BIODIVERSITY ENHANCEMENT SCHEME REPORT

RIVERSIDE MILL, GEORGE STREET, GLOSSOP

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1.0 INTRODUCTION

1.1 Introduction

AC Ecology Services has been commissioned to produce a Biodiversity Enhancement Scheme in pursuance of condition 20 of the planning for Riverside Mill, Glossop; hereafter referred to as the site.

The planning condition this report discharges is as follows:

Condition 20

No development (excluding demolition/site clearance) shall commence until a biodiversity enhancement scheme, including a timetable for implementation, has been submitted to the Local Planning Authority. The scheme shall be implemented in accordance with the approved details and maintained thereafter.

1.2 Objectives

The purpose of the Biodiversity Enhancement Scheme is to:

- Verify the ecological baseline features of interest;
- Identify ecological mitigation requirements; and,
- Identify management and enhancement requirements relevant to the application area.

This Biodiversity Enhancement Scheme sets out the key ecological considerations relevant to the development proposals, the biodiversity management principles for new habitat creation areas and the enhancements that are likely to be achieved through such management.

1.3 Site Description

The site previously comprised a disused mill building which has recently been demolished for development purposes. A residential and commercial area is located to the north of the site and Glossop Brook is situated adjacent to the south of the site and flows downstream from east to west. A public footpath runs from George Street between the site and a car park and crosses the brook via a footbridge. Please refer to Figure 1.1 below for the site location plan.

Figure 1.1 Site Location Plan

2.0 ECOLOGICAL FEATURES OF INTEREST

2.1 Previous Studies

In April 2015, the baseline ecology of the site was assessed by AC Ecology Services during the Extended Phase 1 Habitat Survey. The majority of the site was occupied by buildings, hardstanding and small areas of scattered scrub which were unsuitable for nesting birds due to their size. Glossop Brook was located to the south of the site and areas of amenity grassland and bare ground, together with scattered mature trees and broad-leaved plantation woodland which were present to the south of the brook, approximately 10-20m to the south east and south west of the site. Scattered mature trees were also located on the edge of the car park approximately 10m to the west of the site.

The site was also assessed for bats and birds by Martin Prescott Environmental Services in April and June 2015. The assessments included a daytime building inspection, as well as dusk and dawn bat surveys. It was concluded that the site and surrounding area offered moderate quality bat foraging habitat and the buildings offered moderate to high bat roosting potential, however no roosting bats were identified during the surveys. The buildings offered potential for nesting birds and the surrounding area, such as the mature trees and woodland could provide good bird foraging and nesting habitat, especially Glossop Brook which could provide foraging opportunities for kingfishers and dippers.

3.0 BIODIVERSITY ENHANCEMENT

The key biodiversity enhancements anticipated at the site for habitats and species are set out below.

3.1 Habitat Enhancements

It is recommended to improve the ecological value of the site by implementing a range of biodiversity enhancements which are summarised below as summarised below:

Tree and Shrub Planting

Tree and shrub planting within the amenity grounds of the new development is recommended as part of the landscaping plan. Tree and shrub species should ideally be comprised of native species such as dogwood (*Cornus sanguinea*), hazel (*Corylus avellana*), rowan (*Sorbus aucuparia*) and wild cherry (*Prunus avium*) which are considered appropriate for this development as they have both aesthetic and nature conservation qualities. Shrubs which provide good foraging opportunities for bats by attracting a wide range of insects include butterfly bush (*Buddleia davidii*), honeysuckle (*Lonicera*), lavender (*Lavendula sp.*) and jasmine (*Jasminum sp.*).

Landscaping Areas

A garden is proposed within the north-eastern area of the site. It is recommended that an amenity grassland seed mix which contains a mixture of wear tolerant native species, such as the Emorsgate Eg22 Mix is used. Any ornamental species proposed should be of native origin and locally sourced. Of most benefit to wildlife are fruiting and flowering species which will increase the sites value for birds, bats and invertebrates.

3.2 Species Enhancements

The proposed habitat and landscape features would provide enhancements for the species groups as set out below (with relevant legislation presented in Appendix 1).

Birds

The proposed development will result in a small decrease in nesting bird habitat by the removal of original buildings and scrub on the site. The impacts of this will be mitigated by the installation of a range of bird boxes throughout the development and within the surrounding area, which should be sited prior to the occupancy of the dwellings. It is proposed that 6 bird boxes are installed on the western and eastern walls of the new building, as well as on mature trees adjacent to the site (please refer to Appendix 2 for their locations). The recommended bird boxes are detailed in Table 3.1 below.

Table 3.1 Bird Box Specifications

Bird Box Specifications	Photograph
Traditional Wooden Bird Nest Box (25mm and 32mm) Material: FSC certified European redwood The 25mm entrance hole is suitable for the smaller tit species such as blue and coal tits whilst the 32mm entrance hole will attract a wide range of garden birds including great tits, house sparrows and nuthatches. Nest boxes also provide vital roosting spaces for birds during the cold winter months and the thick walls of these nest boxes will ensure that roosting birds stay warm. The boxes can be expected to last 5-10 years and are constructed using stainless steel staples which will not rust. These boxes can be installed on a tree or wall and should be placed two to four metres above ground. There should be a clear flight path to the entrance hole and the boxes should be placed so that the entrance is not exposed to strong sunlight or winds. Source: http://www.nhbs.com/title/181549/traditional-wooden-bird-nest-box	
Traditional Open Fronted Wooden Bird Nest Box Material: FSC certified European redwood This Traditional Open Fronted Wooden Nest Box has been designed to cater for open nesting species such as robins and is best placed in cover such as ivy, hedgerow areas or other climbing plants so that the nest entrance is secluded and hidden from predators. Nest boxes also provide vital roosting spaces for birds during the cold winter months and the thick walls of these nest boxes will ensure that roosting birds stay warm. The boxes can be expected to last 5-10 years and are constructed using stainless steel staples which will not rust. This nest box can be installed on a tree or wall and should be placed two to four metres above ground in cover. The box should be placed so that the entrance is not exposed to strong sunlight or winds. Source: http://www.nhbs.com/title/202241/traditional-open-fronted-wooden-bird-nest-box	

WoodStone Swift Nest Box Material: FSC certified WoodStone The FSC certified WoodStone Swift Nest Box is constructed entirely out of WoodStone meaning it is long lasting and won't rot away like a traditional wooden nest box. Swift numbers are declining, in part because of the loss of nesting sites. Installing a swift box is a great way to help these birds and to ensure their continued presence in our surroundings. There is an opening at the back of the box for easy cleaning with the nest entrance on the underside of the box. This type of entrance is preferred by swifts but discourages house sparrows and starlings from occupying the box. This box should be installed at least five metres above the ground, ensuring that there is unobstructed access for birds entering and leaving. If possible, boxes should be sited under the shelter of eaves or overhanging roofs. Source: http://www.nhbs.com/title/200401/woodstone-swift-nest-box	
1SP Schwegler Sparrow Terrace Material: FSC certified WoodStone The Sparrow Terrace has been designed to help redress the balance of falling house sparrow numbers. The current UK population of 6 million pairs is half what it was in 1980 and this is thought to be due to habitat destruction and lack of suitable nesting spaces. Sparrows are social birds and like to nest in company. This terrace provides ideal nesting opportunities for three families. Made of Schwegler's revolutionary wood-concrete mix, this terrace is durable, breathable and will last many decades. It may also occasionally attract tits, redstarts and spotted flycatchers. The terrace can be fixed on to the surface of a suitable wall or incorporated into the wall. It is suitable for all types of houses in built-up areas, and on industrial and agricultural buildings such as barns, sheds and factories. Due to its weight (15kg), it is not suitable for fences or garden sheds. Ideally place the terrace two metres 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 (see the images tab for illustrations). Cleaning is advisable but not necessary. The front panel can be removed by turning the screw hook. Source: http://www.nhbs.com/title/174850/1sp-schwegler-sparrow-terrace	

Bats

The development provides the opportunity to further increase the number of roosting opportunities on site for bats. It is recommended that multipurpose bat boxes are to be installed on trees adjacent to the brook to target a range of bat species. It is proposed that 3 bat boxes are installed on the mature trees along the brook (please refer to Appendix 2 for their locations) and they should be sited prior to the occupancy of the dwellings. The recommended bat boxes are detailed in Table 3.2 below.

Table 3.2 Bat Box Specifications

Bat Box Specifications	Photograph
1FF Schwegler Bat Boxes With Built-in Wooden Rear Panel Material: Schwegler Woodcrete The Schwegler 1FF bat box is spacious enough for bats to use as a summer roost or nursery sites and is open at the bottom, allowing droppings to fall out so it does not need cleaning. The 1FF is manufactured from long-lasting Woodcrete, which is a blend of wood, concrete and clay which will not rot, leak, crack or warp, and will last for at least 20 - 25 years. Source: http://www.nhbs.com/title/158636/1ff-schwegler-bat-box-with-built-in-wooden-rear-panel	

Improved Cavity Bat Box This Improved Cavity Bat Box has the following features: * FSC Certified. * Suitable for the British cavity-dwelling bats - including the Brown Long-Eared, Daubenton's, Natterer's, Bechstein's, Grey Long-Eared, Whiskered, Brandt's and Nathusius' Pipistrelle bats. These species together make up about 20% of UK bats. * External panels precision cut from 12mm Exterior Grade FSC plywood, for improved heat insulation. * Exterior surface stained black with water based woodstain for improved thermal input, whilst avoiding any possibility of deterring the bats due to vapour from the stain. * Overhanging apex roof for protection from UK weather. * Single large cavity inside, with varying temperature characteristics. * Wide entrance with accurately sized opening. Ideal for cavity dwelling bats and deters unwelcome birds etc. * Internal ceramic heat sink ensures improved temperature stability. * Improved "Bat Ladder" at base of box facilitates bats landing and climbing into box. * Ladder continues inside box, while textured internal surfaces ensure bats find it easy to move around inside box and on the walls. * Ladder acts as "convector heater" for box - when sun shines on ladder, warm air rises into the box, but does not come out when the outside cools. * Easy and safe to erect box on walls or trees - relatively light weight, with 1 keyhole mounting hole and 2 extra screw holes for secure fixing. * Floor slides out (after removing 1 screw) for cleaning or inspection where permitted. * Improved draught-proofing enhances temperature stability inside box. * Improved aesthetics - looks good to humans as well as bats. Suits any building or tree. Source: http://www.nhbs.com/title/176912/improved-cavity-bat-box	

The proposed lighting scheme for the site will need to consider the locations of the bat boxes. The use of artificial lighting should aim to follow the protocols outlined in the Institute for Lighting Engineers document “Guidance for the Reduction of Obtrusive Lighting” (2005) and BCT’s “Artificial

Lighting and Wildlife Interim Guidance: Recommendations to Help Minimise the Impact of Artificial Lighting" (2014) to minimise disturbance and sky-glow across the site and particularly towards the boundary features.

4.0 ECOLOGICAL MONITORING

In order to monitor the success of the consented mitigation and enhancement measures detailed in this plan, post-construction monitoring will be undertaken for a period of 10 years post development. Please see Table 4.1 below for a proposed monitoring schedule.

Bird Boxes

Nest features are to be checked annually between November and February inclusive and any repairs or modifications undertaken. There are no legal issues associated with the installation of bird boxes. When the nest box is occupied, all wild birds, their nests and eggs, are protected by law. Under the terms of the Wildlife and Countryside Act 198, it is illegal to intentionally take, damage or destroy the nest of any wild bird whilst it is in use or being built. Under the terms of the Wildlife and Countryside Act 1981, if un-hatched eggs are found in the box, they can only legally be removed from October to January inclusive. The eggs must be destroyed, as it is illegal to keep them.

Bat Boxes

Bat boxes are to be checked annually in October by a licensed bat worker and any repairs or modifications undertaken. There are no legal issues associated with the installation of bat boxes. However, once occupied, it is illegal to disturb any bat when it is roosting, or to kill, injure or handle a bat without a licence under the Habitats Regulations 2010 (as amended). If a sick or injured bat is found, the local Wildlife Trust or bat group should be contacted for further advice. If maintenance of the bat boxes is required a licensed bat worker or local bat group should be consulted.

Table 4.1 Ecological Monitoring Schedule

Ecological Feature	Indicator	Assessment	Remedial Works	Timescale	Target
Breeding Birds	Nesting evidence	Check occupancy of nest boxes	Replace damaged or missing boxes. Relocate boxes if no nesting activity within 4 years.	Annually for 10 years (Nov-Feb)	To provide additional nesting opportunities for bird species on site. At least half of installed nest boxes in use.
Bats	Presence	Inspect bat boxes	Replace damaged or missing boxes. Relocate boxes if no roosting	Annually for 10 years (Oct)	To provide roosting opportunities for bats. Bats roost in at

			activity within 4 years.		least 1 box.
	Diversity of bat species	Inspect bat boxes	Replace damaged or missing boxes. Relocate boxes if no roosting activity within 4 years. Identify species minimal disturbance e.g. use droppings for eDNA.	Annually for 10 years (Oct)	To increase bat diversity on site. 2 species using boxes.

5.0 CONCLUSIONS

This Biodiversity Enhancement Scheme describes the current baseline conditions and sets out the proposed biodiversity enhancement for the proposed scheme.

The site currently has low ecological value, though it is anticipated that post development, with the inclusion of the above measures, the sites value for wildlife will be increased.

Long-term monitoring has also been proposed to ensure biodiversity enhancement is achieved post development.

6.0 REFERENCES

- Bat Conservation Trust (2014). Artificial Lighting and Wildlife Interim Guidance: Recommendations to Help Minimise the Impact of Artificial Lighting.

- Collins J (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd edition. Bat Conservation Trust.

- Institute of Environmental Assessment (1995). Guidelines for Baseline Ecological Assessment.

- Institute of Lighting Engineers (2005). Guidance Notes for the Reduction of Obtrusive Light.

- JNCC (1990). Handbook for Phase 1 habitat survey: A technique for environmental audit. English Field Unit, Nature Conservancy Council.

- JNCC (2004). The Bat Workers Manual. 3rd Edition.

- Lawton, J.H. *et al*. (2010). Making Space for Nature: a review of England's wildlife sites and ecological network. Report to Defra.

- Mitchell-Jones A, J, (2004). Bat Mitigation Guidelines, English Nature, Peterborough.

- Stace. C. A. (2011). '*New Flora of the British Isles'*. Third Edition. Cambridge University Press.

APPENDICES

APPENDIX 1 – PROTECTED SPECIES LEGISLATION

Breeding Birds

Under the Wildlife & Countryside Act 1981 (as amended), a wild bird is defined as any bird of a species that is resident in or is a visitor to the European Territory of any member state in a wild state. Game birds, however, are not included in this definition (except for limited parts of the Act). They are covered by the Games Acts, which fully protect them during the closed season.

All birds, their nests and eggs are protected by law and it is an offence, with certain exceptions, to;

- Kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird while it is being built or in use;
- Take or destroy the eggs of any wild bird; and,
- Possess or control any wild bird or egg unless obtained legally.

Birds listed under Schedule 1 of the Wildlife & Countryside Act 1981 (as amended) are afforded additional protection, which makes it an offence to disturb a bird while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

The UK's birds can be split in to three categories of conservation importance - red, amber and green.

Red list criteria:

- Globally threatened;
- Historical population decline in UK during 1800–1995;
- Severe (at least 50%) decline in UK breeding population over last 25 years, or longer-term period (the entire period used for assessments since the first BoCC review, starting in 1969); or,
- Severe (at least 50%) contraction of UK breeding range over last 25 years, or the longer-term period.

Amber list criteria:

- Species with unfavourable conservation status in Europe (SPEC = Species of European Conservation Concern);

- Historical population decline during 1800–1995, but recovering; population size has more than doubled over last 25 years;

- Moderate (25-49%) decline in UK breeding population over last 25 years, or the longer-term period;

- Moderate (25-49%) contraction of UK breeding range over last 25 years, or the longer-term period;

- Moderate (25-49%) decline in UK non-breeding population over last 25 years, or the longer-term period;

- Rare breeder; 1–300 breeding pairs in UK;

- Rare non-breeders; less than 900 individuals;

- Localised; at least 50% of UK breeding or non-breeding population in 10 or fewer sites, but not applied to rare breeders or non-breeders; or,

- Internationally important; at least 20% of European breeding or non-breeding population in UK (NW European and East Atlantic Flyway populations used for non-breeding wildfowl and waders respectively).

Green list species occur regularly in the UK but do not qualify under any or the above criteria.

Bats

All bat species are afforded full protection under UK and European legislation, including the Wildlife and Countryside Act 1981 (as amended), the Countryside and Rights of Way Act (2000) and the Conservation (Natural habitats &c.) Regulations 2010 (as amended). Together, this legislation makes it illegal to:

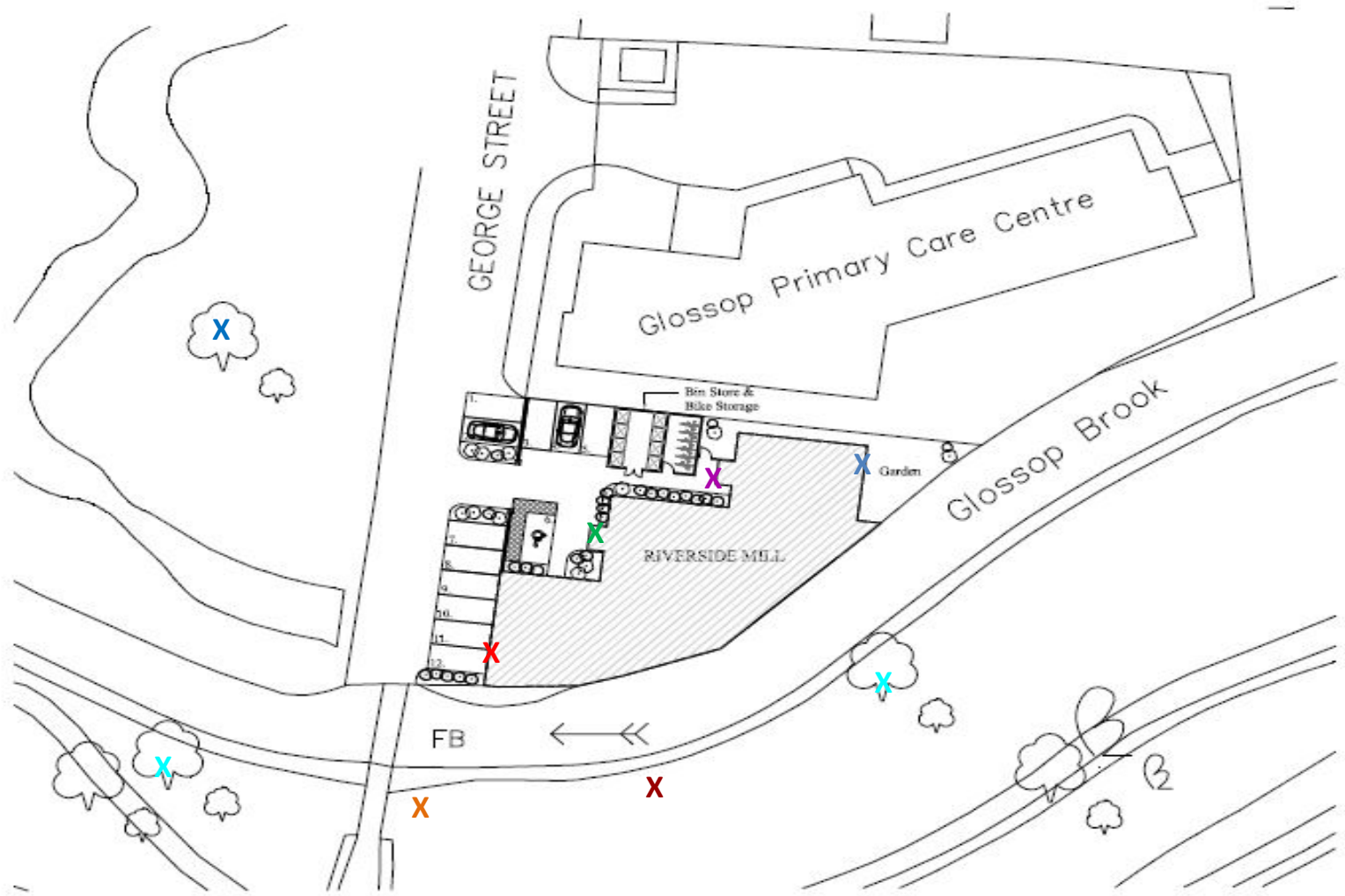
- Intentionally or deliberately take, kill or injure a bat;

- Damage to, destruction of, and obstruction of access to, a bat roost; and,

- Disturbance of a bat occupying a roost.

A bat roost is defined in the legislation as "*any structure or place which a bat uses for shelter or protection*".

APPENDIX 2 – BIRD AND BAT BOX SCHEME



Key

- X 1FF Schwegler Bat Box
- X Improved Cavity Bat Box
- X 25mm Bird Box
- X 32 mm Bird Box
- X Open-Fronted Bird Box
- X Sparrow Terrace
- X Swift Box