



Mileway Real Estate

Land between Pennine View and Pheasant Drive, Birstall

BIODIVERSITY MANAGEMENT PLAN

January 2021

FPCR Environment and Design Ltd

Registered Office: Lockington Hall, Lockington, Derby DE74 2RH

Company No. 07128076. [T] 01509 672772 [F] 01509 674565 [E] mail@fpcr.co.uk [W] www.fpcr.co.uk

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Figure 1: Faunal Enhancement Plan

APPENDICES

Appendix A: Soft Landscaping Proposals

1.0 INTRODUCTION

- 1.1 This Biodiversity management plan has been prepared by FPCR Environment and Design Ltd for Mileway Real Estate; to provide details of the habitat creation and future management associated with the proposed scheme on Land between Pennine View and Pheasant Drive, Birstall (central grid reference: SE 23316 26967). The plan will consider the requirements to maximise the nature conservation value of the site, to achieve a gain in the quality and diversity of habitats that the site provides.
- 1.2 The Site is 1.82ha in extent and predominantly occupied by a warehouse (B1) and associated parking facilities (Figure 1). The area indicated by the red line is referred to as 'Site' throughout the report. Two buildings are present within the Site. These comprise the existing warehouse (B1) and workshop (B2) in the north west corner of the Site. Hardstanding is the dominant habitat present across the remaining Site area. Other small peripheral areas of habitat present included: ephemeral/short perennial vegetation, amenity grassland and a small area of scattered scrub. The landscape immediately beyond the Site is characterised by the commercial and industrial units associated within the Norquest Industrial Estate.
- 1.3 The green infrastructure for the site includes the creation of wildflower lawns, ornamental low level shrub and street trees; as shown on the Soft Landscaping Proposal Plan (Appendix A).
- 1.4 This report provides prescriptions for the creation and ongoing management of habitats post-construction to ensure that the biodiversity of each habitat type is maximised. Prescriptions may be refined once management and monitoring is underway.

2.0 RESPONSIBLE PERSONS AND MONITORING

- 2.1 During the construction phase, the Site Manager as appointed by the developer has the responsibility of maintaining a secure and safe site as well as ensuring all activities on site remain lawful. This includes ensuring that retained habitats are appropriately protected. Creation of habitats, as well as all landscaping throughout the development, is also the responsibility of the Site Manager.
- 2.2 Once the development is operational, this responsibility for long-term management will be passed to a management company who will be appointed by the occupier. The occupier will inform the Council of who this responsibility has been passed to.
- 2.3 The management set out within this document will run for 30 years following the completion of the development. Subsequent to each monitoring visit, the timetable of which is set out in section 5, management will be reviewed, and if required, the management plan will be updated to ensure the practicality and appropriateness of management across the site in the long-term.

Timing / Implementation

- 2.4 All landscaping will be implemented prior to the completion of the built footprint.

3.0 HABITAT CREATION & MANAGEMENT PRESCRIPTIONS

Overview of Habitat Creation Measures

- 3.1 The habitats to be created as part of proposals is shown on the Soft Landscaping Proposal Plan. The landscape areas subject to this plan include the following components:

- Wildflower Lawn;
- Ornamental Shrub Planting; &
- Street Trees.

‘Flowering Lawn’ Grassland

Management Objective: Create and maintain floristically diverse wildflower lawn

Habitat Creation

- 3.2 In order to enhance the biodiversity on site, the formal areas of grassland will be seeded using a flowering lawn mix as an alternative to a standard rye grass mix.
- 3.3 These areas will be sown with ‘Meadowmania Native Wildflower Meadow Suitable for Lawns’ (or similar), comprising species from the following list. The seed will be sown will as per the supplier’s recommendation.

