

Biodiversity Enhancement Scheme

Site:

1 WARDES
BUNGALOWS
OTHAM STREET
OTHAM
ME15 8RW



Maidstone
Borough
Council

Prepared for:

Mr H.Nurhakli

Prepared by:

Sanaa Designs 6th May 2023



Overview

The following Biodiversity Enhancement Scheme has been produced at the request of Mr H Nurhakli in fulfilment of Planning Condition 3 attached to the Grant of Planning Consent dated **23/500564/FULL/FULL** 5th April 2023:

3) The extension/s hereby approved shall not commence above slab level until details of a scheme for the enhancement of biodiversity on the site have been submitted to and approved in writing by the Local Planning Authority. The scheme shall consist of the enhancement of biodiversity through at least one integrated method into the design and appearance of the extension by means such as swift bricks, bat tubes or bee bricks, and through the provision within the site curtilage such as bird boxes, bat boxes, bug hotels, log piles, wildflower planting and hedgehog corridors. The development shall be implemented in accordance with the approved details prior to first use of the extension/s and all features shall be maintained thereafter.

Reason: *To protect and enhance the ecology and biodiversity on the site in the future.*

Habitat loss & fragmentation in our cities and suburbs

Despite covering just 6% of land, urban landscapes are increasingly important for hedgehogs. The matrix of gardens and green spaces in towns and cities can support the highest densities of hedgehogs and may act as a refuge from agricultural practices and high predator density.

Habitat loss from new developments, in-filling of gardens with housing, roads, impermeable boundaries and 'over-management' of green-spaces and gardens are all, however, threats.



The Solution

Habitat Creation

See *Biodiversity Enhancement Plan (BEP)* for locations

a) Bat Bricks / Boxes

- Refer to Bat Conservation Trust 'Bat Box Information Pack' (copy attached)
- Bat Block appropriate for the building design (e.g.

<https://www.green&blue.co.uk>) to be

installed at approximately 4m above ground level with north facing aspect.

- Install single bat box at least 4m above ground level.

aspect. Proprietary bat boxes e.g. the Schwegler range may be used

<https://www.schwegler-natur.de/fledermaus/?lang=en#>

b) Habitat Piles

- 2 x Habitat Piles:

- Log Pile
- Brush Pile

- To be constructed in areas where it is mostly Shaded and Moist with partial sunlight and Little Rain.

c) Bird Boxes

- 2 bird boxes to be installed at locations shown

- Actual heights to be determined by nesting box type

see www.rspb.org.uk/birds-and-wildlife/advice with special consideration given to those suitable for the House Sparrow

- Bird boxes to be orientated facing east (using wooden boundary fence for support)

d) Swift Bricks/ Box

- 3 Swift bricks to be installed Along boundary fence line

- Product to be used e.g. [Swift Block | Swift Box - Integrated – Green&Blue](#) (greenandblue.co.uk)

- To be installed at approximately 5m above ground level as indicated on the attached plan

- Orientate facing east or incorporate under roof eaves to provide shade during the day time.



Bat Box Information Pack

Bats are amazing animals that are important to ecosystems in the UK and worldwide. We have 18 species of bat in the UK, all of which are protected under European law. Bat populations in the UK have declined dramatically over the past century due to persecution and habitat loss. However, a number of UK bat species have recently shown signs of population increases so there is hope.

Bat boxes are artificial roosts designed to provide bats with alternative resting places or to encourage bats into areas where there are few existing suitable roost sites. There are various designs of bat box; wooden boxes that you can make yourself, ready-assembled external boxes for buildings and trees, and even integrated bat boxes that can be built into walls.

Providing bat boxes can increase opportunities for roosting bats but it can take a while for bat boxes to be used regularly, particularly where a number of suitable alternative roost sites exist. Bat boxes

can have an important additional function in encouraging interest and educating members of the public about bat conservation. The correct design and placement of boxes will help increase the likelihood of their uptake by bats.

Bat roost preferences

Bat boxes are now available from many outlets, and in a range of shapes and sizes, so some knowledge of what bat species are in your local area and their preferences will help you choose the best possible box. For example, some species such as horseshoe bats and grey long-eared bats do not use bat boxes.

Microclimate within a new roost is a very important factor in terms of increasing the chance of successful uptake by bats. In general, they prefer warm, dry spaces in the summer for rearing young and cooler damper spaces in the winter for hibernation. The box should be draught proof and made from a thermally stable material such as untreated wood, ecostyrocete, woodcrete, brick or stone. If possible, it's better to provide several internal chambers so that the bats can move to where the conditions suit them best.



