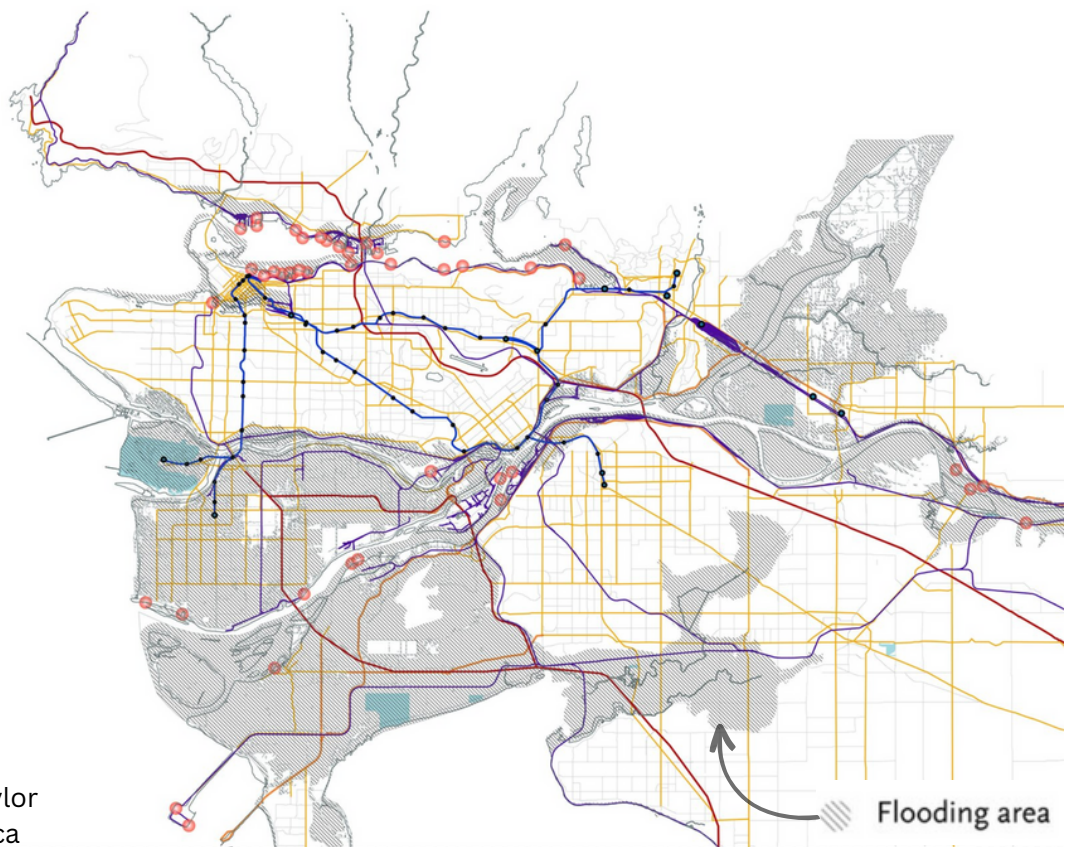


How to handle sea level rise.



Prepared by: Declan Taylor
declanta@student.ubc.ca

Map adapted from the Fraser River Delta Collaborative: <https://frdcollaborative.com/>

Human and environmental wellbeing can be protected IF we employ a regional, conservation-focused approach to flood adaptation and management.

As sea levels rise it becomes more likely that a flood will overtop dykes and submerge Richmond, Delta, and low-lying parts of Vancouver [1]. Many communities, including several First Nations reserves will be under water. All 27 of the port of Vancouver's facilities, 20% of the region's rapid transit lines, and over 35% of the road network would be flooded [2]. 15% of the province's gross farm receipts are on land that would be underwater [3]. \$20-30 billion in damages would ensue [1], 21 municipalities, 11 First Nations, and 3 million residents would be affected; **the slow creep of climate change will become a sudden catastrophe.**

Where will the water come from?



Sea level rise. The Salish Sea will rise 0.5m in the next 30 years (by 2050) and 1m by 2100 [1].



Freshets. Increased winter precipitation and rapid spring snowmelt will increase Fraser River volumes during these times [1].

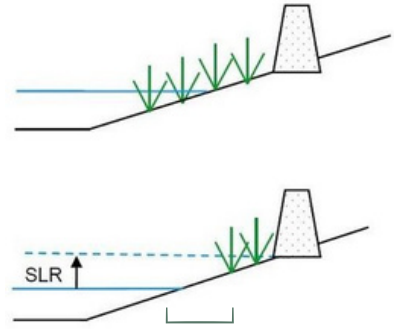


Storm severity. "Once in one hundred year" extreme sea level events from storms, king tides, and El Niño cycles will hit annually by 2050 [4].

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Planning and logistical challenges began in 2003 when the provincial and federal governments of BC assigned flood-risk management to local governments, disengaging from sea level rise planning [5]. Today, regional coordination has stalled and each municipality, First Nation, and regional or port authority is left to design and implement flood-risk management guidelines and mandates for itself [6]. B.C. is the only place in North America without a coordinated sea level rise management strategy [7]. In addition to massive efficiency losses, this lack of coordination has resulted in municipal flood work destroying Indigenous cultural sites [8].

Environmental challenges arise because planning often fails to consider the intertidal salt marshes and eel grass beds of the Fraser delta. They sequester enormous amounts of carbon (reducing further sea level rise) and provide food and habitat for salmon, other commercially important fish, and millions of migratory birds [8, 9]. These habitats are being flooded out with our farms and homes as they cannot retreat up shore—human presence on the shoreline traps these ecosystems in a “**coastal squeeze**”, illustrated right [8].



Sea levels are rising: the problem is that we are failing to meaningfully respond.

We can rise to this challenge! In some areas managed retreat will be necessary. In others, we will have to raise dykes and harden our shorelines. **A regional-scale approach is crucial:**

Mandate mitigation action for current and future infrastructure.

Municipalities and First Nations governments currently engage federal and provincial permitting agencies and legislative hurdles by themselves. This slows down everyone’s work and prevents cross-jurisdiction collaboration and innovation [2].

Streamline environmental management reviews and interagency communication.

We haven’t succeeded if our fish nurseries and carbon stocks are destroyed in the process.

Take on climate adaptation and flood planning at a regional scale.

Losses in one place can be balanced with gains in another if coordination occurs.

Make human and environmental health co-priorities in flood mitigation.

The Lower Mainland’s dyke system is failing to meet provincial standards [10]. Projects like the Roberts Bank expansion are underestimating the sea level rise they will need to resist [11]. We are seismically upgrading our infrastructure, why aren’t we doing the same for flood risk?

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People to send this to:

Honourable Rob Fleming
Minister of Transportation and Infrastructure.
250 387-3198 | minister.MOTI@gov.bc.ca

Honourable Nathan Cullen
Minister of Water, Land and Resource
Stewardship
604-660-2421 | WLRS.Minister@gov.bc.ca

Lori Halls
Deputy Minister of Water, Land and Resource
Stewardship
250 952-6500