<u>Common name</u>	<u>Scientific name</u>	<u>Common name</u>	<u>Scientific name</u>
Common bent	<i>Agrostis capillaris</i>	Common bird’s-foot trefoil	<i>Lotus corniculatus</i>
Crested dog’s-tail	<i>Cynosurus cristatus</i>	Cowslip	<i>Primula veris</i>
Red fescue	<i>Festuca rubra</i>	Yarrow	<i>Achillia millefolium</i>
Lady’s bedstraw	<i>Galium verum</i>	Selfheal	<i>Prunella vulgaris</i>
Ribwort plantain	<i>Plantago lanceolata</i>	Cat’s-ear	<i>Hypochaeris radicata</i>
Kidney vetch	<i>Anthyllis vulneraria</i>	Rough hawkbit	<i>Leontodon hispidus</i>
Oxeye daisy	<i>Leucanthemum vulgare</i>	Meadow buttercup	<i>Ranunculus acris</i>
Common sorrel	<i>Rumex acetosa</i>	Sheep’s-fescue	<i>Festuca ovina</i>
Yellow oat-grass	<i>Trisetum flavescens</i>	Sweet vernal-grass	<i>Anthoxanthum odoratum</i>

- 3.4 Ground preparation would entail the spraying off of any perennial weeds and digging over (or ploughing where extensive) of the areas to bury the remaining surface vegetation. The areas would then be raked (or harrowed) to produce a fine tilth.
- 3.5 The seed will be sown as per the supplier recommendations and will be undertaken during the early autumn (late August/September).
- 3.6 In the first year, the wildflower lawns will be cut quarterly to 50mm if sufficient growth has been attained by the sward with removal & disposal of arisings.
- 3.7 The condition of the grassland areas would be reviewed within 6 months of its original seeding and any areas which have failed to establish would be re-seeded. In order to control any flush of annual weeds.

Ongoing Management

- 3.8 To provide the formal appearance desired, following the initial year of its creation, the management of the flowering lawn grassland will include the following:

- All operations will be carried out using machinery appropriate to the task, cylinder, rotary or mulch mowers;
- Mowing operation will only be carried out during appropriate weather conditions avoiding sustained periods of rain, or heavy frost, snow, and waterlogging;
- The frequency of cuts shall remain flexible in order to accommodate growth rates and weather conditions, but with the most important principle being that cutting will be suspended for an eight week period during May-June to allow for a suitable flowering period. Outside of this eight week period, the grassland should be cut once per month through the growing season. If grass growth proves to be vigorous, the frequency of cutting can be increased to two times per month, up to a maximum of 12 cuts per annum;
- All arisings would be removed within a 48 hour period; and
- Inspections for invasive weeds and controlled as necessary. Spot-sprayed with a herbicide, or hand-pulled for undesirable and persistent weed growth like docks and thistles.

Notes on Achieving Target Condition

- 3.9 The Biodiversity Net Gain assessment undertaken for the Site using the Defra Metric 2.0 (beta), classified the proposed flowering lawn as 'amenity grassland' with the target condition of the grassland over the monitoring period classified as 'moderate'.
- 3.10 The Defra condition assessment for grassland broad habitat type outlines the criteria that must be met to achieve moderate condition. This document specifically references amenity grassland stating that that amenity grasslands with '*similar species to description for agriculture grasslands*' should be recorded as poor condition.
- 3.11 Moderate condition is therefore achievable if none of the indicators of poor condition are present, these are
- Undesirable species and physical damage is greater than 5% cover;
 - Cover of bare ground is greater than 10%; &
 - Cover of scrub and bramble greater than 5%;
- 3.12 Furthermore, habitat creation and management must target the following criteria to achieve moderate condition:
- Wildflowers, sedges and indicator species (...) are very clearly and easily visible throughout the sward and occur at high densities in high frequency; &
 - Rye-grass cover was less than 25%.
- 3.13 Considering the above, it is considered that the habitat creation and management prescriptions outlined within this document would facilitate the creation and maintenance of a wildflower lawn in moderate condition over the management period.

General Soft Landscaping

- 3.14 In addition to the elements of the landscaping scheme which have been considered in the preceding paragraphs, the scheme also involves areas of ornamental planting including ornamental low level shrubs & street trees. The detail of this scheme is shown Soft Landscaping

Proposal Plan. This should be read in conjunction with this Biodiversity Management Plan and is appended to the end of this document for reference.

General Environmental Considerations

- 3.15 Habitat management within the site will take into account a number of environmental considerations, including:
- Targeted weed control using herbicides containing glyphosate, which should be applied according to manufacturer's recommendations;
 - Plants to be watered at appropriate times of day, where appropriate, to minimise water evaporation; and
 - Protected species, such as nesting birds, to be considered during management of appropriate habitats (trees, hedgerows and shrubs/scrub), with a suitably qualified ecologist contacted for advice when required.

