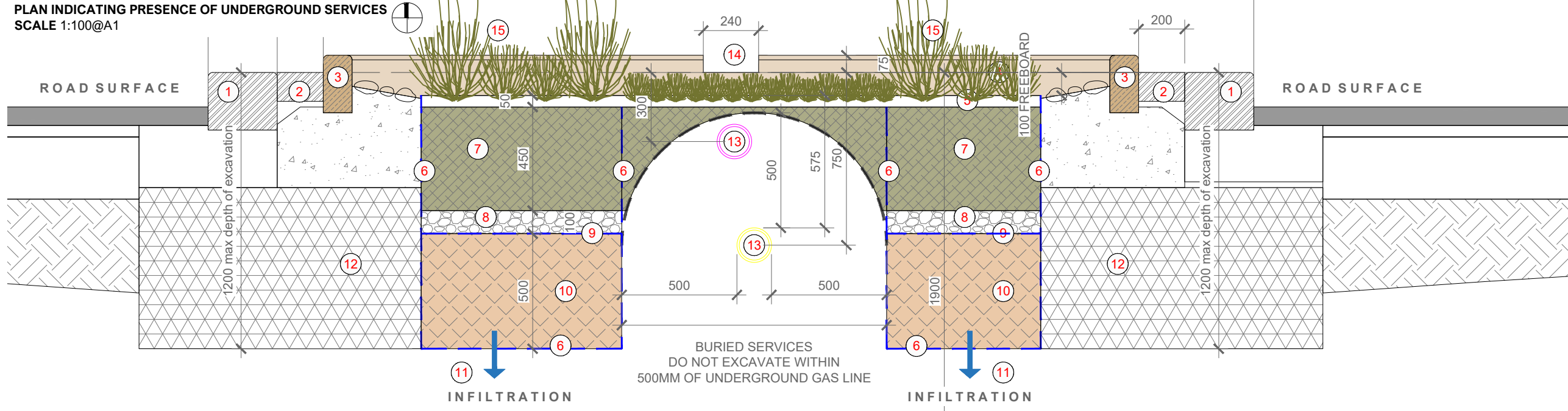


PLAN INDICATING PRESENCE OF UNDERGROUND SERVICES  
SCALE 1:100@A1

- Roadside kerb to DCC specification
- 200mm width area paved in Leinster granite setts to DCC specification
- Edge Restraint:** Solid Leinster granite kerbs, flamed finish, 250x125x600-900mm, 20mm R bull-nosed corners, mitre-cut to exposed corners. Secured in place with ST30 concrete foundation haunching, min. depth of foundations 200mm thickness.
- Freeboard:** min. depth 100mm measured from the carriageway or footpath level to the top of the top soil to provide potential water storage during 'cloud-burst' events
- Non-organic mulch layer:** 50mm depth washed and dried angular aggregate, e.g. locally sourced sandstone/granite. Sample to be approved by DCC/Landscape architect. Plants to be part-planted into mulch layer, part-planted into filter layer.
- Filter fabric:** geotextile separator layer to line excavated bio-retention area
- Filter Growing media layer:** refer to detailed specification notes for rain-garden soils
- Transition layer:** filter layer of pea gravel to prevent the washing of fines from the filter medium into the drainage layer
- Filter fabric:** non-woven geotextile fabric separator layer to prevent granular materials and fines mixing with the drainage layer
- Drainage layer:** refer to detailed specification notes for rain garden sub-soil
- Ground:** Free-draining and un-compacted sub-soil to ensure that water can soak or infiltrate into the ground

- Granular back-fill:** CL505 Clean Angular Stone to engineer's design detail and specification
- EXISTING SERVICES ROUTES APPROX 300mm 750mm and 1900mm BELOW PAVING LEVEL** - existing services to be treated as per specification notes. Indicative illustration only - refer to Street Plan by DCC and GPR Survey drawing.
- KERB-CUT TO ALLOW OVERSPILL OF INUNDATION WATER DURING CLOUDBURST**
- Vegetation:** mix of native and exotic species of shrubs, grasses and ground cover plants suitable for bio-retention at density 9/m<sup>2</sup>; bulbs at 10/m<sup>2</sup> density.
- Kerb-Cut Inlet Detail/Edge Restraint:** Solid Leinster granite kerb, flamed finish, 250x125x600-900mm, 20mm R bull-nosed corners, mitre-cut to exposed corners. Secured in place with ST30 concrete foundation haunching, min. depth of foundations 200mm thickness.
- Side slope gradient from kerb-cut inlet:** 8-10° gradient slope down to filter medium to provide 'freeboard' storage in inundations, planted with vegetation; at kerb-cut inlet slope to be hard-landscaped with cobbles/setts to slow surface water ingress speed/scour/erosion.
- Stone cobbles or setts:** Leinster granite rounded pebbles or salvaged cobbles (in varying heights and sizes) set in C30/35 concrete on 8-10% slope to slow surface water flow into the planter for min. 300-650mm distance from kerb edging into planter.



