UCL Howland Street Site

Landscape & Habitat Management Plan

Final Report
March 2014

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1 INTRODUCTION

Objective

1.1 This document provides details of works required to create and manage new habitats incorporated into the development at the UCL Howland Street site, hereafter 'the site'. It has been produced to fulfil **Criterion 3a** of the Building Research Establishment Environmental Assessment Methodology (BREEAM) Land Use and Ecology Credit **LE 05** Long term Impact on Biodiversity, which requires that:

> *A landscape and habitat management plan, appropriate to the site is produced covering at least the first five years after project completion.*

Site Location and Project Overview

1.2 The site occurs on the footprint of the now demolished Windeyer Building at Howland Street, Fitzrovia, within the highly urbanised landscape of Central London (site centroid TQ2927181868).

1.3 Prior to the commencement of site clearance and demolition works, the habitats present on site principally comprised built structures and associated hard standing areas, including an outdoor courtyard which contained a small ornamental shrubbery and concrete-lined pond.

1.4 The development project involves the erection of a six-storey building with two basement levels, for the purpose of accommodating a new scientific academic research building, and provision of a new area of public open space, or 'pocket park'.

1.5 New habitats provided by the development include four discrete areas of living roof, four newly planted trees, three green walls and several areas of ornamental planting. Details of the works required to create these habitats are provided in **Section 2**.

Legislation and Policy

1.6 As required by **Criterion 3c** of BREEAM **Credit LE 05**, due consideration has been given to applicable legislative requirements and the London and Camden Biodiversity Action Plans.

2 AIMS AND OBJECTIVES OF HABITAT CREATION & MANAGEMENT

Introduction

2.1 This section considers the aims and objectives of habitat creation and management within the site, the achievement of which can be monitored in order to guide future modifications to the Management Plan.

Aims

2.2 The principal aims of habitat creation and management within the site are to:

- Create and maintain an aesthetically stimulating environment, certain areas of which will be directly accessible to occupants of the new building, and which will provide psychological benefits through provision of amenity space, green screening, and by bringing people closer to wildlife within a highly urbanised landscape;
- Enhance the biodiversity of the local area through provision of naturalistic habitats, in accordance with the spirit of the National Planning Policy Framework and local BAP targets; and
- Provide ecological benefits - or eco-system services - associated with building-integrated vegetation, including:
    - attenuation of rainwater run-off;
    - evapo-transpirative cooling;
    - reduction in the urban heat island effect;
    - extension of building lifespan and reduction of maintenance costs; and
    - absorption of noise, air pollutants, greenhouse gases and dust.

Objectives

2.3 The principal aims described above are underpinned by a series of more specific objectives, including:

- Provision of potential foraging habitat for the Black Redstart *Phoenicurus ochruros*, a priority species within the London and Camden Biodiversity Action Plans. A search of biological records data commissioned from Greenspace Information for Greater London (GIGL) in 2010, determined that this species occurred within approximately 170m of the site and could therefore realistically be targeted by enhancement measures.

- Introduction of several previously absent native plant species with a known attraction or benefit to local wildlife, in fulfilment of BREEAM credit **LE 04**.

3 HABITAT CREATION

Introduction

3.1 This section details the work that is in progress to create new habitats within the site, consistent with the consented planning application 2011/1944/P, dated 31st August 2011.

Living Roofs

3.2 Four living roofs will be incorporated into the development, at the locations represented in **Map 2.** The attributes of each roof are described in **Table 1** below.

Table 1: Living roof attributes

Level	Location	Area	Aspect	Accessible to occupants
01	Service area canopy	160m^2	Southern	No
01	Workshop roof	32m^2	Southern	No
04	Plant tower	85m^2	Southern	No
05	Roof terrace	162m^2	Northern	Yes

Level One and Level Four Living Roofs

Habitat Creation Objectives

3.3 The Level One and Level Four living roofs have common attributes in respect of aspect and accessibility to occupants. These will provide biodiverse habitats with high floral variation, incorporating valuable habitat opportunities for bird and invertebrate species. The establishment of extensive, low-nutrient, 'brown' or 'biodiverse' living roofs will serve to maintain diversity by avoiding conditions favourable to the eventual dominance of a few aggressive species.

3.4 As the living roofs established on Levels One and Four will be overlooked by occupants of the new building, they should provide considerable visual interest, incorporating a stimulating variety of colours and micro-habitats.

3.5 The Level One and Level Four living roofs will be created as 'low maintenance' habitats with a low requirement for ongoing management intervention. To this end, impoverished substrates will be used so as to discourage vigorous vegetative growth.

Habitat Creation Approach

3.6 The living roof substrate will predominantly comprise a low-nutrient based aggregate, mixed with approximately 10% organic matter.

