



Blue Check Consulting Ltd

West Road, Pogmoor

LANDSCAPE & ECOLOGICAL MANAGEMENT PLAN

October 2023

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1.0 INTRODUCTION

- 1.1 The following Landscape & Ecological Management Plan has been prepared by Robinson CLA on behalf of the client, Blue Check Consulting Ltd. This document sets out the habitat protection, creation and management approaches for the landscape proposals within the proposed employment development at West Road, Pogmoor.
- 1.2 This document should be read in conjunction with the Ecological Impact Assessment Report prepared by Whitcher Wildlife Ltd and the soft landscape strategy prepared by Robinson CLA.
- 1.3 For reference, the soft landscape strategy is included within **Appendix A**.

Background

- 1.4 This document has been prepared in support of a planning application for a commercial development on a brownfield site located off West Road, Pogmoor. The development comprises a commercial building with a gross area of 750sqm, hardstanding totalling 3872sqm and associated green infrastructure approximating to nearly 60% of the site area.

Legislation & Policy

- 1.5 All relevant EU and UK nature conservation law will be adhered to in relation to the protection of ecological features and ecological enhancement. This includes the protection afforded to nesting birds under the Wildlife and Countryside Act 1981 (as amended) and with reference to the protection of great crested newts and bats and their roosts under the Conservation of Habitats and Species Regulations 2010 (as amended). Regard has also been given to the Local Biodiversity Action Plan (LBAP) and Habitats of Principle Importance (HPI) as listed within Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

Health & Safety

- 1.6 Care will be undertaken throughout the design process and during construction at all stages to consider the health and safety aspects of the proposals.
- 1.7 The site may contain some potentially hazardous features such as steep embankments, overhanging trees and also potentially hazardous operations, including tree works, maintenance works near or on highways, works involving the use of cutting machinery and potentially hazardous chemical agents, works to steep slopes, works near buried services and overhead services and frequently a combination of these.
- 1.8 The Landscape Management Company will check for below and above ground services, including land drainage, in the vicinity, and give notice if they may be affected and obtain instructions before proceeding. The Landscape Management Company will comply with Arboriculture and Forestry Advisory Group Safety leaflets.
- 1.9 The scheme should be implemented by competent landscape managers and operatives, who are responsible for the application of best practice standards and all relevant health and safety procedures, protection of the environment, avoidance of pollution and protection of protected species and habitats. The management items set out in this document in no way remove their responsibilities to current, or any future, statutory and best practice procedures or obligations.

- 1.10 Care must be taken during the management and the design of that management to assess, and where practicable reduce or eliminate risks. To this end the Management Company will periodically carry out a Health and Safety Audit for any public open space. This audit will review health and safety considerations and make recommendations on works necessary to maintain the public open space in a safe condition. Consideration in particular should be given to the growth of newly planted trees with a future potential to overhang adjacent public highways, dwellings or private gardens, which will require arboricultural assessments as and when appropriate. These will be worked into the landscape management as it evolves.

2.0 VISION, AIMS & OBJECTIVES

Vision

- 2.1 The landscape design strategy has been prepared in the context of a thorough and detailed understanding of the site landscape and its context and within the framework of relevant policy and design guidance. The landscape design embraces broader Green Infrastructure (GI) and sustainable development principles and seeks to maximise biodiversity wherever practicable. Green infrastructure has been devised to integrate the employment development within the surrounding ecological and local landscape area.

The **Vision** for the landscape design strategy is to:

Increase the biodiversity and landscape value of the site over the long-term

Aims & Objectives

- 2.2 The Vision consists of four main Aims, with each Aim being sub-divided into its Objectives. The **Aims** are outlined below, with **Objectives** described in detail on the following pages.

Aim 1: Maintain and enhance the biodiversity value of the site

Objective 1: Protect and maintain retained habitats and protected species within the site;

Objective 2: Create a matrix of complimentary new habitats within a GI framework. To maximise the provision and establishment of native species and species of local provenance that are appropriate to the immediate surrounds and local area.

Aim 2: Balance development amenity with wildlife

Objective 3: Provide a safe and pleasant landscape setting for staff and customers and to provide a high quality landscape structure that enhances the appearance and character of the site and its environs. To create new habitat structures and foraging/sheltering opportunities for invertebrates, birds and small mammals through new native and semi-ornamental planting.

Aim 3: Manage the site for biodiversity in the long-term

Objective 4: Ensure the matrix of new and existing habitats establish and are suitably maintained to ensure long-term biodiversity gain. To provide new roosting/nesting opportunities for bat and bird species and create new sheltering and hibernation opportunities for amphibians, reptiles, invertebrates and small mammals.

Aim 4: Monitor the site and review the Plan

Objective 5: Provide a framework of monitoring and review periods.

3.0 HABITATS & PROTECTED SPECIES TO BE RETAINED & PROTECTED

Objective 1: Protect and maintain retained habitats and protected species within the site.

- 3.1 Existing habitats will be retained where feasible within the development, and will be protected through the enabling and construction phases.

Pre-construction Mitigation Measures

- 3.2 The following outlines the ecological mitigation measures to be undertaken ahead of commencing on site in order to minimise impact from construction works.

Existing Vegetation

- 3.3 Scattered trees and sections of scrub along embankments to the periphery of the site are to be retained within the proposed scheme. Retained trees will be left unmanaged unless otherwise dictated for reasons of public safety or to benefit the woodland structure or other adjacent or associated habitats or species.
- 3.4 During construction, any sections of retained hedgerows will be protected in accordance with BS5837:2012 and trees will be protected by fencing erected according to their calculated root protection area (RPA). No removal of woody vegetation will take place during the bird nesting season (**March to September** inclusive) unless a thorough survey by an appropriately experienced ecologist first confirms that no active nests are present. Any work will accord with the Wildlife and Countryside Act 1981 (as amended).
- 3.5 Trees will be inspected for signs of stress, disease or damage and appropriate remedial action taken. Arisings from any tree management activity will, where appropriate, be retained on site in piles to create wood habitat to maximise invertebrate and bryophyte biodiversity. Where it accords with health and safety inspection, standing dead wood will be left in-situ to provide additional dead wood habitats.

Mitigation Measures during Construction

Existing Hedgerows and Trees

- 3.6 Protective fencing will be maintained around the retained trees and hedgerows throughout the site. Regular checks will be undertaken throughout the enabling and construction phase to ensure these are maintained.
- 3.7 Any trees that require felling will be in accordance with an Arboricultural Method Statement if available or under the supervision of a qualified arborist/ tree surgeon and shall be assessed for bat roosts by a suitably qualified Ecologist.
- 3.8 Any hedgerow removal should be checked and overseen by a suitably qualified Ecologist, and will be undertaken with care in stages using hand tools.
- 3.9 It is recommended that any removal of woody vegetation including hedgerow sections and trees should occur outside of the bird breeding season to minimise the risk of disturbance to breeding birds.

- 3.10 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.
- 3.11 If any nesting birds are present, the nest and a 5m buffer 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.

Existing Grassland

- 3.12 During the construction phase, existing retained grassland will be kept short through mowing or grazing to prevent it becoming colonised by reptiles.
- 3.13 Appropriate working methods comprise directional strimming of tall ruderal and grassland habitats prior to site clearance works, and the subsequent maintenance of on-site habitats with a short sward throughout works to minimise the potential for terrestrial fauna being harmed.

Site Storage

- 3.14 Care should be taken to store building materials off the ground, for example on pallets, to avoid creating temporary refugia.

Lighting

- 3.15 No construction lighting will be permitted on retained trees and hedgerows to protect nocturnal animals such as bats. Alternatively, construction will be restricted to daylight hours, finishing at least 30 minutes before sunset and commencing at least 30 minutes after sunrise during the main bat activity season (**April to October** inclusive).

