The Conservation of Habitats and Species Regulations 2010

Application for a Licence
Bats – Method Statement

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The Method Statement will be used to determine the impact of the application on the favourable conservation status of the species concerned (Regulation 53(9)(b)).
You are strongly advised to refer to the Bat Mitigation Guidelines.
Please use photographs to support descriptions

Document 1 - Background and Supporting Information

The format below must be used and completed by a consultant ecologist or other suitably experienced person

A Executive Summary. No more than one side of A4

Uplands Mill is a disused factory located on the outskirts of Biddulph, Staffordshire. The owner of the site, Bovis Homes, has planning permission to demolish the mill and develop the site for residential housing, with the construction of 175-200 houses, internal roads and green spaces.

The eastern elevation of the Mill, and in particular the boiler room area, is used by common pipistrelles, including a probably maternity colony of c.80 bats. Single to small numbers of common pipistrelles (up to 4) roost at various sites along the eastern elevation.

Demolition of the mill building will result in disturbance and temporary displacement of roosting bats during either the Spring (April to May) or Autumn (i.e. September to early November) periods. The roof and other potential bat roost features on the exterior and interior of the eastern elevation of the building will be carefully dismantled under the supervision of the licensed ecologist.

In advance of this, a new purposely designed bat roost building will be constructed within a wildlife area onsite that is close to the existing roost sites. Twelve bat boxes will be installed on trees in this area also, at the same time. In addition, a total of 20 new roost sites will be provided, a combination of roof tile roosts and wall tile roosts, within the new houses to be built on site, with these new roosts suitable for common pipistrelles and providing a range of thermal conditions.

With care taken and the mitigation strategy implemented, we do not consider there to be a significant impact of the conservation status of common pipistrelles, and consider that the new roost sites will be suitable for use by bats over the short, medium and longer terms.

B Introduction

B.1 Background to activity/development, include a brief summary of why the activity is necessary.

The current industrial buildings at Uplands Mill are unoccupied and in a poor state. Uplands Mill is to be demolished so that the site can be redeveloped into a residential housing area, including houses, gardens, internal road network, public open space and a wildlife area/corridor. Uplands Mill as reached the end of it's commercially viable life, occupies much of the site, and needs to be removed to allow for the construction of 175-200 new residential homes that will be available to the general public. There will therefore be some temporary disruption to bats.

B.2 Full details of proposed works on site that are to be covered by the licence e.g. barn/loft conversion to new dwelling, demolition of buildings, re-pointing of bridges and tunnels, lime kilns etc. Include current status of planning permission (if applicable).

Uplands Mill first needs to be prepared for demolition, which involves stripping out the interior of the building and removing anything that is not structural, including all internal fabric. The building then needs to be demolished using heavy machinery and the waste materials produced either recycled or

removed from site. Land re-profiling works will follow; then the laying of infrastructure and services, house construction and landscaping.

Demolition of Uplands Mill is expected to take approximately 12 weeks, and the total development is projected to take around 4 years to complete, dependent on housing markets and sales (D. Oliver, in litt.). Planning permission has been granted for this development.

C Survey and site assessment

C.1 Pre-existing information on the bat species at the survey site. Provide records from local environmental records centres, local bat groups, previous survey work by the applicant or others.

Bat records within 1-km of Uplands Mill were requested from the Staffordshire Ecological Record (SER). The records supplied are reproduced as Annex 1.

There are no records from Uplands Mill itself but there are historical records of small numbers of pipistrelles (including at least two roost sites) within housing areas within 1 km of the site (see Annex 1).

C.2 Status of species at the local, county and regional levels.

Common pipistrelles have been recorded at the Uplands Mill site with a probably maternity roost of up to c.80 bats being recorded in one area of the Mill.

The common pipistrelle is an abundant and widespread species in Britain occurring everywhere on the mainland. BCT monitoring data suggest the population is increasing. Common pipistrelles are a Staffordshire Biodiversity Action Plan (BAP) priority species.

C.3 Objectives of the survey. e.g to determine presence/absence of bats, bat usage of site (e.g. maternity, hibernation, night roosts; foraging, commuting, swarming sites).

Surveys of Uplands Mill were undertaken to investigate if bats were present, what species were present, where they roost, in what numbers, and for what purpose (e.g. maternity, night roost etc.), in order to assess the impacts of the proposed works.

C.4 Scaled plan/map of survey area of appropriate scale and orientation with integral or separate location map at 1:50,000 or 1:25,000 scale. Aerial photographs are also useful.

Uplands Mill is located in Biddulph, Staffordshire (at ST8 7ER or NGR SJ 892 583). Site location and an aerial view are provided in Figures 1 and 2, respectively.

Figure 1: Site location

Figure 2: Aerial photograph

C.5 Site/habitat description (relevant to bats), based on day-time visits (to include description of roost and habitat relevant to bat commuting/foraging behaviour). Include annotated photographs if helpful.

This 6.5ha mill site is located on the north-east edge of the town of Biddulph and is surrounded by residential housing and roads. The nearest open countryside, which consists of pasture and arable fields, is positioned approximately 150m to the east and 200m to the north of the site.

