Asset Management Plan

Municipality of Port Hope

August 2025

psdcitywide

This Asset Management Plan was prepared by:

psdcitywide

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

Key Statistics

$985.6 m	2023 Replacement Cost of Asset Portfolio
55%	Overall Portfolio Average Condition[1]
82%	Percentage of Assets in Fair or Better Condition[1]
53%	Percentage of Assets with Assessed Condition[1] Data
$12.0 m	Annual Capital Infrastructure Deficit
+1.4% Annually	Tax Increase for 20 Years to Fully Fund Proposed Levels of Service
+1.4% Annually	Water Rate Increase for 20 Years to Fully Fund Proposed Levels of Service
+1.2% Annually	Sanitary Rate Increase for 20 Years to Fully Fund Proposed Levels of Service

[1] Condition weighted by replacement cost.

Table of Contents

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 Municipality of Port Hope can ensure that public infrastructure is managed to support the sustainable delivery of municipal services. Figure 1 outlines the asset categories included in this AMP:

Figure 1 Core and Non-Core Asset Categories

Core Assets

- Road Network
- Bridges & Culverts
- Water Network
- Sanitary Sewer Network
- Stormwater Network

Non-Core Assets

- Facilities
- Land Improvements
- Machinery & Equipment
- Fleet& Fleet Equipment

1.2 Compliance

With the development of this AMP, the Municipality of Port Hope has achieved compliance with July 1, 2025, requirements under O. Reg. 588/17. This includes requirements for levels of service and inventory reporting for all asset categories.

1.3 Findings

The overall replacement cost of the asset categories included in this AMP totals $985.6 million. Weighted by replacement cost, 82% of all assets analysed in this AMP are in fair or better condition and have an average weighted condition rating of 55%. Assessed condition data was available for 53% of assets. For the remaining 47% 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 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 $20,129,000. Based on a historical analysis of sustainable capital funding sources, the Municipality is committing approximately $8,083,000 towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $12,046,000.

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 graphic shows annual tax and rate changes required to eliminate the Municipality's infrastructure deficit based on a 20-year plan:

Figure 2 Proposed Tax/Rate Changes

Note: *The above recommendations are based on 2024 dollars and do not account for inflation. The Municipality should consider additional increases (if required) to address annual inflationary pressures.*

Recommendations to guide continuous refinement of the Municipality's asset management program include:

- Review data to update and maintain a complete and accurate dataset
- Develop a condition assessment strategy with a regular schedule
- Review and update lifecycle management strategies
- Develop and regularly review short- and long-term plans to meet capital requirements
- Continue to measure current levels of service and verify sustainability of proposed levels of service

2 Introduction & Context

2.1 Community Profile

Table 1 Municipality of Port Hope Community Profile

Census Characteristic	Municipality of Port Hope[2]	Ontario
Population 2021	17,294	14,223,942
Population Change 2016-2021	3.2%	5.8%
Total Private Dwellings	7,607	5,929,250
Population Density	62.0 / km^2	15.9 / km^2
Land Area	278.80 km^2	892,411.76 km^2

Beyond the town proper, the Municipality extends to include Campbellcroft, Canton, Dale, Elizabethville, Garden Hill, Knoxville, Morrish, Osaca, Perrytown, Port Britain, Rossmount (partially), Tinkerville, Thomstown, Welcome, Wesleyville, Zion, Decker Hollow (ghost town) and Davidson's Corners (partially).

The Ganaraska River, flowing through the town and into nearby Lake Ontario, has always been a vital life source. This strategic location played a key role in Port Hope's early development, fostering trade and transportation. While manufacturing once dominated Port Hope's economy, the landscape has evolved. Smaller manufacturers remain, and the nuclear industry continues to be a key employer. The surrounding fertile lands nurture a vibrant agricultural scene, ensuring access to fresh, local produce. This dedication to sustainable practices aligns perfectly with Port Hope's commitment to preserving its heritage while embracing a dynamic future. Looking forward, Port Hope actively attracts new businesses in sectors like tourism and professional services, fostering a diversified and thriving economy.

The Municipality has experienced punctuated growths in year over year population. Over the last decade, the Municipality has seen a 3.2% increase in population. The Municipality has a population skewed to an aging population with 28% of the population being 65+, which is above the approximate 19% proportion for the rest of Ontario.

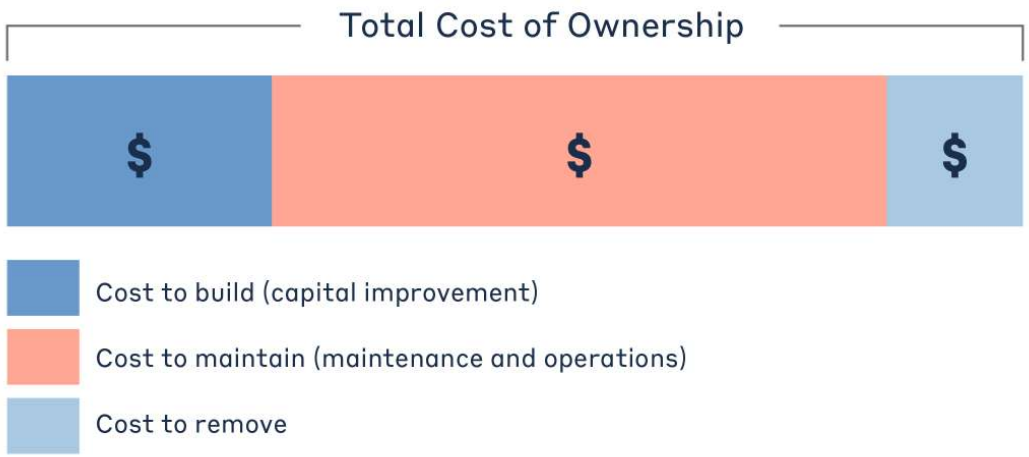
2.2 Asset Management Overview

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.

[2] As per 2021 Census from Statistics Canada.

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

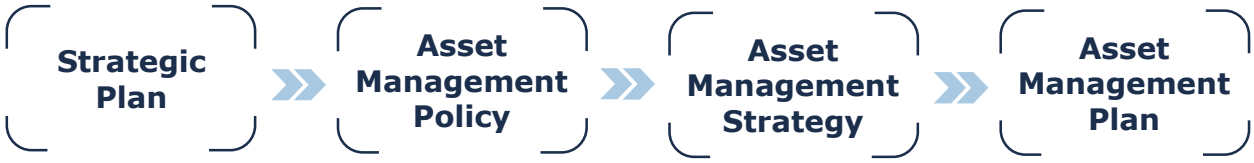


These costs can span decades, requiring planning and foresight to ensure financial responsibility is spread equitably across generations. An asset management plan is critical to this planning, and an essential element of broader asset management program.

2.2.1 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.

Strategic Plan

The 2019-2022 Strategic Plan is in the process of updating for 2025-2030. Acknowledging that the following relates to the previous (now outdated) Strategic Plan, the following six pillars were identified to move forward with public engagement:

- More Homes
- Strong Local Economy
- Welcoming and Liveable Community
- Healthy Natural Environment
- Safe and Well-Maintained Infrastructure
- Good Governance

Table 2 Strategic Plan Goals

Priority	Goal Statement
More Homes	Take action to address the urgent need for more housing options for residents of all ages and incomes.
Strong Local Economy	Leverage our competitive advantages to facilitate business growth and attract new local jobs.
Welcoming & Livable Community	Pursue community projects and partnerships that enhance sense of belonging, improve happiness and ensure a high quality of life.
Healthy Natural Environment	Continually strive to protect, conserve and enhance our natural environment while enhancing our capacity to mitigate and adapt to the impacts of climate change.
Safe & Well-Maintained Infrastructure	Embrace best practices in asset management to continuously maintain and improve our municipal infrastructure assets contributing to long-term sustainability.
Good Government	Provide friendly, responsive, and citizen-focused services encouraging meaningful community engagement and demonstrating transparent decision-making, and provide a safe, inclusive and exceptional working environment for Staff and Council.

Asset Management Policy

An asset management policy represents a statement of the priorities 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 Municipality of Port Hope adopted their Strategic Asset Management Policy on July 2, 2019, in accordance with O. Reg. 588/17, based on the following principles:

- Forward looking
- Budgeting and planning
- Prioritization
- Economic Development
- Transparency
- Consistency
- Environmentally conscious
- Health and safety
- Community focused
- Innovation
- Integration

The Municipality is currently preparing updates to present to Council for adoption in the near future.

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.

An 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.

