

WASTEWATER ASSETS MANAGEMENT PLAN

The Town of Mahone Bay operates and maintains many assets for the delivery of public services and the benefit of residents. The Town's Asset Management Policy classifies these assets into nine categories and the Council's Strategic Plan prescribes the development of an Asset Management Plan for each.

This is the Town's Asset Management Plan for Wastewater Assets and as such will provide a high-level introduction to the Town's wastewater collection and treatment system. The wastewater collection system serves most of the community, unserved areas rely on private septic systems.

ASSET MANAGEMENT GOALS

- Continue to meet treatment regulations
- Renew existing wastewater collection systems assets (reduce infiltration)
- Extend services to eliminate straight pipes and support new development

RISKS:

- Heavier rains overloading lift stations
- Coastal erosion and flooding threatening infrastructure

The Water / Wastewater Department is responsible for the reliable supply of drinking water to residents and businesses as well as the collection and treatment of wastewater. The Department operates in accordance with all federal and provincial regulations to ensure the safety of staff, the public and our natural environment. Department staff include:

Scott Hoyt – Water/Wastewater System Manager
Blake Tibert – Water/Wastewater System Operator
Hiring Underway – Water/Wastewater System Operator

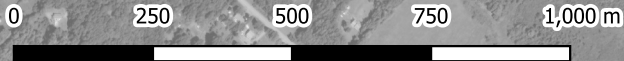
The following map depicts the Town's Wastewater Assets:

Mahone Bay: Wastewater Overview



Wastewater Network

-  Lift Stations
-  Force Main
-  Gravity Main
-  Wastewater Treatment Plant and Reservoir



Lift Station 3

Lift Station 2

Lift Station 1



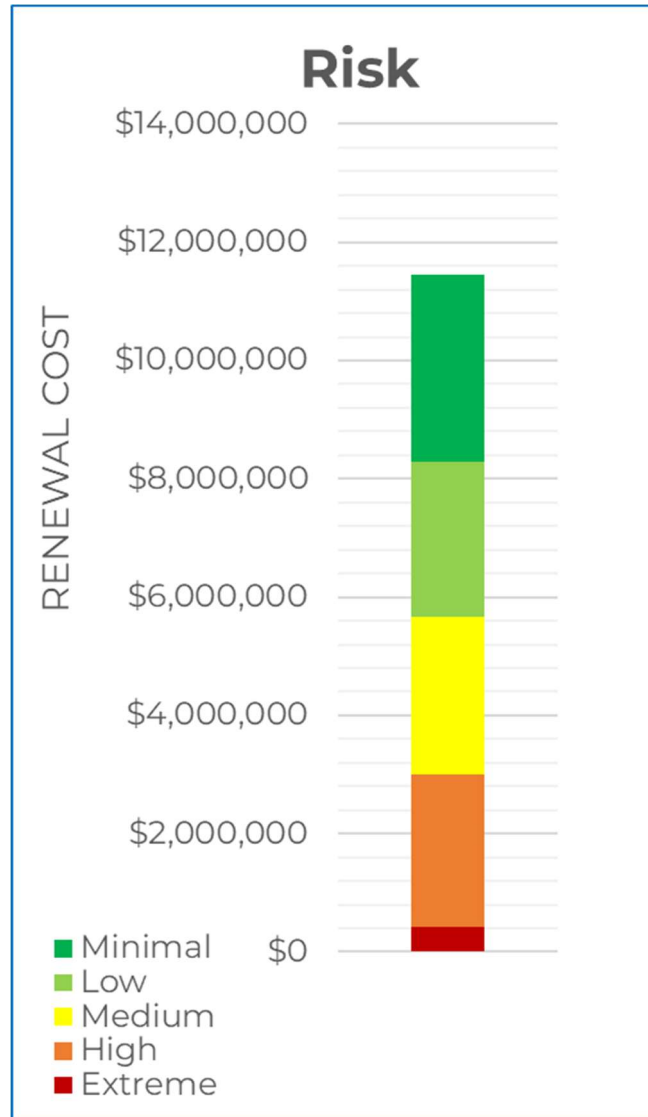
Created by Asia Winter
Reviewed by Edward Van den Berg
evandenber@landinfotech.com
Date created: 2024.09.17

Quantity			
Asset Group (System)	Number of Features	Length (m)	Area (SqM)
Wastewater Collection and Treatment	461	12,849	11,927
Structures	7		11,927
Wastewater Collection	454	12,849	
Control	3		
Manhole Cover	126		
Manhole Trunk	126		
Motor	6		
Pipe	183	12,849	
Other	8	306	
Transmission Force Main	7	1,167	
Transmission Gravity Main	168	11,376	
Pump	6		
Reservoir	3		
Treatment	1		
Grand Total	461	12,849	11,927

