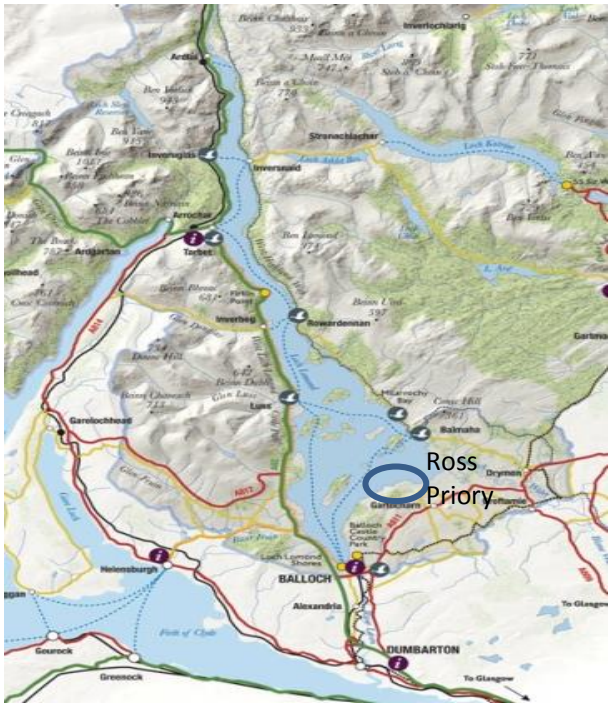
CLIMATE CHANGE ADAPTATION

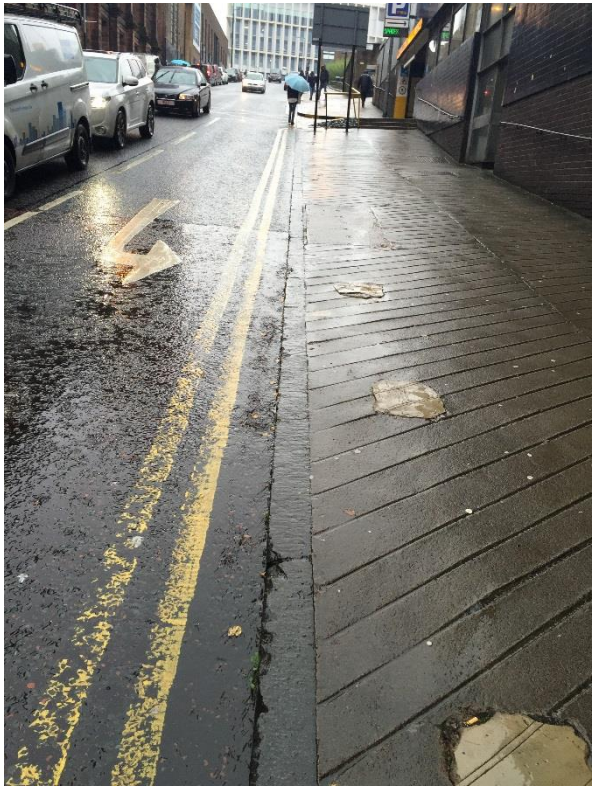
EVENTS AND ACTIONS

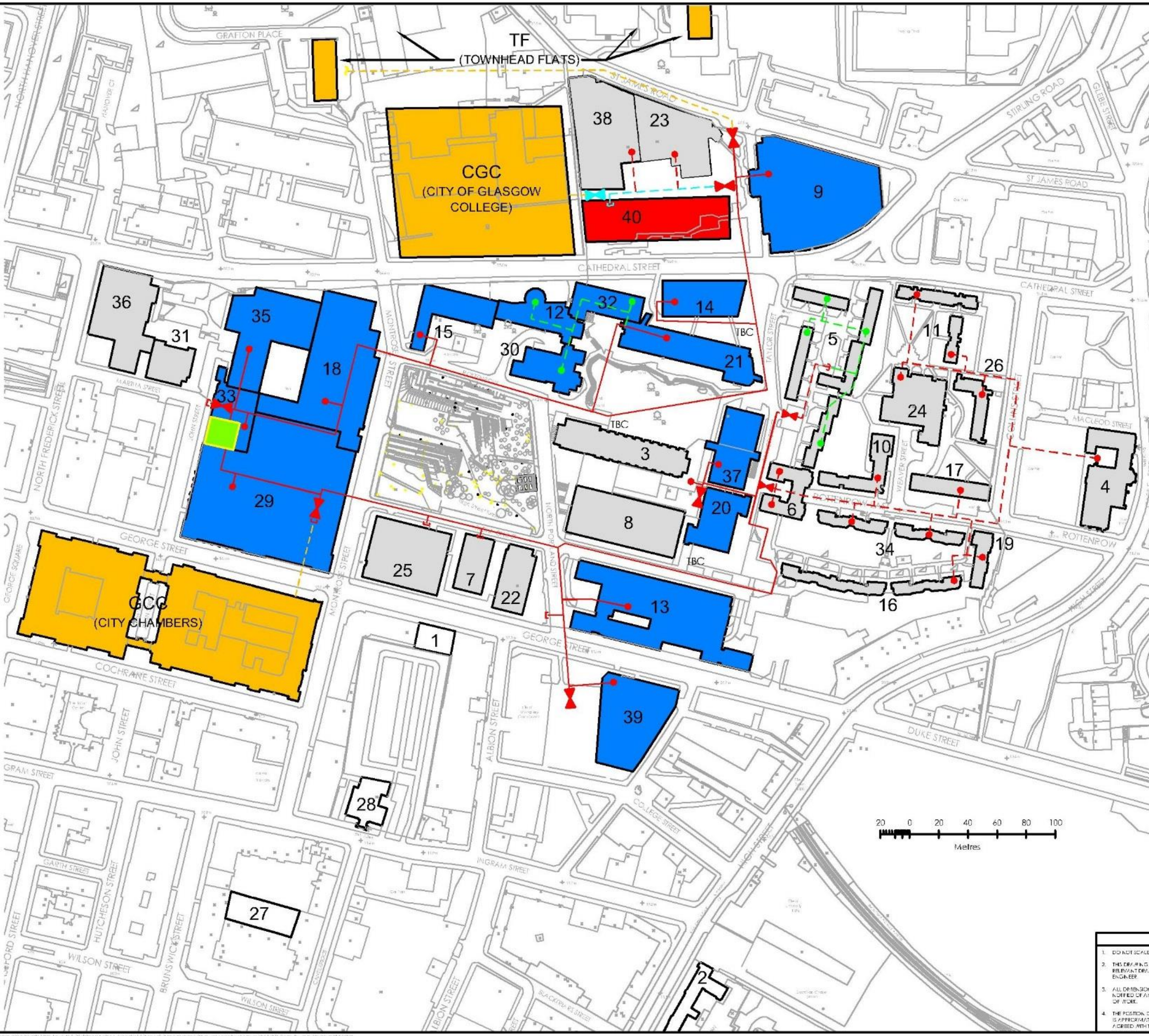
Roddy Yarr, Assistant Director (Sustainability and Environmental Management)

Background

- Several sites across the west of Scotland
  - Glasgow City Centre (36 acres)
  - PNDC at Cumbernauld, North Lanarkshire (3 acres)
  - AFRC at Inchinnan, Renfrewshire (9 acres)
  - Ross Priory, Stirlingshire, Loch Lomond and Trossachs National Park (190 acres)







KEY

- (PHASE 1) PIPEWORK
- (PHASE 2) PIPEWO
- PIPEWORK BY OTHERS
- PIPEWORK BY TH
- PIPEWORK BY BUILDING 40 CONTRACTOR
- CONNECTION TO BUILDING
- CONNECTION FO
- BUILDINGS SUPPLIED UNDER PHASE 1
- BUILDINGS SUPPLIED UNDER PHASE 2
- 3RD PARTY BUILDINGS CONSIDERED FOR CONNE
- ENERGY CENTRE
- BUILDING TO BE CONSTRUCTED FROM AUG 2016