2.2.2 Asset Management Decision Making

While final bylaw, policy, and budget decisions are made at the Council level, many operational level decisions are made by administration. The Municipality of Port Hope utilizes an internal Asset Management Team to promote collaboration, knowledge sharing, and organizational consistency across multiple departments/divisions. The Asset Management Team consists of the follow positions:

- Manager, Municipal Assets and GIS
- Manager, Financial Planning
- Deputy Fire Chief, Training & Operations
- Manager, Parks and Facilities
- Manager, Transportation
- Manager, Engineering
- Manager, Water
- Manager, Wastewater

After achieving compliance with the 2025 O. Reg. 588/17 requirement, the Asset Management Team intends to meet six times per year to refine asset management practices, prioritize capital projects, and complete annual Asset Management Plan updates.

2.2.3 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 fulfil 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 residents, 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 generally be 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.

Table 3 Lifecycle Management: Typical Lifecycle Interventions

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;

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

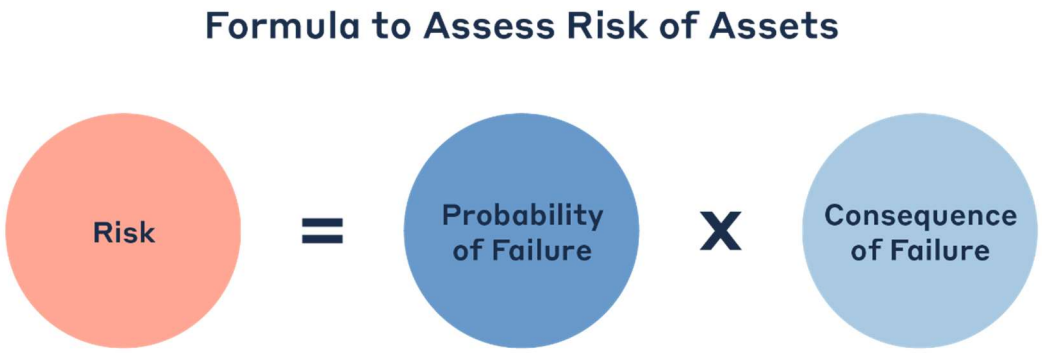
Quantitative Risk

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. one to five), 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 Equation



The approach for quantitative risk used in this AMP relies on a calculable measurement of risk associated with each asset. The probability and consequence of failure are each scored from one to five, producing a minimum risk index of one 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.

Typically, a model is selected for a group of similar assets (e.g. all roads, water distribution system etc.). Often, parameters for estimating probability of failure include asset condition, service life remaining, and/or asset material.

For each risk model, probability of failure (PoF) is determined through the following steps:

1. Identification of available attribute data suitable for determining the probability of failure for selected assets. In some instances, available asset data may be limited requiring a more simplified PoF model, at least initially.
    - This process often identifies opportunities for asset data enhancements and/or data collection. Asset enhancement considerations commonly relate to data quality dimensions which are outlined in Appendix G.
2. Determination of the type of risk that applies to the selected attribute.
    - Condition, Design Capacity, Economic, Environmental, Health and Safety, Operational, Social, Strategic
3. Where there are multiple parameters included in the PoF model, determine suitable weighting of each parameter.
    - Weighting allows the model to recognize that each factor may impact the probability of failure to a different degree. Where the weight is higher, the impact that factor has on the model increases too.

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 4 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.

Table 4 Risk Analysis: Types of Consequences of Failure

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 asset failure on the community's long-term strategic objectives, including economic development, business attraction, etc.

Note: *The above examples of consequence of failure are general in nature and can be integrated into risk calculations as the Municipality feels appropriate. As Port Hope has recently conducted risk criticality evaluations, these types of consequences were considered and incorporated into that framework.*

This AMP includes evaluations 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.

Qualitative Risk

Qualitative risk assessments in municipal asset management go beyond numbers and statistics to capture the broader picture of potential vulnerabilities. This approach recognizes that not all risks can be easily quantified, especially when dealing with factors that involve human judgment, institutional knowledge, and unpredictable external conditions. Here's a deeper look at how and why qualitative risk is vital:

Understanding the Nuances

- **Human Expertise and Experience:** Rather than solely relying on historical data or mathematical models, qualitative risk assessments tap into the insights of experienced staff and stakeholders. Their first-hand knowledge can highlight emerging issues—such as gaps in asset data or unanticipated maintenance challenges—that might be overlooked in quantitative reviews.
- **Contextual Factors:** Municipalities face a range of unique challenges including aging infrastructure, rapid growth, and climate change impacts. Qualitative assessments take into account the specific context of the community, such as local environmental conditions, regulatory landscapes, and historical performance of assets.

Methodological Approach

- **Workshops and Interviews:** Facilitated risk workshops and structured interviews are key methods used in qualitative assessments. These sessions encourage open dialogue among staff from various departments, ensuring that diverse perspectives are considered. Through guided questions—covering topics from asset data confidence to lifecycle management strategies—municipalities can identify risks that are not immediately obvious from a numerical analysis.
- **Identifying Hidden Vulnerabilities:** The qualitative process allows teams to explore risks that are dynamic and interrelated. For instance, while data might show a certain asset has reached the end of its useful life, qualitative insights might reveal that a lack of proactive maintenance, compounded by extreme weather conditions, poses a more immediate risk to service delivery.

Strategic Benefits

- **Informed Decision-Making:** By combining qualitative insights with quantitative data, municipal planners can develop more holistic asset management strategies. This integrated approach enables better prioritization of capital investments, ensuring that both the immediate and long-term needs of the community are addressed.
- **Proactive Risk Management:** Qualitative risk assessments foster a forward-looking mindset. Rather than simply reacting to failures after they occur, this methodology encourages the development of proactive measures—such as enhanced maintenance programs and updated lifecycle strategies—that can mitigate risks before they escalate.
- **Adaptability to Change:** As external conditions evolve, qualitative assessments provide the flexibility needed to capture new risks. Whether it's the onset of climate change-

related events or shifts in funding availability, qualitative methods allow municipal asset managers to continuously refine their strategies in response to real-world developments.

By grounding the assessment process in real-world expertise and contextual analysis, qualitative risk evaluation becomes an essential tool for developing resilient, adaptive, and well-informed asset management strategies. This ensures that municipalities are not only prepared to handle current challenges but are also equipped to navigate the uncertainties of the future.

Levels of Service (LOS)

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 (Road Network, Bridges & Culverts, Water Network, Sanitary Sewer Network, and Stormwater Network), the province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in this AMP.

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 the province, through O. Reg. 588/17, has also provided technical metrics that are required to be included in this AMP. For all categories where not already prescribed by the province, the Municipality has opted to include the metrics such as average condition, percentage of the category in fair or better condition, percentage of the category in poor or lower condition, and a ratio of the average annual requirement against the amount budgeted towards each category.

Current & Proposed Levels of Service

Current levels of service are the past performance metrics of an asset category up until present day. In contrast, proposed levels of service look toward the Municipality's goal for asset performance by a defined future date.

Once current levels of service have been measured, proposed levels of service over a 10-year period should be established, in accordance with O. Reg. 588/17.

Proposed levels of service should be realistic and achievable within the timeframe outlined by the Municipality. They should also be determined by 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.

It is important to note that O. Reg. 588/17 does not dictate which proposed LOS metrics municipalities need to strive for. A proposed level of service will be very specific to each community's resident desires, political goals, and financial capacity. This can range from increasing service levels and costs, to maintaining or even reducing current performance to mitigate future cost increases. Regardless of the proposed LOS chosen, O. Reg 588/17 requires municipalities to demonstrate the achievability of their selected metrics

Both current and proposed levels of service for all included asset categories are outlined in this AMP.

2.3 Scope & Methodology

2.3.1 Included Asset Categories

This asset management plan for the Municipality is produced in compliance with O. Reg. 588/17. The July 2024/2025 deadline under the regulation—the second/third of three AMPs—requires analysis of core and non-core asset categories, as well as proposed service levels and the financial strategy to fund them.

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- and Rate-Funded Asset Categories

Tax-Funded Assets

- Road Network
- Bridges & Culverts
- Stormwater Network
- Facilities
- Land Improvements
- Machinery & Equipment
- Fleet & Fleet Equipment

Rate-Funded Assets

- Water Network
- Sanitary Sewer Network

2.3.2 Data Effective Date

It is important to note that this plan is based on data as of **December 31, 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.

2.3.3 Defining 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 & 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.

Note: *Replacement costs used in this AMP are based on year-end 2024 values and are not inflated to future replacement dates. Any inflationary factors would need to be considered separately from this document.*

2.3.4 Estimated Useful 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, typically aligned with the Municipality's Tangible Capital Assets (TCA) thresholds, 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 Equation

2.3.5 Average Annual Requirement (AAR)

The Average Annual Requirement (AAR) is the estimated amount of money the Municipality would need to set aside each year to ensure sufficient funds are available to carry out major rehabilitation or replacement work when it is due. It is a long-term financial planning tool used to support sustainable asset management and service delivery.

