

Biodiversity Enhancement Measures

Star Radcliffe

Report prepared for Morgan Sindall

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- Appendix 1 Proposed development and outline biodiversity enhancement plan
- Appendix 2 Native tree and shrub listings

1. Introduction

1.1 Background to the project

The client is seeking to planning permissions for the erection of a new school facility at Star Radcliffe.

This report seeks to support the development by providing a scheme for Biodiversity enhancement measures to assist in the provision of biodiversity across the site that are designed to support the planning application.

The proposal is included in Appendix One and generally consists of urban sealed surfacing, associated infrastructure and environmental improvements.

1.2 Site Location and Context

The site is in a semi urban environment and enclosed by existing residential and commercial land uses. The habitat on site comprises of scattered trees, scrub, amenity grassland habitats including areas of hard standing.

1.3 Purpose of this report

Section 40 of the Natural Environment and Rural Communities Act 2006 places a statutory duty on all public authorities in England to conserve biodiversity. Therefore, the purpose of this report is to outline the biodiversity enhancement measures proposed for the redevelopment of this site.

1.3.1 Author information

Simon Brain has attained a Post Graduate Certificate in Biological Recording and has attended residential FSC Field Courses for Land mammal identification, Songbird identification, Barn Owls (CIEEM) and Advanced Bird Survey Techniques (Level M) and various bat mitigation and training courses and European workshops. He holds a NE Class 2 bat license (17334-CLS). In addition, he is a Chartered arboriculturist.

2. Existing ecological interest

2.1 Existing ecological appraisal – opportunities for enhancement

The existing ecology report identified the following general biodiversity measures that could apply to the re-development of site

- Habitats. Retention of mature trees
- Woodland Management Plans
- Non natives vascular plants. Indian Balsam eradications
- Fauna, bats. Suitable lighting provision, artificial roosting provision
- Fauns, birds. Artificial nesting provision
- Grassland introductions to create eco tones between the built and green infrastructures
- Native tree and shrub planting through a landscaping plan
- SUDS planting and grass seeding

3. Ecological aims and objectives

3.1 Aims and objectives

The aim of this plan is to provide a specification, guidelines and proposals for general and site specific biodiversity enhancements as mentioned in section 2.1.

These measures shall be aimed at European protected species and also nationally protected or locally important species.

4. Site specific enhancement measures

4.1. Habitat and species measures – site specific proposals

4.2 Habitats. Retention of mature trees

The implementation of retained tree protection measures shall mean the retention of the arboriculture assets located on the western boundary. The retention of these trees shall be managed by the following means:

- A site visit shall be carried out by the arboricultural clerk of works to delineate the actual RPA in accordance with BS5837:2012.
- The position of the RPA shall become the Construction Exclusion Zone and be fenced off with hears fencing securely staked to the ground.
- The clerk shall receive digital images to demonstrate the CEZ is fit for purpose prior to any other work commencing on site.
- All works shall conform to the approved Arboricultural Impact Assessment and Method Statement

4.3 Woodland Management Plans (WMP)

The creation of woodland as shown on ARES landscape proposals shall require a WMP as part of Biodiversity Net Gain. The WMP seeks to manage biodiversity enhancements by eradicating non native vascular plants and creating conditions favourable for the development of native protected plants including Bluebell.

4.4 Non natives vascular plants. Japanese knotweed and Indian Balsam eradications within the main development site.

The impact of these plants is to remove the possibility of native flora and fauna developing in the areas in which the non natives are growing. The areas of Japanese knotweed are outside site and not the responsibility of the application.

Eradication plans are required across the site for all Indian Balsam.

4.5 Fauna, bats. Suitable lighting provision, artificial roosting provision and planting

The provision of artificial roosting opportunities within buildings under suitable lighting provision will be central to the maintenance of a healthy bat population. Bat species utilise a variety of roosting opportunities and do use many different roost sites throughout the year depending on the time of year. Roost purposes can range from simple day roosts to roosting positions used in the night-time for short periods and therefore the provision of different artificial roosts using different thermal properties will best suit the bats annual cycle and therefore create conditions for the sustainable development of a bat population.

Planting of tree and shrub species shall include *Acer campestre* and *Sorbus torminalis*. When new planting is planned for the site, native tree and shrub species of local provenance are recommended in preference to non-native, ornamental species. Planting of tree and shrub species that support a high insect biomass and provide a potential food source for bats throughout the bat activity period (spring to autumn) such as rowan, buckthorn, dogwood, crab apple and wild plum are recommended.