Renewal Cost		
Asset Group (System)	Renewal Cost (Current CAD)	Sustainable Annual Investment
Wastewater Collection and Treatment	\$11,447,492	\$224,839
Structures	\$475,400	\$9,517
Wastewater Collection	\$10,972,092	\$215,322
Control	\$81,000	\$8,100
Manhole Cover	\$1,171,800	\$19,530
Manhole Trunk	\$1,171,800	\$19,530
Motor	\$37,500	\$2,500
Pipe	\$7,052,392	\$108,498
Other	\$27,621	\$425
Transmission Force Main	\$532,456	\$8,192
Transmission Gravity Main	\$6,492,315	\$99,882
Pump	\$173,000	\$11,533
Reservoir	\$465,000	\$4,650
Treatment	\$819,600	\$40,980
Grand Total	\$11,447,492	\$224,839

Making smart investments in our Wastewater Assets to ensure they provide reliable service into the future requires understanding where investments are needed most. Our investment decisions are guided by the concept of Risk. In asset management planning Risk is a function of probability, the likelihood that an asset will fail to perform its expected role, and consequence, the impact such a failure would have on the delivery of services.

The following is an illustration of the Risk associated with the Town's current Wastewater Assets:



In practice the Town Council must make smart investments to reduce Risk in the wastewater system while considering residents' ability to pay. This Asset Management Plan links the identified need for investment with Council's planned capital spending.

The following map depicts the Town's wastewater system, showing associated Risk:

Mahone Bay: Risk Heat Map



Risk Level

- Extreme — Red line
- High — Orange line
- Medium — Yellow line
- Low — Green line
- Minimal — Blue line
- Planned — Dashed black line

