



Asset Management Plan – Core Assets

Town of Cobourg

June 9, 2022

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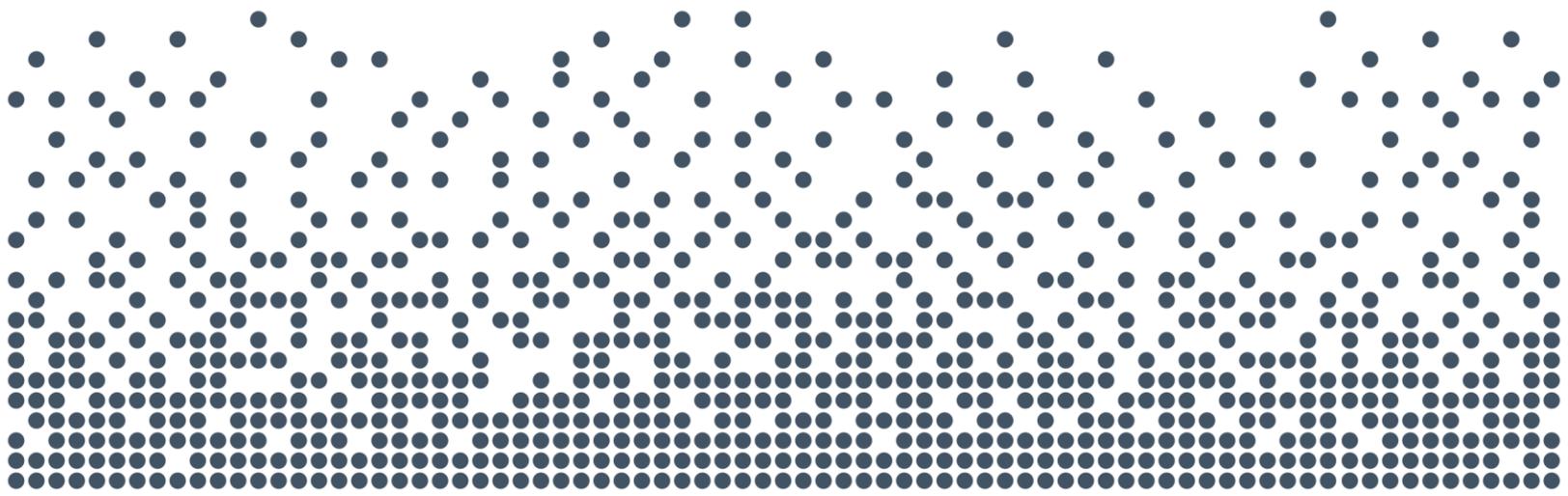
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List of Acronyms and Abbreviations

B.C.I.	Bridge Condition Index
C.C.T.V.	Closed-circuit television
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.R.	Pavement Condition Rating
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 Town of Cobourg (Town) retained Watson & Associates Economists Ltd. (Watson) to update the Town's 2014 Asset Management Plan. With this update, the intent is to bring the Town'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 structural culverts (structures);
- Water; and
- Wastewater.

An asset management plan for the Town's stormwater infrastructure has been prepared under separate cover, as part of the stormwater funding assessment (Stormwater Asset Management Plan and Funding Assessment, April 2022).

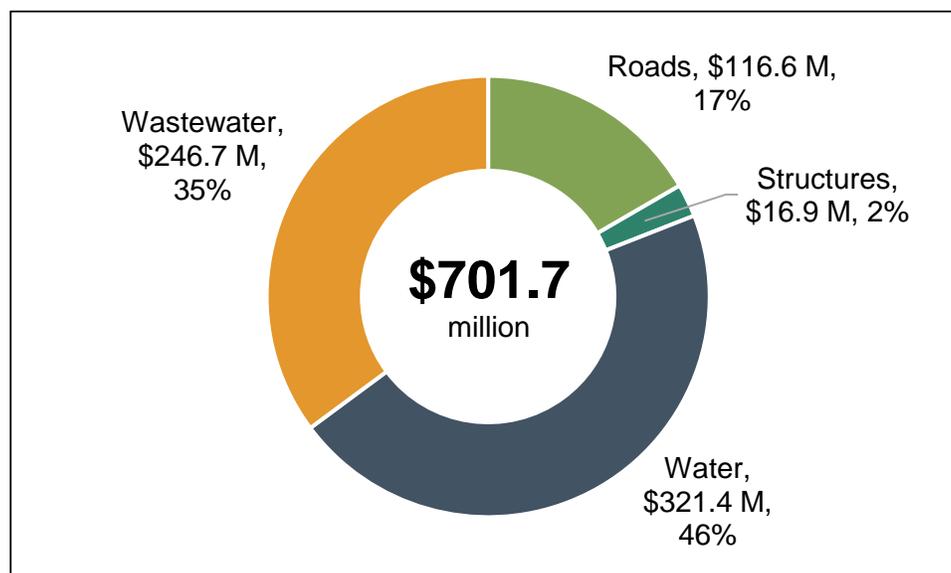
The total replacement cost of the Town's core assets that are included in this asset management plan is estimated at almost \$702 million. A breakdown of the total replacement cost by asset class is provided in Table 1-1 and illustrated in Figure 1-1. The most significant asset class by replacement cost is water, accounting for approximately 46% of the replacement cost, followed by wastewater (35%), roads (17%), and structures (2%).



Table 1-1: Asset Classes and Replacement Cost

Asset Class	Replacement Cost (2022\$)
Roads	\$116,599,000
Structures	\$16,921,000
Water	\$321,435,000
Wastewater	\$246,724,000
Total	\$701,679,000

Figure 1-1: Distribution of Assets by Asset Class



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 require 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 Town at this time.

1.3 Asset Management Plan Development

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

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

1. Compile available information pertaining to the Town'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 Town staff input, existing background reports and studies (e.g., 2018 Road Needs Study, 2020 Ontario Structure Inspection Manual (O.S.I.M.) Bridge Inspection Report, and 2022 Wastewater Pumping Station Condition Assessments), 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 Town'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 Town 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 Town. The focus for the time being has been placed on the Town's roads and structures as these are considered core assets under O. Reg. 588/17 and must be included in the Town'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, and signs).

The road network consists of roads with various surface types, including asphalt and surface treatment. The estimated replacement cost of roads is \$116.6 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 Town'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	Centreline-kilometres	Average Age (years)	Replacement Cost (2022\$)
Asphalt	94.0	35.7	\$94,965,000
Surface Treatment	21.4	39.1	\$21,634,000
Total	115.4	36.3	\$116,599,000

The Town has 13 bridges and 2 structural culverts (diameter \geq 3m) with an estimated combined replacement cost of \$16.9 million. The average age of structures is 43 years. Table 2-2 provides a breakdown of the quantities, 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: Structures – Quantity, Age, and Replacement Cost by Structure Type

Structure Type	Quantity	Average Age	Replacement Cost (2022\$)
Bridges	13	42.0	\$15,911,000
Structural Culverts	2	62.7	\$1,010,000
Total	15	43.3	\$16,921,000



