Coastal Adaptation Study for the Town of Pictou's Jitney Trail, NS

Public Session

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Agenda

- Objectives
- Coastal Hazards
- Shoreline Condition
- Options
- Previous Engagement
- Environmental Assessment
- Design
- Example in Mahone Bay
- Next Steps

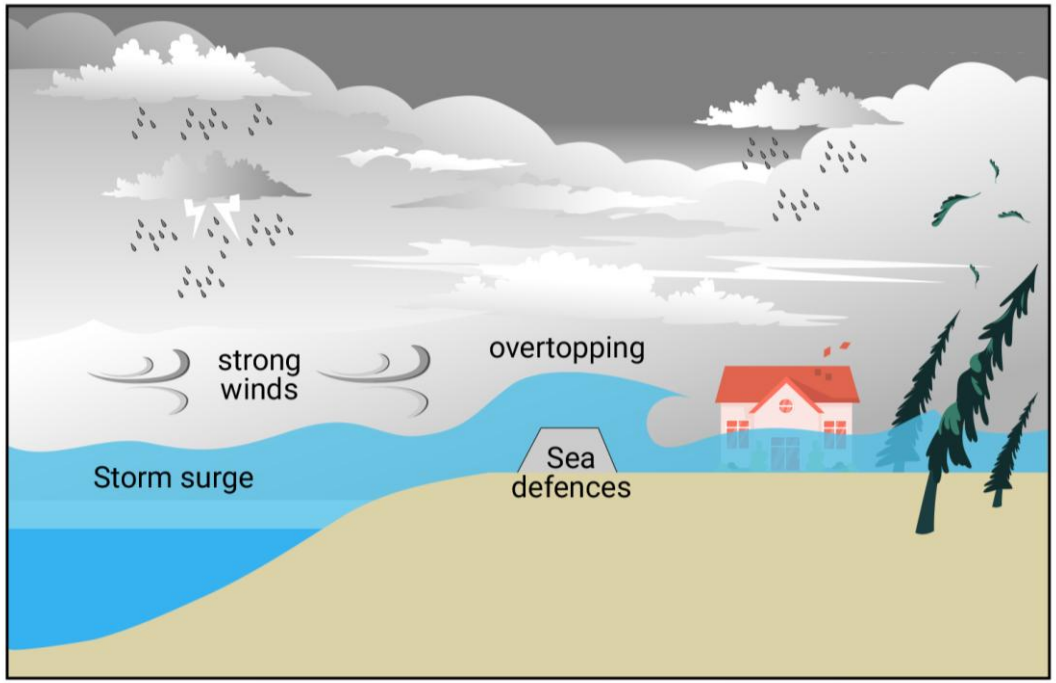
Project Objectives

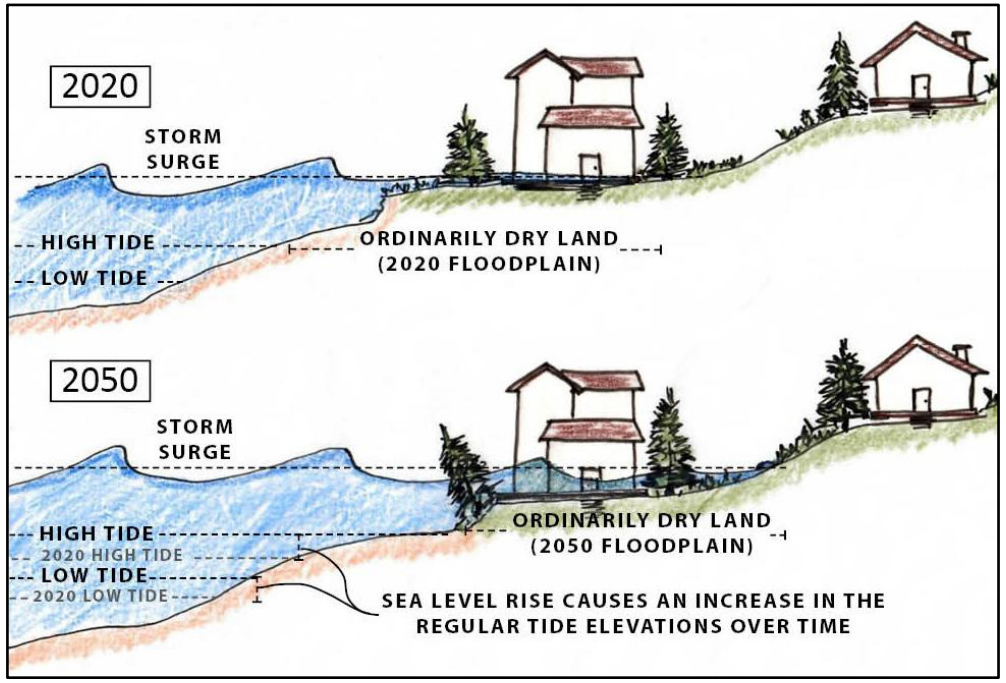
- Conducted shoreline assessment to determine coastal hazards (flooding and erosion)
- Selected most at-risk section for pilot study
- Developed shoreline protection solutions
- Incorporated natural features into solutions
- Sought feedback for pilot study on public's preferred option

