

# Chignecto Isthmus Resiliency Project



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May 8th, 2024



The Maritime Provinces (New Brunswick, Nova Scotia and PEI), by virtue of their geography, stand at the forefront of Canada's most pressing existential threat in this century: climate change and rising sea levels.

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- A United Nations study identified North American locations most vulnerable to climate change effects. The number one location was identified as New Orleans, and the number two is the Chignecto Isthmus area.
- Combination of effects of climate change threaten critical infrastructure by 2100 or sooner.



# Chignecto Isthmus Resiliency Project

The Chignecto Isthmus is a narrow land bridge which physically connects the Provinces of New Brunswick and Nova Scotia. It is a critical land transport corridor for people and goods travelling between **Nova Scotia, Prince Edward Island, Newfoundland and Labrador, and the rest of Canada.**

An estimated **\$100 million per day of trade** rely on this transportation corridor.

This area is located in a very complex landscape containing environmental, archaeological, cultural, and historical significance.

Unique nature and scope of this project;

- Involves multiple jurisdictions (provinces), stakeholders and Rights Holders,
- Ensures regional connectivity,
- National trade corridor significance,
- Significant cost to complete,
- 10-year timeline to complete

# Chignecto Isthmus Facilities

## **This corridor contains:**

- Trans-Canada Highway
- Other roads serving local communities
- CN railway
- High voltage electrical transmission lines
- Fibre-optical cables
- Wind farm
- Cultural sites
- Communities (Tantramar, Amherst)
- Private properties with buildings, wells, and septic systems
- Sewage treatment plant
- Agricultural cropland

Bay of Fundy

CN Rail Line Holding Back Ocean

Trans Canada Highway, Power Transmission Lines, Pipeline, all Behind CN Rail Line



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CN Rail Line Holding Back Ocean

Trans Canada Highway Behind CN Rail Line



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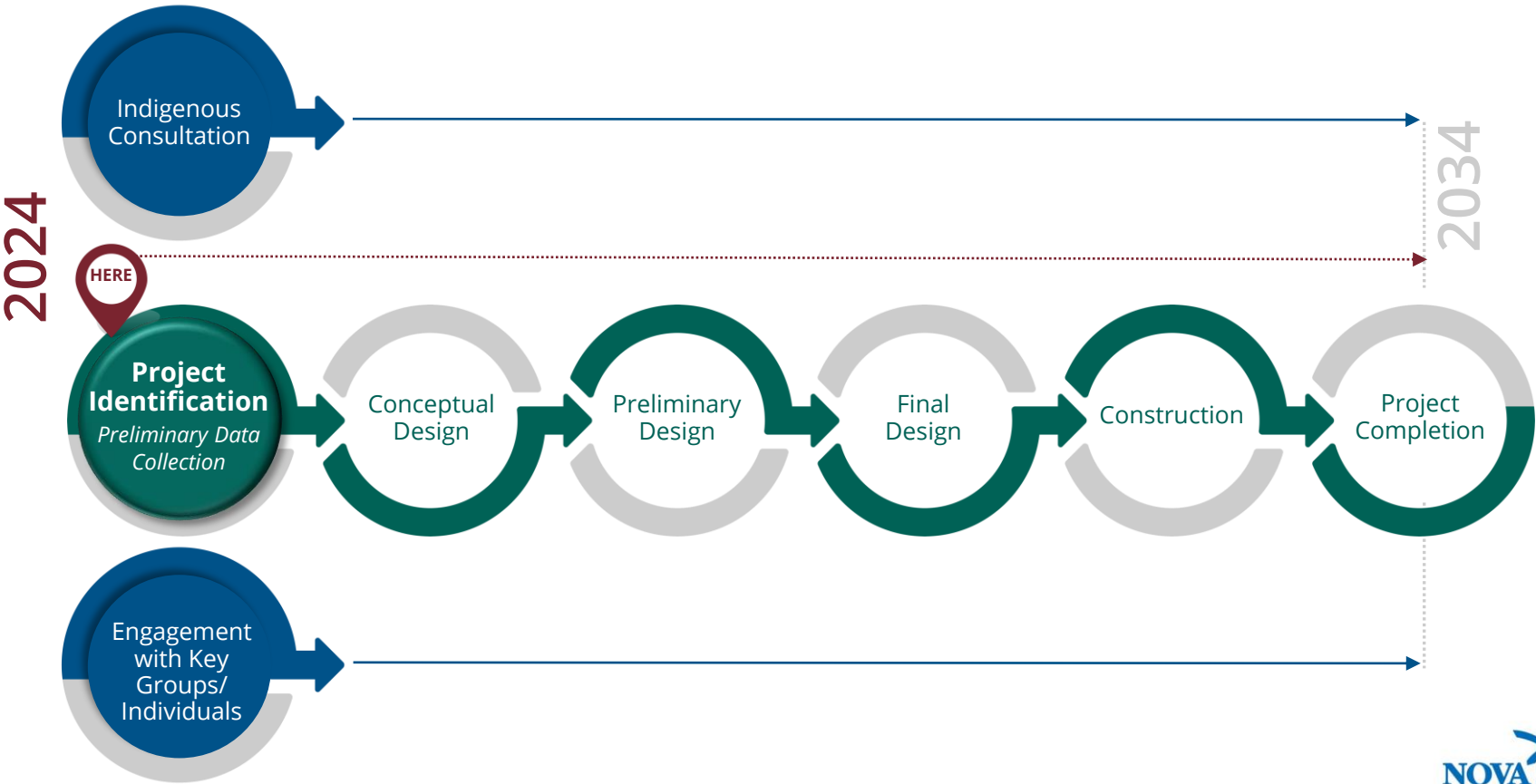
New Brunswick and Nova Scotia are working to advance the planning activities for a new dykeland system capital infrastructure solution for the Chignecto Isthmus to compliment and improve the existing dykeland system infrastructure for the protection of inland assets.

