Asset Management Plan 2024

The Nation Municipality

January 2025

psdcitywide

This Asset Management Plan was prepared by:

Empowering your organization through advanced asset management, budgeting & GIS solutions

Key Statistics

$411m	2023 Replacement Cost of Asset Portfolio
$78k	Replacement Cost of Infrastructure Per Household
73%	Percentage of Assets in Fair or Better Condition
92%	Percentage of Assets with Assessed Condition Data
$7.8m	Annual Capital Infrastructure Deficit
15 Years	Recommended Timeframe for Eliminating Annual Infrastructure Deficit
2.8%	Target Investment Rate
1.0%	Actual Investment Rate

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1. Executive Summary

Municipal infrastructure delivers critical services that are foundational to the economic, social, and environmental health and growth of a community. The goal of asset management is to enable infrastructure to deliver an adequate level of service in the most cost-effective manner. This involves the ongoing review and update of infrastructure information and data alongside the development and implementation of asset management strategies and long-term financial planning.

1.1 Scope

This Asset Management Plan (AMP) identifies the current practices and strategies that are in place to manage public infrastructure and makes recommendations where they can be further refined. Through the implementation of sound asset management strategies, The Nation Municipality can ensure that public infrastructure is managed to support the sustainable delivery of municipal services.

This AMP includes the following asset categories:

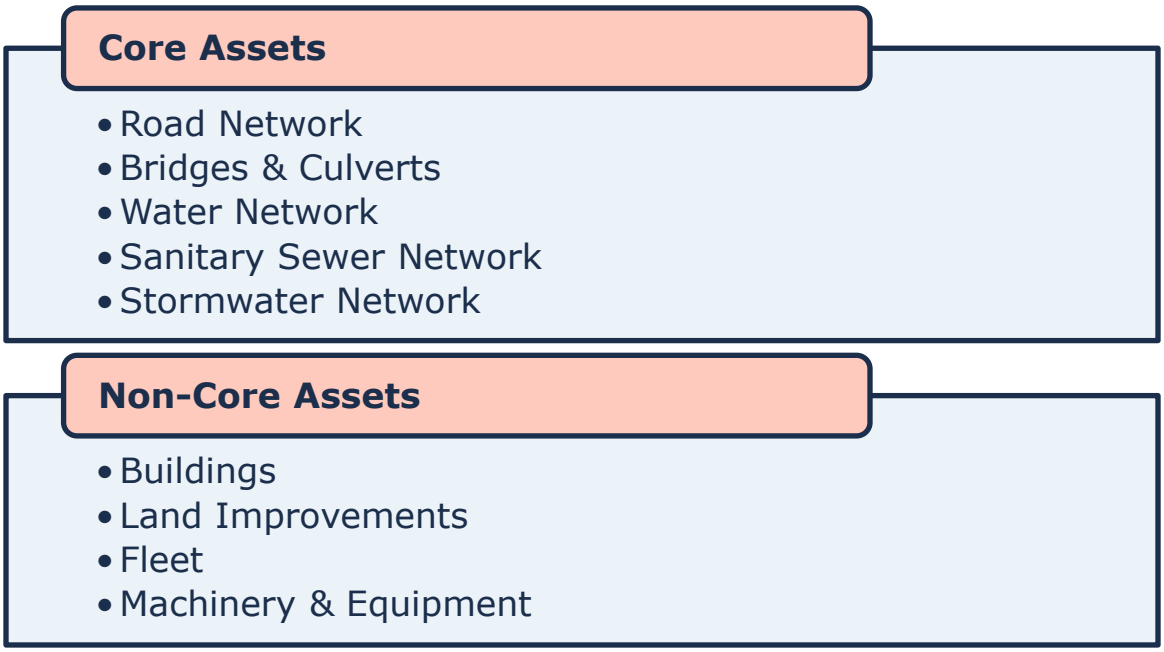

Figure 1 Core and Non-Core Asset Categories

1.2 O. Reg. 588/17 Compliance

With the development of this AMP the Municipality has achieved compliance with July 1, 2024, requirements under O. Reg. 588/17. This includes requirements for levels of service and inventory reporting for all asset categories. More details on compliance can be found in section *2.5.1 O. Reg. 588/17 Compliance Review*.

1.3 Findings

The overall replacement cost of the asset categories included in this AMP totals $411 million. 73% of all assets analyzed in this AMP are in fair or better condition and assessed condition data was available for 92% of assets. For the remaining 8% of assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.

The development of a long-term, sustainable financial plan requires an analysis of whole lifecycle costs. This AMP uses a combination of proactive lifecycle strategies and replacement only strategies to determine the lowest cost option to maintain the current level of service.

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Municipality's average annual capital requirement totals $11.6 million. Based on a historical analysis of sustainable capital funding sources, the Municipality is committing approximately $3.8 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $7.8 million. The values presented in this report are based on current day costs and do not account for inflation or projected growth.

It is important to note that this AMP represents a snapshot in time and is based on the best available processes, data, and information at the Municipality. Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources.

1.4 Recommendations

A financial strategy was developed to address the annual capital funding gap. The following graphics show the annual tax/rate change required to eliminate the Municipality's infrastructure deficit based on a 15-year plan for tax funded assets and 20-year plan for rate funded assets:

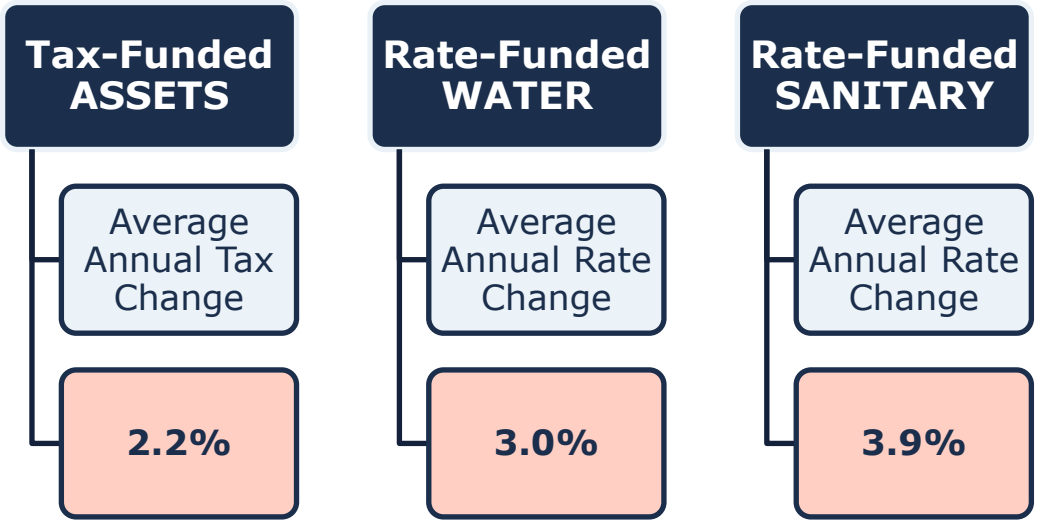

Figure 2 Proposed Tax/Rate Changes

2. Introduction & Context

2.1 Community Profile

Census Characteristic	The Nation Municipality	Ontario
Population 2021	13,350	14,223,942
Population Change 2016-2021	4.2%	5.8%
Total Private Dwellings	5,259	5,929,250
Population Density	20.3/km2	15.9/km^2
Land Area	658.93 km2	892,411.76 km^2

Table 1 The Nation Municipality Community Profile

The Nation Municipality is a lower-tier municipality, part of United Counties of Prescott and The Nation, which is located within eastern Ontario. It is situated directly between Ottawa and Montreal.

The Nation was incorporated in 1998. The incorporation was part of a provincial initiative in Ontario to reduce the number of municipalities through amalgamation. This effort aimed to streamline services, improve governmental efficiency, and reduce administrative costs by combining smaller municipalities into larger municipal governments. The amalgamation of The Nation involved the merging of the former municipalities of Caledonia, Cambridge, South Plantagenet, and the Village of St-Isidore.

The region is characterized by its rural setting and natural landscapes, primarily agricultural with expanses of farmland and forested areas. It includes the South Nation River, which is a central feature, enhancing the area's biodiversity and offering recreational water activities. The region's rural charm is paired with a culturally diverse community, blending Francophone and Anglophone influences, which adds to its unique character.

Demand in the Municipality is primarily driven by the residential and recreational needs of its population. As urban centers in Ontario continue to grow, there is an increasing demand for more rural and semi-rural living spaces, which The Nation can offer due to its scenic environment and lower cost of living. Furthermore, the area attracts those interested in outdoor and recreational activities, including fishing, hiking, and bird watching along the South Nation River. This demand is also fueled by the municipality’s efforts to develop its infrastructure and services, making it more appealing for new residents and businesses looking to establish themselves in a less congested yet accessible region.

2.2 Climate Change

Climate change can cause severe impacts on human and natural systems around the world. The effects of climate change include increasing temperatures, higher levels of precipitation, droughts, and extreme weather events. In 2019, Canada's Changing Climate Report (CCCR 2019) was released by Environment and Climate Change Canada (ECCC).

The report revealed that between 1948 and 2016, the average temperature increase across Canada was 1.7°C; moreover, during this time period, Northern Canada experienced a 2.3°C increase. The temperature increase in Canada has doubled that of the global average. If emissions are not significantly reduced, the temperature could increase by 6.3°C in Canada by the year 2100 compared to 2005 levels. Observed precipitation changes in Canada include an increase of approximately 20% between 1948 and 2012. By the late 21st century, the projected increase could reach an additional 24%. During the summer months, some regions in Southern Canada are expected to experience periods of drought at a higher rate. Extreme weather events and climate conditions are more common across Canada. Recorded events include droughts, flooding, cold extremes, warm extremes, wildfires, and record minimum arctic sea ice extent.

The changing climate poses a significant risk to the Canadian economy, society, environment, and infrastructure. The impacts on infrastructure are often a result of climate-related extremes such as droughts, floods, higher frequency of freeze-thaw cycles, extended periods of high temperatures, high winds, and wildfires. Physical infrastructure is vulnerable to damage and increased wear when exposed to these extreme events and climate variabilities. Canadian Municipalities are faced with the responsibility to protect their local economy, citizens, environment, and physical assets.

2.2.1 The Nation Municipality Climate Profile

The Nation Municipality, located in eastern Ontario, is within the United Counties of Prescott and Russell. The Municipality is expected to experience notable effects of climate change which include higher average annual temperatures, an increase in total annual precipitation, and an increase in the frequency and severity of extreme events. According to Climatedata.ca – a collaboration supported by Environment and Climate Change Canada (ECCC) – The Nation Municipality may experience the following trends:

Higher Average Annual Temperature:

- Between the years 1971 and 2000 the annual average temperature was 5.8 ºC
- Under a high emissions scenario, the annual average temperatures are projected to increase by 4.8 ºC by the year 2050 and over 6.6 ºC by the end of the century.

Increase in Total Annual Precipitation:

- Under a high emissions scenario, The Nation is projected to experience an 13% increase in precipitation by the year 2051 and a 16% increase by the end of the century.

Increase in Frequency of Extreme Weather Events:

- It is expected that the frequency and severity of extreme weather events will change.

2.2.2 Integration of Climate Change and Asset Management

Asset management practices aim to deliver sustainable service delivery - the delivery of services to residents today without compromising the services and well-being of future residents. Climate change threatens sustainable service delivery by reducing the useful life of an asset and increasing the risk of asset failure. Desired levels of service can be more difficult to achieve as a result of climate change impacts such as flooding, high heat, drought, and more frequent and intense storms.

In order to achieve sustainable delivery of services, climate change considerations should be incorporated into asset management practices. The integration of asset management and climate change adaptation observes industry's best practices and enables the development of a holistic approach to risk management.

2.3 Asset Management Overview

Municipalities are responsible for managing and maintaining a broad portfolio of infrastructure assets to deliver services to the community. The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio.

The acquisition of capital assets accounts for only 10-20% of their total cost of ownership. The remaining 80-90% comes from operations and maintenance. This AMP focuses its analysis on the capital costs to maintain, rehabilitate and replace existing municipal infrastructure assets.

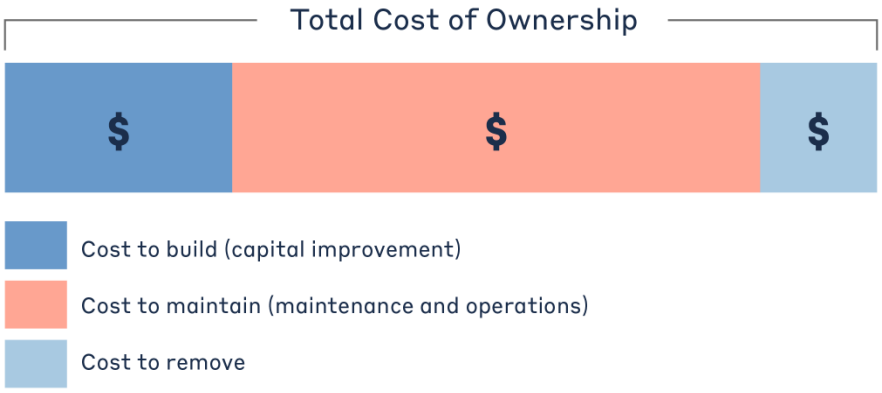

Figure 3 Total Cost of Asset Ownership

These costs can span decades, requiring planning and foresight to ensure financial responsibility is spread equitably across generations. An asset management plan is critical to this planning, and an essential element of a broader asset management program.

This industry standard, defined by the Institute of Asset Management (IAM), emphasizes the alignment between the corporate strategic plan and various asset management documents. The strategic plan has a direct, and cascading impact on asset management planning and reporting.

2.3.1 Foundational Asset Management Documentation

The industry-standard approach and sequence to developing a practical asset management program begins with a Strategic Plan, followed by an Asset Management Policy and an Asset Management Strategy, concluding with an Asset Management Plan.

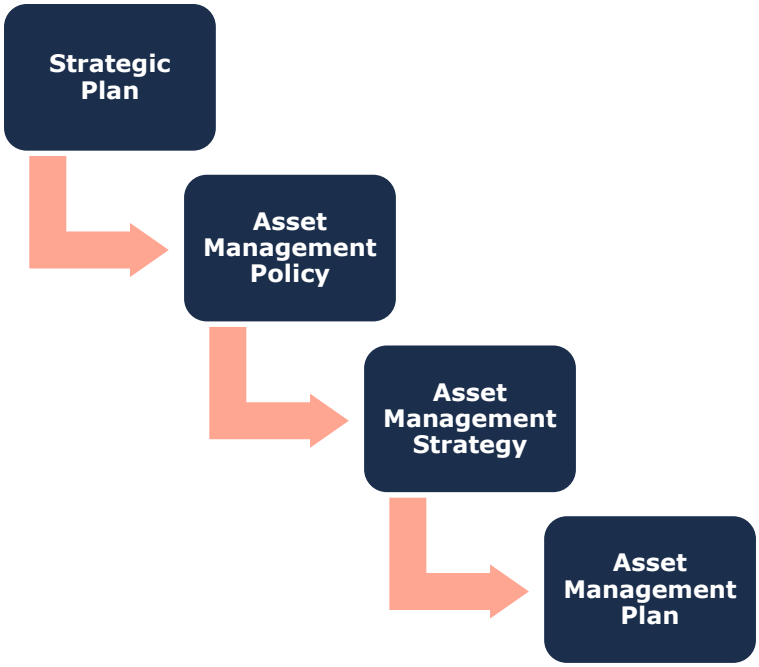

Figure 4 Foundational Asset Management Documents

This industry standard, defined by the Institute of Asset Management (IAM), emphasizes the alignment between the corporate strategic plan and various asset management documents. The strategic plan has a direct, and cascading impact on asset management planning and reporting.

Asset Management Policy

An asset management policy represents a statement of the principles guiding the Municipality's approach to asset management activities. It aligns with the organizational strategic plan and provides clear direction to municipal staff on their roles and responsibilities as part of the asset management program.

The Nation adopted their Strategic Asset Management Policy on June 24, 2019, in accordance with Ontario Regulation 588/17. The policy provides a foundation for the development of an asset management program within the Municipality. It covers key components that define a comprehensive asset management policy:

- The policy's purpose dictates the use of asset management practices to ensure all assets meet the agreed levels of service in the most efficient and effective manner;
- the policy commits to, where appropriate, incorporating asset management in the Municipality's other plans;
- there are formally defined roles and responsibilities of internal staff and stakeholders;

- the guiding principles include the use of a cost/benefit analysis in the management of risk; and
- the policy statements are well defined.

Asset Management Strategy

An asset management strategy outlines the translation of organizational objectives into asset management objectives and provides a strategic overview of the activities required to meet these objectives. It provides greater detail than the policy on how the Municipality plans to achieve asset management objectives through planned activities and decision-making criteria.

The Municipality's Asset Management Policy contains many of the key components of an asset management strategy and may be expanded on in future revisions or as part of a separate strategic document.

Asset Management Plan

The asset management plan (AMP) presents the outcomes of the Municipality's asset management program and identifies the resource requirements needed to achieve a defined level of service. The AMP typically includes the following content:

- State of Infrastructure
- Asset Management Strategies
- Levels of Service
- Financial Strategies

The AMP is a living document that should be updated regularly as additional asset and financial data becomes available. This will allow the Municipality to re-evaluate the state of infrastructure and identify how the organization's asset management and financial strategies are progressing.

The Municipality's last iteration of the AMP was completed in 2022. Since then, the asset inventory has undergone revisions and updates. This document is an AMP that uses the updated asset inventory and has been prepared in accordance with O. Reg. 588/17.

2.3.2 Key Concepts in Asset Management

Effective asset management integrates several key components, including lifecycle management, risk & criticality, and levels of service. These concepts are applied throughout this asset management plan and are described below in greater detail.

Lifecycle Management Strategies

The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including asset characteristics, location, utilization, maintenance history and environment. Asset deterioration has a negative effect on the ability of an asset to fulfill its intended function, and may be characterized by increased cost, risk and even service disruption.

To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

There are several field intervention activities that are available to extend the life of an asset. These activities can be generally placed into one of three categories: maintenance, rehabilitation, and replacement. The following table provides a description of each type of activity and the general difference in cost.

Depending on initial lifecycle management strategies, asset performance can be sustained through a combination of maintenance and rehabilitation, but at some point, replacement is required. Understanding what effect these activities will have on the lifecycle of an asset, and their cost, will enable staff to make better recommendations.

Lifecycle Activity	Cost	Typical Associated Risks
Maintenance Activities that prevent defects or deteriorations from occurring	**$**	• Balancing limited resources between planned maintenance and reactive, emergency repairs and interventions; • Diminishing returns associated with excessive maintenance activities, despite added costs; • Intervention selected may not be optimal and may not extend the useful life as expected, leading to lower payoff and potential premature asset failure;
Rehabilitation/ Renewal Activities that rectify defects or deficiencies that are already present and may be affecting asset performance	**$$$**	• Useful life may not be extended as expected; • May be costlier in the long run when assessed against full reconstruction or replacement; • Loss or disruption of service, particularly for underground assets;
Replacement/ Reconstruction Asset end-of-life activities that often involve the complete replacement of assets	**$$$$$**	• Incorrect or unsafe disposal of existing asset; • Costs associated with asset retirement obligations; • Substantial exposure to high inflation and cost overruns; • Replacements may not meet capacity needs for a larger population; • Loss or disruption of service, particularly for underground assets;

Table 2 Lifecycle Management: Typical Lifecycle Interventions

The Municipality's approach to lifecycle management is described within each asset category outlined in this AMP. Staff will continue to evolve and innovate current practices for developing and implementing proactive lifecycle strategies to determine which activities to perform on an asset and when they should be performed to maximize useful life at the lowest total cost of ownership.

Risk & Criticality

Asset risk and criticality are essential building blocks of asset management, integral in prioritizing projects and distributing funds where they are needed most based on a variety of factors. Assets in disrepair may fail to perform their intended function, pose substantial risk to the community, lead to unplanned expenditures, and create liability for the municipality. In addition, some assets are simply more important to the community than others, based on their financial significance, their role in delivering essential services, the impact of their failure on public health and safety, and the extent to which they support a high quality of life for community stakeholders.

Risk is a product of two variables: the probability that an asset will fail, and the resulting consequences of that failure event. It can be a qualitative measurement, (i.e. low, medium, high) or quantitative measurement (i.e. 1-5), that can be used to rank assets and projects, identify appropriate lifecycle strategies, optimize short- and long-term budgets, minimize service disruptions, and maintain public health and safety.

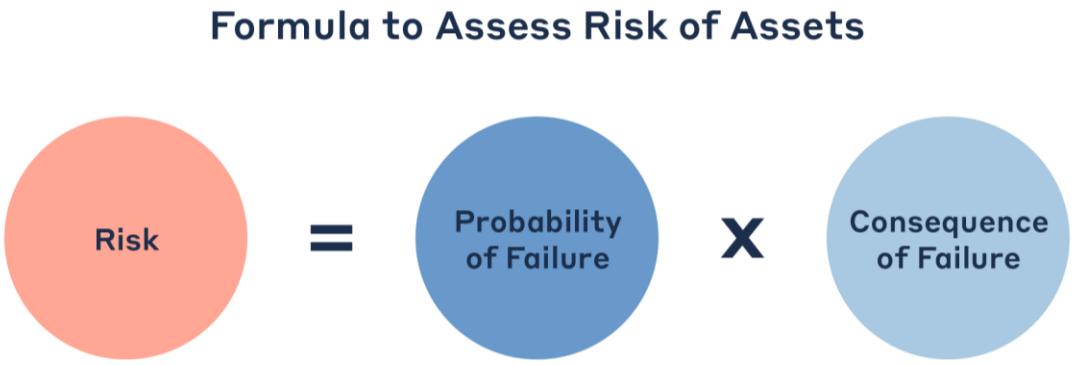

Figure 5 Risk Equations

The approach used in this AMP relies on a quantitative measurement of risk associated with each asset. The probability and consequence of failure are each scored from 1 to 5, producing a minimum risk index of 1 for the lowest risk assets, and a maximum risk index of 25 for the highest risk assets.

Probability of Failure

Several factors can help decision-makers estimate the probability or likelihood of an asset's failure, including its condition, age, previous performance history, and exposure to extreme weather events, such as flooding and ice jams—both a growing concern for municipalities in Canada.

Consequence of Failure

Estimating criticality also requires identifying the types of consequences that the organization and community may face from an asset's failure, and the magnitude of those consequences. Consequences of asset failure will vary across the infrastructure portfolio; the failure of some assets may result primarily in high direct financial cost but may pose limited risk to the community. Other assets may have a relatively minor financial value, but any downtime may pose significant health and safety hazards to residents.

Table 3 illustrates the various types of consequences that can be integrated in developing risk and criticality models for each asset category and segments within. We note that these consequences are common, but not exhaustive.

Type of Consequence	Description
Direct Financial	Direct financial consequences are typically measured as the replacement costs of the asset(s) affected by the failure event, including interdependent infrastructure.
Economic	Economic impacts of asset failure may include disruption to local economic activity and commerce, business closures, service disruptions, etc. Whereas direct financial impacts can be seen immediately or estimated within hours or days, economic impacts can take weeks, months and years to emerge, and may persist for even longer.
Socio-political	Socio-political impacts are more difficult to quantify and may include inconvenience to the public and key community stakeholders, adverse media coverage, and reputational damage to the community and the Municipality.
Environmental	Environmental consequences can include pollution, erosion, sedimentation, habitat damage, etc.
Public Health and Safety	Adverse health and safety impacts may include injury or death, or impeded access to critical services.
Strategic	These include the effects of an asset's failure on the community's long-term strategic objectives, including economic development, business attraction, etc.

Table 3 Risk Analysis: Types of Consequences of Failure

This AMP includes a preliminary evaluation of asset risk and criticality. Each asset has been assigned a probability of failure score and consequence of failure score based on available asset data. These risk scores can be used to prioritize maintenance, rehabilitation, and replacement strategies for critical assets.

These models have been built in Citywide Assets for continued review, updates, and refinements.

Levels of Service

A level of service (LOS) is a measure of the services that the Municipality is providing to the community and the nature and quality of those services. Within each asset category in this AMP, technical metrics and qualitative descriptions that measure both technical and community levels of service have been established and measured as data is available.

The Municipality measures the level of service provided at two levels: Community Levels of Service, and Technical Levels of Service.

Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories as applicable (Roads, Bridges & Culverts, Water, Sanitary, and Stormwater) the province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in this AMP. For non-core asset categories, each municipality may incorporate community levels of service they find useful.

Technical Levels of Service

Technical levels of service are a measure of key technical attributes of the service being provided to the community. These include mostly quantitative measures and tend to reflect the impact of the Municipality's asset management strategies on the physical condition of assets or the quality/capacity of the services they provide.

For core asset categories as applicable (Roads, Bridges & Culverts, Water, Sanitary, and Stormwater) the province, through O. Reg. 588/17, has also provided technical metrics that are required to be included in this AMP. For non-core asset categories, each municipality may incorporate technical levels of service they find useful.

Current and Proposed Levels of Service

This AMP focuses on measuring the current level of service provided to the community. Once current levels of service have been measured, the Municipality plans to establish proposed levels of service over a 10-year period, in accordance with O. Reg. 588/17, as part of the 2025 requirements.

Proposed levels of service should be realistic and achievable within the timeframe outlined by the Municipality. They should also be determined with consideration of a variety of community expectations, fiscal capacity, regulatory requirements, corporate goals and long-term sustainability. Once proposed levels of service have been established, and prior to July 2025, the Municipality must identify a lifecycle management and financial strategy which allows these targets to be achieved.

2.4 Scope & Methodology

2.4.1 Asset Categories for this AMP

This asset management plan for the Municipality is produced in compliance with O. Reg. 588/17. The July 2024 deadline under the regulation—the second of three AMPs—requires analysis of core and non-core asset categories.

The AMP summarizes the state of the infrastructure for the Municipality's asset portfolio, establishes current levels of service and the associated technical and customer oriented key metrics, outlines lifecycle strategies for optimal asset management and performance, and provides financial strategies to reach sustainability for the asset categories listed below.

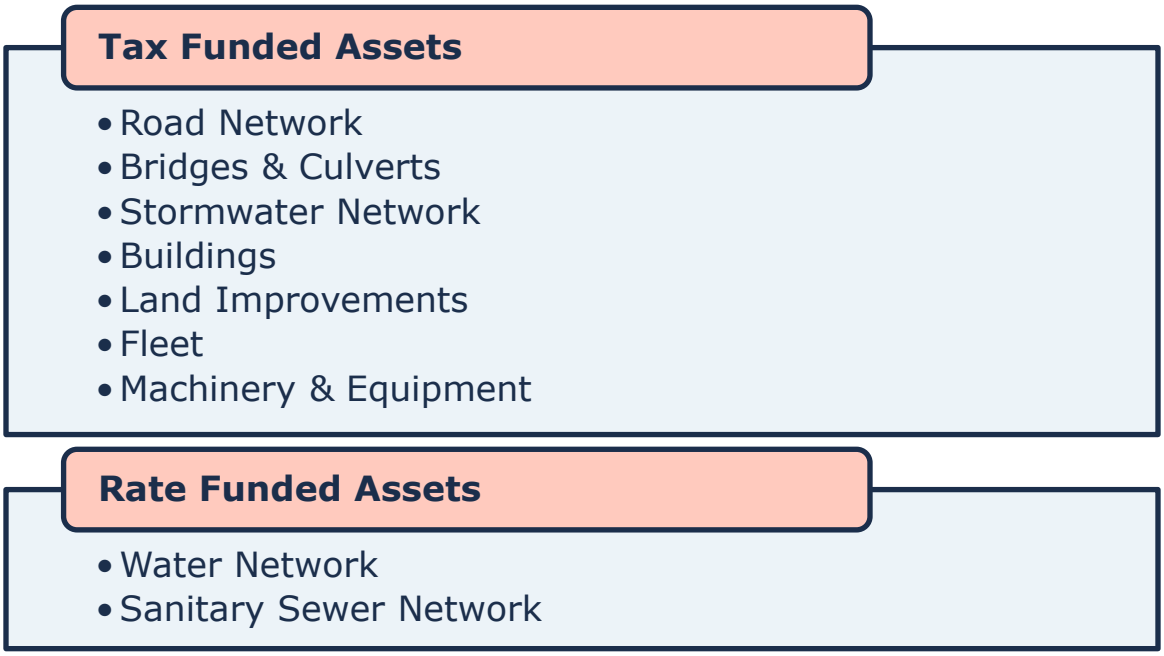

Figure 6 Tax Funded and Rate Funded Asset Categories

2.4.2 Data Effective Date

It is important to note that this plan is based on data as of **December 2023**; therefore, it represents a snapshot in time using the best available processes, data, and information at the Municipality. Strategic asset management planning is an ongoing and dynamic process that requires continuous data updates and dedicated data management resources.

2.4.3 Deriving Replacement Costs

There are a range of methods to determine the replacement cost of an asset, and some are more accurate and reliable than others. This AMP relies on two methodologies:

User-Defined Cost and Cost Per Unit

Based on costs provided by municipal staff which could include average costs from recent contracts; data from engineering reports and assessments; staff estimates based on knowledge and experience.

Cost Inflation / CPI Tables

Historical costs of the assets are inflated based on Consumer Price Index or Non-Residential Building Construction Price Index.

User-defined costs based on reliable sources are a reasonably accurate and reliable way to determine asset replacement costs. Cost inflation is typically used in the absence of reliable replacement cost data. It is a reliable method for recently purchased and/or constructed assets where the total cost is reflective of the actual costs that the Municipality incurred. As assets age, and new products and technologies become available, cost inflation becomes a less reliable method.

2.4.4 Estimated Service Life & Service Life Remaining

The estimated useful life (EUL) of an asset is the period over which the Municipality expects the asset to be available for use and remain in service before requiring replacement or disposal. The EUL for each asset in this AMP was assigned according to the knowledge and expertise of municipal staff and supplemented by existing industry standards when necessary.

By using an asset's in-service data and its EUL, the Municipality can determine the service life remaining (SLR) for each asset. Using condition data and the asset's SLR, the Municipality can more accurately forecast when it will require replacement. The SLR is calculated as follows:

Figure 7 Service Life Remaining Calculation

2.4.5 Reinvestment Rate

As assets age and deteriorate, they require additional investment to maintain a state of good repair. The reinvestment of capital funds, through asset renewal or replacement, is necessary to sustain an adequate level of service. The reinvestment rate is a measurement of available or required funding relative to the total replacement cost.

By comparing the actual vs. target reinvestment rate the Municipality can determine the extent of any existing funding gap. The reinvestment rate is calculated as follows:

Figure 8 Target Reinvestment Rate Calculation

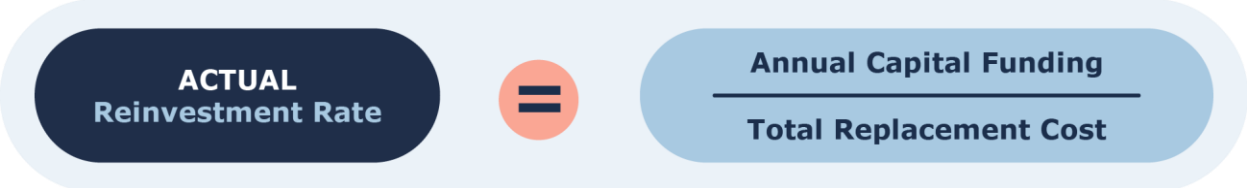

Figure 9 Actual Reinvestment Rate Calculation

2.4.6 Deriving Asset Condition

An incomplete or limited understanding of asset condition can mislead long-term planning and decision-making. Accurate and reliable condition data helps to prevent premature and costly rehabilitation or replacement and ensures that lifecycle activities occur at the right time to maximize asset value and useful life.

A condition assessment rating system provides a standardized descriptive framework that allows comparative benchmarking across the Municipality's asset portfolio. The table below outlines the condition rating system used in this AMP to determine asset condition. This rating system is aligned with the Canadian Core Public Infrastructure Survey which is used to develop the Canadian Infrastructure Report Card. When assessed condition data is not available, service life remaining is used to approximate asset condition.

Condition	Description	Criteria	Service Life Remaining (%)
Very Good	Fit for the future	Well maintained, good condition, new or recently rehabilitated	80-100
Good	Adequate for now	Acceptable, generally approaching mid-stage of expected service life	60-79
Fair	Requires attention	Signs of deterioration, some elements exhibit significant deficiencies	40-59
Poor	Increasing potential of affecting service	Approaching end of service life, condition below standard, large portion of system exhibits significant deterioration	20-39
Very Poor	Unfit for sustained service	Near or beyond expected service life, widespread signs of advanced deterioration, some assets may be unusable	0-19

Table 4 Standard Condition Rating Scale

The analysis in this AMP is based on assessed condition data only as available. In the absence of assessed condition data, asset age is used as a proxy to determine asset condition.

2.5 Ontario Regulation 588/17

As part of the Infrastructure for Jobs and Prosperity Act, 2015, the Ontario government introduced Regulation 588/17 - Asset Management Planning for Municipal Infrastructure (O. Reg 588/17)[1]. Along with creating better performing organizations, more liveable and sustainable communities, regulation is a key, mandated driver of asset management planning and reporting. It places substantial emphasis on current and proposed levels of service and the lifecycle costs incurred in delivering them.

Figure 10 below outlines key reporting requirements under O. Reg 588/17 and the associated timelines.

[1] O. Reg. 588/17: Asset Management Planning for Municipal Infrastructure https://www.ontario.ca/laws/regulation/170588

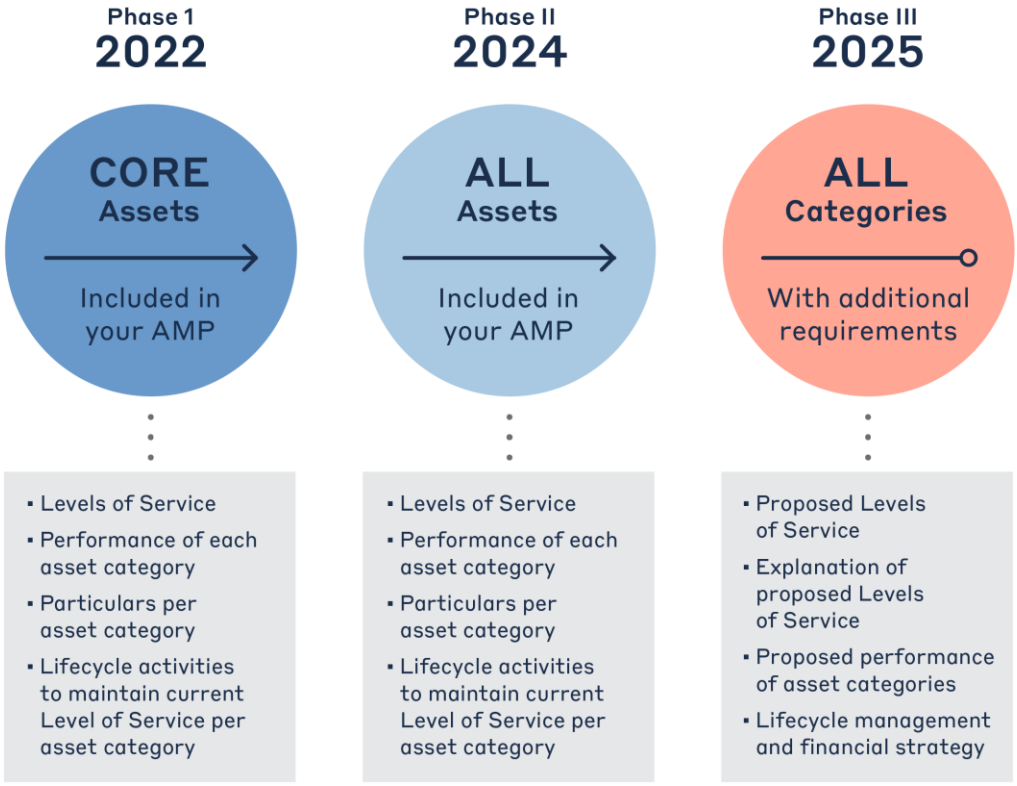

Figure 10 O. Reg. 588/17 Requirements and Reporting Deadlines

2.5.1 O. Reg. 588/17 Compliance Review

Requirement	O. Reg. 588/17 Section	AMP Section Reference	Status
Summary of assets in each category	S.5(2), 3(i)	4.1 – 12.1	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	4.1 – 12.1	Complete
Average age of assets in each category	S.5(2), 3(iii)	4.3 – 12.3	Complete
Condition of core assets in each category	S.5(2), 3(iv)	4.2 – 12.2	Complete
Description of municipality's approach to assessing the condition of assets in each category	S.5(2), 3(v)	4.4 – 12.4	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	4.7 – 12.7	Complete

Current performance measures in each category	S.5(2), 2	4.7 – 12.7	Complete
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	4.4 – 12.4	Complete
Costs of providing lifecycle activities for 10 years	S.5(2), 4	Appendix B	Complete
Growth assumptions	S.5(2), 5(i-ii) S.5(2), 6(i-vi)	13.1 – 13.2	Complete

Table 5 O. Reg. 588/17 Compliance Review

3. Portfolio Overview – State of the Infrastructure

The state of the infrastructure (SOTI) summarizes the inventory, condition, age profiles, and other key performance indicators for the Municipality's infrastructure portfolio. These details are presented for all core and non-core asset categories.

3.1 Asset Hierarchy & Data Classification

Asset hierarchy explains the relationship between individual assets and their components, and a wider, more expansive network and system. How assets are grouped in a hierarchy structure can impact how data is interpreted. Assets were structured to support meaningful, efficient reporting and analysis. Key category details are summarized at asset segment level.

Figure 11 Asset Hierarchy and Data Classification

3.2 Portfolio Overview

3.2.1 Total Replacement Cost of Asset Portfolio

The nine asset categories analyzed in this Asset Management Plan have a total current replacement cost of $411 million. This estimate was calculated using user-defined costing, as well as inflation of historical or original costs to current date. This estimate reflects the replacement of historical assets with similar, not necessarily identical, assets available for procurement today. Figure 12 illustrates the replacement cost of each asset category; combined at 42% of the total portfolio, the water and sanitary sewer networks comprise the largest share of the Municipality's asset portfolio, followed by bridges and culverts at 20%.