Coastal Flooding and Erosion

What causes flooding and erosion?

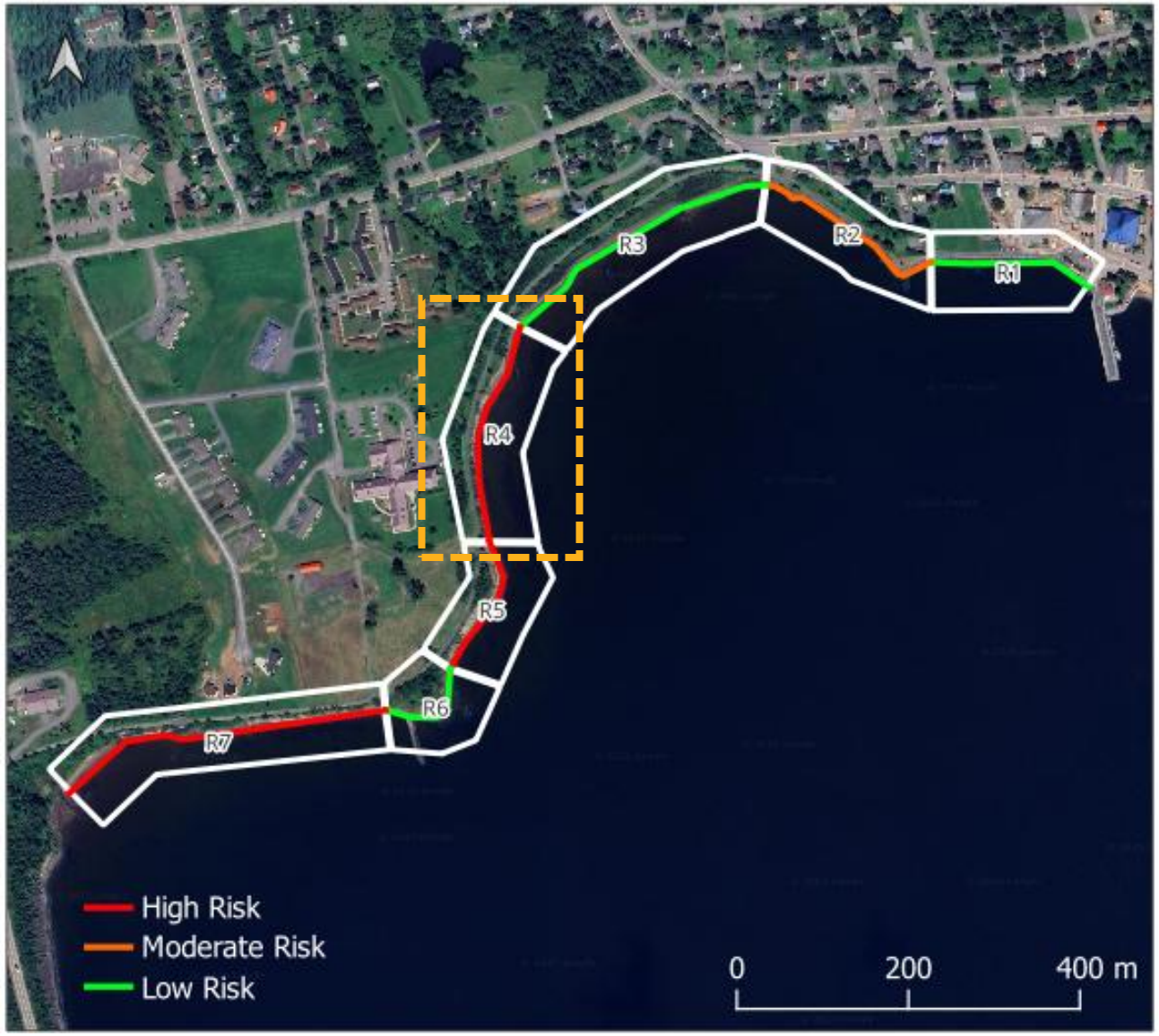
- Wave action, tidal and wave-driven currents
- Extreme storm events and hurricanes
- Sea level rise
- Human impacts (dredging, short setback distances, improperly designed coastal structures)





