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Item No. 13.1.1
Environment and Sustainability Standing Committee
August 1, 2024

TO: Chair and Members of Environment and Sustainability Standing Committee

FROM: Brad Anguish, Acting Chief Administrative Officer

DATE: June 14, 2024

SUBJECT: Existing and Planned Measures for Coastal Management

ORIGIN

March 19th, 2024 Regional Council motion (Item 16.2)

MOVED by Councillor Cuttell, seconded by Councillor Stoddard

THAT Halifax Regional Council direct the Chief Administrative Officer to provide an information report on existing and planned coastal protection measures that are designed to address development on vulnerable coastal properties and mitigate impact on places and services at risk from sea level rise and overland flooding.

MOTION PUT AND PASSED UNANIMOUSLY.

Not present: Mayor Savage, Councillor Russell

RECOMMENDATION

It is recommended that the Environment and Sustainability Standing Committee forward this report to Regional Council as an Information Report..

BACKGROUND

In 2019, the Nova Scotia Government passed the Coastal Protection Act (CPA) aimed at safeguarding the province's coasts. The CPA sought to prevent development and activities that could disrupt natural coastal processes or pose risks to residents and buildings due to sea level rise, coastal flooding, storm surges, and erosion. However, on February 26, 2024, the Province of Nova Scotia announced its decision not to proclaim the CPA introducing instead "The Future of our Coastline: a plan to protect people, homes, and nature from climate change" (the Plan)¹. The Plan outlines 15 actions to assist coastal property owners in decision-making and to support municipalities in addressing coastal protection. The Plan also aims to re-evaluate the cap on disaster relief funding to discourage repeated rebuilding in at-risk areas.

¹ Nova Scotia Department of Environment and Climate Change. (2024). *The Future of Nova Scotia's Coastline*. <https://novascotia.ca/coastal-climate-change/docs/coastline-plan.pdf>

The implementation of the Plan relies on a series of guidance documents, reports, toolkits, and an online flood map. In addition, it places emphasis on municipalities taking the lead in initiating efforts to regulate coastal protection and support communities in managing and adapting to coastal hazards.

HRM has been consistently developing evidence-based documentation and mapping tools to facilitate decision-making regarding the management of its 300 kilometers of coastline. This report offers an overview of initiatives in this area, along with plans aimed at strengthening HRM's role in protecting, restoring, and responsibly developing coastal communities and resources within the municipality.

DISCUSSION

Protecting residents from coastal hazards requires an integrated approach that is based on a thorough understanding of how coastal processes can pose risks. Additionally, it is essential for local government staff to improve their capacity to gather and analyze accurate data. This data is fundamental for making informed decisions about how to manage or upgrade existing infrastructure, where to build and how to design infrastructure that can withstand future challenges. Based on this, the Municipality has been undertaking several initiatives, as follows.

Updates to the Regional Plan

The Halifax Regional Municipal Planning Strategy (the 'Regional Plan') sets out a common vision, principles, and long-range, region-wide planning policies outlining where, when and how future growth and development should take place.

The Regional Plan is regularly reviewed, and the current review was initiated in 2020. A Draft Regional Plan was released for public consultation purposes in June 2023, and following further review, it is anticipated that the revised Regional Plan will be presented to Council for consideration and re-adoption in Summer 2024. The revised Regional Plan includes policies to strengthen coastal protection and climate change adaptation as well as broaden the regulatory scope of the plan around coastal protection. Amendments to the Regional Plan, approved by Council on Thursday, May 23, 2024 to accommodate the Housing Accelerator Fund, do not change any provisions relating to coastal zone protection.

Currently the Regional Plan provides direction for a minimum buffer of 20 metres along all watercourses (including the Atlantic Ocean) throughout the municipality, which may be increased through a secondary planning process. While the standard buffer is typically 20 metres plus a slope calculation in areas with higher grades, there are nuances in individual plan areas. For example, in the Regional Centre, the Harbour designation allows for less restrictions in the harbour and in the Eastern Passage/Cow Bay area there are more restrictions due to identified environmental sensitivities. The Regional Plan update will seek to generally increase the buffer as well as separate regulations into watercourse buffers and coastal buffers, while continuing to recognize existing unique approaches in community plans requirements.