A short compliance report will be generated following provisions installation and suitable lighting provision will be met by the compilation of a bat sympathetic lighting plan in the vicinity of the building roost points.

4.6 Fauna, birds. Artificial nesting provision and avian friendly planting

Breeding bird habitat shall be provided using ground shrubs and trees within the development but also the buffer between development and woodland. Shrubs shall consist of the following species: *Viburnum opulus*, *Juniperus communis*, *Ulex europaeus* and *Euonymus europaeus* and those provided in Appendix 2.

The following shall be fitted to properties:

- Ibstock Swift boxes
- House Sparrow terraces (1SP Schwegler)

4.7 Grassland introductions create eco tones between the built and green infrastructures

The Masterplan shows an area of lowland meadow. This shall be classified as neutral grassland in the Biodiversity Net Gain calculations.

This area has a high biodiversity value and shall provide an environment where the woodland communities interact with the grassland habitat species between the urban sealed areas and green infrastructure. This eco tone is of intrinsic value to flora and fauna and is set to become highly attractive for invertebrates providing foraging, nesting and shelter opportunities for biodiversity to flourish.

The key to the sustainable development of neutral grassland is in the preparation of the soils, particularly making them nutrient poor. This can be achieved by ensuring the top-soils are removed and the clay based sub soils are used to sow seed into. <http://www.landis.org.uk/soilscapes/> describes the soils as Soilscape 18: Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils.

Emorsgate provide the following EM4 mix for clayey soils that shall be utilised at the rate of 16Kilo per acre.

%	Latin name	Common name
0.5	<u>Achillea millefolium</u>	<u>Yarrow</u>
0.5	<u>Agrimonia eupatoria</u>	<u>Agrimony</u>
3.5	<u>Centaurea nigra</u>	<u>Common Knapweed</u>
1.4	<u>Daucus carota</u>	<u>Wild Carrot</u>
0.2	<u>Filipendula ulmaria</u>	<u>Meadowsweet</u>
1.3	<u>Galium album - (Galium mollugo)</u>	<u>Hedge Bedstraw</u>
0.1	<u>Geranium pratense</u>	<u>Meadow Crane's-bill</u>
0.7	<u>Knautia arvensis</u>	<u>Field Scabious</u>
0.1	<u>Leontodon hispidus</u>	<u>Rough Hawkbit</u>
3	<u>Leucanthemum vulgare</u>	<u>Oxeye Daisy - (Moon Daisy)</u>
3	<u>Medicago lupulina</u>	<u>Black Medick</u>
0.1	<u>Primula veris</u>	<u>Cowslip</u>

%	Latin name	Common name
3.5	<u>Prunella vulgaris</u>	<u>Selfheal</u>
0.5	<u>Ranunculus acris</u>	<u>Meadow Buttercup</u>
0.5	<u>Rumex acetosa</u>	<u>Common Sorrel</u>
0.5	<u>Sanguisorba officinalis</u>	<u>Great Burnet</u>
0.1	<u>Silaum silaus</u>	<u>Pepper Saxifrage</u>
0.5	<u>Vicia cracca</u>	<u>Tufted Vetch</u>
20		
%	Latin name	Common name
10	<u>Agrostis capillaris</u>	<u>Common Bent</u>
2	<u>Alopecurus pratensis</u>	<u>Meadow Foxtail (w)</u>
2	<u>Anthoxanthum odoratum</u>	<u>Sweet Vernal-grass (w)</u>
3	<u>Briza media</u>	<u>Quaking Grass (w)</u>
29	<u>Cynosurus cristatus</u>	<u>Crested Dogstail</u>
24	<u>Festuca rubra</u>	<u>Red Fescue</u>
10	<u>Poa pratensis</u>	<u>Smooth-stalked Meadow-grass</u>
80		

4.8 Native tree and shrub planting through a landscaping plan

The provision of a detailed landscaping plan will be based on the provision of native trees and shrubs as contained in Appendix 1.

4.9 SUDS planting and grass seeding

The development of these areas shall utilise suitable wetland and modified grassland seed mixes, such as Emorsgate EM8 and standard modified grassland mixtures.