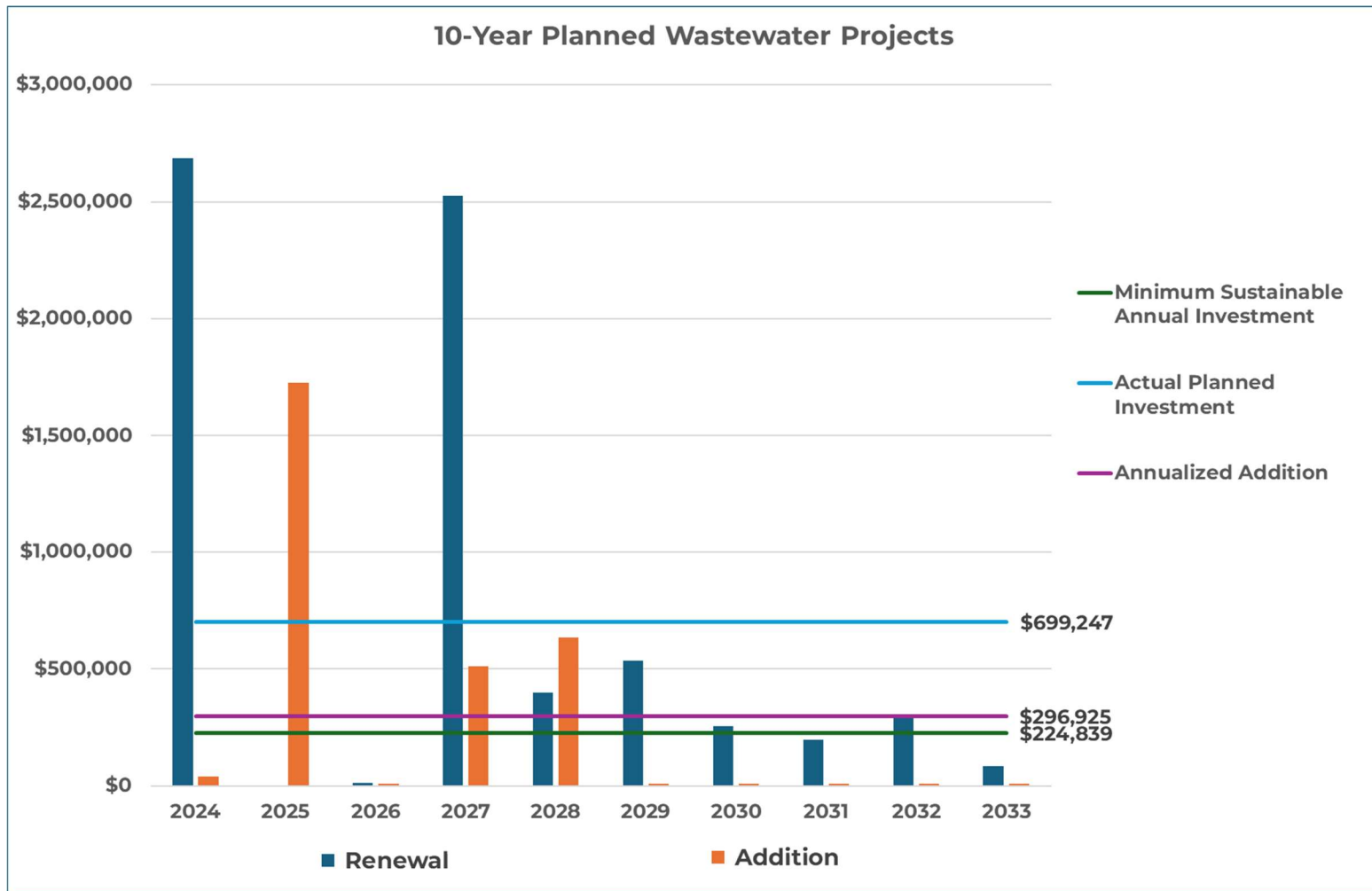


When Risk is used to inform asset management decision making it is possible to develop a picture of the investment decisions which will be necessary to keep our wastewater assets working as intended.

Risk						
Asset Group (System)	Extreme	High	Medium	Low	Minimal	Grand Total
Wastewater Collection and Treatment	\$411,293	\$2,593,465	\$2,656,272	\$2,624,556	\$3,161,907	\$11,447,492
Structures		\$200	\$200	\$475,000		\$475,400
Wastewater Collection	\$411,293	\$2,593,265	\$2,656,072	\$2,149,556	\$3,161,907	\$10,972,092
Control			\$81,000			\$81,000
Manhole Cover	\$37,200	\$27,900	\$418,500	\$241,800	\$446,400	\$1,171,800
Manhole Trunk	\$37,200	\$27,900	\$418,500	\$241,800	\$446,400	\$1,171,800
Motor			\$37,500			\$37,500
Pipe	\$336,893	\$1,717,865	\$1,527,572	\$1,200,956	\$2,269,107	\$7,052,392
Other			\$4,185	\$10,044	\$13,392	\$27,621
Transmission Force Main	\$212,180	\$110,980	\$209,297			\$532,456
Transmission Gravity Main	\$124,713	\$1,606,885	\$1,314,090	\$1,190,912	\$2,255,715	\$6,492,315
Pump			\$173,000			\$173,000
Reservoir				\$465,000		\$465,000
Treatment		\$819,600				\$819,600
Grand Total	\$411,293	\$2,593,465	\$2,656,272	\$2,624,556	\$3,161,907	\$11,447,492

The Sustainable Annual Investment level is the minimum investment needed to mitigate risks and continue with the provision of services. The cost estimates used to determine the Sustainable Annual Investment level are updated periodically but may understate the effects of inflation.

By incorporating Risk, along with the Sustainable Annual Investment level the Town is able to develop a sustainable 10-year Capital Investment Plan (CIP) for wastewater assets:



KEY 10-YEAR CAPITAL PROJECTS:

- Edgewater Street Project (2025-2026) - \$1,685,519
- Main Street West Project (2025-2026) - \$4,231,126
- Main Street East Project (2026-2027) - \$3,000,000
- Transmission Main Replacement (2029-2030) - \$2,000,000

With Average Planned Spending exceeding Sustainable Annual Investment, the Town's planned 10-year capital expenditures are adequate to ensure our Wastewater Assets continue to provide expected levels of service. Upgrades and improvements are not reflected in the minimum Sustainable Annual Investment and additions / extensions are shown as Annualized Addition.

The following map depicts Planned Wastewater projects over the next 10 years, according to the CIP (not all projects may be shown, projects without a location will not be shown):

Mahone Bay: Planned Infrastructure



Wastewater Features

Wastewater Pipe Planned Type

Proposed Addition

Proposed Renewal

Wastewater Pipe Planned Date

12/31/2026

12/31/2027

12/31/2029

12/31/2030

12/31/2031

12/31/2032

12/31/2033

12/31/2034

Edgewater Street Project

Lift Station Refurbishment

WWTF UV System Project

0 250 500 750 1,000 m



Created by Asia Winter
Reviewed by Edward Van den Berg
evandenbergl@landinfotech.com
Date created: 2024.09.17

Finally, to carry out this 10-year Capital Investment Plan funding strategies must be considered.

Funding Strategies

The Town is significantly reliant on external funding support from higher levels of government to carry out the planned capital program. Town funding for Wastewater Assets comes through tax rates, including the Infrastructure Charge, levied on all properties in Mahone Bay, which contributes to a reserve used for capital investments.

Improvement Plan

The Town continues to improve this document and our practice of asset management. The following improvements are planned:

- Wastewater rate study to inform potential user-charges model for wastewater service.
- Stormwater infiltration study to inform future capital spending.
- Operationalization of asset management practice with new work order system.
- Development of standards for the collection and maintenance of asset management data.

Engagement

Staff respond to and track service complaints. The Town has a responsibility to maintain existing infrastructure. Council will consider strategic extension of services to support development.