

VANCOUVER CITYWIDE
**Integrated Stormwater
Management Plan**

Joint Workshop Response Form



*Stormwater Park, Silver Ridge
Golder Associates, 2008*

Name: _____

Department: _____

Role: _____

We want to hear from you!

Please complete and return this form at the end of the workshop **OR** by email or in person by **Friday, March 28, 2014** to Andrew Ling:

Attn: Andrew Ling

andrew.ling@vancouver.ca

Crossroads Building, 7th Floor: Sewers and Drainage Design Branch - Engineering Services

Design Opportunities & Challenges

Design Response Form

The City of Vancouver, Metro Vancouver, and other jurisdictions in similar climates use a variety of Stormwater Source Control Best Management Practices (BMPs). While all of the BMPs listed below should remain under consideration at this point in the ISMP process, this question is intended to share your knowledge and local experience regarding future application of these BMPs in Vancouver.

What are your priorities for further investigation of the BMPs below for each land use typology? Please insert an H, M, or L in each cell in table 1 below.

H = High Priority for Further Investigation

M = Moderate Priority for Further Investigation

L = Low Priority for Further Investigation

Table 1: Design Priorities

LAND USE TYPOLOGIES

	PRIVATE OR AGENCY LAND PARCELS							PUBLIC PARCELS				
	One/Two Dwelling	Multiple Residential	Commercial Mixed Use	Downtown Mixed Use	Industrial	Institutional	Agriculture	Park or Greenspace	Arterial Street	Local Street	Lane	Other?
Absorbent Landscape/Trees												
Rain Gardens or Infiltration Bulges												
Bioswale or Infiltration Swale												
Tree Well (e.g. Silva Cell)												
Flow Through Planter												
Pervious Paving												
Infiltration Trench or Pit												
Green Roof												
Rainwater Capture to Outdoor Uses												
Rainwater Capture to Outdoor plus Toilet Uses												
Detention Tanks												
Constructed Watercourse – low flows												
Constructed Watercourse – All Flows (low to peak)												
Constructed Wetland												
Water Quality Structure (e.g. Stormceptor)												
Other (describe)												
LESSONS LEARNED/COMMENTS												

POTENTIAL BMP

Policy Framework Opportunities & Challenges

Policy Response Form

The Existing Stormwater Framework in City of Vancouver is evolving. Recent emphasis has been on design and construction of pilot projects in lanes and streets, as well as about 20 Infiltration Bulges guided by the Street Water Infiltration Systems Manual (SWIS). In private lands, the City's Rezoning Policy for Sustainable Large Developments requires a Rainwater Management Plan that meets stated targets. The Laneway House Guidelines requires pervious paving for new parking, and encourages attention to the City's Water Wise Landscape Guidelines. In Parks, the City and Parks Board have accomplished watercourse recreation and constructed wetlands on several sites. For an introduction to current policy tools used for Stormwater Management in the City, refer to the table 5 on pages 7-10.

As City policy evolves over the next decade, what are your priorities for further investigation of the public awareness and policy tools below for each land use typology? Please insert an H, M, or L in each cell below.

H = High Priority for Further Investigation

M = Moderate Priority for Further Investigation

L = Low Priority for Further Investigation

Table 2: Planning Policy Priorities

LAND USE TYPOLOGIES

	PRIVATE OR AGENCY LAND PARCELS							PUBLIC PARCELS				
	One/Two Dwelling	Multiple Residential	Commercial Mixed Use	Downtown Mixed Use	Industrial	Institutional	Agriculture	Park or Greenspace	Arterial Street	Local Street	Lane	Other?
EDUCATIONAL TOOLS												
Public Information Print Materials												
Public Information Video or Multimedia												
Public Information Training or Events												
Voluntary Guidelines (e.g. Waterwise Landscape Guidelines)												
INCENTIVE TOOLS												
Fast Track Approvals												
Financial Subsidy (e.g. rain barrel program)												
Feebate (e.g. impervious area fees reduced for BMPs)												
REGULATORY TOOLS												
Requirements with Rezoning												
Requirements with Building Permit (new construction)												
Requirements for Retrofit (existing construction)												
DIRECT INVESTMENT												
City Capital and Operating Finance of projects												
Other (describe)												
LESSONS LEARNED/COMMENTS												