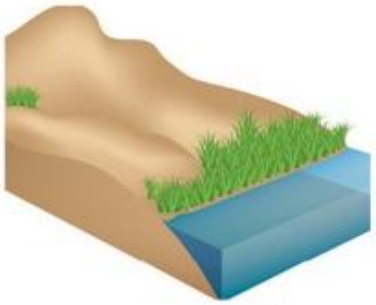
Shoreline Condition

- Organized shoreline into 7 reaches based on
  - Shoreline conditions
  - Exposure to waves and flooding
  - Erosion
  - Other shoreline characteristics
- Reach 4 focus for pilot study



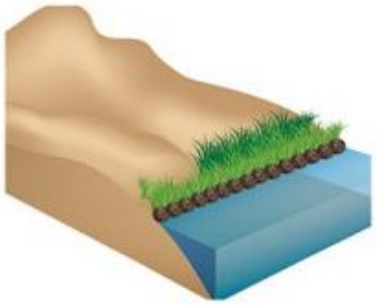
When necessary: Shoreline protection options

Living Shorelines



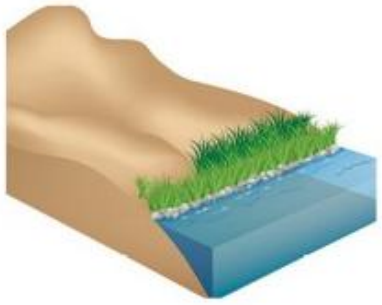
VEGETATION ONLY

Provides a buffer to upland areas and breaks small waves.



EDGING

Added structure holds the toe of existing or vegetated slope in place.



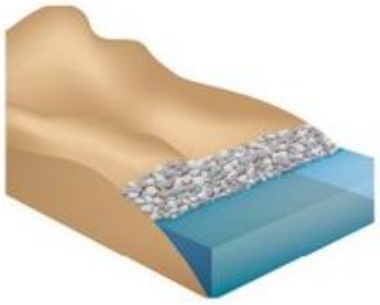
SILLS

Parallel to vegetated shoreline, reduces wave energy, and prevents erosion.

Coastal Structures

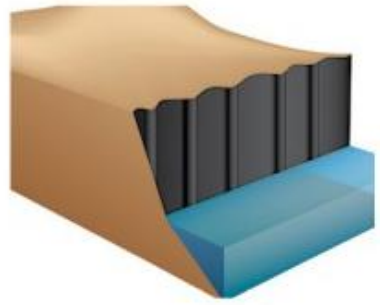
BREAKWATER

Parallel to vegetated shoreline, reduces wave energy, and prevents erosion.



REVETMENT

Lays over the slope of the shoreline and protects it from erosion and waves.



BULKHEAD

Vertical wall parallel to the shoreline intended to hold soil in place.

Soft techniques
Low wave energy
Higher risk tolerance

Hard techniques
High wave energy
Low risk tolerance

Modified from https://basc.pnnl.gov/images/continuum-green-soft-grey-hard-shoreline-stabilization-techniques-used-mitigate-effects

Existing Shoreline

Option 1 – Armourstone Revetment

Armourstone Revetment: Large rocks placed along the shoreline to absorb wave energy and reduce erosion.

