Capabilities on project:
Environment

Appendix 1: Background to Bats and Legislative Status

General UK Bat Information

There are 18 species of bat in Britain which belong to one of two families: the Vesper family of bats (Vespertilionidae) and the Horseshoe family of bats (Rhinolophidae). The Vesper bats are found throughout Britain and are one of the most widespread mammalian groups in the world after man. The Horseshoe bats are generally found in south west England and throughout Wales.

Bats are nocturnal and, in Britain, all species are insectivorous. Bats gather to feed wherever there are lots of insects, so the best places for them include traditional pasture, woodland, marshes, ponds and slow moving rivers.

Surveys are conducted prior to, during and after dusk, and prior to, during and after dawn. Bats use a variety of roosts throughout the year in which to breed, hibernate, feed and give birth. Bats do not build nests; they hang from or creep into cracks and crevices. It is not common for bats to use the same roost throughout the year as they require different roost conditions for breeding and hibernating. The different types of roost sites are described below:

- maternity sites, where young are born and raised to independence.
- hibernation sites, where bats may be found during the winter.
- mating sites, where males and females gather during the autumn.
- feeding sites, where bats rest between feeding bouts during the night; they are rarely used by day.
- transitional sites, where bats may gather during the spring or autumn.
- summer roosts, used by males and non-breeding females.

Bats follow linear features such as lines of trees, hedges, buildings and waterways to commute between their roost sites to their feeding areas. Good commuting routes and foraging areas are essential to the survival of a roosting site. The commuting routes are linear corridors used by bats as flight paths. These routes are important in maintaining the “favourable conservation status” of bats by, for example, allowing bats to move in relative safety between roosts and feeding areas. Foraging areas are used by bats for feeding; however it is important to note that bats will take the opportunity to forage while commuting.

Both bats and their roosts are protected by UK and EU law (refer to 2.2).

Legislation Summary

Due to their decline, bats are protected under the following two pieces of legislation.

Wildlife and Countryside Act 1981

The Wildlife and Countryside Act 1981 (as amended) provides protection to certain wild animals that are listed under Schedule 5 of the Act. The Schedule includes all bats including both horseshoe (*Rhinolophidae*) and typical (*Vespertilionidae)* species. The limited protection afforded to bats is detailed in Section 9(4)(b) and (c) and (5) only, under Part 1 of the Act.

The 1981 Act has been amended several times, notably by the Countryside and Rights of Way Act 2000, which inserted the term “recklessly” with respect to Section 9(4). More recently the Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007 further amended Section 9(4) and removed Section 9(1)(2) and (4)(a) with respect to bats.

Bats are subject to the provisions of Section 9 of the Act, which make it an offence to:

- intentionally or recklessly disturb a bat whilst it is occupying a structure or place which it uses for shelter or protection (roost);
- intentionally or recklessly obstruct access to any structure or place used for shelter or protection by a bat;
- sell, offer or expose for sale, or to possess or transport for sale a live or dead bat or any part of or anything derived from a bat.

The Conservation of Habitats and Species Regulations 2010 (as amended)

European Community Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora otherwise known as the Habitats Directive was transposed into national legislation as the Conservation (Natural Habitats &c.) Regulations 1994. The 1994 Regulations were amended several times since coming into force. These amendments were

consolidated into the Conservation of Habitats and Species Regulations 2010 (as amended) which replaced the Conservation (Natural Habitats &c.) Regulations 1994, as of 1 April 2010.

Part 3 of the 2010 Regulations is concerned with the protection of species. Animal species listed on Annex IV(a) of the Habitats Directive are regarded as European protected species and member states are required to put into place a system of strict protection. Those animal species included on Annex IV(a) that are present within Great Britain are listed in Schedule 2 of the 2010 Regulations. All bats including horseshoe (*Rhinolophidae*) and typical (*Vespertilionidae*) species are included in Schedule 2. Bats are subject to the provisions of Regulation 41 of the 2010 Regulations which makes it an offence to:

- deliberately capture, injure or kill a bat;
- deliberately disturb a bat (where disturbance is likely to impair their ability to survive, breed or reproduce, rear or nurture their young; or to hibernate or migrate; or to affect significantly the local distribution or abundance of the bat species concerned);
- damage or destroy a breeding site or resting place (roost) of a bat; and
- be in possession of, control, transport, sell or exchange, or offer for sale or exchange any live or dead wild bat or any part of a wild bat or anything derived from a bat or any part of a bat wild.

