



**Town of Annapolis
Royal**

Flood Adaptation
and Asset
Management

November 23, 2023



Facilitators

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AIM Network

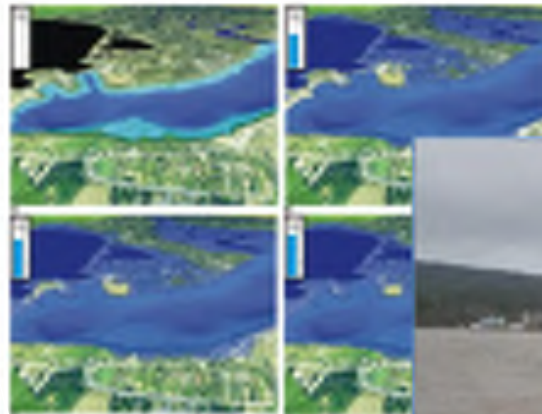
Joy Elliott, CSLA
Landscape Architect

PROJECT SCOPE

- Review comments from Phase 1
- Update Concept Design
- Revise Costing
- Assess Capital Financing
- Prepare report to support funding application for future work



Town of
Annapolis Royal
Flood Risk Assessment
and Adaptation Concepts



What's the Risk?



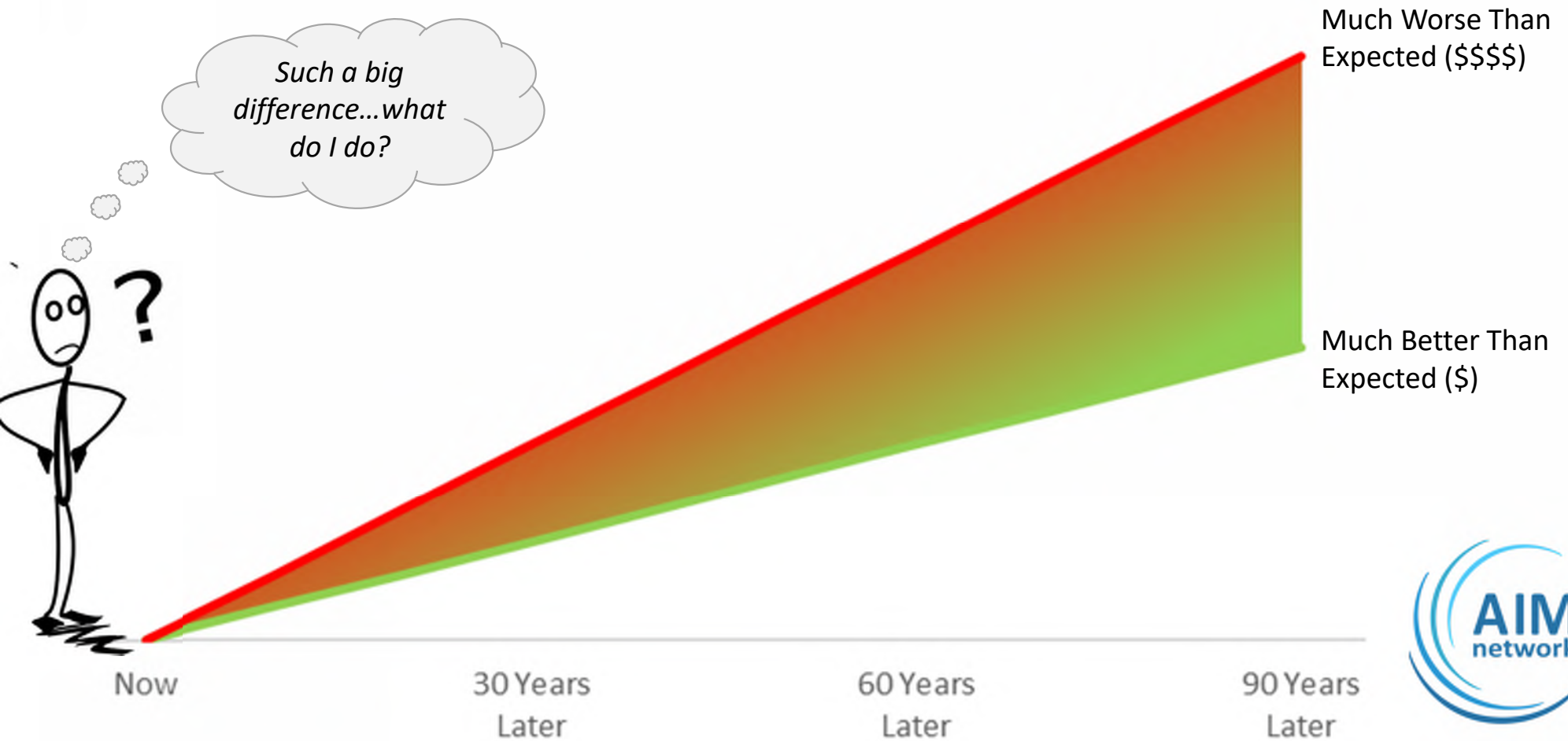
Table 4-2 Peak Water Elevations

RCP	Year	100 yr. Flood Elevation (m)	Higher High Mean Tide (HHMT) Elevation, 2023 (m)	Sea Level Rise (m)	100 yr. Storm Surge (m)	Subsidence (m)
RCP2.6 High confidence	2023	5.01	3.51	0.00	1.5	0.00
	2053	5.15	3.51	0.11	1.5	0.03
	2103	5.32	3.51	0.13	1.6	0.08
RCP8.5 Low confidence	2023	5.01	3.51	0.00	1.5	0.00
	2053	5.79	3.51	0.45	1.8	0.03
	2103	6.71	3.51	1.12	2.0	0.08

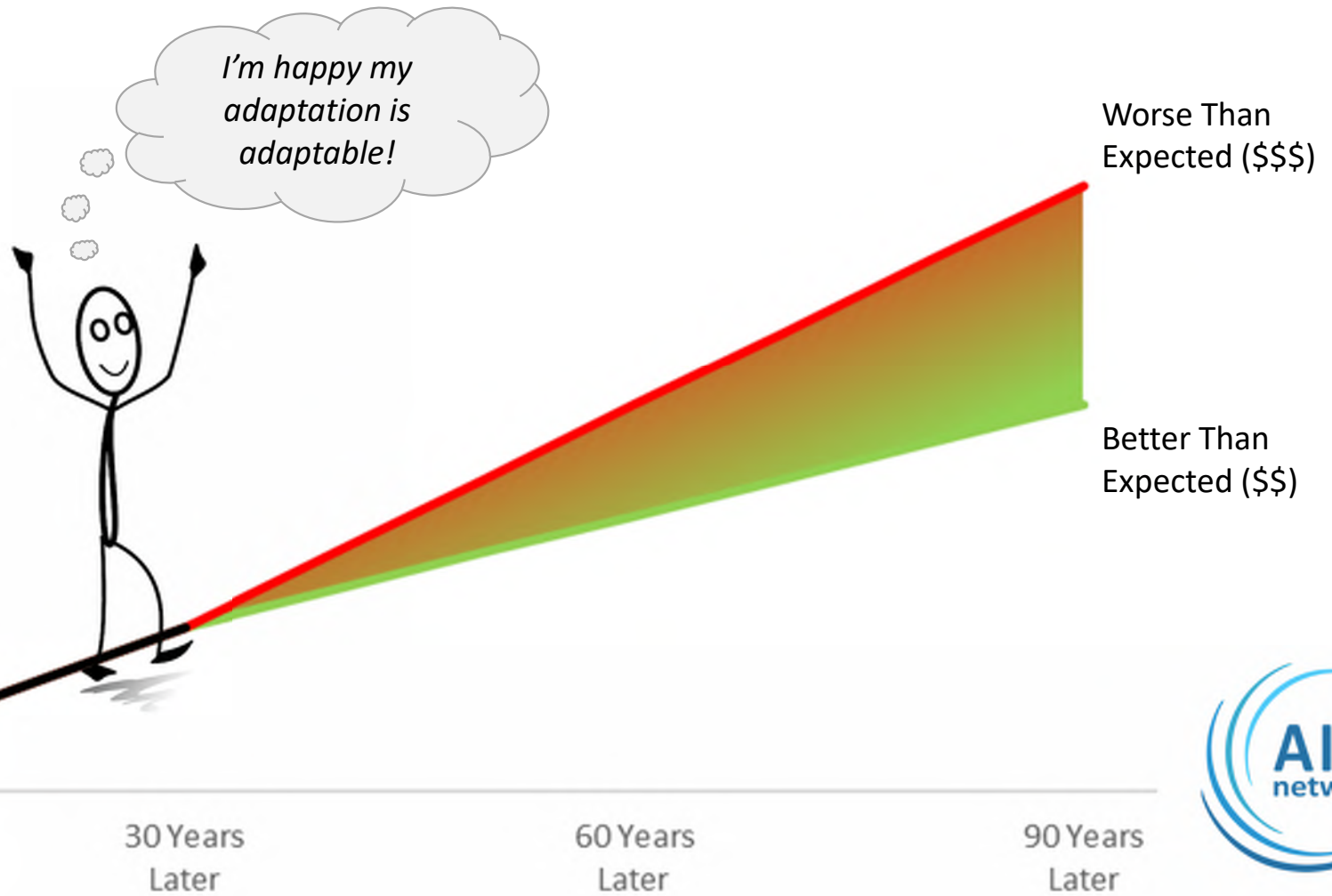
Table 5-3 Estimated Damage by Flood Depth