Figure 2-1: Summary Information – Road Network

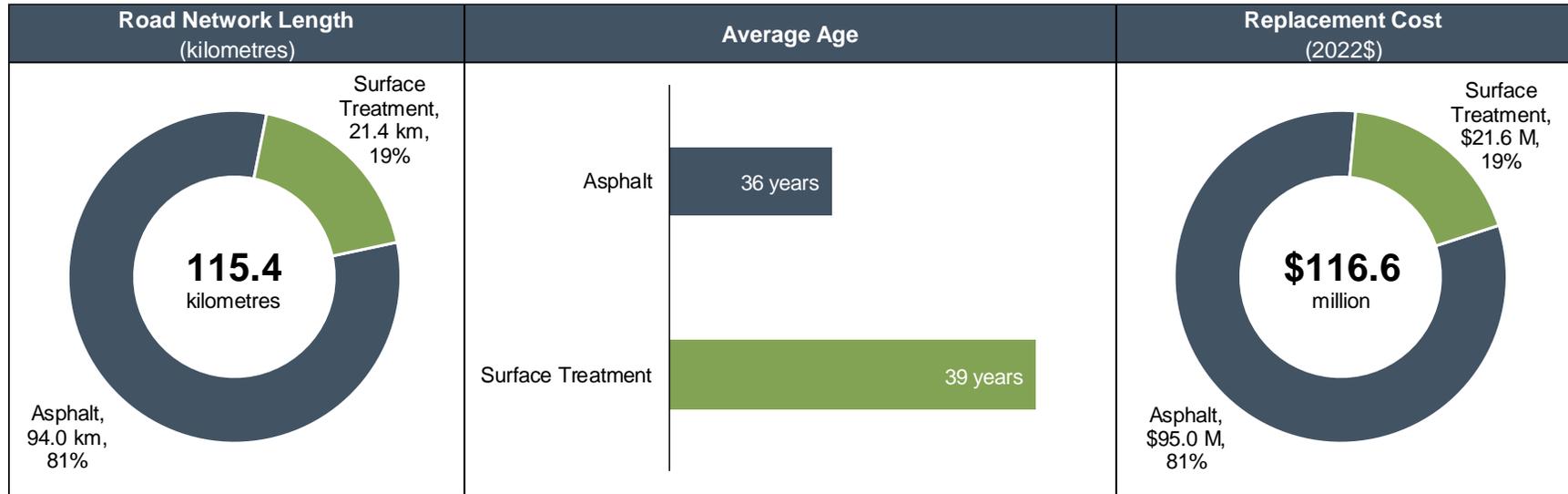
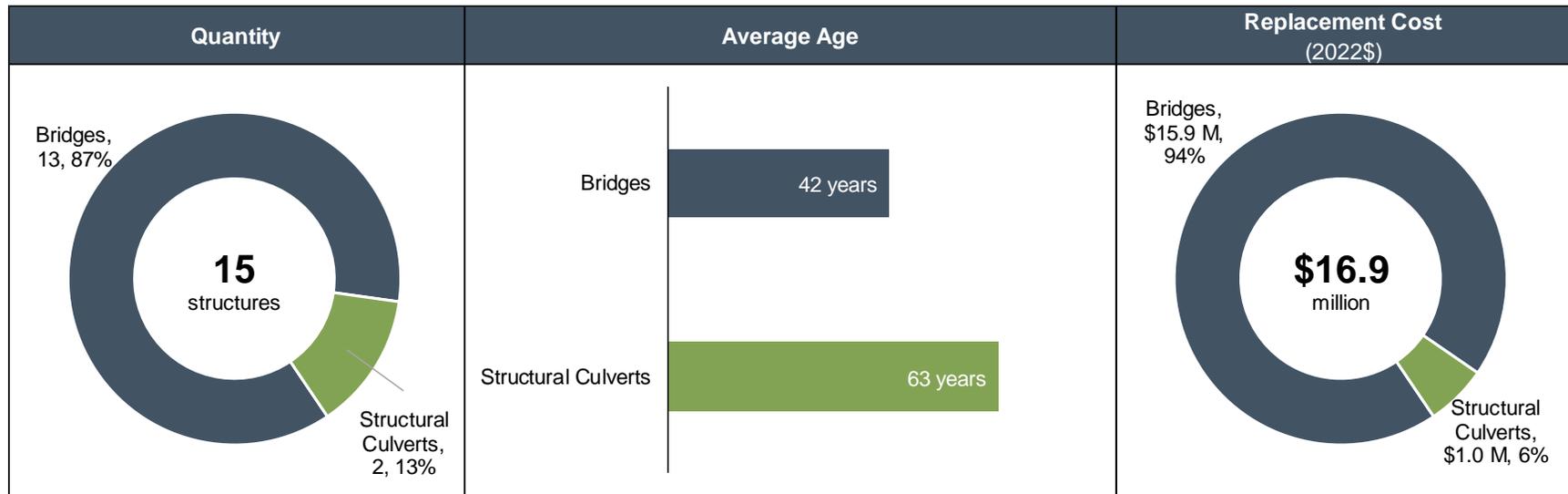




Figure 2-2: Summary Information – Structures

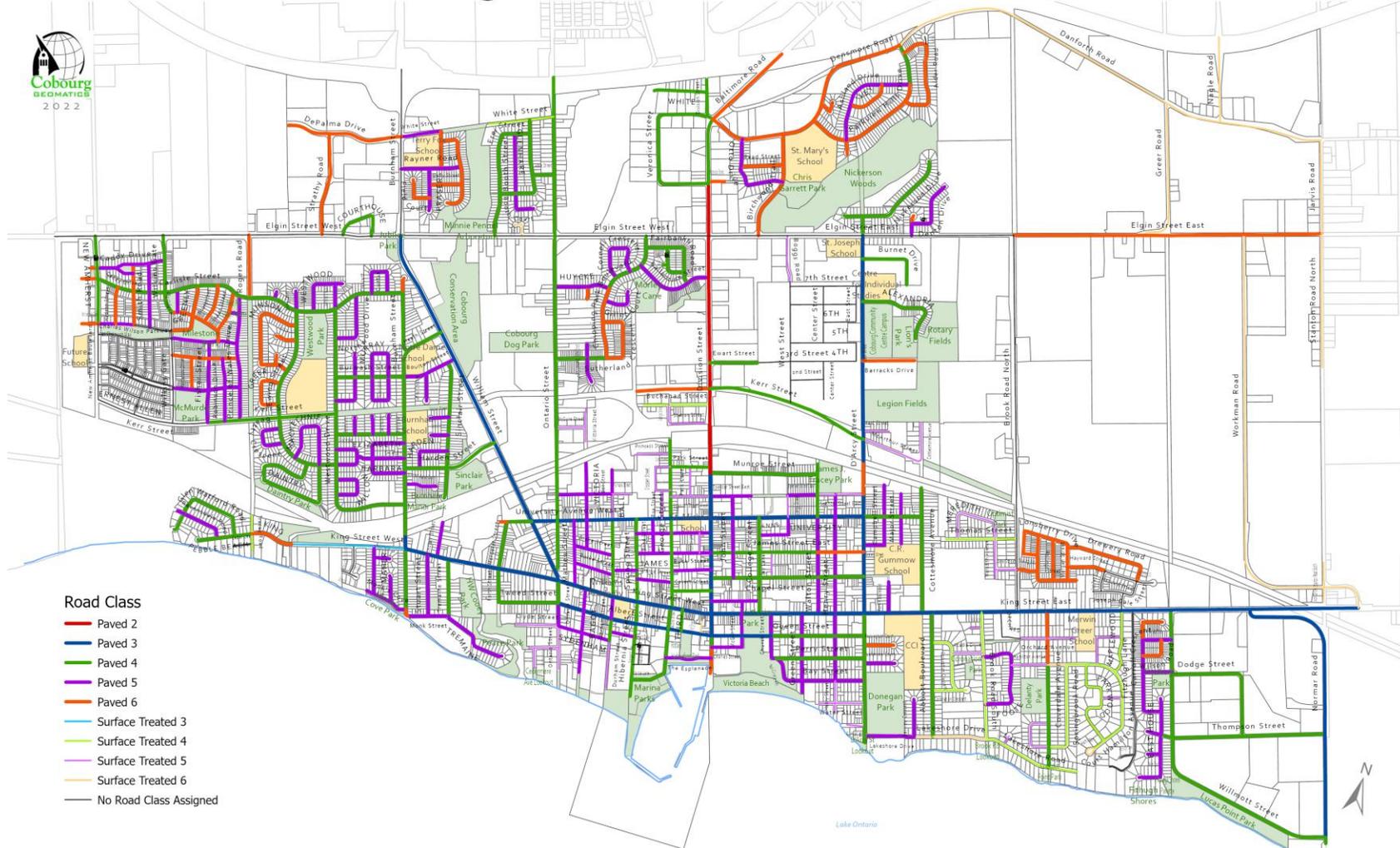




Map 2-1: Roads

Town of Cobourg

Road Class





2.2.2 Condition

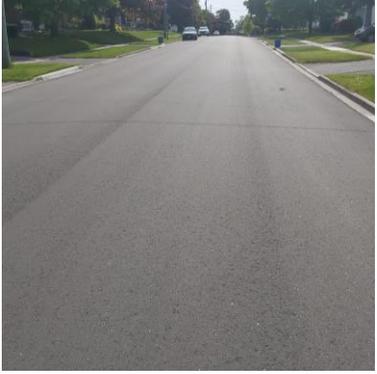
Town staff assess the condition of its roads on a regular basis. The overall condition rating is reported using the Pavement Condition Rating (P.C.R.). The P.C.R. is measured on a scale from 0 to 100, with 100 being an asset in as-new condition and 0 being a failed asset. During condition assessments, Town staff first drive each road segment at the posted speed limit to determine the ride condition rating. A second pass through the road section is then undertaken to identify various deficiencies and the severity of distress, using a pavement evaluation form developed by the Ministry of Transportation. This information is then used to calculate the P.C.R. for each road segment.

The last comprehensive assessment was completed in 2018. However, for road segments where rehabilitations have been performed since the 2018 assessment, the condition ratings have been updated accordingly. In order to provide an accurate representation of the current condition of the road network, the historical condition ratings have been adjusted based on degradation profiles provided by Town staff.

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 Rating

Condition State	Example Photos	Description
<p>Very Good 85 < P.C.R. ≤ 100</p>		<p>Pavement is in excellent condition with few cracks. The Ride Condition Rating is smooth and pleasant.</p>
<p>Good 70 < P.C.R. ≤ 85</p>		<p>The pavement is in good condition with frequent very slight or slight cracking. The Ride Condition Rating is comfortable with a few slightly rough and uneven sections.</p>
<p>Fair 55 < P.C.R. ≤ 70</p>		<p>The pavement is in fair condition with intermittent slight to moderate cracking, distortion, alligating. The Ride Condition Rating is uncomfortable with intermittent rough and uneven sections..</p>



Condition State	Example Photos	Description
Poor 40 < P.C.R. ≤ 55		The pavement is in poor to fair condition with frequent moderate cracking and distortion, and intermittent moderate alligating. The Ride Condition Rating is uncomfortable and the surface is moderately rough and uneven.
Very Poor 25 < P.C.R. ≤ 40		The pavement is in poor condition with frequent moderate alligating and extensive moderate cracking and distortion. The Ride Condition Rating is uncomfortable and the surface is very rough and uneven.
Failed 0 ≤ P.C.R. ≤ 25		The pavement is in poor to very poor condition with extensive severe cracking, alligating and distortion. The Ride Condition Rating is very uncomfortable and the surface is very rough and uneven.