In essence, it treats infrastructure investment like a savings plan: "If we spread the total lifecycle cost of this asset over its useful life, how much do we need to reserve each year to be ready when major costs arise?"

Why the AAR matters:

- **Long-Term Planning:** Encourages proactive financial planning rather than reactive crisis spending.
- **Sustainability:** Ensures assets are properly maintained and replaced without burdening future budgets.
- **Transparency:** Helps identify whether current funding levels are sufficient—or if there is a funding gap.
- **Optimized Investment:** Supports lifecycle strategies that lower total costs and extend asset life.

Lifecycle interventions (e.g., resurfacing a road, relining a pipe) may require upfront investment, but they can extend the life of the asset, which means the cost is spread out over a longer period. This often results in a lower AAR, because the asset is delivering value for a longer time before needing full replacement.

Table 5 Average Annual Requirement Example

Scenario	Total Lifecycle Cost	Useful Life	AAR
No Rehab	$2.5M (replace at Year 25)	25 years	$100,000/year
With Rehab	$2.5M + $500K rehab at Year 15	40 years	$75,000/year

In the example outlined in Table 5, the life of the road would be extended by 15 years if a $500K mid-life rehabilitation was performed, thus reducing the annual amount that must be reserved. The $25,000 that would have been put aside for the road can now be reallocated to another project.

2.3.6 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 Equation

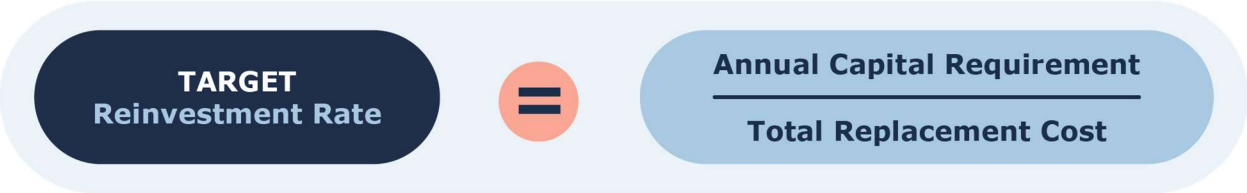
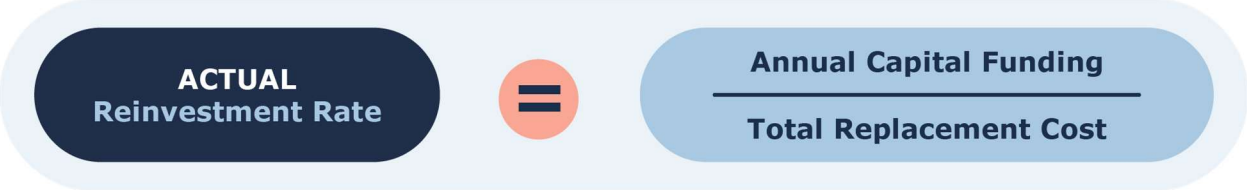


Figure 9 Actual Reinvestment Rate Equation



2.3.7 Establishing 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.

Table 6 Standard Condition Rating Scale

Condition	Description	Criteria	Service Life Remaining (%)
Very Good	Fit for the future	Well maintained, good condition, new or recently rehabilitated	75 – 100
Good	Adequate for now	Acceptable, generally approaching mid-stage of expected service life	50 – 74
Fair	Requires attention	Signs of deterioration, some elements exhibit significant deficiencies	25 – 49
Poor	Increasing potential of affecting service	Approaching end of service life, condition below standard, large portion of system exhibits significant deterioration	1 – 24
Very Poor	Unfit for sustained service	Near or beyond expected service life, widespread signs of advanced deterioration, some assets may be unusable	0 – 0.9

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.

2.3.8 Evaluating Quantitative Risk

As outlined in Risk & Criticality, risk ratings are derived from the total probability of failure multiplied by the total consequence of failure. In this model, risk ratings may range from 0-25. The table below provides ranges of Very Low, Low, Moderate, High, and Very High dependent on the risk rating value.

Table 7 Probability of Failure, Consequence of Failure, and Overall Risk Ratings

Probability of Failure	Consequence of Failure	Risk Rating
1 – Rare	1 – Insignificant	1 - 4 – Very Low
2 – Unlikely	2 – Minor	5 - 7 – Low
3 – Possible	3 – Moderate	8 - 9 – Moderate
4 – Likely	4 – Major	10 - 14 – High
5 – Almost Certain	5 – Severe	15 - 25 – Very High

Additionally, risk ratings can be displayed as a matrix with the probability of failure from one to five along the bottom and the consequence of failure from one to five along the side.

Table 8 Example of a Risk Matrix

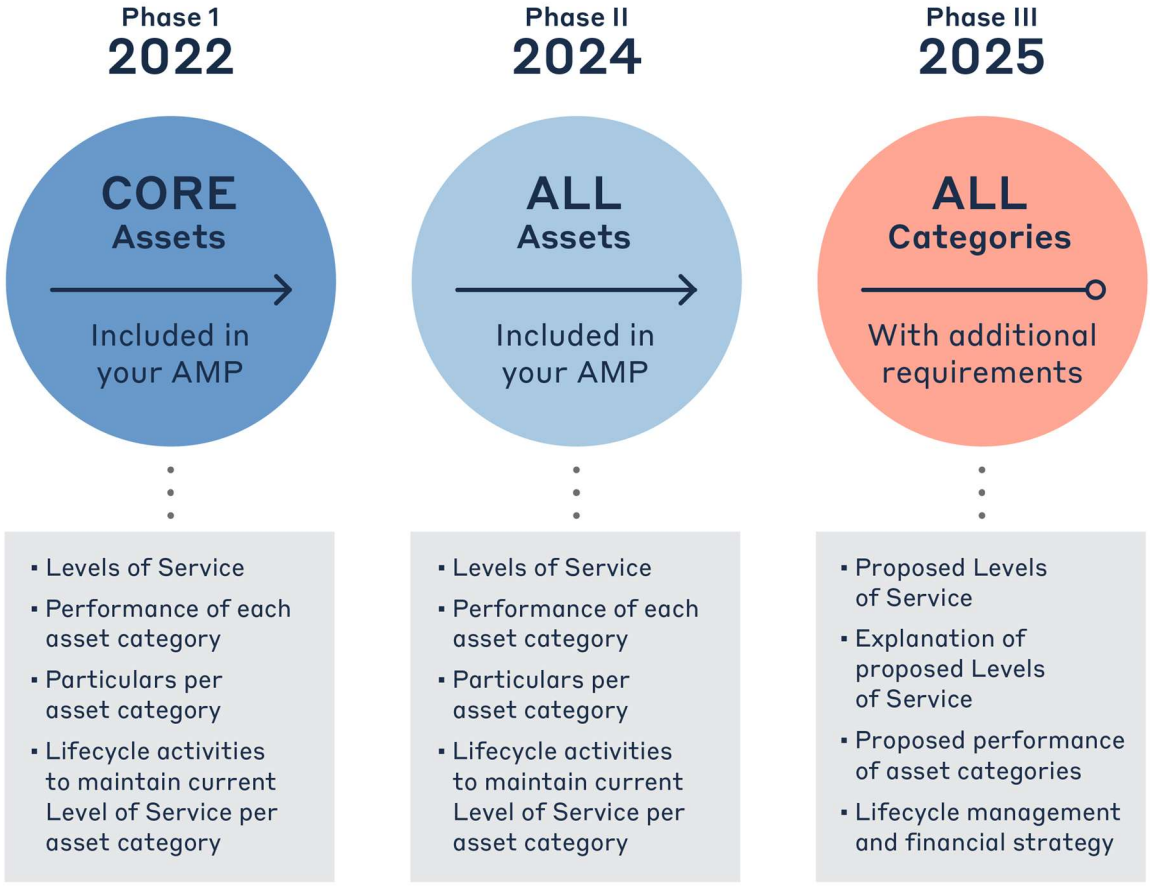
Consequence of Failure					
5	# Assets Quantity Cost	# Assets Quantity Cost	# Assets Quantity Cost	# Assets Quantity Cost	# Assets Quantity Cost
4	# Assets Quantity Cost	# Assets Quantity Cost	# Assets Quantity Cost	# Assets Quantity Cost	# Assets Quantity Cost
3	# Assets Quantity Cost	# Assets Quantity Cost	# Assets Quantity Cost	# Assets Quantity Cost	# Assets Quantity Cost
2	# Assets Quantity Cost	# Assets Quantity Cost	# Assets Quantity Cost	# Assets Quantity Cost	# Assets Quantity Cost
1	# Assets Quantity Cost	# Assets Quantity Cost	# Assets Quantity Cost	# Assets Quantity Cost	# Assets Quantity Cost
	1	2	3	4	5

Probability of Failure

2.4 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)[3]. Along with creating better performing organizations, more liveable and sustainable communities, the 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.