Scenario	Average Cost Impact per Event	Cumulative Percentage Weighted Cost
2053 RCP8.5	\$11,808,836.43	\$3,735,790.34
2103 RCP2.6	\$12,411,263.60	\$9,695,054.71
2103 RCP8.5	\$14,531,007.34	\$11,929,957.03

What Height Do we need?



Adaptation Pathways



Seawall Plan View

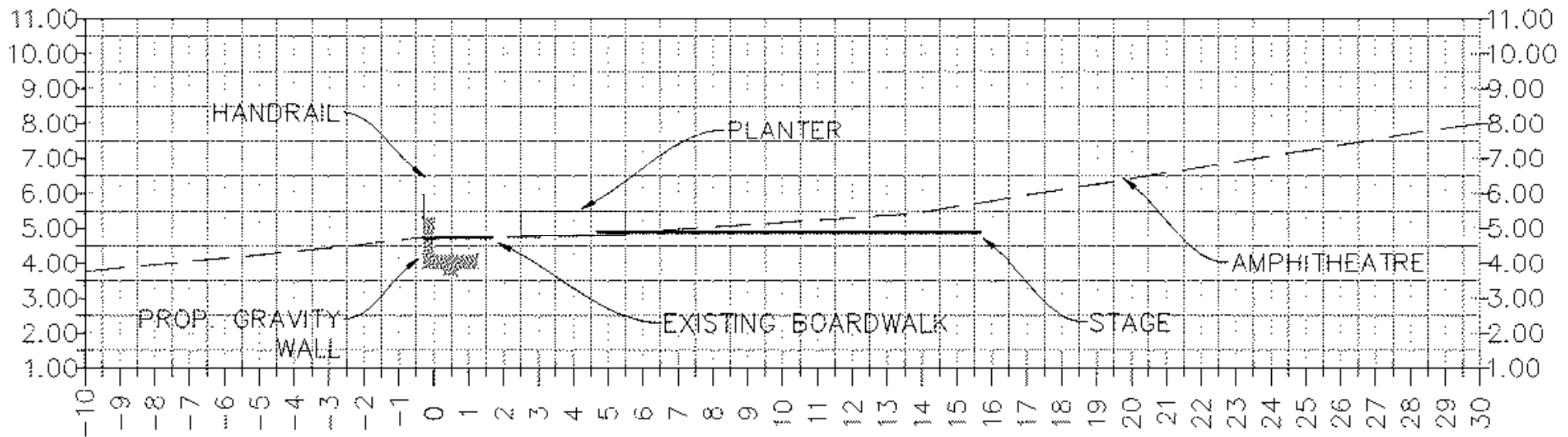


- Start at path to Fort Anne
- End south of Fortier Mills
- Permanent and temporary protection strategies
- Include shoreline renewal
- Plan for future adaptation