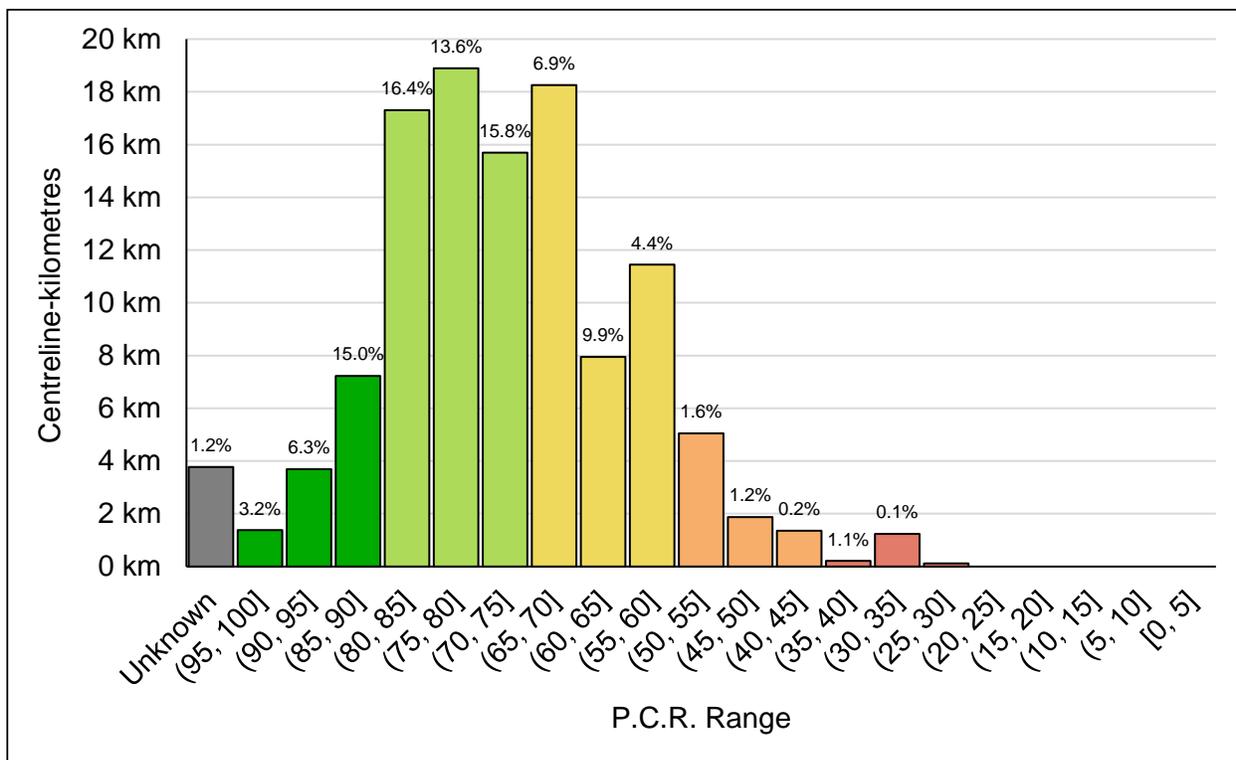


Table 2-4 shows the average condition of roads by surface type. The average condition states for asphalt, surface treatment, and unknown road surfaces are Good, Fair, and Very Good, respectively. The distribution of the road network by condition (as measured by P.C.R.) is presented in Figure 2-3.

Table 2-4: Road Condition Summary

Surface Type	Centreline-kilometres	Condition (Weighted Average P.C.R.)	Average Condition State
Asphalt	94.0	74.0	Good
Surface Treatment	21.4	62.8	Fair
Total	115.4	71.9	Good

Figure 2-3: Distribution of Roads by P.C.R.



In accordance with O. Reg. 104/97, the Town completes biennial inspections of its bridges and structural culverts following the O.S.I.M. The most recent inspections were completed by GHD Ltd. in 2020. 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	Structural Culvert Photos	Description
<p>Excellent $80 \leq \text{B.C.I.} \leq 100$</p>			<ul style="list-style-type: none"> • This refers to an element (or part of an element) that is in “new” (as constructed) condition. • No visible deterioration type defects are present and remedial action is not required. • Minor construction defects do not count as visible deterioration type defects. • Asset is physically sound and is performing its function as originally intended.
<p>Good $70 \leq \text{B.C.I.} < 80$</p>			<ul style="list-style-type: none"> • This refers to an element (or part of an element) where the first sign of “Light (minor) defects are visible. This usually occurs after the structure has been in service for a number of years. These types of defects would not normally trigger any remedial action since the overall performance of the element is not affected. • Asset is physically sound and is performing its function as originally intended.
<p>Fair $60 \leq \text{B.C.I.} < 70$</p>			<ul style="list-style-type: none"> • This refers to an element (or part of an element) where medium defects are visible. These types of defects may trigger a “preventative maintenance” type of remedial action (e.g., Sealing, coating, etc.) where it is economical to do so. • Asset is showing signs of deterioration and is performing at a lower level than originally intended.



Condition State	Bridge Photos	Structural Culvert Photos	Description
<p>Poor $0 \leq \text{B.C.I.} < 60$</p>			<ul style="list-style-type: none">• This refers to an element (or part of an element) where severe and very severe defects are visible. In concrete any type of spalling or delamination would be considered “poor” since these defects usually indicate more serious underlying problems in the material (e.g. corroding reinforcing steel). These types of defects would normally trigger rehabilitation or replacement if the extent and location affect the overall performance of that element.• Asset is showing significant signs of deterioration and is performing to a much lower level than originally intended.

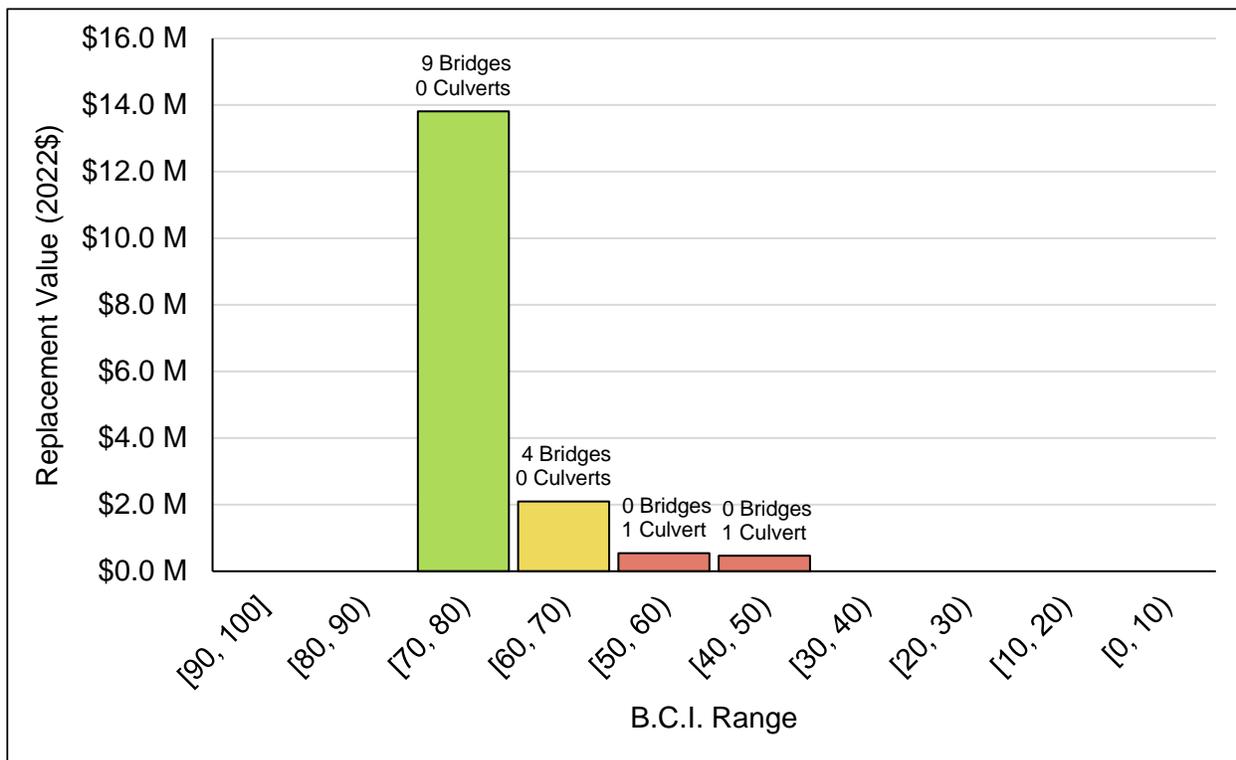


The average B.C.I. ratings and corresponding condition states for structures are summarized in Table 2-6 below. On average, bridges are in a Good condition state and structural culverts are in a Poor condition state. The distribution of structure condition (as measured by B.C.I.) by structure replacement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

Table 2-6: Structure Condition Summary

Structure Type	Quantity	Condition (Weighted Average B.C.I.)	Average Condition State
Bridges	13	72.0	Good
Structural Culverts	2	53.6	Poor
Total	15	70.9	Good

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 Town’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 technical levels of service. In future iterations of the asset management plan, additional technical levels of service may be added to reflect more fully the service transportation assets provide. Targets will also be set for all technical levels of service.

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 Town’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
Scope	The Town’s transportation assets enable the movement of people and goods within the Town and provide connectivity to regional roads. The Town’s transportation assets are used by pedestrians, cyclists, passenger vehicles, commercial truck traffic, and emergency vehicles.
	The scope of the Town’s road network is illustrated by Map 2-1. This map shows the geographical distribution of the Town’s roads.
Quality	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.