A large factory (the former mill) and offices with car-parking dominate the centre of the site, with a variety of largely un-managed habitats surrounding. Habitats on site include: buildings and hard standing; woodland (both semi-natural and plantation); occasional trees; hedgerows; scrub; improved, marshy and unimproved neutral grassland; tall ruderal; and an area of wet flush.

From the habitats present, of particular note is an area of mixed habitat running down the west side of the site that includes semi-natural broadleaved woodland, dense scrub, marshy grassland, and a wet flush that currently receives water run-off from the mill site.

Pipistrelle bats have been recorded roosting behind bargeboards on the eastern elevation of the mill building, principally where the boiler room is located, in the north-east corner of the mill. Roost sites located are shown in Figures 3 and 4 (from Annex 2).

Figure 3: East elevation of boiler room. Arrows indicate main bat emergence-re-entry points.

Figure 4: East elevation of southern Mill building. Arrows indicate main bat access points.

C.6 Field survey(s). Include survey method (emergence counts, dawn surveys, site inspections), timings (day/evening), weather conditions (wind, rain, temperature – tabulated for multiple survey visits), personnel involved (provide individual licence numbers, if held), and equipment used (type of bat detectors and logging equipment).

A daytime survey for potential bat roosts was conducted by Dr Ben Garnett and Rob Firth from JUST ECOLOGY as part of an Extended Phase 1 survey on the 4th March 2009. The exterior and interior of the mill was searched for signs of occupation by bats (especially bats themselves, droppings, feeding remains, staining or grease marks) and possible entry/exit points to potential roost sites on the exterior or interior of the mill. High-powered torches and an endoscope were used to examine within cavities and crevices, where access was possible.

The building search was followed by dusk/dawn activity surveys as follows. The surveyors were Bernard Gibney, Rob Frith and Gareth Walker.

Dusk emergence surveys were carried out on 6th May, 31st May and 18th August 2009. The latter two dusk emergence surveys were followed by dawn re-entry surveys on the 1st June and 19th August 2009. Further dusk emergence surveys were carried out on 23rd August and 13th September 2010. Across these two years, a total of seven activity surveys have thus been undertaken.

The dusk surveys began half an hour before sunset and lasted for at least 1.5 hours. The dawn surveys started 2 hours before sunrise and finished after sunrise.

The aim of the surveys was to observe any bats leaving/entering the mill, with surveyors concentrating on likely roost access points and identifying, where possible, the point of emergence or re-entry. The species present were recorded and bat movements in and around the site were investigated. BatBox Duet bat detectors were used, scanning all frequencies for bats. Recordings were made using Olympus Digital Voice Recorders WS-300M, which were subsequently analysed using Wavesurfer.

All surveying was conducted in accordance with best practice guidance (Bat Conservation Trust 2007; Mitchell-Jones & McLeish 2004). All surveys were conducted under suitable weather conditions.

Table 1 Summary of weather conditions during the bat surveys

Date	Weather	Time of survey	Sunset/sunrise time
06/05/09	50% cloud, dry breeze Beaufort 2-4, 13^0C>11^0C	20.15-22.46	20.46
31/05/09	0% cloud, dry, breeze Beaufort 1-2, 11^0C min.	20.55-23.25	21.25
01/06/09	0% cloud, dry, breeze Beaufort 1-2, 11^0C min.	O2.45-04.45	04.45
18/08/09	50% cloud, dry, breeze Beaufort 1-2, 16^0C	20.00-22.30	20.30
19/08/09	80% cloud, dry, still, 13^0C	04.00-06.00	06.00
23/09/10	80% cloud, rain at start, breeze Beaufort 1-2, 13^0C	20.30-22.00	20.30
13/09/10	100% cloud, dry, breeze Beaufort 3-4, 17^0C	19.30-21.00	19.30

C.7 Survey results. Summarise findings in table form (if appropriate); provide clear, annotated and cross-referenced maps/plans/photographs to show roost locations, flight lines, access points, dimensions of existing roosts etc.). Raw data to be appended, (including sonograms).

Internal and External Building Inspection

The western, southern and eastern external walls of the mill building were noted to have a number of crevices that could be used by roosting bats (see Plates 1, 2 and 3). These varied in quality for bats, with some being under thin sheet metal roofing and others under thicker cladding material. No field signs or obvious roosting potential was found in adjoining or external storage buildings which did not contain any obvious roosting sites for bats.

Plate 1

Plate 2

Plate 3

The factory floors and storage areas of the main mill building also appeared unsuitable for bat roosts, many being much too bright (with skylights), very busy with staff and noisy machinery, and having no obvious crevices on the metal frames and walls which occur through most of the building.

The only interior building which had obvious bat potential was the boiler room (Plate 4). Here, there were crevices at the top of the internal eastern and western walls of this building. Externally there are further crevices under the roofing of the eastern wall (Plate 5), and a pipe housing which leads away from the boiler. At least 10 bat droppings were found internally under the eastern wall (directly by the boiler), and a further five were discovered under the western wall. These were later identified as probable pipistrelle *Pipistrellus* sp. droppings.

Plate 4

Plate 5

Given the warm conditions in the boiler room, with warmth permeating the exterior walls also, this part of the mill was considered the most optimal as a summer roost site for bats.