Excavations

- 3.16 Trenches or large excavations will be covered overnight to prevent wildlife falling in and failing to escape, or a strategically placed plank will provide a means of escape. Any large bore pipes will be capped at the end of the day to reduce the potential for wildlife to enter and become trapped.

Reptiles

- 3.17 Refer to Ecological Impact Assessment Report section 4.3.2.3 for construction phase mitigation measures.

Nesting Birds

- 3.18 Refer to Ecological Impact Assessment Report section 4.3.1.2 for construction phase mitigation measures.

4.0 LANDSCAPE & ECOLOGICAL SPECIFICATION

Objective 2: Create a matrix of complimentary new habitats within a GI Framework.

- 4.1 The Plan will create a matrix of new and existing habitats and corridors through the site to encourage the establishment and movement of wildlife.
- 4.2 The following section outlines the specification and implementation, with **Section 5** outlining the works programme and management regime.

General

- 4.3 Shrub, tree and hedgerow planting are to be delivered and planted in accordance with HTA Standard 'Handling and establishing landscape plants' (obtainable from the Horticultural Trades Association) Part III, paragraphs 6.2 to 6.6 and should also accord with the planting plans. All plants should be stored only when necessary in accordance with the HTA's 'Handling and establishing landscape plants' (obtainable from the Horticultural Trades Association) Part I, Part II and Part III, paragraphs 1.3.3 to 1.3.6, 3.0, and 4.0.
- 4.4 Planting is to remain materially undamaged, sturdy, healthy and vigorous, planted upright or well balanced with best side to front. Trees and shrubs are to be of good shape and without elongated shoots, grown in a suitable environment and hardened off before being delivered to the site. All planting is to be true to name, of UK provenance and free from pests, diseases, discoloration, weeds, fungus and physiological disorders.
- 4.5 All trees should take into consideration the recommended minimum distances to foundations as set out in Chapter 4.2 of the NHBC Standards. Planting should accord with these standards unless checked and verified by the project engineer. For further species calculations refer to Chapter 4.2 of the NHBC Standards, and for species not included use a mature height of 2/3 the specified height in A. Mitchell's 'Trees of Britain and Northern Europe'.
- 4.6 All works are to be undertaken with due diligence being sure to leave the works in a clean and tidy condition at completion and after any maintenance operations. Protect areas affected by planting operations using boards/ tarpaulins and do not place excavated or imported material directly on adjacent grassed areas.
- 4.7 All plants to be protected from wind exposure at all times. All plants to be soaked in water for several hours prior to planting and to be well watered in.
- 4.8 After planting water plants to ensure that the full depth of topsoil is wetted. Apply water evenly and without damaging or displacing plants or soil. Continue to water as necessary to ensure the successful establishment and continued thriving of planting. All new plant material to receive enough water to ensure healthy establishment.
- 4.9 If water supplies are restricted or likely to become restricted by emergency legislation, do not carry out planting until instructed. If planting has been carried out, obtain instructions on watering.
- 4.10 Contractor shall maintain existing levels around the base of existing trees and shall undertake all planting works occurring within tree protection zones in accordance with BS5837:2012.

Topsoiling

- 4.11 Minimum topsoil depths after settlement shall be 150mm grass, 300mm mixed scrub, 450mm formal hedges and ornamental shrub planting, 500mm native standards and 900mm for specimen trees.
- 4.12 Import topsoil to BS3882:2015 Economy Grade where required.
- 4.13 Topsoil must be free from pernicious weeds and roots, clay lumps, non-soil materials, brick or other building materials, foreign matter and chemical contamination. Topsoil should be spread evenly over areas to be planted in layers not exceeding 150mm and firm each layer before spreading the next. At the time of laying, both material and weather should be reasonably dry.
- 4.14 Bare root deciduous planting shall be carried out from late October to late March; conifers and evergreens either September/October or April/May, herbaceous plants [including aquatic and marginal] September/October or March/April. Container grown plants at any time of year if ground and weather conditions are favourable. Bare root deciduous planting to be carried out only during suitable ground and weather conditions. Planting shall not be carried out in waterlogged or frozen ground.
- 4.15 Native scrub and woodland edge planting to be bare root whips and notch planted. Cut the spade fully into the ground. At a right angle to the first cut, repeat step 1 to create a T-shape. Take the spade to the original cut and lever it upwards, parting the turf. Place the tree carefully in between the sections of turf. Lever the spade back out and the turf will fall into place. Ensure all roots are taken into the hole. Adjust the tree to ensure it is at ground level, and thoroughly firm down soil around the tree.
- 4.16 Weed Control Matting: After clearing the ground around the transplant, firmly fit the mat by tucking the edges into the soil. Use 500 x 500mm fabric weed control matting eg Ecomatt by Greentech or similar, fix down with degradable barbed fixing pegs Eg Bio Weed Fabric Fixing Pegs by Greentech. Apply mulch dressing over matting with 50mm minimum depth of chipped natural British forest biomass containing minimum of 70% wood content of particle size 35-45mm. The mulch shall be free of pest, disease or weed contamination for handover. Do not to allow the woodchip to touch the stem as it can cause rot.

Protection

- 4.17 All stock to be protected against rabbit damage and strimming using proprietary tree shelter and staking package.
 - Whip Planting Eg 600mm high Defender Tree Shelter + 900mm x 22mm treated Wood Support Stake by Greentech or similar.
 - Tree Planting Eg 600x250mm Mesh Tree Guard Plastic Shelter with wood support & ties by Greentech or similar.
 - Bushy thicket shrubs to be protected by min. 600mm high x 170-200mm diam, proprietary plastic mesh shrub shelters / guards and secured in place with treated softwood timber stake and plastic cable ties.
- 4.18 General groundcover to woodland planted areas to be Tussock Grassland Mix eg Emorsgate EG10 seeded at 4g /sqm where areas need to be made good.

- 4.19 It is recommended that a regime for watering and replacement planting is in place for the first 5 years to aid the woodland establishment. Water as necessary to ensure successful establishment of all planting.

Native Woodland Edge Mix

- 4.20 New native woodland edge planting should be planted between October and March, avoiding periods of inundation or prolonged ground frost. This will accord with BS 8545:2014. Plants are to be mulched using wood chippings or bark to establish a 1m diameter around the plant stem or use proprietary mulch matting. Woodland planting should be well heeled, protected by rabbit proof guards with a cane support.
- 4.21 New native woodland edge planting will comprise the following species:

Species	Density	Size	Root	%
<i>Acer campestre</i> (Field Maple)	2m centres	60-80cm	BR	15
<i>Betula pubescens</i> (Downy Birch)	2m centres	60-80cm	BR	20
<i>Corylus avellana</i> (Hazel)	2m centres	60-80cm	BR	15
<i>Ilex aquifolium</i> (Holly)	2m centres	45-60cm	5L	5
<i>Malus sylvestris</i> (Crab Apple)	2m centres	60-80cm	BR	15
<i>Prunus avium</i> (Wild Cherry)	2m centres	60-80cm	BR	15
<i>Sorbus aucuparia</i> (Rowan)	1m centres	60-80cm	BR	15

Native Scrubland Planting Mix

- 4.22 New scrub planting should be planted between October and March, avoiding periods of inundation or prolonged ground frost. This will accord with BS 8545:2014. Plants are to be mulched using wood chippings or bark to establish a 1m diameter around the plant stem or use proprietary mulch matting. Mixed scrub planting should be well heeled, protected by rabbit proof guards with a cane support.
- 4.23 New native mixed scrub planting (closed texture) located along the northern embankment will comprise the following species:

Species	Density	Size	Root	%
<i>Corylus avellana</i> (Hazel)	1m centres	20-40cm	RC4	2
<i>Corylus avellana</i>	1m centres	45-60cm	BR	4
<i>Corylus avellana</i>	1m centres	60-80cm	BR	4
<i>Cornus sanguinea</i> (Dogwood)	1m centres	45-60cm	BR	5
<i>Malus sylvestris</i> (Crab Apple)	1m centres	20-40cm	RC4	5
<i>Malus sylvestris</i>	1m centres	45-60cm	BR	5
<i>Malus sylvestris</i>	1m centres	60-80cm	BR	5
<i>Euonymus europaeus</i> (Spindle)	1m centres	20-40cm	RC4	5
<i>Euonymus europaeus</i>	1m centres	45-60cm	BR	5
<i>Euonymus europaeus</i>	1m centres	60-80cm	BR	5
<i>Frangula alnus</i> (Alder Buckthorn)	1m centres	60-80cm	BR	10
<i>Ilex aquifolium</i> (Holly)	1m centres	45-60cm	5L	10
<i>Rhamnus cathartica</i> (Buckthorn)	1m centres	20-40cm	RC4	5
<i>Rhamnus cathartica</i>	1m centres	45-60cm	BR	5
<i>Rhamnus cathartica</i>	1m centres	60-80cm	BR	5
<i>Rosa canina</i> (Dog Rose)	1m centres	45-60cm	BR	5

<i>Salix caprea</i> (Goat Willow)	1m centres	45-60cm	BR	5
<i>Salix cinerea</i> (Grey Willow)	1m centres	45-60cm	BR	5
<i>Viburnum opulus</i> (Guelder Rose)	1m centres	45-60cm	BR	5

- 4.24 New native mixed scrub planting (open mosaic) located along the southern perimeter will comprise the following species:

Species	Density	Size	Root	%
<i>Cornus sanguinea</i> (Dogwood)	1m centres	45-60cm	BR	15
<i>Euonymus europaeus</i> (Spindle)	1m centres	60-80cm	BR	25
<i>Frangula alnus</i> (Alder Buckthorn)	1m centres	60-80cm	BR	10
<i>Rosa canina</i> (Dog Rose)	1m centres	20-40cm	RC4	10
<i>Salix caprea</i> (Goat Willow)	1m centres	45-60cm	BR	15
<i>Salix cinerea</i> (Grey Willow)	1m centres	20-40cm	RC4	10
<i>Viburnum opulus</i> (Guelder Rose)	1m centres	45-60cm	BR	15

- 4.25 Mixed scrub habitat planted in an open mosaic texture with 40% woody shrubs and open glades/rides of grassland 60% using a Tussock Mix eg Emorsgate EM10 or similar.

Specimen Tree Planting

- 4.26 New trees should be planted between October and March, avoiding periods of inundation or prolonged ground frost. This will accord with BS 8545:2014. Trees are to be mulched using wood chippings or bark to establish a 1m diameter around the tree stem or use proprietary mulch matting.
- 4.27 New tree planting will comprise the following species:

Specimen Tree Species	Stem	Size	Root
<i>Betula pendula</i> (Silver Birch)	Clear-stem	12-14cm	RB
<i>Prunus x subhirtella</i> 'Autumnalis Rosea' (Winter Flowering Cherry)	Clear-stem	12-14cm	RB
<i>Quercus robur</i> (English Oak)	Clear-stem	12-14cm	RB
<i>Sorbus aucuparia</i> (Rowan)	Clear-stem	12-14cm	RB
<i>Sorbus commixta</i> 'Embley' (Scarlet Rowan)	Clear-stem	12-14cm	RB

- 4.28 Standard trees to be pit planted. Minimum pit size: 900 x 900 x 500mm depth. Excavate tree pits with slightly raised centre. Retain topsoil for re-use. Dig a hole which is substantially bigger than the volume of roots to be accommodated. Break up and loosen the base and sides of the pit. The trees will be planted to the same depth as they were in the nursery. Back fill the pit in stages, whilst firming up the soil around the roots until the original ground level is restored. Tree pits in soft landscaped areas to be filled with 1:3 mixture of compost and topsoil to an initial depth of 500mm, with well worked subsoil layered beneath to generally accord with existing surrounding soil strata. Topsoil to contain peat free organic matter and slow-release fertiliser to be incorporated into each pit.
- 4.29 Specimen heavy standard trees to receive plastic irrigation pipe system Eg Roottrain Urban by Green Blue Urban or similar.

- 4.30 Stake all heavy standard trees with double stakes and tree shelter protection. Stakes to be first grade pressure impregnated round timber and chamfered tops. Position stake close to the tree on windward side and drive vertically at least 300mm into the bottom of the pit before planting. Backfill and consolidate material around stake. Cut stakes to approximately one third of the tree height above ground level. Use hessian ties e.g. NatureTie by Green Blue Urban, securing tree firmly but not rigidly to stake with at least 2 ties within 25mm of top of stake.
- 4.31 For all proposed trees centred in a location within 3m of any underground services up to a depth of 800mm, use 'ReRoot 1000' by Greenleaf Ltd or similar, ribbed root barrier membrane, to a depth of 1000mm, ribs facing tree, joints fixed with jointing tape, install 10mm above final surface level of soft landscaping.

Single Species Formal Hedge Planting

- 4.32 A single species formal hedge will comprise the following species:

Species	Density	Size	Container	%
<i>Prunus laurocerasus</i> (Cherry Laurel)	5/Lm	40-60cm	5L	100

- 4.33 Plants must be set in the holes at the same depth at which they have previously been growing with planting holes excavated approximately 150mm larger than the root balls and backfilled with a mixture of topsoil. To be maintained at 1.2m in height.
- 4.34 Plants to be a minimum of 300mm from any adjacent hard surface. All stock to be well watered when planted with 20L of water per m². Following planting and watering operations, all beds are to be mulched with 75mm of mulch (5-75mm particle size, British origin, FSC certified).

On Plot Ornamental Planting

- 4.35 The on plot ornamental shrub planting will comprise the following species:

Species	Density /m ²	Size cm	Container
<i>Aucuba japonica</i> 'Rozannie'	4	40-60	3L
<i>Cornus alba</i> 'Sibirica'	3	60-80	3L
<i>Cornus sanguinea</i> 'Midwinter Fire'	3	60-80	3L
<i>Cornus stolonifera</i> 'Flaviramea'	3	60-80	3L
<i>Hebe</i> 'Red Edge'	4	40-60	3L
<i>Photinia x fraseri</i> 'Little Red Robin'	4	40-60	3L
<i>Prunus laurocerasus</i> 'Otto Luyken'	4	40-60	3L
<i>Sarcococca hookeriana</i> var. <i>humilis</i>	4	40-60	3L
<i>Skimmia japonica</i> 'Rubella'	4	40-60	3L
<i>Viburnum davidii</i>	4	40-60	3L
<i>Carex elata</i> 'Aurea'	7		3L
<i>Deschampsia cespitosa</i> 'Goldtau'	5		3L
<i>Dryopteris erythrosora</i> 'Brilliance'	5		3L
<i>Molinia caerulea arundinacea</i> 'Windspiel'	5		3L
<i>Stipa tenuissima</i>	7		3L

- 4.36 This palette comprises berry bearing and nectar rich cultivars which are beneficial to birds and insects.

- 4.37 Plants must be set in the holes at the same depth at which they have previously been growing with planting holes excavated approximately 150mm larger than the root balls and backfilled with a mixture of topsoil.
- 4.38 Plants to be a minimum of 300mm from any adjacent hard surface. All stock to be well watered when planted with 20L of water per m². Following planting and watering operations, all beds are to be mulched with 75mm of mulch (5-75mm particle size, British origin, FSC certified)

Long / Meadow Grassland

- 4.39 New areas of meadow grassland will be seeded using a species-rich meadow grassland mix such as **N4 Summer Flowering Butterfly & Bee Meadow Mix** eg Naturescape (or similar) sown at 5g/m² as per the manufacturer's instructions.