1	Alexander Turnbull Building
2	Andrew Ure Hall
3	Architecture Building
4	Barony Hall
5	Birkbeck Court
6	Chancellors Hall
7	Collins Building
8	Colville Building
9	Curran Building
10	Forbes Hall
11	Garnett Hall
12	Graduate School of Business
13	Graham Hills Building
14	Hamnett Wing
15	Henry Dyer Building
16	James Blyth Court
17	James Goold Hall
18	James Weir Building
19	James Young Hall
20	John Anderson Building
21	John Arbuthnott Building
22	Livingstone Tower
23	Lord Hope Building
24	Lord Todd Building
25	McCance Building
26	Murray Hall
27	Patrick Thomas Court
28	Ramshorn Theatre
29	Royal College Building
30	Sir William Duncan Building
31	St Paul's Chaplaincy
32	Stenhouse Building
33	Students Union
34	Thomas Campbell Court
35	Thomas Graham Building
36	University Centre
37	Wolfson Centre
38	181 St James Road
39	TIC
40	New Sports & Health Building
GC	Glasgow City Chambers
TF	Townhead Flats
CGC	Glasgow City College

BUILDINGS 3, 7, 8, 22
31, 36 & 40 WILL O
HAVE DH CONNECT

P8	S.B.	CONNECTIONS TO BLDGS 25, 7 & 22 AMENDED.
P7	J.N.	MODIFICATION TO BUILDING 40 PIPEWORK CONNECTION
P6	Y.P	PIPEWORK ROUTE MODIFIED.
P5	J.R.	PIPEWORK ROUTE MODIFIED.
P4	J.N.	ENERGY CENTRE RELOCATED TO BUILDING 33 FOR FURTHER CLARITY
P3	J.R.	ENERGY CENTRE RELOCATED.
P2	J.R.	MODIFICATION TO CONNECTION.

UNIVERSITY OF STRATHCL

JOHN ANDERSON CAM

PROPOSED PHASING LAY

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London 0207 554 0787 | Altrincham 0161 928 5791

S.B.			
D.McN.			
1:1250 @ A1			

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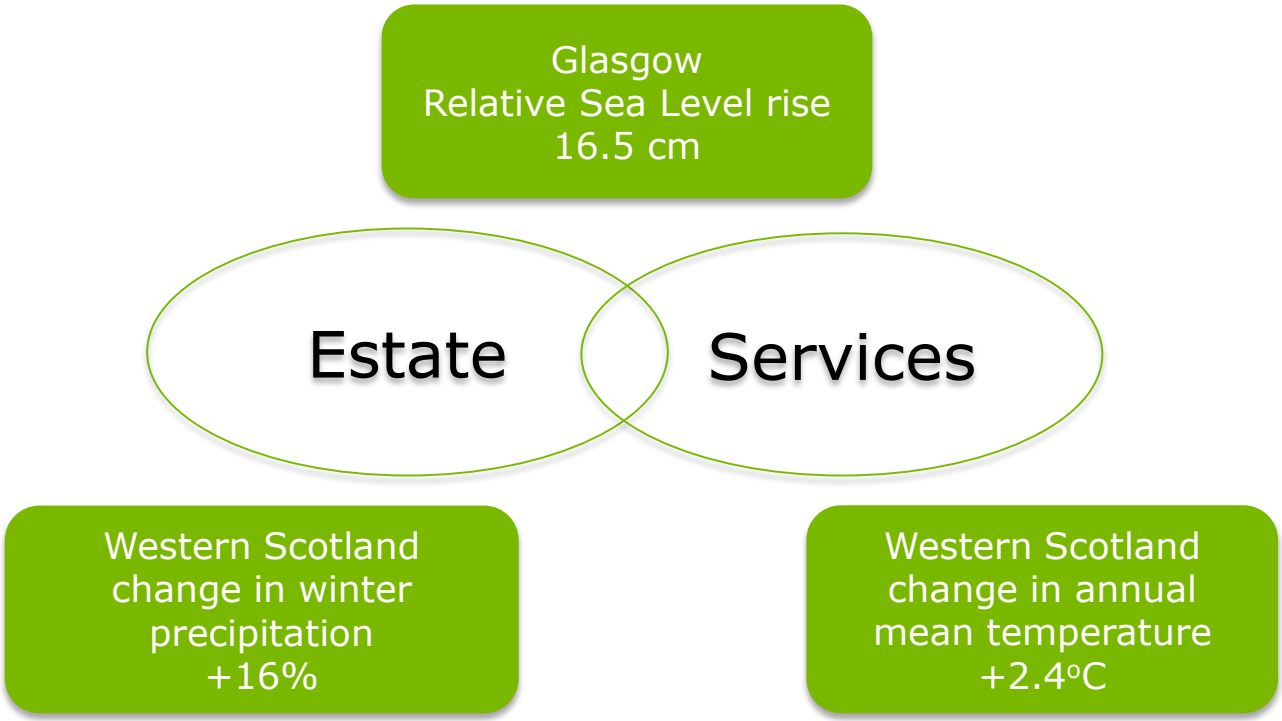
PRELIMINARY