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 Town.	1.660 lane-km/km ²
	Number of lane-kilometres of collector roads as a proportion of square kilometres of land area of the Town.	1.902 lane-km/km ²
	Number of lane-kilometres of local roads as a proportion of square kilometres of land area of the Town.	7.143 lane-km/km ²
	Percentage of bridges in the Town with loading or dimensional restrictions.	15.4%
Quality	For paved roads in the Town, the average pavement condition index value. ^[1]	71.9
	For unpaved roads in the Town, the average surface condition.	n/a ^[2]
	For bridges in the Town, the average bridge condition index value. ^[3]	72.0
	For structural culverts in the Town, the average bridge condition index value. ^[3]	53.6

2.3 Water

2.3.1 State of Local Infrastructure

The Town's water system is operated by Lakefront Utility Services Inc. and provides water for residential and business consumption, as well as maintenance operations and fire suppression. The system supplies water to the majority of properties in the municipality. A spatial illustration of the extent of the Town's water distribution system is provided in Map 2-2. The Town's water infrastructure comprises approximately 171

^[1] As noted in subsection 2.2.2, the Town utilizes the P.C.R. as a measure of overall condition.

^[2] There are no unpaved roads in the Town.

^[3] The B.C.I. values reported are from the Town's latest O.S.I.M. report (i.e., 2020).

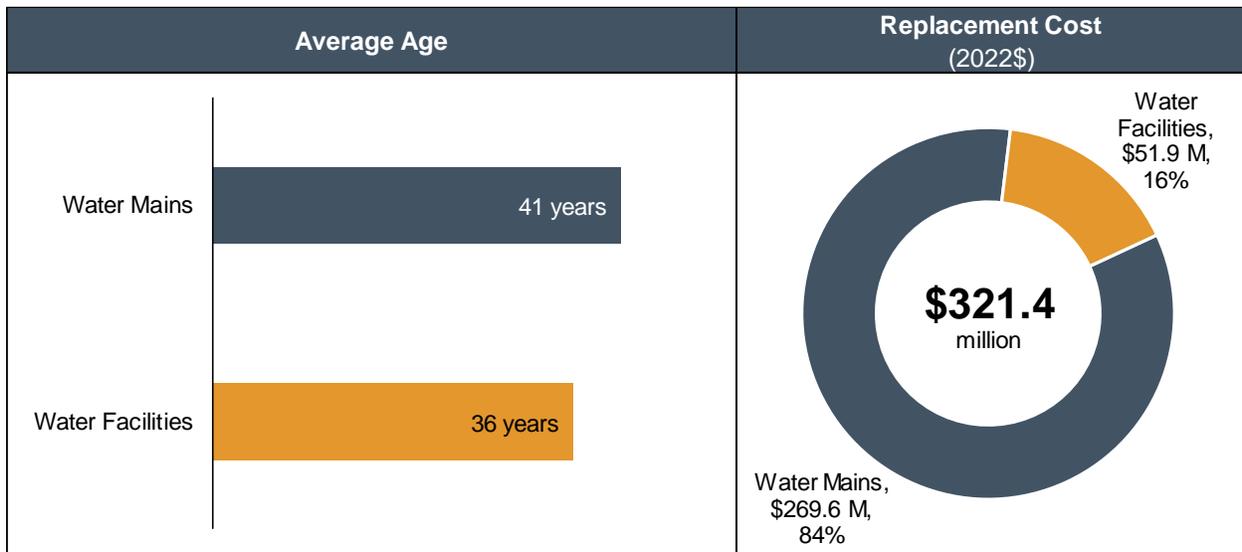


kilometres of water mains (including appurtenances such as valves, service connections, and fire hydrants), and six water facilities (including a water treatment plant, elevated tank, in-ground reservoir, and two pump stations). The combined replacement cost of this infrastructure is estimated at \$321.4 million. Table 2-9 shows summary information for the Town’s water system, including quantities, average ages, and replacement costs by asset class. A visual rendering of the data presented in Table 2-9 is provided in Figure 2-5.

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

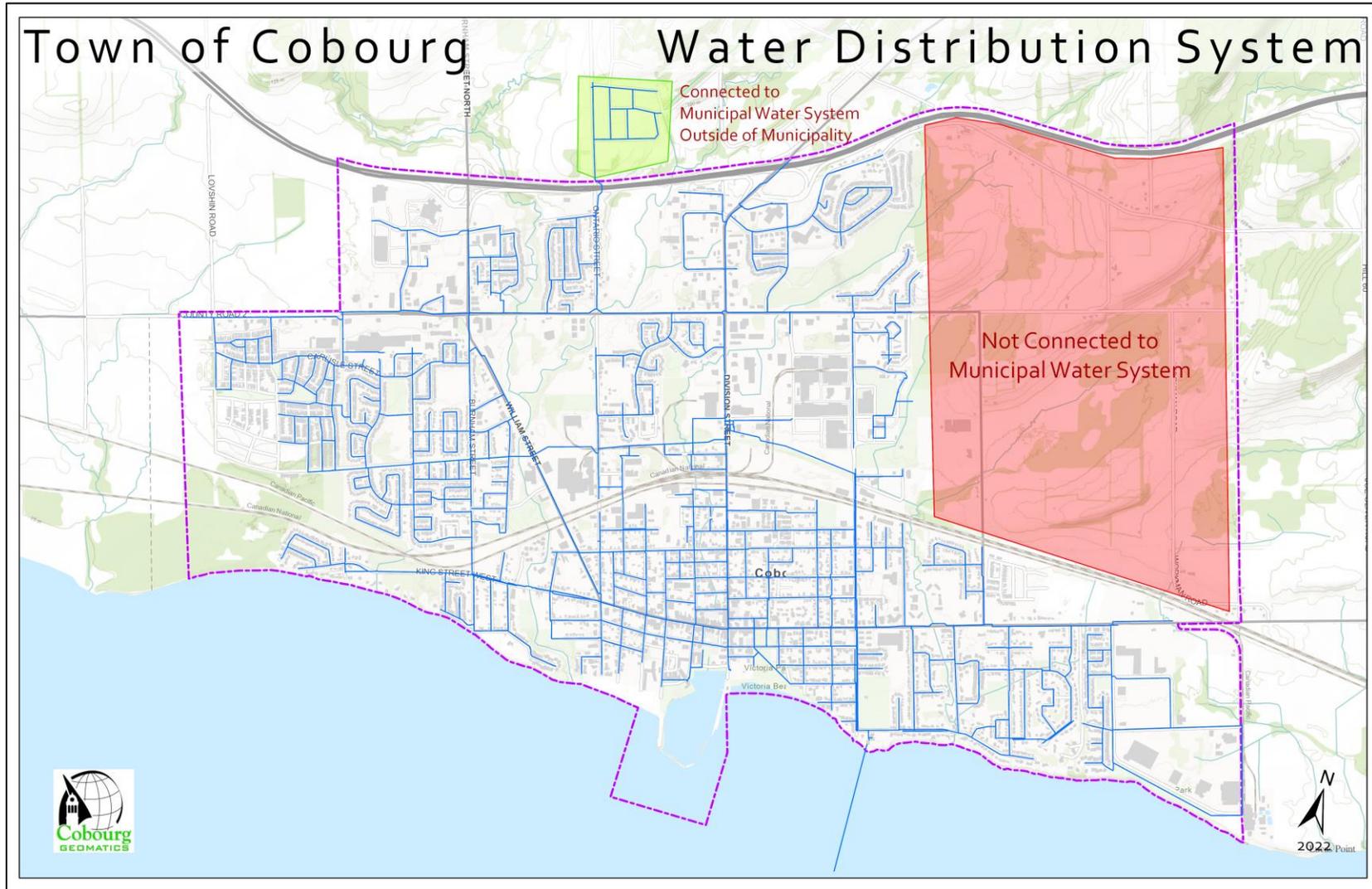
Asset Category	Quantity	Unit	Average Age (Years)	Replacement Cost (2022\$)
Water Mains	171.7	Kilometres	40.5	\$269,560,000
Water Facilities	6	Count	35.8	\$51,875,000
Total				\$321,435,000

Figure 2-5: Summary Information – Water





Map 2-2: Water Service Area





2.3.2 Condition

The condition of the Town's water assets has not been directly assessed through a physical condition assessment. In this asset management plan, the condition of the water assets 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 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.%
Excellent	$0\% \leq \text{U.L.C.\%} \leq 45\%$
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	$125\% < \text{U.L.C.\%}$

The average U.L.C.% ratings and corresponding condition states for water mains and water facilities are summarized Table 2-11 below. On average, the Town's water mains are in the Excellent condition state and water facilities are in the Fair condition state. Figure 2-6 shows the distribution of water main length by condition (as measured by U.L.C.%). Figure 2-7 shows the distribution of water facility replacement cost by condition (as measured by U.L.C.%).



