



PROJECT DESCRIPTION

The long, natural fjord that forms Northwest Arm is a unique part of the Halifax waterfront. A key element of the area's appeal are the walking paths and quarried stone seawalls along the shorelines of Horseshoe Island, Regatta Point and The Dingle. Damage to these seawalls from flooding and wave attack has created an ongoing maintenance issue. Because of our experience in incorporating future sea level rise in engineering assessments and designs, Coldwater was contracted by Halifax Regional Municipality (HRM) to develop a restoration strategy for the seawalls in light of recent storm events and future sea level rise, an appropriate design criteria for the Northwest Arm shoreline, and a conceptual seawall design.

CLIENT

Halifax Regional Municipality
Halifax, NS

LOCATION

Halifax, NS

DATE

2009-2015

PROJECT APPROACH

For the shorelines of the Northwest Arm, the key criteria for the design of coastal works are the stability of armour stone and control of overtopping flows in order to minimize damage to land shoreward of revetment, to infrastructure and to park surfaces.

This study began with an investigation of the structural and geotechnical integrity of the existing seawall, detailed background research into water level and wave statistics, and wave, tide and overtopping modelling. These analyses verified that the present overtopping damage to the seawalls is unacceptable, and that projected sea level rise will serve only to increase both the frequency and severity of damage. Coldwater identified a number of seawall design alternatives that combined aesthetics in keeping with the historic nature of the area and engineering performance. Each alternative was then subjected to a spatially-varying assessment using Coldwater's Coastal Infrastructure Adaptation Planning System (CIAPS). CIAPS considers the combined effects of storm waves, storm surge and sea level rise in a probabilistic design optimization process to minimize total cost of structure ownership.

This process culminated in the design of a hewn granite block wall to replace the ageing seawall at Sir Sandford Fleming Park (known locally as The Dingle). The 3rd phase of construction is now underway. Stonework and quarrying is being undertaken by Lange's rock farm www.langesrockfarm.com.