Committee of the Whole
AGENDA
January 10, 2024, at 6:00 p.m.

"I/We would like to acknowledge that we are in Mi'kma'ki (MEEG-MA-GEE), the traditional (or ancestral) territory of the Mi'kmaq People."

1. CALL TO ORDER

2. PRESENT

3. REGRETS

4. ADDITIONS TO AGENDA

5. APPROVAL OF AGENDA

6. APPROVAL OF COMMITTEE OF THE WHOLE MINUTES:

i. Committee of the Whole – December 6, 2023 **(TAB 1)**

7. PRESENTATIONS:

i.

8. PUBLIC INPUT

9. NEW BUSINESS:

i. Annapolis Royal and Engage Nova Scotia **(TAB 2)**
ii. Uniting Tradition with Tomorrow – proposed Marketing and Economic Development Plan for the Town from MEDEC **(TAB 3)**
iii. Annapolis Royal Flood Risk Assessment and Adaptation Concepts – draft report December 31, 2023 **(TAB 4)**
iv. Request for staff report on condition and future of Town Chain of Office

10. UNFINISHED BUSINESS:

i. Environment Advisory Committee Policy 2023-10 **(TAB 5)**
ii. Board of Police Commissioners By-law **(TAB 6)**
iii. Town Real Estate Policy 2023 #2024-01 **(TAB 7)**

11. CORRESPONDENCE:

i. Communities in Bloom **(TAB 8)**

12. ROUND TABLE:

i. Mayor Boyer **(TAB 9)**

ii. Deputy Mayor Tompkins
iii. Councillor Hafting
iv. Councillor Sanford
v. Councillor Wear

13. IN-CAMERA:
Under Section 22(2) of the *Municipal Government Act*:

Approval of Minutes:
i. Committee of the Whole December 6, 2023, In-camera **(TAB A)**

Business Items:
i. Labour relations and contract negotiations **(TAB B)**
ii. Personnel matters

14. ADJOURNMENT

NEXT MEETINGS:

Planning & Heritage Advisory Committee	Jan 8 @ 9:00 am
Marketing and Economic Development	Jan 9 @ 6:00 pm **Council are invited to attend the Twinning Visit 0f 2023 Presentation – MEDC 6:00 pm*
Board of Police Commissioners	Jan 10 @ 12:00 pm
Traffic Flow Advisory Committee	Jan 11 @ 1:00 pm
Environment Advisory Committee	Jan 12 @ 9:30 am
Council	Jan 24 @ 6:00 pm
Committee of the Whole	Feb 7 @ 6:00 pm

Committee of the Whole
Unapproved Minutes
December 6, 2023, at 6:00 pm

1. **Call to Order**	Deputy Mayor Tompkins gave the land acknowledgment and called the meeting to order at 6:00 pm.
2. **Present**	Mayor Boyer, Deputy Mayor Tompkins, Councillor Sanford, Councillor Hafting, Councillor Wear, CAO Millett-Campbell, ALC Noah Scanlan (left at 6:40 pm), and Recording Secretary Kim Dunning
3. **Regrets**	
4. **Additions to the Agenda**	Correspondence: ii. Gerard Boyer – Acadian Family Reunions In-camera Business items: iv. Labour relations and contract negotiations
5. **Approval of the Agenda**	**MOTION #CoW2023-12-06-01** It was regularly moved and seconded to approve the agenda with additions. **Motion carried.**
Edits to the Minutes	Couple of typos
6. **Approval of the Minutes**	**MOTION #CoW2023-12-06-02** It was regularly moved and seconded to approve the minutes of November 1, 2023 with corrections. **Motion carried.**

7. PRESENTATIONS
   Noah Scanlan made a 'Blue Route Bicycle Presentation' to Council. The name of the project has now been changed to Core Active Transportation Network. The idea is to separate multi-use pathways to provide a designated space for walking, rolling, and cycling. ALC Scanlan explained that this is only a draft, and any changes can be made if required. He also said that he could be contacted if there were any further questions that needed answering.

8. PUBLIC INPUT
   None

9. NEW BUSINESS:

   i. Community Climate Capacity Program
   CAO Millett-Campbell has advised that the County Annapolis Inter-Municipal Working Group is applying for funding for a three-year position to work on a joint climate action plan. CAO is currently working on the grant and is applying for a three-year position. She will need a letter of support to accompany the application.

   MOTION #CoW2023-12-06-03
   It was regularly moved and seconded to recommend to Council that a letter be prepared to demonstrate municipal support for our Community Climate Capacity application.
   Motion carried.

   ii. Change January 2024 Meetings
   CAO Millett-Campbell has requested that the Committee of the Whole meeting scheduled for January 3, 2024 be moved to January 10th. Council supports this change

and will review moving the Council meeting scheduled for January 17, 2024 at the next Council meeting on December 20.

iii. Nova Scotia Power Meeting Tentative Date January 23, 2024
CAO Millett-Campbell had a discussion with Emily MacNeill from Nova Scotia Power, and they would like to give a presentation on their plans for the building at 236 Prince Albert Road to Council. The presentation to Council will be held on January 23 at 6:00 pm.

iv. Policy on Snow and Ice Control
Council reviewed the policy, and recommended the following changes:

- Include Fortier Mills Lane to route
- Change *Public Works Superintendent* to *Director of Municipal Operations and Development*
- Change *These records should be retained* to *These records will be retained*

All changes will be ready for Council to review at the next Council meeting.

MOTION #CoW2023-12-06-04
It was regularly moved and seconded to recommend to Council approval of undated Snow and Ice Control Policy #2023-09 with the changes. **Motion carried**.

v. Valley Waste Temporary Borrowing Resolution (TBR)
CAO Millett-Campbell advised that in September the current staff at Valley Waste sent the TBR to the Town to approve. Valley Waste have advised the CAO that they sent the wrong document for approval. The correct one has been sent so Council needs to rescind MOTION C2023-09-20-08 and approve the new document.

MOTION #CoW2023-12-06-05
It was regularly moved and seconded to recommend to Council rescind of MOTION C2023-09-20-08 for Council to approve the temporary borrowing resolution for Valley Waste with the Town of Annapolis Royal's share of the 2023-2024 capital budget at 1.31% in the amount of $7,244. **Motion carried.**

MOTION #CoW2023-12-06-06
It was regularly moved and seconded to recommend to Council approval of the Temporary Borrowing Resolution for Valley Waste with the Town of Annapolis Royal's share for the 2023-2024 capital budget at 1.31% in the amount of $7,244. **Motion carried.**

10. UNFINISHED BUSINESS:
    i. Wharf Repairs Update
    CAO Millett-Campbell reported that Interim Director of Municipal Operations and Development Knox has spoken with Digby Wharf staff and was advised that the barriers there are not available as this was included in the engineering work when the wharf was built. They did suggest another supplier and costs have been included in the Request for

Decision (RFD). Due to the high costs of this new option, it was suggested that rocks to be installed now as this is a safety issue, and the newer option can be reviewed when the updated costs for installation have been received by the Town. The previous motion to install half-height barriers that was tabled at the previous meeting can be removed.

MOTION #CoW2023-12-06-07
It was regularly moved and seconded to recommend to Council approval of the installation of half-height barriers and parking curbs to replace the wooden curbs that have rotted due to age. **Motion failed. Five nay votes**

MOTION CoW2023-12-06-08
It was regularly moved and seconded to recommend to Council approval of the installation of boulders in front of the wooden curbs that have rotted due to age.
Motion carried.

11. CORRESPONDENCE

i. Marine Spatial Planning (MSP) and Nova Scotia Municipalities
The Environment Advisory Committee asked for this to be shared with CoW. It was recommended that this report be shared with Interim Director of Municipal Operations and Development Knox.

ACTION: Send Marine Spatial Planning (MSP) and Nova Scotia Municipalities document to Director of Municipal Operations and Development Knox
OWNER: CAO Millett-Campbell
DATE: As soon as possible

ii. Gérard Boyer – Acadian Family Reunions
Council recommended that this correspondence to go to the Marketing and Economic Development Committee (MEDC) for their review and they can respond directly to him.

ACTION: Add to MEDC agenda
OWNER: Kim Dunning
DATE: Before next MEDC meeting on December 11, 2023

12. ROUNDTABLE:

i. Mayor Boyer
Included as Appendix 1.
Mayor Boyer confirmed that Scotiabank has received the letter from the Town regarding the closure. The letter regarding the move of the Ferry Fundy Rose to the Magdalene Islands is no longer required as the move will not be happening now.

ii. Deputy Mayor Tompkins
Oaklawn Farm Zoo is closing due to the retirement of the owners. Excited to hear about the potential development of nursing homes in the area.

iii. Councillor Hafting

Thoroughly enjoyed the Christmas Markets on Saturday. Was great to see the Town Crier traveling on the bus welcoming people.

iv. Councillor Sanford
Attended the Remembrance Day Service and it was well attended. Was unable to attend the Parade of Lights and Fireworks but heard they were a success.

v. Councillor Wear
Friends of the Library book sale was a huge success.

vi. CAO Millett-Campbell informed all that James Barteaux (Jimmy) has resigned from the town and wanted to wish him all the best for his future endeavours.

MOTION #CoW2023-12-06-09
It was regularly moved and seconded to move in camera at 7:36pm. **Motion carried.**

MOTION #CoW2023-12-06-11
It was regularly moved and seconded to move out of camera at 8:57 pm. **Motion carried.**

MOTION #CoW2023-12-06-12
It was regularly moved and seconded to recommend to Council the appointment of Ken Knox as the Director of Operations and Development as of December 30, 2023. **Motion carried.**

13. NEXT MEETING: January 10, 2024, at 6:00 pm

14. ADJOURNMENT
The meeting was adjourned at 8:58pm.

_____ _____

Michael Tompkins, Deputy Mayor Kim Dunning, Recording Secretary

Mayor's Roundtable Report Dec 4, 2023

Nov 22, 2023

Met with Town resident looking for affordable housing in a quieter environment in Annapolis Royal or Digby.

Nov 23, 2023

Attended Sea Wall presentation by Matt Delorme of AIMN. About 25 people were in attendance (about the same number as the January session).

Nov 24 &25, & Dec 1

Attended Town tree lighting on Nov 24. Attended Victorian Christmas to play the harpsichord in new Mayor's cape (gift to the Town from Mille Hawes). The Dec 1 event was for school children.

Nov 27, 2023

Attended virtual meeting with Roswall, a green energy producer, along with CAO and Bill Crossman. CAO Dan Roscoe recommended not giving up on pursuing the NSURB feed-in-tariff program for tidal projects.

Attended REMO meeting at County offices. Reviewed budget and dates for 2024 meetings.

Dec 4, 2023

Drove to Middleton to pick up NSCC LPN nursing students involved in placements in Annapolis Royal who had not been able to make arrangements for transportation (mornings only) to Annapolis Royal for 7 days during the first two weeks of December. Placements were cancelled for December 4 due to the storm. Jim Medill has offered to help get the students to their placements for the remaining 6 days needed. The transportation issue has been referred to the Health Foundation who will raise it with the NSCC.

To attend 5 year budget meeting and MEDEC meeting rescheduled to Dec. 4.

Continuing to assist the CAO with grant applications:

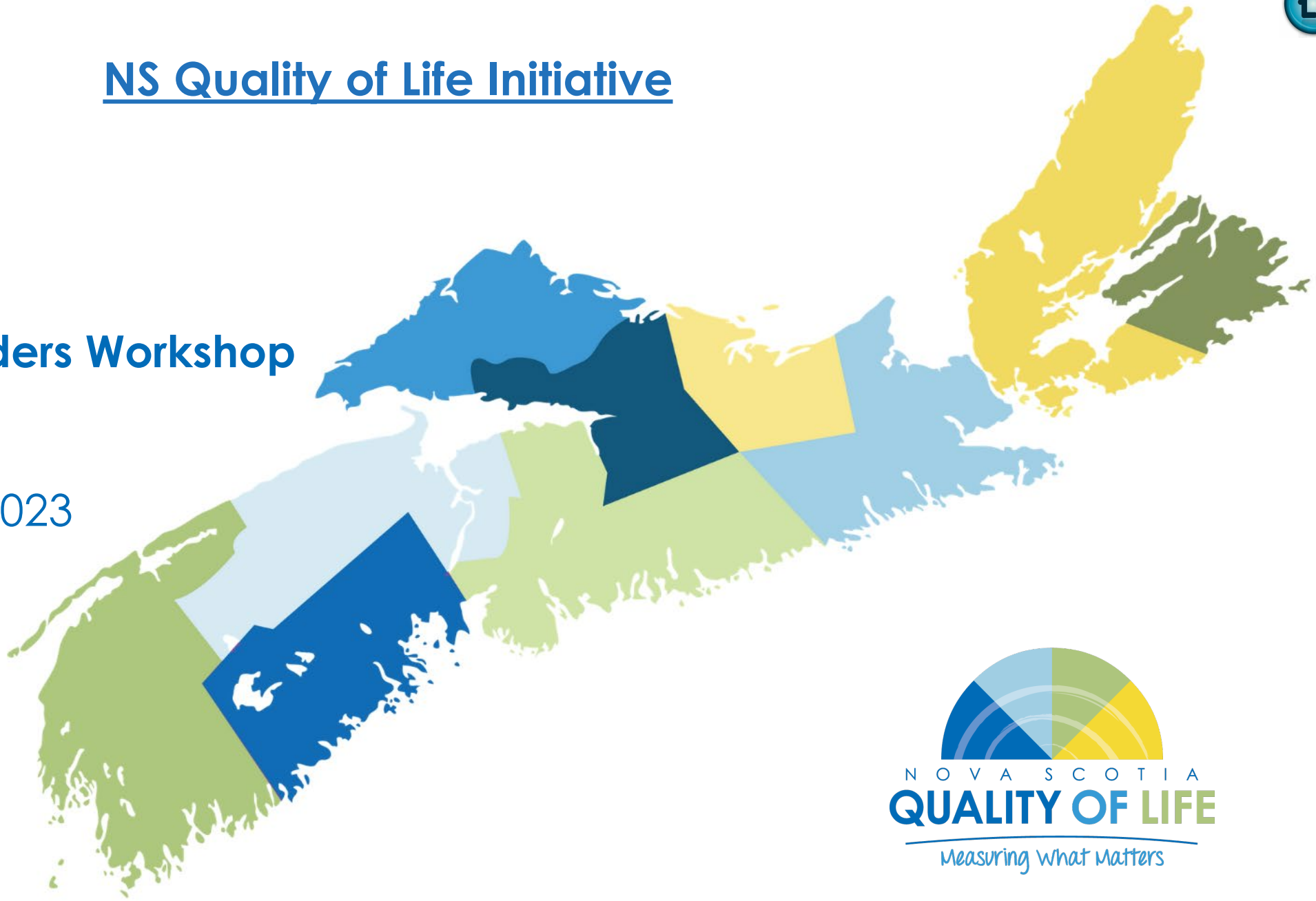
Project	**Potential Funding Source**	**Status**
Tidal Pilot Project Feasibility Study	Sustainable Communities Challenge Fund (Province of NS)	Application for $105,808 filed Nov 29, 2023/**decision expected March/April 2024**
	FCM Green Funds (Federation of Canadian Municipalities)	Pre-screening application 57% complete (no deadline)
	Net Zero Energy Concepts and Technical Resources Program (Province of NS))	Application for $50,000 submitted Nov 21, 2023/**decision expected Dec 23, 2023**
Regional infrastructure capacity study	Capacity Building Stream and Indigenous Engagement Grant	Inter Municipal Working Group has been advised to go through existing funding programs.
Sea wall	Climate-Resilient Coastal	Determined not to be a good fit

	Communities Program (NRCan)	for feasibility study. Deferred to receipt of 2nd draft sea wall report expected on Dec 20, 2023
Second water source	Municipal Capital Growth Program	Deadline is Dec 13, 2023

NS Quality of Life Initiative

Municipal Leaders Workshop

December 4, 2023



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NOVA SCOTIA QUALITY OF LIFE
Measuring What Matters

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Familiarity Questions (Use Chat)

Economic and population growth

Quality of life in community

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2019 Spring Quality of Life Survey

- **Engage NS** partnered with **Canadian Index of Wellbeing** (Univ of Waterloo)
- **80,000** households received an invitation in their mailbox to participate in a **230-question survey**
- **Responses (13,000 province-wide)**
- **Weighted by age, sex and region**
- **Largest single survey on Wellbeing in Canada**

2019 - PARTNERS

- All Governments
- All Sectors
- All Regions

2019 - LOCAL LEADERSHIP TEAMS

Largest Single Quality of Life "Census" in Canada

(U of Waterloo Ethics Approval)
(StatsCan Reviewed)

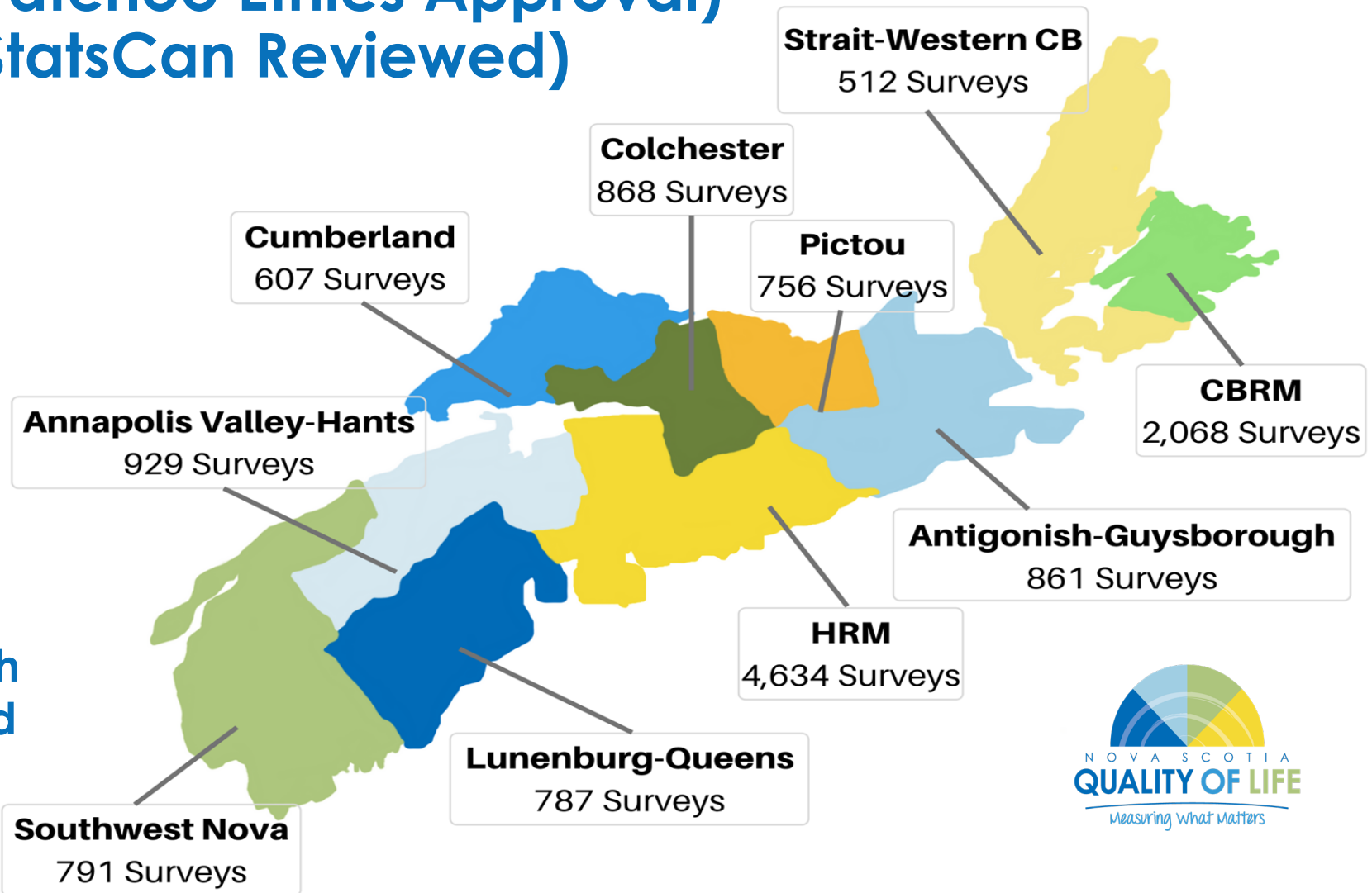
12,827 Responses (Pre-Covid)

230 Individual questions

16 years-old and above

1% Margin of Error (**weighted**)

Data Sharing Agreements with Governments, Universities and Municipalities



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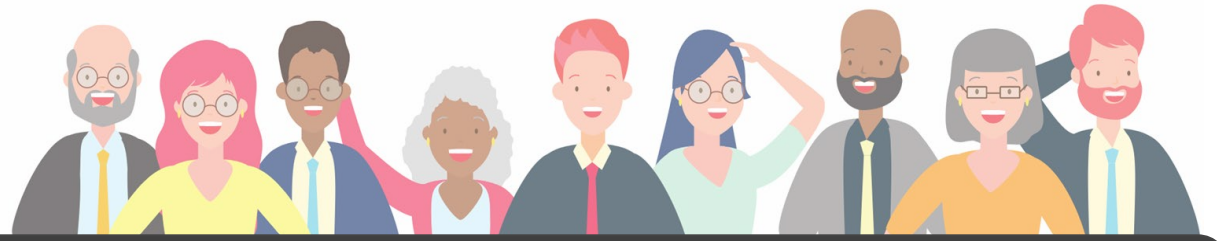
Measuring What Matters

WHAT'S POSSIBLE?

NS Quality of Life Initiative



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By Region | Age | Own/ rent/lease | Income level | Time in community | Level of education | Living arrangement | Sex at Birth | Disability | Race/Ethnicity

Community Vitality

- Sense of belonging to community
- Number of close friendships
- Social isolation and trust in others
- Inclusiveness of community
- Trust in neighbours, media, business and NGOs
- Volunteering
- Feeling of safety in neighbourhoods
- Experiences of discrimination

Healthy Populations

- Mental and physical health
- Access to, and quality of, health care
- Level of exercise
- Ate less and less nutritiously
- Substance use and gambling activity

Living Standards

- Could not pay bills on time
- Could not buy necessities
- Access to, and quality of internet
- Overall work satisfaction
- Satisfaction with job, salary, security, and promotion opportunities
- Flexible work hours and schedule
- Under-employment relative to training
- Effects of job on personal health and wellbeing

Environment

- Perceptions of water quality in community
- Personal commitment to environmental protection and energy conservation
- Access to, and quality of, natural environment
- Eco-friendly practices
- Purchase of local foods

Democratic Engagement

- Trust in local, provincial, and federal government
- Confidence in police, justice, schools and health care
- Participation in public meetings
- Participation in advocacy

Leisure and Culture

- Access to libraries and learning institutions
- Participation in recreation, leisure, sports, and hobbies

Education

- Availability of adult education
- Affordable education
- Use of retraining opportunities

Time Use

- Time pressure for sleep, socializing, creativity, and outdoors
- Time spent caring for dependent children and adults

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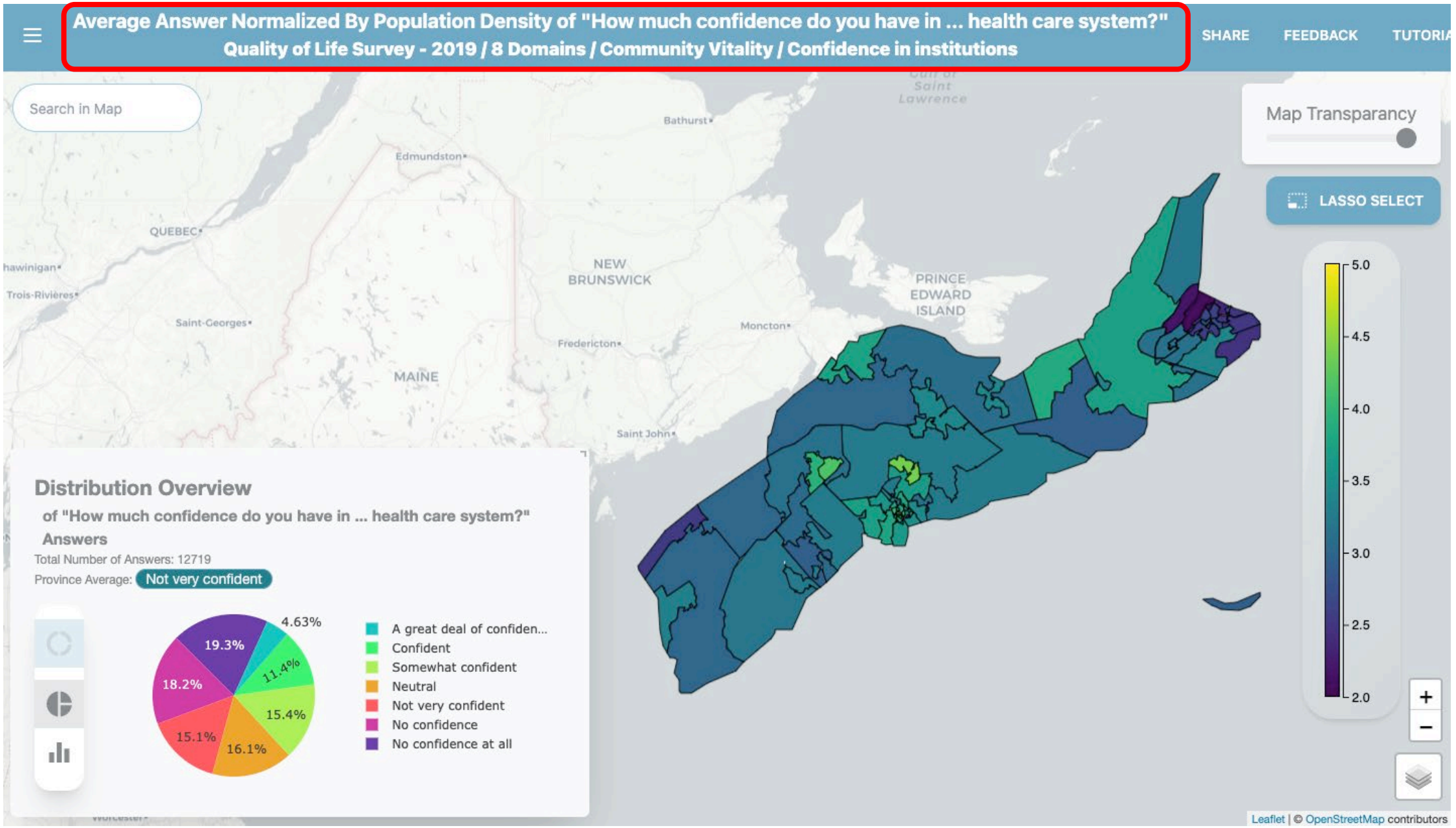
FINDINGS AND TOOLS DEMO

(FACULTY OF COMPUTER SCIENCES – DALHOUSIE UNIVERSITY - 2022)

ellbeing Mapping Tool (2022 Launch) - (Dalhousie Computer Scientists and Engage)



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First Pause for Questions

WELLBEING ANALYSIS TOOL (2022 Launch)

Domain	Question	CBRM Overall	CBRM with income <$40k	CBRM 16-35 Adults	CBRM Over 65 Adults	CBRM Single Parents	CBRM with a Disability
Living Standards	How often in past year: I could not pay my bills on time	-0.02	-0.42	-0.58	0.25	-0.62	-0.20
	How often in past year: I could not pay my mortgage or rent on time	-0.04	-0.53	-0.66	0.17	-0.62	-0.18
	How often in past year: I ate less because there was not enough food or money for food	-0.02	-0.44	-0.40	0.04	-0.42	-0.18
	How often in past year: I could not afford to purchase nutritious foods	-0.04	-0.53	-0.54	0.07	-0.56	-0.24
	How often in past year: I use a local food bank	-0.05	-0.37	-0.17	-0.08	-0.30	-0.06
	How often in past year: I could not afford to pay for transportation to get to where I needed	-0.06	-0.51	-0.27	-0.04	-0.52	-0.19
	How often in past year: I did not have enough money to buy the things I wanted	-0.02	-0.42	-0.68	0.19	-0.49	-0.18
	How often in the past year: I did not have enough money to buy the things I needed	-0.07	-0.59	-0.43	0.05	-0.61	-0.26

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Second Pause for Questions

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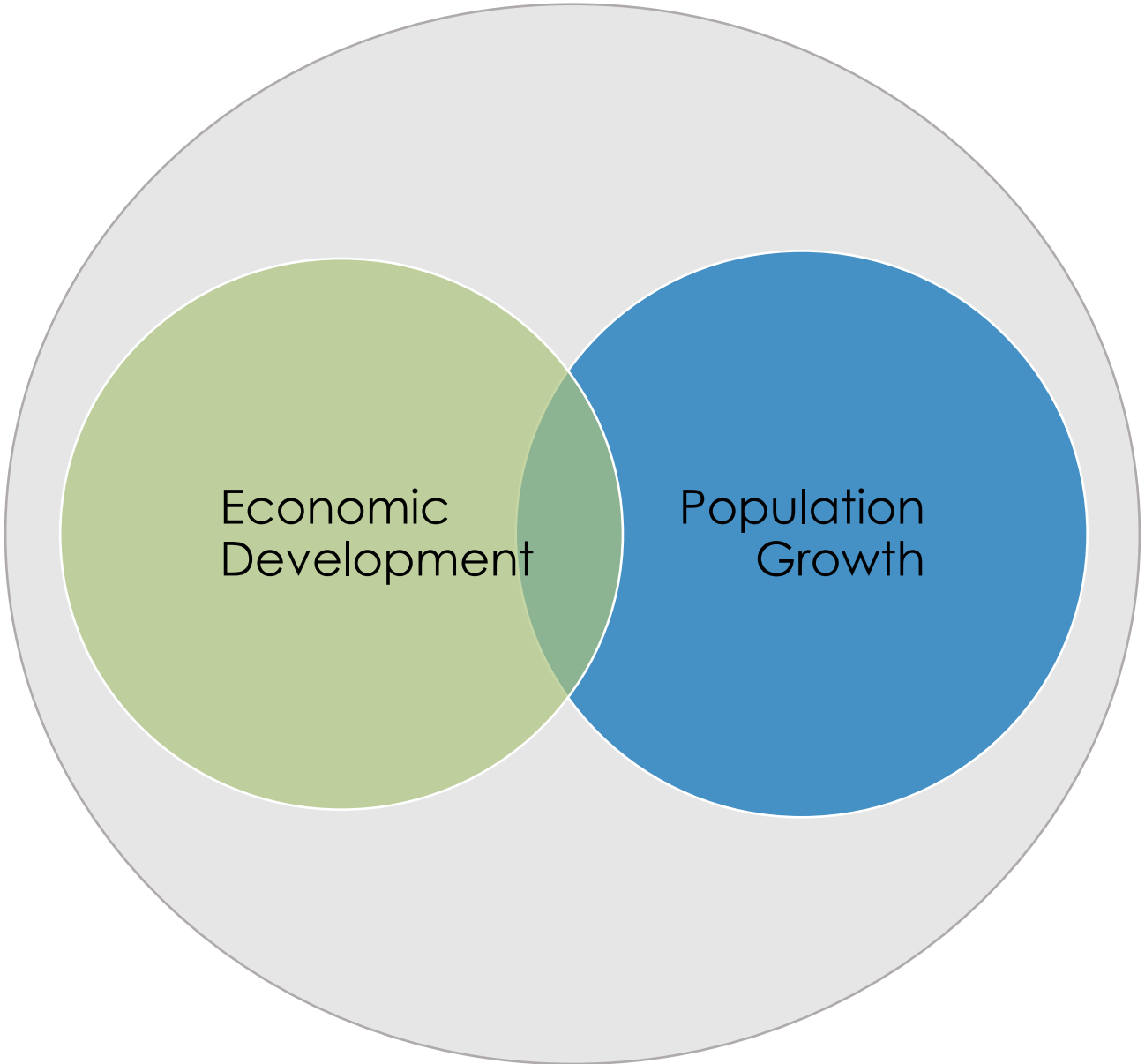
Cape Breton Regional Municipality
Sample Use Case

Cape Breton Regional Municipality
Initial Strategic Vision, 2022-2023



Notables for Older Adults IN CBRM

Assets

- Work life balance
- Time for others
- Time for own wellbeing
- Time for essential daily routines
- Able to pay bills on time
- Sense of Community
- Satisfied with life
- Infrequent experiences of discrimination
- Educational opportunities exist nearby

Concerns

- Low perceptions of health care services
- Infrequent use of sport and recreation facilities
- Low trust/confidence in others/institutions
- Poor perceptions of environment
- Infrequent environment friendly practices
- Infrequent use of public library

Notables for Adults 16-35 in CBRM

Assets

- Use of sport and recreation facilities
- Physical activity participation
- Positive perceptions of job promotion prospects

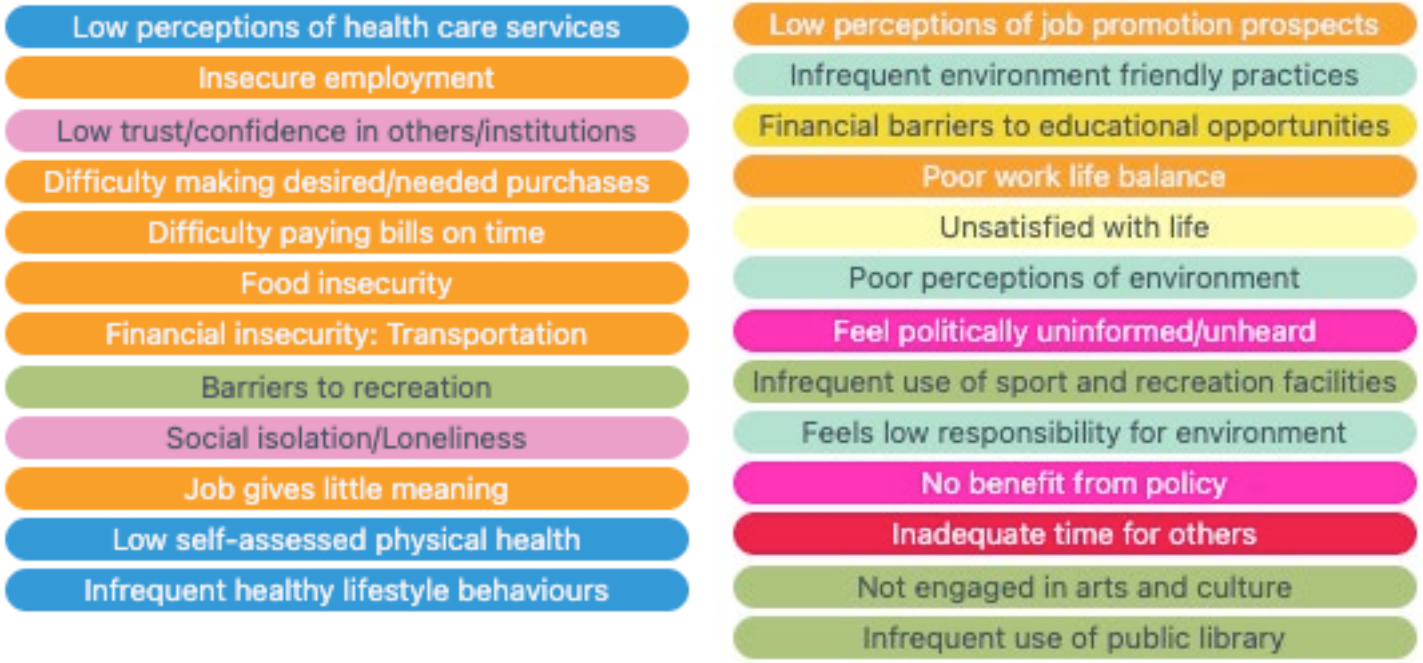
Concerns

- Inadequate time for own wellbeing
- Inadequate time for essential daily routines
- Social isolation/Loneliness
- Low perceptions of health care services
- Inadequate time for others
- Low trust/confidence in others/institutions
- Difficulty making desired/needed purchases
- Difficulty paying bills on time
- Low self-assessed mental health
- Unsatisfied with life
- Financial barriers to educational opportunities
- Infrequent environment friendly practices
- No benefit from policy
- Barriers to recreation
- Food insecurity
- Childcare not available at recreation facilities
- Feel politically uninformed/unheard
- Poor support and services for families
- Infrequent healthy lifestyle behaviours
- Rarely buy local
- Poor work life balance
- Educational opportunities don't exist nearby
- Feels low responsibility for environment
- Financial insecurity: Transportation
- Experiences of discrimination
- Poor perceptions of environment
- Insecure employment
- Little leisure time at home
- Secure employment
- Infrequent use of public library
- Not engaged in arts and culture

