Coastal Adaptation Planning for Public Areas, Infrastructure, and Assets

3 (presentation).

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west vancouver

Presentation Outline

1. Background and Project Objectives
2. Adaptation Strategies
3. Cost Implications
4. Next Steps and Recommendations

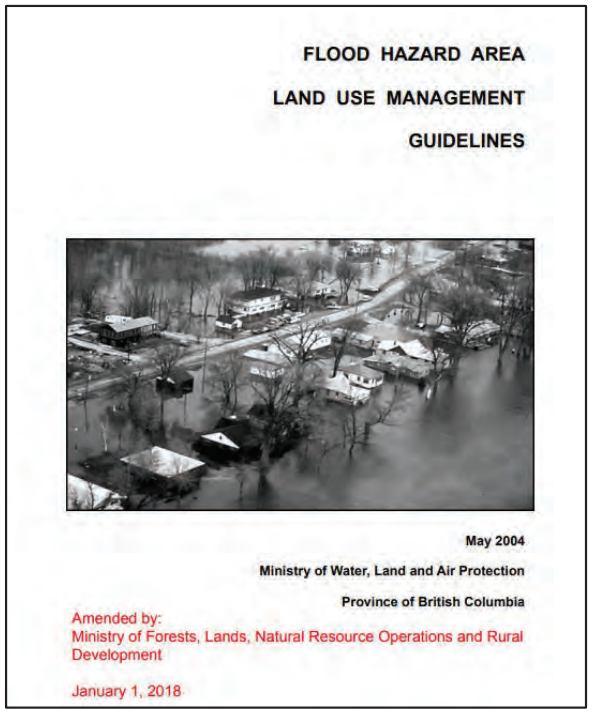
1 Background

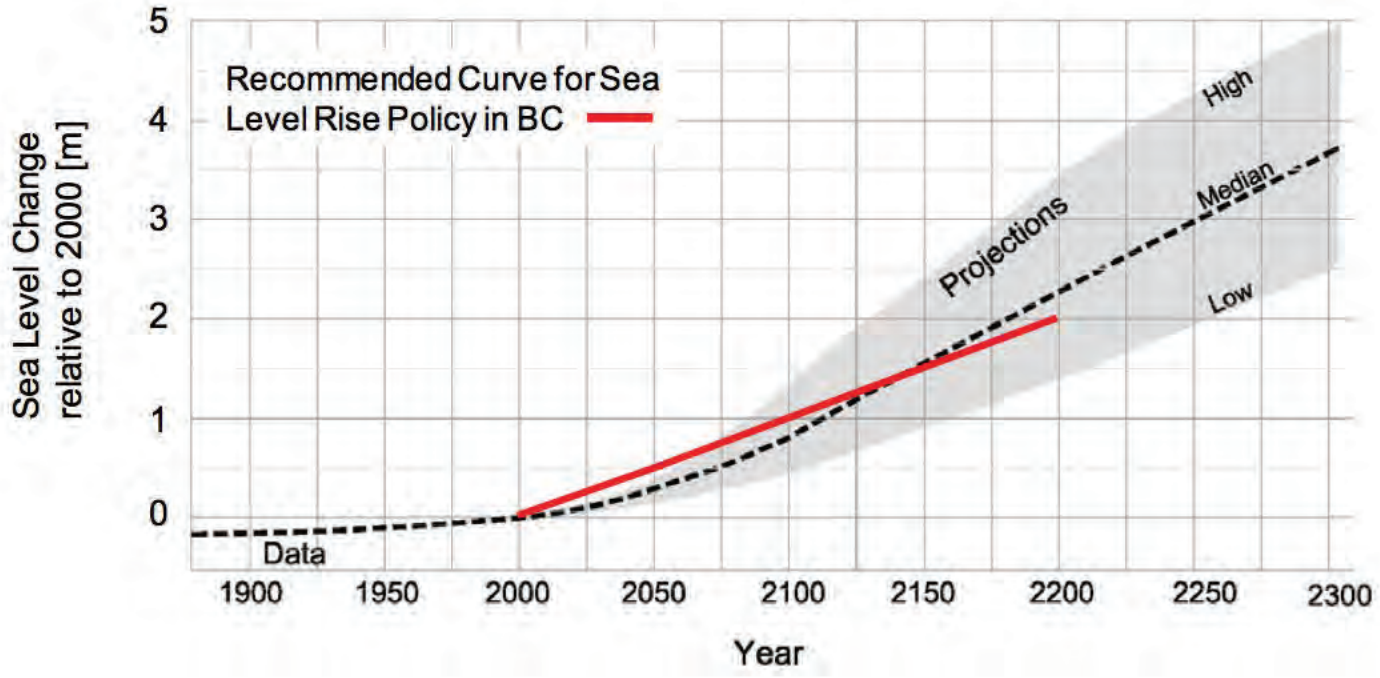
Current Storm Impacts

- Flooding (roads, parks, homes)
- Storm damage (seawalk, piers, parks)
- Pressure on infrastructure
- Loss of waterfront beaches (erosion)
- Log build-up on beaches (access challenges)
- Temporary inundation of waterfront areas

Future Sea Level Rise

- New science showing sea level rise occurring at faster rate compared to historical records.
- 2018 guidance from Province to Municipalities - plan for 1 m sea level rise by year 2100 for land-use decisions in coastal flood hazard areas.





Timeline

- 2012-2015 – Shoreline Protection Plan (did not account for sea level rise)
- 2018 – Updated provincial guidance on sea level rise projections for land use planning to year 2100
- 2020 – West Vancouver coastal flood mapping analysis
- 2021 – North Shore Sea Level Rise Strategy (sectoral risk and vulnerability assessment)
- 2022 – Coastal Marine Management Plan (guiding framework for coastal management)
- 2022 – Foreshore Development Permit Area (protection for private property development)
- **2025 – Coastal Adaptation Planning - Public lands:**
    - Implementation of CMMP short-term actions to protect parks, amenities, and built infrastructure and assets

Project Objectives

Through the implementation of the Coastal Marine Management Plan:

- Determine adaptation options to protect public areas and built infrastructure and assets to alleviate:
  - Long-term permanent inundation of low-lying public areas due to sea level rise.
  - Short-term impacts, temporary closures, and damage due to storm surge and flooding events.
- Preserve/enhance existing intertidal habitat and beach buffer zones.
- Align Ambleside Waterfront Plan with recommended coastal adaptation options.

