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Habitat Creation, Biodiversity Mitigation and Enhancement Scheme

Client

Harworth Group

Project

Unit 7 - Gateway 36, Rockingham, Barnsley

Date

September 2025

CONTENTS

FIGURES

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-		SAM / JDH / 07.11.24	PA / 08.11.24
A			JDH / 28.02.25
B	Final		JDH / 11.09.25

1.0 INTRODUCTION

1.1 This document has been produced by FPCR Environment and Design Ltd on behalf of Harworth Group to support a reserved matters application specific to Unit 7 of development within the wider Gateway 36 development. A corresponding scheme will be prepared for submission for approval of reserved matters for each subsequent phase. The extent of this phase is illustrated in Figure 1.

1.2 This report should be used to inform the design team and appointed contractors of the specifications required for the creation of a range of ecological habitats and species-specific enhancements. Indicative locations of the practical enhancements required, such as bat boxes, are also included.

2.0 HABITATS

Habitat Creation and Enhancement

2.1 Habitat creation and enhancement within the site wide Green Infrastructure will have the following aims:

- Create a green corridor which will encircle the development to provide visual screening and biodiversity assets, enhancing habitat linkages through the earlier development phases and to the wider local area.
- Buffer habitats within the Dearne Valley Wetlands SSSI and the Short Wood and Hay Green LWS.
- Provide a diverse range of valuable woodland, scrub, grassland, and wetland habitats.
- Enhance retained woodlands and grasslands in the periphery of the site through an appropriate management scheme to ensure the long-term biodiversity value of these habitats.
- Provide mitigation for habitat loss for a range of species groups including bats, amphibians and birds including appropriate habitat creation.

2.2 Habitats to be created and enhanced within the future Green Infrastructure will be specified such that, under appropriate management measures, they will have long-term viability.

Key Habitat Details

2.3 All habitat works will be undertaken in accordance with landscape drawings issued by Urban Wilderness.

2.4 Habitat creation and enhancement specific to Unit 7 will have the following aims:

- Retain habitat connectivity for a range of species (including bats). Habitat will be enhanced to provide a more graded wood-edge habitat which will support a wider range of invertebrate species to optimise foraging opportunities for a range of fauna (including bats).
- Provide habitat connectivity to the wider landscape through hedgerow and woodland creation.

- Provide a sensitive and diverse planting scheme to attract a range of invertebrates, especially lepidoptera (butterflies and moths).
- Further enhancements will include log piles, bird box, and bat box provision.

2.5 Full management details are provided in the Landscape and Ecological Management Plan (LEMP) issued by Urban Wilderness (Rev F, 2025). Biodiversity condition targets for new and retained habitats are provided below:

Broad-leaved Woodland

2.6 To reach the target condition of 'good', woodlands will be created and managed to meet all the following criteria:

1. An area of trees with complete canopy cover.
2. Native species are dominant. Non-native and invasive species account for less than 10% of the vegetation cover.
3. A diverse age and height structure of the trees.
4. Free from damage [Bark stripping; Browse line; Damage shoot tips] (in the last five years) from stock or wild mammals with less than 20% of vegetation being browsed.
5. Evidence of successful (i.e. not browsed off before it gets well established) tree regeneration such as seedlings, saplings, and young trees.
6. Standing and fallen dead wood of over 20 cm diameter are present including fallen large dead branches/stems and stumps.
7. Wetland habitats if they exist within the wood has little sign of drainage or channel straightening.
8. The area is protected from damage by agricultural and other adjacent operations.
9. No evidence of inappropriate management (e.g. deep ruts, animal poaching or compaction).
10. Invasive non-native[NB1] plants are below 5%.
11. No signs of significant nutrient enrichment present.
12. More than 3 different native trees and 3 shrub species in an average 10 m radius.

NB1: Invasive non-native species include- American skunk cabbage *Lysichiton americanus*, Himalayan balsam *Impatiens glandulifera*, Japanese knotweed *Reynoutria japonica*, Cherry Laurel *Prunus laurocerasus*, Shallon *Gaultheria shallon*, Snowberry *Symphoricarpos albus*, Variegated yellow archangel *Lamiastrum galeobdolon* subsp. *Argentatum*, Rhododendron *Rhododendron ponticum.*

Neutral Grassland

2.7 To reach the target condition of 'moderate', grasslands will be created and managed to meet all the following criteria:

1. The area is clearly and easily recognisable as a good example of this type of habitat and there is little difference between what is described in the relevant habitat classifications and what is visible on site.
2. Undesirable species[NB2] and physical damage is <5% cover.

3. Cover of bracken is <20% and scrub and bramble cover is <5%.
4. Cover of bare ground is >10%.

NB2: Undesirable species include- creeping thistle *Cirsium arvense*, spear thistle *Cirsium vulgare*, curled dock *Rumex crispus*, broad-leaved dock *Rumex otusifolius*, common ragwort *Senecio jacobea*, common nettle *Urtica dioica*, creeping buttercup *Ranunculus repens*, white clover *Trifolium repens*, cow parsley *Anthriscus sylvestris*, marsh thistle *Cirsium palustre* and marsh ragwort *Senecio aquaticus*.

Scrub

2.8 To reach the target condition of 'good', scrub will be created and managed to meet all the following criteria:

- There are at least three woody species, with no one species comprising more than 75% of the cover.
- There is a good age range – a mixture of seedlings, saplings, young shrubs, and mature shrubs.
- Pernicious weeds and invasive species[NB3] make up less than 5% of the ground cover.
- The scrub has a well-developed edge with un-grazed tall herbs.
- There are many clearings and glades within the scrub.

NB3: Undesirable species include- creeping thistle *Cirsium arvense*, common nettle *Urtica dioica*, Himalayan balsam *Impatiens glandulifera*, Japanese knotweed *Reynoutria japonica*, Cherry Laurel *Prunus laurocerasus*, Rhododendron *Rhododendron ponticum*.

Hedgerows

2.9 To reach the target condition of 'moderate', hedgerows will be created and managed with the aim of achieving all the following criteria.

1. The hedge has an average height of at least 1.5 m along its length.
2. The hedge has an average width of at least 1.5 m along its length.
3. The vertical gap between ground and base of canopy is less than 0.5 m.
4. The hedgerow is continuous with no horizontal gaps along the length of hedgerow.
5. The hedgerow and undisturbed ground is free of invasive non-native and neophyte species.

Street Trees

2.10 Street trees will be planted and managed to meet all the following criteria:

1. The trees should be allowed to mature into standard trees, targeting a minimum breast height diameter of 30 cm. This will provide nesting and foraging opportunities for local wildlife. Tree management will be limited to essential works, promoting tree health or for reasons of health and safety.
2. The trees will be protected from damage during establishment.
3. If any specimens die or fail to flourish, they will be removed and a new specimen of a type suitable for the conditions replanted.

3.0 PROTECTED SPECIES

3.1 The following section provides outline details of the enhancement measures required for the range of species found onsite, with enhancement features illustrated on Figure 1.

Bats

3.2 The development will result in an initial loss of foraging habitat and commuting habitat. New green infrastructure for Unit 7 includes a mix of grassland, scrub, and woodland, providing a range of foraging habitats. Connectivity is achieved across the Site via woodland edges, tree lines and hedgerows.

3.3 Light spill from street and external lighting onto suitable habitat types for bats, such as hedgerows, or woodland edge, may indirectly impact upon the species that are dependent on them. Lighting specifications should consider the Institution of Lighting Professionals Guidance Note GN08/23 - Bats and Artificial Lighting At Night (2023). To reduce the level and extent of light spill in proximity to the above habitats, the following general measures should be adopted as far as feasible:

- All luminaires should lack UV elements when manufactured. Metal halide, compact fluorescent sources should not be used;
- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability;
- A warm white light source (2700Kelvin or lower) should be adopted to reduce blue light component;
- Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats;
- Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered - See ILP GN01;
- Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt;
- Use of a Central Management System (CMS) with additional web-enabled devices to light on demand;
- Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed. However, due to the lensing and fine cut-off control of the beam inherent in modern LED luminaires, the effect of cowls and baffles is often far less than anticipated and so should not be relied upon solely.

3.4 If tree management results in any trees requiring felling, they shall be assessed for bat roosts by a suitably qualified Ecologist prior to felling.

3.5 A range of bat boxes will be installed to provide enhancement to the schemes value for bats and will provide potential roost sites for bats within the areas of newly created habitat that would otherwise be unable to support roosting bats for a number of years (prior to maturity).

3.6 The boxes recommended are suitable for the range of bat species recorded on Site. As there is an absence of mature trees, the boxes will be pole mounted, at a minimum height of 4m above ground. Recommended boxes comprise:

- 2 x suitable size poles (minimum height 4m above ground) supporting:
  - 1 x Schwegler 2F Bat Box or similar, suitable for smaller bat species
  - 1 x Vincent Pro Bat Box or similar, suitable for a range of bat species

Schwegler 2F Bat Box **Vincent Pro Bat Box**

3.7 Bat boxes should be located following Bat Conservation Trust guidelines:

- positioned close to linear bat navigation aids such as hedgerows,
- positioned ideally at least 4m above the ground, but should follow the specific height requirements for the bat boxes purchased,
- positioned out of reach of opportunistic predators such as cats,
- positioned away from permanent and temporary artificial light sources,
- sheltered from strong winds but exposed to the sun for part of the day by positioning the entrance to the box facing south-west to south-east,
- positioned so that the entrance to the box is free of obstacles, such that there is a clean and clear flight path to the entrance.

3.8 The boxes must be installed by / under the supervision of a bat worker to ensure they are installed in optimum locations. Once installed they must only be opened, moved or disturbed by a bat worker holding the correct class of licence to ensure there is no breach of legislation. They should not be disturbed by works or any artificial lighting as part of the construction or built development

Birds

3.9 The development will result in an initial loss of habitat suitable for foraging and nesting birds. However, new green infrastructure includes a mix of grassland, scrub, and woodland, providing a range of foraging habitats.

3.10 Willow tit *Poecile montanus* are a notifiable feature of the nearby Dearne Valley Wetlands SSSI. New habitat creation on-site, particularly the scrub habitats, will provide additional potential foraging opportunities and connectivity for this species.

3.11 To provide additional nesting opportunities while new planting establishes, a range of bird nest boxes will be provided:

- 2 x small hole box - e.g. 1B Schwegler Nest Box 26mm Hole or similar, suitable for species including blue tit *Cyanistes caeruleus* and coal tit *Periparus ater*.
- 2 x large hole box - e.g. 1B Schwegler Nest Box 32mm Hole or similar, suitable for species including great tit *Parus major*, blue tit, coal tit, and nuthatch *Sitta europaea*.

3.12 These will be individually sited at least 1.5m above the ground on existing trees or artificial poles with a clear flight path to the entrance but with suitable perches in the vicinity. These boxes should be located throughout the development in retained mature woodland, tree standards and new plantation.

3.13 In general, all bird boxes should be sited avoiding prevailing wind and rain, south-east is generally a preferred direction. Locations of all nest box types will be decided upon by an experienced ecologist who can advise the most appropriate location depending upon the species involved and their requirements in terms of surrounding habitat and favoured nest sites. This will ensure that the boxes receive the best chance of occupancy.

3.14 Removal of woody vegetation, including hedgerow sections and trees, should occur outside of the bird breeding season (March to August inclusive) to minimise the risk of disturbance to breeding birds. If this is not possible, such vegetation must be checked prior to removal by a suitably experienced ecologist to confirm the absence of active nests.

3.15 If any nesting birds are present, the nest and the buffer (the size of which to be defined by the ecologist) surrounding it must be retained undisturbed until the birds have fledged. If works are undertaken outside of the bird breeding period, such restrictions do not apply.

Amphibians

3.16 A range of common amphibian species have been recorded in, and adjacent to, the scheme. To further improve the scheme's value for amphibians log pile features will be created in association with the woodland.

Log Piles

3.17 Two areas of approximately 1x3m will be selected to locate the log piles. Topsoil / turf to 300mm will be removed from the footprint of the log pile and retained so that it can used to cover the completed construction.

3.18 Larger logs and root balls will be placed initially to provide structure, followed by the remaining materials. The piles will be created with a diverse structure containing a mixture of sizes, shapes and wood species, with some small-diameter material present, and reach at least 0.75 m high. The wood piles will be secured using sturdy wire to discourage their removal by members of the public.

3.19 Following the completion of the timber core, topsoil will be spread across the surface of the pile and the stripped turf replaced.

Image 1: Example Log Pile

Other Species

3.20 Within the broadleaved woodland, arisings from tree management activities will, where appropriate, be retained onsite in piles to create wood habitat to maximise invertebrate and bryophyte biodiversity. Where it accords with health and safety, standing dead wood will be left in-situ to provide additional dead wood habitats.

3.21 Gaps will be provided through any fences installed within the green infrastructure (13 x 13 cm) to maintain connectivity for hedgehogs.

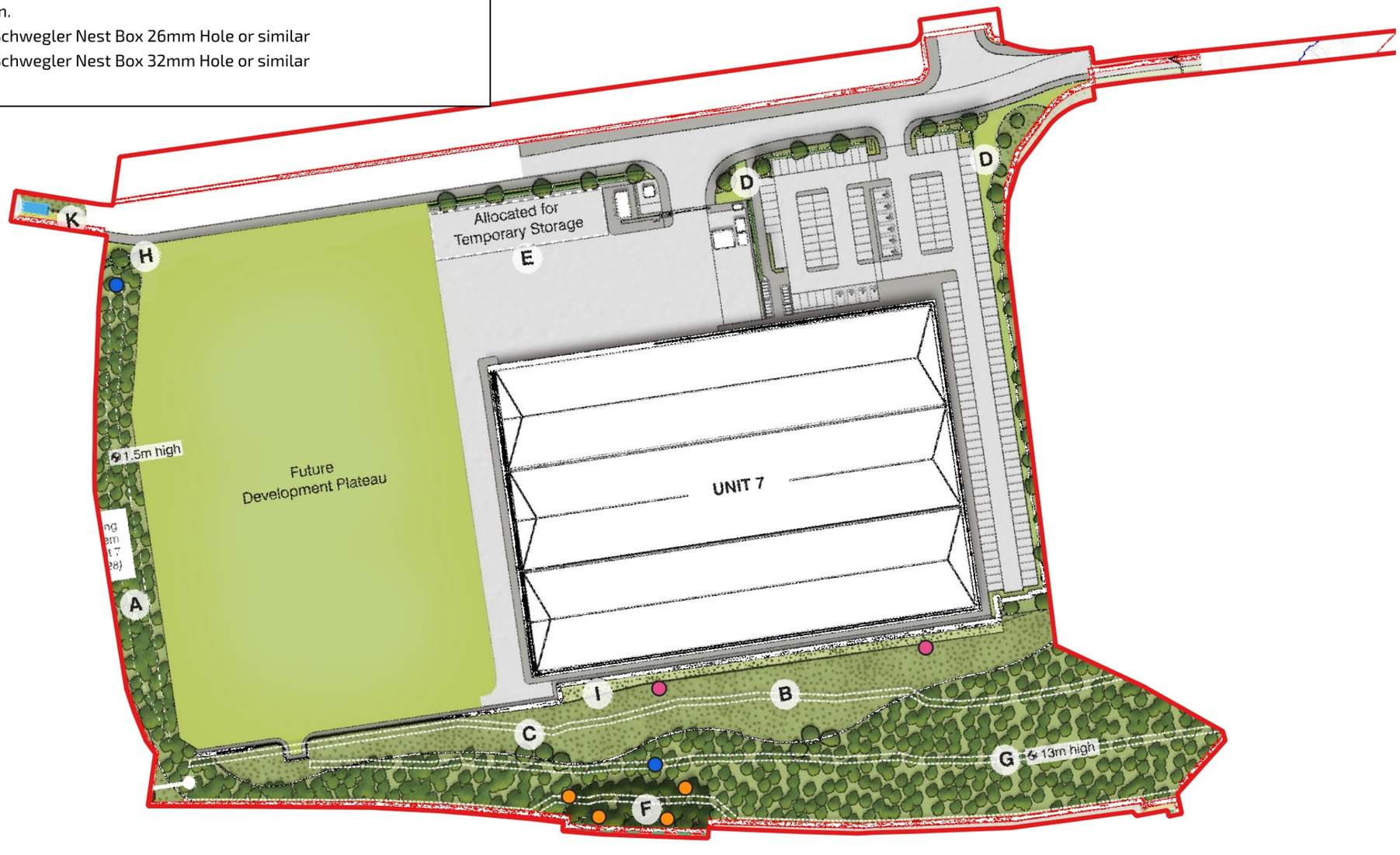
BAT BOXES
- Opportunities exist to provide additional roosting sites for bats in the form of pole-mounted bat boxes, paricularly in the woodland edge habitats, that link to off-site areas.
- Bat boxes should be placed facing South to provide decent exposure to sunlight in an area sheltered from the wind where possible.
Recommended boxes comprise:
2 x suitable size poles (minimum height 4m above ground) each supporting:
- 1 x Schwegler 2F Bat Box or similar, suitable for smaller bat species
- 1 x Vincent Pro Bat Box or similar, suitable for a range of bat species

BIRD BOXES
To be installed in retained woodland at a height of c.1.5m facing between North and East to prevent exposure to the prevailing wind and rain.
2 x 1B Schwegler Nest Box 26mm Hole or similar
2 x 1B Schwegler Nest Box 32mm Hole or similar

LOG PILES
All log piles created should meet a minimum size of at least 3 m long, by 1 m wide by 0.75 m high.

OTHER SITE ENHANCEMENTS
- Habitat connectivity should be protected by including gaps in any permanent fencing which intersects areas of suitable habitat. These should measure 13x13cm to allow hedgehogs free movement but prevent passage for larger predators.

- Invertebrates can be supported with a sensitive planting scheme. There is a range of genera suitable for species of lepidoptera, and a diverse planting scheme should be used to reflect this.



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0 25 50 m

Unit 7 Red Line Boundary

Log Piles

Bat Boxes

Bird Boxes

date 11/09/25

drwn/chkd SAM / JDH

client
Harworth Group

project
Unit 7 - Gateway 36
Rockingham

title
HABITAT CREATION, BIODIVERSITY MITIGATION AND EHANCEMENT PLAN

scale 1:1,500 @ A3

number
FIGURE 1

rev B

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