is better to leave the buildings (with the roosts) in their current form and/or whether the work could be undertaken in a different way, so as to facilitate retaining the roost habitat. The answer is that the approach is the most sensitive that can be implemented: it retains the large building B3 and this supports more than one roost, which can be retained or reinstated. This is the most satisfactory approach and the second test can be satisfied.**

3) The licence can only be granted if:

"The action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range" [Regulation 44(3)(b)]. **The two bat species that roost here are opportunistic and resilient crevice-dwelling bats, for which mitigation can be achieved to protect against killing and injury, plus to retain existing roost habitat where possible. Additionally, compensation can be achieved so that they have a combination of retained and replacement roost habitat in the long-term. The third test is therefore satisfied.**

See **Appendix 1** for the Outline Mitigation Method Statement.

E.2 Nesting birds

E.2.1 Legislation & Assessment:

Wild birds, their nests and their eggs are protected under Part 1 of the *Wildlife and Countryside Act 1981*, which makes it illegal to kill or injure a bird and to destroy its eggs or its nest whilst it is in use or being built.

Since the daylight habitat appraisal identified potential value for nesting birds in association with trees, shrubs, dense Ivy cover, gaps in walls and also dilapidated buildings B5 and B6, this indicates there is a risk of redevelopment at the Site having a negative impact on breeding birds, so mitigation is essential. The risk will only arise during the breeding season, which is typically March to August inclusive.

E.2.2 Recommendations:

Firstly, the design of the scheme is to demonstrate retention of shrubs, gaps in stone walls and Ivy cover on walls where possible, as all have the potential to support low numbers of nesting birds during the breeding season.

Where avoidance cannot be achieved, sensitive timing and methodology of clearance works is necessary. The bird breeding season typically extends from the beginning of March to the end of August inclusive, which is the critical period for sensitive works. **Clearing the Site outside the breeding season is therefore a recommended means of ensuring there is little or no threat to breeding birds.** If sensitive timing is *not* possible, commencement *may* be able to take place during the bird breeding season, provided extra due diligence is implemented prior to and during the clearance. The following precautions must be applied:

- In the days immediately prior to commencing work, a thorough inspection is to be made within and around the features to check for opportunistic colonisation by breeding birds.
- If any breeding birds are detected, the nest must be left undisturbed until the chicks have fledged, at which point the work can take place. As a rough indication, the incubation of eggs and rearing of chicks until they depart the nest can take 2 – 4 weeks, depending on the bird species and what stage the process has reached at the time that the nest is discovered.

- Once it is demonstrated that no birds are actively nesting, features can then be removed.

It is important that removal of trees and shrubs (due to their poor condition and short projected life-spans) is compensated by replacement planting of a range of shrubs and trees. This is to be demonstrated in the proposals plan for the Site.

E.3 Barn owl

The Barn owl is not only protected under Part 1 of the *Wildlife and Countryside Act 1981*, as are all breeding wild birds in the UK, but it is also listed in Schedule 1 of the *Act 1981 (as amended)* and this afforded it special protection that makes it illegal to *disturb* the species whilst at the nest.

However, there is no evidence of Barn owl and no reasonable likelihood of occurrence at the Site, so there is no risk of negative impacts and no further actions or precautions are required.

F ADDITIONAL CONSIDERATIONS: BIODIVERSITY RETENTION & ENHANCEMENT

Outdoor lighting:

Outdoor lighting is typically a deterrent to wildlife, including bats. Any outdoor lighting is therefore to be screened, hooded or positioned low at bollard level so that it does not illuminate roofs, upper walls or nearby trees and shrubs. This will be important in relation to bats, but it will also permit birds and other wildlife to use the habitats in safety.