Table 2-11: Water Infrastructure Condition Summary

Asset Category	Quantity	Weighted Average U.L.C.%.	Average Condition State
Water Mains	171.7 km	42%	Excellent
Water Facilities	6	99%	Fair



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

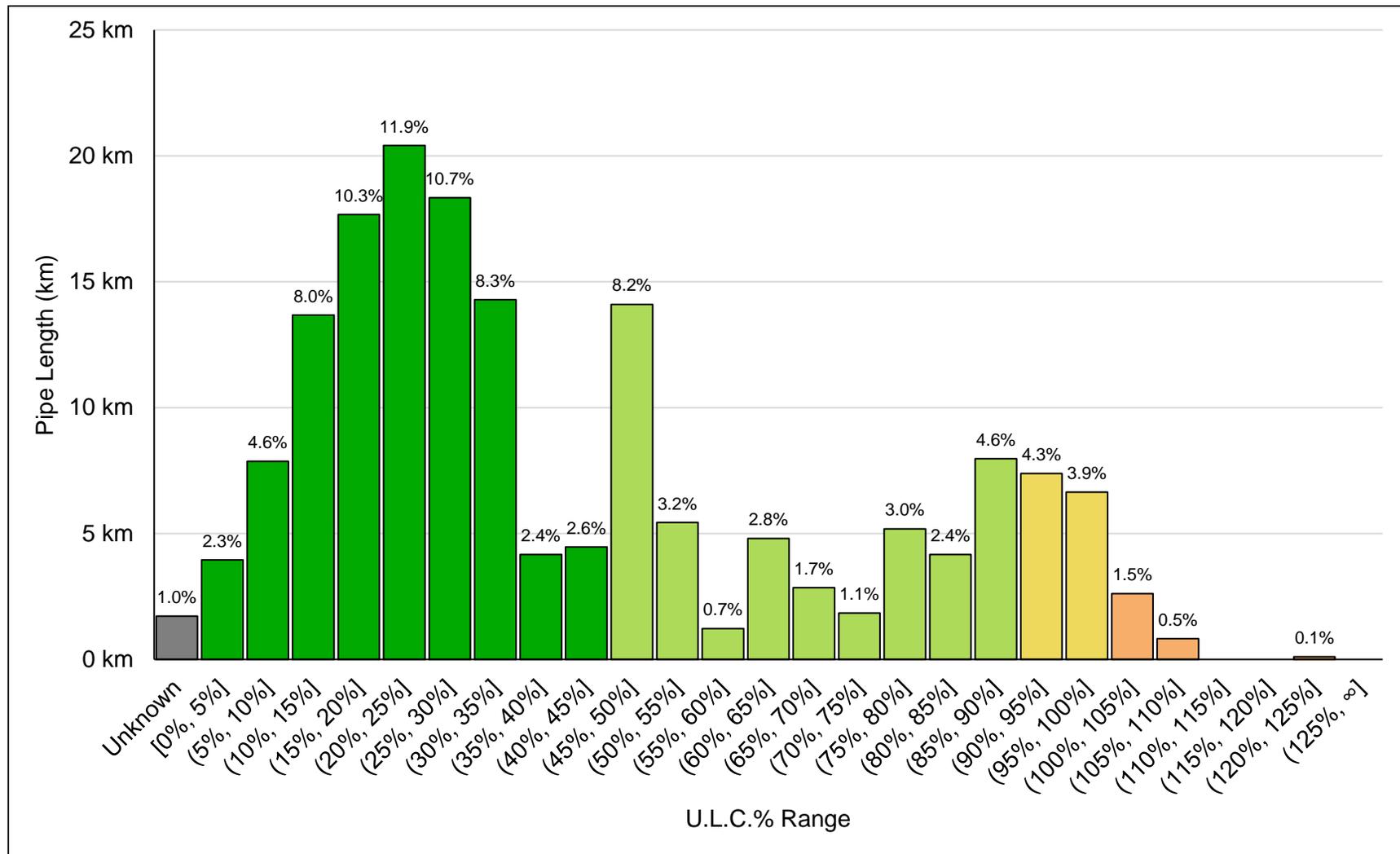
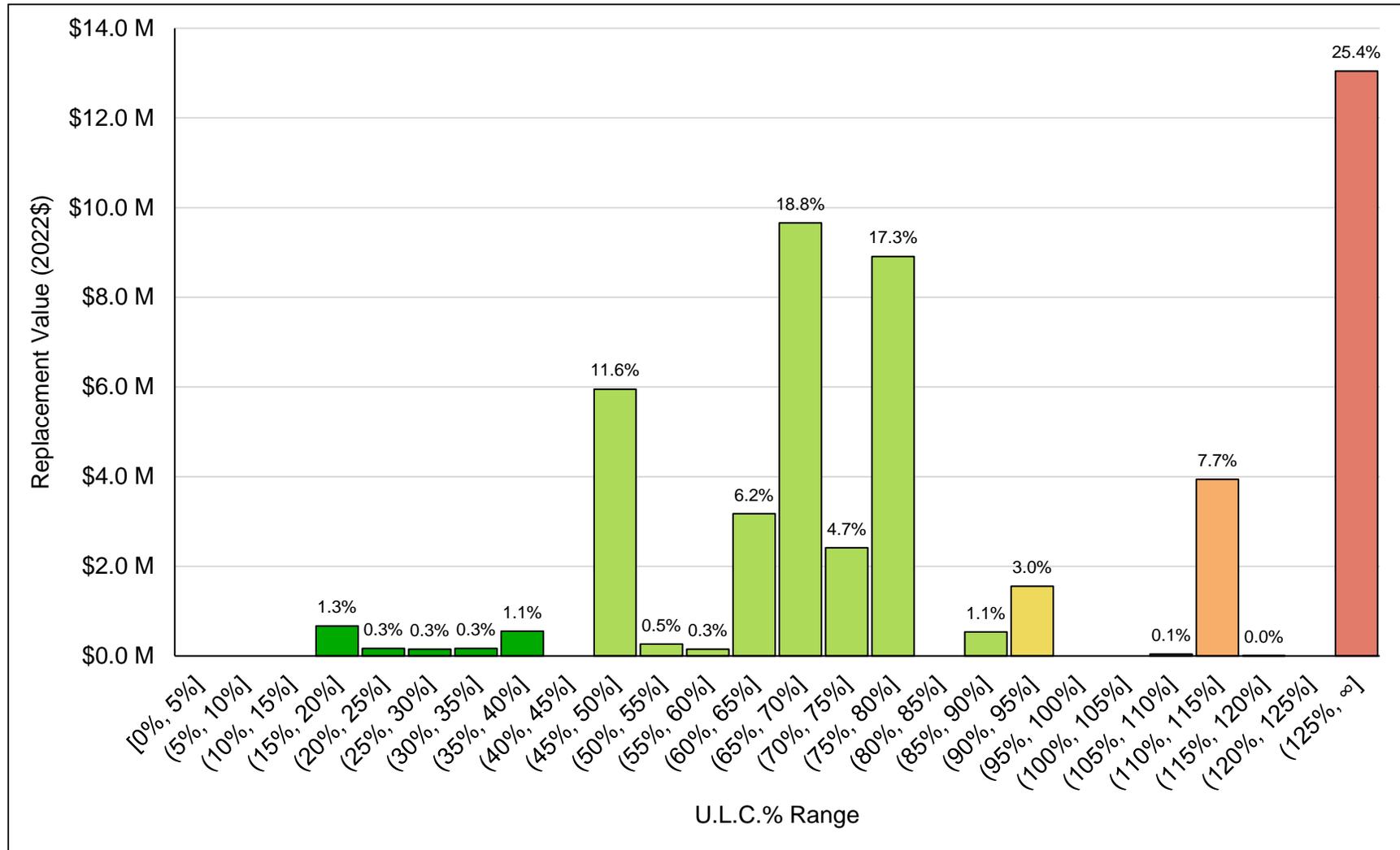




Figure 2-7: Distribution of Water Facilities by U.L.C.% Range





2.3.3 Current Levels of Service

This section provides an overview of the Town’s level of service framework for water services.

Table 2-12: Community Levels of Service – Water

Service Attribute	Community Levels of Service
Scope	Water service is provided to customers in most areas of the Town, as illustrated in Map 2-2. All areas that are connected to the water system have fire flow available.
Reliability	To ensure safe drinking water, the Town's drinking water system is operated under a Quality Management System as legislated under the <i>Safe Drinking Water Act, 2002</i> , and regulated by the Ontario Ministry of the Environment and Climate Change. Water quality is tested regularly, as required, and the results of this testing are reported annually.
	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 Town’s <i>Quality Management System Operational Plan</i> .

Table 2-13: Technical Levels of Service – Water

Service Attribute	Performance Measure	2021 Performance
Scope	Percentage of properties connected to the Town water system.	98%
	Percentage of properties where fire flow is available.	98%
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 Town 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 Town water system.	0.0002 connection days / connection



