



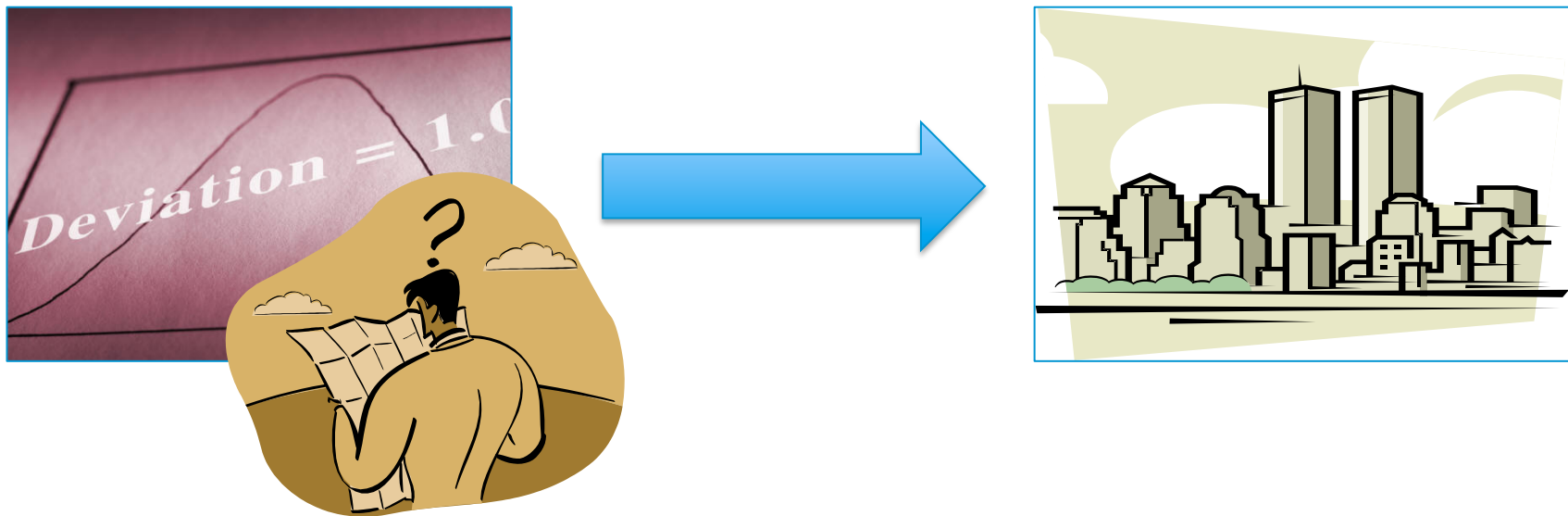
Science and Policy on the Ground: Implementing Vancouver's Adaptation Strategy

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How do we get there?



