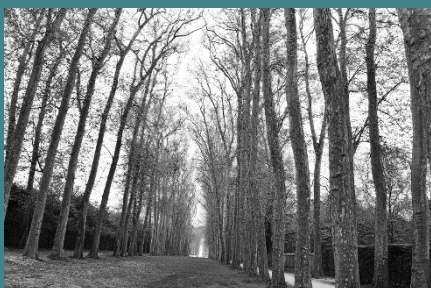


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Habitat Creation, Biodiversity Mitigation and Enhancement Scheme

Client

Harworth Group

Project

**Unit 6 - Gateway 36, Rockingham,
Barnsley**

Date

November 2025

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-	FINAL	EOM / 21/10/2025	PRA / 06/11/2025

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 6 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 within the phase for Unit 6. Indicative locations of the practical enhancements required, (such as bat boxes), are also included (as shown on Figure 1).

2.0 HABITATS

Habitat Creation and Enhancement

- 2.1 Habitat creation and enhancement within the Gateway 36 site-wide provision of green infrastructure has 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 Local Wildlife Sites (LWSs).
 - 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 'Smeeden Foreman.'
- 2.4 Habitat creation and enhancement specific to Unit 6 will have the following aims:
- Provide a buffer transition habitat between the Unit 6 car park and wider area of woodland and scrub planting in the north and west of the wider Gateway 36 Site.
 - Provide visual amenity to Unit 6 whilst also supporting a wide range of plant and invertebrate species, which will optimise foraging opportunities for a range of fauna.
 - Further enhancements will include 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 (2025). Biodiversity condition targets for new and retained habitats are provided below:

Modified (Amenity) Grassland

- 2.6 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^{NB1} 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%.

NB1: Undesirable species include- creeping thistle *Cirsium arvense*, spear thistle *Cirsium vulgare*, curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius*, 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*.

Hedgerows

- 2.7 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.

Specimen Trees

- 2.8 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.

Mixed Scrub

- 2.9 To reach the target condition of 'poor,' scrub will be created and managed with the aim of achieving all the following criteria.
1. There are at least three woody species, with no one species comprising more than 75% of the cover.

2. The scrub is free of invasive non-native plant species and species indicative of sub-optimal condition^{NB2}.

NB2: Undesirable species include: Himalayan balsam *Impatiens glandulifera*, Japanese knotweed *Reynoutria japonica*, Cherry Laurel *Prunus laurocerasus*, Rhododendron *Rhododendron ponticum*, non-native conifers, tree-of-heaven *Ailanthus altissima*, holm oak *Quercus ilex*, European turkey oak *Quercus cerris*, snowberry *Symphoricarpos spp.*, shallon *Gaultheria shallon*, American skunk cabbage *Lysichiton americanus*, buddleia *Buddleja spp.*, cotoneaster *Cotoneaster spp.*, Spanish bluebell *Hyacinthoides hispanica* and hybrid bluebells *Hyacinthoides x massartiana*. There may be additional relevant species local to the region and or site.

Broad-leaved Woodland

- 2.10 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^{NB3} 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.

NB3: 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 *Lamiasium galeobdolon* subsp. *Argentatum*, Rhododendron *Rhododendron ponticum*.

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 6 includes a mix of grassland, native species-rich hedgerow with trees, and native hedgerow providing a range of foraging habitats. Connectivity is achieved across the wider 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 will 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 will 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 will 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 and hedgerows, 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:

- 1 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*.

- 1 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 artificial poles with a clear flight path to the entrance but with suitable perches in the vicinity. These boxes will be located throughout the development in the newly created hedgerow and grassland area.
- 3.13 In general, all bird boxes will be sited to avoid prevailing wind and rain, (south-east is the preferred direction (the general location is shown on Figure 1). The exact locations of all nest box types will be decided upon at the time of installation by an experienced ecologist. The ecologist will advise the most appropriate location to ensure that the boxes receive the best chance of occupancy (depending upon the species involved and their requirements for surrounding habitat and favoured nest sites)..
- 3.14 Removal of woody vegetation, including hedgerow sections and trees, will occur outside of the bird breeding season (March to August inclusive) to minimise the risk of disturbance to breeding birds.
- 3.15 Any vegetation clearance undertaken outside of the bird breeding season will be checked prior to removal by a suitably experienced ecologist to confirm the absence of active nests. If any nesting birds are present, the nest and the buffer (the size of which to be defined by the ecologist) surrounding it will be retained undisturbed until the birds have fledged
- 3.16 .

Log Piles

- 3.17 A range of common amphibian species have been recorded in, and adjacent to, the Gateway 36 scheme. To further improve the scheme's value for amphibians, log pile features will be created in association with areas of woodland planting.
- 3.18 Two areas of approximately 1m x 3m will be selected within the Unit 6 Site for construction of log piles. Topsoil / turf to 300mm will be removed from the footprint of the log pile and retained so that it can be used to cover the completed construction.
- 3.19 Larger logs and root balls will be placed initially to provide structure, followed by the remaining smaller materials (twigs and sticks, leaves, woodchippings etc.). The piles will be created with a diverse structure containing a mixture of materials in varied sizes, shapes, and wood species, with some small-diameter material present. The completed log pile will reach at least 0.75m high. The log piles will be secured using sturdy wire or wire mesh to discourage tampering or removal.
- 3.20 Following the completion of the timber core, topsoil will be spread across the surface of the pile and the stripped turf replaced on top of the pile.



Image 1: Example Log Pile

Other Species

- 3.21 Where it accords with health and safety, standing or fallen dead wood will be left in-situ to provide additional dead wood habitats.
- 3.22 Gaps of 13cm x 13cm will be provided at ground level through any fences installed within the green infrastructure areas to maintain connectivity for hedgehogs.



BAT BOXES

- Opportunities exist to provide additional roosting sites for bats in the form of pole-mounted bat boxes, particularly 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

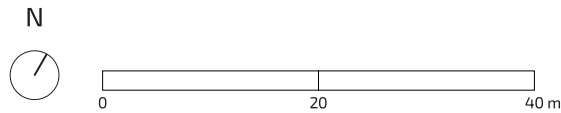
- To be installed in retained woodland at a height of c.1.5m facing between North and East to prevent exposure to the prevailing wind and rain.
- 1 x 1B Schwegler Nest Box 26mm Hole or similar
- 1 x 1B Schwegler Nest Box 32mm Hole or similar

OTHER SITE ENHANCEMENTS

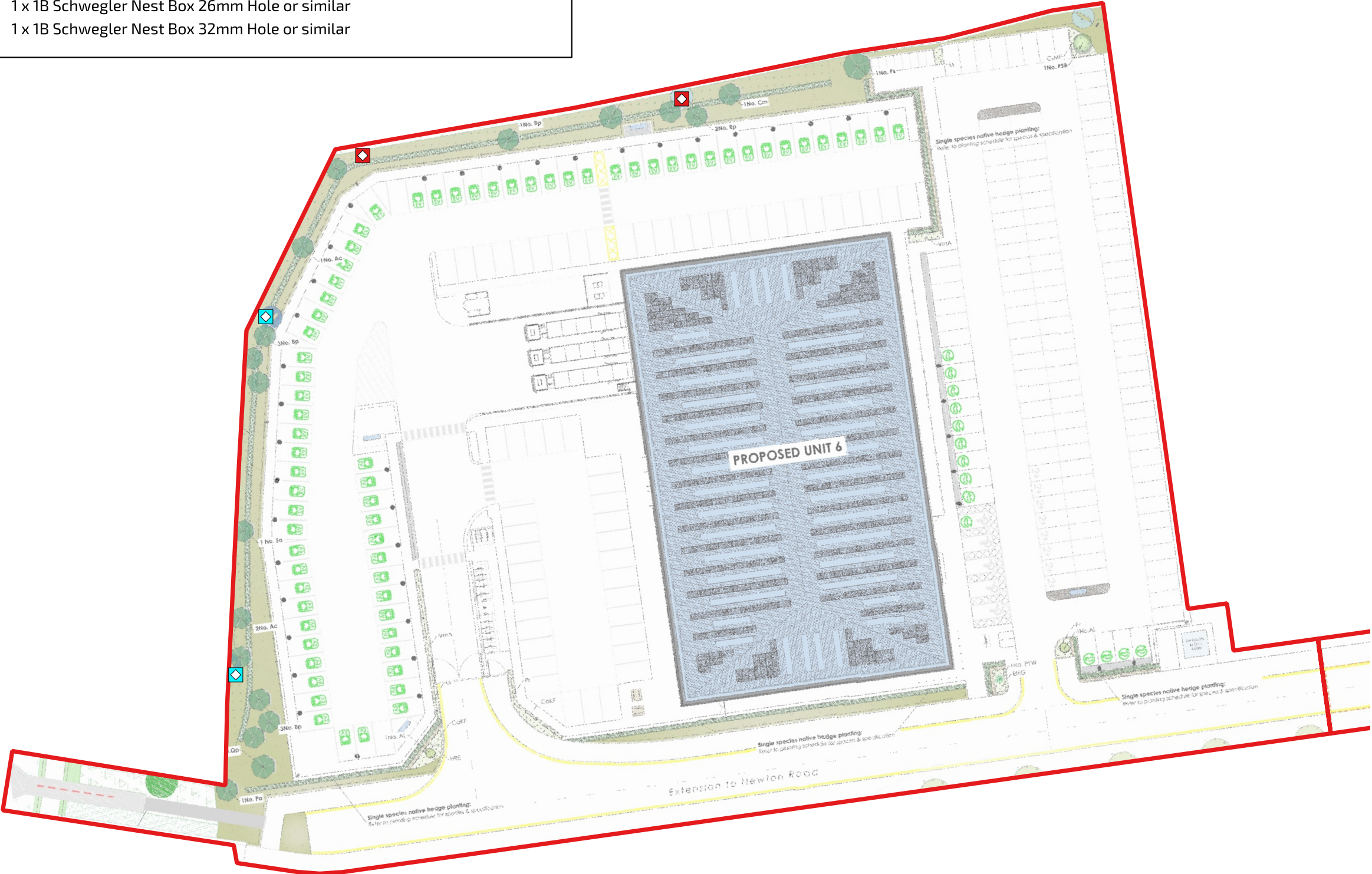
- Habitat connectivity should be protected by including gaps in any permanent fencing which intersects areas of suitable habitat. These should measure 13x13cm to allow hedgehogs free movement but prevent passage for larger predators.
- Invertebrates can be supported with a sensitive planting scheme. 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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- Unit 6 Red Line Boundary
- Bird Boxes
- Bat Boxes



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project	Unit 6 - Gateway 36 Rockingham		
title	HABITAT CREATION, BIODIVERSITY MITIGATION AND ENHANCEMENT PLAN	scale	1:700 @ A3
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FIGURE 1 A