%	Latin name	Common name
<u>Wildflowers 20%</u>		
3	<i>Achillea millefolium</i>	(Yarrow)
3	<i>Anthyllis vulneraria</i>	(Kidney Vetch)
1	<i>Campanula glomerata</i>	(Clustered Bellflower)
1	<i>Campanula trachelium</i>	(Nettle Leaved Bellflower)
8	<i>Centaurea nigra</i>	(Common Knapweed)
5	<i>Centaurea scabiosa</i>	(Greater Knapweed)
4	<i>Daucus carota</i>	(Wild Carrot)
4	<i>Echium vulgare</i>	(Viper's Bugloss)
8	<i>Galium verum</i>	(Lady's Bedstraw)
2	<i>Geranium pratense</i>	(Meadow Cranesbill)
3	<i>Hypericum perforatum</i>	(Common St. John's Wort)
5	<i>Knautia arvensis</i>	(Field Scabious)
3	<i>Lathyrus pratensis</i>	(Meadow Vetchling)
1	<i>Linaria vulgaris</i>	(Common Toadflax)
7	<i>Lotus corniculatus</i>	(Birdsfoot Trefoil)
2	<i>Lythrum salicaria</i>	(Purple Loosestrife)
2	<i>Origanum vulgare</i>	(Wild Marjoram)
10	<i>Prunella vulgaris</i>	(Self Heal)
7	<i>Rhinanthus minor</i>	(Yellow Rattle)
4	<i>Scabiosa columbaria</i>	(Small Scabious)
4	<i>Stachys officinalis</i>	(Betony)
3	<i>Stachys sylvatica</i>	(Hedge Woundwort)
2	<i>Succisa pratensis</i>	(Devilsbit Scabious)
3	<i>Trifolium pratense</i>	(Wild Red Clover)
2	<i>Verbascum nigrum</i>	(Dark Mullein)
3	<i>Vicia cracca</i>	(Tufted Vetch)
100		
<u>Grasses 80%</u>		
3	<i>Agrostis capillaris</i>	(Common Bent)
3	<i>Anthoxanthum odoratum</i>	(Sweet Vernal Grass)
2	<i>Briza media</i>	(Quaking Grass)
22	<i>Cynosurus cristatus</i>	(Crested Dogstail)
22	<i>Festuca Trachyphylla</i>	(Hard Fescue)
22	<i>Festuca rubra ssp. commutata</i>	(Chewing's Fescue)
13	<i>Festuca rubra ssp. litoralis</i>	(Slender Creeping Red Fescue)
1	<i>Hordeum secalinum</i>	(Meadow Barley)
10	<i>Poa pratensis</i>	(Smooth Stalked Meadow Grass)
2	<i>Trisetum flavescens</i>	(Yellow Oatgrass)
100		

- 4.40 Areas to be sown will be first rotovated and raked or harrowed to produce a medium fine, firm tilth. Fertiliser will not be applied at any point as this will lead to dominance of nutrient loving species such as broad-leaved grasses, nettles and docks. The seed mix will be sown at a density as per the general manufacturer's recommendation to allow space for each species to establish and to produce good ground cover.
- 4.41 Seed will be sown in the autumn or spring, selecting a time when the soil is moist and can be worked. Seeding will be sown by hand broadcasting, seed fiddle, spinner, hydroseeding or grass seed drill on the surface and will not be raked or harrowed in.

Tussocky Grassland

- 4.42 Established grassland that is not mown or grazed each year will become rough and "tussocky" in character. This grassland type is not as diverse or attractive as meadowland, but once established requires minimal maintenance. This can form useful refuge habitat on corners and margins of a site.
- 4.43 Dense tussocks establish a layer of thatch that provide valuable shelter and over wintering areas. In order to expedite this establishment, the tussock grassland areas will have minimal maintenance and will not require harrowing or the removal of arisings.
- 4.44 New areas of tussocky grassland will be seeded using an appropriate mix such as **Emorsgate EM10 – Tussock Mix**, sown at 4g/m² as per the manufacturer's instructions.

%	Latin name	Common name
<u>Wildflowers</u>		
1.5	<i>Agrimonia eupatoria</i>	(Agrimony)
0.2	<i>Arctium minus</i>	(Lesser Burdock)
2.4	<i>Centaurea nigra</i>	(Common Knapweed)
0.1	<i>Centaurea scabiosa</i>	(Greater Knapweed)
0.5	<i>Chaerophyllum temulum</i>	(Rough Chervil)
0.1	<i>Cirsium eriophorum</i>	(Woolly Thistle)
0.1	<i>Cruciata laevipes</i>	(Crosswort)
3.0	<i>Dipsacus fullonum</i>	(Wild Teasel)
1.5	<i>Filipendula ulmaria</i>	(Meadowsweet)
1.0	<i>Galium album</i>	(Hedge Bedstraw)
1.0	<i>Leucanthemum vulgare</i>	(Oxeye Daisy)
1.0	<i>Malva moschata</i>	(Musk Mallow)
1.0	<i>Ranunculus acris</i>	(Meadow Buttercup)
0.1	<i>Silene dioica</i>	(Red Campion)
1.5	<i>Silene latifolia</i>	(White Campion)
1.5	<i>Silene vulgaris</i>	(Bladder Campion)
0.5	<i>Torilis japonica</i>	(Upright Hedge-parsley)
3.0	<i>Vicia cracca</i>	(Tufted Vetch)
<u>Grasses</u>		
1.0	<i>Alopecurus pratensis</i>	(Meadow Foxtail)
16.0	<i>Cynosurus cristatus</i>	(Crested Dogtail)
16.0	<i>Dactylis glomerata</i>	(Cocksfoot)
4.0	<i>Deschampsia cespitosa</i>	(Tufted Hair-grass)
24.0	<i>Festuca rubra</i>	(Strong-creeping Red-fescue)
1.0	<i>Holcus lanatus</i>	(Yorkshire Fog)
10.0	<i>Schedonorus arundinaceus</i>	(Tall Fescue)
8.0	<i>Schedonorus pratensis</i>	(Meadow Fescue)

- 4.45 Seed will be sown in the autumn or spring, selecting a time when the soil is moist and can be worked. Seeding will be sown by hand broadcasting, seed fiddle, spinner, hydroseeding or grass seed drill on the surface and will not be raked or harrowed in.
- 4.46 Only areas disturbed through landscape works will be seeded.

Amenity Grassland

- 4.47 New short sward amenity grassland areas will be established using a suitable species-rich native flowering grassland mix such as **Emorsgate EL1 – Flowering Lawn Mixture**, sown at 4g/m² as per the manufacturer's instructions.

%	Latin name	Common name
4	<i>Galium verum</i>	(Lady's Bedstraw)
0.5	<i>Leontodon hispidus</i>	(Rough Hawkbit)
1	<i>Leucanthemum vulgare</i>	(Oxeye Daisy - (Moon Daisy))
3.7	<i>Lotus corniculatus</i>	(Birdsfoot Trefoil)
3	<i>Primula veris</i>	(Cowslip)
4	<i>Prunella vulgaris</i>	(Selfheal)
3.5	<i>Ranunculus acris</i>	(Meadow Buttercup)
0.3	<i>Trifolium pratense</i>	(Wild Red Clover)
8	<i>Agrostis capillaris</i>	(Common Bent)
40	<i>Cynosurus cristatus</i>	(Crested Dogtail)
28	<i>Festuca rubra</i>	(Red Fescue)
4	<i>Phleum bertolonii</i>	(Smaller Cat's-tail)

- 4.48 Only areas disturbed through landscape works will be seeded.
- 4.49 Areas to be sown will be first rotovated and raked or harrowed to produce a medium fine, firm tilth. Seed will be sown in the autumn or spring, selecting a time when the soil is moist and can be worked.
- 4.50 The above seed mix includes many perennial species that can be slow to germinate and grow. Ground cover will therefore likely take longer to develop than conventional lawn sowings and may take 12-18 months to knit together as turf. Newly seeded areas will therefore be protected to prevent seedling destruction by pedestrians.

Existing Grassland Undisturbed During the Construction Process

- 4.51 Areas undisturbed during the construction process (and hence will not be seeded) will be created through the cutting management regime.