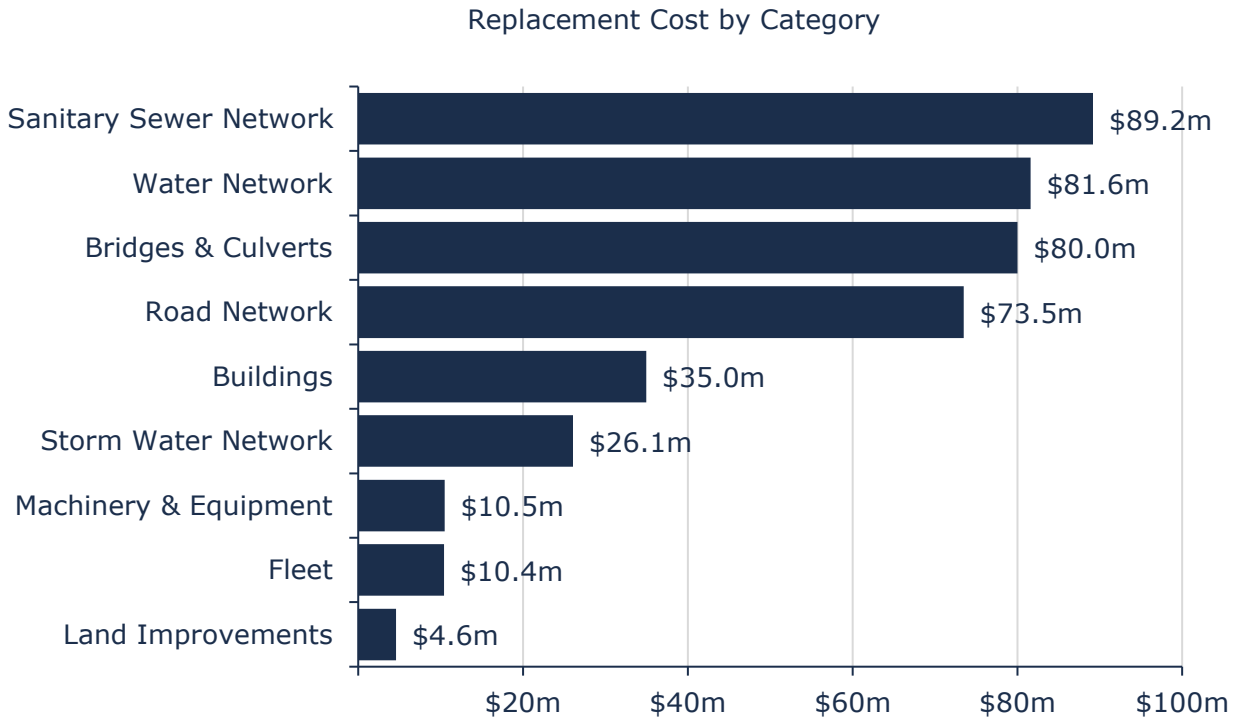

Figure 12 Current Replacement Cost by Asset Category

3.2.2 Target vs. Actual Reinvestment Rate

The graph below depicts funding gaps by comparing the target to the current reinvestment rate. To meet the existing long-term capital requirements, the Municipality requires an annual capital investment of $11.6 million, for a target portfolio reinvestment rate of 2.81%. Currently, annual investment from sustainable revenue sources is $3.8 million, for a current portfolio reinvestment rate of 0.92%. Target and current re-investment rates by asset category are detailed below.

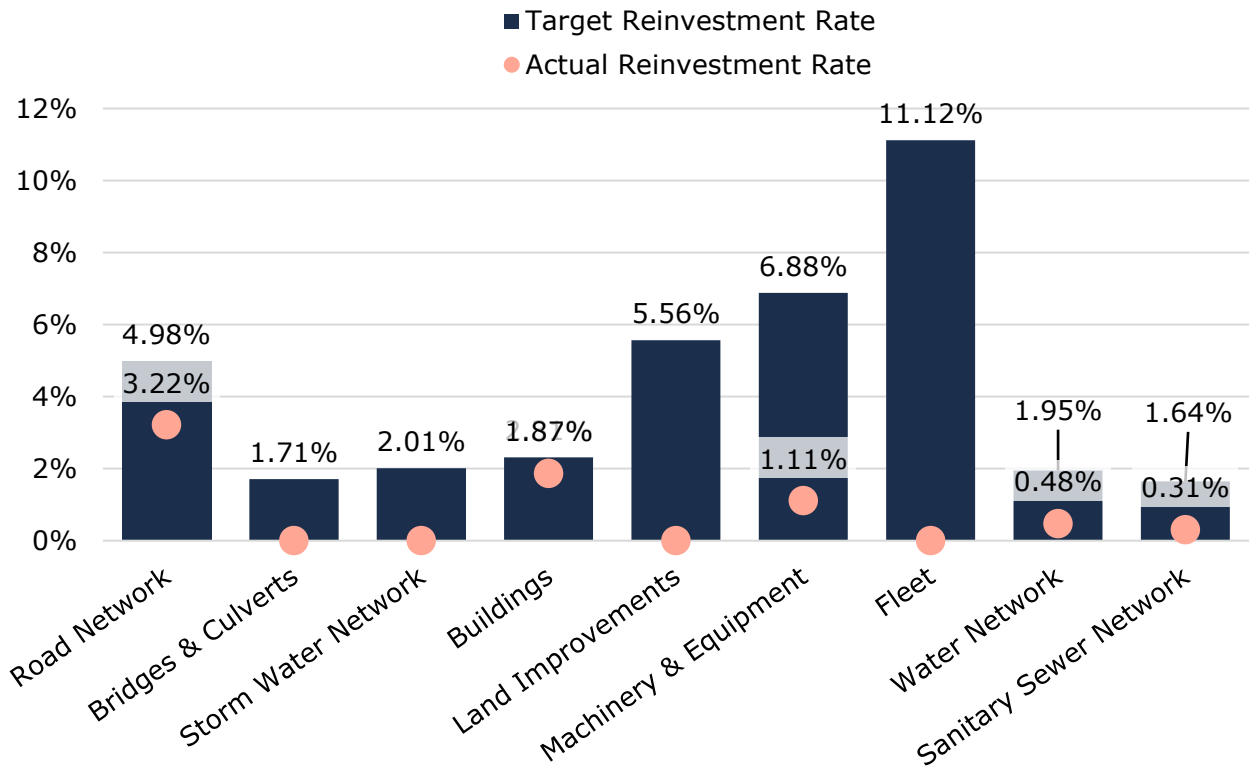

Figure 13 Current Vs. Target Reinvestment Rate

3.2.3 Condition of Asset Portfolio

Figure 14 and Figure 15 summarize asset condition at the portfolio and category levels, respectively. Based on both assessed condition and age-based analysis, 73% of the Municipality's infrastructure portfolio is in fair or better condition, with the remaining 27% in poor or worse condition. Typically, assets in poor or worse condition may require replacement or major rehabilitation in the immediate or short-term. Targeted condition assessments may help further refine the list of assets that may be candidates for immediate intervention, including potential replacement or reconstruction.

Similarly, assets in fair condition should be monitored for disrepair over the medium term. Keeping assets in fair or better condition is typically more cost-effective than addressing assets needs when they enter the latter stages of their lifecycle or decline to a lower condition rating, e.g., poor or worse.

Condition data was available for the majority of assets with the exception of the Stormwater Network. For all remaining assets, including major infrastructure such as storm mains, age was used as an approximation of condition for these assets. Age-based condition estimations can skew data and lead to potential under- or overstatement of asset needs.

Further, when assessed condition data was available, it was projected to the current year (2023). This 'projected condition' can generate lower condition ratings than those established at the time of the condition assessment. The rate of this deterioration will also depend on lifecycle curves used to project conditions over time.

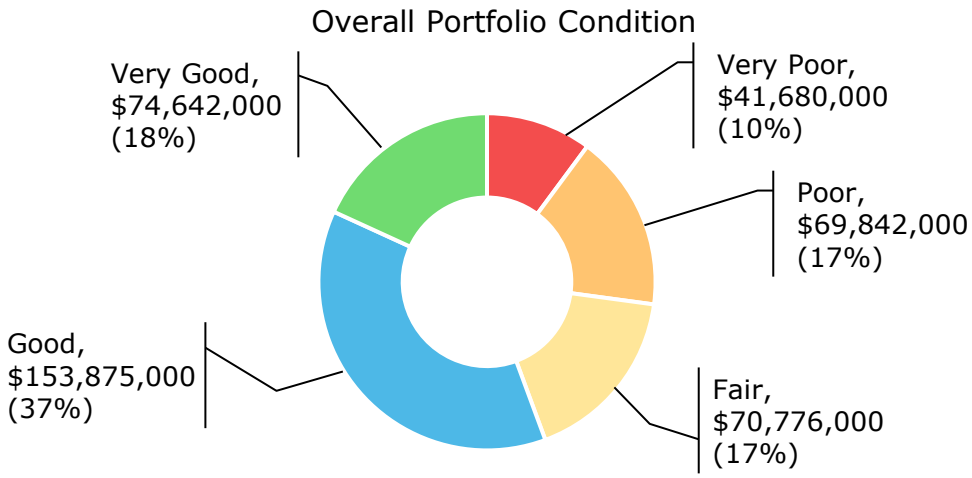

Figure 14 Asset Condition: Portfolio Overview

As further illustrated in Figure 15 at the category level, the majority of major, core infrastructure including roads, bridges, structural culverts, water and sanitary mains are in fair or better condition, based on in-field condition assessment data. Most catch basins, manholes, and storm sewer mains are poor or worse condition, based on recent condition assessments and asset age.

See Table 6 for details on how condition data was derived for each asset segment.

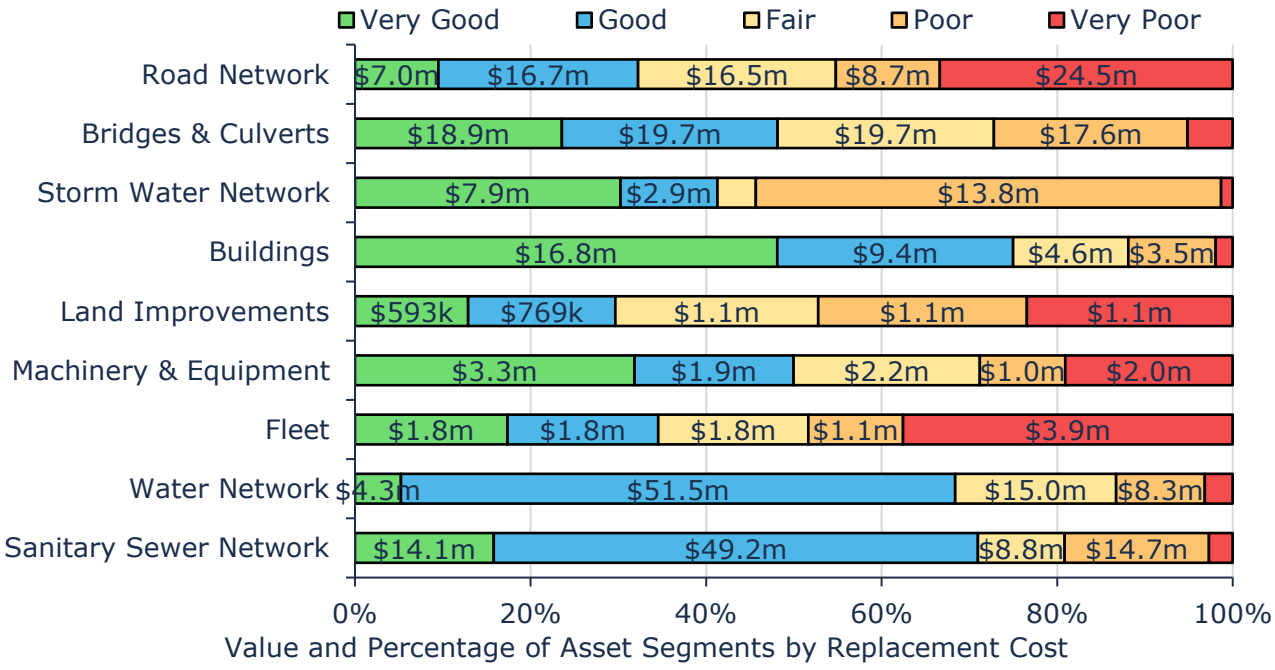

Figure 15 Asset Condition by Asset Category

As outlined previously, buildings are not consistently fully componentized into their individual major elements and components. This limits the validity of some current condition estimates as they are presented only at the 'parent' asset level, such as 'Fire Hall, Original', or 'Town Hall, Addition'.

Source of Condition Data

This AMP relies on assessed condition for 92% of assets, based on and weighted by replacement cost. For the remaining assets, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data used throughout this AMP.

Asset Category	Asset Segment(s)	% of Assets with Assessed Conditions	Source of Condition Data
Road Network	Curb Guide Rails Paved Shoulders Road Signs Road Surface Treatment Road Surface- Gravel Road Surface- Hot Mix Road/Berm Sidewalks Street Lights Traffic Signal	99%	Internal Assessments
Bridges & Culverts	Bridges Culverts (under 3m) Structural Culverts (over 3m)	100%	2023 OSIM Inspections
Storm Water Network	Catch Basins Manholes Storm Sewer Mains	19%	Internal Assessments
Buildings	Administration Protection Services Recreation & Cultural Services Transportation Services	89%	Internal Assessments

Land Improvements	Fencing & Lighting Fields & Courts Parks & Playgrounds Pavement Towers	88%	Internal Assessments
Machinery & Equipment	Admin / Library Emergency Response IT/Computer Public Works Recreation & Parks SCADA Water/Wastewater	61%	Internal Assessments
Fleet	Heavy Equipment Light Duty Medium Duty Rescue	69%	Internal Assessments
Water Network	Buildings Flowmeter Hydrants Meters Reservoir Tower Treatment Valve Chambers and Manholes Valves Water Housing Connection Watermains Well	99%	Internal Assessments

Sanitary Sewer Network	Buildings Collection Electrical System Force main House Sewer Connection Lagoon Manholes Monitoring Pumping Station Scada Septic Field Sewer mains Treatment	100%	Internal Assessments

Table 6 Source of Condition Data

3.2.4 Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 15% of the Municipality's assets will require replacement within the next 10 years. More information can be found in Appendix B – 10-Year Capital Requirements.

3.2.5 Risk Analysis

Qualitative Risk

The qualitative risk assessment involves the documentation of risks to the delivery of services that the municipality faces given the current state of the infrastructure and asset management strategies. These risks can be understood as corporate level risks. Municipality staff provided information related to the following potential risks:

	Risk Type	Description
	Asset Data Confidence	As the Municipality's asset management program matures, the Municipality is gaining more confidence in their asset data. A lack of confidence in asset data can result in a lack of confidence in the results of the asset management plan and subsequently result in uncertainty in funding requirements for the future.
	Lifecycle Management Strategies	In addition to asset level risk, the Municipality may also face risk associated with not executing key lifecycle activities, including repairs, rehabilitation, and replacement of critical assets. These include: - missed opportunities for cost savings and increases in lifecycle costs; - deferral of vital projects, or further lending and borrowing; - accelerated asset deterioration and premature failure, which may lead to public health and safety hazards, and disruption of services; - a decline in public satisfaction with the Municipality's service standards and the resulting reputational damage.
	Organizational Cognizance/Capacity	While the Municipality has confidence in their capacity to engage in asset management practices, on-going training is needed for staff to have the knowledge and capacity to engage in informed asset management practices moving into the future.
	Aging Infrastructure	The Municipality's current state of infrastructure show a large portion of the current infrastructure in moderate stages of their estimated useful lives. Ongoing infrastructure replacement should aim to maintain these moderate levels and avoid significant portions of the infrastructure reaching the end of their useful lives at the same time.
	Climate Change & Extreme Weather Events	Climate and extreme weather events have an impact on infrastructure service life as well as functionality. Examples of these impacts include accelerated degradation of road surfaces due to increase freeze/thaw cycles, minimized capacity in storm systems due to increased intensity in rainfall events,

Risk Type	Description
	and increased use of salt to combat winter storms resulting in degradation of vehicles and equipment. To date the municipality has not noticed significant impacts on the infrastructure due to the increase in extreme weather events.
Growth	Community growth is expected to continue in the Municipality, consistent with the growth trend in the Province of Ontario. It is critical to consider growth when planning long-term infrastructure replacements to ensure infrastructure is not required to be replaced prematurely due to capacity issues. Staff have indicated that upgrades to the system will be required to accommodate projected growth in the municipality.
Infrastructure Reinvestment	Current levels of investment in infrastructure need to be looked at to ensure they are meeting lifecycle requirements and maintaining a good state of repair. Chronic underfunding of infrastructure replacement may lead to detrimental impacts in the future requiring significant changes to service levels. Staff have indicated that due to the steep increase in the cost of materials, major projects are heavily dependent on subsidies.

Risk Matrix

Using the risk equation and preliminary risk models, Figure 16 shows how assets across the different asset categories are stratified within a risk matrix.

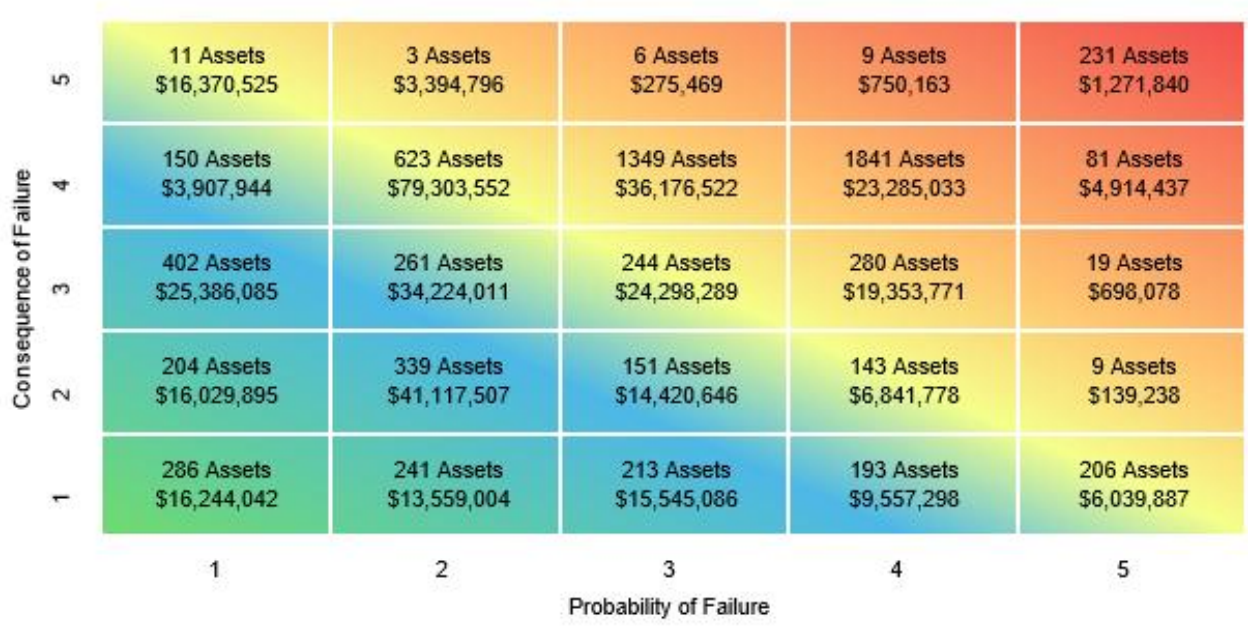

Figure 16 Risk Matrix: All Assets

The analysis shows that based on current risk models, approximately 12% of the Municipality's assets, with a current replacement cost of approximately $50 million, carry a risk rating of 15 or higher (red) out of 25. Assets in this group may have a high probability of failure based on available condition data and age-based estimates and were considered to be most essential to the Municipality.

As new asset attribute information and condition assessment data are integrated with the asset register, asset risk ratings will evolve, resulting in a redistribution of assets within the risk matrix. Staff should also continue to calibrate risk models.

We caution that since risk ratings rely on many factors beyond an asset's physical condition or age, assets in a state of disrepair can sometimes be classified as low risk, despite their poor condition rating. In such cases, although the probability of failure for these assets may be high, their consequence of failure ratings were determined to be low based on the attributes used and the data available.

Similarly, assets with very high condition ratings can receive a moderate to high-risk rating despite a low probability of failure. These assets may be deemed as highly critical to the Municipality based on their costs, economic importance, social significance, and other factors. Continued calibration of an asset's criticality and regular data updates are needed to ensure these models more accurately reflect an asset's actual risk profile.

3.2.6 Forecasted Capital Requirements

Aging assets require maintenance, rehabilitation, and replacement. Figure 17 below illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for all asset categories analyzed in this AMP over an 80-year time horizon. On average, $11.6 million is required each year to remain current with capital replacement needs for the Municipality's asset portfolio (red dotted line). Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise. This figure relies on age and available condition data.

The chart also illustrates a backlog of more than $13.1 million. It is unlikely that all such assets are in a state of disrepair, requiring immediate replacements. This makes continued and expanded targeted and consistent condition assessments integral.

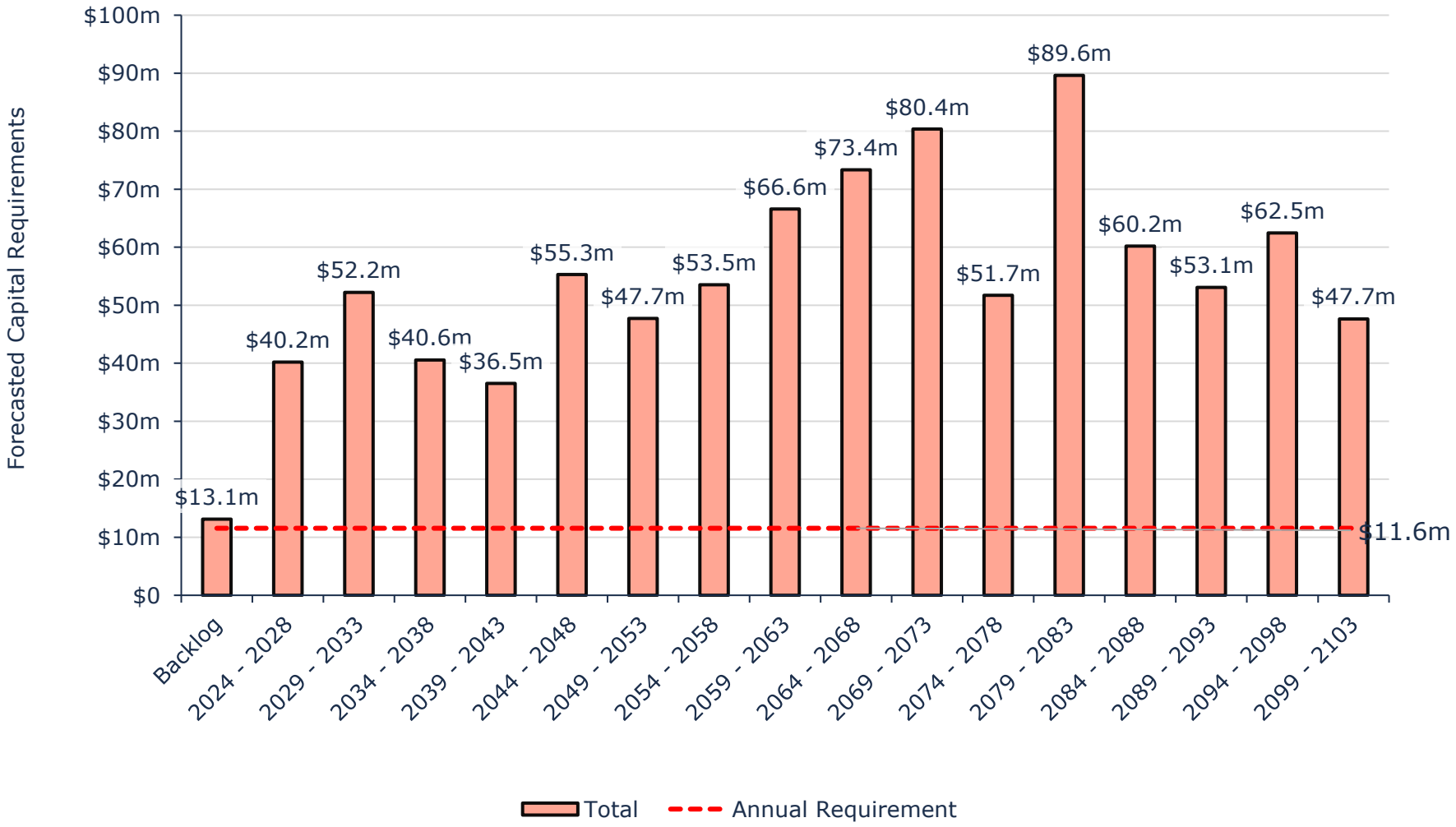

Figure 17 Capital Replacement Needs: Portfolio Overview 2024-2103

Risk frameworks, proactive lifecycle strategies, and levels of service targets can then be used to prioritize projects, continuously refine estimates for both backlogs and ongoing capital needs and help select the right treatment for each asset. In addition, more effective componentization of buildings will improve these projections, including backlog estimates.

Core Assets

Road Network

Bridges & Culverts

Water Network

Sanitary Sewer Network

Stormwater Network

4. Road Network

The Municipality's road network comprises a large proportion of its infrastructure portfolio, with a current replacement cost of more than $73 million, distributed primarily between paved and surface treated roads. The Municipality also owns and manages other supporting infrastructure and capital assets, including sidewalks, curbs, signage and streetlights.

4.1 Inventory & Valuation

Table 7 summarizes the quantity and current replacement cost of the Municipality's various road network assets as managed in its primary asset management register, Citywide.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Curb	1,201	Meters	$138,000	CPI
Guide Rails	10,059	Meters	$4,513,000	CPI
Paved Shoulders	33,856	Meters	$1,287,000	CPI
Road Signs	1,260	Assets	$292,000	CPI
Road Surface Treatment	58,142	Meters	$11,648,000	CPI
Road Surface- Gravel	192,401	Meters	$5,384,000	CPI
Road Surface- Hot Mix	203,710	Meters	$41,644,000	CPI
Road/Berm	1,590	Meters	$728,000	CPI
Sidewalks	16,492	Meters	$4,081,000	CPI
Street Lights	1,644	Assets	$3,645,000	CPI
Traffic Signal	1	Assets	$130,000	CPI
TOTAL			**$73,490,000**	

Table 7 Detailed Asset Inventory: Road Network

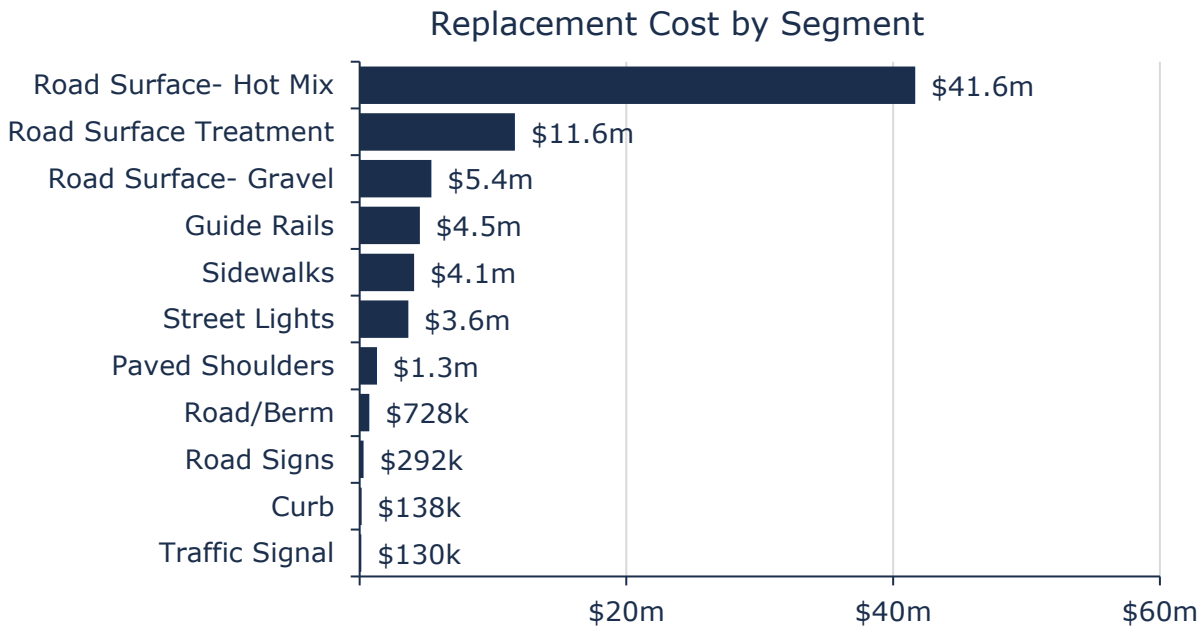

Figure 18 Portfolio Valuation: Road Network

4.2 Asset Condition

Figure 19 summarizes the replacement cost-weighted condition of the Municipality's road network. Based on a combination of field inspection data and age, 55% of assets are in fair or better condition; the remaining 45% of assets are in poor to very poor condition. Condition assessments were available for 99% of roads based on replacement cost. This condition data was projected from inspection date to current year to estimate their condition today. No condition data was available for the remaining asset types.

Assets in poor or worse condition may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition. As illustrated in Figure 19, the majority of the Municipality's road network assets are in fair or better condition.

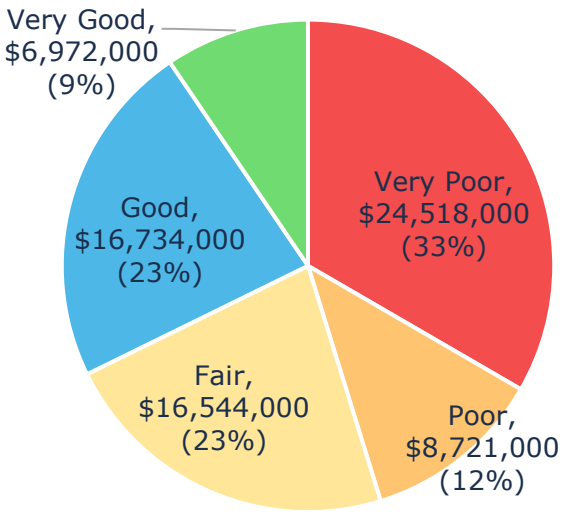

Figure 19 Asset Condition: Road Network Overall

As illustrated in Figure 20, based on condition assessments, the majority of the Municipality's hot mix roads are in fair or better condition; however, 100% of road signs, 99% of surface treated roads, and 50% of gravel roads are in poor or worse condition.

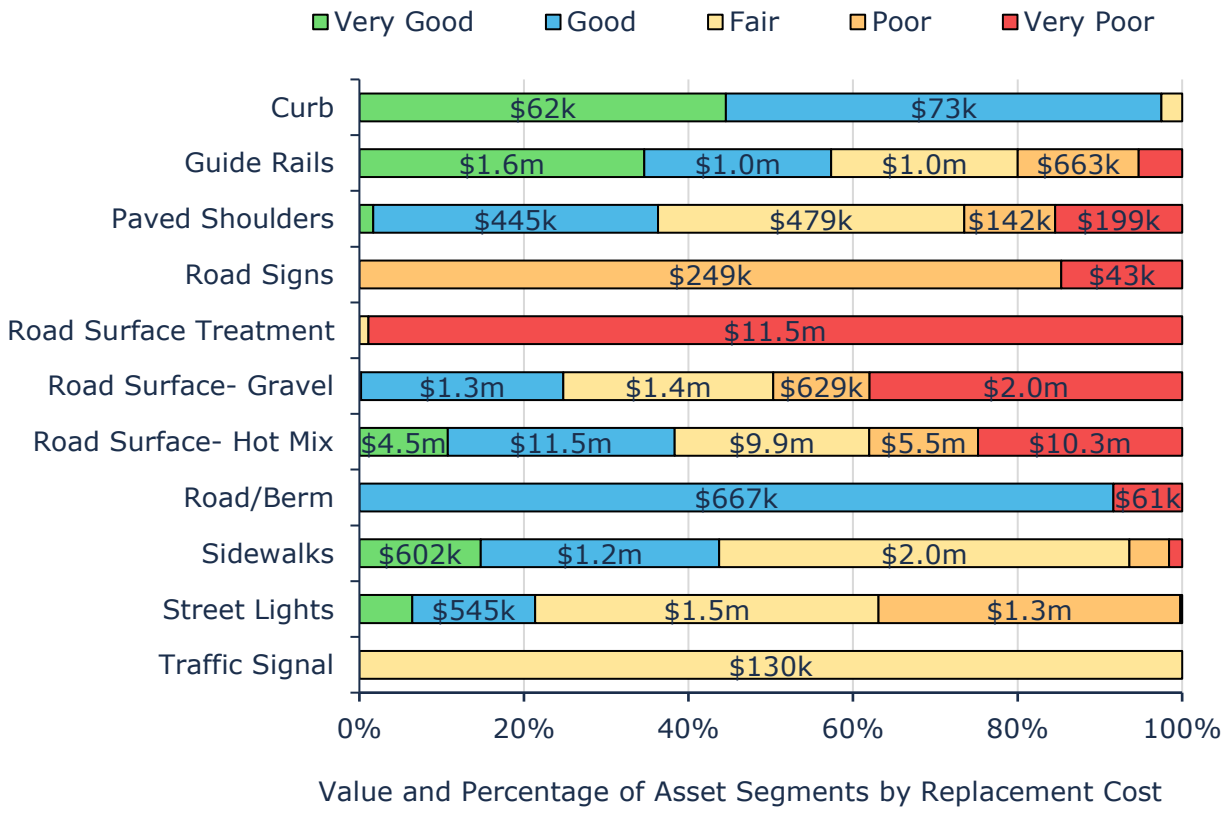

Figure 20 Asset Condition: Road Network by Segment

4.3 Age Profile

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning for potential long-term replacement spikes.

Figure 21 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

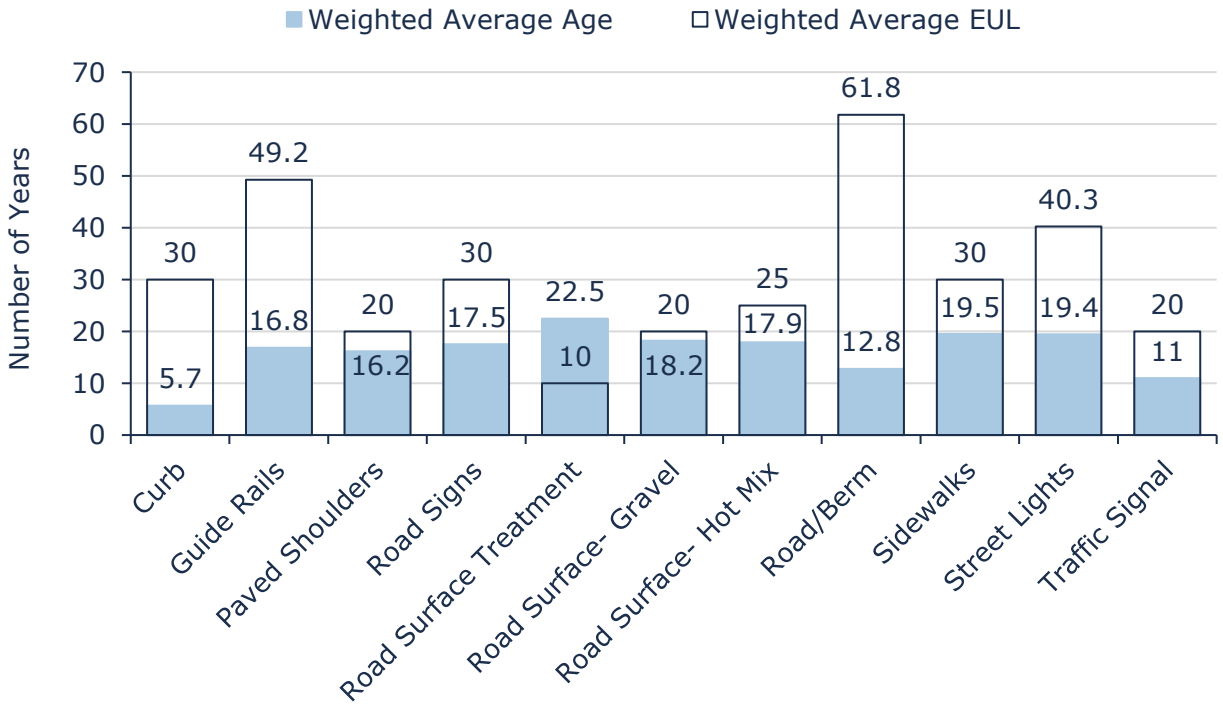

Figure 21 Estimated Useful Life vs. Asset Age: Road Network

Age analysis shows that the majority of paved roads are in later stages of their expected useful life, with an average age of 17.9 years against a design life of 25 years. Surface treated roads continue to remain in service well beyond their expected useful life and gravel roads are approaching their end of life, however, gravel roads can be maintained on a perpetual cycle through the operational maintenance budget with a regular roadway granular replacement program.

Although asset age is an important measurement for long-term planning, condition assessments provide a more accurate indication of actual asset needs. Further, useful life estimates established as part of the PSAB 3150 implementation may not be accurate and may not reflect in-field asset performance.

4.4 Current Approach to Lifecycle Management

The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment.

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

Activity Type	Description of Current Strategy
Maintenance	Routine maintenance includes cleaning, minor repairs, and vegetation management. Maintenance is triggered by visual inspection, and safety hazards.
Rehabilitation	Rehabilitation includes resurfacing, structural repairs, and major upgrades, usually triggered by a PCI of below 50. Rehabilitation programs are typically every 5 years.
Replacement	Replacement is considered when rehabilitation is no longer cost-effective and the condition has deteriorated significantly, prioritizing assets that frequently incur costly repairs or are nearing the end of service life.
Inspection	Internal staff conduct bi-annual or annual assessments, depending on asset usage. As needed, external contractors are secured to perform formal assessments. Inspections are conducted in accordance with the MMS.

Table 8 Lifecycle Management Strategy: Road Network

The following lifecycle strategies have been developed to formalize the current approach to manage the lifecycle of hot mix and surface treated roads. Instead of allowing the roads to deteriorate until replacement is required, strategic rehabilitation is expected to extend the service life of roads at a lower total cost.

