



Asset Management Plan – Core Assets

Municipality of Mississippi Mills

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List of Acronyms and Abbreviations

B.C.I.	Bridge Condition Index
E.C.A.	Environmental Compliance Approvals
I.J.P.A.	Infrastructure for Jobs and Prosperity Act
O. Reg. 588/17	Ontario Regulation 588/17
O.S.I.M.	Ontario Structure Inspection Manual
P.C.I.	Pavement Condition Index
P.R.V.	Pressure Reducing Valve
P.S.A.B.	Public Sector Accounting Board
U.L.C.%	Useful Life Consumed Percentage



Report



Chapter 1

Introduction



1. Introduction

1.1 Overview

The main objective of an asset management plan is to use a municipality's best available information to develop a comprehensive long-term plan for capital assets. In addition, the plan should provide a sufficiently documented framework that will enable continual improvement and updates of the plan, to ensure its relevancy over the long term.

The Municipality of Mississippi Mills (Municipality) retained Watson & Associates Economists Ltd. (Watson) to update the Municipality's 2016 Asset Management Plan. With this update, the intent is to bring the Municipality's asset management plan into compliance with the July 1, 2022 requirements of Ontario Regulation 588/17 (O. Reg. 588/17).

The assets included in this iteration of the asset management plan are the core municipal assets which fall into the following asset classes:

- Roads;
- Bridges and culverts (structures);
- Water;
- Wastewater; and
- Stormwater.

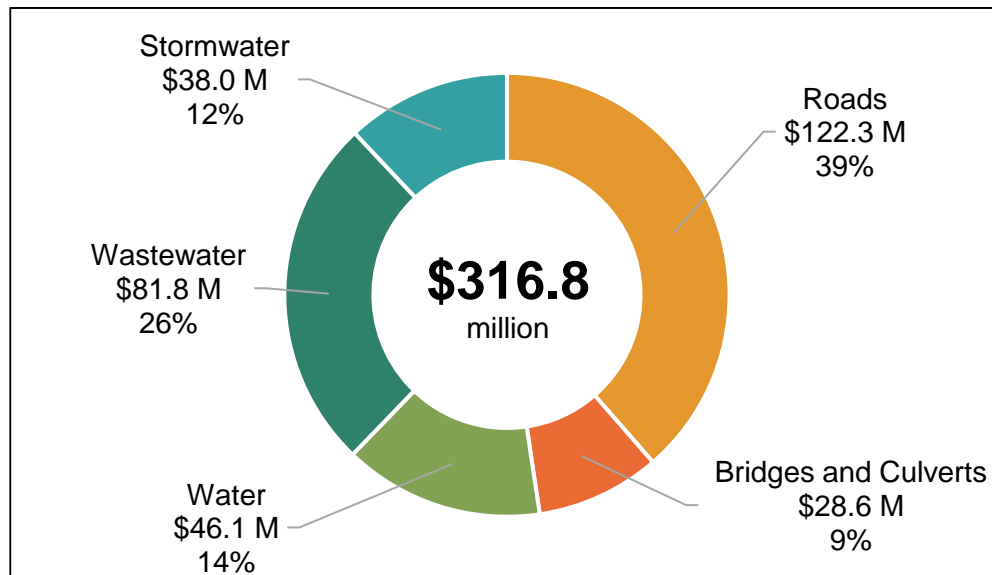
The total replacement cost of the Municipality's core infrastructure assets has been estimated at \$316.8 million. A breakdown of the total replacement cost by asset class is provided in Table 1-1 and illustrated in Figure 1-1. The most significant asset class by replacement cost is roads, accounting for approximately 39% of the total, followed by wastewater (26%), water (14%), stormwater (12%), and bridges and culverts (9%).



Table 1-1: Asset Classes and Replacement Cost

Asset Class	Replacement Cost (2022\$)
Roads	\$122,318,341
Structures	28,630,000
Water	\$46,112,000
Wastewater	\$81,761,000
Stormwater	\$37,993,554
Total	\$316,814,895

Figure 1-1: Distribution of Assets by Asset Class



The Municipality's goals and objectives with respect to asset management are identified in its Strategic Asset Management Policy. A major theme within that policy is employing sound asset management practices to ensure that all municipal infrastructure assets maintained at condition levels that are aligned with the expected service levels and the Municipality's strategic intent. Furthermore, the Municipality is committed to providing services and maintaining assets in a financially sustainable manner. The asset management plan and the progress with respect to its implementation will be evaluated based on the Municipality's ability to meet these goals and objectives.



1.2 Legislative Context for the Asset Management Plan

Asset management planning in Ontario has evolved significantly over the past decade.

Before 2009, capital assets were recorded by municipalities as expenditures in the year of acquisition or construction. The long-term issue with this approach was the lack of a capital asset inventory, both in the municipality's accounting system and financial statements. As a result of revisions to section 3150 of the Public Sector Accounting Board (P.S.A.B.) handbook, effective for the 2009 fiscal year, municipalities were required to capitalize tangible capital assets, thus creating an inventory of assets.

In 2012, the Province launched the municipal Infrastructure Strategy. As part of that initiative, municipalities and local service boards seeking provincial funding were required to demonstrate how any proposed project fits within a detailed asset management plan. In addition, asset management plans encompassing all municipal assets needed to be prepared by the end of 2016 to meet Federal Gas Tax (now the Canada Community-Building Fund) agreement requirements. To help define the components of an asset management plan, the Province produced a document entitled *Building Together: Guide for Municipal Asset Management Plans*. This guide documented the components, information, and analysis that were required to be included in municipal asset management plans under this initiative.

The Province's *Infrastructure for Jobs and Prosperity Act, 2015* (I.J.P.A.) was proclaimed on May 1, 2016. This legislation detailed principles for evidence-based and sustainable long-term infrastructure planning. The I.J.P.A. also gave the Province the authority to guide municipal asset management planning by way of regulation. In late 2017, the Province introduced O. Reg. 588/17 under the I.J.P.A. The intent of O. Reg. 588/17 is to establish standard content for municipal asset management plans. Specifically, the regulation requires that asset management plans be developed that define the current levels of service, identify the lifecycle activities that will be undertaken to achieve these levels of service, and provide a financial strategy to support the levels of service and lifecycle activities.

This plan has been developed to address the July 1, 2022 requirements of O. Reg. 588/17. It utilizes the best information available to the Municipality at this time.



1.3 Asset Management Plan Development

This asset management plan was developed using an approach that leverages the Municipality's asset management principles as identified within its strategic asset management policy, capital asset database information, and staff input.

The development of the Municipality's asset management plan is based on the steps summarized below:

1. Compile available information pertaining to the Municipality's capital assets to be included in the plan, including attributes such as size, material type, useful life, age, and current replacement cost valuation. Update the current replacement cost valuation, where required, using benchmark costing data or applicable inflationary indices.
2. Define and assess current asset conditions, based on a combination of input from the Municipality's staff, existing background reports and studies (e.g., 2022 Bridge Management Study), and an asset age-based condition analysis.
3. Define and document current levels of service based on analysis of available data and consideration of various background reports.
4. Develop lifecycle management strategies that identify the activities required to sustain the levels of service discussed above. The outputs of these strategies are summarized in the forecast of annual capital and operating expenditures required to achieve these levels of service outcomes.
5. Document the asset management plan in a formal report to inform future decision-making and to communicate planning to municipal stakeholders.



Chapter 2

State of Local Infrastructure and Levels of Service



2. State of Local Infrastructure and Levels of Service

2.1 Introduction

This chapter provides an analysis of the Municipality's assets and the current service levels provided by those assets.

O. Reg. 588/17 requires that for each asset class included in the asset management plan, the following information must be identified:

- Summary of the assets;
- Replacement cost of the assets;
- Average age of the assets (it is noted that the regulation specifically requires average age to be determined by assessing the age of asset components);
- Information available on condition of assets; and
- Approach to condition assessments (based on recognized and generally accepted good engineering practices where appropriate).

Asset management plans must identify the current levels of service being provided for each asset class. For core municipal infrastructure assets, both the qualitative descriptions pertaining to community levels of service and metrics pertaining to technical levels of service are prescribed by O. Reg. 588/17.

The rest of this chapter addresses the requirements identified above, with each section focusing on an individual asset class.

2.2 Transportation

2.2.1 *State of Local Infrastructure*

The Municipality owns and manages a variety of assets that support the provision of transportation services and that contribute to the overall level of service provided by the Municipality. The focus for the time being has been placed on the Municipality's roads and structures as these are considered core assets under O. Reg. 588/17 and must be included in the Municipality's asset management plan by July 1, 2022. The analysis for



transportation services will be expanded in the future to include all transportation assets that contribute in various ways to the overall level of service (e.g., sidewalks, streetlights, traffic control equipment, and signs).

The road network consists of roads with various surface types, including pavement, surface treatment, and gravel. The estimated replacement cost of roads is \$122 million. Table 2-1 provides a breakdown of the road network by surface type, showing centreline length, average age, and replacement cost. A visual rendering of the data presented in Table 2-1 is provided in Figure 2-1. A spatial illustration of the Municipality's road network and its extent is provided in Map 2-1.

Table 2-1: Road Network – Length, Age, and Replacement Cost by Surface Type

Surface Type	Quantity	Average Age	Replacement Cost (2022\$)
Pavement	95.3 km	20 years	\$78,643,689
Surface Treatment	91.4 km	12 years	\$22,234,237
Gravel	172.2 km	16 years	\$21,440,415
Total	358.9 km		\$122,318,341

The Municipality has 15 bridges and 11 culverts with an estimated combined replacement cost of \$28.6 million. Table 2-2 provides a breakdown of the counts, average ages, and replacement costs by structure type. A visual rendering of the data presented in Table 2-2 is provided in Figure 2-2.

Table 2-2: Summary of Quantity, Age, and Replacement Cost by Structure Type – Structures

Structure Type	Quantity	Average Age	Replacement Cost (2022\$)
Bridges	15	61 years	\$23,280,000
Structural Culverts	11	59 years	\$5,350,000
Total	26		\$28,630,000