Notables for Households with less than 40K annual income in CBRM

Assets

Concerns



Notables for Single Parents in CBRM

Assets

- Close personal relationships
- Use of sport and recreation facilities
- Infrequent experiences of discrimination

Concerns

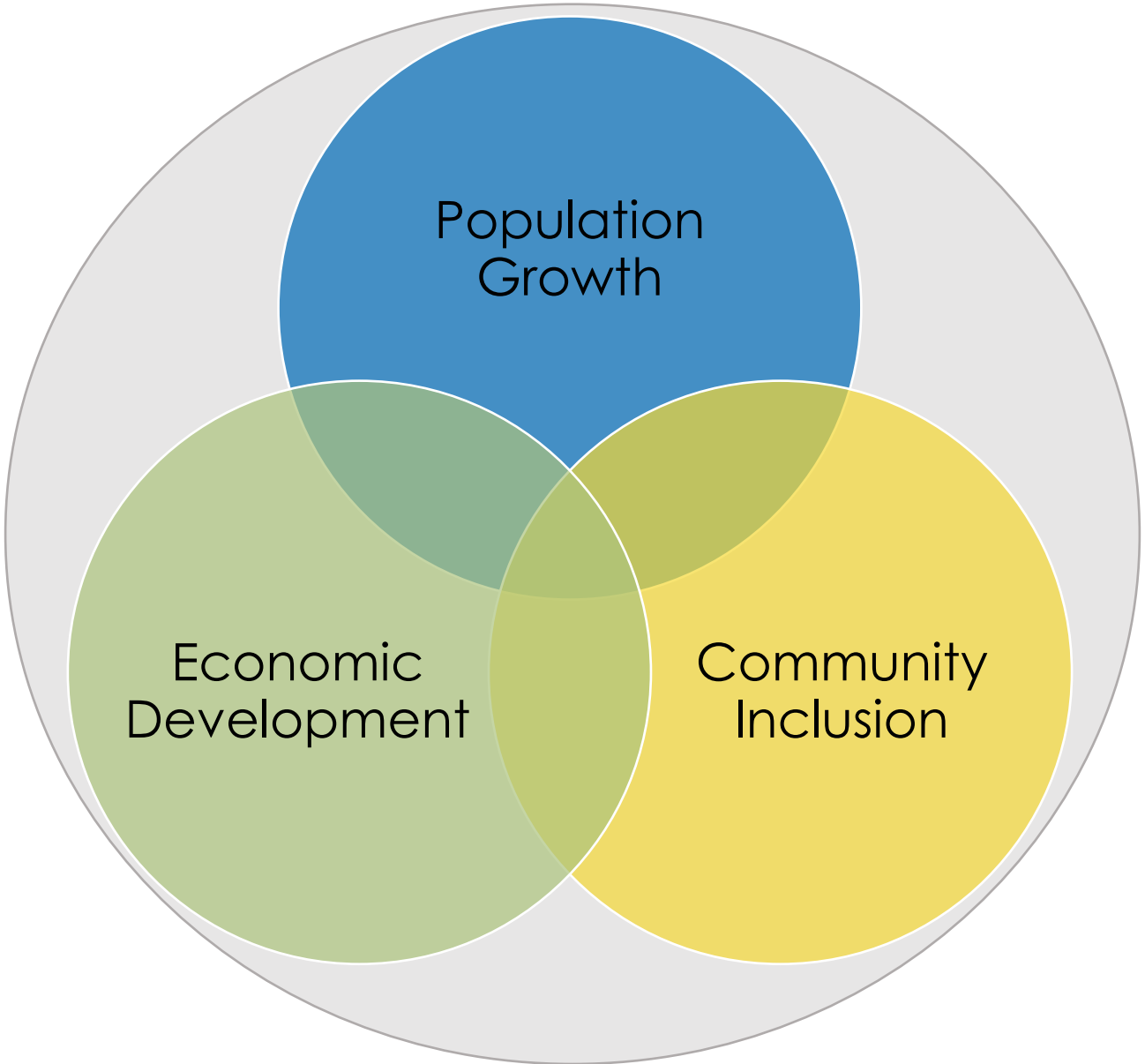
- Inadequate time for others
- Low perceptions of health care services
- Difficulty paying bills on time
- Social isolation/Loneliness
- Difficulty making desired/needed purchases
- Inadequate time for own wellbeing
- Food insecurity
- Inadequate time for essential daily routines
- Low trust/confidence in others/institutions
- Poor perceptions of environment
- Financial insecurity: Transportation
- Infrequent environment friendly practices
- Infrequent healthy lifestyle behaviours
- Barriers to recreation
- Unsatisfied with life
- Infrequent use of public library
- Financial barriers to educational opportunities
- Insecure employment
- Feels low responsibility for environment
- Feel politically uninformed/unheard
- Educational opportunities don't exist nearby
- Childcare not available at recreation facilities
- No benefit from policy
- Poor work life balance
- Low perceptions of job promotion prospects
- Rarely buy local
- Not engaged in arts and culture
- Feeling unsafe in neighbourhood

Notables for those living with a disability in CBRM

Assets

Concerns

Cape Breton Regional Municipality
Revised Strategic Vision
(Community Inclusion Workshop May 10th 2023)



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Next Steps

Three Task Forces Struck

1. Affordable Housing and Homelessness
2. Youth and Family Recreation
3. Transit

Workshop

"Deeper Dive" and "First Voices" in January

Notables for people with low life satisfaction in CBRM

Assets

Concerns

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TESTIMONIAL

"If you look at the Strategic Vision before Engage Nova Scotia started working with CBRM Council, compared to now, you can see what a long way we've come to making social inclusion a major part of our plan going forward. It really shows the impact of having the depth and breadth of data that Engage is able to provide. I am grateful to Engage for this. It really feels like we are heading in a direction where no one will be left behind when making municipal decisions."

Mayor Amanda McDougall, Cape Breton Regional Municipality.

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IMPLICATIONS

- HYPER-LOCAL
- INTERSECTIONAL
- NIMBLE

Cost Savings Because spending is more targeted

- Planning
- Budgeting
- Measuring
- …and more

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THird Pause for Questions

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Future Plans

Next Quality of Life Survey

- **100,000** households
- **Pre and Post Pandemic** comparisons
- **Refresh and repeat questions** to reflect new priorities
- Participation of **"hard to reach communities"** prioritized
- Analysis at fingertips, **in tools within a few months**

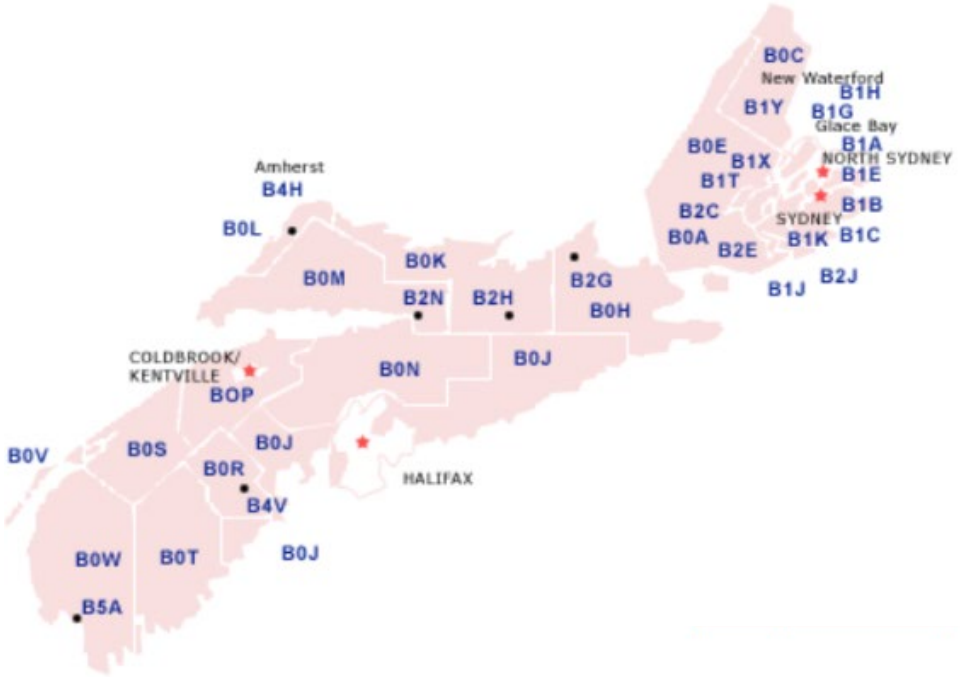
HOW CAN MUNICIPALITIES BENEFIT AND SUPPORT

1. IDENTIFY A STAFF PERSON TO WORK WITH US AND CONTACT RYLEY (rurban@engagenovascotia.ca)
2. PREPARE FPR AND PROMOTE PARTICIPATION IN THE SURVEY TO ALL RESIDENTS IN 2024
3. ENSURE RESIDENTS WHO ANSWER SURVEYS LESS OFTEN UNDERSTAND THE VALUE TO THEM
4. CONTRIBUTE FINANCIALLY TO THE COST OF THE SURVEY (50¢/resident)
5. SUGGEST NEW QUESTIONS FOR 2024
6. START IMAGINING CBRM-LIKE POSSIBILITIES
7. START IMAGINING ”UNIQUE-TO-YOU” NEEDS/POSSIBILITIES
8. REACH OUT TO ENGAGE NS WITH QUESTIONS, REQUESTS AND SUGGESTIONS (https://engagenovascotia.ca)

PLANNED DATA TOOLS – "U of Waterloo, Mapping Project"

Current

- FSA (First 3 digits of postal code)
- 10 Functional Economic Regions



Future

- Municipalities
- Rural/Urban/Suburban/Town
- Neighbourhood
- Health Zones
- MLA Constituencies
- School Board Zones

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Connections to Related Initiatives

THE NOVA SCOTIA QOL INITIATIVE IS LEADING "WELLBEING" DISCUSSIONS NATIONALLY AND INTERNATIONALLY

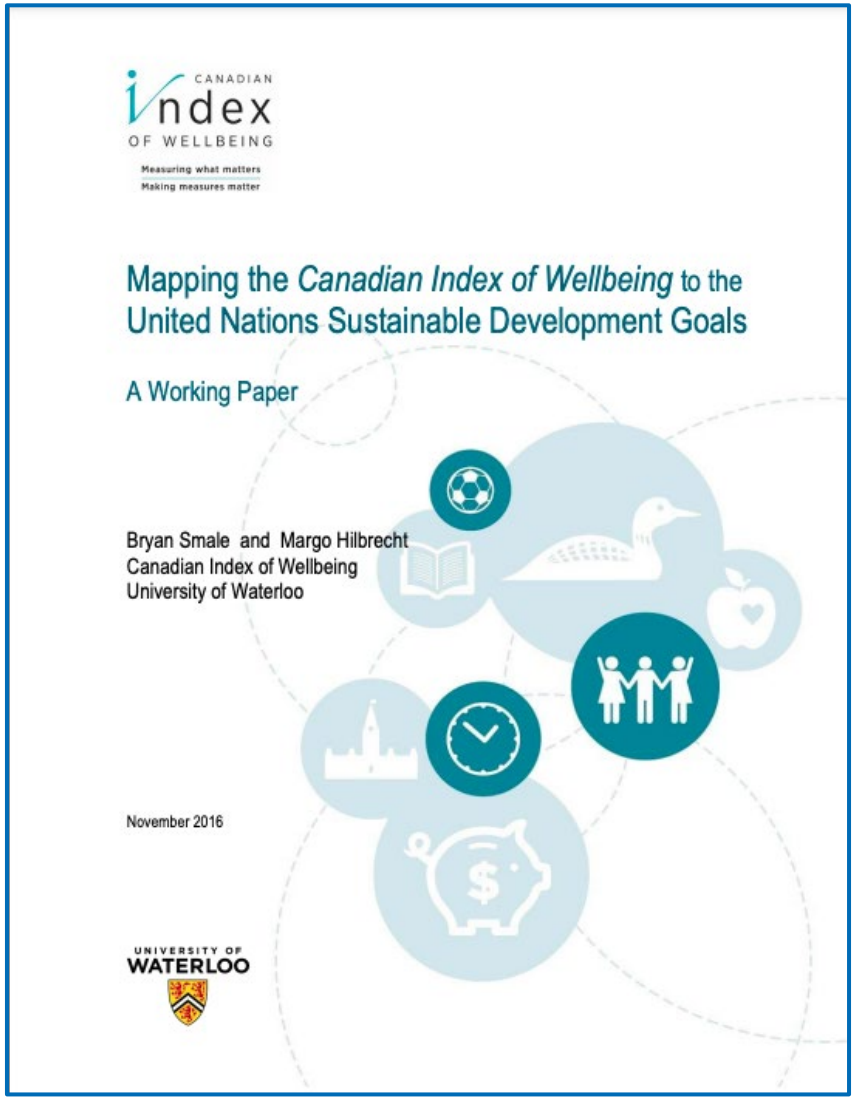
OUTSIDE CANADA

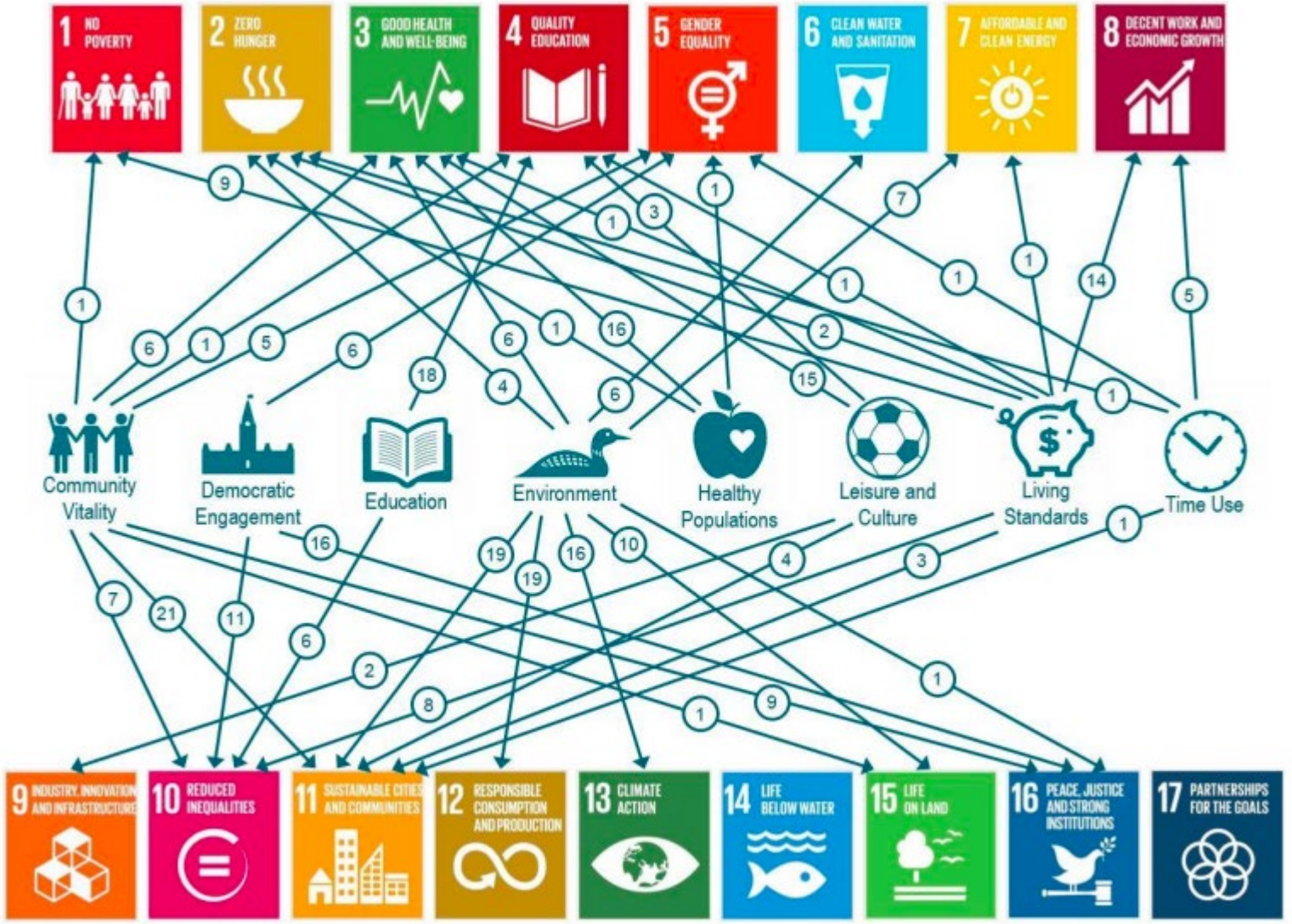
- Robert Wood Johnston Foundation, Carnegie Foundation (UK),
- OECD (Better Life Index)
- Office of Mayor of NYC
- We All America & New America
- Club of Rome (Earth 4 All)

CANADA

- Statistics Canada, Treasury Board, Dept of Finance, PHAC, ESDC, Infrastructure Canada
- Canadian Wellbeing Knowledges Network
- Sustainable Development Goals (UN SDGs)

Connection Between the SDGs and NS Quality of Life Initiative





NOVA SCOTIA
QUALITY OF LIFE
Measuring What Matters

Your Municipality and our Province is positioned to be a leader!

Canadian Department of Finance Quality of Life Framework (2021)

Source: Department of Finance Canada.

Discussion

Follow up

Danny Graham - dgraham@engagenovascotia.ca
Ryley Urban – rurban@engagenovascotia.ca

Engage Nova Scotia Quality of Life Municipal Investment Plan

Engage Nova Scotia (https://engagenovascotia.ca) is an independent registered charity that has, with its many partners, created a ground-breaking approach to improving quality of life for all.

Almost 13,000 Nova Scotians responded to a 230-question survey administered by Engage in cooperation with the Canadian Index of Wellbeing (University of Waterloo) in 2019, making it one of the largest single quality of life data sets anywhere.

With Dalhousie University, they have also built ground-breaking new tools to easily extract the findings of the survey at hyper-local (https://www.nsqualityoflife.ca) and demographically intersectional levels (https://engagenovascotia.ca/wellbeing-analysis-tool).

Partners at the local, provincial, national and international levels are recognizing this approach (broad and deep data, plus nimble and compelling tools) as a break-through for making more effective strategy, policy, evaluation and budget decisions.

What's ahead

The potential for this approach to, over time, improve the lives of all Nova Scotians is significant. The applicability of this approach to municipalities is limitless. A next comprehensive quality of life survey is planned for fiscal 2024/25. The breadth and depth of the data will give municipalities a "pre and post-pandemic" body of comparative information. Data will be available in the tools within just months of survey completion.

Doing the survey thoroughly, and in every corner of the province, requires a collaboration with municipalities to promote resident-awareness when the survey is in the field. This is especially important for under-represented and marginalized communities that continue to face barriers to participating in surveys of this type. It also involves meticulous design and administration of the survey itself, including, for example, mailouts to 100,000 randomly selected Nova Scotia households on multiple occasions. Total costs for outreach, design, promotion, administration, mailing, and data integrity are approximately $1,000,000.

Support

Support for Engage has come from many sectors. It has productive working relationships with the governments of Nova Scotia and Canada, with whom it has multi-year funding agreements. In a December 4, 2023, workshop for mayors, wardens and CAOs Engage set out the value proposition of the survey to municipalities, highlighted a "use case" where CBRM is already using the data to advance policy and actions, and **invited municipalities to contribute 50 cents a resident toward the cost of administering the survey in 2024/25.** Mayors, wardens and CAOs of municipalities of all sizes, and from all regions of the province, have already signaled their intention to support Engage in their upcoming budgets.

By supporting Engage, Nova Scotia municipalities set themselves up for five years of accessible evidence-based decision making that leaves fewer residents behind.

Testimonial

"If you look at the Strategic Vision before Engage Nova Scotia started working with CBRM Council, compared to now, you can see what a long way we've come to making social inclusion a major part of our plan going forward. It really shows the impact of having the depth and breadth of data that Engage is able to provide. I am grateful to Engage for this. It really feels like we are heading in a direction where no one will be left behind when making municipal decisions." – **Mayor Amanda McDougall, Cape Breton Regional Municipality.**

To learn more: contact Matthew Knezacek at admin@engagenovascotia.ca or Danny Graham at dgraham@engagenovascotia.ca

MARKETING & ECONOMIC DEVELOPMENT COMMITTEE

UNITING TRADITION WITH TOMORROW

FOR A FLOURISHING ANNAPOLIS ROYAL

PREPARED BY DANIELA SIGGIA BEASANT-CHAIRPERSON

EXECUTIVE SUMMARY

This updated marketing plan charts a course for Annapolis Royal's future, steering towards enhanced tourism, new residency, and robust economic development. It's tightly aligned with the town's Strategic Plan, embodying the vision to ***"encourage, support, and promote the Town's long-term economic vitality"*** and to ***"provide a safe, inclusive, and diverse community while maintaining its deep-rooted history and culture."***

Vision and Goals:
Guided by our mission to **"partner to encourage sustainable economic growth and environmental development,"** we aim to spotlight Annapolis Royal's rich historical tapestry and its appeal as a picturesque center for quality shopping and dining. We're set to capitalize on significant events like the Congrès Acadien Mondial in 2024, and our 2025 delegation to Royan, France.

This plan embodies our vision to be a town where *'550 people choose to live, work, and play by 2026.'*

Key Initiatives:
Leading our initiatives are the development of First Lake and the advancement of the tidal power project, both crucial in boosting tourism and creating a sustainable revenue stream for the town. We remain open to innovative revenue-generation opportunities, aligning with our vision of preserving the town's natural and built heritage.

Stakeholder Engagement:
Collaboration with local businesses, residents, and groups is vital. We'll foster this through formal consultation sessions and dedicated liaisons, ensuring all voices are heard and integrated.

Measurable Objectives:
Short-term (1-2 years): Unify stakeholders for collaboration, commence First Lake development, and launch the tidal power project, coupled with dynamic town marketing.
Long-term (3-5 years): A thriving business community and a financially robust town, in harmony with our strategic plan's long-term objectives.

Funding and Resource Allocation:
Our financial strategy focuses on prudent fund allocation, emphasizing growth over tax hikes, to maintain fiscal responsibility and taxpayer respect.

Call to Action:
We seek endorsement to set this plan in motion, ensuring a bright and prosperous future for Annapolis Royal, reflective of our commitment to a high quality of life for its citizens.

INTRODUCTION

Nestled in the heart of Nova Scotia, Annapolis Royal stands as a vibrant testament to Canada's rich beginnings. Known as "the cradle of the nation," our town is a living museum, echoing tales of the first European settlers and the birthplace of Acadian culture. The streets are a mosaic of storied battlegrounds and historic milestones, inviting visitors and new residents to partake in our collective memory and continue the narrative of our ancestors.

Today, Annapolis Royal flourishes beyond its historical allure. It boasts an idyllic setting where the past meets present in harmony — picturesque views invite contemplation, while King's Theatre, Fortview Golf Course, boutique shops and gourmet restaurants offer a contemporary twist to the town's old-world charm. It is this seamless blend of history and modernity that positions Annapolis Royal as a unique gem in Nova Scotia's crown.

Our marketing plan is a strategic extension of this ethos, designed to resonate with the objectives laid out in the Annapolis Royal Strategic Plan. It serves as our compass, directing efforts towards enhancing tourism, enriching the lives of our residents, and seeding economic growth. We ensure that each initiative undertaken is a step towards our collective vision.

However, the journey is not without its challenges. We recognize the precarious balance between preserving our heritage and cultivating economic resilience. The dissolution of the Annapolis Board of Trade underscore the need for a robust marketing strategy that can navigate these turbulent waters.

Within the pages that follow, this plan will unfold in layers, addressing key areas such as tourism development, stakeholder engagement, and infrastructure enhancement. We will delve into the promising prospects of First Lake and the tidal power project, both teeming with potential to elevate Annapolis Royal's standing as a must-visit destination and a beacon of green innovation.

The significance of this marketing plan cannot be understated. It is not merely a blueprint for attraction but a declaration of our intent to thrive and adapt. It is a commitment to our community and to the enduring spirit of Annapolis Royal — to grow, to welcome, and to flourish without forsaking the roots that ground us.

As we embark on this transformative journey, we invite you, our stakeholders and partners, to join us. Together, let us chart a course that secures prosperity for Annapolis Royal and immortalizes its legacy for generations to come.

SCOPE & OBJECTIVE

Scope of the Plan: This marketing plan is dedicated to the prosperity and vibrant future of Annapolis Royal. Our scope encompasses the historic heart of the town, its surrounding natural beauty, and the diverse community that calls it home. With an eye to the future and respect for the past, we aim to reach potential tourists, prospective residents, and business investors. Our strategies will unfold over the next five years, with annual reviews to assess progress and adapt to changing circumstances.

Strategic Objectives: In harmony with Annapolis Royal's Strategic Plan, our objectives serve as stepping stones towards a thriving community. We aim to:

1. **Enhance Annapolis Royal's profile as a premier historical and cultural destination.**
2. **Foster a sustainable economic environment that supports existing businesses while attracting new ventures.**
3. **Position Annapolis Royal as an ideal place to live, underpinned by its unique blend of history, community, and quality of life.**

Economic Development Goals: We shall strive to:

- Diversify the town's economic base by exploring innovative opportunities such as the tidal power project.
- Increase the town's revenue by promoting and developing First Lake, ensuring it complements our economic landscape.
- Consider reviewing and possibly updating MEDC's mandate if necessary to better reflect potential changing needs.

Tourism Growth: Our goals include:

- Boosting tourism by capitalizing on Annapolis Royal's historical significance and events like the Congrès acadien Mondial.
- Encouraging longer stays through marketing initiatives that package Annapolis Royal's attractions and experiences.
- Amplifying the appeal of Annapolis Royal through strategic digital marketing and the development of signature events.

SCOPE & OBJECTIVE CONTINUED

Residential Attraction: We are committed to:

- Promoting the town's appeal to potential residents by highlighting its safe, inclusive, and culturally rich environment.
- Collaborating with real estate and local organizations to create welcoming packages that showcase residential benefits.

Community and Stakeholder Engagement: We will:

- Engage with stakeholders through regular, structured forums and create avenues for input and feedback.
- Build partnerships with local NGOs, businesses, and the media to foster a unified marketing approach.
- Explore the possibility of workshops and seminars to empower local businesses and community members with marketing and technological skills.

Sustainability and Environmental Goals: Our environmental objectives align with the town's commitment to heritage and natural preservation:

- Support green initiatives, particularly the exploration and potential implementation of the tidal power project, to position Annapolis Royal as a leader in sustainable tourism.
- Ensure marketing practices reflect the town's dedication to environmental stewardship.

Measurement and Success Indicators: Success will be measured through:

- Increased tourism numbers and longer visitor stays, tracked through local occupancy rates and visitor surveys.
- New business openings monitored via business registration data and economic impact assessments.
- Growth in the number of residents, evaluated using census data and housing market trends.

In the following sections, we will present a detailed market analysis, a thorough SWOT analysis, and an in-depth look at each strategic focus area. These will include specific actions, responsible parties, and timelines, ensuring a comprehensive approach to achieving Annapolis Royal's bright future.

MARKET ANALYSIS

Annapolis Royal, steeped in history and rich in cultural heritage, stands at a pivotal moment in its evolution as both a tourism haven and a cherished hometown. The Market Analysis aims to dissect the layers of opportunity that lie within its beautiful streets and beyond.

Tourism Trends: Annapolis Royal's tourism market shows a robust inclination towards heritage tourism, with visitors drawn to its narrative as the 'cradle of the nation'. Interest peaks around historical commemorations, suggesting potential for themed events and packages. Visitor data indicates a steady flow of tourists, with room to increase off-season visits and extend average stays.

Demographic Insights: The town's demographics paint a picture of a population proud of its roots, yet open to growth. The presence of historically significant lineage alongside newcomers sets the stage for a diverse, inclusive marketing approach. Population trends indicate stability, but also point to the need for attracting younger demographics and families as part of long-term sustainability.

Economic Climate: Economically, Annapolis Royal is at a crossroads, with the closure of the power generating station marking an end to one era and the potential tidal power project heralding the start of another. Business registrations and local entrepreneurship show promise, despite the challenges faced by the dissolution of the Board of Trade. The economic climate is ripe for initiatives that encourage business development and investment.

Consumer Behavior: Consumers within and drawn to Annapolis Royal value authenticity, quality, and experience. They are inclined towards businesses that tell a story and offer a personal touch. The high appreciation for local crafts, art, golf, and cuisine indicates a market for experiences that are unique to the town.

Competitive Landscape: In comparison to neighbouring regions, Annapolis Royal holds a distinctive edge with its historical significance. However, there is competition for tourists and residents alike. The marketing plan must carve a niche for Annapolis Royal that highlights its unique attributes while also addressing areas where competing destinations may have an advantage.

SWOT ANALYSIS

A concise SWOT Analysis offers a strategic lens through which Annapolis Royal can view its competitive stance and identify actionable paths forward. This analysis underscores key areas to address in the marketing plan.

Strengths:

- **Heritage Tourism Anchor:** Annapolis Royal's historical significance as "the cradle of the nation" is unparalleled, providing a strong foundation for heritage tourism.
- **Community Engagement:** The town boasts an engaged community and active orgs like King's Theatre, Fort View Golf Course, Fort Anne, Historic Gardens, Mapannapolis self guided tours and many others contributing to a cohesive local spirit.
- **Unique Experiences:** The town's picturesque setting, boardwalk and elevated shopping and dining options offer unique experiences that are quintessentially Annapolis Royal.
- **Media Attention:** The charismatic town crier has garnered province-wide media attention, spotlighting the town's vibrancy and appeal.

Weaknesses:

- **Economic Diversification:** The loss of 16.3% revenue from the generating station has underscored the need for a more diversified economy.
- **Aging Population:** While stable, the demographic trends indicate a need to attract a younger population to sustain the town's growth.
- **Limited Digital Presence:** Current digital marketing efforts are underdeveloped, missing opportunities to reach a broader audience.
- **Dependency on The Explorer:** Reliance on a single publication for tourist information poses a risk should any unforeseen changes occur.
- **Housing Gap:** 105 unit gap by 2032 according to Annapolis Royal Strategic Plan p.8
- **Seasonal Businesses:** It is difficult to delight tourists when some businesses do not offer dependable opening hours or open seasonally.

Opportunities:

- **Tidal Power Project:** The green technology project presents an opportunity to pioneer sustainable tourism and energy production with potential revenue possibilities.
- **Cultural Events:** Upcoming events like the Congrès Acadien Mondial and others, offer a platform to boost tourism and global visibility.
- **Cornwallis Park Conversion:** Potential of 61 units could greatly reduce housing gap
- **Evolving Consumer Trends:** The growing interest in authentic and local experiences among tourists aligns well with Annapolis Royal's offerings.

SWOT ANALYSIS CONTINUED

Threats:

- **Economic Uncertainty:** Financial constraints and the need for careful budgeting can limit the scope of marketing initiatives.
- **Competition:** Neighbouring municipalities and regions vie for the same tourist demographic, necessitating a distinctive value proposition.
- **Technological Advancements:** Rapid changes in digital marketing require agility to keep up with trends and platforms.
- **Changing Demographics:** The potential decline in traditional visitor demographics highlights the need for adaptive marketing strategies.
- **Bank Closure:** The closure of Scotiabank poses a risk to Annapolis Royal's local economy, as residents seeking banking services elsewhere may also shift their shopping to those communities. This could lead to reduced local spending, particularly affecting businesses during off-peak seasons.

STRATEGIC FOCUS AREAS

Tourism and Heritage Development:

- **Objective:** To enhance and promote Annapolis Royal's historical and cultural assets to attract more visitors and extend their stay.
- **Strategies:**
  - Empower local tourism stakeholders to collaborate on the development of thematic heritage tours and packages around significant historical events and locations.
  - Leverage upcoming events like the Congrès acadien Mondial to create global awareness.
  - Collaborate with local businesses to offer a comprehensive cultural experience.

Economic Initiatives:

- **Objective:** To diversify the local economy by supporting existing businesses and attracting new investments, with a focus on sustainable and green technologies.
- **Strategies:**
  - Support the development of the tidal power project as a dual tourist attraction and economic driver..

Digital Endeavours:

- **Objective:** To establish a strong digital presence that showcases Annapolis Royal's unique offerings and reaches a wider audience.
- **Strategies:**
  - Update the town's official website with a focus on user experience and SEO optimization.
  - Implement a digital marketing campaign utilizing social media, online advertising, and influencer partnerships.

Community Engagement:

- **Objective:** To engage with local stakeholders in the marketing efforts, ensuring community benefits and support.
- **Strategies:**
  - Organize regular town hall meetings and workshops to gather input and foster community involvement.

STRATEGIC FOCUS AREAS CONTINUED

- **Residential Marketing:**
  - **Objective:** To position Annapolis Royal as an attractive location for potential new residents, particularly families and younger demographics.
  - **Strategies:**
    - Highlight the quality of life, safety, and community spirit in residential marketing materials.
    - Work with real estate agents to create welcome packages that provide useful information for new residents.
    - Promote the town's educational opportunities, recreational activities, and cultural experiences.

- **Sustainability and Environment:**
  - **Objective:** To integrate sustainability into Annapolis Royal's brand, highlighting green initiatives and practices.
  - **Strategies:**
    - Market the tidal power project as a model for sustainable living and a tourist attraction.
    - Showcase the town's efforts in environmental stewardship in all marketing materials.

Each of these strategic focus areas will be elaborated upon in the following sections of the marketing plan, detailing specific actions, responsible parties, projected timelines, and required resources. The ultimate goal is to create a cohesive narrative that not only markets Annapolis Royal effectively but also weaves the fabric of the town's story into every initiative.

STRATEGIC INITIATIVE: PURSUING UNESCO WORLD HERITAGE SITE DESIGNATION

Annapolis Royal's rich tapestry of history and well-preserved cultural sites make it a prime candidate for UNESCO World Heritage Site designation. This prestigious status would not only honor the town's heritage but also amplify its visibility on the global stage, potentially increasing tourism and economic development.

Objectives:

- To secure UNESCO World Heritage Site designation for Annapolis Royal.
- To leverage this designation to enhance cultural preservation and tourism.

Actions Steps:

- **Preliminary Assessment:** Conduct an assessment to understand the criteria for UNESCO designation and evaluate Annapolis Royal’s eligibility.
- **Stakeholder Engagement:** Engage with community stakeholders, including local historians, government officials, and First Nations representatives, to gather support and input.
- **Documentation and Research:** Compile extensive documentation of Annapolis Royal's historical significance, cultural assets, and conservation efforts.
- **Nomination Dossier Preparation:** Develop a comprehensive nomination dossier that meets UNESCO's rigorous requirements.
- **Advocacy and Promotion:** Advocate for national support for the nomination, as UNESCO requires submissions to be made by national governments.

Timeline:

- Year 1-2: Conduct preliminary assessment and begin stakeholder engagement.
- Year 2-3: Complete necessary research and documentation.
- Year 3-4: Prepare and submit the nomination dossier.
- Year 4-5: National government review and submission to UNESCO.
- Year 5+: Ongoing promotion and advocacy while UNESCO considers the nomination.

Resources Needed:

- Dedicated staff or consultant to lead the assessment and dossier preparation.
- Funding for research, documentation, and preparation of the nomination dossier.
- Marketing and promotional materials to support advocacy efforts.

Expected Outcomes:

- Increased global recognition of Annapolis Royal's historical and cultural value.
- Growth in tourism with the prestige of the UNESCO designation.
- Preservation of cultural heritage for future generations.

Tourism and Heritage Promotion:

- **Initiative:** Develop a "Heritage Highlight" online campaign showcasing Annapolis Royal's historical sites and stories.
- **Responsible Parties:** MEDC, in collaboration with local historians and content creators.
- **Timeline:** Call out to local content creators Q1 2024. Content creation to also start in Q1 2024, with a gradual rollout throughout the year.
- **Resources:** Minimal budget for content development, leveraging existing digital platforms and social media.