3.7 The base layer of aggregate and organic matter will be applied at 120-130mm depth and topped with 20-30mm of a suitable low-nutrient proprietary planting substrate. Variation in the total depth of substrate will be created in order to promote microtopographical diversity, enhancing the value and complexity of the living roof habitat.

3.8 The living roof will be created by laying a bespoke wildflower turf preparation upon the planting substrate. The composition of the wildflower turf is provided in **Appendix 1**.

3.9 In order to promote the diversification of the living roof habitat, 1.2m wide strips of semi-exposed substrate will be incorporated into both the Level One roofs, and the Level Four roof. These patches of semi-exposed substrate will fulfil a number of valuable biodiversity functions, providing germination niches for annual plant species, habitat for burrowing invertebrates, and foraging opportunities for birds.

Level Five Living Roof

Habitat Creation Objectives

3.10 As with the living roofs on Levels One and Four, the Level Five roof terrace will provide high floral diversity and habitat opportunities for bird and invertebrate species.

3.11 As the Level Five living roof will be used as a roof terrace and amenity space for users of the building, it should provide an accessible and visually stimulating amenity space.

3.12 The Level Five living roof will be robust and relatively vigorous, in order to withstand trampling and the shaded conditions arising from its aspect.

Habitat Creation Approach

3.13 The green roof substrate will predominantly comprise a low-nutrient based aggregate, mixed with approximately 10% organic matter.

3.14 The base layer of aggregate and organic matter will be applied at 90-110mm depth and topped with 40-60mm of a suitable low-nutrient proprietary planting substrate. The substrate will be raked level to promote the safe accessibility of the roof terrace.

3.15 The living roof will be created by laying a bespoke wildflower turf preparation upon the planting substrate, supplemented with plug plants where necessary. The composition of the wildflower turf is provided in **Appendix 1**.

Green Walls

3.16 Green walls will be established at several locations within the site, as represented in **Map 2**.

Habitat Creation Objectives

3.17 The green walls will provide visual interest and green screening.

3.18 The green walls will provide cover for nesting and roosting birds and a foraging resource for birds and invertebrates.

Habitat Creation Approach

3.19 Honeysuckle *Lonicera periclymenum*, Ivy *Hedera helix* and Hydrangea *Hydrangea petiolaris* will be planted at 3m intervals within planting troughs and trained onto wall-mounted planting supports.

Landscape Planting

3.20 Trees and Bamboo will be planted at the locations represented in **Map 2**.

Habitat Creation Objectives

3.21 Landscape planting will provide visual interest, green screening and shading.

3.22 Incorporation of native species will provide foraging resources for birds and invertebrates.

Habitat Creation Approach

3.23 Three rootballed 6-8m high Hornbeams *Carpinus betulus* will be planted within the pocket park at the north-western extent of the site and secured with ground anchorage systems. Planting pits will be dug to 1500x2000x2000mm, backfilled with an appropriate proprietary compost and capped with tree grilles.

3.24 A single 3m high multi-stemmed Japanese Maple *Acer palmatum* will be installed within a glass reinforced concrete planting container within the site's southern courtyard.

3.25 Bamboo, underplanted with Lesser Periwinkle *Vinca minor*, will be installed within glass reinforced concrete planting containers in the site's southern courtyard and along the northern perimeter of the Level Five roof terrace.

4 HABITAT MANAGEMENT

Introduction

4.1 This section provides details of habitat management and maintenance works required over the first five years from project completion and thereafter.

Level One and Level Four Living Roofs

4.2 The Level One and Level Four Living Roofs have been designed as low-maintenance habitats and - subject to the management review provisions described below - should not require frequent intervention for the purposes of vegetation control.

4.3 A degree of periodic maintenance may be necessary in order to maintain drainage and effect the removal of litter and self-seeded invasive plant species. Species such as Buddleia, Willow and Birch should be expeditiously removed should they self-seed, to prevent damage to the building and the intended eco-system.

4.4 The living roofs may require watering during droughted conditions.

Level Five Living Roof

4.5 Due to the effects of trampling by people and the low nutrient character, the Level Five roof terrace may not require very vigorous vegetation control.

4.6 The Level Five living roof is an amenity space for users of the building. If the vegetative structure of the roof develops in such a fashion that reactive intervention is considered necessary for the purposes of maintaining safe access or to encourage building users to access the living roof, two possible maintenance methodologies have been identified:

a. Cutting on an annual basis. Cutting should only occur after herbs have finished flowering and set seed. All arisings must be collected and removed from site to maintain the condition of nutrient poverty.

b. If more frequent mowing is considered necessary, this should be undertaken after the seed is ripe and dry and allowing the seed to disperse. Arisings may be left *in situ* for a few days after mowing to allow further seed dispersal, but arisings must be subsequently collected and removed from site and the soil condition of nutrient poverty maintained.