2 Adaptation Strategies

Project Area

WAVE ENERGY

Adaptation Concepts and Benefits

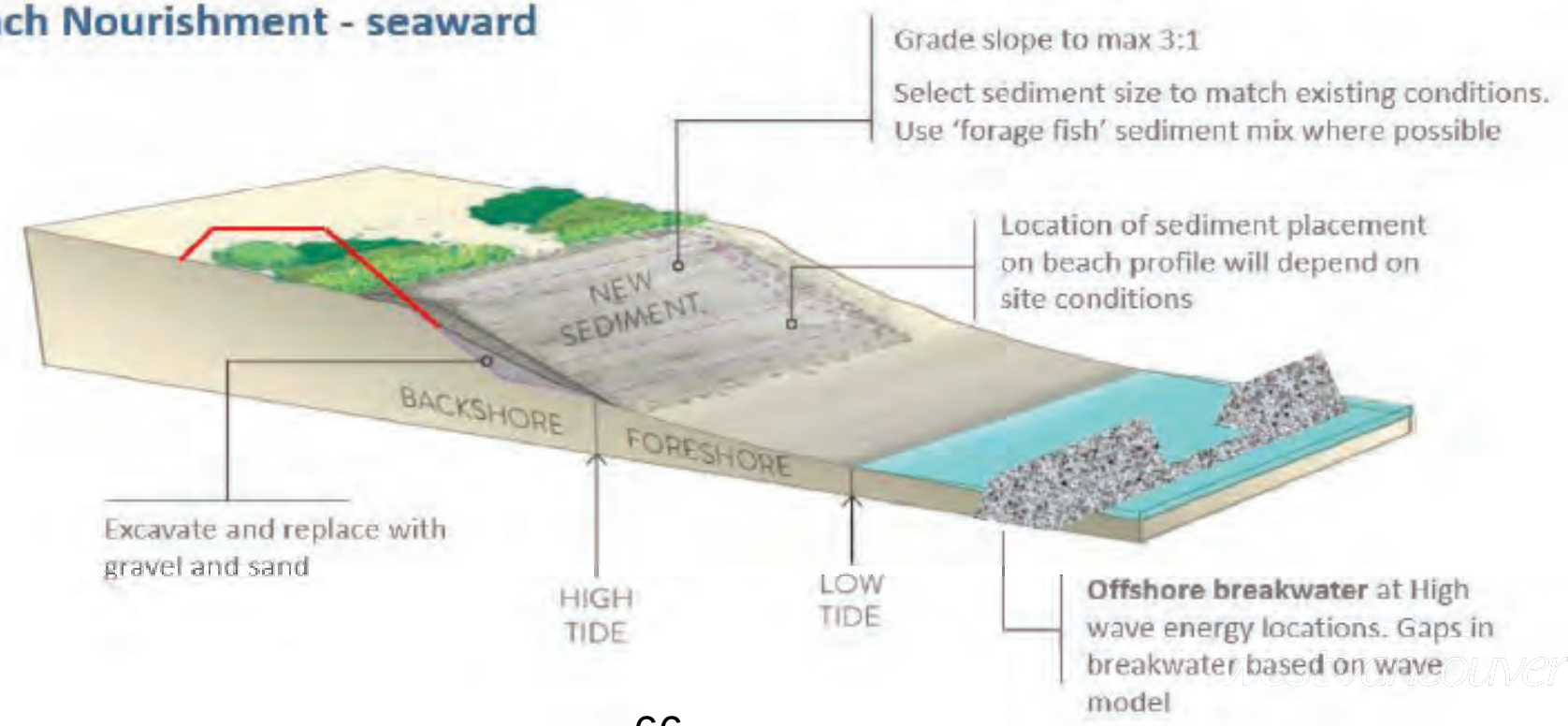
Offshore Breakwater:

- Enhance intertidal habitat / habitat creation
- Reduce wave energy
- Sediment trapping
- Infrastructure protection