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Orientation and location

Structures for summer roosting should be positioned where they are sheltered from the wind but unshaded for most of the day. Summer maternity roosts (in the northern hemisphere) should be on a south-easterly to south-westerly aspect. It is always best to provide a number of different options for bats so that they can choose the most appropriate temperature based on their needs. This can be achieved by grouping a number of bat boxes each with a different aspect; two or three boxes is preferable to one, although a single box still has a chance of being used depending on the bat species that use the local area. Three boxes can be arranged around the trunk of larger trees – see below for details about putting up bat boxes.



Bat boxes are more likely to succeed in areas where there is a good mixture of foraging habitat, including trees, and a source of water (most maternity roosts are located within a short distance of permanent fresh water such as a stream, pond, river or lake). Bat boxes in areas with few other roosting opportunities are also likely to be more successful.

Bat boxes should also be located close to unlit linear features, such as lines of trees or hedgerows and no lit should fall on the bat box itself or the adjacent habitat. Bat species use dark linear features for navigation between their roosting sites and feeding grounds and to avoid predation by flying in open and exposed areas. Ensure the bats approach to the box is not impeded, for example by branches – clear away underneath the box so the bats can land easily before crawling up into the box.

Size of the bat box

The most frequently used bat boxes are small, with narrow apertures to enter them and are only suitable for crevice-dwelling bat species.

Access

Crevice dwelling bats crawl into their roosts via small gaps around 15-20mm high. Roughened vertical surfaces or landing areas allow better access (by landing and crawling), horizontal landing perches should be avoided as these are not necessary, may even deter bats and encourage birds to nest within the bat box.

Other considerations

Bats are nocturnal and adapted to low light conditions. Artificial light sources should not be directed onto bat boxes or flight paths as most bat species find artificial lighting very disturbing.



If possible, make or purchase bat boxes with an entrance slit along the bottom so that accumulated bat waste can drop out of the box or be pushed out as bats emerge. This will also help stop birds nesting in the box and blocking the entrance, which can happen with bat boxes that have entrance holes in the middle or entrance holes that are too large.

Boxes that may accumulate bat droppings will also need to be cleaned regularly by a licensed bat worker. It is important to remember that bat boxes must not be opened by anyone except a licensed bat worker (see ‘monitoring bat boxes’ below for more details on licences). In addition, nesting birds must not be disturbed so leave the area immediately upon finding an active nest in a box, and there is the potential for dormice to be found in some woodland boxes, in which case the box must only be checked by a licensed ecologist.

Types of bat boxes

Bat boxes come in many forms depending on their materials, function and location. Simple bat boxes are available commercially or can even be home-made. Bat boxes can be divided into the following categories: self-made external bat boxes, ready-made external bat boxes, integrated bat boxes and free standing bat boxes. Advanced forms of artificial roost creation include bat houses, bat barns and internal bat lofts (if you are interested in these please refer to the websites and publications listed at the end of this document).

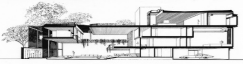
Self-made external bat boxes

Self-made wooden bat boxes are usually located on trees or the outside walls of buildings. These boxes are usually cubic or rectangular, with a grooved ‘bat ladder’ and a narrow entrance slit at the bottom. These will last for approximately ten years and can either be bought in kit form, or you can make your own from scratch (there are instructions for the ‘The Kent bat box’ pictured below in the Appendix at the end of this document – these boxes are also available commercially).

They come in a variety of shapes but key requirements are:



- While commercial wooden bat boxes may be made from a variety of materials, to make sure self-made bat boxes are suitable for bats we recommend the wood used should be rough sawn for grip and untreated.
- Bats do not like draughts; the entrance slit should be no more than 15-20mm wide and there should be no gaps where the sides and top join - the box should be well put together.
- A box that cannot be opened is best - it will lessen the chances of the bats being harmed through becoming trapped under the opened lid, or disturbed by people opening the top.
- To increase longevity of the box, use screws rather than nails.
- Any screws, hardware or staples used must be exterior grade (galvanized, coated, stainless, etc).



Ready-made external bat boxes

There are a number of ready made external bat boxes suitable for buildings and trees that can be purchased. These boxes can be made from wood, however there are an increasing number of more durable options, such as ecostyrocete (pictured right). These types of boxes can come in a range of finishes to blend into the buildings façade or indeed to highlight their presence!