CROSS SECTION A-AA' INDICATING PRESENCE OF UNDERGROUND SERVICES  
SCALE 1:20@A1

OUTLINE SPECIFICATION NOTES FOR PLANTING BED SOIL SYSTEMS FOR BIO-RETENTION AND RAIN-GARDEN AREAS

**General Notes:**  
Contractor to familiarise themselves with 'Guidance on the Construction of SuDS', CIRIA C768, 2017; 'The SuDS Manual', CIRIA C753, 2015, 'Site Handbook for the Construction of SuDS' CIRIA C698, 2007, and 'Designing Rain Gardens: A Practical Guide', Urban Design London

**GENERAL NOTES**  
All landscape works to be undertaken by a suitably qualified and experienced landscape contractor.  
Additional Information: These drawings are to be read in conjunction with the following documents:  
• Scheme Design Drawings  
• Utility Service Providers Drawings & Existing Surveys (Topographical & GPR)

- EXISTING SERVICES**  
Due to the nature of this project there may be various services and utilities located in each proposed planting pit/trench. These services are **LIVE** and of various diameter, depth and composition. The potential utilities located near each planting pit/trench could be generally, but are not limited to the following services;
- Telecommunications / Eir/ Virgin Media
  - Drainage (Foul and Surface Water)
  - Public lighting / ESB / Electrical
  - Mains Water
  - Gas
- All existing services are to be uncovered, completely exposed and identified prior to bulk excavation by machine. All existing services are to be protected during excavation and installation of the planting pit/trench structure and backfill soils. Temporary support to exposed ductwork/installations for the duration of the pit/trench construction is to be provided as per Engineer's requirements.
  - The geotextile lining the planting pit/trench will require to be

- carefully cut to allow the services to penetrate into the pit/trench. This opening in the geotextile should be no more than 50mm wider than the diameter of the duct. Cable ties should be used to ensure the opening is closed off and sealed.
- Services running through the pit should be wrapped in a root barrier ('ReRoot 2000' 2mm by Greenleaf or equivalent approved). This root barrier should be secured to the ductwork with suitable cable ties. Where applicable and where it is possible, multiple ducts should be wrapped together to prevent ducts becoming pushed apart.
- The backfill material/growing medium(soil) should be carefully placed around the ducting by hand, in unison with backfilling the pit/trench.
- A photographic record of the services should be documented and presented to the Landscape Architect upon completion of the pit/trench.
- Any damage to existing services or utilities should be notified immediately to the Employers representative.
- Services located within the working space adjacent to the planting pit should be reinstated as per typical detail indicated above. For specific installation of various services and diameters of ducting inc. backfill requirements please refer to Scheme Design drawings and specifications.
- Where existing services are located within the 260mm drainage layer of the proposed planting pit/trench, C12/15 concrete bed and surround will be required to cover the duct to a minimum thickness of 100mm.

**Composition:**  
**Rocks/verge stones to break water velocity at kerb cut:**  
Salvaged Leinster granite cobbles or setts set in concrete haunching, sloped at 8-10% and grading into bed of Leinster granite pebbles to mulch.  
**Non-organic mulch layer:**  
Washed and dried 6-14mm angular golden gravel aggregate (e.g.

sandstone or granite) surfacing in bio-retention area. Depth: 75mm. Provide 5kg sample before opening. Plants to be part-planted into mulch layer, part into filter growing media layer.

**Filter growing media:** 'Filter Media for Bioretention Area' by Enrich or equivalent approved.

Filter growing media must be sufficiently permeable to allow water to pass through it. The filter medium must be manufactured to BS 3882:2015 and suitable for use in a bio-retention/swale area. The filter medium should be well-graded and the composition should contain limited particle size range:

- organic matter content 3-5%;
- pH range of 5.5-8.5 (1:2.5 soil/water extract);
- electrical conductivity (EC) should be <3300µS/cm (1:2.5 soil/CaSO4 extract);
- total nitrogen should be 0.10-0.30%;
- extractable phosphorous 16-100mg/l;
- extractable potassium 120-900mg/l.

Method of analysis in accordance with BS 3882:2015.  
<5% clay and silt (<0.063mm)  
<20% fine sand (0.063-0.2mm)  
<35%-65% medium sand (0.2-0.6mm)  
<50%-60% coarse sand (0.60-2.0mm)  
<10% fine gravel (2.0-6.0mm)

- Filter growing media can comprise a free-draining amended soil mix comprising 55% sand, graded as above: 30% multi-purpose grade topsoil to BS 3882:2015 and 15% peat-free compost to IS 441. Material should be well-mixed and meet the permeability requirements as listed above.
- Filter growing media can comprise a custom mix of crushed and sandy silt loam to provide a very free-draining growing medium.
- Volume of filter growing media should be based on 110% of plan volume, to account for settling or compaction.
- Provide 5kg sample with details of proposed soil mix.
- Size distribution: 100% passing through a 25mm screen; 50% passing

through a 10mm screen.  
- Moisture content: 12-30%  
- Permeability range: 100-300mm/h  
- Purity: sustainable, free from physical and chemical contaminants and pathogens.