# NB/NS Chignecto Isthmus Resiliency Project

**Developing preliminary work approach** - prioritizing the main areas of focus.

**Engagement early in the project is key to success** - it provides transparency and opportunity to gain insight and knowledge necessary for the design.

**Design options and solutions** are determined through various technical analyses, stakeholder engagement and Indigenous consultation along core **Stages of a Project**.





# Interprovincial Collaboration

The two provinces are working closely to improve best practices and standards for constructing and maintaining dykeland systems by engaging interested parties, researchers, and engineering experts.

The collective experience of the two provincial infrastructure departments responsible for large-scale project delivery, combined with subject matter expertise on design and construction of dykeland systems, will support initial planning to define this project.

# Budget and Timing

**Total cost estimated at approximately**

**\$650M**

Estimated 10-year project expected to include nature-based solutions for saltmarsh restoration where possible, contains significant water courses and the protection of critical infrastructure.

# Indigenous Consultation

The Provinces agree to collaborate on First Nations engagement and consultation, recognizing that each jurisdiction is required to fulfill their respective legal duty to consult obligations, and where appropriate, to mitigate and/or to accommodate any potential adverse impacts to Aboriginal and Treaty rights in relation to the Work and the Project.

# Engagement with Key Groups/ Individuals

- Completed Review of previous engagement analysis work
- Updated 2019 list and built extensive engagement list/tracker.
- Team coordinated to understand linkage with the Risk Register and align efforts
- Draft Engagement Plan underway
- Preparing to further communicate with key groups/individuals.
- Reviewing websites for infrastructure projects

# Targeted Meetings to Support Preliminary Work – Timing Immediately

## Chignecto Isthmus – Summer Data Collection

- DFO
- Subject Matter Experts
- Municipalities
- Soil and Crop Association
- Parks Canada
- National Research Council
- Environment Canada
- IAAC, NRCan
- DU, NCC
- Landowners
- Provincial Departments
- Utilities
- CN
- Windfarm

## Contingency Plan

- Mayors/Warden
- EMO
- RCMP
- Public Safety Canada
- National Defence
- EHS
- Fire Departments
- Provincial Departments
- Local EMO
- Comfort Centres
- Local Police
- Hospitals

# Natural Infrastructure

The project will include earthen structures and water control structures forming a dykeland system.

Tidal wetlands and marshes in front of dykes (called foreshore wetlands) act as the first line of defense against extreme weather events and sea-level rise.

More foreshore wetland leads to lower water levels and smaller waves and means less risk of a dyke being damaged or having water spill over the top (called overtopping).

Realigning dykes and restoring tidal wetlands in front of them can create new salt marsh and provides better defences for dykeland communities.

The extent of saltmarsh area restored, and the use of other natural infrastructure solutions, will be further defined as the project design progresses and may be incorporated in the final design.