The current Regional Plan establishes a vertical setback (minimum elevation for development), which prohibits all residential development on the coast within a 3.8 metre elevation above CGVD28² (3.2 m above CGVD2013). This elevation includes considerations for extreme water levels, sea level rise and some allowance for the impacts of waves and uncertainties with sea level rise projections. This value is based on the best science at the time and can be adjusted as more information becomes available.

The proposed Regional Plan includes policy support for several proposed amendments to the Municipality's land use by-laws, which will result in immediate changes to development regulations should they be adopted by Council. The proposed land use by-law amendments include:

² Canadian Geodetic Vertical Datum (CGVD): Height reference systems such as the CGVD2013 and the CGVD28 define heights with respect to mean sea level (MSL)

- Updating the required coastal elevation for new development to include residential, commercial and institutional main uses as well as updating the vertical standard from the Canadian Geodetic Vertical Datum (CGVD 28) to CGVD2013. The minimum development elevation under this new datum is 3.2 m.
- Defining a minimum 30 metre horizontal coastal buffer for development with restricted activities within the buffer; and
- Limiting development on islands and existing undersized lots which are prone to hazards such as storm surge and coastal erosion.

The proposed Regional Plan policy also sets direction to undertake future work, including the work outlined in this report. This proposed policy includes direction for:

- Updating topographic data and vulnerability maps and using the latest climate change projections to inform future amendments to planning documents, including land use by-laws to support long-term safety by further defining coastal buffers and elevations for development that consider coastal erosion, sea level rise, wave runup, and climate change where an updated system of measurement or methodology is identified to provide a reasonable level of safety.
- Considering the adoption of a coastal-specific adaptation policy using a PARAEBA (Protect, Accommodate, Retreat, Avoid or Ecosystem Based Adaptation) Framework or other suitable framework for climate change adaptation planning;
- Maintaining, protecting and/or restoring natural coastal ecosystems, encouraging use of nature-based and/or hybrid infrastructure on coastlines³, and minimizing the use of hard infrastructure on coastlines such as armour stone and seawalls through best management practices, public education, and guidelines.

Coastal Hazard Data Collection

Flooding and coastal erosion due to extreme water levels and strong waves are significant hazards throughout the coastline of HRM. In addition, sea levels have been rising globally and are projected to continue to rise due to climate change. Paired with extreme storm events and strong waves, coastal flooding and erosion can result in significant damage to coastal infrastructure, safety concerns, and flooding of property. Understanding the physical processes that may combine to produce hazardous conditions and mapping their extent is critical for coastal hazard assessments, coastal planning, policy development, infrastructure design, and ecosystem management. For this purpose, HRM has completed the following studies:

- **HRM Extreme Water Level Report (2022):** This project consists of a desktop review of extreme static water levels (tides, storm surge and sea level rise) and the latest projections of sea level rise. This information has been used to inform detailed flood mapping studies such as the Flood Hazard Maps for HRM, and ongoing studies and capital projects (described below)
- **Creation of Flood Hazard Maps for HRM (2024):** This project involves extensive and high-level pluvial, fluvial, and coastal spatial flood hazard maps for the entire HRM under multiple climate scenarios, recurrence intervals, and time frame combinations. The project provides an extensive set of flood mapping covering approximately 10,000 km of watercourse and waterbody length as well as over 300 km of coastline. The resulting maps allow for a broad awareness of potential locations at risk and can be used to identify areas where more detailed modelling may be needed and to guide decisions regarding infrastructure, emergency response, and regional planning where detailed information is not imperative.
- **Mapping of Wave Runup along the HRM coastline (ongoing):** Wave runup and overtopping are wave-induced flood hazards that occur along coastal areas where waves encounter the shoreline and break, resulting in an uprush of water. In many coastal floodplains, the process of high velocity

³ Nature-Based Solutions: nature-based solutions mimic natural processes or work in combination with traditional hard infrastructure (hybrid approach) to address climate hazards.

wave runup and overtopping puts residential and non-residential structures located above the storm surge levels along the shorelines at an increased risk of damage due to flooding and erosion. Wave runup can increase risk of flooding by up to 2 m above the combined storm surge and tidal levels. To identify areas under this additional risk, staff have initiated a project to map wave runup levels along the coastline of the municipality. The results of this high-level assessment can be used to update the regulation of vertical setbacks (minimum elevation to allow development) and identify areas where more detailed assessment may be required to refine land-use and coastal protection regulation, inform amendments to the Regional Plan, or to identify vulnerable infrastructure.