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



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

2.4.1 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)	5.1 – 13.1	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	5.1 – 13.1	Complete
Average age of assets in each category	S.5(2), 3(iii)	5.3 – 13.3	Complete
Condition of core assets in each category	S.5(2), 3(iv)	5.2 – 13.2	Complete
Description of municipality's approach to assessing the condition of assets in each category	S.5(2), 3(v)	5.2 – 13.2	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	5.7 – 13.8	Complete
Current performance measures in each category	S.5(2), 2	5.7 – 13.8	Complete
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	5.4 – 13.5	Complete
Costs of providing lifecycle activities for 10 years	S.5(2), 4 S.6(1), 4(ii)	Appendix B	Complete
Growth considerations	S.5(2), 5(i-ii) S.5(2), 6(i-vi)	14.1	Complete
Proposed levels of service for each category for next 10 years	S.6(1), 1(i-ii)	4.2	Complete
Lifecycle management activities for proposed levels of service	S.6(1), 4(i)	4.2.2	Complete
Annual funding availability projections	S.6(1), 4(iii)	15.1 – 15.3	Complete

Portfolio Overview

3 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

Road Network

- HCB & LCB Roads
- Sidewalks
- Streetlights
- Traffic Signals

Bridges & Culverts

- Bridges
- Culverts
- Pedestrian Bridges

Water Network

- Hydrants
- Pumps
- Water Facilities
- Water Mains

Sanitary Sewer Network

- Manholes
- Pumps
- Sanitary Mains
- Sanitary Sewer Facilities

Stormwater Network

- Culverts
- Oil/Grit Separator
- Storm Conduit
- Storm Structure
- Stormwater Management Facilities

Facilities

- Cemetery
- Emergency Services
- General Government
- Marina
- Outdoor Washroom Facilities
- Public Works
- Recreation

Land Improvements

- Cemetery
- Concrete Stairs
- Entrance Signs
- Fencing
- Outdoor Lighting
- Parking Lots
- Parkland
- Playground Equipment
- Retaining Walls
- Sports Areas
- Trails & Pathways

Machinery & Equipment

- Athletic Equipment
- Facilities Systems
- Fire Equipment
- Fuel Storage Tanks
- Furniture & Fixtures
- Sanitary Treatment Equipment
- Small Equipment & Tools
- Technology and Communications Equipment
- Water Treatment Equipment

Fleet & Fleet Equipment

- Emergency Services
- Heavy Duty Vehicles
- Light Duty Vehicle
- Medium Duty Vehicles
- Off Road Vehicles
- Public Transit
- Public Works / Parks
- Snow Control
- Trailers

3.2 Portfolio Overview

3.2.1 Total Replacement Cost of Asset Portfolio

The nine asset categories analysed in this Asset Management Plan have a total current replacement cost of $985.6 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. Table 9 provides a detailed breakdown of replacement cost and average annual requirement[4] by asset category.

Figure 12 provides an overview of the portfolio replacement cost while Figure 13 illustrates the replacement cost of each asset category; at 23% of the total portfolio, road network assets form the largest share of the Municipality's asset portfolio, followed by closely by both the water and sanitary networks at 21%.

[4] For further clarification on average annual requirement (AAR), see section 2.3.5 Average Annual Requirement (AAR).

Table 9 Detailed Asset Inventory Valuation: Portfolio Overview

Asset Category	Replacement Cost	Replacement Cost Method	% of Total[5]	AAR
Road Network	$229,821,000	Cost per Unit	23%	$5,645,000
Bridges & Culverts	$39,021,000	User-Defined	4%	$508,000
Water Network	$203,896,000	Cost per Unit	21%	$3,136,000
Sanitary Sewer Network	$207,793,000	Cost per Unit	21%	$3,247,000
Stormwater Network	$113,834,000	User-Defined	12%	$1,445,000
Facilities	$147,817,000	User-Defined	15%	$2,914,000
Land Improvements	$15,768,000	CPI	2%	$649,000
Machinery & Equipment	$3,753,000	CPI	0%	$481,000
Fleet & Fleet Equipment	$23,904,000	CPI	2%	$2,104,000
TOTAL	**$985,607,000**	**Cost per Unit**	**100%**	**$20,129,000**

[5] Weighted by replacement cost.

Figure 12 Replacement Cost as of 2023 Year-End: Portfolio Overview

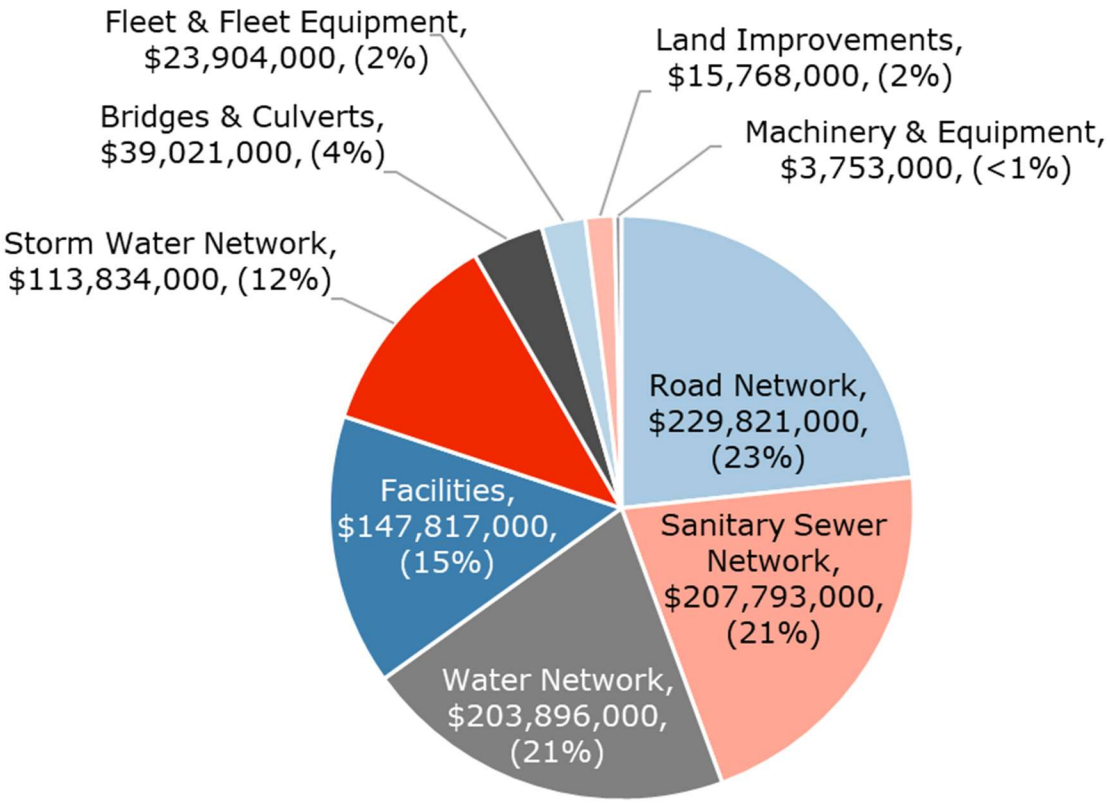
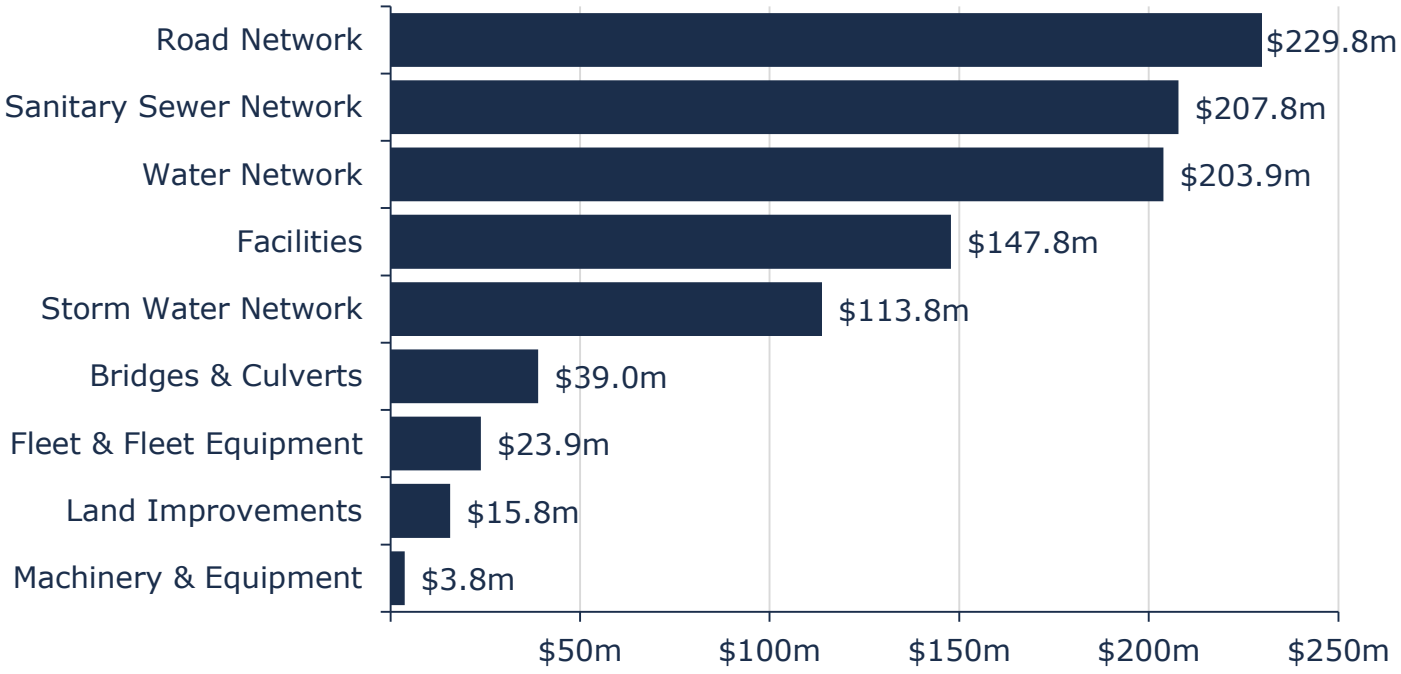