# Dykeland System Potential Design Upgrade Options



1  
Dyke Reinforcement



2  
Dyke Realignment



3  
Tidal Wetland Restoration



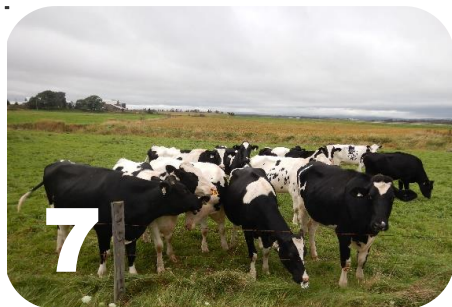
4  
Aboiteau/Upgrades  
Rehabilitation



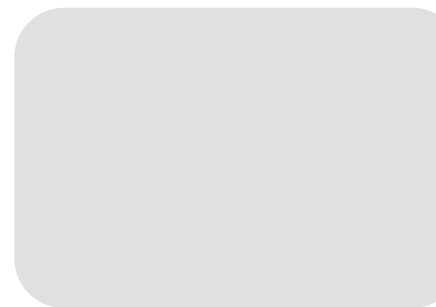
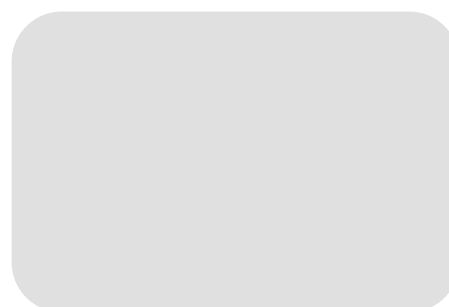
5  
Aboiteau Construction



6  
Drainage Improvement



7  
Management Plan



# Contingency Plan

A hurricane along the Bay of Fundy could create a failure of the existing dyke system. During a scenario like this, the corridor could be inundated with seawater resulting in disruption in trade; damage to communities, and injuries to people or worse.

Due to this certainty, both NB and NS have been collaborating on a contingency plan. We have assessed the viability of rerouting traffic from the Trans-Canada Highway onto secondary roads and through communities. More communication with municipalities, emergency management representatives and engineers is needed to make sure we are as prepared as possible.

We have developed a contingency plan for an event lasting between 12-24 hours. While it includes an alternate route it is not a good alternative; there will

still be disruptions in traffic and goods, and it will add over 30 kilometres each way to trips through this area. The secondary roads were not intended for trucks, high volumes or high speeds. They will quickly become congested.

Both provinces are working together to update this plan and ensure there are enough resources in place to minimize the potential impacts of the highway being closed due to a major storm or flooding.

Public Safety Canada is hosting a tabletop exercise in the fall 2024 regarding a potential closure of the Isthmus. Several interested parties will be attending to learn and better understand the impacts. This will be valuable for planning the priorities for limited traffic that will be able to pass through the corridor during an emergency.