Natural England Licensing

Licences may be granted by Natural England under Regulation 53 of the Conservation of Habitats and Species Regulations 2010 for certain purposes affecting bats, including development works. Regulation 53 (2)(e) states that such licences can be granted for the purpose of '*preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment*'. Those activities listed under Regulation 41 of the 2010 Regulations would not constitute an offence if carried out in accordance with the terms of such a licence.

Natural England will not grant such a licence unless they are satisfied that:

- *'there is no satisfactory alternative' (Regulation 53 (9)(a)); and*
- *'the action authorised will not be detrimental to the maintenance of the population of the bat species at a favourable conservation status in their natural range' (Regulation 53 (9)(b)).*

In order to obtain a licence to allow either to deliberately capture, injure or kill any bat, to deliberately disturb any bat, or to damage or destroy a breeding site or resting place of any bat, in advance of any otherwise legitimate development which may impact on the favourable conservation status of bats, it must be demonstrated by the applicant that all reasonable steps have been taken to minimise the impact in order to satisfy Regulation 53 (9)(a) of the 2010 Regulations and any remaining damage will be adequately compensated for (to satisfy Regulation 53 (9)(b)).

Examples of works that are likely to need a licence because they may result in the destruction of a breeding or resting place and/or disturbance of bats include:

- demolition of buildings known to be used by bats;
- conversion of barns or other building known to be used by bats; and
- removal of trees known to be used by bats, when carried out as part of a development.

A Natural England Bat Licence Application consists of a completed application form, two Method Statements, and a Reasoned Statement of Application. Mitigation measures would need to be put in place to mitigate for the impacts of the development on the local bat population. Details of the mitigation plans would need to be included in the Method Statement.

Licences usually take at least 35 working days to be issued by Natural England. However, in our experience it can take up to three months for a licence to be granted. Information on the species and number of bats using the site is required for Natural England licensing purposes. It can take a number of surveys to establish this information. If bat roost(s) are present on site no work, that could cause disturbance to bats, can be undertaken until a licence has been granted. Generally a bat licence cannot be obtained for outline planning applications but only for detailed planning applications and then not before planning approval has been granted.

Capabilities on project:
Environment

Appendix 2: Site Photographs

Building Photographs	
 Photograph 1: Building B1	 Photograph 2: Building B2
 Photograph 3: Building B3	 Photograph 4: Building B3 (left), B2(middle) and B4a(right)



Photograph 5: Building B4a (taken facing west)



Photograph 6: Building B4b (taken facing south)



Photograph 7: Building B6 with a section of B5 shown on the left



Photograph 8: Building B4b (left) and B4a (right)



Photograph 9: The hole in the cladding of B4b in which a blue tits was nesting at the time of survey (indicted by the red circle)



Photograph 10: B4a (taken facing east) – missing windows can be seen



Photograph 11: B4a (taken facing east) – missing windows can be seen



Photograph 12: Building B7



Photograph 13: Building B8



Photograph 14: Hole and gap between B8 and B9



Photograph 15: Holes in the wall of B9



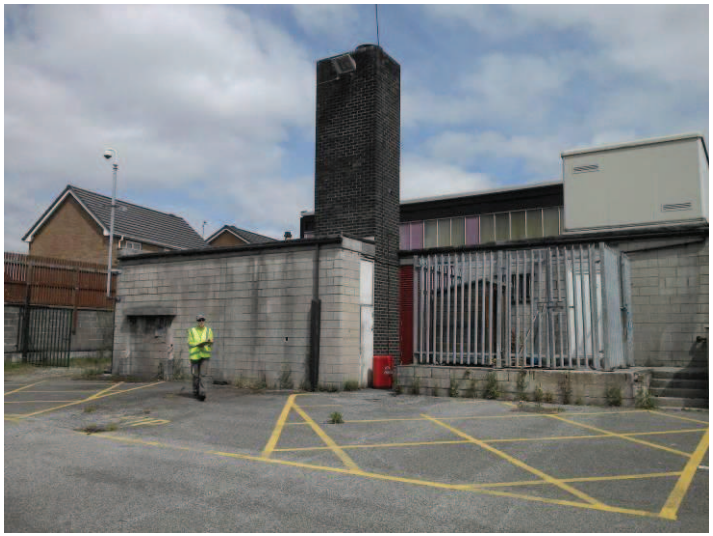
Photograph 16: Building B5 between B4a and B6



Photograph 17: Doorway to basement in building B9



Photograph 18: Holes in the wall in building B9



Photograph 19: West facing end of building B8



Photograph 20: Courtyard between B10 and B9



Photograph 21: Building B10a



Photograph 22: Building B10a



Photograph 23: Building B10b (left) and B5 (right)



Photograph 24: South-east elevation og B5 and B4a



Photograph 25: Porch located on south-east elevation of B5. Roosing pigeons



Photograph 26: Vent holes on south-east elevation of B5



Photograph 27 Building B13 (bungalow)



Photograph 28 Building B13 (bungalow)



Photograph 29 Building B7 and B5



Photograph 30 Courtyard between building B8, B7, B5 and B9. Building B5 (three storey section) can be seen in the background.

Capabilities on project:
Environment

Table 2A

Habitat Photographs	
 Photograph 31: Lapsed amenity grassland	 Photograph 32: Logs
 Photograph 33: Hardstanding (sports court)	 Photograph 34: Lapsed amenity grassland and scrub on boundary of playing fields



Photograph 35: Japanese knotweed (off site)



Photograph 36: Brash pile



Photograph 37: Mammal push-under and location of fox hair



Photograph 38: Hedgehog seen on site



Photograph 39: Scrub to the north of B4b



Photograph 40: Raised railway sleeper planting beds



Photograph 41: Pond



Photograph 42: One of the three bird boxes on site



Photograph 43: Vegetated bank on site



Photograph 44: Bat box on site



Photograph 45: Cotoneaster on site



Photograph 46: Scrub to the north of B13

Appendix 3: Target Notes

Target Note	Description
TN1	Log piles with invertebrate, reptile and amphibian refugia potential
TN2	Roosting pigeons
TN3	Mammal path
TN4	Lapsed amenity grassland with timothy grass (*Phleum pratense*) cocksfoot grass (*Dactylis glomerata*),rough meadow grass (*Poa pratenses*), and creeping buttercup (*Ranunculus repens*)
TN5	Old playing fields to the east of the disused tennis courts, rye grass (*Lolium perenne*), willowherb (*Epilobuim hirsutum*), bramble (*Rubus fruticosus*) around the boundary
TN6	Log piles with invertebrate, reptile and amphibian refugia potential
TN7	Scrub, dominated by *Rubus fruticosus*
TN8	Japanese knotweed (*Fallopia japonica*)(off site)
TN9	Woodland (boundary and off site) species include alder (*Alnus glutinosa*), birch (*Betula sp.),* oak (*Quercus sp.*) and sycamore (*Acer psuedoplatinus*)
TN10	Brash pile with invertebrate, reptile and amphibian refugia potential
TN11	Mammal path
TN12	Trees adjacent to the boundary (on site), species include ash and *Acer* sp.
TN13	Grassy bank between the two areas of hardstanding
TN14	Fox hair found on fence, push under fence present
TN15	Colonising plant species emerging between cracks in the paving slabs
TN16	Scrub, bramble and trees including a large willow (*Salix* sp.)
TN17	Hedgehog – incidental sighting
TN18	Blue tit in a hole present in the wall of building B4a
TN19	Lapsed amenity grassland with hardcore pathways
TN20	Push unders located along the boundary fence, likely to be fox.
TN21	Raised sleeper planting beds with horsetail, common vetch (*Vicia sativa*) and meadowsweet (*Filipendula ulmaria*)
TN22	Pond supporting amphibians with the potential to support great crested newts
TN23	Two bird boxes located on the north-facing external walls of buildings B5 and B7. Blue tits nesting in the box located on B7
TN24	Bat box located approximately head height in a fork in a tree. Bat dropping, likely *Pipistrelle* sp.
TN25	Bank, damp ground, well vegetated with bramble, dock, dandelion, rush, incidental sightings of smooth newt and several frogs
TN26	*Cotoneaster* sp.
TN27	Holes in block work of buildings B8 and B9
TN28	Lapsed amenity grassland, species include crested dogstail grass, red clover (*Trifolium pratense*), meadow buttercup (*Ranunculus acris*), ,dandelion (*Taraxicum officinale*), Yorkshire

Target Note	Description
	fog (*Holcus lantata*) and dock (*Rumex obtusifolia*)
TN29	*Cotoneaster* sp. (likely to be a Schedule 9 (of the Wildlife and Countryside Act, 1981, as amended) species
TN30	Pigeons roosting and nesting on the face of the building and possibly inside
TN31	Ornamental planting of firethorn (*Pyracantha sp*.), but mixed with native species including box (*Buxus sempervirens*), and birch (*Betula sp*.) saplings

Appendix 4: Bats and Artificial Lighting - General Recommendations

General Lighting for Wildlife
The light should be as low as guidelines permit. If lighting is not needed, don't light.
Bat Roosts
No bat roost (including access points) should be directly illuminated. If it is considered necessary to illuminate a building known to be used by roosting bats, the lights should be positioned to avoid the sensitive areas e.g. the exit and entrance points. Close offset accent lighting causes less light pollution; it is more specific and can be designed to avoid bat sensitive areas, and better highlights the features of the subject of the illumination.
Type of Lighting
The impact on bats can be minimised by the use of high pressure sodium lamps instead of mercury or metal halide lamps where glass glazing is preferred due to its UV filtration characteristics. The International Dark Sky Association (IDA) has issued a press release about the negative impacts of Bluish/White LED and induction lamps. They state that these lights have significant environmental impacts and urge light developers to limit blue light to wavelengths shorter than 500nm.
Minimise lighting
Lighting should be directed to where it is needed and light spillage avoided, particularly onto surrounding vegetation and commuting routes. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvres and shields to direct the light to the intended area only. Strategic planting can also be used as a barrier or manmade features that are required within the build can be positioned so as to form a barrier.
Avoid light directed at the sky or horizontally out from the buildings
The height of lighting columns in general should be as short as is possible as light at a low level reduces the ecological impact. Direct the light below the horizontal plane, preferably at an angle less than seventy degrees. There are cases where a taller column will enable light to be directed downwards at a more acute angle and thereby reduce horizontal spill. For pedestrian lighting this can take the form of low level lighting that is as directional as possible and below 3 lux at ground level. The acceptable level of lighting may vary dependent upon the surroundings and on the species of bat affected.
Timing of lighting
The times during which the lighting is on should be limited to provide some dark periods. Roads or trackways in areas important for foraging bats should contain stretches left unlit to avoid isolation of bat colonies. These unlit stretches should be 10 metres in length either side of commuting route.

Capabilities on project:
Environment

Appendix 5: Biodiversity and Landscaping - Suggested Species List and Enhancements

Common Name	Latin Name	Comments
Evergreen hedging		
Wild Privet	***Ligustrum vulgare***	**Semi evergreen, attracts privet hawkmoth**
Holly	***Ilex aquifolium***	**Provides fruit for birds**
Evergreen Privet	***Ligustrum ovalifolium***	**Semi evergreen**
English Yew	***Taxus baccata***	
Deciduous hedging and shrubs		
Spindle	***Euonymus europaeus***	**Provides fruit for birds**
Hornbeam	***Carpinus betulus***	
Hazel	***Corylus avallana***	
Hawthorn	***Crataegus monogyna***	**Provides fruit for birds**
Common Buckthorn	***Rhamnus cathartica***	
Wayfairing Tree	***Viburnum lantana***	**Provides fruit for birds**
Guelder Rose	***Viburnum opulus***	
Field Rose	***Rosa arvensis***	**Provides fruit for birds**
Blackthorn	***Prunus spinosa***	**Provides fruit for birds**
Bird Cherry	***Prunus padus***	
Goat Willow	***Salix caprea***	
Shade tolerant climbers or wall plants		
Travellers joy	***Clematis vitalba***	
Climbing corydalis	***Ceratocapnos claviculata***	
Honeysuckle	***Lonicera periclymenum***	
Wall rue	***Asplenium ruta-muraria***	
Ivy	***Hedera helix***	**Suitable for damp conditions, good evergreen ground cover**
Shade tolerant non flowering perennials		

Common Name	Latin Name	Comments
Male fern	***Dryopteris filix-mas***	**Suitable for damp conditions**
Golden scale fern	***Dryopteris affinis***	**Suitable for damp conditions**
Soft shield fern	***Polystichum setiferum***	**Suitable for damp conditions**
Pendulous sedge	***Carex pendula***	**Suitable for damp conditions**
Shade tolerant herbaceous flowering perennials		
Columbine	***Aquilegia vulgaris***	
Narrow leaved bittercress	***Cardamine impatiens***	**London BAP Priority Species**
Green-flowered helleborine	***Epipactis phyllanthes***	**London BAP Priority Species calcicolus**
Deadnettles	***Lamium spp.***	
Greater woodrush	***Luzula sylvatica***	**Suitable for damp conditions**
Hedge woundwort	***Stachys sylvatica***	
Herb robert	***Geranium robertianum***	**Annual but self seeding**
Lily of the valley	**Convallaria *majalis***	**Suitable for damp conditions**
Sweet violet	***Viola odorata***	
Sweet woodruff	***Galium odoratum***	**Good ground cover**
Ground ivy	***Glechoma hederacea***	**Suitable for damp conditions, good ground cover**
Wood spurge	***Euphorbia amygdaloides***	**Suitable for damp conditions**
Wood avens	***Geum urbanum***	**Suitable for damp conditions**
Wood Crane's-bill	***Geranium sylvaticum***	
Meadowsweet	***Filipendula ulmaria***	**Suitable for damp conditions**
Marsh violet	***Viola palustris***	**Suitable for damp conditions**
Self heal	***Prunella vulgaris***	**Good ground cover**
Native bulbs for understorey planting		
Wood anemone	***Anemone nemorosa***	

Common Name	Latin Name	Comments
Bluebell	***Hyacinthoides non-scripta***	
Lesser celandine	***Ranunculus ficaria***	**Suitable for damp conditions**
Snakeshead fritillary	***Fritillaria meleagris***	
Wild Garlic	***Allium ursinum***	**Suitable for damp conditions**
Snowdrop	***Galanthus nivalus***	
Night scented plants to attract night flying insects and bats		
Night-scented stock	***Matthiola bicornis***	
Nottingham catchfly	***Silene nutans***	
Night-scented catchfly	***Silene noctiflora***	
Honeysuckle	***Lonicera periclymenum***	
Soapwort	***Spanoria officinalis***	
Herbaceous border insect attracting plants		
Tower mustard	***Arabis glabra***	**UK and London BAP Priority Species**
St John's Wort	***Hypericum sp.***	
Forget-me-not	***Myosotis sp***	
Dove's-foot Crane's-bill	***Geranium molle***	
Small-flowered Crane's-bill	***Geranium pusillum***	
Meadow Crane's-bill	***Geranium pratense***	
Long-stalked Crane's-bill	***Geranium columbinum***	
Black knapweed	***Centaurea nigra***	**And bumblebees and butterflies**
Ox-eye daisy	***Leucanthemum vulgare***	
Field scabious	***Knautia arvensis***	**And bumblebees and butterflies**
Red campion	***Silene dioica***	
Red valerian	***Centranthus ruber***	**And bumblebees and butterflies**

Common Name	Latin Name	Comments
Maiden Pink	***Dianthus deltoides***	**And bumblebees and butterflies**
Herbaceous border attracting bumblebees		
Viper's bugloss	***Echium vulgare***	
Bugle	***Ajuga reptans***	
Foxglove	***Digitalis***	
Comfrey	***Symphytum officinale***	
Everlasting pea	***Lathyrus sylvestris***	
Cornflower	***Centaurea cyanus***	**UK BAP**
Herbaceous border attracting butterflies		
Garlic mustard	***Alium ursinum***	**Caterpillar food**
Sorrel	***Rumex acetosa***	**Caterpillar food**
Purple loosestrife	***Lythrum salicaria***	
Ragged robin	***Lychnis flos cuculi***	**Suitable for damp conditions**
Bird's-foot trefoil	***Lotus corniculatus***	
Teasel	***Dipsacus fullonum***	
Hemp agrimony	***Eupatorium cannabinum***	
Grasses		
Annual meadow grass	***Poa annua***	**Caterpillar food**
Cocksfoot	***Dactylus glomerata***	**Caterpillar food**
Sheep's fescue	***Festuca ovina***	**Caterpillar food**
Timothy	***Phleum pratense***	**Caterpillar food**
Yorkshire fog	***Holcus lanatus***	**Caterpillar food**

Examples of Bird and Bat Boxes and Invertebrate Shelters

Table 6A: Example Redstart Box

Name of Model	**A02086 Sparrow Terrace**	**Triple Sparrow House**
Type Of Model	Brick/Box	Box
Type of Fitting	Internal	External
Material Used	Woodcrete (75% wood sawdust, concrete and clay mixture)	Wood
Size and dimension	Width: 430mm Height: 245mm Depth: 200mm Weight: 13kg	Dimensions: 310 x 370 x 185 mm
Extra Notes	Suitable for house and tree sparrows. These are sociable birds that like to nest in colonies, so the Triple Sparrow House is designed to provide comfortable accommodation for three pairs, nesting side-by-side.	An attractive and sturdy house built from cedar. Both house and tree sparrows are sociable birds that like to nest in colonies, so the Triple Sparrow House is designed to provide comfortable accommodation for three pairs, nesting side-by-side. The front door hinges forward for inspection.
Picture[1]		

[1] Images courtesy of NHBS: http://www.nhbs.com/bird_boxes_eqcat_426.html

Table 6B: Example Redstart Box

Name of Model	**Schwegler Nest Box 2HW**
Type Of Model	Box
Type of Fitting	External –on trees and buildings
Material Used	Woodcrete (75% wood sawdust, concrete and clay mixture)
Size and dimension	Weight: 5.1kg
Manufacturers Notes	The Schwegler 2HW is designed for species that nest in cavities or recesses, particularly those which prefer an open, balcony-type entrance such as redstart, wagtail and flycatchers. The wide, open access of such types of boxes often leaves such species at risk from predators but the predator-proof 2HW helps to prevent such attacks. This box contains a wooden nesting chamber insert which makes it secure against magpies and jays. This is because nesting takes place at the far end of the box where they cannot reach. This insert can be easily removed for inspection and cleaning purposes. The large entrance also means that occupation can be very quick, even when hung in relatively dark places.
Picture[2]	

[2] Images courtesy of NHBS: http://www.nhbs.com/schwegler_nest_box_2hw_tefno_177926.html

Table 6C: Example Bat Bricks for Integration into Buildings[3]

Name of Model	**Schwegler N27 Bat Box**	**Schwegler 1FR Bat Tube**
Material Used	Woodcrete (75% wood sawdust, concrete and clay mixture)	Woodcrete (75% wood sawdust, concrete and clay mixture)
Size and Dimension	Width: 180mm Height: 265mm Depth: 240mm Weight: 9.5kg Entrance hole: 55 x 26mm	Width: 200mm Height: 475mm Depth: 125mm Entrance Width: 150mm Entrance Depth: 20mm Weight: 9.5kg
Comments	"This box is designed to be cemented into a wall as part of the fabric of the building. It contains a single internal wooden panel which simulates a crevice. The removable front panel allows for easy cleaning Brick boxes are designed for buildings, or underneath bridges, arches or tunnels, where conditions are relatively humid. They are particularly useful for new buildings or bridges to attract bats, or to provide new roost sites where existing buildings with bats are being renovated"3.	"Brick boxes are designed for buildings, or underneath bridges, arches or tunnels, where conditions are relatively humid. They are particularly useful for new buildings or bridges to attract bats, or to provide new roost sites where existing buildings with bats are being renovated. 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" 3
Picture		

[3] NHBS (2013) http://www.nhbs.com/schwegler_brick_box_type_27_for_bats_tefno_163995.html and http://www.nhbs.com/search/quick_search.php?search_phrase=Schwegler+1FR+Bat+Tube&mode=quick_search