NOTES

1. DO NOT SCALE FROM THIS DRAWING.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS AND SPECIFICATIONS ISSUED BY THE ENGINEER.
3. ALL DIMENSIONS TO BE CHECKED ON SITE AND THE ENGINEER NOTIFIED OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF WORK.
4. THE POSITION OF ALL EQUIPMENT INDICATED ON THIS DRAWING IS APPROXIMATE. THE EXACT POSITION OF ALL EQUIPMENT TO BE AGREED WITH THE ENGINEER PRIOR TO COMMENCING WORKS.

Impact of climate change on estate and services



CLIMATE CHANGE ADAPTATION -ISSUES AND DRIVERS

- Severe weather events already have an impact on the University in terms of travel disruption and fabric damage.
- Climate change will result in significant impacts on the built, natural, and social environments
- Adapting to climate change includes planning to reduce the risks while identifying and capturing opportunities.

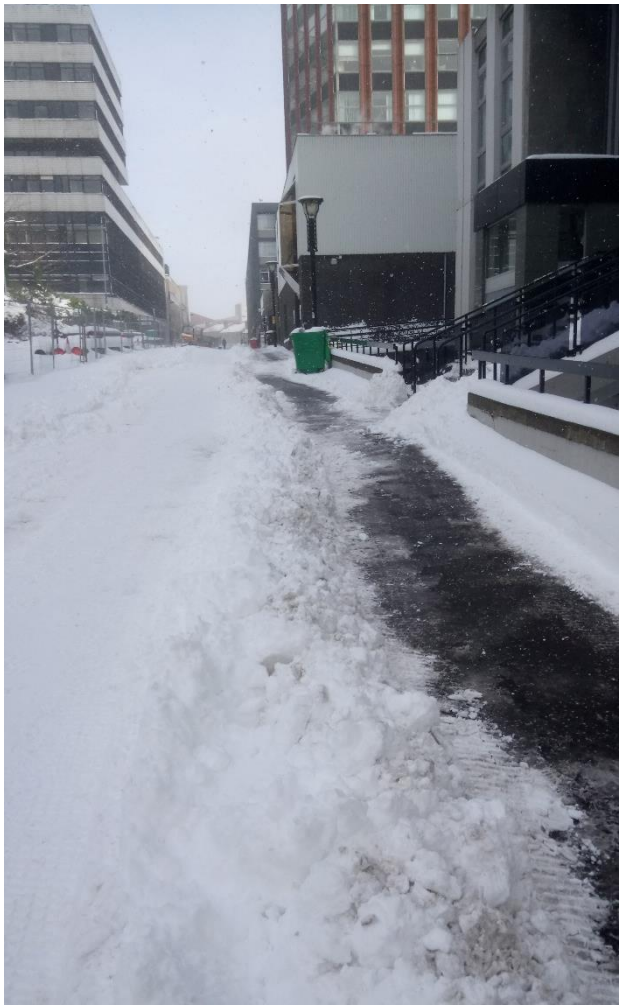
December flood at Ross Priory by Loch Lomond, impact on effluent treatment reedbed

Event Examples 1

- Ross Priory Reedbed
  - December 2015 flooding event meant that reedbed could not properly treat effluent into Loch Lomond (National Park)