©Liz Greenwood



Integrated bat boxes

Integral or integrated bat boxes can be built into the walls or masonry of houses and other buildings.. The boxes can be embedded such that they do not impair the air-tightness of the building.

Many designs are available including some that have bespoke coverings that can match the building façade and / or highlight the boxes presence. The same principles for size, location and access apply.

©Green&Blue

Ready-made free standing boxes

American style bat houses (larger, multi-chambered boxes) have been successfully used for bat conservation in North America and elsewhere. These large multi-chambered boxes are increasingly being used in the UK for sites where there are few suitable features (such as trees or buildings) for boxes to be attached to, as they can be put up on poles:

<http://www.batcon.org/files/RocketBoxPlans.pdf>



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The Roost Partnership scheme



The Roost Partnership is a unique conservation-lead built environment scheme involving BCT and bat box or access product manufacturers working together to provide bat conservation features that can be incorporated onto and into buildings and other structures that are designed with the latest best practice guidance and research in mind.

The Partnership doesn't endorse particular products but rather promotes the importance of our common goal of improving roosting opportunities for bats within our built environment. The Roost Partnership also acts as an information sharing hub used to gather feedback from industry professionals to constantly improve our understanding of bat roosting requirements. Details of companies and products within the Partnership scheme are found on the BCT website: <https://www.bats.org.uk/our-work/buildings-planning-and-development/roost-replacement-and-enhancement/partnerships>

Putting up bat boxes

Most bat species will use higher positioned boxes (around 4m up); assess the risk of working at height when undertaking the installation, then place the box as high as it is safe to do so. This will also help protect bats from vandalism and falling prey to cats. If working in the public realm, try to locate boxes so they are not above public walkways.

Ensure the boxes are appropriately fitted, to avoid the risk of them falling off. The boxes should be checked at least annually and after high winds to ensure they are still securely in place.



On buildings

Place the boxes high up by the eaves on a building, which can also help shelter the box from the weather. As detailed above, the aspect of the box should capture sun for part of the day if the intention is to attract maternity colonies.

Gazebos, garden walls and sheds have been suggested as sites for bat boxes. However, the main danger is that the boxes are not high enough above the ground, the structures may not be robust enough to support the box in high winds and the boxes are too visible to predators or vandals.

On trees

Consideration should be given to tree growth and boxes may need rehangng over time, regularly check boxes to assess this. Use headless or domed nails not fully hammered home to allow the tree growth, again regular checks will ensure that this allowance can be made while still being securely fitted. Iron nails can be used on trees with no commercial value. Copper nails can be used on conifers, but aluminium alloy nails are less likely to damage saws and chipping machinery.



Monitoring bat boxes

Making and putting up bat boxes is a great conservation action but what is even more useful is to know whether they are being used, when and by which species.

How long before bats will use the box?

Sometimes it can take several years for bats to find a new box. Be patient! Slow (or no) uptake may be due to the availability of other roosts locally. Sometimes, however, bats move in within months or even weeks!



How will I know if the box has been successful?

To check if the box is being used, look out for droppings and urine-staining on the vertical 'bat ladder' below the box and listen for 'chattering' during the day, especially during the summer months. You can also watch the box for an hour either side of sunset to observe any bats leaving to feed, or around dawn to see any bats returning to their roost. Bats may be observed by looking up into the box from below, however no light should be used as this may disturb any bats that are present.

Licensing and the law

You can undertake the non-invasive checks above without needing a licence. However, if the box needs to be opened to check it then there must be a suitably licensed bat worker present. Anyone wishing to undertake bat box checks should obtain training in bat handling and identification before applying for a licence. You can find out more about licensing and bats on the Bat Conservation Trust website at: www.bats.org.uk/pages/licensing.html



All bats and their roosts are protected by law and it is an offence to deliberately disturb, handle or kill bats. The relevant legislation in England & Wales is the Wildlife and Countryside Act 1981 and Conservation of Habitats & Species Regulations 2017. In Scotland it is the Conservation (Natural Habitats, etc.) Regulations 1994 and in Northern Ireland the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995.



Bats often use features such as hedgerows, tree lines and watercourses as commuting pathways between roosts and foraging areas. This type of habitat also provides shelter, allowing insects to gather and therefore supports foraging bats. The highest densities of bats occur where insects are most plentiful.