Analysis of Hazards

Baseline Climate Hazard Exposure Maps (2023): This project generated baseline climate hazard exposure maps to enable staff to make strategic, data-informed, and climate-aligned decisions around critical infrastructure prioritization, emergency management, and planning. The outputs of the analysis are a set of climate projections and associated maps that include extreme values for multiple indicators of six climate hazards: extreme heat, meteorological drought, extreme rainfall, extreme snowfall, extreme wind, and changing winter temperatures. Projections about changes in wind intensity will inform climate change considerations of wave action along HRM coasts.

Hazard, Risk and Vulnerability Assessment (HRVA) – Ongoing: The HRVA will allow for a better understanding of the number of hazards, risks and vulnerabilities that exist within our communities, with the scope of the assessment covering the entire geographic area of HRM, including coastal areas.

The assessment is inclusive of all natural, technological and human-induced hazards, for a total of 45 hazards that may require a disaster response or could potentially disrupt communities. Coastal flooding is considered one of a number of hazards that are likely to occur and cause damage to critical infrastructure and services.

The findings from the assessment will be used to initiate important discussions to determine unacceptable levels of risk. In particular, the HRVA will help advise HRM project planning as it pertains to identifying municipal critical infrastructure, updating the municipal Emergency Plan and identifying areas of high concern where mitigation measures may be appropriate, among other planning priorities. Findings from the assessment, in combination with findings of ongoing coastal studies (such as wave runup mapping) will also inform whether further amendments to the Regional Plan and supporting land use regulations are needed to enhance shoreline protection provisions in specific areas.

Capital Projects and Functional Assessments

The Municipality is developing several capital projects that aim to study and mitigate coastal damage along the shoreline. These projects include the following:

- **Shore Road:** Several sections along Shore Road are becoming increasingly damaged with the impacts of climate change. The ongoing “Shore Road: Building with Nature” project involves the construction of a nature-based approach for erosion mitigation along a 480 m stretch of road between Norman’s Lane and Oceanlea Drive
- **Purcells Cove between Keefe Drive and the north end of Ferguson’s Cove Road:** This road has a history of flooding and icing issues caused by inadequate drainage infrastructure and sections of the road are exposed to the impact of storm surges. Staff have commissioned a detailed study of flooding risks and mitigation measures along the road with design criteria based on the most recent projections of climate change, coastal modelling, and coastal risk assessment.
- **Point Pleasant Park:** Point Pleasant Park has seen considerable erosion and storm related damage. A consultant has been engaged for detailed design of shoreline improvements in Point Pleasant Park from Black Rock Beach to the Northwest Arm bluffs. The project is still in the data collection and modelling stage. Once this is completed, options for erosion mitigation will be assessed and selected for design.

- Regatta Point: Detailed design is ongoing for improvements of the Regatta Point trail. The erosion mitigation approach in this project includes a combination of rock revetments and living shorelines (salt marsh restoration).
- Dingle Seawall: Design has begun on the final phase of the Dingle Seawall replacement. Like the previous phases, this section will be constructed from granite blocks. The impact of sea level rise and wave action has been considered in the design.

Building Technical Capacity: Technical capacity in climate change adaptation, coastal management and planning and coastal engineering is key for the Municipality to effectively draft and implement policies and plans that reflect the latest science and best practices in coastal resilience and that reduce the risk to public safety. Staff are involved in the following initiatives:

- **Green Shores Local Government Working Group:** The Green Shores program is an initiative that encourages the implementation of coastal management principles for the preservation or restoration of healthy shore environments through a series of rating programs for waterfront or coastal property development. Staff have received training with the program and participate in the Green Shores for Local Governments in the Maritimes working group.
- **Resilient Infrastructure Standards Group:** Since 2022, HRM corporate structure includes the Resilient Infrastructure Standards (RIS) Group in Planning & Development, tasked with leading the development and implementation of policies and standards, designed to enhance the resilience of infrastructure, enabling it to withstand, adapt to, and recover quickly from adverse climate-related events. The group also provides project management or technical advice to capital projects in areas vulnerable to coastal and stormwater damage. The RIS Group collaborates closely with key stakeholders such as Halifax Water, Regional Planning, Environment & Climate Change (ECC), Public Works (PW), and Parks and Recreation. The group also collaborates with other municipalities facing similar coastal challenges.

