



Biodiversity Enhancement Measures Report

**Birthwaite Business Park, Barnsley,
South Yorkshire,
S75 5JR**

October 2023

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A report for

The Masonite Group



MASONITE.

A report by



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1. INTRODUCTION

1.1 REASON FOR REPORT

PENNINE ecological have been commissioned by The Masonsite Group to undertake a Biodiversity Enhancement Measures Report (BEMR) for Birthwaite Business Park, Barnsley, South Yorkshire, S75 5JR. The site will be developed with two new warehouses, 115 car parking spaces, and a 44,500 square foot lorry park. The BEMR follows the submission of a Preliminary Ecological Appraisal report to the client in September 2023 (PENNINE ecological, 2023).

The recommendations included within this report attempt to reduce the impacts of the habitat losses caused as a result of the development. The recommendations include the general landscape plans for the scheme which include the implementation of new hedgerows, grasslands, areas of scrub, woodland planting etc. as well as targeting species e.g., erection of bat boxes, bird nest boxes, and the creation of an amphibian hibernacula amongst others. The report should be read in conjunction with the Landscape Illustrative Masterplan drawn by Areas Landscape Architects.

1.2 SITE LOCATION

The site is located approximately 5.5km north west of the centre of Barnsley. The towns of Kexborough, Darton and Mapplewell are all within 2km of the site, to the south and east respectively. The site is immediately adjacent to and west of the M1 motorway and is located to the north of the A637 Huddersfield Road.

The central Ordnance Survey National Grid Reference for the site is SE 30424 10363.

2. BIODIVERSITY ENHANCEMENT RECOMMENDATIONS

The following outlines the habitat creation and targeted species enhancements which will be implemented following the construction of the scheme. An annotated figure provided in Appendix A illustrates the indicative locations of species specific enhancements e.g., bird boxes and the following should be read in conjunction with the Landscape Illustrative Masterplan produced by Ares Landscape Architects.

2.1 HABITAT CREATION

The following habitats/measures are to be created on site as part of the scheme and each should aim to benefit the biodiversity within the site.

- Grasslands
- Mixed scrub / Woodland enhancement
- Shrub planting
- Pond
- Green roof
- Tree planting

(a) Grasslands

There are to be numerous grassland habitats throughout the site accounting for a total area of approximately 4,700 square meters. As is included within the scheme's planting schedule, a mix from Emorsgate Seeds will be used; EM2F Standard General Purpose Wild Flowers Mix (see list below which details the plant species). If managed sympathetically i.e., avoiding excessive mowing, avoiding the use of fertilisers, removing cuttings etc. the grasslands should develop into an important resource for insects, birds and potentially foraging bats amongst others.

- | | |
|--------------------|-------------------------------|
| • Yarrow | • Salad Burnet |
| • Agrimony | • Cowslip |
| • Common Knapweed | • Meadow Buttercup |
| • Wild Carrot | • Red Campion |
| • Common Sorrel | • Yellow Rattle |
| • Lady's Bedstraw | • Common bent |
| • Field Scabious | • Crested dogstail |
| • Oxeye Daisy | • Red fescue |
| • Musk Mallow | • Smaller cat'-tail |
| • Ribwort Plantain | • Smooth-stalked meadow grass |

(b) Mixed Scrub / Woodland Enhancement

Approximately 9,170 square metres of the woodland along the southern boundary of the site is to be retained as part of the development. It dominates the southern section of the site both to the east and west of the site entrance. These woodlands are to be enhanced with the species and percentage mixes listed below. At present the woodland lacks an understorey and with the addition of the following species the woodland should become more diverse which is likely to benefit numerous species of fauna including insects and birds.

- Field maple: 20%
- Hazel: 25%
- Hawthorn: 30%
- English walnut: 5%
- Rowan: 20%

Additionally, the following woodland meadow mix will also be planted to enhance the woodland habitat along the southern boundary of the site.

- | | |
|----------------------------|---------------------|
| • Woodland Meadow Planting | • Wood avens |
| • Garlic mustard | • Bluebell |
| • Cow parsley | • Red campion |
| • Grey sedge | • Ragged robin |
| • Pendulous sedge | • Common bent |
| • Rough chervil | • Sweet vernal |
| • Foxglove | • False brome |
| • Meadowsweet | • Tufted hair-grass |
| • Hedge bedstraw | • Red fescue |
| • Hedge crane's-bill | • Wood meadow grass |

(c) Shrub planting

Although predominantly introduced, non-native species the proposed shrub beds will be planted within the site predominantly surrounding car parks and amenity grassland areas. The total area of shrub planting is approximately 1,327 square meters. These are likely to be of limited ecological value when compared to other habitats to be created on site. However, it is likely to be serve as some value to invertebrates.

