



**Q37 Specification for**

**21 Parliament Hill**

**Sky Garden Biodiverse System**

**For: OLF Construction**

**Ref: SG41316**

**18/11/2020**

This specification is based on current information available at the time of writing, if any aspects are revised prior to construction, or you require any additional details. Please contact our Technical Services Dept who would be pleased to amend or update the information provided.



## Q37 GREEN ROOFS

To be read with Preliminaries / General Conditions

### GENERAL

#### 130 **EXTENSIVE BIODIVERSE BROWN LIVING ROOF**

Roof type: J41 (Bitumen)  
Substrate: As J41  
Slope: As J41  
Waterproofing: As J41  
Thermal Insulation: As J41  
Protection: Protection fleece as clause 330  
Moisture Control: Drainage layer as clause 350  
Growing medium: Soil-less substrate as clause 390  
Vegetation: Sedum blanket as clause 400

#### Accessories:

Filter fleece as clause 360  
Surface habitat creation as clause 392  
Wall mounted habitats as clause 393  
Irrigation as clause 401  
Aftercare as clause 402  
Edge retaining profile as clause 420  
Separation edge as clause 420/b  
Border as clause 460  
Intermediate restraints as clause 820A

### PERFORMANCE

#### 210 GENERAL DESIGN

Green roof and associated features: Complete the detailed design.  
Proposals: Submit drawings, technical information, calculations and manufacturers' literature.  
Performance criteria: As per design requirements.

#### 250 CHARACTERISTIC ROOF LOADS

Roof structure: The structural engineers must satisfy themselves that the roof structure and deck are suitable to receive the dead load of the proposed green roof system and landscape both during construction and on completion of the works.

#### **Living Roof: 91kg/m2 (Dry) & 129kg/m2 (Saturated)**

Allowance for additional loads during construction: To be advised

Requirement: Restrict site activities to ensure that design loads are not exceeded, or submit proposals for temporary supports.



## PRODUCTS

- 320 ROOT BARRIER to Extensive Roof  
Supplier: Sky Garden Ltd, 7&8 Keil Close, Broadway, Worcestershire, WR12 7DP  
Contact: Dean Jordan T: 01242 620905 E:  
Product reference: N/A  
Material: N/A  
Thickness: N/A
- 330 PROTECTION LAYER To Extensive Roof  
Supplier: Sky Garden Ltd, 7&8 Keil Close, Broadway, Worcestershire, WR12 7DP  
Contact: Dean Jordan T: 01242 620905 E:  
Product reference: SGPL0102  
Material: Tensile geo-synthetic protection layer  
**Thickness: 3.5 mm**
- 350 DRAINAGE LAYER To Extensive Roof  
Supplier: Sky Garden Ltd, 7&8 Keil Close, Broadway, Worcestershire, WR12 7DP  
Contact: Dean Jordan T: 01242 620905 E:  
Product reference: SGDRRD20  
Material: HDPE rigid drainage and retention board with high compressive strength.  
**Depth: 20 mm**
- 360 FILTER MEMBRANE To Extensive Roof  
Supplier: Sky Garden Ltd, 7&8 Keil Close, Broadway, Worcestershire, WR12 7DP  
Contact: Dean Jordan T: 01242 620905 E:  
Product reference: SGFF01  
Material: 150gsm non-woven polypropylene fibre filter membrane bonded to drainage layer  
**Thickness: 1.5 mm**
- 390 EXTENSIVE  
Supplier: Sky Garden Ltd, 7&8 Keil Close, Broadway, Worcestershire, WR12 7DP  
Contact: Dean Jordan T: 01242 620905 E:  
Product reference:SGSBS50  
Material: Screened blend of recycled crushed brick and lightweight mineral materials with 20% organic matter (PAS100 recycled green waste)  
**Depth: 100 mm**  
Ameliorant/ conditioner: N/A  
Coverage: Total.  
Declaration of analysis: Submit.  
Parameters: Consistent installation of product to filter layers provided.



