



# Coastal Processes Study

## For New Pier Location at McNabs Island

Prepared for Nova Scotia Department of  
Natural Resources and Renewables

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# Executive Summary

McNabs Island Provincial Park is located at the entrance of Halifax Harbour. Its main public access point is Garrison Pier, which is reaching the end of its service life. The Department of Natural Resources and Renewables (DNRR) commissioned CBCL to provide coastal engineering input into the selection of a suitable site for a new access structure. CBCL completed a site visit and an assessment of wave conditions and flood and erosion hazards, considering potential long-term changes from sea level rise and shoreline stability. Coastal analyses on 4 potential pier site were used to develop the following ranking, from most favorable (1) to least favorable (4) coastal conditions.

**(1) Timmonds Cove** and **(2) Ives Cove** are the most suitable sites for the construction of a new pier. These sites are least exposed to wave action, flood risk, and demonstrate the most stability in terms of erosion/sediment transport.

**(3) McNabs Cove/Garrison Pier** may be considered for rebuild, conditional to strengthened design and realignment of Garrison Road (which is already planned by DNRR). Although the site will remain exposed to wave action during storms, with incremental exposure as rising sea levels continue to overtop the isthmus at Maughers Beach, regular pier operations during the tourism season are not expected to be hindered by the wave conditions. Pier structural design should account for extreme wave conditions to minimize maintenance requirements.

**(4) Wreck Cove** is the least suitable site for the construction of a new pier. This site is most dynamic in nature. This site is also the shallowest and most exposed to flooding, as it features wide low-lying beaches between the existing trail accesses and the cove.

It is suggested DNRR use the results of this coastal study in the following next steps.

- 1. Narrow down the list of candidate sites.** CBCL suggests the existing site of Garrison Pier (ranked coastal #3), as many of the Island's long-term devotees in the Friends of McNabs have a strong sentiment for McNabs Cove as the gateway to the Island. The alternative site should be either Timmonds Cove (coastal #1) or Ives Cove (coastal #2), selected based on the coastal parameters, stakeholder and public feedback, and /or other factors from DNRR. Factor in access trail upgrades, socio-economic and visitor experience considerations.
- 2. Initiate conceptual design of the pier for the (two) candidate sites.** Use the water depth, extreme wave and water level parameters provided in the present coastal study for preliminary, concept-level dimensions and structure type of the pier. Based on the concept design, develop preliminary capital and maintenance cost estimates for the new structures. Consider additional costs related to factors external to the pier structure, including but not limited to access trail upgrades. Complete a cost-benefit analysis studying all expenditures and advantages of pier sites to make an informed decision.
- 3. Make final site selection** and proceed to detailed design and permitting. Additional field data may be required for structural design including but not limited to geotechnical and bathymetric surveys, as well as wave measurements for model validation and confirmation of design parameters.