(d) Pond

An attenuation pond with a maximum area of 453 square meters is to be constructed in the southeastern corner of the site. The ponds margins are to be planted using the Emorsgate Meadow Mixture for Wetlands which includes the species listed below. The pond will be an important habitat within the site and will likely support an array of wildlife serving as an important resource for amphibians, invertebrates and mammals e.g., foraging bats.

- Yarrow
- Agrimony
- Common knapweed
- Meadowsweet
- Lady's bedstraw
- Water avens
- Meadow vetchling
- Rough hawkbit
- Oxeye daisy
- Birdsfoot trefoil
- Greater birdsfoot trefoil
- Ribwort plantain
- Cowslip
- Selfheal
- Meadow buttercup
- Yellow Rattle
- Common sorrel
- Greater burnet
- Ragged robin
- Devil's-bit scabious
- Tufted vetch
- Common bent
- Sweet-vernal grass
- Grey sedge
- Crested dogstail
- Tufted hair grass
- Red fescue
- Meadow barley
- Rough-stalked meadow grass
- Tall fescue.

(e) Green roof

A green roof measuring approximately 285 square meters is to be implemented in a section of one of the warehouses to be built. However, the final species mix and location of it is yet to be finalised at the time of writing. The green roof is likely to support numerous invertebrate species, birds and potentially foraging bats.

(f) Tree planting

A total of 52 trees will be planted across the site and include the species listed below. Tree planting will attract invertebrates upon which birds and bats will feed. Furthermore, as trees develop they could potentially provide nesting habitats for birds.

- Downy birch
- Field maple
- European hornbeam
- English walnut
- Eastern black walnut
- Bird cherry
- Holm oak
- Small leaved lime and
- Large leaved lime.

2.2 HEDGEROW PLANTING

The site in its current state does not comprise any hedgerows. However, following the completion of the scheme approximately 635m of native, species-rich hedgerows are to be planted. These will

be managed to a height of approximately 1.5m. The hedgerows are scattered throughout the site notably in the southeastern corner adjacent to a pond, and also bordering an area of amenity grassland and a car park.

The hedgerow adjacent to the pond is likely to be an important resource for an array species that will colonise and begin to use the site following construction. Given the hedgerows close proximity to the pond, it will likely serve as good terrestrial habitat for amphibians which over time will colonise and begin to use the pond for breeding. Furthermore, the hedgerow will help direct any amphibians away from the car parking area to the north towards the woodland and scrub habitat to the east and west of the pond.

The species to be planted and percentage compositions of the hedgerows to be planted on site are as follows:

- | | |
|-------------------|------------------|
| • Hawthorn: 30% | • Privet: 10% |
| • Field maple: 5% | • Dogwood: 5% |
| • Hazel: 10% | • Blackthorn: 5% |
| • Holly: 20% | • Rowan: 5% |
| • Cherry plum: 5% | • Holly: 10% |
| • Crab apple: 10% | • Spindle: 5% |

There are also areas to be planted with shrubs which will comprise species that are likely to serve as food plants for numerous invertebrates.

2.3 BATS

The proposals should consider good working practice and enhancements for bats to demonstrate a biodiversity net gain for this site, in accordance with local and national planning policy. A number of potential enhancement measures are provided below.

2.3.1 Habitat Management for Bats

Following the bat transect and static detector surveys undertaken by Quants Environmental in 2021 six species of bat were recorded. The species recorded are listed below.

- Common pipistrelle bat
- Soprano pipistrelle bat
- Brown long-eared bat
- Noctule bat
- Leisler's bat and
- *Myotis* bat species.

Overall, Quants environmental described 'low levels' of bat activity and identified the woodland along the southern and western boundaries of the site as the locations where most bat activity was recorded (these habitats are to broadly remain as part of the development). Additionally, a higher

number of bats were recorded in locations that weren't subject to artificial lighting e.g., existing lorry park.

The most commonly occurring bat species recorded during the surveys were common pipistrelle with approximately 80% of the total numbers of bat calls recorded.

The following outlines general recommendations on how best to manage the habitats to be created on site which will be of benefit to the bat species listed above. The information is taken from Entwistle, A. (2001) *Habitat Management for Bats: A Guide for Land Managers, Land Owners and Their Advisors*. Joint Nature Conservation Committee. Peterborough

(a) Common Pipistrelle and Soprano Pipistrelle Bats

Key feeding habitats include bankside habitats (particularly lakes, wide rivers and large ponds), parks, broadleaved woodland, hedges, tree lines, and beneath white lighting. Pipistrelles eat mainly flies, often those associated with freshwater habitats and are generally associated with semi-open vegetation found at the boundary between different habitats. Tree lines and bankside vegetation are used as flight paths, although these species will also cross open areas.