Event Examples 2 – Feb 2018
Snow and Ice Closure of University

Montrose Street



Richmond Street

ACTIONS

- Understanding what Climate Change and Climate Change Adaptation means for the University
  - Identifying future climate vulnerability and risks
- Identifying Adaptation priorities
  - Updating Winter preparedness – greater level of infrastructure and planning
  - Developing a Climate Adaptation Plan and business case
  - Building this into development masterplan
  - Integrating climate change issues into infrastructure works e.g Heart of the Campus Project to incorporate ‘rain gardens’
  - Roll-out of Rain gardens, guttering upgrades, increased maintenance

Action - Heart of the Campus Relandscaping

University of Strathclyde Glasgow

8.3 Rainwater Management / Raingardens

Interconnected at surface landscape system for improved rainwater management across the Gardens that: -

- intercepts
- Treats
- Conveys
- Attenuates
- Infiltrates

1. A swale or vegetated filter strip intercepts run-off from the planted bank and conveys across the lawn through vegetated channels.
2. Overgenerous scale concrete steps - a section converted into soft landscape terraces that connects into the bioretention basin (former water feature) and links into vegetated channels. Hard landscape rill or channel intercepts run off from steps.
3. Link into stepped raingarden.
4. Bioretention garden intercepts run infiltrates, with cloud burst surges overflow route onto road as per existing condition.
5. Rain gardens prominent at lowest part of the Gardens attenuates, filters, infiltrates with cloud burst surges, overflow route onto road as per existing.
6. Hard landscape areas could be permeable.

8.4 Planting Approach

A response that interweaves the multi-faceted objectives of: -

- positive at-surface rainwater management that interrupts the gravity flow & dramatic topography.
- inbuilt climate change resilience through careful selection of habitat types & species selection.
- a positive contribution to the biodiversity of the city ecology.
- introducing soft landscape structure that gives legibility and a strong identity to the Garden. Combined with ephemeral 'come and go' elements such as bulbs, winter seed heads, autumn coloured bark & stems that provide seasonal variety and a layer of richness to the Garden.
- a contrast of spaces that feel safe and welcoming, and where vibrant, social spaces and more tranquil environments can be found.