Option 2 – Vegetated Bank with Rock Toe

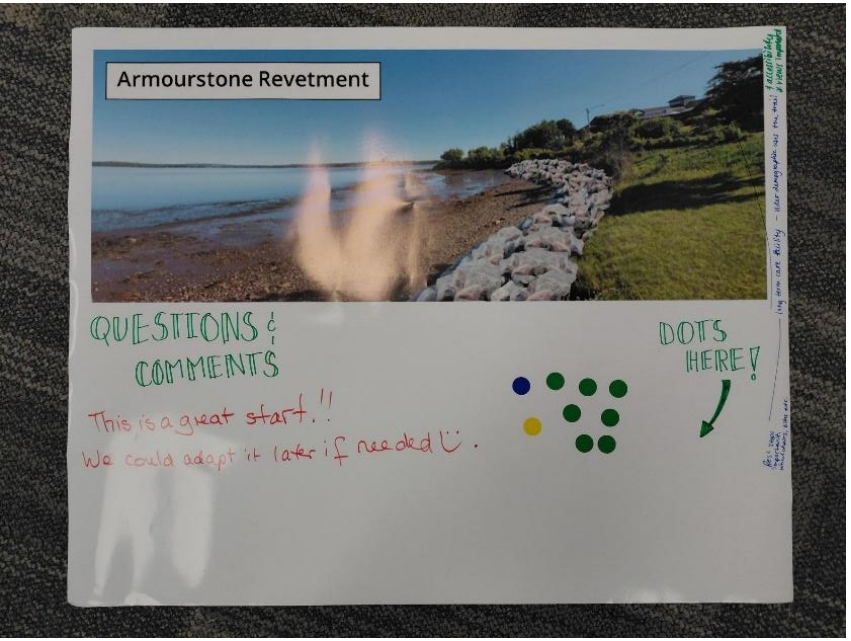
Vegetated Bank with Rock Toe: Reshaping the slope of the bank, planting vegetation, and adding a rock toe for stability.

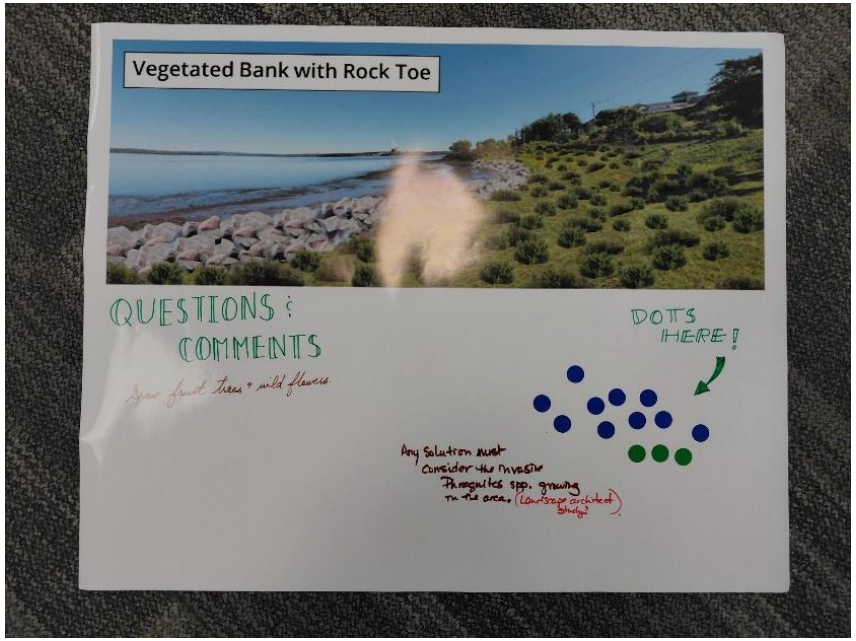
Option 3 – Salt Marsh with Rock Sill

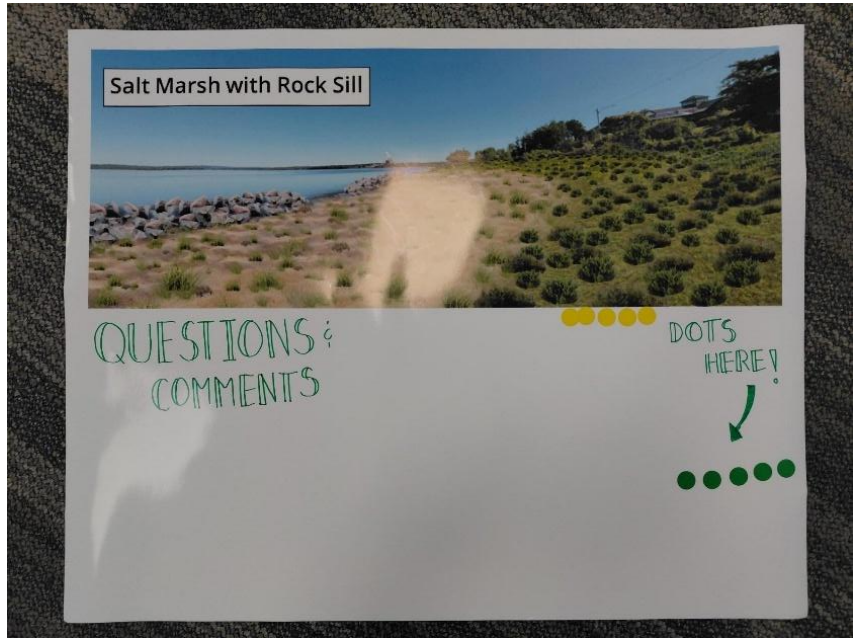
Salt Marsh with Rock Sill: A mix of natural vegetation and a low rock wall (“sill”) to protect the coast and create habitat.