Litter Clearance

- 3.16 Litter picks and general litter clearance should be carried out on all landscape areas on a monthly basis. Litter picks should be undertaken prior to any grass cutting operations. The overall objective is to ensure that all landscape areas are free from litter, as neglect generates further neglect.

4.0 FAUNAL ENHANCEMENTS

Bird Boxes

- 4.1 A range of types of bird boxes will be installed on newly planted heavy standard tree standards within the site, with two hole-fronted and two open-fronted boxes installed (Figure 1). Hole-fronted boxes (e.g. Schwegler 1B) are suitable for species such as great tit *Parus major*, blue tit *Cyanistes caeruleus* and house sparrow *Passer domesticus*, whilst open-fronted boxes (e.g. Schwegler 2H) are suitable for species such as robin *Erithaceus rubecula* and wren *Troglodytes troglodytes*.
- 4.2 Each must be placed on a different tree, and where the box will not be shaded by adjacent trees. They should be sited on a north-through to east aspect so as to avoid direct sunlight and overheating of the box.
- 4.3 Boxes should be placed at a height of approximately 1.5-2m and well hidden in vegetation. Ideally bird boxes should be installed in the autumn, to give birds a chance to find them ready for breeding the following spring.
- 4.4 Other brands of habitat boxes which provide similar features and properties could be substituted at the discretion of the ecologist, given the fluctuating availability of Schwegler boxes.
- 4.5 Bird boxes should be monitored for damage. Damaged or broken boxes should be repaired or replaced outside of the bird nesting season (March to August, inclusive).

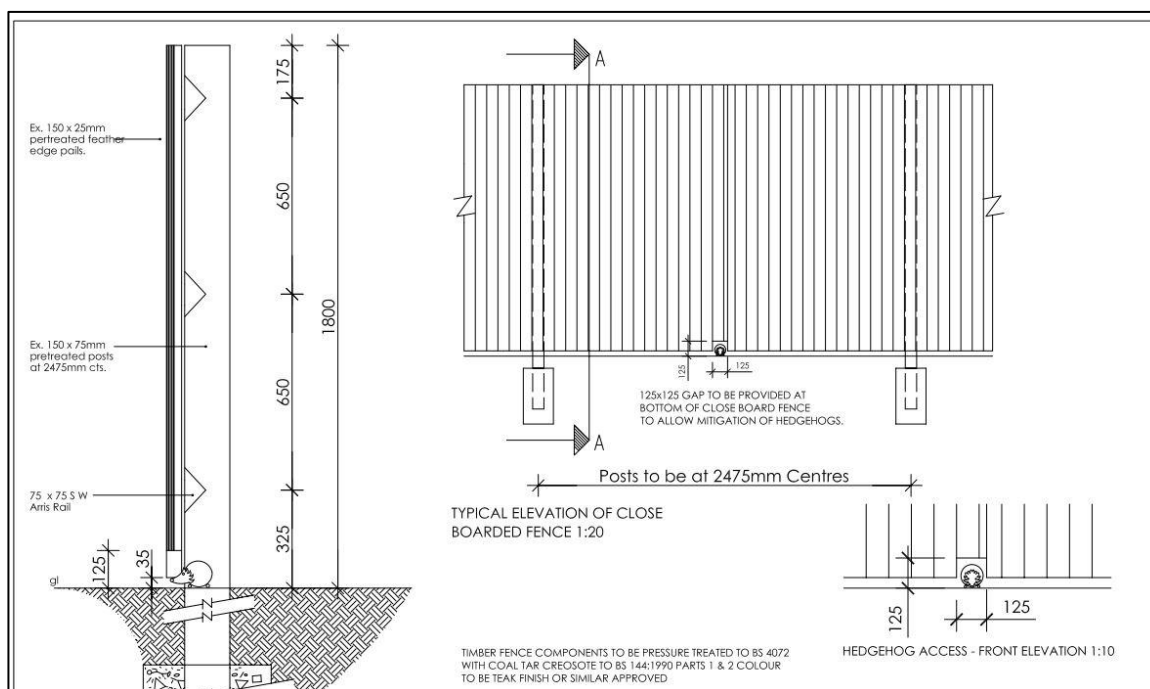
Insect Boxes

- 4.6 Two insect boxes will be installed on newly planted heavy standard trees within the site. Boxes which offer a variety of shelter types (e.g. National Trust Apex Insect House) which offer suitable

habitat for species such as lacewings, ladybirds, some butterflies and potentially solitary bees. Boxes should be placed at a height below 2m in a sheltered position amongst vegetation.