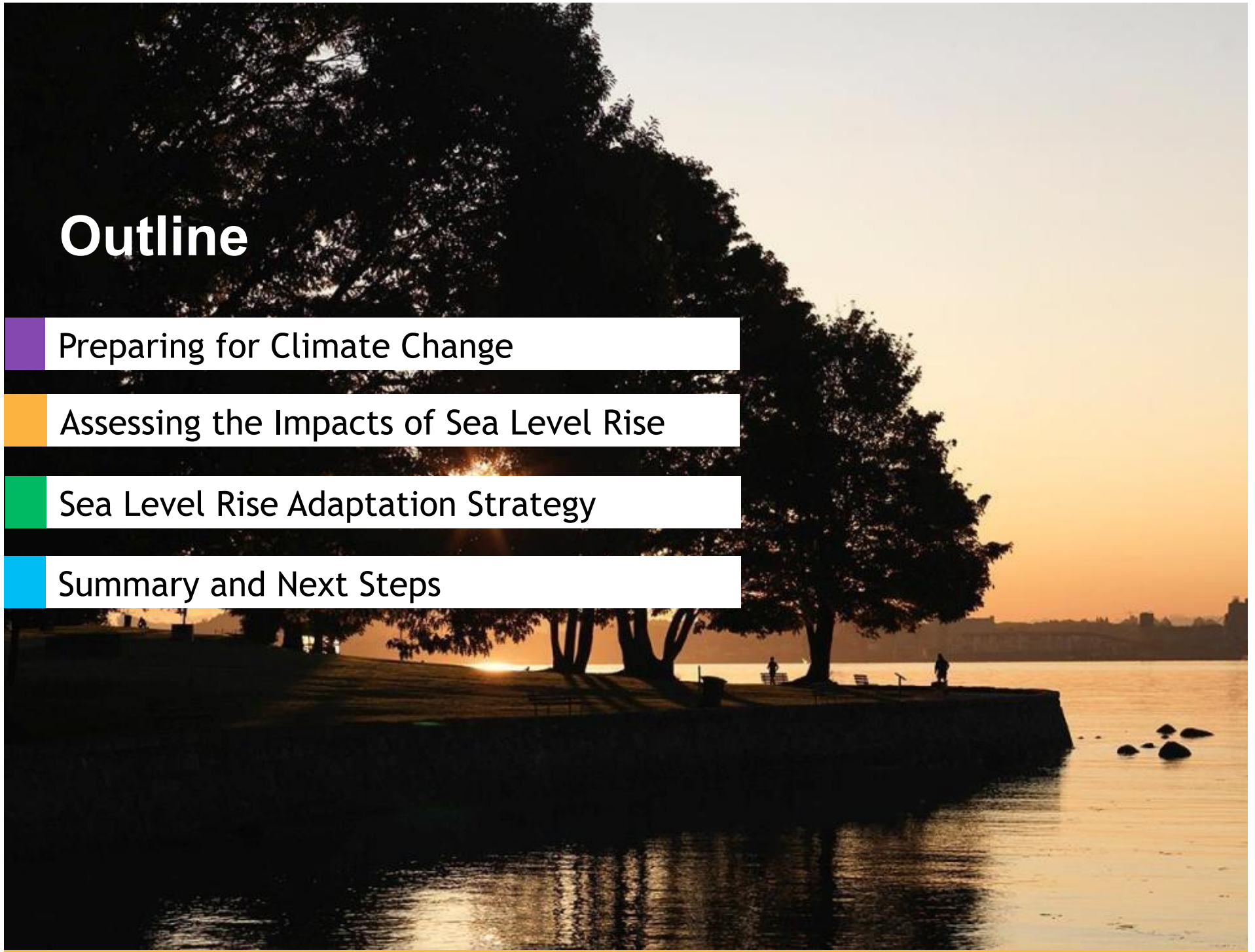
Outline

Preparing for Climate Change

Assessing the Impacts of Sea Level Rise

Sea Level Rise Adaptation Strategy

Summary and Next Steps



Preparing for Climate Change





Vancouver relies heavily on its coastline

- 17 ha of natural shoreline habitat
- Almost 18 km of beaches surround Vancouver

- 25,000 people living within 300m of shoreline

- 135 Million Tonnes of cargo a year
- 98,800 jobs



Our coastline is changing

Kitsilano Public Pool:
King Tide event in 2012

Coastal Cities at Risk project ranked
Metro Vancouver 15th most vulnerable in
the world for exposed assets

Adaption Strategy

To ensure Vancouver is ready, Council adopted an Adaptation

Strategy with 9 Priority Actions and 46 supporting actions



1. Coastal Flood Risk Assessment
2. Amend minimum building elevations



3. Continue sewer separation
4. Citywide Stormwater Mangement Plan



5. Continue water conservation actions
6. Extreme Heat Planning



7. Complete an Urban Forest Strategy
8. Incorporate climate change in building code
9. Complete a back-up power plan

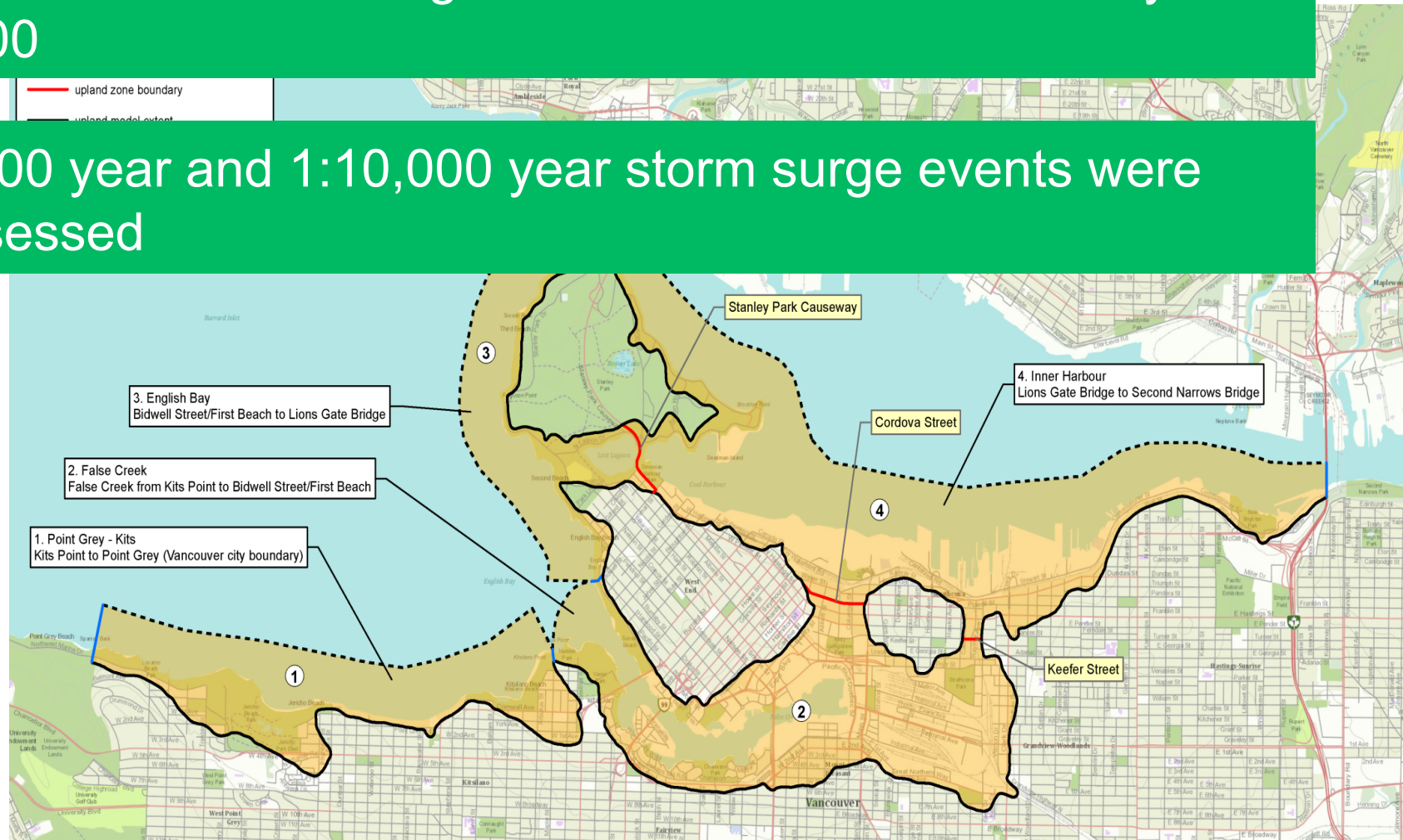
An aerial photograph of a coastal city, likely Vancouver, showing a mix of modern high-rise apartment buildings and older, more traditional structures. In the foreground, a curved concrete promenade runs along a marina filled with numerous sailboats and yachts. The water is dark, and the sky is a clear, bright blue with a few wispy clouds. A semi-transparent blue horizontal band is overlaid across the middle of the image, containing the title text in white. The overall scene depicts a densely populated urban area with a significant waterfront presence.