Economic Development Support:

- **Initiative:** Establish the Annapolis Royal Cooperative Marketing Fund (ARC-MF) to enable local businesses to collaboratively fund and benefit from shared marketing initiatives.
- **Responsible Parties:** MEDC will initiate and oversee the establishment of ARC-MF's structure, including guidelines for contributions, governance, and fund utilization. Once operational, a committee elected from participating businesses will manage the fund.
- **Timeline:**
- **Q2 2024:** MEDC develops the cooperative framework, including contribution scales, fund management, and advertising guidelines.
- **Q3 2024:** Official introduction of ARC-MF to the local business community with invitations to participate.
- **Q4 2024:** Election of the ARC-MF committee and commencement of the first joint advertising campaign.
- **Resources:** MEDC will seek initial seed funding through economic development grants or sponsorships to incentivize participation. Subsequent funding will be sourced from voluntary contributions by the participating businesses.

The ARC-MF will facilitate various marketing initiatives such as collective advertising in regional media, joint promotional events, and possibly pooling resources for high-impact marketing efforts like regional trade shows or tourism fairs. The fund's collective nature allows for a wider reach and a stronger market presence, benefitting all participating members.

- **Stakeholder Collaboration:**
  - **Initiative:** Establish a town hall roundtable series for local businesses and stakeholders to discuss marketing strategies and collaboration opportunities.
  - **Responsible Parties:** MEDC
  - **Timeline:** First roundtable to be held in Q1 2024, with subsequent sessions every quarter.
  - **Resources:** Town Hall or other community room.

- **Targeted Residential Outreach:**
  - **Initiative:** Partner with real estate agents and online platforms to feature Annapolis Royal as a desirable place to live.
  - **Responsible Parties:** MEDC, local real estate professionals, and community ambassadors.
  - **Timeline:** Begin partnership outreach in Q1 2024, with ongoing content sharing and promotion.
  - **Resources:** Minimal, relying on partnerships and shared promotional efforts.

- **Sustainable Practices Communication:**
  - **Initiative:** Highlight local green initiatives and sustainable practices through a focused online editorial series.
  - **Responsible Parties:** MEDC, with contributions from local environmental groups and green businesses.
  - **Timeline:** Launch series in Q2 2024, with new features twice per year.
  - **Resources:** A small budget to get these published on various online & print magazines like Valley Living or Explorer.

Each initiative has been designed to require minimal expenditure and staffing, utilizing digital platforms and the power of collaboration to maximize impact. The timelines are staggered to manage workload effectively, and the reliance on partnerships and community involvement is heightened to compensate for staffing and budget limitations.

Annapolis Royal's rich Acadian heritage is not only a cornerstone of its identity but also a magnet for cultural tourism. Two upcoming events present unique opportunities to celebrate this heritage and draw visitors from near and far.

Congrès Acadien Mondial 2024:

- **Overview:** The Congrès Acadien Mondial is an international gathering that celebrates Acadian culture and history. Scheduled for 2024, this event will attract visitors of Acadian descent from around the world, offering Annapolis Royal a platform to showcase its significant role in Acadian history.
- **Strategies:**
- Collaborate with local historians and cultural groups to create informative materials that highlight Annapolis Royal's Acadian sites and stories.
- Promote the Congrès through the town's existing communication channels, to build anticipation and awareness.
- Facilitate connections between local businesses and the Congrès organizers to explore opportunities for co-promotion.

Twinning with Royan, France 2025:

Overview: The Twinning Committee's invitation to visit Royan, France, in 2025, fosters international relations and offers a unique cultural exchange opportunity. This visit can be used to strengthen the town's cultural ties and promote Annapolis Royal as a heritage destination in European markets.

Strategies:

- Utilize the twinning visit to create a narrative of shared history and culture, which can be featured in the town's existing promotional efforts.
- Develop a cultural exchange program, including virtual components that can be shared with the broader community, to foster an international dialogue.
- Leverage the twinning to attract media coverage, thereby reaching potential tourists interested in cultural and historical travel.
- Collaborate with groups like Annapolis Heritage Society, MapAnnapolis and others to maximize opportunities

Implementation:

- Both events will be approached with the aim of leveraging existing resources and infrastructure to maximize their promotional value:
- **Preparation:** Begin by mapping out the historical and cultural points of interest related to Acadian heritage and the town's twinning relationship with Royan.
- **Promotion:** Use established communication methods to share these stories, inviting local businesses and cultural entities to contribute their own Acadian-related content or promotions tied to these events.
- **Engagement:** Engage with local, national, and international media to cover Annapolis Royal's participation in these events, providing a broader stage for the town's cultural narrative.

Honouring Dugua De Mons

Annapolis Royal, with its deep Acadian roots and Francophone connections, is poised to commemorate a significant historical milestone in 2024 — the 400th anniversary of the death of Pierre Dugua, Sieur de Mons. Dugua De Mons's legacy offers a profound opportunity to celebrate our Francophone heritage and strengthen our cultural and tourism appeal.

Strategies to Capitalize on the 400th Anniversary:

Educational Campaign:

- Develop a series of educational materials that tell the story of Dugua De Mons and his impact on the region's history, which can be distributed through existing channels such as the town's website.

Collaborative Storytelling:

- Partner with local schools, historical societies, and Acadian cultural organizations to create a community-driven storytelling project, culminating in a digital showcase that can be promoted across various media outlets.

Media Engagement:

- Engage with local and national media to feature stories leading up to the anniversary, highlighting Annapolis Royal's unique historical significance and the town's Francophone heritage.

Commemorative Merchandise:

- Encourage local artisans and businesses to create commemorative merchandise that celebrates the anniversary, which can be highlighted in existing business directories or featured spaces.

Culinary Celebrations:

- Work with local restaurants and cafes to introduce a "Taste of History" menu featuring dishes inspired by the French colonial era, adding a gastronomic dimension to the commemoration.

Genealogy Workshops:

- Consult with Annapolis Heritage Society on workshops on tracing Acadian and Francophone genealogy, potentially in partnership with genealogical societies, as a way to engage descendants and history buffs.

Implementation:

The focus will be on initiatives that do not require the direct management or hosting by MEDC or town staff, but rather on those that can be facilitated through partnerships, leveraging existing platforms and resources:

- **Outreach and Partnerships:** Build relationships with cultural and historical groups, media, and the education sector to support these initiatives.
- **Content Creation:** Utilize community knowledge and expertise to generate content, reducing the need for additional resources.
- **Promotion:** Use established communication methods, such as the town's website, to promote these initiatives.

§ ECONOMIC DEVELOPMENT

The economic vitality of Annapolis Royal is of paramount importance. In light of the recent revenue loss, our economic development strategy is designed to not only recuperate the deficit but also to create a surplus that will fund future initiatives and infrastructure improvements.

Strategic Objectives Inspired by the Town's Strategic Plan:

Diversify Economic Base:

- Expand beyond tourism by promoting sectors like green technology, artisanal crafts, and remote digital services.
- Encourage the development of the tidal power project as a long-term investment to boost the green economy and create jobs.

Business Retention and Expansion:

- Implement a business retention program to assist existing businesses with growth opportunities, including access to grants and business development resources.
- Facilitate a "Shop Local" campaign to circulate more revenue within the community.

Workforce Development:

- Partner with educational institutions to align training programs with the skills needed by local businesses, encouraging youth retention and attracting families.
- Launch mentorship programs that connect experienced business owners with new entrepreneurs.

Sustainable Infrastructure:

- Promote and support the installation of additional EV charging stations to attract eco-conscious visitors and residents should grants become available.

Implementation Tactics:

- **Collaborative Approach:** Foster a collaborative environment where town officials, business leaders, and community members work together towards common economic goals.
- **Marketing and Promotion:** Utilize existing marketing channels to promote Annapolis Royal's business opportunities and highlight success stories.
- **Monitoring and Evaluation:** Regularly monitor economic indicators and adjust strategies as necessary to ensure they are effective and aligned with the town's strategic plan.

Outcome Goals:

- Recoup the 16.3% revenue loss within 3 years through increased business activity, new investment, and expanded tax base.
- Establish Annapolis Royal as a model town for sustainable economic development and a hub for green technology in the region.

Diversify Economic Base:
Initiative: Launch a "Green Tech Incubator" program to support the tidal power project and other sustainable ventures.

- **Responsibility:** MEDC, in partnership with local business leaders and regional development agencies.
- **Timeline:** Research and planning phase throughout Q3-Q4 2024, with the program launch targeted for Q2 2025.
- **Resources Needed:** Initial funding from economic development grants, and mentorship resources.

Business Retention and Expansion:
Initiative: Develop a "Business Health Check" workshop series to help existing businesses identify growth opportunities.

- **Responsibility:** Ideally Chamber of Commerce but MEDC can if needed.
- **Timeline:** Workshop development in Q1 2025, with the first series running in Q3 2025.
- **Resources Needed:** Workshop materials, venue (virtual or physical), promotion through existing channels.

Attract New Investment:
Initiative: Create an investment prospectus showcasing Annapolis Royal's opportunities to prospective investors.

- **Responsibility:** MEDC, utilizing information from local real estate and business data.
- **Timeline:** Drafting in Q2 2024, with distribution starting in Q4 2024.
- **Resources Needed:** Professional services for printing, distribution through established networks.

Cost-Effective Principles:

- **Leverage Existing Resources:** Utilize current platforms, tools, and volunteer networks to reduce costs.
- **In-Kind Contributions:** Encourage local businesses and community members to offer services and expertise instead of financial outlay.
- **Grants and Sponsorships:** Prioritize seeking out grants and sponsorships that align with the economic development goals.

Adjusted Initiative Budgeting:

- **Green Tech Networking Events:**
  - Estimated Cost: In-kind venue provision, minimal promotional expenses.
  - Funding Sources: Sponsorships for refreshments, local business donations.
- **Business Health Check Initiative:**
  - Estimated Cost: MEDC's time, use of online meeting tools.
- **Investment Attraction Materials:**
  - Estimated Cost: Utilize existing digital platforms for distribution to avoid printing costs.
  - Funding Sources: Online advertising revenue, local business spotlights.

Long-Term Investment Strategies:

- Community Fundraising: Small-scale, community-based fundraising efforts for specific projects.
- Micro-Donations: Encourage local residents to contribute small amounts to a dedicated community fund.

Monitoring and Adjustment:

- Quarterly financial health checks to ensure initiatives stay within budget.
- A focus on ROI for any small expenditures, ensuring they contribute directly to economic development objectives.

Community Engagement:

- Utilize community workshops and forums to gather input and foster a sense of ownership, which can translate into volunteer support.

Strategic Partnerships:

- **Local Businesses:** Forge stronger connections with local businesses to encourage them to support and participate in joint marketing efforts and collective funding strategies.
- **Regional Economic Development Agencies:** Collaborate with these agencies to tap into regional initiatives and resources that can benefit Annapolis Royal.
- **Cultural and Historical Organizations:** Work with these groups to enhance the town's cultural appeal and develop heritage tourism. King's Theatre, galleries and museums will give us plenty to work with.

Investor Engagement:

- **Investment Seminars:** Host virtual seminars that showcase Annapolis Royal's investment opportunities to potential investors, leveraging the expertise within the community to present and facilitate.
- **Business Ambassadors:** Develop a network of local business leaders who can act as ambassadors for the town, sharing opportunities within their networks.
- **Investor Packets:** Create digital investor packets that outline key information and opportunities in Annapolis Royal, available for download from the town's existing website.

Community Crowdfunding:

- **Local Projects:** Identify and support community-based projects that have the potential to improve the town's economy, and assist in setting up crowdfunding campaigns.
- **Micro-Donations:** Encourage the community to contribute to economic development projects through micro-donations, creating a collective investment in the town's growth.

Outreach and Communication:

- **Regular Updates:** Provide regular updates on economic development initiatives through the town's existing communication channels to maintain transparency and interest.
- **Networking Events:** Encourage local business networking through existing events, or facilitate new ones within the community that require minimal investment.

Leveraging Existing Events:

- **Cultural and Historical Events:** Utilize existing cultural events to promote economic development messages and opportunities.
- **Town Hall Meetings:** Use these meetings as a platform to discuss economic development and attract potential local investors or volunteers.

Key Performance Indicators (KPIs):

- **Business Engagement:** Number of local businesses participating in marketing and economic development initiatives.
- **Investment Attraction:** Amount of new investment attracted to Annapolis Royal as a result of outreach activities.
- **Event Participation:** Attendance and engagement metrics for virtual seminars and networking events.
- **Crowdfunding Success:** Funds raised through community crowdfunding efforts for local projects.
- **Digital Footprint:** Increase in digital engagement as reflected by website traffic, downloads of investor packets, and social media interactions.

Data Collection Methods:

- Surveys and feedback forms distributed after events and seminars.
- Tracking software to monitor website and social media analytics.
- Financial tracking of investments and crowdfunding contributions.
- Regular check-ins with local businesses to gauge participation and satisfaction.

Evaluation Schedule:

- **Short-term Evaluations:** After each major initiative or event to gather immediate insights and make quick adjustments.
- **Biannual Reviews:** Comprehensive review of all KPIs to assess progress toward broader economic development goals.
- **Annual Reports:** In-depth reports that analyze year-over-year trends, with insights shared with the community and stakeholders.

Adjustment Mechanisms:

- Feedback loops that include community input to refine and improve initiatives.
- Agile methodology to allow for quick pivots in strategy in response to KPI feedback.
- Continuous learning approach to incorporate best practices and lessons learned into future planning.

Reporting and Transparency:

- Regular updates from MEDC and community stakeholders on performance against KPIs.
- Transparent sharing of both successes and areas needing improvement.

Community Involvement:

- Mechanisms for community members to suggest new KPIs or provide input on the evaluation process.
- Opportunities for local volunteers to participate in the data collection and analysis process.

Identifying Potential Risks:

- **Economic Fluctuations:** Recognizing that broader economic downturns can impact local investment and business health.
- **Funding Shortfalls:** The potential for expected funding or grants not materializing.
- **Project Delays:** Delays in project timelines due to unforeseen circumstances.
- **Low Community Engagement:** The risk that community members and businesses may not engage with initiatives as expected.
- **Technology Changes:** Rapid technological advancements that could outpace current strategy implementations.
- **Turnover:** The possibility that key outlets we depend on like Explorer that are privately owned may choose to discontinue services at any time, disrupting continuity.

Mitigation Strategies:

- **Diversified Economy:** Continue to promote diversification across various sectors to buffer against market changes.
- **Community Incentives:** Develop incentive programs to boost community and business participation.
- **Technology Watch:** Stay informed of technological trends to adapt digital strategies promptly.
- **Outreach:** Maintain regular dialogue with privately owned stakeholders we have come to depend on.

Contingency Plans:

- **Alternate Funding:** Develop relationships with multiple potential funders to have alternatives if one falls through.
- **Flexible Timelines:** Build flexibility into project timelines to accommodate delays.
- **Engagement Campaigns:** Have ready-to-launch engagement campaigns if initial efforts do not yield expected participation.
- **Adaptation to Tech Advances:** Prepare to quickly adopt new technologies that could benefit marketing and economic initiatives.

Regular Risk Assessments:

- Conduct yearly risk assessments to identify new risks and assess the effectiveness of current mitigation strategies.
- Adjust plans based on these assessments to ensure resilience in the face of changing conditions.

Communication of Risks:

- Keep stakeholders informed about potential risks and the plans in place to manage them, maintaining transparency and trust.
- Use stakeholder feedback to refine risk management strategies.

IDEAS WORTH CONSIDERING

- **Collaboration with Local Businesses and Golf Course:** Include a strategy for engaging with the local golf course and other businesses to promote Annapolis Royal as a destination that offers more than just historical tours – perhaps through a 'Stay and Play' promotional concept that can be highlighted in existing publications without requiring new platforms or additional town staff resources.
- **Promotion of Trail System:** Although direct event hosting is not within MEDC's mandate, consider supporting third-party initiatives that promote the trail systems. This can be done through highlighting these features in discussions with tourism operators and including them in any existing materials or directories.
- **Utilization of Stamped Passport Concept:** Encourage local businesses to adopt a stamped passport system to incentivize repeat visits. MEDC's role would be purely promotional, sharing the concept with businesses and suggesting they incorporate it into their customer experience.
- **QR Codes for Information Dissemination:** Advise and support local businesses in implementing QR codes that link to historical facts, business information, or special offers. This can be part of a simple "How-To" informational campaign that MEDC can distribute without direct involvement in the creation or maintenance of digital content.
- **Support for EV Charging Stations at Market Square:** Highlight the environmental commitment of the town by promoting the existing EV charging stations and creating more at Market Square Parking as a convenience feature for eco-conscious visitors.
- **Educational Workshops and Tech Support for Seniors:** Partner with local community groups or educational institutions like CORA & Law Enforcement to offer workshops on technology use, such as virtual care and online banking, fraud awareness etc, MEDC could act as a facilitator, connecting organizations and resources rather than directly managing these programs.
- **Business Workshops and Networking:** Encourage the establishment of a business association or informal networking group that could run workshops and networking events, providing a forum for local businesses to share insights and collaborate without direct event hosting by MEDC.
- **Creation of a New Chamber of Commerce:** MEDC may not be able to facilitate this, the plan can outline the benefits and steps for the business community to consider in establishing a new Chamber of Commerce.
- **Signage and Accessibility Standards:** Advocate for the maintenance and enhancement of signage that respects the town's federal historic district status and accessibility standards, working with relevant committees and organizations. We must partner with PHAC & Accessibility Environment Committee.
- **Highlighting the Town Crier's Role:** Feature the town crier in marketing materials to emphasize the unique cultural experience visitors can enjoy, and consider increasing stipend to support further development.
- **Annapolis County REN:** Create a new REN for SW Nova Scotia
- **Create a tourism app:** possibly as part of a REN collaboration

MEDC: YESTERDAY VS TOMORROW

- **Current Landscape:** The Marketing and Economic Development Committee (MEDC) of Annapolis Royal was established to foster growth and prosperity in our town. However, recent developments, including the closure of the Board of Trade and the winding down of AIRO, have significantly altered the economic and social landscape. These changes necessitate a reevaluation of our approach and strategies.

- **Reviewing Our Mandate:** As noted in the Annapolis Royal Strategic Plan (page 8), there is a "lack of definition of the town's marketing & economic development committee mandate, roles & responsibilities." This points to an urgent need for clarity and direction in our operations.

Today, our role has been crucial in navigating the challenges and leveraging the opportunities within our community. However, the evolving needs of Annapolis Royal require a proactive and flexible approach.

- **Redefining for Tomorrow:** Our immediate goal is to conduct a comprehensive review of the MEDC's mandate. This review will focus on:

- Clearly defining the roles, responsibilities, and objectives of the MEDC.
- Aligning our activities with the current and emerging needs of the community.
- Establishing actionable and measurable strategies that resonate with the dynamic economic landscape.
- This process is not just about restructuring; it's about reimagining and revitalizing our approach to ensure the MEDC is not only relevant but also instrumental in driving sustainable growth and development in Annapolis Royal. We are committed to transforming challenges into opportunities and setting a course for a prosperous future.

CONCLUSION

In conclusion, the marketing and economic development plan for Annapolis Royal is a comprehensive blueprint designed to navigate our town through the challenges of today and steer us towards a prosperous future.

Rooted in the rich tapestry of our history and propelled by the innovative spirit of our community, this plan sets forth a series of strategic initiatives that are both ambitious and attainable.

As we embrace our Francophone heritage, capitalize on significant historical milestones, and foster a robust, diversified economy, we invite all stakeholders—local businesses, community members, and external partners—to join us in this transformative journey.

Together, we can enhance Annapolis Royal's appeal as a premier cultural destination, a hub of economic innovation, and a cherished home for residents both current and future.

This marketing plan, while a guide, is also a living document that requires our collective effort, adaptability, and commitment to continuous improvement. We call on the committee, town council, and the broader community to endorse and actively participate in the execution of this plan.

With your support, we can ensure that Annapolis Royal not only recovers the revenue we have lost but also achieves new heights of economic and cultural vitality.

Let us move forward with confidence, harnessing our shared passion for Annapolis Royal to create a legacy of growth, sustainability, and community pride.

APPENDIX: ROADMAP OF OBJECTIVES FOR ANNAPOLIS ROYAL

Short-Term Objectives (1-2 Years):

- Establish the Annapolis Royal Cooperative Marketing Fund (ARC-MF) structure and initiate the first joint marketing campaign.
- Develop and disseminate educational materials highlighting Annapolis Royal's heritage, particularly in preparation for the Congrès Acadien Mondial.
- Begin regular "Economic Development Corner" features in the town's communications to keep the community informed and engaged.
- Begin UNESCO portfolio

Medium-Term Objectives (3-5 Years):

- Achieve measurable increase in tourism, particularly during off-peak seasons, as a result of heritage and cultural marketing initiatives.
- Realize a diversification of the economic base with the support of the Green Tech Incubator and other sustainable ventures.
- See a successful operation and self-sustainability of the ARC-MF with an expanded number of participating businesses.
- Establish a robust network of business ambassadors and a series of investor seminars to attract and retain new investments in the town.
- Submit UNESCO package to federal liaison for submission

Long-Term Objectives (5+ Years):

- Recover the 18% revenue loss and generate a surplus for future initiatives through increased business activity and a broader tax base.
- Position Annapolis Royal as a leader in sustainable economic development and as a prime destination for cultural tourism.
- See the fruition of large-scale infrastructure projects, like Tidal Project & First Lake, that support business growth and attract new residents.
- Observe a thriving local economy that is resilient, diverse, and supportive of both new and existing businesses.
- Achieve UNESCO designation.

APPENDIX: CONSOLIDATED LIST OF ACTION ITEMS

Create the Annapolis Royal Cooperative Marketing Fund (ARC-MF).

Implement a digital "Heritage Highlight" campaign.

Promote the Congrès Acadien Mondial through local media and materials.

Advocate for local restaurants to introduce "Taste of History" menus.

Facilitate a virtual campaign on the life and times of Dugua De Mons.

Launch "Green Tech Networking " for Tidal Project.

Develop a "Business Health Check" workshop series for local businesses.

Create an investment prospectus showcasing Annapolis Royal.

Develop an "Economic Development Corner" in the town's website.

Plan an online strategy to showcase investment opportunities.

Develop a network of business ambassadors.

Assist local projects with community crowdfunding campaigns.

Engage with potential investors and partners for economic growth.

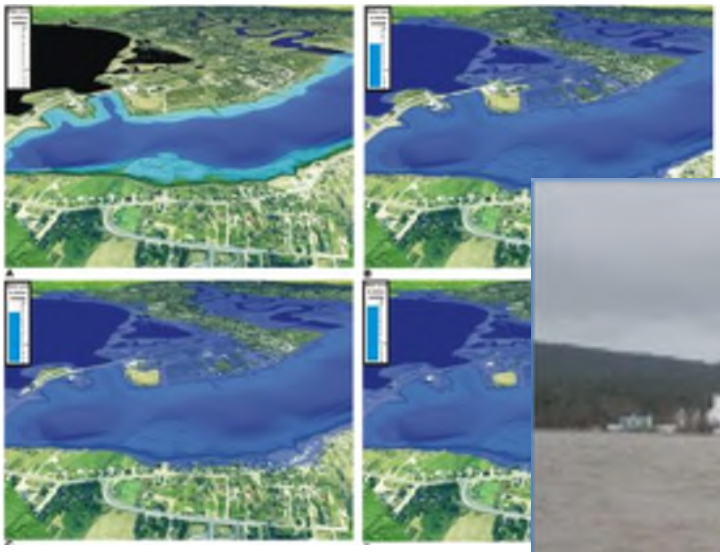
Utilize existing events to promote economic development messages.

Conduct review of MEDC mandate, roles & responsibilities

Pursue UNESCO World Heritage Site designation for Annapolis Royal.

Town of Annapolis Royal

Flood Risk Assessment and Adaptation Concepts



AIM Network
www.aimnetwork.ca

Table of Contents

Executive Summary

The Town of Annapolis Royal commissioned this report to investigate adaptation measures to protect the town from coastal flooding of the Annapolis River. Numerous reports have been completed in the past to study the impact of coastal flooding on the town's infrastructure and how this flood risk will change as a result of climate change. This report is intended to:

a) Incorporate the results of these previous reports,
b) Supplement prior climate change assumptions with a risk management approach that considers uncertainty in forecasts and multiple scenarios from the Intergovernmental Panel on Climate Change (IPCC) sixth assessment report (AR6),
c) Investigate climate adaptation options that can provide a flexible adaptation pathway for impacts of climate change over the next eighty years,
d) Provide advice on risk decisions to assist Annapolis Royal in taking immediate action toward adaptation, and
e) Provide cost estimates to allow capital financing strategies to be put into place.

The level of risk is established by looking at the likelihood that something will occur and the impact if it does occur. These to elements, the likelihood, or probability, and the impact, or consequence, together form the risk of an event. For example, something that happens often low, but not inconsequential impacts could be considered a similar risk as something that has an extremely low chance of occurring but a greater impact.

Annapolis Royal is currently at moderate risk of flooding from a major storm surge event coinciding with high tide levels in the Bay of Fundy, with this risk increasing in the future. In the near-term (five to twenty years), the increased risk of higher water levels is from larger storm surges resulting from increased wind energy in storms. In the longer term (thirty to one hundred years), risk increases from both increased wind-driven storm surge and predicted sea-level rise.

A small portion of the central core and large extent of the eastern lowlands will flood during current projections of the 100-year (one percent chance of occurring annually) flood event. Currently the eastern extents of the town are protected by water management at the tidal plant. Any solution selected must include a plan to maintain flood control measures at the causeway to be effective.

Climate change increases the predicted occurrence of these large events, or to think of it another way, increases the amount of flooding expected from that one-percent change per year event. This makes risk increase over time, so it becomes high- to very high-risk once climate impacts are considered. By considering the possible future occurrences, a risk management approach can minimize the potential loss of services, damage to properties, disruption to businesses and displacement of people with climate adaptation measures.

Canada has experienced dramatically rising costs from weather related damage in the last forty-years. There is a staggering amount of infrastructure at risk, and we as a Canadian society bear those costs through the cost of national emergency relief for catastrophic events, uninsured loss of property, decreased economic activity or increasing costs of insurance, particularly in high-risk zones. This has prompted a call for action through the National Adaptation Strategy (NAS) for everyone to understand that we share many of these costs whether the disaster occurs in our backyard or across the country. The NAS encourages all residents and communities to think about adaptation in this respect so we can make sensible decisions nationally about investing in adaptation work and minimize the risk of future costs and community disruption. Adaptation measures can save five to six dollars in damage for every dollar spent, or up to fifteen dollars for every dollar spent if economic and social costs are considered as well[1].

Adaptation pathways are a key concept in today's climate field. An adaptation pathway is a decision-making approach that allows infrastructure owners to maintain resilient infrastructure through the large amount of uncertainty inherent in climate predictions. This uncertainty comes both from the possible variation in how aggressively the global community reduces greenhouse gas production over the next thirty-years, as well as from uncertainty in the modelling used to predict climate impacts. This reality of climate forecasting means that there are models of low emission futures, with lower impacts, and higher emission futures, with higher impacts. Within each of these models, there is uncertainty that results in a range of impacts that gets wider the further into the future the modelling seeks to predict. Adaptation pathways allow us to construct cost-effective protection now to be resilient to more moderate impacts, while allowing future expansion if evidence demonstrates we are on a more catastrophic path.

Climate change is increasing the severity of weather events. The cost-benefit analysis presented here demonstrates that action now will cost less than the "do-nothing" option. The probabilistic analysis in this report shows that there is expected to be an increasing cost risk from flood events as a result of climate change, and that considered over the next eighty years, adaptation is a more cost-effective option than responding to a disaster through emergency funding or insurance.

Risk related to coastal flooding in Annapolis Royal are mostly related to flooding of private properties on St. George Street and inundation of the wastewater treatment plant on the east side of the town. To a lesser extent, there is minor or moderate risk to other municipal infrastructure such as streets and underground utilities from these flood events.

This report discusses several options: doing nothing and repairing damage as it occurs, managed retreat to relocate people and services from at-risk areas, construction of a seawall along the existing boardwalk location with a flood gate at the existing causeway, construction of a flood

[1] Damage Control: Reducing the Costs of Climate Impact in Canada, Canadian Climate Institute. September 2022.

barrier at Goat Island in the Annapolis River Basin, and construction of a storm gate at Digby Gut that would protect the entire river valley.

The combination of a new seawall and managing upstream impacts at the Highway 1 causeway is the most resilient, cost-effective and practical option to maintain the character and heart of this historic site while protecting it from coastal flood risk. It is also able to be constructed in a way that allows flexibility to protect Annapolis Royal over the life of the infrastructure while avoiding major impacts to the existing waterfront and view across the river.

The conceptual design of the new seawall can accommodate expansion if required in thirty to forty years without having to remove any of the wall structure. The design is based on climate forecasts based on the eighty-year impacts from the IPCC. The IPCC sixth assessment report (AR6) identifies forecasts based on shared socio-economic pathway (SSP) scenarios that represent how aggressively we, as a global society, will reduce greenhouse gas emissions in the coming decades[2]. The design proposed in this report uses forecasts from models based on SSP2-4.5, the intermediate emissions scenario. Adaptation pathways are planned considering SSP5-8.5, the very-high emissions, or worst-case scenario. The lower estimate assumes that globally, there is sustained action to reduce reliance on fossil fuels; and the higher estimate assumes greenhouse gas production continues with existing trends. This results in a lower cost of construction for the project and reduces the likelihood of over-adapting and spending scarce infrastructure funding on over-built infrastructure, while accommodating future expansion should we find ourselves on the more catastrophic climate impact path.

In simpler terms, despite worldwide efforts and current policy it is almost certain that flood levels predicted in the intermediate scenario will occur, while it is less likely – though still possible – that the greater flood levels predicted in the very high emissions scenario will occur, and these only after several decades have passed. The design plans for the very likely scenario and allows for an adaptation pathway to adjust in the future for the less likely scenario weather patterns and sea-level data monitoring confirms it is occurring.

Finally, the proposed solution seeks opportunity in crisis. With a major infrastructure project like the one needed here, there is an opportunity to enhance the waterfront with natural, artistic, cultural and heritage features that will increase the attraction to this already popular destination. There is also opportunity to restore marine habitat that has been impacted by development, restore natural species, build shoreline habitat and increase biodiversity in the Annapolis River.

[2] IPCC, 2023: Summary for Policymakers. In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 1-34, doi: 10.59327/IPCC/AR6-9789291691647.001

The total cost estimate of the seawall concept is **$3.95 million**, including detail design, construction management, project management and construction. The report also provides conceptual cost estimates of additional work that may be interrelated with the seawall construction: rehabilitation of the King's Wharf and shoreline salt marsh restoration. Any infrastructure adaptation project must be accompanied by a floodwater management plan at the Highway 1 causeway to replace the flood control inherent in the tidal plant operation.

The cost of adaptation is lower than the likely cost of major coastal flooding risk over the next eighty years. However, the municipal contribution to support this project is significant. The project will primarily protect function of the downtown core and private properties along the waterfront. Private property flood risk is higher closer to the wharf. The town will need to consider novel financing strategies such as aggressive reserve funding, alternative revenue sources, contributions from industry and additional contributions from the community. These costs need to be balanced with the potential impacts of flooding which go beyond damage costs, and impact the social fabric of the community, physical and mental health of its residents and long-term sustainability of this historic location. This report discusses in detail the assumptions, uncertainties, risks, cost estimates and recommended activities for climate adaptation in Annapolis Royal to allow the town and its residents to make well-informed decisions, discuss activities with permitting agencies, consult with First Nations and inform the local community to make the project a success for future generations.

1 Introduction

Annapolis Royal is located on the banks of the Annapolis River on the northwest coast of Nova Scotia. The Annapolis River is a 120-kilometer-long river, conveyed from its headwaters near Aylesford, Nova Scotia to its outlet to the Bay of Fundy at Digby Gut. The outlet is 20-kilometers west of Annapolis Royal. Annapolis Royal is located near the end of the estuarine section of the river, which runs from Bridgetown to Digby Gut. Tidal mixing occurs here as high tides in the Bay of Fundy push ocean water into the freshwater stream of the river.

River levels vary because of changing tide levels in the Bay of Fundy, which has a 9.7 metre variance between lowest and highest tides. This analysis considers risk factors for coastal flooding at Annapolis Royal from high tides, storm surges and high river flows during spring melt or following a major storm event.

Reviewing background information for this report made it clear that there is no lack of data or study on the Annapolis River. There have been many studies done in the past, and the authors of this report would like to acknowledge the work of John Bottomley for his summary of past reports[3] and CLIMAtlantic for assistance in defining the most relevant climate data in this report. The summary of past reports is included as **Appendix A**.

Despite data and evidence contained in reports produced since 1998 that Annapolis Royal is indeed at risk from climate-change related extreme weather events, the Town has not had the opportunity to construct adaptation or protection measures in the last decade. In discussing this with stakeholders from Annapolis Royal and reviewing the past body of work, there are two main barriers.

First, Annapolis Royal is a small community with limited municipal revenue. Even if funding for adaptation work heavily subsidizes the cost of a major project, it is challenging for Annapolis Royal to raise the remaining contribution with current revenue and cash reserves. Further, any use of revenue and reserves diverts infrastructure spending from needed upgrades to core service infrastructure, risking failure from aging and lack of maintenance.

Secondly, while there has been substantial work in recent years toward climate mitigation, there has been little funding available for climate adaptation action, and disaster mitigation funding has typically only followed a catastrophic event.

To address the first barrier, the Town will need to consider novel approaches to financing the infrastructure project. Without unconventional funding strategies, contributions will impact the Town's ability to support capital renewal of existing infrastructure like roads, water lines, sewer

[3] Bottomley, John (2022) Flood Risk Assessment, Town of Annapolis Royal, Annapolis Royal

lines and facilities. It could also result in heavy debt loads that, with recent high interest rate variability, could cause the Town financial risk. Annapolis Royal is not alone in these challenges. Across the country, all levels of government and private sector are coming to realize that we will be unable to delver all the needed adaptation work at the speed and scale needed with conventional infrastructure funding models[4].

The second barrier has been addressed through policy and funding changes at a federal level. Along with the National Adaptation Strategy, the Canadian government announced new funding streams to support major capital projects with the goal of climate adaptation. This report is intended to support application(s) for funding under these streams.

The risk assessment in **Appendix B** and detailed technical discussion in **Appendix C** are based on the Public Infrastructure Engineering Vulnerability Committee (PIEVC) Protocol. The PIEVC Protocol was developed by Engineers Canada to assess the change in risk of infrastructure service failure from future climate change and is currently under the oversight of the Climate Risk Institute (CRI) and Institute for Catastrophic Loss Reduction (ICLR). The assessment considers the increasing cost risk of delaying action (the "do-nothing" option) against the cost of a proposed adaptation solution. Because there is no certainty in if, when or how often disaster-scale events would occur, the Town should use this information to make strategic risk management decisions, and plan for emergency measures if adaptation work is deferred or not constructed.

The risk management discussion explores the time-based changes in this risk of the public bearing this cost. Triple bottom line cost analysis is outside of the scope of this report, but an overview of social and environmental impacts is discussed as they may be significant considerations in decision making.

[4] Canadian Climate Institute, 2023: Mobilizing Private Capital For Climate Adaptation Infrastructure [Ewart, T., Coffee, J. and Miller, S.], https://climateinstitute.ca/wp-content/uploads/2023/05/mobilizing-private-capital-climate-adaptation-infrastructure.pdf

2 Risk Assessment Overview

Appendix B contains the results of the climate risk analysis for coastal flooding. Risk is defined as a combination of:

a) the probability, or likelihood, of infrastructure being exposed to a severe weather event, and
b) the potential consequence of exposure of infrastructure to that severe weather event.

A complete explanation of the risk analysis process in in **Appendix C, Section C1.3**. Infrastructure elements at greatest risk are the wastewater treatment plant, King's Wharf, and private properties along the waterfront.

The wastewater treatment plant lies on the eastern side of Town, with coastline behind the causeway and existing tidal plant flow control system. Ongoing water management at the tidal plant site is presented in more detail in **Section 3**.

