

5.1 Water Network

Water services for the Township are currently maintained by the City of Brockville, and the operating expenditures are funded through the City of Brockville billing system. The Township is expected to pay for capital costs associated with the water distribution main they own. The water services provided by the Township includes the following:

- 69. Hydrants
- 70. Valves
- 71. Water Mains
- 72. Booster Station
- 73. Meter Chamber
- 74. Meters
- 75. Flush Sample Station

5.1.2 Asset Inventory & Replacement Cost

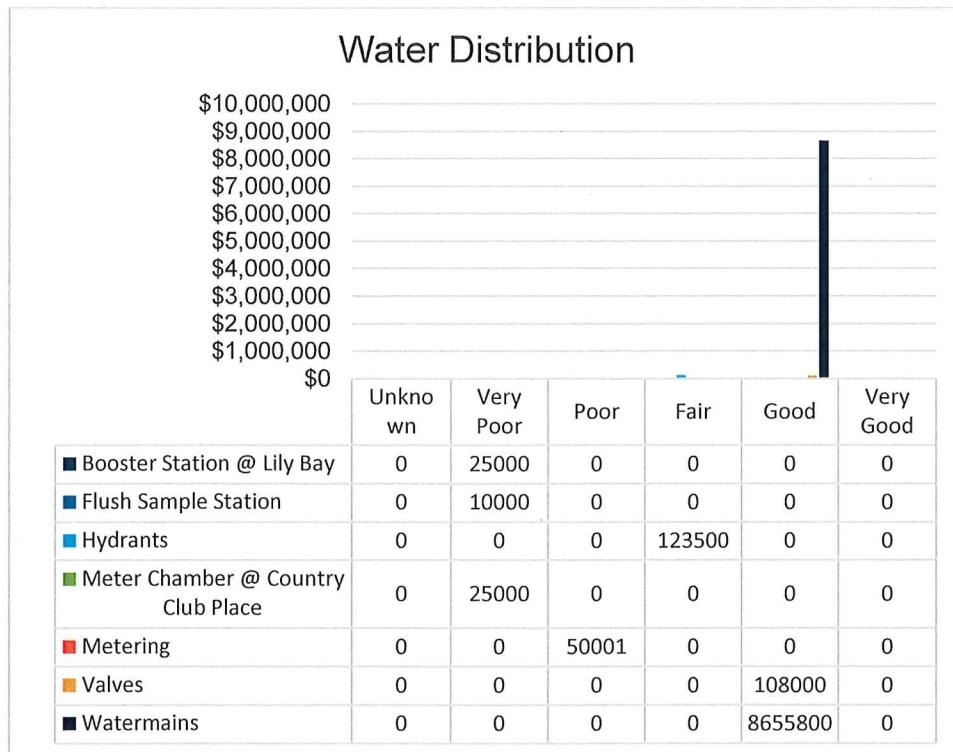
The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Township's Water Network inventory.

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Hydrants	19	User-Defined	\$123,500
Valves	60	User-Defined	\$108,000
Water Mains	16.23 kms	Cost/Unit	\$8,655,800
Booster Station		User-Defined	\$25,000
Meter Chamber		User Defined	\$25,000
Meters		Cost/unit	\$50,000
Flush Sample Station		User-Defined	\$10,000
			\$8,997,300

5.1.3 Asset Condition

The table below identifies the current average condition and source of available condition data for each asset segment. The Average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Hydrants	46%	Fair	Age-Based
Valves	63%	Good	Age-based
Water Mains	63%	Good	Age-Based
Booster Station	0	Poor	Age-Based
Flush Sample Station	0	Poor	Age-based
Meter Chamber	0	Poor	Age-Based
Metering	27%	Poor	Age-Based
	57%	Good	Age-Based



To ensure that the Township's water network continues to provide an acceptable level of service, the Township should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the Water Network.

Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently.

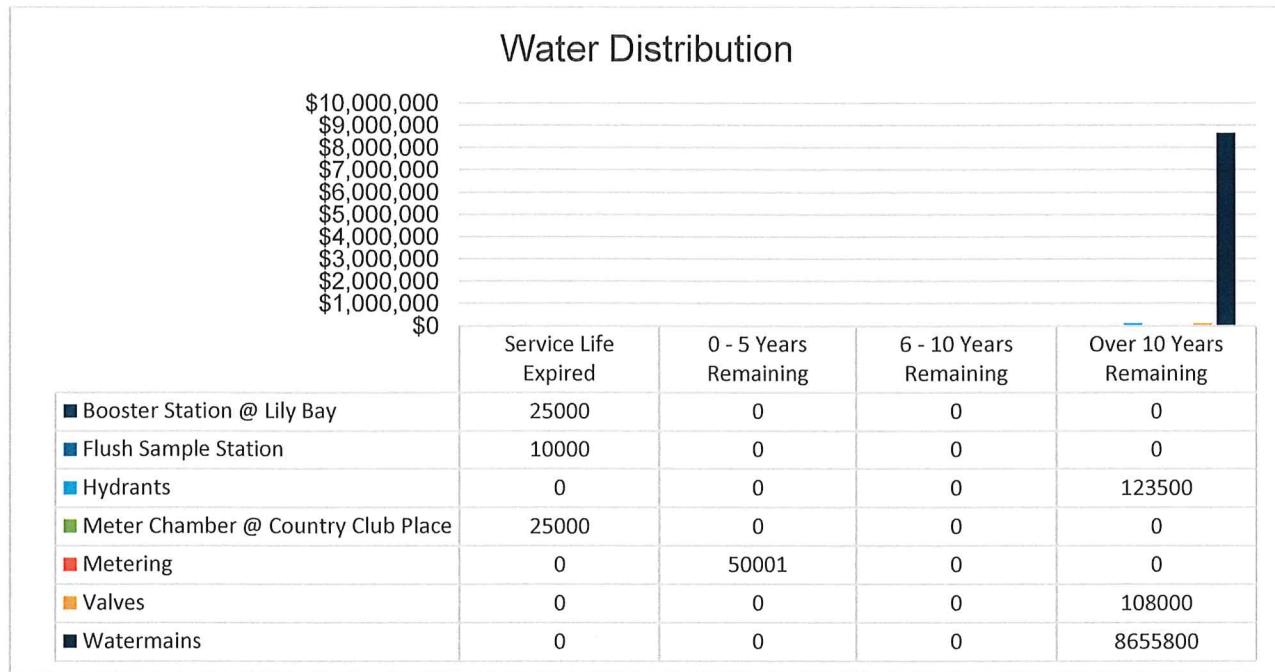
The following describes the municipality's current approach to the condition assessment of the Water Network:

76. Staff primarily rely on the age and material of watermains to determine the projected overall condition of watermains.
77. There are no formal internal condition assessment programs in place for the Water Network.
78. Regular inspections are completed by the City of Brockville.

5.1.4 Estimated Useful Life & Average Age

The Estimated Useful Life for Water Network assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Hydrants	50	27.0	23.0
Valves	72	27.0	45.0
Water Mains	72	27.0	45.0
Booster Station	10	21	0
Flush Sample Station	10	11	0
Meter Chamber	10	21	0
Metering	15	11	4
		26.1	38.9



5.1.5 Lifecycle Management Strategy

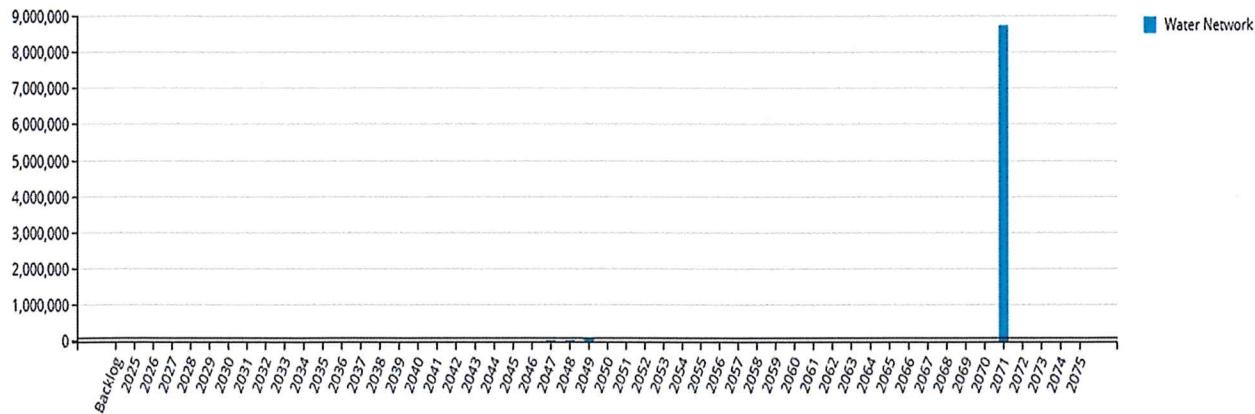
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Township's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Main flushing is completed annually
	Hydrant inspection and valve turning occurs annually
Replacement	In the absence of mid-lifecycle rehabilitative events, most mains are simply maintained with the goal of full replacement once it reaches its end-of-life
	Replacement activities are identified based on an analysis of the main break rate as well as any issues identified during regular maintenance activities

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs.



5.1.6 Risks to Current Asset Management Strategies

The following section summarizes key trends, challenges, and risks to service delivery that is currently being faced by the Township:

Asset Data & Information



All asset data pertaining to the water network is with The City of Brockville. Consequently, the Township does not have immediate access.

With the completion of this AMP, the Township has been able to have a centralized database of the hydrants, valves, and mains. Staff plan to prioritize data refinement efforts to increase confidence in the accuracy and reliability of asset data and information. Once completed there will be greater confidence in the development of data-driven strategies to address infrastructure needs.

5.1.7 Levels of Service

The following tables identify the Township's current level of service for Water Network. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Township has selected for this AMP.

Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by Water Network.

Service Attribute	Qualitative Description	Proposed LOS (2025)	Current LOS (2021)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	See Appendix B	See Appendix B
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	See Appendix B	See Appendix B
Reliability	Description of boil water advisories and service interruptions	N/A	

Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the Water Network.

Service Attribute	Technical Metric	Proposed LOS (2025)	Current LOS	LOS (2021)
Scope	% Of properties connected to the municipal water system	7%	7%	7%
	% Of properties where fire flow is available	0%	0%	0%
Reliability	# Of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	0	0	0
	# Of connection-days per year where water is not available due to water main breaks compared to the total number of properties connected to the municipal water system	0.017	0.017	0.017
Outcome	Capital re-investment rate	1.48%	0.0%	0.0%

Recommendations

1. Asset Inventory

- Review unit replacement costs of watermains and hydrants, ensuring they reflect current market value.

2. Condition Assessment Strategies

- Continue to identify condition assessment strategies for high value and high-risk water network assets.

3. Lifecycle Strategies

- Work with Brockville to determine an appropriate level of flushing, valve turning, and hydrant maintenance to ensure the water system is functioning.

4. Risk Management Strategies

79. Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
80. Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

5. Levels of Service

- Continue to measure levels of service in accordance with the metrics that the Township has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.