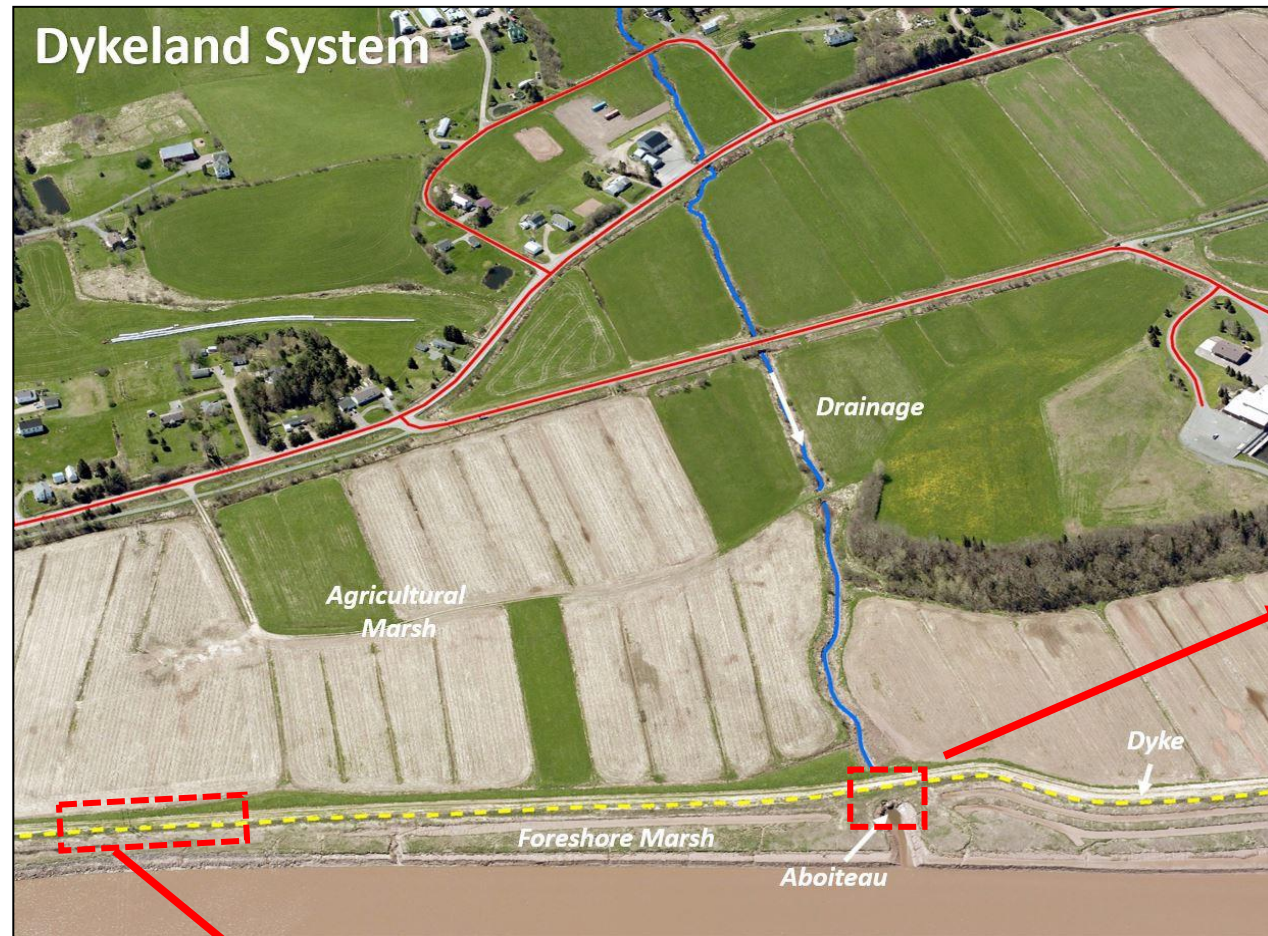


# Dykeland System Solutions

A *dykeland system* is vital for protecting critical infrastructure, communities, and agricultural lands from coastal flooding. However, the system is facing climate change challenges such as sea level rise, storm surge, and erosion.

*To address these challenges, it is crucial to develop long-term, climate adaptive, and sustainable solutions.*

Working with landowners, subject matter experts, and researchers the goal is to develop innovative solutions along this coastal environment while protecting agricultural land and communities.



## Dyke

(i.e., dike, levee or embankment)

An embankment constructed of earth or other suitable materials whose purpose is coastal flood risk reduction or water conveyance.



## Aboiteau

(plural aboiteaux)

A water control structure consisting of a tide gate at the end of a culvert that regulates water flow between a tidewater area and a drained upland area.