The King's Wharf is already at risk from structural failure because the aging sheet pile encasement, which was installed to rehabilitate the original wooden wharf, is reaching its end of life. The steel panels exhibit significant rust and narrowing of the steel section, with some locations perforated through. It is at risk from structural damage during current high-water events, and this risk will increase with time. A detailed wharf structural report was issued by Able Engineering on September 22, 2022, along with the conclusion that rehabilitation or replacement is necessary in the next five years. **Section 4** of this report discusses possible integration of the wharf rehabilitation with this project. Because this project is already viewed as a priority because of the risk of structural failure in the near-term, costs of wharf reinstatement are not included in the damage estimates in **Appendix C**.

The other major impact is to private buildings within the Town boundaries. **Appendix D** contains flood maps that show the extent of the various 100-year storm surge scenarios discussed in **Appendix C**. The mapping demonstrates that aside from the wharf and water treatment plant, a proposed seawall and flow management strategy at the causeway would be supported by a need to protect private, historical properties within the Town.

There would also be some minor potential impacts to the pavement structure, sanitary sewer system and stormwater system. These costs would be minor compared to potential structural damage, insurance costs, uninsurable building damage, loss of commercial activity and loss of habitable space both near and long-term. Transportation corridors, particularly along St. George Street will be impacted during flooding, but would be reinstated following cleanup of debris.

There are also wind-related risks to telecommunication and power infrastructure as stronger extreme gusts are expected with climate change. However, this has not been assessed in **Appendix C** as it is not under Town jurisdiction and is outside the scope of this report.

3 Options Assessment

Several options are available to address climate risk to the waterfront, and in this section each option is discussed as it relates to timeframe, feasibility, economic considerations and socio-environmental concerns to develop a preferred option for analysis.

3.1 Managed Retreat

Managed retreat is a strategy that seeks to adapt to changes in weather patterns from climate change by protecting (through regulation) or abandoning properties at risk. Typically, properties are acquired by a level of government and converted into green space or recreational use parks that are not at risk from major damage from a weather event. Restricting development on at-risk land and planning for relocation after a catastrophic event occurs are considered low-monetary cost measures of dealing with climate risk. Where these measures involve private property, there is a lengthy process of consultation and consensus building.

Managed retreat strategies are best used in locations where there is readily available land for relocation and where relocation does not carry costs greater than other adaptation options. Neither of these ideal conditions is present in Annapolis Royal. In determining the feasibility of this strategy, Town management and the project team considered that:

a) The Annapolis Royal Historic District which encompasses the downtown area, was designated a national historic site in Canada in 1994 because of its mix of 18th, 19th and early 20th century architecture, its distinctive sense of history and place as former colonial capital and significant Acadian history, and early roots in contact between the first settlers and Indigenous populations,
b) There are a substantial number of medium density commercial and mixed-use properties that cannot be readily relocated elsewhere within the area,
c) There is no nearby urban centre to relocate the commercial heart of the Town,
d) There is little remaining area within the Town limits to relocate the downtown core, and
e) The cost of relocating service infrastructure and reconstructing buildings would be far greater than other adaptation measures available.

Based on this high-level screening of this option, managed retreat is not a feasible option.

3.2 Emergency Response Measures

Annapolis Royal participates in a Regional Emergency Management Organisation (REMO) with neighboring municipal units. The goal of the REMO is to plan for response to potential disasters, one of which is catastrophic flooding of the downtown core. The engineering analysis has demonstrated that the downtown core is at moderate risk of flooding currently, with increasing

risk over time from a 1:100-year storm surge event. The increasing risk is because the flood depth of a 1:100-year flood event (with a one percent per year likelihood based on historic data) will become greater as average and peak wind velocities increase and sea-level rises, generating higher storm surge water levels for a given storm recurrence.

The analysis in **Appendix C** takes an approach of assessing increasing cost impacts of a standard weather event over time, in this case the 1:100-year storm surge. That is, the event with one percent chance per year of occurring will have greater flood extents and greater damage costs in the future. This convention is adopted because climate projections are well suited to this approach.

However, note that it also true that the current 1:100-year flood event would be expected to become more likely in the future. That is, another way of looking at the climate impacts is that more frequent, smaller flood events are predicted from climate change projections along with more impactful infrequent events.

Developing constructed adaptation measures requires significant capital investment and multiple years of planning. During this time there is a small, but not statistically insignificant chance that a catastrophic flood event could occur. Annapolis Royal should prepare the emergency response measures for such an event, including:

a) Developing a communication plan for residents in at risk areas when there is a forecast of a major storm / wind event that can coincide with high tide, and in particular with higher astronomical, or king tides,
b) Developing an evacuation plan that considers floodwater interruption to the road network, especially in low areas by the King's Wharf. The evacuation plan should consider how to mobilize people and goods before, during and after floodwaters, when streets may not be passable due to water and debris,
c) Establishing default lines of communication to provincial and federal disaster relief departments,
d) Identifying processes and resources to make it easier to engage insurance companies and aiding residents in navigating the process,
e) Educating residents about the risk of overland flooding and that default insurance policies do not typically cover damage from water running over the ground,
f) Identifying temporary residences for displaced residents immediately following an event and longer-term residence for residents with uninhabitable homes,
g) Identifying programs for assistance to businesses with lost revenue during reconstruction periods,
h) Identifying challenges and solutions if freezing weather follows a flood event, and
i) Identifying responsibilities and a plan to address sewage overflow and ingress into buildings.

By planning early and establishing the protocols to keep familiar with these plans, the Town will be able to mitigate consequences of a disaster event such as those seen throughout Nova Scotia in recent years.

3.3 Adaptive Building

Adaptive building seeks to build flood resilient infrastructure that minimizes the reconstruction required after a flood event. This typically includes using building materials for structures and exterior cladding that is resistant to water damage and can be more easily cleaned following sewage overflow from the collection system. Electrical and mechanical infrastructure is installed on higher floors, above the predicted flood elevation. It can be costly, and difficult to enforce without updates to national and local building codes.

These measures are most effective in new buildings where they can be designed to purpose. While retrofitting these measures is possible, the relative savings in damage do not always offset the cost of design and construction, and the changes can reduce usable area for commercial or residential purposes in the building. Also, Annapolis Royal, as a national heritage site, needs to retain the character and architecture of its buildings.

Because of the technical difficulty, cost to retrofit older buildings and the inevitable impact on the character of the Town, this option is not feasible for Annapolis Royal.

3.4 Goat Island Barrier

The option to construct a flood protection barrier and gate at Goat Island was discussed during preliminary public consultation meetings. This option was determined to be undesirable when compared to the proposed solution of a seawall discussed in **Section 3.6**. The overall length of the wall would be comparable to the seawall discussed in **Section 3.6**, with increased costs of due to the depth of the river reaching 15 meters in the project site, complications with maintaining navigable waters, impacts to aquatic habitat and biological function, and unknown impacts on erosion and sediment transportation. Based on the potentially high cost, unknown risks and technical challenges with such an installation, this protection measure is not feasible to pursue.

3.5 Digby Gut Storm Gate

Annapolis Royal is not the only municipality at risk from elevated flood levels in the Annapolis Valley. Impact of major storm surge events can extend to Bridgetown. In the Netherlands, where there is a similar tidally influenced river that impacts far inland, they constructed the Maeslant structure, a massive tide gate at the ocean outfall that can be closed when storms are predicted to cause high surges. Built in the 1990's, the structure protects Rotterdam and nearby coastal

communities from storm surges up to three metres. It was first put into effect in 2007 during a large storm event and has proven to be effective in controlling inland flooding.

However, an estimate of the current cost of such a barrier in Nova Scotia would be optimistically estimated at $1.5 billion, not considering the significant technical, material procurement and construction expertise that would need to be obtained for such a project. While the construction would be an economic boon to the area, and the gate itself would be a world class attraction, the economic benefits would not outweigh the cost to communities to support the project and return on investment would be long after there were irreparable effects on capital renewal of existing infrastructure and financial stability of the communities.

With anticipated flood damage from a single flood event throughout the Annapolis Valley on the order of $100 million in current dollars, this project would not be feasible from a cost-benefit perspective.

3.6 Seawall

Because other structural and regulatory management measures are not feasible, a waterfront seawall is the preferred adaptation option to protect the Town from current and future flood risk. A schematic of the wall location and key infrastructure is shown in **Figure 3-1**.

Figure 3-1: Schematic of Proposed Seawall

3.6.1 Proposed Seawall

The cost and detailed technical analysis of a seawall design concept, included in **Appendix C**, should be measured against the increasing likelihood of need for emergency measures discussed in **Section 2.2 and** emergency response costs when considering risk management strategies to build resilience against climate change impacts. **Table 3-1** summarizes key flood elevations, shown in bold, used in the seawall concept design, with reference to how likely they will occur based on current climate change forecasts. Details on how the flood elevations were developed are in **Appendix C, Section C2.**

Table 3-1 Peak Water Elevations

Likelihood	Year	100 yr. Flood Elevation (m)
More Likely to Occur (Moderate Case)	2023	4.37
	2053	4.64
	2103	**4.96**
Less Likely to Occur (Worst Case)	2023	4.37
	2053	**5.04**
	2103	**6.06**
Model Extreme	2103	**6.43**

The proposed wall is a cantilevered concrete wall along the shore along the current boardwalk and riverfront trail. **Appendix E** contains general arrangement and concept wall sections that were used to generate the cost estimates. Detailed cost estimates are included in **Appendix F**. The top of wall in the concept design has been set at elevation **5.34 metres**. This provides approximately **500 millimetres** of freeboard for the moderate climate change prediction to year **2103**, or **300 millimetres** of freeboard for the worst-case predictions in **2053**. It is also designed to resist overturning sliding or uplift failure for the worst-case elevation of **6.06 metres** in **2103**. This means that the wall will be stable if the barrier is extended in the future should data demonstrate that we are tracking closer to the worst-case scenario by **2153**, at which time there will be less uncertainty in the rate of climate change impacts. This approach allows future expansion without reconstructing the wall foundations or face. The last line item is the modelling extreme prediction, with 1.5 metres of sea level rise by 2100.

3.6.2 Causeway Flood Control

For the seawall to be effective, flood control at the tidal station causeway crossing will be required. If water levels are not managed through the causeway, there is a high likelihood that

flooding will occur on the eastern side of the Town, which can reach the western side through the system of channels and culverts to the French Basin.

The flood mapping in **Appendix D** assumes equal water levels on either side of the causeway river crossing. In reality, the narrow passage at the causeway could restrict flow to the north side of the causeway. This would prevent the peak level of the storm surge from fully developing on the north side of the causeway, and by extension, on the east side of town. This would mitigate, but not prevent, flooding on the east side of Town. Hydraulic modelling of these flow dynamics is outside the scope of this report but should be undertaken as part of the long-term management strategy of the causeway flow.

We strongly recommend that if any flood mitigation measures are put in place to protect the downtown and waterfront on the west side of town, that it be accompanied by an agreement with the authority having jurisdiction over the causeway river crossing to ensure that there are adequate measures in place to prevent high tide and storm surge water levels from fully developing across the causeway. This could be done by maintaining a controlled gate system similar to the one used during operation of the tidal generating plant, or it could be a detailed hydraulic study to confirm expected water levels on the north side of the causeway during various tide and storm surge events. Note that the latter option is very likely to trigger the need for various flood control measures on the east side of town, which could range from simple installations like tide gates on culverts, to more major interventions such as seawalls or raising the Highway 1 embankment to protect against longer term scenarios with more pronounced climate change effects.

3.6.3 Proposed Storm Sewer System

The proposed concept also includes new catch basins and a new storm sewer behind the wall to collect runoff from properties. This runoff would no longer be able to run over the boardwalk into the river and must be collected to an outfall.

Flow from this system is conveyed to a proposed stormwater pump station near the existing sewage lift station at the boat works. This pump station will collect runoff from the waterfront, seepage from behind and under the proposed wall, and stormwater from the existing outfall. When Annapolis River levels are lower than approximately the level of the boardwalk, stormwater will flow by gravity through a pipe similar to the existing concrete outfall beside King's Wharf and pumping will not be required.

When river levels are higher than the water in the stormwater pipe system, a flap gate on the gravity pipe will close, preventing backflow from the river into the storm system. Provided water levels do not reach a critical level where they will flood streets or properties, stormwater will collect in the underground storm sewers until the river levels are low enough to discharge by

gravity. If water levels reach a critical level that risk flooding streets or properties, the pumps will activate and drain the system to safe levels until the river recedes sufficiently to drain without pumping. In effect, this pump system will only be required during extreme events of heavy rainfall combined with high tide and storm surge conditions and is not expected to incur large ongoing energy expenses for operation. Cost of the pump station will be the initial capital costs, plus routine pump maintenance costs. With proper routine maintenance the life of the pumps is expected to exceed thirty years because of the low run-time expected.

3.6.4 Access to King's Wharf and Annapolis Royal Haul Up Association

The proposed design needs to accommodate access to the King's Wharf and to the Annapolis Royal Haul Up Association (ARHUA). This is challenging, as during design storm surge events, both of these areas are under flood waters. During development of the protection concept, the design team considered permanent flood protection for these areas – in effect, extending the wall to provide permanent protection.

At the wharf, this would require raising the elevation of the wharf approximately 600 millimetres in the base scenario, and over one metre in the worst-case scenario. This would not be possible without reconstructing the entire wharf because, as discussed in more detail in **Section 3.7**, the existing wharf is experiencing critical structural degradation and cannot support any extension.

Secondly, the ARHUA needs to maintain access to the river beside the wharf as well as to land access at St. George Street. A permanent barrier would interfere with one or the other of these requirements.

Lastly, major changes in grade at the wharf or the ARHUA would create changes in grade, or slopes from the road to the wharf / ARHUA that were not traversable by vehicles. There is insufficient distance between the areas that would need to be raised and the street to maintain a maximum eight percent (or lower in the case of the wharf) desirable grade for vehicle traffic.

Because of these functional and geometric restrictions, a permanent barrier at this location is not feasible. To maintain access to these locations while providing adequate flood protection, the concept design proposes a section of temporary flood protection as shown in **Figure 3-1**.

3.6.5 Temporary Flood Protection

Temporary flood protection refers to protection measures that are not permanently in place. Instead, they are deployed by Public Works only when there is a possibility of flood risk. This type of emergency measure is used to protect urban areas that experience frequent street flooding from undersized storm sewers to prevent flow into underground parkades or other at-risk, lo-elevation areas. The samples shown here are intended to be indicative of how the flood barriers

work and are not intended to endorse or warrant the performance of any particular temporary flood barrier.

The proposed design leaves a gap in the seawall from the south side of the King's Wharf to the park north of the ARHUA. The final wall design will have keyways where the wall terminates for the temporary flood barrier to abut the wall structure. When deployment is required, that is, when there is a forecast of a large post-tropical storm event that could coincide with high tide, the flood barriers will be laid between the ends of the wall. **Figure 3-2** shows a picture of temporary flood barriers deployed before a flood event.

Figure 3-2: Temporary Flood Barrier - Deployment

Once the flood barrier has been laid out, it can be driven over, and will not impact operation of the wharf or ARHUA while it is in place. Once flood waters begin to rise in front of the barrier, the water pressure starts to lift the leading edge of the barrier, as seen in **Figure 3-3**.

Figure 3-3: Temporary Flood Barrier – Rising Flood Water

The barrier will effectively extend the seawall, providing temporary flood protection for the duration of the storm event, shown in **Figure 3-4**. These barriers are expected to have some seepage below and around the edges that will be captured in the town stormwater system, conveyed to the lift station and pumped out with the rest of the stormwater. The seepage will be a much lower rate than the stormwater inflow that the system is designed to accommodate.

Figure 3-4: Flood Barrier in Place

In considering whether temporary flood measures could be appropriate for the full extent of the waterfront, rather than constructing the seawall, the following considerations are relevant:

a) The barriers are available with heights up to 1.5 metres. This would provide protection to elevation 5.7 metres, higher than the best-case scenario, but 300 millimetres lower than the worst-case scenario.
b) Because it is lower than the worst-case scenario, this option is insufficient to provide an adaptation pathway to long-term protection if climate change impacts follow the worst-case predictions in the future.
c) Despite being available with heights up to 1.5 metres, common use of these flood barriers is up to a height of 675 millimetres. 675 millimetres is sufficient to provide protection to the 2053 worst-case flood elevation of 5.04 metres at the wharf, but no higher. If the town elects to pursue an option with greater heights, we recommend working with suppliers to field proof effectiveness and stability under the higher water levels prior to proceeding.
d) The maximum length of continuous flood protection required is 580 metres, or 1900 feet. The barriers are sold in 15 metres, or 50-foot lengths. The wharf temporary protection would require four lengths of flood barriers, whereas the maximum length would require thirty-eight lengths of flood barriers. The town should confirm stability of barriers without interim support with suppliers to confirm if there is a need for interim support such as concrete keyways at intervals through the installation.
e) The temporary barrier sits on the ground surface. This increases the risk of high floodwaters undermining the ground during a flood event. The barrier would likely need a concrete pad over much of the length to provide a consistent base for the barrier.
f) Deployment of the 38 lengths of flood barrier could be a multi-day process for public works, which will would require earlier preparation and more frequent response to forecasted extreme events.
g) The subdrain, storm sewer and pump station will still be required to deal with runoff behind the barrier, seepage through the ground under the barrier and seepage through the barrier joints and under the barrier.

Based on the additional risk inherent in using a surface based temporary flood barrier and lack of adaptation pathways for future worst-case scenarios, the temporary flood barrier is not selected as the preferred option. However, it can be pursued as a lower-cost alternative if funding cannot be secured for the seawall, provided additional investigation for proof of concept is undertaken prior to construction of concrete pads, the stormwater collection system and interim support columns if needed.

3.6.6 Estimated Cost

The estimated cost of the concept seawall design, including the storm sewer system is $3.78 million, which includes a 25% contingency for unknown factors in the detail design phase. **Appendix E** contains concept drawings of the seawall along the river shoreline for a combined distance of **570-metres**. The temporary flood protection barriers would be required for the **60-metre** gap at the wharf and ARHUA with an estimated cost of $48,000. Detailed engineering, site inspection and project management are anticipated to be an additional $125,000. The total estimated cost to deliver the concept design through construction is **$3.95 million**. A detailed breakdown of cost estimate items can be found in **Appendix F**.

A detailed cost estimate of work to prepare grades and install intermittent supports for a temporary flood barrier was outside of the scope of this report, which was intended identify and provide costs for one preferred option. However, to assist the town in decision making, the opinion of probable cost (order of magnitude costing) for the temporary barrier solution, provided that it is validated by proof of concept, is $1.5 million for site preparation and concrete, plus $456,000 for the flood barriers for a total of **$1.96 million**.

3.7 Shoreline Restoration

The existing waterfront has been impacted with over two hundred years of development which has altered the riverbanks and salt marshes that originally thrived in the inter-tidal zone. With this work along the waterfront, there is an opportunity to incorporate shoreline restoration to reinstate aquatic habitat and biodiversity within the intertidal zone. The section at the lighthouse, shown in **Figure 3-5**, shows conceptually how the shoreline could be adjusted by rearranging the existing boulders shore protection to create a biodiversity rich salt marsh habitat.

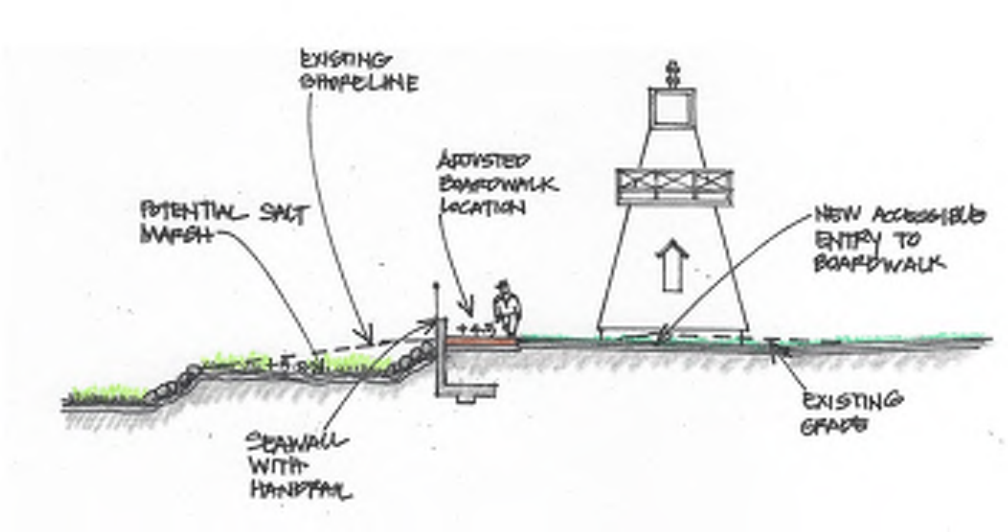


Figure 3-5: Section at the Lighthouse

The area between the King's Wharf and the King's Theatre has been protected with a mix of large stone and driven sheet pile walls, shown in **Figure 3-6**.

Figure 3-6: Existing Condition at King's Wharf

It is proposed that the area be infilled in levels to match aquatic environments that sustain life and create biodiversity. This work will correspond to proposed wharf retention measures to protect King's Wharf. The photos in **Figure 3-7** are examples of built intertidal green spaces – a diverse salt marsh habitat which offers shoreline erosion protection as well.

The section and plan view in **Figure 3-8** shows a conceptual idea of what shoreline restoration could look like between the wharf and the King's Theatre. Refer as well to report **Section 3.8** for a detail through the wharf showing how intertidal terracing can be used as part of a wharf rehabilitation strategy.

The cost of the shoreline restoration is highly variable depending on the extent, length and breadth of construction. The estimated cost of this restoration work is $600,000 based on the extents shown on the drawing in **Appendix E**. Detail design, specifications, project management, site inspection and monitoring are expected to be approximately $75,000 for a total of **$675,000.**

The shoreline restoration is not required for stability of the seawall because the seawall cost estimate includes an accommodation for moving and importing armour stone to protect the toe of the wall against erosion and debris. The shoreline restoration is an additional environmental

enhancement that may open access to special-purpose funding if incorporated into the project, as well as improve the look, useability and tourism benefit of the waterfront.

Figure 3-7: Shoreline Restoration

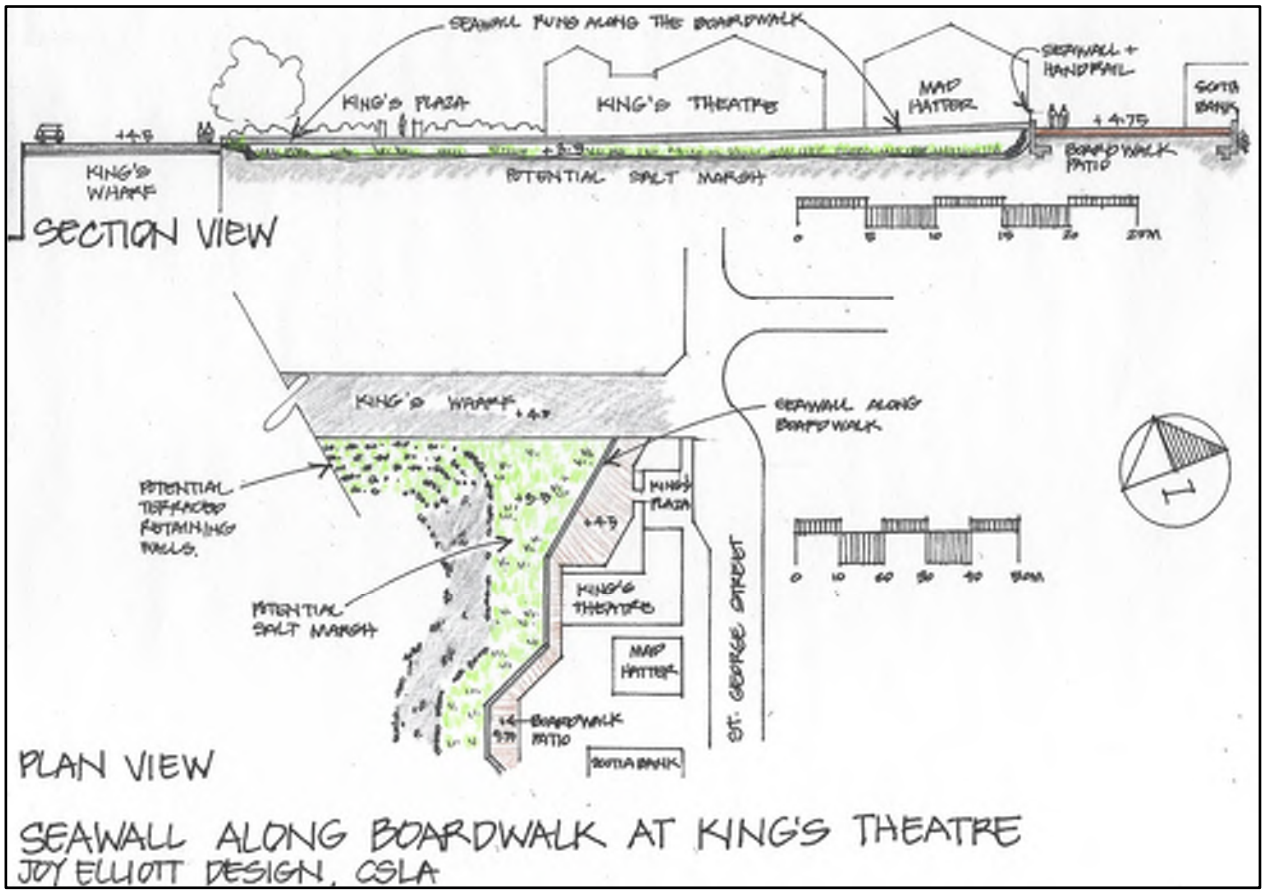


Figure 3-8 Terracing and Shoreline Restoration at King's Theatre

3.8 Wharf Replacement

The Town is assessing options to address structural issues at the King's Wharf, following a structural report issued by Able Engineering on September 22, 2022, with the conclusion that rehabilitation or replacement is necessary in the next five years. On the understanding that this is a priority for the town, this report has incorporated this section to discuss how the wharf rehabilitation could be incorporated into the waterfront construction and shoreline rehabilitation.

The original wharf was timber construction and the current corrugated sheet piles were installed as a rehabilitation of the original wharf. Rather than reconstruct a new wharf, the town could construct a new shell around the wharf to retain the existing fill as the existing sheet piles continue to degrade and perforate. **Figure 3-9** shows a plan view of the concept for rehabilitation of the wharf. The concept incorporates a terraced fill embankment as part of the coastal restoration on the south side of the wharf, which reduces the amount of wall required for rehabilitation.

It is not intended here to provide a design of the wharf rehabilitation, as this is outside the scope of this report. However, the town has requested an order of magnitude cost estimate for rehabilitation that includes an embankment fill on the south side and potential to tie into shoreline restoration that will contribute to habitat restoration and beautification of the waterfront by the King's Theatre. The cost estimate provided here is based on the following assumptions should this be adopted as a preferred approach, subject to validation through detailed structural design. Note that cost estimates do not include cost of design, construction support and project management.

a) The existing wharf will be retained, with the exception of the concrete cap which will be demolished and replaced,
b) Steel H-Piles will be driven around the wharf at 1.8 metre spacing,
c) Facing for the new walls will be 75 millimeter thick, 300-millimetre x 1.8 metre long treated and marine painted timber or stainless steel structural mesh,
d) As shown in Section A-A in **Figure 3-10**, the embankment can be used as a tie-back to support the opposite H-Piles and reduce the depth required for piling,
e) On the west end of the wharf, the embankment is not possible to construct because the river bottom drops off steeply. In this area, two options are available:
    a. Drive the H-Piles deeper to get the required stability. This will require additional cost in pile length and installation time, as well as increase the risk of hitting obstructions or rock during piling, but saves cost in steel fabrication, or
    b. Fabricate a steel structure by connecting the H-Piles with cross beams and stiffening plates to provide global stability, which incurs less piling cost but more structural fabrication cost.

Once the shell has been constructed, the wharf cap can be repoured.

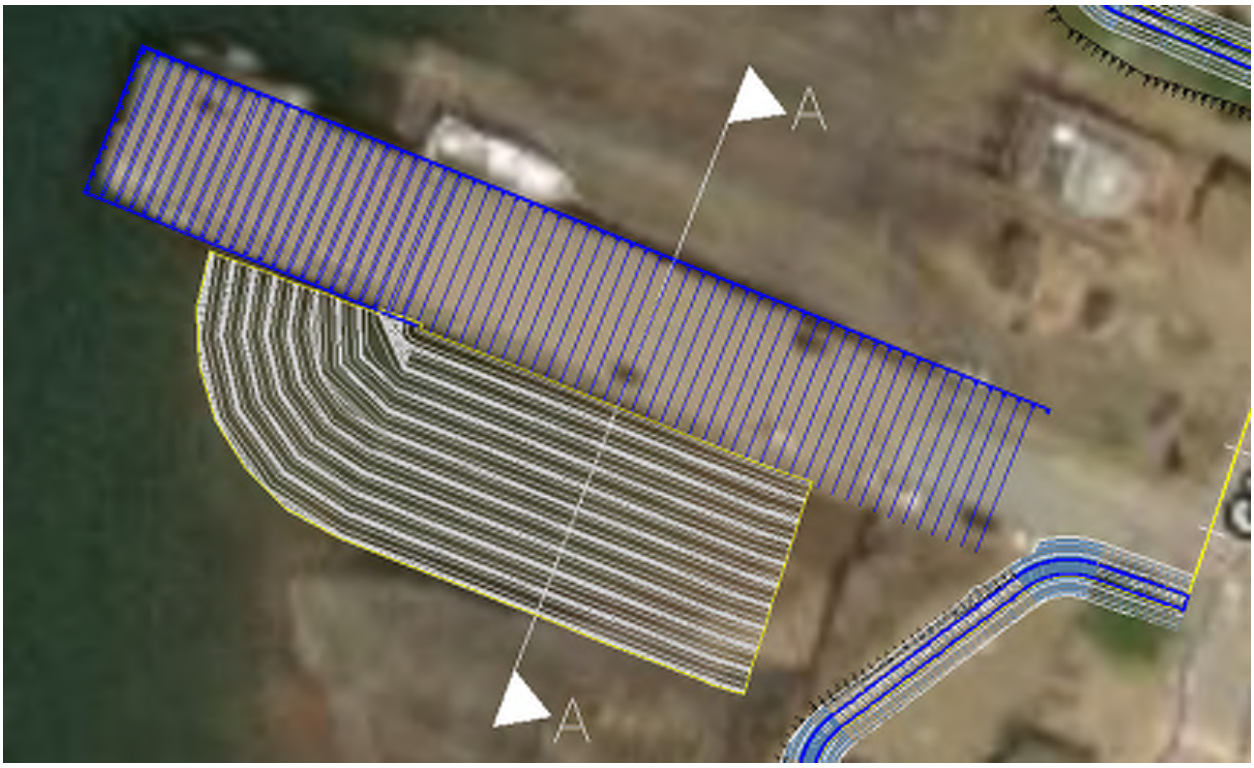


Figure 3-9: Wharf Rehabilitation Plan View

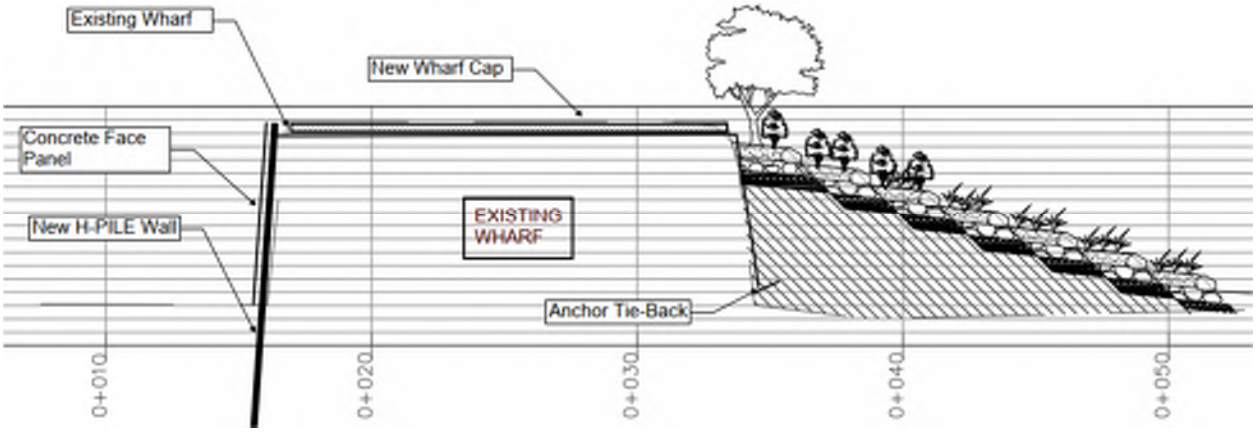


Figure 3-10: Wharf Rehabilitation Concept Section A-A

The opinion of probable cost for this construction is shown in **Table 3-2**. During discussions with town stakeholders, there has been an opportunity identified to include precast facing panels on the outside of the wall. The architectural pre-cast panels would allow for cultural and artistic elements to be incorporated into the wall; however, this carries significant extra cost because the precast facing panels are not used as structural elements to retain fill to the heights required

for the wharf. Costs are presented in tabular format to show an overview of cost elements in the concept.

Table 3-2 Wharf Rehabilitation Opinion of Probable Cost

Element	Approximate Cost (2023$)
Steel Piling and Wall Face	$ 525,700
Structural Steel Work	$ 260,545
Tie-Back System	$ 69,575
Embankment fill, rock placement, geotextile and planting	$ 288,090
Concrete capping	$ 122,500
Subtotal	**$ 1,266,410**
30% Contingency for unknowns	$ 379,923
Total without architectural panels	**$ 1,646,333**
Architectural Pre-Cast Panels	$ 980,800
30% Contingency for unknowns	$ 294,240
Total with architectural panels	**$ 2,921,373**

4 Seawall Design Basis

This section provides the basis of the concept design of the seawall that should be considered if the town proceeds to detail design and construction. All elevations are given in Canadian Vertical Geodetic Datum (CGVD) 2013.

- Design life of the wall shall be 100 years.
- Concrete mix shall be developed considering the possibility of saltwater exposure from estuarine conditions, which will become more pronounced with sea level rise.
- Drilling logs and an interpretive report are included as **Appendix G** of this report. The dominant substrate is a firm clay material overlain with some areas of imported fill. Based on the drill logs, it is expected that most of the wall foundation will be on native clay material, but the cost estimate includes a provision to remove and replace pockets of material where unsuitable fill is encountered.
- Maximum bearing pressure of the firm clay has been assumed to be 75 kPa with a maximum design wall bearing pressure of 45 kPa.
- Minimum factor of safety against overturning shall be 1.5.
- Top of wall is set at elevation 5.34 metres with a design water level of 5.04 metres.

- Minimum frost depth to bottom of wall is 1.2 metres.
- Handrail height is 450 millimetres with top of rail at elevation 5.78 metres.
- Maximum water level in the worst-case climate forecast is 6.05 metres.
- Handrail design should accommodate bending moments from a water level to top of rail at its lowest elevation in the event it is integrated as part of the barrier in the future.
- Handrail heights should be set to meet code while minimizing the impact to the visual line across the river. Height may vary depending on the height of wall above the boardwalk.
- Wall overturning and sliding should consider current conditions, design conditions and worst-case water elevations, as well as low tide conditions.
- The toe of the wall will need to be protected from erosion and undermining by armour stone or living shoreline.
- Elevations of the existing boardwalk shall be retained.
- Access to the existing boardwalk shall be retained at all current locations. At the lighthouse, the boardwalk and wall shall be stepped out toward the river to straighten this section of walkway.
- Existing stair access from the deck behind the King's Theatre to the waterside shall be reinstated with steps over the wall from the boardwalk side.
- Wall design should include considerations that the wall may need to be extended up to 900 millimetres in the future, so rebar design and upstand thickness should allow for this modification if required.

Adaptation pathways shall be considered in the design of the wall. The current design basis will protect against flooding from the current highest astronomical tides, the 100-year return period storm surge with SSP2-4.5 climate projections to 2103, or the 100-year return period storm surge with SSP5-8.5 climate projections to 2053. If sea-level rise and increased storm surge from more powerful winds is found to be tracking on the worst-case scenario, remedial work will be required to increase the level of protection from the wall in approximately thirty years. There is no way to predict what materials, technologies or funding will be available at this time, but the detail design should consider at least two possible solutions.