Activity Surveys

Full results from the bat activity surveys undertaken are provided in the attached report and are not repeated here – see Annex 2). Annex 3 provides sonograms for the common pipistrelle bats recorded emerging from the mill, the only recordings relevant to this application. Annex 4 provides the raw data sheets from the surveys.

In 2009, a common pipistrelle roost was confirmed as present in the vicinity of the boiler room in the north-east corner of the mill, with 79 recorded exiting from this roost in May 2009. In June, small numbers of common pipistrelles were also recorded entering various locations along the south-east elevation of the building (observed also in August). In August, 74 common pipistrelles exited from boiler room roost at dusk and 61 were recorded re-entering the roost at dawn on the following day.

In 2010, 48 common pipistrelles emerged from the boiler room barge boards in August, but none in September. Sometime between this and the previous survey the boiler had been removed as the mill was closing down.

Over the two years, the average count for the boiler room roost when occupied was 66 and the maximum recorded was 79 over the two years. Further small roosts are also located behind the bargeboards of the east elevation of the southern Mill building, involving up to four bats

In both years, common pipistrelles were recorded feeding across the Uplands Mill site and a noctule was recorded overflying the site in 2009.

Bat roost exit and re-entry points are shown in Figures 3 and 4 in Section C.5 above, with approximate roost site locations shown also in Figure 5.

Figure 5: Approximate roost positions on the eastern elevation of Uplands Mill.

C.8 Interpretation/evaluation of survey results (Bat Mitigation Guidelines section 5.8) Provide count/estimate of bat numbers, status of site (e.g. hibernation, maternity or feeding roost, swarming site etc), roost significance, constraints on survey (e.g. time of year, cold weather, access problems – justify as necessary).

The surveys located a probable maternity roost of common pipistrelle bats within the boiler room part of Uplands Mill. Smaller numbers of bats of the same species occurred solitarily or in small groups elsewhere on the eastern elevation of the building, most likely to be males or non-breeding females.

Using the available guidance, the main roost present on site would be classed as a *maternity site of common species* and this would be of **medium conservation significance**. The other roost sites present involve s*mall numbers of common species (not a maternity site)* and these would be of **low conservation significance**.

Daytime inspection and seven activity surveys have been undertaken at this site over two years and thus adequate survey effort has been expended. However, bats are very mobile, utilise a variety of potential roost sites and can temporarily vacate or occupy roost sites, and thus their patterns of occupation can change. A precautionary approach needs to be adopted, with work to the building proceeding cautiously (under licence) in the absence of perfect knowledge on how the bats utilise this site.

D Impact assessment in absence of mitigation. See Bat Mitigation Guidelines (section 6.2)

D.1 Short-term impacts: disturbance e.g. noise, vibration, dust, lighting, access obstruction due to scaffolding and plastic sheeting.

If bats are present within the Mill at the time of the demolition works, the work activities will result in short-term disturbance from human and equipment noise and vibration and (perhaps) the use of artificial light to illuminate the work areas. Roosting bats may be exposed as the fabric of the building is removed.

If bats are present within Uplands Mill at the time of the works, the work activities will result in short-term disturbance and displacement from their current roost sites. Disturbance will include human and equipment noise and vibration and the use of artificial light to illuminate the work areas and provide for site security. Scaffolding may interfere with bat movements. The buildings will be demolished once considered clear of bats and so short-term roost loss will occur.

D.2 Long-term impacts: roost modification e.g. new entrances (including human access e.g. for servicing/maintenance), change in size of roost space, changes in air flow etc., temperature and humidity. Note that impacts can be positive or negative as this is in absence of mitigation.

N/a, the current roost sites for bats will be destroyed.

D.3 Long-term impacts: roost loss. Impact on different species populations to be taken into account at local, regional, and national level.

The current roost sites used by bats within Uplands Mill will be permanently lost on account of the demolition of the Mill.

With the presence of a probably common pipistrelle maternity roost, the loss would be significant at the local level and, together with other roost losses or adverse factors for this species, may contribute towards a cumulative impact that would be detrimental to at least regional populations.

D.4 Long-term impacts: fragmentation and isolation. e.g. loss of linear features such as hedges, tree lines, increased lighting, severance of flight lines by roads/rail lines.

The loss of the Mill buildings themselves are unlikely to contribute to fragmentation or isolation, but the loss of surrounding habitats to this housing development may provide bats with reduced feeding opportunity and could mean that bats from nearby housing areas have to fly further to reach good foraging habitats.

D.5 Post-development interference impacts. e.g. extra street lighting, use of loft space as storage.

The additional of street lighting, human noise and activity associated with residential areas would have implications for bats, which, pre-development, experienced a relatively quiet and dark environment away from the mill buildings at night. However it should be noted that pipistrelles are often well accustomed to living alongside humans.

D.6 Predicted scale of impact on species status at the site, local county and regional levels.

Common pipistrelles will be impacted by this development and, given the presence of the probable maternity roost, the unmitigated impact is judged to be of medium to high significance for local and regional bat populations.

The impact on the small numbers of bats roosting away from the main roost site, involving low numbers of common pipistrelle, is judged to be low to negligible for local and regional bat populations.

