

**THE BRYN
Nr PENLEY, WREXHAM**

BAT, BIRD AND AMPHIBIAN ASSESSMENT
(Doc Ref: TEP 2278.001C)

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Prepared by TEP for:

**STRUTT & PARKER
PARK HOUSE
37 LOWER BRIDGE STREET
CHESTER
CH1 1RS**

Written:	Checked:	Approved:
JC	RH	RH

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1.0 SUMMARY

- 1.1 In December 2009 TEP were commissioned to undertake a bat survey, a nesting bird survey and an amphibian habitat assessment at The Bryn on Bryn Lane, near Penley, Wrexham, North Wales.
- 1.2 The site comprises farm buildings and areas of hardstanding with some small grassland areas and scattered trees. The main farm buildings are to be refurbished for residential use and outbuildings are to be demolished.
- 1.3 No evidence of bats was found in any buildings during daytime inspections. Buildings 1 and 4 have features that are suitable for roosting bats. Buildings 5 and 6 (large open fronted cattle sheds) could not be accessed internally due to the presence of cattle. Buildings 5 and 6 are considered to have very low potential to support roosting bats. All of the buildings had hay or other materials on the floor of the loft voids which limited the effectiveness of the bat survey by obscuring signs of bats such as droppings.
- 1.4 A ground-based inspection of trees within the development footprint revealed that none have potential to support roosting bats.
- 1.5 Timescales for implementation of the proposed development is currently unknown and roost surveys have a limited period of validity. Nighttime roost surveys of buildings 1 and 4 to be carried out prior to development commencing to inform licensing requirements. These surveys should accord fully with the Bat Conservation trust (BCT) guidelines.
- 1.6 Mitigation measures for roosting bats are to be provided that can confidently guarantee suitable avoidance measures within the development proposals. Refurbishment of retained suitable buildings 1 to 4 will provide roost enhancement measures. A new garage is to be provided of a form that will be ideal to accommodate new bat roost provision to replace the loss of buildings 2 and 3.
- 1.7 The amphibian habitat assessment confirmed that there is no great crested breeding habitat on site. The site itself provides limited sheltering potential. There are records of great crested newt ponds located 100 metres and 273 metres west of the site. There are numerous ponds within 500 metres of the site. There are five ponds within 50 metres of the site, the nearest being 1 to 2 metres from the boundary. There is potential for great crested newts to range into the potential development footprint.
- 1.8 Measures need to be taken to prevent great crested newts entering the site during the development. This would involve applying Reasonable Avoidance Measures (RAMs) to ensure that no amphibians can enter works during the redevelopment of the site. This would include installation of one-way fencing around the site. No breeding habitat or foraging habitat would be affected by this measure, nor would any migratory or dispersal corridors be affected or disrupted. Hand dismantling of the limited refuge opportunities within the farmyard would also be required. In the event that any great crested newts were identified, a licence from the Welsh Assembly Government to permit the translocation of the newts from the farmyard to suitable surrounding habitats. Replacement sheltering habitats would need to be constructed around nearby ponds.
- 1.9 Old nests of swallow were identified in buildings 1 and 4. These birds are afforded legal protection while nesting. Any works that will affect nest locations should be

undertaken outside of the bird breeding season (March-August inclusive). Alternative nesting habitat will be incorporated in accordance with Appendix C.

2.0 INTRODUCTION

- 2.1 TEP was commissioned by Strutt and Parker in December 2009 to carry out a daytime bat and bird survey and an amphibian habitat assessment of an existing farm yard inclusive of farm buildings and hardstanding.
- 2.2 Proposals for the site include converting two of the existing six buildings into residential units and the demolition of the other four.
- 2.3 All species of UK bat and their places of shelter (roosts) are fully protected under national and European legislation. Great crested newts are similarly protected under UK and EU legislation. All species of wild bird, their nests and eggs are protected under the Wildlife and Countryside Act 1981 (as amended).
- 2.4 The purpose of this survey report is therefore to:
- Identify locations of bat roosts and other sensitive areas of bat concern;
 - Identify evidence of nesting birds and sites potential to support nesting birds;
 - Identify habitats on site that have potential to support great crested newts.
 - Outline any implications for development;
 - Identify any further survey requirements;
 - Propose sensitive landscape features and other mitigation/habitat improvement measures as appropriate.
- 2.5 A general overview of planning policy and legislation is available to download from the TEP website (www.tep.uk.com).

3.0 SITE DESCRIPTION

- 3.1 The Bryn is on Pigeon Lane, Hanmer, Whitchurch, Shropshire. The site is comprised of farm buildings, associated hardstanding and a small area of pasture land. The site is surrounded by pasture land as illustrated in Figure 1.

Figure 1: Aerial photograph of the site and surrounding area



4.0 METHODS

Bat Survey

Building survey

- 4.1 The site contains six buildings. The buildings were subject to internal and external inspections by experienced bat ecologist John Crowder assisted by ecologist Chris Barrett. The survey was undertaken on the 19th January 2010.
- 4.2 The buildings were inspected externally from the ground using binoculars. The buildings were accessed and inspected internally, where possible, for field signs of bats such as droppings, insect remains and smear mark. Emphasis was given to those areas where bats might roost including loft spaces, cellars, internal gables, ridge beams, water tanks, around windows, shafts, ducting, cladding, etc. Ladders and a powerful hand lamp were used as aids.
- 4.3 The potential for use by roosting bats was assessed in terms of temperature, draughtiness, humidity, cleanliness and the presence of suitable crevices. A powerful torch, binoculars and ladders were used where necessary. The survey was conducted with summer, autumn and winter use by bats in mind. Further details of survey methods and field are given in Appendix A.

Tree survey

- 4.4 All trees on site were assessed for bat roost potential by experienced ecologist John Crowder during the day on 19th January 2010.
- 4.5 This assessment was carried out by viewing each tree from the ground, using binoculars where appropriate, looking for the field signs and for features that provide potential roosting habitat such as cracks, cavities and ivy clad branches.

Limitations

- 4.6 Bat droppings are the most obvious clue of bat occupation when carrying out inspections of building exteriors. However, bats feed solely on insects and their droppings quickly turn to powder. As such these signs are highly vulnerable to weather conditions and are easily washed away in rain. Consequently the absence of droppings externally should be treated with caution.
- 4.7 Much of the interiors of Buildings 1-4 had hay on the floor and in loft voids. It was therefore difficult to locate bat signs such as droppings. Buildings 5 and 6 could not be accessed internally due to the presence of cattle.