# Chignecto Isthmus Existing Dykeland System

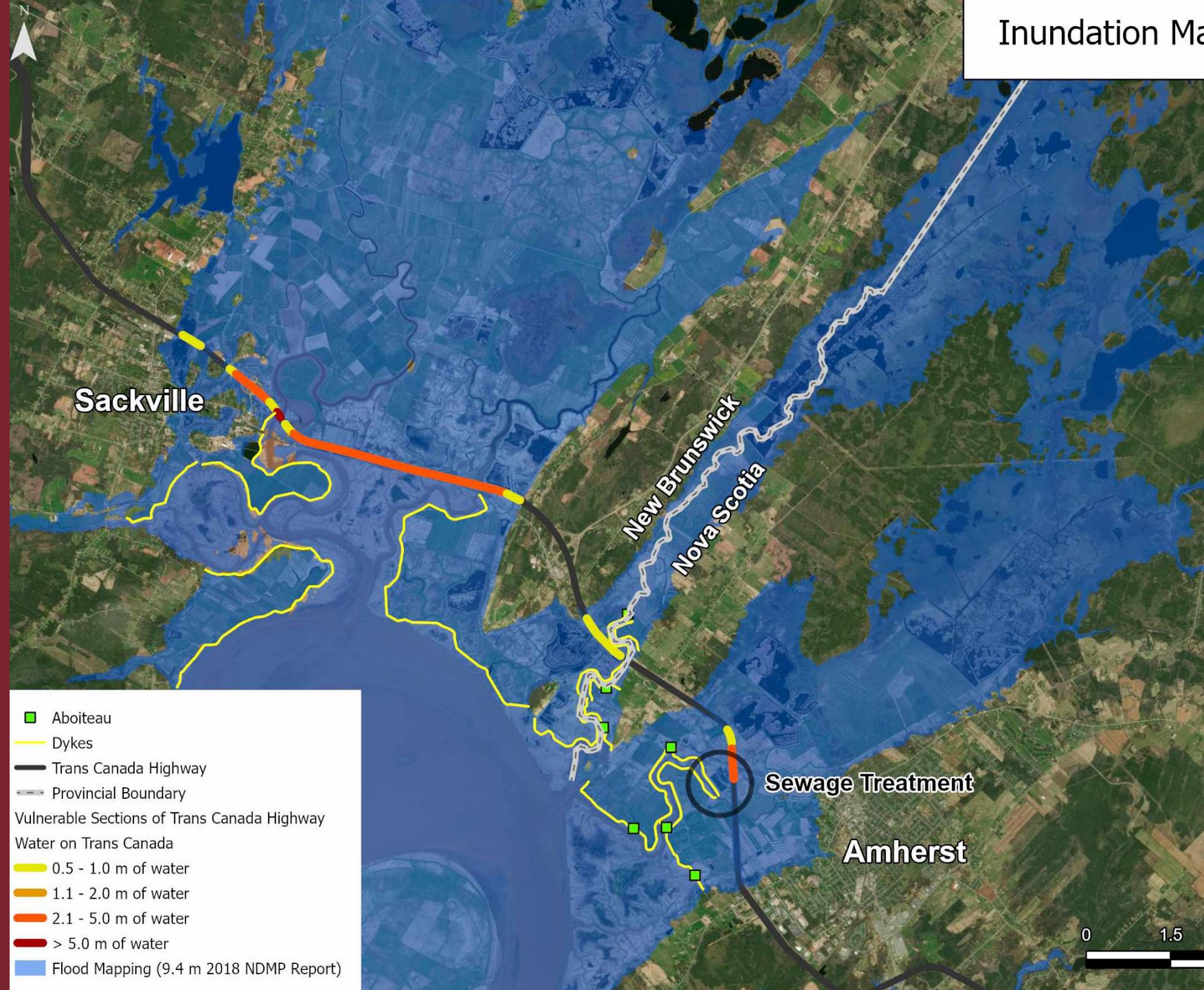


- Aboiteau
- Dyke Chainage (m)
- Dykes
- - - Marsh Access Road
- ⋯ Provincial Boundary
- Trans Canada Highway

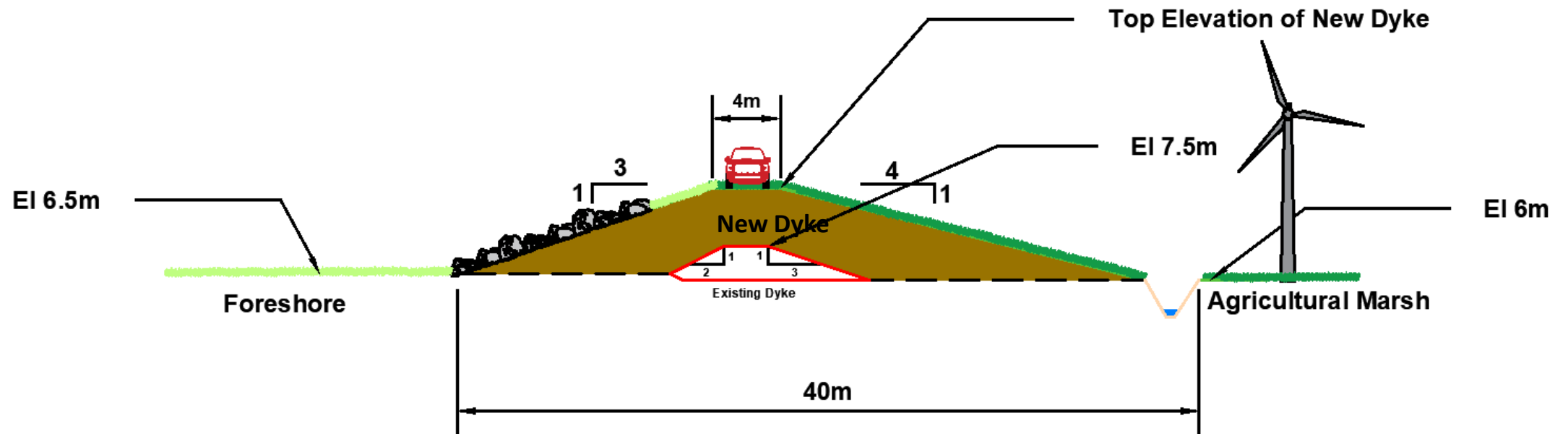


# Inundation Map

Inundation Ma



# Centerline of Dyke Maintained





Thank You!!

Chignecto  
([www.gnb.ca](http://www.gnb.ca))