Bulb Planting

- 4.52 Areas of bulb planting are to be included within areas of amenity grassland. Planting will take place from late summer through to autumn. Topsize bulbs should be planted 300mm apart, planted in random swathes in the areas shown, at three times their depth.
- 4.53 Planting will comprise the following species:

Species

Narcissus 'Thalia'

To be grade 8/10 and planted at 30/m² densities.

Bird and Bat Boxes

- 4.54 Two telegraph poles will be erected within the strip of mixed scrub along the southern edge of the site to accommodate bird and bat box installations.
- 4.55 Two bat boxes will be erected on one of these poles, installed in accordance with standard best practice, such that the boxes are positioned at least 3m above the ground, with the entrances to the boxes facing south-west to south-east. The entrances to the boxes are to be free of obstacles such that there is a clean and clear flight path to the new potential roost sites. This measure will provide increased roosting opportunities across the site over the existing situation.
- 4.56 Two bird boxes will be erected on the other freestanding pole, installed in accordance with standard best practice, such that the boxes are positioned 3m above the ground, with the entrances to the boxes facing between north and east. The entrances to the boxes are to be free of obstacles such that there is a clean and clear flight path to the new potential nesting sites.
- 4.57 The specification of boxes are as follows;
- 2no. Bat Boxes; eg Eco Bat Box with Cavity or Crevice Chamber
 - 2no. Bird Boxes; eg Vivaro Woodstone boxes, one with a 32mm entrance hole and one with a 28mm entrance hole.
- 4.58 No artificial lighting is to be used near or directed towards the bird and bat bricks.

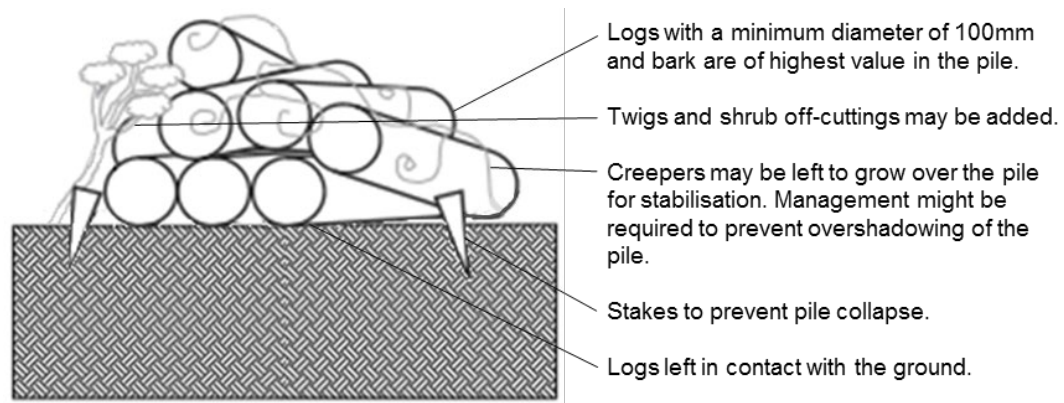
Lighting Design

- 4.59 To minimise potential effects to the local bat population artificial lighting should be carefully designed adjacent to existing and new potential bat foraging areas including tree groups, hedgerows and commuting lines.
- 4.60 Any proposed lighting scheme will be designed in compliance with the Bat Conservation Trust publication 'Bats and Artificial Lighting in the UK' (2018).

Log Piles

- 4.61 Log piles will ideally be created from tree work arisings from site and placed at the interface between woodland and grassland habitats, avoiding north facing areas. The logs should be left in contact with the ground in dappled shade and built into a compact pile to maintain humidity. Stakes should be driven into the ground either side of the log pile to prevent the pile from collapsing.
- 4.62 Larger diameter logs (at least 100mm thick) with bark are of most value, particularly hard wood like ash, oak and beech, whereas freshly cut willow and poplar may re-sprout. Twigs, stems and shrub off-cuttings may also be added. Climbers may be allowed to grow thinly over the dead wood pile for stabilisation and moisture. Full sun will dry and heat the wood, supporting little life, whereas dense shade will promote the growth of fungi but may be too cool for insects.

Figure 3: Log Pile Detail



Objective 3: Provide a safe and pleasant landscape setting for new employment development for staff and customers.

- 4.63 The scheme will incorporate areas of visually attractive meadow grassland, tussock grassland, short sward flowering lawn grassland and spring bulbs, specimen trees, native mixed scrubland, formal hedgelines and ornamental planting.
- 4.64 The inner core of the site will incorporate informal greenspace with ornamental hedges, planting borders and small trees to provide structure and interest.
- 4.65 This will be enveloped by the site wide green infrastructure comprising a mosaic of scrubland, grassland, woodland edge planting and groups of trees.

5.0 LANDSCAPE & ECOLOGICAL MANAGEMENT

Objective 4: Ensure the matrix of new and existing habitats establish and are suitably maintained to ensure long-term biodiversity gain.

5.1 The following section outlines the works programme and management regime, with **Section 4** outlining the specification and implementation.

Table 1: 30 Year Management Works Programme

Prescriptions	Years with Priority									
	1	2	3	4	5	6-10	11-15	16-20	21-25	26-30
Existing Retained Trees										
Tree works will follow best practice procedures as set out in BS 3998:2010. No removal of woody vegetation will take place during the bird nesting season unless checked by a qualified Ecologist. Existing retained trees will be left unmanaged unless otherwise dictated for reasons of public safety.	✓									
Existing trees will be inspected to record pests and diseases, deadwood and structural condition.			✓		✓	✓	✓	✓	✓	✓
Retained trees will be protected from damage and from soil compaction during construction using fenced Root Protection Areas (RPAs) where construction works are to be undertaken in the vicinity, in accordance with guidance in British Standard 5837:2012 – Trees in Relation to Design, Demolition and Construction – Recommendations.	✓									
Arisings from any woodland management activity will, where possible will be used to provide opportunities for invertebrates and bryophytes by forming micro-habitats from piles of dead wood or recumbent dead logs away from publicly accessible areas. Woodpiles will be created at the woodland edge and within the woodland interior. Where practical, piles will be situated in partial sunlight with some shade.	As required									

Native Scrubland Planting Mix										
Replace failed specimens on a like-for-like basis. Top up mulch to a depth of 75mm where necessary.	✓	✓	✓	✓	✓					
Spraying or strimming of weeds to reduce competition and aid establishment. Not required if weed suppression matting used. Spray and hand weed around tree boles.	✓	✓	✓	✓	✓					
Examine all stakes, ties and guarding, replace or adjust as appropriate. If the tree has yet to establish, replace or adjust ties, spacers and tree tubes as appropriate. If the tree has established well, then remove all stakes, ties, spacers, tubes etc. and make good surfaces disturbed – filling any holes with suitable topsoil.	✓	✓	✓	✓	✓					
Where periods of extreme drought occur, trees that have not yet established (not healthy, not in full leaf, suppressed growth) need to be watered where their tolerance to drought is deemed to be insufficient.	✓	✓	✓	✓	✓					
Scrubland to be thinned once between years 10 and 15 by removing weaker specimens. Inspect and identify low quality/over suppressed trees whose removal or thinning would support creation of a more uneven, diverse canopy structure. Generally thin invasive species in favour of less common species- these to be encouraged through formative pruning and crown lifting as appropriate. Arisings will be left in windrows within the woodland blocks unless there is a large quantity of material in which case it will be removed from site. Any diseased wood should be removed from site. Further thinning will be carried out after year 20 & 30 if necessary.						✓		✓		✓
Specimen Tree Planting										
A weed-free mulched 1m diameter circle around the tree stem to a minimum depth of 75mm. When trees have reached independence, the sward can be allowed to grow up to the trunk, although tall weeds, bramble and	✓	✓	✓	✓	✓					