Best practice approach to planting:

Where possible, it is recommended that new planting favours a mixture of trees, shrubs and herbs that produce flowers and berries or fruits, plus night-scented plants. These can provide shelter and food for a wide array of wildlife, including insects, birds and bats. An array of suitable trees, shrubs and plants is available, but some suggestions are listed below:

Trees: Rowan (*Sorbus cuparia*), Apple (*Malus sp.*), Plum (*Prunus sp.*), Field maple (*Acer campestre*), Common whitebeam (*Sorbus aria*).

Shrubs: Holly (*Ilex aquifolium*), Hazel (*Corylus avellana*), Forcythia sp., Lilac (*Syringa vulgaris*), Butterfly bush (*Buddleja davidii*).

Climbers: Honeysuckle (*Lonicera periclymenum*), Clematis sp., Climbing roses (*Rosa sp.*), Wisteria floribunda.

Night-scented: White jasmine (*Jasminum officinale*), Tobacco plant (*Nicotiana glauca* / *alata*), Night-scented stock (*Matthiola incana* / *oxyceras*).

Herbs: Lavender (*Lavandula angustifolia*), Sage (*Salvia officinalis*), Rosemary (*Rosmarinus officinalis*), Mint (*Mentha sp.*), Oregano (*Origanum vulgare*), Chives (*Allium schoenoprasum*).

Boundary fences permeable to wildlife:

Close boarded fences with concrete bases, or any other fence types that meet with the ground at their bases, are barriers to animal movement. It is recommended that any new fences are *not* to be sealed at their bases. Where possible there is to be a 5 – 10cm gap between the fence bases and the ground (greater in some locations and less in others is not a problem). This is so that the Site is permeable to wildlife.

G CONCLUSION

In conclusion, roosting bats and nesting birds are material considerations at the Application Site, but Barn owl and other protected species do not present a concern. There is a requirement for bat

mitigation measures in accord with a European Protected Species (EPS) licence, but Common pipistrelle and Soprano pipistrelle bats respond well to mitigation and compensation schemes and this proposal for conversion and new-build facilitates creating replacement roost habitats. It is therefore possible to achieve the redevelopment proposal without having negative impacts on local bat populations. Similarly, mitigation for breeding birds is achievable.

However, if permission is granted, it is respectfully suggested that the LPA should attach suitably worded planning conditions to the Decision Notice so as to enforce implementation of mitigation measures.

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APPENDIX 1 – Outline Mitigation Method Statement for Bats

A Mitigation and Compensation

This outline mitigation strategy primarily relates to several confirmed roost sites at the Lodematic buildings, used by low numbers of Common pipistrelle and Soprano pipistrelle bats.

However, additionally it specifies a range of precautionary mitigation measures that relate to other features on the buildings, where no confirmed roosts have been recorded but where potential value for crevice-roosting bats has been identified, because there will remain a risk of one or more bats using such features.

Inclusion of all mitigation measures within one method statement ensures that workers only have one document to refer to. Ultimately, the document will have to be amended and formalised once additional nocturnal survey work is conducted and once a licensed bat worker compiles the full Method Statement to accompany an EPS Licence, but at present the *outline* of practical and achievable measures is as follows:

Mitigation

- i. Additional nocturnal survey work will be undertaken, so as to obtain more information about the roost sites prior to applying for an EPS licence. This will give rise to all roost locations being mapped, described and numbered.
- ii. Discussion with relevant parties (owners / contractors / structural surveyors) will then establish whether any roosts can be retained and left undisturbed on building B3.
- iii. Two (or more) Schwegler 1FF bat boxes are to be installed on a combination of trees T6, T7 and T8 (where possible), or alternatively on the north-eastern end walls of retained building B3: the boxes are to provide short-term alternative roost habitat and also to receive any bats captured and removed during the invasive works.
- iv. Where existing roosts on the buildings are in use but have to be lost *and* where bats are *inaccessible* (e.g. within mortar gaps) exclusion and deterrence measures will be applied by a suitably licensed and experienced bat worker. Any requirement for exclusion will follow standardised methods and timing, as indicated in **Section B** on the next page.
- v. For *all roofs finished with slates and stone tiles* (i.e. buildings B2, B3, B4, B5 and B6), there will be varied levels of risk that bats will be occupying gaps under the roof materials. A licensed bat worker will supervise roof removal in confirmed roost locations, plus where high risk has been identified. Additionally, a pre-demolition brief will be given to workers, explaining that slates and tiles are to be lifted/prized off cleanly, rather than dragged and that gaps beneath are to be checked for bats. Workers are to be shown photographs of a Common pipistrelle bat and an accumulation of bat droppings (see **Section B**).
- vi. If any bats are uncovered, **bat capture** is to be undertaken with gloved hands and/or a light cloth, as specified in **Section B**. If the licensed bat worker is absent, they are to be contacted for guidance at this stage.
- vii. Additionally, for *all* roofs, including corrugated sheets, once roof materials have been removed, workers must check the wall-tops for roosting bats and **bat capture** may be needed. Again, capture is undertaken with gloved hands and/or a light cloth, as specified in **Section B**. If the licensed bat worker is absent, they are to be contacted for guidance at this stage.
- viii. In relation to landscaping and habitat value for foraging and commuting bats, Tree T8 will be retained because this is situated outside the red-line boundary, plus in the short-term to medium-term there will be an attempt to retain trees T5 – T7 so that these can also provide

a continuation of sheltered air-space for bats, despite them being poor-quality and badly situated specimens. Trees T1 – T4 are conclusively proposed for removal, along with self-set saplings and shrubs, because they are in poor condition and have short projected life-spans, but all removal will be directly compensated by replacement tree and shrub planting. A mixture of well-established trees and shrubs is to be planted along the belt of land where trees T1 – T7 are currently situated. Small tree species that produce flowers and berries are desirable, including *Prunus* spp., *Sorbus* spp. and *Crataegus* spp.

Compensation

- ix. Where possible, roosts on building B3 will be retained. They will be clearly identified and protected.
- x. The Schwegler 1FF bat boxes installed on trees T6, T7, T8 (where possible) and/or on the retained building B3 will provide short-term replacement habitat whilst invasive work is occurring on the buildings, plus they will also be retained in the medium-long-term. These can last for 20 - 25 years and are readily used by pipistrelles, plus other bat species.
- xi. As compensation for roost loss from all demolished buildings, replacement roost habitat will be incorporated into the redevelopment of building B3 and into the new-build accommodation block as well. The Wild X Cavity roost features and similar inbuilt bat roost features shown in **C.1.3** are all suitable for use. These are to be primarily incorporated at south-east and south-west aspects. Additionally there is scope to provide bat access and roost habitat behind fascia or barge boards, onto wall-tops and/or under roof slates. Details of all replacement roost habitat features will require finalisation in order to apply for a licence, but incorporation of a range of features shown in section **C.1.3** will provide a suitable range of replacement habitat.
- xii. Outdoor lighting will be arranged so that it does not illuminate the belt of new planting, nor the locations of the bat boxes or any of the replacement bat roost features. Details will need to be demonstrated at the time of applying for the EPS licence.

B Works to be undertaken by the ecologist or suitably licensed person

B.1 Capture and exclusion

Capture

Capture will only be implemented if bats are uncovered during invasive work such as removal of the roofs. For high risk areas, such work will be supervised by the licensed bat worker, but even when workers are operating alone they are to remain vigilant and check for bats, with reference to the following image of a pipistrelle bat and bat droppings so that they know what to look for.



Fully grown Common pipistrelle bat



Pipistrelle bat droppings, which look like mouse droppings, but crumble to dust when squashed between the fingers (comprising tiny, glistening bits of insect wings etc.)

Any bat capture is to be undertaken using gloved hands or a light cloth. If a licensed bat worker is not present it is to be contained in a small box until their arrival.

Any captured bats are to be transferred into one of the installed Schwegler bat roost boxes on nearby trees, by the suitably experienced bat worker.