POTENTIAL POLICY TOOL

Rainwater Management Targets

‘What Gets Measured Gets Done’ is a common statement in support of targets. In reviewing rainwater management targets applying to the City of Vancouver, there are several different targets in use. This question wishes to share your knowledge of what targets may be appropriate in Vancouver. As well as an overall set of targets for the ISMP study area it is also conceivable that different targets might be appropriate for different land use typologies. With the City’s goal of eliminating Combined Sewer Overflows (CSO) by Year 2050, there may be merit in more aggressive targets for specific CSO outfalls and their drainage area? We will investigate the implications of targets in more detail in the next phase of the ISMP. In the meantime, could you share, on a tentative basis, your early thoughts on approach to target setting that might be appropriate for Vancouver?

In considering broad CITYWIDE approaches to targets for rainwater infiltration or reuse in Vancouver, please rate the choices below from highest priority for further investigation to lowest. Please insert an H, M, or L in each cell below.

H = High Priority for Further Investigation

M = Moderate Priority for Further Investigation

L = Low Priority for Further Investigation

Table 3: Approaches to Rainwater Infiltration

1	Pursue rainwater management targets that are recommended by DFO and MV, which generally would encourage infiltration or slow release of the first 39mm of rainfall in 24 hours in Vancouver	
2	Establish City of Vancouver Citywide rainwater management targets that are customized, potentially at a lower level of infiltration than 1) above (e.g. infiltration or slow release of the first 25mm of rainfall in 24 hours as in the SWIS guidelines)	
3	Do not establish quantitative targets for Citywide rainwater management, but instead pursue rainwater management at every opportunity that is presented by redevelopment (with the result that rainwater management may be slower or less universally applied than if targets were pursued)	

Lessons Learned/Comments

In reaching the cumulative Citywide targets that are envisioned in a) above, there may be different sub-targets in different areas of the City. In considering such AREA-SPECIFIC approaches to targets for rainwater infiltration or reuse in Vancouver, please rate the choices below from highest priority to further investigation to lowest. Please insert an H, M, or L in each cell below.

H = High Priority for Further Investigation

M = Moderate Priority for Further Investigation

L = Low Priority for Further Investigation

Table 4: Area Specific Approaches to Rainwater Infiltration

1	Have different targets for different land use typologies (e.g. one/two family housing may have different targets than multiple family housing)	
2	Have different targets for different CSO outfalls and drainage areas (for example drainage areas subject to greater CSO risk may have higher targets)	
3	Don't vary targets across the City – just have one universal rainwater management target.	

Lessons Learned/Comments



Rainwater Management in Vancouver

Table 5: Policy Overview

PLAN, BYLAW, POLICY	HOW DOES IT RELATE TO SWM?	POTENTIAL REFINEMENTS
Greenest City Action Plan	<ul style="list-style-type: none"> • Sets targets for planting 150,000 trees, and reducing water consumption by 20%. Includes a target of completing the ISMP under climate goals. 	Provides a broad set of goals and targets that include support for rainwater management
Sewer design Manual 2002	<ul style="list-style-type: none"> • Outdated • No SWM/RWM design standards. 	Add design standards for SWM/RWM.
Vancouver Sewer Utility Plan 2010	<ul style="list-style-type: none"> • Key Action: Integration of rainwater management plans • Policies and actions related to rainwater management plans are included in the document however, actions are soft. (ex. Continue to develop and implement IRMP's). 	More specific actions for implementation.
Street Water Infiltration Design Manual – Sept. 2011	<ul style="list-style-type: none"> • City goal: Double the # of street water infiltration systems (SWIS) in the city by 2020 (e.g. from 20 to 40 sites) • Accompanies the SWIS design template • Target rainfall capture default is 25mm, alternate values are 36.3mm or 26.4mm based on Airport rainfall. • SWIS Design standard assumes underdrain at bottom of drain rock trench. • SWIS Design Tool provides guidance for infiltration Bulges/Rain Gardens, but not for Bioswales, Planter Boxes, and Tree Cells. 	<ul style="list-style-type: none"> • To date, implementation has mainly come through transportation and traffic calming initiatives. City should look for other avenues for implementation. • Need to rationalize capture targets: • MV guideline for Vancouver is 39mm based on Stanley Park rainfall (1600mm/year). • Consider underdrain at top of drain rock trench. • Consider use of MV guidelines and sizing for rain gardens, bioswales, and planter boxes. Develop guidelines for tree cells.
Engineering Strategic Plan 2012 - 2014	<p>Goals, objectives and actions:</p> <ul style="list-style-type: none"> • E6c-1 – Use street design concepts to better integrate stormwater management, maximize access to nature and enhance pedestrian experiences.' • E10-2 – Update and refine the CSO strategy to ensure the City meets its 2050 regulatory target. 	Should refer directly to stormwater management design guidelines.
Sewer & Watercourse bylaw	<ul style="list-style-type: none"> • Standards for stormwater discharge, wastewater treatment, connections to the sewer, volume control, water meters, etc. 	<ul style="list-style-type: none"> • Focuses on discharges from private, commercial & industrial lands. • Doesn't look at overland flow/ rainwater discharge from storm events.

