Plan Update - Fundy Vulnerability Supplemental Report

Planning Advisory Committee

April 18, 2023

Planning and Development Department

EAST HANTS

Background

- At their March meeting of Council, Motion C23(93) was passed regarding the Plan Update:

- *Moved that Council direct staff to bring back a report to a future Planning Advisory Committee meeting, to look at the erosion and floodplain zones; and to include the maps for 2050 and 2100 flood line scenarios; and to look at options (non-permanent structures) for land owners on the shore to maximize opportunities for the land.*

- Additional information and images have been included in this report to assist members of PAC in deciding how to proceed with the Fundy Erosion (FE) Designation and Zone policies and regulations.

- Although the motion mentions flood risk zone scenarios, based on discussion at PAC, staff understood the intent was to further discuss the erosion zone.

Background

- A detailed review of the Fundy Vulnerability Study was presented by Dr. Tim Webster, Research Scientist, NSCC's Applied Research Group, to Planning Advisory Committee (PAC) in May of 2022.

- PAC can rewatch the presentation as the information presented is critical to understanding how both the Fundy Flood Risk Overlay (FF) Zone and Fundy Erosion Overlay (FE) Zone were established (https://www.youtube.com/watch?v=BA4dNn3Ivbs).

- Fundy Vulnerability Study and associated staff report also provided for review.

- To show how the coastline of the Bay of Fundy is eroding, "Historical coastline positions were generated from georeferenced aerial photos of the entire study area acquired from the Nova Scotia Geomatics Centre for the years 2013 and 1973. Lidar was used in place of imagery for the most recent coastal position, 2019…"

- https://arcgis.easthants.ca/portal/apps/webappviewer/index.html?id=897f74bc96a84799b47a6dc31fac852d

Historic Erosion Rates

- Erosion rates for 2050 and 2100 are based on historical rates of erosion.

- There is a 40-year period between 1973 and 2013, a six-year period between 2013 and 2019, a 31-year period between 2019 and 2050, and a 50-year period between 2050 and 2100.