Habitat management should aim to maintain freshwater habitats that favour high densities of aquatic insects. Maintain bankside trees and other vegetation as flight routes and feeding grounds. Manage woodland edges and hedgerows appropriately.

(b) Brown Long-eared Bat

Brown long-eared bats feed by taking insects, generally moths, directly from foliage or other surfaces. Their favoured foraging ground is deciduous woodland within 1-2 km of roost sites. Other feeding areas include coniferous woodland, wet woodland, small groups of trees, woodland edge, garden shrubs, bankside vegetation and parkland with scattered trees. Brown long-eared bats rarely cross open areas and follow hedgerows, tree lines and grassy banks when moving between roosts and foraging sites. Loss of such features may isolate feeding grounds from roost sites, making them unusable.

Management should aim to protect broadleaved woodland, trees and woodland edge. Manage to favour moth populations. Maintain linear features such as hedges and tree lines, especially close to roost sites. Prioritise management of woodland, woodland edge and hedgerows within 1 km of roosts (no brown long-eared roosts were included within the desk study data obtained by Quants Environmental).

(c) Noctule Bat

Noctule bats were recorded passing high over the site in 'relatively low numbers'. The noctule is a fast flying species which eats flies, beetles and moths. Noctules forage over open areas such as open water and wetlands, often at considerable distances – up to 26 km – from their roosts. Other feeding

areas include improved cattle pasture, open parts of woodland, woodland edges, parks and open farmland near lakes. Noctules also feed by white street lamps in villages and on the outskirts of towns.

Habitat recommendations include the following: conserve freshwater habitats and maintain water quality, avoid felling mature trees, leave dead wood standing to attract woodpeckers and maintain open areas in woodlands.

(d) Leisler's Bat

As for Noctule Quants recorded Leisler's passing high over the site in 'relatively low numbers'. bats generally forage over open environments catching flies and beetles. This species uses a wide range of habitats: rivers, lakes, ponds, coastal marshes, beaches, pasture, meadow, hedgerows and woodland clearings, over woodland canopies and along woodland edges. Leisler's bats also forage around white lighting in rural and urban areas. Management recommendations should include the following for the site; minimise use of pesticides, maintain open freshwater habitats and water quality, avoid felling mature trees as these offer roosting opportunities.

(e) *Myotis* species

In Quant Environmental bat transect survey report only the genus i.e., *Myotis* were referred to and the species weren't separated. However, it is likely the species recorded are Natterer's, Whiskered/Brandt's and Daubenton's bats. The numbers of *Myotis* bats recorded according to Quants were very low (Quants Environmental, 2021).

Habitat management recommendations which are likely to be favourable to the *Myotis* species referred to above include the follow: maintain the pond, conserve freshwater insects by maintaining aquatic plants, protect trees, hedges and bankside vegetation and manage sensitively, retain woodland, particularly wet woodland and broadleaved woodland near water, maintain any damp areas around the pond.

2.3.2 Bat Boxes

Bat boxes should be erected within the site particularly within and on the edge of the woodland in the southern section of the site (refer to Figure 1). Fourteen bat boxes of the following types should be erected.

- Six Schwegler 2F bat boxes – general purpose bat box for numerous species.
- Five Schwegler 2FN bat boxes – noctule bats have been known to use this design of bat box.
- Two Schwegler 1FF bat boxes – box for numerous species including pipistrelle species and noctule bats that can be used as a summer or nursery site.
- One Large Multi Chamber Woodstone Bat Box – box can be used as a summer roost, maternity roost or hibernation box during mild winters and is suitable for numerous species including noctule, natterer's, pipistrelle species and brown long-eared bats.

The following are recommendations for the erection of bats boxes.

- Boxes should be erected facing in different directions on sunny aspects to provide a range of warm conditions.
- Boxes should be put as high as possible (at least 4m off the ground) to try and avoid predation from cats on the ground or nearby structures.
- As bats use dark tree lines or hedgerows for navigation, putting boxes near these features could help bats find the box.
- Boxes should be erected away from artificial light sources (to protect them from predation).
- Boxes should be sheltered from strong winds and exposed to the sun for part of the day (usually south, south-east or south-west).

2.3.3 External Lighting with Consideration to Bats

In all cases illumination of the site should be avoided/kept to a minimum. Where lighting is required, this must be low level, low intensity and directed downwards away from boundaries. The following principles will apply.