Assessing the Impacts of Sea Level Rise

Modeling Approach

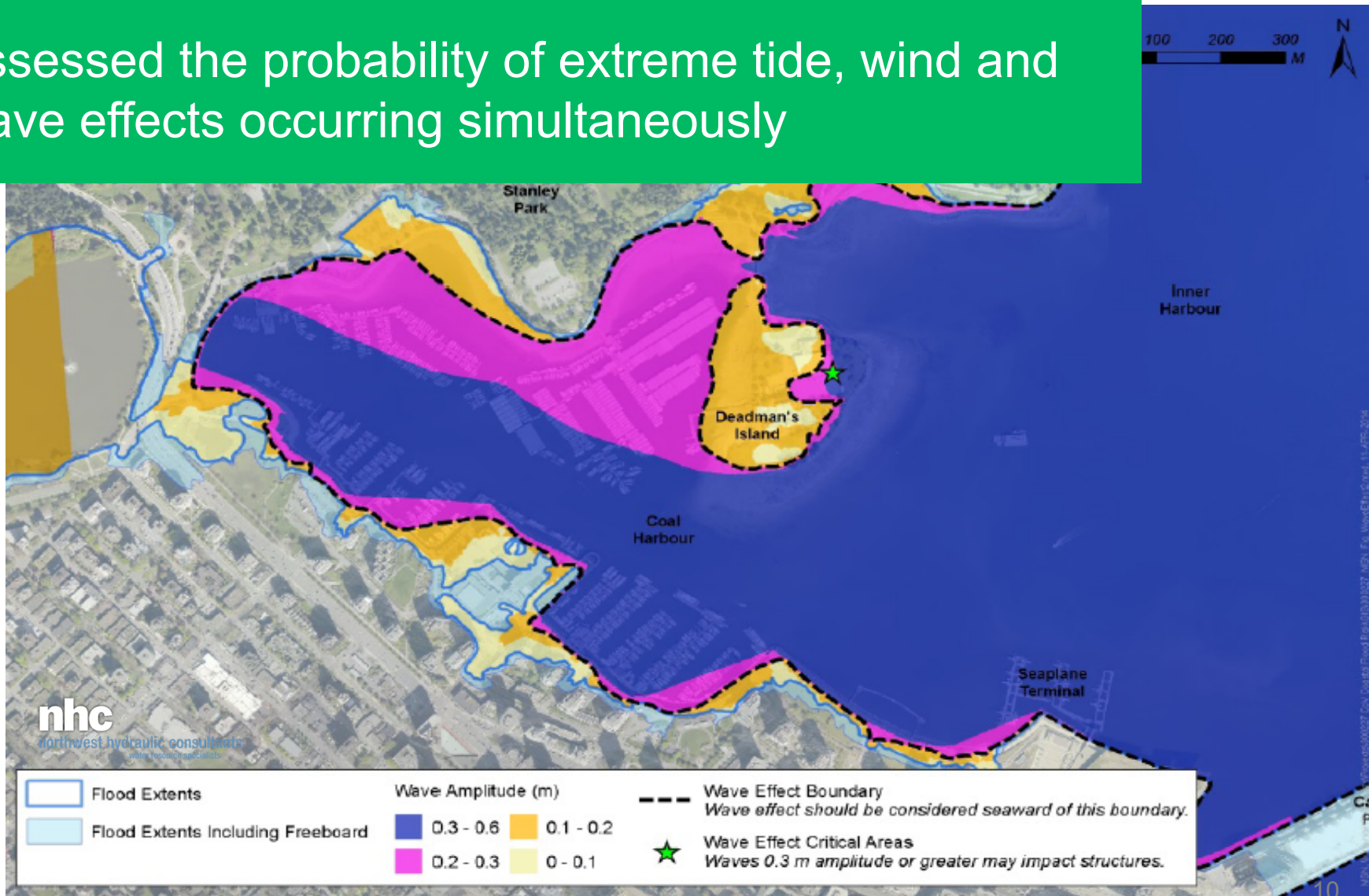
Coastal flood modeling based on 1m sea level rise by 2100