Nesting Bird Inspection

- 4.8 During the bat survey of the buildings and trees, an inspection for evidence and opportunity for nesting birds was also undertaken.

Amphibian assessment

- 4.9 A walkover assessment of the site to identify any sheltering, foraging or breeding habitats for great crested newts was undertaken. A desktop search for records of

great crested newt within 1km of the site and a map based investigation of pond distribution with 500 metres of the site was also conducted.

5.0 RESULTS

- 5.1 Drawing 2278.002 identifies the building locations and general habitat appraisal.

Bats

Buildings

- 5.2 Building 1 is a brick building with a pitched slate roof and gable ends (Figure 2, below). The ground floor is used as stables and the upper floor is a hay loft that is open to the roof (Figure 3, below).
- 5.3 There is an open hatch on one of the gable ends of the building. There are some slipped roof slates. The building has drain pipes at the eaves. There are a number of windows that have had the glass smashed. There are a number of holes in the bricks and mortar. The roof is constructed of wooden beams with no underlining (Figure 3, below).

Figure 2: Exterior of building 1



Figure 3: Loft void of building 1



- 5.4 No bats or evidence of bats such as droppings/ urine stains was found during external/internal inspection of this building. This building has potential to support roosting bats, associated with the open windows, slipped roof slates and gaps in brickwork which could allow bats to access the loft void or provide crevice roosting opportunities.
- 5.5 Building 2 is a brick building with a rounded corrugated metal roof (Figure 4, below). The building is open on one side and does not have any windows. The building is open to the roof and does not have any loft voids. The building is used for storage of farm materials. No bat field signs were identified and the building is considered to have low potential to support roosting bats.

Figure 4: Exterior of building 2



- 5.6 Building 3 is a metal framed barn that is open on one side (Figure 5, below). The building is open to the roof and does not have any loft voids. No bat field signs were identified during the survey and its construction is such that it has very low potential to support roosting bats.

Figure 5: Exterior of building 3



- 5.7 Building 4 is a 'C shaped' brick building with a pitched slate roof and gable ends, surrounding a hardstanding yard (Figures 6 and 7, below). The building has a single upper floor that is open to the roof (Figure 8, below). The ground floor is used as stables and the upper floor is used partly for storage and partly as a hay loft. There are some slipped roof slates. The building has drain pipes at the eaves. There are no other eaves features such as barge boards. There are a number of windows that have had the glass smashed. There are a number of holes in the bricks and mortar. The roof is constructed of wooden beams with felt underlining.

Figure 6: Exterior of building 4



Figure 7: Exterior of building 4



Figure 8: Loft void of building 4



5.8 No bats or evidence of bats such as droppings/ urine stains was found during external/internal inspection of Building 4. This building has potential for roosting bats associated with the open windows, slipped roof slates and gaps in brickwork which could allow bats to access the loft void or provide roosting opportunities.

5.9 Building 5 is a metal framed barn that is open on one side (Figure 9, below). The other three walls of the barn are constructed of open-board vertical wooden panelling (Figure 10, below). There is no weatherboarding associated with the eaves of the barn and there are no crevices associated with the roof or eaves of the barn. The barn is open to the roof and does not have any loft voids. The open wooden panels would allow wind and, to a degree, rain to pass through the gaps between vertical planks. Internal inspections of this building could not be undertaken due to the presence of cattle. However due to the structure of the building it is considered to have very low potential to support roosting bats.

Figure 9: Exterior of building 5



Figure 10 Exterior of building 5



5.10 Building 6 is a collection of consecutive barns that have asbestos roofs and wooden sides (Figure 11, below). The barns are open to the roof and do not have any loft voids. There is no weatherboarding associated with the eaves of the barns and no crevices associated with the roof or eaves of the barns. Internal inspections of this building could not be undertaken due to the presence of cattle. However due to the structure of the buildings they are considered to have very low potential to support roosting bats.

Figure 11: Exterior of building 5



Trees

- 5.11 There are a number of scattered trees that are associated with the site. All of the trees offer very little potential for roosting bats, as they are either too small or lack cracks and cavities.

Nesting birds

- 5.12 A number of disused swallow nests were noted within the upper floor areas of Buildings 1 and 4. These buildings would also provide potential for other bird species such as swift, house martin, robin and sparrow.

Amphibians

- 5.13 There is no aquatic habitat on site and so no amphibian breeding habitat is present. There are eleven ponds within 500 metres of the site, four of which (and a slurry pit) are located within 50 metres of the site. The closest pond is approximately 1 to 2 metres south west corner of the site.
- 5.14 The slurry pit is within a field that is grazed by cattle and sheep. The slurry pit is poached around its edges. Of the other four ponds within 50m of the site, the first is an ornamental pond in a garden, shaded by trees on one side. The second and third ponds are within a field that is grazed by cattle and sheep, fenced off and boarded on one side by trees. The fourth pond is closest to the site, only 1 to 2 metres from the site boundary. It is a field pond that has been fenced off, with a few small scattered trees around the edge of the pond. With the exception of the slurry pit, all four ponds within 50m of the site are considered suitable for great crested newts, although no records exist for these ponds.
- 5.15 Desktop records, presented at Appendix B, reveal the presence of two great crested newt ponds located approximately 100 and 273 metres west of the site. There is no population data for these ponds but the presence of eggs and larvae confirms breeding in these ponds. There are no barriers between these ponds and the site.
- 5.16 The habitats on site include six farm buildings and associated hardstanding. Short heavily poached grassland is present to the east and north of the site, beyond the main footprint of the farmyard and buildings, where livestock approaches and enters the farm from the surrounding fields. A couple of small patches of sparse rough grass are associated with the entrance tracks around the farmyard. A small number of scattered trees are found in the north of the site. There are various debris piles throughout the site.
- 5.17 The site therefore provides some refuge potential for great crested newts but there is no breeding habitat on site. Foraging opportunities are limited due to the high degree of disturbance caused by the concentration of livestock around the farmyard. The site does not lie on any significant migratory or dispersal route, between ponds or between breeding and wintering/foraging habitats. Substantial linear belts of woodland lie further afield to the site, to the east and to the west, which will be

unaffected by the proposals. None of the ponds surrounding the site would be affected by the proposals.