2.4 Wastewater

2.4.1 State of Local Infrastructure

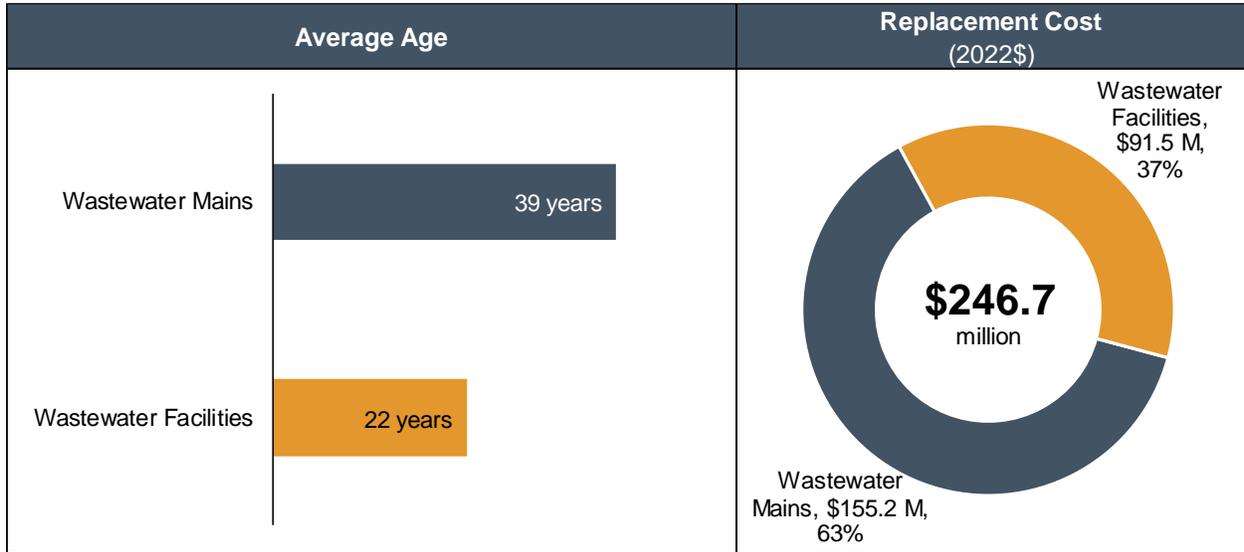
The Town owns a wastewater system that collects and treats materials from residential sewage, landfill leachate, and septic waste. The proper functioning of the wastewater system ensures that these materials can be safely recycled back into the environment. A spatial illustration of the extent of the Town's wastewater collection system is provided in Map 2-3. The Town's wastewater infrastructure comprises approximately 102 kilometres of wastewater mains (including associated maintenance holes), and seven wastewater facilities (including two wastewater treatment plants and five pumping stations). The combined replacement cost of this infrastructure is estimated at \$246.7 million. Table 2-14 provides summary information for the Town's wastewater infrastructure, including quantities, average ages, and replacement costs by asset category. A visual rendering of the data presented in Table 2-14 is provided in Figure 2-8.

Table 2-14: Wastewater Infrastructure – Quantity, Age, and Replacement Cost by Asset Category

Asset Category	Quantity	Units	Average Age (Years)	Replacement Cost (2022\$)
Wastewater Mains	102.0	Kilometres	38.8	\$155,192,500
Wastewater Facilities	7	Count	21.8	\$91,531,500
Total				\$246,724,000

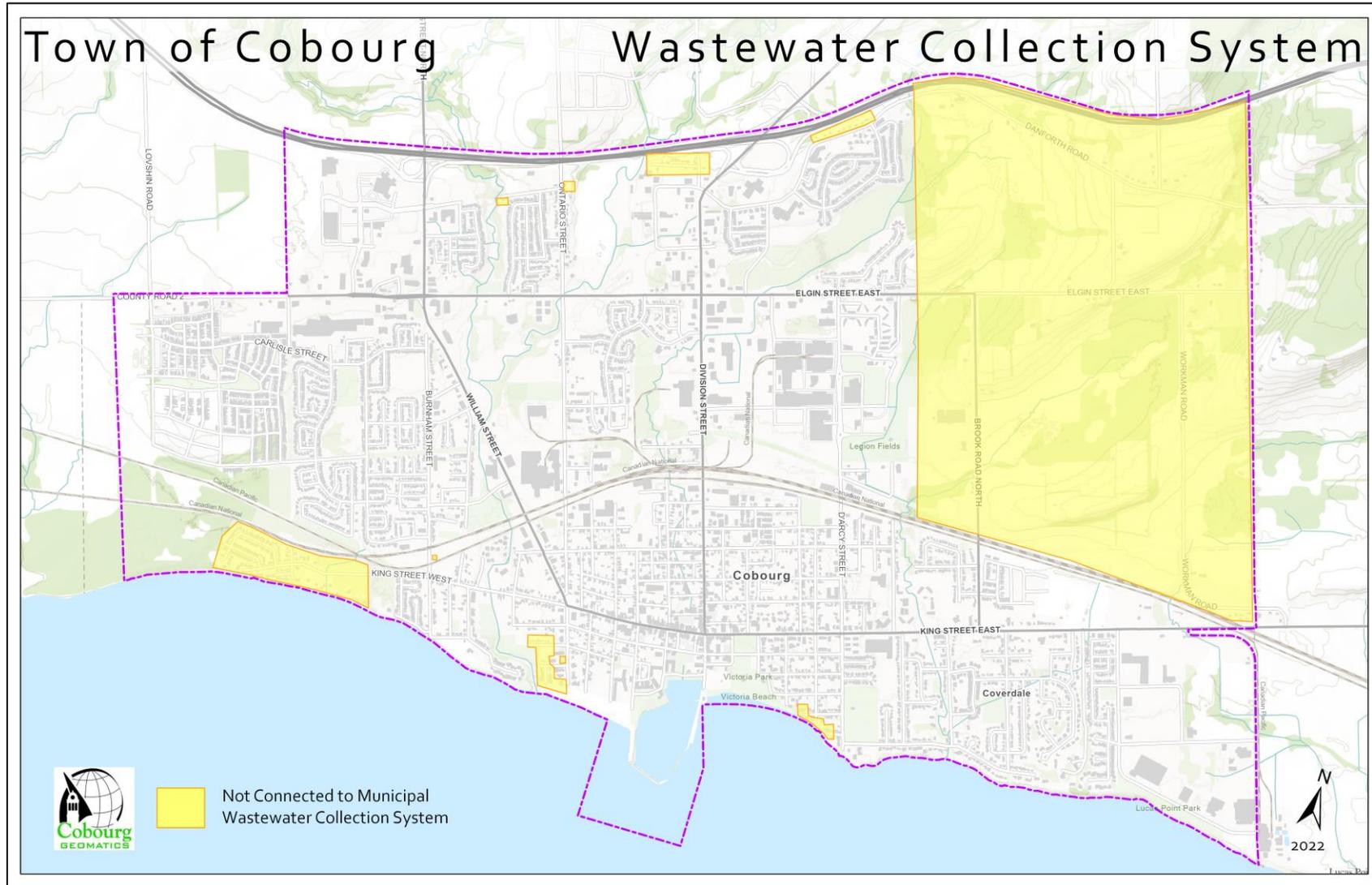


Figure 2-8: Summary Information – Wastewater





Map 2-3: Wastewater Service Area





2.4.2 Condition

The condition of the Town's wastewater infrastructure, as reported in this asset management plan, reflects a combination of physical condition ratings, staff-assigned performance ratings, and age-based condition ratings.

The Town regularly inspects the condition of wastewater mains through a closed-circuit television (C.C.T.V.) inspection program, with approximately one-fifth of the wastewater mains inspected annually on a rotating basis. In 2018, the Town started using a new scoring system to assign condition ratings to wastewater mains and is currently in the process of harmonizing the condition scores across the entire wastewater main inventory. Therefore, for the purposes of this asset management plan, the condition of the wastewater mains was 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 assets in subsection 2.3.2.

For wastewater facilities, the Town has historically used a condition rating based on a combination of asset age and staff-assigned performance ratings, both of which are assigned at the component level. However, the Town is currently in the process of completing physical condition assessments of its wastewater pumping stations. At the time of compiling this asset management plan, the results from the physical condition assessment were only available for two of the five pumping stations. Where available, the condition ratings obtained through the physical condition assessment have been used instead of age/performance-based condition ratings. The condition of wastewater facilities is reported on a scale from 1 to 5, with 1 being an asset in as-new condition and 5 being a failed asset.

To better communicate the condition of wastewater facilities, the numeric condition ratings have been segmented into qualitative condition states as shown Table 2-15. Moreover, descriptions of components in these condition states are provided to better communicate the condition to the reader.



Table 2-15: Condition States Defined with Respect to Condition Rating – Wastewater Facilities

Condition State	Condition Rating	Description
Very Good	1	Sound physical condition – no wear and tear, no/minimum risk of physical failure. Asset likely to perform adequately without major work to at least 80% of its estimated life.
Good	2	Acceptable physical condition – minor wear and tear, minimum risk of physical failure. No substantial deterioration over the next 5-10 years. No immediate repair work required, or only minor work required (if any).
Fair	3	Acceptable physical condition – moderate wear and tear, moderate risk of physical failure. Failure unlikely within next 2 years but further deterioration likely and major rehabilitation /replacement required within next 5 years. Minor components or isolated sections of the asset need replacement or repair now but asset still functions safely at adequate level of service. Minor work may be required, but asset is still serviceable.
Poor	4	Poor physical condition – heavy wear and tear, failure is likely in short term. Likely need to replace most or all of asset within 2 years. No immediate risk to health or safety but work required within 2 years to ensure asset remains safe. Substantial work required in short term; asset barely serviceable.
Very Poor	5	Failed or failure imminent. Immediate need to replace most or all of asset. Health and safety hazards exist, or asset cannot be serviced or operated without risk to personnel.

The average U.L.C.% ratings and corresponding condition states for water mains and water facilities are summarized Table 2-16 below. On average, Town’s wastewater mains and facilities are both in the Good condition state. Figure 2-10 shows the distribution of wastewater main length by condition range. Figure 2-9 depicts the distribution of wastewater facilities (measured by replacement cost) by condition rating.