1:500 year and 1:10,000 year storm surge events were assessed



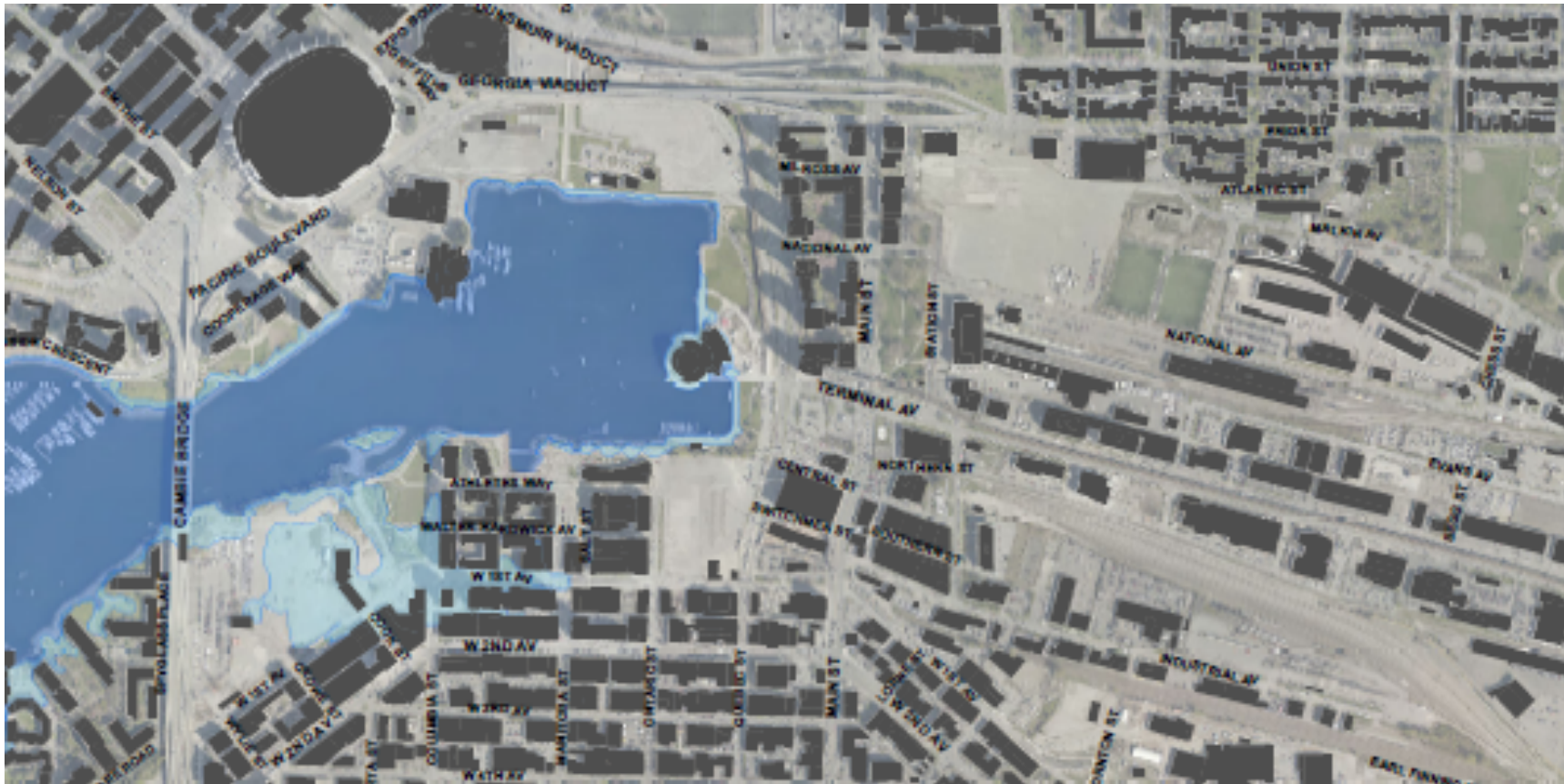
Modeling approach

Assessed the probability of extreme tide, wind and wave effects occurring simultaneously