ivy will be removed from around the trees. Care will be taken when using trimmers or mowers to avoid damaging trees. Weeds and grass within 100mm of the trunks will be removed by hand.										
Examine all tree stakes and ties, replace or adjust as appropriate. If the tree has yet to establish, replace or adjust ties, spacers and tree tubes as appropriate. If the tree has established well, then remove all stakes, ties, spacers, tubes etc. and make good surfaces disturbed – filling any holes with suitable topsoil.	✓	✓	✓	✓	✓					
Replace failed specimens on a like-for-like basis. Top up mulch to a depth of 75mm where necessary.	✓	✓	✓	✓	✓					
Where periods of extreme drought occur, trees that have not yet established (not healthy, not in full leaf, suppressed growth) need to be watered where their tolerance to drought is deemed to be insufficient.	✓	✓	✓	✓	✓					
Throughout the management period there will be a continual process of formative pruning as appropriate to encourage good growth and shape, if required. Once trees have reached 150mm diameter at breast height (DBH) a formal process of tree inspection, for the discharge of a tree owner's duty of care.			✓		✓	✓	✓	✓	✓	✓
Any trees that are overhanging highways, footways or obstructing signs / lighting columns will be pruned back for safety reasons.					✓	✓	✓	✓	✓	✓
Woodland Edge Planting										
Replace failed specimens on a like-for-like basis. Top up mulch to a depth of 75mm where necessary.	✓	✓	✓	✓	✓					
Spraying or strimming of weeds to reduce competition and aid establishment. Not required if weed suppression matting used. Spray and hand weed around tree boles.	✓	✓	✓	✓	✓					
Examine all tree stakes and ties, replace or adjust as appropriate. If the tree has yet to establish, replace or adjust ties, spacers and tree tubes as appropriate. If the tree has established well, then remove all stakes, ties,	✓	✓	✓	✓	✓					

[illegible]

[illegible]

[illegible]

for damage. Replace lost or damaged boxes.										
Bat boxes will have a non-invasive visual inspection in autumn or winter to check for damage, unless a separate agreement has been agreed with Natural England. Replace lost or damaged boxes. Any work required to the bat boxes will be carried out by a licenced bat worker.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
General										
Check for, and control of INNS (Invasive Non-Native Species)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Litter will be removed from the site as part of the general management and maintenance visits. All litter, stones or other debris will be collected and removed by the Contractor immediately prior to grass cutting operations.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ecological visual inspection by a qualified ecologist for the first year to provide baseline data for future surveys to be monitored against.	✓				✓					✓
Arboricultural visual inspection, as part of a tree safety risk assessment for the development.						✓	✓	✓	✓	✓
Work programme review by those members of staff involved in site management.					✓					✓

General Notes

- 5.2 In general the objectives relating to the soft landscape are to allow for potential periodic thinning of plant beds should beds become excessively overcrowded, to remove dead or damaged plants and undertake further replacement planting where necessary and reinstate any grassed areas subject to erosion or damage.
- 5.3 Scrubland thinning will be carried out in January / February to avoid the bird nesting season and to allow birds to eat any berries.
- 5.4 All scrubland and tree works will be carried out with consideration of the potential presence of legally protected and priority species. Prior to commencement of any arboricultural or pruning works any trees with the potential to support roosting bats will be inspected by a qualified ecologist. Works will be scheduled to avoid the bird nesting season (March to August). Some deadwood will be retained to create additional log/brush piles and potential hibernation sites for fauna.
- 5.5 Amphibians and reptiles are typically active from March to October and therefore care is to be taken when cutting grass during these months. Short, heavily managed grassland will be short sward (exposed) therefore of very low risk, however medium to tall sward have a higher risk of

amphibians and reptiles being present and therefore the grassed areas (edges in particular) should be walked slowly prior to cutting to encourage any amphibians and reptiles to move away of their volition (if present). Medium to tall sward grass should not be cut to ground level immediately and cutting should be undertaken in a directional manner, working from the middle of a space outwards to enable time for the amphibians and/or reptiles to escape.

- 5.6 Wildflower grasslands and flowering plants provide a valuable nectar and food source for invertebrates. Once established, wildflower grassland should be left to seed before a cut is taken (i.e. a late summer cut). Pruning of shrubs and herbaceous species should be undertaken once flowering has finished.

Implementation of the Maintenance Works

- 5.7 Planting should be maintained by the landscape contractor for a minimum of 12 months following planting, with any defective planting replaced by the end of the first year.
- 5.8 Maintenance of the landscape areas shall be undertaken by a competent Landscape Contractor, registered with the British Association of Landscape Industries (BALI).
- 5.9 All soft landscape areas to be maintained to BS7370-4:1993 Grounds Maintenance.
- 5.10 The landscape maintenance of the site is to be carried out to a high standard at all times and in accordance with the schedule and specifications within this management plan.
- 5.11 The contractor shall ensure that the site is left tidy and safe following all maintenance works. All arisings should be removed from site in accordance with the maintenance schedule.
- 5.12 The contractor shall programme their visits to coincide with appropriate weather conditions for carrying out maintenance operations including the use of chemicals and the mowing of grass. Grass mowing in excessively wet conditions is prohibited.
- 5.13 A record of all maintenance visits should be completed by the maintenance contractor and these should be submitted to the Client for review every six months.
- 5.14 The maintenance contractor shall ensure that any chemical application is undertaken by trained personnel only with the appropriate NPTC certificates and in accordance with the manufacturer's recommendations.
- 5.15 The 'Code of Practice for the Safe Use of Pesticides for Non-agricultural Purposes' will be observed where applicable. The use of any chemicals shall be included within the maintenance visit records as described above.
- 5.16 The Contractor should notify the Client immediately to any significant pest or disease problem affecting plant stock and a suitable strategy for treatment should be discussed and agreed with the Client.
- 5.17 Sufficient watering should be undertaken to establish and maintain healthy plant growth with special attention given to prolonged dry periods.
- 5.18 All failed / defective plants identified within the first 5 years of installation should be replaced by the contractor at the soonest available planting season to ensure a continued coverage of growth. Replacement plants should be of the same species and specification of the failed specimens.

- 5.19 All planting areas should be kept tidy and free from weeds, trimmings, debris and litter. Weeds should be removed by hand unless it is unfeasible; whereby weeds can be treated by the application of a suitable proprietary herbicide.
- 5.20 Herbicide usage to be limited to spray usage on calm days (no wind) and undertaken by suitably qualified operatives in accordance with current legislation.
- 5.21 Tree stakes, ties and guards should be checked annually or as required after significant storms for adjustment and/or replacement/removal as required.
- 5.22 Check guards and stakes are upright and pushed firmly into the soil. Pull up any grass growing inside the guard and carefully replace the guard.
- 5.23 Pests can cause damage inside the tube so check tree stems and guards for damage. Keep tree guards firmly pressed into the soil and a weed-free area around tree base.
- 5.24 Check weed control matting is securely fixed and ensure pegs are firmly fixed/ replace as required.
- 5.25 All plants should be maintained in a disease and pest free state. In all instances, 'natural' methods of pest control are to be undertaken prior to any chemical application. In the event that natural methods of eradication are unsuccessful, plants should be treated through the application of a suitable proprietary herbicide/pesticide.
- 5.26 Bark mulch should be topped up annually in the spring to retain moisture and limit weed growth, to a nominal depth of 50-75mm.

6.0 MONITOR THE SITE AND REVIEW THE PLAN

Objective 5: Provide a framework of monitoring and review periods.