6.0 CONCLUSIONS & IMPLICATIONS

Bats

- 6.1 The site contains little foraging habitat for bats and is not situated along any significant wildlife corridor. The wider landscape surrounding the site provides ideal foraging and commuting opportunities, comprising of open fields with hedgerows with significant linear woodland features occurring to the east and to the west of the site. These landscape features will remain unaffected by the refurbishment proposals.
- 6.2 No evidence of bats was found in any buildings on site during the survey, however low numbers of roosting bats can be difficult to locate in winter months. The presence of disturbed hay and cattle in the buildings was that it was difficult to locate bat signs such as droppings. Buildings 1 and 4 have potential to support roosting bats. Therefore the presence of bats in these buildings cannot be fully ruled out. On this basis suitable avoidance measures are provided to confidently negate harm to any potential species of bat which may be presently using the site.

Nesting birds

- 6.3 A number of disused swallow nests were noted in Buildings 1 and 4. Swallow are listed on the amber list of Birds of Conservation Concern (BoCC) and are protected from disturbance or damage/destruction of the nest, while the birds are activity nesting.
- 6.4 Irrespective of conservation status, all species of wild bird, their nests and eggs are protected under the Wildlife and Countryside Act 1981 (as amended). Measures will need to be implemented to ensure that actively nesting birds are not disturbed and that no active nests are damaged or destroyed during the works (see Appendix C).

Amphibians

- 6.5 There are no waterbodies and therefore no amphibian breeding habitat on site. The grassland associated with the site is short and heavily poached by livestock. The rest of the site is comprised of buildings and hardstanding.
- 6.6 There will be no loss of breeding or foraging habitat as result of the development of this site. Due to the limited nature of the habitats on site, the offers only small localised opportunities for amphibian shelter in the form of debris piles typical of a working farm. The site is not located on any significant dispersal or migratory corridor. The redevelopment proposals will not significantly alter the layout of the site and will not affect the surrounding landscape.
- 6.7 The refurbishment of the site will therefore have negligible impact upon the local amphibian populations. There will be no impact upon breeding, foraging or ranging habitats. Due to the small potential of refuge opportunity within the site, there is a low risk of encountering amphibians, including great crested newts that may incidentally range into the farmyard.
- 6.8 Great crested newts are legally protected under the Conservation (Natural Habitats & c.) Regulations 1994. Planning consent does not provide derogation from the legislation protecting the species. Reasonable avoidance measures (RAMs) will therefore need to be taken during the proposed site refurbishment to ensure great

crested newts are not harmed during works. These are discussed in further detail below.

7.0 RECOMMENDATIONS

Bats

- 7.1 Proposals at this time are to obtain detailed planning for the site. However, the timescale for implementation is currently unknown.
- 7.2 Proposals include the refurbishment of buildings 1 and 4 and the demolition and replacement of building 3. Other out buildings 2, 5 and 6 will be demolished.
- 7.3 Mitigation measures are to be built into the proposals which satisfy the need for suitable avoidance with confidence. Refurbishment of buildings 1 and 4 will provide roost enhancement through the creation of additional habitat roost crevices and ensuring multiple access points at ridge, eaves and gables. Roost crevices will be created through the provision of extra battens attached to purlins to create a gap of 20 – 25 mm between them. Roost boxes will be created by fixing boards (400 mm minimum height and width) across two or three purlins. Roof lining is to be replaced with traditional black bitumastic felt liners with small slits or flaps (30mm x 30mm) to ensure access into the roof.
- 7.4 A new brick built garage block with a pitched and tiled roof will be provided. The garage will incorporate a range of bat roost features to replace any potential roost found in buildings 2 and 3. The roof space will be 2.8m in height from ridge to loft floor and have a traditional unobstructed rafter and purlin construction using bitumastic roof lining. Access points will be provided at both gable ends. Gable ends will be tiled or clad with horizontal rustic timber boards to provide added quality. Access points will also be provided at the ridge by employing a dry ridge system. Similar internal roost features will be provided as those within the refurbishment building eg roost battens, roost and access through the felt lining.
- 7.5 Examples of access points and roost features are provided in Appendix D. Detailed design of the roost provision are provided with supporting plans that will accompany the submission.
- 7.6 Prior to the commencement of development it must be established confidently whether bats are present in order to identify the requirement for a licence from Welsh Assembly Government.
- 7.7 This survey will require a nighttime roost survey to be completed at buildings 1 and 4 in accordance with Bat Conservation Trust Guidelines. Results of the survey will inform the application for a Welsh Assembly licence, if bats are identified roosting at the site.
- 7.8 Examples for the provision of standard bat mitigation/compensation are given at Appendix D. Mitigation measures are set out at Drawing 2278.003.
- 7.9 Although the site does not appear to support valuable foraging or commuting habitats for bats and does not directly affect these features which are present in the wider countryside, the refurbishment of the site could potentially result in indirect impacts upon foraging and commuting bats through the introduction of a new lighting scheme. Any lighting proposals for the new site should be designed to avoid significant light spillage into surrounding habitats. Lighting should be shielded and directional,

avoiding nearby tree and hedge canopies and ponds. Lighting should also be screened from the linear woodlands to the east and west of the site.

Nesting Birds

- 7.10 Buildings 1 and 4 showed past occupation by nesting swallows but these and other buildings within the site could also support other bird species dependent on buildings for nesting.
- 7.11 Works to the buildings (refurbishment for residential use or demolition) should be commenced outside of the bird breeding season (March-August inclusive) to avoid committing an offence under the Wildlife and Countryside Act 1981 (as amended). Any vegetation clearance should be similarly completed outside of the bird nesting season. If this is not possible alternative measures to prevent nesting should be implemented, such as exclusion.
- 7.12 It should be possible, with good design, to ensure that redevelopment proposals maintain the net potential bird nesting habitat at the site. Examples of standard bird mitigation/compensation to be incorporated during implementation (artificial nesting habitat for use on buildings) are given at Appendix C.