Table 2-16: Wastewater Infrastructure Condition Summary

Asset Category	Quantity	Condition (Weighted Average)	Average Condition State
Wastewater Mains	102.0 km	U.L.C.% = 48%	Good
Wastewater Facilities	7	Condition Rating = 2.01	Good

Figure 2-9: Distribution of Wastewater Facilities by Condition Rating

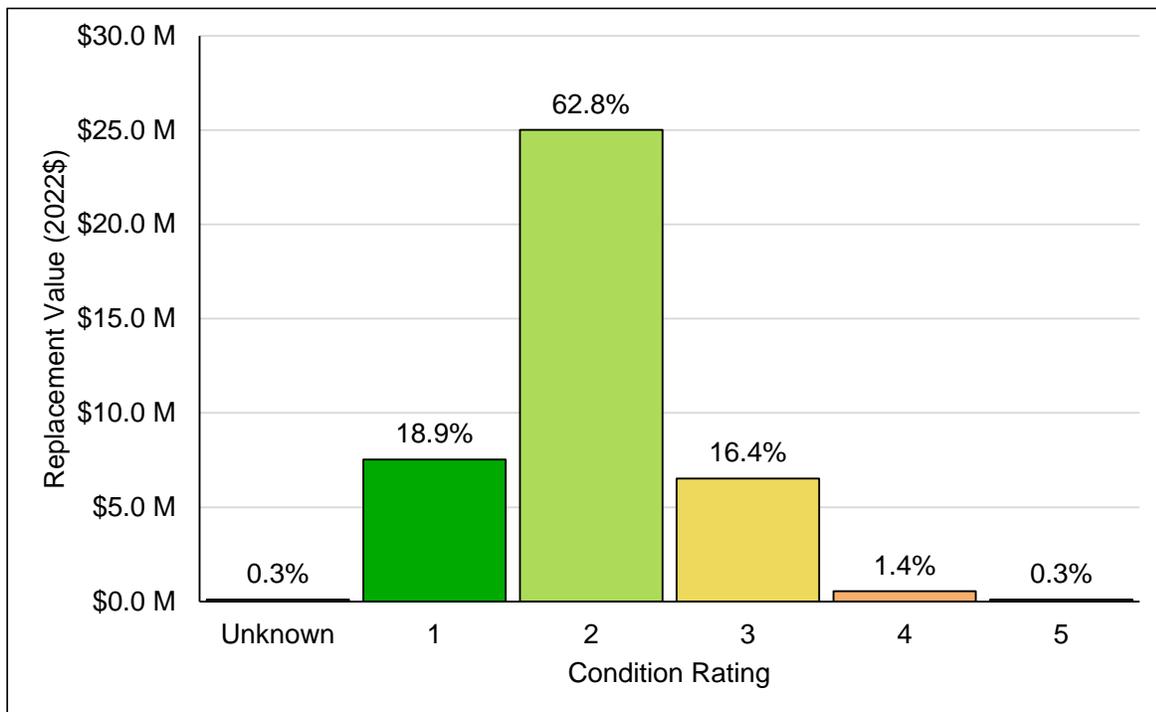
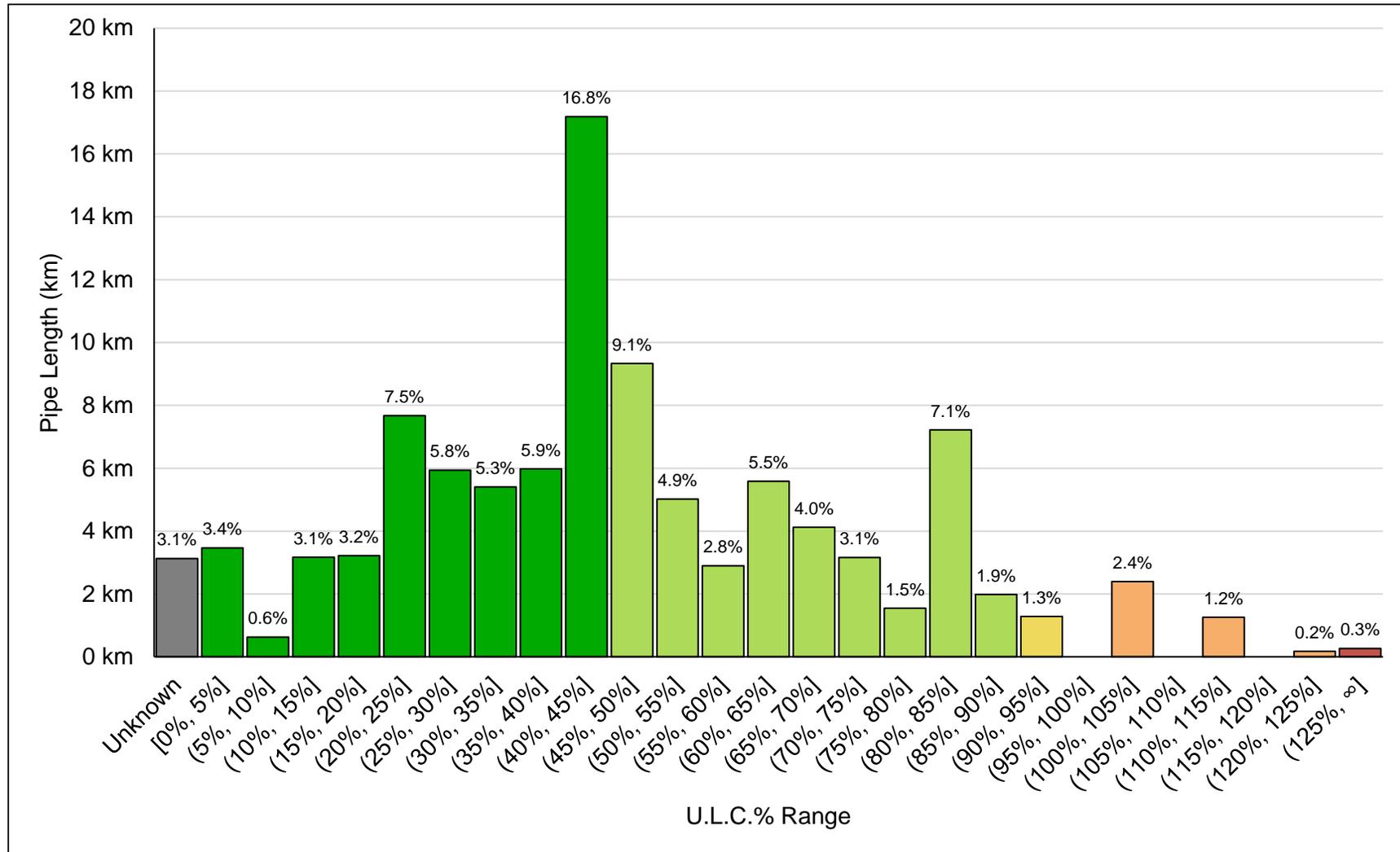




Figure 2-10: Distribution of Wastewater Mains by U.L.C.% Range





2.4.3 Current Levels of Service

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

Table 2-17: Community Levels of Service – Wastewater

Service Attribute	Community Levels of Service
Scope	Wastewater service is provided to customers in most areas of the Town, as illustrated in Map 2-3.
Reliability	<p>The Town 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).</p> <p>Sewers are designed to handle flows significantly higher than average daily flows to help address peak flows resulting from inflow and infiltration during wet weather events.</p> <p>There are also several initiatives underway to reduce inflow and infiltration. The Town has a program underway to replace all sanitary maintenance lids in floodplain areas with watertight lids. Furthermore, the Town also has a program underway to inspect sewers, identify stormwater connections, and reline/replace sanitary sewers with high infiltration rates in floodplain areas.</p>
	<p>The Town’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 each wastewater treatment facility is provided in the respective E.C.A.:</p> <ul style="list-style-type: none"> • Wastewater Treatment Plant No. 1: 6436-B5TLN5 • Wastewater Treatment Plant No. 2: 2602-9QDN8Y



Table 2-18: Technical Levels of Service – Wastewater

Service Attribute	Performance Measure	2021 Performance
Scope	Percentage of properties connected to the Town wastewater system.	98%
Reliability	The number of connection-days per year lost due to wastewater backups compared to the total number of properties connected to the Town wastewater system.	0.0002 ^[1] connection days / connection
	The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the Town wastewater system.	0.0002 violations / connection

2.5 Population and Employment Growth

According to the 2021 census, the Town's 2021 population was 20,519. Based on the growth forecast contained in the Town's 2021 Development Charges Background Study, the Town's population is anticipated to reach 23,936 by 2031.

This 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 Town's 2021 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.

^[1] It has been assumed that, on average, wastewater backups last up to 6 hours.



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 Town 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 Services

This section presents a preliminary estimate of the costs associated with maintaining the Town'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, modelled in the Town's asset management decision support system. For bridges and structural culverts, the estimate is based on the maintenance, repair, and replacement recommendations identified in the 2020 Municipal Structure Inventory and Inspection report, adjusted for works that have already been completed.

The ten-year lifecycle expenditure forecast for roads and structures is summarized in Figure 3-1. A further breakdown of the lifecycle expenditure forecast is provided in Table 3-1. Average annual expenditures over the forecast period have been estimated at approximately \$3.4 million.