September Community Engagement

- Presentation, Q&A period, dot voting activity





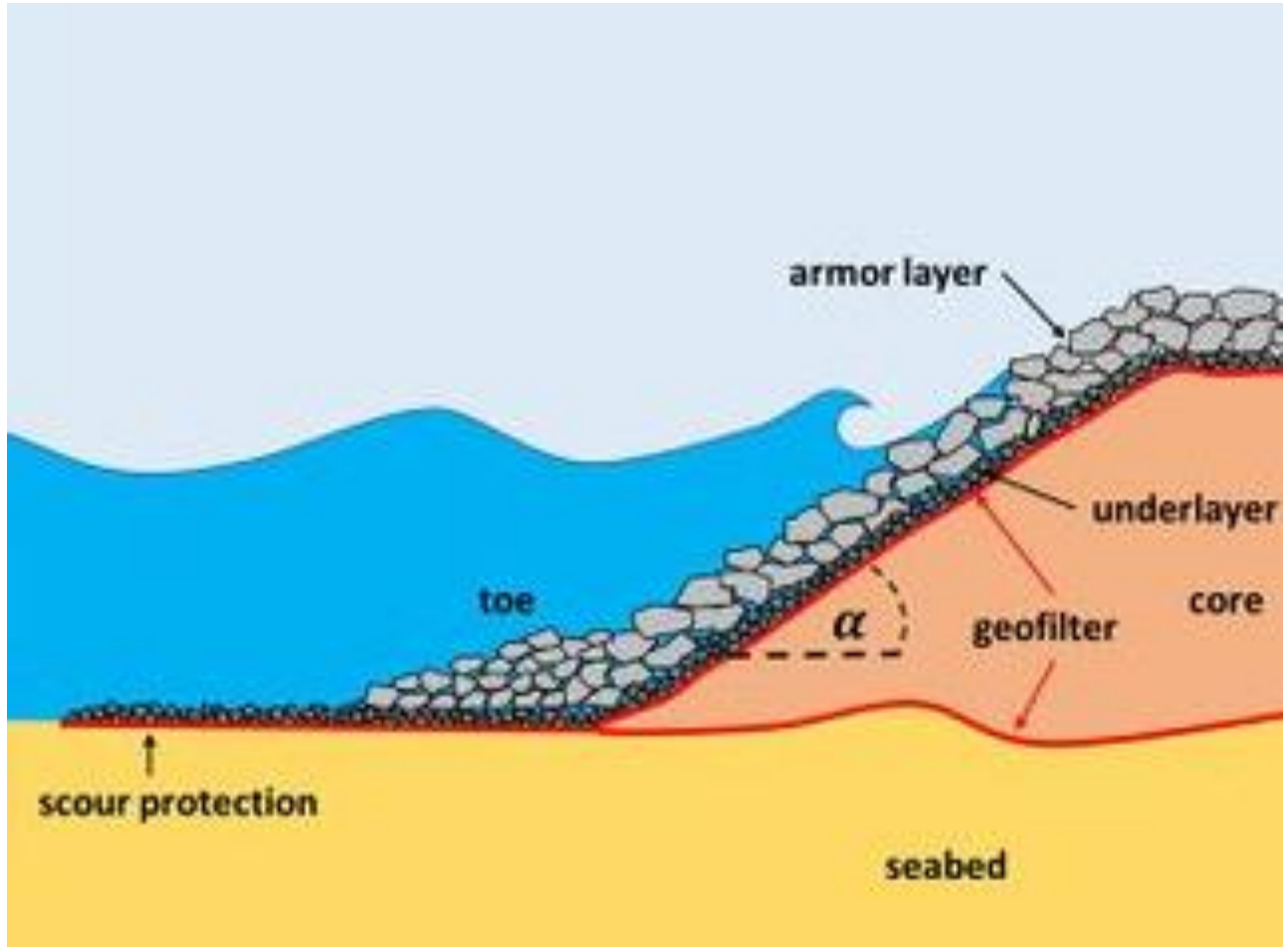


Environmental Assessment

- Site visit by biologist July 2025
  - Investigated shoreline and intertidal zone
- Checked for sensitive habitats
- Findings:
  - No Species at Risk observed
  - No eelgrass beds in intertidal zone
  - Three small wetlands and one watercourse noted (outside of Reach 4)