Exclusion

Any work affecting mortar crevice roost sites will be timed so that it takes place during the bat active season and will be implemented so that it is preceded by nocturnal emergence survey work. A combination of deterrence and exclusion will only be required if the nocturnal emergence survey indicates that bats are present. According to what feature(s) any bats are detected emerging from, the exclusion device will be adapted in terms of size and composition, but the general methodology (as applied by the suitably experienced licenced ecologist) will be along the lines of the following specifications:

- Bat emergence will be monitored at dusk, with the aid of infra-red torches and cameras and night-vision binoculars where appropriate, to identify if any bats emerge, where possible with specific identification of the crevices or roost locations.
- If judged necessary, as based on the outcome of the emergence monitoring, at 1 hour and 15 minutes after dusk (when all bats will have emerged), exclusion sheets or tubes of plastic will be affixed at roost holes or crevices, such that bats can escape out, but cannot re-enter.
- If exclusion devices have to be fitted, they will be removed or lifted in the early evening the following day (more than 30 minutes before the official time of sunset) and will then be lowered / re-installed after 1hr and 20 minutes after sunset the following night.
- This process will be repeated over a period of at least 3 consecutive, suitably mild and calm nights (>8°Celsius, with negligible rain and no strong winds). Even on bad weather nights the sheet will be lifted, but the exclusion period will be extended if it is doubtful as to whether bats are active. Where necessary there will be more than one exclusion device fitted. A log of all installation locations and dates will be made. A logbook will be kept for all actions undertaken at each exclusion location, ensuring that all are used for the correct period of time and under the correct conditions to be confident that bats have been conclusively excluded.
- Upon exclusion being successfully completed at each location, and also upon dusk and dawn work showing other crevices to be free of bats, closure of the monitored gaps or demolition of the structure will then be undertaken the following day, ensuring that holes are sealed up whilst bats are absent. It will be ensured that all 'clear' gaps are filled that same day.

Note that at the time of compiling the final and formal Method Statement a suitably experienced bat worker may wish to vary the methodology, either based on new experience and success with exclusion techniques, or based on the results arising from a nocturnal survey. The key principle is that a combination of monitoring and exclusion is to be applied, to ensure that bats are displaced and are not in harm's way when invasive work takes place.

C Works to be undertaken by the developer / landowner

C.1.1 In-situ retention of roost(s).

The implementation of another nocturnal survey, followed by liaison with relevant parties (e.g. owners / contractors / structural surveyors), will ascertain whether or not in-situ retention of existing roosts can be achieved on building B3.

It is possible that roosts within mortar crevices can be left undisturbed for example. If this is the case, the roosts will be marked up on plans and workers will be given clear instruction to leave such features unaltered and undisturbed.

C.1.2 Modification of existing roost(s). Give dimension details etc.

There is potential that crevice-roosts on the roof of B3 will be retained, but it is likely that such roosts will have to be disturbed and modified to ensure the roof is suitable for the intended change of use to apartments. Details will have to be established prior to applying for the EPS licence, with a clear specification as to what roof work will be undertaken.

C.1.3 New roost creation – dimension details, access points etc.

A range of replacement roost features can be used within building B3 and also the new-build accommodation block. These are to comprise a combination of the features shown on the following pages. Precise details will be required, including the numbers and locations of all such features.

Additionally, good quality landscape planting is required, so that there is future foraging and commuting habitat for the bats in the vicinity of the buildings and roosts. Where there will be removal of trees T2 – T4 from the belt of land to the east of building B3, the landscaping will demonstrate replacement planting of mixed shrubs and trees, as indicated below:



Bat roost boxes or access bricks can be built into upper walls. This is subtle but provides high quality roost habitat.

Position them to avoid locations above windows or doors.