**Transition Layer or Geotextile Separator Layer:**  
Non-woven geotextile fabric with a flow rate of >110 litres per minute per metre, to prevent inter-mixing of granular materials and soils, and prevent the ingress of fines into drainage media. Provide sample.

**Drainage layer:**  
Sub-base materials such as 4/20 aggregate or crushed recycled concrete with 'no fines' particles (tested to ensure it will not leach contaminants into the water). Coarse graded aggregate 4/20 and 4/40 to BS 7533-13-2009. Provide sample and description.

- Care should be taken not to over-compact soils below the bio-retention area, and particularly the filter and soil planting bed, as this will reduce infiltration capacities.
- To excavate a bio-retention area, use a back-hoe excavator, and avoid running over the area with construction equipment.
- Take care to ensure that geotextiles are not clogged or torn during construction.
- Do not place the filter medium if the drainage layer is saturated or the ground below the system is saturated.
- Do not over-compact soils below the bio-retention area as this will reduce infiltration capacities.

**Aggregates for planting beds:**  
Sand: coarse, grained sharp sand with neutral pH.  
Grit: 2-5mm horticultural grit  
Crushed materials: crushed and graded rubble  
Recycled materials: submit proposals

GENERAL 'SOFT' LANDSCAPE MATERIALS - OUTLINE SPECIFICATION KEY	
Planting has been specified with a mix of exotic species to respond to climate change issues, occasional inundations and to provide pollinator plants in the urban setting.	
PLANTER BEDS GENERALLY	
<ul style="list-style-type: none"> <li>Excavate trench and pit and place filter media, growing media, drainage layers and sub-soil.</li> <li>No bare-root (BR) trees, transplants or hedge plants permitted outside the planting season, October-March.</li> <li>Work in 100mm depth multi-purpose organic compost to min. 450mm depth multi-purpose grade topsoil to BS:3882 on min. 450mm depth free-draining subsoil.</li> <li>Top with 75mm settled depth mulch topping.</li> </ul>	
	<b>MIX P1 - Rain-garden</b> 6.8m <sup>2</sup> Perennial pollinator-friendly planting to planter beds with a diverse mix of ornamental grasses, bulbs, corms, ferns, ground-cover plants, sedums and flowering perennials of both native cultivars and exotic species.
	<b>MIX P2 - Hedge</b> 18.5m <sup>2</sup>
	<b>MIX P3 - Bulbs (in area of limited excavations)</b> 2.7m <sup>2</sup>
	<b>INLET DETAIL/EDGE RESTRAINT:</b> Solid Leinster granite kerb, flamed finish, 250x125x600-900mm, 20mm R bull-nosed corners, mitre-cut to exposed corners. Secured in place with ST30 concrete foundation haunching, min. depth of foundations 200mm thickness. Provide 100mm gap at 900mm centres to create a number of small gap 'kerb-cut' type inlets. Provide Leinster granite rounded pebbles or salvaged cobbles (in varying heights and sizes) at kerb-cut inlet point set in C30/35 concrete on 8-10% slope to slow surface water flow into the planter.
	<b>PIT/ TRENCH BACK-FILL SOIL</b> as per soil specification
	<b>PIT/ TRENCH BACK-FILL SUB-SOIL</b> as per soil specification

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**PROJECT** PROPOSED PUBLIC REALM WORKS, LEESON STREET, DUBLIN 2

<b>CLIENT</b> DUBLIN CITY COUNCIL	<b>PROJECT ARCHITECT</b> DUBLIN CITY COUNCIL
<b>JOB NO.</b> 19_150	<b>PLANNING REFERENCE</b> NOT APPLICABLE

**DRAWING**  
CONSTRUCTION DETAILS (RAIN GARDEN)

**DRAWING NO.**  
19-150-LA\_P\_02

<b>DRAWN BY</b> J COUGHLAN MILJ	<b>CHECKED</b> COLM KENNY MILJ	<b>DATE</b> 2022.06.15
<b>STATUS:</b> TENDER	<b>SCALE:</b> 1:20, 1:100 @ A3	<b>REVISION</b> F

NOTE:  
All dimensions are in millimeters unless otherwise stated and shall be checked and confirmed by the contractor on site. Any discrepancies shall be immediately reported to the landscape architect. Work to ignored dimensions only. Do not scale from drawing. Do Not Scale. Not for Construction Purposes unless Specifically Marked.

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