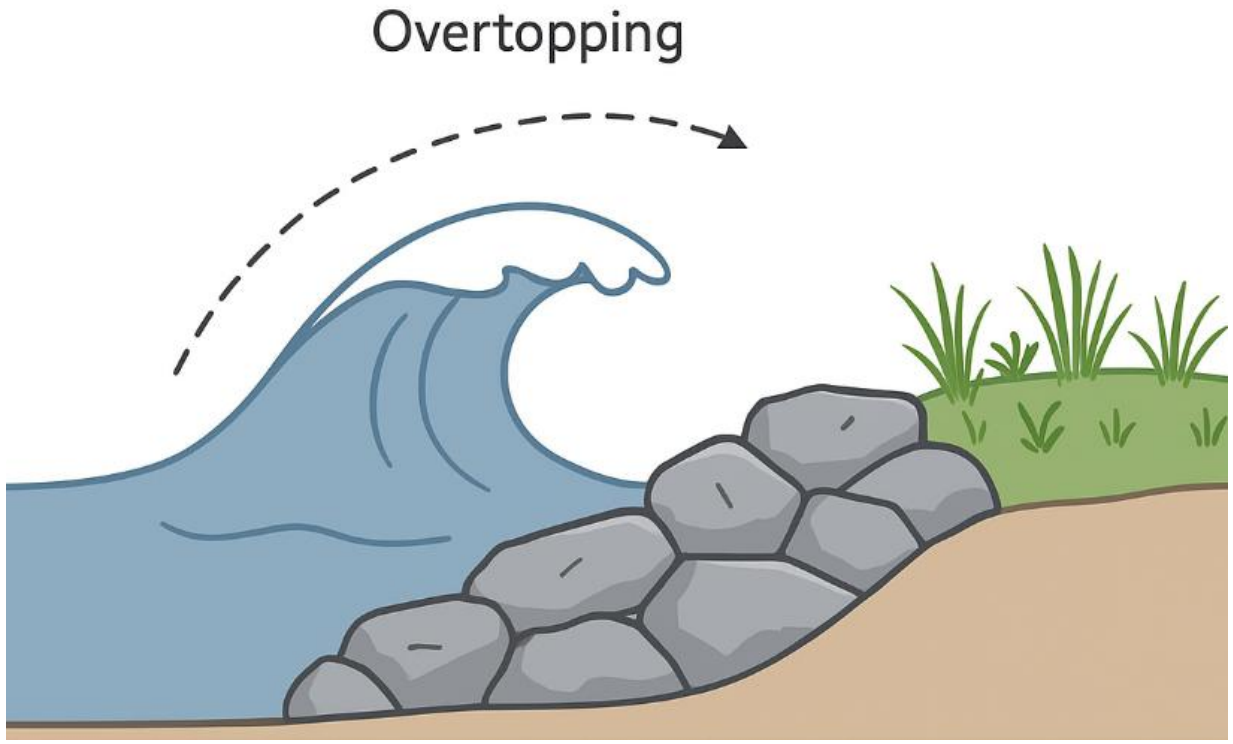
Design of Armourstone Rock Toe

- Size of stone based on Rock Manual (CIRIA, 2007)
- Considered waves for 1% AEP storm (100-year return period) in 2080 and ice impacts