Hot Mix Roads		
Event Name	**Event Class**	**Event Trigger**
40mm overlay (Arterial)	Rehabilitation	Condition: 50 - 55
40mm overlay (Local)	Rehabilitation	Condition: 49 - 60
Patching	Regulatory	Condition: 30 - 80
Asset replacement	Replacement	Condition 30 - 40

Table 9 Lifecycle Strategy: Hot Mix Roads

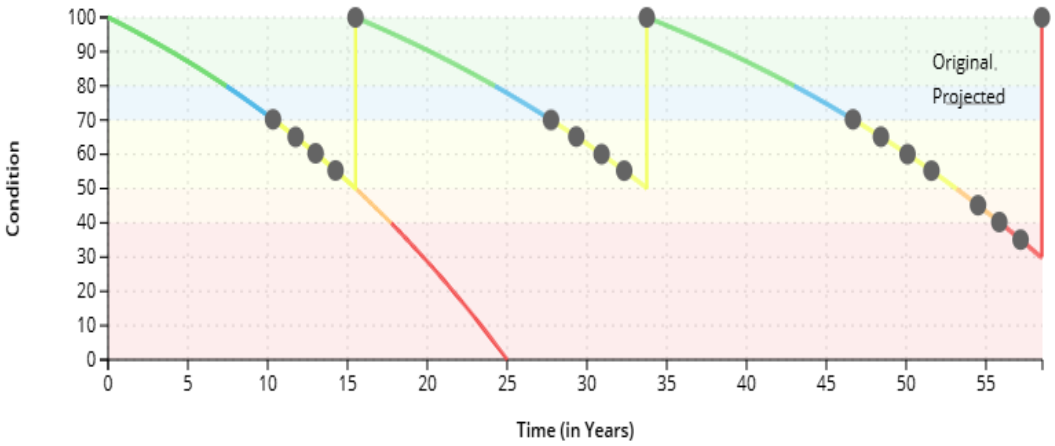

Figure 22 Lifecycle Strategy: Hot Mix Roads

Surface Treated Roads		
Event Name	**Event Class**	**Event Trigger**
40mm overlay	Rehabilitation	Condition: 55 - 60
Patching	Regulatory	Condition: 30 - 80
Asset replacement	Replacement	Condition 30 - 40

Table 10 Lifecycle Strategy: DST Roads

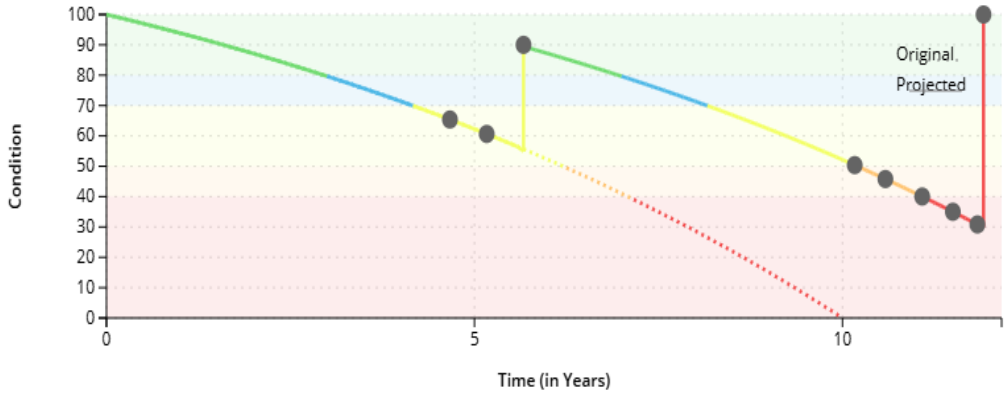

Figure 23 Lifecycle Strategy: DST Roads

4.5 Forecasted Long-Term Replacement Needs

Figure 24 illustrates the cyclical short-, medium- and long-term infrastructure rehabilitation and replacement requirements for the Municipality's road network. This analysis was run until 2078 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Municipality's primary asset management system and asset register.

The average annual requirements (red dotted line) total $3.7 million for all assets in the road network. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

The chart illustrates substantial capital needs through the forecast period. It also shows a backlog $5.7 million, primarily consisting of surface treated roads. These projections are based on asset replacement costs, age analysis, and condition data when available, as well as lifecycle modeling (roads only). They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

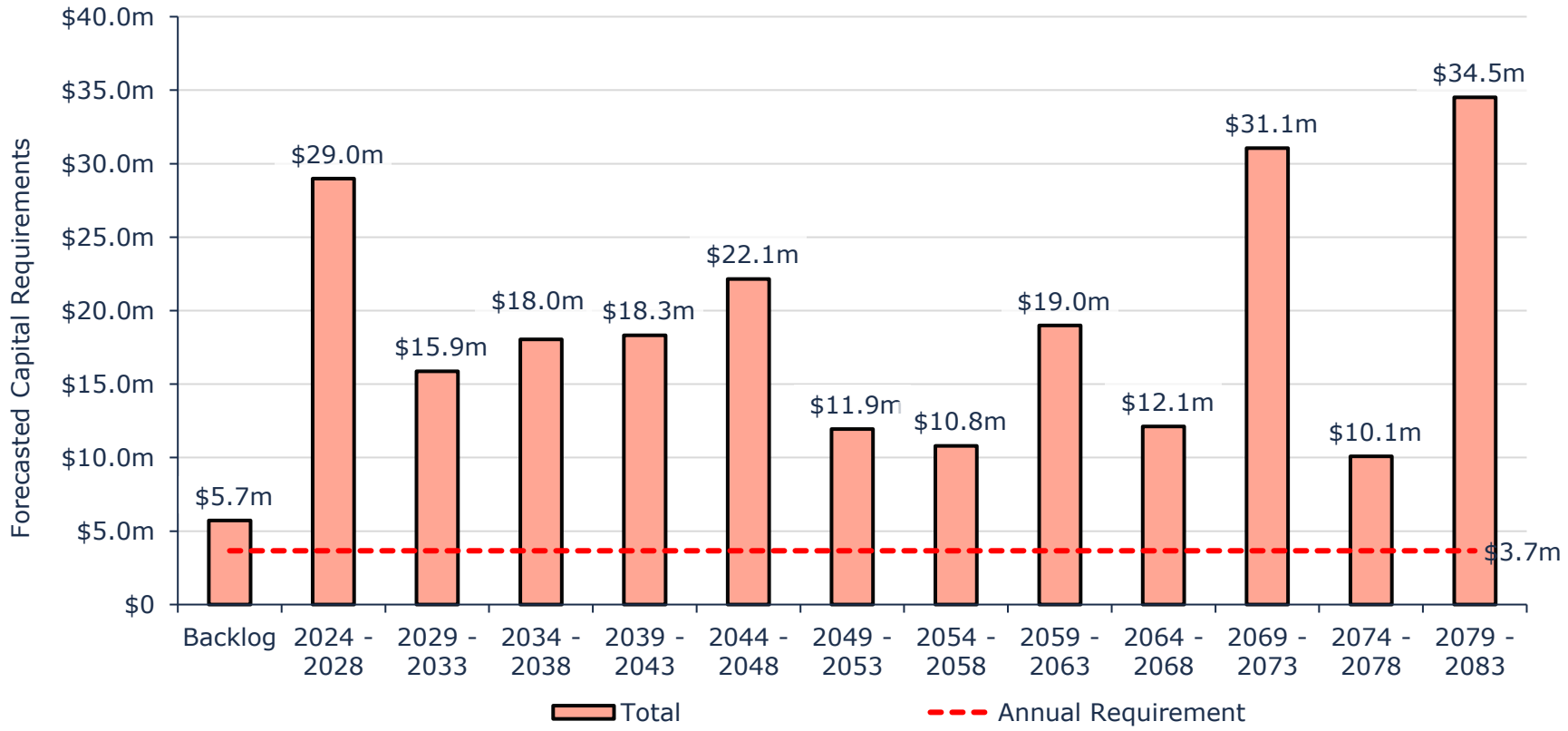

Figure 24 Forecasted Capital Replacement Needs: Road Network 2024-2078

Often, the magnitude of replacement needs is substantially higher than most municipalities can afford to fund. In addition, most assets may not need to be replaced. However, quantifying and monitoring these spikes is essential for long-term financial planning, including establishing dedicated reserves. Regular pavement condition assessments and a robust risk framework will ensure that high-criticality assets receive proper and timely lifecycle intervention, including replacements.

Tables summarizing the projected lifecycle activities (rehabilitation and replacements) that may be undertaken in the next 10 years to support current levels of service can be found in Appendix B – 10-Year Capital Requirements.

4.6 Risk Analysis

The risk matrix below is generated using available asset data, including condition, service life remaining, replacement costs, traffic data, and road class. The risk ratings for assets without useful attribute data were calculated using only condition, service life remaining, and their replacement costs.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Municipality may consider integrating relevant information that improves confidence in the criteria used to assess asset risk and criticality.

These risk models have been built into the Municipality's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

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1 - 4 **Very Low** $9,676,000 (13%)	5 - 7 **Low** $16,431,000 (22%)	8 - 9 **Moderate** $10,908,000 (15%)	10 - 14 **High** $25,612,000 (35%)	15 - 25 **Very High** $10,862,000 (15%)

Figure 25 Risk Matrix: Road Network

4.7 Levels of Service

The tables that follow summarize the Municipality's current levels of service with respect to prescribed KPIs under Ontario Regulation 588/17, as well as any additional performance measures that the Municipality selected for this AMP.

4.7.1 Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity	See Appendix C
Quality	Description or images that illustrate the different levels of road class pavement condition	Using a Pavement Condition Index (PCI), each road segment is assessed and assigned a rating on a scale from 0-100.

Table 11 O. Reg. 588/17 Community Levels of Service: Road Network

4.7.2 Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2023)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	0 km/km^2
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	0.92 km/km^2
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	0.61 km/km^2
Quality	Average pavement condition index for paved roads in the Municipality	56
	Average surface condition for unpaved roads in the Municipality (e.g. excellent, good, fair, poor)	Very Poor
Performance	% of paved surfaces in good or very good condition	38.3%
	% of paved surfaces in poor or very poor condition	36.88%
Affordable	Annual capital reinvestment rate	3.22%

Table 12 O. Reg. 588/17 Technical Levels of Service: Road Network

5. Bridges & Culverts

The Municipality's transportation network also includes bridges and structural culverts, with a current replacement cost of $80 million. Bridges and culverts represent a critical portion of the transportation services provided to the community. The Municipality is responsible for the maintenance of all bridges and structural culverts (≥3m in span) located across municipal roads with the goal of keeping structures in an adequate state of repair and minimizing service disruptions.

5.1 Inventory & Valuation

Table 13 summarizes the quantity and current replacement cost of bridges and culverts. The Municipality owns and manages 25 bridges and 21 structural culverts.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Bridges	25	Assets	$49,411,000	User-Defined
Structural Culverts (over 3m)	21	Assets	$15,656,000	CPI
Culverts (Under 3m)	724	Assets	$14,940,000	User-Defined
TOTAL			**$80,006,000**	

Table 13 Detailed Asset Inventory: Bridges & Culverts

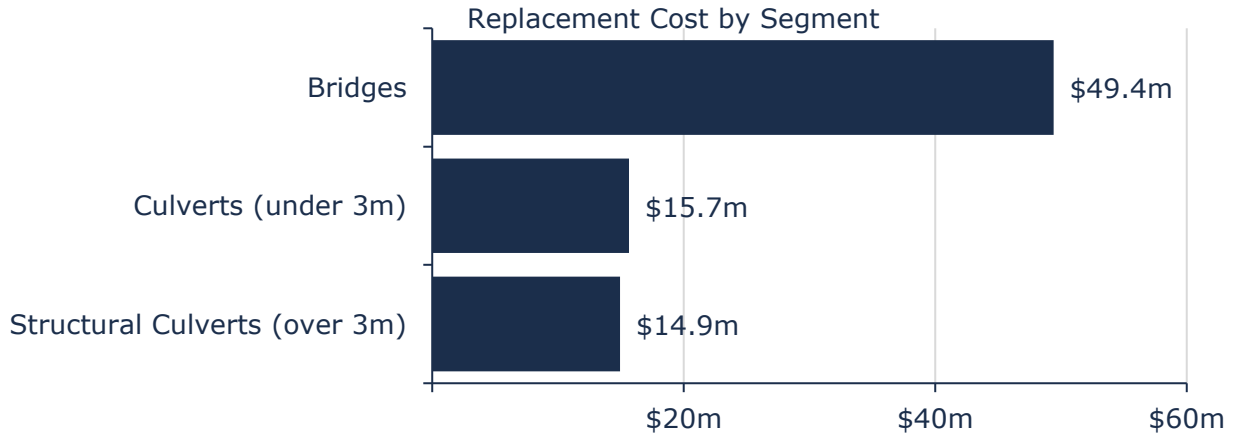


Figure 26 Portfolio Valuation: Bridges & Culverts

5.2 Asset Condition

Figure 27 summarizes the replacement cost-weighted condition of the Municipality's bridges and culverts. Based on the Municipality's recent Ontario Structures Inspection Manual (OSIM) assessments, 73% of bridges and culverts are in fair or better condition. Some elements or components of these structures may be candidates for replacement or rehabilitation in the medium term and should be monitored for further degradation in

condition. At 27% of the total bridges and culverts portfolio, assets in poor or worse condition may require replacement in the immediate or short term.

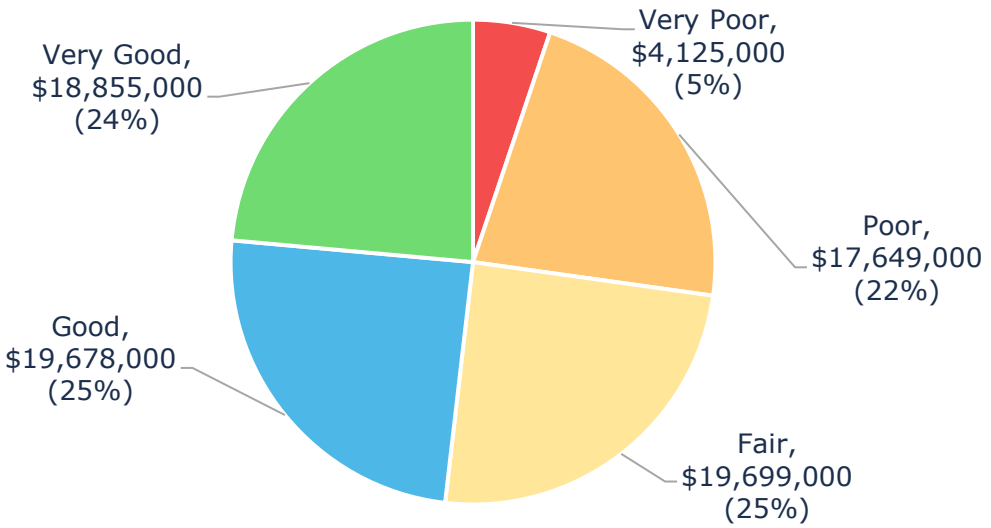


Figure 27 Asset Condition: Bridges & Culverts Overall

As further detailed in Figure 28, based on in-field condition assessments, $21 million of bridge and culvert assets were assessed as being in poor or worse condition. Bridges and structures with a poor or worse rating (i.e., a bridge condition index of less than 55) are not necessarily unsafe for regular use. The OSIM ratings are designed to identify repairs needed to elevate condition ratings to a fair or higher.

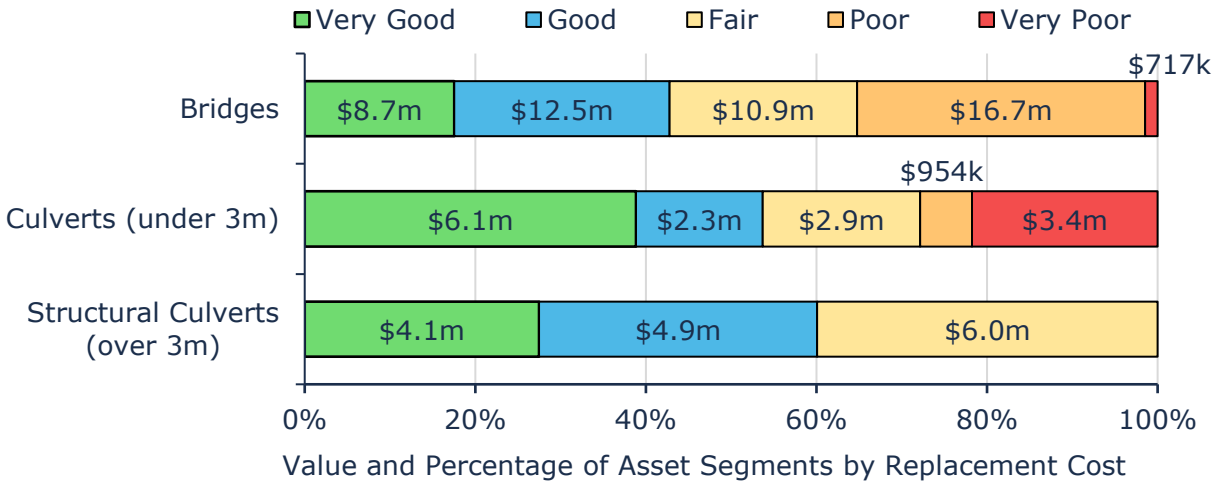


Figure 28 Asset Condition: Bridges & Culverts by Segment

5.3 Age Profile

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning for potential replacement spikes.

Figure 29 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

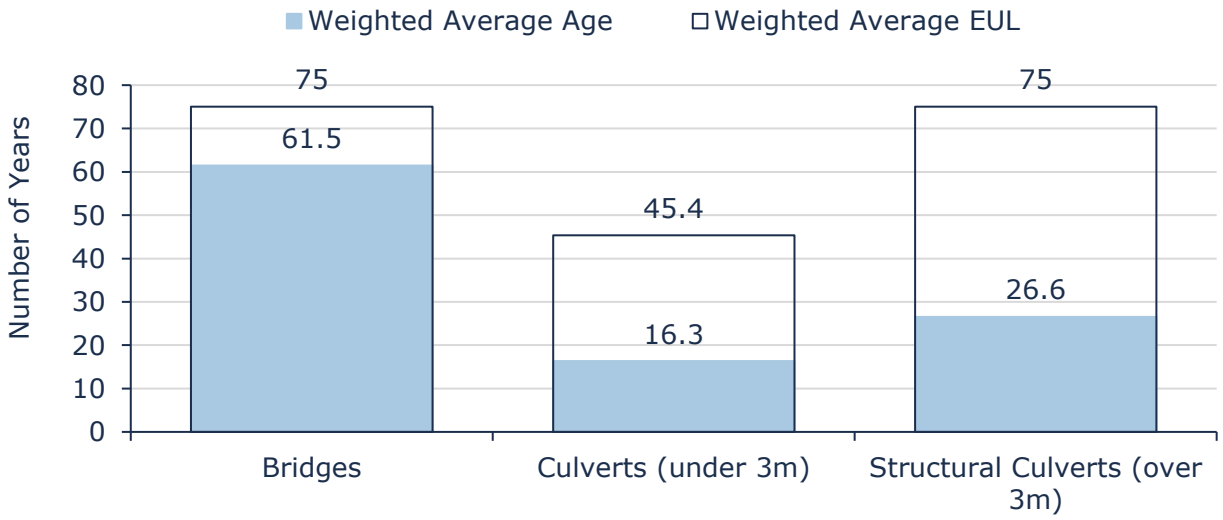


Figure 29 Estimated Useful Life vs. Asset Age: Bridges & Culverts

Age analysis reveals that on average, bridges and culverts are in the moderate to later stages of their estimated useful life. OSIM assessments should continue to be used in conjunction with age and asset criticality to prioritize capital and maintenance expenditures.

5.4 Current Approach to Lifecycle Management

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

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

Activity Type	Description of Current Strategy
Maintenance	Typical routine maintenance includes cleaning, and minor repairs.
	Biennial OSIM inspection reports include a list of recommended maintenance activities that the Municipality considers and completes according to cost and urgency.
Rehabilitation / Replacement	Biennial OSIM inspection reports include a Capital Needs List identifying recommended rehabilitation and replacement activities with estimated costs. Activities may include resurfacing, structural repairs, and upgrading.
	Replacement is considered when an asset's condition has deteriorated significantly, and rehabilitation is no longer cost-effective. Assets with an expected service life nearing its end or those incurring frequent and costly repairs are prioritized for replacement.
Inspection	OSIM reports are conducted every 2 years, while informal staff inspections are conducted twice a year. The most recent OSIM inspection reports were prepared in 2023 by Keystone.

Table 14 Lifecycle Management Strategy: Bridges & Culverts

5.5 Forecasted Long-Term Replacement Needs

Figure 30 illustrates the cyclical short-, medium- and long-term infrastructure rehabilitation and replacement requirements for the Municipality's bridges and culverts. This analysis was run until 2098 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Municipality's primary asset management system and asset register. The Municipality's average annual requirements (red dotted line) for bridges and culverts total $1.4 million. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

Major replacement spikes will occur between 2054 and 2088 as assets near end of life. These projections and estimates are based on asset replacement costs, age analysis, and condition data. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

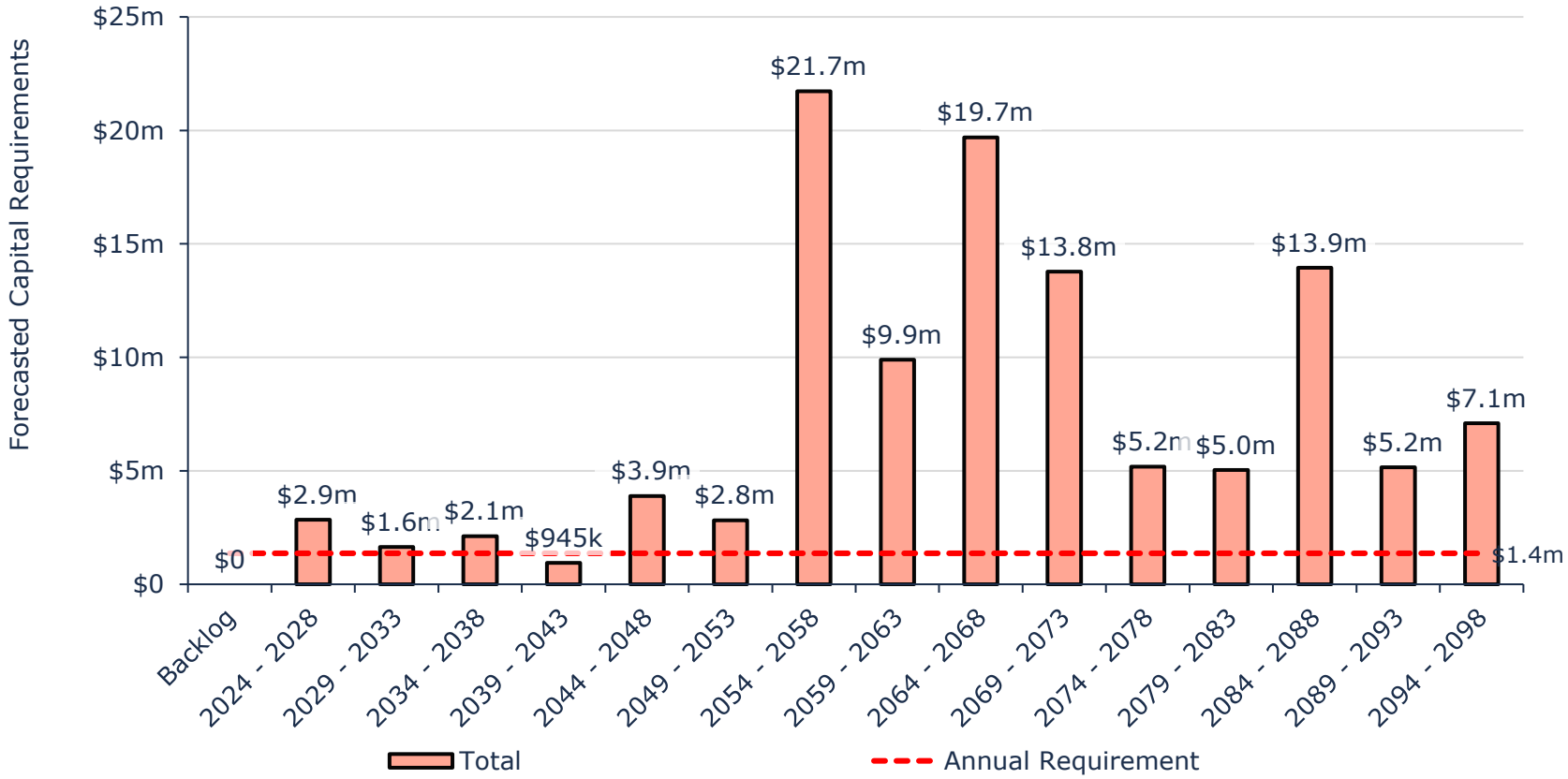


Figure 30 Forecasted Capital Replacement Needs: Bridges & Culverts 2024-2093

Often, the magnitude of replacement needs is substantially higher than most municipalities can afford to fund. In addition, most assets may not need to be replaced. However, quantifying and monitoring these spikes is essential for long-term financial planning, including establishing dedicated reserves. OSIM condition assessments and a robust risk framework will ensure that high-criticality assets receive proper and timely lifecycle intervention, including replacements.

Tables summarizing the projected lifecycle activities (rehabilitation and replacements) that may be undertaken in the next 10 years to support current levels of service can be found in Appendix B – 10-Year Capital Requirements.

5.6 Risk Analysis

The risk matrix below is generated using available asset data, including condition, service life remaining, replacement costs, and daily traffic counts. The risk ratings for assets without useful attribute data were calculated using only condition, service life remaining, and their replacement costs.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Municipality may consider integrating relevant information that improves confidence in the criteria used to assess asset risk and criticality.

These risk models have been built into the Municipality's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

1 - 4 **Very Low** $4,273,000 (5%)	5 - 7 **Low** $15,787,000 (20%)	8 - 9 **Moderate** $9,144,000 (11%)	10 - 14 **High** $34,274,000 (43%)	15 - 25 **Very High** $16,528,000 (21%)

Figure 31 Risk Matrix: Bridges & Culverts

5.7 Levels of Service

The tables that follow summarize the Municipality's current levels of service with respect to prescribed KPIs under Ontario Regulation 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

5.7.1 Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Bridges and structural culverts play a significant role and the majority of them are accessible to most types of traffic including heavy transport, emergency vehicles, motor vehicles and cyclists without restrictions. Only 5 bridges have loading and/or dimensional restrictions, out of which one is the pedestrian bridge.
Quality	Description or images of the condition of bridges & culverts and how this would affect use of the bridges & culverts	See Appendix C – Level of Service Images

Table 15 O. Reg. 588/17 Community Levels of Service: Bridges & Culverts

5.7.2 Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2023)
Scope	% of bridges in the Municipality with loading or dimensional restrictions	10.64%
Quality	Average bridge condition index value for bridges in the Municipality	68.4
	Average bridge condition index value for structural culverts in the Municipality	73.71
Performance	% of bridges and structural culverts in good or very good condition	67.4%
	% of bridges and structural culverts in poor or very poor condition	42.6%
Affordability	Annual capital reinvestment rate	0.0%

Table 16 O. Reg. 588/17 Technical Levels of Service: Bridges & Culverts

6. Water Network

The Municipality's water network includes water mains, hydrants, and treatment facilities, with a current replacement cost of almost $82 million. Potable water represents a critical portion of the services provided to the community.

6.1 Inventory & Valuation

Table 17 summarizes the quantity and current replacement cost of the Municipality's various water network assets as managed in its primary asset management register, Citywide.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Buildings	4	Assets	$522,000	CPI
Flowmeter	12	Assets	$129,000	CPI
Hydrants	277	Assets	$3,040,000	CPI
Meters	1,294	Assets	$10,339,000	CPI
Reservoir	7	Assets	$5,063,000	CPI
Tower	1	Assets	$5,799,000	CPI
Treatment	45	Assets	$2,061,000	CPI
Valve Chambers and Manholes	6	Assets	$151,000	CPI
Valves	379	Assets	$4,809,000	CPI
Water Housing Connection	1,961	Assets	$10,020,000	CPI
Watermains	64,979	Meters	$39,509,000	CPI
Well	9	Assets	$170,000	CPI
TOTAL			**$81,611,000**	

Table 17 Detailed Asset Inventory: Water Network

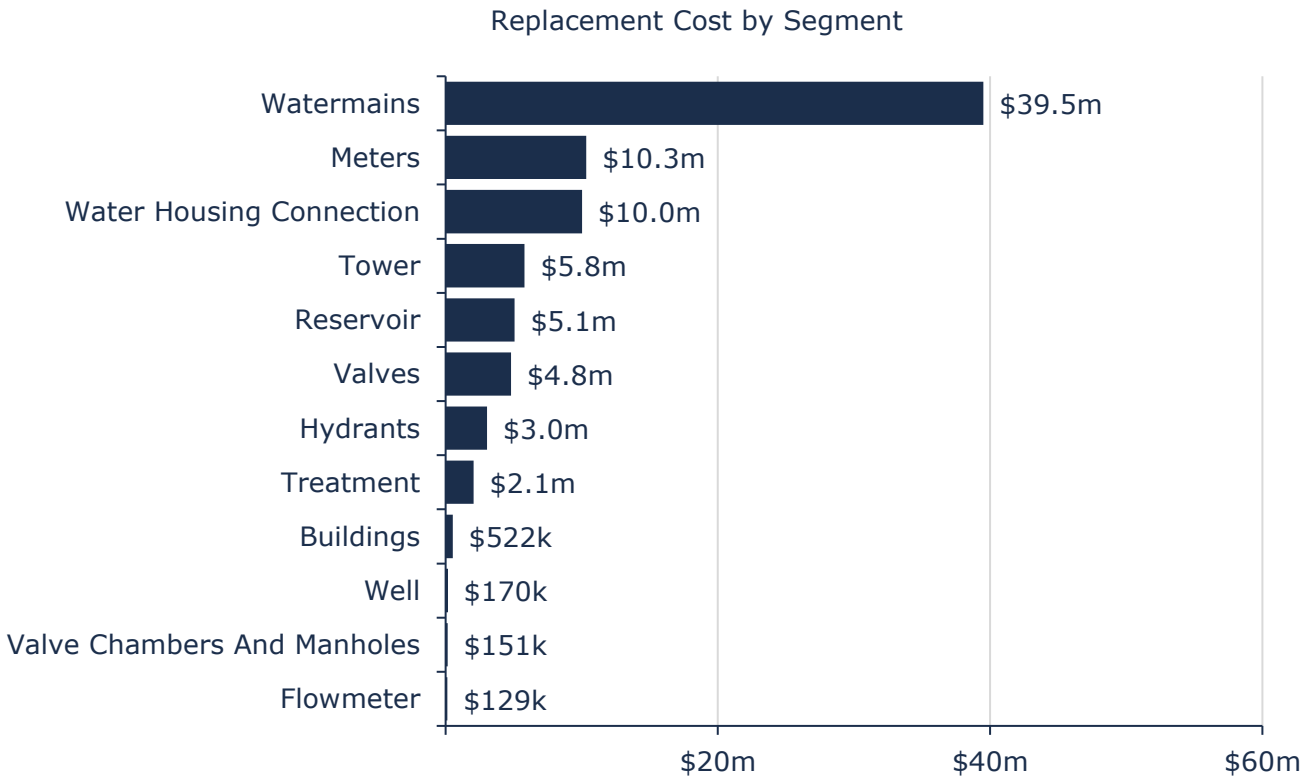


Figure 32 Portfolio Valuation: Water Network

6.2 Asset Condition

Figure 33 summarizes the replacement cost-weighted condition of the Municipality's water network. Based on a combination of field inspection data and age, 87% of assets are in fair or better condition; the remaining 13% of assets are in poor to very poor condition. Condition assessments were available for 99% of water assets. This condition data was projected from inspection date to current year to estimate their condition today.

Assets in poor or worse condition may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition. As illustrated in Figure 33, the majority of the Municipality's water network assets are in fair or better condition.

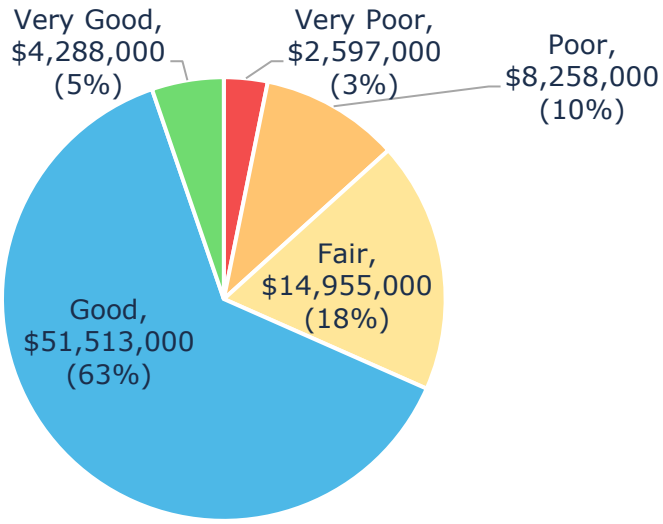


Figure 33 Asset Condition: Water Network Overall

As illustrated in Figure 34, based on condition assessments and age-based conditions, the majority of the Municipality's water mains and water facilities are in good to very good condition; however, 77% of water meters are in poor or worse condition.

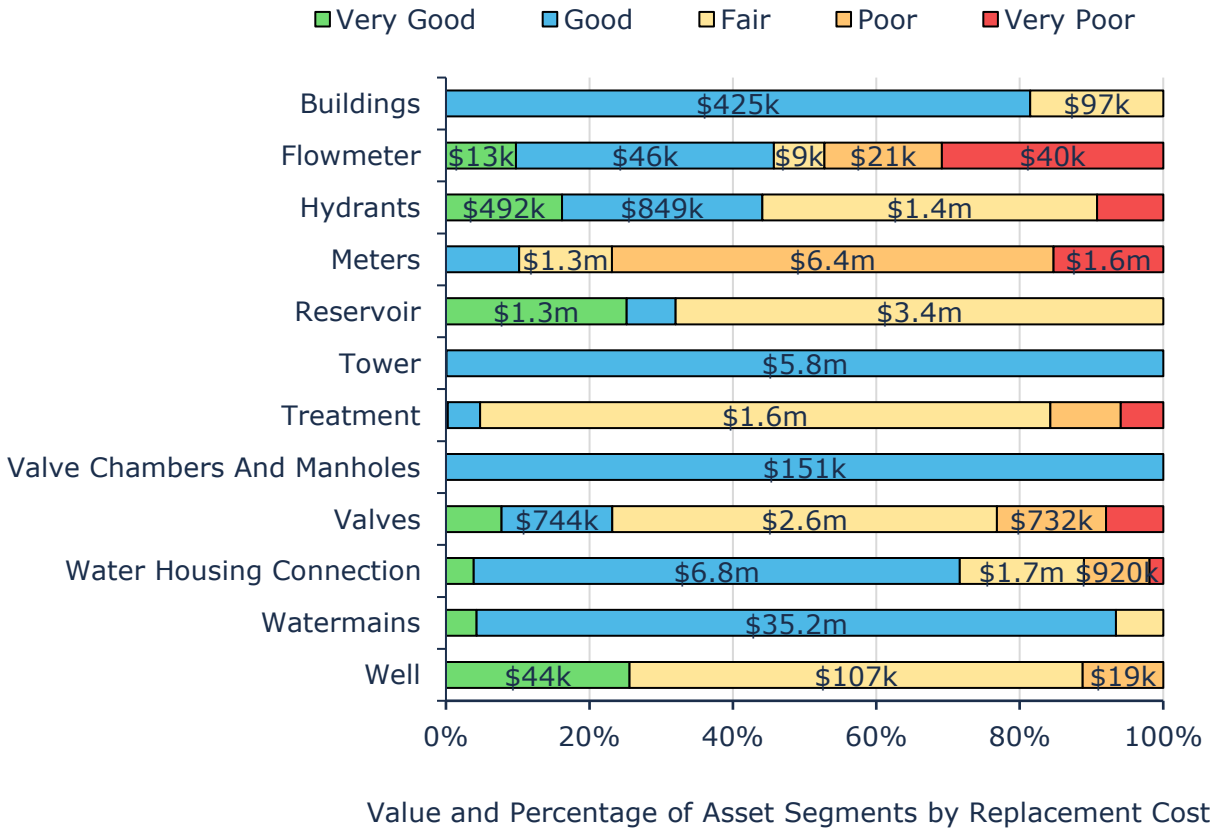


Figure 34 Asset Condition: Water Network by Segment

6.3 Age Profile

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning for potential long-term replacement spikes.

Figure 35 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

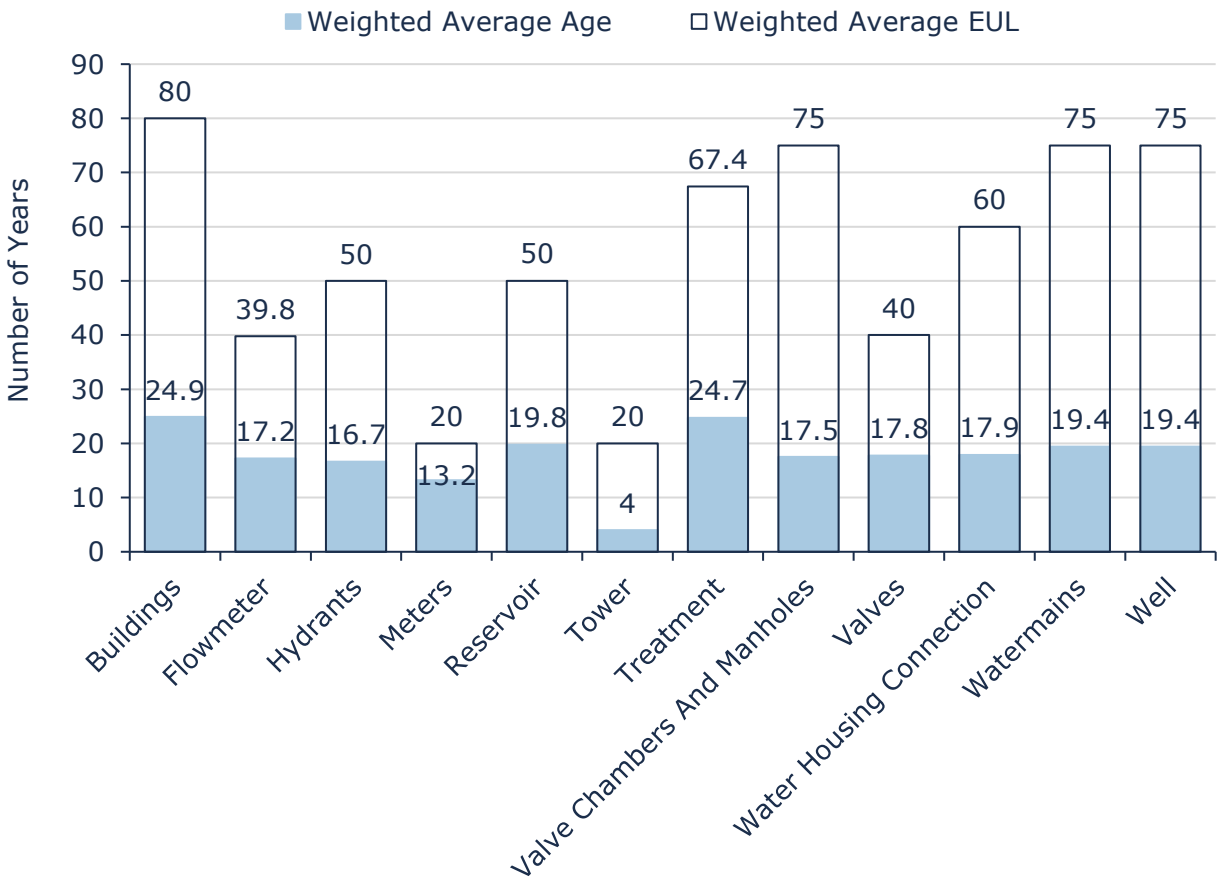


Figure 35 Estimated Useful Life vs. Asset Age: Water Network

Age analysis reveals that on average, water network assets are in the early to moderate stages of their design life. Age profiles and condition assessments will help to identify mains in need of replacements and/or upgrades. Extensions to EULs for mains may also be considered based on performance history to date.

6.4 Current Approach to Lifecycle Management

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

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

Activity Type	Description of Current Strategy
Maintenance	Routine maintenance includes cleaning, valve turning, and water main flushing. Maintenance is triggered by our maintenance schedule board to reduce the cost of any breaks or maintenance after hours.
Rehabilitation/ Replacement	Rehabilitation activities include resurfacing of the water tower exterior, upgrading SCADA systems, ect., with different assets having different programs each lasting 5 years.
	Replacement is considered when the condition of an asset has deteriorated significantly, and rehabilitation is no longer cost-effective. Assets whose expected lifespan is nearing the end or those incurring frequent and costly repairs are prioritized for replacement
Inspection	Internal staff provide water main assessments, with the most recent being conducted in 2020. Fire hydrants and booster stations are inspected every year. Distribution systems are inspected every month, and treatment trains, pumps, etc., are inspected semi-annually and annually.
	Major infrastructure like Reservoirs, Water tower, Wells, etc. are assessed by an external firm. This firm provides an estimation of when to perform the maintenance and rehabilitation.

Table 18 Lifecycle Management Strategy: Water Network

The following lifecycle strategy has been documented to formalize the current strategy used to manage the lifecycle of water mains.

Water Mains		
Event Name	**Event Class**	**Event Trigger**
Water Main Flushing	Maintenance	Annually
Asset Replacement	Replacement	Condition: 10 - 20

Table 19 Lifecycle Strategy: Water Mains

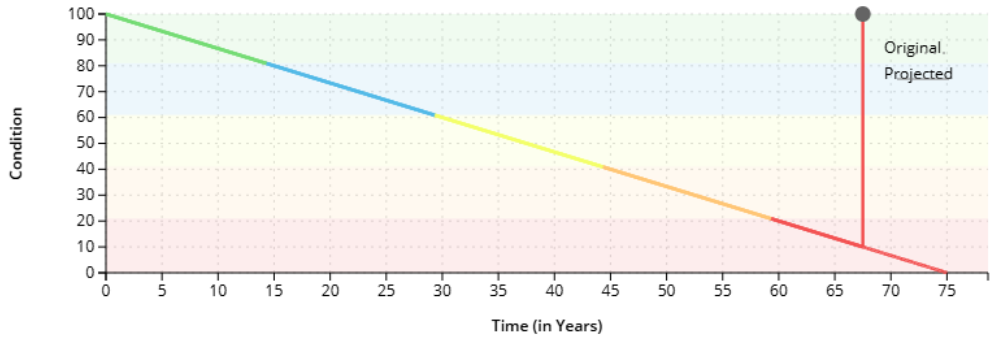


Figure 36 Lifecycle Strategy: Water Mains

6.5 Forecasted Long-Term Replacement Needs

Figure 37 illustrates the cyclical short-, medium- and long-term infrastructure rehabilitation and replacement requirements for the Municipality's water network. This analysis was run until 2098 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Municipality's primary asset management system and asset register. The Municipality's average annual requirements (red dotted line) total $1.6 million for all assets in the water network. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

The chart illustrates substantial capital needs throughout the forecast period. These projections are based on asset replacement costs, age analysis, and condition data when available. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

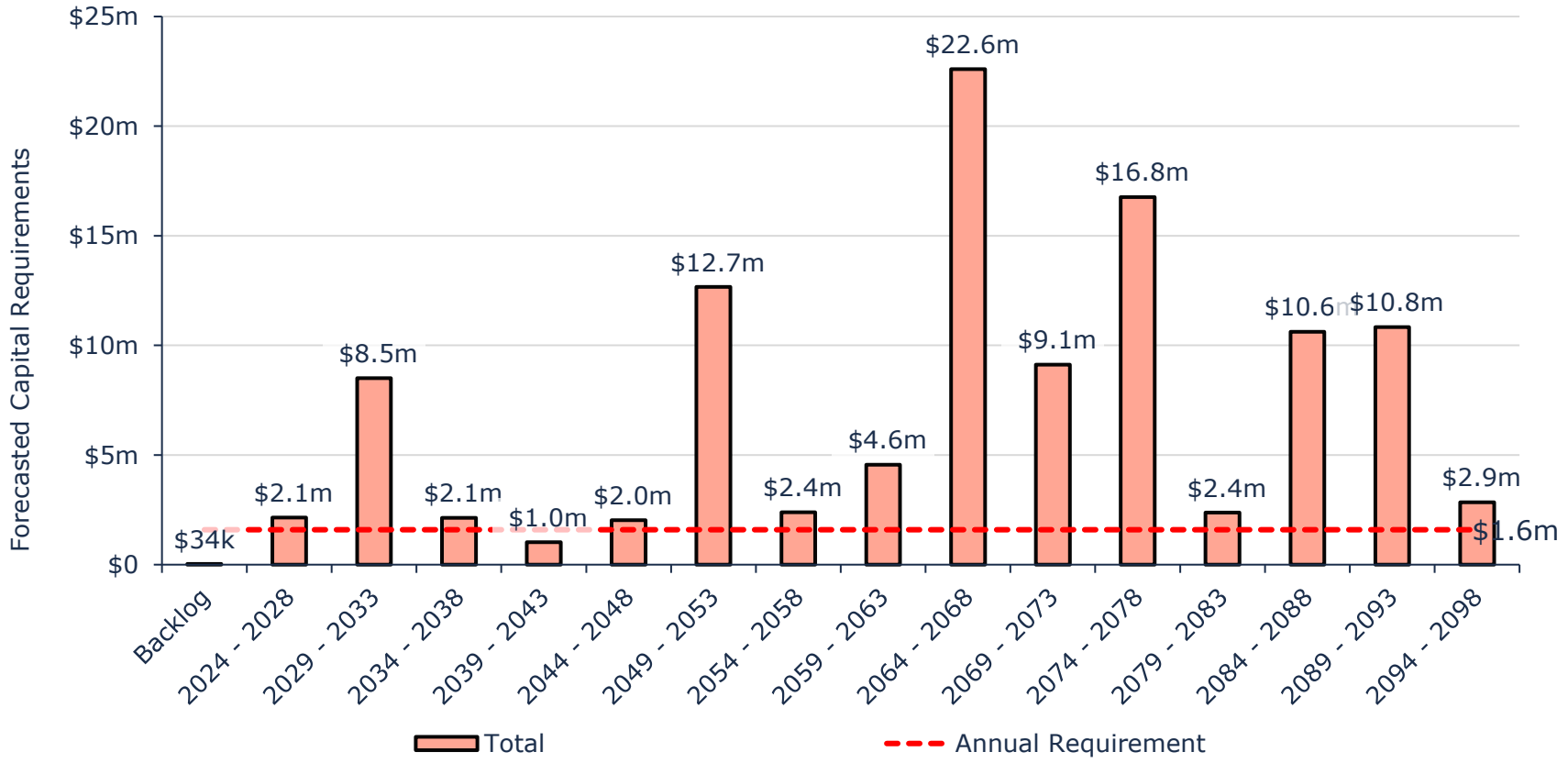


Figure 37 Forecasted Capital Replacement Needs: Water Network 2024-2098

Often, the magnitude of replacement needs is substantially higher than most municipalities can afford to fund. In addition, most assets may not need to be replaced. However, quantifying and monitoring these spikes is essential for long-term financial planning, including establishing dedicated reserves. Regular condition assessments and a robust risk framework will ensure that high-criticality assets receive proper and timely lifecycle intervention, including replacements.

Tables summarizing the projected lifecycle activities (rehabilitation and replacements) that may be undertaken in the next 10 years to support current levels of service can be found in Appendix B – 10-Year Capital Requirements.

6.6 Risk Analysis

The risk matrix below is generated using available asset data, including condition, service life remaining, replacement costs, traffic data, and road class. The risk ratings for assets without useful attribute data were calculated using only condition, service life remaining, and their replacement costs.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Municipality may consider integrating relevant information that improves confidence in the criteria used to assess asset risk and criticality.

These risk models have been built into the Municipality's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

1 - 4 **Very Low** $12,286,000 (15%)	5 - 7 **Low** $16,282,000 (20%)	8 - 9 **Moderate** $28,207,000 (35%)	10 - 14 **High** $14,256,000 (17%)	15 - 25 **Very High** $10,637,000 (13%)

Figure 38 Risk Matrix: Water Network

6.7 Levels of Service

The tables that follow summarize the Municipality's current levels of service with respect to prescribed KPIs under Ontario Regulation 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

6.7.1 Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	See Appendix C
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	
Reliability	Description of boil water advisories and service interruptions	Water service interruptions may occur due to main breaks, maintenance activities or reconstruction projects. Staff tend to these interruptions and inform residents in a timely manner.

Table 20 O. Reg. 588/17 Community Levels of Service: Water Network

6.7.2 Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2023)
Scope	% of properties connected to the municipal water system[2]	87%
	% of properties where fire flow is available[3]	100%
Reliability	# of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	0
	# of connection-days per year where water is not available due to water main breaks compared to the total number of properties connected to the municipal water system	0
Affordable	Annual capital reinvestment rate	0.48%

Table 21 O. Reg. 588/17 Technical Levels of Service: Water Network

[2] This figure represents the connections within the urban areas and is distributed between Limoges and St. Isidore.
[3] This figure indicates, that of those properties with a water connection, 100% have fire flow available.

7. Sanitary Sewer Network

The sanitary sewer network provides the essential service of wastewater collection, disposal, and treatment for the community, and has a current replacement value of over $89 million.

7.1 Inventory & Valuation

Table 22 summarizes the quantity and current replacement cost of the Municipality's various sanitary sewer network assets as managed in its primary asset management register, Citywide.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Buildings	11	Assets	$793,000	CPI
Collection	5	Assets	$78,000	CPI
Electrical System	15	Assets	$1,684,000	CPI
Force main	17,157	Meters	$8,875,000	CPI
House Sewer Connection	1,941	Assets	$7,872,000	CPI
Lagoon	2	Assets	$12,050,000	CPI
Manholes	450	Assets	$20,155,000	CPI
Monitoring	15	Assets	$8,857,000	CPI
Pumping Station	33	Assets	$3,477,000	CPI
Scada	12	Assets	$563,000	CPI
Septic Field	16	Assets	$2,382,000	CPI
Sewer mains	39,176	Meters	$22,128,000	CPI
Treatment	9	Assets	$268,000	CPI
TOTAL			**$89,181,000**	

Table 22 Detailed Asset Inventory: Sanitary Sewer Network

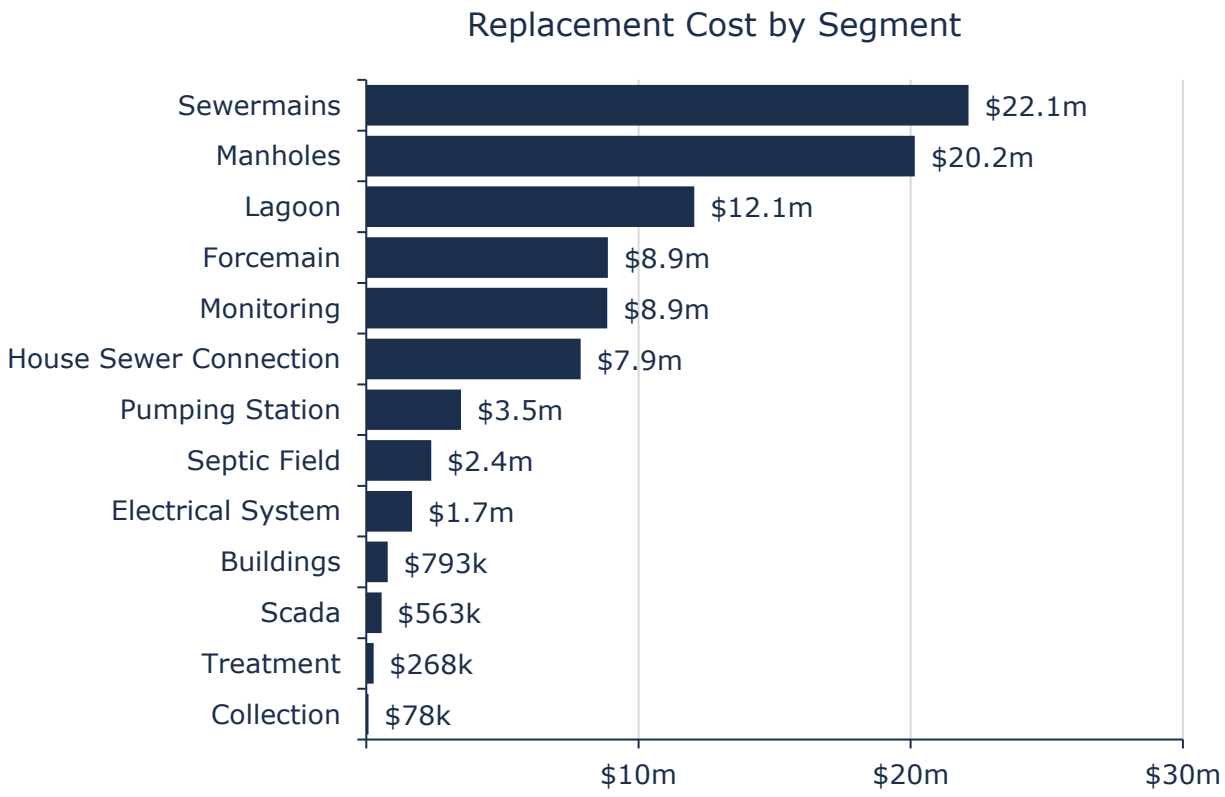


Figure 39 Portfolio Valuation: Sanitary Sewer Network

7.2 Asset Condition

Figure 40 summarizes the replacement cost-weighted condition of the Municipality's sanitary sewer network. Based on a combination of field inspection data and age, 81% of assets are in fair or better condition; the remaining 19% of assets are in poor to very poor condition. Condition assessments were available for 100% of sanitary assets. This condition data was projected from inspection date to current year to estimate their condition today.

Assets in poor or worse condition may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition. As illustrated in Figure 40 the majority of the Municipality's sanitary sewer network assets are in fair or better condition.

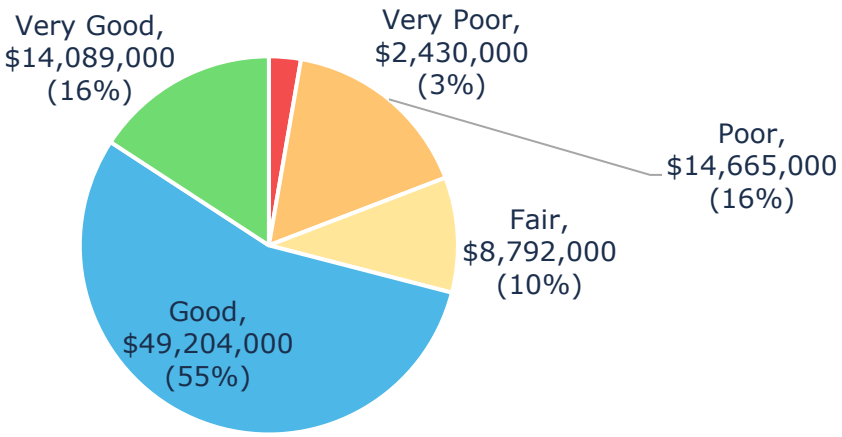


Figure 40 Asset Condition: Sanitary Sewer Network Overall

As illustrated in Figure 41, based on condition assessments and age-based conditions, the majority of the Municipality's sanitary sewer mains are in good to very good condition.

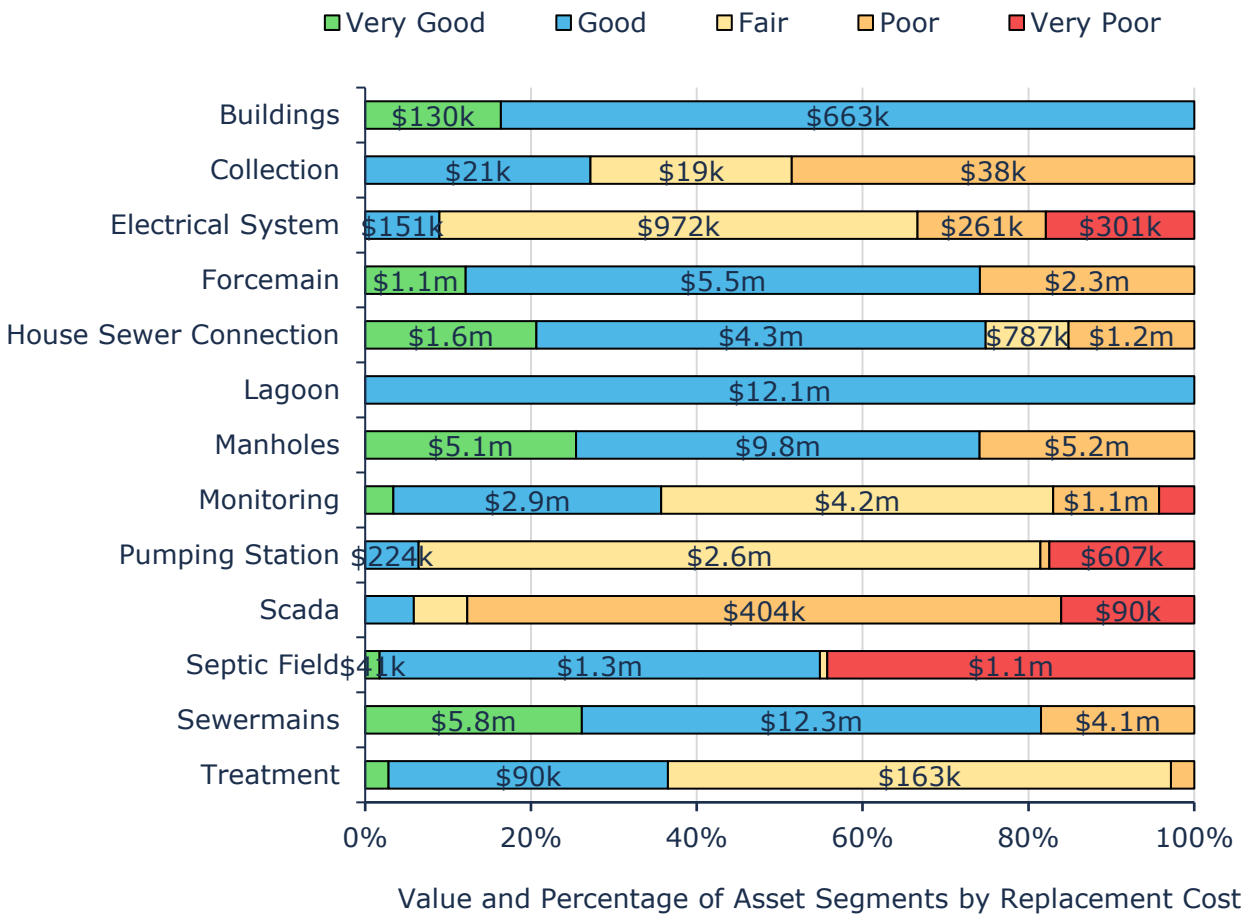


Figure 41 Asset Condition: Sanitary Sewer Network by Segment

7.3 Age Profile

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning for potential long-term replacement spikes.

Figure 42 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

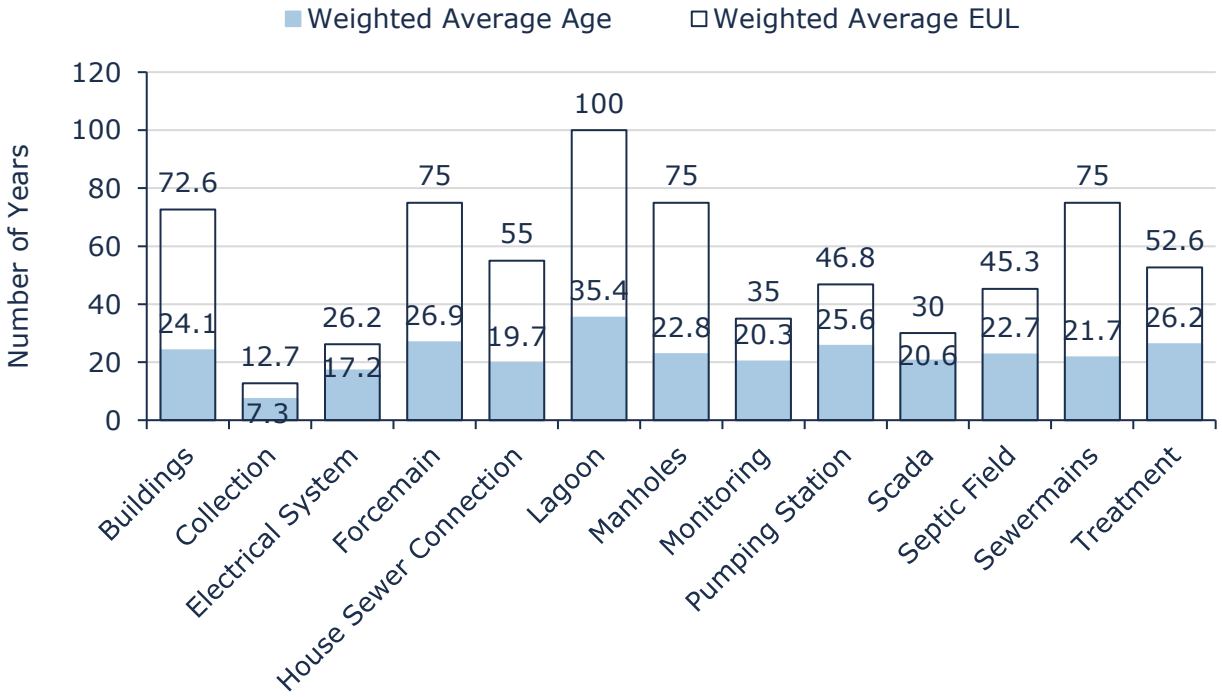


Figure 42 Estimated Useful Life vs. Asset Age: Sanitary Sewer Network

Age analysis reveals that on average, sanitary sewer assets still have about half of their life expectancy remaining. Age profiles and CCTV inspections will help to identify mains in need of replacements and/or upgrades. Extensions to EULs for mains may also be considered based on performance history to date.

7.4 Current Approach to Lifecycle Management

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

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

Activity Type	Description of Current Strategy
Maintenance	Routine maintenance includes cleaning, valve turning, and flushing. Maintenace is triggered by our maintenance schedule board to reduce the cost of any breaks or maintenance after hours.
Rehabilitation/ Replacement	Rehabilitation activities include upgrading SCADA systems, Lagoon cell cleaning, etc. Each asset has a different rehabilitation program, lasting approximately 5 years. Replacement is considered when the condition of an asset has deteriorated significantly, and rehabilitation is no longer cost-effective. Assets whose expected lifespan is nearing the end or those incurring frequent and costly repairs are prioritized for replacement.
Inspection	Internal staff complete condition assessments for sewer mains with the most recent being from 2020. Wastewater facilities and pump stations are inspected monthly. The treatment facility and appurtenances are inspected semi-annually and annually.

Table 23 Lifecycle Management Strategy: Sanitary Sewer Network

The following lifecycle strategy has been documented to formalize the current strategy used to manage the lifecycle of sanitary mains.

Sanitary Mains		
Event Name	**Event Class**	**Event Trigger**
Main Flushing	Maintenance	Annually
Asset Replacement	Replacement	Condition: 10 - 20

Table 24 Lifecycle Strategy: Sanitary Mains

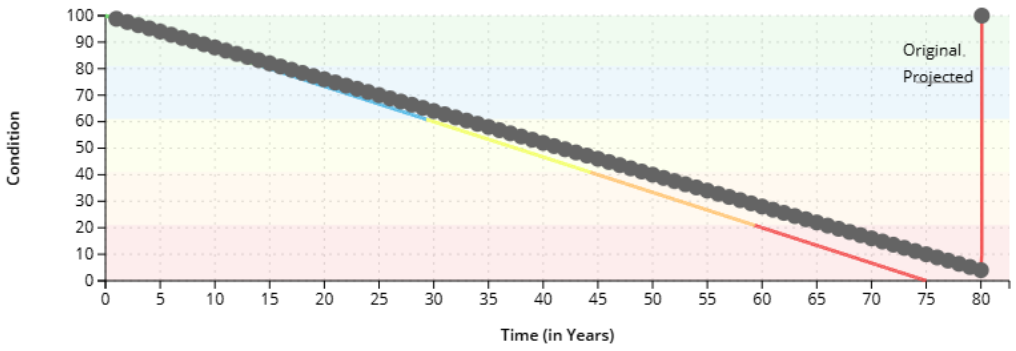


Figure 43 Lifecycle Strategy: Sanitary Mains

7.5 Forecasted Long-Term Replacement Needs

Figure 44 illustrates the cyclical short-, medium- and long-term infrastructure rehabilitation and replacement requirements for the Municipality's sanitary sewer network. This analysis was run until 2098 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Municipality's primary asset management system and asset register. The Municipality's average annual requirements (red dotted line) total $1.5 million for all assets in the sanitary sewer network. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

The chart illustrates substantial capital needs throughout the forecast period. These projections are based on asset replacement costs, age analysis, and condition data when available. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

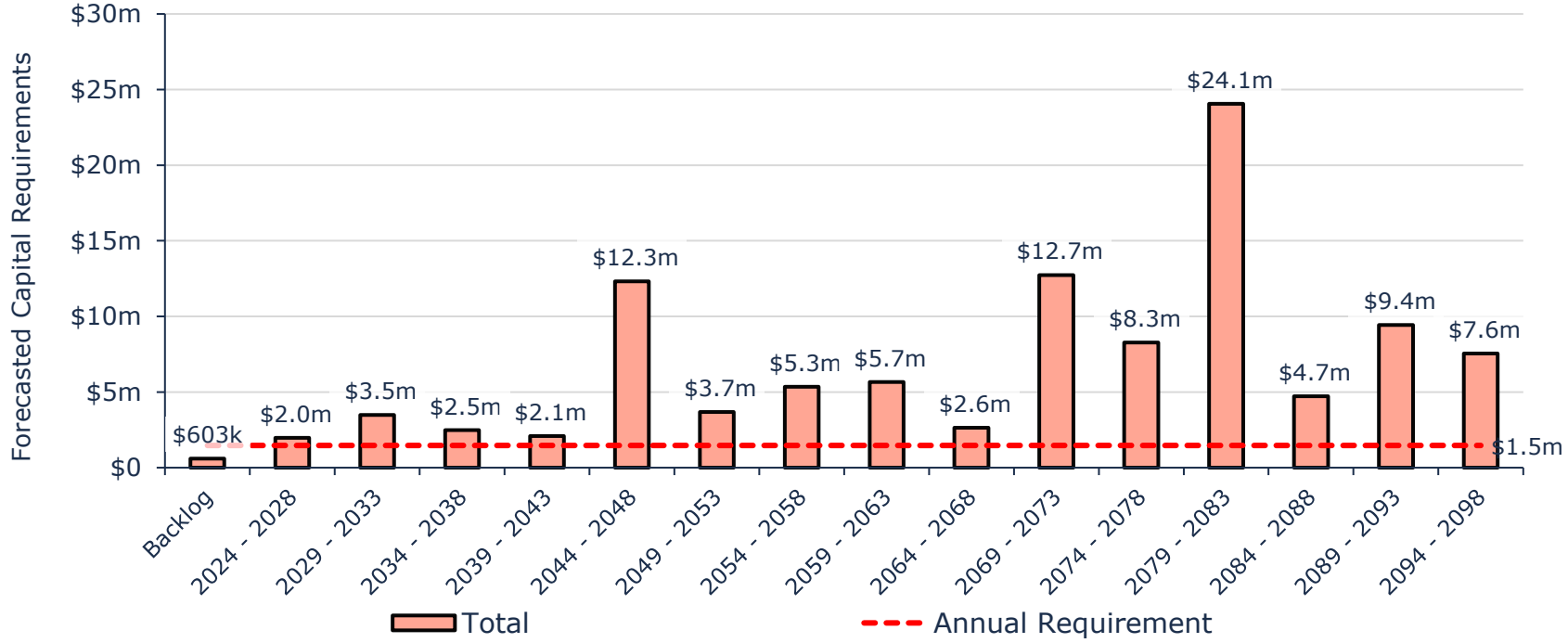


Figure 44 Forecasted Capital Replacement Needs: Sanitary Sewer Network 2024-2103

Often, the magnitude of replacement needs is substantially higher than most municipalities can afford to fund. In addition, most assets may not need to be replaced. However, quantifying and monitoring these spikes is essential for long-term financial planning, including establishing dedicated reserves. Regular condition assessments and a robust risk framework will ensure that high-criticality assets receive proper and timely lifecycle intervention, including replacements.

Tables summarizing the projected lifecycle activities (rehabilitation and replacements) that may be undertaken in the next 10 years to support current levels of service can be found in Appendix B – 10-Year Capital Requirements.

7.6 Risk Analysis

The risk matrix below is generated using available asset data, including condition, service life remaining, replacement costs, traffic data, and road class. The risk ratings for assets without useful attribute data were calculated using only condition, service life remaining, and their replacement costs.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Municipality may consider integrating relevant information that improves confidence in the criteria used to assess asset risk and criticality.

These risk models have been built into the Municipality's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

1 - 4 **Very Low** $19,926,000 (22%)	5 - 7 **Low** $14,795,000 (17%)	8 - 9 **Moderate** $33,034,000 (37%)	10 - 14 **High** $11,558,000 (13%)	15 - 25 **Very High** $9,869,000 (11%)

Figure 45 Risk Matrix: Sanitary Sewer Network

7.7 Levels of Service

The tables that follow summarize the Municipality's current levels of service with respect to prescribed KPIs under Ontario Regulation 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

7.7.1 Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	See Appendix C
Reliability	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes	There are no combined sewers in the Municipality
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	
	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	During heavy rainfall, sanitary sewers could experience high volumes of inflow, exceeding their design capacity. Storm water can also enter sanitary sewers via infiltration from broken pipes, cracks, or bad joints, holes in the manhole covers, etc. These factors, in extreme conditions, could result in an overflow of sewage/water into streets or backup into homes. Installing a sump pump for storm water can help reduce this occurrence.
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	The Municipality adheres to the provincial guidelines and design standards during construction or replacement of sanitary sewers. Also, it does not allow connecting sump pumps to the sanitary system. There are no combined storm and sanitary sewers, and the manhole covers have only two holes each.
	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	N/A

Table 25 O. Reg. 588/17 Community Levels of Service: Sanitary Sewer Network

7.7.2 Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2023)
Scope	% of properties connected to the municipal wastewater system[4]	77%
Reliability	# of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system	0
	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	0
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0
Affordable	Capital reinvestment rate	0.31%

Table 26 O. Reg. 588/17 Technical Levels of Service: Sanitary Sewer Network

[4] This figure represents the connections within the urban areas and is distributed between Limoges and St. Isidore.

8. Stormwater Network

The Municipality's Stormwater Network is comprised of sewer mains and other critical supporting capital assets. The current replacement cost of assets accounted for within the asset management system totals approximately $26 million.

8.1 Inventory & Valuation

Table 27 summarizes the quantity and current replacement cost of the Municipality's various stormwater network assets as managed in its primary asset management register, Citywide.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Catch Basins	1,294	Assets	$1,502,000	CPI
Manholes	265	Assets	$3,336,000	CPI
Storm Sewer Mains	48,345	Meters	$21,235,000	CPI
TOTAL			**$26,073,000**	

Table 27 Detailed Asset Inventory: Stormwater Network

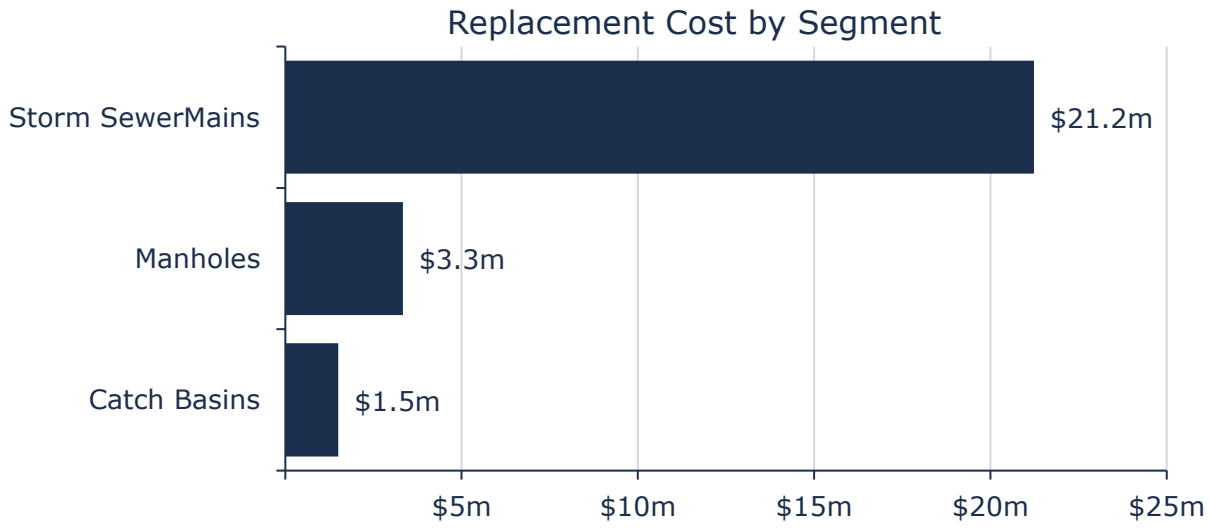


Figure 46 Portfolio Valuation: Stormwater Network

8.2 Asset Condition

Figure 47 summarizes the replacement cost-weighted condition of the Municipality's stormwater management assets. Based on primarily age data, approximately 54% of assets are in poor to very poor condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition.

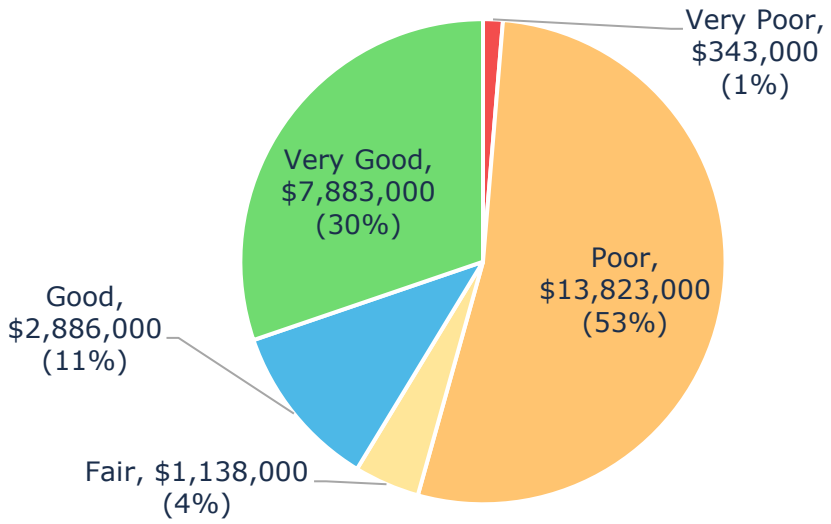


Figure 47 Asset Condition: Stormwater Network Overall

Figure 48 summarizes the mostly age-based condition of stormwater assets. The analysis illustrates that the majority of stormwater mains are in poor or worse condition with a current replacement cost of $14 million.

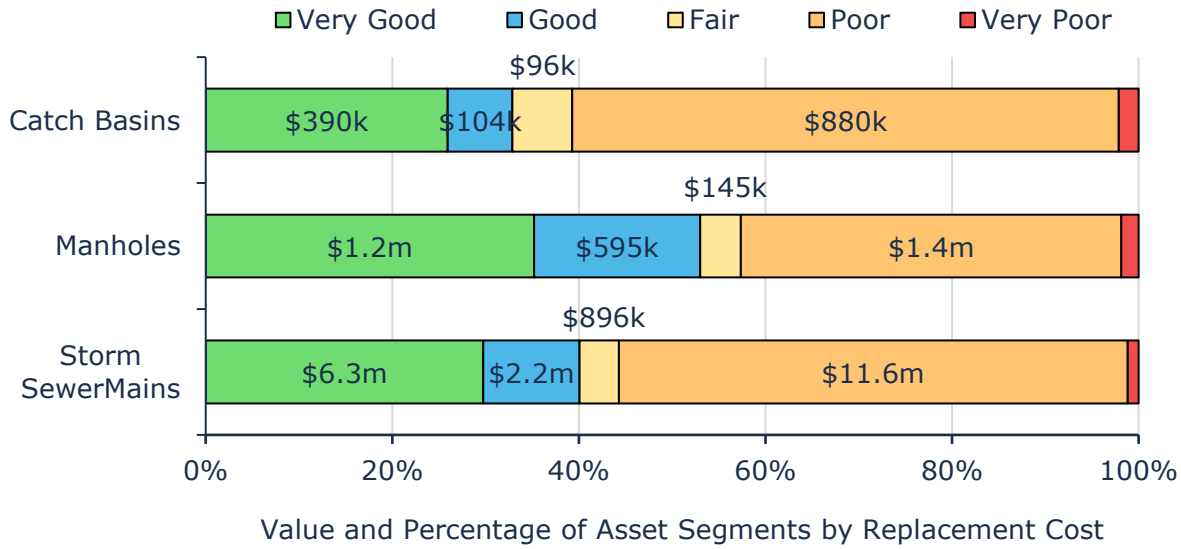


Figure 48 Asset Condition: Stormwater Network by Segment

8.3 Age Profile

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates

for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning for potential replacement spikes.

Figure 49 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

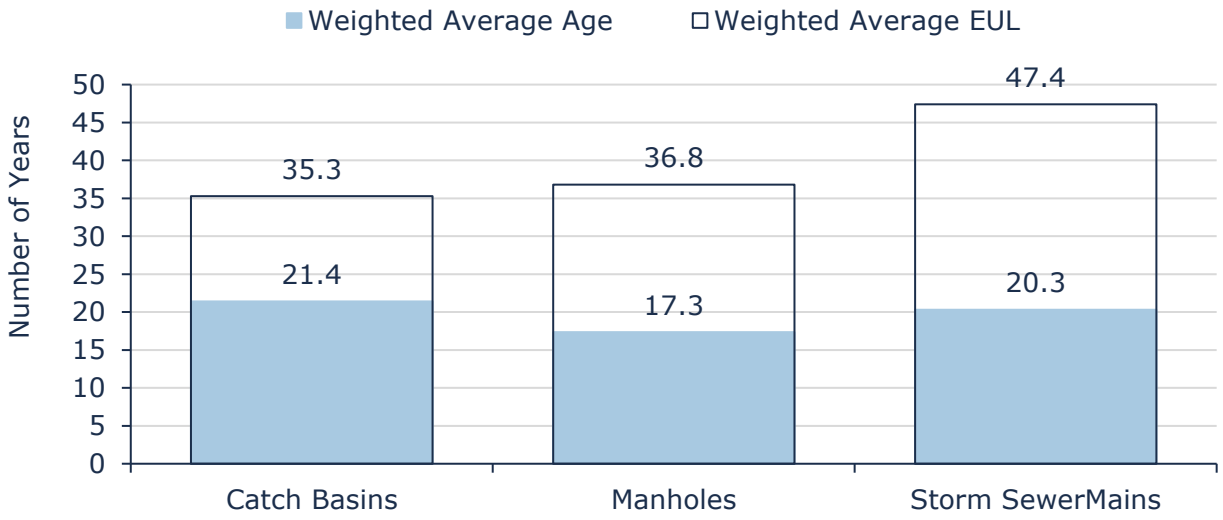


Figure 49 Estimated Useful Life vs. Asset Age: Stormwater Network

Age analysis reveals that on average, stormwater assets are in the moderate stages of their design life. Age profiles and CCTV inspections will help to identify mains in need of replacements and/or upgrades. Extensions to EULs for mains may also be considered based on performance history to date.

8.4 Current Approach to Lifecycle Management

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

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

Activity Type	Description of Current Strategy
Maintenance	Maintenance is triggered by visual inspections identifying issues such as cracks, potholes, or safety hazards.
Rehabilitation/ Replacement	Rehabilitation activities include resurfacing, structural repairs, and upgrading outdated systems. Rehabilitation programs are typically initiated every five years for assets with significant wear and tear. Replacement is considered when an asset's condition has deteriorated significantly, and rehabilitation is no longer cost-effective. Assets with an expected service life nearing its end or those incurring frequent and costly repairs are prioritized for replacement.
Inspection	Stormwater mains are assessed by internal staff every 5 years. Hydrants and booster stations are assessed every year for safety.

Table 28 Lifecycle Management Strategy: Stormwater Network

8.5 Forecasted Long-Term Replacement Needs

Figure 50 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Municipality's storm network assets. This analysis was run until 2098 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Municipality's primary asset management system and asset register. The Municipality's average annual requirements (red dotted line) total $524,000 for all assets in the stormwater network. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

The chart illustrates there is no infrastructure backlog. The largest replacement spike of $11.5 million is forecasted in 2029 to 2033 as mains reach the end of their expected design life. These projections and estimates are based on asset replacement costs and age analysis. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

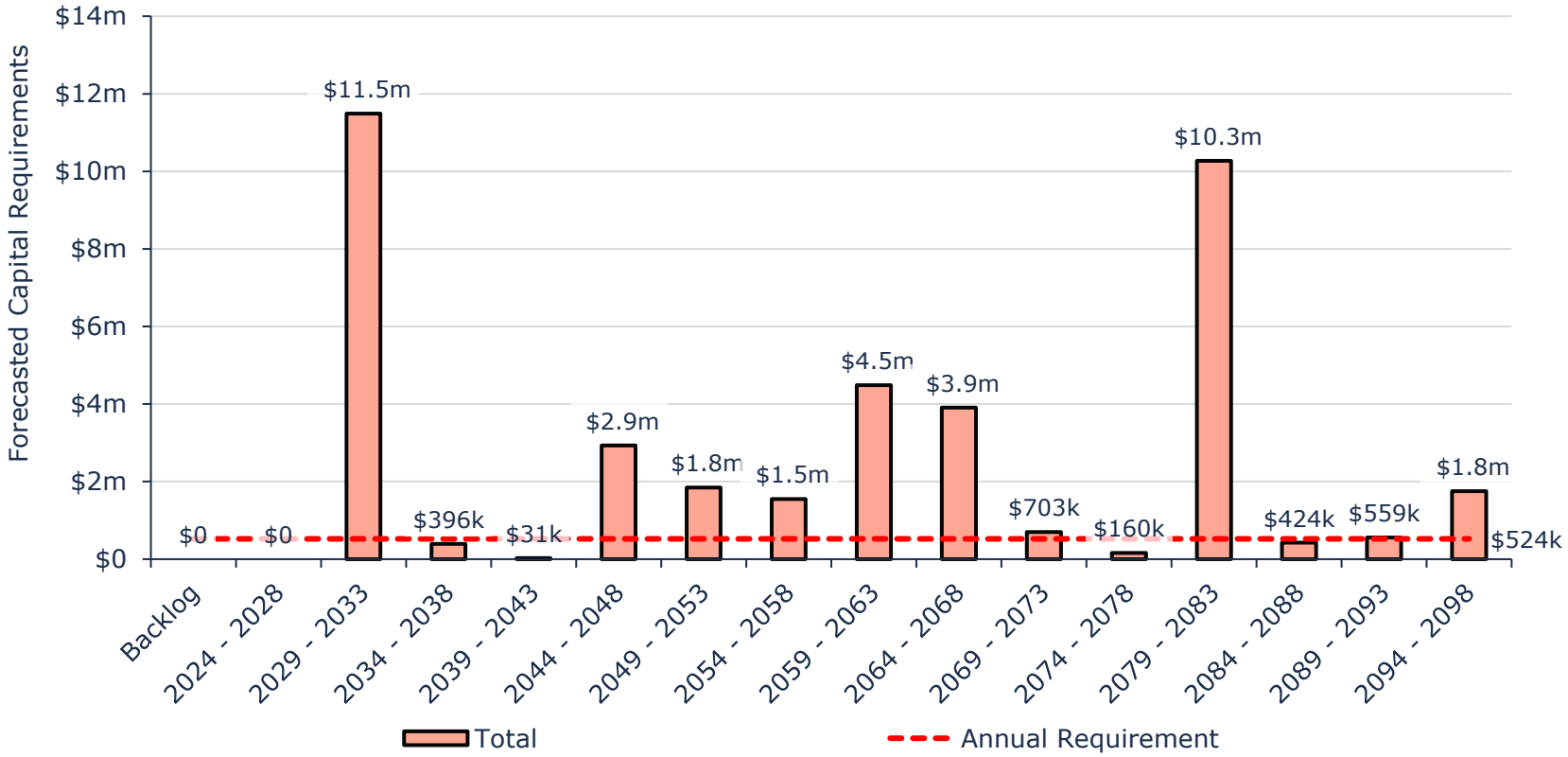


Figure 50 Forecasted Capital Replacement Needs Stormwater Network 2024-2103

Often, the magnitude of replacement needs is substantially higher than most municipalities can afford to fund. In addition, most assets may not need to be replaced. However, quantifying and monitoring these spikes is essential for long-term financial planning, including establishing dedicated reserves. CCTV inspections may reveal a higher or lower backlog. The inspections may also help reduce long-term projections by providing more accurate condition data for mains than age. In addition, a robust risk framework will ensure that high-criticality assets receive proper and timely lifecycle intervention, including replacements.

Tables summarizing the projected lifecycle activities (rehabilitation and replacements) that may be undertaken in the next 10 years to support current levels of service can be found in Appendix B – 10-Year Capital Requirements.

8.6 Risk Analysis

The risk matrix below is generated using available asset data, including condition, service life remaining, and replacement costs. As no attribute data was available for storm assets, the risk ratings for assets were calculated using only these required, minimum asset fields.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Municipality may consider integrating relevant information that improves confidence in the criteria used to assess asset risk and criticality.

These risk models have been built into the Municipality's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

1 - 4 **Very Low** $16,627,000 (66%)	5 - 7 **Low** $1,175,000 (5%)	8 - 9 **Moderate** $2,065,000 (8%)	10 - 14 **High** $3,248,000 (13%)	15 - 25 **Very High** $2,154,000 (9%)

Figure 51 Risk Matrix: Stormwater Network

8.7 Levels of Service

The tables that follow summarize the Municipality's current levels of service with respect to prescribed KPIs under Ontario Regulation 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

8.7.1 Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description, which may include map, of the user groups or areas of the Municipality that are protected from flooding, including the extent of protection provided by the municipal storm water network	See Appendix C

Table 29 O. Reg. 588/17 Community Levels of Service: Stormwater Network

8.7.2 Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2023)
Scope	% of properties in municipality designed to be resilient to a 100-year storm	0%[5]
	% of the municipal stormwater management system designed to be resilient to a 5-year storm	0%[6]
Affordable	Capital reinvestment rate	0%

Table 30 O. Reg. 588/17 Technical Levels of Service: Stormwater Network

[5] This value is provided based on staff knowledge and expertise of the current systems in place. However, there are no studies or data available at the time of this report to support these values.
[6] This value is provided based on staff knowledge and expertise of the current systems in place. However, there are no studies or data available at the time of this report to support these values.

Non-Core Assets

Buildings

Land Improvements

Fleet

Machinery & Equipment

9. Buildings

The Municipality's buildings portfolio includes administration, protection, recreation and cultural, and transportation services. The total current replacement of buildings is estimated at almost $35 million.

9.1 Inventory & Valuation

Table 31 summarizes the quantity and current replacement cost of the Municipality's various building and facilities assets as managed in its primary asset management register, Citywide. Within the asset management database, buildings and facilities are not fully componentized. The quantity listed represents the number of asset records currently available for each department.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Administration	5	Assets	$2,196,000	CPI
Protection Services	22	Assets	$4,288,000	CPI
Recreation & Cultural Services	557	Assets	$23,369,000	CPI
Transportation Services	25	Assets	$5,098,000	CPI
TOTAL			**$34,951,000**	

Table 31 Detailed Asset Inventory: Buildings & Facilities

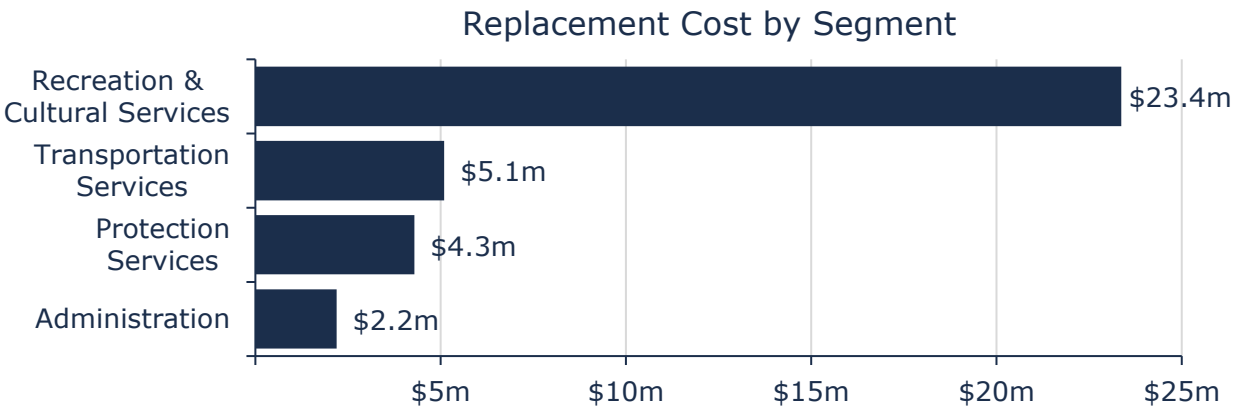


Figure 52 Portfolio Valuation: Buildings & Facilities

9.2 Asset Condition

Figure 58 summarizes the replacement cost-weighted condition of the Municipality's buildings portfolio. Based on staff assessments, 88% of building assets are in fair or better condition; however, 12%, with a current replacement cost of more than $4 million are in poor or worse condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition. As buildings are not fully componentized, condition data is presented only at the site level, rather than at the individual element or component level within each building. This drawback is further compounded by the lack of formalized condition data, as opposed to subjective staff estimates.

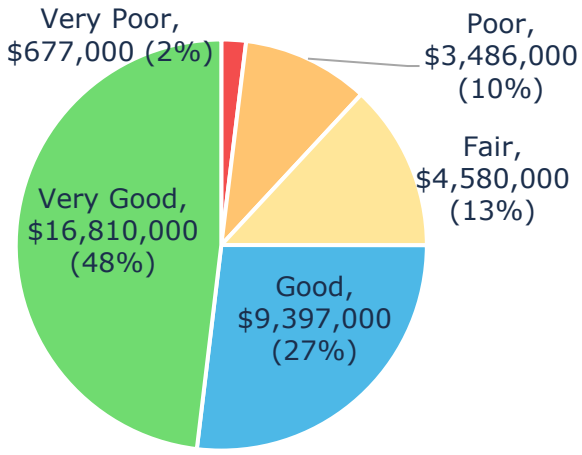


Figure 53 Asset Condition: Buildings & Facilities Overall

Figure 54 summarizes the assessed condition of buildings by each department. However, in the absence of fully componentization, this data has limited value. Componentization of assets and integration of condition assessments will provide a more accurate and reliable estimation of the condition of various facilities.

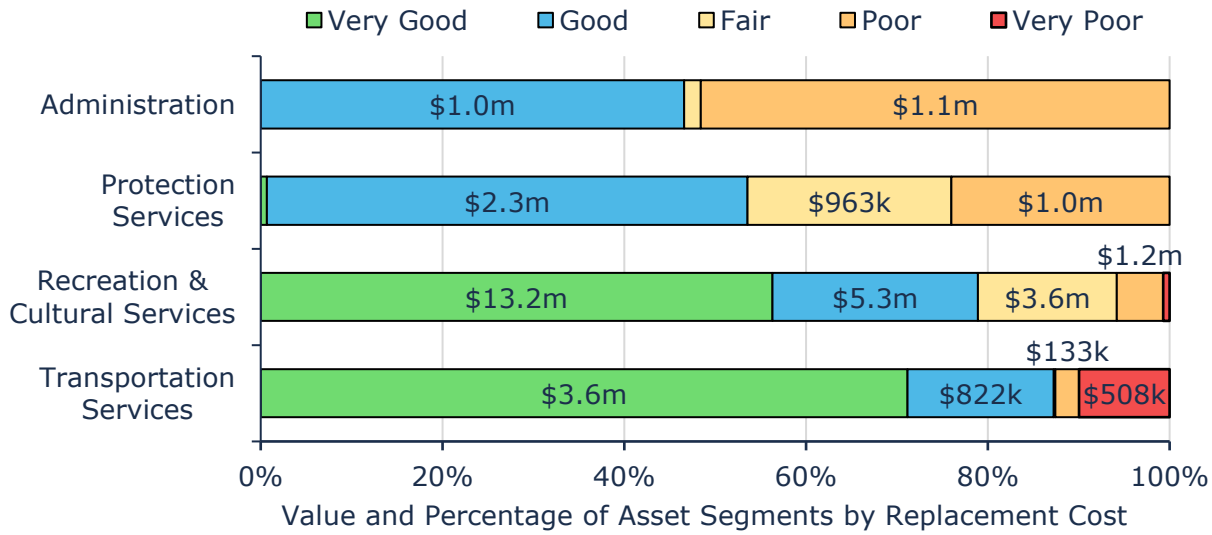


Figure 54 Asset Condition: Buildings & Facilities by Segment

9.3 Age Profile

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning for potential replacement spikes.

Figure 55 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

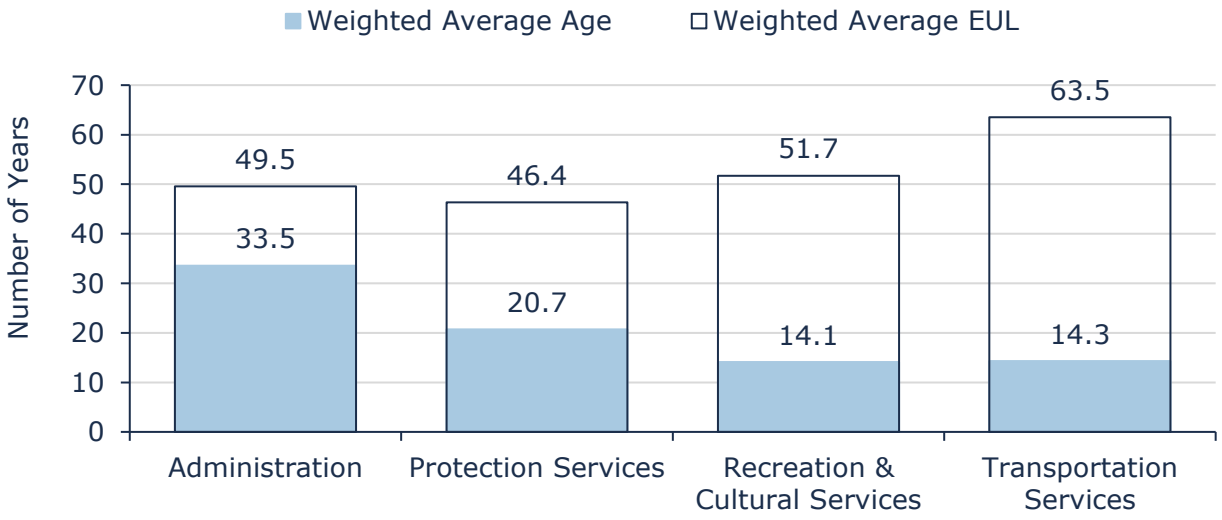


Figure 55 Estimated Useful Life vs. Asset Age: Buildings & Facilities

Age analysis reveals that, on average, building assets are in the earlier to moderate stages of their serviceable life. Once again, this analysis is presented primarily at the site level, rather than at the individual element or component level. Useful and meaningful age analysis for buildings is entirely predicated on effective componentization.

9.4 Current Approach to Lifecycle Management

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

Table 32 outlines the Municipality's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Routine maintenance such as cleaning, inspections and minor repairs are done on a weekly basis. Maintenance is triggered by weekly visual inspections and use of the building.
Rehabilitation/ Replacement	Rehabilitation programs are identified in the FCA plan and put into the annual budgets. Rehabilitation programs are triggered by items identified in the FCA as critical items requiring replacement or repairs that are due to emergency situations. Activities include structural repairs, replacement of flooring, windows, roofing, painting and patching etc. Replacement is considered when an asset's condition has deteriorated significantly, and rehabilitation is no longer cost-effective. Assets with an expected service life nearing its end or those incurring frequent and costly repairs are prioritized for replacement or an emergency repair is needed.
Inspections	Buildings are assessed by internal staff every year, with the last assessment being April 2024. Inspections are conducted monthly, while cleaning and minor repairs are performed quarterly. The first external FCA assessment was completed in 2020.

Table 32 Lifecycle Management Strategy: Buildings & Facilities

9.5 Forecasted Long-Term Replacement Needs

Figure 56 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Municipality's buildings portfolio. This analysis was run until 2098 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Municipality's primary asset management system and asset register. The Municipality's average annual requirements (red dotted line) total $809,000 for all buildings. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

Replacement needs are forecasted to remain relatively consistent over the next 75 years, with a significant spike occurring between 2059 and 2063, and between 2094 and 2098. These projections and estimates are based on current asset records, their replacement costs, and age analysis. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

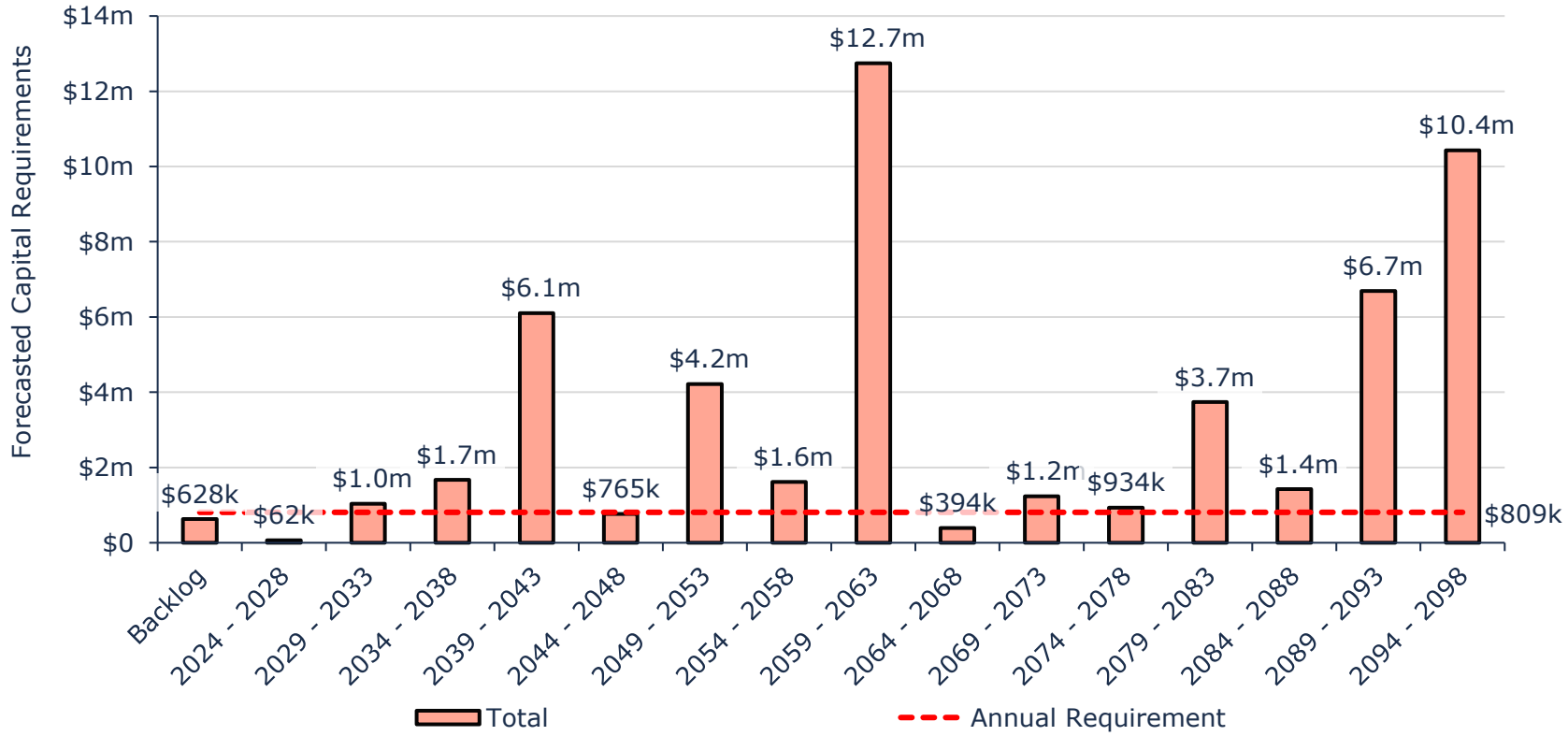


Figure 56 Forecasted Capital Replacement Needs Buildings & Facilities 2024-2078

Often, the magnitude of replacement needs is substantially higher than most municipalities can afford to fund. In addition, most assets may not need to be replaced. However, quantifying and monitoring these spikes is essential for long-term financial planning, including establishing dedicated reserves. In addition, a robust risk framework will ensure that high-criticality assets receive proper and timely lifecycle intervention, including replacements. In the case of buildings and facilities, detailed componentization is necessary to develop more reliable lifecycle forecasts that reflect the needs of individual elements and components.

Tables summarizing the projected lifecycle activities (rehabilitation and replacements) that may be undertaken in the next 10 years to support current levels of service can be found in Appendix B – 10-Year Capital Requirements

9.6 Risk Analysis

The risk matrix below is generated using available asset data, including service life remaining, replacement costs, and building department. The risk ratings for assets without useful attribute data were calculated using only age, service life remaining, and their replacement costs.

The matrix classifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Municipality may consider integrating relevant information that improves confidence in the criteria used to assess asset risk and criticality.

These risk models have been built into the Municipality's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

1 - 4 **Very Low**	5 - 7 **Low**	8 - 9 **Moderate**	10 - 14 **High**	15 - 25 **Very High**
$12,840,000 (37%)	$15,169,000 (43%)	$2,000,000 (6%)	$4,941,000 (14%)	- (0%)

Figure 57 Risk Matrix: Buildings & Facilities

9.7 Levels of Service

The tables that follow summarize the Municipality's current levels of service. There are no specifically prescribed KPIs under Ontario Regulation 588/17 for non-core assets, therefore the KPIs below represent performance measures that the Municipality has selected for this AMP.

9.7.1 Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description, which may include maps of the types of facilities that the municipality operates and maintains	Facilities within the Nation include those dedicated to administration, such as Town Hall and Libraries. Fire services are supported by multiple fire halls. Public works is supported by various equipment garages and salt/sand protection facilities.

		Recreation provides its services through a variety of facilities such as community centers, recreation center and arena.
Quality	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	The municipality utilizes formal FCA reports as annual reference points. Project allocation is determined by cost constraints, with long-term planning contingent upon available funding opportunities and the potential health and safety risks to both users and staff.

Table 33 Community Levels of Service: Buildings & Facilities

9.7.2 Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2023)
Scope	Square meters of indoor recreation facilities per 1,000 households	11.4
Quality	Average facility condition index value for facilities in the municipality	79

Table 34 Technical Levels of Service: Buildings & Facilities

10. Land Improvements

The Municipality's parks and land improvements portfolio include parking lots, various sports fields and courts, fencing and lighting, and towers. The total current replacement of land improvements is estimated at approximately $4.6 million.

10.1 Inventory & Valuation

Table 35 summarizes the quantity and current replacement cost of the Municipality's various parks and land improvement assets as managed in its primary asset management register, Citywide. Parks and playgrounds account for the largest share of the land improvements asset group.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Fencing & Lighting	181	Assets	$903,000	CPI
Fields & Courts	33	Assets	$1,074,000	CPI
Parks & Playgrounds	229	Assets	$1,559,000	CPI
Pavement	22	Assets	$585,000	CPI
Towers	6	Assets	$470,000	CPI
TOTAL			**$4,591,000**	

Table 35 Detailed Asset Inventory: Parks & Land Improvements

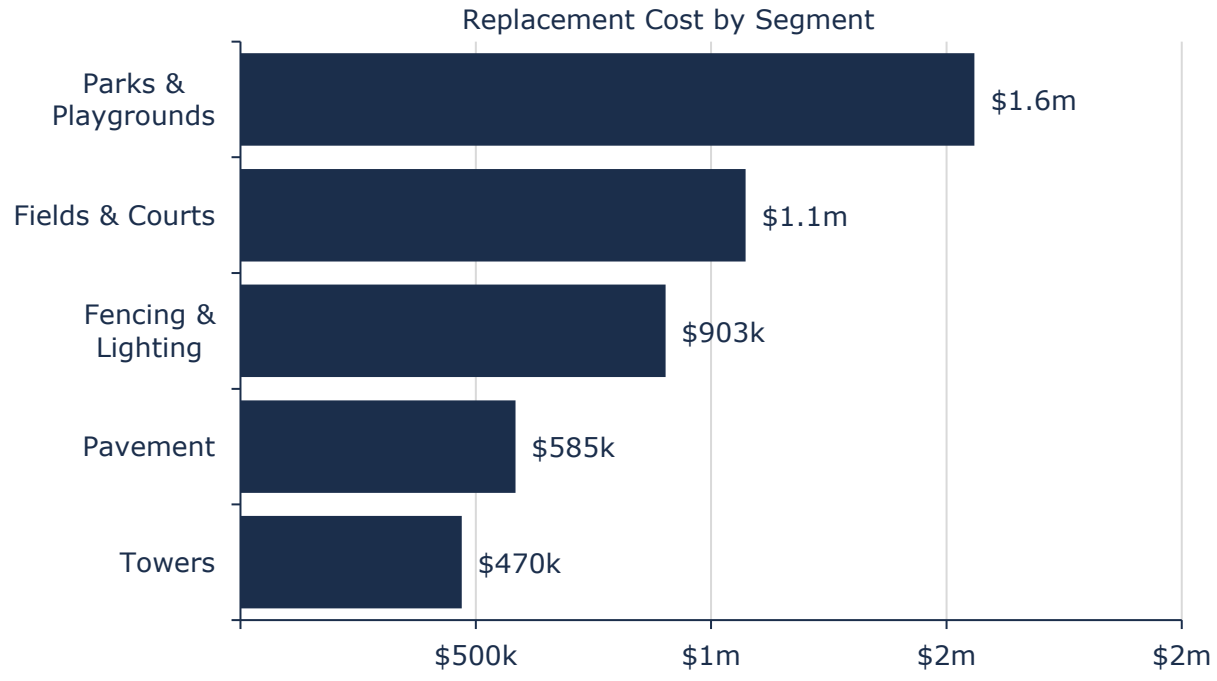


Figure 58 Portfolio Valuation: Parks & Land Improvements

10.2 Asset Condition

Figure 59 summarizes the replacement cost-weighted condition of the Municipality's parks and land improvement portfolio. Based on staff estimated conditions, 53% of assets are in fair or better condition. As assets deteriorate into poor condition, they may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition.

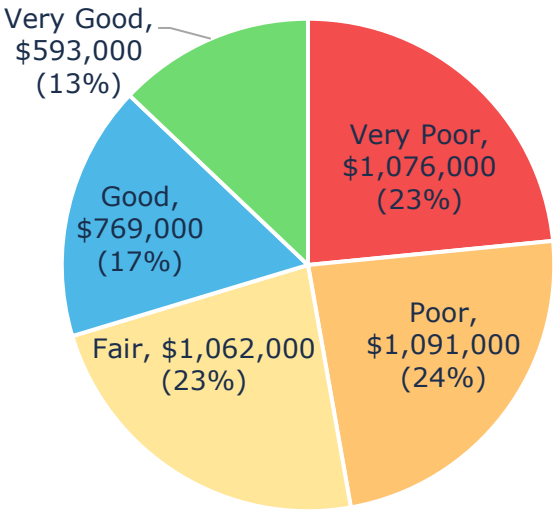


Figure 59 Asset Condition: Parks & Land Improvements Overall

Figure 60 summarizes the condition of land improvements by each department.

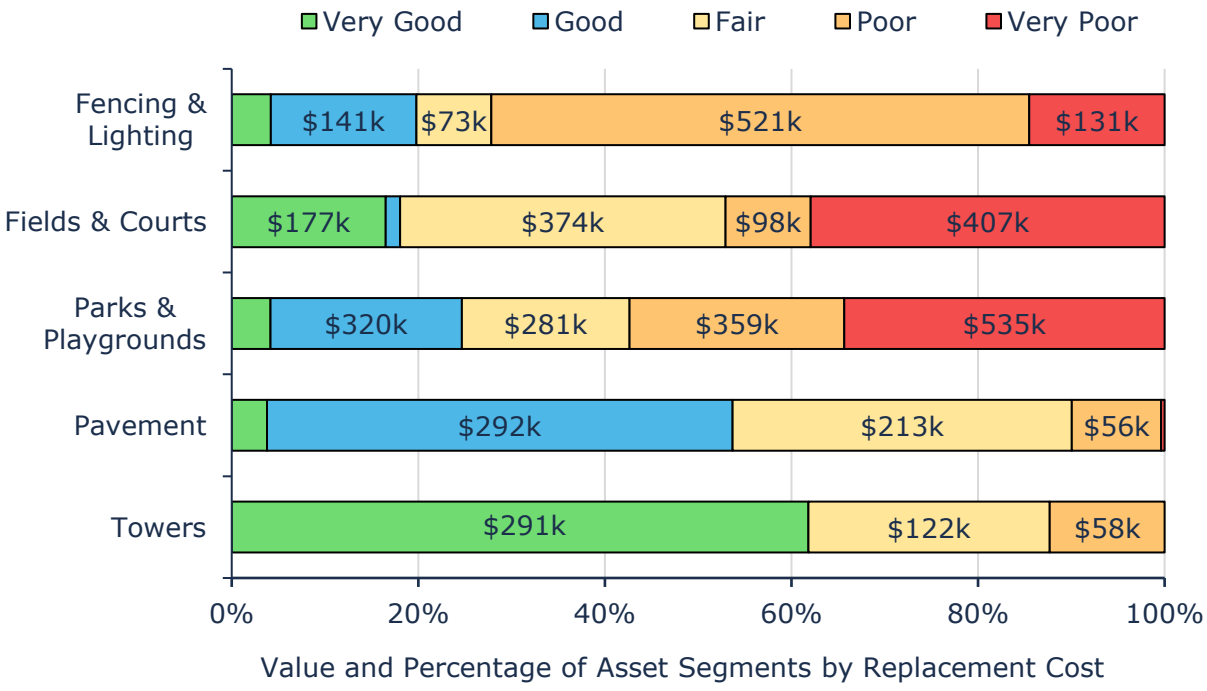


Figure 60 Asset Condition: Parks & Land Improvements by Segment

10.3 Age Profile

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning for potential replacement spikes.

Figure 61 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

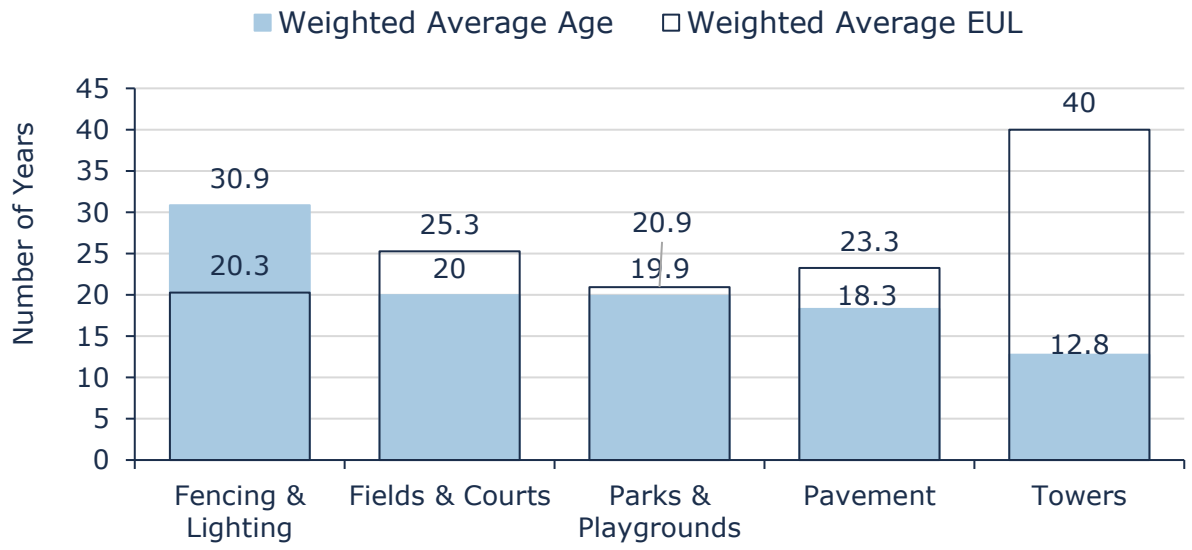


Figure 61 Estimated Useful Life vs. Asset Age: Parks & Land Improvements

Age analysis reveals that, on average, most assets are in the moderate to later stages of their expected life, with the exception of fencing and lighting which operate well beyond the estimated useful life.

10.4 Current Approach to Lifecycle Management

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

Table 36 outlines the Municipality's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Routine maintenance activities include weekly inspections, garbage collection, and minor repairs as needed. Maintenance is triggered by visual inspections which identify vandalism, damaged equipment, or washouts on trails.
Rehabilitation /Replacement	Rehabilitation programs are initiated annually as part of the budget process. Major repairs to an asset are identified and included in the capital budget. Replacement is considered when an asset's condition has deteriorated significantly, and rehabilitation is no longer cost-effective. Policy REC-2023-02 must be consulted before the equipment is replaced. Assets with an expected service life nearing its end or those incurring frequent and costly repairs are prioritized for replacement, but REC-2-23-02 conditions must also be met before replacement of an infrastructure will occur.
Inspections	Parks and trails are assessed on a yearly basis by internal staff. Weekly visual inspections are performed by internal staff during garbage collection in the parks and trails. Play structure detailed inspections are once a month.

Table 36 Lifecycle Management Strategy: Parks & Land Improvements

10.5 Forecasted Long-Term Replacement Needs

Figure 62 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Municipality's land improvements portfolio. This analysis was run until 2098 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Municipality's primary asset management system and asset register. The Municipality's average annual requirements (red dotted line) total $255,000 for all land improvements. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

Replacement needs are forecasted to fluctuate over the next 75-year time as assets reach the end of their useful life. These projections and estimates are based on asset replacement costs and age analysis. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

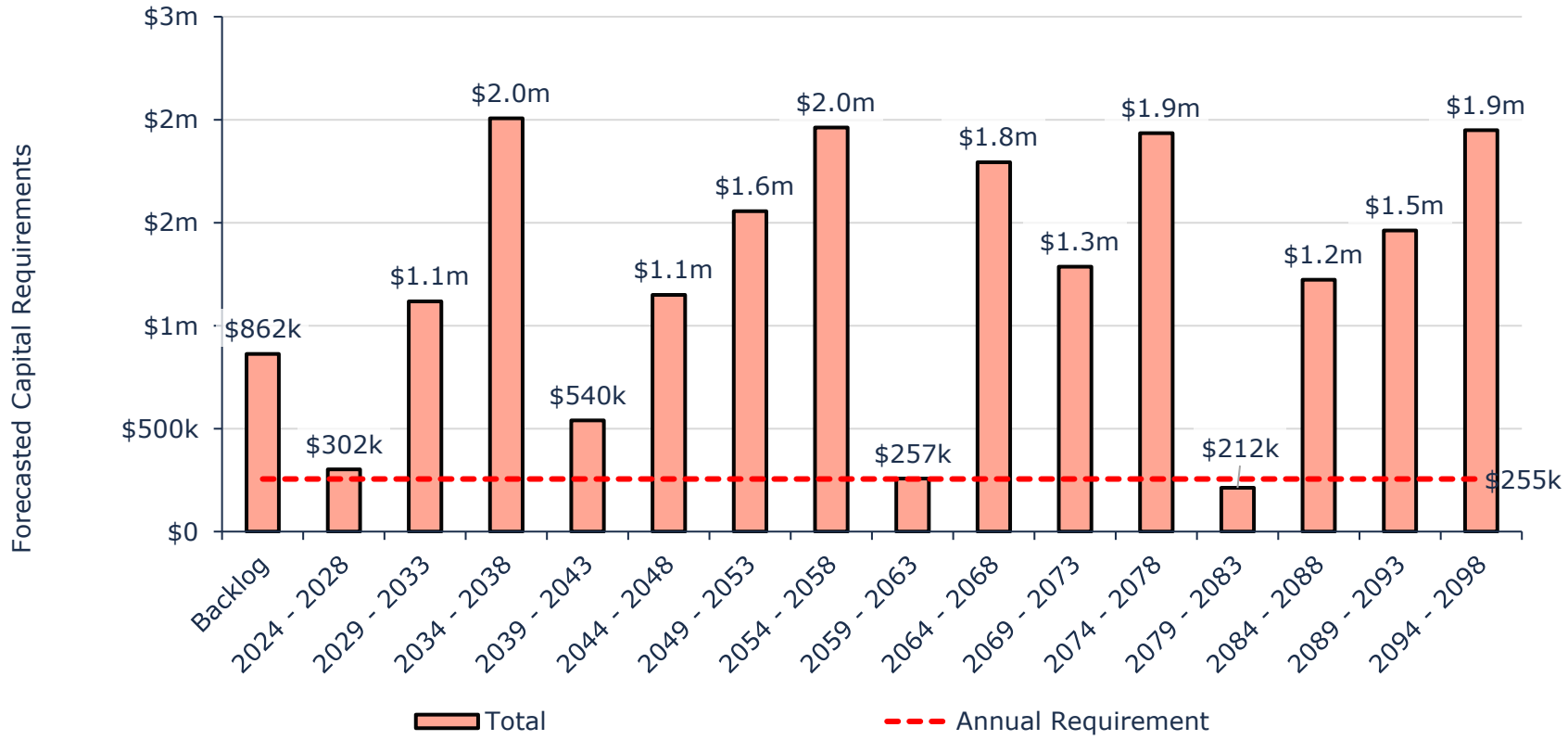


Figure 62 Forecasted Capital Replacement Needs: Parks Land Improvements 2024-2078

Often, the magnitude of replacement needs is substantially higher than most municipalities can afford to fund. In addition, most assets may not need to be replaced. However, quantifying and monitoring these spikes is essential for long-term financial planning, including establishing dedicated reserves. In addition, a robust risk framework will ensure that high-criticality assets receive proper and timely lifecycle intervention, including replacements.

Tables summarizing the projected lifecycle activities (rehabilitation and replacements) that may be undertaken in the next 10 years to support current levels of service can be found in Appendix B – 10-Year Capital Requirements.

10.6 Risk Analysis

The risk matrix below is generated using available asset data, including condition and replacement costs. The risk ratings for assets without useful attribute data were calculated using only condition, service life remaining, and their replacement costs.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Municipality may consider integrating relevant information that improves confidence in the criteria used to assess asset risk and criticality.

These risk models have been built into the Municipality's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

1 - 4 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$3,515,000 (77%)	$1,076,000 (23%)	- (0%)	- (0%)	- (0%)

Figure 63 Risk Matrix: Parks & Land Improvements

10.7 Levels of Service

The tables that follow summarize the Municipality's current levels of service. There are no specifically prescribed KPIs under Ontario Regulation 588/17 for non-core assets, therefore the KPIs below represent performance measures that the Municipality has selected for this AMP.

10.7.1 Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description or images of the types of land improvement assets that the municipality operates and the services that they help to provide for the community	The municipality provides and maintains a variety of outdoor sports fields, courts, parks and playground structures.
Quality	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Routine inspections are conducted regularly to assess necessary repairs, with a major inspection performed prior to opening the parks each year.

Table 37 Community Levels of Service: Parks & Land Improvements

10.7.2 Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2023)
Scope	Square metres of outdoor recreation facility space per 1,000 households	240.7
Quality	Average condition of outdoor recreational facilities in the municipality (e.g. very good, good, fair, poor, very poor)	45%

Table 38 Technical Levels of Service: Parks & Land Improvements

11. Fleet

The Municipality's fleet portfolio includes 91 assets that support a variety of general and essential services, including public works, administration, recreation, and rescue services. The total current replacement of the fleet is estimated at approximately $10.4 million.

11.1 Inventory & Valuation

Table 39 summarizes the quantity and current replacement cost of the Municipality's various fleet assets as managed in its primary asset management register, Citywide. Public works and fire services account for the largest share of the fleet portfolio.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Heavy Equipment	17	Assets	$3,893,000	CPI
Light Duty	38	Assets	$1,066,000	CPI
Medium Duty	18	Assets	$825,000	CPI
Rescue	18	Assets	$4,629,000	CPI
TOTAL			**$10,413,000**	

Table 39 Detailed Asset Inventory: Fleet

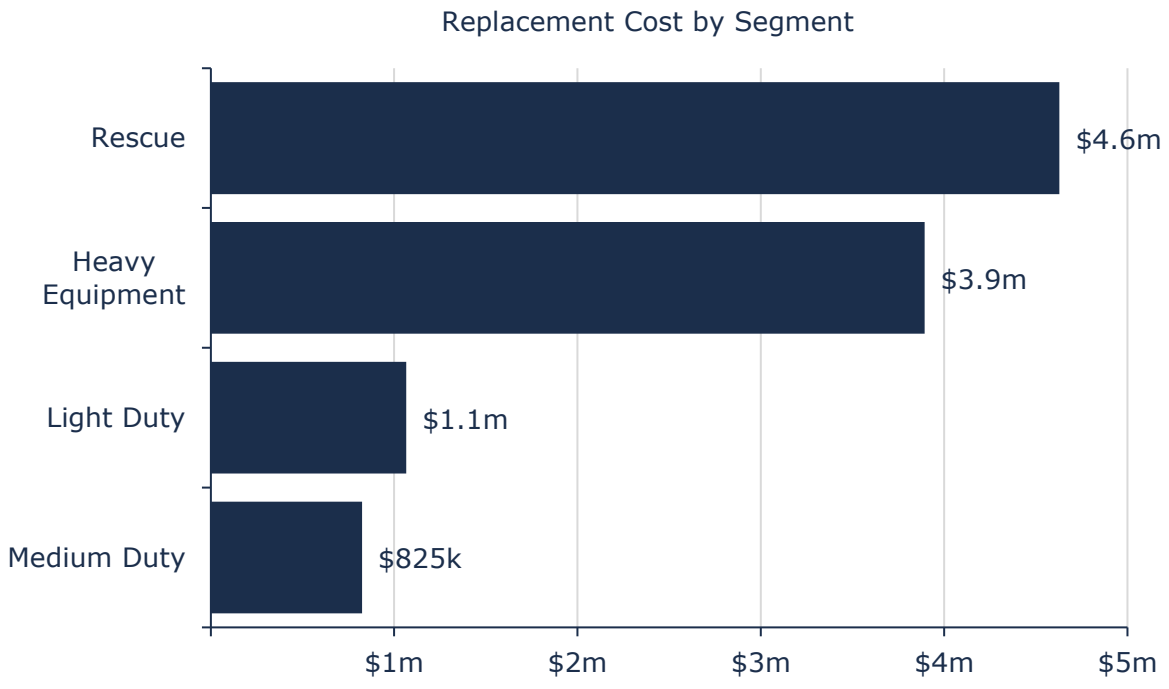


Figure 64 Portfolio Valuation: Fleet

11.2 Asset Condition

Figure 65 summarizes the replacement cost-weighted condition of the Municipality's fleet portfolio. Based on a combination of aged-based and staff estimated assessed condition data, 56% of fleet assets are in fair or better condition, with the remaining 44% are in poor or worse condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition. Condition data was available for 66% of fleet; age was used to estimate condition for the remaining 34% of assets.

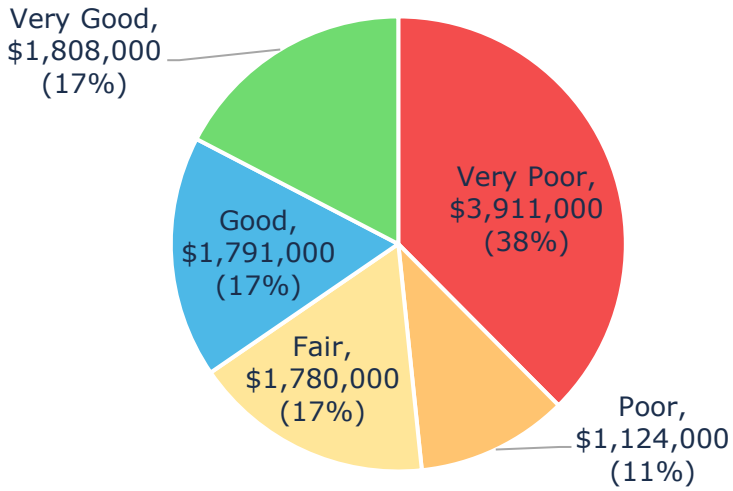


Figure 65 Asset Condition: Fleet Overall

Figure 66 summarizes the condition of fleet by each department. The majority of fleet that supports critical services such as rescue services are in poor or worse condition.

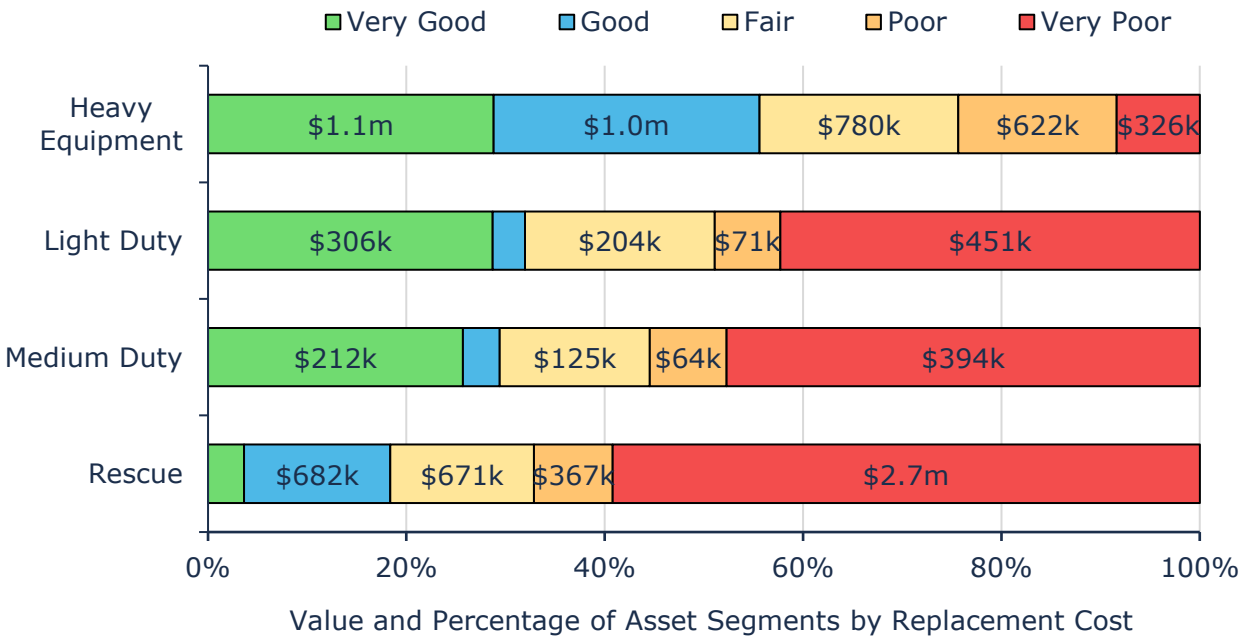


Figure 66 Asset Condition: Fleet by Segment

11.3 Age Profile

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning for potential replacement spikes.

Figure 67 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

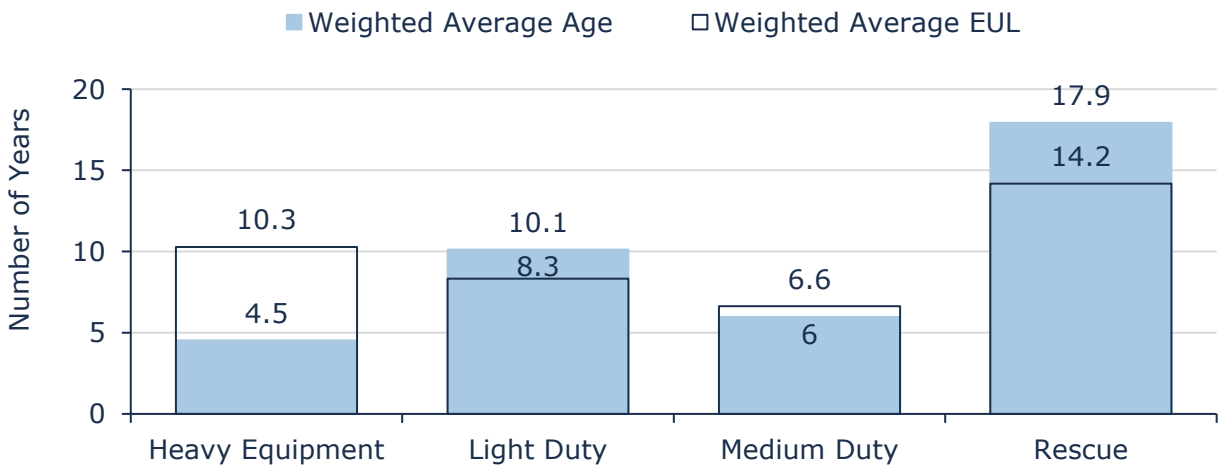


Figure 67 Estimated Useful Life vs. Asset Age: Fleet

Age analysis reveals that, on average, most fleet are in the moderate to later stages of their expected life. With light duty and rescue vehicles operating beyond their serviceable life.

11.4 Current Approach to Lifecycle Management

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

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

Activity Type	Description of Current Strategy
Maintenance	Routine maintenance activities include inspections, cleaning, minor repairs.

Activity Type	Description of Current Strategy
Replacement	Replacement is considered when an asset's condition has deteriorated significantly, and rehabilitation is no longer cost-effective. Assets with an expected service life nearing its end or those incurring frequent and costly repairs are prioritized for replacement
Inspections	Fleet are assessed by internal staff annually. Inspections are conducted monthly, while cleaning and minor repairs are performed quarterly.

Table 40 Lifecycle Management Strategy: Fleet

11.5 Forecasted Long-Term Replacement Needs

Figure 68 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Municipality's fleet portfolio. This analysis was run until 2098 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Municipality's primary asset management system and asset register. The Municipality's average annual requirements (red dotted line) total $1 million for the whole fleet. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

Replacement needs are forecasted to fluctuate, as vehicles reach the end of their useful life. These projections and estimates are based on asset replacement costs and age analysis. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

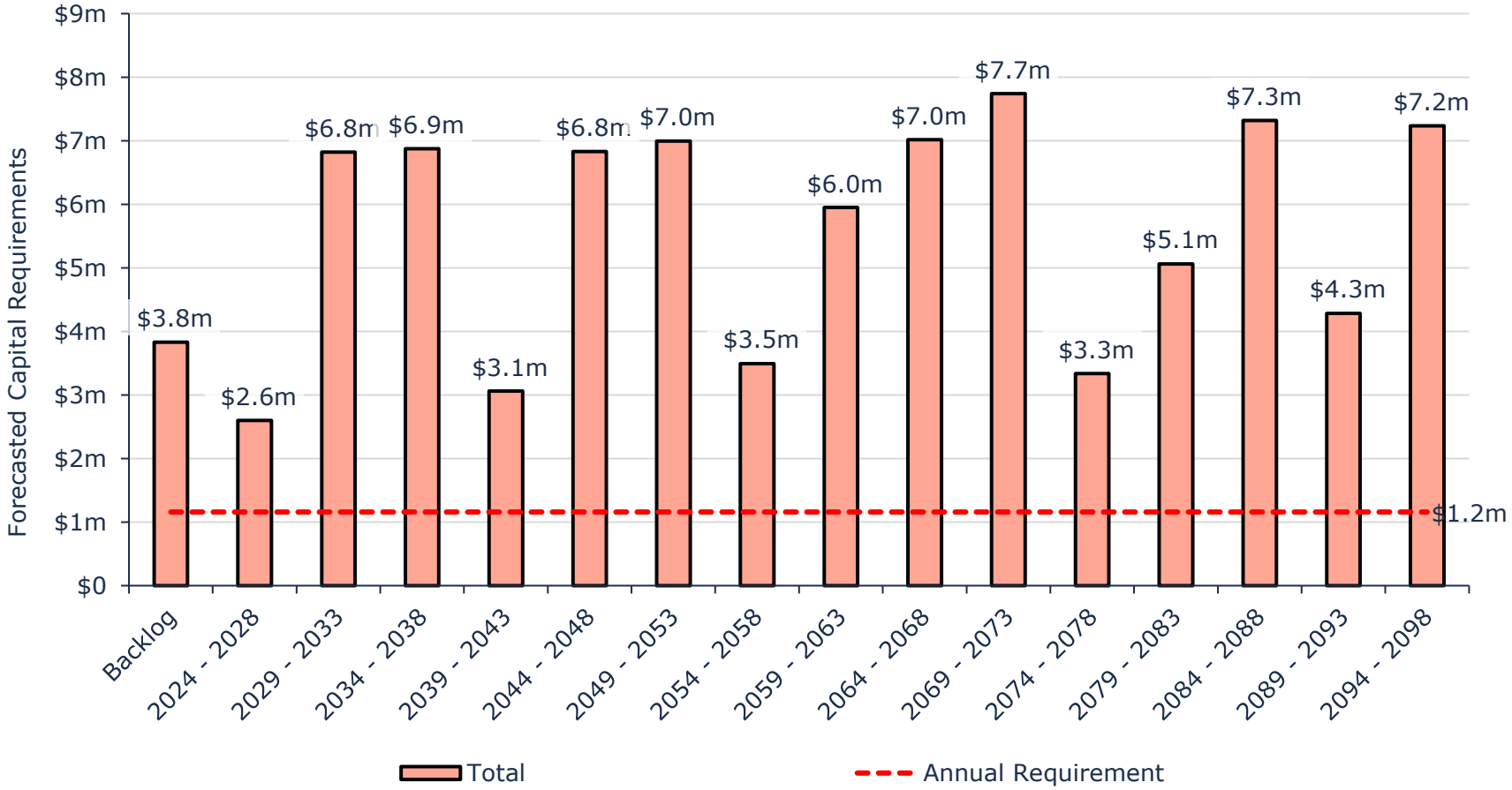


Figure 68 Forecasted Capital Replacement Needs: Vehicles 2024-2043

Often, the magnitude of replacement needs is substantially higher than most municipalities can afford to fund. In addition, most assets may not need to be replaced. However, quantifying and monitoring these spikes is essential for long-term financial planning, including establishing dedicated reserves. In addition, a robust risk framework will ensure that high-criticality assets receive proper and timely lifecycle intervention, including replacements.

Tables summarizing the projected lifecycle activities (rehabilitation and replacements) that may be undertaken in the next 10 years to support current levels of service can be found in Appendix B – 10-Year Capital Requirements.

11.6 Risk Analysis

The risk matrix below is generated using available asset data, including condition, service life remaining, replacement costs, and department or service area. The risk ratings for assets without useful attribute data were calculated using only condition, service life remaining, and their replacement costs.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Municipality may consider integrating relevant information that improves confidence in the criteria used to assess asset risk and criticality.

These risk models have been built into the Municipality's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

1 - 4 **Very Low**	5 - 7 **Low**	8 - 9 **Moderate**	10 - 14 **High**	15 - 25 **Very High**
$6,181,000 (66%)	$3,148,000 (34%)	- (0%)	- (0%)	- (0%)

Figure 69 Risk Matrix: Fleet

11.7 Levels of Service

The tables that follow summarize the Municipality's current levels of service. There are no specifically prescribed KPIs under Ontario Regulation 588/17 for non-core assets, therefore the KPIs below represent performance measures that the Municipality has selected for this AMP.

11.7.1 Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description or images of the types of vehicles that the municipality operates and the services that they help to provide to the community	Fire vehicles include water tankers, pumpers, service and rescue trucks, ensuring readiness for emergency response. Recreation vehicles include light duty vehicles such as pick-up trucks and mowers for services such as park maintenance. Public Works vehicles, such as snowplows, sanders and pick-up trucks, are vital for ensuring safe road conditions and managing infrastructure during inclement weather and construction projects.

Service Attribute	Qualitative Description	Current LOS (2023)
Quality	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Replacement and repair activities are planned for and carried out as deficiencies are identified through routine and regulated inspections and assessments.

Table 41 Community Levels of Service: Fleet

11.7.2 Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2023)
Quality	Average condition of vehicles (e.g. very good, good, fair, poor, very poor)	66%
Performance	Average capital reinvestment rate	0%

Table 42 Technical Levels of Service: Fleet

12. Machinery & Equipment

The Municipality's Machinery & Equipment portfolio supports a variety of services, including library, emergency response, public works, and recreation. The total current replacement cost of machinery and equipment is estimated at approximately $10.5 million.

12.1 Inventory & Valuation

Table 43 summarizes the quantity and current replacement cost of the Municipality's various machinery and equipment assets as managed in its primary asset management register, Citywide.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Admin / Library	179	Assets	$966,000	CPI
Emergency Response	285	Assets	$1,468,000	CPI
IT/Computer	155	Assets	$938,000	CPI
Public Works	8	Assets	$399,000	CPI
Recreation & Parks	13	Assets	$922,000	CPI
SCADA	1	Assets	$259,000	CPI
Water/Wastewater	202	Assets	$5,545,000	CPI
TOTAL			**$10,497,000**	

Table 43 Detailed Asset Inventory: Machinery & Equipment

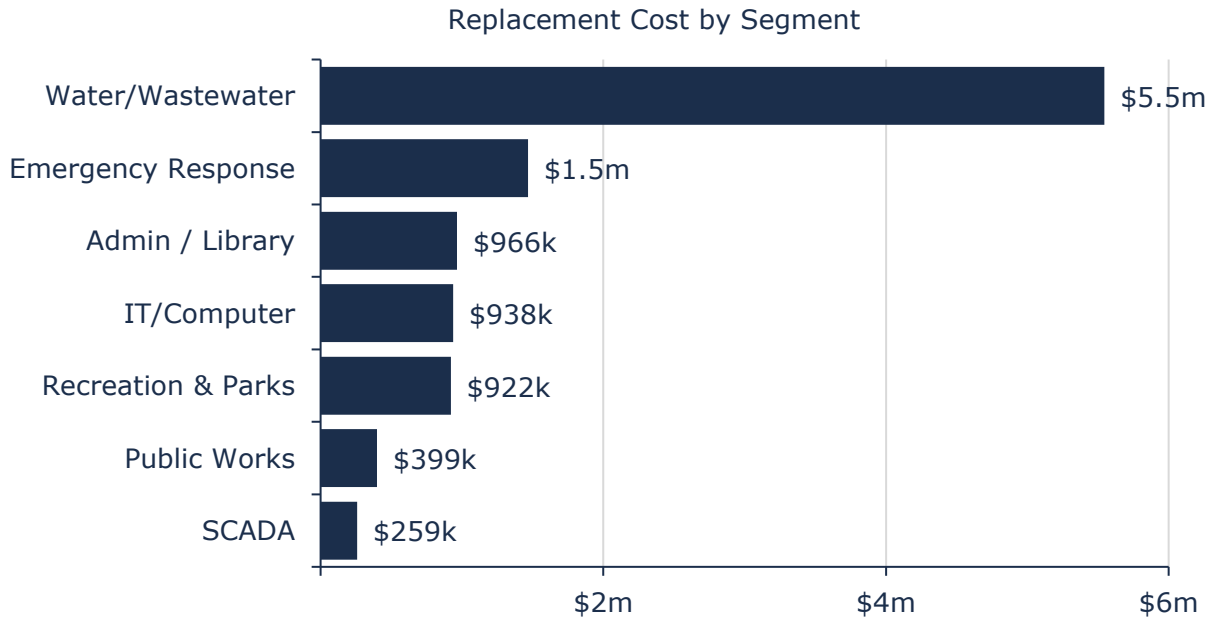


Figure 70 Portfolio Valuation: Machinery & Equipment

12.2 Asset Condition

Figure 71 summarizes the replacement cost-weighted condition of the Municipality's machinery and equipment portfolio. Based partially on age data and partially on staff estimated conditions, 71% of assets are in fair or better condition; the remaining 29% are in poor or worse condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition.

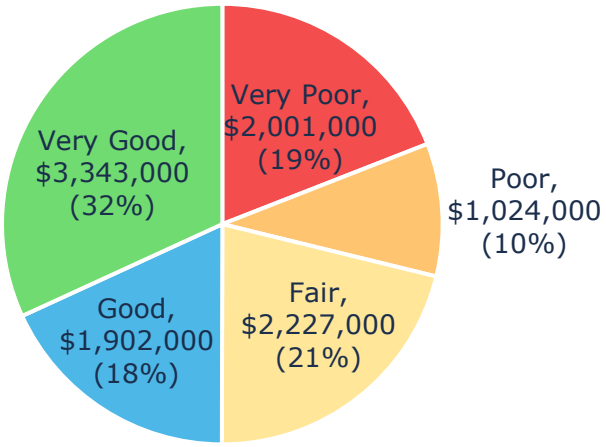


Figure 71 Asset Condition: Machinery & Equipment Overall

Figure 72 summarizes the age-based condition of machinery & equipment by each department. The majority of assets in public works, and recreation and parks are in very good condition. Whereas a significant portion of IT, emergency response, and admin are in very poor condition.

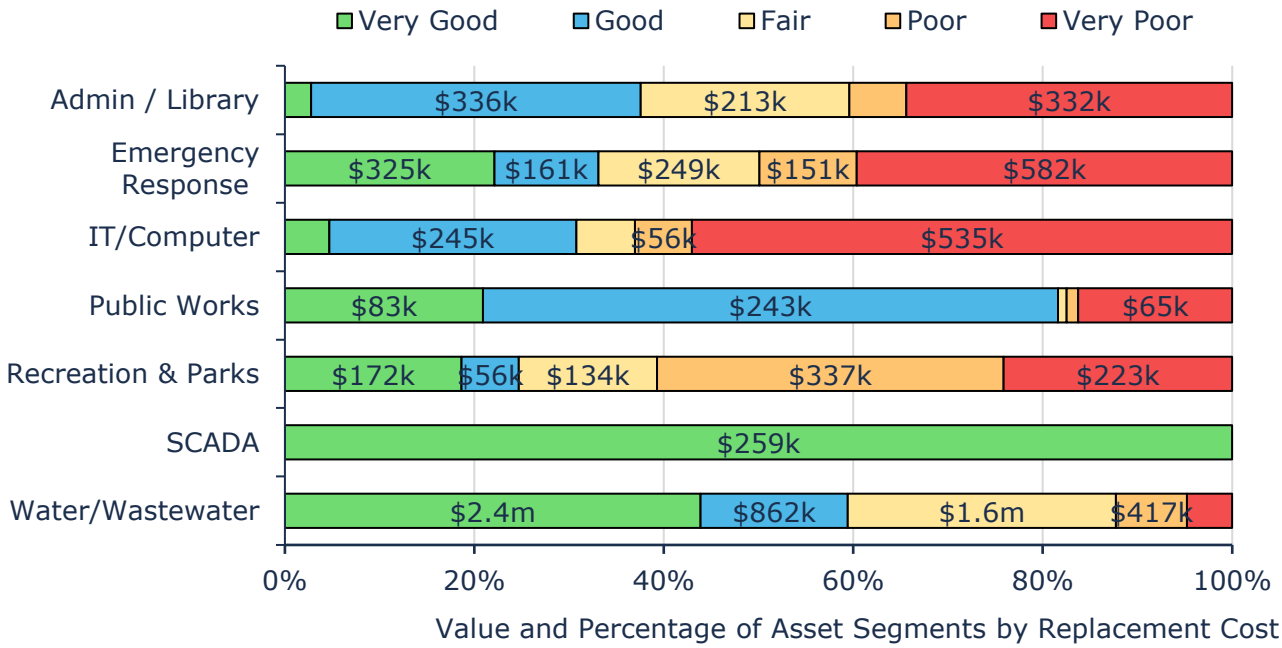


Figure 72 Asset Condition: Machinery & Equipment by Segment

12.3 Age Profile

An asset's age profile comprises two key values: estimated useful life (EUL), or design life; and the percentage of EUL consumed. The EUL is the serviceable lifespan of an asset during which it can continue to fulfil its intended purpose and provide value to users, safely and efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life.

In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning for potential replacement spikes.

Figure 73 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

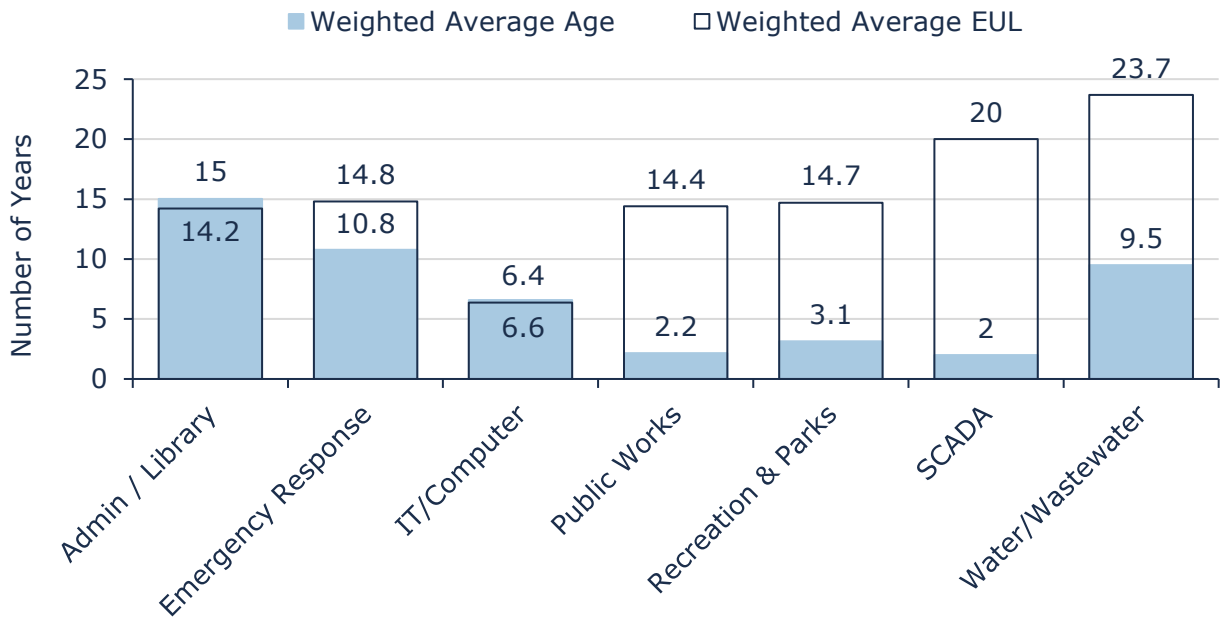


Figure 73 Estimated Useful Life vs. Asset Age: Machinery & Equipment

Age analysis reveals that, on average, public works, recreation and parks, and water/wastewater assets are in the earlier stages of their expected life. Admin/library, emergency response, and IT/computer are in the later stages of their expected life or have exceeded their expected life.

12.4 Current Approach to Lifecycle Management

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

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

Activity Type	Description of Current Strategy
Maintenance	Routine maintenance activities include inspections, cleaning, minor repairs, and changing of filtres and oil etc. which are performed quarterly. Maintenance is triggered by visual inspections identifying issues such as unusual noises, leaking of oil etc.
Replacement	Rehabilitation measures include replacing parts & machinery as needed. Replacement is considered when an asset's condition has deteriorated significantly, and rehabilitation is no longer cost-effective. Assets with an expected service life nearing its end or those incurring frequent and costly repairs are prioritized for replacement or if machinery or equipment has been deemed as dangerous to operate.
Inspections	Assessments are performed annually by internal staff with assistance from an external mechanic. Inspections are conducted monthly depending on type of equipment. Refrigeration equipment is assessed annually during shut down, HVAC and furnaces are assessed twice a year with maintenance.

Table 44 Lifecycle Management Strategy: Machinery & Equipment

12.5 Forecasted Long-Term Replacement Needs

Figure 74 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Municipality's machinery and equipment portfolio. This analysis was run until 2098 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Municipality's primary asset management system and asset register. The Municipality's average annual requirements (red dotted line) total $723,000 for all machinery and equipment. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

Replacement needs are forecasted to fluctuate over the next 75-year projection period, peaking at approximately $5 million every 20 years. These projections and estimates are based on asset replacement costs and age analysis. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

Figure 74 Forecasted Capital Replacement Needs: Machinery & Equipment 2024-2073

Often, the magnitude of replacement needs is substantially higher than most municipalities can afford to fund. In addition, most assets may not need to be replaced. However, quantifying and monitoring these spikes is essential for long-term financial planning, including establishing dedicated reserves. In addition, a robust risk framework will ensure that high-criticality assets receive proper and timely lifecycle intervention, including replacements.

Tables summarizing the projected lifecycle activities (rehabilitation and replacements) that may be undertaken in the next 10 years to support current levels of service can be found in Appendix B – 10-Year Capital Requirements.

12.6 Risk Analysis

The risk matrix below is generated using available asset data, including condition, service life remaining, replacement costs, and service criticality. The risk ratings for assets without useful attribute data were calculated using only condition, service life remaining, and their replacement costs.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Municipality may consider integrating relevant information that improves confidence in the criteria used to assess asset risk and criticality.

These risk models have been built into the Municipality's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

1 - 4 **Very Low** $7,204,000 (69%)	5 - 7 **Low** $1,916,000 (18%)	8 - 9 **Moderate** $723,000 (7%)	10 - 14 **High** $256,000 (2%)	15 - 25 **Very High** $401,000 (4%)

Figure 75 Risk Matrix: Machinery & Equipment

12.7 Levels of Service

The tables that follow summarize the Municipality's current levels of service. There are no specifically prescribed KPIs under Ontario Regulation 588/17 for non-core assets, therefore the KPIs below represent performance measures that the Municipality has selected for this AMP.

12.7.1 Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description or images of the types of machinery and equipment that the municipality operates and the services that they help to provide to the community	Fire is supported by equipment such as extrication equipment, SCBAs, and bunker suits. Water and Wastewater operations are supported by equipment such as generators, pumps, and monitoring systems. Administration, Libraries, and Recreation are supported by a variety of equipment.
Quality	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Replacement and repair activities are planned for and carried out as deficiencies are identified through routine inspections.

Table 45 Community Levels of Service: Machinery & Equipment

12.7.2 Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2023)
Quality	Average condition of equipment (e.g. very good, good, fair, poor, very poor)	Fair (58%)
Performance	% of machinery & equipment in good or very good condition	71%
	% of machinery & equipment in poor or very poor condition	29%

Table 46 Technical Levels of Service: Machinery & Equipment

Strategies

Growth

Financial Strategies

13. Growth

The demand for infrastructure and services will change over time based on a combination of internal and external factors. Understanding the key drivers of growth and demand will allow the Municipality to plan for new infrastructure more effectively, and the upgrade or disposal of existing infrastructure. Increases or decreases in demand can affect what assets are needed and what level of service meets the needs of the community.

13.1 The Nation Official Plan (March 2018)

The Nation Municipality's Official Plan outlines a vision for the future growth of the municipality and a set of policies to guide infrastructure development over the next 20 years, up to 2036. It aims to oversee and influence land use within the four villages of Embrun, The Nation, Limoges, and Marionville, as well as the Commercial Parks and the Industrial Park near Highway 417.

The Official Plan's objectives prioritize developing pedestrian-friendly villages that encourage community interaction and retain a distinct local identity through design and architecture. It aims to provide a variety of community services and facilities to meet the needs of each neighborhood and the Municipality as a whole. Additionally, the plan focuses on ensuring that residential and workspaces are in close proximity, particularly around the Commercial and Industrial Parks, to leverage local employment opportunities. High standards for architectural design are set across all types of buildings, promoting energy conservation and preserving significant historical structures.

The principles of growth within The Nation Municipality's official plan are focused on intensifying and directing development in a sustainable and efficient manner. The plan promotes intensification across all land use designations to optimize infrastructure use and reduce the Municipality's carbon footprint. It includes strategies like redevelopment of brownfield sites, infill development, and the expansion or conversion of existing buildings, aiming for a 15% target of all new residential units within the serviceable area of development. Compatibility with existing areas and infrastructure needs are key considerations, ensuring that new growth doesn't adversely impact current services or the character of existing areas.

Table 47 outlines the recorded population and total number of private dwellings for The Nation, from 1996 to 2021 according to Statistics Canada.

Year	1996	2001	2006	2011	2016	2021
Population	10,478	10,599	10,643	11,668	12,808	13,350
Population Change	N/A	1.2%	0.4%	9.4%	9.8%	4.2%
Private Dwellings	N/A	3,760	3,893	4,432	4,917	5,2590

Table 47 The Nations Population 1996-2021

According to the Official Plan, the population is projected to reach 23,830 by 2036. Current trends from the 2021 census suggest that the actual population may meet or potentially exceed these expectations.

13.2 Impact of Growth on Lifecycle Activities

By July 1, 2025, the Municipality's asset management plan must include a discussion of how the assumptions regarding future changes in population and economic activity informed the preparation of the lifecycle management and financial strategy.

Planning for forecasted population growth may require the expansion of existing infrastructure and services. As growth-related assets are constructed or acquired, they should be integrated into the Municipality's AMP. While the addition of residential units will add to the existing assessment base and offset some of the costs associated with growth, the Municipality will need to review the lifecycle costs of growth-related infrastructure. These costs should be considered in long-term funding strategies that are designed to, at a minimum, maintain the current level of service.

14. Financial Strategy

14.1 Financial Strategy Overview

For an asset management plan to be effective and meaningful, it must be integrated with financial planning and long-term budgeting. The development of a comprehensive financial plan will allow The Nation Municipality to identify the financial resources required for sustainable asset management based on existing asset inventories, desired levels of service, and projected growth requirements.

This report develops such a financial plan by presenting several scenarios for consideration and culminating with final recommendations. As outlined below, the scenarios presented model different combinations of the following components:

1. The financial requirements for:
    a. Existing assets
    b. Existing service levels
    c. Requirements of contemplated changes in service levels (none identified for this plan)
    d. Requirements of anticipated growth (none identified for this plan)
2. Use of traditional sources of municipal funds:
    a. Tax levies
    b. User fees
    c. Debt
    d. Development charges
3. Use of non-traditional sources of municipal funds:
    a. Reallocated budgets
    b. Partnerships
    c. Procurement methods
4. Use of Senior Government Funds:
    a. CCBF
    b. Annual grants

Note: Periodic grants are normally not included due to Provincial requirements for firm commitments. However, if moving a specific project forward is wholly dependent on receiving a one-time grant, the replacement cost included in the financial strategy is the net of such grant being received.

If the financial plan component results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Municipality's approach to the following:

1. In order to reduce financial requirements, consideration has been given to revising service levels downward.
2. All asset management and financial strategies have been considered. For example:
    a. If a zero-debt policy is in place, is it warranted? If not the use of debt should be considered.

b. Do user fees reflect the cost of the applicable service? If not, increased user fees should be considered.

14.1.1 Annual Requirements & Capital Funding

Annual Requirements

The annual requirements represent the amount the Municipality should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs and achieve long-term sustainability. In total, the Municipality must allocate approximately $7.6 million annually to address capital requirements for the assets included in this AMP.

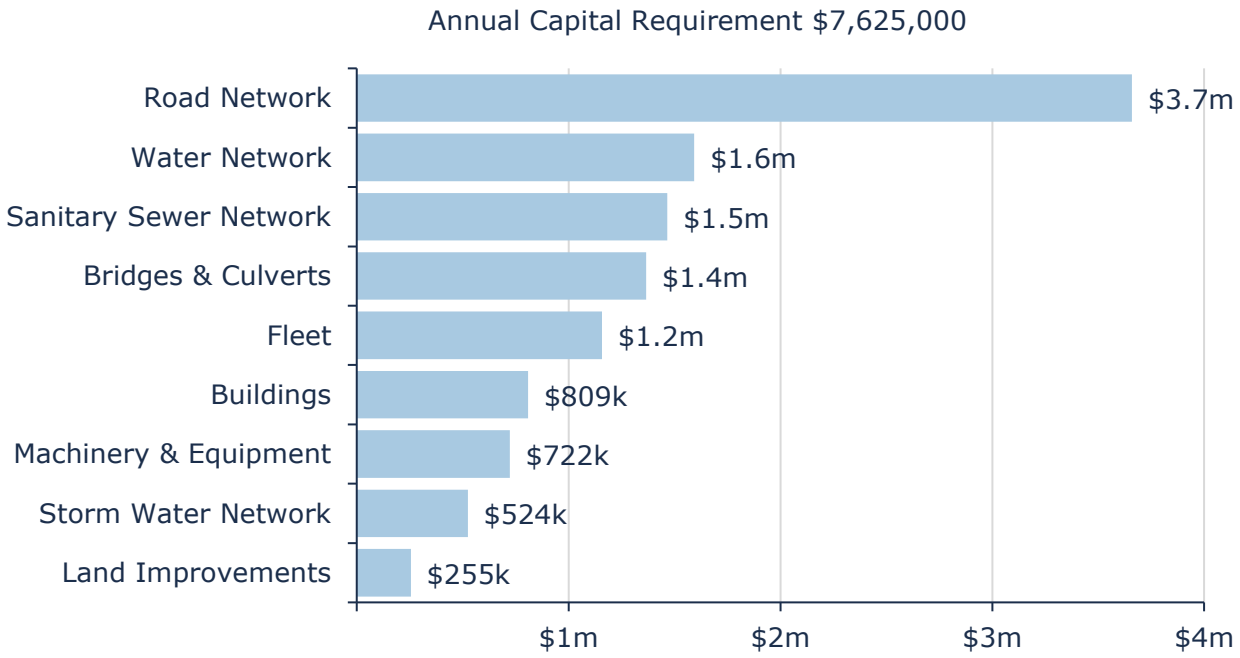


Figure 76 Average Annual Capital Requirements by Asset Category

For most asset categories the annual requirement has been calculated based on a "replacement only" scenario, in which capital costs are only incurred at the construction and replacement of each asset.

However, for the Road Network, lifecycle management strategies have been developed to identify capital costs that are realized through strategic maintenance of the Municipality's roads. The development of these strategies allows for a comparison of potential cost avoidance if the strategies were to be implemented. The following table compares two scenarios for the Road Network:

1. **Replacement Only Scenario**: Based on the assumption that assets deteriorate and – without regularly scheduled maintenance and rehabilitation – are replaced at the end of their service life.
2. **Lifecycle Strategy Scenario**: Based on the assumption that lifecycle activities are performed at strategic intervals to extend the service life of assets until replacement is required.

Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Municipality is committing approximately $3.8 million towards capital projects per year. Given the annual capital requirement of $7.6 million, there is currently a funding gap of $3.8 million annually.

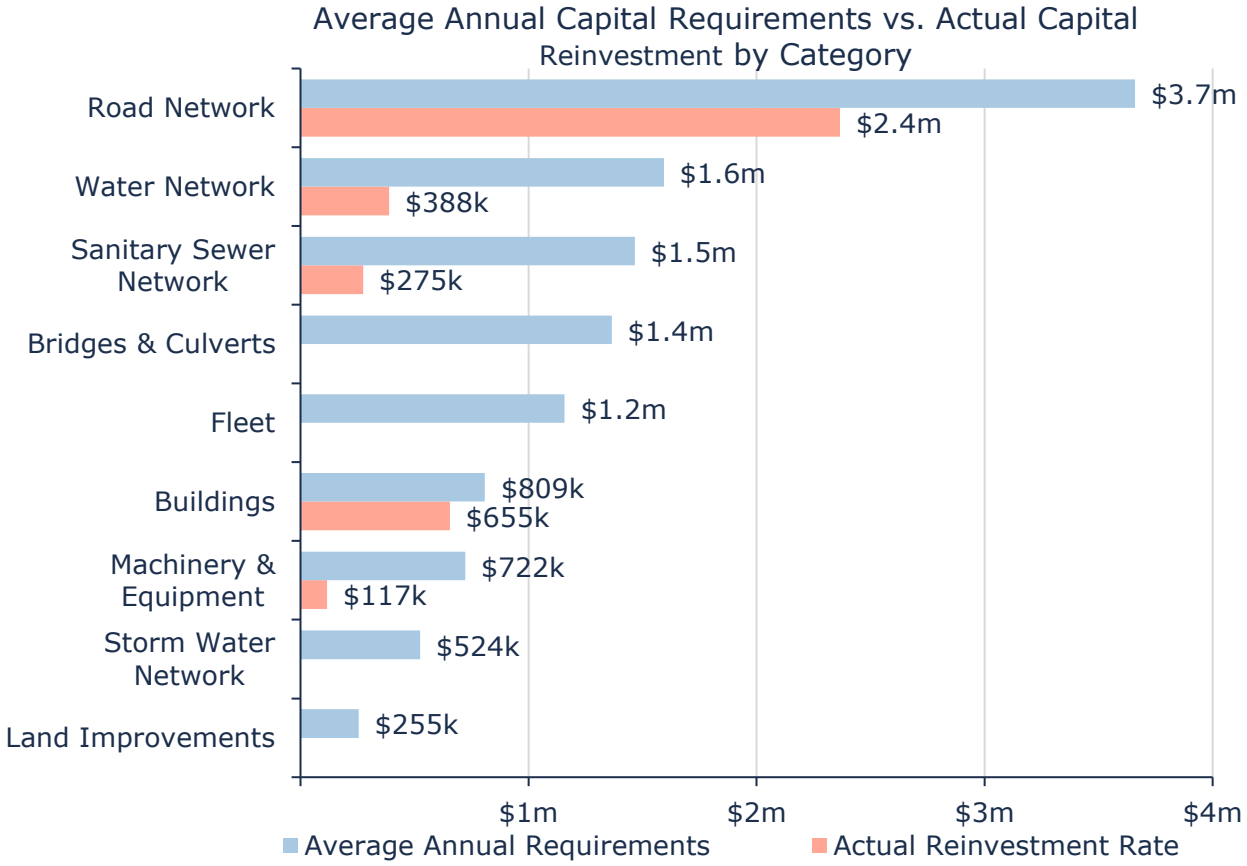


Figure 77 Annual Capital Requirements vs. Actual Reinvestment

14.2 Funding Objective

We have developed a scenario that would enable The Nation to achieve full funding within 1 to 20 years for the following assets:

1. **Tax Funded Assets:** Road Network, Stormwater Network, Bridges & Culverts, Buildings, Machinery & Equipment, Parks & Land Improvements, and Vehicles
2. **Rate-Funded Assets:** Water Network, Sanitary Sewer Network

Note: For the purposes of this AMP, we have excluded gravel roads since they are a perpetual maintenance asset and end of life replacement calculations do not normally apply. If gravel roads are maintained properly, they can theoretically have a limitless service life.

For each scenario developed we have included strategies, where applicable, regarding the use of cost containment and funding opportunities.

14.3 Financial Profile: Tax Funded Assets

14.3.1 Current Funding Position

The following tables show, by asset category, The Nation's average annual asset investment requirements, current funding positions, and funding increases required to achieve full funding on assets funded by taxes.

Asset Category	Avg. Annual Require-ment	Annual Funding Available				
		Taxes	CCBF	OCIF	Total Available	Annual Deficit
Road Network	3,659,000	746,000	890,000	729,000	2,365,000	1,294,000
Bridges & Culverts	1,366,000	0	0	0	0	1,366,000
Stormwater Network	524,000	0	0	0	0	524,000
Buildings	809,000	655,000	0	0	0	154,000
Land Improvements	255,000	0	0	0	655,000	255,000
Machinery & Equipment	722,000	117,000	0	0	117,000	605,000
Fleet	1,158,000	0	0	0	0	1,158,000
Total	**8,493,000**	**1,517,000**	**890,000**	**729,000**	**3,137,000**	**5,356,000**

Table 48 Annual Funding Available for Tax Funded Assets

The average annual investment requirement for the above categories is $8.5 million. Annual revenue currently allocated to these assets for capital purposes is $3.1 million, leaving an annual deficit of $5.4 million. Put differently, these infrastructure categories are currently funded at 37% of their long-term requirements.

14.3.2 Full Funding Requirements

In 2023, The Nation Municipality budgeted annual tax revenues of $13.06 million. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

Asset Category	Tax Change Required for Full Funding
Road Network	9.9%
Bridges & Culverts	10.5%
Stormwater Network	4.0%
Buildings	1.2%
Land Improvements	2.0%
Fleet	8.9%
Machinery & Equipment	4.6%
Total	**41%**

Table 49 Full Funding Tax Increases for Tax Funded Categories

The following changes in costs and/or revenues over the next number of years should also be considered in the financial strategy:

a) The Nations debt payments for these asset categories will be decreasing by $42,000 over the next 5 years, $108,000 over the next 10 years, $194,000 over the next 15 years, and $384,000 over the next 20 years.

Our recommendations include capturing the above changes and allocating them to the infrastructure deficit outlined above. The table below outlines this concept and presents several options:

	Tax Increases Without Capturing Changes			
	5 Years	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	5,356,000	5,356,000	5,356,000	5,356,000
Change in Debt Costs	N/A	N/A	N/A	N/A
Resulting Infrastructure Deficit:	**5,356,000**	**5,356,000**	**5,356,000**	**5,356,000**
Tax Increase Required	40.1%	40.1%	40.1%	40.1%
Annually:	**7.1%**	**3.5%**	**2.3%**	**1.7%**

Table 50 Annual Tax Increase Requirements without Debt Reallocation

	Tax Increases With Capturing Changes			
	5 Years	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	5,356,000	5,356,000	5,356,000	5,356,000
Change in Debt Costs	**-42,000**	**-108,000**	**-194,000**	**-384,000**
Resulting Infrastructure Deficit:	**5,314,000**	**5,248,000**	**5,162,000**	**4,972,000**
Tax Increase Required	40.1%	40.1%	40.1%	40.1%
Annually:	**7.1%**	**3.4%**	**2.2%**	**1.6%**

Table 51 Annual Tax Increase Requirements with Debt Reallocation

14.3.3 Financial Strategy Recommendations

Considering all the above information, we recommend the 15-year option. This involves full funding being achieved over 15 years by:

1. Reallocating the debt cost reductions of $194,000 to the infrastructure deficit as outlined above.
2. Increasing tax revenues by 2.2% each year for the next 15 years solely for the purposes of phasing in full funding to the tax funded assets
3. Increasing existing and future infrastructure budget by the applicable inflation index on an annual basis in addition to the deficit phase in.
4. Reallocating appropriate revenue from categories in a surplus position to those in a deficit position.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included OCIF formula-based funding, if applicable, since this funding is a multi-year commitment[7].
2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.
3. Although the strategy provided, and the recommendations made in this plan aim to reduce the need for debt and reallocated current debt payments to address the current deficit. It is notable that the likelihood of any municipality to take on more debt in the future is high.

[7] The Municipality should take advantage of all available grant funding programs and transfers from other levels of government. While OCIF has historically been considered a sustainable source of funding, the program is currently undergoing review by the provincial government. Depending on the outcome of this review, there may be changes that impact its availability.

Although this option achieves full funding on an annual basis in 15 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of $3.3 million for the Road Network, $1.1 million for Bridges & Culverts, $1.7 million for Machinery & Equipment, and $2.2 million for Vehicles.

Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

14.4 Financial Profile: Rate Funded Assets

14.4.1 Current Funding Position

The following tables show, by asset category, the Nation's average annual asset investment requirements, current funding positions, and funding increases required to achieve full funding on assets funded by rates.

Asset Category	Avg. Annual Require-ment	Annual Funding Available				Annual Deficit
		Rates	CCBF	OCIF	Total Available	
Water Network	1,593,000	388,000	0	0	388,000	1,205,000
Sanitary Sewer Network	1,466,000	275,000	0	0	275,000	1,192,000
Total	**3,060,000**	**663,000**	**0**	**0**	**663,000**	**2,397,000**

Table 52 Annual Funding Available for Rate Funded Assets

The average annual investment requirement for the above categories is $3.1 million. Annual revenue currently allocated to these assets for capital purposes is $663,000 leaving an annual deficit of $2.4 million. Put differently, these infrastructure categories are currently funded at 22% of their long-term requirements.

14.4.2 Full Funding Requirements

In 2023, The Nation budgeted annual water revenues of $1.3 million and annual sanitary revenues of $1.0 million. As illustrated in the table below, without consideration of any other sources of revenue, full funding would require the following changes over time:

Asset Category	Rate Change Required for Full Funding
Water Network	92.6%
Sanitary Sewer Network	115.7%

Table 53 Full Funding Rate Increases for Rate Funded Categories

In the following tables, we have expanded the above scenario to present multiple options. Due to the significant increases required, we have provided phase-in options of up to 20 years:

Water Network Rate Increases				
	5 Years	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	1,205,000	1,205,000	1,205,000	1,205,000
Decrease in Debt Payments	**0**	**-141,000**	**-141,000**	**-141,000**
Resulting Infrastructure Deficit:	**1,205,000**	**1,064,000**	**1,064,000**	**1,064,000**
Rate Increase Required	92.6%	92.6%	92.6%	92.6%
Annually:	**14.0%**	**6.2%**	**4.1%**	**3.0%**

Table 54 Annual Rate Increase Requirements: Water Network

Sanitary Sewer Network Rate Increases				
	5 Years	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	1,192,000	1,192,000	1,192,000	1,192,000
Decrease in Debt Payments	0	0	0	0
Resulting Infrastructure Deficit:	**1,192,000**	**1,192,000**	**1,192,000**	**1,192,000**
Rate Increase Required	115.7%	115.7%	115.7%	115.7%
Annually:	**16.6%**	**8.0%**	**5.3%**	**3.9%**

Table 55 Annual Rate Increase Requirements: Sanitary Sewer Network

14.4.3 Financial Strategy Recommendations

Considering all of the above information, we recommend the 20-year option that includes debt cost reallocations. This involves full funding being achieved over 20 years by:

a) When realized, reallocating the debt cost reductions of $141,000 for water services to the applicable infrastructure deficit.
b) increasing rate revenues by 3.0% for water services and 3.9% for sanitary services each year for the next 20 years solely for the purpose of phasing in full funding to the rate funded assets.
c) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. This periodic funding should not be incorporated into an AMP unless there are firm commitments in place.
2. We realize that raising rate revenues for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.
3. Any increase in rates required for operations would be in addition to the above recommendations.

Although this option achieves full funding on an annual basis in 20 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available.

Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

14.5 Use of Debt

Debt can be strategically utilized as a funding source within the long-term financial plan. The benefits of leveraging debt for infrastructure planning include:

a) the ability to stabilize tax & user rates when dealing with variable and sometimes uncontrollable factors
b) equitable distribution of the cost/benefits of infrastructure over its useful life
c) a secure source of funding
d) flexibility in cash flow management

Debt management policies and procedures with limitations and monitoring practices should be considered when reviewing debt as a funding option. In efforts to mitigate increasing commodity prices and inflation, interest rates have been rising. Sustainable funding models that include debt need to incorporate the now current realized risk of rising interest rates. The following graph shows the historical changes to the lending rates:

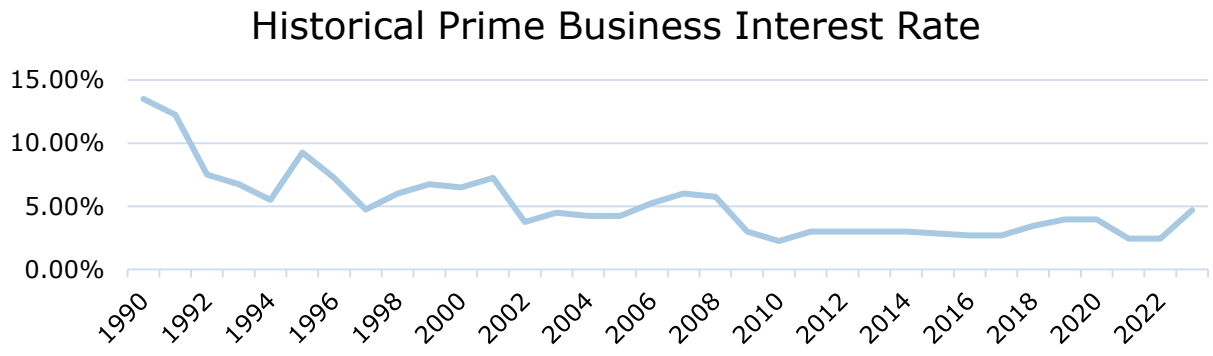


Table 56 Historical Prime Rates

A change in 15-year rates from 5% to 7% would change the premium from 45% to 65%. Such a change would have a significant impact on a financial plan.

For reference purposes, the following table outlines the premium paid on a project if financed by debt. For example, a $1 million project financed at 3.0%[8] over 15 years would result in a 26% premium or $260,000 of increased costs due to interest payments. For simplicity, the table does not consider the time value of money or the effect of inflation on delayed projects.

Interest Rate	Number of Years Financed					
	5	10	15	20	25	30
7.0%	22%	42%	65%	89%	115%	142%
6.5%	20%	39%	60%	82%	105%	130%
6.0%	19%	36%	54%	74%	96%	118%
5.5%	17%	33%	49%	67%	86%	106%
5.0%	15%	30%	45%	60%	77%	95%
4.5%	14%	26%	40%	54%	69%	84%
4.0%	12%	23%	35%	47%	60%	73%
3.5%	11%	20%	30%	41%	52%	63%
3.0%	9%	17%	26%	34%	44%	53%
2.5%	8%	14%	21%	28%	36%	43%
2.0%	6%	11%	17%	22%	28%	34%
1.5%	5%	8%	12%	16%	21%	25%
1.0%	3%	6%	8%	11%	14%	16%
0.5%	2%	3%	4%	5%	7%	8%
0.0%	0%	0%	0%	0%	0%	0%

Table 57 Insurance Premiums Paid

The following tables outline how The Nation has historically used debt for investing in the asset categories as listed. There is currently $14.8 million of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of $1.3 million, well within its provincially prescribed maximum of $2.46 million. For the purposes of this AMP, only those debts that are funded through property tax and user rate revenues are included. Further the options outlined in the plans allow the Nation to fully fund its long-term infrastructure requirement without further use of debt.

[8] Current municipal Infrastructure Ontario rates for 15-year money is 4.03%.

Asset Category	Current Debt Outstanding	Use of Debt in the Last Five Years				
		2019	2020	2021	2022	2023
Road Network	0	0	0	0	0	0
Bridges & Culverts	0	0	0	0	0	0
Stormwater Network	0	0	0	0	0	0
Buildings	13,876,000	2,900,000	0	0	0	10,230,000
Land Improvements	0	0	0	0	0	0
Fleet	41,000	0	0	0	0	0
Machinery & Equipment	0	0	0	0	0	0
Total Tax Funded:	**1,720,000**	**2,900,000**	**0**	**0**	**0**	**10,230,000**
Water Network	885,000	0	0	0	0	0
Sanitary Sewer Network	0	0	0	0	0	0
Total Rate Funded:	**14,800,000**	**0**	**0**	**0**	**0**	**0**

Table 58 Use of Debt 2019-2023

Asset Category	Principal & Interest Payments in the Next Ten Years						
	2023	2024	2025	2026	2027	2028	2033
Road Network	0	0	0	0	0	0	0
Bridges & Culverts	0	0	0	0	0	0	0
Stormwater Network	0	0	0	0	0	0	0
Buildings	1,121,000	1,121,000	1,121,000	1,121,000	1,121,000	1,121,000	1,054,000
Land Improvements	0	0	0	0	0	0	0
Fleet	42,000	0	0	0	0	0	0
Machinery & Equipment	0	0	0	0	0	0	0
Total Tax Funded:	**1,162,000**	**1,121,000**	**1,121,000**	**1,121,000**	**1,121,000**	**1,121,000**	**1,054,000**
Water Network	141,000	141,000	141,000	141,000	141,000	141,000	0
Sanitary Sewer Network	0	0	0	0	0	0	0
Total Rate Funded:	**141,000**	**141,000**	**141,000**	**141,000**	**141,000**	**141,000**	**0**

Table 59 Summary of Principal and Interest Payments

The revenue options outlined in this plan allows The Nation to fully fund its long-term infrastructure requirements without further use of debt.

14.6 Use of Reserves

14.6.1 Available Reserves

Reserves play a critical role in long-term financial planning. The benefits of having reserves available for infrastructure planning include:

a) the ability to stabilize tax rates when dealing with variable and sometimes uncontrollable factors
b) financing one-time or short-term investments
c) accumulating the funding for significant future infrastructure investments
d) managing the use of debt
e) normalizing infrastructure funding requirement

By asset category, the table below outlines the details of the reserves currently available to the Nation.

Asset Category	Balance at December 31, 2023
Road Network	0
Bridges & Culverts	0
Stormwater Network	202,000
Buildings	1,692,718
Land Improvements	0
Fleet	838,631
Machinery & Equipment	402,001
Total Tax Funded:	**3,135,350**
Water Network	3,673,690
Sanitary Sewer Network	918,126
Total Rate Funded:	**4,591,816**

Table 60 Current Reserves Balances

There is considerable debate in the municipal sector as to the appropriate level of reserves that a Municipality should have on hand. There is no clear guideline that has gained wide acceptance. Factors that municipalities should take into account when determining their capital reserve requirements include:

a) breadth of services provided
b) age and condition of infrastructure
c) use and level of debt
d) economic conditions and outlook
e) internal reserve and debt policies.

These reserves are available for use by applicable asset categories during the phase-in period to full funding. This coupled with the Nations judicious use of debt in the past, allows the scenarios to assume that, if required, available reserves and debt capacity can be used for high priority and emergency infrastructure investments in the short- to medium-term.

14.6.2 Recommendation

In 2025, Ontario Regulation 588/17 will require the Nation to integrate proposed levels of service for all asset categories in its asset management plan update. We recommend that future planning should reflect adjustments to service levels and their impact on reserve balances.

15. Recommendations and Key Considerations

15.1.1 Financial Strategies

- Review feasibility of adopting a full-funding scenario that achieves 100% of average annual requirements for the asset categories analyzed in this AMP. This involves:
- implementation of a 2.2% annual tax increase over a 15-year phase in period and allocating the full increase in revenue toward these asset categories.
- reallocating appropriate revenue from categories in a surplus position to those in a deficit position.
- continued use and allocation of OCIF and CCBF funding
- using risk frameworks and staff judgement to prioritize projects, particularly to aid in elimination of existing infrastructure backlogs;

Although difficult to capture, inflation costs, supply chain issues, and fluctuations in commodity prices will also influence funding needs and true cost of capital expenditures. The above recommendations do not include inflation, which may further escalate recommended tax increases to achieve full funding.

15.1.2 Data Management and Governance

- Codify roles and responsibilities for regular upkeep and maintenance of asset register (Citywide), asset datasets, and asset management plans. A data management and governance strategy may also be warranted to support long-term asset management initiatives. We note that effective data management and governance may also require additional and dedicated resources.
- Ensure critical asset data, such as condition and attribute data, is shared with asset management lead so that it is regularly integrated with asset register.
- Conduct semi-annual data audit or data gap analysis of inventory to evaluate for completeness, currency, accuracy, and validity.

15.1.3 Better Asset Management Through Better Asset Data

- Componentize buildings and facilities data using Uniformat II Code standard for building classifications. This can be accomplished during building condition assessments. PSD-provided data templates can be submitted to external consultants for efficient data input, and upload in Citywide
- Continuously develop, review, refine, and calibrate lifecycle and risk profiles created to better reflect actual practices and improve capital projections. In particular:

  - the timing of various lifecycle events, the triggers for treatment, anticipated impacts of each treatment, and costs;
  - the various attributes used to estimate the likelihood and consequence of asset failures, and their respective weightings.

- Periodically update replacement costs based on recent projects, invoices, or estimates, as well as condition assessments, or any other technical reports and studies. However, material and labour costs can fluctuate due to local, regional, and broader market trends, and substantially so during major world events. As a result, accurately estimating the replacement cost of like-for-like assets can be challenging. Ideally, several recent projects over multiple years should be used. Staff judgement and historical data can help attenuate extreme and temporary fluctuations in cost estimates and keep them realistic.
- Specifically, review replacement costs for both the Buildings and Fleet assets where at the time of this report replacement costs are known to be undervalued. Consider commissioning a formal assessment on all building and facilities to provide more accurate replacement and condition values.
- Develop condition assessment protocols that can be implemented and repeated easily by staff. Consistent updates to condition assessment will allow for better understanding of asset performance and quantifying the condition.
- The useful life of assets established for financial reporting purposes in compliance with PSAB 3150 can differ from an asset's actual performance. Although Citywide allows users to create separate, segregated EULs as inputs for asset management-related reporting, the Municipality's TCA policy may require updates to better reflect an asset's true serviceable life.

15.1.4 Lifecycle Planning

- Consider dedicated capital funding for condition assessment programs, particularly for high-criticality assets across all asset categories. Condition data is integral in estimating accurate annual needs and refining estimates for infrastructure backlogs.
- Criticality should account for not only an asset's financial value or replacement cost, but also its role in delivering essential services, supporting the local economy, and providing a high quality of life to residents.
- Evaluate lifecycle events, timing, and costs on a regular basis and update lifecycle models in Citywide to reflect necessary changes.
- Componentization of buildings will be critical in accurately forecasting requirements for major elements and components.

15.1.5 Risk and Levels of Service

- Risk models and matrices can play an important role in identifying high-value assets, and developing an action plan which may include repair, rehabilitation, replacement, or further evaluation through condition assessments. As a result, project selection and the development of multi-year capital plans can become more strategic and objective. Initial models have been built into Citywide for all asset groups. As the data evolves and new attribute information is obtained, these models should also be refined and updated.

- Dedicated efforts should be made to collect and integrate asset attribute data related to climate change and infrastructure vulnerability. Many attributes can be used to develop an asset's climate change vulnerability profiles. This may include prior asset failure history due to extreme weather events, impacts of asset failures, and proximity to various water bodies to approximate flooding risk. This data should be used to continuously refine risk models in Citywide.

- As available, data on current performance should be centralized and tracked to support any calibration of service levels ahead of O. Reg's 2025 requirements on proposed levels of service.

- Staff should monitor evolving local, regional, and environmental trends to identify factors that may shape the demand and delivery of infrastructure programs. These can include population growth, and the nature of population growth; climate change and extreme weather events; and economic conditions and the local tax base. This data can also be used to revise service level targets.

Appendices

Appendix A – Infrastructure Report Card

Appendix B – 10-Year Capital Requirements

Appendix C – Level of Service Images

Appendix A – Infrastructure Report Card

Asset Category	Replacement Cost	Asset Condition	Financial Capacity	
Road Network	**$73,500,000**	**Fair (48%)**	Annual Requirement:	$3,659,000
			Funding Available:	$2,365,000
			Annual Deficit:	**$1,294,000**
Bridges & Culverts	**$80,000,000**	**Good (69%)**	Annual Requirement:	$1,366,000
			Funding Available:	-
			Annual Deficit:	**$1,366,000**
Water Network	**$81,600,000**	**Good (63%)**	Annual Requirement:	$1,593,000
			Funding Available:	$388,000
			Annual Deficit:	**$1,205,000**
Sanitary Sewer Network	**$89,200,000**	**Good (63%)**	Annual Requirement:	$1,466,000
			Funding Available:	$275,000
			Annual Deficit:	**$1,192,000**
Storm Water Network	**$26,100,000**	**Fair (54%)**	Annual Requirement:	$524,000
			Funding Available:	-
			Annual Deficit:	**$524,000**
Buildings	**$35,000,000**	**Good (79%)**	Annual Requirement:	$809,000
			Funding Available:	$655,000
			Annual Deficit:	**$154,000**
Land Improvements	**$4,600,000**	**Fair (45%)**	Annual Requirement:	$255,000
			Funding Available:	-
			Annual Deficit:	**$255,000**
Fleet	**$10,400,000**	**Fair (43%)**	Annual Requirement:	$1,158,000
			Funding Available:	-
			Annual Deficit:	**$1,158,000**
Machinery & Equipment	**$10,500,000**	**Fair (58%)**	Annual Requirement:	$722,000
			Funding Available:	$117,000
			Annual Deficit:	**$605,000**
Overall	**$410,800,000**	**Good (61%)**	Annual Requirement:	$11,553,000
			Funding Available:	$3,800,000
			Annual Deficit:	**$7,753,000**

Appendix B – 10-Year Capital Requirements

The tables below summarize the projected cost of lifecycle activities (rehabilitation and replacements) that may be undertaken over the next 10 years to support current levels of service.

These projections are generated in Citywide and rely on the data available in the asset register. Assessed condition data and replacement costs were used to assist in forecasting replacement needs for roads. For all remaining assets, only age was used to determine forthcoming replacement needs.

The projections can be different from actual capital forecasts. Consistent data updates, particularly condition, replacement costs, and regular upkeep of lifecycle models, will improve the alignment between the system generated expenditure requirements, and the Municipality's capital expenditure forecasts.

Road Network

Segment	Back-log	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Curb	-	-	-	-	-	-	-	-	-	-	-
Guide Rails	$31k	$97k	$80k	$30k	$46k	$245k	$146k	$35k	$73k	$118k	$30k
Paved Shoulders	-	$208k	$124k	$111k	$78k	$169k	$339k	-	-	-	-
Road Signs	$43k	-	-	-	-	-	-	-	-	-	-
Road Surface Treatment	$4.0m	$7.3m	-	$257k	-	-	$6.5m	$81k	$26k	$351k	-
Road Surface-Gravel	-	-	-	-	-	-	-	-	-	-	-
Road Surface-Hot Mix	$1.7m	$7.5m	$2.1m	$3.7m	$4.6m	$2.2m	$1.6m	$2.9m	$1.4m	-	-
Road/Berm	-	-	-	-	-	-	-	-	-	-	-
Sidewalks	-	$41k	$1k	$3k	$19k	$85k	$61k	$50k	$78k	$359k	$475k
Street Lights	-	$7k	$1k	-	$1k	$6k	$3k	$6k	$3k	-	$1.1m
Traffic Signal	-	-	-	-	-	-	-	-	$130k	-	-
Total	**$5.7m**	**$15.1m**	**$2.3m**	**$4.1m**	**$4.8m**	**$2.7m**	**$8.7m**	**$3.1m**	**$1.7m**	**$828k**	**$1.6m**

Table 61 System Generated 10-Year Capital Replacement Forecast: Road Network

Bridges & Culverts

Segment	Back-log	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Bridges	-	$5k	$5k	$5k	$5k	$5k	$5k	$5k	$5k	$5k	$5k
Culverts (under 3m)	-	$1.1m	$184k	$270k	$63k	$150k	$232k	$125k	$100k	$230k	$231k
Structural Culverts (over 3m)	-	$205k	$205k	$205k	$205k	$192k	$174k	$174k	$174k	$102k	$77k
Total	**-**	**$1.4m**	**$393k**	**$480k**	**$273k**	**$346k**	**$410k**	**$303k**	**$278k**	**$336k**	**$312k**

Table 62 System Generated 10-Year Capital Replacement Forecast: Bridges & Culverts

Water Network

Segment	Back-log	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Buildings	-	-	-	-	-	-	-	-	-	-	-
Flowmeter	$9k	$8k	-	$23k	$14k	-	$7k	$9k	-	-	-
Hydrants	-	-	-	-	-	-	-	-	-	-	-
Meters	$16k	-	-	-	-	$1.6m	-	$1.5m	$1.6m	$3.2m	$529k
Reservoir	-	-	-	-	-	-	-	-	-	-	-
Tower	-	-	-	$250k	-	-	-	-	-	-	-
Treatment	$9k	$8k	$130k	$151k	-	-	$7k	$14k	-	$1.5m	$14k
Valve Chambers and Manholes	-	-	-	-	-	-	-	-	-	-	-
Valves	-	-	-	-	-	-	-	-	-	-	-
Water Housing Connection	-	-	-	-	-	-	-	-	-	-	-
Watermains	-	-	-	-	-	-	-	-	-	-	-
Well	-	-	-	-	-	-	-	$19k	-	-	-
Total	**$34k**	**$16k**	**$130k**	**$423k**	**$14k**	**$1.6m**	**$14k**	**$1.6m**	**$1.6m**	**$4.8m**	**$542k**

Table 63 System Generated 10-Year Capital Replacement Forecast: Water Network

Sanitary Sewer Network

Segment	Back-log	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Buildings	-	-	-	-	-	-	-	-	-	-	-
Collection	-	-	-	$38k	-	$19k	-	-	-	-	-
Electrical System	-	$301k	-	-	-	$90k	-	$38k	$193k	-	$188k
Forcemain	-	-	-	-	-	-	-	-	-	-	-
House Sewer Connection	-	-	-	-	-	-	-	-	-	-	-
Lagoon	-	-	-	-	-	-	-	-	-	-	-
Manholes	-	-	-	-	-	-	-	-	-	-	$1.1m
Monitoring	-	$377k	-	-	-	-	-	$1.4m	-	-	-
Pumping Station	$603k	$5k	-	-	-	$5k	$35k	-	$8k	$42k	$128k
Scada	-	$90k	-	-	-	-	-	-	$27k	$377k	-
Septic Field	-	-	-	-	$753k	$301k	-	-	-	-	-
Sewermains	-	-	-	-	-	-	-	-	-	-	-
Treatment	-	-	-	-	-	-	-	$20k	-	-	-
Total	**$603k**	**$773k**	**-**	**$38k**	**$753k**	**$416k**	**$35k**	**$1.4m**	**$227k**	**$419k**	**$1.4m**

Table 64 System Generated 10-Year Capital Replacement Forecast: Sanitary Sewer Network

Stormwater Network

Segment	Back-log	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Catch Basins	$32k	-	-	-	-	-	-	-	-	-	-
Manholes	$61k	-	-	-	-	-	-	-	-	-	-
Storm SewerMains	$250k	-	-	-	-	-	-	-	-	-	-
Total	**$343k**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Table 65 System Generated 10-Year Capital Replacement Forecast: Stormwater Network

Buildings

Segment	Back-log	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Administration	-	-	-	-	-	-	-	-	-	-	
Protection Services	-	-	-	-	-	-	-	$12k	-	-	$11k
Recreation & Cultural Services	$121k	$34k	$14k	-	$14k	-	$59k	$19k	$119k	-	$806k
Transportation Services	$508k	-	-	-	-	-	$7k	-	-	-	-
Total	**$628k**	**$34k**	**$14k**	**-**	**$14k**	**-**	**$66k**	**$31k**	**$119k**	**-**	**$816k**

Table 66 System Generated 10-Year Capital Replacement Forecast: Buildings

Note: These projections are generated in Citywide and rely on the data available in the asset register. Buildings often contain thousands of assets, each with its own estimated useful life. Currently, however, as the Municipality's buildings are not fully componentized, there are only 609 assets in the register. Over time, with improved and effective componentization, the alignment between the system generated expenditure requirements, and the Municipality's capital expenditure forecasts will also increase.