FINANCIAL IMPLICATIONS

Individual initiatives described herein have either been already accounted for in the approved budget or can be completed using staff resources under the approved 2024/25 operating budget.

RISK CONSIDERATION

Informing the Regional Council about ongoing initiatives in coastal adaptation is fundamental for highlighting our progress and establishing a foundation for future efforts to enhance HRM's resilience to coastal hazards. Not sharing this information increases the risk of work duplication and the persistence of silos, which could undermine the effectiveness of our current and future coastal and ecosystem management strategies. Effective communication is necessary to protect our residents and improve the resilience of our coasts.

COMMUNITY ENGAGEMENT

No community engagement was required nor conducted as part of this report. However, several of the projects named underwent project specific community engagement, such as the Regional Plan, the HRVA project, and the Shore Road: Building with Nature project.

ENVIRONMENTAL IMPLICATIONS

Informing the Regional Council about ongoing coastal adaptation initiatives will enhance HRM's ability to foster ecosystem restoration and implement nature-based solutions. This approach will strengthen the resilience of our coasts and communities against the impacts of climate change.

LEGISLATIVE AUTHORITY

Municipal Government Act S.N.S. 1998, c. 18, ("MGA") Statement of Provincial Interest Regarding Flood Risk Areas, Schedule B made under Section 193 and subsections 194(2) and (5) provides:

For Flood Risk Areas that have been mapped under the Canada-Nova Scotia Flood Damage Reduction Program planning documents must be reasonably consistent with the following:

- a) within the *Floodway*,
 - i. development must be restricted to uses such as roads, open space uses, utility and service corridors, parking lots and temporary uses, and
 - ii. the placement of off-site fill must be prohibited.

- b) within the *Floodway Fringe*,
 - i. development, provided it is flood proofed, may be permitted, except for
 - (1) residential institutions such as hospitals, senior citizen homes, homes for special care and similar facilities where flooding could pose a significant threat to the safety of residents if evacuation became necessary, and
 - (2) any use associated with the warehousing or the production of hazardous materials,
 - ii. the placement of off-site fill must be limited to that required for flood proofing or flood risk management.

The Halifax Regional Municipality Charter, S.N.S. 2008, c.39 subsection 227(1), 227(4), 229(1) and 235(5) provide:

227 (1) The Council shall adopt one or more municipal planning strategies in accordance with the requirements of this Section.

...

(4) A municipal strategy must:

- (a) be reasonably consistent with every statement of provincial interest; and
- (b) fulfill the minimum planning requirements. 2018, c. 39,

229 (1) A municipal planning strategy must include statements of policy respecting

- (a) the objectives of the Municipality in respect of its physical, economic and social environment;
- (b) the future use, management and development of lands within the Municipality;
- (c) the implementation and administration of the municipal planning strategy and the periodic review of the municipal planning strategy, its implementing land-use by-law and the extent to which the objectives set out in the municipal planning strategy are achieved;

235 (5) Where a municipal planning strategy so provides, a land-use by-law may

...

- (p) prohibit development on land that

- (i) is subject to flooding or subsidence,
- (ii) has steep slopes,
- (iii) is low-lying, marshy, or unstable,
- (iv) is otherwise hazardous for development because of its soil conditions, geological conditions, undermining or topography,
- (v) is known to be contaminated within the meaning of the Environment Act, or
- (vi) is located in an area where development is prohibited by a statement of provincial interest or by an enactment of the Province;

ALTERNATIVES

None has been identified.

ATTACHMENTS:

- HRM Extreme Water Level Report (CBCL, 2022)
- Creation of Flood Hazard Maps for HRM (CBCL, 2024)
- Baseline Climate Hazard Exposure Maps (WSP, 2023)

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