Figure 2-1: Summary Information – Road Network

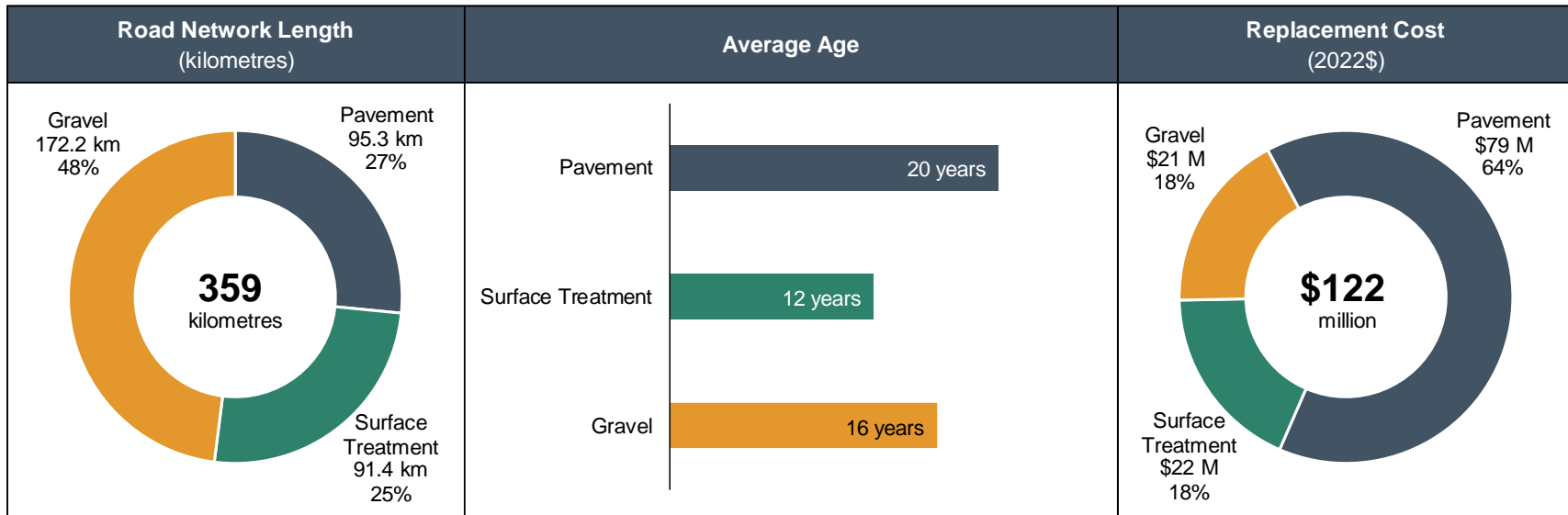
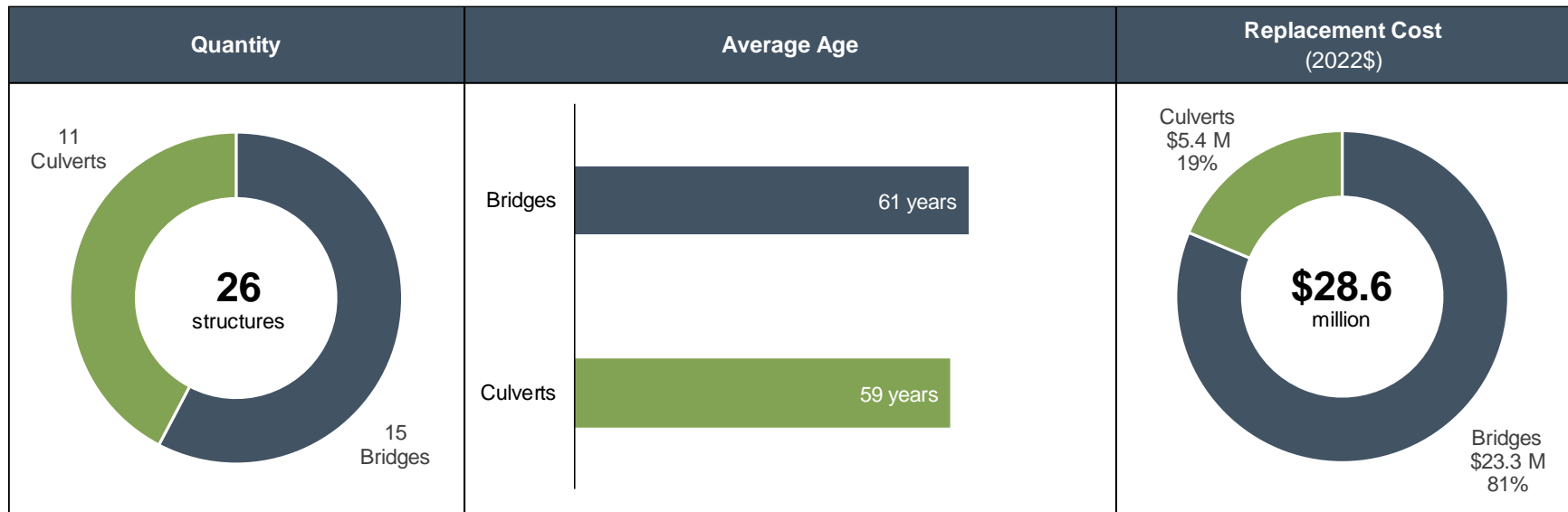


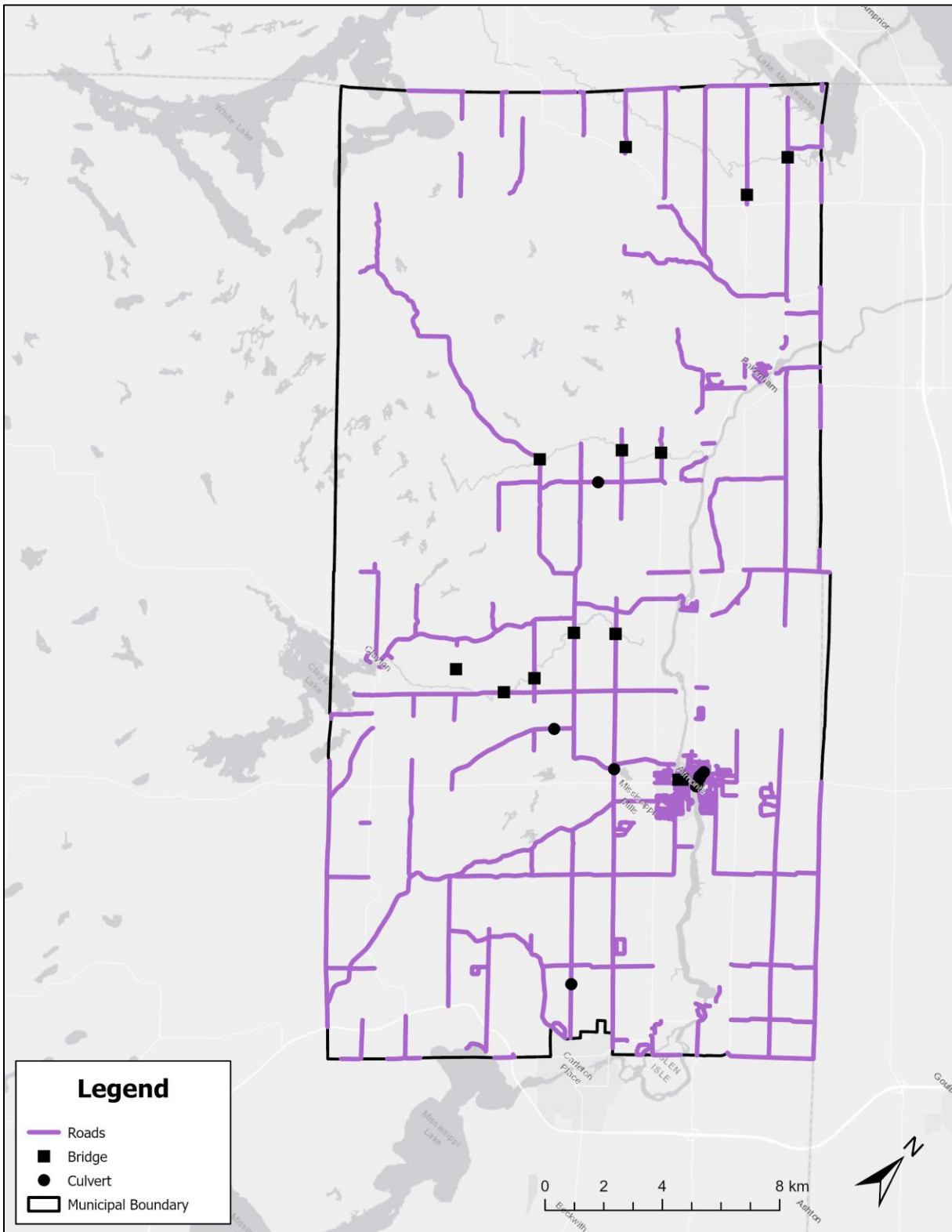


Figure 2-2: Summary Information – Structures





Map 2-1: Roads and Structures







2.2.2 Condition



The Municipality completes regular condition assessments of the road network. Roads are assessed using the Pavement Condition Index (P.C.I.). The P.C.I. is measured on a scale from 0 to 10, with 10 being an asset in as-new condition and 0 being a failed asset.

To better communicate the condition of the paved road network, the numeric condition ratings for paved roads have been segmented into qualitative condition states as shown in Table 2-3. Moreover, descriptions and photos of roads in these condition states are provided to better communicate the condition to the reader.

Table 2-3: Road Condition States Defined with Respect to Pavement Condition Index

Condition State	Example Photos	Description
<p style="text-align: center;">Very Good (P.C.I. = 9-10)</p>		<p>Pavement is in excellent condition with few cracks. The ride is smooth and pleasant.</p>
<p style="text-align: center;">Good (P.C.I. = 7-8)</p>		<p>The pavement is in good condition with frequent very slight or slight cracking. The ride is comfortable with a few slightly rough or uneven sections.</p>



Condition State	Example Photos	Description
<p style="text-align: center;">Fair (P.C.I. = 5-6)</p>		<p>The pavement is in fair condition with intermittent slight to moderate cracking, distortion, and alligating. The ride is somewhat uncomfortable with intermittent rough and uneven sections.</p>
<p style="text-align: center;">Poor (P.C.I. = 3-4)</p>	<p style="text-align: center;">Example currently not available.</p>	<p>The pavement is in poor condition with frequent moderate cracking and distortion, and intermittent moderate alligating. The ride is uncomfortable and the surface is moderately rough and uneven.</p>
<p style="text-align: center;">Very Poor (P.C.I. = 0-2)</p>		<p>The pavement is in very poor condition with extensive severe cracking, alligating and distortion. The ride is very uncomfortable and the surface is very rough and uneven.</p>

The condition of the Municipality’s gravel roads has not been formally assessed, however, based on current maintenance practices it is estimated that gravel roads are on average in Fair to Good condition.

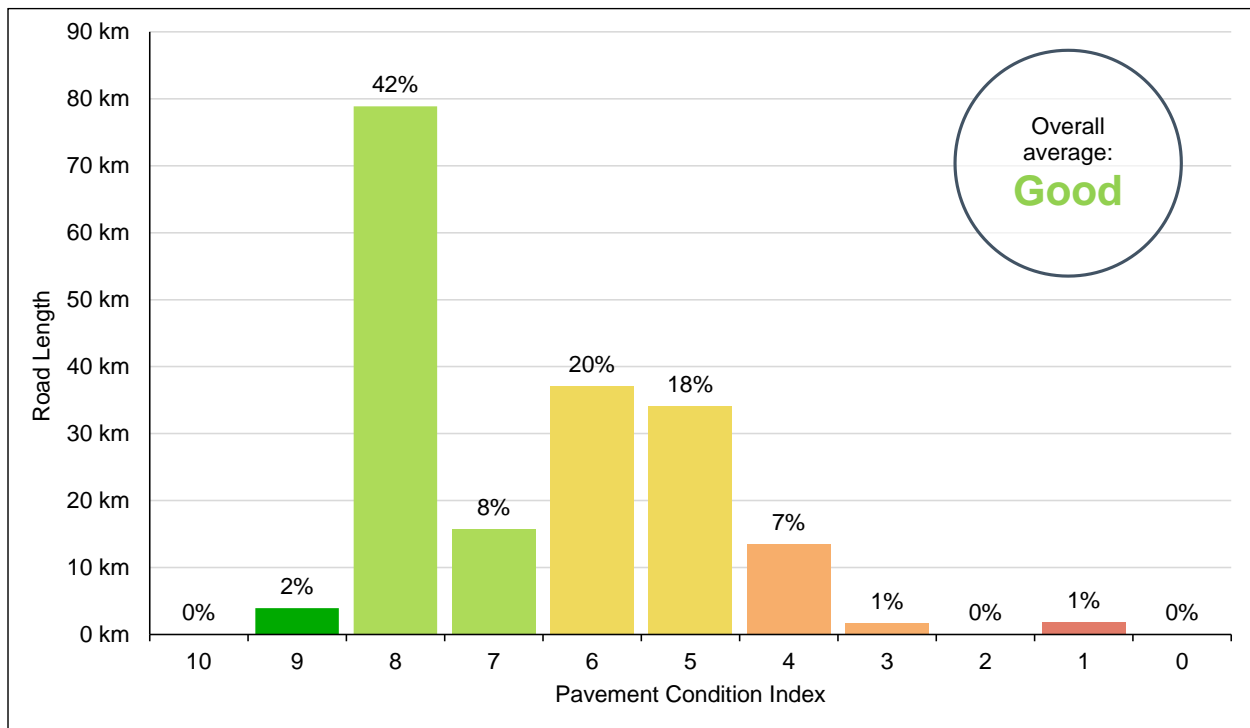
Table 2-4 shows the average condition of paved roads by surface type. On average, both pavement and surface treatment are in the Good condition state. The distribution of paved roads by condition (as measured by P.C.I.) is presented in Figure 2-3.