- Durability, works well with other measures

Beach nourishment:

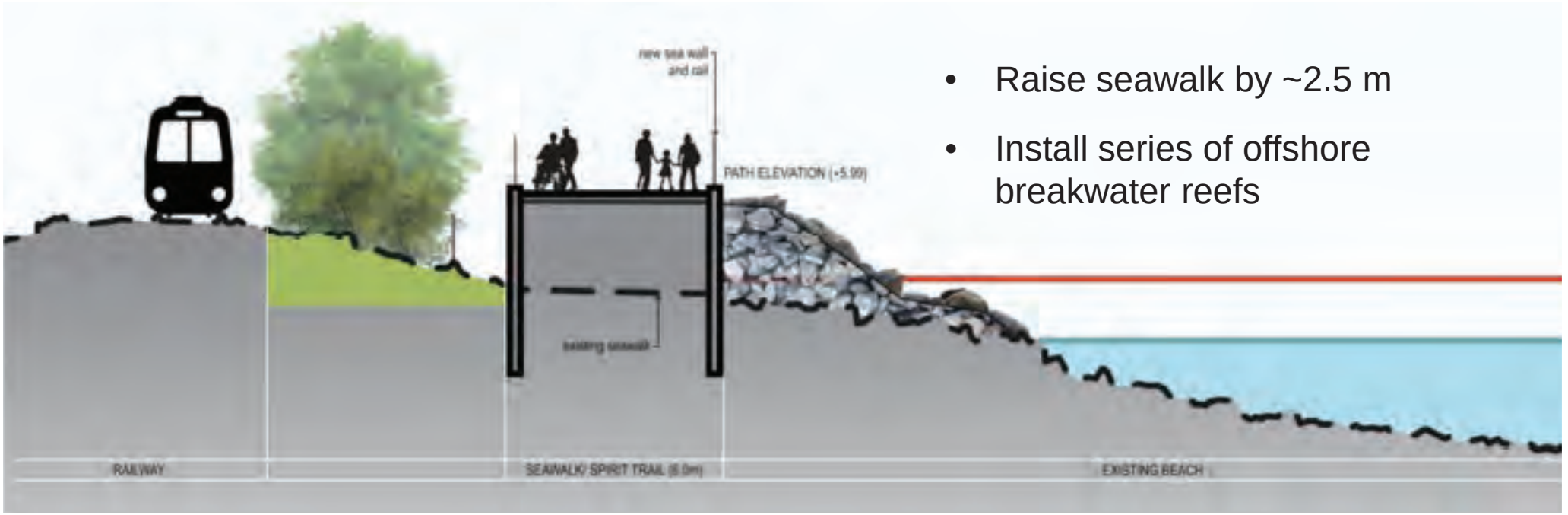
- Co-benefits – tourism, recreation, ecological, property protection
- Replenishes beach materials
- Wave energy dissipation
- Flexibility to adapt to rising sea levels