- 6.1 The applicant will be responsible for the management and monitoring for the 30-year management period.
- 6.2 Monitoring will be undertaken in years 2, 5, 10, 20 and 30 as per current BNG guidance.
- 6.3 In order to ensure that the habitats created within the site reach and maintain their maximum value to nature conservation, all habitats will be monitored.
- 6.4 Results of this monitoring will be used to inform changes to the management plan and 30 year work programme. The prescriptions provided here will not be set in stone and will be altered if required in agreement with the Local Planning Authority (LPA). The management plan will run for a period of 30 years, with the work programme fully reviewed at the end of the initial five year period by those members of staff involved in site management, and the LEMP updated accordingly, to be updated for the life of the development.
 - Regular arboricultural visual inspections, as part of the tree safety risk assessment for the development.
 - Ecological inspection by a qualified ecologist in years 2, 5, 10, 20 and 30 to provide baseline data for future surveys to be monitored against.
- 6.5 Results of monitoring should be submitted to the LPA and will include condition assessments of the habitats, noting which condition assessment criteria have been passed/failed. The monitoring report would also detail any revisions that may be required to the management plan if habitats are not achieving the anticipated condition.
- 6.6 Monitoring should also include checks of proposed bat and bird boxes (where access allows) and recommendations for replacement/ re-instatement of these features, if necessary.

APPENDIX A

Soft Landscape Strategy

9422-SLS-01



SPECIMEN TREES :

Name	Common Name
<i>Betula pendula</i> [Bp]	Silver Birch
<i>Prunus x subhirtella</i> 'Autumnalis Rosea' [Ps AR]	Winter-Flowering Cherry
<i>Sorbus aucuparia</i> [Sa]	Rowan
<i>Sorbus commixta</i> 'Embley' [Sc E]	Chinese Scarlet Rowan

Heavy Standards 12-14cm girth with double staking.

NATIVE WOODLAND EDGE STRUCTURAL MIX:

%	Name	Common Name
15	<i>Acer campestre</i>	Field Maple
20	<i>Betula pubescens</i>	Downy Birch
15	<i>Corylus avellana</i>	Hazel
5	<i>Ilex aquifolium</i>	Holly
5	<i>Malus sylvestris</i>	Crab Apple
15	<i>Prunus avium</i>	Wild Gean
15	<i>Sorbus aucuparia</i>	Rowan

All plants* 60-80cm bare root transplants planted in matrix with staggered rows at 2000mm centres in random groupings of 3, 5 and 7 same species groups. Pit plant with rabbit protection and staking. *Ilex aquifolium SL containers

MIXED SCRUB PLANTING: (Closed texture)

%	Name	Common Name	Size
2	<i>Corylus avellana</i>	Hazel	20-40cm RC4
4	<i>Corylus avellana</i>	Hazel	45-60cm BR
4	<i>Corylus avellana</i>	Hazel	60-80cm BR
5	<i>Cornus sanguinea</i>	Dogwood	45-60cm BR
5	<i>Malus sylvestris</i>	Crab Apple	20-40cm RC4
5	<i>Malus sylvestris</i>	Crab Apple	45-60cm BR
5	<i>Malus sylvestris</i>	Crab Apple	60-80cm BR
5	<i>Euonymus europaeus</i>	Spindle	20-40cm RC4
5	<i>Euonymus europaeus</i>	Spindle	45-60cm BR
5	<i>Euonymus europaeus</i>	Spindle	60-80cm BR
10	<i>Frangula alnus</i>	Alder buckthorn	60-80cm BR
10	<i>Ilex aquifolium</i>	Holly	60-80cm SL
5	<i>Rhamnus cathartica</i>	Buckthorn	20-40cm RC4
5	<i>Rhamnus cathartica</i>	Buckthorn	45-60cm BR
5	<i>Rhamnus cathartica</i>	Buckthorn	60-80cm BR
5	<i>Rosa canina</i>	Dog rose	45-60cm BR
5	<i>Salix caprea</i>	Goat Willow	45-60cm BR
5	<i>Salix cinerea</i>	Grey Willow	45-60cm BR
5	<i>Viburnum opulus</i>	Guelder rose	45-60cm BR

Planted in staggered matrix formation at 1000mm centres to random groupings of 3, 5 and 7 same species groups. Pit plant with rabbit protection and staking.

MIXED SCRUB PLANTING (Open Mosaic):

%	Name	Common Name	Size
15	<i>Cornus sanguinea</i>	Dogwood	45-60cm BR
25	<i>Euonymus europaeus</i>	Spindle	60-80cm BR
10	<i>Frangula alnus</i>	Alder buckthorn	60-80cm BR
10	<i>Rosa canina</i>	Dog rose	20-40cm RC4
15	<i>Salix caprea</i>	Goat Willow	45-60cm BR
15	<i>Salix cinerea</i>	Grey Willow	20-40cm RC4
15	<i>Viburnum opulus</i>	Guelder rose	45-60cm BR

Planted in staggered matrix formation at 1000mm centres to random groupings of 3, 5 and 7 same species groups. Pit plant with rabbit protection and staking.

Open Mosaic Mixed Scrub
40% Woody shrub component- as above
60% Tussock Grassland Mix to open glades/ rides eg Emorsgate EM10 or similar sown at 4g/ sqm

Planted in staggered matrix formation at 1000mm centres to random groupings of 3, 5 and 7 same species groups. Pit plant with rabbit protection and staking.

SEMI-ORNAMENTAL AMENITY PLANTING MIX: To Formal Car Park Area (suggested)

3L pots planted typically at 0.5-0.58m centres

%	Name	Common Name	Size
5%	<i>Aucuba x japonica</i> 'Rozanne'		
7.5%	<i>Cornus alba</i> 'Sibirica'		
10%	<i>Cornus sanguinea</i> 'Midwinter Fire'		
7.5%	<i>Cornus stolonifera</i> 'Flaviramea'		
5%	<i>Hebe</i> 'Red Edge'		
7.5%	<i>Phloxia x fraseri</i> 'Little Red Robin'		
7.5%	<i>Prunus laurocerasus</i> 'Otto Luyken'		
5%	<i>Skimmia japonica</i> 'Rubella'		
5%	<i>Sarcococca x hookeriana</i> humilis		
5%	<i>Viburnum davidii</i>		

%	Name	Common Name
5%	<i>Carex elata</i> 'Aurea' *	
5%	<i>Deschampsia cespitosa</i> 'Goldtau'	
5%	<i>Dryopteris erythrosora</i> 'Brilliance'	
15%	<i>Molinia caerulea</i> 'arundinacea' 'Windsplaf'	
5%	<i>Stipa tenuissima</i>	

Bulbs
<i>Narcissus</i> 'Thalia' 8/10 (10no. per sqm)

* Cea to be planted as understory to *Cornus* sp. at front of borders

FLOWERING LAWN MIX:

Emorsgate EL1 Seed Mix or similar

Sowing rate: 4g/sqm

%	Latin name	Common name
	Wildflowers	
4	<i>Galium verum</i>	(Lady's Bedstraw)
0.5	<i>Leontodon hispidus</i>	(Rough Hawkbit)
1	<i>Leucanthemum vulgare</i>	(Oxeye Daisy - (Moon Daisy))
3.7	<i>Lotus corniculatus</i>	(Bird's-foot Trefoil)
3	<i>Primula veris</i>	(Cowslip)
4	<i>Prunella vulgaris</i>	(Selfheal)
3.5	<i>Ranunculus acris</i>	(Meadow Buttercup)
0.3	<i>Trifolium pratense</i>	(Wild Red Clover)
	Grasses	
8	<i>Agrostis capillaris</i>	(Common Bent)
40	<i>Cynosurus cristatus</i>	(Crested Dogtail)
28	<i>Festuca rubra</i>	(Red Fescue)
4	<i>Phleum bertolonii</i>	(Smaller Cat's-tail)

Tussock Mixture
Tussock mixture for open rides/ glades within Mixed Scrub Habitat

Emorsgate EM10 (or similar) %
Sowing rate: 4g/m2 (40kg/Ha)