E Land ownership – Mitigation site(s) (area(s) where any works will be done to offset development impacts, including development plot if applicable)

E.1 Mitigation site ownership If the mitigation site is not owned by the applicant, you must provide the written consent of the relevant land owner(s). You must also provide details of how any measures to secure the population are to be maintained in the long term (e.g. a legal agreement).

The mitigation for this project will be provided on site and is under the full control of the applicant.

F References: List any references cited, and include credits for source information.

Bat Conservation Trust. 2007. Bat surveys - good practice guidelines. Bat Conservation Trust, London.

Just Ecology. 2010. Bat emergence/re-entry surveys of Uplands Mill, Biddulph, Staffordshire: 2009-2010. Report to Bovis Homes. September 2010. Just Ecology, Berkeley.

Mitchell-Jones, A. J. & McLeish, A. P. 2004. Bat workers' manual. Joint Nature Conservation Committee

G Annexes

G.1 Pre-existing survey reports;

Annex 1 – Bat records from Staffordshire Environmental Records.

Annex 2 - JUST ECOLOGY 2009-2010 bat survey report.

Annex 3 – Example sonograms.

G.2 Raw survey data.

Annex 4 - Raw data (survey sheets).

Document 2 - Delivery Information

The format below must be used and completed by a consultant ecologist or other suitably experienced person

This document will be attached to the licence

A Mitigation and compensation.

A.1 Summary of mitigation strategy Overview of how the impacts will be addressed in order to ensure no detriment to the maintenance of the population at a favourable conservation status. To include a scaled map or plan that can be compared with the proposals on the survey results plan.

This mitigation strategy has four main elements, as detailed below. Through this strategy the aim is to achieve no net loss of roosting bats from the Uplands Mill site although some temporary displacement of bats is to be expected.

1. *Timing the works appropriately, with the licensed ecologist providing on-site supervision to avoid injury, minimise disturbance and rescue any bat that may be in harms way.*

The works will only take place under the permission of a Natural England licence. Any works that may impact on bat roosts within the Uplands Mill building, or that may disturb bats present within that building, will be prohibited during the maternity or hibernation periods for bats, for these are the seasons when bats are most vulnerable.

Instead the work to displace bats will be undertaken in either the Spring (April and May) or Autumn (September to early November) periods under the supervision of the licensed ecologist, working closely with the demolition contractors.

2. *Provision of a bespoke bat roost building.*

As explained under Section C below, a new purposely designed bat roost building will be provided prior to demolition of the Uplands Mill building.

3. *Soft, supervised and gradual demolition of the Eastern part of the Uplands Mill building.*

Along the entire eastern elevation of the Uplands Mill building (i.e. where bat roosts have been recorded), a first task will be to carefully remove any external materials that are currently providing crevice spaces for bats, including barge boards, overhanging lead work and cladding *etc.*, under the supervision of the licensed ecologist. At the same time, any internal structures on these walls that may harbour bats will be carefully removed, as well as the roof cladding back to a distance of at least 1.5m from the wall. This manual dismantling work will be carried out in stages over several days in order to minimise the overall impact and give bats the opportunity to react to the disturbance and vacate the building under the cover of darkness.

All areas exposed will be inspected for the presence of bats by the licensed ecologist and any further dismantling of bat roost featured specified and carried out under the direction of the ecologist. All of this work will be carried out sensitively and with hand tools to seek to avoid any harm to roosting bats. The use of heavy machinery will not be permitted at this stage.

A final inspection of the eastern elevation wall of the Uplands Mill building by the licensed ecologist will then take place to search for the presence of bats. Only when the licensed ecologist believes the building to be free from bats will the ecologist allow the remainder of the building to be stripped and demolished by mechanical means. The bat ecologist will be present or remain on-call for on-going support and advice.

4. *Providing replacement bat roost features within the new houses and providing additional roosting opportunities.*

As explained under section C below, 32 new roost sites will be provided for bats, 12 bat boxes in trees and 20 as bat roost sites within the new housing built on site. The tree roost sites will be provided prior to the demolition of Uplands Mill and the house roost sites provided as the new build progresses and will consist of a mixture of roof tile roosts and wall tile roosts, as detailed further below.

B Works to be undertaken by the ecologist or suitably experienced person.

B.1 Capture and exclusion (if applicable). Timings, effort, methods to be employed, care of bats, release sites etc. Include diagrams and photographs to show capture/exclusion apparatus. Include map to show location of capture and exclusion activities.

A bat ecologist will be present on site to supervise the construction of the new bat roost building, the installation of bat boxes on trees and also for the 'soft demolition' of the eastern elevation of the Mill building, working closely with the demolition contractors. The bat ecologist will provide a briefing on bats, bat law, and the conditions of the licence before any works take place.

As the fabric of the building is dismantled, and as potential bat roost features are exposed, the licensed bat ecologist will check for bats, and will train and encourage the demolition contractors to do so as well. The licensed ecologist will also check, with torches and an endoscope, any potential crevice sites within which bats might be found.

No specific capture of bats is proposed but if any bats are found that are endangered by the works, then, depending on circumstances, they will be allowed to remain, be allowed to disperse naturally, or will be removed by the bat ecologist to a cardboard box with a top and ventilation holes.

Bats will be caught by hand or with a static hand-held soft cloth net. They will then be released at dusk on the same day in dark areas close to the woodland within the Uplands Mill site.

The bat ecologist will be present during all work that may displace/disturb bats and will be on call for on-going advice and assistance.

The bat ecologist will also advise on the installation of the new bat roost sites proposed for the new buildings, as detailed further below.

He will also be consulted and offer advice on the lighting to be used during the demolition, construction and operational phases of the project so that lighting impacts on roosts and commuting/foraging areas can be avoided and minimised, as far as practicable.

C Works to be undertaken by the Developer/Landowner.

C.1 Bat roosts

C.1.1 In-situ retention of roost(s) – providing details of all re-roofing works for example, replacement of tile type, replacement of felt with breathable membrane, use of insect guards, timber treatment; also include addition or changes in insulation and any impact on temperature/humidity. Explain how roost entrances will be retained and if purpose built entrances are required a scaled drawing of their design is required. Any enhancements to the roosts such as crevice provision should also be detailed. (include photographs)

As the existing Mill building at Uplands Mill is to be demolished, no in-situ retention of roosts is possible.

C.1.2 Modification of existing roost(s) dimension details, scale drawings of the roost and access points, orientation, state what services will be incorporated in the roost that might require regular servicing, for example, lift winding gear, electrical or plumbing services, gas boilers, partitioning of voids where a large property is being converted to a number of units, etc. (include photographs)

As the existing Mill building at Uplands Mill is to be demolished, existing roost sites will be destroyed.

C.1.3 New roost creation (including bat houses, cotes and bat boxes) – dimension details including access points, location details, materials to be used e.g., timber, sarking felt, etc.. aspect, jstify variation from the original roost. Diagrams of widely available standard bat box designs are not required, just refer to bat box name and reference number, e.g., FF 1 Schwegler.

New bat roost building

A purposely designed bat roost building will be built within the designated wildlife area in the south of the site, and close to the mill building. This new roost site will be constructed in advance of the demolition of the Mill building so that it becomes available as soon as possible for occupation by bats. This building has been positioned away from potential human disturbance and in the prime habitats for bats.

Design details are provided in the following drawings as well as the indicative position for the roost; a sunny and sheltered final position will be selected on site with the ecologist.

Although primarily for pipistrelle bats, the new roost site will have good access points for a variety of bat species, and be able to provide a variety of roosting conditions, such as differing temperature regimes. There will be a warm roof void, as well as a cool and damp cellar. The building will need to be locked and made secure.

The building will be double-skin breeze block construction and be timber clad and have a rustic appearance. Footprint area is 5x5m, with an upper storey room for summer maternity use and a cellar for winter hibernation use. Cellar height will be 2m and upper room height 4m.

Crawl-through access for species such as pipistrelles and long-eared bats will be provided through the gable wall and roof of the building, with access to the cellar area provided within.

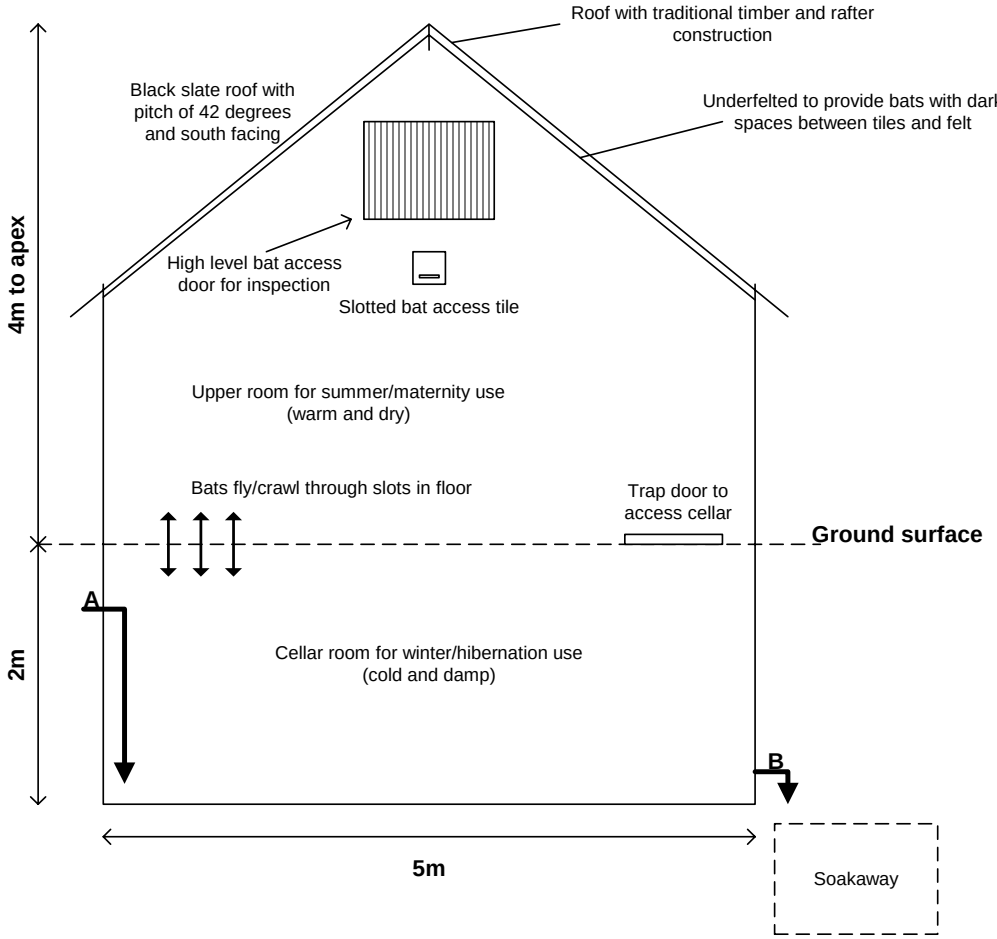
The building has a slate roof which is under-felted with traditional bitumen roofing felt. The cavity walls of the roost will be insulated. The inclusion of a steeply pitched roof (42^{o}), with one pitch facing south, will provide a suitable thermal regime and achieve high temperatures in summer but offering a choice of roosting temperatures. The use of dark-coloured roof coverings (black slate) will help to produce high temperatures.