- Where and if lighting is required, this will be directed internally within the site avoiding any light spillage.
- The use of low powered sodium lights or similar will be used and these will be fitted with cowls / covers that prevent lateral light spillage towards boundary habitats.
- Wherever possible and only if required low level (1-1.5m high) bollard lighting will be used.
- If required, lights will be fitted with timer controls that minimise the duration of lighting.

Lighting requirements will follow guidance provided by the Bat Conservation Trust; links are provided below.

- Bat Conservation Trust's Artificial Lighting Guidance. Webpage link <https://www.bats.org.uk/our-work/buildings-planning-and-development/lighting>
- Bat Conservation Trust and Institute of Lighting Professionals Guidance Note 08/23: Bats and Artificial Lighting in the UK. Webpage link <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/>

2.4 BIRDS

As for bats, the proposals may consider improving nesting opportunities for birds on site by erecting nesting boxes on the properties and/or existing trees. Numerous boxes are widely available for a variety of species, examples of boxes include the following. Photographs of suggested boxes and general information taken from the Natural History Book Service (NHBS) website where many of the nest boxes can be purchased from (<https://www.nhbs.com/>).

Locations of all nest boxes are included in Figure 1, Appendix A.

(a) Tawny Owl

Whilst tawny owl have not been recorded using the site during the surveys undertaken by Quants Environmental or PENNINE ecological or in the desk study data obtained by the former, it is likely given the extensive woodland within and beyond 1km of the site's red line boundary that the species is present within the locality. Therefore, it is recommended that a single tawny owl nest box (Figure 1) be erected within the woodland along the southern extent of the site. The box should be erected on the underside of a branch at an angle of 45°, with ratchet straps used to secure the box to the branch. The box should be erected at least three meters off the ground and the open side of the box facing away from the prevailing wind which is generally considered to originate from a south westerly direction.



Figure 1 - Example of tawny owl nest box.

(b) House Sparrow

Five chambered house sparrow boxes (Figure 2) should be erected on the warehouses following their completion (see Figure 1, Appendix A for their suggested locations). Sparrows are social birds and like to nest in groups. Made of Schwegler's wood-concrete mix, this nest box is durable, breathable and long-lasting. It may also occasionally attract other species of birds.

The terrace can be fixed on to the surface of a suitable wall or incorporated into the wall. Ideally place the terrace 2m or more above the ground. Either install on the surface of the wall using the plugs and screws provided, or install directly into the wall. Cleaning is advisable but not necessary, and the front panel can be removed by turning the screw hook.

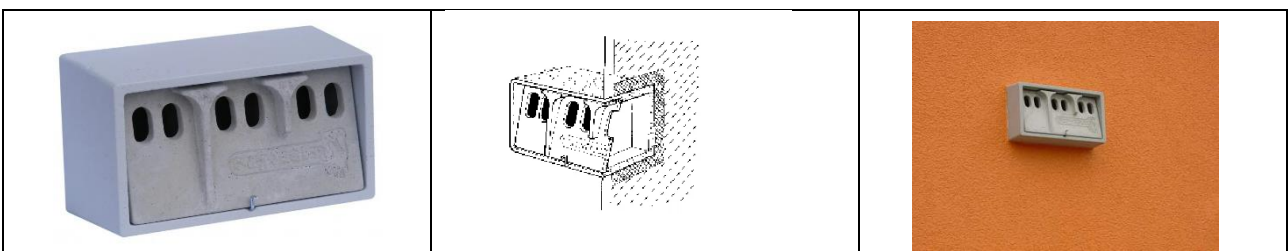


Figure 2: House sparrow nest box.

(c) General Bird Nest Boxes

There are numerous bird nest boxes available which can be erected on existing trees/planted trees throughout the site. Examples of such are include below in Figure 3. These nest boxes will attract numerous commonly occurring birds such as tits, wrens, robins, and finches.