Make sure you maintain or create good foraging habitats for bats by planting a wide range of plants such as flowers that vary not only in colour and fragrance, but also in shape. See BCT's 'Encouraging Bats' leaflet for more information (www.bats.org.uk/publications).



Useful websites

Bat Conservation Trust

www.bats.org.uk

The Bat Conservation Trust (BCT) is working towards a world where bats and people thrive in harmony, to ensure they are around for future generations to enjoy. BCT is the only organisation solely devoted to bat conservation in the UK.

Bat Conservation International

www.batcon.org

Bat Conservation International's mission is to conserve the world's bats and their ecosystems to ensure a healthy planet. Based in Austin, Texas, BCI is devoted to conservation, education and research initiatives involving bats and the ecosystems they serve.

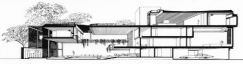
Vincent Wildlife Trust

www.vwt.org.uk

The Vincent Wildlife Trust (VWT) is an independent charitable body founded by Vincent Weir in 1975 and has been supporting wildlife conservation ever since. They conserve a range of endangered mammals through management of their own reserves, undertake pioneering research and provide expert advice to others through practical demonstration.

Publications

- Gunnell, K., Murphy, B. and Williams, C. (2013) *Designing for biodiversity: a technical guide for new and existing buildings* (2nd ed.)
- Gunnell, K., Grant, G. and Williams C. (2012) *Landscape and urban design for bats and biodiversity*
- Mitchell-Jones, A.J (2004) *Bat mitigation guidelines*
- Mitchell-Jones, A.J. and McLeish, A.P. (2004) *Bat workers' manual* (3rd edition)
- Tuttle, M.D., Kiser M. and Kiser S (2004) *The Bat House Builder's Handbook*



Design and measurements

Simple to construct, self-cleaning and low maintenance, the Kent bat box (designed by the Kent Bat Group) is a great way to encourage bats in your garden or your green space. The box should be rainproof and draught-free.

The only critical measurement is the width of the crevices: between 15-25mm. Other measurements are approximate. Timber should be approximately 20mm thick.

Measurements for one Kent bat box kit would be as follows:

Part	Quantity	Size (mm)
Roof (A)	1	x 160 x 20
Back (B)	1	x 200 x 20
Centre (C)	1	x 200 x 20
Front (D)	1	x 200 x 20
Centre Rails (E)	2	x 20 x 20
Front Rails (F)	2	x 15 x 15
Stand-offs (optional)	2	x 20 x 20

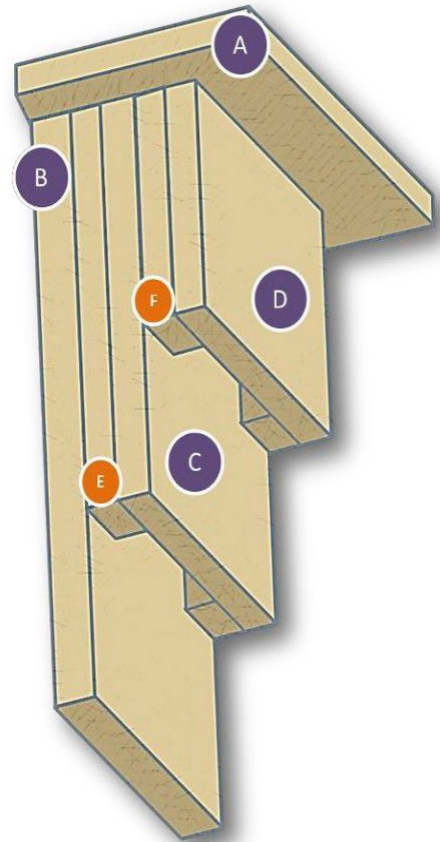
Material and Tools

This kit requires approximately 1.6m of rough wood and 25 screws (8 x 1 1/2 inches) to assemble. You can rough it up by scraping with a suitable tool – possibly a saw blade or even a screwdriver but make sure you use untreated wood as some preservative chemicals can kill bats.

Pre-drill the holes to prevent the wood splitting. Alternatively you can assemble your bat box kit with nails although they tend to be less robust than boxes made with screws.

The hanging screws may either be at the edges of the front panel or in the side centre block (not in the rails!). Fixing may be by use of brackets, durable nylon cord or wires.

When installing the box, assess the risks of working at height, use the appropriate fittings and assess where the box will be located, in relation to any public access. Regular checks should be made to ensure the box remains securely fitted, especially after high winds.