Table 2-4: Road Condition Summary

Surface Type	Centreline-kilometres	Condition (Weighted Average P.C.I.)	Average Condition State
Pavement	95.3	7	Good
Surface Treatment	91.4	7	Good
Total	186.7	7	Good







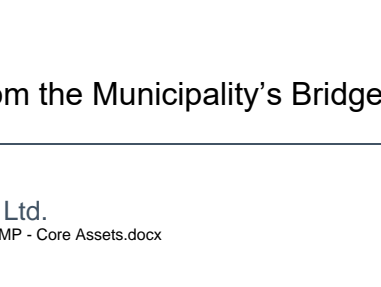
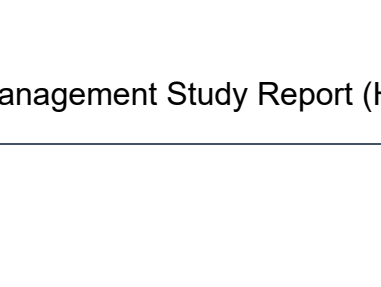
Figure 2-3: Distribution of Paved Roads (Pavement and Surface Treatment) by P.C.I.



In accordance with O. Reg. 104/97, the Municipality completes biennial inspections of its bridges and structural culverts following the O.S.I.M. The most recent inspections were completed by HP Engineering Inc. in 2022. Each structure was assigned a Bridge Condition Index (B.C.I.). The B.C.I. is on a scale of 0 to 100, with 100 being an asset in as-new condition and 0 being a failed asset. Similar to the analysis for roads described above, the numeric condition ratings for structures have been segmented into qualitative condition states. Photographs and descriptions of these condition states are provided in Table 2-5 to better communicate the condition to the reader.



Table 2-5: Examples and Descriptions of Structure Condition States

Condition State	Bridge Photos ^[1]	Structural Culvert Photos ^[1]	Description
Very Good 90 < B.C.I. ≤ 100			Repair/maintenance work is not usually required within the next five years.
Good 70 < B.C.I. ≤ 90			Repair/maintenance work is usually scheduled within the next five years. This may represent an ideal time to schedule major rehabilitation, from an economic perspective.
Fair 60 < B.C.I. ≤ 70			Repair/maintenance work is usually scheduled within approximately one year.
Poor 30 < B.C.I. ≤ 60			
Very Poor B.C.I. ≤ 30			

^[1] Photos are reproduced from the Municipality's Bridge Management Study Report (HP Engineering Inc., Jul. 2019)

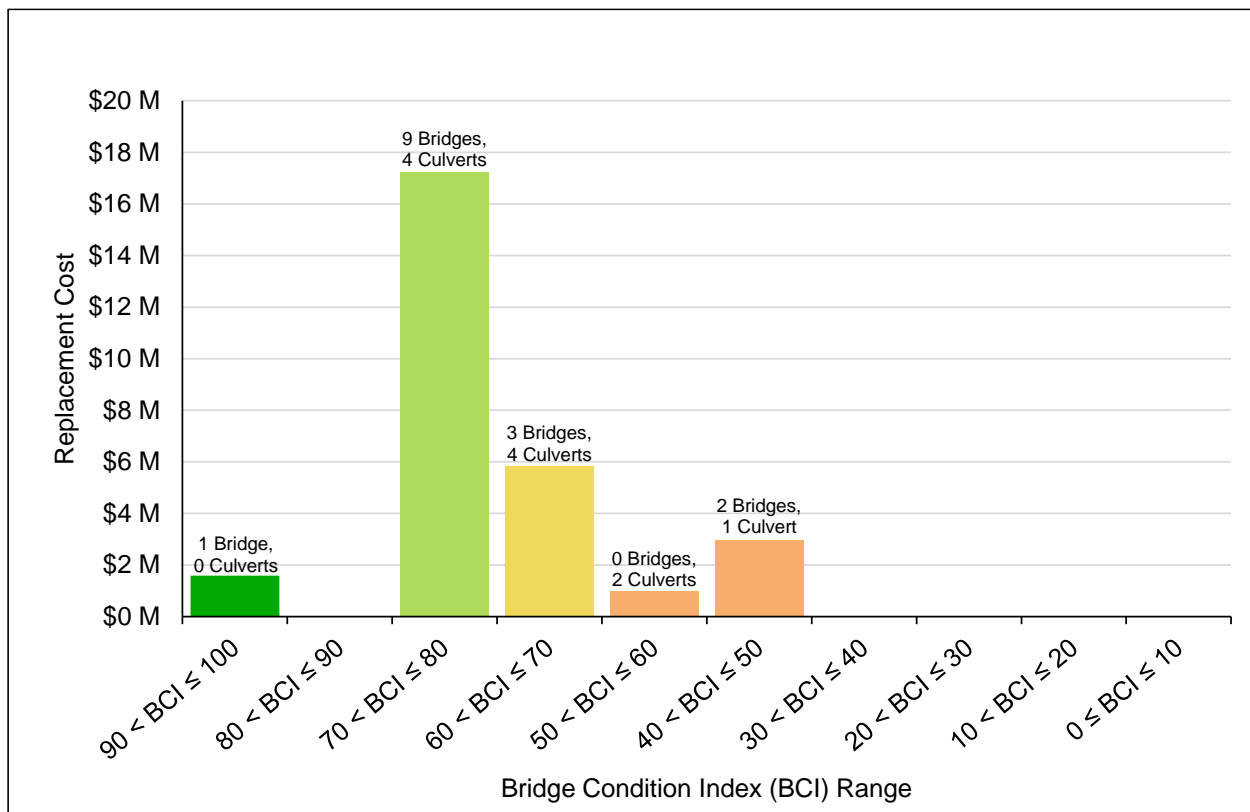


The average B.C.I. ratings and corresponding condition states for structures are summarized in Table 2-6 below. On average (weighted by replacement cost), bridges are in a Good condition state and structural culverts are in a Fair condition state. The distribution of structures by condition range (as measured by B.C.I.) is presented in Figure 2-4.

Table 2-6: Structure Condition Analysis

Structure Type	Quantity	Condition (Weighted Average B.C.I.)	Average Condition State
Bridges	15	71.9	Good
Culverts	11	65.8	Fair

Figure 2-4: Distribution of Structures by B.C.I.





2.2.3 Current Levels of Service

The levels of service currently provided by the Municipality's transportation system are, in part, a result of the state of local infrastructure identified above. The levels of service framework defines the current levels of service that will be tracked over time. There are prescribed levels of service reporting requirements under O. Reg. 588/17 for core transportation assets (i.e., roads and structures).



Table 2-7 and Table 2-8 include the prescribed community and technical levels of service. In future iterations of the asset management plan, additional performance measures may be added to more comprehensively capture the level of service provided by transportation assets. Targets will also need to be set for all performance measures by July 1, 2025.

The tables are structured as follows:

- The Service Attribute columns indicate the high-level attribute being addressed;

The Community Levels of Service column in



- Table 2-7 explains the Municipality’s intent in plain language and provides additional information about the service being provided;
- The Performance Measure column in Table 2-8 describes the performance measure(s) connected to the identified service attribute; and
- The 2021 Performance column in Table 2-8 reports current performance for the performance measure.



Table 2-7: Community Levels of Service – Roads and Structures

Service Attribute	Community Levels of Service
<p>Scope</p>	<p>The Municipality’s transportation assets enable the movement of people and goods within the Municipality and provide connectivity to regional roads. The Municipality’s transportation assets are used by pedestrians, cyclists, passenger vehicles, commercial vehicles, and emergency vehicles.</p>
	<p>The scope of the Municipality’s transportation network, including roads and structures, is illustrated by Map 2-1. This map shows the geographical distribution of the Municipality’s roads and locations of structures.</p>
<p>Quality</p>	<p>The Municipality’s main objective with respect to transportation assets is to enable the safe, comfortable, and efficient movement of vehicular and pedestrian traffic within the Municipality. The Municipality strives to meet these objectives while minimizing overall lifecycle costs by performing asset maintenance and renewal activities at optimal intervals, as guided by best practices and current knowledge.</p>
	<p>To aid in interpreting condition states, photos of roads, bridges, and structural culverts in different condition states are provided in Table 2-3 and Table 2-5. A general description of how each condition state may affect the use of these assets is also provided in these tables.</p>



Table 2-8: Technical Levels of Service – Roads and Structures

Service Attribute	Performance Measure	2021 Performance
Scope	Number of lane-kilometres of arterial roads as a proportion of square kilometres of land area of the Municipality.	0 km/km ²
	Number of lane-kilometres of collector roads as a proportion of square kilometres of land area of the Municipality.	0.4140 km/km ²
	Number of lane-kilometres of local roads as a proportion of square kilometres of land area of the Municipality.	0.9674 km/km ²
	Percentage of bridges in the Municipality with loading or dimensional restrictions.	26.7%
Quality	For paved roads in the Municipality, the average pavement condition index value.	65.9 ^[1]
	For unpaved roads in the Municipality, the average surface condition.	Fair to Good
	For bridges in the Municipality, the average bridge condition index value.	71.9
	For structural culverts in the Municipality, the average bridge condition index value.	65.8

2.3 Water

2.3.1 State of Local Infrastructure

The Municipality’s drinking water system supplies water to the Almonte Ward. A spatial illustration of the extent of the Municipality’s water distribution system is provided in Map 2-2. The Municipality’s water infrastructure comprises approximately 48.6 kilometres of water mains (including appurtenances such as valves, service connections, and fire hydrants), five pressure reducing valve (P.R.V.) access points, five wells, one water

^[1] As noted in subsection 2.2.2, the Municipality assigns P.C.I. ratings on a scale of 0 to 10, with 10 corresponding to a road segment in as-new condition and 0 corresponding to a failed road segment. In order to report the level of service consistently with other municipalities, the average P.C.I. presented in Table 2-8 has been converted to a 100-point scale.



storage facility, one water tower, and approximately 3,500 water meters. The combined replacement cost of this infrastructure is estimated at \$46.1 million. Table 2-9 provides summary information for the Municipality's water infrastructure, including quantities, average ages, and replacement costs by asset category. A visual rendering of the data presented in Table 2-9 is provided in Figure 2-5.