Amphibians

- 7.13 Great crested newts are protected under European and UK legislation. Although there will be no impact upon breeding habitat, core refuge habitat or migratory and dispersal habitats, there is a low risk of encountering amphibians within the farmyard seeking temporary shelter. Measures will be required to ensure no great crested newts are harmed during site clearance and redevelopment works.
- 7.14 Replacement refuge features should also be created in surrounding habitats, ideally located with nearby pond(s). These should comprise refuge mounds at least 1m by 2m in area and at least 1m in height. Ideally, the refuge mound should be 0.5m below ground and 0.5m above ground, providing some refuge area below frost levels. The refuge mound should be sloped slightly to allow drainage of surface water. The refuge mound should be constructed using inert materials such as logs or clean timber or brick, which could potentially be salvaged from site refurbishment works. Refuge mounds should ideally be associated (within 25m) with nearby ponds (excluding the slurry pit), although specific locations should be agreed on site.
- 7.15 Prior to the onset of any site works, the site should be surrounded by temporary one-way amphibian exclusion fencing. If they are to be affected by proposals, any scrubby vegetation, including the small trees, within the site should be removed by hand in the presence of an experienced amphibian ecologist. Debris across the farmyard which may create temporary amphibian shelter features should be dismantled in the presence of an amphibian ecologist.
- 7.16 Once the site is clear of any refuge feature, and providing any other mitigation for protected species (such as bats or nesting birds), have been satisfactorily completed, redevelopment works can commence. The one-way exclusion fencing should be retained until development, including any new landscaping, is complete. The fence should then be removed in the presence of an amphibian ecologist.
- 7.17 In the event that a great crested newt is encountered during the avoidance measures described above, works would need to cease and a licence obtained from the Welsh Assembly Government. If substantial site clearance works are required, such as lifting areas of hardstanding or demolishing buildings that possess below ground areas, it would be advisable to apply for a licence prior to commencing any works at the site.

- 7.18 If the site is not developed within 12 months or plans change, a reassessment may be required and further survey may be required.

8.0 REFERENCES & FURTHER READING

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UK BIODIVERSITY PARTNERSHIP, UK Biodiversity Action Plan

APPENDIX A

British bat ecology and survey methods

A BRITISH BAT ECOLOGY AND SURVEY METHODS

A1 Bats in Britain

- A1.1 There are 16 species of bat occurring in Britain, one of which is possibly now extinct. These species all belong to one of two families – horseshoe bats or vesper (evening) bats.
- A1.2 As recently as the 1950's bats in Britain were numerous to the point that colonies of thousands of bats could be seen. Today, colonies of such numbers are extremely rare.
- A1.3 The greater horseshoe bat has declined by 99% in Britain, and other species have suffered similar declines.
- A1.4 Bats are highly specialised animals, being the only mammal with the ability of true flight. They are nocturnal and, in Britain, they are all insectivorous. Bats have evolved to use a specialised echolocation system by which to navigate and catch insects, even in complete darkness.
- A1.5 Bats need a variety of roosts throughout the year in which to breed, hibernate and give birth.
- A1.6 Six different categories of bat roost have been described (Hutson, 1993):
- Spring gathering roosts
 - Maternity roosts
 - Mating roosts
 - Night roosts and feeding roosts
 - Prehibernal roosts
 - Hibernation roosts
- A1.7 It is uncommon for bats to use the same roost throughout the year as they require different conditions for breeding and hibernating. Some bats can fly long distances between suitable sites, which can be remotely located. There are three main types of roost:
- Buildings: most important in the summer, but some are used throughout the year.
 - Caves / mines / underground structures: most important for winter hibernation because they give stable, cold conditions.
 - Trees: used throughout the year.
- A1.8 Each species of bat prefers its own type of roost. Some almost always use one type of roost, while others switch between roosts during the year. Once a roosting site is established, bats are quite faithful to it and return regularly.

A2 Bats in trees

- A2.1 Trees (especially native ones such as Oak, Beech, Ash and Scots Pine) and hedgerows play host to swarms of insects, which forms the primary prey item for UK bats.
- A2.2 Trees also provide bats with a place to roost or rest, give birth, raise young, form groups and hibernate in natural holes, crevices and sheltered places. Such features are traditionally associated with mature trees.

- A2.3 The availability of suitable holes may limit the number of these species.
- A2.4 Identification of tree roosts is an area with a poor record of success. Typical sites may be old woodpecker holes, cavities and cracks in trees, crevices behind peeling-off bark, woodpiles and behind ivy or dense epicormic growth.
- A2.5 Over a period of time bats will use a number of trees to optimise roosting conditions. External disturbances, an internal build up of parasites or distance from feeding area can influence the choice of tree.
- A2.6 Bats also use trees, lines of trees and hedges to navigate at night. Loss or damage to such features affects the ability of bats to commute safely and economically between roosts and feeding sites. A gap in a hedge of as little as 10 metres may force some bats to seek an alternative route or to change roosts.
- A2.7 Bats in tree roosts may offer little or no evidence of their occupation, especially when in hibernation. Signs to look for include:
- Obvious holes, cavities and splits
 - Dark staining on the tree below a hole
 - Staining around a hole caused by the natural oils in bats' fur
 - A maze of tiny scratch marks around the hole made by bats' claws
 - Droppings below a hole – they look similar to those for rodents, but crumble to a powder of insect fragments
 - Noise (squeaking or chittering) coming from a hole, especially on a hot day or at dusk
 - On closer inspection a hole may contain droppings or smell of bats
- A2.8 All UK bat species are dependent to some extent on trees. This dependency varies with species, season, roosting behaviour and foraging behaviour.
- A2.9 Some bat species, such as noctule (*Nyctalus noctula*), Bechstein's bat (*Myotis bechsteinii*) and barbastelle (*Barbastella barbastellus*) rely almost exclusively on trees for roost sites throughout the year. A number of other species may use tree roosts for only a part of the year, including pipistrelles (*Pipistrellus* spp.) and brown long-eared bats (*Plecotus auritus*).

A3 Bats in buildings

- A3.1 Buildings also provide bats with a variety of places in which they can roost e.g.:
- External hanging tiles or weather boarding
 - Cavity spaces
 - Cracks in bricks/mortar
 - At top of solid walls
 - In eaves, behind fascia and barge boarding
 - Beneath underfelt, tiles or slates
 - Around timber joints, gable end or around chimneybreast.
- A3.2 The most common time of year in which bats utilise buildings is between May and August, when the pregnant females gather in maternity roosts to give birth and raise their young.
- A3.3 Females and young often remain in a favoured roost for the duration of summer or move about using several roosts.

