SEA LEVEL RISE PLANNING CSAP Workshop November 15 2018

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OUTLINE

Background
Coastal Flood Risk Assessment program
Next Steps
Summary



BACKGROUND

- 1894 Highest flood on record occurs on Fraser River (1/500 year freshet)
- 1948 BC's second largest flood occurs and several dikes failed
- 1968 -2004 Fraser River Flood Control Program provincial/federal programs under which most dikes and floodplain mapping were completed

 2004 - Responsibility for development approval in floodplains transferred to local governments



GREENEST CITY ACTION PLAN

	Green Buildings			
ZERU CARDUN	Green Transportation	Clir Ren		
ZERO WASTE	Zero Waste	mate & ewables	Green E	Lighter F
HEALTHY ECOSYSTEMS	Access to Nature		cond	oot
	Clean Water		omy	prin
	Local Food			t
	Clean Air			
3 high-level objectives	10 goal areas			



PREPARING FOR CLIMATE CHANGE IMPACTS







CLIMATE CHANGE ADAPTATION STRATEGY



CLIMATE CHANGE & COASTAL FLOODS

- Coastal cities around the world are responding to sea level rise
- Major floods in the Lower Mainland are expected to increase in frequency (Fraser Basin Council report)
- Vancouver is exposed to sea level rise along the coast, Burrard Inlet and Fraser River

Kitsilano Pool December 2012

CAUSES OF SEA LEVEL RISE





FUTURE SEA LEVEL RISE PROJECTIONS



Province of BC recommends local governments plan for 1 m of sea level rise by 2100 and 2 m by 2200



APPROXIMATE SEA LEVEL RISE SINCE 1972



Impacts from sea level rise include increased coastal flooding, coastal squeeze, erosion and storm damage.

Action: complete a Coastal Flood Risk Assessment and develop a City-wide Sea Level Rise Planning Framework



COASTAL FLOOD RISK ASSESSMENT PROGRAM OVERVIEW

PHASE	
1	

Flood hazard today and in 2100. Understand 2014 what is at risk and potential losses

PHASE	High-level options, costing and tradeoffs for the	2016
2	11 flood hazard zones	

PHASE	Timeline road map for sea level rise planning and	2018
3	infrastructure across the city	



VANCOUVER FLOODPLAIN

Flood hazard due to 1.0 m of sea level rise, high tide and a 1/500 year (0.2% AEP) storm event



LOCAL IMPACTS OF FLOODING

- With 1 m of sea level rise and a major storm, almost 13 km² of City lands lie in the floodplain
- Today a major storm would result in 1700 displaced households and almost 500 damaged buildings
 - The same flood event, with 1 m of sea level rise, would result in 4000 displaced households and more than 800 damaged buildings
- Major disruption to transportation routes and critical infrastructure



SEA LEVEL RISE WORK PLAN





PROJECT COMPLETE



SEA LEVEL RISE WORK PLAN



ENGAGEMENT AND EARLY ACTIONS DESIGN CONVERSATIONS PROJECT COMPLETE



COASTAL ADAPTATION PLAN – FRASER RIVER

BUILDING SHARED UNDERSTANDING

SHAPING OPTIONS Coastal Flood Risk Assessment (CFRA) Public engagement MAKING DECISIONS phases 1 & 2 and co-design of Community values adaptation options Refine adaptation elicitation and options High level technical development of assessment of Participatory design principles options options selection process Community driven evaluation of Detailed design and options phasing 2014-2018 2019-2021 2021+ We are here

















ADAPTATION APPROACHES

GREENEST

CITY

OUVER

FRASER RIVER ADAPTATION APPROACHES







PRECEDENT: GREEN SHORES

PRECEDENT: HUNTER'S POINT SOUTH PARK, NY





WHAT MATTERS

- Communities and People
- Environment
- Recreation
- Infrastructure and Transportation
- Local and Regional Economy
- Culture and Heritage
- Health and Safety





ADAPTATION APPROACHES



Design for adaptability



Design for safety and public health



Design for safe-to-fail infrastructure systems



Design for nature



Design for access



Design for co-benefits





BY-LAWS AND REGULATIONS

To ensure adaptation at the neighbourhood level and the application of consistent shoreline flood protection performance standards:

 VBBL was amended in 2014, e.g. 4.6 m GD + wave effect + geotechnical (subsidence)

Amend Zoning and Development bylaw

Develop bylaws, regulations, and policies to guide shoreline design



CRITICAL INFRASTRUCTURE AND FUNDING

Determine interdependencies of critical infrastructure impacted by flooding

- Partnership with the City's Chief Resilience Officer and Office of Risk Management
- Examine the interdependencies of critical infrastructure and the potential impacts of flooding



SEA LEVEL RISE ENGAGEMENT & DESIGN CHALLENGE

Sea level rise presents new, complex challenges

- Require a process that convenes a mix of expertise to work together with communities to find innovative, new solutions
- Example model: Rebuild by Design
 - New York City, New Jersey & Connecticut (post Sandy 2012)
 San Francisco (May 2018)





 The Coastal Flood Risk Assessment provides the City with a robust understanding of the potential impacts of sea level rise

 The next phases of work will focus more on implementing solutions

A sea level rise design challenge will engage residents, helping to advance solutions

 Regulatory measures can improve neighbourhood resilience to flood hazard



Thank you

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SEA LEVEL RISE ENGAGEMENT & DESIGN CHALLENGE

Plan and seek grants to support an innovative sea level rise design program that will:

 Engage and educate about climate change, sea level rise and flood risk;

Attract diverse local and international thinkers and designers;

Focus on False Creek and the Fraser River foreshore; and

Create conceptual designs for shoreline flood protection that are holistic, cost-effective and implementable.



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HIGH-LEVEL CITY POLICIES