A high relative humidity for the cellar area is required and will be provided by allowing for ground water to seep in one side of the cellar with a sump letting out the excess. Omitting any damp-proofing in below-ground areas will also assist in raising humidity.

A high level door only is proposed providing access via ladders into both rooms for monitoring purposes. This will help to discourage any unauthorised access.

The final positioning and construction of the new bat roost building at Uplands Mill will be supervised by the licensed bat ecologist.

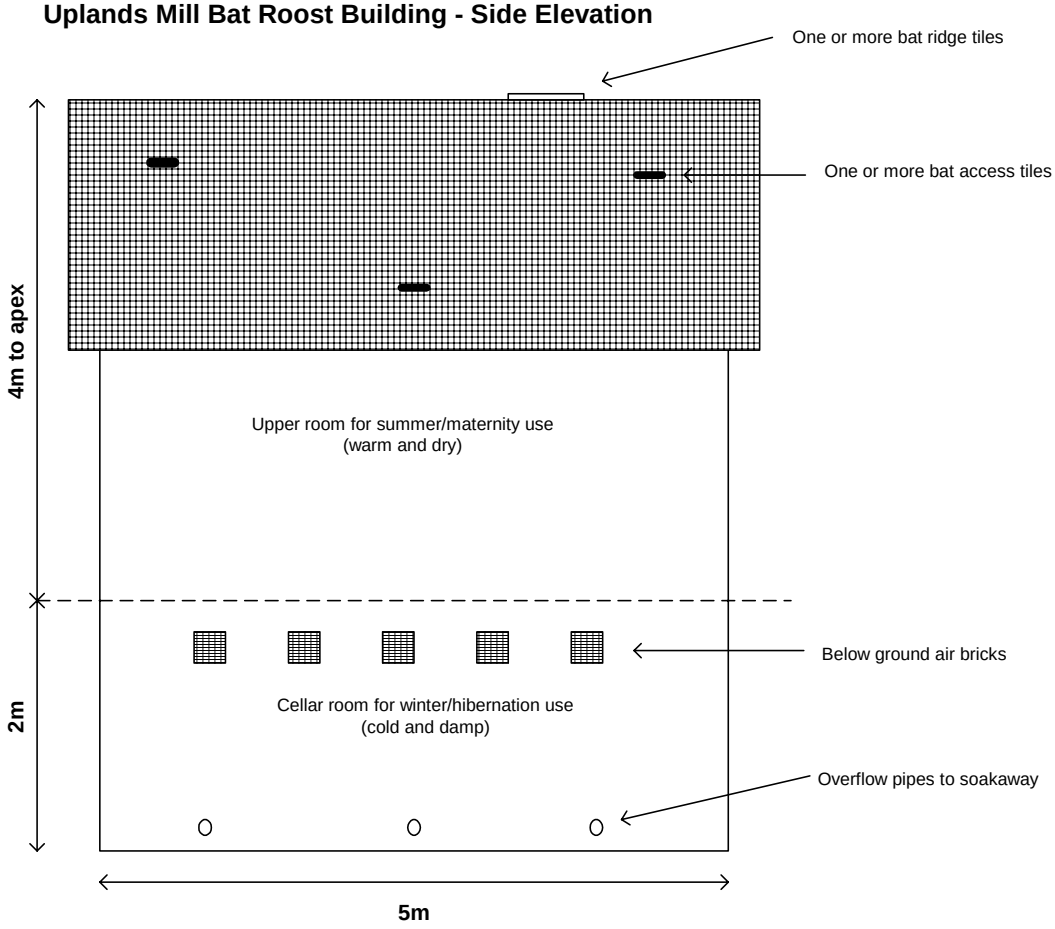
Uplands Mill Bat Roost Building - Front Elevation



A Airbricks allow water to seep into the cellar

B Overflow pipe allows water to escape into a soakaway

Uplands Mill Bat Roost Building - Side Elevation



Bat boxes on trees

To help mitigate the short-term disturbance to bats that will occur at Uplands Mill, a total of 12 bat boxes will be installed on trees close to the mill, in positions to be agreed with the ecologist (areas with minimal light spill, shelter and good cover will be selected).