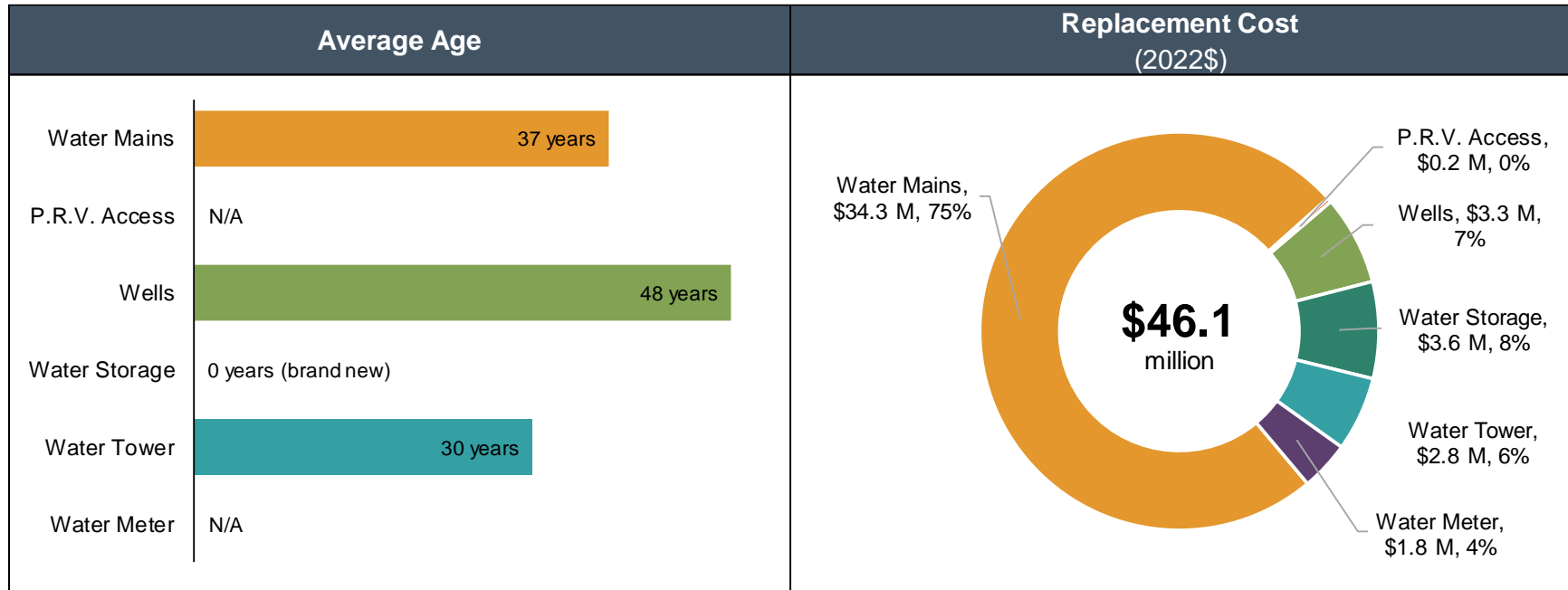
Table 2-9: Water Infrastructure – Quantity, Age, and Replacement Cost by Asset Category

Asset Category	Quantity	Average Age	Replacement Cost (2022\$)
Water Mains	48.6 km	37 years	\$34,344,000
P.R.V. Access	5	N/A	\$167,000
Wells	5	48 years	\$3,346,000
Water Storage	1	0 years ^[1]	\$3,625,000
Water Tower	1	30 years	\$2,789,000
Water Meters	3,474	N/A	\$1,841,000
Total			\$46,112,000

^[1] The new water storage facility was completed in 2022.

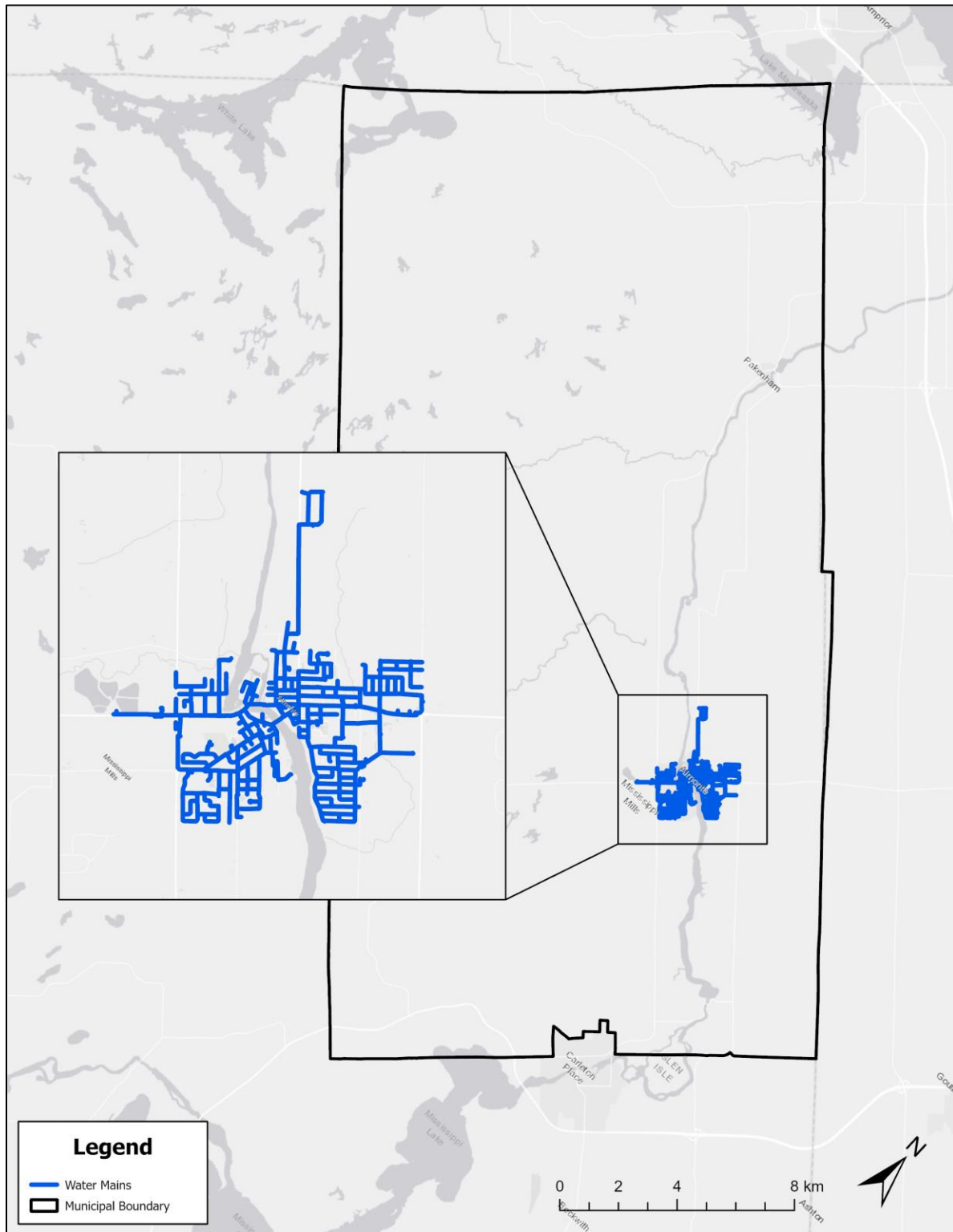


Figure 2-5: Summary Information – Water Infrastructure





Map 2-2: Water Distribution System





2.3.2 Condition

The condition of the Municipality's water infrastructure was comprehensively assessed and documented in the Condition Assessment Report that was prepared for the Municipality's 2012 Water and Wastewater Infrastructure Master Plan (2012 Master Plan). Results from the condition assessment have not been formally incorporated into the Municipality's asset inventory by way of condition scores assigned to assets. However, the 2012 Master Plan identified recommendations and an opinion of probable costs arising from the condition assessment. These recommendations were later updated in 2018 through the Water and Wastewater Infrastructure Master Plan Update Report and form the basis for the Municipality's lifecycle management strategy. It is noted that the Municipality will be updating the Water and Wastewater Infrastructure Master Plan again in the near future, including condition assessments.

The condition of the Municipality's water mains has not been directly assessed through a physical condition assessment. In this asset management plan, the condition of the water mains is evaluated based on age relative to the expected useful life (i.e., based on the percentage of useful life consumed (U.L.C.%)). A useful life of 80 years has been assumed for the Municipality's water mains. A brand-new asset would have a U.L.C.% of 0%, indicating that zero percent of the asset's life expectancy has been utilized. Conversely, an asset that has reached its life expectancy would have a U.L.C.% of 100%. It is possible for assets to have a U.L.C.% greater than 100%, which occurs if an asset has exceeded its typical life expectancy but continues to be in service. This is not necessarily a cause for concern; however, it must be recognized that assets that are near or beyond their typical life expectancy are likely to require replacement or rehabilitation in the near term.

To better communicate the condition of water and other assets where U.L.C.% will be used, the U.L.C.% ratings have been segmented into qualitative condition states as summarized in Table 2-10. The scale is set to show that if assets are replaced around the expected useful life, they would be in the Fair condition state. The Fair condition state extends to 100% of expected useful life. Beyond 100% of useful life, the probability of failure is assumed to have increased to a point where performance would be characterized as Poor or Very Poor.



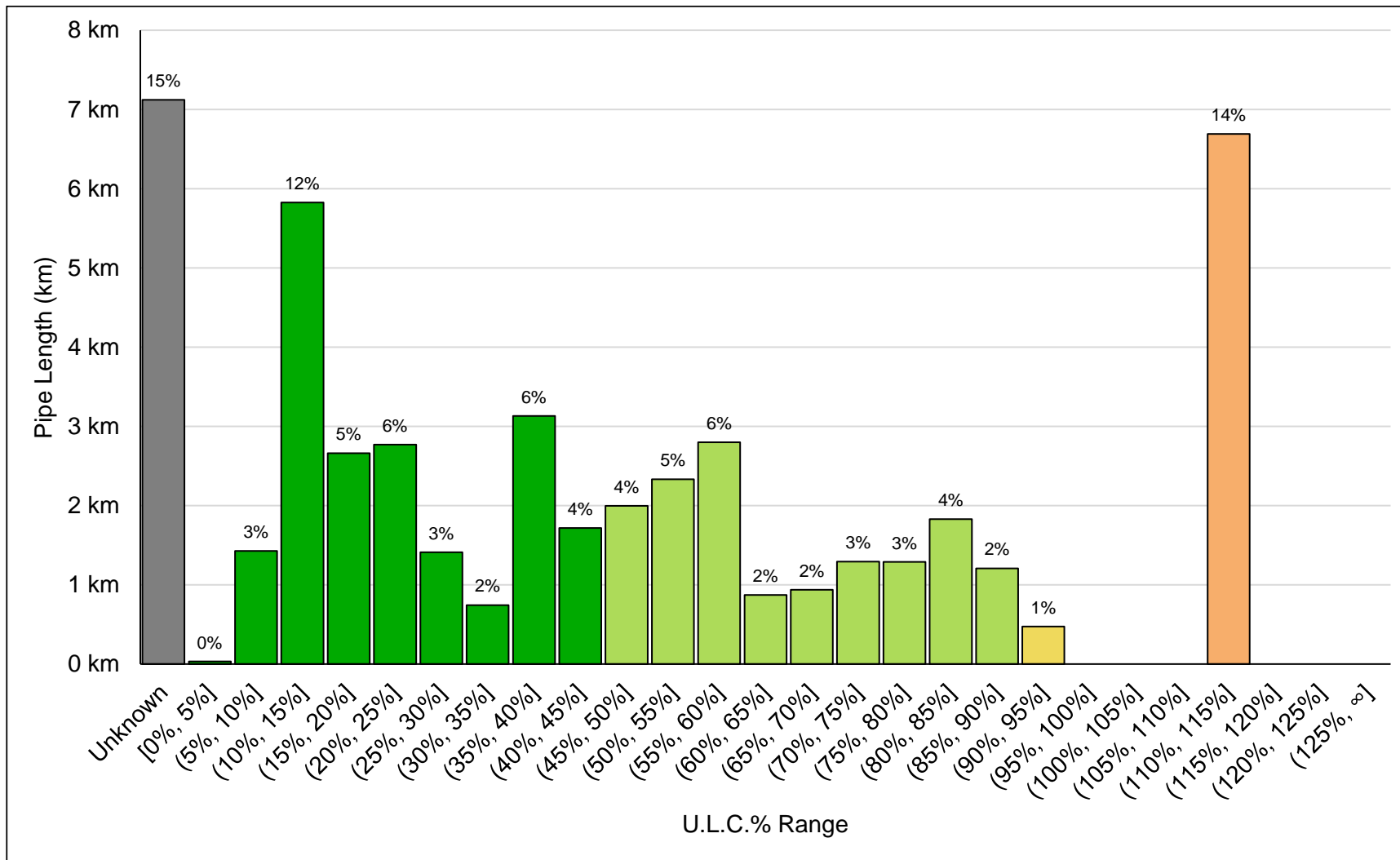
Table 2-10: Condition States Defined with Respect to U.L.C.% – Water Assets

Condition State	U.L.C.%
Very Good	$0\% \leq \text{U.L.C.\%} \leq 45\%$
Good	$45\% < \text{U.L.C.\%} \leq 90\%$
Fair	$90\% < \text{U.L.C.\%} \leq 100\%$
Poor	$100\% < \text{U.L.C.\%} \leq 125\%$
Very Poor	$125\% < \text{U.L.C.\%}$

Figure 2-6 shows the distribution of water main length by condition (as measured by U.L.C.%). On average, Municipality's water mains are in the Good condition state.