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- A3.4 Most summer colonies will have dispersed by the autumn, though brown long-eared bats often appear early in the year (early April) and leave later (October or later). These bats will also occasionally roost in a single building throughout the entire year.
- A3.5 Buildings may also be used as temporary or “transitional roosts” by small numbers of adult and immature bats of both sexes, particularly in spring and autumn.
- A3.6 Many outbuildings are attractive to bats for temporary night time roosts or as sheltered feeding perches. The latter are generally indicated by the presence of a lot of insect remains, particularly of moths or large beetles and some droppings.
- A3.7 Cool, undisturbed, humid places are important as hibernation sites. Most species will tuck themselves into small crevices e.g. between bricks/stonework, and can easily pass the winter there unnoticed.
- A3.8 Bats are usually concealed in crevices, behind roofing felt, in cavity walls, in old timber joints or under ridge tiles and are only occasionally seen out in the open in lofts. Consequently, the key identification feature is the presence of droppings. Sometimes only a small scattering of droppings may be obvious, on other occasions the accumulation of droppings into piles beneath ridge-boards and around chimneys or gable ends is also typical of bats.
- A3.9 Bats are sometimes drawn to open water tanks in lofts in search of a drink. They fall into the tank, can't get out and eventually drown. Dead bats are often found in these 'open' tanks in roof spaces where bats habituate.
- A3.10 Characteristic odour will also provide evidence to the presence of bats. A polished or clean surface near a place where light enters may also indicate habitual usage by bats. Bats may sometimes be heard “chittering”, but this is usually in warm summer weather or when they are about to leave the roost to forage at dusk.
- A3.11 The species most commonly occurring in buildings (usually modern houses) are two pipistrelle species (*Pipistrellus pipistrellus* and *P.pygmaeus*), the former is the most common species local to the site, the latter generally less so.
- A3.12 These highly gregarious small bats use roofs for breeding during the summer and, in general, the bats disperse during the autumn. The most likely places to find droppings in the roof void are at the gable end wall and along the eaves. In some cases, the bats may roost beneath ridge tiles, on top of the ridge beam or under insulation close to the eaves.
- A3.13 The brown long-eared bat (*Plecotus auritus*) is the second most common species in Britain but is the one most likely to be encountered in roof voids. It may occasionally be seen clinging on to timbers near the apex of the roof. Like the pipistrelle, highest numbers may be seen on hot days between June and September when breeding colonies may be present. During the autumn and in cool weather, bats remain concealed in crevices or hollow walls but may appear on mild days or if disturbed.
- A3.14 Brown long-eared bats tend to fly around in the open roof void and hang from the ridge during the night, so droppings are usually found scattered over the floor or concentrated in piles beneath favoured roosting areas, typically beneath the ridge beam. In hipped roofs, piles of droppings may also be found in the junction between two hips.

The Bryn - Bat, bird survey and amphibian assessment

- A3.15 A number of other species are more frequently recorded roosting in buildings than other types of roost site. These include Brandt's bat (*Myotis brandtii*), whiskered bat (*Myotis mystacinus*), Natterer's bat (*Myotis nattereri*), Leisler's bat (*Nyctalus leisleri*), serotine (*Eptesicus serotinus*) and the two horseshoe species (*Rhinolophus ferrumequinum* and *R. hipposideros*). Some of these species are relatively widespread while others are restricted and/or rare.

APPENDIX B

Desktop Search Results

APPENDIX C

Standard compensation measures for birds

BIRD BOX SPECIFICATIONS

Suppliers (prices correct as of Oct 2003):

Alana Ecology
The Old Primary School
Church Street
Bishop's Castle
Shropshire
SY9 5AE

Tel: +44 (0)1588 630173
Fax: +44 (0)1588 630176
Email: sales@alanaecology.com

Schwegler boxes have the highest occupation rates of all box types. They are carefully designed to mimic natural nest sites and provide a stable environment for chick rearing and winter roosting. They can be expected to last 25 years or more without maintenance

BOXES TO FIT UNDER EAVES

Sparrow Terrace, Stone Colour

House sparrows are gregarious and prefer to nest close to each other, so this woodcrete box provides room for three families under one roof. Made from long-lasting, breathable woodcrete. Stone colour.

No maintenance required.

Dimensions 245 x 430 x 200 mm.

Weight 13kg. Designed for fixing to walls (not suitable for fences or sheds due to the weight of the box).



A02085 Sparrow Terrace, Stone Colour (also available in brown)

Schwegler 9A House Martin Double Nest

These woodcrete nests are durable and ready for immediate use when birds return each summer. Easily fixed under the eaves on the outside walls of buildings, at least 2 metres from the ground. The backing board may be painted to match the building.



Model 9A is a double unit with two nests mounted side by side on a backing board, as shown. Model 9B is similar to the 9A above but with one single nest

A02018 Schwegler 9A House Martin Double Nest

A02019 Schwegler 9B Single House Martin Nest

Schwegler No 10 Swallow Box

This box should be located inside buildings such as barns, stables, sheds or outhouses, ensuring there is always access for the birds through a window or opening.



A02020 Schwegler No 10 Swallow Box

Droppings Board

To avoid problems with bird droppings from house martin or swallow nests, this board can be installed where necessary, for example over a window or door.



A02021 Droppings Board

Schwegler No 16 IMF Swift Box, Double Chamber

The design of this box mimics bell tower louvres. It has two removable panels for easy inspection of the two nest chambers. Designed for fixing on or within walls (not suitable for fences or sheds).

Dimensions 460mm h x 430mm w x 225mm d

A02088 Schwegler No 16 IMF Swift Box, Double Chamber



Schwegler No 16 Swift Box, Single Chamber

Similar to the box above but with a single chamber and single front panel.

Dimensions 240mm h x 430mm w x 225mm d.

A02087 Schwegler No 16 Swift Box, Single Chamber

Nest Mould for No 16 Swift Boxes

This nest mould fits inside the nest chamber of the No16 or No16 IMF boxes above, to encourage nesting. Research shows that the birds are more likely to nest if a nest mould is used.