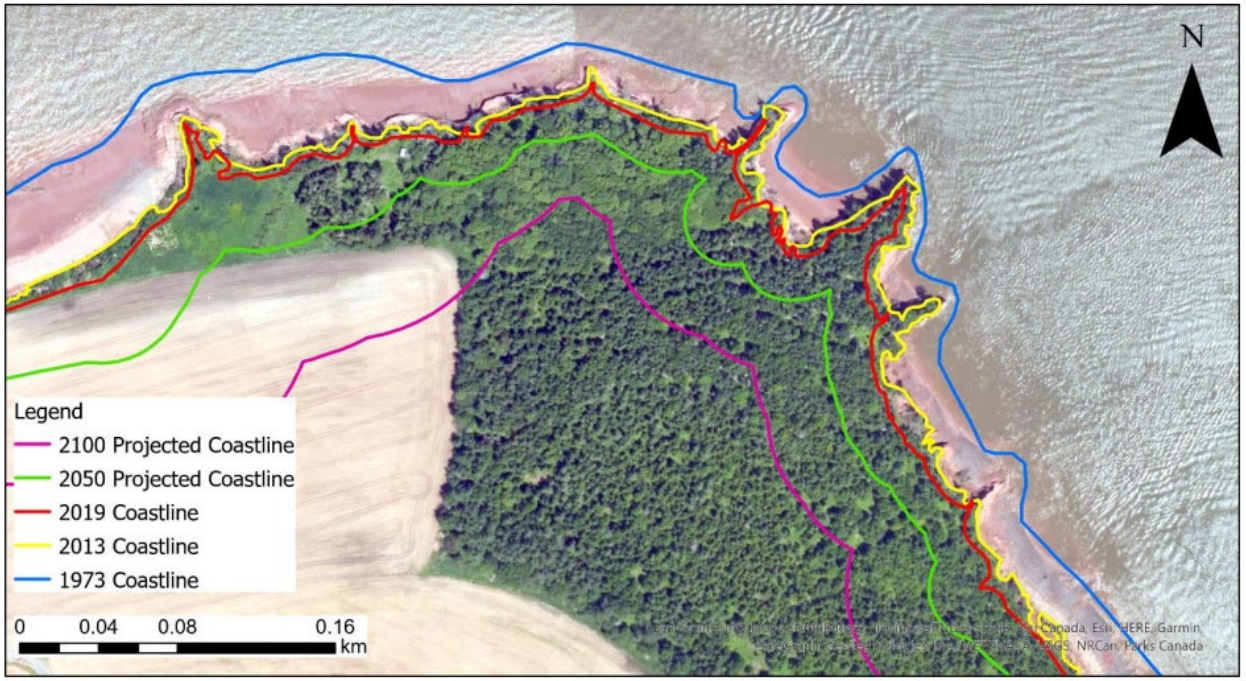


Figure 9. Comparison of 5 coastlines: three digitized historic coastlines (1973, 2013 and 2019) and projected 2050 and 2100 coastlines.