Figure 2-6: Distribution of Water Mains by U.L.C.%





2.3.3 Current Levels of Service

This section provides an overview of the Municipality's level of service framework for water services.

Table 2-11: Community Levels of Service – Water

Service Attribute	Community Levels of Service
Scope	Water service is provided to customers in the Almonte Ward, as illustrated in Map 2-2. All areas that are connected to the water system have fire flow available.
Reliability	<p>The Municipality has developed and implements a Drinking Water Quality Management System (DWQMS) to enhance the management and operation of its drinking water system, ensuring a continual supply of safe drinking water to all consumers.</p> <p>Boil water advisories can be caused by adverse water quality test results or problems in the water treatment and distribution system. Service interruptions can occur as a result of routine water system maintenance or asset failure. Both boil water advisories and service interruptions are handled in accordance with the Municipality's DWQMS.</p>



Table 2-12: Technical Levels of Service – Water

Service Attribute	Performance Measure	2021 Performance
Scope	Percentage of properties ^[1] connected to the Municipality’s water system.	48%
	Percentage of properties ^[4] where fire flow is available.	48%
Reliability	The number of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the Municipality’s water system.	0 connection days / connection
	The number of connection-days per year lost due to water main breaks compared to the total number of properties connected to the Municipality’s water system.	0.0031 connection days / connection

2.4 Wastewater

2.4.1 State of Local Infrastructure

The Municipality owns a wastewater system servicing customers in the Almonte Ward. Furthermore, the wastewater treatment plant also provides environmentally responsible treatment alternatives for septage materials which are pumped and hauled from private septic systems in the rural areas of Pakenham and Ramsay. A spatial illustration of the extent of the Municipality’s wastewater collection system is provided in Map 2-3. The Municipality’s wastewater infrastructure comprises approximately 41.2 kilometres of wastewater mains, 5.7 kilometres of force mains, a 1.1-kilometre lagoon outfall, wastewater treatment plant, and 8 pumping stations. The combined replacement cost of this infrastructure is estimated at \$81.8 million. Table 2-13 provides summary information for the Municipality’s wastewater infrastructure, including quantities, average ages, and replacement costs by asset category. A visual rendering of the data presented in Table 2-13 is provided in Figure 2-7.

^[1] Percentage of all properties in the Municipality (i.e., not just those in the Almonte ward).

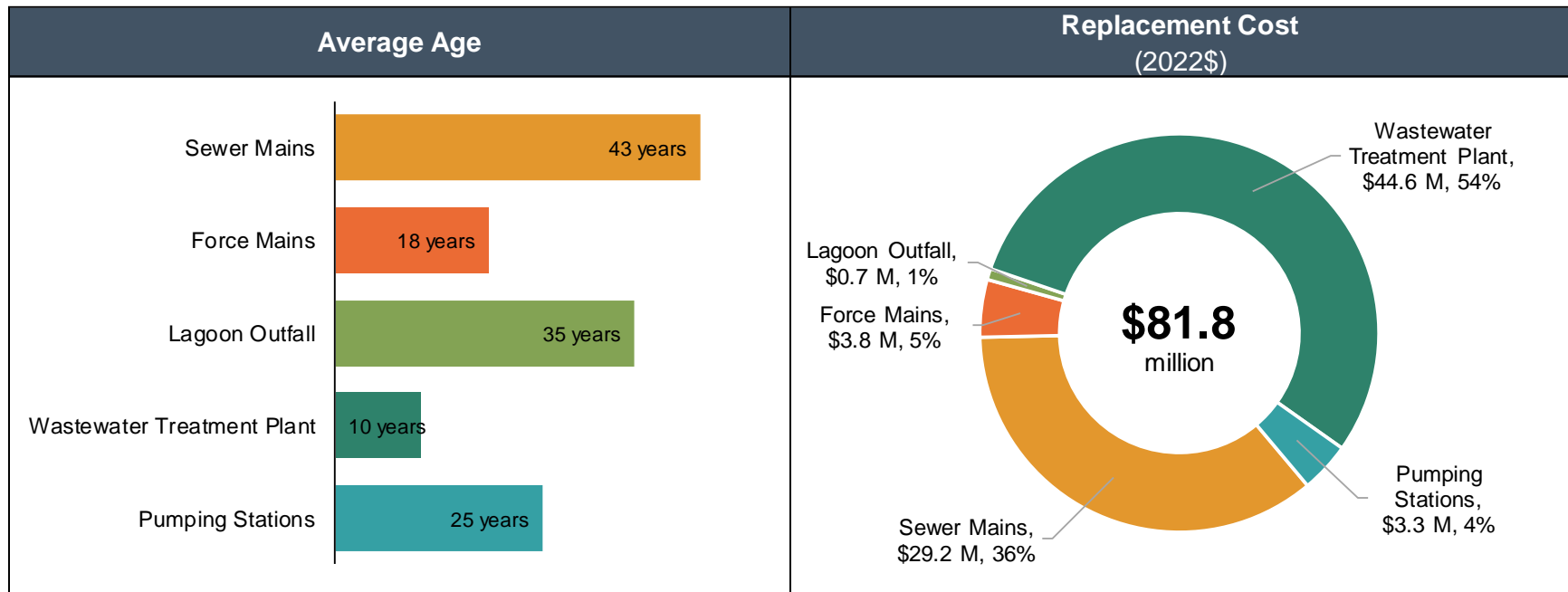


Table 2-13: Wastewater Infrastructure – Summary of Quantity, Age, and Replacement Cost by Asset Category

Asset Category	Quantity	Average Age	Replacement Cost (2022\$)
Wastewater Mains	41.2 km	43 years	\$29,249,000
Force Mains	5.7 km	18 years	\$3,823,000
Lagoon Outfall	1.1 km	35 years	\$739,000
Wastewater Treatment Plant	1	10 years	\$44,618,000
Pumping Stations	8	25 years	\$3,332,000
Total			\$81,761,000

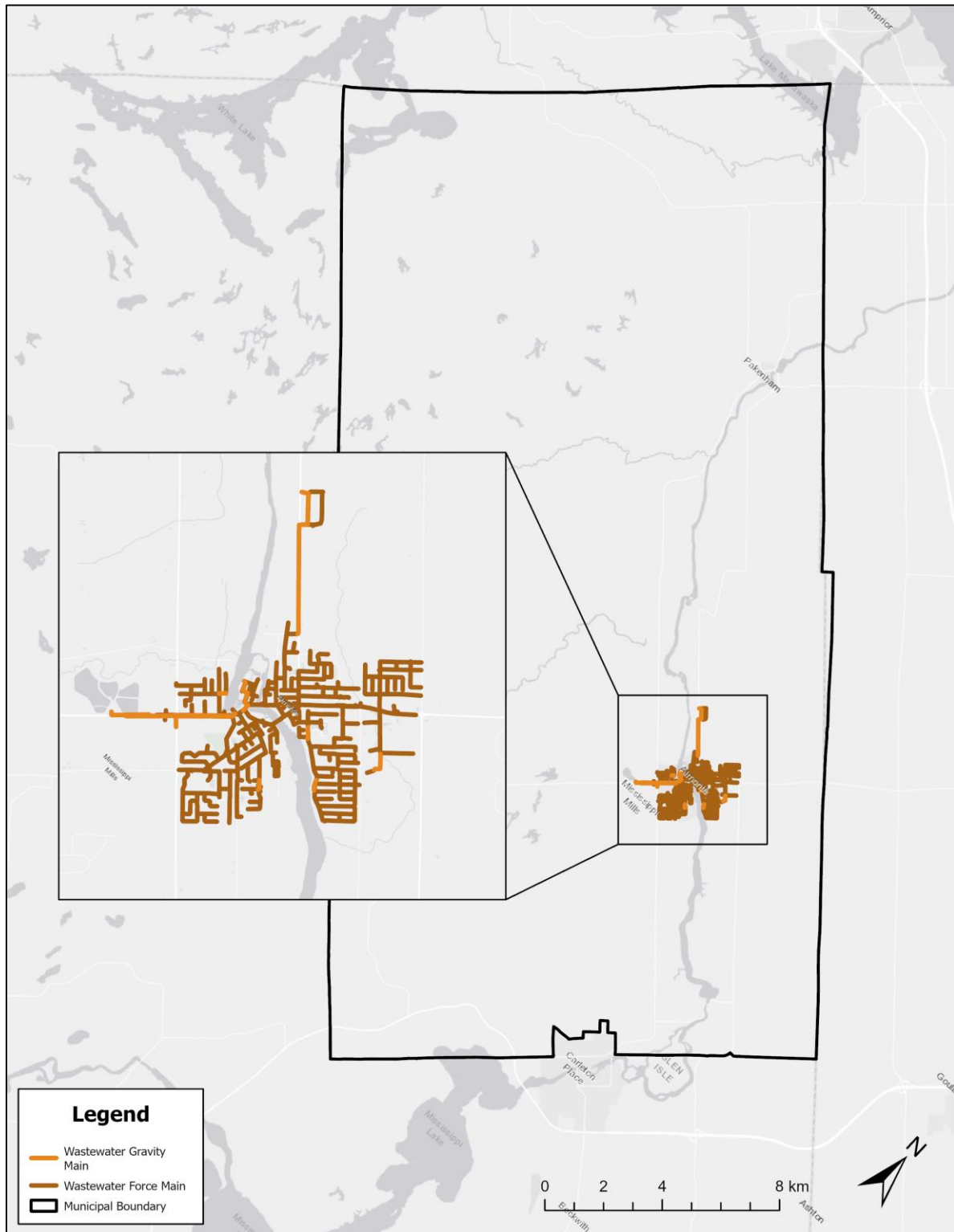


Figure 2-7: Summary Information – Wastewater





Map 2-3: Wastewater Service Area





2.4.2 Condition

The condition of the Municipality's wastewater infrastructure was comprehensively assessed and documented in the Condition Assessment Report that was prepared for the Municipality's 2012 Water and Wastewater Infrastructure Master Plan (2012 Master Plan). Results from the condition assessment have not been formally incorporated into the Municipality's asset inventory by way of condition scores assigned to assets. However, the 2012 Master Plan identified recommendations and an opinion of probable costs arising from the condition assessment. These recommendations were later updated in 2018 through the Water and Wastewater Infrastructure Master Plan Update Report and form the basis for the Municipality's lifecycle management strategy. It is noted that the Municipality will be updating the Water and Wastewater Infrastructure Master Plan again in the near future, including condition assessments.

For wastewater mains, the Municipality uses condition ratings obtained through closed-circuit television (CCTV) inspections. Table 2-14 provides information on how the overall condition rating (zero to four) correlates with qualitative condition states (from Very Good to Very Poor).

