Technical Note – Green Roof

Site: Westminster House

Client: Baden Prop Ltd.

Date: September 2024

Crossland Ecology Ltd. Office 5945, 321 High Road, Chadwell Heath, Essex, RM6 6AX

www.crosslandecology.co.uk | info@crosslandecology.co.uk | 01245 806 360

Quality Assurance

Revision	Status	Date	Author(s)	Review and approval by
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Site assessments / surveys (where required) have been restricted to a level of detail required to achieve the stated objectives of the work.

Due to the temporal nature of ecology, the findings of this technical note should not be relied upon if a significant amount of time has passed, as defined by the Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines.

Introduction

1.1 Crossland Ecology Ltd. Were commissioned by Baden Prop Ltd. to provide ecological advice and input to the design of the proposed extensive green roof for the proposed development at Westminster House, Kew Road, Richmond (the site). The proposals are for the approved mixed-use development (Planning Reference: 23/3371/FUL) with the provision of ecological input required to address Planning Condition U0182956 Green Roof whereby:

Prior to commencement of superstructure works (excluding site investigations and demolition), details of the biodiversity roof(s) shall be submitted to and approved in writing by the Local Planning Authority, including details of maintenance. The biodiversity roof(s) shall be biodiversity based with extensive substrate base (min depth 85mm). The biodiversity roof shall be implemented in accordance with the details approved and planted/seeded with the agreed mix of species within the first planting season following the practical completion of the building works. The green roof shall be maintained in accordance with the schedule set out in the Flood Risk and SUDS Assessment Rev2 (dated 13 December 2023) unless otherwise agreed in writing by the Local planning Authority.

1.2 The proposals include the provision of an area of c.70m^2 of extensive green roof, to be made up of a UK grown sedum mat over an appropriate extensive growing medium.

Green Roof Ecological Advice

1.3 The following green roof design and implementation measures are recommended to maximise the biodiversity benefits of the green roof:

- Provision of a variable (undulating) substrate depth of between 85mm and 150mm, with a minimum depth of 85mm.
- Inclusion of some areas of bare, unplanted substrate.
- Supplementing the sedum blanket with native and locally appropriate plants (see recommended species below[1]).
- Use of a broad range of flowering species with a minimum of around 15 species.
- Inclusion of other habitat features such as logs, rocks and boulders, stone piles and invertebrate 'hotels'.

<u>Recommended Species</u>

1.4 It is recommended that supplementary planting of the sedum blanket is undertaken with appropriate plants such as drought tolerant species, small, hardy succulents, wildflower species suited to low nutrient and free draining soils and small herb species (bulbs and alpines).

1.5 Grasses should generally be limited to avoid outcompeting the wildflowers/sedums and dominating the green roof. Therefore, should grasses be included, they should include only slow-growing and non-aggressive species.

1.6 Table 1 provides details of a range of suitable species for inclusion within the green roof.

[1] The chosen sedum mat should not prohibit the capacity for natural regeneration and supplementary planting, to ensure biodiversity benefits are maximised.

Table 1: Recommended species for extensive green roofs

Plant species	Common name
Herbs	
Ajuga reptans	Bugle
Anthyllis vulneraria	Kidney vetch
Centaurea nigra	Common knapweed
Centranthus ruber	Red valerian
Daucus carota	Wild carrot
Dianthus spp.	Pinks
Galioum verum	Lady's bedstraw
Lamium album	White dead-nettle
Linaria vulgaris	Toadflax
Lotus corniculatus	Bird's foot trefoil
Lunaria annua	Honesty
Myosotis spp.	Forget me not sp.
Oneothera spp.	Evening primrose
Primula veris	Cowslip
Primula vulgaris	Primrose
Saxifraga oppositifolia	Saxifrage
Scabiosa columbaria	Small scabious
Silene dioica	White campion
Silene noctiflora	Night flowering catch-fly
Silene vulgaris	Bladder campion
Thymus serpyllum	Creeping thyme
Trifolium spp.	Clover species
Viola tricolor	Pansy
Succulents	
Sedum acre	Biting stonecrop
Sedum album	White stonecrop
Sedum anglicum	English stonecrop
Sedum fosterianum	
Sedum rupestre	Reflexed stonecrop
Sedum spectabile	Ice plant
Grasses	
Anthoxanthum odoratum	Sweet vernal-grass
Briza media	Quaking grass
Cynosurus cristatus	Crested dogstail
Festuca ovina	Sheep's fescue

Other Habitat Features

1.7 The addition of other habitat features onto the green roof (where possible) could provide further biodiversity benefit, mostly in relation to providing increased habitat diversity for invertebrates. Examples are provided below.

Deadwood/logs – should be native hardwood seasoned logs.