<i>Agrimonia eupatoria</i> (Agrimony)	1.5
<i>Arctium minus</i> (Lesser Burdock)	0.2
<i>Centaurea nigra</i> (Common Knapweed)	2.4
<i>Centaurea scabiosa</i> (Greater Knapweed)	0.1
<i>Chaerophyllum temulum</i> (Rough Chervil)	0.5
<i>Cirsium ephorium</i> (Woolly Thistle)	0.1
<i>Cruciata laevis</i> (Crosswort)	0.1
<i>Dipsacus fullonum</i> (Wild Teasel)	3.0
<i>Filipendula ulmaria</i> (Meadowsweet)	1.5
<i>Galium album</i> (Hedge Bedstraw)	1.0
<i>Leucanthemum vulgare</i> (Oxeye Daisy)	1.0
<i>Malva moschata</i> (Musk Mallow)	1.0
<i>Ranunculus acris</i> (Meadow Buttercup)	1.0
<i>Silene dioica</i> (Red Campion)	0.1
<i>Silene latifolia</i> (White Campion)	1.5
<i>Silene vulgaris</i> (Bladder Campion)	1.5
<i>Torilis japonica</i> (Upright Hedge-parsley)	0.5
<i>Vicia cracca</i> (Tufted Vetch)	3.0
	20
Grasses	
<i>Alopecurus pratensis</i> (Meadow Foxtail)	1.0
<i>Cynosurus cristatus</i> (Crested Dogtail)	16.0
<i>Dactylis glomerata</i> (Cocksfoot)	16.0
<i>Deschampsia cespitosa</i> (Tufted Hair-grass)	4.0
<i>Festuca rubra</i> (Strong-creeping Red-fescue)	24.0
<i>Holcus lanatus</i> (Yorkshire Fog)	1.0
<i>Schedonorus arundinaceus</i> (Tall Fescue)	10.0
<i>Schedonorus pratensis</i> (Meadow Fescue)	8.0
	80
Meadow Mixture	
N4 Summer Flowering Butterfly & Bee Meadow Mix eg Naturscape (or similar)	%
Sowing rate: 5g/m2 (50kg/Ha)	
80% Grasses : 20% Wildflowers	
<i>Achillea millefolium</i> (Yarrow)	3%
<i>Anthyllis vulneraria</i> (Kidney Vetch)	3%
<i>Campanula glomerata</i> (Clustered Bellflower)	1%
<i>Campanula trachelium</i> (Nettle Leaved Bellflower)	1%
<i>Centaurea nigra</i> (Common Knapweed)	8%
<i>Centaurea scabiosa</i> (Greater Knapweed)	5%
<i>Daucus carota</i> (Wild Carrot)	4%
<i>Echium vulgare</i> (Viper's Bugloss)	4%
<i>Galium verum</i> (Lady's Bedstraw)	8%
<i>Geranium pratense</i> (Meadow Cranesbill)	2%
<i>Hypericum perforatum</i> (Common St. John's Wort)	3%
<i>Knautia arvensis</i> (Field Scabious)	5%
<i>Lathyrus pratensis</i> (Meadow Vetchling)	3%
<i>Linaria vulgaris</i> (Common Toadflax)	1%
<i>Lotus corniculatus</i> (Birdsfoot Trefoil)	7%
<i>Lythrum salicaria</i> (Purple Loosestrife)	2%
<i>Origanum vulgare</i> (Wild Marjoram)	2%
<i>Prunella vulgaris</i> (Self Heal)	10%
<i>Rhinanthus minor</i> (Yellow Rattle)	7%
<i>Scabiosa columbaria</i> (Small Scabious)	4%
<i>Stachys officinalis</i> (Betony)	4%
<i>Stachys sylvatica</i> (Hedge Woundwort)	3%
<i>Succisa pratensis</i> (Devilbit Scabious)	2%
<i>Trifolium pratense</i> (Wild Red Clover)	3%
<i>Verbascum nigrum</i> (Dark Mullein)	2%
<i>Vicia cracca</i> (Tufted Vetch)	3%
26 Wildflower species	100%
<i>Agrostis capillaris</i> (Common Bent)	3%
<i>Anthoxanthum odoratum</i> (Sweet Vernal Grass)	3%
<i>Briza media</i> (Quaking Grass)	2%
<i>Cynosurus cristatus</i> (Crested Dogtail)	22%
<i>Festuca Trachyphylla</i> (Hard Fescue)	22%
<i>Festuca rubra ssp. commutata</i> (Chewing's Fescue)	22%
<i>Festuca rubra ssp. litoralis</i> (Slender Creeping Red Fescue)	13%
<i>Hordeum secalinum</i> (Meadow Barley)	1%
<i>Poa pratensis</i> (Smooth Stalked Meadow Grass)	10%
<i>Trisetum flavescens</i> (Yellow Oatgrass)	2%
10 Grass species	100%

Key

- Application Boundary 0.75Ha
- Existing Tree Groups to be Retained
- Existing Tree Groups to be Removed
- Proposed Specimen Trees eg 12-14cm girth heavy standards TOTAL 26no.
- Semi-Ornamental Planting to Car Park Area 3L pots @ typically 0.5 to 0.58m centres TOTAL AREA: 205sqm
- Formal Single Species Hedgeline eg *Prunus laurocerasus* 40-60cm @ 5/Lm in double staggered rows TOTAL LENGTH: 85 Lm
- Native Woodland Edge Structural Planting eg 60-80cm whips @ 2m centres TOTAL AREA: 705sqm
- Native Scrub Mix Planting (closed texture) eg RC4, 45-60cm & 60-80cm whips @ 1m centres -mixed age native species in random matrix format TOTAL AREA: 718sqm
- Mixed Scrub Habitat: Open mosaic woody shrubs with glades/ rides of grassland eg Tussock Mix Emorsgate EM10 or similar) TOTAL AREA: 395sqm (woody : grass 40% : 60%)
- Grassland Meadow N4 Naturscape Summer Flowering Butterfly & Bee Meadow Mix or similar. Sowing rate: 5g/sqm TOTAL AREA: 235sqm
- Flowering Lawn Mix eg Emorsgate EL1 Seed Mix, Sowing rate: 4g/sqm TOTAL AREA: 343sqm
- Drifts of Naturalising Spring Bulbs Grade 8/10 TOTAL AREA: 37.5 sqm

Total Green Infrastructure 0.27Ha (36% of Site Area)
GI Areas given are dependent upon site constraints and assumes all prevailing site gradients to be ameliorated in order to create safe and stabilised batters to accommodate construction and maintenance of all planting and to provide conditions suitable for the successful establishment of habitats. To BS 4428: 1989 Code of practice for general landscape operations & BS 6031:2009 Code of practice for earthworks

NOTES
This drawing is to be read in conjunction with all relevant contract documentation from the design team, with any conflicting information to be brought to the attention of Robinson Chartered Landscape Architecture in writing before commencing on site.

The contractor is to check and verify all levels and dimensions before construction. Any discrepancies are to be brought to the attention of Robinson Chartered Landscape Architecture in writing before commencing on site.

All dimensions in mm, unless otherwise stated.
Do not scale from this drawing.
All sub base and concrete specification to engineer's details.
Waterproofing of any element to be specified by others.
All proprietary products shall be installed in accordance with manufacturers written instructions.

Plants are to be ordered to suit site areas in accordance with scheduled plant densities.
Any proposed plant substitution shall be agreed with the landscape architect prior to ordering.
Do not scale areas or dimensions from this plan as the layout has been derived from a large scale OS base plan.
It is the contractors responsibility to ascertain the positions of all underground and above services.
Tree locations and design layout may be subject to change following an accurate survey of all service locations.

10/02/21	EDR	Formal Issue		E	EDR
29/03/21	EDR	Tree mix revised to client instruction		D	EDR
01/03/21	EDR	Tree mix revised to client instruction		E	EDR
01/03/21	EDR	Tree mix revised to client instruction		A	EDR
10/03/21	EDR	Scrub mix & tree sizes changed client comment		A	EDR
10/03/21	EDR	DRIFT - for 8/10 bulbs			EDR

DATE: DRAWN: DESCRIPTION OF REVISION: REVISION LETTER: CHECKED BY: