FLOOD ADAPTATION IN VANCOUVER:
A Regional Adaptation Collaborative

Regional Adaptation Collaborative Project
February 19th, 2012
The Community Visioning Process:

**DEVELOP SCENARIOS**
- Participation
- Data + Models
- Production

**DATA + MODELS**

**VISIONING PACKAGE**

**NEXT STEPS**
- Report
- Engage
- Assess
- Develop Policy
- Implement

**PHASE ONE**

**PHASE TWO**

**PHASE THREE**

**ONGOING**

Source: Visioning Guidance Manual (Ellen Pond)
Climate change impacts

In Delta: 1.2 meters of sea level rise by 2100 (BC Sea Dike Guidelines, 2011)

Figure 3-1: Projections of Sea Level Rise
Climate change impacts

Why Adapt?

Current dike height, water level of 2.9m: 2m high tide, 0.9m storm surge
Climate change impacts

LADNER dike view

Current dike height, water level of 4.2m: 2m high tide, 1m storm surge 1.2m sea level rise

Ladner - Dike View

Baseline scenario, breach condition (hypothetical year 2100)

Future high tide + storm surge

Future sea level

Current sea dike: ~3.2m

1.2 metres of sea level rise

Why Adapt?
How to Adapt? Four Scenarios:

Hold the Line

Managed Retreat

Reinforce and Reclaim

Build Up
Hold the Line

Ladner - Dike View
Hold the Line Scenario (hypothetical year 2100)
1.2 metres sea level rise

Ladner - Street View
Hold the Line Scenario (hypothetical year 2100)
1.2 metres sea level rise
Hold the Line

Ladner - Dike View

Hold the Line Scenario (hypothetical year 2100)

1.2 metres sea level rise

Existing River Road width: 10 meters

Road width after adaptation: 5 meters

Ladner - Street View

Hold the Line Scenario (hypothetical year 2100)

1.2 metres sea level rise
Hold the Line

Value of Land & Buildings
Converted $49 million
Protected $5.8 billion

Agricultural Land Area
Converted 9%
Protected 91%

Road & Dike Length

South Delta - Sea Wall View
Hold the Line Scenario (Hypothetical year 2100)
1.2 metres of sea level rise
Hold the Line

South Delta - Backyard View

Hold the Line Scenario (year 2010)

South Delta - Backyard View

Hold the Line Scenario (Hypothetical year 2100)

1.2 metres of sea level rise

Beppu Japan

Samphire Hoe, UK
Hold the Line – Reinforce and Reclaim

South Delta - Aerial View

Reinforce and Reclaim Scenario (hypothetical year 2100)

1.2 metres of sea level rise
Managed Retreat

South Delta - Sea Wall View

Managed Retreat Scenario (hypothetical year 2020)
Managed Retreat

South Delta - Sea Wall View

Managed Retreat Scenario (hypothetical year 2030)
Managed Retreat

South Delta - Sea Wall View

Managed Retreat Scenario (hypothetical year 2040)
Managed Retreat

South Delta - Sea Wall View

Managed Retreat Scenario (hypothetical year 2100)

1.2 metres of sea level rise
Build Up

Build Up Scenario (hypothetical year 2100)

1.2 metres sea level rise
Initial feedback from working group:

Hold the Line:
- Earthen dike more suitable in Ladner, but need right-of-way
- Implications for current policies eg. allowing homes on the dike
- Decrease probability, not vulnerability

Reinforce & Reclaim:
- A “win-win” for South Delta (habitat + protection)
- Only suitable for South Delta
Initial feedback from working group:

Managed Retreat:
• Cost to buy land vs. cost to raise dikes
• Sacrificing agriculture vs. suburban areas

Build Up
• Public costs vs. private costs
• Side-effect: incentive for densification to alleviate costs
• Build on existing incentives for float homes
• Decreases vulnerability, not probability
THERE IS NO SILVER BULLET
But the process has been effective at understanding options, where they are suitable, how to get there and assessing trade-offs

Informing decision-making