Asset Management Plan – Core Assets

City of Kawartha Lakes

Final

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Table of Contents

List of Acronyms and Abbreviations

BCI	Bridge Condition Index
HCB	High-class Bituminous
IJPA	Infrastructure for Jobs and Prosperity Act
LCB	Low-class Bituminous
O. Reg. 588/17	Ontario Regulation 588/17
OSIM	Ontario Structure Inspection Manual
PCI	Pavement Condition Index
PSAB	Public Sector Accounting Board
ULC%	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 City of Kawartha Lakes (City) retained Watson & Associates Economists Ltd. (Watson) to update the City's 2017 Asset Management Plan. With this update, the intent is to bring the City'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:

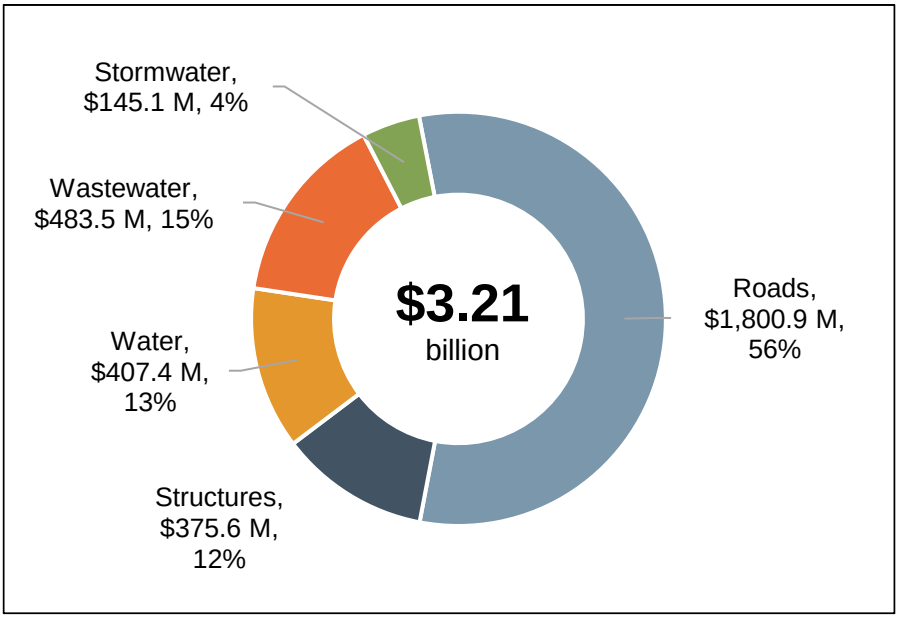
- Roads;
- Bridges and structural culverts (structures);
- Water;
- Wastewater; and
- Stormwater.

Core assets and their replacement costs are shown in Table 1-1. Figure 1-1 shows the distribution of assets (measured by replacement cost) by asset class. Roads account for over half of the replacement cost (56%), followed by wastewater (15%), water (13%), structures (12%), and lastly, stormwater (4%).

Table 1-1: Asset Classes and Replacement Cost

Asset Class	Replacement Cost (2022$)
Roads	$1,800,800,000
Structures	$375,600,000
Water	$407,400,000
Wastewater	$483,500,000
Stormwater	$145,100,000
Total	**$3,212,400,000**

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 (PSAB) 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* (IJPA) was proclaimed on May 1, 2016. This legislation detailed principles for evidence-based and sustainable long-term infrastructure planning. The IJPA 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 IJPA. 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 City at this time.

1.3 Asset Management Plan Development

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

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

1. Compile available information pertaining to the City'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 City staff input, existing background reports and studies (e.g., 2021 Road Needs Study, 2020 OSIM Bridge Inspection Report), and an 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 City'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 City 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 City. The focus for the time being has been placed on the City's roads and structures as these are considered core assets under O. Reg. 588/17 and must be included in the City'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 high-class bituminous (HCB), low-class bituminous (LCB), and gravel. The estimated replacement cost of roads is $1,801 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 City's road network and its extent is provided in Map 2-1.

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

Surface Type	Centreline-kilometres	Average Age (years)	Replacement Cost (2022$)
HCB – Surface	965	30.2	$947,300,000
LCB – Surface	848	18.3	$454,300,000
Gravel – Surface	891	5.5	$399,200,000
Total	**2,704**	**18.3**	**$1,800,800,000**

The City has 147 vehicle bridges, 11 pedestrian bridges, and 86 structural culverts (diameter ≥ 3m) with an estimated combined replacement cost of $376 million. The average age of structures is 59 years. Table 2-2 provides a breakdown of the counts, average ages, and replacement costs by structure type. Figure 2-2 illustrates the data in Table 2-2 visually. Map 2-2 provides a spatial illustration of the City's structures.

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

Structure Type	Count	Average Age	Replacement Cost (2022$)
Vehicle Bridges	147	60	$259,350,000
Pedestrian Bridges	11	100	$14,400,000
Structural Culverts	86	52	$101,850,000
Total	**244**	**59**	**$375,600,000**

Figure 2-1: Summary Information – Road Network

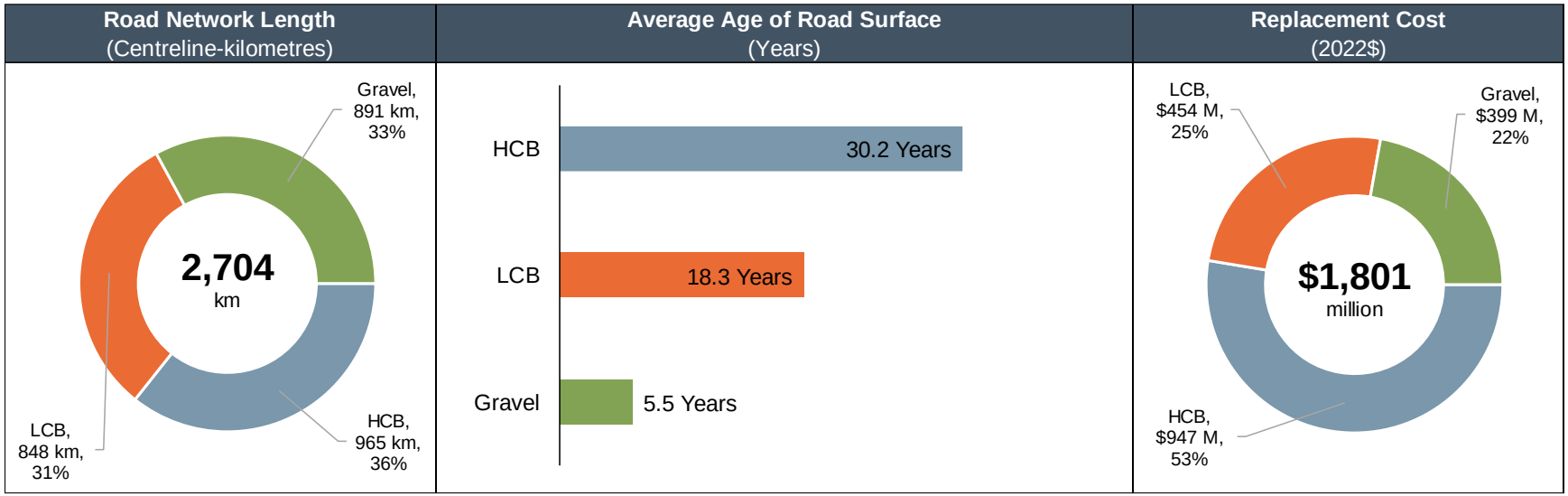
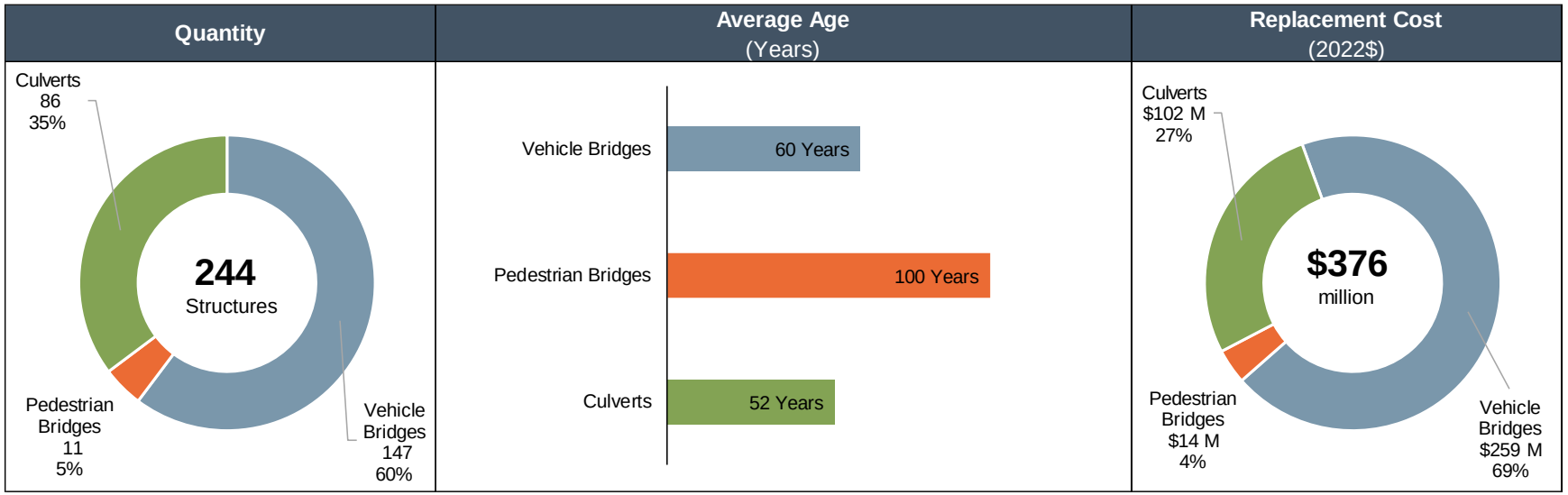
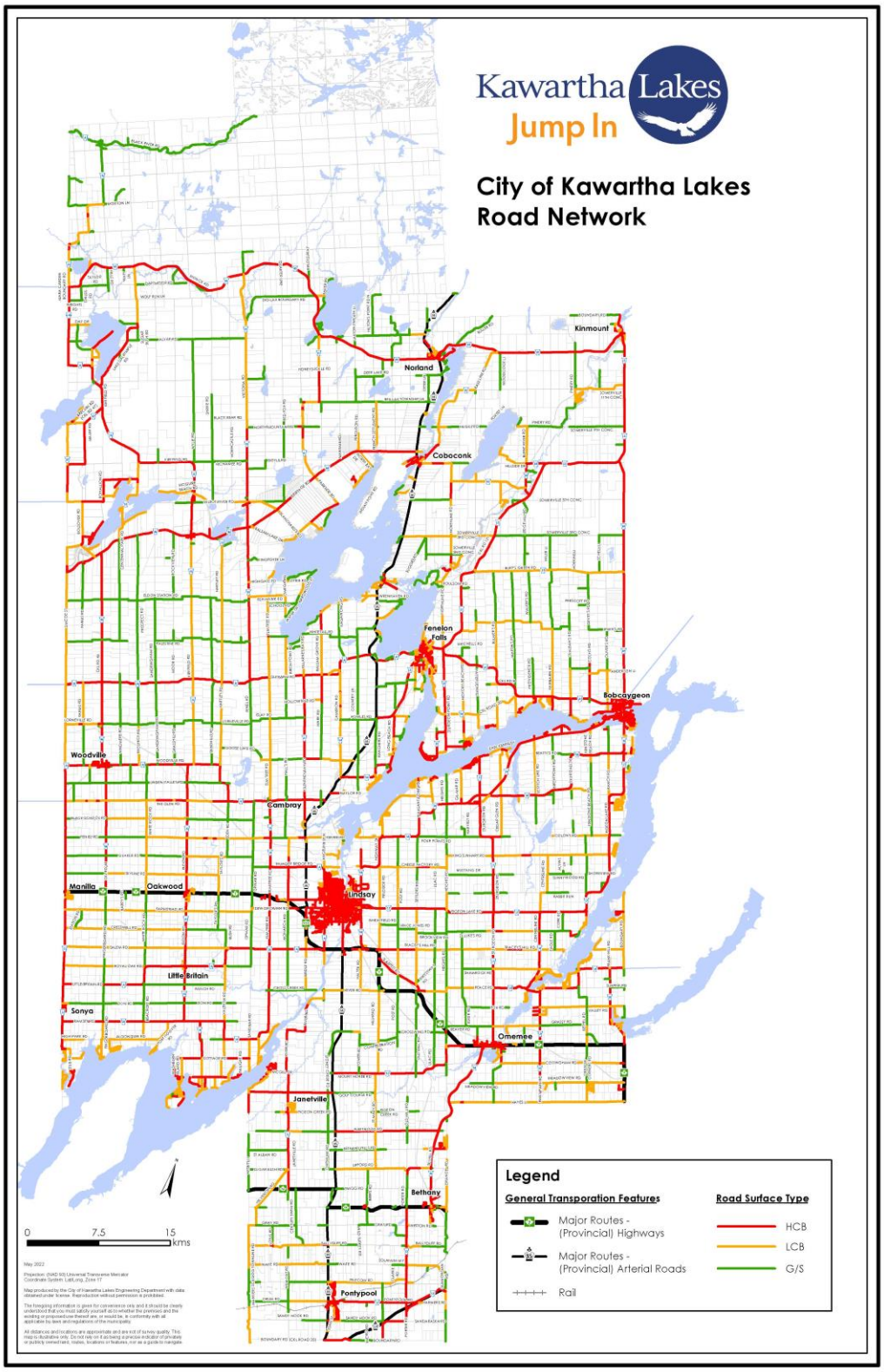


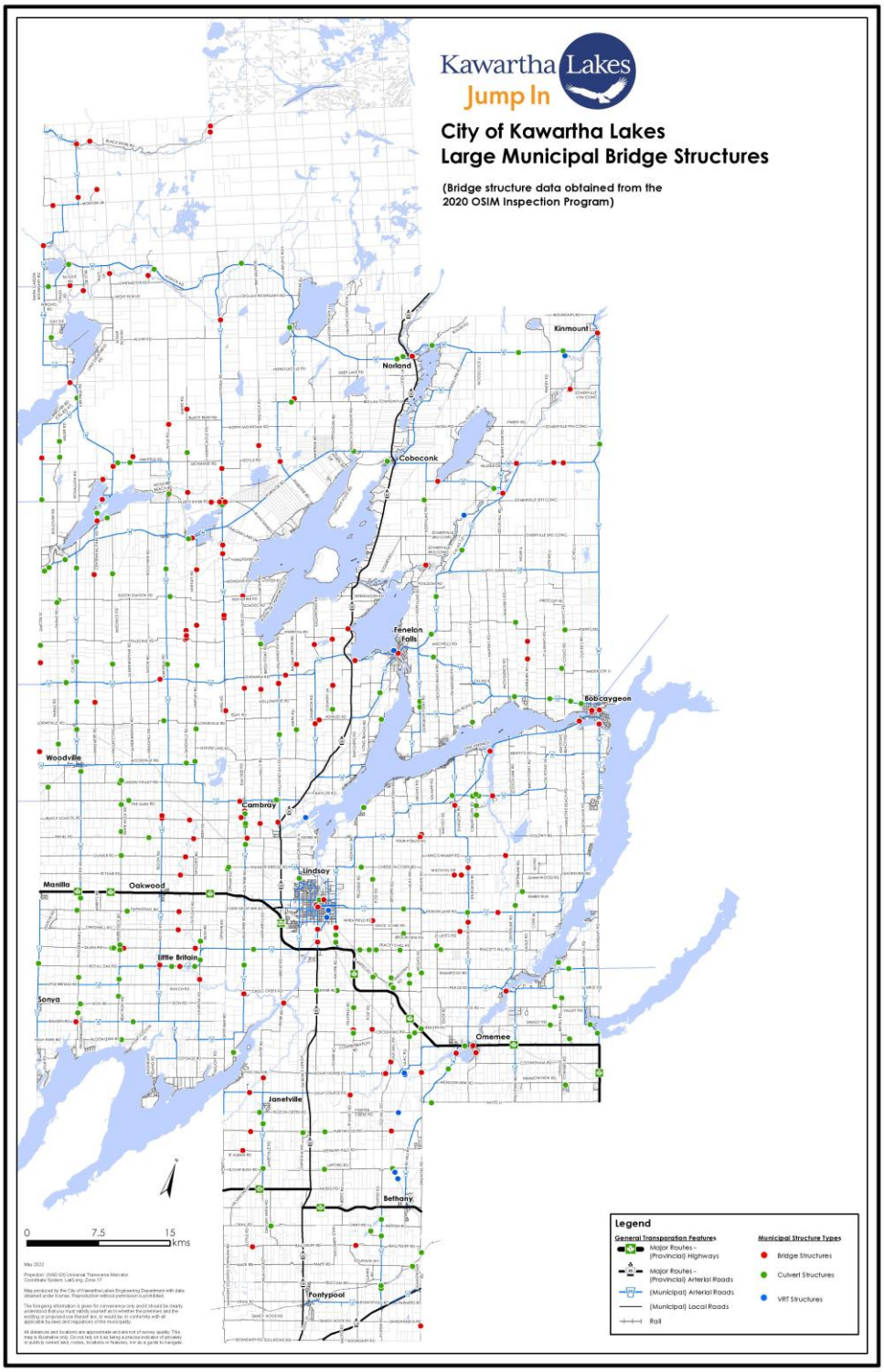
Figure 2-2: Summary Information - Structures



Map 2-1: Roads by Surface Type



Map 2-2: Structures



2.2.2 Condition

The City had the condition of its paved roads assessed in 2021 by D.M. Wills Associates Ltd. Paved roads were assessed using the Pavement Condition Index (PCI). The PCI is measured on a scale from 0 to 100, with 100 being an asset in as-new condition and 0 being a failed asset.

The condition of gravel roads is estimated to be Fair to Good based on the expected outcomes of the gravel resurfacing program and ongoing maintenance activities. Maintenance activities include grading, ditching, brushing, and calcium chloride application multiple times per year. The gravel resurfacing program occurs on a 10-year cycle to bring each gravel road back to Very Good condition every 10 years.

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

Pavement Condition Index (PCI) Range	Condition State	Example Photos	Description[1]
85 ≤ PCI ≤ 100	**Excellent**		A very smooth ride. Pavement is in excellent condition with few cracks.
70 ≤ PCI < 85	**Very Good**		A smooth ride with just a few bumps or depressions. The pavement is in good condition with frequent very slight or slight cracking.
55 ≤ PCI < 70	**Good**		A comfortable ride with intermittent bumps or depressions. The pavement is in fair condition with intermittent moderate and frequent slight cracking, and with intermittent slight or moderate alligatoring and distortion.
40 ≤ PCI < 55	**Fair**		An uncomfortable ride with frequent to extensive bumps or depressions. Cannot maintain the posted speed at lower end of the scale. The pavement is in poor to fair condition with frequent moderate cracking and distortion, and intermittent moderate alligatoring.
25 ≤ PCI < 40	**Poor**		A very uncomfortable ride with constant jarring bumps and depressions. Cannot maintain the posted speed and must steer constantly to avoid bumps and depressions. The pavement is in poor condition with moderate alligatoring and extensive severe cracking and distortion.
10 ≤ PCI < 25	**Very Poor**		The pavement is in poor to very poor condition with extensive severe cracking, alligatoring and distortion.
0 ≤ PCI < 10	**Failed**		

Table 2-4 shows the average condition of roads by surface type. The average condition states for HCB, LCB, and gravel road surfaces are Excellent, Very Good, and Fair to Good respectively.

Table 2-4: Road Condition Analysis – Paved Roads

Road Surface	Centreline-kilometres	Pavement Condition Index (Weighted Average)	Average Condition State
HCB	965	88.1	**Excellent**
LCB	848	73.5	**Very Good**
Gravel	891	Not Applicable	**Fair to Good**

In accordance with O. Reg. 104/97, the City completes biennial inspections of its bridges and culverts following the OSIM. The most recent inspections were completed by TSI Inc. in 2020. Each structure was assigned a Bridge Condition Index (BCI). The BCI 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.

[1] Descriptions are from the SP-024 Manual for Condition Rating of Flexible Pavements (Ontario Ministry of Transportation, 2016)

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

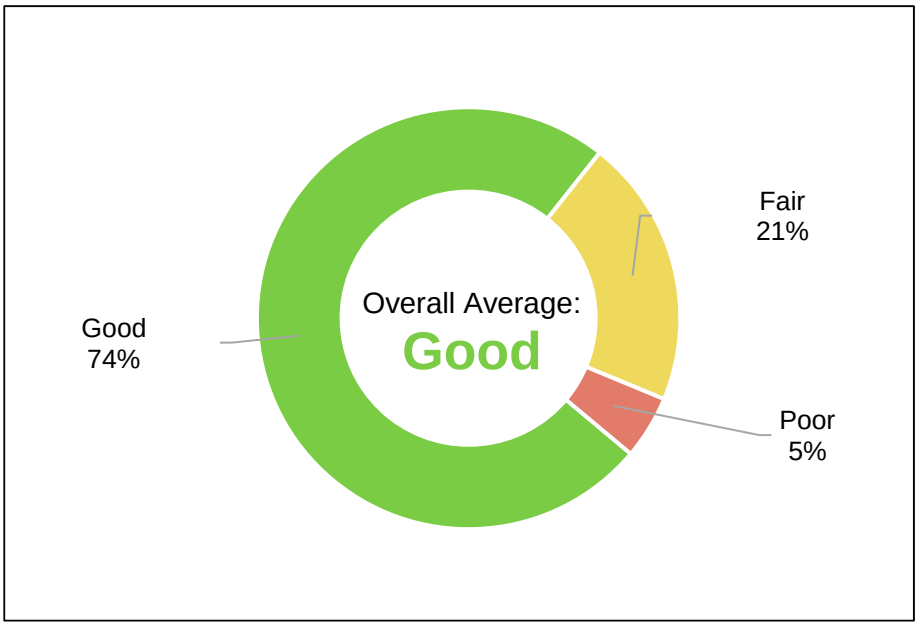
Condition State	Bridge Photos	Culvert Photos	Description
Good 70 ≤ BCI < 100			Maintenance is not usually required within the next five years
Fair 60 ≤ BCI < 70			Maintenance work is usually scheduled within the next five years. This is the ideal time to schedule major structure repairs to get the most out of bridge spending.
Poor 0 ≤ BCI < 60			Maintenance work is usually scheduled within one year. Structure may be at increased risk of requiring a loading restriction to be posted.

The average BCI ratings and corresponding condition states for structures are summarized in Table 2-6 below. On average, vehicle bridges and structural culverts are each in the Good condition state and pedestrian bridges are in the Fair condition state. The distribution of structures (measured by replacement cost) by condition state is presented in Figure 2-3.

Table 2-6: Structure Condition Analysis

Structure Type	Count	Average Condition	Average Condition State
Vehicle Bridges	147	73.1	**Good**
Pedestrian Bridges	11	69.7	**Fair**
Structural Culverts	86	71.4	**Good**
Total	**244**	**72.5**	**Good**

Figure 2-3: Distribution of Structures by Condition State



2.2.3 Current Levels of Service

The levels of service currently provided by the City'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 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 City'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 City's transportation assets enable the movement of people and goods within the City and provide connectivity to regional roads. The City's transportation assets are used by pedestrians, cyclists, horse-drawn buggies, passenger vehicles, heavy transport vehicles, all-terrain vehicles, and emergency vehicles. The Victoria Rail Trail and its pedestrian bridges are used by pedestrians, cyclists, horse riders, all-terrain vehicles, and snowmobiles.
	The scope of the City's transportation network is illustrated by Map 2-1 and Map 2-2. The maps show the geographical distribution of the City's roads and identify locations of the City's structures.
Quality	The City strives to maintain road and bridge surfaces to a level that supports comfortable passage of vehicles.
	To aid in interpreting condition states, photos of roads, bridges, and 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 municipality.	0.144 km/km²
	Number of lane-kilometres of collector roads as a proportion of square kilometres of land area of the City.	0.026 km/km²
	Number of lane-kilometres of local roads as a proportion of square kilometres of land area of the City.	1.553 km/km²
	Percentage of bridges in the City with loading or dimensional restrictions.	5.7%
Quality	For paved roads in the City, the average pavement condition index value.	79.3
	For unpaved roads in the City, the average surface condition (e.g. excellent, good, fair or poor).	Fair to Good[1]
	For bridges in the City, the average bridge condition index value.[2]	73
	For structural culverts[3] in the City, the average bridge condition index value.	71

2.3 Water

2.3.1 State of Local Infrastructure

The water system provides potable water for residential and business consumption, as well as maintenance operations and use by recreational facilities. The City provides water service to just over one-third of properties in the City. The system supports fire flow in Lindsay, Fenelon Falls, Bobcaygeon, and along the water main connecting

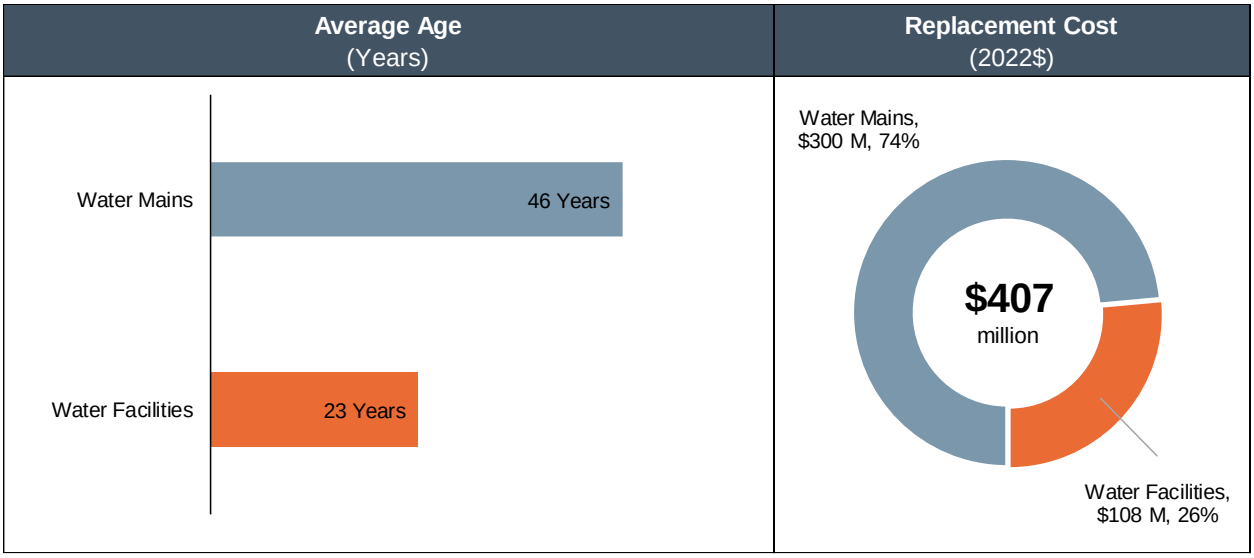
[1] The average condition of gravel roads of is based on expected outcomes from the regravelling program and maintenance activities the City performs on them.
[2] Bridge condition index values are from 2020 for bridges and structural culverts.
[3] Structural culverts are culverts with a diameter greater than or equal to three metres.

Lindsay to Oakwood. Map 2-3 shows the communities with water service. Table 2-9 shows summary information for the City'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 2-4

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

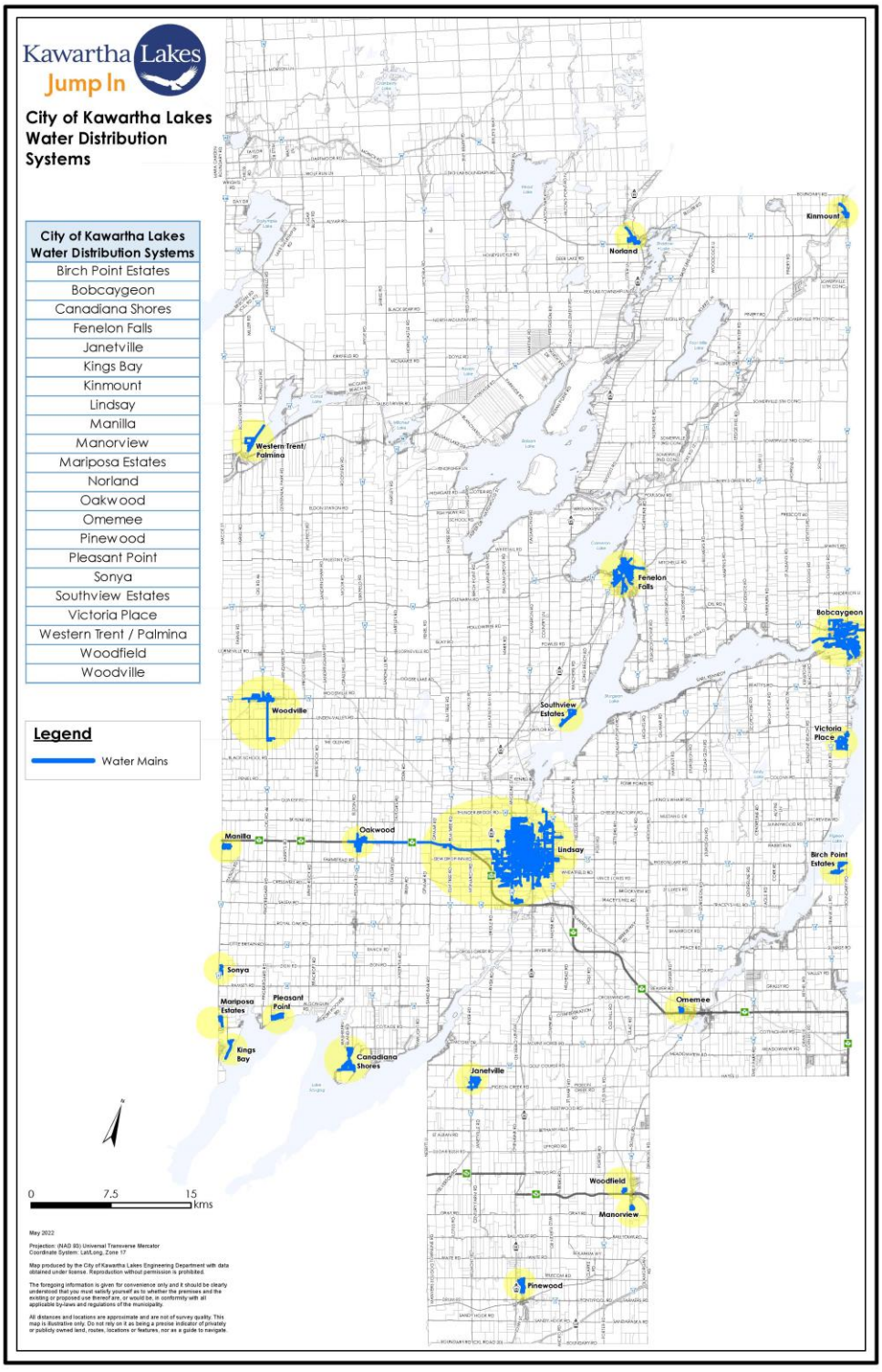
Asset Class	Quantity	Units	Average Age (Years)	Replacement Cost (2022$)
Water Mains	269.9	Kilometres	46[1]	$299,600,000
Water Facilities	30	Number	23	$107,800,000
Total			**36**	**$407,400,000**

Figure 2-4: Summary Information – Water



[1] The average age is calculated based on watermain segments with known ages. Approximately 8% of the network does not have age data.

Map 2-3: Water Service Area



2.3.2 Condition

The condition of the City'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 (ULC%)). A brand-new asset would have a ULC% of 0%, indicating that zero percent of the asset's life expectancy has been utilized. On the other hand, an asset that has reached its life expectancy would have a ULC% of 100%. It is possible for assets to have a ULC% 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 ULC% will be used, the ULC% 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 140% of expected useful life. Beyond 140% 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 ULC%

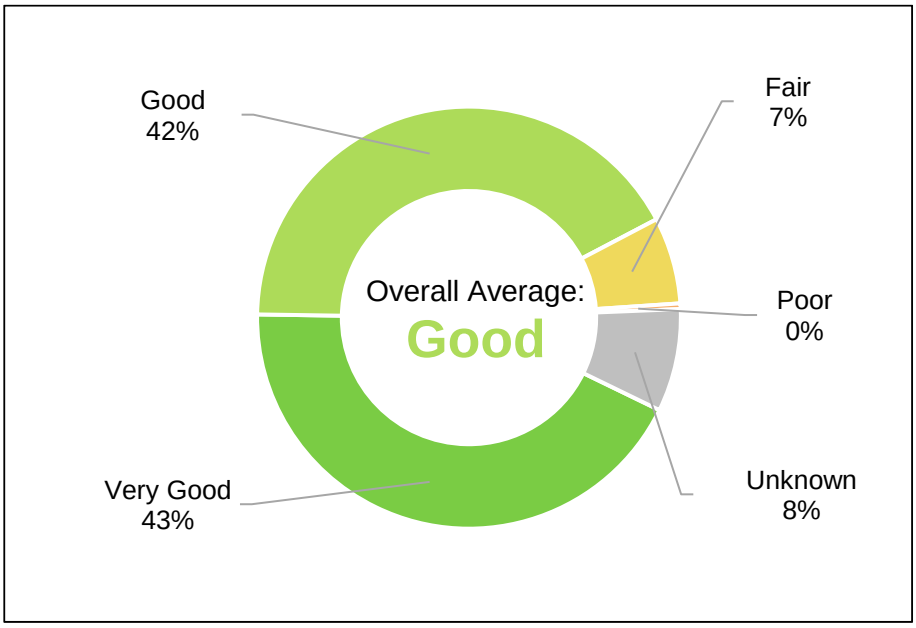
ULC%	Condition State
0% ≤ UL% ≤ 45%	**Very Good**
45% < UL% ≤ 90%	**Good**
90% < UL% ≤ 140%	**Fair**
140% < UL% ≤ 200%	**Poor**
200% < UL%	**Very Poor**

Table 2-11 shows a summary of the age-based condition of water assets along with the corresponding condition state. Figure 2-5 shows the distribution of water assets (measured by replacement cost) by condition state.

Table 2-11: Condition Analysis – Water

Asset Class	Quantity	Units	ULC%	Average Condition State
Water Mains	269.9	Kilometres	49%	Good
Water Facilities	30	Number	52%	Good
Total			**50%**	**Good**

Figure 2-5: Distribution of Water Assets by Condition State



2.3.3 Current Levels of Service

This section provides an overview of the City'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 the following communities: Bethany (Manorview), Bethany (Woodfield), Birch Point, Bobcaygeon, Bolsover (Palmina), Bolsover (Western Trent), Canadiana Shores, Chambers Corner, Coboconk, Fenelon Falls, Janetville, Kings Bay, Kinmount, Lindsay, Manilla, Mariposa, Norland, Oakwood, Omemee (Victoria Glen), Pleasant Point, Pontypool (Pinewood), Sonya, Southview Estates, Victoria Place, and Woodville.
Reliability	The City strives to minimize disruptions to water service.
	Boil water advisories are triggered by adverse water quality reports from routine water testing or from ad hoc tests done after events, such as watermain breaks, that may have allowed contaminants into the system. The City has a standard operating procedure documented for handling boil water advisories (SOP RC 03).
	Service interruptions can be caused by routine municipal work, including watermain replacements, water distribution system repairs, service connection repairs, and maintenance of water system facilities. Customers are informed in advance when feasible of service interruptions, including details regarding the location and timeline of the interruption. Customers are instructed to ensure they have sufficient water supplies on hand, hot water tanks are turned off, and to run their water taps until any discolouration in the water clears once the interruption ends. If the period of interruption is prolonged, a temporary water service may be installed to minimize the impact on customers.

Table 2-13: Technical Levels of Service – Water

Service Attribute	Performance Measure	2021 Performance
Scope	Percentage of properties connected to the municipal water system.	34%
	Percentage of properties where fire flow is available.	28%
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 municipal water system.	0.134 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 municipal water system.	0.018 connection days / connection

2.4 Wastewater

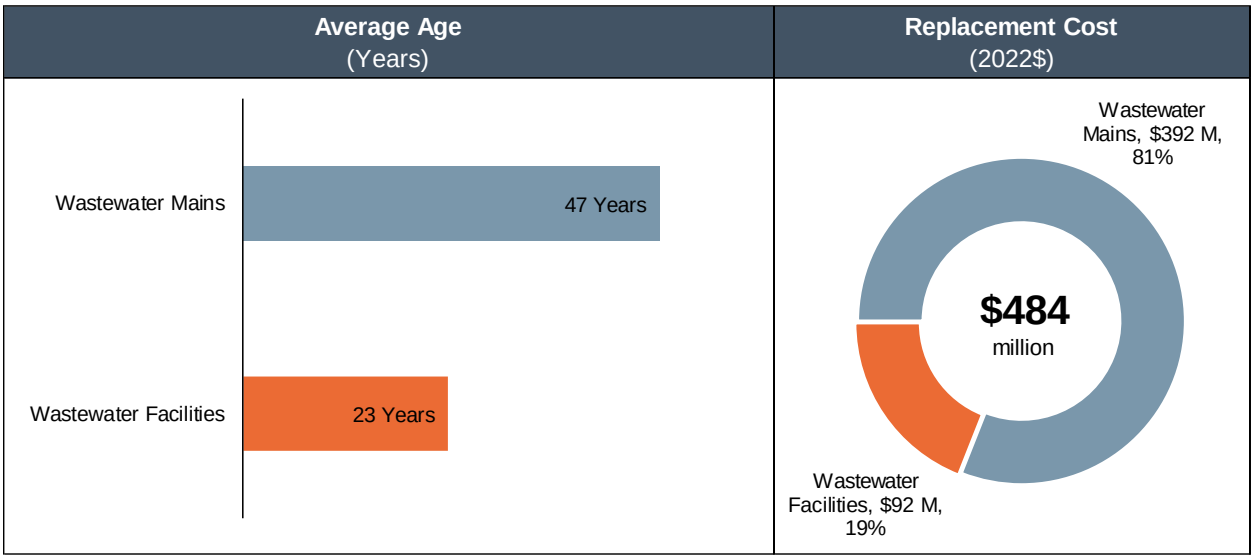
2.4.1 State of Local Infrastructure

The City provides wastewater service to just under one-third of properties in the City. Map 2-4 shows the communities with wastewater service. Table 2-14 shows summary information for the City's wastewater system, including quantities, average ages and replacement costs by asset class. A visual rendering of the data presented in Table 2-14 is provided in Figure 2-6.

Table 2-14: Summary of Quantity, Age, and Replacement Cost by Component - Wastewater

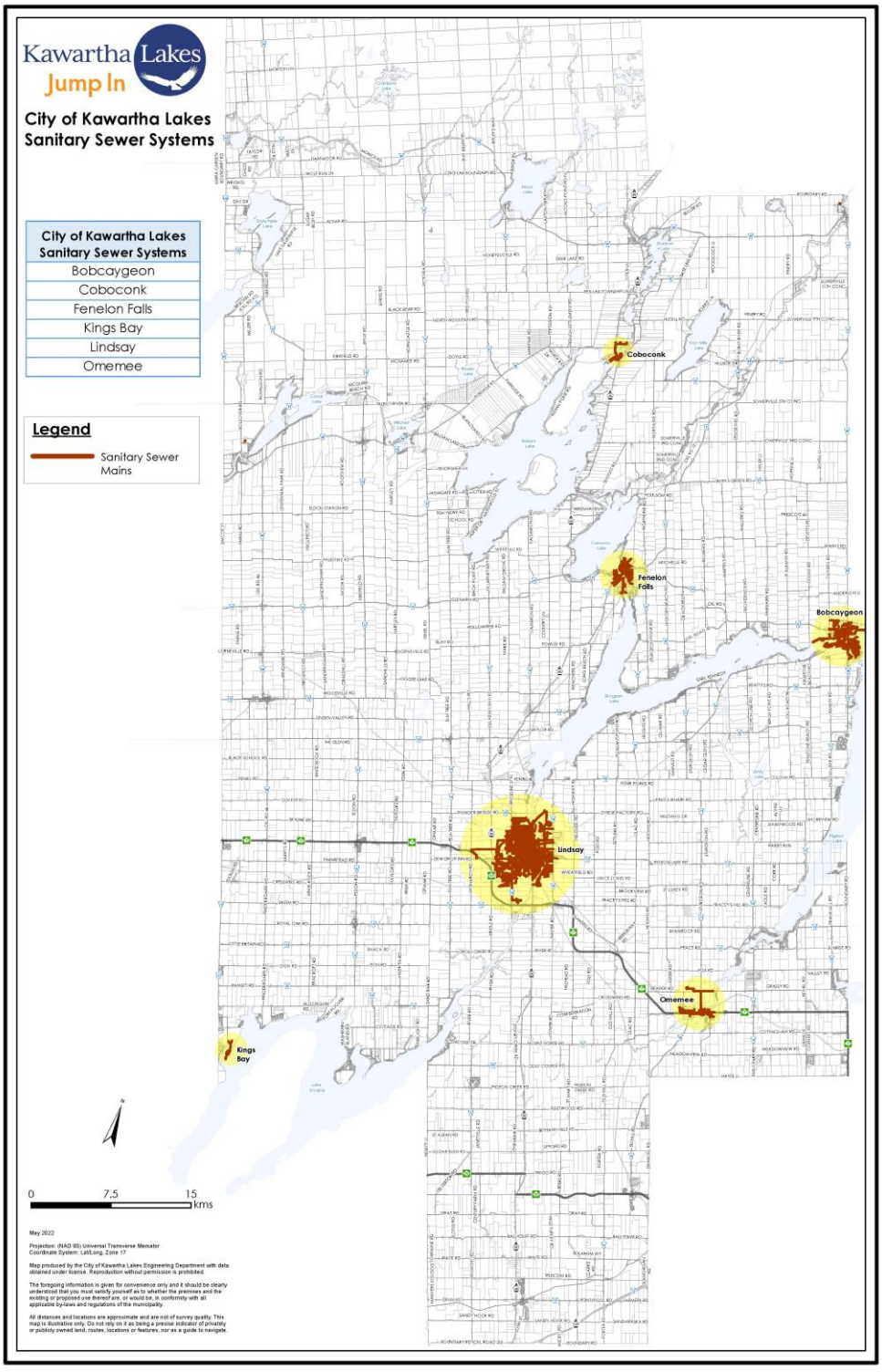
Asset Class	Quantity	Units	Average Age (Years)	Replacement Cost (2022$)
Wastewater Mains	209.3	Kilometres	47[1]	$380,200,000
Wastewater Facilities	44	Number	23	$103,300,000
Total			**42**	**$483,500,000**

Figure 2-6: Summary Information – Wastewater



[1] The average age is calculated based on wastewater main segments with known ages. Approximately 12% of the network does not have age data.

Map 2-4: Wastewater Service Area



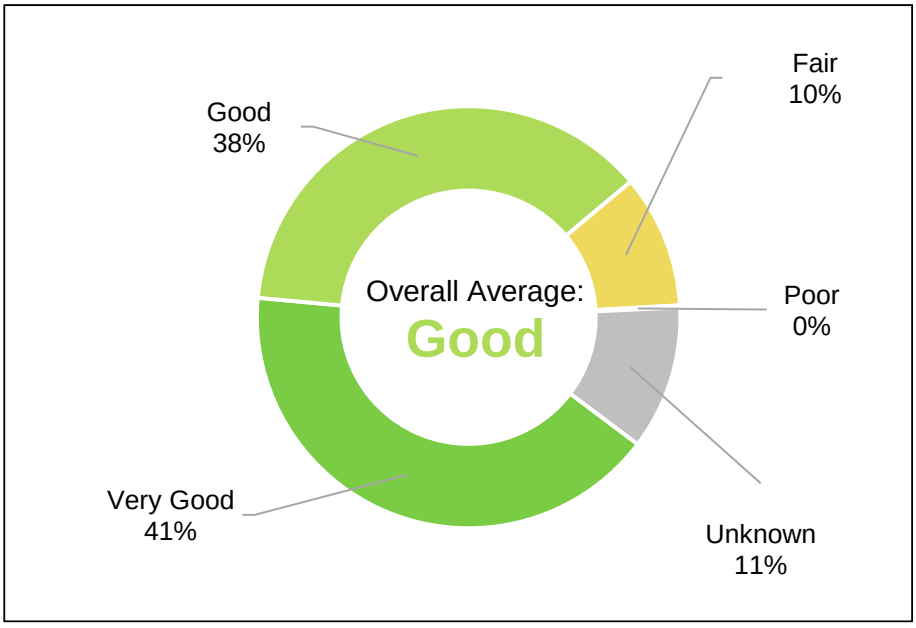
2.4.2 Condition

The condition of the City's wastewater assets has not been directly assessed through a physical condition assessment. In this asset management plan, the condition of the wastewater assets 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 assets in Section 2.3.2. Table 2-15 shows a summary of wastewater asset condition based on age and expected useful life. Figure 2-7 shows the distribution of wastewater assets (measured by replacement cost) by condition state.

Table 2-15: Condition Analysis – Wastewater

Asset Class	Quantity	Units	ULC%	Average Condition State
Wastewater Mains	209.3	Kilometres	52%	Good
Wastewater Facilities	44	Number	53%	Good
Total			**52%**	**Good**

Figure 2-7: Distribution of Wastewater Assets by Condition State



2.4.3 Current Levels of Service

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

Table 2-16: Community Levels of Service – Wastewater

Service Attribute	Community Levels of Service
Scope	Wastewater service is provided to customers in the following communities: Bobcaygeon, Coboconk, Fenelon Falls, Kings Bay, Kinmount, Lindsay, Omemee, and Western Trent / Palmina.
Reliability	The City strives to minimize disruption to wastewater service.
	Stormwater enters sanitary sewers by two routes: inflow and infiltration. Inflow refers to stormwater flows entering into sanitary sewers via manhole cover holes, connected foundation and roof drains, unsealed openings in construction sites, and cross-connections. Infiltration refers to groundwater entering sanitary mains through cracks, holes, failed joints, and incorrect or faulty connections. Wet weather events can significantly and rapidly increase stormwater flows into the wastewater systems through both inflow and infiltration pathways, leading to capacity related issues with sewer mains, pumping stations, and wastewater treatment plants.
	Several strategies are used to prevent sewage from overflowing into streets and backing up into homes when there are wet weather events. The system has capacity to handle flows significantly higher than average daily flows to help address peak flows. If a facility if overwhelmed by excess flows, detention tanks, partial or full bypasses, and/or overflow procedures are used to relieve pressure on overwhelmed facilities. This is done in accordance with the related Environmental Compliance Approval and the operating design of the affected facility. The City has a Backwater Valve Subsidy Program. It allows eligible property owners to apply for a 50% cost recovery on the purchase and installation of a backwater valve. Backwater valves can help prevent basements from flooding.

Table 2-17: Technical Levels of Service – Wastewater

Service Attribute	Performance Measure	2021 Performance
Scope	Percentage of properties connected to the municipal wastewater system.	30%
Reliability	The number of connection-days per year lost due to wastewater backups compared to the total number of properties connected to the municipal wastewater system.	0.0174 connection days / connection
	The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system.	0.00077 violations / connection

2.5 Stormwater

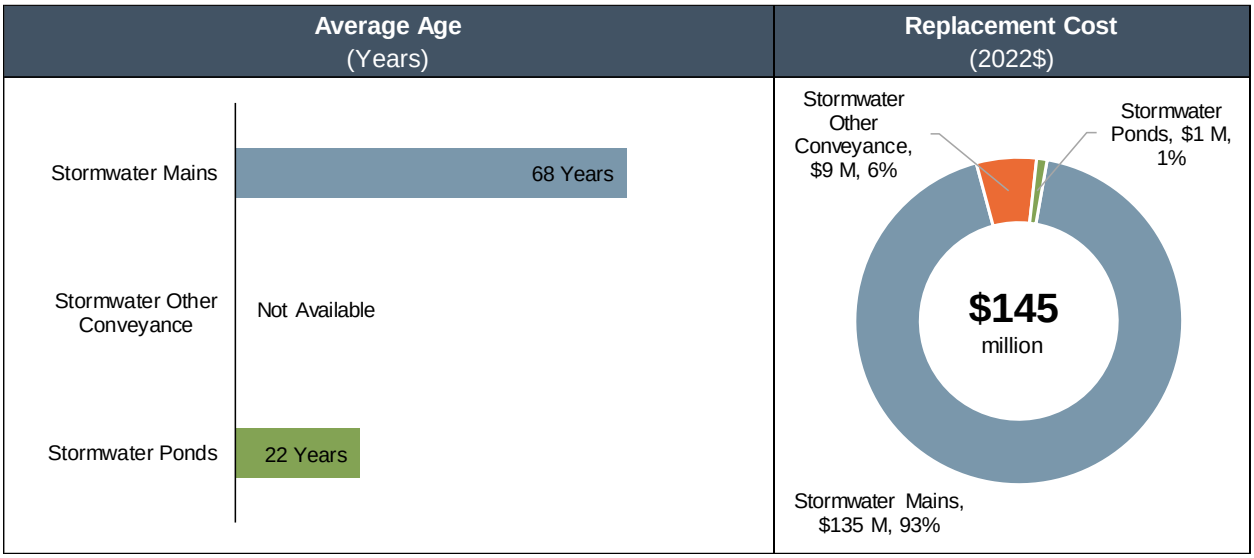
2.5.1 State of Local Infrastructure

The stormwater management system provides for the collection of stormwater in order to protect properties and roads from flooding, to manage the discharge rate into the environment, and to remove contaminants. The City provides stormwater service in 33 communities. Map 2-5 shows the communities with stormwater service. Table 2-18 shows summary information for the City's stormwater system, including quantities, average ages and replacement costs by asset class. A visual rendering of the data presented in Table 2-18 is provided in Figure 2-8

Table 2-18: Summary of Quantity, Age, and Replacement Cost by Asset Class – Stormwater

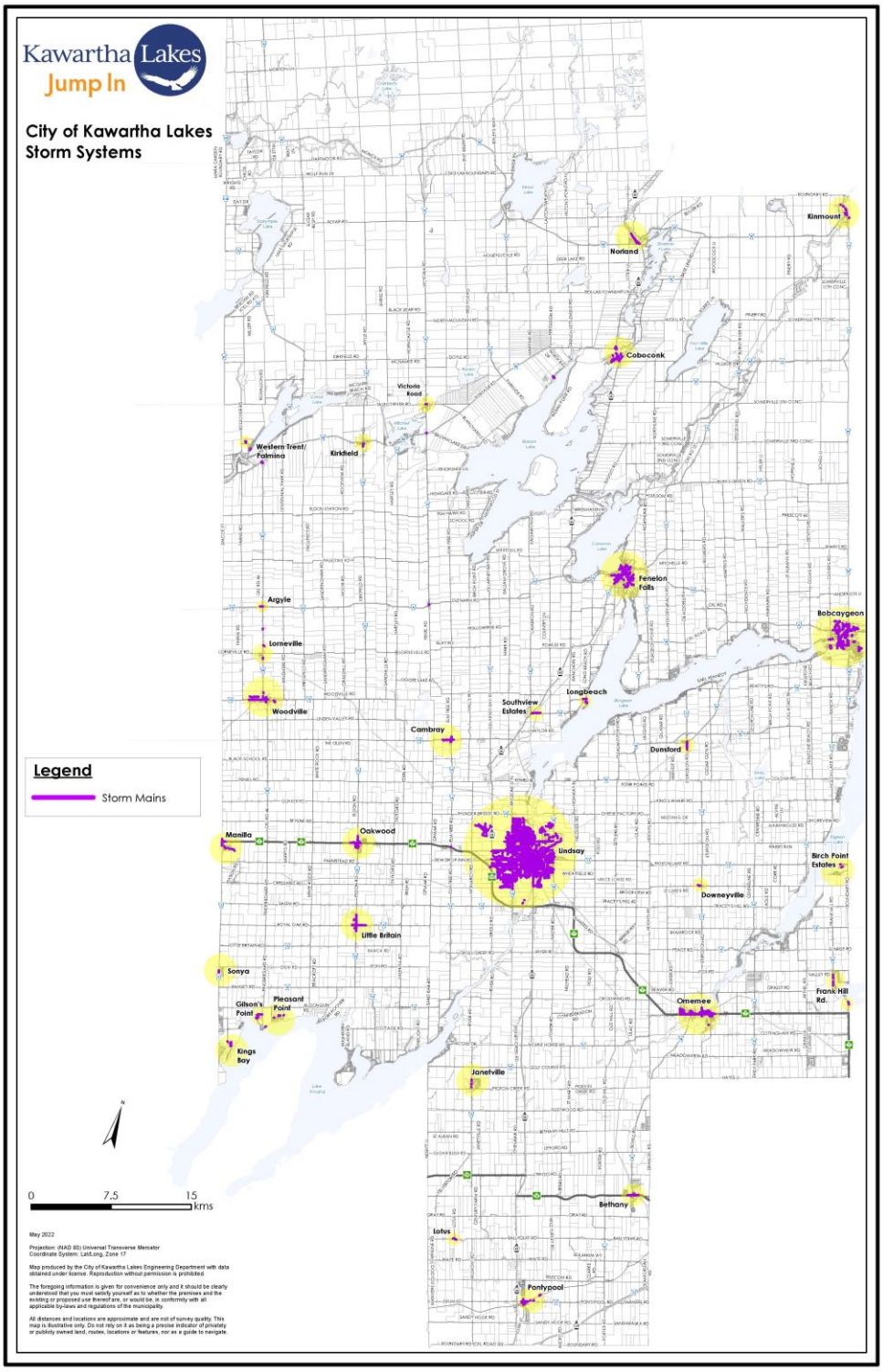
Asset Class	Quantity	Units	Average Age (Years)	Replacement Cost (2022$)
Stormwater Mains[1]	151.3	Kilometres	68[2]	$135,000,000
Stormwater Other Conveyance[3]	8.4	Kilometres	Not Available	$8,600,000
Stormwater Ponds	11	Number	22	$1,500,000
Total			**67**	**$145,100,000**

Figure 2-8: Summary Information – Stormwater



[1] Includes manholes, catch basins, and other appurtenances. The age distribution of these appurtenances is assumed to match the age distribution of the mains.
[2] The average age is calculated based on stormwater main segments with known ages. Approximately 13% of the network does not have age data.
[3] Includes French drains, open channels, and non-structural culverts.

Map 2-5: Stormwater Service Area



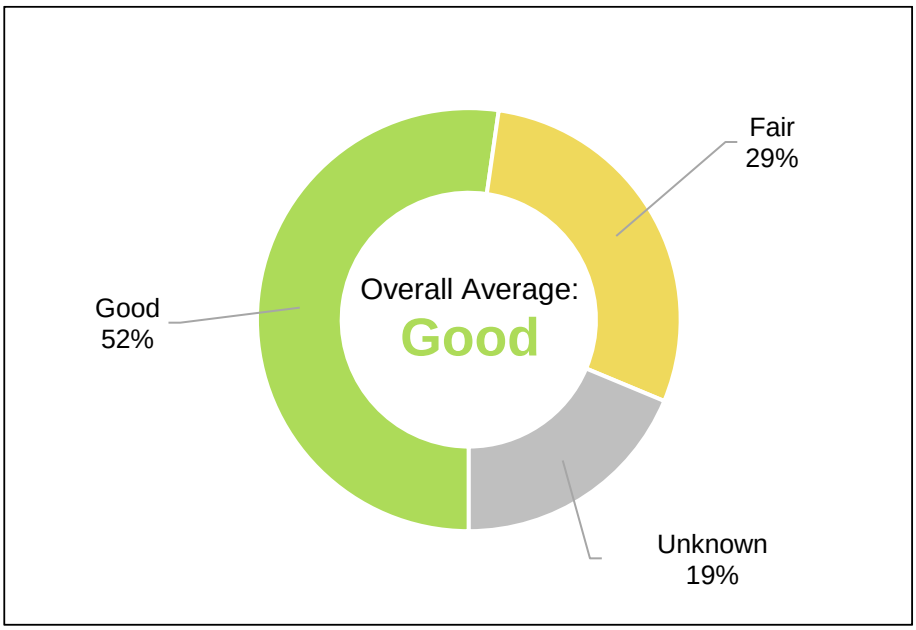
2.5.2 Condition

The condition of the City's stormwater linear assets has not been directly assessed through a physical condition assessment. In this asset management plan, the condition of stormwater linear assets 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 assets in Section 2.3.2. The condition of stormwater other conveyance assets cannot be estimated based on ULC% because age data is not available. The ULC% for stormwater ponds is undefined because they are not replaced. Their condition needs to be assessed directly. The 10-year capital plan includes inspections of the stormwater ponds. Table 2-19 shows a summary of stormwater asset condition based on age and expected useful life. Figure 2-9 shows the distribution of stormwater assets (measured by replacement cost) by condition state.

Table 2-19: Condition Analysis – Stormwater

Asset Class	Quantity	Units	ULC%	Condition State
Stormwater Mains	151.3	Kilometres	87%	Good
Stormwater Other Conveyance	8.4	Kilometres	Not Available	Not Available
Stormwater Ponds	11	Number	Not Applicable	Not Available
Total			**87%**	**Good**

Figure 2-9: Distribution of Stormwater Assets by Condition State



2.5.3 Current Levels of Service

This section provides an overview of the City's level of service framework for stormwater service. The City is not currently able to report on the technical levels of service required by O. Reg. 588/17. They will be included in future updates to the asset management plan.

Table 2-20: Community Levels of Service – Stormwater

Service Attribute	Community Levels of Service
Scope	Stormwater service is provided in the following communities: Bethany (Manorview), Bethany (Woodfield), Birch Point, Bobcaygeon, Bolsover (Palmina), Bolsover (Western Trent), Canadiana Shores, Chambers Corner, Coboconk, Fenelon Falls, Janetville, Kings Bay, Kinmount, Lindsay, Manilla, Mariposa, Norland, Oakwood, Omemee (Victoria Glen), Pleasant Point, Pontypool (Pinewood), Sonya, Southview Estates, Victoria Place, and Woodville.

Table 2-21: Technical Levels of Service – Stormwater

Service Attribute	Performance Measure	2021 Performance
Scope	Percentage of properties in municipality resilient to a 100-year storm.	Not Available
	Percentage of the municipal stormwater management system resilient to a 5-year storm.	Not Available

2.6 Population and Employment Growth

According to the 2021 census, the City's 2021 population was 79,247. Employment data from the 2021 census are not yet available, however the City had estimated employment of 17,578 in 2019. By 2031, the City's population is anticipated to reach 100,000 and employment to reach 27,000, based on the City's approved Official Plan.

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 City's 2019 Development Charges Background Study and are funded through development charges imposed on new development. Utilizing development charges helps ensure that the effects of future population and employment growth do not increase the cost of maintaining levels of service for existing tax and rate payers.

The estimated capital expenditures to address capacity pressures resulting from growth are included in the 10-year capital forecasts presented in the next chapter of this report.

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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.[1] 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.[2] 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 City to maintain current levels of service.

[1] Future iterations of the City's asset management plan will include proposed levels of service and the lifecycle management strategy will identify the lifecycle activities that would need to be undertaken to provide the proposed levels of service,

[2] 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 City's roads and structures at the current level of service. The estimate is based on a 10-year capital forecast maintained by City staff.

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 $33 million.

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

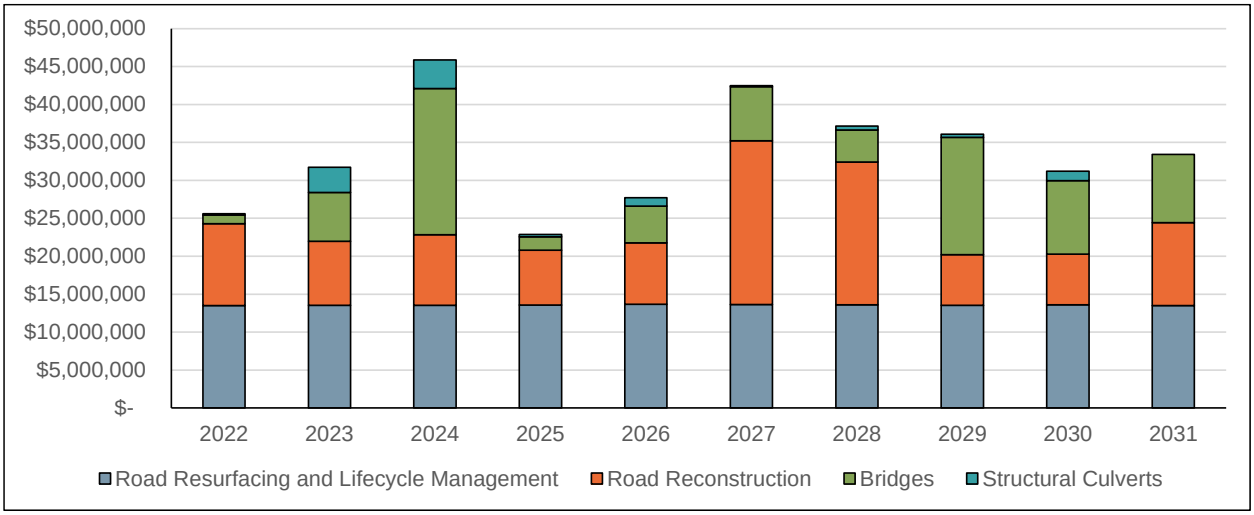

Table 3-1: Lifecycle Expenditure Forecast for Roads and Structures (2022$)

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Roads										
Urban/Arterial Resurfacing	$6,271,000	$6,271,000	$6,271,000	$6,271,000	$6,271,000	$6,271,000	$6,271,000	$6,271,000	$6,271,000	$6,271,000
Rural Resurfacing	$3,690,000	$3,690,000	$3,690,000	$3,690,000	$3,690,000	$3,690,000	$3,690,000	$3,690,000	$3,690,000	$3,690,000
Lifecycle Management	$1,737,000	$1,737,000	$1,737,000	$1,737,000	$1,737,000	$1,737,000	$1,737,000	$1,737,000	$1,737,000	$1,737,000
Urban/Rural Reconstruction	$10,790,100	$8,454,600	$9,319,500	$7,225,200	$8,061,300	$21,569,400	$18,828,900	$6,685,200	$6,685,200	$10,919,700
Gravel Resurfacing	$1,785,756	$1,822,088	$1,836,291	$1,864,201	$1,990,871	$1,951,070	$1,898,718	$1,833,484	$1,897,396	$1,806,564
Subtotal Roads	**$24,273,856**	**$21,974,688**	**$22,853,791**	**$20,787,401**	**$21,750,171**	**$35,218,470**	**$32,425,618**	**$20,216,684**	**$20,280,596**	**$24,424,264**
Structures										
Bridges	$1,149,500	$6,420,750	$19,250,000	$1,766,350	$4,847,825	$7,125,325	$4,222,525	$15,447,825	$9,689,725	$9,014,175
Culverts	$185,000	$3,342,750	$3,770,375	$321,000	$1,101,000	$136,000	$516,250	$416,500	$1,238,750	$0
Subtotal Structures	**$1,334,500**	**$9,763,500**	**$23,020,375**	**$2,087,350**	**$5,948,825**	**$7,261,325**	**$4,738,775**	**$15,864,325**	**$10,928,475**	**$9,014,175**
Total	**$25,608,356**	**$31,738,188**	**$45,874,166**	**$22,874,751**	**$27,698,996**	**$42,479,795**	**$37,164,393**	**$36,081,009**	**$31,209,071**	**$33,438,439**

3.3 Water and Wastewater Services

This section presents a preliminary estimate of the costs associated with maintaining current level of service for water and wastewater. The estimate is based on a 10-year capital forecast maintained by City staff.

The ten-year lifecycle expenditure forecast for water and wastewater infrastructure is summarized in Figure 3-2. The lifecycle expenditure forecast is provided in tabular form in Table 3-2. Average annual expenditures over the forecast period have been estimated at approximately $8.0 million.

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

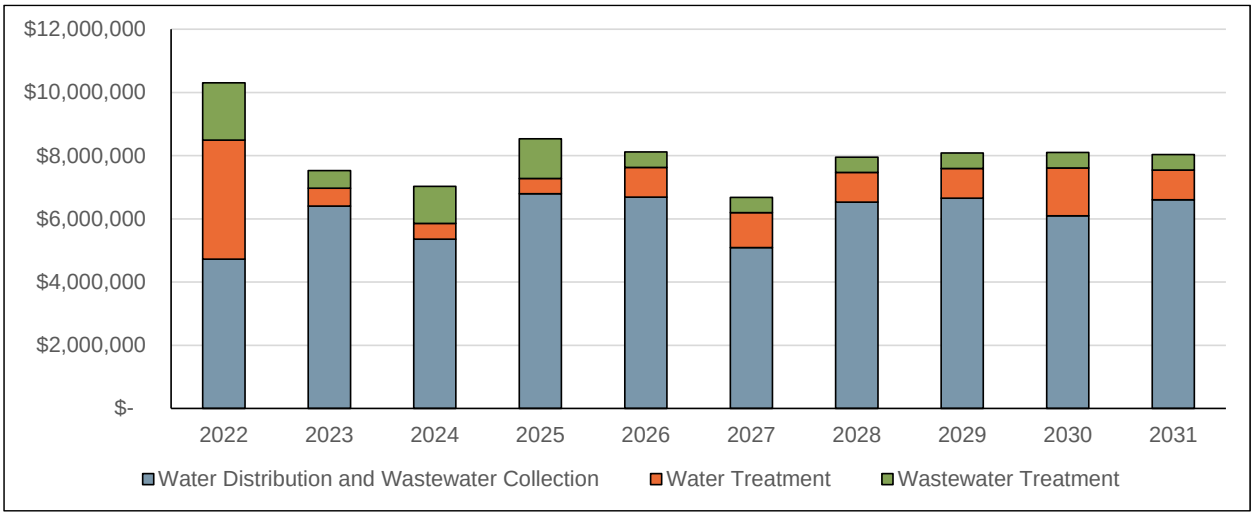

Table 3-2: Lifecycle Expenditure Forecast for Water and Wastewater Infrastructure (2022$)

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Water Distribution and Wastewater Collection	$4,726,400	$6,407,200	$5,355,000	$6,796,000	$6,689,000	$5,091,000	$6,526,000	$6,656,000	$6,094,000	$6,603,000
Water Treatment	$3,766,500	$565,000	$501,000	$483,000	$940,000	$1,102,000	$940,000	$940,000	$1,519,000	$940,000
Wastewater Treatment	$1,810,500	$553,000	$1,170,000	$1,253,000	$488,167	$488,167	$488,167	$488,167	$488,167	$488,167
Total	**$10,303,400**	**$7,525,200**	**$7,026,000**	**$8,532,000**	**$8,117,167**	**$6,681,167**	**$7,954,167**	**$8,084,167**	**$8,101,167**	**$8,031,167**

3.4 Stormwater Services

This section presents a preliminary estimate of the costs associated with maintaining current level of service for stormwater. The estimate is based on a 10-year capital forecast maintained by City staff.

The ten-year lifecycle expenditure forecast for stormwater infrastructure is summarized in Figure 3-3. The lifecycle expenditure forecast is provided in tabular form in Table 3-3. Average annual expenditures over the forecast period have been estimated at approximately $1.3 million.

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

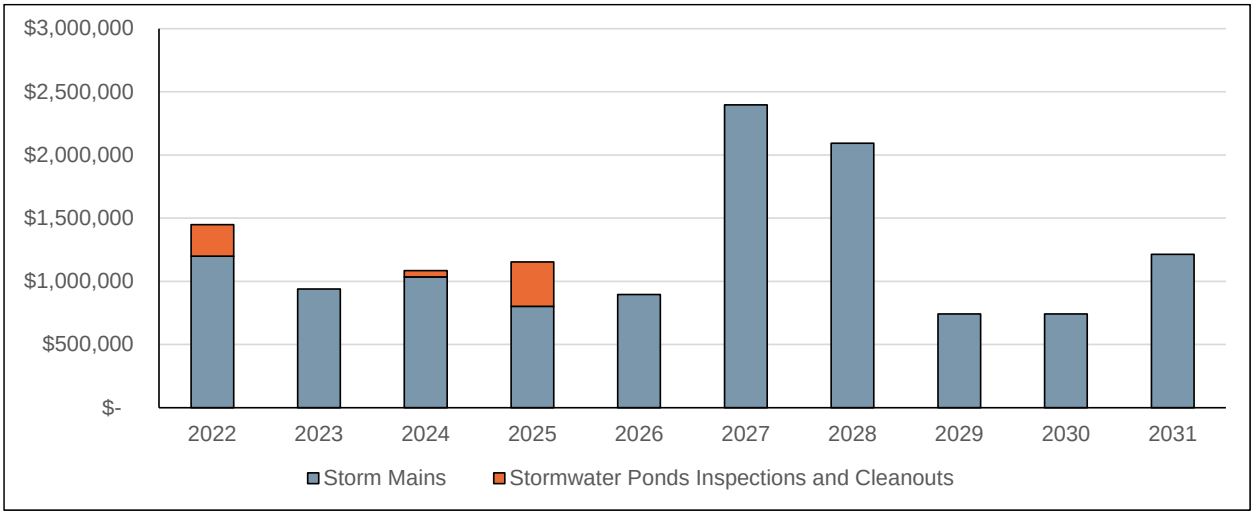

Table 3-3: Lifecycle Expenditure Forecast for Stormwater Infrastructure (2022$)

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Storm Mains	$1,198,900	$939,400	$1,035,500	$802,800	$895,700	$2,396,600	$2,092,100	$742,800	$742,800	$1,213,300
Stormwater Ponds Inspections and Cleanouts	$250,000	$0	$50,000	$350,000	$0	$0	$0	$0	$0	$0
Total	**$1,448,900**	**$939,400**	**$1,085,500**	**$1,152,800**	**$895,700**	**$2,396,600**	**$2,092,100**	**$742,800**	**$742,800**	**$1,213,300**

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 City'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 City to maintain current levels of service. The plan is based on the best information available to the City at this time. The City is actively working on further expanding the asset management plan to include all City assets, to have targets set for levels of service performance measures, and to include a detailed financial strategy. The ongoing expansion of the AMP will ensure the City's compliance with the July 1, 2024 and July 1, 2025 requirements of O. Reg. 588/17.

Beyond regulatory compliance, the City should continue working on integrating asset management planning with other municipal financial and planning documents. Furthermore, the City will need to establish processes for reviewing and updating assumptions underlying the asset management plan on a regular basis to keep the plan relevant and reliable.