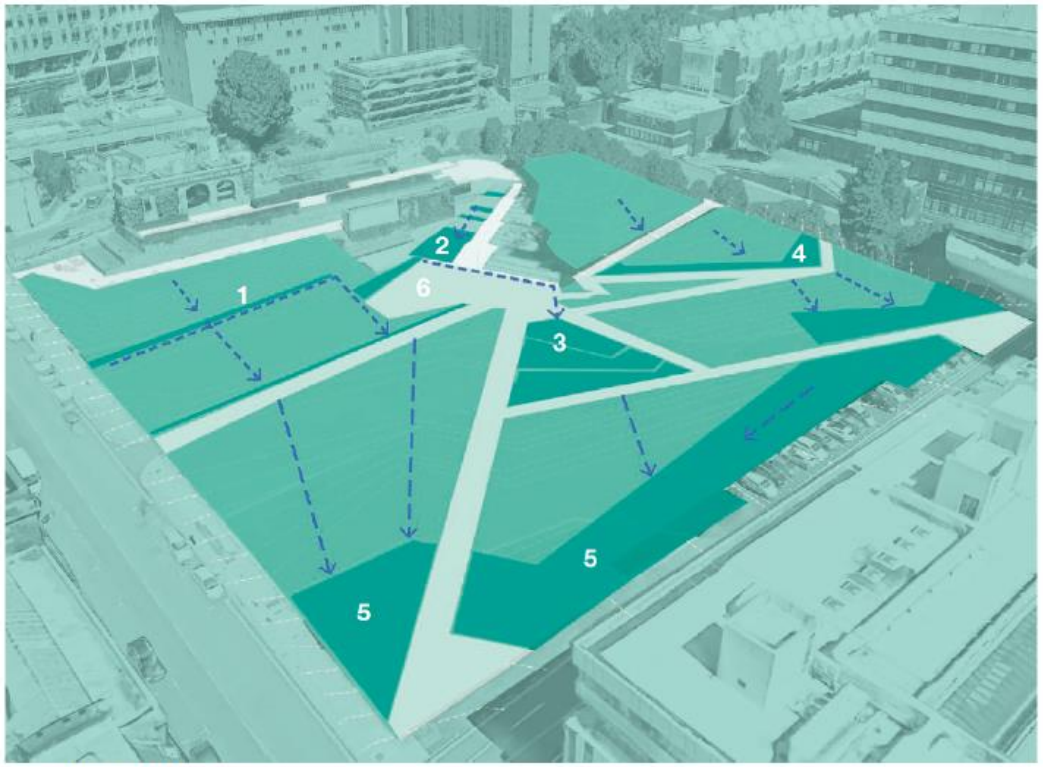
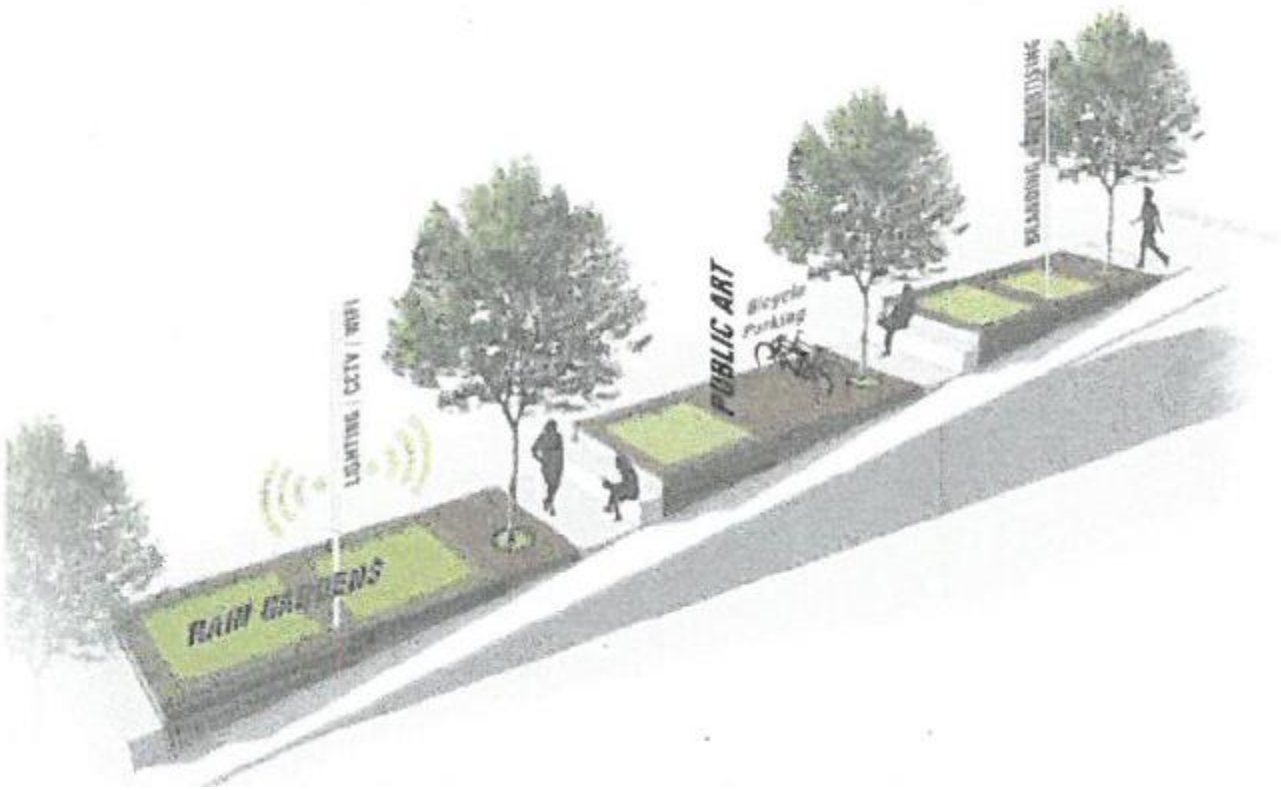


Figure 31 - Rainwater Management

Rain Garden North Portland Street



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