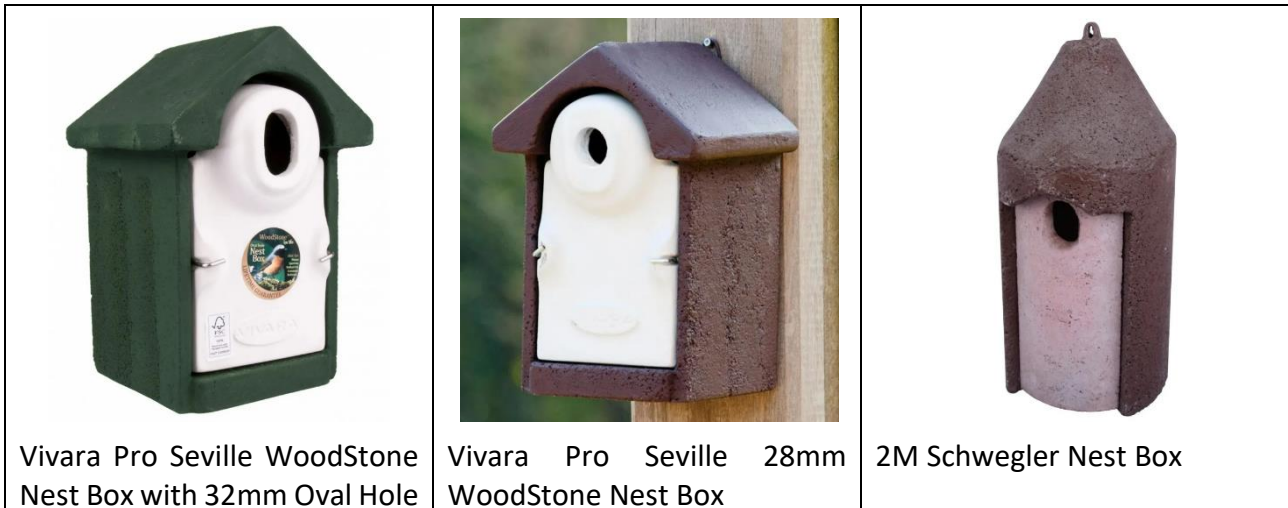


Figure 3 - Suggestions of general nest boxes for numerous species of birds.

(d) Treecreeper Nest Box

Two treecreeper nest boxes (Figure 4) should be erected in the two sections of woodland to the east and west of the site's driveway. Boxes should be hung at a height of 2-3 metres on trees with coarse bark, and in a location that is sheltered from the prevailing wind and is not easily accessed by potential predators.



Figure 4 - Treecreeper nest box.

(e) Woodpecker Nest Box

A single woodpecker nest box (Figure 5) should be erected in the section of woodland to the east of the site's driveway. It should be situated at a height of between 2 to 3 meters and it should face away from the prevailing wind.



Figure 5 - Woodpecker nest box.

2.5 MAMMALS

(a) Hedgehog Nest Boxes

Hedgehog nest boxes can be easily situated within a site to provide shelter for hedgehogs. The nest boxes should be located to the north of the woodland in the southeastern section of the site, and in close proximity to the pond. This location is likely to support invertebrates e.g., slugs that hedgehogs will feed upon. The boxes should point away from the prevailing wind.



Figure 6 – Hedgehog nest boxes.

2.6 AMPHIBIANS

To the south of the pond it is recommended an amphibian hibernaculum is built to provide cover for amphibians during the winter. The example provided below in Figure 6 is taken from the Great Crested Newt Mitigation Guidelines, however it will support all species of amphibians as well as other invertebrates such as bees.

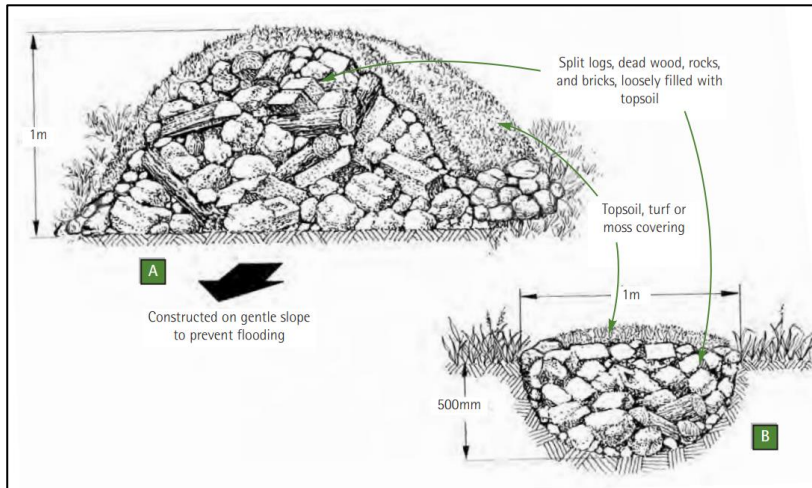


Figure 6 - Great crested newt hibernaculum which will also be suitable for other amphibian species (take from English Nature (2001). Great Crested Newt Mitigation Guidelines. English Nature, Peterborough)

Appendix A – Biodiversity Enhancements Plan

Figure 1 - Biodiversity Enhancements Plan