Seawall Section

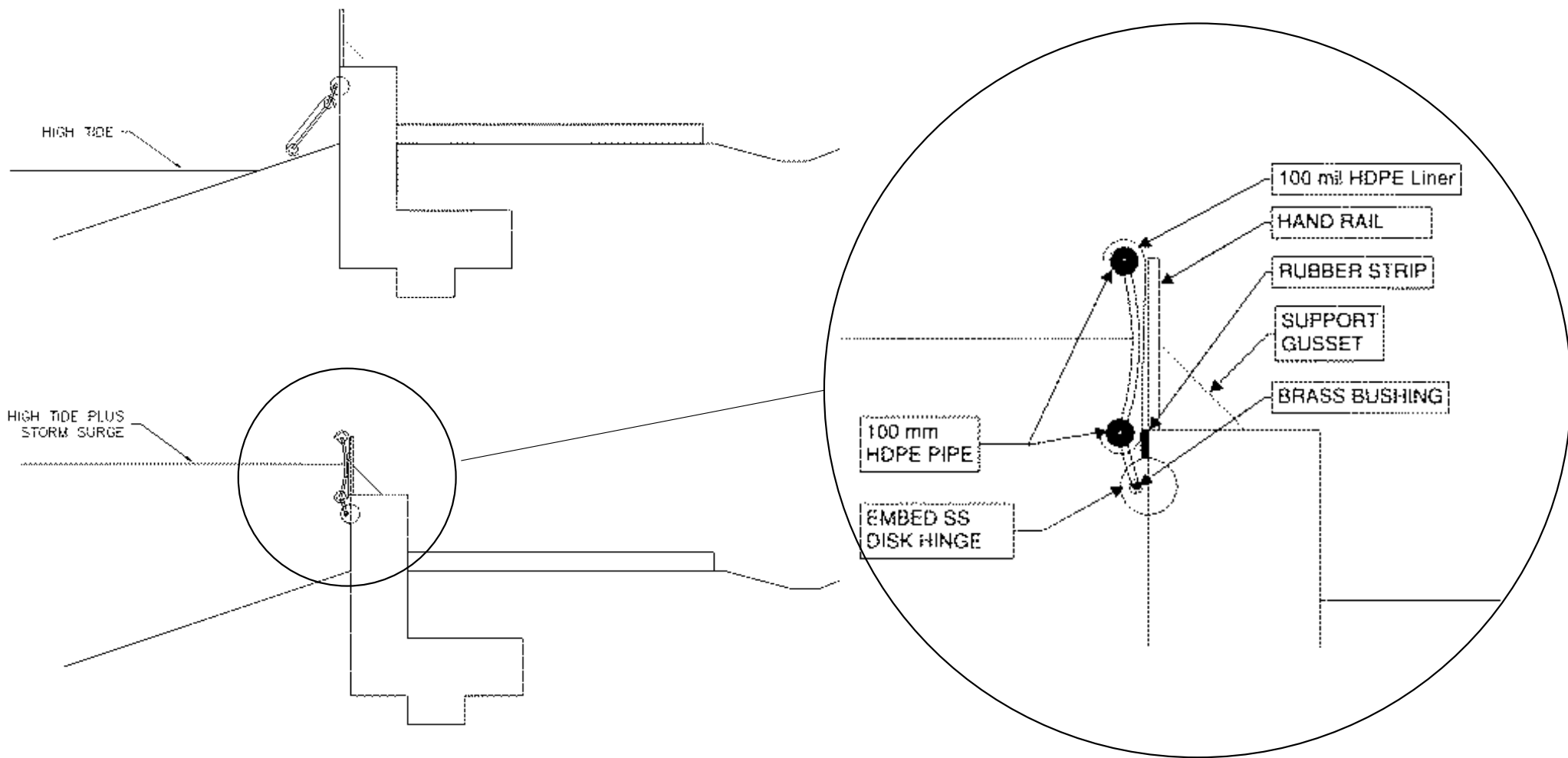
Section 01100
AMPHITHEATRE (WATER LOT)