Modeling results

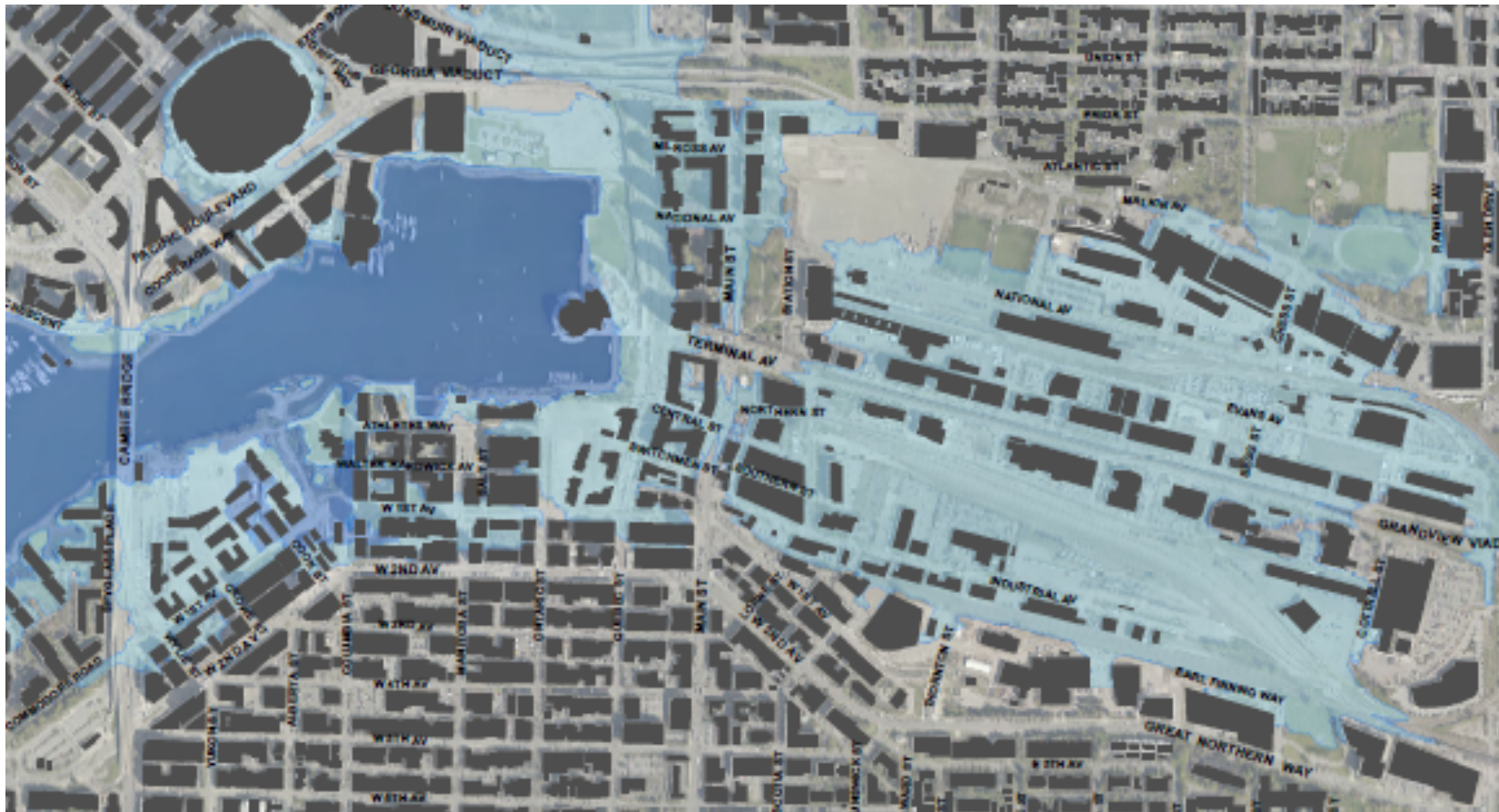
With increasing sea level, our risk grows