The first is extending the wall with additional concrete. The design shall demonstrate how an additional section of wall could be added to the top of the existing wall without compromising the function, global stability or bearing capacity of the existing wall and foundations.

The second option would be to retain the view through the handrail at the current design height and install a floating flood barrier that would brace against the handrail during high water levels and drop back below the top of wall once the surge recedes. The design shall demonstrate how such a mechanism could be developed and installed without compromising the function, global stability or bearing capacity of the existing wall and foundations. An illustrative sketch of such a-mechanism is shown in **Figure 4-1**.

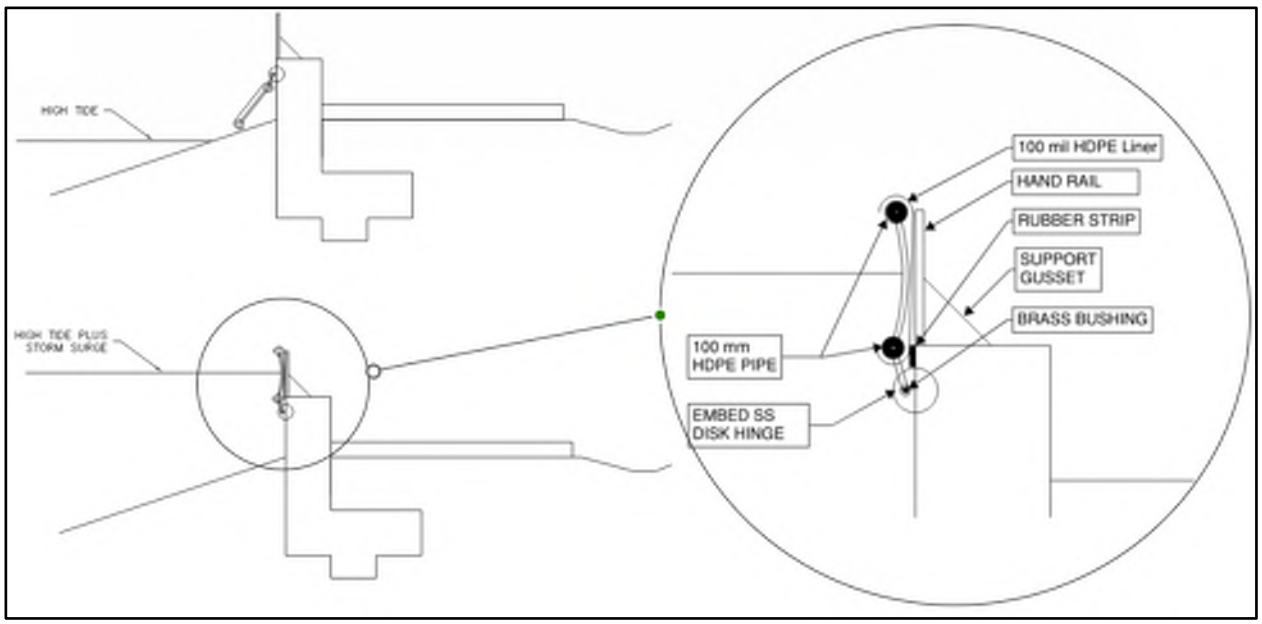


Figure 4-1: Schematic of Floating Flood Barrier

5 Culture and Heritage Considerations[5]

Annapolis Royal is known as the 'Cradle of our Nation'. Long before Europeans arrived here, the Mi'kmaq inhabited the area. The Annapolis River (previously known as the Dauphin River) was an important link in the overland route to the South Shore of what is now Nova Scotia. The site of present-day Annapolis Royal is situated on the shallow south facing banks of the Annapolis Basin – a good but shallow harbour and was firmly established as a Mi'kmaq habitation site.

The first Europeans visited the area in 1604 when the French explorers began a friendship with the Mi'kmaq under the leadership of Chief Membertou. Battles between the French and the English for control over these lands continued between 1613 and 1763 when France transferred power over the land to Britain. The 17th and 18th Centuries saw the area become a center for European colonization.

The first fort was built in present-day Annapolis Royal by the Scottish in 1629. The French built the star shaped European fortification beginning in 1702 but by 1706 the British gained control and the area was named Annapolis Royal. The new Field Officers Quarters were built at the fort in the 1790's and the site became known as Fort Anne in 1800.

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[5] Sources: https://annapolisroyal.com/visitors/history-timeline/
https://annapolisheritagesociety.com/community-history/history-annapolis-royal/
https://en.wikipedia.org/wiki/Annapolis_Royal
https://parks.canada.ca/lhn-nhs/ns/fortanne/culture/histoire-history

This area supported a thriving Acadian population until 1755 when they were deported during the Great Upheaval. They left behind a legacy of dykes which protected productive farmlands. Many of these are still in use today. The New England Planters began to settle in Annapolis County in 1760. The period between 1781-1783 saw an influx of United Empire Loyalists including Black families.

After the War of 1812, calm was restored to the area and attention turned to economic pursuits. Many lavish homes were built in Annapolis Royal using the wealth generated by the growth of the shipping industry and from ship building. The Annapolis Royal Port was connected to the productive Annapolis Valley farmlands by the Windsor – Annapolis Royal Railway. The sea link allowed this small town to achieve a high level of industry that belied its small size. The town boasted a dozen working wharves at this time. This high level of economic growth allowed the culture of the area to thrive. There was a music hall, a rink, a theatre, numerous churches as well as numerous inns and many stylish homes.

When the British withdrew from the town in 1854, the town declined, but local citizens helped to establish the town as Canadas first National Historic Site in 1917. It is the largest registered Historic District in Canada with 135 Registered Heritage Properties, Canada's oldest wood framed building and the oldest example of an Acadian style home. Since 1900, the town's major economic activity has been tourism.

Annapolis Royal has long attracted a unique population of artists, writers, musicians and other creative people. The tranquil streets, historic sites, and scenic beauty make the small town a haven for those with an artistic spirit. The community celebrates and supports their local artisans – which has resulted in a thriving artistic community that adds a creative energy to the town.

Community spirit shines in Annapolis Royal. There are many active volunteers who strengthen the unity and pride within the town. This strong sense of community creates a warm and inviting atmosphere.

Multiple gardens (both public and private), tree lined streets, a public waterfront boardwalk, a unique shopping area, an enviable selection of restaurants, world class accommodations, important heritage sites, exciting art community and theatre combined with many wonderful recreation opportunities make this small town a must-see destination.

The proposed seawall project will protect this unique site with its rich diversity of culture and heritage. While the town is small, it is not possible to relocate the resources of the worst flood prone area. The town is only 2.04 square kilometers in size and there is no vacant land to move to even if the current buildings and infrastructure could be relocated.

While the population of Annapolis Royal is only 550 inhabitants, the town serves as a catchment for 5,000 local citizens. In addition, tourism numbers soar during the spring, summer and fall months.

The seawall is critical to protect this vibrant town with its iconic heritage and cultural landscape from destruction by rising flood waters and storm related events. The design allows the existing connection between the upland elements to remain.

Figure 5-1, a section drawing at the Amphitheatre shows how the outdoor stage area will remain accessible to the boardwalk. This is a critical link for the Amphitheatre as this is the accessible connection to the stage area. The photograph in **Figure 5-2** shows the existing condition for reference. The low height of the wall (shown on the section drawing) continues to allow views to the Annapolis Basin. Additionally, the seawall construction will not disrupt the existing salt marsh habitat.

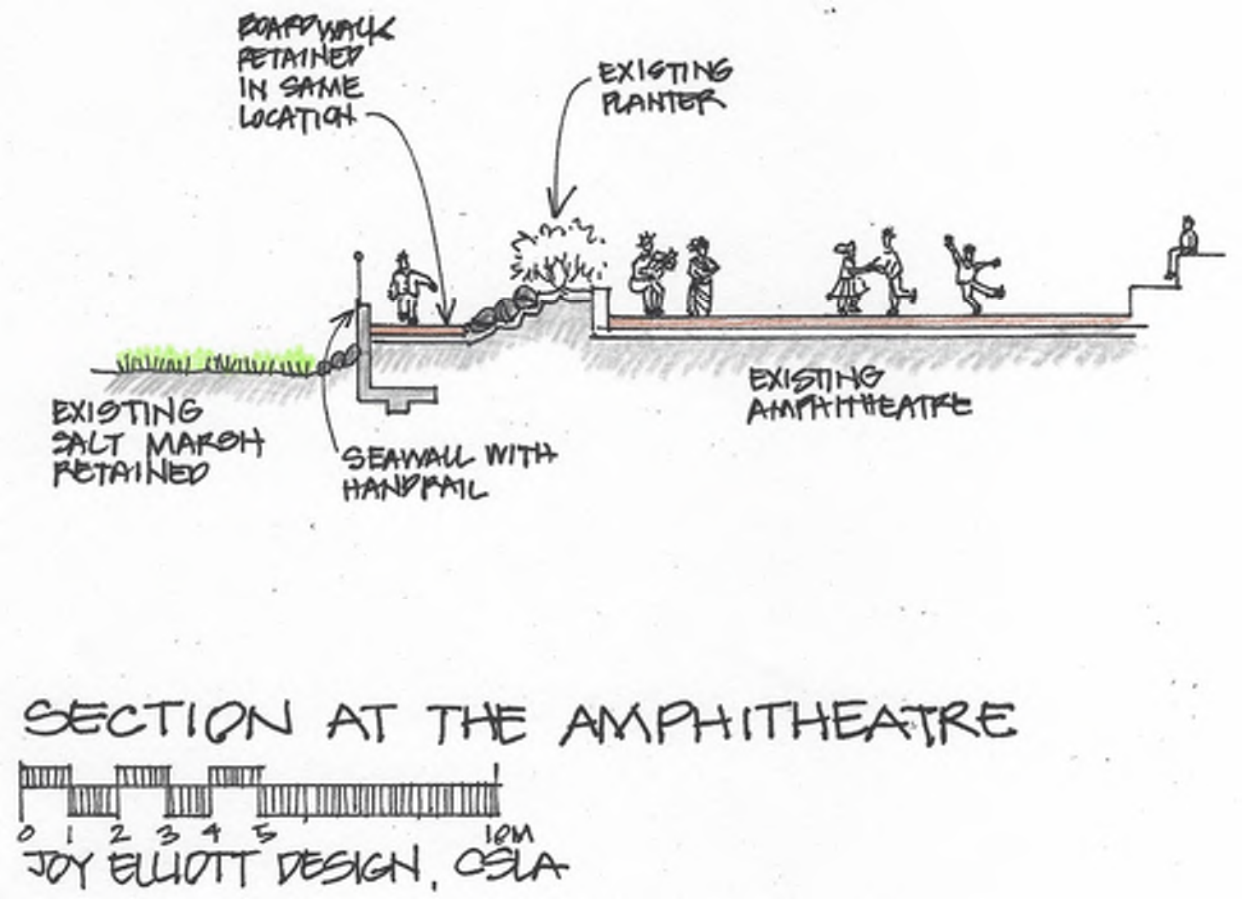


Figure 5-1: Section at the Amphitheatre

Further along the boardwalk, the seawall offers an opportunity to improve the crooked alignment of the existing boardwalk resulting in a safer condition. This important public connection between the boardwalk and the upland park is retained. There is also the opportunity to rearrange the existing boulders shore protection to create a biodiversity rich salt marsh habitat. **Figure 5-3** shows the new boardwalk location at the lighthouse and illustrates the existing crooked section of boardwalk that will be straightened with the new installation.

Figure 5-2: Existing Conditions at the Amphitheatre

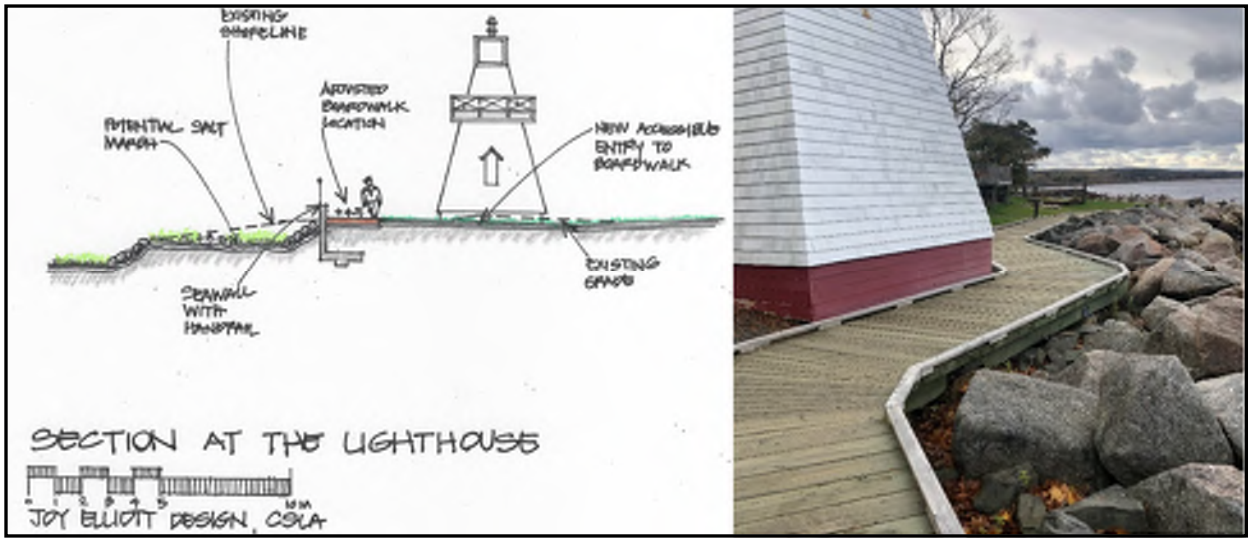


Figure 5-3: Boardwalk Improvement at the Lighthouse

The existing patio space on the boardwalk will be retained allowing this well-loved public gathering space to be retained. The important connection between the adjacent business patio remains unchanged and views of the Annapolis Basin will be left open, shown in **Figure 5-4**. This site also offers the potential to create a salt marsh habitat.

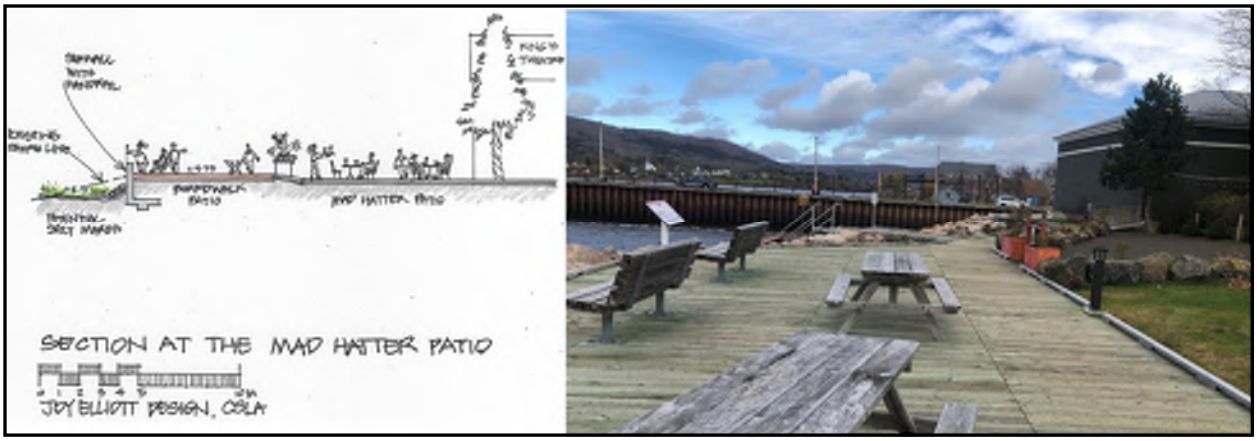
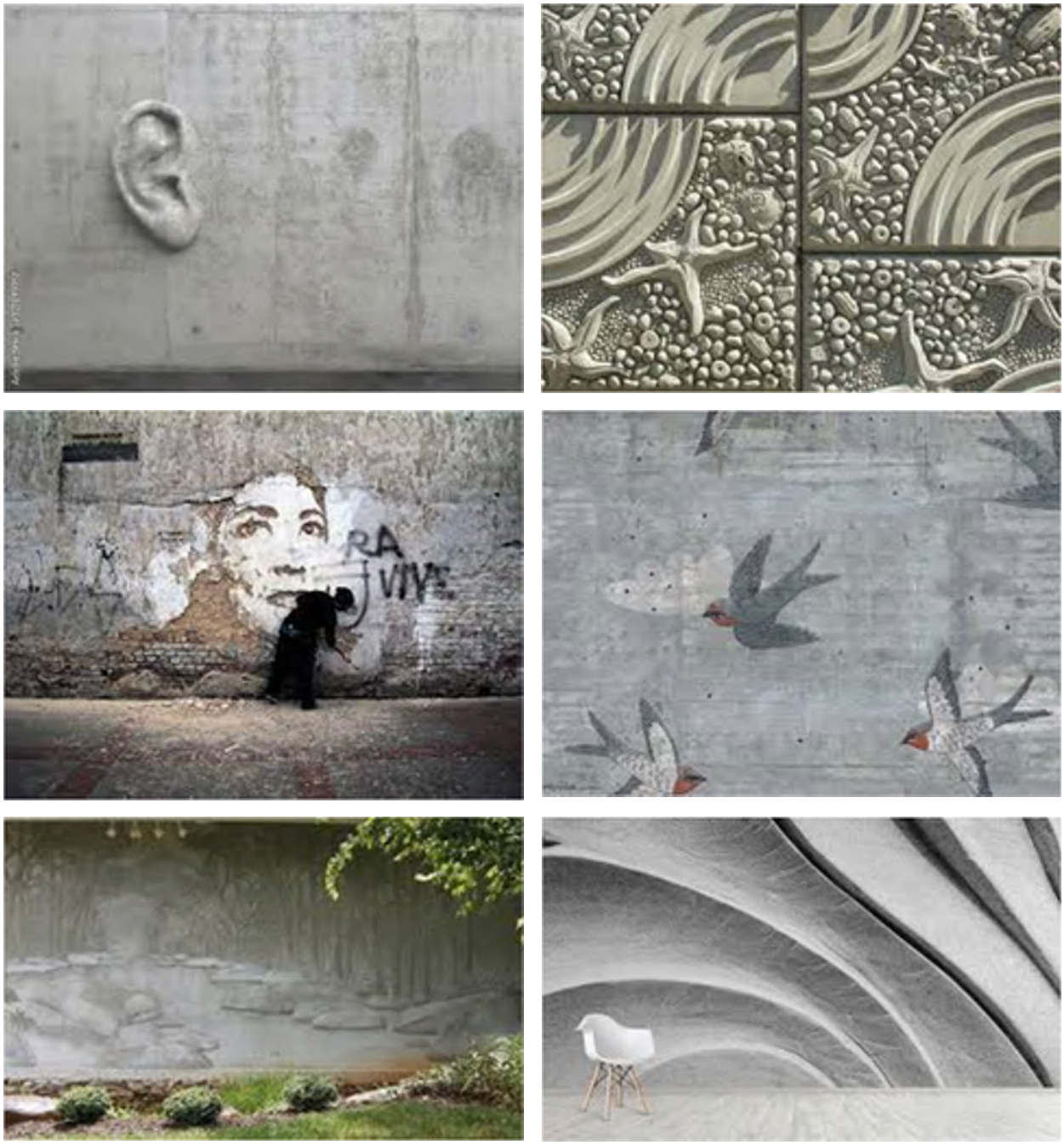


Figure 5-4: Proposed Wall at Boardwalk Patio

In addition, the wall offers a unique opportunity to add another layer of interest and attraction to the town. Not only will the seawall hold back the flood waters, but the proposed 570 lineal meters of wall could become a canvas for the community to tell its story. The photos that follow show some images of concrete wall art to demonstrate the possibilities using cast or stamped concrete to tell a story of Annapolis Royal's history through art.



The proposed low seawall also offers the potential to add seating in select locations. Below are two image ideas, in **Figure 5-5**, showing what could be possible.

Figure 5-5: Integrated Wall Seating Areas

6 Indigenous Consultation

One of the guiding principles of Canada's National Adaptation Strategy is to respect jurisdictions and uphold Indigenous rights[6]. With respect to jurisdiction, all land in Nova Scotia is considered unceded Mi'kmaq territory[7]. In this regard, any impact from storm surge or riverine flooding, as well as the potential impacts of adaptation works discussed in this report fall under the duty to consult with First Nations. This report has been developed in part to open a collaborative effort in exploring risk mitigation and climate adaptation efforts with local First Nations as part of the climate adaptation roadmap. There is great potential for not only consultation, but collaboration on aspects of the project discussed in this report like shoreline restoration, native species habitat, historical markers, informative signage and storytelling through art.

7 Financial Analysis

The technical analysis in Appendix C demonstrates that it is more cost-effective to adapt to climate change than respond to a disaster through emergency response funding or insurance claims. The financial assessment in **Appendix C, Section C.15** is summarized in **Table 7-1**. This table shows the risk weighted costs of flood damage. These weighted costs are developed by

[6] Canada's National Adaptation Strategy: Building Resilient Communities and a Strong Economy, Environment and Climate Change Canada. 2022

[7] Supreme Court Ruling, R v. Simon. 1985, s50.

weighting the total damage expected from a flood event, in current dollars by the percentage likelihood from **Table 7-2** that such an event will occur once, twice or more over the study period.

Table 7-1 Estimated Damage by Flood Depth

Scenario	Average Cost Impact per Event	Cumulative Percentage Weighted Cost
2103 RCP2.6	$5,982,799	$1,892,691
2053 RCP8.5	$9,102,445	$7,110,372
2103 RCP8.5	$20,626,968	$16,934,740

The estimated cost of the flood wall in current dollars is **$3.95 million**. The table demonstrates that, in current dollars, if climate change forecasts follow the best-case scenario of RCP2.6, that it would cost less to respond to a flood event than construct the wall. However, it is generally accepted that given current global climate policy, continuing reliance on fossil fuels, and still increasing annual greenhouse gas emissions, that RCP2.6 is not a realistic possibility to achieve by the end of the century.

Table 7-2 Probability of Storm Occurrence

Number of 1:100-Year Events	To 2053	To 2103
None	73.6%	43.3%
One	22.6%	36.4%
Two	3.3%	15.1%
Three	0.3%	4.1%
Four	Negligible	0.8%
Five	Negligible	Negligible

RCP8.5 is sometimes referred to as the “business as usual” scenario, where emissions continue along current trajectories. Under this scenario, the risk-weighted costs exceed the cost of the wall by 80% for the thirty-year period to 2053, and by 430% when considering the full study period of eight years to 2103. Interpolating from these assessments, interim climate scenarios would be cost neutral over the medium term and still overwhelmingly cost positive over the longer term.

The financial assessment in **Appendix C** considers the cost of damage to structures. It does not consider other related costs such as interruption to the business community, access to services provided by those businesses if they are shut down for a long time, potential loss of heritage buildings if damage is severe enough and impacts to tourist traffic from functional loss of buildings like the King's Theatre. These are difficult to quantify but are important considerations in decision making.

8 Conclusions and Recommendations

Based on this analysis, there is increasing risk over the coming decades from coastal flood risk in Annapolis Royal from the impacts of climate change. The financial analysis demonstrates that under all but the most optimistic of climate projections that taking adaptation action will be more cost effective than waiting for and responding to disaster events which have increasing likelihood of occurring over time.

Near-term (five year) risk of a major flood event in the downtown area only slightly greater than historic baseline conditions. Sea level rise has been minimal over the last on-hundred years, but there is a weak statistical indication that wind energy, responsible for storm surges, has already increased somewhat. However, the period of record is too short for reliable statistical analysis of the magnitude of that increase.

The most urgent action needed is for the King's Wharf, which is at risk not only from climate driven events, but also from the aging sheet pile structure. This is recommended to be the first priority over the next five-years.

There is substantial future risk of catastrophic flooding over the medium term (thirty-years). Managing this flood risk is recommended as a priority over the next twenty years, and sooner if funding is available to support long-term adaptation projects. The risk increases the longer adaptation activities are delayed. Out of the potential adaptation strategies, only two are feasible: emergency response planning to mitigate the consequences of flood events or construction of a structural barrier along the waterfront. Construction of a barrier should protect against flooding to elevation 5.04. This will provide flood protection for intermediate forecasts to 2103, or for worst-case climate forecasts to 2053. The wall shall be designed to allow future expansion or alternative flood protection for the worst-case scenario to 2103 without having to remove or reconstruct the wall. Because climate forecasts are continually changing as new data and modeling is developed, the designers should consider whether to accommodate future expansion to RCP8.5 upper limits of 1.1 metres of sea level rise by 2100 or the modeling extreme worst-case scenario of 1.5 meters through a workshop to discuss the value of reduced risk versus cost in a workshop with the town.

The following list of recommendations will provide various levels of protection against current and future risk:

a) **Emergency response planning**: This is a low-cost, high value exercise that can be started immediately. The town should develop an emergency response plan that contains at minimum, the following elements:
    i. a communication plan for residents in at risk areas when there is a forecast of a major storm / wind event that can coincide with high tide.
    ii. an evacuation plan that considers floodwater interruption to the road network. Evacuation plan should consider mobilizing people and goods before, during and after floodwaters, when streets may not be passable due to debris.
    iii. default lines of communication to provincial and federal disaster relief departments for potential damage more than $10,000,000.
    iv. procedures to engage insurance companies and aiding residents in navigating the process.
    v. identification of temporary residences for displaced residents immediately following an event and longer-term residence for residents with uninhabitable homes.
    vi. identification of programs for assistance to businesses with lost revenue during reconstruction periods.
    vii. process to address challenges and solutions if a surge event is followed by freezing weather.
    viii. contingency planning to address sewage overflow and ingress into buildings.

b) **Wharf Rehabilitation**: The wharf can be abandoned (removed), rehabilitated or replaced. The cost to rehabilitate or replace the wharf is on the order of **$1.7 million** dollars to **$5 million** dollars, depending on rehabilitation versus replacement, the size of a replacement and aesthetics of the wharf finish. The town should consider the costs versus benefits of retaining this structure. Benefits may include considerations other than financial (such as tourism, community support and heritage value) but these need to translate into a community willingness to support the financial requirements of the work. Costs may also be experienced in less obvious ways, such as lost opportunities to upgrade existing roads and underground utilities, resulting in a lower service level from these core municipal services.

c) **Climate Adaptation**: If the town decides to invest in adaptation through constructing a flood barrier along the existing boardwalk and trail system, there are several other actions recommended to accompany pursuit of funding from conventional sources.
    i. Consider the “do-nothing” option. The greatest risk to municipal service infrastructure is the wastewater treatment plant, which can be protected through

operational flood control through the causeway. There is potential for hydraulic connections from flooding on the west side of town, but this could be addressed with temporary flood barriers like the ones described earlier in this report. Most of the infrastructure protected by a proposed seawall is privately owned. Even with outside financing, there will be a substantial municipal contribution required which will increase municipal debt loads and delay upgrades to roads, facilities and underground utilities. Continuing public consultation is recommended to ensure that the community understands these trade-offs and compromises and the purpose for which they are intended.

ii. Commence consultation with Bear River First Nation to understand the cultural implications of this work and explore opportunities for collaboration.

iii. Engage with sponsors / potential contributors through businesses or large industry. Annapolis Royal is a premier destination in Nova Scotia. Corporate contributions to this project would be highly visible to thousands of people per year. With its proximity to the amphitheatre, Fort Anne and the downtown core, there is ample opportunity to publicize contributions of engaged corporate citizens.

iv. Consult with local businesses to determine their current protection from overland flooding through insurance and costs of that insurance. Some commercial insurance policies do not cover overland flooding, and deductibles vary greatly. Hurricane Fiona demonstrated that disaster relief funding can be slow to arrive. There may be a business case for local corporate contribution to the project through lump sum or installments when costs of deductibles, loss of revenue following a flood event and increasing rates as the insurance industry absorbs more frequent costs from climate change.

v. Seek funding from tourism related sources and incorporate this as an opportunity to build an attraction, not just flood protection infrastructure. Allow for input from the community and local experts on the function and design of the installation.

vi. Consider the big picture. Annapolis Royal's response to climate change is just one other key event in a long and storied history. With such a vibrant and creative community, actions taken now can reflect the place of Annapolis Royal within Canada's history, and the place of these decisions within Annapolis Royal's history.

vii. Start a reserve fund in the asset management plan to support construction of potential adaptation measures. This reserve fund should not take precedence over maintenance of critical infrastructure systems but can take precedence over non-essential development activities.

viii. Engage provincial and federal elected officials to determine proposed courses of action for funding needed adaptation projects for small coastal communities in Nova Scotia.

9 Closure

This report (including any enclosures and attachments) has been prepared for the exclusive use and benefit of the Town of Annapolis Royal and solely for the purpose for which it is provided. The report is not intended nor are to be used as a guarantee or warranty, expressed or implied, regarding the future adequacy, performance or condition of any inspected structure, item or system. The inspector is not an insurer of any inspected conditions. Unless we provide express prior written consent, no part of this report should be reproduced, distributed or communicated to any third party. We do not accept any liability if this report is used for an alternative purpose from which it is intended, nor to any third party in respect of this report.

Matt Delorme, P.Eng.

Affix Professional Seal

Appendix A

Flood Risk Assessment, Town of Annapolis Royal

John Bottomley, BA, MA, Ph.D.

Appendix B

Risk Assessment

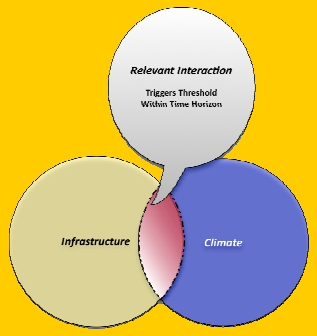
Table C-1: Town of Annapolis Royal Flood Risk Assessment: Infrastructure Response Considerations	
Date:	December 1, 2022
Completed by:	AIM Network
Structural Design	Safety Load carrying capacity Fatigue Serviceability Deflection Cracking and deterioration Foundation Design considerations
Functionality	Level of Service, Serviceability, Reliability Level of Effective Capacity Short term Medium term Long term Equipment - Component selection, design, process and capacity considerations
Watershed, Surface Water, and Groundwater	Erosion along streams, rivers, and ditches Erosion scour of associated or supporting earthworks Sediment transport and sedimentation Channel realignment / meandering Change in water quantity Slope stability
Operations, Maintenance, and Materials Performance	Structural aspects Functionality & Effective Capacity Materials Performance (changes over time from design expectation) Pavement Aspects (i.e. hail, softening, cracking from freeze thaw and other causes)
Emergency Response	Storm Flood Ice Water damage
Insurance Considerations	Cost of damage to municipal infrastructure and private buildings
Policy Considerations	Codes Public sector policy Land use planning documents Guidelines
Social Effects	Displacement of residents Interruption of municipal services Interruption of private services Access to services for vulnerable populations (older, disabled)

Table C-2: Infrastructure Threshold Parameters	
Date:	December 1, 2022
Completed by:	AIM Network
Climate Events	**Infrastructure Threshold Parameters**
Storm Surge	Thunderstorm winds causing storm surge Extremes / wind gusts
Precipitation as Rain	Frequency (one-day, short duration max 24 hours) Extreme Rainfall Intensity < 1 Day Rain on Snow High River Flows
Wind	Sustained Winds (> 1 hour)

Town of Annapolis Royal

Flood Adaptation Study: Risk Assessment
Table C-3: Exposure Analysis

Scope: Municipal infrastructure limited to asset inventory items. Private infrastructure limited to buildings within impacted zone. Does not consider vehicles or personal effects. Time frame to 2100.
Context: Looking inward, only at elements that can be controlled by municipal action or policy (not outside policy, socio-economic impacts or out of jurisdiction regulations)
Criteria: Risk definition (PoF and CoF) from asset management plan. Climate predictions from documented analysis, flood events from tide and storm surge coincidence.