Hedgehog Highway

- 4.7 A network of hedgehog holes (15x15cm) will be created at the base of boundary and internal paladin fencing to facilitate corridors for hedgehog, and other wildlife to move through and across the site. the indicative locations of the holes are shown on Figure 1, with an example specification provided below.



5.0 MONITORING

Objective: To ensure achievement of BMP objectives by monitoring implementation of management

- 5.1 Monitoring is a key element of the management plan, required in order to ensure that the habitats have successfully established and to evaluate the effectiveness of management activities.
- 5.2 In order to check effective establishment, monitoring will be undertaken during the first year of commencement and years 2 and 5. Following the establishment period monitoring will be undertaken in years 10, 15, 20 and 30. Results of this monitoring should be used to inform changes to this management plan. The prescriptions provided here are for overall guidance and should not be set in stone, if monitoring indicates that a different management method or timing may be more effective and would facilitate development of habitats of greater ecological value.
- 5.3 Management prescriptions should be reviewed, and any refinements incorporated into an updated version of the Management Plan. Any proposed significant changes in the proposed management should be agreed with Kirklees Council.

Flowering Lawn Grassland

- 5.4 The below table lists a number of indicators of poor condition of the flowering lawn grassland which might be encountered during monitoring with suggested remedial actions to rectify specific issues.

Indicator of Poor Condition	Remedial Action
Vigorous Grass Growth limiting flowering species	Increase frequency of cutting in autumn and early spring. If problem persists cut the sward to 25mm in autumn, lightly harrow and sow yellow rattle <i>Rhinanthus minor</i> seeds. The following spring and subsequently, delay first cut after flowering period to mid July to allow yellow rattle to flower and set seed.
Short sward maintained, but with low proportion of flowering plants	Decrease frequency of mowing, particularly in April and July. If problem persists, lightly harrow and reseed with an appropriate 100% wildflower mix in autumn
High proportion of bare ground	Re-seed bare areas with appropriate seed mix.
High scrub cover	Remove scrub and ensure regular cutting of area
High cover of undesirable species*	Targeted weed control and ensure regular mowing.

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

Street Trees

- 5.5 Over the management period, as the street trees mature, there is the potential for them to develop features of additional value to biodiversity such as deadwood, rot holes and cracks and splits. These can occur from pruning activities, wind damage or through pest damage. Where health and safety issues allow, these features should be retained as they provide important habitats for invertebrates.
- 5.6 As all birds are protected whilst on the nest under the Wildlife and Countryside Act 1981 (as amended), where there is a need to remove dead limbs or standing dead trees for safety reasons, this should be undertaken in the period September to February, inclusive. This will avoid the breeding season of most bird species. Ideally tree works should be carried out in January or February to allow trees to fruit during autumn which provides a food source for small mammals and birds.
- 5.7 Should it be necessary to prune or trim trees or shrubs within the period when birds are likely to be nesting, then a check by an ecologist or other suitably qualified individual beforehand should be carried out to confirm no nests will be affected.
- 5.8 All, or a proportion, of the deadwood removed during pruning operations should be left at the base of the tree.

6.0 TIMETABLE OF WORKS

- 6.1 An outline of management during establishment and 1st year after creation is provided in Table 1, with long-term management (year 2 onwards) outlined in Table 2.

Table 1. Management during establishment and 1st year

Description of Works	Establishment and First Year Management											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Flowering Lawn Grassland												
Remove weeds using repeated cultivation or a herbicide. Then plough or dig to bury the surface vegetation.			✓	✓	✓	✓	✓	✓	✓			
Best sown in autumn or spring,				✓	✓				✓	✓		
Control weed growth by topping or mowing and remove the cuttings from site.							✓			✓		
Maintain grassland at a height of 50mm (avoiding wet condition).	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Monitor success of establishment						✓						

Table 2. Management from 2nd year onwards.