Storm surge, high tide 2020

Modeling results

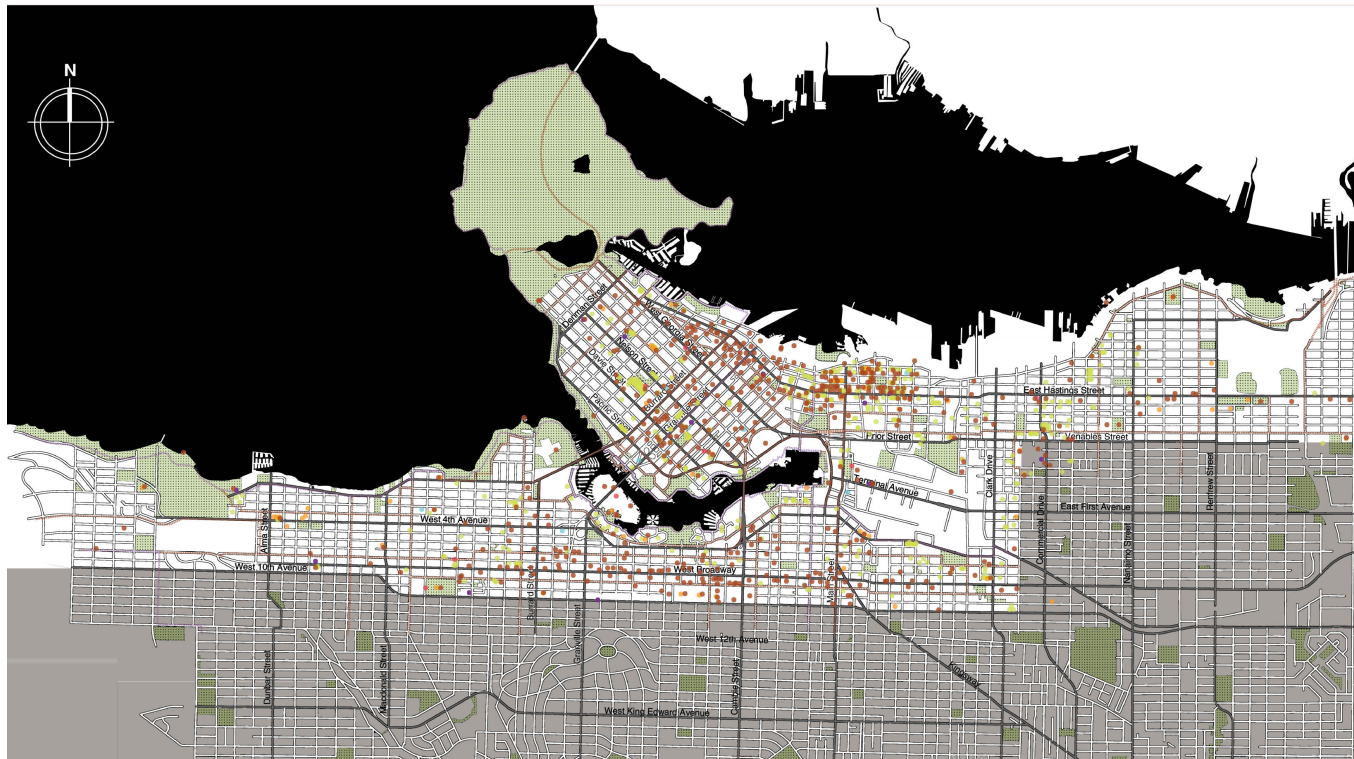
With increasing sea level, our risk grows



~ year 2100

Identifying elements of risk

COMMUNITY DATA MAP



LEGEND

- Social Services
- Seniors Centres
- Hospitals and Care Facilities
- Friendship Centres
- Community Centres
- Food Shelter
- Farmers Markets
- Non-Market Housing
- Homeless Shelters