Infrastructure Components	Infrastructure Response Considerations										Potential Climate Events and Change Factors						
											Storm Surge		Rain			Snow / Ice	Wind
	Structural Design	Functionality	Watershed, Surface Water, Groundwater	Operations, Maintenance	Emergency Response	Insurance Considerations	Policy Guidelines & Standards	Social Effects	Public Health & Safety	Environmental Effect	Thunderstorms causing storm surge	Extreme Wind Gusts & Wave Runup	Frequency of Severe Storm Driven Peak Flows	Magnitude of Severe Storm Driven Peak Flows	High River Flows from Precipitation / Melt	Rain on Snow	Sustained High Winds
Facilities																	
Private Buildings on St. George Street	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓
Boardwalk	✓	✓		✓		✓			✓		✓	✓					
Wharf	✓	✓		✓		✓					✓	✓					
Amphitheater	✓	✓		✓		✓		✓			✓	✓					✓
Shoreline Revetement	✓	✓		✓							✓	✓			✓		
Wastewater Treatment Plant	✓	✓		✓		✓					✓	✓			✓		✓
Transportation																	
Road Pavement Structure	✓	✓		✓	✓	✓		✓	✓		✓		✓	✓			
Sidewalks	✓	✓		✓		✓					✓		✓	✓			
Signage	✓	✓		✓		✓											✓
Underground Utilities																	
Stormwater System		✓											✓	✓		✓	
Water Distribution System											✓						
Sanitary Collection System						✓			✓	✓	✓						
Other Utilities																	
Electrical Network																	✓
Communications Network																	✓

Step 1 - Review List → Step 2 - Check those that apply → Step 3 - Check those that apply → Step 4 - Review List

Town of Annapolis Royal

Flood Adaptation Study: Risk Assessment
Table B.1: Risk Assessment

5-YEAR TIME HORIZON

Infrastructure Components	Infrastructure Response Considerations										Potential Climate Events and Change Factors																			
											STORM SURGE								RAIN								SNOW/ STORM				WIND			
	Structural Design	Functionality	Watershed, Surface Water, Groundwater	Operations, Maintenance	Emergency Response	Insurance Considerations	Policy Guidelines & Standards	Social Effects	Public Health & Safety	Environmental Effect	Thunderstorms causing storm surge				Extreme Wind Gusts & Wave Runup				Frequency of Severe Storm Driven Peak Flows				Magnitude of Severe Storm Driven Peak Flows				High River Flows from Precipitation / Melt				Rain on Snow				Sustained High Winds			
Facilities											Y/N	L	C	R	Y/N	L	C	R	Y/N	L	C	R	Y/N	L	C	R	Y/N	L	C	R	Y/N	L	C	R	Y/N	L	C	R
Private Buildings on St. George Street	✓	✓		✓	✓	✓		✓	✓	✓	✓	2	5	10	✓	1	3	3	✓	2	3	6	✓	1	4	4									✓	5	2	10
Boardwalk	✓	✓		✓		✓			✓		✓	4	2	8	✓	4	2	8																				
Wharf	✓	✓		✓		✓					✓	4	5	20	✓	3	5	15																				
Amphitheater	✓	✓		✓		✓		✓			✓	2	2	4	✓	3	2	6																	✓	4	2	8
Shoreline Revetement	✓	✓		✓							✓	5	1	5	✓	5	1	5									✓	1	1	1								
Wastewater Treatment Plant	✓	✓		✓		✓					✓	2	4	8	✓	1	3	3									✓	3	1	3					✓	3	3	9
Transportation																																						
Road Pavement Structure	✓	✓		✓	✓	✓		✓	✓		✓	2	3	6					✓	3	1	3	✓	3	1	3												
Sidewalks	✓	✓		✓		✓					✓	2	3	6					✓	2	1	2	✓	2	1	2												
Signage	✓	✓		✓		✓																													✓	3	1	3
Underground Utilities																																						
Stormwater System		✓																	✓	5	1	5	✓	5	1	5					✓	3	1	3				
Water Distribution System											✓	1	3	3																								
Sanitary Collection System						✓			✓	✓	✓	4	2	8																								
Other Utilities																																						
Electrical Network																																			✓	4	3	12
Communications Network																																			✓	4	3	12

Likelihood (L)		Consequence (C)
0	Negligible - Not Applicable	No Effect
1	Highly Unlikely - Improbable	Insignificant
2	Remotely Possible	Minor
3	Possible - Occasional	Moderate
4	Somewhat Likely - Normal	Major
5	Likely - Frequent	Catastrophic

Risk Thresholds - Risk(R) = Likelihood (L) x Consequence (C)

Consequence						
5	15	19	22	24	25
4	10	14	18	21	23
3	6	9	13	17	20
2	3	5	8	12	16
1	1	2	4	7	11
	1	2	3	4	5
	Likelihood				

< 10	Very Low: no action
10-15	Low: Monitor, minimal action
16-19	Medium: Review Risk Sensitivity
20-22	High: Plan Near -Term Action
>= 23	Critical: Immediate Action

Town of Annapolis Royal

Flood Adaptation Study: Risk Assessment
Table B.2: Risk Assessment

20-YEAR TIME HORIZON

Infrastructure Components	Infrastructure Response Considerations										Potential Climate Events and Change Factors																					
											STORM SURGE								RAIN												SNOW/ STORM				WIND			
	Structural Design	Functionality	Watershed, Surface Water, Groundwater	Operations, Maintenance	Emergency Response	Insurance Considerations	Policy Guidelines & Standards	Social Effects	Public Health & Safety	Environmental Effect	Thunderstorms causing storm surge				Extreme Wind Gusts & Wave Runup				Frequency of Severe Storm Driven Peak Flows				Magnitude of Severe Storm Driven Peak Flows				High River Flows from Precipitation / Melt				Rain on Snow				Sustained High Winds			
											Y/N	L	C	R	Y/N	L	C	R	Y/N	L	C	R	Y/N	L	C	R	Y/N	L	C	R	Y/N	L	C	R	Y/N	L	C	R
Facilities																																						
Private Buildings on St. George Street	✓	✓		✓	✓	✓		✓	✓	✓	✓	4	5	20	✓	1	3	3	✓	3	3	9	✓	1	4	4									✓	5	2	10
Boardwalk	✓	✓		✓		✓			✓		✓	5	2	10	✓	4	2	8																				
Wharf	✓	✓		✓		✓					✓	4	5	20	✓	4	5	20																				
Amphitheater	✓	✓		✓		✓		✓			✓	2	2	4	✓	2	2	4																	✓	4	2	8
Shoreline Revetement	✓	✓		✓							✓	4	1	4	✓	5	1	5									✓	1	1	1								
Wastewater Treatment Plant	✓	✓		✓		✓					✓	4	4	16	✓	1	3	3									✓	3	1	3					✓	3	3	9
Transportation																																						
Road Pavement Structure	✓	✓		✓	✓	✓		✓	✓		✓	4	3	12					✓	4	1	4	✓	4	1	4												
Sidewalks	✓	✓		✓		✓					✓	3	3	9					✓	2	1	2	✓	2	1	2												
Signage	✓	✓		✓		✓																													✓	3	1	3
Underground Utilities																																						
Stormwater System		✓																	✓	5	1	5	✓	5	1	5					✓	3	1	3				
Water Distribution System											✓	1	3	3																								
Sanitary Collection System						✓			✓	✓	✓	4	2	8																								
Other Utilities																																						
Electrical Network																																			✓	4	3	12
Communications Network																																			✓	4	3	12

Likelihood (L)	
0	Negligible - Not Applicable
1	Highly Unlikely - Improbable
2	Remotely Possible
3	Possible - Occasional
4	Somewhat Likely - Normal
5	Likely - Frequent

Consequence (C)
No Effect
Insignificant
Minor
Moderate
Major
Catastrophic

Risk Thresholds - Risk(R) = Likelihood (L) x Consequence (C)

Consequence						
5	15	19	22	24	25
4	10	14	18	21	23
3	6	9	13	17	20
2	3	5	8	12	16
1	1	2	4	7	11
	1	2	3	4	5
	Likelihood				

< 10	Very Low: no action
10-15	Low: Monitor, minimal action
16-19	Medium: Review Risk Sensitivity
20-22	High: Plan Near -Term Action
>= 23	Critical: Immediate Action

Town of Annapolis Royal

Flood Adaptation Study: Risk Assessment
Table B.3: Risk Assessment

80-YEAR TIME HORIZON

Infrastructure Components	Infrastructure Response Considerations										Potential Climate Events and Change Factors																					
											STORM SURGE								RAIN								SNOW/ STORM				WIND			
	Structural Design	Functionality	Watershed, Surface Water, Groundwater	Operations, Maintenance	Emergency Response	Insurance Considerations	Policy Guidelines & Standards	Social Effects	Public Health & Safety	Environmental Effect	Thunderstorms causing storm surge				Extreme Wind Gusts & Wave Runup				Frequency of Severe Storm Driven Peak Flows				Magnitude of Severe Storm Driven Peak Flows				High River Flows from Precipitation / Melt				Rain on Snow				Sustained High Winds			
Facilities											Y/N	L	C	R	Y/N	L	C	R	Y/N	L	C	R	Y/N	L	C	R	Y/N	L	C	R	Y/N	L	C	R
Private Buildings on St. George Street	✓	✓		✓	✓	✓		✓	✓	✓	✓	5	5	25	✓	2	3	6	✓	2	3	6	✓	1	4	4									✓	5	2	10
Boardwalk	✓	✓		✓		✓			✓		✓	5	2	10	✓	5	2	10																				
Wharf	✓	✓		✓		✓					✓	5	5	25	✓	5	5	25																				
Amphitheater	✓	✓		✓		✓		✓			✓	4	2	8	✓	4	2	8																	✓	4	2	8
Shoreline Revetement	✓	✓		✓							✓	5	1	5	✓	5	1	5									✓	1	1	1								
Wastewater Treatment Plant	✓	✓		✓		✓					✓	5	4	20	✓	1	3	3									✓	3	1	3					✓	3	3	9
Transportation																																						
Road Pavement Structure	✓	✓		✓	✓	✓		✓	✓		✓	5	3	15					✓	3	1	3	✓	3	1	3												
Sidewalks	✓	✓		✓		✓					✓	4	3	12					✓	2	1	2	✓	2	1	2												
Signage	✓	✓		✓		✓																													✓	3	1	3
Underground Utilities																																						
Stormwater System		✓																	✓	5	1	5	✓	5	1	5					✓	3	1	3				
Water Distribution System											✓	1	3	3																								
Sanitary Collection System						✓			✓	✓	✓	4	2	8																								
Other Utilities																																						
Electrical Network																																			✓	4	3	12
Communications Network																																			✓	4	3	12

Likelihood (L)	
0	Negligible - Not Applicable
1	Highly Unlikely - Improbable
2	Remotely Possible
3	Possible - Occasional
4	Somewhat Likely - Normal
5	Likely - Frequent

Consequence (C)
No Effect
Insignificant
Minor
Moderate
Major
Catastrophic

Risk Thresholds - Risk(R) = Likelihood (L) x Consequence (C)

Consequence \ Likelihood	1	2	3	4	5
5	15	19	22	24	25
4	10	14	18	21	23
3	6	9	13	17	20
2	3	5	8	12	16
1	1	2	4	7	11

< 10	Very Low: no action
10-15	Low: Monitor, minimal action
16-19	Medium: Review Risk Sensitivity
20-22	High: Plan Near -Term Action
>= 23	Critical: Immediate Action

Appendix C

Seawall Technical Assessment

C1 Project Definition

The intended outcomes of this report are a risk assessment, conceptual design solutions to address riverine or storm surge flooding in Annapolis Royal from the Annapolis River, and recommendations for a roadmap to adaptation. The solutions and roadmap are to be used to engage permitting agencies, public consultation, funding organizations and First Nations stakeholders. The intent is that findings and recommendations from this assessment will inform decision-making throughout the detailed design and construction of a funded project.

C2 Scope

This report uses Engineers Canada's PIEVC Protocol model for risk assessment and draws on the recommended risk evaluation and treatment analysis methodologies outlined in Infrastructure Canada's Climate Lens Guideline and strives to keep recommendations in accordance with Canada's National Adaptation Strategy. The assessment was completed using the Practitioner Risk Assessment approach rather than a fully facilitated approach. The risk assessment has drawn on failure modes described in the document *Flood Risk Assessment; Town of Annapolis Royal* published by John Bottomley in March of 2022. Because the Bottomley report contains numerous references to a comprehensive body of past work on flood risk in Annapolis Royal, it has been included as **Appendix A** of this report. Consequence of failure (CoF) rankings are based on a CoF matrix developed in a workshop with Annapolis Royal staff during their asset management program development.

The risk assessment is limited to the impacts of rainfall, riverine and coastal driven flooding and does not contemplate impacts of other climate events such as increased wind damage to structures, fire, temperature or others not explicitly mentioned.

Figure C-1 is an excerpt from Infrastructure Canada's Climate Lens – General Guidance. Based on historical reports of catastrophic coastal flooding (the Saxby Gale of 1869 and Groundhog Day Storm of 1976) within the last 150 years and the vast body of literature demonstrating risk to low-lying areas from coastal flooding, the coastline of Annapolis Royal is considered high risk and calls for more detailed analysis and action if following this guidance. This report adds to the previous body of work by defining clear probabilities for a wider range of events and conducting a detailed cost analysis of current and climate change scenarios to determine appropriate adaptation measures to pursue immediately and when further funding can be secured.

C3 Analysis Context

The results of this risk assessment are focused on identifying climate adaptation action for Annapolis Royal that can be integrated with work currently underway to develop an asset management plan for long-term sustainable service delivery. The analysis supports the recommendations in the main body of the report.

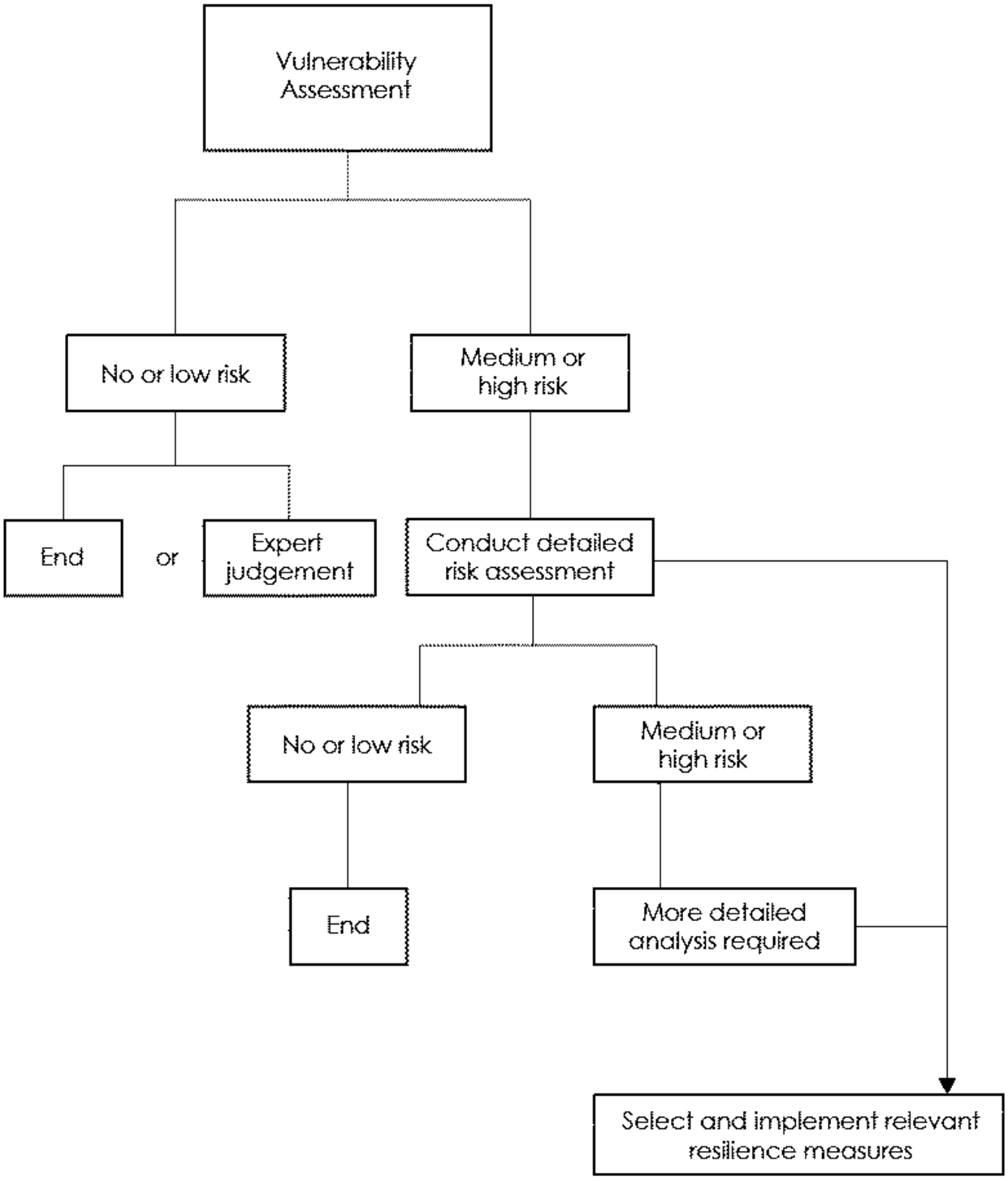


Figure C-1 Flowchart of Resilience Assessment

The report expands on these recommendations to provide a roadmap for adaptation with actions that can be taken immediately. These actions recognize that adaptation based on worst-case scenarios is not possible using only the Town's financial resources and existing funding structures from other levels of government. The adaptation plan provides options not based on what "should" be done, as risks have been clear from numerous past reports over the last decade, but instead to support what *can* be done, including activities to remove the barriers to proper adaptation that currently exist.

C4 Risk Definition

The risk appetite and risk tolerance developed with Annapolis Royal for the asset management plan were used to define the relevant criteria for the risk assessment.

Risk cannot be eliminated from any system; risks can only be managed to an acceptable level. The acceptable level is determined by balancing the costs and benefits of risk management activities. Risk appetite is the amount of risk that Annapolis Royal is willing to accept at an organizational level, and risk tolerance is the willingness of the organization to deviate from that risk profile.

Risk is the combination of the probability, or likelihood of an event and the consequences of such an event. Probability of Failure is defined for the purposes of infrastructure planning as shown in **Table C-1**.

Table C-1 Probability of Failure

Probability of Failure (PoF)	Likelihood of Failure during the planning period	
	Description	Representative Percentage Chance of Failure
1	Negligible – little chance of failure	0% to 10%
2	Low – more unlikely than likely	11% to 40%
3	Moderate – equally likely as unlikely	41% to 60%
4	High – more likely than unlikely	61% to 80%
5	Very High – probable failure	81% to 90%
6	Effectively failed, or near certain to fail	91% to 100%

Typically, these probabilities are considered in asset management risk assessments over the five-year, near-term planning period. With longer range climate impacts as those considered in this assessment, it is necessary to consider both short and long-term probabilities to make decisions.

Probability of failure (PoF) percentages are the likelihood of a specific service failure during a specific period. In the case of this study, the defined time periods are medium-term planning to 2053 (a thirty-year horizon) and long-term planning to 2103 (an eighty-year horizon). Probabilities that the infrastructure will fail to protect the downtown area from flooding are different for each period. The longer period has a higher chance of experiencing a catastrophic event because of climate change impacts and because there are a greater number of years in the period that may experience a flooding event.

The second component of risk is the consequence of failure. This is the impact to the community if the service failure occurs. Consequences of failure are defined in **Table C-2**. To interpret these risk assessments, it is important to consider the timeframe of the risk exposure. As the timeframe approaches zero, the likelihood of experiencing a failure also approaches zero. As the timeframe gets longer, the likelihood increases, ultimately becoming almost certain over long periods without intervention. To determine the most critical risk infrastructure, the risk screening considers increasing likelihood of events with the same consequences, seen in the risk assessment tables in **Appendix B**.

Annapolis Royal's risk tolerance is represented in the risk tolerance matrix developed in the risk workshop during asset management plan development. This defines how critical action is for climate change event exposure. **Figure C-2** shows the risk tolerance used in the assessments in **Appendix B**. Action is prioritized over the relevant timeframe:

- Extreme Risks: Take immediate action.
- High Risk: Plan action within assessment time frame.
- Medium Risk: Review risk sensitivity and determine if further action needed.
- Low: Monitor risk profile.
- Very Low: No action required.

	Consequence				
Probability	1	2	3	4	5
1	1	3	6	10	15
2	2	5	9	14	19
3	4	8	13	18	22
4	7	12	17	21	24
5	11	16	20	23	25

	Risk Tolerance	
Risk Class	Low	High
Lowest	1	8
Low	9	15
Medium	16	19
High	20	22
Extreme	23	25

Figure C-2 Risk Tolerance

In developing a strategy to address risks from an asset management perspective, the Town has adopted an approach that seeks to eliminate (by infrastructure management or risk mitigation) Extreme risks immediately, High risks within five years of identifying them and to develop longer-term plans to address medium risks so they can be addressed when they become High risk or when all higher risks have been addressed.

Table C-2 Consequence of Failure Matrix

CONSE-QUENCE LEVEL	RANK	SOCIAL / CULTURAL / POLITICAL	ECONOMIC	LEGAL	SAFETY	ENVIRONMENTAL
INSIG-NIFICANT	1	Public will not notice. No impact to cultural resources or groups. No impact to relations with other levels of government.	Costs are minor and expected within ongoing operational budget.	No regulatory or legal impacts.	No risk to safety above baseline conditions.	No impact to the environment.
MINOR	2	Minor public notice, public contacts staff - single point of contact. Municipality can alert the public with only minimal social media commentary on the incident. No impact to cultural resources or cultural groups. No impact to relations with other levels of government.	Unexpected operational cost can be accommodated by redistribution of yearly budget. Grant can offset the unexpected cost.	Failure may result in small claims.	Risk of "near miss" incidents, low risk of injury.	Short term effects to the environment requiring one time remediation of mitigation to restore the system to its original state. Notification to NSE.
MODERATE	3	Moderate public notice - multiple single points of contact, elected officials are contacted. Social media has a significant presence with pictures or video. Interruption of service is characterized as unusual. Coverage in local news, requires official municipal response. Impact to cultural groups limited. Potential for insurable damage more than $10,000.	Unexpected operational cost requires cancellation of minor planned activities accommodate. No long-term financial impacts. Minor impact to tourism. Grant cannot offset unexpected cost.	Failure may result in litigation and informal inquiry.	More unlikely than likely to cause short- or long-term injury, no risk of loss of life.	Short term effects to the environment requiring temporary remediation or mitigation which restore the system to its original state. Submit plans for approval to NSE.
MAJOR	4	Potential for injury. Mayor / CAO is notified. Public notice is widespread, large volume of multiple contacts. Social media has a strong awareness in terms of pictures or video. Coverage in local news, requires multiple official municipal responses. Interruption of service is characterized as very unusual. Coverage in provincial news. Impact to cultural groups widespread. Potential for insurable loss greater than $100,000	Unexpected operational cost requires cancellation of major planned activities to accommodate. Long term financing required to accommodate. Loss of commercial or tourism service greater than 5 days.	Failure may result in class action litigation and formal inquiry.	More likely than not to cause short- or long-term injury, low potential for loss of life.	Long term effects to the environment requiring sustained remediation or mitigation. System may not ultimately reach its original state. NSE issues a directive to the Town.
CATASTROPHIC	5	Potential for loss of life or damage. Coverage in national news. Public life is disrupted for an extended period. Interruption of service is "once in a lifetime". Potential for insurable loss greater than $1,000,000	Property damage that the Town is liable for. Loss commercial or tourism service greater than a season. Financing requirements may render the municipality insolvent.	Failure results in contravention of laws, significant litigation, court action and multiple litigations.	More likely than not to cause short- or long-term injury, potential for loss of life.	Permanent or long-term environmental effects that cannot be remediated or mitigated. Failure to comply results in legal action.

The results of the five-year horizon risk assessment indicate that action needs to be taken within the next five years to manage risk exposure to the King's Wharf, while flood risk is within the town's acceptable risk tolerance for coastal flooding from the Annapolis River. Because the town is already pursuing options to replace, repair or rehabilitate the wharf, it is not assessed further in this report. However, any design for the wharf shall consider the climate change conclusions presented here in the design specifications.

The results of the twenty-year horizon risk assessment indicate that action needs to be taken to address risks related to coastal flooding of the downtown core in the next six to twenty-years, and that potential the wastewater treatment plant should be considered in this assessment. The remainder of this section provides the detailed technical assessment of these impacts.

The long-term horizon risk assessment does not indicate any other critical risk factors other than those already identified, and provided appropriate action is taken to address the medium-term risks, there are no residual risks to be considered.

C5 Climate Events

Four weather events were considered relevant to the assessment: sea-level rise, storm surge magnitude, wave runup magnitude and higher riverine flooding from increased flow. Discussion of these events and potential changes because of climate change are discussed in detail in **Section C15** of this appendix.

C6 Time Horizon

The assessment considered how current weather events may affect infrastructure in Annapolis Royal and how a changing climate will change infrastructure performance before and after construction. The time horizons considered are current to 2023, thirty-years into design life to 2053 and approaching the end of proposed design life in eighty-years to 2103.

C7 Infrastructure

Flooding from the Annapolis River has the potential to inundate the downtown core and surrounding areas for an extended period. The scope of this assessment looks at the impact of inland flooding on the buildings, roads and underground utilities in the flood zone.

The focus of the engineering analysis in **Section C15** of this appendix is potential damage and disaster repair costs from these events. However, the consequence of failure matrix considers broader reaching impacts such as environmental and socio-political consequences that may not be captured fully in the financial analysis of adaptation options. It is important to consider that while triple bottom line accounting (that considers financial, social and economic costs) of risk is outside the scope of this report, actual impacts will be greater than those captured in the conventional engineering cost analysis presented here.

C8 Geographic Setting

The study includes the geographic area bounded by the Town of Annapolis Royal jurisdictional boundary, shown as a black dashed line in **Figure C-3**.

Figure C-3 Geographic Setting

C9 Applicable Jurisdictions

Most potential impacts from flooding are on private infrastructure within the Annapolis Royal jurisdictional boundary. The Parks Canada National Historic Site of Fort Anne lies within the study boundaries, so it is considered as well. In addition to the Town jurisdiction, the land lies within the Mi'kmaw district of Kespukwitk, and consultation with Bear River First Nation is required for any potential adaptation work. Land along the Annapolis River waterfront below the Ordinary High-Water Mark (OHWM) falls under jurisdiction of the provincial Department of Natural Resources, and any impact may be referred by Nova Scotia environment for review by the federal department of Fisheries and Oceans Canada.

C10 Participating Stakeholders

This report has been developed using input from reports produced by a variety of consultants, NGOs, local government authorities, provincial reporting and academic studies. The report is

produced through consultation with the Annapolis Royal Environment Advisory Committee, CAO, Wharf Committee, Town Council and Public Works staff.

C11 Data Gathering

The historical review of climate impacts, event likelihood and potential impacts was supplemented by an independent analysis of various climate projections and likelihoods. This independent review provided the final assessment in this report used to produce the time bound risk assessments.

Data used in this report were gathered from available reference material, most notably from reference sources quoted in the Bottomley report, independent collection of climate data in consultation with CLIMAtlantic on the most relevant current climate data, hydrotechnical information developed by subject matter experts on the project team, past infrastructure projects with Annapolis Royal, asset inventories from Annapolis Royal's asset management program and provincial digital elevation model (DEM) data from LiDAR collection for GIS mapping. This section summarizes the outcomes of the data collection and modelling.

C12 Baseline Data and Climate Change

Benchmark tide elevations for the tide station at Digby are shown in **Table C-3**. Tide elevations, adjusted to CGVD2013 geodetic elevation has been derived from tide charts at the Town of Digby provided by Fisheries and Oceans Canada. The tide station elevations are provided using Chart Datum, with a conversion factor of -4.429 to convert to the Canadian Geodetic Vertical Datum of 1928 (CGVD28)[7]. The current standard for vertical survey datum in Nova Scotia is CGVD2013, which has replaced CGVD28 and requires a further adjustment of -0.637, using the benchmark at Annapolis Royal Town Hall[8].

Maximum water levels can arise from four factors:

a) astronomical tide elevations in the Bay of Fundy,
b) storm surge from sustained winds during a hurricane or post-tropical storm, with lesser contribution from pressure differential over the water surface,
c) wave runup from wind gusts during a storm, and
d) increased water level from outward flow of the Annapolis River

[7] Government of Canada Tides, Currents and Water Levels, https://www.tides.gc.ca/en/stations/325

[8] https://webapp.csrs-scrs.nrcan-rncan.gc.ca/geod/data-donnees/station/report-rapport.php?id=69N012

Table C-3 Digby Tide Elevation - Relative to CGVD2013

Name		Description	Elevation (m)
Highest Astronomical Tide	HAT	The highest predicted tide expected over the period of 40 years.	**4.314**
Higher High Water Large Tide	HHWLT	The average of the highest high waters, 1 from each of 19 years of predictions.	**4.104**
Higher High Water Mean Tide	HHWMT	The average from all the higher high waters from 19 years of predictions.	**2.874**
High Water Level	HWL	The highest level reached at a place by the water surface in 1 oscillation.	**2.734**
Mean Water Level	MWL	The average of all hourly water levels over the available period of record.	**-0.526**
Low Water Level	LWL	The lowest level reached at a place by the water surface in 1 oscillation.	**-3.816**
Lower Low Water Mean Tide	LLWMT	The average of the lowest low waters, 1 from each of 19 years of predictions.	**-3.936**
Lower Low Water Large Tide	LLWLT	The average of all the lower low waters from 19 years of predictions.	**-5.226**
Lowest Astronomical Tide	LAT	The lowest predicted tide expected over the period of 40 years.	**-5.416**

Tide elevations are consistent and predictable but do experience variations in magnitude. High tides are the critical risk factor, but even these have variations in maximum level. It is important for this analysis to differentiate the different high tides. High tides occur twice a day with differing elevations. High tide levels vary throughout the year depending on the relative position of the earth, sun and moon. Once or twice a year, high tide occurs at its maximum level, often referred to as a king tide, or highest astronomical tide (HAT). This is not appropriate to use for a risk assessment. The tide and storm surge are independent events. The likelihood of a 100-year (or one-percent chance of occurring each year) storm surge occurring during a king tide, which only happens one or two days out of the year, would be a lower probability than the 100-year event.

More consistently, high tides occur around an average of the **higher high water mean tide** (HHWMT), or the average elevation of the higher high tide range. This means that on any given day, it is as likely as not that the higher tide will reach this level.

Storm surges can last several hours to near a day, so when the 100-year storm surge occurs, it is probable that it will be coincident with a level approaching the HHMT. For greater tides, such as a king tides, the frequency of occurrence is less than that of the HHMT. For this reason, the HHMT is used as the base tide condition for analysis.

C12.1 Sea Level Rise

Climate models for sea level rise are inherently uncertain. First, all models rely on calculations of complex systems. Such modelling has potential for error, represented by how confident we are that the future condition will **exceed** a given result. Projected sea level rise is typically shown as a mean projection with increasing potential for error above or below that mean as we project further into the future. **Figure C-4** demonstrates this for one climate case.

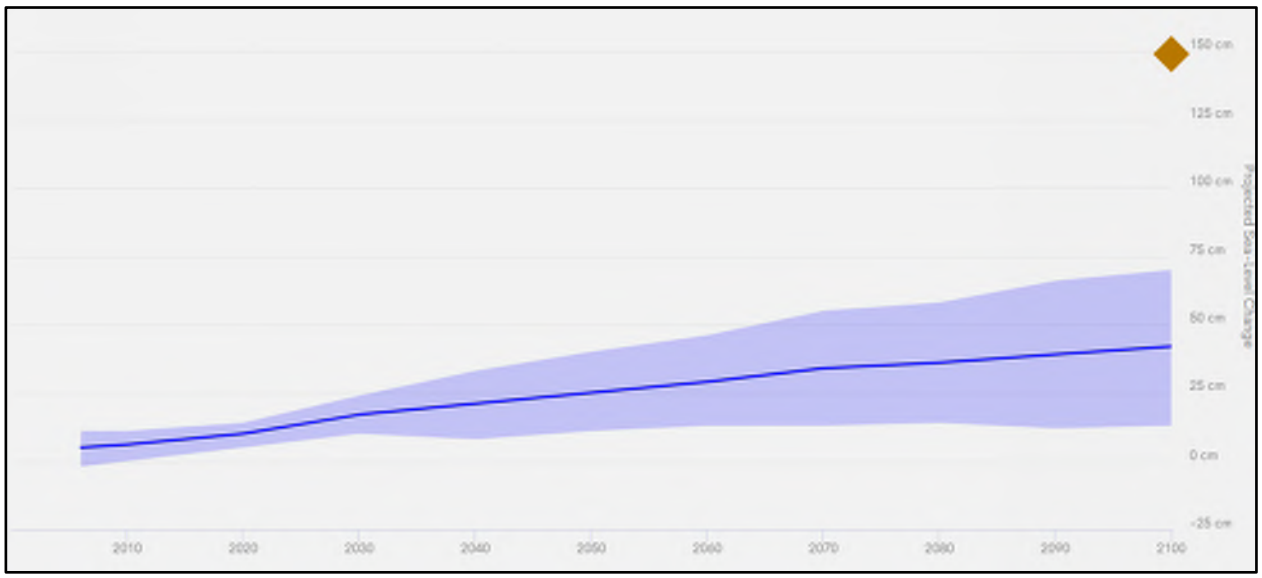


Figure C-4 Sea Level Rise Projection for RCP 2.6[9]

Figure C-4 shows that for a given year, all predictions will be **higher** than the lowest band of the error (bottom of the shaded part) and all predictions will be lower than the **highest** band of the error. The mean sea level rise is the line with half predictions higher and half predictions lower than that value.

Referring to the "5th percentile" for sea level rise means that 95% of the results exceed the given value, that is, we have a high level of confidence that this increase will be exceeded in the given period.

The "95th percentile" in contrast, is only exceeded by 5% of the values, therefore, while it is possible that the increase will be this much, we have a lower level of confidence that it will occur.

[9] https://climatedata.ca/

More plainly, it is almost certain that sea level rise will be higher than the 5th percentile, and unlikely that it will be higher than the 95th percentile.

The second uncertainty affecting the magnitude of sea-level rise is human mitigation actions. Climate change impacts are lessened over the next century if, globally, aggressive measures are taken to reduce greenhouse gas emissions. One way of measuring this, used by the Intergovernmental Panel on Climate Change (IPCC) is the representative concentration pathway (RCP). A lower RCP indicates more effective reduction of greenhouse gas emissions, and a higher RCP represents less mitigation. **Figure C-5** shows the relative greenhouse gas emissions and mean worldwide temperature increase for different RCPs.

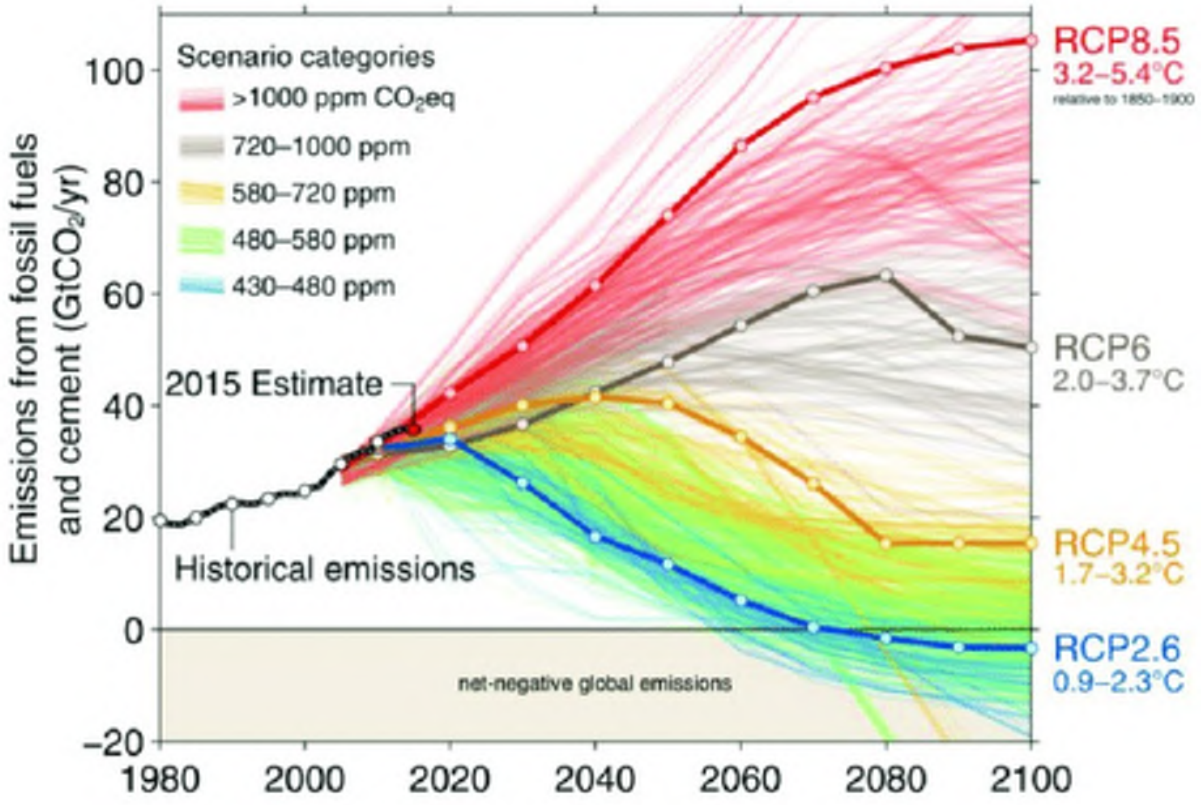


Figure C-5 RCP Pathways and Mean Global Temperature Increase[10]

Consider the contrast between RCP2.6, the best-case scenario of aggressive emissions reduction with RCP8.5, a projection that assumes there are no aggressive climate policies adopted worldwide. RCP8.5 assumes that our past increases in fossil fuel use continue unabated or put differently, that recent mitigation efforts and policy changes are abandoned in the future.

[10] Image Credit: Neil Craik, University of Waterloo

Figure C-4, for RCP2.6 has a median sea level rise of 380 millimetres, with a margin of error predicting at least 130 millimetres of rise but no more than 700 millimetres. This can be contrasted with RCP8.5, shown in **Figure C-6**, which has a median sea level rise prediction of 750 millimetres, almost double that of the RCP 2.6 scenario. The maximum projection is 1120 millimetres, a 60% increase over the RCP 2.6 scenario. Also note the diamond at the top right of the projection. This is the current theoretical maximum given current modeling, 1500 millimetres of sea level rise by the year 2100.

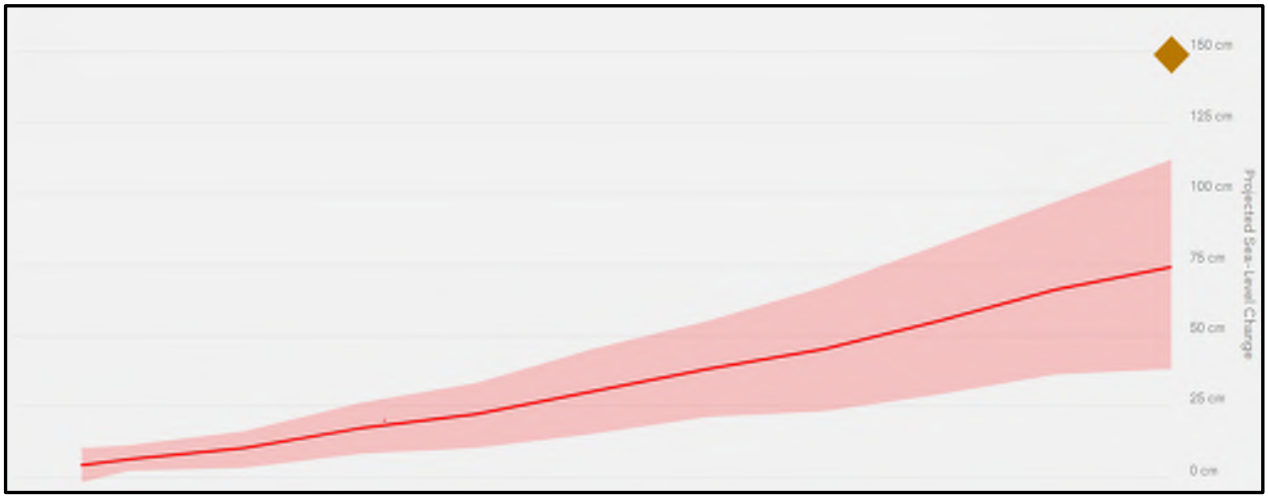


Figure C-6 Sea Level Rise Projection for RCP 8.5[11]

In summary, it is important to consider that there is no "right" prediction for climate change impacts, only more or less likely possibilities. Adaptation measures that consider smaller, more likely scenarios are less costly and more accessible. Adaptation measures that consider worse case scenarios are more robust, but also more costly and prohibitive. This basis allows a risk managed approach to developing climate change adaptation measures.