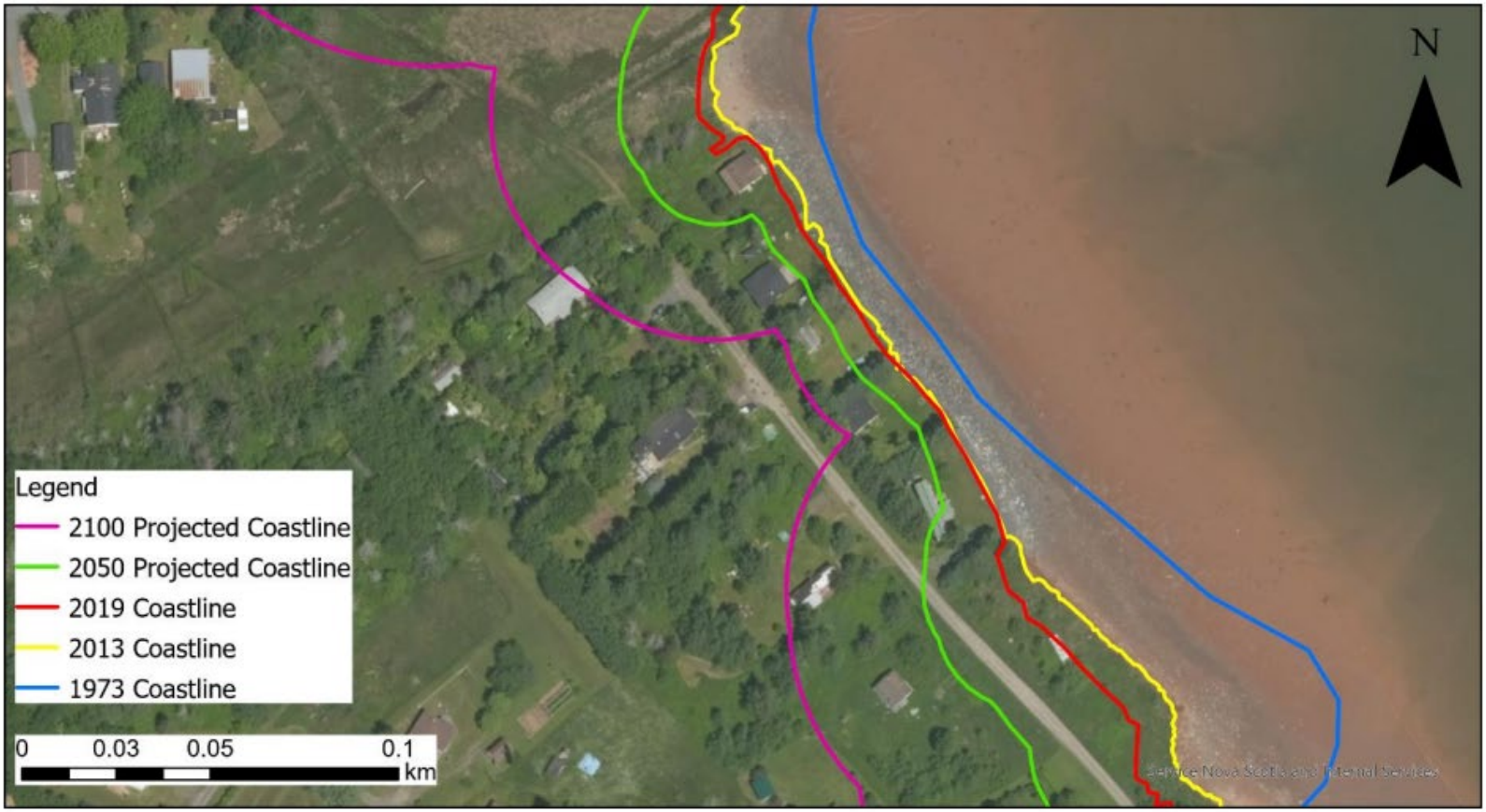


Figure 10. Historical coastlines and how future erosion could impact coastal residential areas without armoring.


May 2019


Jan 2020


March 2021

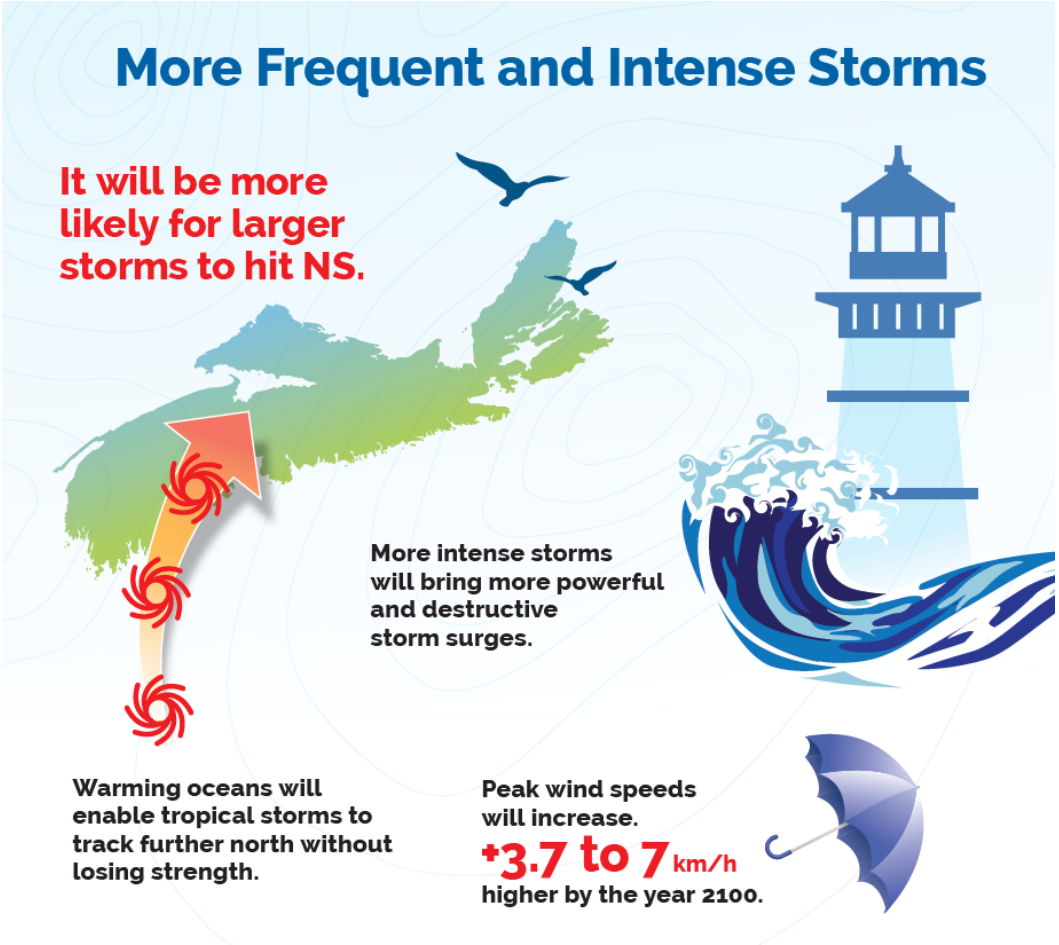

March 2021

Shoreline Collapse 2022

Climate Change

- The erosion rates calculated in the Study are based on historic erosion rates and do not take into consideration sea level rise or increased storm events, both of which would impact rates of erosion.

