

# Shoreline Armouring Neighbouring Effects

## Case Study: Chance Harbour, Green Shores for Homes

### Erosion is a natural process

Erosion and the resulting transport of sediment along shorelines is a natural process necessary for the health of coastal ecosystems. The process provides movement of nutrients, seeds, plant rhizomes, and other materials that nurture healthy shorelines.

However, unchecked erosion can threaten property, infrastructure, and human life. Due to rising sea levels and increasingly powerful storms associated with climate change, finding effective ways to protect against receding shorelines and coastal squeeze is considered more urgent than ever.

Scientists now understand that blocking erosion and the transport of sediments using hard armouring, like seawalls, can collapse healthy systems in adjacent areas, resulting in a chronic need for more armouring as neighbouring shorelines begin losing sediment at a greater rate.

### Hard armouring causes accelerated erosion on adjacent properties

Hard surfaces like seawalls do not absorb wave energy. Instead, waves are reflected off hard surfaces, exploding in all directions, up, down, and to the sides! This reflected energy can cause serious issues for seawall owners and neighbouring properties alike. Shoreline structures are undermined through scouring. Flood risk increases when waves overtop the structure during powerful storms. And wave energy reflected to neighbouring shorelines accelerates erosion, creating a chain of effects along the coastline that demand ever increasing interventions to mitigate human risk.

### Nature-based “soft armouring” is a solution

Erosion is steadily encroaching on waterfront properties along the Northumberland Strait. Here, many, but not all homeowners have resorted to hard armouring techniques, like rip rap, and seawalls.

One homeowner in Chance Harbour, Pictou County, found their shoreline was being battered by wave energy reflected by hard armouring on two adjacent properties, resulting in an accelerated rate of erosion. Powerful storms, like Hurricane Fiona, exacerbated the issue.

The homeowners wanted to protect their property from erosion, while also preserving the natural beauty and accessibility of their beach, so looked for alternatives to hard armouring through the Green Shores for Homes program and requested a shoreline assessment from TransCoastal Adaptations.



TransCoastal Adaptations identified nature-based approaches that, once implemented, will strengthen the structural integrity of the bank, preserve beach access, and eliminate the need for hard armouring.

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### Green Shores Assessment

The assessment determined the best course of action for the Chance Harbour site. The property was run through CLIMAtlantic's *Coastal Adaptation Toolkit*; those results combined with the information collected onsite recommended that a buried revetment with dune building and planting practices would be the best way forward. This hybrid solution would help to protect the property from wind and wave energy whilst maintaining the important dune habitat for invertebrates, birds, and the other local wildlife. The information gathered from the assessment will help contractors develop their design using the Green Shores framework.

### Credit 1.5: Nature-Based Erosion and Flood Management

Credit 1.5 promotes the use of soft-shore and hybrid measures to reduce the risks associated with shoreline erosion and flooding. Soft shore projects typically look like natural shorelines in the area by using gravel, sand, vegetation, and organic debris; these measures have little to no hard elements like rocks and logs. Hybrid designs utilize hard elements, such as oyster shells, logs, or rocks to enhance the function of soft shore elements like vegetation, sand, and gravel. Hard elements can also be buried below the soft shore in hybrid designs to provide additional protection in the case of an extreme event, as is recommended in the case study example.

### How to get started with Green Shores for Homes

Ready to get started with Green Shores for Homes? Visit our website to learn more about how to enroll.

To learn more about the prerequisites, credit system, and monitoring protocols, check out the Green Shores Guidebooks, and keep an eye out for training opportunities near you!

### Acknowledgement to our Partners

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1. Request a shoreline assessment
2. Enroll your project with Green Shores
3. Project design and construction
4. Project verification and award
5. Monitoring

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