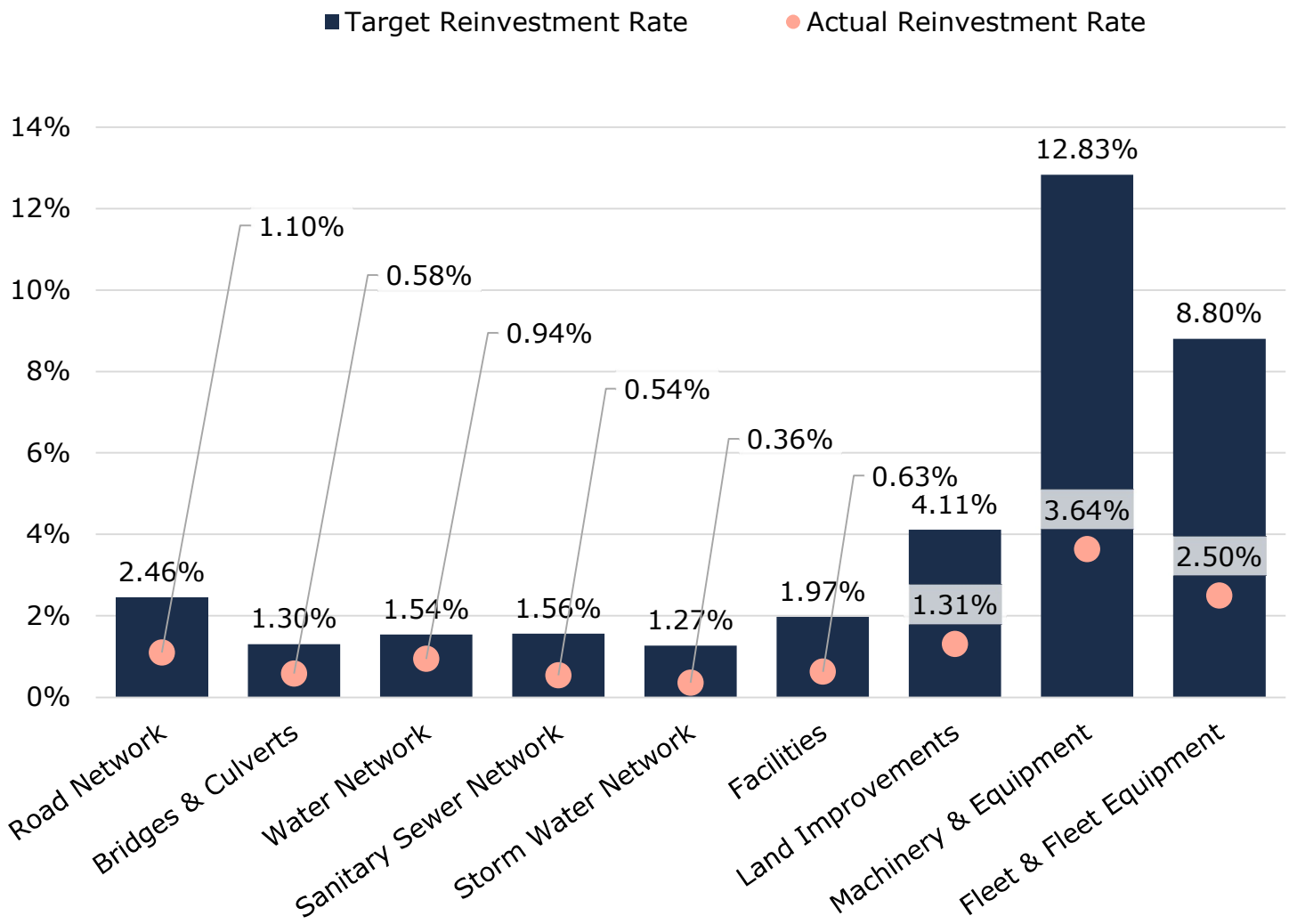
Figure 13 Replacement Cost as of 2023 Year-End: By Category



3.2.2 Target vs. Actual Reinvestment Rate

Figure 14 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 $20,129,000[6], for a target portfolio reinvestment rate of 2.04%. Currently, annual investment from sustainable revenue source is $8,083,000, for a current portfolio reinvestment rate of 0.82%. This leads to an annual infrastructure budget deficit of $12,046,000.

Figure 14 Current vs. Target Reinvestment Rate: Portfolio Overview



[6] Note that future costs are in 2024 dollars and are not indexed for inflation.

3.2.3 Condition of Asset Portfolio

Figure 15 Asset Condition: Portfolio Overview

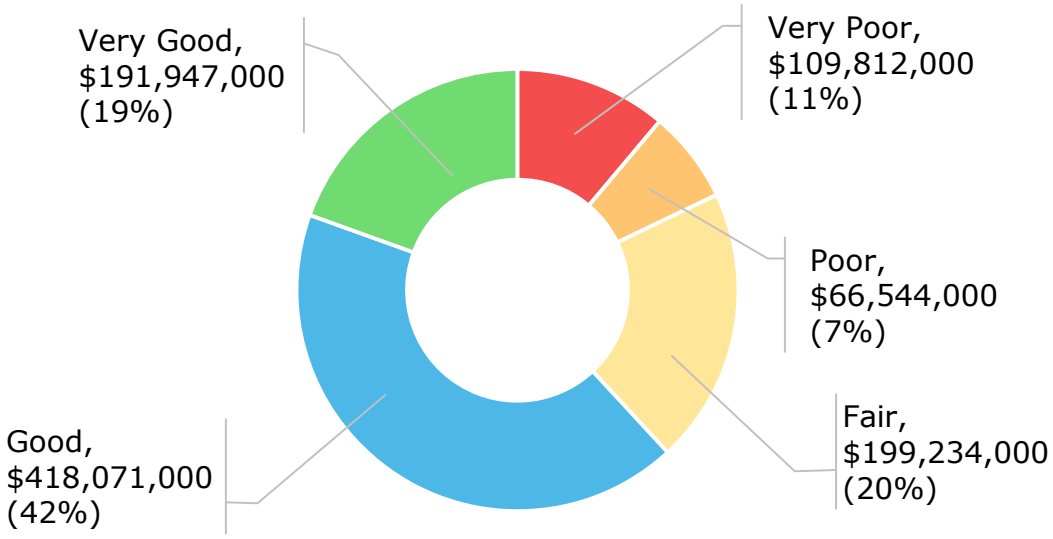


Figure 16 Asset Condition by Category: Portfolio Overview

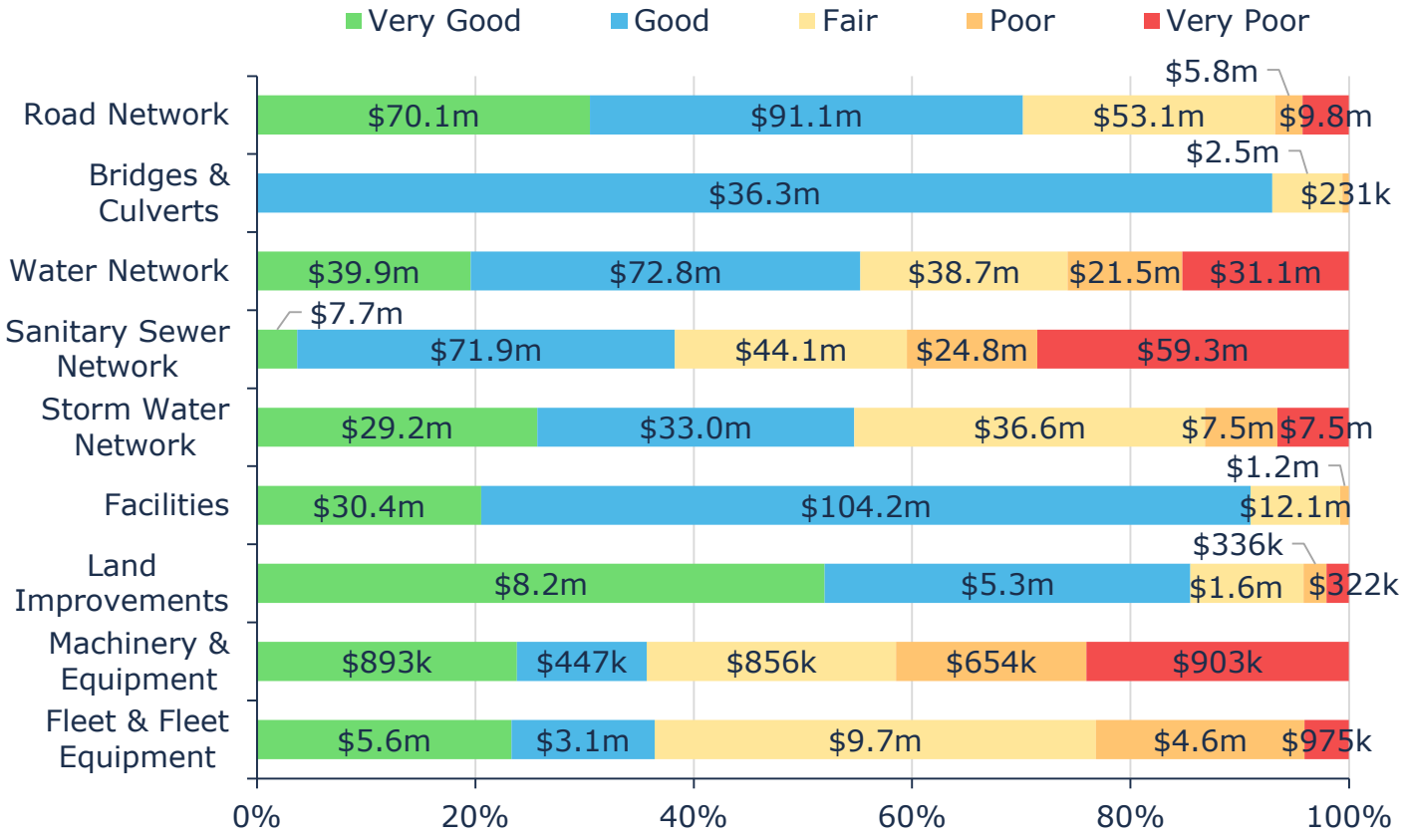


Figure 15 and Figure 16 summarize asset condition at the portfolio and category levels, respectively. Based on both assessed condition and age-based analysis, 82%[7] of the Municipality's infrastructure portfolio is in fair or better condition, with the remaining 18%[7] in poor or lower condition, and an overall condition rating of 55%[7]. Typically, assets in poor or lower 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 lower.

Table 10 Detailed Asset Condition: Portfolio Overview

Asset Category	≤ Poor $	≤ Poor %	≥ Fair $	≥ Fair %	Average Condition[8]
Road Network	$15,527,000	7%	$214,295,000	93%	Good (63%)
Bridges & Culverts	$231,000	1%	$38,790,000	99%	Good (67%)
Water Network	$52,532,000	26%	$151,364,000	74%	Fair (46%)
Sanitary Sewer Network	$84,140,000	40%	$123,653,000	60%	Fair (42%)
Stormwater Network	$15,002,000	13%	$98,832,000	87%	Good (54%)
Facilities	$1,172,000	1%	$146,646,000	99%	Good (68%)
Land Improvements	$657,000	4%	$15,111,000	96%	Good (72%)
Machinery & Equipment	$1,556,000	41%	$2,196,000	59%	Fair (41%)
Fleet & Fleet Equipment	$5,539,000	23%	$18,365,000	77%	Fair (49%)
TOTAL	**$176,355,000**	**18%**	**$809,252,000**	**82%**	**Good (55%)**

[7] Weighted by replacement cost.

[8] Weighted by replacement cost.

Condition Data

This AMP relies on assessed condition for 53% of the asset portfolio, based on and weighted by replacement cost. For all remaining assets, age was 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. 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 align with the year-end used (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 condition over time. Table 11 identifies the percentage of condition data available weighted by replacement cost.

Table 11 Percentage of Available Condition Assessment Data: Portfolio Overview

Asset Category	% Assessed
Road Network	90%
Bridges & Culverts	100%
Water Network	12%
Sanitary Sewer Network	34%
Stormwater Network	1%
Facilities	95%
Land Improvements	97%
Machinery & Equipment	92%
Fleet & Fleet Equipment	88%
TOTAL	**53%**

Condition data was available for the majority of asset categories excluding underground linear networks (water network, sanitary sewer network, and stormwater network) which are more challenging to assess due to accessibility. As such, age was used as an approximation of condition for these assets.

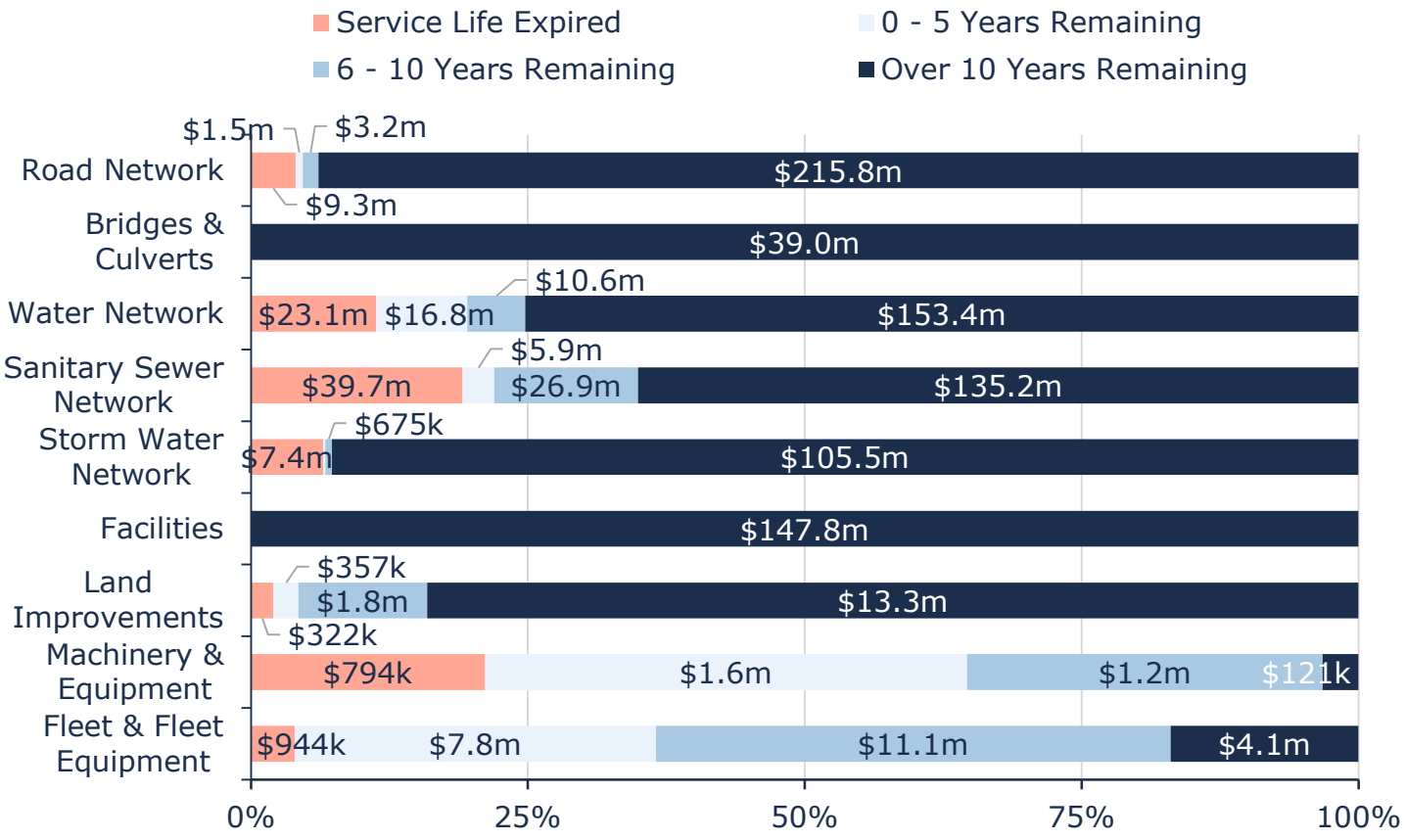
Note: *Condition assessments have been completed for the entire Sanitary Sewer Network, and partial competition of the Storm Water Network. Initiatives are underway to have this data entered into Citywide. Next steps for the Asset Management Team include the documentation of condition assessment and maintenance management practices and programs, to ensure proper documentation.*

3.2.4 Service Life Remaining

Based on asset age, available assessed condition data, and estimated useful life, 17% of the Municipality's assets will require replacement within the next 10 years. These values can be

reassessed once condition assessments have been captured for the Sanitary and Stormwater networks. Refer to Appendix B for further breakdown by asset category and segment.