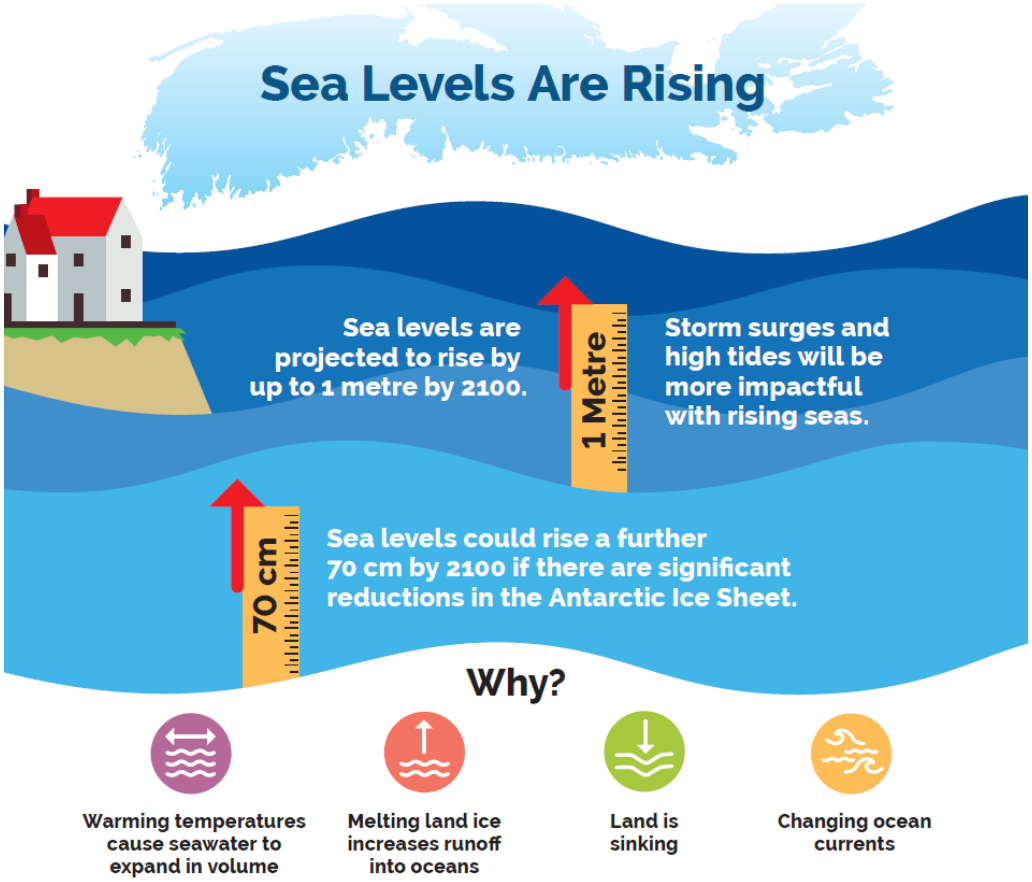
- Information from the Government of Nova Scotia states that Nova Scotia can expect more frequent and intense storms. “Warming oceans enable tropical storms to move further north without losing strength. When these storms make landfall, they can contribute to highspeed winds and powerful storm surges. In a changing climate, Nova Scotia is likely to experience more frequent and intense storms.”



Climate Change Continued

- Sea level rise will also have an impact on an eroding coastline.

- “Research projects an increase of up to 1 metre in relative sea level in Nova Scotia by 2100. Higher sea levels have the potential to damage coastal communities and infrastructure, infiltrate freshwater supplies, and threaten sensitive coastal species and ecosystems. Storm surge and high tides will be more impactful as sea levels rise.”