There are a range of designs & suppliers, including these examples:

<http://www.wildcareshop.com/product/nest-boxes-artificial-habitats/bat-boxes.html>

<http://www.nhbs.com/browse/subject/421/bat-boxes>

<http://www.ibstock.com/sustainability-ecozone.asp>

<http://www.forticrete.co.uk/products/184/bat-boxes.html>



Ibstock

Height=265mm Width=180mm
Depth= 240mm



Ibstock

Height=265mm
Width=180mm
Depth= 240mm



Schwegler 1FR

Height=475mm
Width=200mm
Depth= 125mm



Schwegler 1WI

Schwegler Summer and Winter Box

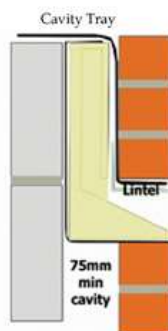
Height=545mm
Width=345mm

Wildcare



Wild-X Cavity Bat Roost

Height=440mm
Width=420mm
Depth (at base)= 170mm



Small Cavity Bat Roost

Height=440mm
Width=210mm
Depth (at base)= 170mm



Forticrete

Height=215mm
Width=440mm
Depth (at base)= 100mm



Schwegler N27

Height=265mm
Width=180mm
Depth= 240mm

Fascia boards and barge boards provide valuable bat habitat, provided they are offset from the wall by about 20mm (3/4 of an inch)



Allow a gap for bats to gain access behind this board, where they will roost against the outer stonework

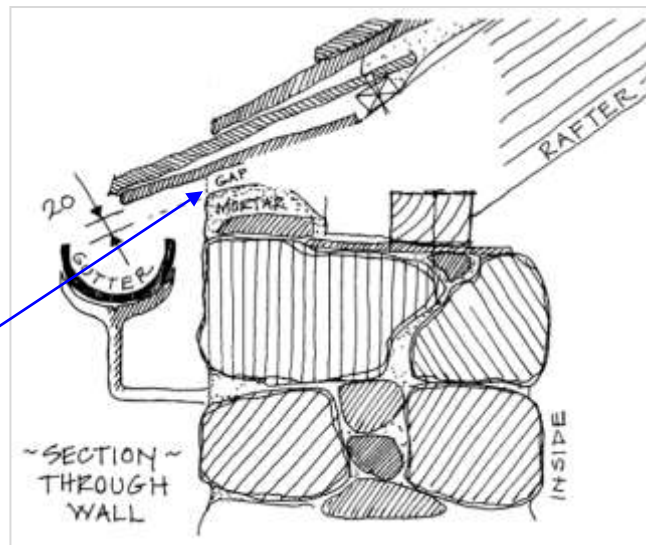
This should allow the bats two options:

- a) Roosting directly between the wall and the fascia board
- b) Access to the tops of the walls (see separate recommendation).

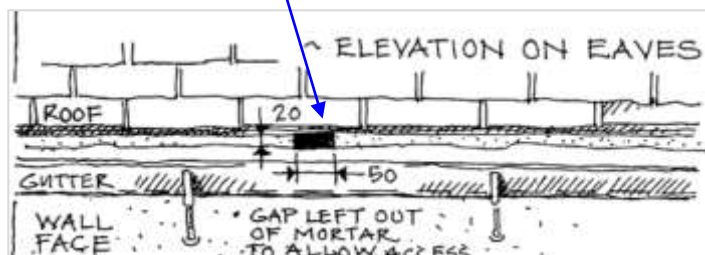
Bat access onto wall-tops can be achieved for stone-built and brick-built walls.

When work is undertaken on a roof, there is an opportunity to leave localised gaps that create wall-top roost sites, as shown in these diagrams.