The boxes will be installed in groups of three, with the boxes in each cluster facing west, south and east, to provide a range of conditions for bats. The boxes will be securely installed at more than 4m above ground to deter human interference and will remain *in situ* and thus available to bats long-term.

Traditional wooden bat boxes will be used, available from Alana Ecology:

These provide tree-cavity-mimicking roost opportunities suitable for pipistrelle and other small to medium-sized bats.

Bat roost sites within new houses

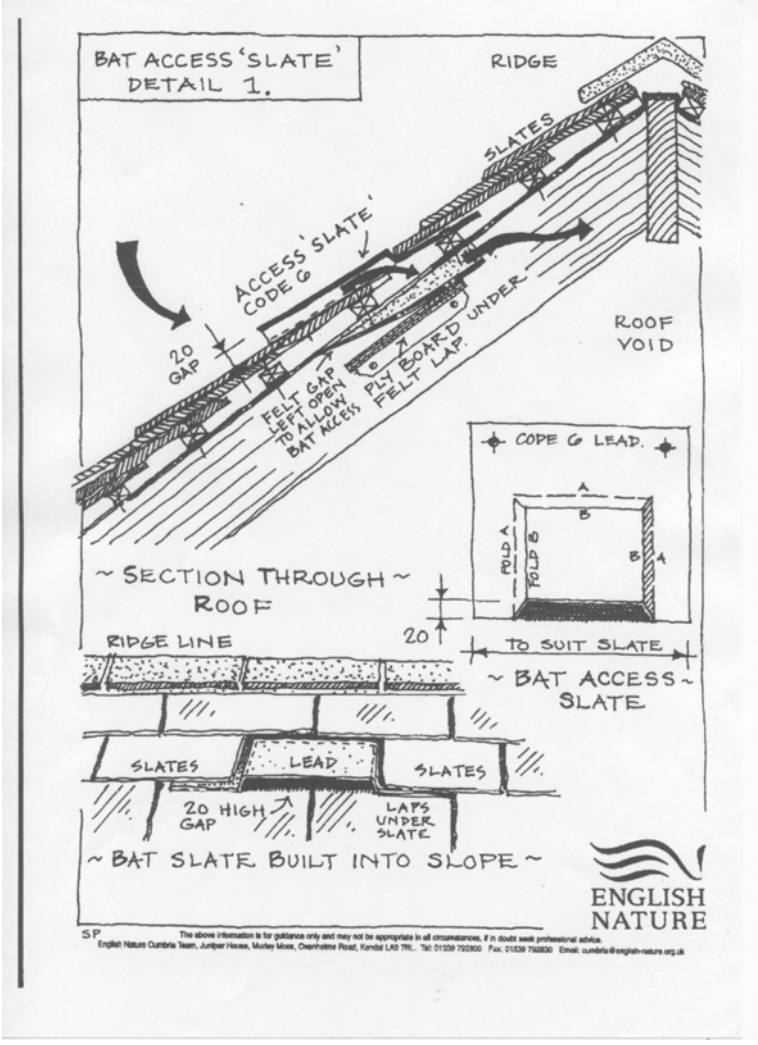
Two types of roost site will be provided to cater primarily for the pipistrelle bats recorded at this site, scattered across a variety of locations to provide varied roosting sites. These will be installed approximately within the positions indicated in Figure 6; final locations will be agreed with the contractors and approved by the licensed bat ecologist. These types of roost are described further, as follows.

(a) Ten roof tile roost sites within the roofs of the new buildings allowing bats to access the spaces between the tiles and under felt.

Ten bat access tiles will be installed. These will be sourced by the bat ecologist from suppliers such as Tudor Roof Tiles Co. Limited (available in five colours or in Natural Clay), and provide a bat optimised entrance to the under-felt area. The top 'tunnel' tile offers bats an 18mm high x 165mm long (approx.) tunnel to an entrance hole in the under tiles. This allows bats to crawl into the roost area.

An advantage of Tudor's tiles large double camber, is that it provides the maximum amount of natural air flow under the tiles. The carefully designed access, along with this air flow between the tiles and the under-felt, aims to provide conditions where the bats are protected from any extremes of heat. The bat access tiles are illustrated as follows.

If the Tudor tiles do not match those proposed for the roofs of the new build then a bespoke solution can be provided, based on the following design details:



Bat access tiles like these do not provide access for bats into loft spaces but instead to the spaces between tiles and the felt below.

In all roost locations, traditional bitumen roofing felt will be used, rather than breathable membranes *etc.*, to provide bats with optimum conditions.

(b) Ten wall tile roost sites within gable end walls of the new buildings allowing bats to access contained roosting space within the walls.

Ten Schwegler 1FE bat access panels will be built into the gable end walls of ten selected buildings, with one roost per building.

This is a maintenance free access panel, normally used to allow bats entry through exterior walls to the interior of the building. However, in this case the optional Back Plate will be fitted (see below), which includes an attached wooden panel to create a cavity wall inside the box.