PLAN, BYLAW, POLICY	HOW DOES IT RELATE TO SWM?	POTENTIAL REFINEMENTS
Street Restoration Manual	<ul style="list-style-type: none"> Addresses protection of existing watercourses but no new standards for implementing green rainwater features. 	Include targets, standards and details for rainwater management features – or cross reference to SWIS or MV stormwater guidelines
Biodiversity Strategy (DRAFT)	<ul style="list-style-type: none"> Goals & strategies to reach the biodiversity target (increase natural forest by 25 ha & natural wetland/stream/shoreline by 10ha by 2020) 	Good – the strategy clearly outlines restoration projects that would help reach the goal and objectives
Urban Forest Strategy	<ul style="list-style-type: none"> In development Objectives related to SWM: <ul style="list-style-type: none"> Further develop our plan to plant 150,000 trees by 2020 and increase Vancouver’s canopy cover Update management plans, policies and practices to address emerging dimensions such as climate change 	Coordination of recommendations between UFS and the Rainwater ISMP is necessary
Waterwise Landscaping Guide	<ul style="list-style-type: none"> Focuses on private landscape projects. Identifies resources for ‘rainwise’ landscape techniques such as rain gardens, pervious paving, soil preparation, etc. Refers to the MV Stormwater Source Control Guidelines Recognizes that COV current regulations allow use of infiltration trenches from smaller roofs (e.g. garages) Notes ‘significant health, safety and Vancouver Building Bylaw issues with water storage and reuse systems’. 	<ul style="list-style-type: none"> An excellent primer on urban rainwater and irrigation concepts. Does not include specific targets or quantitative requirements for rainwater capture or water conservation performance. Refers to other documents (e.g. MV Stormwater Source Controls) for technical guidance on stormwater.
Green Building policies	<ul style="list-style-type: none"> Waterwise landscape guidelines is listed as a resource for sustainable building and renovating. 	By inference, same lack of quantitative rainwater capture targets as above.
Climate Change Adaptation Strategy	<ul style="list-style-type: none"> Recognize that habitat, parks & greenspace can play an important role in mitigating the effects of storm events. Outlines several actions related to stormwater management to respond to climate change impacts including: <ul style="list-style-type: none"> Complete & implement a city-wide ISMP. Separate sanitary/stormwater sewers. 	
Transportation plan;	<ul style="list-style-type: none"> Walking policy 1.4: Make streets and public spaces rain friendly. Outlines actions to achieve rain friendly streets from a human comfort perspective. 	