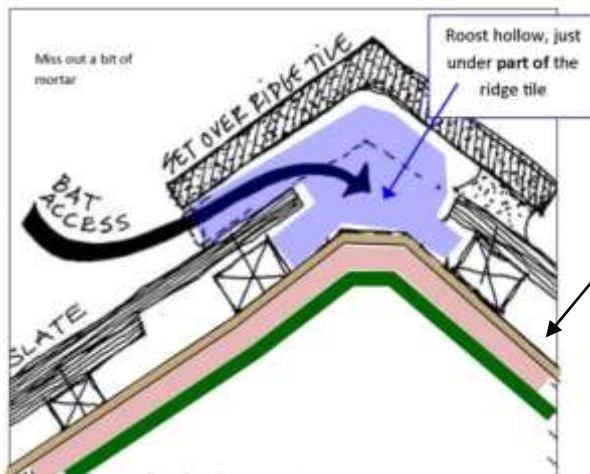
It is also possible to leave an unfilled cavity in the uppermost 10cm of the wall, so there is a hollow in which bats can roost



Entrance hole size = approx. 20mm x 50mm, and must lead to a gap on the wall top



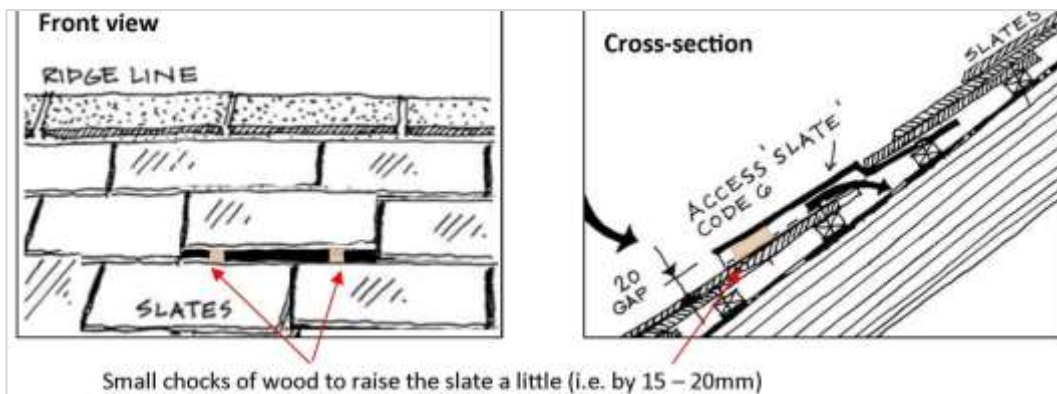
Access **under ridge tiles** can be achieved with no loss of water-tightness. Small gaps are left out of the mortar of certain ridge tiles and the hollow under the ridge tile is not filled with mortar at these locations, so there is a roost hollow, as shown.



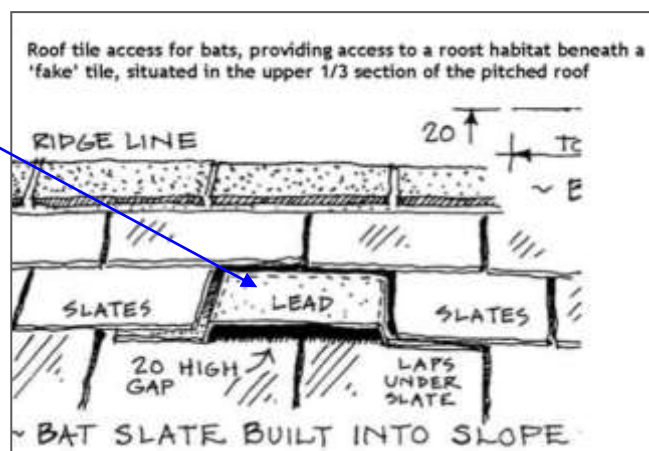
NOTE: It is important that a layer of **bitumen felt** is used under the roost tiles, though breathable membrane can be used elsewhere. Research shows that breathable membranes can be prone to fraying when bats use them for roosting, which is a major hazard to the bats and also degrades the membrane. There is no means of the bats getting into the roof void provide the layers of bitumen and membrane do not have gaps in them.

Access under slates can be created in 2 ways:

- 1) Insert small chocks of wood under specific slates that are one or two rows down from the ridge



- 2) Create 'lead saddles' (i.e. mould pieces of lead, like shown below).



NOTE: again, **bitumen felt** has to be used under these slates, with breathable membrane elsewhere.