- 391 ROOF FINISH CONTOUR To Extensive Roof  
Supplier: Sky Garden Ltd, 7&8 Keil Close, Broadway, Worcestershire, WR12 7DP  
Contact: Dean Jordan T: 01242 620905 E:  
Product Reference:N/A  
Material:N/A
- 392 SURFACE HABITAT CREATION To Extensive Roof  
Manufacturer: Sky Garden Ltd, 7&8 Keil Close, Broadway, Worcestershire, WR12 7DP  
Product Reference:surface habitats to increase biodiversity.  
**Material:N/A**
- 393 WALL MOUNTED HABITAT To Extensive Roof Boundaries  
Manufacturer: Sky Garden Ltd, 7&8 Keil Close, Broadway, Worcestershire, WR12 7DP  
Product Reference: N/A  
Material: N/A
- 400 VEGETATION To Extensive Roof  
Supplier: Sky Garden Ltd, 7&8 Keil Close, Broadway, Worcestershire, WR12 7DP  
Contact: Dean Jordan T: 01242 620905 E:  
Product reference: **VGPLWF20**  
Density: mixed standard bio-diverse plugs planted in bands and blocks, 20 per sqm across 20% of the surface area.  
Planting mix: Agrimony (Agrimonia Eupatoria), Bird's Foot Trefoil (Lotus Corniculatus), Bladder Champion (Silene Vulgaris), Common Sorrel (Rumex Acetosa), Common Toadflax (Linaria Vulgaris), Cowslip (Primula Veris), Hoary Plantain (Plantago Media), Kidney Vetch (Anthyllis Vulneraria), Lady's Bedstraw (Galium Verum), Ox-Eye Daisy (Leucanthemum Vulgare), Perforate St John's Wort (Hypericum Perforatum), Red Clover (Trifolium Pratense), Rough Hawkbit (Leontodon Hispidus), Salad Burnett (Sanguisorba Minor), Self Heal (Prunella Vulgaris), Small Scabious (Scabiosa Columbaria), Vipers Bugloss (Echium Vulgare), Wild Marjoram (Origanum Vulgare), Thyme (Thymus Polytrichus), Yarrow (Achillea Millefolium), Common Poppy (Papaver Rhoëas), Cluster Bellflower (Campanula Glomerata), Harebell (Campanula Rotundifolia), Lesser Knapweed (Centaurea Nigra), Black Medic (Medico Lupulina), Red Champion (Silene Dioica), Betony (Stachys Officinalis), Catsear (Hypochaeris), Yellow Rattle (Rhianthus Minor), Field Scabious (Knautia Arvensis), Meadow Buttercup (Ranunculus Acris), Cornflower (Centaurea Cyanus), Corn Marigold (Chrysanthemum Segetum).  
Additional: A greater range of species and additions of wildflower, cornflower, herb and alpine mixes can be added as a regional pre-grown blanket or as a post installation over seed and should be discussed at planning stage.

- 401            IRRIGATION  
The green roof will need thorough saturation following installation. Immature systems will require a supplementary irrigation system to be available for the first 12 months of the establishment period. Blanket systems may need supplementary watering during periods of extended drought, especially for the first 2 years' post installation. It is strongly recommended that a connection at roof height is left for systems to connect with providing a roof pressure of 2.5-3bar and a flow rate of 60L/min.
- 402            AFTERCARE  
A two-visit inspection and remedial package for year 1 maintenance (unless longer agreed) to manage the roof establishment period. Aftercare program should not cover watering but should cater for commissioning and de-commissioning of the irrigation system.  
System/drainage outlet checks and removal of invasive/unwanted plants to be included.  
Remedial aftercare to cover failure of the green roof to establish under certain criteria but not damage caused by other services, e.g. birds, theft, vandalism or extreme weather damage.
- 420            EDGE RETAINING PROFILE  
Supplier: Sky Garden Ltd, 7&8 Keil Close, Broadway, Worcestershire, WR12 7DP  
Contact: Dean Jordan T: 01242 620905 E:  
Product Reference: SGRE100100  
Material: 2mm tensile aluminium upstand with corner fixings and perforations  
Height:        **100mm**  
Foot:           **100mm**
- 420/b         SEPARATION PROFILE  
Supplier: Sky Garden Ltd, 7&8 Keil Close, Broadway, Worcestershire, WR12 7DP  
Contact: Dean Jordan T: 01242 620905 E:  
Product Reference: SGRE100100  
Material: 2mm tensile aluminium upstand with corner fixings and perforations  
Height:        **100mm**  
Foot:           **100mm**
- 460            BORDERS  
Type: Riverstone Pebbles  
Supplier: Sky Garden Ltd, 7&8 Keil Close, Broadway, Worcestershire, WR12 7DP  
Contact: Dean Jordan T: 01242 620905 E:  
Size: 20-40mm rounded, washed  
Colour: Multi-colour, mixed grade natural finish (minimal sharp edges but not guaranteed as stone damage during bagging and transport can occur)  
Laying: 250 mm borders around perimeters, penetrations and outlets (25kg sack units) with reduced width by agreement, according to location/adjacent finishes.