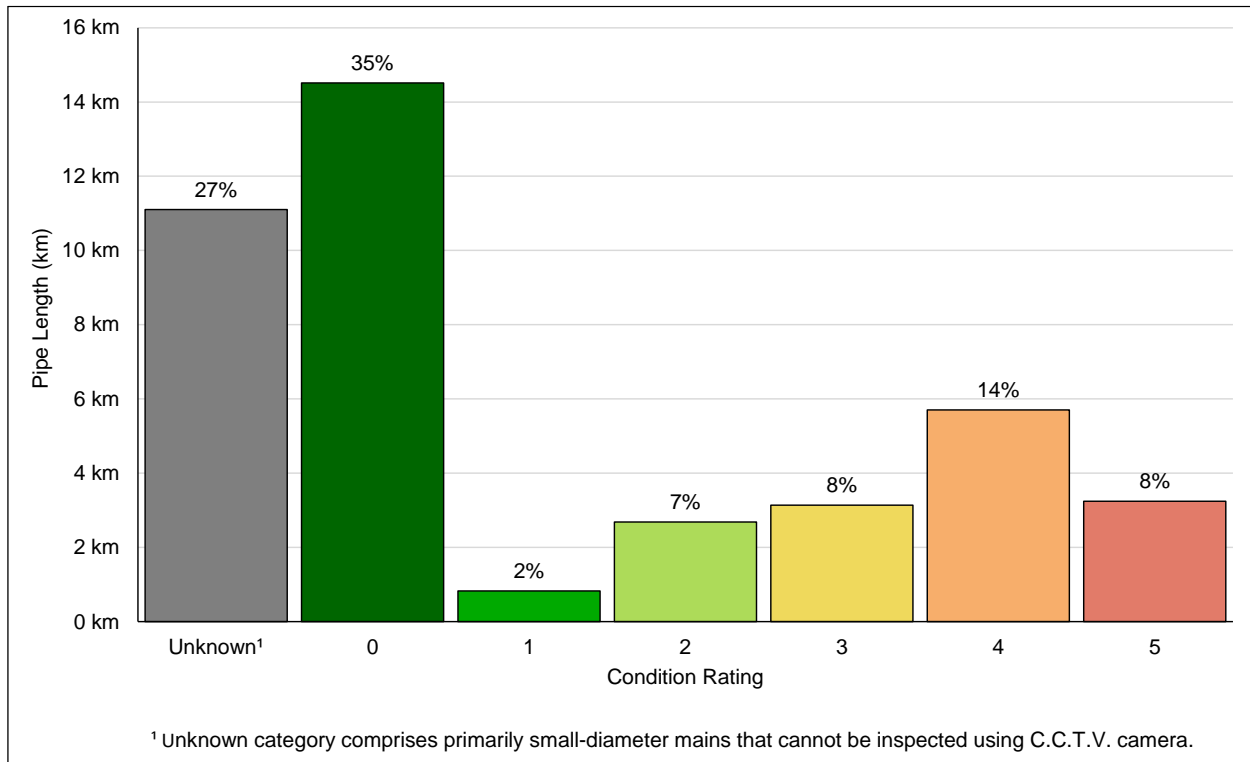
Table 2-14: Wastewater Mains Overall Condition Ratings and Corresponding Condition States

Overall Condition Rating	Condition State
0	Excellent
1	Very Good
2	Good
3	Fair
4	Poor
5	Very Poor

Figure 2-8 shows the distribution of wastewater main length by condition rating. On average, the Municipality's wastewater mains are in the Very Good condition state



Figure 2-8: Distribution of Wastewater Mains by Condition Rating





Current Levels of Service

This section provides an overview of the Municipality's level of service framework for wastewater services.

Table 2-15: Community Levels of Service – Wastewater

Service Attribute	Community Levels of Service
Scope	Wastewater service is provided to customers in in the Almonte Ward, as illustrated in Map 2-3. Furthermore, disposal of septage materials from private septic systems is available to residents of Pakenham and Ramsay.
Reliability	The Municipality does not have combined sewers (sewers designed to carry both sanitary and storm water in a single pipe). Despite this, stormwater can enter the wastewater system through numerous sources (e.g., openings on maintenance hole covers, cracks, holes, failed joints, and incorrect or faulty connections). As part of its asset management efforts, the Municipality has budgeted for sewer lining to reduce inflow and infiltration.
	The Municipality's facilities are operated in accordance with Environmental Compliance Approvals (E.C.A.) as issued by the Ministry of Environment, Conservation and Parks. A description of the effluent that is discharged from the wastewater treatment facility is provided in the E.C.A. No. 1637-AC8NT7, dated August 8, 2016.



Table 2-16: Technical Levels of Service – Wastewater

Service Attribute	Performance Measure	2021 Performance
Scope	Percentage of properties connected to the Municipality's wastewater system.	54%
Reliability	The number of connection-days per year lost due to wastewater backups compared to the total number of properties connected to the Municipality's wastewater system.	0.0203 connection days / connection
	The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the Municipality's wastewater system.	0 violations / connection
	Number of Bypass/Overflow events	1
	Percentage of wastewater mains that have been inspected at least once in past 5 years (measured by length)	100%
	Percentage of wastewater mains that are in condition state Good or better (measured by length)	44%
	Number of Community Complaints	0

2.5 Stormwater

2.5.1 State of Local Infrastructure

The stormwater management system provides for the collection of stormwater in order to protect properties and roads from flooding, and to manage the volume and quality of stormwater discharged back to the environment. A spatial illustration of the extent of the Municipality's stormwater system is provided in Map 2-4. The Municipality's stormwater infrastructure comprises approximately 42 kilometres of stormwater mains, several hundred appurtenances directly related to the mains (such as maintenance holes, catch basins, and stormceptors), and 4 stormwater ponds. The combined replacement cost of this infrastructure is estimated at \$38 million. Table 2-17 shows summary information for the Municipality's stormwater system, including quantities, average ages and replacement costs by asset category. A visual rendering of the data presented in Table 2-17 is provided in Figure 2-9.



Table 2-17: Stormwater Infrastructure – Quantity, Age, and Replacement Cost by Asset Category

Asset Category	Quantity	Average Age	Replacement Cost (2022\$)
Stormwater Mains	42.0 km	22 years	\$28,133,354
Maintenance Holes	268	N/A	\$1,795,600
Catch Basins	834	N/A	\$5,587,800
Stormceptors (oil/grit separators)	2	N/A	\$236,800
Stormwater Ponds	4	~ 10 years	\$2,240,000
Total			\$37,993,554

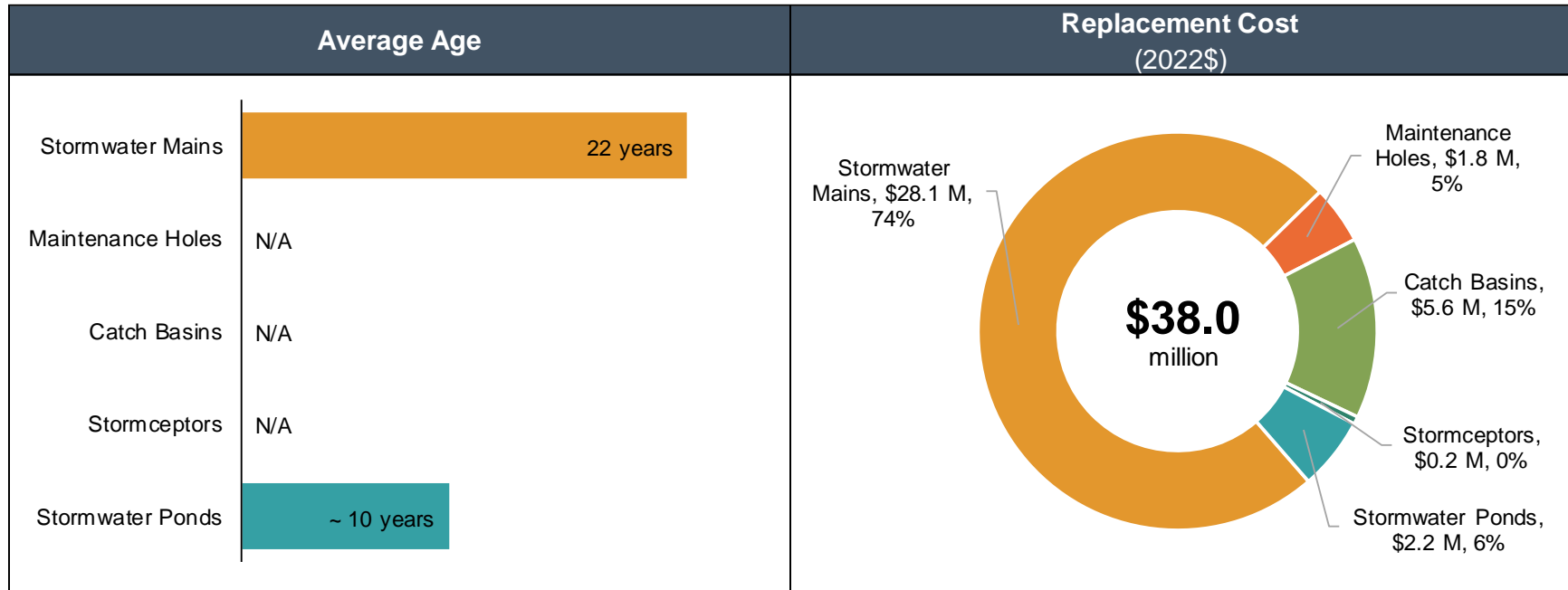
2.5.2 Condition

The condition of the Municipality’s stormwater assets has not been directly assessed through a physical condition assessment. In this asset management plan, the condition of the stormwater mains is evaluated based on age relative to the expected useful life (i.e., based on the percentage of useful life consumed (ULC%)) as described for water mains in subsection 2.3.2.

Figure 2-10 shows the distribution of stormwater main length by condition (U.L.C.) range. On average, Municipality’s stormwater mains are in the Very Good condition state.