PLAN, BYLAW, POLICY	HOW DOES IT RELATE TO SWM?	POTENTIAL REFINEMENTS
Corporate Business Plan 2012-2021	<ul style="list-style-type: none"> • Goal 10 – focuses on CSO regulatory target strategy. 	<ul style="list-style-type: none"> • Goal 10 – add a strategy for stormwater/rainwater management.
Rezoning Policy for Sustainable Large Developments	<ul style="list-style-type: none"> • Requires a Rainwater Management Plan with rezoning, and followup details during DP and BP. • Sets targets of ‘post development runoff rate and volume = pre-development runoff rate and volume for the two-year 24-hour duration storm’, and ‘treats 90% of the average runoff volume’ and ‘85% TSS removal’. Preference for landscape-based treatment systems. • All proposed systems and appurtenances must meet the Vancouver Building Bylaw (requires letter of assurance). • Guidelines for soils/plantings are qualitative. Other sections encourage tree planting and urban agriculture. 	<ul style="list-style-type: none"> • Target language is slightly different than DFO or MV targets – it would be desirable to clarify and align the target language. It appears that intent is similar? • Other than targets, there is no reference to quantitative or detailed design guidance (e.g. the MV Stormwater Source Control Guidelines).
Lane Way House Guidelines	<ul style="list-style-type: none"> • Requires permeable surfaces for both parking and manouvering. • ‘Surface parking spaces should have permeable surfaces: permeable pavers, gravel, grass-crete, or impermeable wheel paths with ground cover planting in the centre and sides’. • ‘The 0.9m setback between the building and the lane should be permeable . . .’ • ‘The landscape plan should be developed with consideration of the ... Water Wise Landscaping Guidelines’ 	<ul style="list-style-type: none"> • Straightforward requirements for permeable surfaces. • Does not provide detail design guidance for permeable paving or absorbent landscape, or refer to other standards (e.g. MV Stormwater Source Controls)
Plaza Design Guidelines	<ul style="list-style-type: none"> • ‘for example, wherever possible, permeable surfaces should be considered’ 	Provides general guidance. Does not reference other documents for stormwater/rainwater management detailed design or targets.
Protection of Trees Bylaw	<ul style="list-style-type: none"> • Applies to all trees on private property • Requires retention and replacement of trees on development sites. 	No specific provision or recognition of stormwater/rainwater management role of trees, or cross reference to other documents.

PLAN, BYLAW, POLICY	HOW DOES IT RELATE TO SWM?	POTENTIAL REFINEMENTS
Major Planning Projects	<ul style="list-style-type: none"> • Cambie Corridor • Central Broadway Corridor • Chinatown revitalization • Great Northern Way • Hastings Park/PNE • Langara Gardens • Little Mountain • Northeast False Creek • Oakridge Centre • Olympic Village • Pearson Dogwood Lands, • Powell Street Overpass • Southeast False Creek • Still Creek Enhancement 	<ul style="list-style-type: none"> • Many of these projects include aspirations and general ideas for integration of rainwater management into redevelopment. • Improved functional results could be encouraged by providing standardized terminology, targets and links to detailed design references to inform project teams and project concepts. • Older Guidelines (e.g. Broadway) mention rain protection, but not rainwater management, and could use update. • The UBC Line Rapid Transit project could recognize opportunities for rainwater management.
Off Street Parking Space Regulations	<ul style="list-style-type: none"> • Establishes minimum required parking spaces, but also can set maximum allowable parking spaces (e.g. maximum spaces based on site width at rear property line in one/two family dwellings) • Requires parking surface to be a ‘hard durable surface that does not produce dust’ for specified R and C zones. • In specified RM and C, HA and other zones, requires asphalt or equivalent impermeable surface on a driving lanes, and ‘at least a permeable layer of crushed asphalt on all parking spaces to allow for drainage ‘ • Requires laneway house uncovered parking space to have a permeable surface • Includes landscape guidelines 	<ul style="list-style-type: none"> • Could expand the maximum parking clauses to other land uses (now SF, and SEFC) • Could expand the specifications for permeable surfaces, and improve clarity of permeable paving requirements. • Landscape guidelines could cross reference rainwater management guidelines in other documents, and reconsider the amount of landscape area.
Other	<p>Examples:</p> <ul style="list-style-type: none"> • Neighbourhood plans • Zoning And Development Bylaw; • Vancouver Building Bylaw • Sustainability Checklists; • Approval Procedures For Various Land Use And Development Application Types; • Co-Funding Programs; • Maximum Impervious Area Guidelines; • Policies On Development Charges; • Capital Projects That Show Leadership By Example • Urban Agriculture Design Guidelines • City Rain Barrel Program • Street Tree Bylaw 	<p>These other documents may have reference to stormwater, paving or drainage requirements or encouragements that have an effect on rainwater management. As rainwater programs are formalized, a review of these documents for potential contradictions is advisable</p>