HHWLT = The average of the highest high waters, 1 from each of 19 years of predictions.

Shoreline Erosion

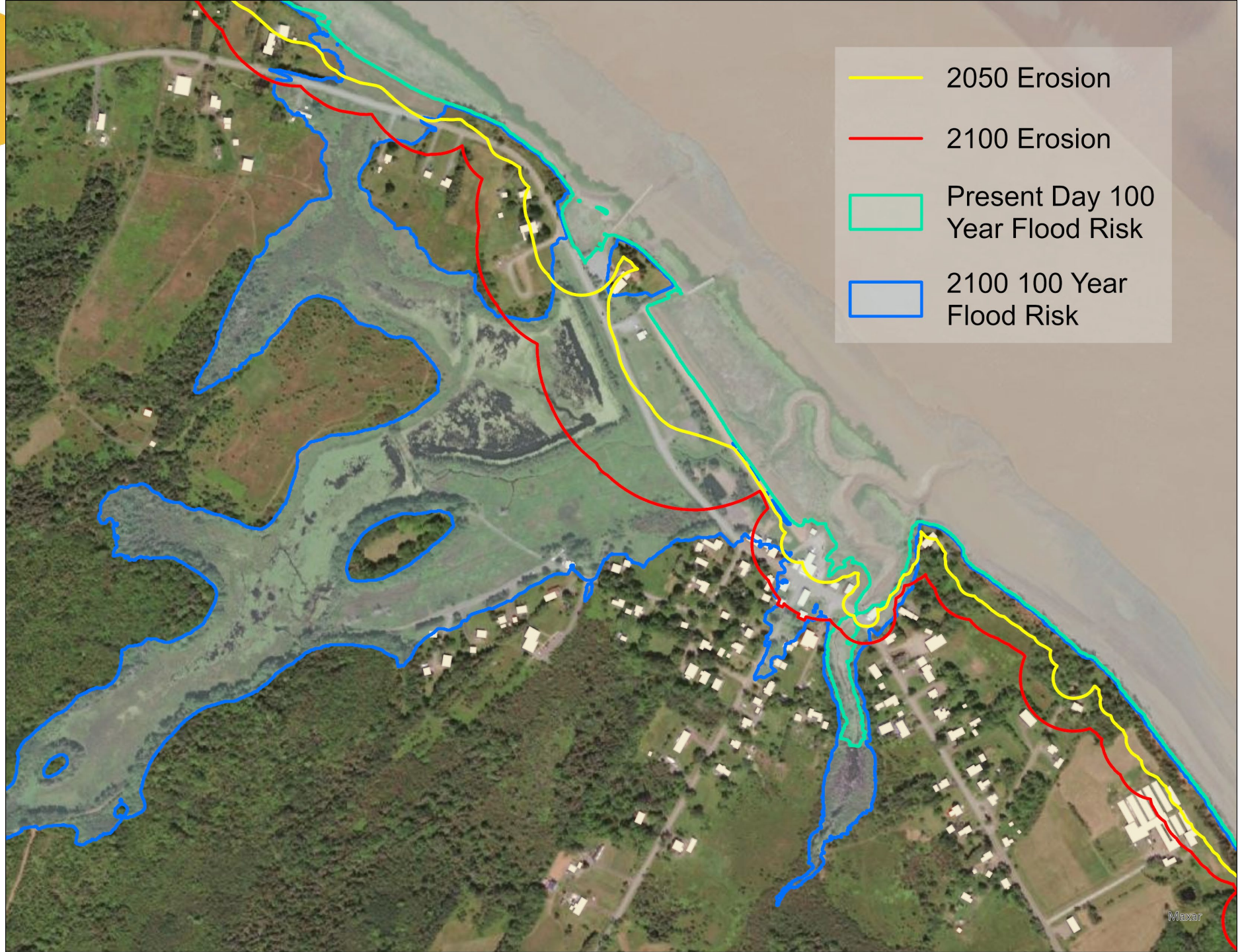
- If a steady erosion rate year over year could be predicted, property owners would have time to arrange for their homes to be moved and it would allow them to secure the safety of their families.
- However, nature is unpredictable, and one storm event could destroy the lives of many.
- In Port aux Basques, post tropical storm Fiona resulted in the destruction of over 100 homes and the death of one person.
- According to the National Hurricane Centre, a tide gauge in Port aux Basques, Newfoundland, measured 2.3 ft above Higher High Water Large Tide (HHWLT).