In addition to sea level rise from climate change, flood elevation projections need to include a factor for land subsidence. Nova Scotia is sinking in elevation at a rate of approximately 1 millimetre per year, which causes an apparent rise in sea level of the same amount on top of climate impacts.

As an addendum to this section, this report uses both RCP and Shared Socioeconomic Pathway (SSP) terminology, depending on which IPCC report is being referenced. Since the original version of this report, the IPCC AR6 was released which replaced RCP designations with SSP designations.

[11] https://climatedata.ca/

Figure C-7 shows the relation from the 5th assessment report (AR5) RCP designation and the AR6 SSP designation.

Category in WGIII	Category description	GHG emissions scenarios (SSPx-y*) in WGI & WGII	RCPy** in WGI & WGII
C1	limit warming to 1.5°C (>50%) with no or limited overshoot***	Very low (SSP1-1.9)	
C2	return warming to 1.5°C (>50%) after a high overshoot***		
C3	limit warming to 2°C (>67%)	Low (SSP1-2.6)	RCP2.6
C4	limit warming to 2°C (>50%)		
C5	limit warming to 2.5°C (>50%)		
C6	limit warming to 3°C (>50%)	Intermediate (SSP2-4.5)	RCP 4.5
C7	limit warming to 4°C (>50%)	High (SSP3-7.0)	
C8	exceed warming of 4°C (>50%)	Very high (SSP5-8.5)	RCP 8.5

Figure C-7: Representative Concentration Pathways and Shared Socioeconomic Pathways[12]

C12.2 Storm Surge and Wave Runup

Storm surge and wave runup are increases in water elevation resulting from wind action on water bodies. The difference between them is that storm surge is a sustained increase in water level over a large area lasting several hours, while wave runup is a short duration change in water level from waves. In the Annapolis Basin, storm surge from the Bay of Fundy has a much greater impact than wave runup. The largest wave height is limited by the short wind reach across the Annapolis River, while the larger geographic impact of storm surge originates in water levels at the Bay of Fundy, which has a much longer wind reach. Data collected at tide gauges does not differentiate between water level increases from storm surge or wind action, so they have been combined for this assessment.

There is limited literature available for the relationship between climate change and increased storm surge potential from greater wind energy in storms. However, there is consensus that climate change will result in more energetic storms and greater potential for sea-level rise, with an increase in storm intensity of between one percent and ten percent for a two-degree Celsius warming. With reference to **Figure C-5**, warming could be up to four to five degrees above the global mean under the RCP 8.5 scenario, which would increase the energy in the atmosphere and wind energy. Based on available data, this study has adopted potential wind speed increases above baseline between 5% and 20% for the high confidence and low confidence values over the next eighty years. Increase over time has been assumed to be approximately linear.

[12] IPCC, 2023: Summary for Policymakers. In: Climate Change 2023: Synthesis Report.

The project team used a plot of storm surge versus wind speed for the Bay of Fundy developed using methods from the *Guide to Storm Surge Forecasting*, World Meteorological Association. 2011. The projected curve is shown in **Figure C-8**.

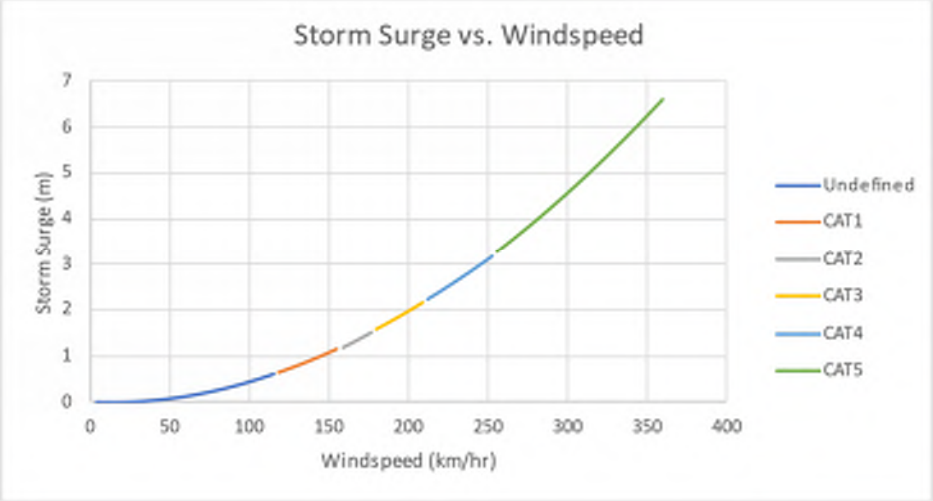


Figure C-8: Storm Surge vs Wind Speed

The Saxby Gale of 1869 was estimated to have water levels 1.5 meters above tide elevation, corresponding to a 1:100-year return period (1% chance of occurrence each year) storm surge[13]. Combined with a HHMT elevation of 3.51 metres, this would result in a flood water elevation of 5.01 metres, which is close to the predicted 1:100-year storm surge elevation presented in *Flood Risk Mapping Using LiDAR for Annapolis Royal, Nova Scotia, Canada*, Tim L. Webster, Applied Geomatics Research Group, Nova Scotia Community College. 2010.

Based on the wind speed analysis, this would correspond to a post-tropical storm with sustained wind velocities of approximately 170 kilometres per hour. This would result in a future 1:100 return period storm surge resulting from wind speeds between 179 kilometres per hour and 204 kilometres per hour, with resultant storm surge increases of 1.6 metres and 2.0 metres, respectively. For reference, a 200 kilometre per hour wind speed is the boundary between a Category 3 and Category 4 hurricane, more typically seen in the tropics. From this assessment, this report has adopted the following estimates for storm surge with intermediate estimates for interim time periods and probabilities:

a) 1.5 metres as the estimate for the current 1:100-year return period event.
b) 1.8 metres as the high likelihood, best-case 1:100-year return period event in 2100, and
c) 2.0 metres as the low likelihood, worst-case, 1:100-year return period event in the year 2100

[13] An Evaluation of Flood Risk to Infrastructure Across the Chignecto Isthmus, Atlantic Climate Adaptation Solutions Association. 2012

C12.3 Increased Riverine Flooding from Increased Precipitation

The final mechanism to cause flooding along the Annapolis River is elevated water levels from increased flow from precipitation. Flow in the Annapolis River is caused by short duration storms and periodic snowpack melting through the winter and in the spring.

In support of this study to find the risk caused by riverine flooding, the project team assessed flow records for the Annapolis River gauge at Lawrencetown and corresponding flood reports at Annapolis Royal. Through the historical record, from 1983 to 2020, there were several significant flood events noted at Lawrencetown. The majority corresponded to a mid-winter warming combined with rainfall, combining stormwater flow with significant snowmelt. Discharges on record were up to 402 cubic metres per second, more than four times the mean flow levels. Water elevation is affected by downstream tide levels, and high flows with high tide resulted in water elevations of 9.0 meters, which is over 2 metres higher than mean water elevations.

During these substantial flooding events at the Lawrencetown gauge station, there were no reports or gauge data suggesting elevated waters or flooding at Annapolis Royal. The conclusion from this assessment is that increased flow at Annapolis Royal does not have a significant impact on water levels compared to the height of storm surge and wave runup.

Hydraulically, this is consistent with the Annapolis River flow regime based on the cross section of the river at Annapolis Royal. The width of the river is 420 metres as it opens into the Annapolis Basin, compared to approximately 30 metres at Lawrencetown. The large cross section as the river expands into the Annapolis Basin results in low sensitivity to increased flows.

No further analysis was necessary on peak flow water elevations because the critical events are storm surges during summer and fall storms. These are unlikely to coincide with winter and spring flood events which contribute to increased rainfall and snowmelt flow.

C12.4 Increased Stormwater Flow from Increased Rainfall Intensity

The scope of this project is focused on flooding from the Annapolis River overtopping its banks, however, increased rainfall during a storm event can cause flooding in the stormwater system upstream of the storm system outfalls. Water levels in the storm conveyance system (both the minor piped system and major overland flow system) can be affected by increased rainfall.

A combination of events, with high tide and storm surge combined with an extreme precipitation event can cause unexpected failure of the storm system from increased tailwater at the river.

This analysis included an assessment of the performance of the Annapolis Royal stormwater conveyance system using a PCSWMM model to develop hydraulic gradelines through the system under different conditions. PCSWMM is a hydrologic and hydraulic modelling tool that models two-dimensional, unsteady flow.

Rainfall intensity-duration-frequencies were derived from the IDF_CC tool from the University of Western Ontario[14]. Current peak rainfall is based on a 1:50 (two percent per year chance of occurrence), twenty-four-hour rain event with 109.3 millimetres of total rainfall. The climate adjusted rainfall, based on projections to the year 2100 is 129.0 millimetres of total rainfall. This is an 18 percent increase, which corresponds to 2.5 degrees of mean global temperature increase[15].

If a new seawall is constructed to prevent flooding, a new stormwater pump station with a floodbox will be required to expel stormwater from the Town system during periods of high river water level.

C12.5 Threshold Values

Threshold values are the load at which an infrastructure element may experience impacts from a weather event. These are not the same as the design event and typically results in lower impacts with more frequent occurrence.

Flooding at the waterfront of Annapolis Royal could potentially damage infrastructure at an elevation of 4.8 metres. Impacts will be minimal, with overtopping of the lower portions of the boardwalk, wharf and St. George Street. As water levels increase above this elevation, the impact becomes greater as the extents of flooding become larger and impact greater areas of the Town and begins to inundate a greater number of buildings.

A series of flood maps showing the extents of flooding in 0.5-meter intervals of elevation are included in **Appendix D**.

C13 Design Values

Based on the analysis above, **Table C-4** shows the range of peak water elevations in the Annapolis River for high-confidence RCP4.5 (very likely) and low confidence RCP8.5 (less likely) projections. RCP4.5 has been selected as the lower range because there is general consensus in the climate change community that the aggressive political and policy action required for emission reduction in the RCP2.6 scenario is no longer possible.

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[14] Simonovic, S.P., A. Schardong, R. Srivastav, and D. Sandink (2015), *IDF_CC Web-based Tool for Updating Intensity-Duration-Frequency Curves to Changing Climate – ver 6.0*, Western University Facility for Intelligent Decision Support and Institute for Catastrophic Loss Reduction, open access https://www.idf-cc-uwo.ca.

15 Westra, S., Alexander, L.V. and Zwiers, F.W. (2013): Global increasing trends in annual maximum daily precipitation; Journal of Climate, v. 26, p. 3904–3918. doi:10.1175/JCLI-D-12-00502.1

Table C-4 Peak Water Elevations (Elevations in CGVD2013)

RCP	Year	100 yr. Flood Elevation (m)	Higher High Mean Tide (HHMT) Elevation, 2023 (m)	Sea Level Rise (m)[16]	100 yr. Storm Surge (m)	Subsidence (m)
RCP4.5 High confidence	2023	4.37	2.85	0.00	1.5	0.00
	2053	4.64	2.85	0.14	1.6	0.03
	2103	4.96	2.85	0.21	1.8	0.08
RCP8.5 Low confidence	2023	4.37	2.85	0.00	1.5	0.00
	2053	5.04	2.85	0.44	1.7	0.03
	2103	6.06	2.85	1.11	2.0	0.08
RCP8.5 Worst Cast	2023	4.37	2.85	0.00	1.5	0.00
	2103	6.43	2.85	1.48	2.0	0.08

Table C-4 shows that under various climate scenarios, a 1:100-year return event, the event that has a one percent chance of occurrence each year, increases in magnitude under the effects of climate change. This increase results from increasing sea level in the Bay of Fundy and an increase in maximum wind speed causing larger storm surges.

This impact can be interpreted in two ways:

a) The damage and cost impact for a given return period event (e.g., the 1:100-year return period) will increase in the future, or
b) The threshold flood elevation and the **current** 1:100-year return event will have a greater chance of occurrence in the future.

The cost analysis in this report is based on the first interpretation, and the risk assessment to determine when action should be taken is based on the second interpretation. The reason for these approaches is that adaptation action should be driven by the increasing likelihood of given events that infrastructure was originally designed to accommodate, while risk-based cost estimates are better represented by the increasing damage potential from a similarly recurring event.

[16] https://climatedata.ca/

C14 Infrastructure Elements

The impact of increased stormwater intensity, rising sea level and increased wave runup from storm surge impacts both public and private infrastructure. The risk assessment in Appendix B presents a chart view of this analysis and the infrastructure elements considered in that analysis.

C15 Technical Analysis

The engineering analysis centred around finding the likelihood of catastrophic events occurring, possibly more than once in the period of concern. Based on the risk analysis, there is potential for significant damage to municipal and private infrastructure from flooding.

C15.1 Probability Analysis

Section Error! Reference source not found.**C-4** discussed the change in likelihood and effects of a 1:100-year return period event under the effects of climate change. A fundamental characteristic of this statistical approach is that there is an equal chance, one percent, each year of this storm occurring. This leads to a conclusion that there is a possibility of the design event occurring more than once in the period of concern. A statistical method called a Monte Carlo simulation established the percentage likelihood of a 1:100-year return period design event occurring once, more than once or not at all in a given time frame. This method runs a randomized simulation of the period(s) of concern; in this case, the 30-year period to 2053 and the 80-year period to 2103 and determines how many times the design event occurs in that time period. This is repeated thousands of times to determine the average percentage chance of occurrence for each frequency of occurrence. **Table C-5** shows the results of this simulation.

Table C-5 Probability of Storm Occurrence

Number of 1:100-Year Events	To 2053	To 2103
None	73.6%	43.3%
One	22.6%	36.4%
Two	3.3%	15.1%
Three	0.3%	4.1%
Four	Negligible	0.8%
Five	Negligible	Negligible

C15.2 Cost Analysis

The Federal Flood Damage Estimation Guidelines for Buildings and Infrastructure, Version 1.0[17] has been used to develop a stage / damage curve for different levels of flooding in Annapolis Royal, shown in **Table C-6 to C-8**. Costs are based on 2014 data from Alberta, so costs have been adjusted for regional differences (a reduction of 18%) and inflation from 2014 to 2022 (an increase of 36% for non-residential buildings).

Table C-6 Estimated Damage by Flood Depth: RCP8.5, Projection to 2103[1]

Flood Depth in Structure (m)	Affected Structures	Footprint (Cumulative m^2)	Estimated Damage (Cumulative)
0 - 0.1	3	492	$247,838
0.1 - 0.3	8	3,004	$2,177,545
0.3 - 0.6	16	3,229	$2,867,659
0.6 - 0.9	28	5,179	$4,837,374
0.9 - 1.3	20	3,361	$3,347,547
1.3 - 1.5	5	1,335	$1,332,471
1.5 - 1.8	6	1,331	$1,328,297
1.8 - 2.1	1	896	$895,311
2.1 - 2.4	2	251	$250,251
> 2.4	7	3,346	$3,342,674
TOTAL:	96	22,424	$20,626,968

1. With reference to Section 2.6, replacement of the wharf is not included in damage estimates.

[17] Federal Flood Damage Estimation Guidelines for Buildings and Infrastructure Version 1.0, Natural Resources Canada. 2021

Table C-7 Estimated Damage by Flood Depth: RCP8.5, Projection to 2053[1]

Flood Depth in Structure (m)	Affected Structures	Footprint (Cumulative m^2)	Estimated Damage (Cumulative)
0 - 0.1	6	1,234	$621,730
0.1 - 0.3	13	1,970	$1,428,505
0.3 - 0.6	6	1,492	$1,325,063
0.6 - 0.9	6	1,331	$1,243,116
0.9 - 1.3	2	1,036	$1,031,535
1.3 - 1.5	1	111	$110,809
1.5 - 1.8	2	987	$985,287
1.8 - 2.1	3	1,907	$1,905,143
2.1 - 2.4	1	64	$64,010
> 2.4	1	388	$387,246
TOTAL:	41	10,520	$9,102,445

1. With reference to Section 2.6, replacement of the wharf is not included in damage estimates.

Table C-8 Estimated Damage by Flood Depth: RCP2.6, Projection to 2103[1]

Flood Depth in Structure (m)	Affected Structures	Footprint (Cumulative m^2)	Estimated Damage (Cumulative)
0 - 0.1	4	1,224	$616,771
0.1 - 0.3	4	1,168	$846,662
0.3 - 0.6	3	1,059	$940,709
0.6 - 0.9	1	139	$130,266
0.9 - 1.3	3	1,098	$1,093,900
1.3 - 1.5	1	1,105	$1,103,111
1.5 - 1.8	2	802	$800,125
1.8 - 2.1	1	64	$64,010
2.1 - 2.4	-	-	$-
> 2.4	1	388	$387,246
TOTAL:	20	7,047	$5,982,799

1. With reference to Section 2.6, replacement of the wharf is not included in damage estimates.

C15.3 Economic Consequence of Failure

Combining **Table C-5** and **Tables C-6 to C-8** yields a percentage weighted cost impact of storm surge flooding, shown in **Table C-9**. Because all years are equally likely to experience a given magnitude storm, the default cost for each period and climate scenario is the average of the current loss estimate and the future loss estimate. The total cost representation is calculated by:

$$Cost(2022\$) = Sum\ of\ \text{n x}\ C_A x P_n$$

where n is the number of occurrences, CA is the period cost average and P_n is the probability of occurrence for n storms in the period.

Table C-9 Estimated Damage by Flood Depth

Scenario	Average Cost Impact per Event	Cumulative Percentage Weighted Cost
2103 RCP2.6	$5,982,799	$1,892,691
2053 RCP8.5	$9,102,445	$7,110,372
2103 RCP8.5	$20,626,968	$16,934,740

Appendix D

Flood Extent Mapping

Annapolis Royal Flood Extent Mapping

Scenario: 2023

Scenario: RCP2.6 2103

Scenario: RCP8.5 2053

Scenario: RCP8.5 2103

Flood Depth
2.4m
2.1m
1.8m
1.5m
1.3m
0.9m
0.6m
0.3m
0.1m

0 250 500 m

Appendix E

General Arrangement Drawing

Appendix F

Cost Estimates

Cost Estimate Report

Town of Annapolis Royal

Annapolis Royal, NS, B0S 1A0

285 St George St,

Date: 01/02/2024

Annapolis Royal Flood Wall

Year 2023

Unit Detail Report

Prepared By: Matt Delorme EC Atlantic

LineNumber		Description	Quantity	Unit	Total Incl. O&P	Ext. Total Incl. O&P
Division 02	**Existing Conditions**					
022113090020		Topographical survey, conventional, minimum	44.50	Acre	$543.44	$24,183.08
Division 02	**Existing Conditions Subtotal**					**$24,183.08**
Division 03	**Concrete**					
031113859060		C.I.P. concrete forms, walls, steel framed plywood, to 8' high, based on 50 uses of purchased forms, 4 uses of bracing lumber, includes erecting, bracing, stripping and cleaning	35,000.00	SFCA	$5.36	$187,600.00
031113859060		C.I.P. concrete forms, for battered walls, 1 side battered, add	1.00		$0.54	$18,760.00
032111500650		Reinforcing steel, western mill, A615, grade 60, mill base price, material only	38.10	Ton	$1,583.95	$60,348.50
032111500700		Reinforcing steel, cut, bent and delivered, A615, grade 60, material only	38.10	Ton	$902.25	$34,375.73
032111501005		Reinforcing steel, mill extra for delivery to shop, A615, grade 40, material only, included in delivered price	38.10	Ton	$41.70	$1,588.77
032111501010		Reinforcing steel, shop extra for handling and storage, A615, grade 40, material only, included in delivered price	38.10	Ton	$47.72	$1,818.13
032111501020		Reinforcing steel, shop extra for bending limited percent of bars, A615, grade 40, material only, included in delivered price	38.10	Ton	$38.50	$1,466.85
032111501200		Reinforcing steel, shop extra for detailing, under 50 tons, A615, grade 40, material only, included in delivered price	38.10	Ton	$57.74	$2,199.89
033053404300		Structural concrete, in place, free-standing wall (3000 psi), 15" thick x 8' high, includes forms(4 uses), Grade 60 rebar, concrete (Portland cement Type I), placing and finishing	954.00	C.Y.	$464.37	$443,008.98
Division 03	**Concrete Subtotal**					**$751,166.85**
Division 05	**Metals**					

LineNumber		Description	Quantity	Unit	Total Incl. O&P	Ext. Total Incl. O&P
055213502050		2-line pipe rail with pickets and attached handrail, steel, primed, 1-1/2" pipe, 1/2" pickets @ 4-1/2" OC, 42" high, shop fabricated, straight & level	1,860.00	L.F.	$211.98	$394,282.80
055213502050		Railing, shop fabricated, for curved and level rails, add	1.00	L.F.	$21.07	$39,188.34
Division 05	**Metals Subtotal**					**$433,471.14**
Division 22	**Plumbing**					
221123103240		Pump, general utility, single stage, double suction, 150 H.P. to 4,000 GPM, includes motor	3.00	Ea.	$68,659.80	$205,979.40
Division 22	**Plumbing Subtotal**					**$205,979.40**
Division 31	**Earthwork**					
311110100150		Clearing & grubbing, grub stumps and remove	1.00	Acre	$2,369.98	$2,369.98
311413231420		Topsoil stripping and stockpiling, loam or topsoil, remove and stockpile on site, 200 HP dozer, 6" deep, 200' haul per C.Y.	153.00	C.Y.	$2.72	$416.16
312316420200		Excavating, bulk bank measure, 1 C.Y. capacity = 100 C.Y./hour, backhoe, hydraulic, crawler mounted, excluding truck loading	4,783.00	B.C.Y.	$2.78	$13,296.74
312323160100		Fill by borrow and utility bedding, for pipe and conduit, crushed stone, 3/4" to 1/2", excludes compaction	2,958.00	L.C.Y.	$42.84	$126,720.72
312323160100		Fill by borrow and utility bedding, for pipe and conduit, crushed stone, 3/4" to 1/2", excludes compaction	561.00	L.C.Y.	$42.84	$24,033.24
312323160100		Fill by borrow and utility bedding, for pipe and conduit, crushed stone, 3/4" to 1/2", excludes compaction	50.00	L.C.Y.	$42.84	$2,142.00
312323160100		Fill by borrow and utility bedding, for pipe and conduit, crushed stone, 3/4" to 1/2", excludes compaction	1,219.00	L.C.Y.	$42.84	$52,221.96
312323160500		Fill by borrow and utility bedding, for pipe and conduit, compacting bedding in trench	1,883.00	B.C.Y.	$7.16	$13,482.28
312323160500		Fill by borrow and utility bedding, for pipe and conduit, compacting bedding in trench	500.00	B.C.Y.	$7.16	$3,580.00
312323160500		Fill by borrow and utility bedding, for pipe and conduit, compacting bedding in trench	776.00	B.C.Y.	$7.16	$5,556.16
312323170190		Fill, from stockpile, 300 HP dozer, 2-1/2 C.Y., 300' haul, spread fill, with front-end loader, excludes compaction	1,555.00	L.C.Y.	$4.44	$6,904.20
312323201069		Cycle hauling(wait, load, travel, unload or dump & return) time per cycle, excavated or borrow, loose cubic yards, 15 min load/wait/unload, 12 C.Y. truck, cycle 30 miles, 35 MPH, excludes loading equipment	6,220.00	L.C.Y.	$16.78	$104,371.60
312514161000		Synthetic erosion control, silt fence, install and remove, 3' high	2,000.00	L.F.	$3.40	$6,800.00
313713100370		Rip-rap and rock lining, random, broken stone, 300 lb. average, dumped	1,200.00	Ton	$29.18	$35,016.00
Division 31	**Earthwork Subtotal**					**$396,911.04**

LineNumber		Description	Quantity	Unit	Total Incl. O&P	Ext. Total Incl. O&P
Division 32	**Exterior Improvements**					
329119130600		Topsoil placement and grading, loam or topsoil, 1 C.Y. for 600 S.F., remove and stockpile on site, top dress by hand	153.00	C.Y.	$59.30	$9,072.90
Division 32	**Exterior Improvements Subtotal**					**$9,072.90**
Division 33	**Utilities**					
331413152100		Water supply distribution piping, ductile iron pipe, cement lined, mechanical joint, no fittings, 18' lengths, 12" diameter, class 50, excludes excavation or backfill	120.00	L.F.	$528.53	$63,423.60
333213132520		Packaged utility lift station, packaged sewage lift station, 800,000 GPD, excludes fencing or external piping	1.00	Ea.	$618,339.10	$618,339.10
334116302110		Subdrainage piping, plastic, perforated PVC, pipe, 6" diameter, excludes excavation and backfill	1,860.00	L.F.	$23.63	$43,951.80
334123190100		Geotextile subsurface drainage filtration, fabric, laid in trench, polypropylene, ideal conditions	1,017.00	S.Y.	$4.05	$4,118.85
334211501040		Public storm utility drainage piping, drainage and sewage, corrugated HDPE, type S, bell and spigot, with gaskets, 12" diameter, excludes excavation and backfill	1,860.00	L.F.	$18.78	$34,930.80
334233131582		Utility area drain, catch basins or manholes curb inlet frame, grate, and curb box, large, heavy duty, 24" x 36", excluding footing & excavation	12.00	Ea.	$4,447.50	$53,370.00
Division 33	**Utilities Subtotal**					**$818,134.15**
Division CO						
CONTINGENCY		Cost contingency: 25% for Class D cost estimate	1.00	Ea.	$756,229.64	$756,229.64
CUSTOM-01		Remove and Replace Boardwalk	1.00	Ea.	$55,000.00	$55,000.00
CUSTOM-02		Adjustment to drainage items for difference between muncipal tender estimates in 2023 and RS Means piping estimates	1,860.00	L.F.	$100.00	$186,000.00
CUSTOM-03		Allowance for Lighting and Electrical Work	1.00		$50,000.00	$50,000.00
CUSTOM-04		Allowance for Benching, Seating and Enhancement	1.00		$25,000.00	$25,000.00
CUSTOM-05		Allowance for art installations along the wall	1.00		$70,000.00	$70,000.00
Division CO	**Subtotal**					**$1,142,229.64**

LineNumber	Description	Quantity	Unit	Total Incl. O&P	Ext. Total Incl. O&P
Subtotal					**$3,781,148.20**
General Contractor's Markup on Subs				**0.00%**	**$0.00**
Subtotal					**$3,781,148.20**
General Conditions				**0.00%**	**$0.00**
Subtotal					**$3,781,148.20**
General Contractor's Overhead and Profit				**0.00%**	**$0.00**
Grand Total					**$3,781,148.20**

Appendix G

Drilling Report

Via Email: mdelorme@aimnetwork.ca

AIM Network
1668 Brow of Mountain Road
Glenmont, NS
B0P 1J0

December 8, 2023

Re: Shoreline Soil Assessment

Town of Annapolis Royal – Shoreline Stabilization Project

Introduction

PSI Infinity Consulting (PSI) was retained by the Atlantic Infrastructure Management (AIM) Network to attend and direct a drilling program in the town of Annapolis Royal, Nova Scotia with the purpose of assessing sub-surface soil composition and stability.

PSI's assigned scope consisted of the following:

- Coordinate with the Town of Annapolis Royal to approve borehole locations.
- Coordinate with Public Works staff to conduct buried utility locates.
- Manage drilling sub-contractors to complete the necessary sub-surface investigation.
- Supervise drilling program and record a log of borehole data.
- Collect and retain soil samples for possible grain-size evaluation
- Provide a report of findings and data.

The drilling program was completed between October 10 and October 12, 2023. This report summarizes the observations made during the drilling program.

Site Preparation:

Prior to attending the site, approximate borehole locations were determined by the combined efforts of AIM, the Town of Annapolis Royal, Logans Drilling and PSI. The locations were selected based on:

- Accessibility for the drilling equipment;
- Minimization of damage to infrastructure or disruption of public activities; and
- Locations which would be expected to be representative of the sub-surface soil condition along the shoreline.

On October 10, 2023, PSI attended the site to complete a pre-drilling inspection and ensure that the locations were clear for drilling. The desired work sites were attended by members of the Town of Annapolis Public Works who confirmed the location of buried infrastructure and necessary clearances. Borehole locations were indicated with utility marking paint.

To limit risk to the public and maintain adequate clearance for the drill rig, vehicular access to the drilling sites was restricted by the town through the use of traffic control barricades.

Borehole Data:

The following sections describe the observations and conditions noted during the completion of each borehole. Refer to Appendix A for a diagram outlining the locations of Boreholes. Refer to Appendix B for copies of the borehole logs.

Borehole 1:

Borehole 1 was selected to be installed in the open parking area located between 225 and 235 St. George Street, in Annapolis Royal. This site was the former location of a gasoline distributing service station, and it was reported that at the time of decommissioning, a significant portion of the lot had been excavated and reinstated to remove fuel distribution infrastructure. As such, surficial soil in this location may consist of a combination of native soil and fill.

During drilling, water was encountered at 8’ below grade, within a layer of sandy gravel. Upon encountering the water table, strong hydrocarbon odours were noted, which are suspected to have originated from the former service station which had been located on the subject lot. Due to the quantity of water, the borehole began collapsing significantly, and prevented the advancement of the split spoon deeper than 16’ without the use of hollow-stem or coring, which would generate an abundance of contaminated water and cuttings.

Based on the observations made during the drilling, it is suspected that up to 14' of fill and/or disturbed soil may be present along the shoreline edge of this lot. In addition, any operation which will disturb soil or groundwater on this site will be subject to the management of contaminated material and must be completed under the guidance of a site professional as per the Nova Scotia Contaminated Sites Guidelines under the Environment Act.

Borehole 2:

The second drilling location was selected to be completed at the top of the boat launch adjacent to the wharf located at 193 St. George Street (Refer to Figure 1, appendix A). The upper layer of soil in this location was suspected to consist of rocks and fill used to stabilize the ramp, however the underlying material is suspected to be native till.

During drilling, granite boulders and cobble were encountered in the upper 4' of surficial soil. Beneath the boulders, the soil was identified to be well compacted clay. The presence of un-decomposed organic material (grass, wood), grey colour and strong odour indicate anaerobic conditions, but no evidence of chemical contamination was encountered.

A vein of sand, situated approximately 12' below surface grade, was saturated with water, and would be suspected to be strongly influenced by proximity with the Annapolis River.

Borehole 3:

Borehole 3 was completed on the walking trail at the end of St. George Street. Boulders used to prevent vehicles from using the trail were temporarily moved by the town to permit access by the drill rig.

The soil in this location was consistently a very tight and compact clay below a depth of 4'. Anaerobic odours were encountered between 10-12' and it is suspected that groundwater fluctuates within this lense.

This location reached refusal at 14' below grade where a sandstone obstruction was encountered. This is not believed to be bedrock, but could not be bypassed without use of coring, and due to the presence of water, the integrity of the borehole could not be guaranteed, so drilling was terminated at this point.

Closing

This document entitled **Shoreline Soil Assessment** has been prepared by Brody Mossman for the AIM Network and the Town of Annapolis Royal. The material in it reflects the assessor's professional judgment in light of the scope, schedule and other limitations stated in the document. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. Any use which a third party makes of this document is the responsibility of such third party.

Sincerely,

Broderick Mossman, BSc., C.Chem., ROH, EP
Occupational Hygienist

Appendix A

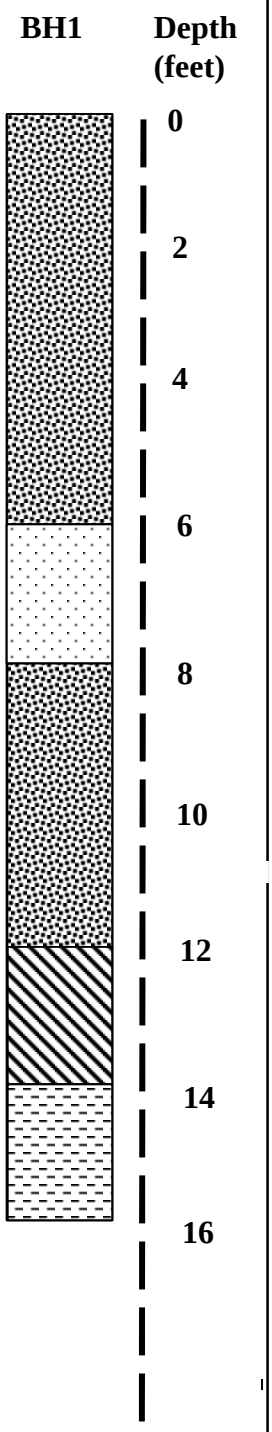
Figures

Psi Infinity Consulting	Prepared By: B. Mossman	Scale: NTS	Date: October 12, 2023
	Project Name:: Soil Condition Survey – Annapolis Royal		File No.: 2023-009
	Figure Name: Borehole Locations		Figure No.: 1

Appendix B

Borehole Logs

Interval (feet)	Drill Type	Blow Counts (per 6")	Observations
0-4	Auger	n/a	Augered through loose fill, sandy GRAVEL
4-6	SS	1,2,4,1	Fill, Coarse grain sandy GRAVEL, loose and uncompacted
6-8	SS	1,2,1,1	Fill, silty SAND with minor gravel
8-10	SS	1,6,5,39	Dark grey fill consisting of sandy GRAVEL with minor cobble. Water table encountered. Strong hydrocarbon odour and sheen
10-12	SS	14,2,1,1	Fill, Sandy GRAVEL, saturated with water, loosely compacted. Moderate Hydrocarbon odour
12-14	SS	1,1,1,2	Fine grained sandy SILT, saturated with water, strong hydrocarbon odour
14-16	SS	2,2,3,2	Firm fine-grained silty CLAY, expected to be native till. Minor hydrocarbon odour. Cave in from water infiltration prevents further split spoons beyond this point.



Legend –
Primary Soil Classification

Sand

Silt

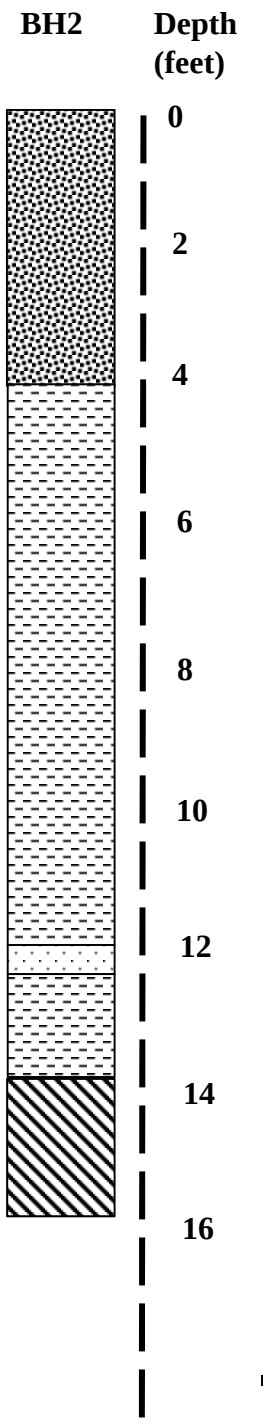
Clay

Gravel

Psi Infinity Consulting

Prepared By: B. Mossman	Scale: NTS	Date: Oct 12,2023
Project Name:: Annapolis Royal Soil Survey		File No.: 2023-009
Figure Name: Borehole Log – BH1		Figure No.: BH 1

Interval (feet)	Drill Type	Blow Counts (per 6”)	Observations
0-4	Auger	n/a	Augered through gravel and underlying Granite boulders,
4-6	SS	3,1,2,2	Fill, silty clay with organic debris and exotic fill (bricks, ash, etc)
6-8	SS	0,0,3,2	Fine grained Grey silty CLAY with a strong anaerobic odour. Grass, reeds and other organics identified within clay matrix.
8-10	SS	0,1,4,5	Dark Grey/black, silty CLAY with minor gravel and minor organics (wood fragments)
10-12	SS	14,31,25,29	Dark grey, CLAY, very firm and compact. Minor sandstone fragments observed at tip of drill bit.
12-14	SS	32,23,22,25	Vein of silty SAND encountered between layers of extremely dense and firm CLAY. Water table encountered.
14-16	SS	37,25,24,30	Firm and compact sandy SILT, minor gravel. Saturated with water.