Green Walls

4.7 Pruning of the green walls should not required in the year of planting or immediately thereafter. Once the green wall vegetation becomes well established, pruning should be conducted in late spring or early autumn, annually, or at such frequency as is considered

appropriate for the removal of dead leaves and maintenance of the desired form and appearance.

Landscape Planting

4.8 Crown lifting and formative pruning of trees should be undertaken as required in order to promote good form and apical dominance and to remove dead, dying or diseased wood. On an annual basis, dead and damaged Bamboo canes should be cut to ground level.

4.9 All elements of landscape planting should be watered in the course of dry spells during the growing season.

4.10 Weed control should be regularly undertaken within the growing season. All weeds should be removed from tree grilles and planting containers by hand.

4.11 Any element of landscape planting which fails to thrive over the first five years from project completion should be removed and replaced, subject to the management review provisions described below.

Irrigation

4.12 Irrigation will be provided to the following areas in accordance with BREEAM WAT 6:

- Level 00:
    - green wall in southern courtyard;
    - green wall in pocket park;
    - Bamboos in planters;
    - Japanese Maple in planter;
    - Hornbeams in pocket park.
- Level 05:
    - roof terrace wildflower turf;
    - Bamboos in perimeter planter.

4.13 Details of the irrigation system are provided separately in IRAL-PSK 1278A.

5 MONITORING AND MANAGEMENT REVIEW

5.1 The Management Plan will be subject to review every 5 years, although an initial review should be undertaken within 1-2 years of project completion, so as to identify and address any initial problems. The first review will include the following specific considerations:

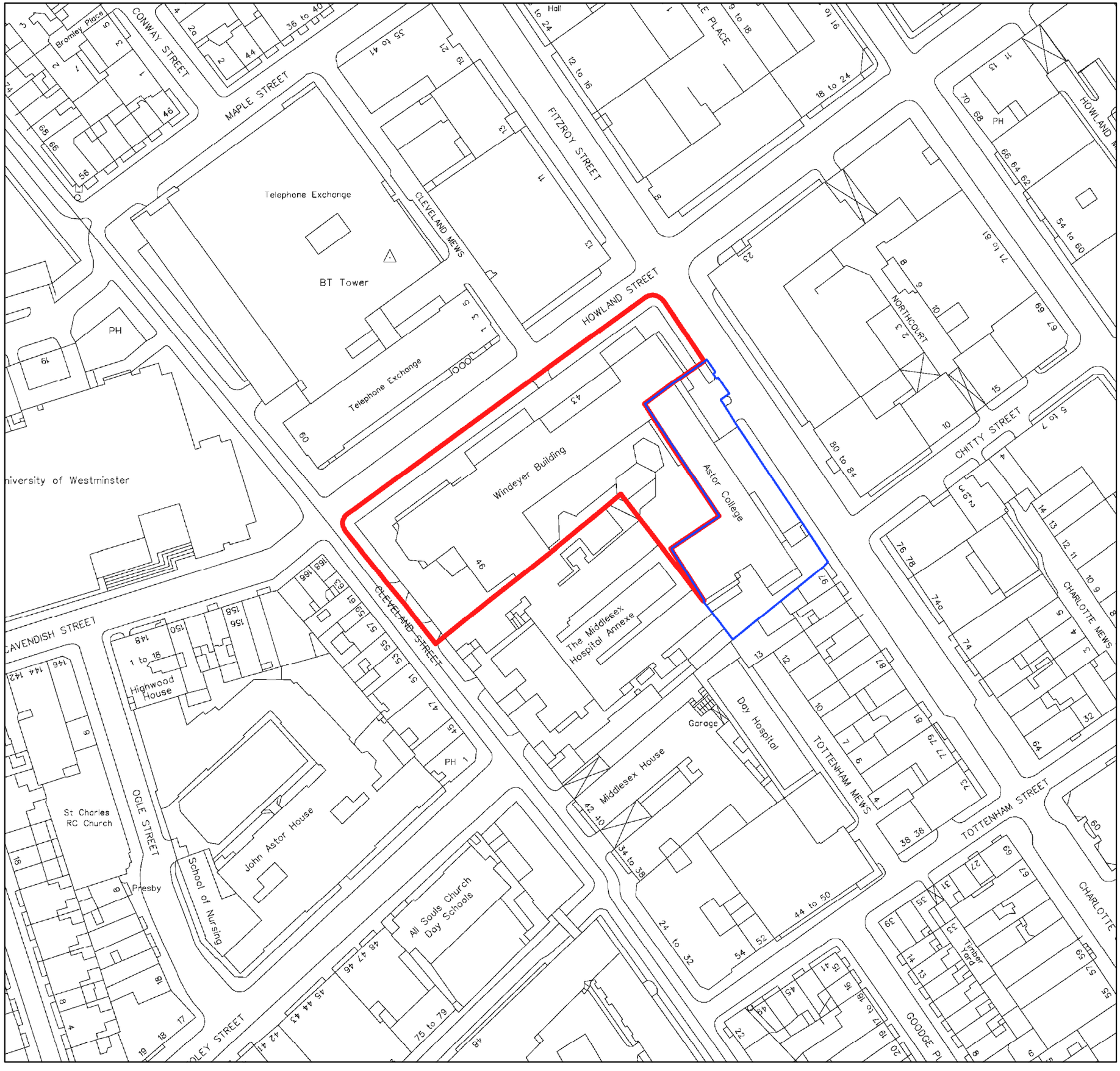
- Success of initial habitat establishment;
- Analysis of use by occupants;
- Operational problems and experience;
- An assessment of whether overall management has been effective, and any necessary adjustments.