Description of Works	Management in Years 2 onwards											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wildflower Lawn												
Cut / strim (min height of 50mm) and remove the cuttings from site.			✓	✓			✓	✓	✓	✓		
Weed control/removal of weeds. Spot sprayed with a herbicide, or pulled for undesirable and persistent weed growth.			✓	✓	✓	✓	✓	✓	✓	✓		
Reseed, as required.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring												
Monitoring of habitat creation/management and faunal enhancements (in years 2, 5, 10, 15, 20 and 30)						✓						

Key

Faunal Enhancements

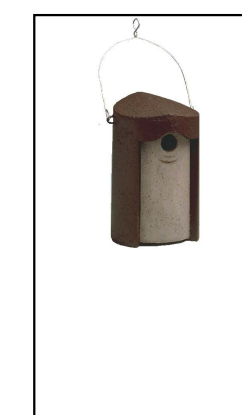
- Hedgehog Highway
- ▲ Hole-fronted Bird Box
- Insect Box
- ▲ Open-fronted Bird Box



Hedgehog Highway



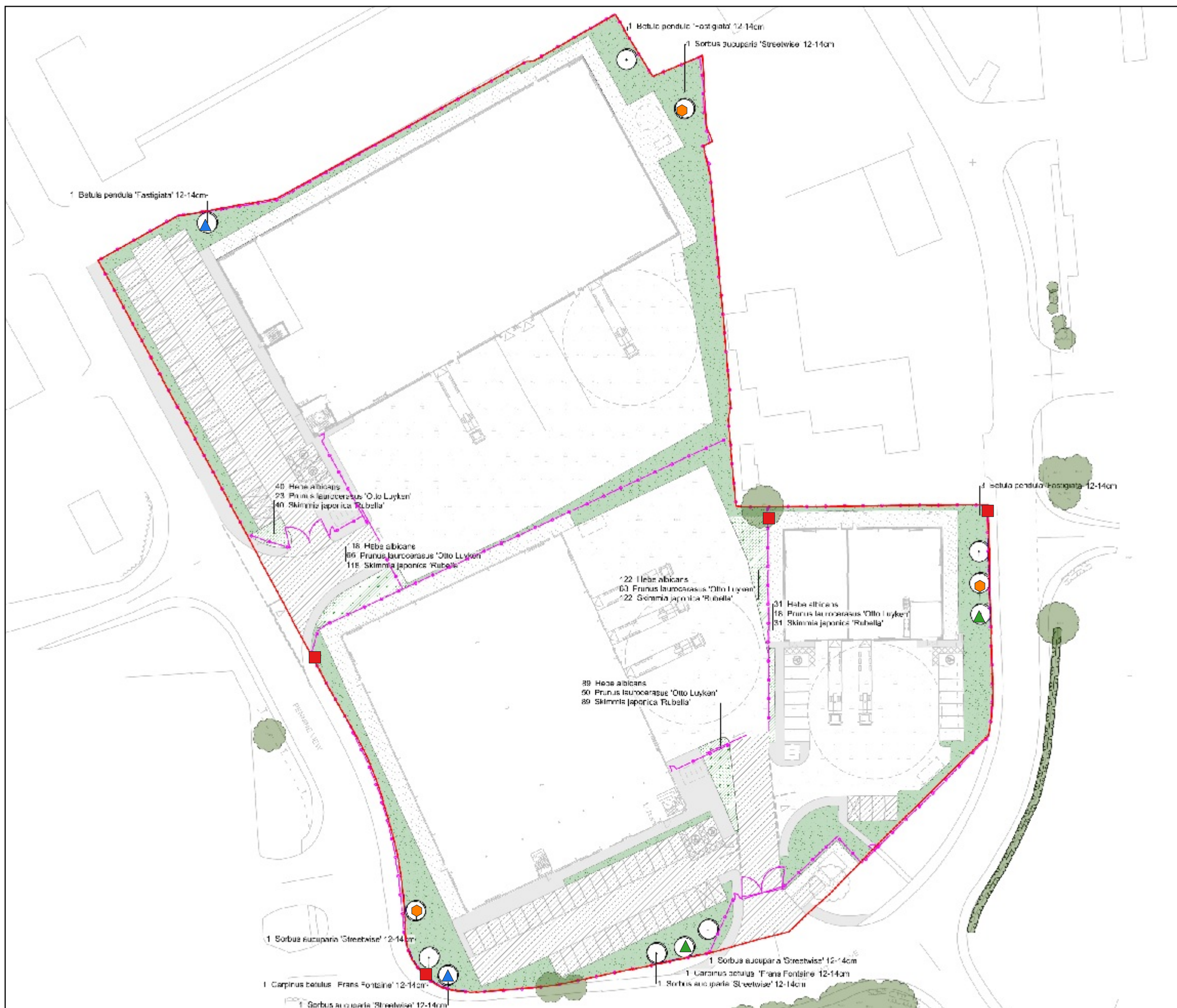
National Trust Apex Insect House (or similar)