A02089 Nest Mould for No 16 Swift Boxes



Schwegler No 17 Swift Box

This box is constructed from plant-fibre based material. It should be sited 6-7m above the ground, near the roof of a building or on a steep rock face.

Interior dimensions 14 x 14 cm. Outer length 34cm

A02041 Schwegler No 17 Swift Box



Schwegler No 18 Swift Box

This nest box is suitable for fixing high under the eaves or under the guttering of a building.

Woodcrete on board backing.

Interior dimensions 14 x 34 x 15 cm.

Exterior dimensions 19 x 50 x 22 cm

A02041A Schwegler No 18 Swift Box



Schwegler No 23 Barn Owl Box

This box is best sited on the interior wall of barns or church towers. Only a small opening is needed on the outside of the building to serve as an entrance. There is an inspection panel at the back of the box.

Suitable for: Barn owl, Kestrel

Material: Water resistant, glued chipboard with fully galvanised metal parts

Height: 500mm

Width: 1000mm

Depth: 500mm

Entrance hole : 14 x 19 cm

Ref: 002036D Schwegler No 23 Barn Owl Box



APPENDIX D

Standard compensation measures for bats

BROWN LONG-EARED BAT **RECOMMENDED BAT ROOST SPECIFICATIONS** (ENGLISH NATURE 2004)

Roost considerations

- A replacement roost should be situated as closely as possible to the original roost to be lost and match it in terms of size, height and aspect.
- The location of the roost should be close to suitable/existing flight-lines and have an entrance close to appropriate habitat.
- Most bat species, especially brown long-eared bats, prefer to fly in dark areas straight into vegetation, so external lighting should be avoided.

Roof structure

- The roosting area must take account of the brown long-eared requirements – they are open loft dwellers that fly within the roof voids. They require large unobstructed voids with a floor to apex height of minimum 2.8m.
- The building should provide an appropriate thermal regime. For maternity sites this usually requires a steep pitch (42° is optimal) with one pitch facing south to achieve high temperatures (up to 50°C). Dark coloured roof coverings, such as black slates, will help to produce high temperatures.
- Roofing felt should be traditional bitumastic and hessian.
- The top slate/batten needs to be placed 20mm from the ridge board. At 2m intervals the ridge roof felt should have 30mm x 100mm slots cut out beside the ridge boards to allow bats to access the ridge tiles.
- When the ridge tiles are laid, it is important to ensure the space within the ridge tiles remains unfilled with mortar and there are lengths of tile which remain unobstructed (some blockages are required to prevent draughts).
- Small (40mm x 60mm) holes should be torn on three sides (allowing one end to hang down) in roof felt at several levels from apex to half way down the roof slope to allow bats into the space between felt and tile.
- Double beams or rafters should be provided to create crevices preferred by bats. These features can be installed by the bat consultant after the roof has been constructed. Lengths of 1m battens/rafters can be added alongside the roof timbers spaced 20-25mm away with half bridged over, to create a long enclosed cavity. One end can be closed completely (always the upper end, if adjacent to a rafter).
- Ideally, timbers should be recovered from the original roost site and introduced into the replacement roost roof structure.
- Gable ends should have an overhanging style with soffits to give bats a sheltered approach to the entrance. When roof felt is being placed over the end of the wall it should be supported by thin slate to ensure it does not fall by fatigue onto the brickwork, thus blocking the route bats gain access to the roost space. The work will be inspected by the bat consultant before the tiles are fixed.

Walls

- Walls can be faced with any type of brick or block, but if hanging tiles, wooden cladding or weather boarding is not to be used, the wall face must be rough to facilitate landing by bats before they crawl into the roost.
- Walls should be of standard hollow construction (i.e. provide cavity walls) especially at gable ends.
- Part of the inner hollow wall should be thickened on the north side of the roost with an additional 220mm thick hollow block wall spaced 30mm away from the normal inner wall.
- There will need to various small gaps leading into the wall through the mortar lines to allow bats to crawl into crevices. During construction, timber battens measuring 15mm x 50mm should be inserted between blocks, both vertically and horizontally – these battens can be withdrawn a few hours after laying the blocks to create access crevices into the hollows.
- A variety of roosting crevices can be provided on internal walls inside the replacement roost site, at heights from 400mm above the floor to the ceiling.
- Some ceiling joists can have additional lengths added with narrow gaps similar to that described for the roof. Narrow “boxes” constructed of rough soft wood measuring 300mm deep and 450mm-60mm long with a narrow (30mm) space can be attached to the walls. The top and sides should be closed (and for longer structures, some of the base).

Bat entrances

- Access can be achieved both through crevice routes over walls and into the roof space as well as directly through a hole in the wall. If hanging tiles or weather boards are used, small spaces should be created through the wall behind the coverings to give alternate routes into the cavity and roof void.
- Access slits (15mm x 50mm) should also be provided at the gable ends into the soffits and through into the cavity wall and roof void.
- Modified ridge tiles and dry ridge systems will also provide bat access opportunities.

Aurvey and monitoring access requirements

- Consideration should be given to minimising the opportunity for vandalism internally and externally to the roost space.
- Access to the roost space should be independent of private residences – ideally there should be a dedicated lockable access, but alternatively lockable access could be via communal areas.
- There should be no access into the roost space directly from private residences.
- Arrangements must be in place for securing the long term integrity and security of the roost.

BAT ACCESS

Recommended 6 slits per gable end, top two right within apex.

Excerpt from JNCC (2004) *Bat workers manual*. Eds Mitchell-Jones, A. J. & McLeish, A. P. Joint Nature Conservation Committee

Access holes should be kept small or birds may move in. For most bat species a slit 15mm x 20-25mm long is adequate and the ideal position appears to be between soffit and wall. The bats can then land on the vertical wall and run up through the gap; most birds cannot manage this. Building regulations specify that roost must have adequate ventilation around the soffit, so access for bats can easily be incorporated into this. Other suitable access points for bats are at gable ends, around lead flashing or through gaps between slates or tiles.

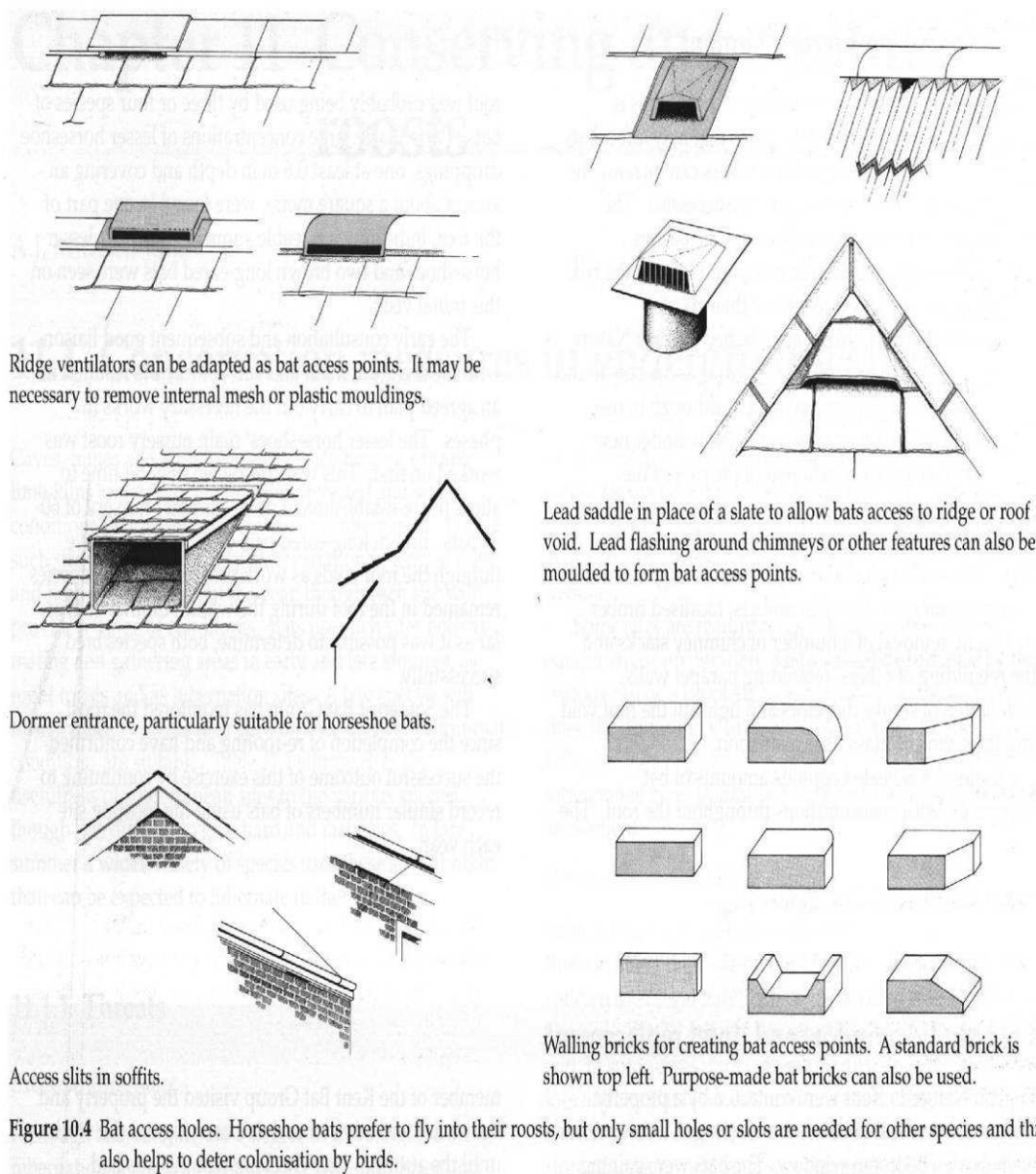


Figure 10.4 Bat access holes. Horseshoe bats prefer to fly into their roosts, but only small holes or slots are needed for other species and this also helps to deter colonisation by birds.

BAT ACCESS BRICK SUPPLIERS:

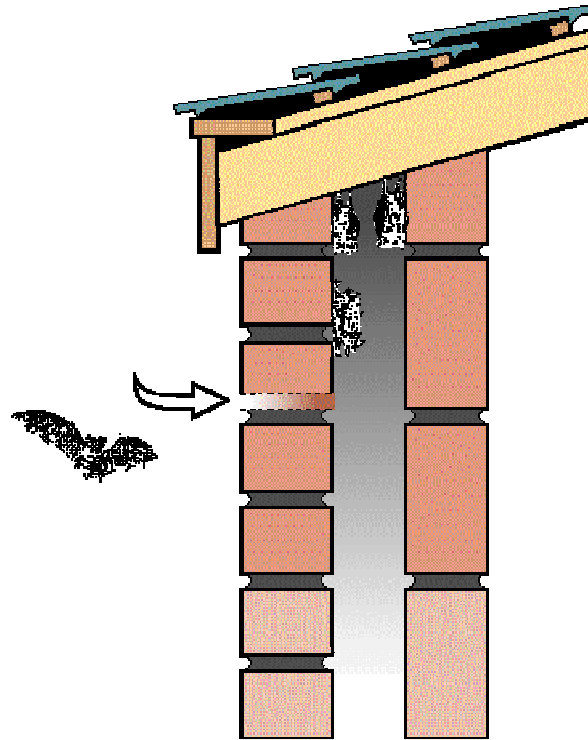
Marshall's Clay Products

Quarry Lane, Howley Park, Woodkirk, Dewsbury, West Yorkshire WF12 7JJ Tel (01132) 203535

Fax (01132) 203555



Marshall's Bat Access Brick (also available in stone)



A Bat Brick should ideally be placed as high as possible, at the gable apex or close to the soffit.

'Over recent years Marshall's Clay Products has become almost as well known for the success of its award winning environmental work as it is for the quality of its brick products. Our land restoration and nature conservation schemes, first developed by Yorkshire Brick Company, have become an integral part of our activities over the years and have been recognised as some of the most successful of their kind anywhere. As part of this ongoing philosophy, Marshall's Clay Products have been producing a special Bat Access Brick, specially designed to help the country's badly depleted bat population by providing access to wall cavities or roof spaces where most bat colonies tend to be. (see diagram)

In recent years bats have been declining at an alarming rate, (estimates suggest as much as 60%) loss of habitat being a key factor in this decline. Nearly all colonies tend to be on the outside of houses, in wall cavities, under slates, flashing or tiles, etc.