5.2 The management review will be informed by ongoing monitoring of all habitats within the site. A key objective of monitoring within the first five years following project completion will be the identification, removal and replacement of any elements that fail to establish. In the case of failures which are considered attributable to site conditions such as shading, or excessive or inadequate moisture levels, it may be necessary to consider alternative options which would be more likely to succeed.

5.3 Annual monitoring of the living roof habitats should be undertaken for the purposes of detecting problematic invasive species. Monitoring should also be conducted with the aim of identifying trends in floral diversity and the relative extent and distribution of grasses, herbs and areas of exposed substrate. These records will be used as an input to the management review process, to ensure the maintenance of floral diversity and an appropriate balance of microhabitats.

5.4 Subject to the results of monitoring, reactive management of the living roof habitats may be required, such as increased frequency of cutting in order to remove nutrients or turf disturbance such as scarification undertaken to maintain germination niches which are likely to be necessary in order for annual species to persist within the sward. Such reactive management should however be guided by the principle that the living roofs are extensive, low maintenance habitats, and that unduly frequent or poorly timed intervention is likely to reduce floral diversity.

Maps



MAP 1 Site Location

KEY

Site boundary

SCALE: 1:1,000 at A3

0 10 20 30 40 Metres

N

EPR

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PROJECT: UCL Howland Street Site

DATE: March 2014

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MAP 2 Landscape Plan

KEY

- Site boundary
- Living roof
- Level 00 Bamboo planting
- Green wall
- Level 05 Bamboo planting
- T1 Hornbeam (3 no.)
- T2 Japanese Maple (1 no.)
- L01 Level (1-5)

SCALE: 1:400 at A3

0 5 10 15 20 25 Metres

N

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Appendix 1
Composition of Living Roof Turf Preparations

Common Name	Scientific Name	Level Five Roof	Level One and Level Four Roofs
Grasses			
Crested Dog's Tail	*Cynosurus cristatus*	X	X
Slender Creeping Red Fescue (ssp littoralis)	*Festuca rubra ssp. Littoralis*	X	X
Sheep's Fescue	*Festuca ovina*	X	X
Quaking grass	*Briza media*		
Annuals			
Viper's Bugloss	*Echium vulgare*	X	X
Common Poppy	*Papaerva rhoeas*		X
Corncockle	*Agrostemma githago*		X
Cornflower	*Centaurea cyanus*		X
Scarlet Pimpernel	*Anagallis arvensis*		X
Wild Pansy	*Viola tricolor*		X
Yellow Rattle	*Rhinanthus minor*		X
Sheep's Bit Scabious	*Jasione montana*		X
Perennial			
Yarrow Milfoil	*Achillea millefolium*	X	X
Kidney Vetch	*Anthyllis vulneraria*	X	
Thrift	*Armeria maritima*	X	X
Harebell	*Campanula rotundiflora*		X
Common Knapweed	*Centaurea nigra*	X	X
Wild Basil	*Clinipodium vulgare*	X	X
Lady's Bedstraw	*Galium verum*	X	X
Perforate St John's Wort	*Hypericum perforatum*	X	X
Rough Hawkbit	*Leontodon hispidus*	X	X
Oxeye Daisy	*Leucanthemum vulgare*	X	X
Common Toadflax	*Linaria vulgaris*	X	X
Bird's Foot Trefoil	*Lotus corniculatus*	X	X
Musk Mallow	*Malva moschata*	X	X
Black Medick	*Medicago lupulina*	X	X
Wild Majoram	*Origanum vulgare*	X	X
Hoary Plantain	*Plantago media*	X	X
Cowslip	*Primula veris*	X	X
Selfheal	*Prunella vulgaris*	X	X
Meadow Buttercup	*Ranunculus acris*	X	
Bulbous Buttercup	*Ranunculus bulbosus*	X	
Salad Burnet	*Sanguisorba minor*	X	
Bladder Campion	*Silene vulgaris*	X	X
Wild Thyme	*Thymus polytrichus*	X	X
Red Clover	*Trifolium pratense*	X	X