Infrastructure



People



Economy/Assets

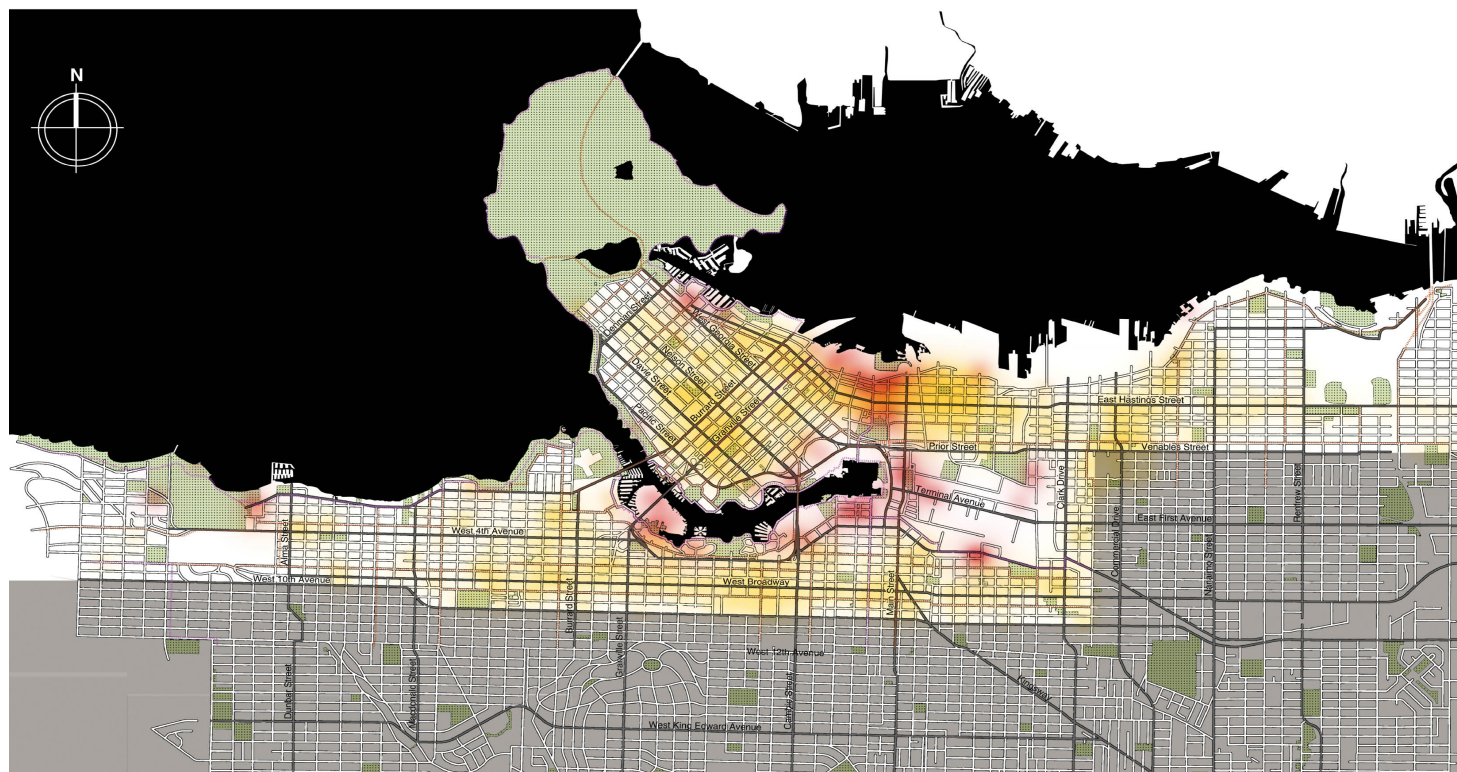


Environment

Assessing vulnerability

Hop spot map showing areas of high vulnerability

COMMUNITY HOTSPOT MAP



LEGEND

Bike Path
Greenway

Within Flood Zone

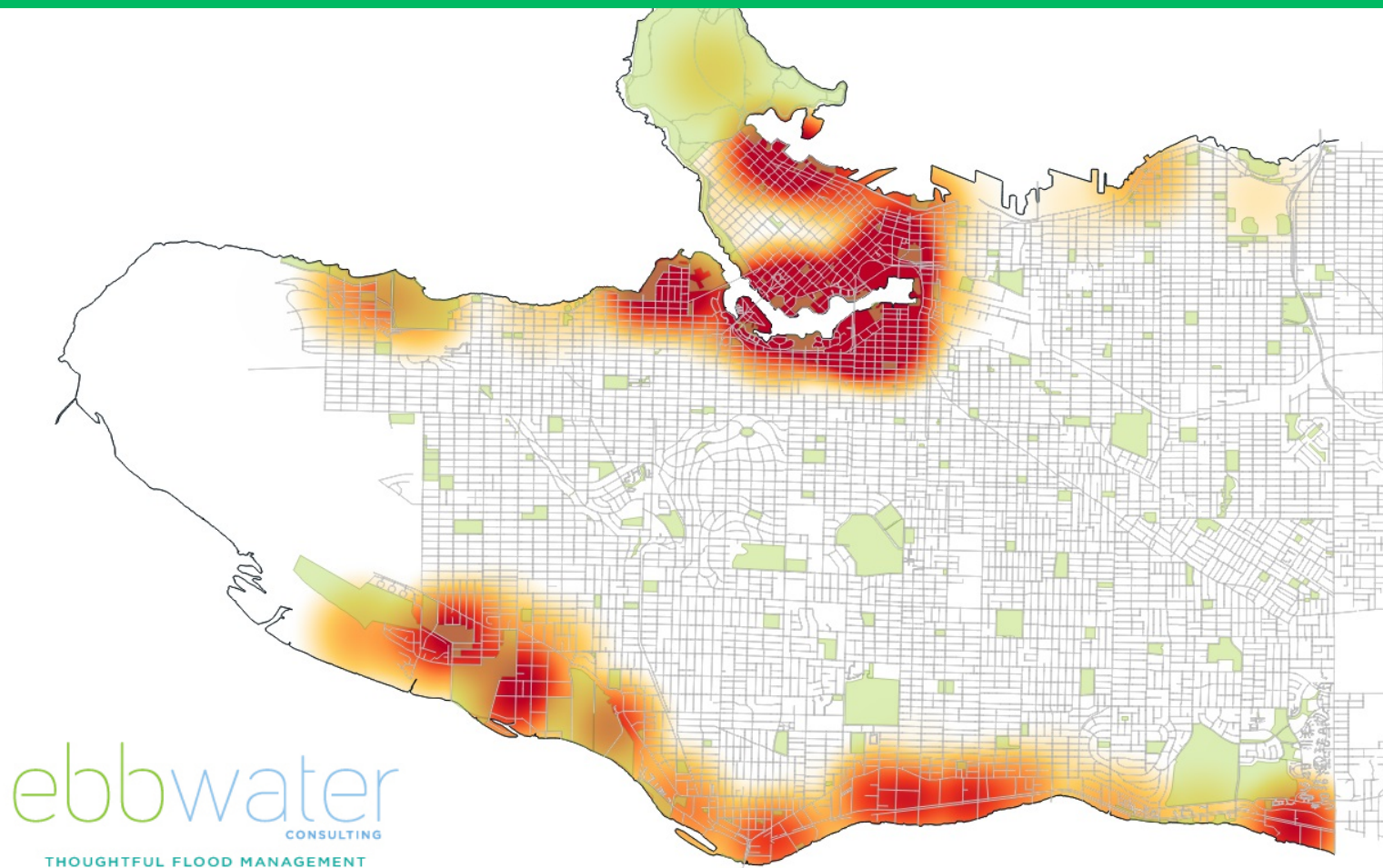
Highest Concentration Lowest Concentration