Appendix One – Enhancement plans

Native tree species list

Common name	Latin name
Field maple	<i>Acer campestre</i>
Common alder	<i>Alnus glutinosa</i>
Strawberry-tree	<i>Arbutus unedo</i>
Silver birch	<i>Betula pendula</i>
Downy birch	<i>Betula pubescens</i>
Box	<i>Buxus sempervirens</i>
Hornbeam	<i>Carpinus betulus</i>
Dogwood	<i>Cornus sanguinea</i>
Hazel	<i>Corylus avellana</i>
Midland hawthorn	<i>Crataegus laevigata</i>
Hawthorn	<i>Crataegus monogyna</i>
Spindle	<i>Euonymus europaeus</i>
Beech	<i>Fagus sylvatica</i>
Alder buckthorn	<i>Frangula alnus</i>
Common ash	<i>Fraxinus excelsior</i>
Sea buckthorn	<i>Elaeagnus rhamnoides</i>
Holly	<i>Ilex aquifolium</i>
Juniper	<i>Juniperus communis</i>
Crab apple	<i>Malus sylvestris</i>
Scots pine	<i>Pinus sylvestris</i>
Black poplar	<i>Populus nigra</i> subsp. <i>Betulifolia</i>
Aspen	<i>Populus tremula</i>
Wild cherry	<i>Prunus avium</i>
Bird cherry	<i>Prunus padus</i>
Blackthorn	<i>Prunus spinosa</i>
Plymouth pear	<i>Pyrus cordata</i>
Sessile oak	<i>Quercus petraea</i>
Pedunculate oak	<i>Quercus robur</i>
Purging buckthorn	<i>Rhamnus cathartica</i>
White willow	<i>Salix alba</i>
Goat willow	<i>Salix caprea</i>
Grey willow	<i>Salix cinerea</i>
Crack willow	<i>Salix fragilis</i>
Bay willow	<i>Salix petandra</i>
Purple osier	<i>Salix purpurea</i>
Almond willow	<i>Salix triandra</i>
Common osier	<i>Salix viminalis</i>
Elder	<i>Sambucus nigra</i>
English whitebeam	<i>Sorbus anglica</i>
Common whitebeam	<i>Sorbus aria</i>
Arran whitebeam	<i>Sorbus arranensis</i>
Rowan	<i>Sorbus aucuparia</i>
Bristol whitebeam	<i>Sorbus bristoliensis</i>
Devon whitebeam	<i>Sorbus devoniensis</i>
Service-tree	<i>Sorbus domestica</i>

Native tree species list

Round-leaved whitebeam	<i>Sorbus eminens</i>
Irish whitebeam	<i>Sorbus hibernica</i>
Lancastrian whitebeam	<i>Sorbus lancastriensis</i>
Grey-leaved whitebeam	<i>Sorbus porrigentifformis</i>
Arran service-tree	<i>Sorbus pseudofennica</i>
Rock whitebeam	<i>Sorbus rupicola</i>
Somerset whitebeam	<i>Sorbus subcuneata</i>
Wild service-tree	<i>Sorbus torminalis</i>
Bloody whitebeam	<i>Sorbus vexans</i>
Wilmott's whitebeam	<i>Sorbus wilmottiana</i>
Yew	<i>Taxus baccata</i>
Small-leaved lime	<i>Tilia cordata</i>
Large-leaved lime	<i>Tilia platyphyllos</i>
Wych elm	<i>Ulmus glabra</i>
Field elm	<i>Ulmus minor</i>

Common name	Latin name
Large shrubs	
Dogwood	<i>Cornus sanguinea</i>
Spindle	<i>Euonymus europaeus</i>
Sea Buckthorn	<i>Hippophae rhamnoides</i>
Wild privet	<i>Ligustrum vulgare</i>
Rhamnus cathartica	<i>Buckthorn</i>
Rosa canina	<i>Dog rose</i>
Purple willow	<i>Salix purpurea</i>
Eared willow	<i>Salix aurita</i>
Welsh whitebeam	<i>Sorbus leptophylla</i>
	<i>Sorbus minima</i>
Wayfaring tree	<i>Viburnum lantana</i>
Guelder rose	<i>Viburnum opulus</i>
Medium shrubs	
Broom	<i>Cytisus scoparia</i>
Field rose	<i>Rosa arvensis</i>
Soft downy rose	<i>Rosa mollis</i>
Sweet briar	<i>Rosa rubiginosa</i>
English whitebeam	<i>Sorbus anglica</i>
Gorse	<i>Ulex europaeus</i>
Western gorse	<i>Ulex gallii</i>
Small shrubs	
Burnet rose	<i>Rosa pimpinellifolia</i>
Butchers broom	<i>Ruscus aculeatus</i>
Dwarf willow	<i>Salix herbacea</i>
Woolly willow	<i>Salix lanata</i>
Creeping willow	<i>Salix repens</i>