Table 6D: Example Bat Boxes for Installation onto Buildings[4]

Name of Model	**Schwegler 1FQ Bat Box for external attachment to buildings**	**Schwegler 1WQ Summer and Winter Bat Roost**
Material Used	Woodcrete (75% wood sawdust, concrete and clay mixture)	Woodcrete (75% wood sawdust, concrete and clay mixture)
Size and dimension	Height: 600mm Width: 350mm Depth: 90mm Weight: 15kg	Height: 580mm Width: 380mm Depth: 115mm Weight: 22kg
Comments	"The 1FQ box 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"[4]	"A sophisticated bat box designed for the safe hibernation of bats in winter as well as for roosting, forming colonies and raising their young during summer. It has an attractive design and is easy and convenient to install on the wall of a building. The combination of several well-insulating materials in a layer structure ensures outstanding insulation properties but still guaranties sufficient air-convection and permeability. The extremely durable material will last for many decades providing shelter for the bats. The insulation not only protects the bats in winter but also prevents overheating during summer. This box is self-cleaning and thus completely maintenance-free" [4]

[4]NHBS (2013) http://www.nhbs.com/bat_roost_1fq_for_external_walls_tefno_160551.html and http://www.nhbs.com/summer_and_winter_bat_roost_1wq_tefno_161275.html

Name of Model	Schwegler 1FQ Bat Box for external attachment to buildings	Schwegler 1WQ Summer and Winter Bat Roost
Picture[4]		

Table 6E: Example of Invertebrate Shelters

Name of model	Wooden Insect House	Wooden Insect House	Insect Nesting Aid
Type Of Model	Box	BUG BOX 2000	Insect Nesting Aid,
Type of Fitting	External	External	External
Material Used	Wood	Wood	Unknown
Size and dimension	22 x 13.5 x 13.5cm	(H. 155mm W. 220mm D. 90mm - Approx Weight: 0.72KG)	290H x 225W x 205D mm
Extra Notes	A good general insect habitat for beneficial insects in summer and, later in the year, over wintering ladybirds and lacewings. Site in a sheltered place near nectar/pollen plants or by a pond. Durable and strong construction in acacia/oak/larch with no maintenance necessary.	This new small double chambered insect habitat (top varying size canes - bottom solid bored timber) is ideal for hanging in a sheltered garden or house wall or orchard. This is a general insect habitat. The holes may be used by solitary bees such as Mason Bees or Leafcutter Bees, which are non aggressive and excellent for pollinating in the garden, helping to increase fruit yields. The durable roof and solid timber construction give excellent insulation for over wintering Ladybirds and Lacewings. Site using back hanger or central hanging chain if preferred in a sheltered spot, preferably to catch the morning sun.	Bees and wasps are of great ecological value: they regulate the numbers of other harmful insects and play an important role as pollinators. Most species nest in beetle holes; where such natural holes are scarce our Nesting Blocks provide the ideal alternative. They can be hung on fences, walls, pergolas and balconies, in sheds, and anywhere sunny and sheltered in gardens. They should be left outside during winter; otherwise the insects may hatch too early and die. None of the insects using these aids is aggressive.
Picture			

Appendix 6: HSI Results

Suitability Index	Factor	Description	Data	Result
1	Location	Area in the UK	Zone A	1
2	Pond Area	Area m^2	$12m^2$	0.05
3	Pond permanence	Years the pond dries out	Never dries out	0.9
4	Water Quality	Invertebrate diversity	Moderate	0.67
5	Shade	% perimeter shade	20%	1
6	Number of waterfowl	Impact of waterfowl	Major	1
7	Fish	Fish presence	Major	1
8	Ponds in area	Concentration of ponds within 1km of site	0.1 ponds/km^2 (2 ponds)	0.5
9	Habitat	Quality of surrounding habitat for newts	Poor	1
10	Macrophyte	% pond surface area occupied by macrophytes	30% cover	0.8
HSI score	HSI = (SI1 x SI2 x SI3 x SI4 x SI5 x SI6 x SI7 x SI8 x SI9 x SI10) $^{1/10}$			**0.64**

The result of 0.64 categorises the pond as having “average” suitability for great crested newts.