Land Improvements

Segment	Back-log	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Fencing & Lighting	$123k	-	-	$8k	-	-	$14k	$507k	-	-	-
Fields & Courts	$226k	$181k	-	-	-	-	-	$98k	-	-	-
Parks & Playgrounds	$511k	$21k	$35k	-	-	$57k	$13k	$317k	$22k	-	$30k
Pavement	$2k	-	-	-	-	-	-	$56k	$3k	-	-
Towers	-	-	-	-	-	-	-	-	$58k	-	-
Total	**$862k**	**$202k**	**$35k**	**$8k**	**-**	**$57k**	**$27k**	**$978k**	**$83k**	**-**	**$30k**

Table 67 System Generated 10-Year Capital Replacement Forecast: Land Improvements

Fleet

Segment	Back-log	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Heavy Equipment	$326k	-	-	$622k	-	$1.4m	$609k	-	-	-	$959k
Light Duty	$407k	-	$51k	$29k	$48k	$124k	$153k	$59k	$328k	$208k	$7k
Medium Duty	$356k	$38k	$64k	$125k	-	$31k	-	$212k	$394k	$64k	$125k
Rescue	$2.7m	-	-	$72k	-	-	$294k	-	$2.7m	-	$671k
Total	**$3.8m**	**$38k**	**$115k**	**$849k**	**$48k**	**$1.5m**	**$1.1m**	**$271k**	**$3.5m**	**$272k**	**$1.8m**

Table 68 System Generated 10-Year Capital Replacement Forecast: Fleet

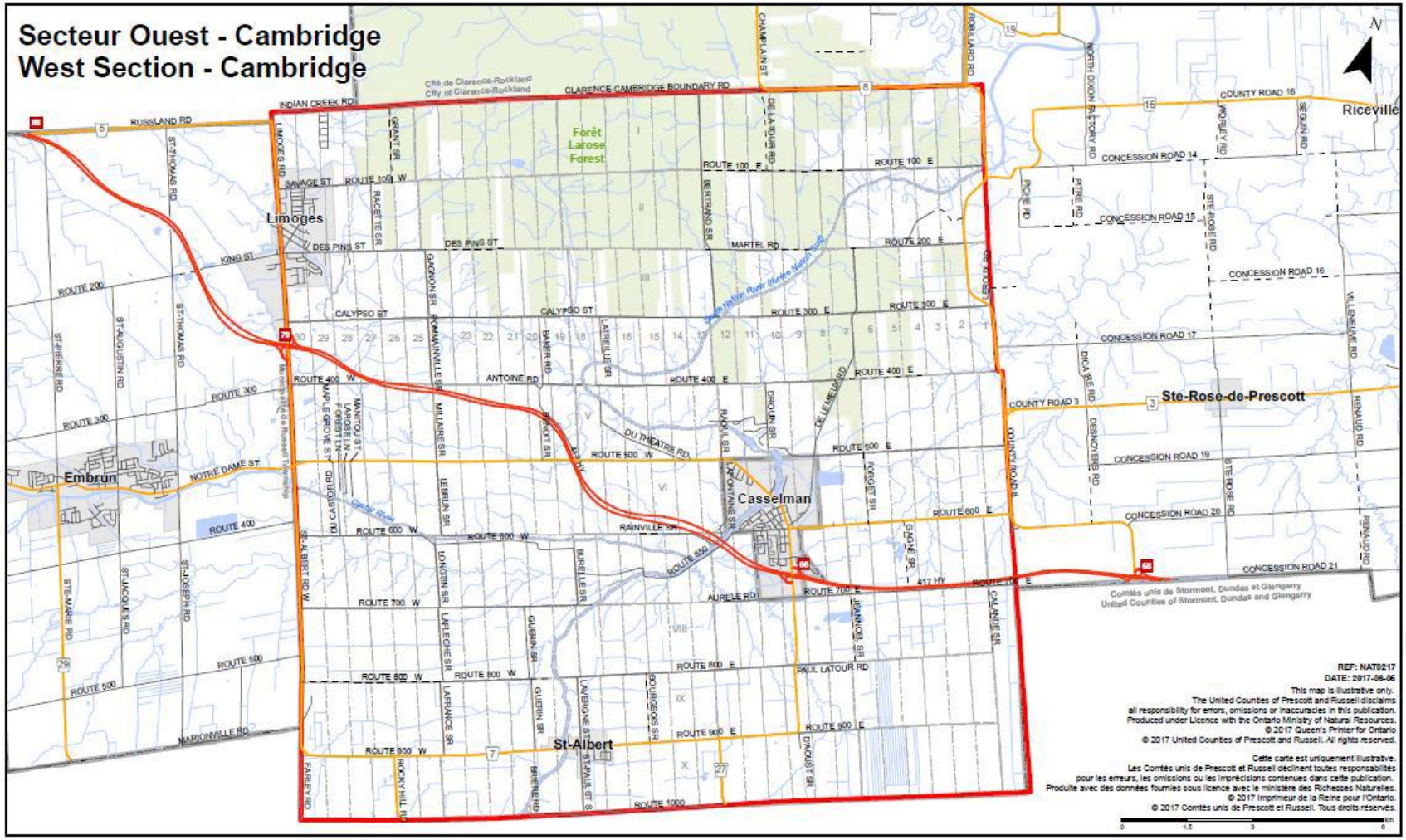
Machinery & Equipment

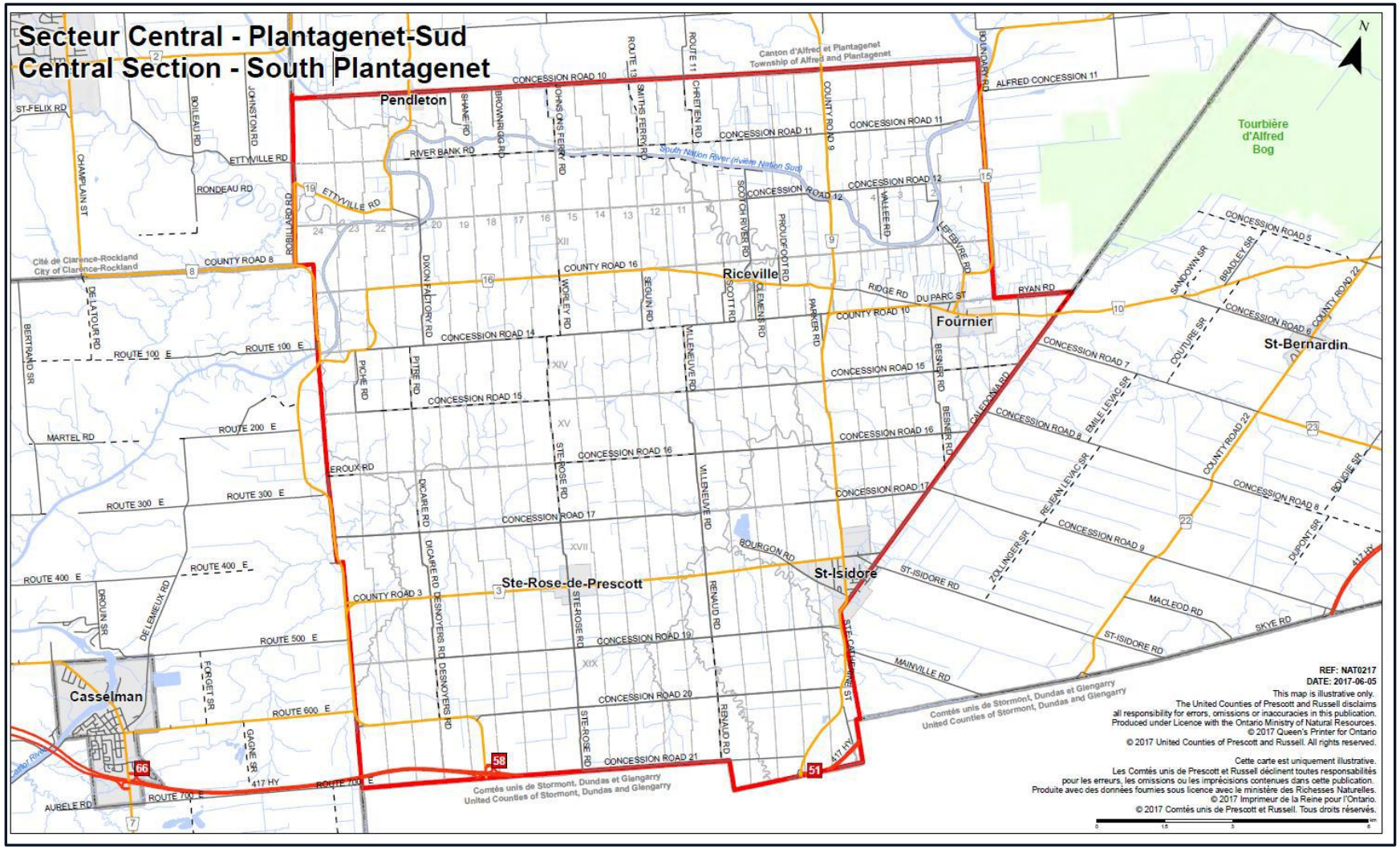
Segment	Back-log	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Admin / Library	$198k	$95k	$27k	$20k	$54k	$32k	$203k	$18k	$69k	$13k	-
Emergency Response	$505k	$5k	$64k	$88k	$48k	$85k	$46k	$41k	$62k	$74k	$55k
IT/Computer	$408k	$57k	$160k	$58k	$80k	$220k	$74k	$359k	$85k	$200k	$119k
Public Works	$65k	-	-	$6k	$8k	-	$4k	$12k	$3k	$9k	$27k
Recreation & Parks	$207k	$15k	-	-	$5k	$16k	$33k	$332k	$4k	-	$22k
SCADA	-	-	-	-	-	-	-	-	-	-	-
Water/Wastewater	$49k	$90k	-	$10k	$28k	$23k	$41k	$264k	-	$121k	$11k
Total	**$1.4m**	**$263k**	**$251k**	**$182k**	**$224k**	**$376k**	**$402k**	**$956k**	**$224k**	**$416k**	**$232k**

Table 69 System Generated 10-Year Capital Replacement Forecast: Machinery & Equipment

Appendix C – Level of Service Images

Road Network Maps (2022)




Secteur Central - Plantagenet-Sud
Central Section - South Plantagenet
Pendleton
Riceville
Fournier
St-Bernardin
St-Isidore
Ste-Rose-de-Prescott
Casselman
Tourbière d'Alfred Bog
Canton d'Alfred et Plantagenet
Township of Alfred and Plantagenet
Cité de Clarence-Rockland
City of Clarence-Rockland
Comtés unis de Stormont, Dundas et Glengarry
United Counties of Stormont, Dundas and Glengarry
CONCESSION ROAD 10
CONCESSION ROAD 11
CONCESSION ROAD 12
CONCESSION ROAD 14
CONCESSION ROAD 15
CONCESSION ROAD 16
CONCESSION ROAD 17
CONCESSION ROAD 19
CONCESSION ROAD 20
CONCESSION ROAD 21
COUNTY ROAD 8
COUNTY ROAD 16
COUNTY ROAD 10
COUNTY ROAD 3
ALFRED CONCESSION 11
RIVER BANK RD
ETTYVILLE RD
RONDEAU RD
RIDGE RD
DU PARC ST
RYAN RD
MARTEL RD
BOURGON RD
ST-ISIDORE RD
MACLEOD RD
SKYE RD
MAINVILLE RD
ROUTE 100 E
ROUTE 200 E
ROUTE 300 E
ROUTE 400 E
ROUTE 500 E
ROUTE 600 E
ROUTE 700 E
417 HY
REF: NAT0217
DATE: 2017-06-05
This map is illustrative only.
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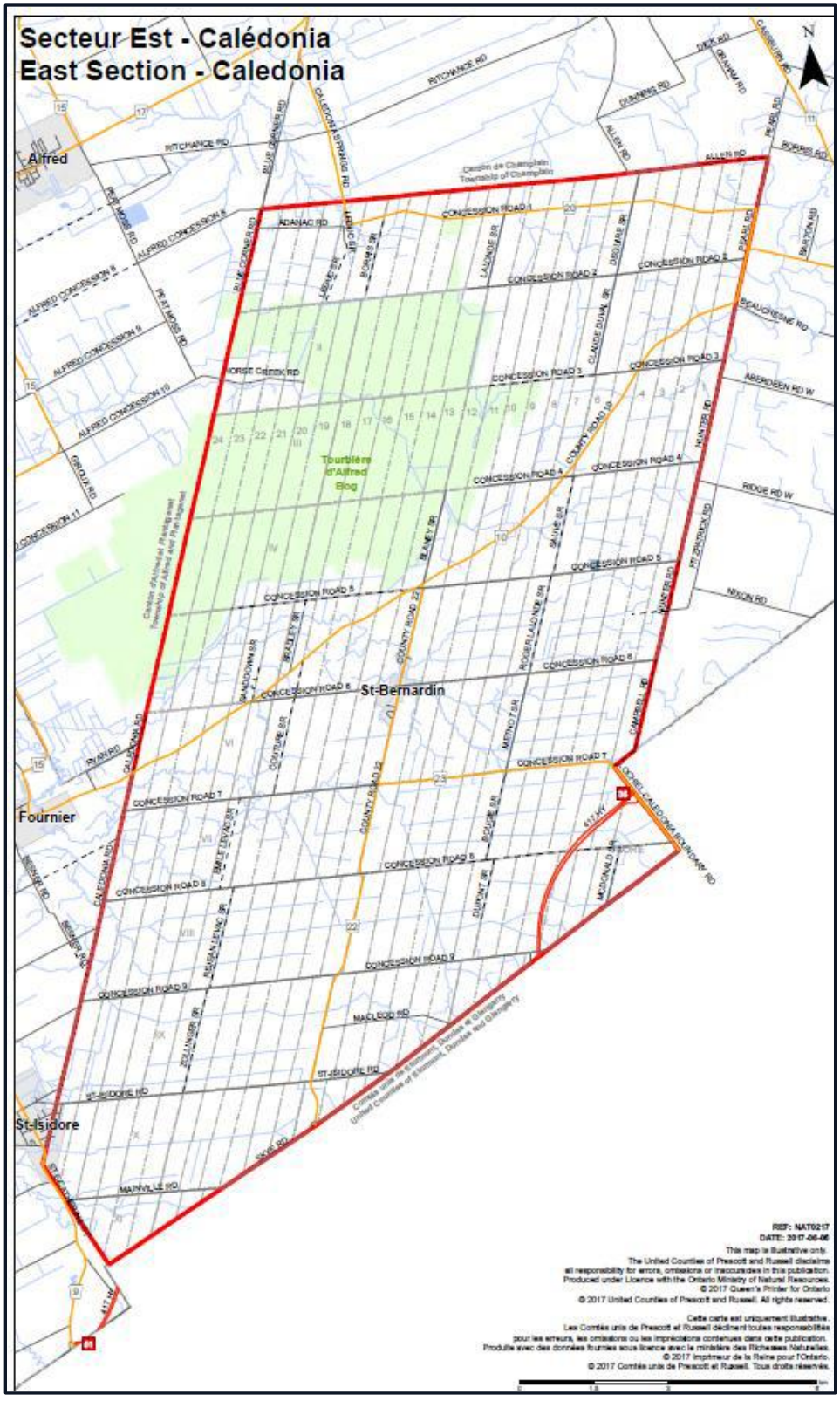

Secteur Est - Calédonia
East Section - Caledonia
N
Alfred
St-Bernardin
Fournier
St-Isidore
Tourbière d'Alfred Bog
CONCESSION ROAD 1
CONCESSION ROAD 2
CONCESSION ROAD 3
CONCESSION ROAD 4
CONCESSION ROAD 5
CONCESSION ROAD 6
CONCESSION ROAD 7
CONCESSION ROAD 8
CONCESSION ROAD 9
COUNTY ROAD 19
COUNTY ROAD 23
RITCHANCE RD
ADANAC RD
ALLEN RD
BEAUCHESNE RD
ABERDEEN RD W
RIDGE RD W
NIXON RD
MACLEOD RD
ST-ISIDORE RD
MANVILLE RD
617 HWY
REF: NAT0217
DATE: 2017-06-06

Road Surface Condition Examples

Very Good Condition - St. Isidore Road

Fair Condition – Ridge Road

Very Poor Condition – Concession 19

Bridge Condition Examples

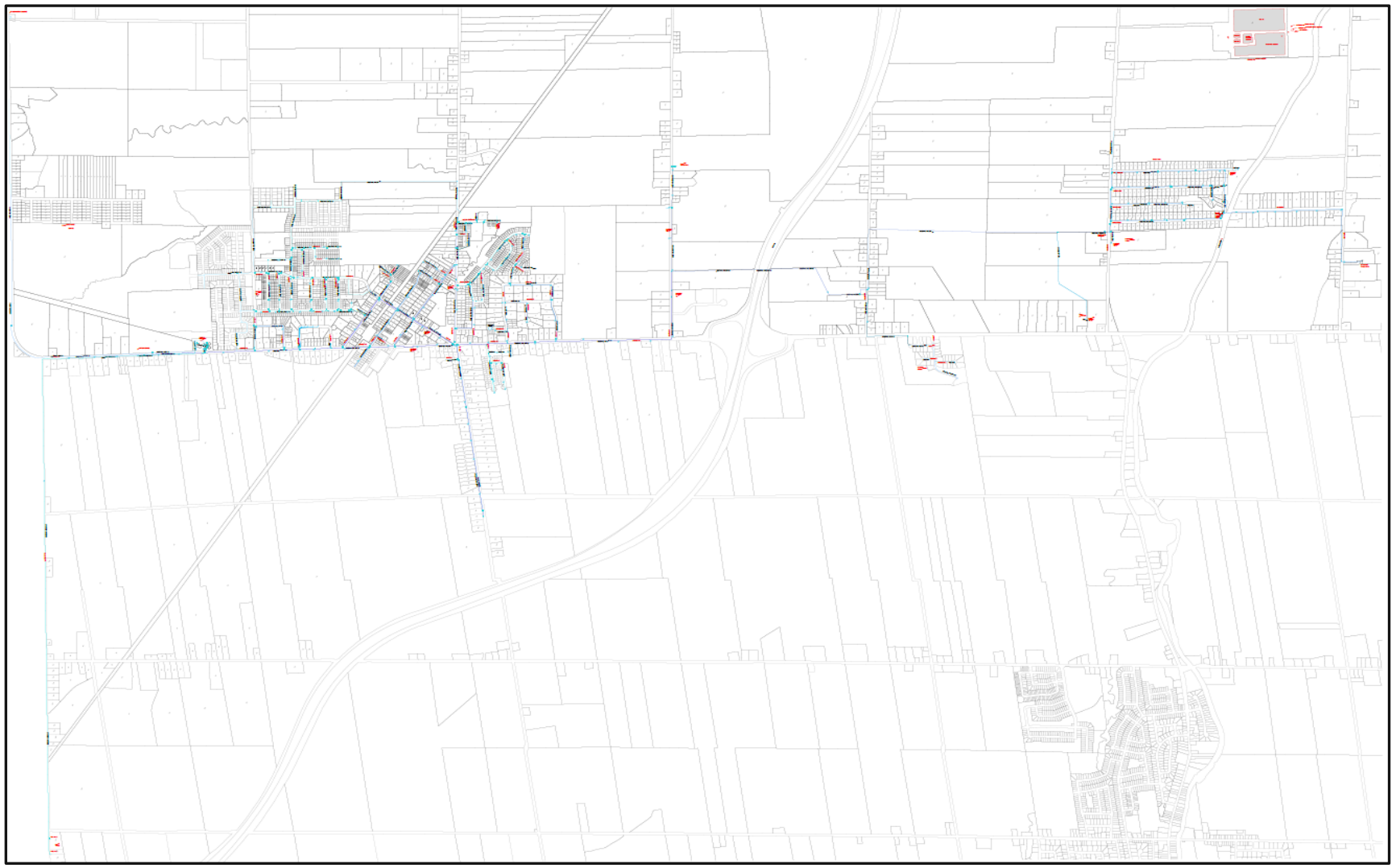
Good condition – BCI 73.2 – Concession 20, West Scotch River Bridge

Poor Condition – BCI 59 – Louis Galipeau Bridge

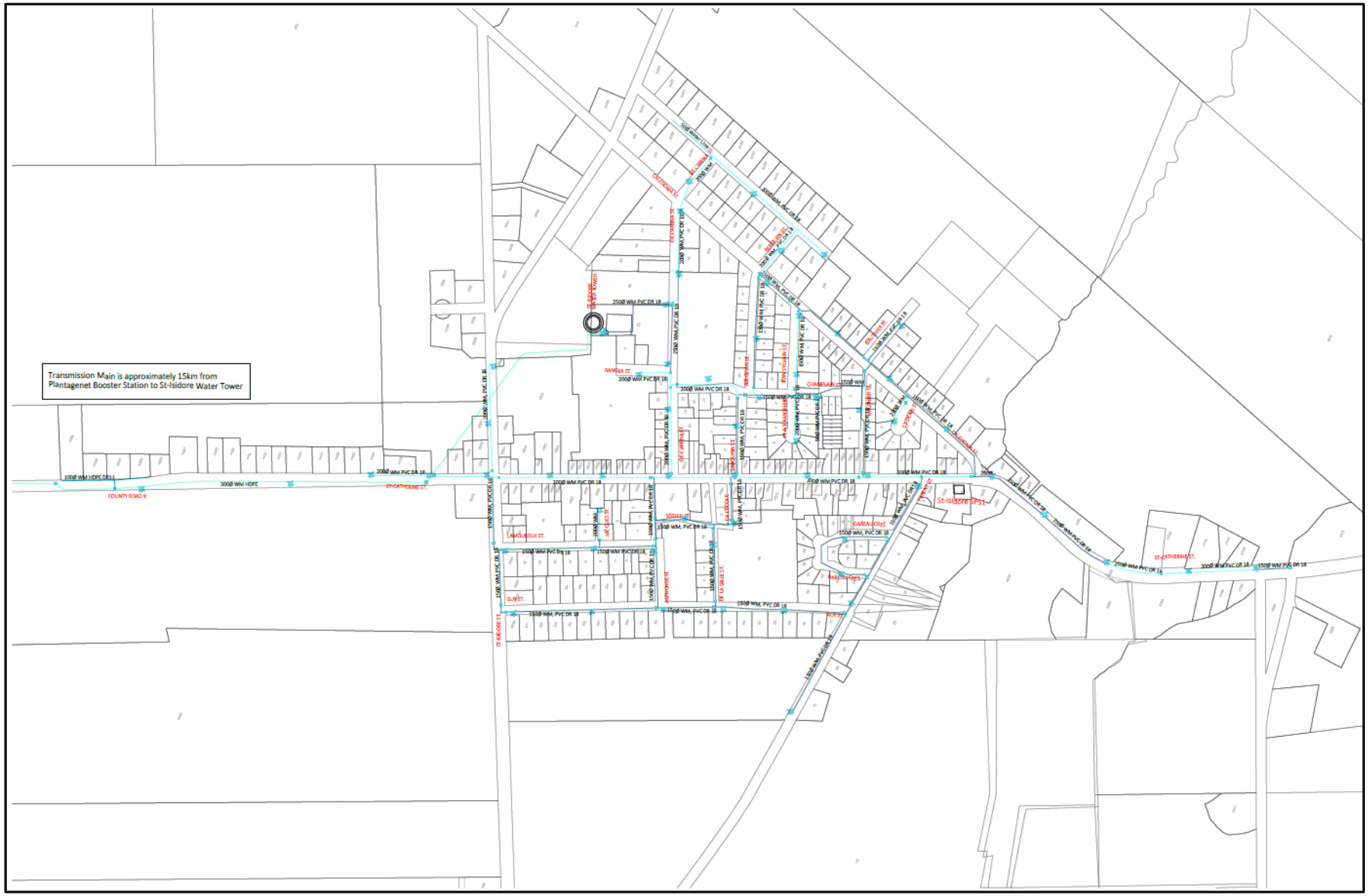
Very Poor Condition – BCI 42.7 – Concession 8, Paxton Creek Bridge

Water Services Maps (2024)

Limoges Water Distribution Network

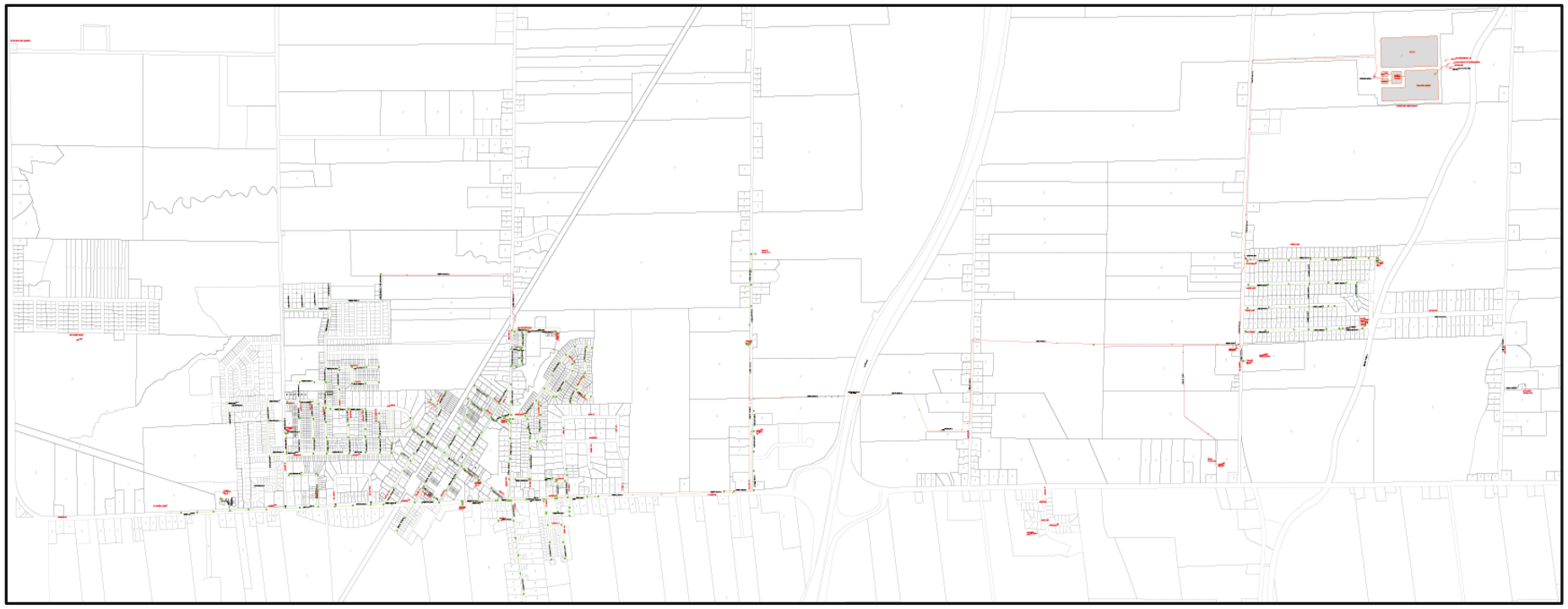


St. Isidore Water Distribution Network

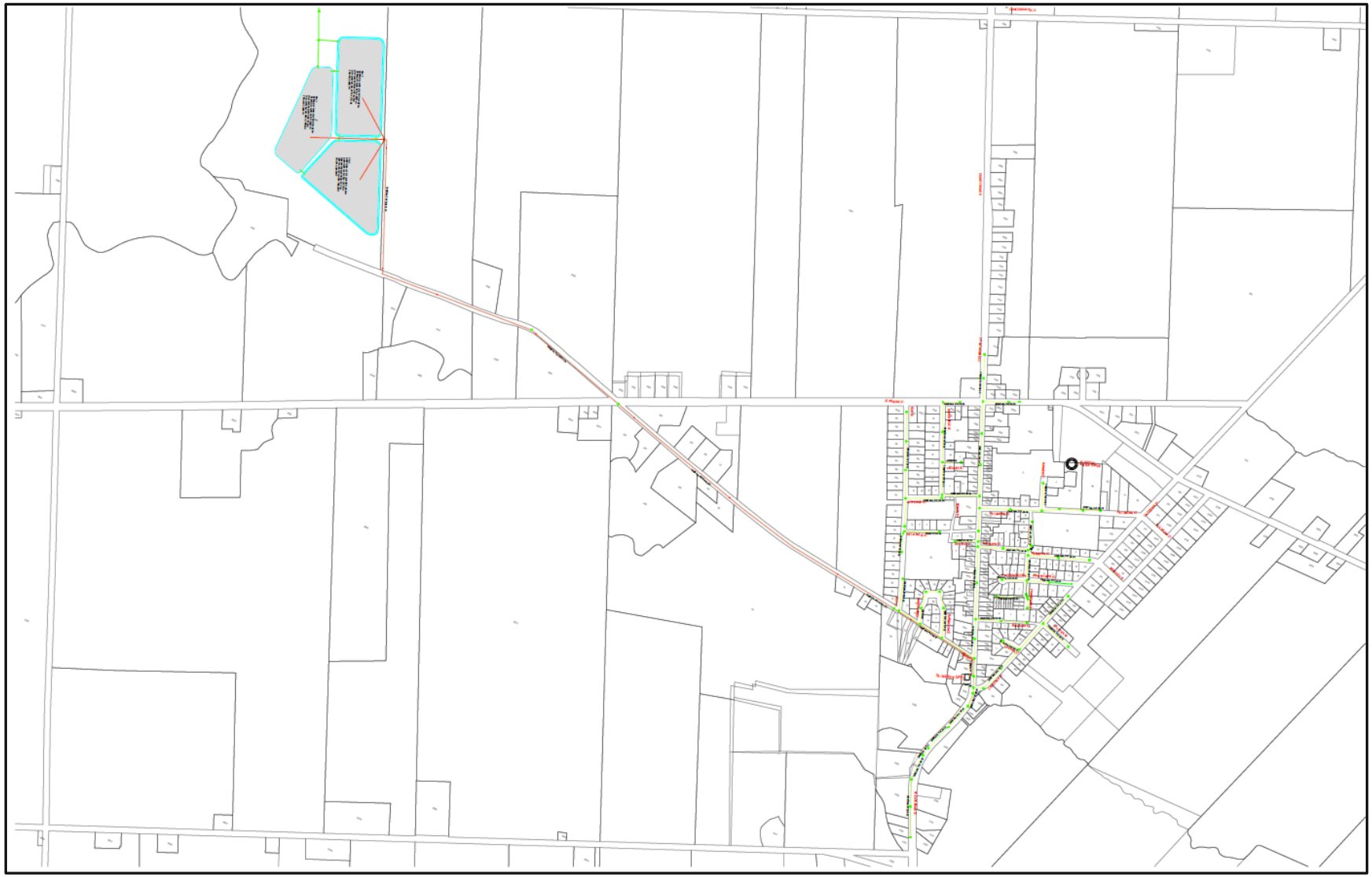


Sanitary Sewer Services Maps (2024)

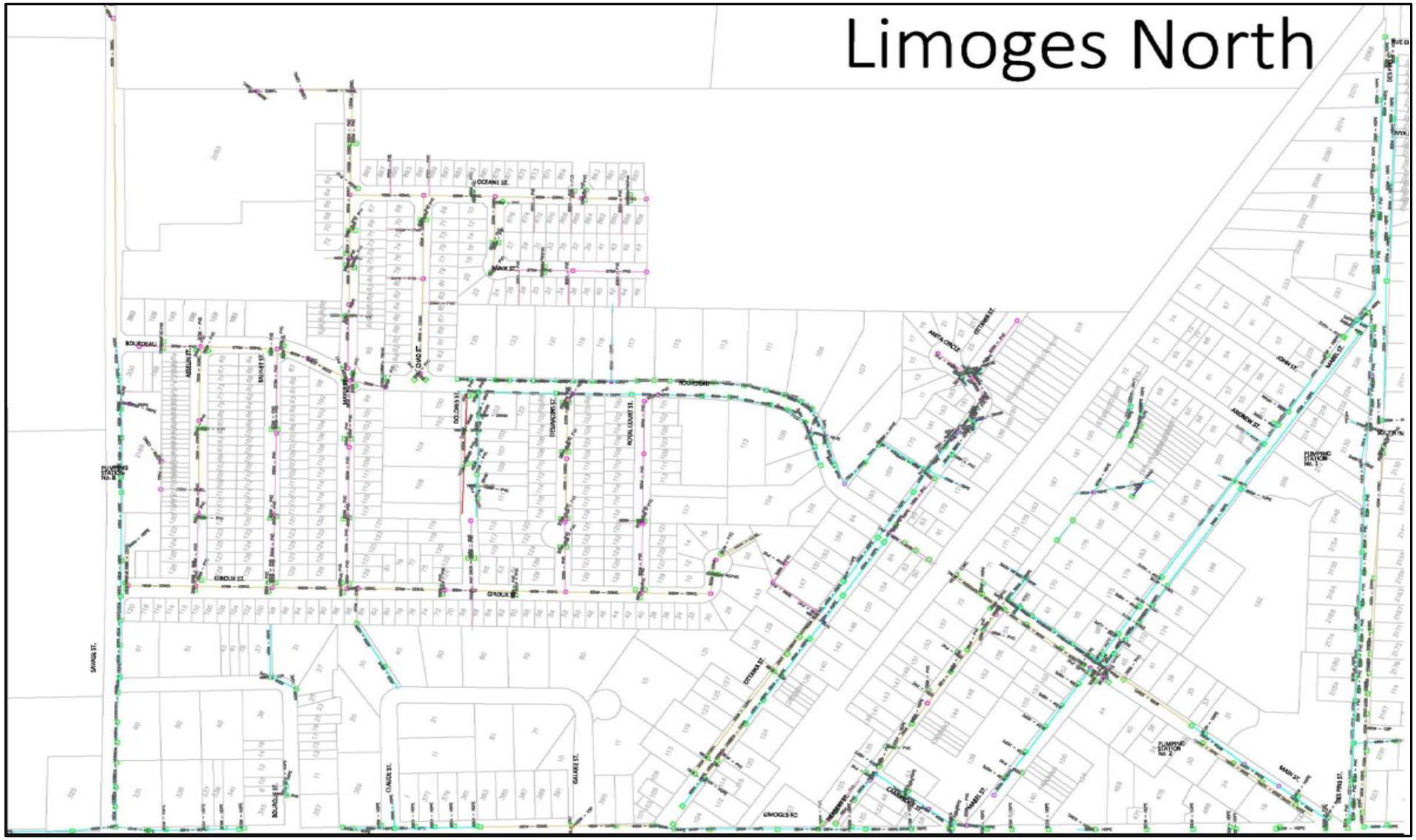
Limoges Sanitary Sewer Network

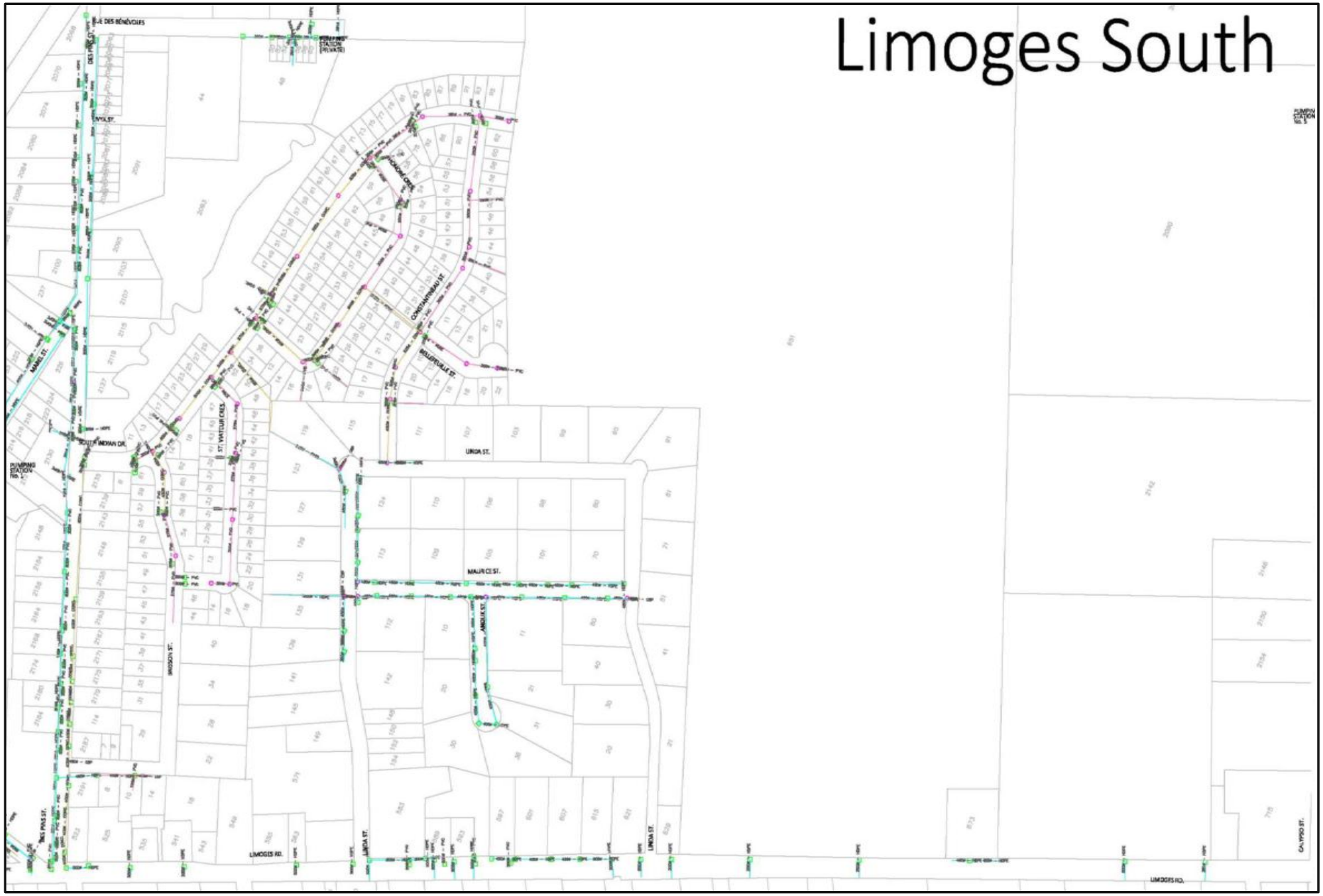


St. Isidore Sanitary Sewer Network

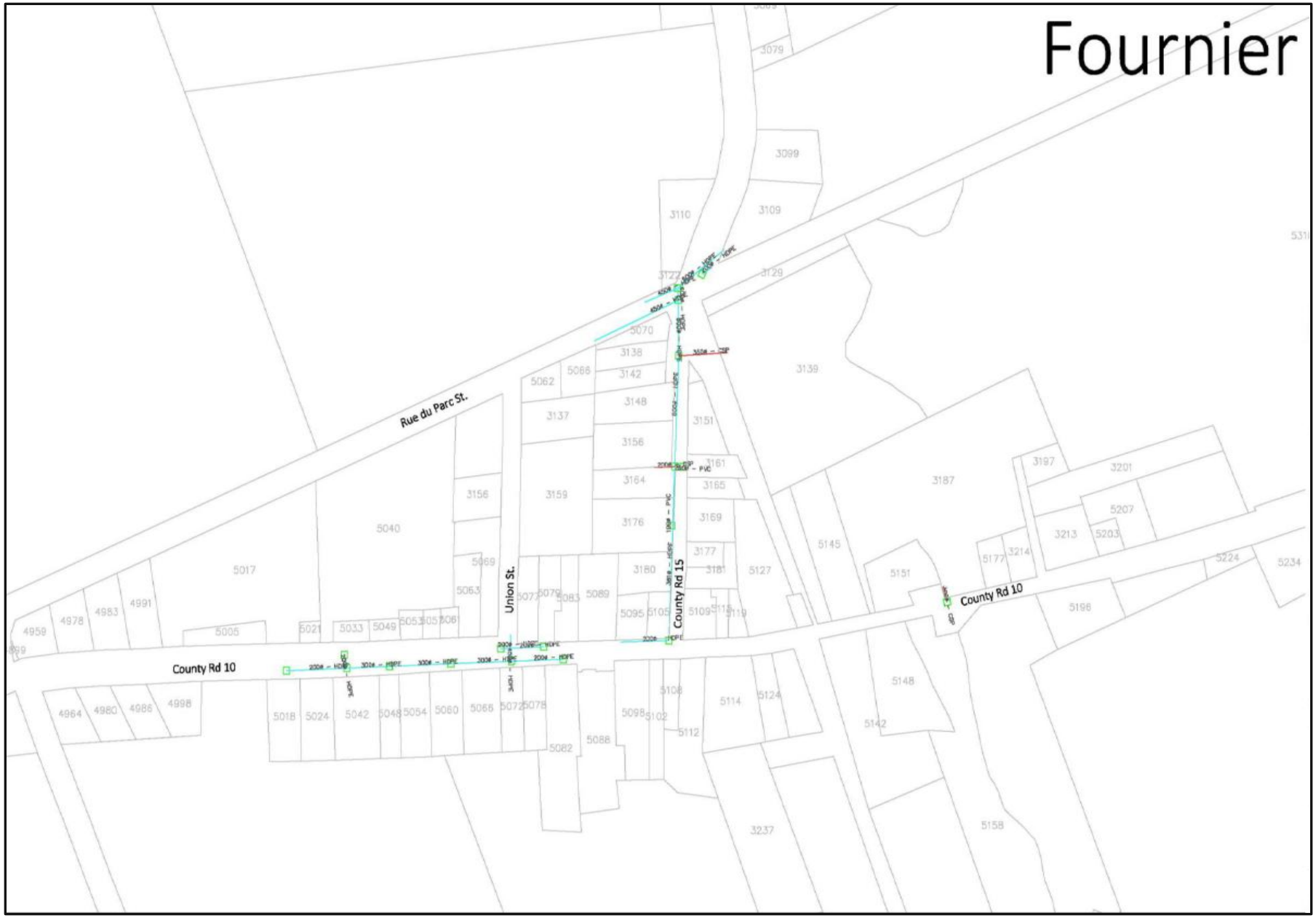


Stormwater Network Maps (2022)




Limoges South
LINDA ST.
MAURICE ST.
LIMOGES RD.


Forest Park
MANITOU LANE
LAROSE LANE
FOREST LANE
MAPLE GROVE
CAMBRIDGE PUBLIC SCHOOL
PUMPING STATION NO. 3
ROUTE 600


Fournier
Rue du Parc St.
Union St.
County Rd 15
County Rd 10
County Rd 10


St-Albert
PRINCIPALE ST.
ADAM ST.
CAYER ST.


St-Isidore
ST-CATHERINE ST.
SEGUIN ST.
GUY ST.
GUY ST.
ST-ISIDORE ST.
DE L'EGLISE ST.
RANGER
GAREAU CRES


St-Bernardin
De l'Église St.
De l'Église St.
County Rd 22
County Rd 22