## EXECUTION

- 710           **INSTALLATION GENERALLY**  
Preparation: Clear all surfaces of debris.  
Timing: After certification of waterproof membrane integrity.  
Surface condition: Visually inspect waterproof membrane, report any damage.  
Faults in waterproof membrane: Report.  
Contamination: Do not use materials detrimental to healthy plant growth.  
Storage: Do not overload.  
Point loads: Avoid.  
Outlets: Do not block.  
Outlet grilles: Installed (by roofing contractor)
- 720           **ADVERSE WEATHER**  
Unfinished work: Secure from damage and wind uplift.  
Conditions: Do not install or work with frozen materials.
- 740           **ROOT BARRIER INSTALLATION**  
Joints: Minimize  
Overlaps (minimum): 100mm
- 750           **PROTECTION LAYER INSTALLATION**  
Joints: Minimize  
Overlaps (minimum): 100mm  
Upstands: Extend to top of growing medium.
- 770           **DRAINAGE LAYER INSTALLATION**  
Extent: Continuous beneath living roof area  
Fitting: Loose laid  
Up stands: Fit closely around penetrations and outlets.
- 780           **FILTER MEMBRANE INSTALLATION**  
Joints: Minimize  
Overlaps (minimum): 100mm  
Fitting: Loose Laid  
Upstands: Extend to top of growing medium.
- 790           **GROWING MEDIUM INSTALLATION**  
Handling: Minimize.  
Conditions: Handle in the driest condition possible. Do not handle or install wet or frozen.  
Layers: N/A  
Depth (maximum): as per Q37 clause 390  
Sequence: Gently firm each layer before spreading the next

- 800 VEGETATION INSTALLATION  
Handling: Minimize.  
Vegetation: Foliage upright. Avoid tearing blanket. Lift from beneath root zone/carrier, not foliage. Minimise foot traffic or laying of materials on to blanket during or after installation.  
Conditions: Blankets should be moist but not saturated nor dry. Do not handle or install when frozen.  
Surface preparation: Ensure substrate surface is flat and even before laying blanket  
Layers: Lay blanket root zone on to substrate ensuring direct contact with substrate across entire surface. Ensure no air pockets between substrate and root zone.  
Sequence: Remove from pallets on same day of delivery. Open rolls with foliage upwards and lay direct onto substrate. Gently firm blanket onto substrate surface. Water in on day of installation.
- 820 EDGE RETAINING PROFILE INSTALLATION  
Cutting: Neat, accurate and without spalling.  
Junctions: Vertical, secured using proprietary connectors.  
Position: True to line and level. Smooth continuous lines.  
Fixing: Spot bonded with manufacturers approval or system ballasted  
  
Retention detail used where there are system retention requirements and should be spot bonded in accordance with manufacturers approval or system ballasted.  
  
Separation detail if for physical divide between system and slab or stone detailing and is system ballasted.
- 840A INTERMEDIATE RESTRAINTS INSTALLATION  
Intermediate restraints should be fitted across the roof on pitches exceeding 10°. Refer to specification and design detail or waterproof system manufacturer detail for type and fixing method.  
  
As a guide, retention battens on pitches from 10°-20° should be installed at 2000mm increments up the roof slope with a mechanical fixing at eaves. From 21°-45° the spacing should be reduced to 1000mm. The height of the restraints should not exceed the combined height of the drainage and substrate layers
- 840 LAYING BORDER  
Condition of substrate: Clean.  
Gravel guards: Fit to outlets.  
Laying: 250 mm borders around perimeters and outlets - spread evenly, do not pile to excessive heights  
  
Depth (minimum): 85 mm  
Previously laid materials: Protect during the spreading of Riverstone Pebbles

## COMPLETION

- 910      **INSPECTION**  
Timing: Before handover.  
Give notice (minimum): 3 days.
- 920      **COMPLETION**  
General: Leave the works in a clean, tidy condition.  
Surfaces: Clean immediately before handover.  
Outlets: Clean and clear of obstructions.  
Completed green roof: Protect from adjacent or high level working.
- 930      **DOCUMENTATION**  
Timing: Submit at handover.  
Contents: Growing medium declaration of analysis.  
Manufacturers' guarantees and warranties  
Procedures for maintenance of the green roof  
Record drawings showing the location of planting and associated features  
Aftercare agreement  
O&M Manual  
Irrigation guidelines  
Number of copies: As required.
- 940      **MAINTENANCE**  
This should consist of a minimum of two visits per year by the appropriate labour force, which will be dictated by the roof area. Irrigation is unlikely to be required once the plant player is established.  
  
Establishment of immature systems 18-36 months and blanket systems 12-18 months.