Schwegler 1B Bird Box (or similar)



Schwegler 2H Bird Box (or Similar)



client
Mileway Real Estate

project
Land between Pennine View and Pheasant Drive, Birstall

drawing title
FAUNAL ENHANCEMENT PLAN

scale
1:750

drawn
IH

issue
24/11/2021

drawing / figure number
Figure 1

rev
-

APPENDIX A – SOFT LANDSCAPING PROPOSALS

GENERAL LANDSCAPING NOTES

- All planting and seeding to be undertaken during the first planting season following completion of development. Deciduous trees and shrubs: Late October to late March. Conifers and evergreens: September/ October or April/ May. Container grown plants: At any time if ground and weather conditions are favourable (provide watering and weed control as necessary).
- Existing trees to be retained and protected throughout construction period in accordance with BS 5837 2012 - Trees in Relation to Design, Demolition and Construction - Recommendations.
- Materials and workmanship shall generally be in accordance with the following documents - BS3936 Nursery Stock and BS4426. Recommendations for General Landscape Operations. Plant material to be the sizes and dimensions as stated in the schedule and shall be healthy with good fibrous root systems.
- Site Preparation: Break up compacted soil to full depth for planting areas. Spread well rotted organic material, subject to approval. Remove undesirable material brought to the surface. Apply approved herbicides as per manufacturer's guidelines to all areas to be seeded or planted and allow suitable time to elapse to ensure all weeds are dead before cultivation. Leave regular and even.
- Setting out of planted areas to be approved on site by Contract Administrator (CA). All tree and shrubs to be planted in top soil @ 450mm depth.

PLANTS/TREES - GENERAL

- Condition: Materially undamaged, sturdy, healthy and vigorous.
- Appearance: Of good shape and without elongated shoots.
- Hardiness: Grown in a suitable environment and hardened off.
- Health: Free from pests, diseases, discolouration and weeds.
- Budded or grafted plants: Bottom worked.
- Root System and Condition: Balanced with branch system.
- Standard: The relevant parts of BS 3936.
- Species: True to Name.
- Origin/Provenance: British provenance as per the National Plant Specification.
- Names, Forms, Dimensions, Provenance and other Criteria: To BS 3936-1 Trees and Shrubs.
- Where proposed trees are located adjacent to roads/pathways root protection barriers to be provided on footpath side of tree pit. Where landscape works encroach on root protection areas non-dig / hand dig methods to be used in accordance with the Arboricultural Method Statement.

PROTECTION OF EXISTING GRASS

- General: Protect areas affected by operations using boards/ tarpaulins.
- Excavated or imported material: Do not place directly on grass.
- Duration: Minimum period.

PLANTING OF TREES AND SHRUBS:-

- Individual trees to be double staked and tied above ground. 18-20cm girth trees to be fitted with underground guying system such as SASLCB Arborguy Large Anchor System (or similar approved). All trees to be back filled with top soil and suitable organic material (to be specified). All trees to be protected by tree guards. Trees located within the highway edge or other public pedestrian locations within the site will need to be adequately protected (selected system to be approved). Trees planted in bare ground to have 1.5m radius circle of woodchip or crushed bark mulch to a depth of 100mm.

TREE PROTECTION: TO BAREROOT / FEATHERED STOCK

- Manufacturer: Contractor's choice, to LA approval.
- Material: Clear photodegradable 100% recycled PVC spiral guard.
- Size: 600mm high 63mm diameter.
- Support: Stout bamboo cane or softwood alternative.

SHRUB PROTECTION:

- Manufacturer: Contractor's choice, to LA approval.
- Material: Uv stabilised Polypropylene Shrub Shelter.
- Size: 600mm high 63mm diameter.
- Support: Stout bamboo cane or softwood alternative.