Legend –
Primary Soil Classification

Sand

Silt

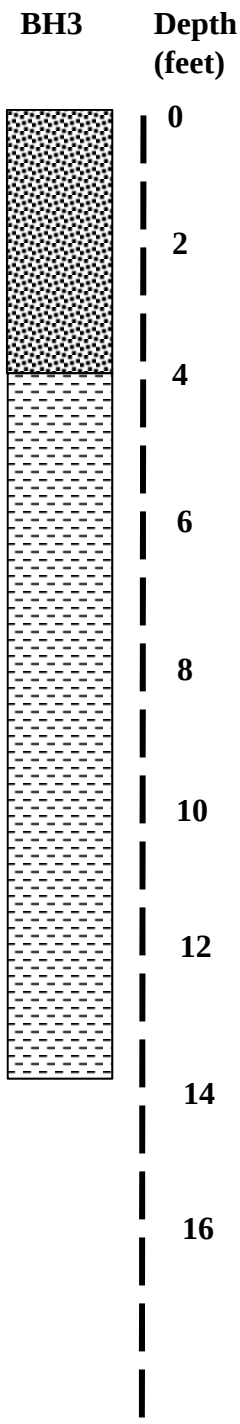
Clay

Gravel

Psi Infinity Consulting

Prepared By: B. Mossman	Scale: NTS	Date: Oct 13,2023
Project Name:: Annapolis Royal Soil Survey		File No.: 2023-009
Figure Name: Borehole Log – BH2		Figure No.: BH2

Interval (feet)	Drill Type	Blow Counts (per 6")	Observations
0-4	Auger	n/a	Augered through sandy GRAVEL, no obstructions
4-6	SS	3,2,2,2	Firm damp red CLAY, with minor gravel
6-8	SS	2,2,1,2	Very firm damp red CLAY, minor sand and gravel
8-10	SS	2,1,2,2	Soft dark grey silty CLAY, with a strong anaerobic odour. Minor organics noted (grass, wood fragments)
10-12	SS	3,4,11,11	Firm, grey silty clay, Minor organics (wood fragments). Very strong anaerobic odour.
12-14	SS	9,9,15,50	Very firm grey silty CLAY. Refusal reached, and sandstone fragments recovered from the tip of the bit.



Legend –
Primary Soil Classification

- **Sand**
- **Silt**
- **Clay**
- **Gravel**

Psi Infinity Consulting

Prepared By: B. Mossman	Scale: NTS	Date: Oct 13,2023	
Project Name:: Annapolis Royal Soil Survey		File No.: 2023-009	
Figure Name: Borehole Log – BH3		Figure No.: BH 3	

TOWN OF ANNAPOLIS ROYAL
POLICY

Title: **Environment Advisory Committee Policy**	
Policy No: **2023-10**	Supersedes: **2018-01** **December 16, 2019** **Motion No.: #C2019-Dec-16-32**
Effective Date:	Date Approved by Council Resolution:

1. Council hereby establishes the Environment Advisory Committee as a standing committee.

2. The mandate of the Environment Advisory Committee is to recommend proactive measures, educate, promote and provide feedback on environmental issues related to sustainability, advocacy and stewardship within the Town of Annapolis Royal. The Committee's mandate:

   (a) to review and update the Climate Protection Milestone 5 plan initially and annually;

   (b) to implement the Climate Protection Milestone 5 plan and measure successes from the current plan;

   (c) to work with The Federation of Canadian Municipalities and the Partners for Climate Protection program;

   (d) to identify opportunities and initiatives to Council;

   (e) engage the community and seek funding opportunities, as approved by Council, relating to environmental issues and or projects;

   (f) to take such other steps consistent with the Policy that the Committee reasonably deems necessary to carry out its mandate, as approved by Council;

   (g) to bring forward to Council any budget requests relevant to carrying out its mandate by January of every year;

   (h) to advise and make recommendations to Council and to report to Council;

3. The Committee is authorized by Council to form sub-committees or task forces to deal with a particular issue within the Committee's mandate and that any sub-committee or task force be chaired by a member of the Environment Advisory Committee.

4. The Committee will meet a minimum of 4 times a year as decided by the Committee and Chair availability.

5. The Environment Advisory Committee shall have a maximum of seven (7) members. Members shall consist of one (1) Council Member, one (1) member from the Clean Annapolis River Project

with the remaining members being residents of Annapolis Royal and/or area who demonstrate a vested interest in the Town. Members will be appointed by Council for a two year term and will be appointed in December.

THIS IT TO CERTIFY that this policy was duly passed by a majority vote of the whole council at a duly called Council meeting held on the ____ day of _____2024.

GIVEN under the hand of the CAO and under the Seal of the Town of Annapolis Royal the ____day of _____2024.

_____
Sandi Millett-Campbell
Chief Administrative Officer

_____ _____

TOWN OF ANNAPOLIS ROYAL
POLICY

Title: **Environment Advisory Committee Policy**	
Policy No: **2018-01**	Supersedes:
Effective Date: **December 16, 2019**	Date Approved by Council Resolution: **December 16, 2019** **Motion No.: #C2019-Dec-16-32**

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3. The Committee is authorized by Council to form sub-committees or task forces to deal with a particular issue within the Committee's mandate and that any sub-committee or task force be chaired by a member of the Environment Advisory Committee.

4. The Committee will meet a minimum of 4 times a year as decided by the Committee and Chair availability.

5. The Environment Advisory Committee shall have a maximum of seven (7) members. Members shall consist of one (1) Council Member, one (1) member from the Clean Annapolis River Project with the remaining members being residents of Annapolis Royal and/or area who demonstrate a

vested interest in the Town. Members will be appointed by Council for a two year term, and will be appointed in December.

I certify that this is a true copy of the policy adopted by the Council of the Town of Annapolis Royal at a meeting duly called and held on the 16th day of December 2019.

_____	_____
Mayor	***Interim Chief Administrative Officer***
_____	_____
Date	***Date***

BE IT RESOLVED that the following Bylavv be adopted as amended and enacted as a Bylaw of the Town of Annapolis Royal pursuant to the authority of the *Police Act, SNS. 100-1,c.31,* as amended and that the said Bylaw be forwarded to the Minister of Justice along with a request for approval.

TOWN OF ANNAPOLIS ROYAL

ANNAPOLIS ROYAL BOARD OF POLICE COMMISSIONERS BYLAW

This Bylaw may be cited as the "Annapolis Royal Board of Police Commissioners Bylaw."

This Bylaw is made under the *Police Act,* and the *Police Act* should be referenced for questions concerning the terminology, clarification, and full administration of the Annapolis Royal Board of Police Commissioners Bylaw.

DEFINITIONS

1. In this Bylaw:

   (a) "Board" means the Board of Police of Commissioners for the Town of Annapolis Royal.

   (b) "Chief' means the Chief of the Annapolis Royal Police Service.

   (c) "Chief Administrative Officer" means the Chief Administrative Officer of the Town of Annapolis Royal.

   (d) "Council" means the Town Council of the Town of Annapolis Royal.

   (e) "Police Act" means the *Police Act,* 2004 c.31 as amended, and the Regulations made thereunder.

   (f) "Town" means the Town of Annapolis Royal.

BOARD FUNCTION

2. The function of the Board is to provide:

   (a) Civilian governance on behalf of the Town in relation to the enforcement of law, the maintenance of law and order and the prevention of crime in the Town; and

   (b) The administrative direction, organization and policy required to maintain an efficient and adequate police service, but shall not exercise jurisdiction relating to:

      (i) complaints, discipline, or personnel conduct except in respect to the Chief.

      (ii) a specific prosecution or investigation; or

      (iii) the actual day-to-day direction of the police service.

3. On behalf of the Board, the Board Chair or the Chair's delegate, may give advice or direction, in writing, to the Chief on any matter within the jurisdiction of the Board under the *Police Act,* but not to other members of the police service and, for greater certainty, no other member of the Board shall give advice or direction to a member of the police service. [sec. 52 of the *Police Act]*

COMPOSITION OF THE BOARD

4. (a) The Board shall consist of five (5) members.

(b) The members shall be appointed as follows:

(i) Two (2) members of Council are appointed by resolution of Council. The Council appointments shall be made and take effect at the first Council meeting in November of each calendar year.

(ii) Two (2) residents appointed by resolution of Council, who are neither members of council nor employees of the Town of Annapolis Royal. The Resident Appointments shall be made and take effect at the first Council meeting in November of each calendar year.

(iii) One (I) member appointed by the Minister of Justice of the Province of Nova Scotia.

(c) All subsequent appointments of resident members shall be appointed for a term of three (3) years, and members are eligible for reappointment for maximum of three (3) consecutive three (3) year terms.

(d) Where a member of the Board is unable to carry out the member's duties by reason of illness, absence or any other reason, the person or the body that made the initial appointment may appoint some other person to act as or be a member of the Board in place or stead of the absent member [sec.45 (3) of the *Police Act].*

CHAIR AND VICE-CHAIR

5. The Board shall at its first meeting in November, following the November Regular Council Meeting, choose from amongst its members a Chair and Vice-Chair.

MEETINGS

6. (a) The Board holds meetings every quarterly (March, June, September, and December). These meetings are open to the public and will be held in Council Chambers at Town Hall on the second Wednesday of the relevant month at a time agreed with the Board, provided that the date, time, and location of such public meetings shall be adve1tised with forly-eight (48) hours' notice.

(b) Three (3) members constitutes a quorum.

(c) The Board may meet *in-camera* at any time on 24 hours' notice by the Chair or any two (2) members or at any time with unanimous consent of all members, concerning urgent matters relating to issues, which fall under the authority and function of the Board. A member of the Board or any person in attendance at an *in-camera* meeting shall not disclose any item or information of a confidential nature that is discussed at the meeting.

(d) The Chief or designate shall, whenever requested by the Chair of the Board, attend meetings of the Board, whether public or *in-camera.*

(e) The Chief Administrative Officer or designate shall be the Secretary to the Board and shall have charge of all minutes and records to be followed and maintained by the Board.

FISCAL MATTERS

7. (a) The Board shall submit to Council its recommendations with respect to all financial and budgeting matters related to the administration of the policing service on or before the end of February each year.

(b) The Board shall submit to Council all proposed employment agreements or contract negotiations for Council's approval of all financial matters contained therein, prior to the execution thereof, by the Board.

8. All capital equipment proposed to be purchased by the Board, not provided for in its budget as approved by Council, shall be submitted to the Council, together with the written recommendation of the Board for purchase consideration.

9. (a) Board members are not remunerated.

(b) Board members are entitled to reimbursement of reasonable expenses incurred in conducting the business of the Board. This may include annual membership fees associated with the Nova Scotia Association of Police Governance (NSAPG) and training. Expenses shall be reimbursed in accordance with the Town Travel Policy.

OTHER MATTERS

10. The Board shall have all the powers, duties and responsibilities as designated under the *Police Act* 2004 c.31.

REPEAL

11. A Bylaw, known as the *Annapolis Royal Board of Police Commissioners Bylaw No.116* as adopted by Town Council on the I0th day of May 1993, is hereby repealed.

ENFORCEMENT

12. This Bylaw shall come into force and legal effect upon receiving the approval of the Minister of Justice of Nova Scotia as per sec. 55(2) of the *Police Act.*

EFFECTIVE DATE

13. This Bylaw shall be effective

THJS JS TO CERTIFY that the foregoing is a true copy of a Bylaw duly pass d a a duly called meeting of the Town Council of the Town of Annapolis Royal held on the __day of _____, 2024.

GIVEN under the hand of the Town CAO and under the seal of the Town of Annapolis Royal this ____ day of _____, 2024.

_____ MAYOR

_____ CAO

Bylaw Adoption	Date
First Reading	
Notice of Intent of Publication Second Reading	
Ministerial Approval Date of Publishing	

Certificate of Afil!roval

"Annapolis Royal Board of Police Commissioners Bylaw"

Town of Annapolis Royal

This is to certify that, pursuant to section 450 of the *Municipal Government Act,* "Annapolis Royal Board of Police Commissioners Bylaw" passed at a duly convened meeting of the Council of the Annapolis Royal Board of Police Commissioners on the ____day of _____, 2024, is hereby approved, and the said Bylaw has the force of law upon publication pursuant to subsection 169(1) of the *Municipal Government Act.*

DATED this ____day of _____, 2024

Honorable Brad (BJ) Jones
Attorney General and Minister of Justice
Province of Nova Scotia

BE IT RESOLVED that the following Bylaw be adopted as amended and enacted as a Bylaw of the Town of Annapolis Royal pursuant to the authority of the *Police Act, S.N.S. 2004,c.31,* as amended and that the said Bylaw be forwarded to the Minister of Justice along with a request for approval.

TOWN OF ANNAPOLIS ROYAL

ANNAPOLIS ROYAL BOARD OF POLICE COMMISSIONERS BYLAW

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   (a) Civilian governance on behalf of the Town in relation to the enforcement of law, the maintenance of law and order and the prevention of crime in the Town; and

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      (i) complaints, discipline, or personnel conduct except in respect to the Chief.

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(iii) One (1) member appointed by the Minister of Justice of the Province of Nova Scotia.

(c) All subsequent appointments of resident members shall be appointed for a term of three (3) years, and members are eligible for reappointment for maximum of three (3) consecutive three (3) year terms.

(d) Where a member of the Board is unable to carry out the member's duties by reason of illness, absence or any other reason, the person or the body that made the initial appointment may appoint some other person to act as or be a member of the Board in place or stead of the absent member [sec.45 (3) of the *Police Act*].

CHAIR AND VICE-CHAIR

5. The Board shall at its first meeting in November, following the November Regular Council Meeting, choose from amongst its members a Chair and Vice-Chair.

MEETINGS

6. (a) The Board holds meetings every month except August however a meeting during August may be called at the discretion of the Chair. These meetings are open to the public and will be held in Council Chambers at Town Hall on the second Wednesday of each month, commencing at 10 o'clock in the morning, or such meetings at such other time or place as the Board shall determine, provided that the date, time, and location of such public meetings shall be advertised with forty-eight (48) hours' notice.

(b) Three (3) members constitutes a quorum.

(c) The Board may meet *in-camera* at any time on 24 hours' notice by the Chair or any two (2) members or at any time with unanimous consent of all members, concerning urgent matters relating to issues, which fall under the authority and function of the Board. A member of the Board or any person in attendance at an *in-camera* meeting shall not disclose any item or information of a confidential nature that is discussed at the meeting.

(d) The Chief or designate shall, whenever requested by the Chair of the Board, attend meetings of the Board, whether public or *in-camera.*

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FISCAL MATTERS

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(b) The Board shall submit to Council all proposed employment agreements or contract negotiations for Council's approval of all financial matters contained therein, prior to the execution thereof, by the Board.

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9. (a) Board members are not remunerated.

(b) Board members are entitled to reimbursement of reasonable expenses incurred in conducting the business of the Board. This may include annual membership fees associated with the Nova Scotia Association of Police Governance (NSAPG) and training. Expenses shall be reimbursed in accordance with the Town Travel Policy.

OTHER MATTERS

10. The Board shall have all the powers, duties and responsibilities as designated under the *Police Act* 2004 c.31.

REPEAL

11. A Bylaw, known as the *Annapolis Royal Board of Police Commissioners Bylaw No.116* as adopted by Town Council on the 10th day of May 1993, is hereby repealed.

ENFORCEMENT

12. This Bylaw shall come into force and legal effect upon receiving the approval of the Minister of Justice of Nova Scotia as per sec. 55(2) of the *Police Act.*

EFFECTIVE DATE

13. This Bylaw shall be effective November 5 2020

THIS IS TO CERTIFY that the foregoing is a true copy of a Bylaw duly passed at a duly called meeting of the Town Council of the Town of Annapolis Royal held on the 20 day of July, 2020.

GIVEN under the hand of the Town CAO and under the seal of the Town of Annapolis Royal this 12 day of August, 2020.

MAYOR

Sandi Millett Campbell
CAO

Bylaw Adoption	Date
First Reading	June 15, 2020
Notice of Intent of Publication	July 2, 2020
Second Reading	July 20, 2020
Ministerial Approval	October 27, 2020
Date of Publishing	November 5, 2020

Certificate of Approval

"Annapolis Royal Board of Police Commissioners Bylaw"

Town of Annapolis Royal

This is to certify that, pursuant to section 450 of the *Municipal Government Act*, "Annapolis Royal Board of Police Commissioners Bylaw" passed at a duly convened meeting of the Council of the Annapolis Royal Board of Police Commissioners on the 12th day of August, 2020, is hereby approved, and the said Bylaw has the force of law upon publication pursuant to subsection 169(1) of the *Municipal Government Act*.

DATED this 27th day of October, 2020.

Honourable Mark Furey
Attorney General and Minister of Justice
Province of Nova Scotia

TOWN OF ANNAPOLIS ROYAL
POLICY

TITLE: **Town Real Estate Transactions**	
POLICY NO.: **#2024-01**	SUPERSEDES: **November 17, 2003 P#2003-7**
EFFECTIVE DATE:	APPROVED BY COUNCIL MOTION NO.:

Purpose:

To ensure that the public is aware of what Town land may be available for sale and that the Town receives fair market value on the sale of all Town owned land. The Town of Annapolis Royal endeavors to provide a fair and equitable way to price land for sale in accordance with Section 50(5)(b) and 218 of the Municipal Government Act. The Town of Annapolis royal encourages community growth to contribute to the social and economic development of the Town.

Definitions:

Town: Town of Annapolis Royal

Policy Statement:

1. An inventory of all Town land that may become available for sale will be posted to the Town's website.
2. When and if there is any interest expressed in a property, an appraisal will be obtained.
3. Based on the appraisal results and the Town's own assessment of the value of the property, a price will be determined by the Town, ensuring consistency, fairness, transparency, and accountability in land prices for lands owned by the Town.
4. In the event the Town requires the services of a Realtor. The Town shall select a Realtor from one of the real estate businesses within the Town on a rotation basis.
5. All Purchase and Sale Arrangements must include clear direction related to any buy-back provisions such as: stating the requirements that must be met and the timeframe for meeting such requirements. These may include construction timelines and any other situation-specific requirements.

Repeal and Replace:

1. This policy known as Policy on Town Real Estate Transactions # 2003-7 as adopted by Council on November 17, 2003 is hereby repealed.

THIS IS TO CERTIFY that this policy was duly passed

by a majority vote of the whole Council at a duly called
Council meeting held on the ____ day of _____2024.

GIVEN under the hand of the CAO and under the
seal of the Town of Annapolis Royal the ____day of _____ 2024.

_____

Sandi Millett-Campbell
Chief Administrative Officer

Communities in Bloom / Collectivités en fleurs
CANADA
Growing Great Places Together
Cultivons ensemble de beaux espaces

December 6th, 2023

Mayor Amery Boyer
Town of Annapolis Royal
P. O. Box 310, 285 St. George Street,
Annapolis Royal, Nova Scotia B0S 1A0

Honourable Mayor and Council,

Communities in Bloom is a non-profit, charitable, Canadian organization committed to fostering civic pride, environmental responsibility, and beautification through community engagement and the challenge of friendly competition.

The program nurtures involvement and action by citizens of all ages, municipal governments, local organizations, institutions, not-for-profits and businesses. It strives to improve the tidiness, appearance, and visual appeal of our neighborhoods, parks, open spaces, and streetscapes through the imaginative use of flowers, plants and trees.

A focus on environmental awareness and the preservation and conservation of the cultural, natural, and built heritage elements are also an integral pillars to the success of the program.

We invite your community to explore the program, experience Canadian community pride, and enjoy the benefits of people, plants and pride…growing great places together, by participating in the 2024 Communities in Bloom program.

In the past few years, significant changes have occurred in society's expectations for, and usage of, our outdoor environments. We encourage you to join communities across the Atlantic provinces and Canada to develop:

- **civic pride**
- **mitigate and adapt to the impacts of climate change**
- **enhance green spaces**
- **strengthen neighborhoods** and
- **increase investment opportunities and tourism**

Your community will receive **invaluable feedback from a professional team of experienced, volunteer judges** who will provide you with a comprehensive report of observations and recommendations to serve as a **template for continuous improvement** following their visit.

7856 5th Line
South,
Milton, ON
L9T 2X8

T 514 694-8871

E-Mail/Courriel : bloom@cib-cef.com
Web Site : www.communitiesinbloom.ca
Site Internet : www.collectivitesenfleurs.ca

cibcef
communitiesinbloom
@cibcef

Your community has the option to participate in one of the following categories:

- **Population Category (community is evaluated):**
  Two volunteer judges visit and evaluate the community to provide a detailed report, including any special mentions and an overall bloom rating (from 1 to 5 blooms) The evaluation visit will be scheduled for two days with accommodation provided by the host community.

  Or

- **Friends Category (community is not evaluated):**
  Community is not evaluated: becomes part of the Communities in Bloom network, able to access educational, idea sharing for community improvement, and an invitation to attend the annual symposium.

Participating in the CiB program has proven, **positive benefits**! While impacting all sectors of your municipality, CiB will help to encourage and enhance community involvement, improve green infrastructure, and become more environmentally sustainable. The very high Return on Investment that has been noted by other communities make CiB **one of the best investments** you can make for your hometown!

CiB Atlantic is challenging and inviting your community to act early and REGISTER for the 2024 Atlantic Provincial Edition!

The deadline to register is **February 29th, 2024.** The registration form can be completed directly on-line, by following this link: http://www.communitiesinbloom.ca/cib2024

Also, at the request of our communities, we decided to continue with a **colour theme for 2024**. Next year's colour will be **ORANGE**. We invite everyone to plant orange in honour of our Indigenous communities as we celebrate all the ways Plants Love You.

The National Symposium on Parks & Grounds and National & International Awards Ceremonies will be held in Charlottetown, Prince Edward Island from October 17-20, 2024. We would be pleased to showcase your achievements and to celebrate your bloom rating and level.

For more information about how Communities in Bloom can **help your community** become a **Greener and Healthier** community, please contact:

Sonia Parrino - CiB Program Specialist
Phone: (514) 694-8871 email: bloom@cib-cef.com

Sincerely,

Susan Ellis,
B.A., B. Ed., Ec.D.
CiB National Chairperson

How to Participate in Communities in Bloom

www.communitiesinbloom.ca

Growing Great Places Together

THE PROGRAM

Communities in Bloom is a volunteer and partnership-driven charitable organization that uses a multi-tiered competitive evaluation process to foster community strength, involvement and continuous improvement. This is accomplished by nurturing environmental sustainability, enhancements of green spaces, and heritage conservation, in cultural and natural environments encompassing municipal, residential, commercial, and institutional spaces. National beautification programs have flourished in Europe – including Great Britain, France and Ireland – for decades, and were the inspiration for Communities in Bloom.

The program began in 1995 with 29 Canadian communities and has grown to improve the quality of life in hundreds of participating communities in the provincial, national and international editions.

All communities are invited to participate in the provincial or national editions, within their population category. Trained volunteer judges travel across Canada during the summer to evaluate communities and the overall contributions of municipality, businesses & institutions and residents, including volunteer efforts in regards to the following criteria:

Community Appearance reflects an overall effort by the municipality, businesses, institutions and the residents throughout the community to create great first impressions and a sense that there is continuous attention and upkeep to critical elements of a community that benefit quality of life and economic vitality Elements for evaluation are: parks and green spaces, medians, boulevards, sidewalks, streets; municipal, commercial, institutional and residential properties; ditches, road shoulders, vacant lots, signs and buildings; weed control, litter clean-up, graffiti prevention/removal and vandalism deterrent programs..

Tignish, PE

Tree Management Woodlands, Canopy Management, Urban and Rural Forestry includes the efforts of the municipality, businesses, institutions and residents with regards to written policies, by-laws, standards for tree management protection (selection, planting, and maintenance), long and short-term management plans, tree replacement policies, pollinator-friendly tree selection, tree inventory including heritage, memorial, and commemorative trees, and Integrated Pest Management (IPM) programs.

Environmental Action pertains to the impact of human activities on the environment and the subsequent efforts and achievements of the community with respect to: environmental stewardship, policies, by-laws, programs and best practices for waste reduction and landfill diversion, composting sites, landfill sites, hazardous waste collections, water conservation, energy conservation, and activities under the guiding principles of sustainable development pertaining to green spaces.

Grand-Falls Windsor, NL

Landscape includes planning, design, construction and maintenance of parks, green spaces and cemeteries suitable for the intended use and location on a year-round basis. Elements for evaluation include native and introduced materials; biodiversity, materials and constructed elements; appropriate integration of hard surfaces and art elements, use of turf and groundcovers. Landscape design should harmonize the interests of all sectors of the community and provide safe and secure public spaces. Standards of execution and maintenance should demonstrate best practices, including quality of naturalization, use of groundcovers and wildflowers along with turf management.

Heritage Conservation includes efforts to preserve and protect both natural and cultural heritage within the community. Preservation of natural heritage pertains to policies, plans and actions concerning all elements of biodiversity including flora and fauna ecosystems and associated geological structures and formations. Cultural conservation represents the "persona" of a community and refers to the heritage that helps define the community including the legacy of tangible elements such as heritage buildings, monuments, memorials cemeteries, artifacts, museums and intangible elements such as traditions customs, festivals and celebrations.

Chipman, NB

Plant and Floral Displays evaluates the efforts of the municipality, businesses institutions and residents to design, plan execute, and maintain plant and flora displays of high-quality standards. Evaluation includes the design and arrangements of flowers and plants (annuals, perennials bulbs, ornamental grasses, edible plants water efficient and pollinator friendly plants) in the context of originality, distribution, location diversity and balance, colour, and harmony. It also pertains to flowerbeds, carpet bedding containers, baskets and window boxes.

PROGRAM STRUCTURE

Communities in Bloom is designed to be a continuous community improvement program. It is divided into three phases: Provincial, National and International.

Provincial Editions

Communities participate in their population category within their province and are awarded a bloom rating of 1 to 5 blooms at a provincial awards ceremony in the fall. Based on provincial guidelines, success in a provincially evaluated category leads to the community being invited to the national program.

Any community is allowed to participate in a non-competitive provincial category either to learn about the program or, if they are past participants, to maintain their initiatives, program and committees. Both evaluated and non-evaluated options are available in Atlantic provinces.

Each provincial organization also offers special programs and categories specific to provincial context and objectives.

National Edition

Who is invited to participate in the national edition?

Population

- Past National finalists from the previous year's national edition are invited back to the national competition
- Communities from the previous year's provincial editions as recommended by the respective provincial organization.

Circle of Excellence

A non-competitive category for National Winners without an evaluation.

Class of Champions

A category where Canadian communities who have won in the Population category compete amongst themselves.

Grand Champions

A category where past winners of the Population, International Challenge and Class of Champions compete amongst themselves.

Special Attractions

A category that features green attractions such as parks, living history museums, public gardens, etc.

International Challenge

A competitive category between national and international winners.

The information in this brochure is provided for information purposes only and may vary from actual 2024 program offerings in your area.

PROGRAM BENEFITS

Communities have recognized numerous benefits from participating in the program:

- Increased civic pride and community involvement
- Environmental stewardship through the enhancement of green spaces
- Mobilization of citizens, groups, organizations, businesses and the municipality
- Best practices and Information exchange
- Valuable information and feedback from the judges
- Economic development and increased property values
- Marketing and promotional opportunities
- Positive benefits for the tourism, hospitality and retail industries
- Improved quality of life
- Participation from all ages and walks of life of the community

PROCESS FOR PARTICIPATION

Registrations

Please note that the Atlantic Provincial Edition is administered by the CiB National office, you can contact the National organization by visiting:
http://www.communitiesinbloom.ca

You can access the on-line registration form by following this link:
2024 CiB Atlantic Edition Registration

Cost

Evaluated category (by population)
Up to 1,000 population: $425 CAD
1,001- 5,000 population: $495 CAD
5,001 - 10,000 population: $595 CAD
10,000 + population: $775 CAD
Non evaluated category
Networking (Non-Evaluated): $250 CAD

Your Local Committee

The committee is usually composed of local citizens, including one member of council and members of associations, businesses and organizations interested in horticulture, heritage and improving community life.

The committee's objectives are:

- To involve the community by means of local contests, which increase awareness about the program, its benefits and opportunities.
- To act as a liaison with the municipal authorities and Communities in Bloom.

Budget

While participation in the program does not require considerable financial resources, obtaining funds to promote the program, involve the community, honour participants and volunteers, attend the award ceremonies, etc. is recommended.

It is suggested for the community to prepare an estimated budget and to find sources of funding, such as fundraising programs, community events, etc. Communities in Bloom can provide fundraising ideas and examples from other communities.

Bloom Ratings

Communities are rated from 1 to 5 Blooms

Up to 55 points:	1 Bloom
56-63 points:	2 Blooms
64-72 points:	3 Blooms
73-81 points:	4 Blooms
82 points and more:	5 Blooms

There are four (4) levels of 5 Blooms exclusive to the National and International Edition, for evaluated communities only.

5 Blooms:	82 to 83.9%
5 Blooms (Bronze):	84 to 86.9%
5 Blooms (Silver):	87 to 89.9%
5 Blooms (Gold):	90% and over

- A community does not have to be entered in a competitive category, but will need to be evaluated.

- With the introduction of this enhanced higher award standards, the marking of scores will be more critical.

Bay Roberts, NL

PROGRAM COMMITMENT

The participating communities have a responsibility to:

- Involve the entire community to participate (with the support of municipal council)
- Prepare for the judging during the summer
- Provide lodging for 1 or 2 nights for 2 judges.
- Provide transportation for the judges to and from the nearest airport/train station.
- Attend the Provincial and/or National awards ceremonies if budget permits it.
- Pay a registration fee, based on population categories and level of competition.

THE JUDGES' VISIT – USEFUL TIPS

- Prepare information that addresses all criteria in the evaluation form.
- Make good use of the time spent by the judges in your community, to benefit from their expertise.
- The judges' itinerary should include all of the criteria.
- Provide the judges with the opportunity to interact with key individuals and network in your community.
- Let them see that you are proud of your achievements.

AWARDS CEREMONIES

The Provincial Awards Ceremonies are held in the fall and include presentations and awards to all participants along with the judges' feedback.

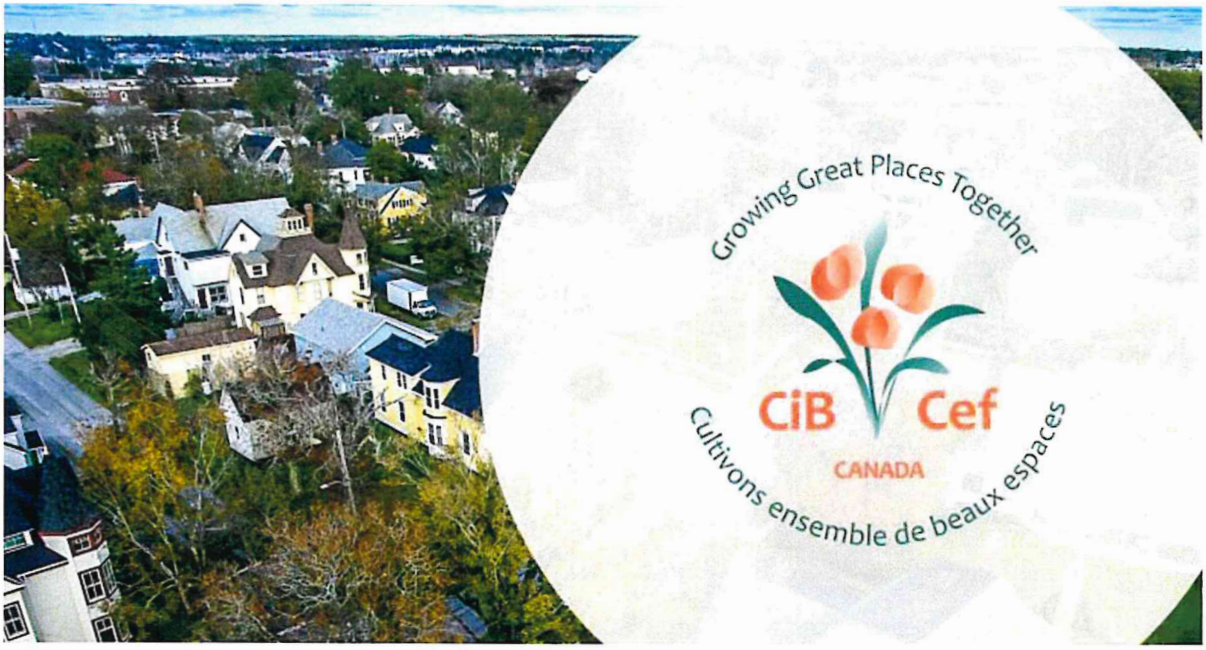
The National Awards Ceremonies is held in the fall, in conjunction with the National Symposium on Parks and Grounds. All National Finalists are encouraged to attend. The communities are showcased by means of community exhibits and promotional material.

PROMOTIONS

www.communitiesinbloom.ca: CiB's website gives visibility to our participants in the NewsComm and Explore our Communities section of our website. The website also includes a resource centre featuring information from sponsors and communities along with electronic copies of our magazines.

Social Networks: CiB participants are welcomed to send us updates, news and photos to post on our Facebook, Twitter and Instagram pages:
www.facebook.com/communitiesinbloom
www.twitter.com/cibcef www.instagram.com/cibcef/

Within the context of climate change and environmental concerns, all communities involved in the program can be proud of their efforts, which benefit all of society.



Communities in Bloom
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bloom@cib-cef.com
www.communitiesinbloom.ca
communitiesinbloom
@cibcef
cibcef

Major Sponsor

Founding Sponsor

National Sponsors

Partners

AIPH

Mayor's Roundtable Report Jan 3, 2024

Dec 31, 2023

Reviewed draft report on 2023 twinning activities submitted by Christine Igot and Sally O'Grady.

Jan 1, 2024

Attended New Year's Levée wearing Mayor's Cape and hat produced by Millie Hawes at no cost to the Town for use with the chain of office. The cape can be worn by a man or a woman. The cape will be used for appearances at Acadian events throughout 2024.

Jan 3, 2024

Reviewed and commented on third draft of Marketing and Economic Development Plan from the Chair of MEDEC.

Received Flood Risk Report by AIMN and will begin to review.

Continuing to assist the CAO with grant applications:

Project	**Potential Funding Source**	**Status**
Tidal Pilot Project Feasibility Study	Sustainable Communities Challenge Fund (Province of NS)	Application for $105,808 filed Nov 29, 2023/decision expected March/April 2024 – **the Town was asked to make changes to the application which it submitted by the Dec 19, 2023 deadline.**
	FCM Green Funds (Federation of Canadian Municipalities)	Pre-screening application **62% complete** (no deadline)/**holding for telephone meeting with CAO and FCM**
	Net Zero Energy Concepts and Technical Resources Program (Province of NS))	Application for $50,000 submitted Nov 21, 2023/**this application was declined and will be replaced with the FCM application mentioned above.**
Regional infrastructure capacity study	Capacity Building Stream and Indigenous Engagement Grant	Inter Municipal Working Group has been advised to go through existing funding programs. **The 3 CAOs will review this in January 2024 and get back to us with recommendation.**
Sea wall	Climate-Resilient Coastal Communities Program (NRCan)	Determined not to be a good fit for feasibility study. Deferred to receipt of 2nd draft sea wall**/report received on Jan 3, 2024 and going to CoW.**
Sea Wall	To begin looking for existing and future funding sources: in progress: National Adaptation Strategy Climate Adaptation	Jan 2024: in progress

	Green Municipal Funds 2024 Natural Infrastructure Fund Disaster Mitigation & Adaptation Fund Private capital (sponsors for wall itself): • Acadian Seaplants • Bell • Rogers • Irving Oil Other orgs: • Ducks Unlimited	
Regional Climate Change Plan	Community Climate Capacity Program	**Application completed and submitted by deadline.**
Second water source	Municipal Capital Growth Program	Deadline was Dec 13, 2023, however, on the recommendation of staff, due to existing workloads, **we will wait for the next round.**