Contrary to popular opinion bats do not make nests and do absolutely no damage to buildings or roof timbers, indeed many people encourage bat colonies in their area because of the large number of insect pests, woodworm, etc. which they eat. Most colonies will use a house for only a few weeks in summer before dispersing by the autumn.'

BAT BOX SPECIFICATIONS

Suppliers (prices correct as of Oct 2005):

Alana Ecology
The Old Primary School
Church Street
Bishop's Castle
Shropshire
SY9 5AE

Tel: +44 (0)1588 630173
Fax: +44 (0)1588 630176
Email: sales@alanaecology.com

BOXES/BRICKS TO INCORPORATE INTO BUILDINGS

N27

This box should be cemented into a wall. It contains a single internal wooden panel which simulates a crevice. The removable front panel allows for easy cleaning. *No painting is required, but if it is necessary, a natural breathable paint should be used*

Woodcrete (75% wood sawdust, concrete and clay mixture)
Width 18cm
Height 29cm
Depth 23.5cm

A02006 **N27**
£22.94 **£26.95 inc VAT**



No 750/6 Bat tube

This long box can be installed within brick masonry, beneath plasterwork or wood panelling, or incorporated into concrete structures such as factory buildings or bridges. Inside it contains a woodcrete surface, a roughened wood board, and a metal mesh, providing a choice of roosting areas depending on the weather conditions and the bats' habits. This box is maintenance-free as the entrance slit is at the bottom, allowing for self cleaning. *No painting required, but if painting is necessary a natural breathable paint should be used*

Woodcrete (75% wood sawdust, concrete and clay mixture)
Width 20cm
Height 47.5cm
Depth 12.5cm
Entrance width 15cm
Entrance depth 2cm

A02057 **No 750/6**
£46.77 **£54.95 inc VAT**



Norfolk Bat Brick

A handmade brick which can be used to replace an existing brick or incorporated into new structures. Ideal for sheltered sites such as under bridges, in tunnels, or even in mines and caves. The slits are the perfect size for Daubentons', Natterers, Long-eared, and Brandts' bats. The bat brick should not be painted.

These bat bricks are only available directly from the Norfolk Bat Group. Contact John Goldsmith 01508 550 784 for orders.

Norfolk Bat Brick
£8.09 **£9.51 inc VAT**

Delivery time may be several weeks



GENERAL BOXES

2F Bat Box

A popular general purpose box attractive to the smaller British bats. A simple design with a narrow entrance slit on the front.

Woodcrete (75% wood sawdust, concrete and clay mixture)
Diameter 16cm
Height 33cm

A02002 2F Bat Box

(Up to 10) £16.13 £18.95 inc VAT
(11+) £15.11 £17.75 inc VAT



2F-DFP Bat Box

A general purpose box attractive to the smaller British bats, with a roughened wooden panel inside the box which simulates a crevice. This box is favoured by Daubenton's bat and Nathusius' pipistrelle.

Woodcrete (75% wood sawdust, concrete and clay mixture)
Diameter 16cm
Height 33cm

A02003 2F-DFP Bat Box

(Up to 10) £21.23 **£24.95 inc VAT**
(11+) £20.38 **£23.95 inc VAT**



2FN Bat Box

A larger box with both a wide access slit at the base and an access hole on the underside. Suitable for the larger British bat species. Particularly successful in attracting Noctule and Bechstein's bats.

Woodcrete (75% wood sawdust, concrete and clay mixture)
Diameter 16cm
Height 36cm

A02004 2FN Bat Box

(Up to 19) £21.23 **£24.95 inc VAT**
(20+) £20.68 **£24.30 inc VAT**



1FF Bat Box

The rectangular shape makes the 1FF suitable for attaching to the sides of buildings or in sites such as bridges, though it may also be used on trees. It has a narrow crevice-like internal space to attract Pipistrelle and Noctule bats.

Woodcrete (75% wood sawdust, concrete and clay mixture)
Width 27cm
Height 43cm

A02000 1FF Bat Box

(Up to 3) £33.15 **£38.95 inc VAT**
(4+) £32.50 **£37.95 inc VAT**



1FD Bat Box

A large general purpose bat box, with two roughened wood panels inside the box which simulate crevices.

Woodcrete (75% wood sawdust, concrete and clay mixture)
Diameter 16cm
Height 36cm

A02058 **1FD Bat Box**
£30.60 £35.95 inc VAT



1FS Bat Box

A larger capacity general purpose bat box.

Woodcrete (75% wood sawdust, concrete and clay mixture)
Diameter 28cm
Height 44cm
Weight 10kg

A02005 **1FS Bat Box**
£51.02 £59.95 inc VAT



1FW Hibernation Box

This monster box is designed to provide a protected environment, particularly through the cold winter months when bats hibernate. It has three internal wooden panels imitating crevices. *Supplied with special fixing brackets. It is important to fit this heavy box very securely if mounting above the ground, and to site it well away from public areas.*

Woodcrete (75% wood sawdust, concrete and clay mixture)
Diameter 38cm
Height 50cm
Weight 28kg

A02001 **1FW Hibernation Box**
£98.68 £115.95 inc VAT



Schwegler 1FQ Bat Box

The latest model from Schwegler is an attractive box designed specifically to be fitted on the external wall of a house, barn or other building. Equally appealing to bats as a roost or a nursery, it features a special porous coating to help maintain the ideal temperature inside as well as a roughened front panel to enable the bats to land securely. Access into the box is via a step-like recess. Inside the box, rough pieces of wood are incorporated into the back of the box which are good insulators and are used by the bats as perches. The internal layout offers three different areas with varying degrees of brightness and temperature.

This durable box is easy to attach to most walls, requires no maintenance or cleaning and will last for decades. *Please note that this box is designed to be fitted to a wall. Due to the weight it is unsuitable for fences or sheds.*

Woodcrete (75% wood sawdust, concrete and clay mixture)
Height 565mm; Width 350mm Depth 85mm Weight 13kg

A02092 **Schwegler 1FQ Bat Box**
£55.28 £64.95 inc VAT



DRAWINGS

2278.002 Habitat appraisal and current site layout
2278.003 Bat Mitigation