Figure 17 Service Life Remaining: Portfolio Overview



3.2.5 Risk & Criticality

Using the risk equation and preliminary risk models, Figure 18 shows how assets across the different asset categories are stratified within the 1-25 risk rating ranges while Table 12 provides a breakdown of the probability of failure, consequence of failure, and risk ratings by asset category.

Figure 18 Risk Ratings: Portfolio Overview

1 - 4 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$216,214,253 (22%)	$332,379,177 (34%)	$139,419,891 (14%)	$180,553,568 (18%)	$120,213,835 (12%)

The analysis shows that based on current risk models, approximately 12% of the Municipality's assets, with a current replacement cost of roughly $120.2 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.

Table 12 Risk Ratings: Portfolio Overview by Category

Asset Category	Probability of Failure	Consequence of Failure	Risk Rating
Road Network	2.1 / 5	2.93 / 5	6.08 / 25
Bridges & Culverts	2.08 / 5	3.99 / 5	8.3 / 25
Water Network	2.66 / 5	4.05 / 5	10.69 / 25
Sanitary Sewer Network	3.27 / 5	3.5 / 5	11.32 / 25
Stormwater Network	2.39 / 5	3.28 / 5	7.85 / 25
Facilities	1.89 / 5	3.86 / 5	7.36 / 25
Land Improvements	1.69 / 5	2.36 / 5	4 / 25
Machinery & Equipment	3.06 / 5	2.58 / 5	7.71 / 25
Fleet & Fleet Equipment	2.68 / 5	3.7 / 5	9.74 / 25
TOTAL	**2.48 / 5**	**3.51 / 5**	**8.68 / 25**

Overall, the average risk rating for the entire portfolio is 8.68, which is considered Moderate. As new asset attribute information and condition assessment data is integrated with the asset register, asset risk ratings will evolve, resulting in a redistribution of assets within the risk ranges. Staff should also continue to review risk models at regular intervals to adapt to any changes in risk tolerance.

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 19 below illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for all asset categories analysed in this AMP over a 100-year time horizon to ensure at least one replacement of every asset in the inventory. For clarity, the chart shows a 50-year window segregated into five-year groupings.

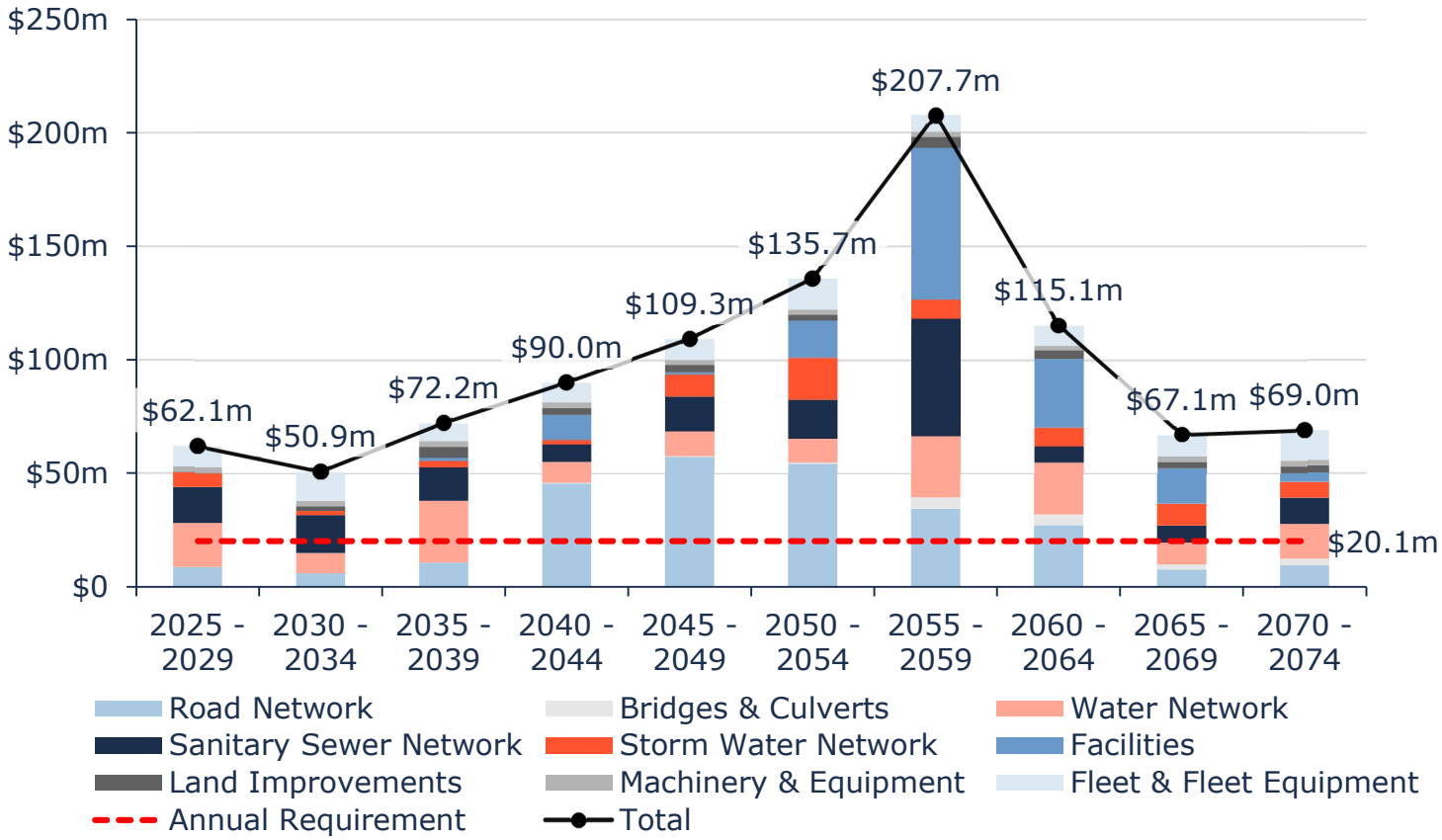
On average, $20,129,000[9] is required each year to remain current with capital replacement needs for the Municipality's asset portfolio (red dotted line). Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark for annual capital expenditure targets (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.

There is currently an approximate $83,950,000 backlog comprised of assets that remain in service beyond their estimated useful life. The 10-year capital requirements expanded in Appendix B have accounted for removing this accumulation and continuing to rehabilitate or replace assets in alignment with the proposed levels of service.

It is unlikely that all such assets are in a state of disrepair that requires immediate replacement. This makes continued and expanded targeted and consistent condition assessments integral. Risk frameworks, proactive lifecycle strategies, and levels of service targets should continue to be used to prioritize projects, continuously refining estimates for ongoing capital needs, and helping to select the right treatment for each asset. In addition, more effective componentization of buildings will improve these projections.

Figure 19 illustrates the continuous increase of forecasted capital requirements to a peak during the 2055-2059 time period followed by a sharp decline.

Figure 19 Capital Replacement Needs: Portfolio Overview 2025-2074



[9] Note that future costs are in 2024 dollars and are not indexed for inflation.

4 Proposed Levels of Service Analysis

4.1 Overview

4.1.1 O. Reg. 588/17 Proposed Levels of Service Requirements

The third iteration of municipal Asset Management Plans required under O. Reg. 588/17 requires the evaluation of levels of service (LOS) that includes:

- Proposed LOS options (i.e. increase, decrease, or maintain current LOS) and the risks associated with these options
- How the proposed LOS may differ from current LOS.
- Whether the proposed LOS are achievable; and
- The Municipality's ability to afford proposed LOS.