Outside of Flood Zone

Highest Concentration Lowest Concentration

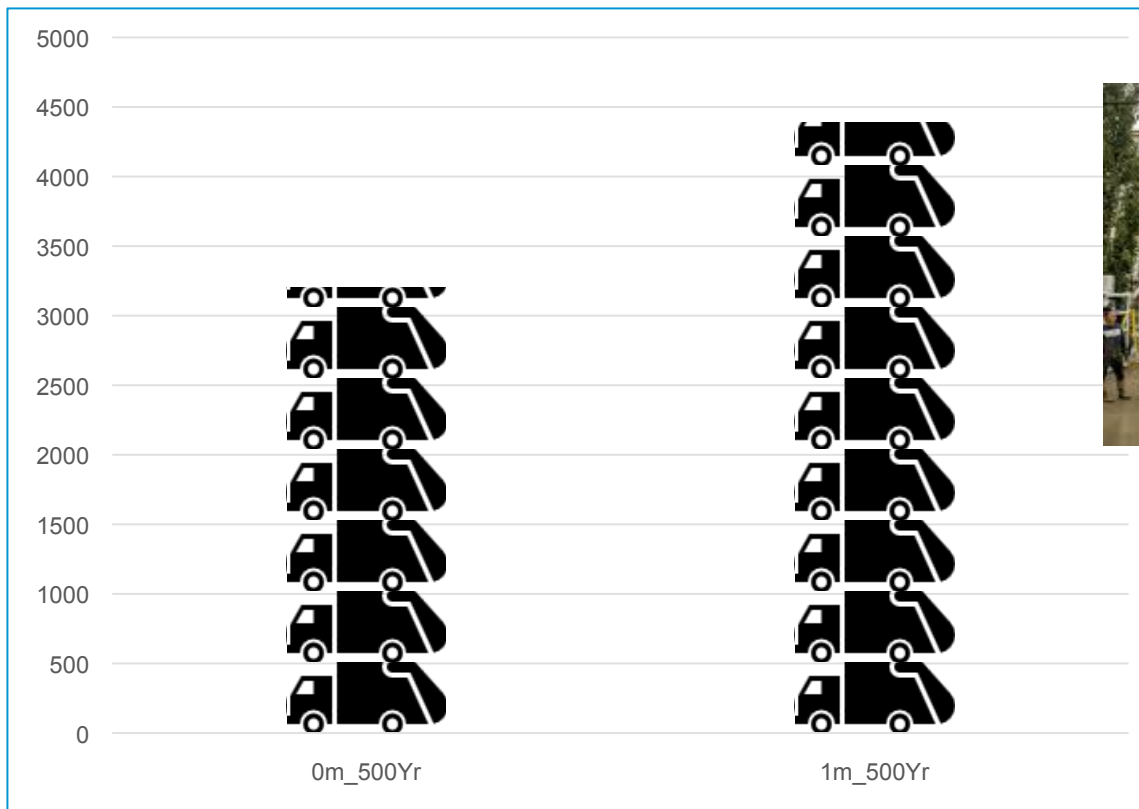
Assessing the consequences

Shelter Needs – 1 m of Sea Level Rise, 500-Year Coastal Event



Assessing the consequences

Estimated debris generation



Calgary Sun Image

Vancouver future?

Assessing the hazard, vulnerability and consequences is critical to making informed policy decisions

Providing information in an accessible, visual format is key





Developing a Flood Adaptation Strategy

The background image shows a city waterfront scene. In the foreground, there's a body of water with a green tarp-covered object and a metal pole with a sensor. In the middle ground, a white boat is docked near a bridge. In the background, several modern high-rise buildings are visible under a blue sky with some clouds.

Sea Level Rise Strategy

- Use best science and learn from others
- Pragmatic balance of cost and risk
- Be opportunistic and proactive
- Take a phased approach, distribute cost of adaptation across time

Next phase of coastal flood planning is to identify and prioritize location-based protection options including:

- A. Land Use Changes
- B. Green Infrastructure (non-structural)
- C. Grey Infrastructure (structural flood protection)
- D. Preparedness measures



- Process:
 - Internal advisory committee involved in Phase 1 (flood mapping) will carry on Phase 2 (adaptation strategy)
 - Steering committee of senior staff
 - Expert advisory committee will be similar
 - External advisory committee will draw from a variety of stakeholder groups
- Aiming to complete by September 2015

Flood construction level increased



- Detailed modeling analysis was used to determine flood construction levels
- FCL recently increased from 3.5m to 4.6m
- Based on:
 - 1.0 sea level rise by 2100
 - 1:500 year storm surge
 - Likely extreme wind and wave conditions
 - 0.6m freeboard
- Urban design scan of affected zones = adding 1m to current FCL is manageable

Summary



- Use your champion and executive sponsors
- Draw on examples from elsewhere
- Collaborate!
 - With other municipalities and levels of government
 - With universities
 - With NGO's
- Rely on best available science but communicate it simply and visually



THANK YOU! QUESTIONS