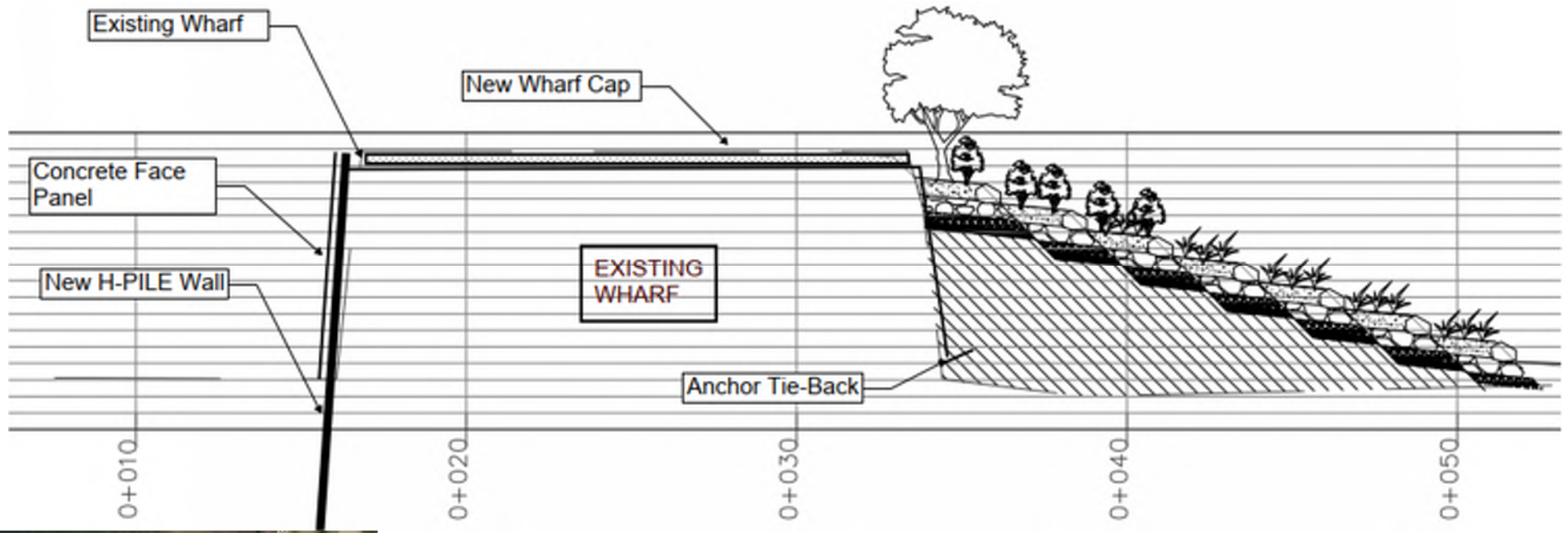
Temporary Flood Protection



Adaptive Design



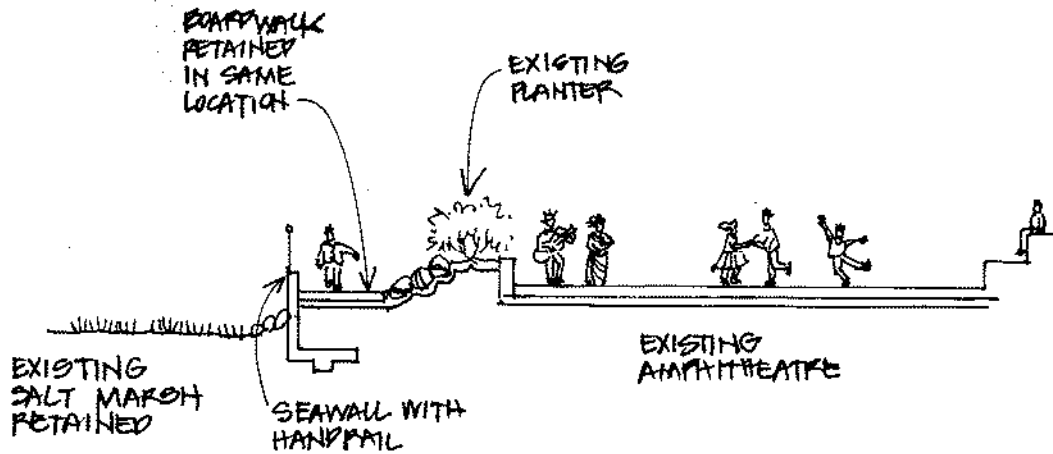
The Wharf



- Reduce cost by retaining existing
- Assess cost of piling vs. earthen embankment
- Allows anchoring top of piles, allowing shorter piles
- Aligns with shoreline renewal
- Cultural scenes on concrete panels