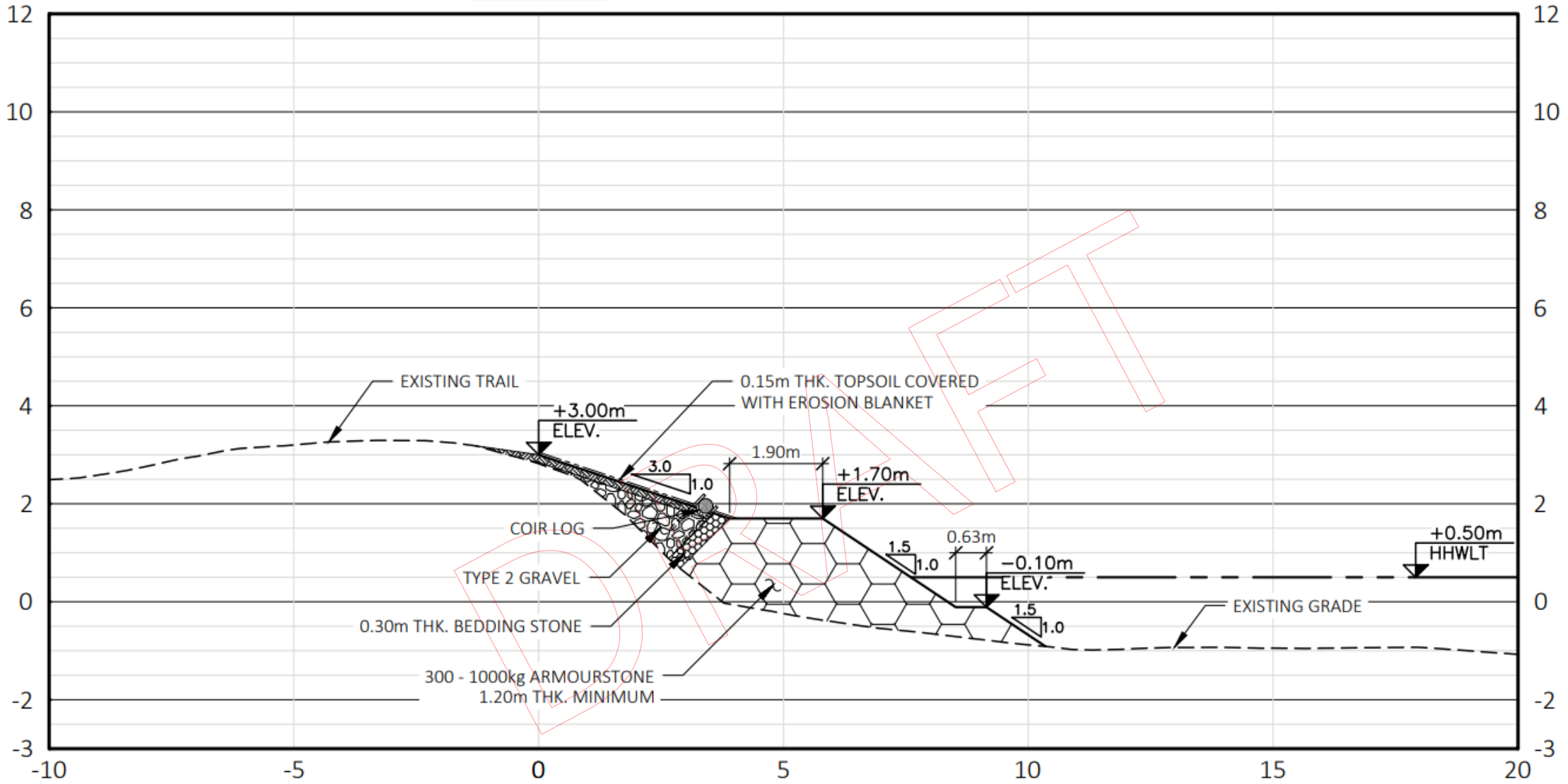


Design of Armourstone Rock Toe

- Crest elevation by evaluating overtopping of the structure based on Overtopping Manual (EurOtop, 2018)
- Tolerable overtopping rate for vegetation - 10 L/s/m for a 2-year RP storm



Draft Design – Cross-Section



Mahone Bay Example

- Construction in progress, vegetation not added yet
- Two coir logs for Mahone Bay

- Established vegetated bank at the living shoreline
- Planted in 2022

Next Steps for Implementation

- Complete geotechnical investigation to confirm soil conditions
- Advance design to 66% and 99% stages
- Obtain regulatory approvals

Recommended test pit locations for geotechnical investigation.

Next Steps for Implementation

- Issue final drawings and specifications for tender
- Schedule construction with environmental best practices
- Optimize timing for vegetation planting (spring)

Construction of vegetated bank with rock toe at Mahone Bay

Monitoring and Maintenance

- Regular inspections
- Vegetation care
- Rock and erosion repairs
- Documentation

Questions or Comments?

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