Photos and illustrations in this document by the Bat Conservation Trust unless otherwise stated.



Habitat Piles

In the UK, habitat piles are often used to support local wildlife populations, especially those that have been impacted by habitat loss and fragmentation. They are relatively easy to create and maintain and can



provide an important refuge for many different species. Habitat piles can be made from a variety of materials, including logs, branches, and even old pallets. When creating a habitat pile, it's important to use natural materials and avoid the use of treated or painted wood, which can be harmful to wildlife.

How to Create a Habitat Pile

Creating a habitat pile or woodpile in your garden can be a great way to provide a home for wildlife while also disposing of bulky cuttings. Not only can woodpiles provide shelter for a range of animals, but they can also support mosses, lichens, and fungi.

When creating a habitat pile, it's important to leave woody cuttings in piles within a shrub bed, avoiding cutting the wood into small pieces. It's best to leave the wood in direct contact with the ground, in dappled shade, and in compact piles to maintain humidity. Larger diameter pieces of wood are of most value, but even small twigs and branches should not be discounted, and neither should the cut stems of herbaceous plants.

You can add to your decaying wood by using wood from friends and neighbors or contacting a local tree surgeon. Avoid taking logs from woods and hedges as you will be removing the resource from its natural environment, along with any associated flora or fauna.

Logs at least 100mm thick with the bark still attached provide the best wood. Hardwood trees such as ash, oak, and beech are particularly good, while freshly cut willow and poplar logs should be avoided as they can easily re-sprout if left lying on the ground.

To create a standing dead wood, logs can be partially buried vertically in the



ground to an approximate depth of 450 to 500mm, using logs of different diameters and length and burying them side-by-side to form a pyramid. A single log either buried in the soil or on top can also be of value if space is a limitation.

Climbers can be allowed to ramble over woodpiles, logs, and stumps to help cover them and retain moisture, but the shade may make it too cold for some insects. Alternatively, an old bucket with drainage holes and holes in the side filled with garden soil and top with coarse hardwood chips can be buried in a discrete corner of the garden.

Overall, creating a habitat pile in your garden can be an easy and effective way to provide a home for wildlife and support biodiversity in your local area.

Where to Construct a Habitat pile?

Piles and logs can go in areas with different sun exposure or vegetation types.

In areas with little rain and hot summers, wildlife will benefit from habitat piles and constructed logs in shade.

In cooler areas, a habitat pile or constructed log on the edge of a clearing or anywhere with partial sun is beneficial.



Habitat Pile Wildlife

Habitat piles or log piles in the UK can provide a range of habitats for different types of wildlife. Some of the animals that may live in a habitat pile include:

Insects: Habitat piles can provide an ideal habitat for insects such as beetles, spiders, centipedes, and woodlice. These insects play an important role in decomposing the wood and other organic material, helping to create a nutrient-rich soil.

Amphibians: Habitat piles can provide shelter and moisture for amphibians such as toads, newts, and frogs. These animals may use the pile for hibernation or as a place to lay their eggs.

Reptiles: Some reptiles such as slow worms, lizards, and snakes may also use habitat piles for shelter.



Small mammals: Habitat piles can provide shelter for small mammals such as mice, shrews, and hedgehogs.

Birds: Habitat piles may attract birds such as robins, wrens, and thrushes, which may use the pile for shelter or as a source of food.

Overall, a habitat pile can provide a valuable habitat for a range of wildlife in the UK, helping to support biodiversity in your local area.

Types of Habitat Piles

There are several different types of habitat piles that can be created in the UK, each of which provides a different type of habitat for wildlife. Here are a few examples:



Log pile - This is one of the most common types of habitat piles and involves stacking logs on top of each other to create a tall pile. Log piles are great for insects and small mammals, as they provide shelter and a place to hide from predators.



Brush pile - A brush pile is created by stacking branches, twigs, and other woody debris on top of each other. Brush piles are great for birds, as they provide nesting material and shelter.



Rock pile - A rock pile is created by stacking rocks on top of each other to create a pile. Rock piles are great for reptiles and amphibians, as they provide a place to bask in the sun and hide from predators.



A hibernaculum - is a habitat pile that is specifically designed for hibernating animals, such as hedgehogs and reptiles. Hibernacula are often made from logs and soil and are dug into the ground to provide a cool, dark, and damp environment.

Stump pile - A stump pile is created by stacking tree stumps on top of each other. Stump piles are great for insects, fungi, and small mammals, as they provide a place to hide and decompose.