All installations for bats will be inspected and signed-off by the licensed bat ecologist.

<u>Lighting scheme</u>

Info on lighting arrangements to be included here.

C.1.4 Scaled maps/plans to show proposals/mitigation outlined above in relation to existing and proposed habitat features.

Figure 5 (above) shows the locations of the current roost sites at Uplands Mill.

A plan showing the locations of the proposed mitigation (i.e. new bat roost building, bat boxes in trees, bat roost sites on buildings) is included as Figure 6.

Figure 6: Approximate locations of created bat roost sites (final positions to be determined by the licensed bat ecologist).

D Post-development site safeguard

D.1 Habitat/site management and maintenance – to include details of what will be done in terms of habitat management and site maintenance required to ensure long-term security of affected population. Include details of site/structure ownership, and who will be responsible for undertaking the work and who is responsible for funding.

A wildlife area and wildlife corridor is to be maintained as a permanent part of this development and a long-term landscape and habitat management plan is to be implemented (see Planning Condition 21). This will provide foraging areas for bats close to the newly provided roost sites, which will also be able to forage in people's gardens and in the nearby open countryside.

A site management company is to be appointed who will be responsible for the on-going management and maintenance of the new bat roost building and the bat boxes installed on trees (D. Oliver, in litt.). The management company will inform new householders of the bat roost features within their homes and the need to maintain these as roost sites for bats. This will help to ensure that the new bat roost sites remain *in situ* and that bat access remains unrestricted over at least the medium and longer terms.

D.2 Population monitoring, roost usage etc. – to include details of monitoring effort, timing and equipment to be used.

Due to the medium conservation significance of the Uplands Mill roosts, monitoring of the installed roost sites will take place annually during the construction period and annually for two years post construction, in accordance with Bat Mitigation Guidelines.

The annual monitoring will include a day-time inspection of the bat roost building and bat boxes on trees, a dusk emergence survey of the bat roost building and a dusk site-wide activity transect survey.

An annual report that details the results, including any recorded bat emergences and bat activity around the site, will be sent to the client, the Local Authority and Natural England.

D.3 Mechanism for ensuring delivery of post-development works e.g. Section 106 Agreement, to include details of who will undertake the work and reporting details, other covenants or contractual agreements.

No post-development works are proposed.

E Timetable of works:

Because of the presence of bat roosts, the demolition of Uplands Mill can only take place during either the Spring (April and May) or Autumn (September to early November) periods, with the aim being to start the project as soon as possible, i.e. Spring 2011.

Should demolition works be delayed beyond 2011 then the licensed bat ecologist will need to be consulted at least 6 months in advance with a view to applying to Natural England for a change to the period of licensed activity. Further bat surveys may be required if such delays occur to provide an update on the status of the roosts present.

The timetabling of activities that may impact on bats, for mitigation and compensation measures, and for post-development monitoring activities, is outlined in the following tables.

A: Development activities and timing		
Activity	**Timing**	**Notes**
Install bat boxes on trees	February 2011	Positioning to be agreed with the licensed ecologist.
Start and complete construction of new bat roost building.	Early March to mid-April 2011	Final position agreed with licensed ecologist and Construction supervised by licensed ecologist.
Soft and controlled dismantling of bat roost features on east elevation of mill	April/May 2011, or September/October 2011	Barge boards, lead work and roofing sheets removed by hand; all voids and possible roost sites inspected. Work progressed over several days and under the supervision of the licensed ecologist.
Demolition of Uplands Mill	June/July 2011 or November/December 2011	Unsupervised but licensed ecologist remains on-call.
Site preparation works, i.e. clearance, profiling, services and infrastructure	April 2011 onwards or November 2011 onwards	Unsupervised but licensed ecologist remains on-call. NB. No works within Uplands Mill until bats are successfully displaced.
Construction of new houses, including build-in of 20 bat roost features.	September 2011 onwards or January 2012 onwards, for approximately 4 years.	Close working with licensed ecologist over final positions of bat roost features and their installation.

B: Post development monitoring						
Year	2011	2012	2013	2014	2015	2016
Details	July/August visit. Day-time inspection of bat roost building and bat boxes on trees. Dusk emergence survey of the bat roost building. Dusk site-wide activity transect survey. Report sent to client, LA and NE.	July/August visit. Day-time inspection of bat roost building and bat boxes on trees. Dusk emergence survey of the bat roost building. Dusk site-wide activity transect survey. Report sent to client, LA and NE.	July/August visit. Day-time inspection of bat roost building and bat boxes on trees. Dusk emergence survey of the bat roost building. Dusk site-wide activity transect survey. Report sent to client, LA and NE.	July/August visit. Day-time inspection of bat roost building and bat boxes on trees. Dusk emergence survey of the bat roost building. Dusk site-wide activity transect survey. Report sent to client, LA and NE.	July/August visit. Day-time inspection of bat roost building and bat boxes on trees. Dusk emergence survey of the bat roost building. Dusk site-wide activity transect survey. Report sent to client, LA and NE.	July/August visit. Day-time inspection of bat roost building and bat boxes on trees. Dusk emergence survey of the bat roost building. Dusk site-wide activity transect survey. Report sent to client, LA and NE.