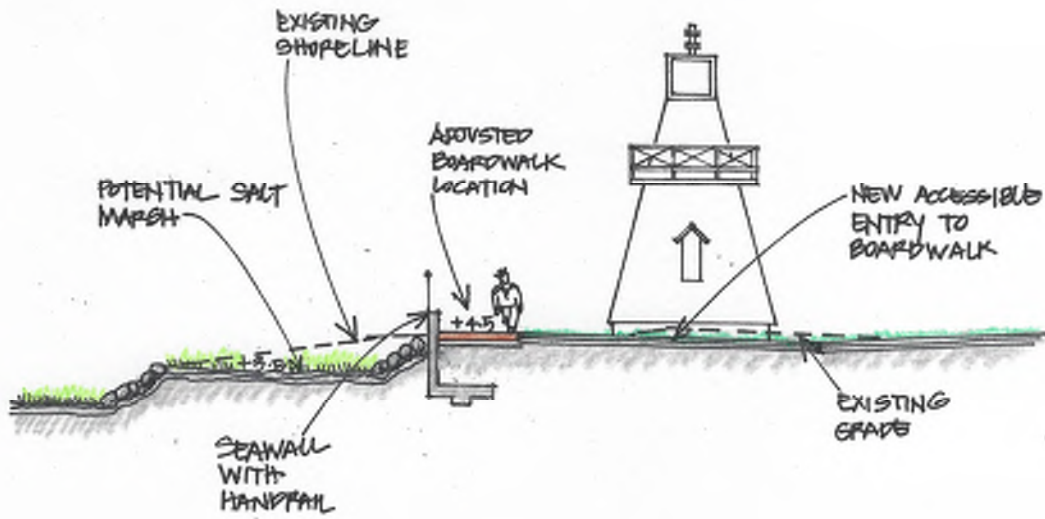
Seawall at the Amphitheatre



SECTION AT THE AMPHITHEATRE



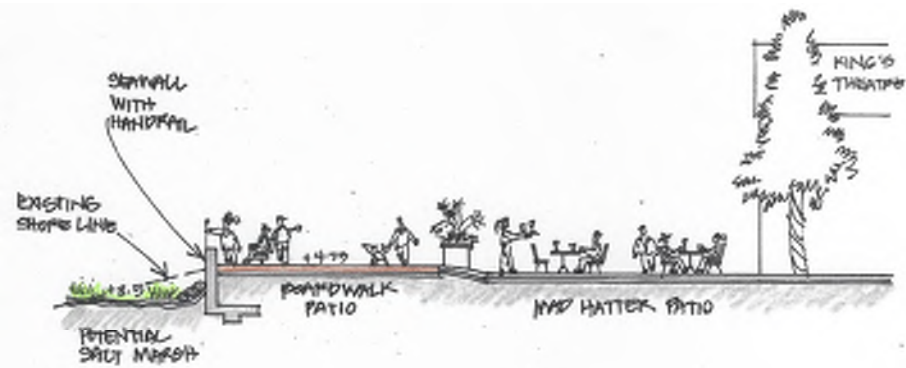
Seawall at the Lighthouse



SECTION AT THE LIGHTHOUSE

0 1 2 3 4 5 10M
JOY ELLIOTT DESIGN, CSLA

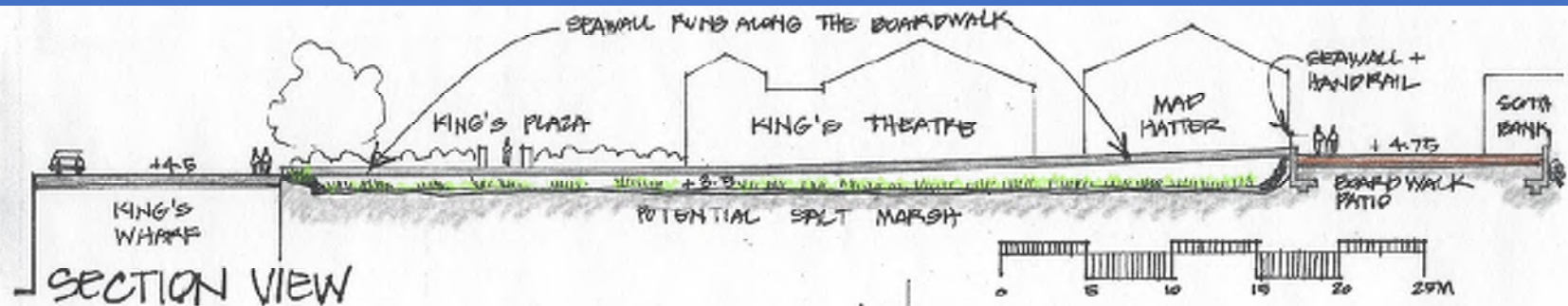
Seawall at the Mad Hatter Patio



SECTION AT THE MAD HATTER PATIO

0 1 2 3 4 5 10M
JOY ELLIOTT DESIGN, CSLA

Seawall at King's Theatre



SECTION VIEW

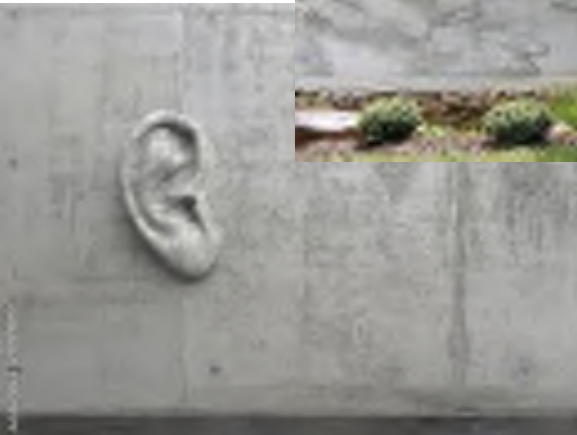


PLAN VIEW

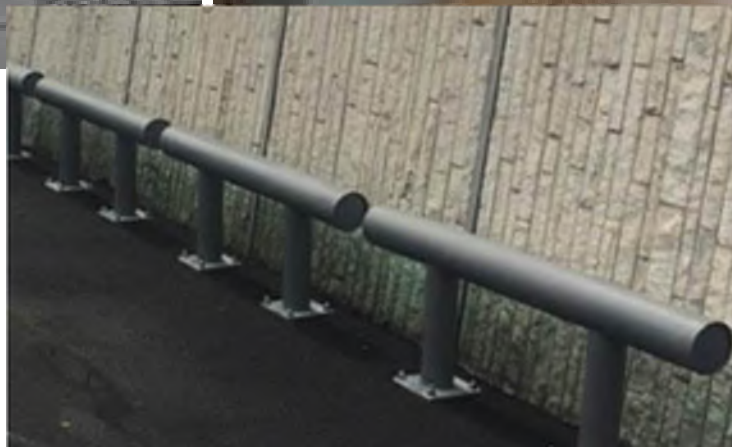
Seawall at King's Theatre



Concrete Seawall as Art



Seating and Guardrail Options



Intertidal Green Space and Living Seawall



Cost and Capital Financing

- Cost is becoming more certain with better return on investment
- Estimated at \$3.8 million dollars
- Municipal Contribution:
 - 30% = \$1.1 million
 - 60% = \$2.2 million

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Cost and Capital Financing

Component	Current Estimate	10% Contribution	30% Contribution	60% Contribution
Seawall	\$3,800,000	\$380,000	\$1,100,000	\$2,200,000
Wharf Repair	\$2,700,000	\$270,000	\$ 810,000	\$1,620,000
Living Shoreline	\$ 800,000	\$ 80,000	\$ 240,000	\$ 480,000
Total	\$7,300,000	\$730,000	\$2,150,000	\$4,300,000

- Support for projects is a community decision
 - Consider alternatives
 - Cost of catastrophic flooding
 - Potential land use regulations
 - Time for emergency funds to arrive
- Weigh certain costs of adaptation vs possible costs of disasters
- Risk management considers the likelihood and consequence

Questions and Discussion