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

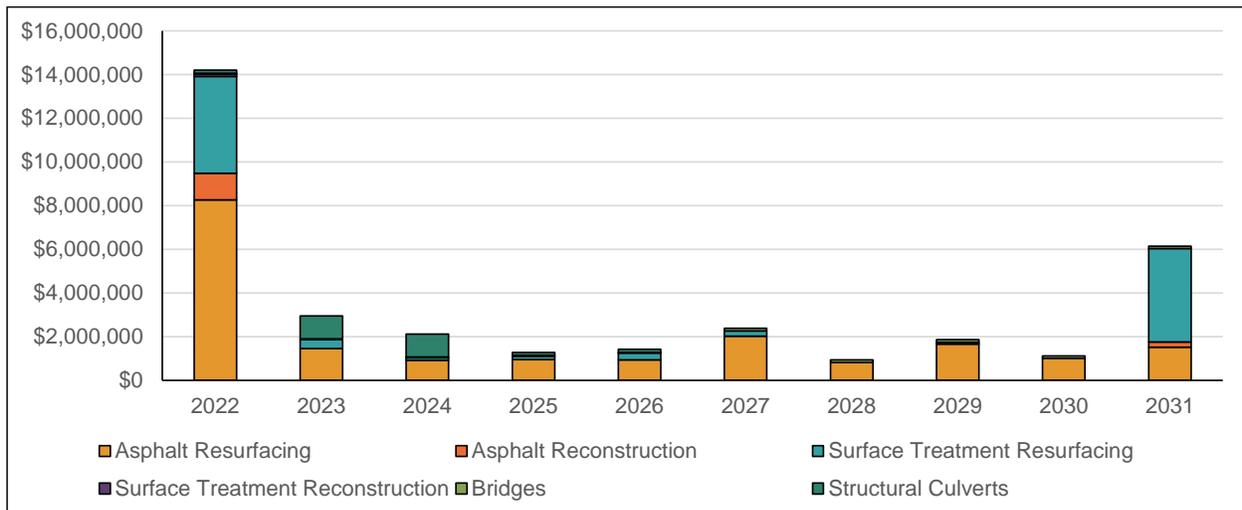




Table 3-1: Lifecycle Expenditure Forecast for Roads and Structures (2022\$)

Asset Class	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Roads										
Asphalt Resurfacing	\$8,270,000	\$1,454,000	\$918,000	\$955,000	\$932,000	\$2,024,000	\$819,000	\$1,656,000	\$1,008,000	\$1,518,000
Asphalt Reconstruction	\$1,211,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$245,000
Surface Treatment Resurfacing	\$4,438,000	\$416,000	\$120,000	\$156,000	\$317,000	\$244,000	\$0	\$93,000	\$0	\$4,273,000
Surface Treatment Reconstruction	\$122,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sub-total Roads	\$14,041,000	\$1,870,000	\$1,038,000	\$1,111,000	\$1,249,000	\$2,268,000	\$819,000	\$1,749,000	\$1,008,000	\$6,036,000
Structures										
Bridges	\$28,800	\$28,800	\$28,800	\$28,800	\$28,800	\$114,600	\$114,600	\$114,600	\$114,600	\$114,600
Structural Culverts	\$137,200	\$1,054,700	\$1,054,700	\$137,200	\$137,200	\$0	\$0	\$0	\$0	\$0
Sub-total Structures	\$166,000	\$1,083,500	\$1,083,500	\$166,000	\$166,000	\$114,600	\$114,600	\$114,600	\$114,600	\$114,600
Total	\$14,207,000	\$2,953,500	\$2,121,500	\$1,277,000	\$1,415,000	\$2,382,600	\$933,600	\$1,863,600	\$1,122,600	\$6,150,600



3.3 Water Services

This section presents a preliminary estimate of the costs associated with maintaining current level of service for water. A detailed capital forecast for the Town's water system was developed as part of the Town's 2020 Water and Wastewater Rate Study. For the purposes of this asset management plan, the forecast was extended by one year (i.e., to 2031), updated with information from the Cobourg Drinking Water System Master Plan, and 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 \$8.1 million, of which approximately 37% 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\$)

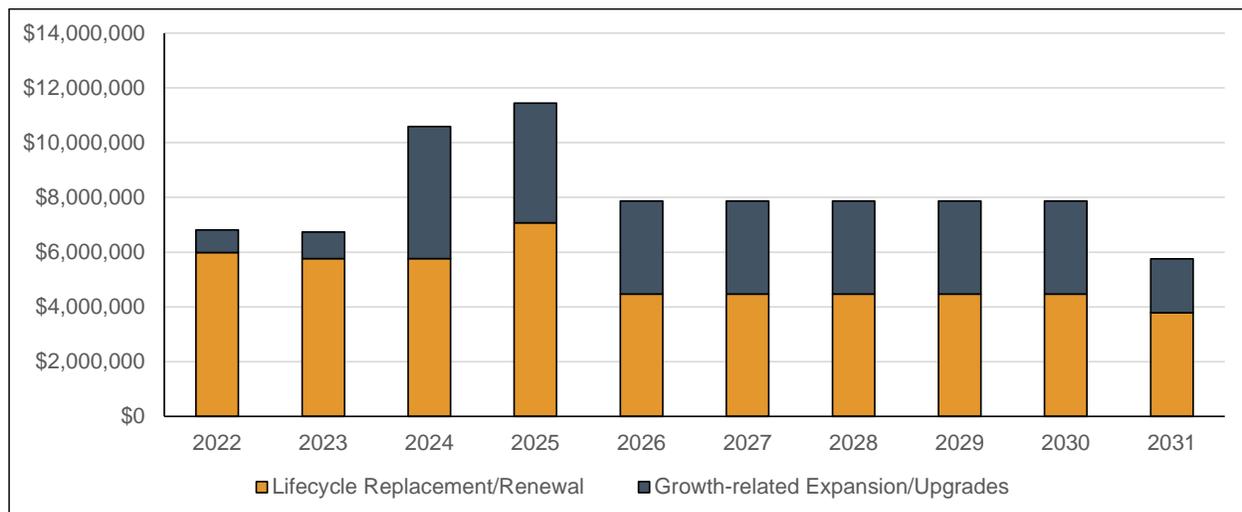




Table 3-2: Lifecycle Expenditure Forecast for Water Infrastructure (2022\$)

Asset Class	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Lifecycle Replacement/Renewal	\$5,986,427	\$5,768,186	\$5,764,581	\$7,073,638	\$4,469,542	\$4,469,542	\$4,469,542	\$4,469,542	\$4,469,542	\$3,788,976
Growth-related Expansion/Upgrades	\$830,161	\$962,818	\$4,823,766	\$4,365,435	\$3,402,618	\$3,402,618	\$3,402,618	\$3,402,618	\$3,402,618	\$1,970,834
Total	\$6,816,588	\$6,731,003	\$10,588,347	\$11,439,073	\$7,872,160	\$7,872,160	\$7,872,160	\$7,872,160	\$7,872,160	\$5,759,811



3.4 Wastewater Services

This section presents a preliminary estimate of the costs associated with maintaining current level of service for water. A detailed capital forecast for the Town’s wastewater system was developed as part of the Town’s 2020 Water and Wastewater Rate Study. For the purposes of this asset management plan, the forecast was extended by one year (i.e., to 2031), and adjusted to current dollar values.

The ten-year lifecycle expenditure forecast for wastewater 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 \$8.9 million, of which approximately 38% 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\$)

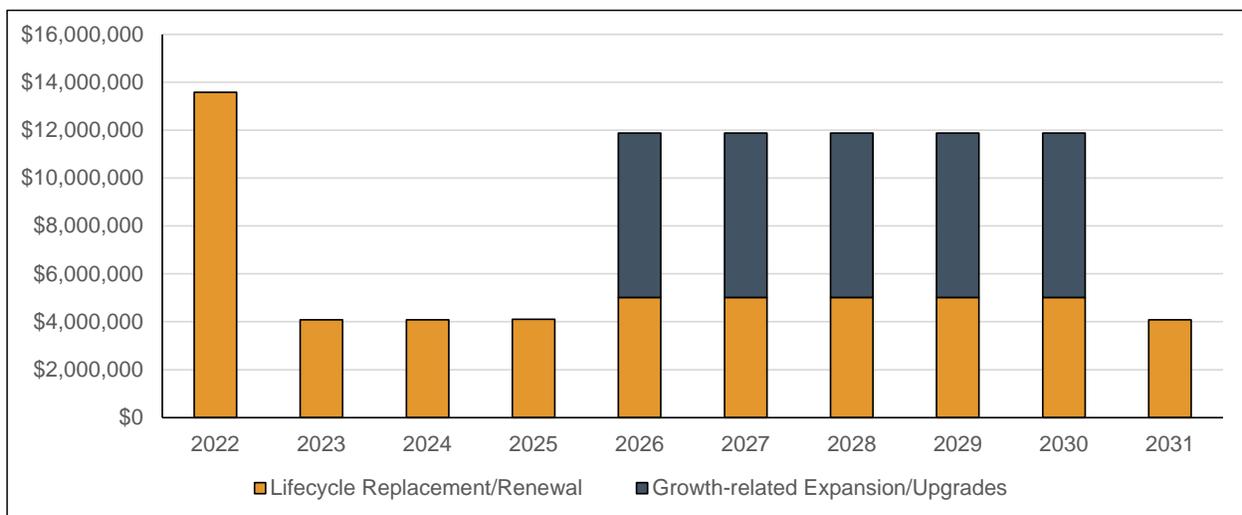




Table 3-3: Lifecycle Expenditure Forecast for Wastewater Infrastructure (2022\$)

Asset Class	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Lifecycle Replacement/Renewal	\$13,579,269	\$4,085,798	\$4,085,798	\$4,105,025	\$5,014,510	\$5,014,510	\$5,014,510	\$5,014,510	\$5,014,510	\$4,085,798
Growth-related Expansion/Upgrades	\$0	\$0	\$0	\$0	\$6,858,675	\$6,858,675	\$6,858,675	\$6,858,675	\$6,858,675	\$0
Total	\$13,579,269	\$4,085,798	\$4,085,798	\$4,105,025	\$11,873,185	\$11,873,185	\$11,873,185	\$11,873,185	\$11,873,185	\$4,085,798



Chapter 4

Summary



4. 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 Town'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 Town to maintain current levels of service. The plan is based on the best information available to the Town at this time. In the coming years, the Town will need to further expand the asset management plan to include all Town 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 Town's compliance with the July 1, 2024, and July 1, 2025 requirements of O. Reg. 588/17.