Figure 2-9: Summary Information – Stormwater





Map 2-4: Stormwater System

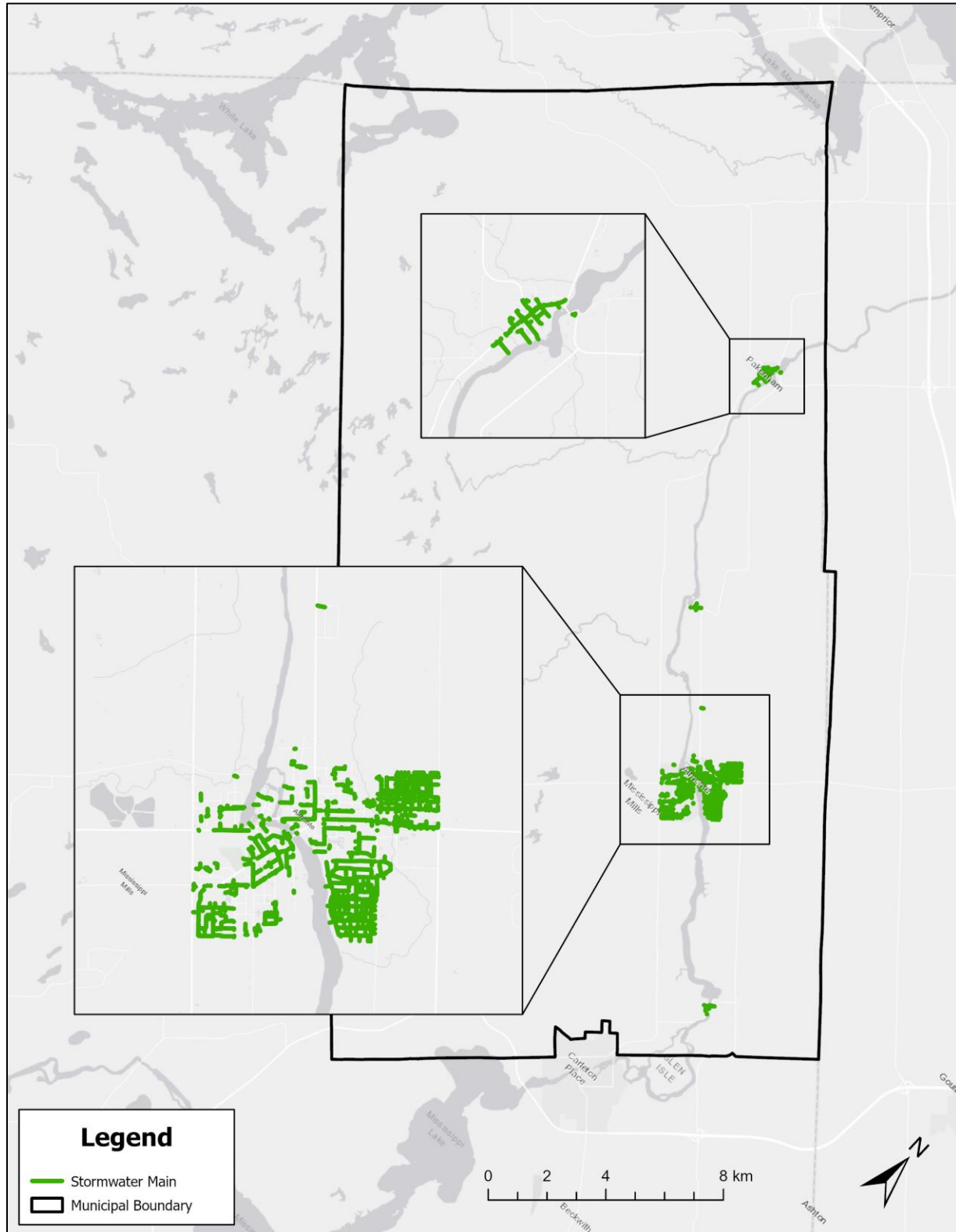
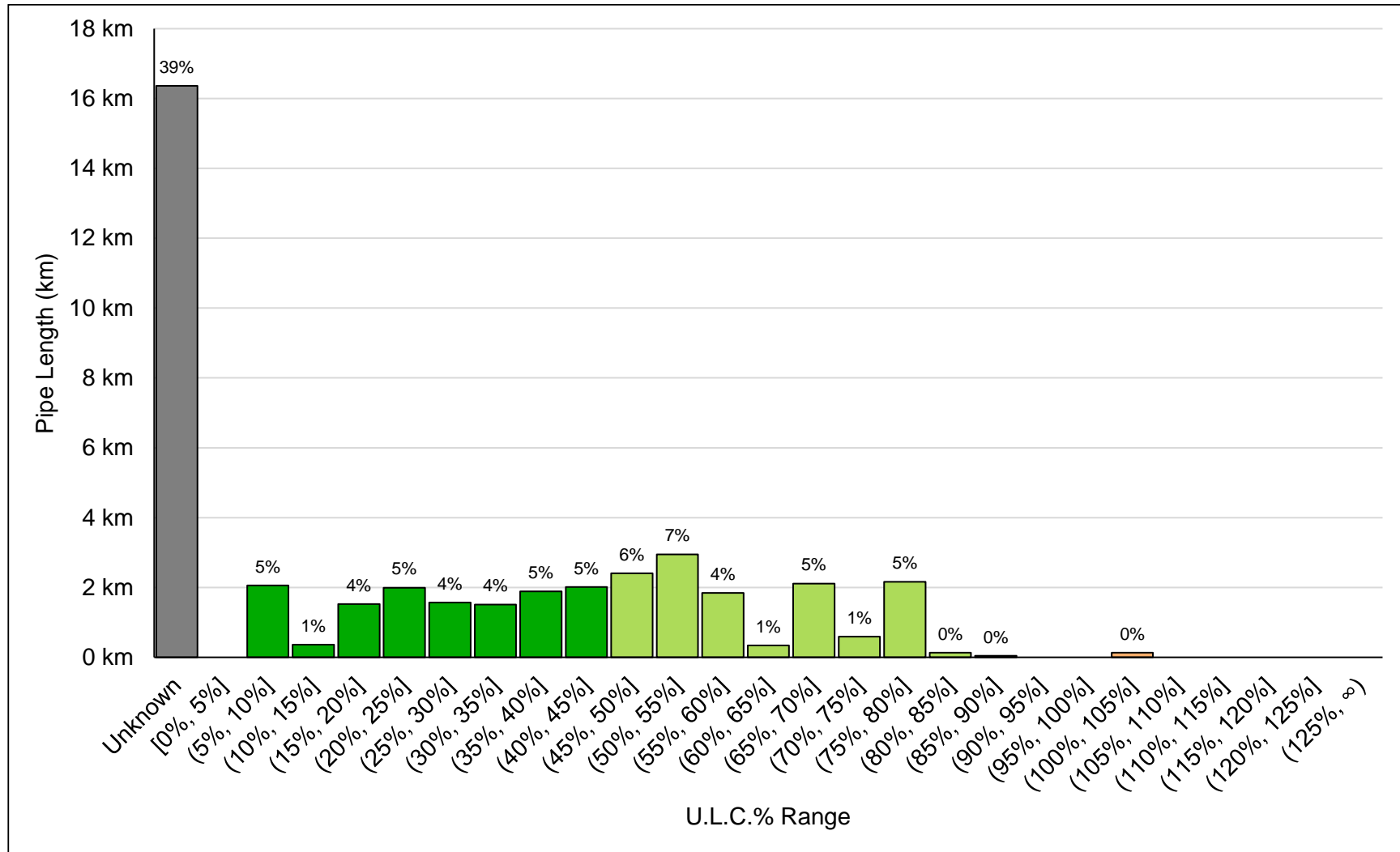




Figure 2-10: Distribution of Stormwater Mains by Condition (U.L.C.%) Range





2.5.3 Current Levels of Service

This section provides an overview of the Municipality’s level of service framework for wastewater service.

Table 2-18: Community Levels of Service – Stormwater

Service Attribute	Community Levels of Service
Scope	The Municipality’s stormwater system helps protect several areas of the municipality from flooding. The extent of the Municipality’s stormwater management system is illustrated in Map 2-4.

Table 2-19: Technical Levels of Service – Stormwater

Service Attribute	Performance Measure	2021 Performance
Scope	Percentage of properties in the municipality resilient to a 100-year storm.	This information is currently not available. The Municipality will seek to collect information on this performance measure for inclusion in future updates of this asset management plan.
	Percentage of the municipal stormwater management system resilient to a 5-year storm.	This information is currently not available. The Municipality will seek to collect information on this performance measure for inclusion in future updates of this asset management plan.

2.6 Population Growth

According to the 2021 census, the Municipality’s 2021 population was 14,740. Based on the growth forecast contained in the Municipality’s 2018 Development Charges Background Study, the Municipality’s population is anticipated to reach 16,304 by 2031.

Future growth in population is expected to result in incremental service demands that may impact the current level of service. These growth-related needs are summarized in the Municipality’s 2018 Development Charges Background Study and are funded



through development charges imposed on new development. Utilizing development charges helps reduce the effects that future population and employment growth have on the cost of maintaining levels of service for existing tax and rate payers.

The estimated capital expenditures related to the lifecycle activities required to maintain the current levels of service considering the projected increases in demand caused by growth are included in the 10-year lifecycle expenditure forecast for water and wastewater infrastructure presented in the next chapter of this report. Growth-related improvements to the road network are summarized in the Municipality's 2018 Development Charges Background Study and will be incorporated into the asset management plan following the next update of the Transportation Master Plan.



Chapter 3

Lifecycle Management Strategies



3. Lifecycle Management Strategy

3.1 Introduction

The lifecycle management strategy in this asset management plan identifies the lifecycle activities that would need to be undertaken to maintain the current levels of service presented in Chapter 2. Within the context of this asset management plan, lifecycle activities are the specified actions that can be performed on an asset in order to ensure it is performing at an appropriate level, and/or to extend its service life.^[1] These actions can be carried out on a planned schedule in a prescriptive manner, or through a dynamic approach where the lifecycle activities are only carried out when specified conditions are met.

O. Reg. 588/17 requires that all potential lifecycle activity options be assessed, with the aim of identifying the set of lifecycle activities that can be undertaken at the lowest cost to maintain current levels of service. Asset management plans must include a ten-year capital forecast, identifying the lifecycle activities resulting from the lifecycle management strategy.

The following sections detail the ten-year forecasts of lifecycle activities and associated costs that would be required for the Municipality to maintain current levels of service.

^[1] The full lifecycle of an asset includes activities such as initial planning and maintenance which are typically addressed through master planning studies and maintenance management, respectively.



3.2 Transportation

This section presents a preliminary estimate of the costs associated with maintaining the Municipality's roads and structures at the current level of service. For roads, the estimate is based on a combination of deterioration models and asset treatment strategies, developed in consultation with the Municipality's staff. For bridges and structural culverts, the estimate is based on the maintenance, repair, and replacement recommendations identified in the 2022 Bridge Management Study report.

The ten-year lifecycle expenditure forecast for roads and structures is summarized in Figure 3-1 and provided in tabular form in Table 3-1. Average annual expenditures over the forecast period have been estimated at approximately \$3.50 million.

Figure 3-1: Lifecycle Expenditure Forecast for Roads and Structures (2022\$)

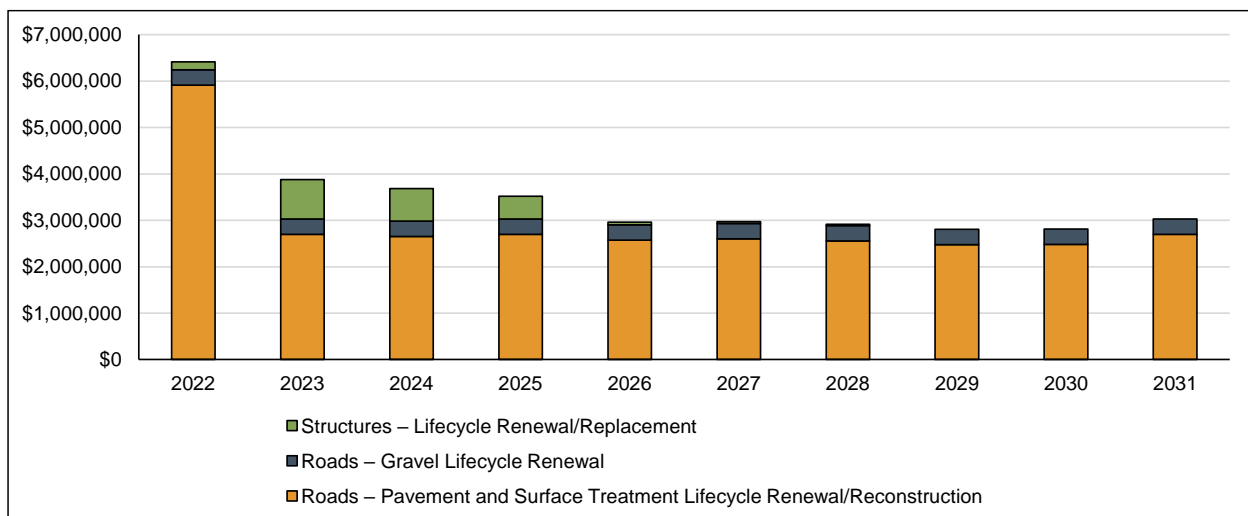




Table 3-1: Lifecycle Expenditure Forecast for Roads and Structures (2022\$)

Lifecycle Activity	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Roads – Pavement and Surface Treatment Lifecycle Renewal/Reconstruction	\$5,914,900	\$2,699,724	\$2,652,990	\$2,698,360	\$2,574,776	\$2,603,579	\$2,555,445	\$2,478,695	\$2,482,239	\$2,700,507
Roads – Gravel Lifecycle Renewal	\$328,600	\$328,600	\$328,600	\$328,600	\$328,600	\$328,600	\$328,600	\$328,600	\$328,600	\$328,600
Structures – Lifecycle Renewal/Replacement	\$170,000	\$848,000	\$703,000	\$491,000	\$56,000	\$42,000	\$28,000	\$0	\$0	\$0
Total	\$6,413,500	\$3,876,324	\$3,684,590	\$3,517,960	\$2,959,376	\$2,974,179	\$2,912,045	\$2,807,295	\$2,810,839	\$3,029,107



3.3 Water

This section presents a preliminary estimate of the costs associated with maintaining current level of service for water. A detailed capital forecast for the Municipality's water system was developed as part of the Municipality's 2021 Water and Wastewater Rate Study. For the purposes of this asset management plan, the forecast was adjusted to current dollar values.