Image from © Hohenschlaeger (from www.zinco-greenroof.co.uk)

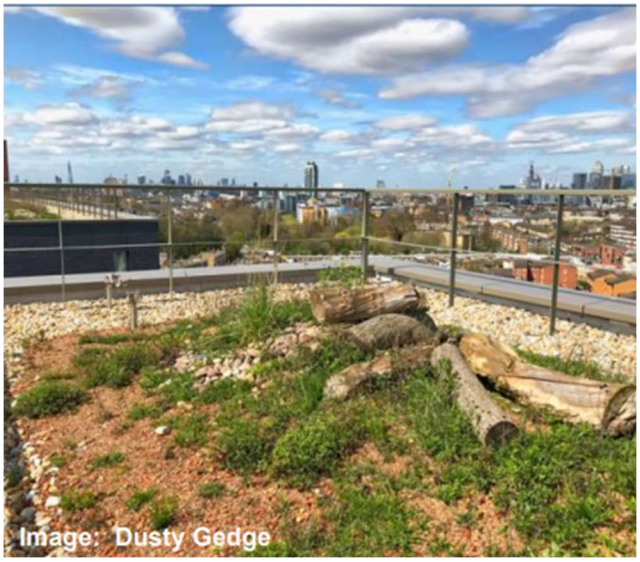

Image of Thurston Road green roof, Lewisham ©Dusty Gedge (from Grant and Gedge, 2019)

Image from https://www.nomuraholdings.com/sdgs/article/008/

Rock, boulder, stone and gravel piles

Image from www.zinco-greenroof.co.uk/systems/biodiversity-green-roof

Image from www.axter.co.uk/range/green-roofs

Invertebrate Features 'Hotels'

Image from https://www.nomuraholdings.com/sdgs/article/008/

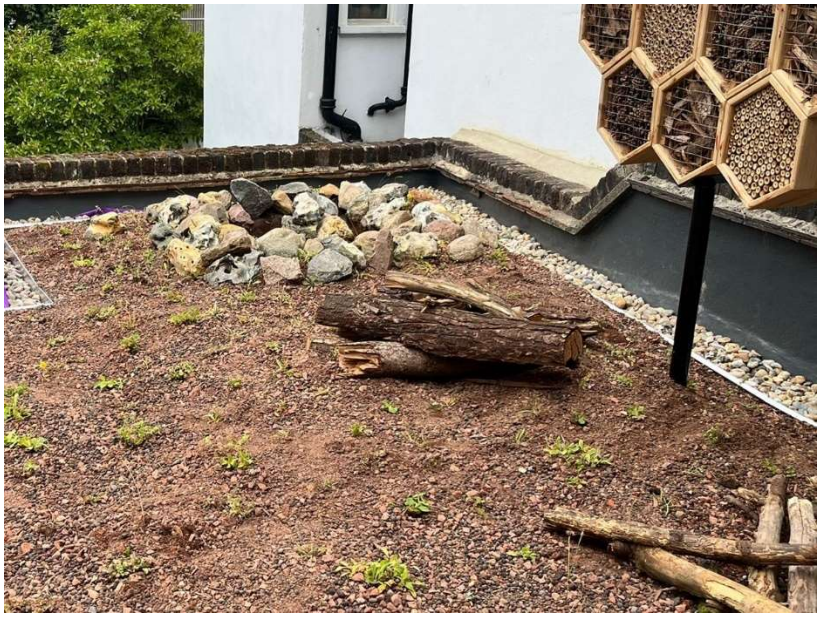

Image from Pritchard & Pritchard https://green-roofs.co.uk/what-are-our-top-five-tips-for-creating-biodiverse-green-roofs/

Bee Banks

1.8 These can be created by using sand and shaping it into mounds. Such features provide burrowing habitat for solitary bees and wasps. They should be south facing to maximise sunshine on the banks.

Conclusions

1.9 The inclusion of the above recommendations into the design and implementation of the proposed green roof at Westminster House is considered suitable to provide biodiversity benefits, and to inform the design enabling approval by the Local Planning Authority.

References

Gedge, D., Grant, G., Kadas, Dr. G. and Dinham, C. *Creating Green Roofs for Invertebrates. A Best Practice Guide.* Buglife – The Invertebrate Conservation Trust. Peterborough.

Grant, G. and Gedge, D. (2019) *Living Roofs and Walls from policy to practice. 10 years of urban greening in London and beyond.* European Federation of Green Roof and Green Wall Associations (EFB) and Livingroofs.org (on behalf of the Greater London Authority). London.

Green Roof Organisation Ltd. (2021) *The GRO Green Roof Code.* Green Roof Organisation Ltd. Surrey.