PLANTING MAINTENANCE GENERALLY-

- Weed control: Maintain weed free area around each tree and shrub.
- Trees: Spray crown when in leaf during warm weather.
- Tree accessories: Check condition of stakes, ties, guys, guards and irrigation and ventilation systems.
- Broken or missing items: Replace.
- Loose stakes: Re-firm in the ground or replace as necessary.
- Loose guys: Re-firm anchor points and adjust as necessary to provide support to the tree.
- Ties: Adjust to accommodate growth and prevent constriction.
- Damage to bark: Cut back with sharp knife. Prevent further damage.
- Frequency of checks: as agreed by LA.
- Watering: as necessary to ensure survival.

Planting Schedule

Low Level Shrub Mix						
Qty	Latin Name	Height	Scheduled Size	Root Condition	Rating / Spacing Per sq/m	
400	Hebe albicans	30-40cm (D)	5-7.5L	C	4	
225	Prunus laurocerasus 'Otto Luyken'	60-80cm	5-7.5L	C	3	
400	Skimmia japonica 'Rubella'	40-60cm	5-7.5L	C	4	
Trees						
Qty	Latin Name	Height	Form	Root Condition	Minimum Clear Stem	Girth
5	Betula pendula 'Fastigiata'	350-400cm	Heavy Standard	RB	Min 200cm	12-14cm
2	Carpinus betulus 'Frans Fontaine'	350-425cm	Heavy Standard	RB	Min 200cm	12-14cm
5	Sorbus aucuparia 'Streetwise'	350-400cm	Heavy Standard	RB	Min 200cm	12-14cm



NOTES
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Ordnance Survey base mapping - supplied by client.



KEY

- Site Boundary
- Existing Trees
- Proposed Trees
- Proposed Wild Flower Grass Seed Mix
Meadowmania Native Wildflower Meadow Suitable for Lawns ref MAS-WMEAD12 (or similar)
- Proposed Low Level Shrub Mix
- Root Protection Barrier- GreenBlue Urban ReRoot 300mm

Hard Surface Treatment for Reference

- Tarmac Footpath
- Gravel Maintenance Path
- Tarmac Road Surface for Vehicle Access
- Concrete Service Yard
- Proposed 2.4m black paladin fencing with gates to match fencing

To be read in conjunction with AEW Architects drawing ref: '11321-AEW-XX-SI-DR-A-0503_Proposed External Works Plan' Rev P4

Meadowmania Native Wildflower Meadow Suitable for Lawns ref MAS-WMEAD12

%	Species
0.8	Yarrow
0.8	Kidney Vetch
2.4	Lady's Bedstraw
0.6	Common Catsear
0.8	Rough hawkbit
1.6	Oxeye daisy
2	Birdsfoot Trefoil
1.6	Ribwort plantain
0.4	Cowslip
3.2	Self heal
2.4	Meadow Buttercup
3.4	Common sorrel
5	Browntop bent
5	Crested Dogtail
23	Sheeps Fescue
25	Chewing Fescue
20	Slender Creeping Red Fescue
1	Yellow oat Grass
1	Sweet Vernal Grass
100	

Notes:

All trees, located within 3m of any services or roads/footpaths, to have their roots directed downwards by the installation of Greenleaf Reroot 300 or Reroot 600, or similar approved, dependant on ground conditions and service locations

For detailed levels and drainage info refer to engineers proposals

For Planning

E	24.11.2020	Amendments to hard landscape areas	JES / CEH
D	20.11.2020	Updated layout & additional trees per officer comment	JES / CEH
C	13.08.2020	Updated to layout dated 11.08.2020	PT / CH
-	27.03.2020	First Issue	PT / CH
rev	date	description	dm / chkd

- masterplanning
- environmental assessment
- landscape design
- urban design
- ecology
- architecture
- arboriculture

FPCR Environment and Design Ltd
Lockington Hall
Lockington
Derby DE74 2RH

t: 01509 672772
f: 01509 674566
e: mail@fpcr.co.uk
w: www.fpcr.co.uk

client
Mileway Real Estate

project
**Norquest Industrial Estate,
Pheasant Drive**

drawing title
Soft Landscape Proposals

scale
1:500 @ A1

drawn / checked
JES / CEH

revision date
24 November 2020

drawing number
9387-L-01

rev
E