The ten-year lifecycle expenditure forecast for water infrastructure is summarized in Figure 3-2 and provided in tabular form in Table 3-2. Average annual expenditures over the forecast period have been estimated at approximately \$1.8 million, of which approximately 52% is related to growth-related infrastructure expansion and upgrades which will be funded through development charges.

Figure 3-2: Lifecycle Expenditure Forecast for Water Infrastructure (2022\$)

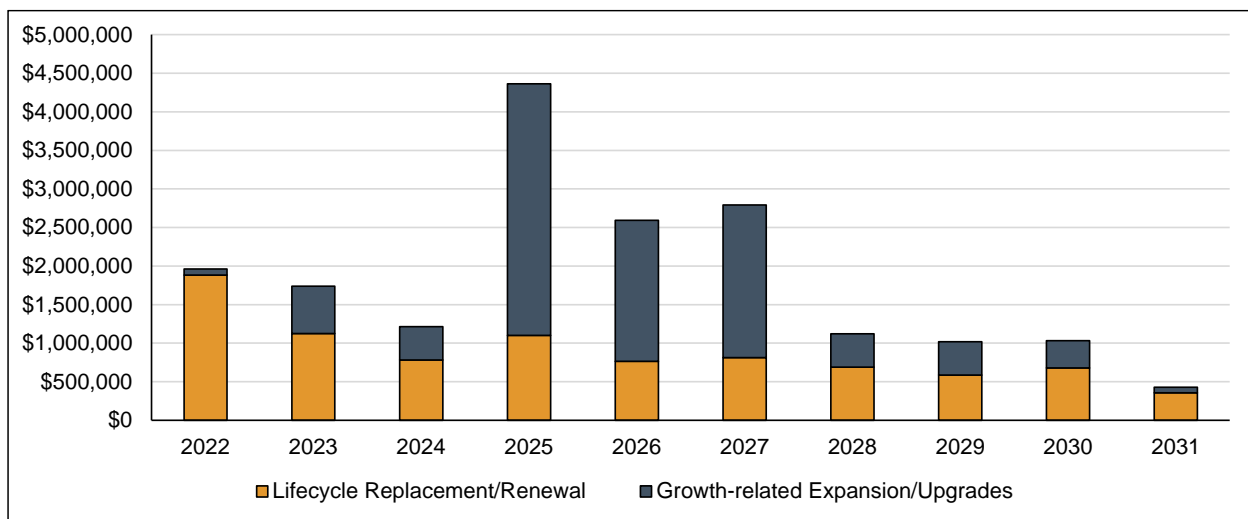




Table 3-2: Lifecycle Expenditure Forecast for Water Infrastructure (2022\$)

Asset Activity	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Lifecycle Replacement/Renewal	\$1,882,864	\$1,124,781	\$780,862	\$1,101,241	\$765,080	\$813,768	\$690,207	\$587,586	\$679,667	\$355,819
Growth-related Expansion/Upgrades	\$78,114	\$615,312	\$434,414	\$3,262,375	\$1,828,327	\$1,978,746	\$431,930	\$431,930	\$353,234	\$72,511
Total	\$1,960,978	\$1,740,093	\$1,215,276	\$4,363,617	\$2,593,407	\$2,792,514	\$1,122,137	\$1,019,516	\$1,032,901	\$428,330



3.4 Wastewater

This section presents a preliminary estimate of the costs associated with maintaining current level of service for water. A detailed capital forecast for the Municipality’s water system was developed as part of the Municipality’s 2021 Water and Wastewater Rate Study. For the purposes of this asset management plan, the forecast was adjusted to current dollar values.

The ten-year lifecycle expenditure forecast for water infrastructure is summarized in Figure 3-3 and provided in tabular form in Table 3-3. Average annual expenditures over the forecast period have been estimated at approximately \$1.3 million, of which approximately 14% is related to growth-related infrastructure expansion and upgrades which will be funded through development charges.

Figure 3-3: Lifecycle Expenditure Forecast for Wastewater Infrastructure (2022\$)

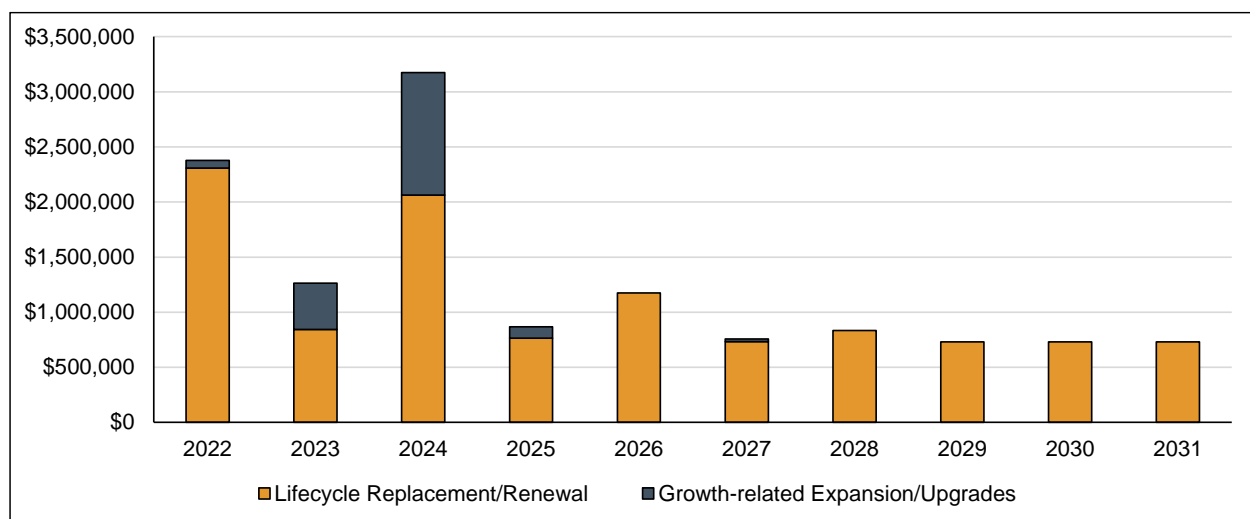




Table 3-3: Lifecycle Expenditure Forecast for Wastewater Infrastructure (2022\$)

Asset Activity	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Lifecycle Replacement/Renewal	\$2,307,304	\$842,601	\$2,063,275	\$763,641	\$1,175,678	\$733,823	\$834,352	\$730,616	\$730,616	\$730,616
Growth-related Expansion/Upgrades	\$69,986	\$421,197	\$1,110,720	\$103,059	\$0	\$23,006	\$0	\$0	\$0	\$0
Total	\$2,377,290	\$1,263,798	\$3,173,996	\$866,700	\$1,175,678	\$756,829	\$834,352	\$730,616	\$730,616	\$730,616



3.5 Stormwater

Given the limited records currently available (i.e., only partial age-based information), the costs associated with maintaining all the Municipality's stormwater infrastructure at the current level of service have not been estimated.

It should be noted, however, that the Municipality does take a proactive approach to managing stormwater infrastructure through ongoing operations and maintenance programs which include:

- Cleaning of sewers, catch basins and ponds;
- Removal of obstructions in creeks and watercourses (creek rehabilitation);
- Street sweeping;
- Leaf collection; and
- Site investigations (based on customer complaints or calls).

In terms of capital, stormwater infrastructure is replaced/rehabilitated through road reconstruction projects on an as-needed basis.

In the coming years the Municipality may wish to consider including stormwater infrastructure in Master Service Plans/Assessments and developing Operational Maintenance Plans for stormwater ponds (including condition/sedimentation surveys). These plans would form the basis for developing a long-term capital lifecycle investment plan.



Chapter 4

Financial Strategy



4. Financial Summary

4.1 Introduction

This chapter presents a preliminary estimate of the funding that would be required to sustainably finance the Municipality’s core infrastructure assets over their full lifecycle. It also examines the relationship between these funding needs and the Municipality’s current lifecycle funding capacity.

An annual lifecycle funding target represents the amount of funding that would be required annually to fully finance a lifecycle management strategy over the long-term. By planning to achieve this annual funding level, the Municipality would theoretically be able to fully fund capital works as they arise. In practice, capital needs are often “lumpy” in nature due to the value of works being undertaken changing year-to-year. By planning to achieve this level of funding over the long-term, the periods of relatively low capital needs would allow for the building up of lifecycle reserve funds that could be drawn upon in times of relatively high capital needs.

Once a comprehensive capital needs forecast has been developed for all of the Municipality’s assets and level of service targets have been established, a full financing strategy can be developed. This financing strategy should examine how to fund capital needs in the short-term while ensuring long-term sustainability.

4.2 Annual Contribution and Lifecycle Funding Target

Table 4-1 presents the Municipality’s current annual contributions towards capital-related needs of core infrastructure assets—as detailed in the Municipality’s 2022 Budget—as well as a preliminary estimate of the funding that would be required to sustainably finance the Municipality’s core infrastructure assets over their full lifecycle.

In total, the Municipality has budgeted to contribute approximately \$5.52 million towards capital-related needs in 2022. Included in this are budgeted contributions to capital projects and capital-related reserve funds, reliable and long-term Federal and Provincial grants, and the repayment of non-growth-related debentures. The sum of these components comprises the amount of funding the Municipality has budgeted to contribute in 2022 to the provision of capital-related needs.



The annual lifecycle funding target for the Municipality's core assets has been estimated at approximately \$7.52 million^[1]. The difference between the annual lifecycle funding target and the current contribution towards capital-related needs, referred to as the lifecycle funding gap, indicates that the Municipality is currently underfunding its core infrastructure by approximately \$2 million annually. While the differences between current contributions and annual targets is relatively small for water and wastewater assets, a majority of the lifecycle funding gap is a result of underfunding transportation (i.e., roads, bridges, and major culverts) and stormwater assets.

Table 4-1: Annual Lifecycle Funding Targets and Current Annual Contribution Towards Capital-related Needs (2022\$)

Asset Class	Annual Lifecycle Funding Target	Current Annual Contribution
Tax-supported		
Roads	\$ 4,425,726	
Bridges and Culverts	\$ 539,973	
Stormwater (excl. ponds)	\$ 446,919	
Sub-total: Tax-supported Assets	\$ 5,412,619	\$ 3,602,028
Rate-supported		
Water	\$ 729,817	
Wastewater	\$ 1,381,478	
Sub-total: Rate-supported Assets	\$ 2,111,295	\$ 1,920,998
Total	\$ 7,523,914	\$ 5,523,026

The lifecycle funding gap could be mitigated by increasing contributions to capital reserve funds over time or potentially reducing levels of service. A detailed examination of funding sources and a strategy for addressing the current lifecycle funding gap will be addressed in the next iteration of the Municipality's asset management plan.

^[1] It is noted that the extent of infrastructure that will be emplaced by developers within subdivisions, and that will eventually be assumed by the Municipality, has not been estimated. The lifecycle activities and costs of these assets will be included in future updates of this asset management plan as the infrastructure is constructed.



Chapter 5

Summary



5. Summary

This asset management plan has been developed to address the July 1, 2022 requirements of O. Reg. 588/17. The plan provides summary information for the Municipality's core infrastructure assets (including replacement cost valuation and condition), identifies current levels of service, and includes a 10-year forecast of lifecycle activities and associated costs that would be required for the Municipality to maintain current levels of service. The plan is based on the best information available to the Municipality at this time. In the coming years, the Municipality will need to further expand the asset management plan to include all Municipality assets, to have targets set for levels of service performance measures, and to include a detailed financial strategy. The future expansion of this asset management plan will need to be undertaken to ensure the Municipality's compliance with the July 1, 2024, and July 1, 2025 requirements of O. Reg. 588/17.