- **Beach Slope Projection – inland**
- **Beach Nourishment - seaward**

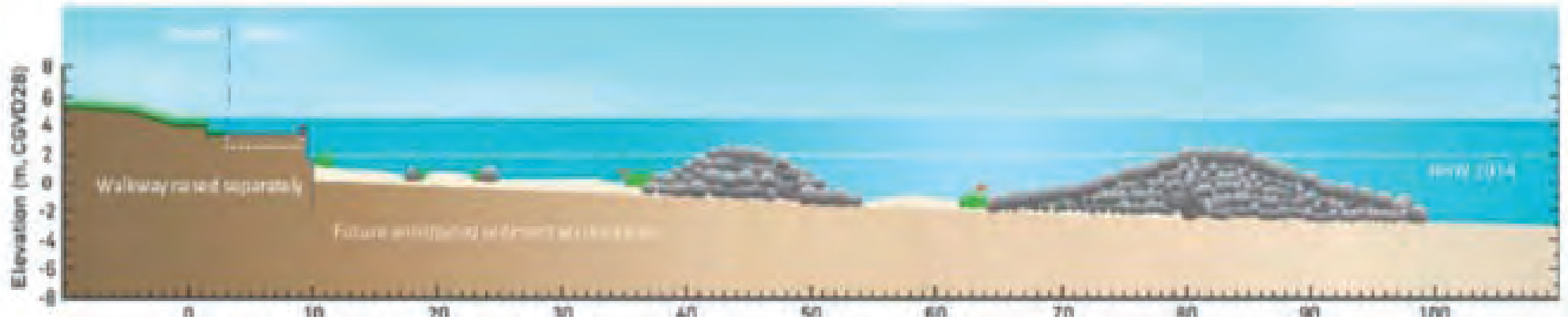


Adaptation Approaches

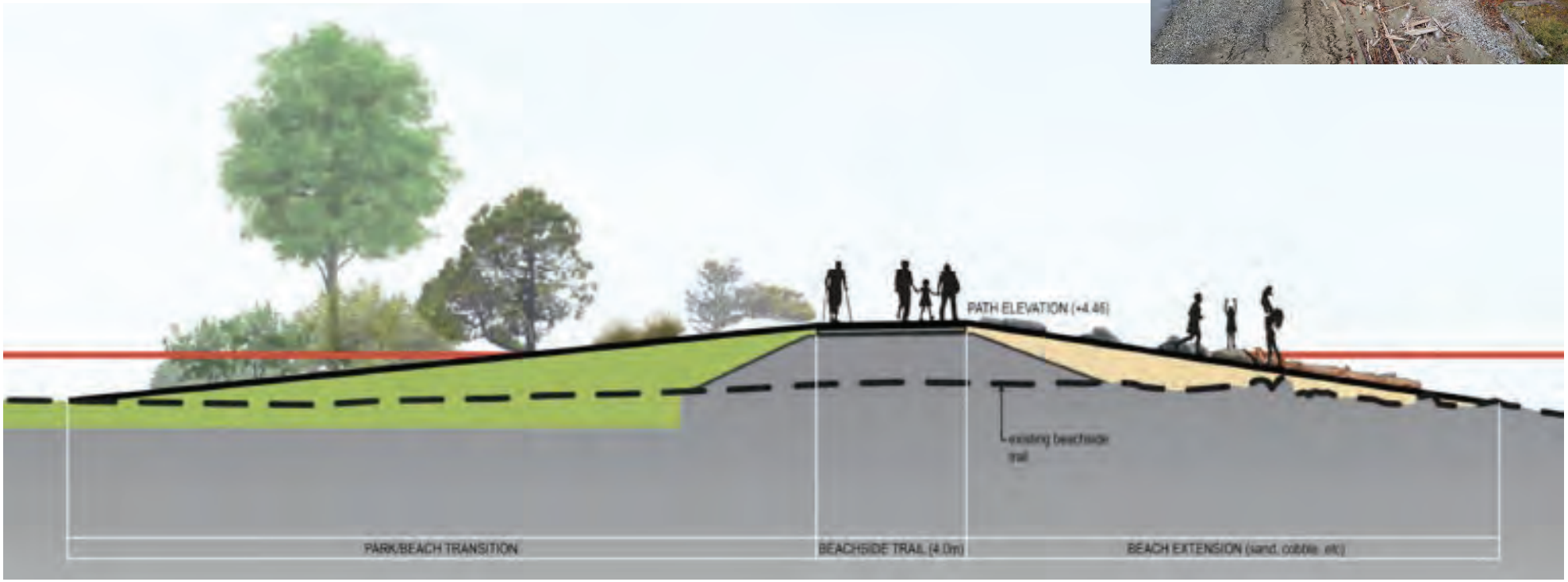
Centennial Seawalk

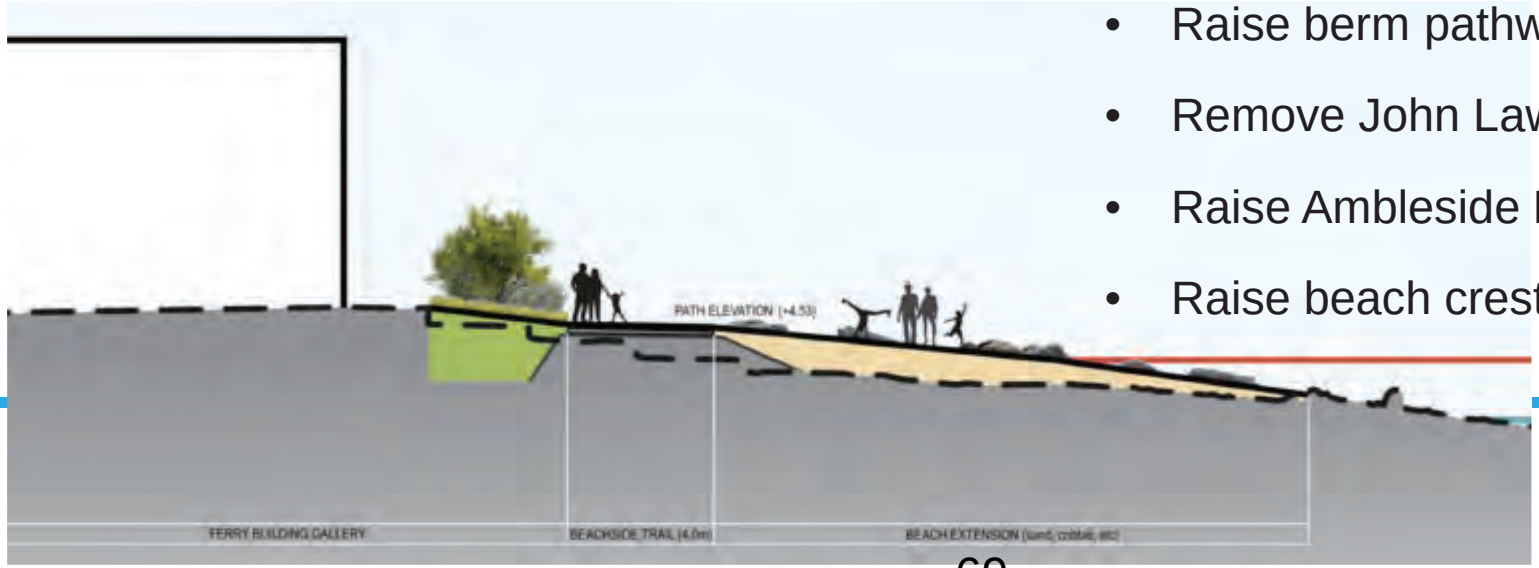


- Raise seawalk by ~2.5 m
- Install series of offshore breakwater reefs



John Lawson/Ambleside Parks

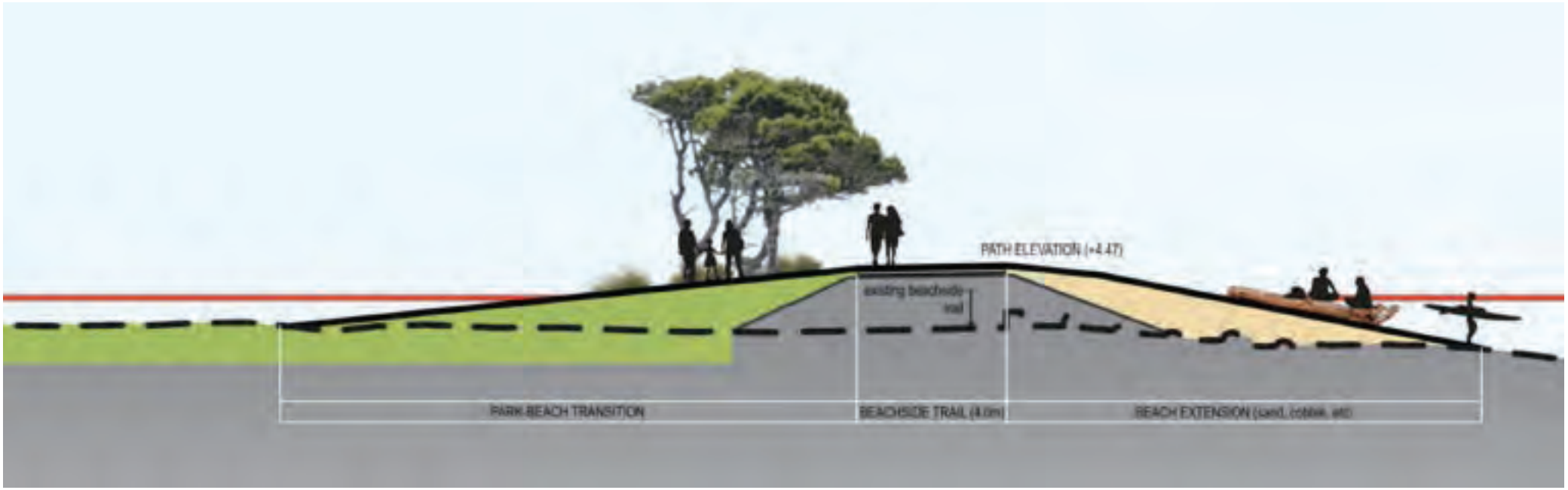




- Raise berm pathway by ~2 m
- Remove John Lawson Pier
- Raise Ambleside Pier
- Raise beach crest elevation by ~0.5-1 m

Ambleside Beaches

- Raise elevation of berm pathway by ~2 m
- Raise beach crest elevation by ~0.5-1 m



3 Cost Implications

Probable Construction Cost Estimates

Project Segment	Project Description	Probable Costs
Centennial Seawalk	Offshore Breakwater (12 reef systems)	$13,662,000
	Elevated Seawalk	$21,005,000
John Lawson and Ambleside Parks	Beach Segment (18th Street to 14th Street)	$5,536,250
	Pier Replacement	$4,047,500
Ambleside Beaches	Beach Segment (14th Street to Ambleside Pond)	$7,163,750
	Realigned Trail (Ambleside Pond to Railway Crossing)	$4,326,000
	Total	$55,740,500
	40% Contingency Costs	$22,296,200

Note - Contingency costs cover unexpected expenses or risks that may arise during a project and account for any uncertainties such as timing, design changes, material cost increases, unexpected delays, etc.

4 Next Steps and Recommendations

Next Steps

- Community, stakeholder, and First Nations engagement
- Integrating adaptation options into other District plans
- Determining funding options
- Establishing an implementation schedule
- Developing detailed designs for each project segment
- Permitting (provincial and federal)
- Construction

Recommendations

THAT Council:

1. Receive the report for information.
2. Direct staff to complete engagement with other levels of government, key stakeholders and partners, and the community to develop a prioritized phased implementation plan with funding options.

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