Shoreline Erosion Continued

- Considering East Hants now has the data that identifies properties and homes that are at threat of being lost to erosion and coastal flooding, it is recommended that East Hants take a proactive approach to land development instead of allowing more homes to be constructed along a shoreline which may erode considerably in the future and therefore are recommending that the Planning Documents remain as drafted.

- Using the East Hants civic addressing data we can determine the number and location of homes that are potentially at risk. There could be other buildings, which do not have civics, that are also at risk in these areas.

Erosion Risk By Year	Number of Residential Civics
Fundy Erosion 2050	15
Fundy Erosion 2100	59


2050 Erosion
2100 Erosion
Present Day 100 Year Flood Risk
2100 100 Year Flood Risk
Maxar

Alternatives

- Planning staff recommend that PAC and Council continue with the approach which they approved in June 2022.

- If Councillors are concerned about the data, staff recommend taking a cautious approach and adopting the Fundy Flood Risk and Fundy Erosion policies and regulations as they have been presented in the draft Planning documents and also direct staff to budget for lidar in an upcoming budget.

- The new lidar will allow for a review of the current rates of erosion. If, at that time, changes are warranted they can be completed with the support of the additional data.

- The current data we have is the best data available and this information should be used to make land use decisions that are appropriate for the Fundy shoreline.

Alternatives Continued

- If East Hants Council decides not to continue with the Fundy Erosion policies and regulations as proposed, staff have prepared an alternative set of policies and regulations that would prevent development in the 2050 erosion area and would only permit development on skids or helical piles in the 2100 erosion area.

- This option would allow for two zones to be created Fundy Erosion Overlay (FE-2050) Zone and the Fundy Erosion Overlay (FE-2100) Zone.

- No structures are proposed to be constructed in the FE-2050 Zone, as land in this zone will most likely be eroded in the next 27 years.

- In the FE-2100 Zone, new structures would be permitted by site plan approval only if they are constructed on skids or helical piles, which would allow for the structures to be moved away from the shoreline if necessary.

- Regulations would also prevent on-site services from being placed in the FE-2050 Zone. Draft policies and regulations for the alternative FE Zones have been attached as Appendix C.

Alternative Continued

1. Maintain the current Fundy Flood Risk and Fundy Erosion Overlay zones as presented in the draft Planning documents and direct staff to budget for additional lidar research on erosion rates.

2. Use the amended Fundy Erosion policies and regulations as presented in Appendix C.

Coastal Protection Act

- The Nova Scotia Coastal Protection Act was established to protect natural ecosystems and make sure that new homes and businesses are safer from sea level rise, coastal flooding and coastal erosion.

- The Nova Scotia government are still working on regulations to implement the Act.

- To date the Provincial Government has completed two consultations with the public and they are now planning on a third round of consultation.

- No date has been provided for the completion of the Coastal Protection Act Regulations.

- East Hants has requested that where Municipalities have created their own regulations that they be exempted from the Act/Regulations.

Recommendation

- That the current proposed Fundy Erosion Overlay policies and regulations are maintained and request that lidar is budgeted for in the draft 2024/2025 cycle.

Recommended Motion

Planning Advisory Committee recommends that Council:

- ***Maintain the current proposed Fundy Erosion Overlay policies and regulations; and***
- ***budget for new lidar to be acquired as part of the draft 2024/2025 budget cycle.***

Alternative Motion

Planning Advisory Committee recommends that Council:

- *amend the draft East Hants Official Community Plan to include new provisions for the Fundy Erosion Overlay Designations and Zones as outlined in the staff report presented to Planning Advisory Committee on April 18, 2023.*