Additionally, a lifecycle management and financial strategy to support the proposed LOS must be identified for a period of 10 years with specific reporting on:

- Identification of lifecycle activities needed to provide the proposed LOS.
- Annual costs over the next 10 years to achieve the proposed LOS; and
- Identification of proposed funding projected to be available

4.1.2 Considerations

Proposed LOS for the Municipality have been developed through comprehensive engagement with Municipality staff. In order to achieve any target LOS goal, careful consideration should be given to the following:

Financial Impact Assessments

- Assess historical expenditures/budget patterns to gauge feasibility of increasing budgets to achieve increased service levels
- Consider implications of LOS adjustments on other services and other infrastructure programs (i.e. trade-offs)

Infrastructure Condition Assessments

- Regularly assess the condition of critical infrastructure components
- Use standardized condition assessment protocols (where possible) to quantify the state of the infrastructure
- Identify non-critical components where maintenance could potentially be deferred without causing severe degradation

- Use current condition metrics as benchmarks to gauge feasibility of large adjustments to LOS

Service Metrics

- Measure user satisfaction, response times, and other relevant indicators for specific services

Service Impact Assessments

- Evaluate potential impacts on user satisfaction and service delivery due to changes in infrastructure condition

Key Lifecycle Activities

- Implement routine maintenance and inspections to ensure infrastructure reaches its optimal useful life
- Monitor and optimize operational processes for efficiency
- Regularly review and update preventive maintenance schedules
- Prioritize critical infrastructure components for maintenance
- Implement cost-saving measures without compromising safety or compliance
- Develop strategies for managing and communicating service impacts to stakeholders
- Invest in technology and process improvements to enhance maintenance efficiency
- Upgrade critical infrastructure components to improve overall reliability
- Explore opportunities for innovation and efficiency gains

Risk Management

- Identify potential risks to infrastructure and service quality resulting from adjusted service levels
- Develop contingency plans to address unforeseen challenges without compromising service quality
- Monitor performance closely to ensure that the target investment translates to the desired infrastructure condition

Infrastructure Condition Enhancements

- Identify areas for improvement and increased maintenance to enhance overall infrastructure condition

Timelines

- Although O. Reg. 588/17 requires evaluation of expenditures for a 10-year period in pursuit of proposed LOS, it does not require municipalities to achieve the LOS within this 10-year timeframe (ex. a municipality may have a goal to reach X% condition by 2050, the AMP is required to review the first 10 years of the strategy to reach this goal)
- Careful consideration should be given to setting realistic targets for when proposed service levels can be achieved.

Stakeholder Engagement

- It is recommended to ensure adjustments to LOS are not made in isolation and without consultation of various stakeholders. This could include, but is not limited to:
  - Department Heads/Infrastructure Managers
  - Residents
  - Service Users
  - Council
- Efforts should be made to communicate changes to LOS transparently to all affected stakeholders

Flexibility

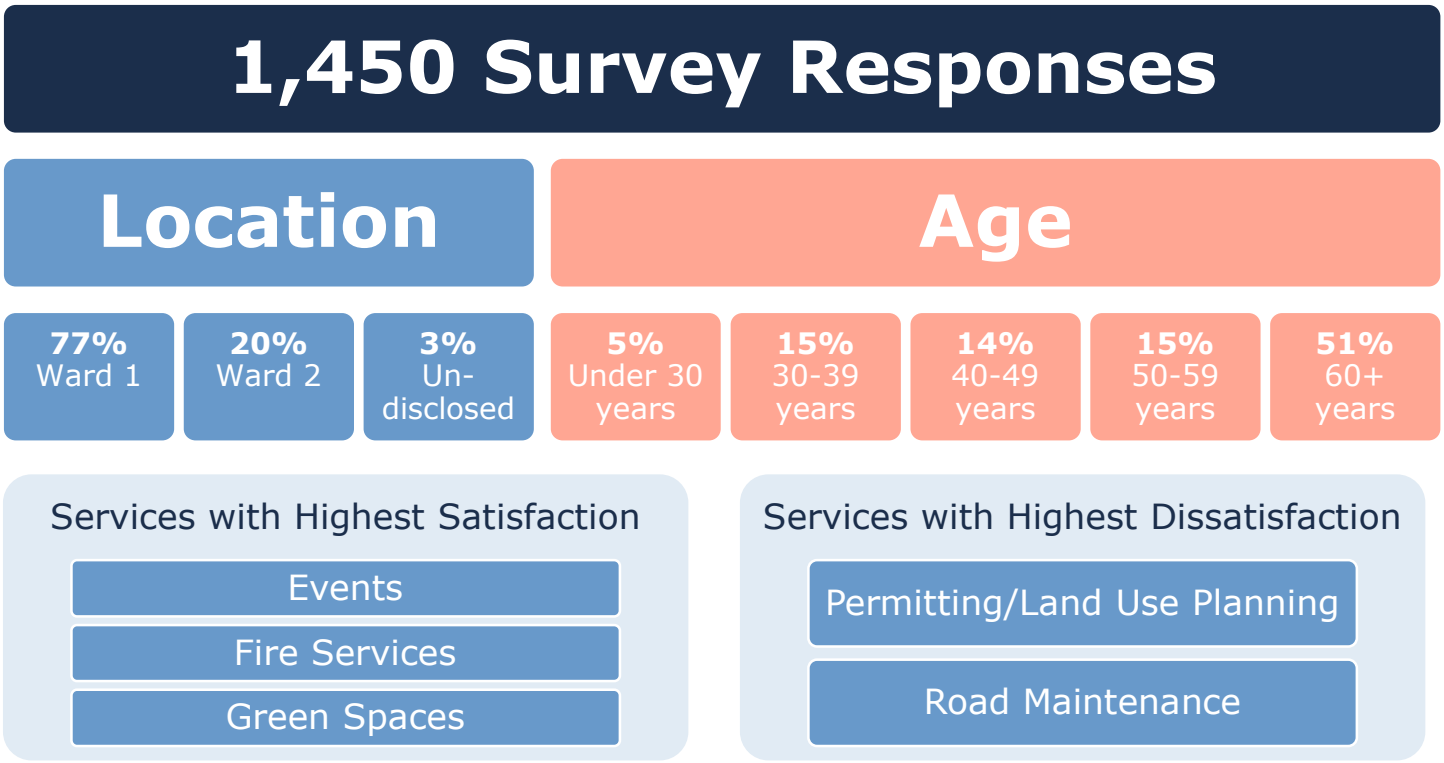
- Priorities may change over time due to a variety of factors, such as:
  - Financial state of the municipality
  - Availability of grants
  - Significant increases or decreases in population
  - Changes in political priorities
  - Changes in resident priorities
  - New technologies
  - Changes in legislation
- Any proposed changes to LOS should be flexible and able to adapt to changes listed above, and other unforeseen circumstances

4.1.3 Community Engagement

A key element for developing the Municipality's proposed levels of service must be the voice of the community. It should also be recognized that many factors, such as available funding, staff capacity, and operational priorities, must be considered to ensure realistic and achievable targets for the proposed LOS.

To incorporate the priorities of the public, the Municipality utilized results from recent surveys that included references to service levels. Specifically, the Municipality's recent '2025 Port Hope Budget Survey' was a significant success in terms of community engagement. Figure 20 below is a high-level summary of the results of the survey:

Figure 20 Highlights of 2025 Budget Survey Results



General Themes

- Survey results showed an even 50/50 split between respondents who were willing to maintain or increase municipal services, even if it means higher taxes vs. respondents who would prefer tax decreases, even if it resulted in reduced municipal services
- Residents showed a desire to increase spending for road maintenance, economic development, and addressing housing issues, with the majority of other services being maintained at spending current levels
- Relating to project importance rankings, respondents felt that the top priority should be allocating resources to advance objectives within existing master plans, with the projects showing the lowest priority being climate change initiatives and arts and cultural programming.

For more details, a full breakdown of the 2025 Budget Survey results can be found at https://engage.porthope.ca/2025-budget.

As the Municipality's asset management approach continues to grow and evolve, and as budget and resource limitations become less restrictive, there may be an opportunity to launch a project focused entirely on engaging with the community and gathering input on infrastructure and service priorities. This may allow even further influence of community feedback on shaping LOS goals.

4.2 Proposed Levels of Service Scenarios

4.2.1 Proposed Levels of Service Development

The Municipality adopted a practical and data-informed approach to determine its proposed LOS for each segment within the nine asset categories. This process ensures that service delivery remains reliable over the long term while also balancing affordability and infrastructure needs.

To begin, the Municipality applied the rubric outlined in Appendix E to determine weighted average risk and criticality to calculate a target average condition to be reached and maintained. Floor and ceiling thresholds, of 45 and 65, were created to ensure that average condition was kept within a reasonable range. Additionally, due to the lack of condition assessment data the Water, Sanitary Sewer, and Stormwater networks were set to their current average condition, to ensure the average annual requirement was not over inflated.

Once these condition targets were confirmed (see Table 13), the Municipality used the Decision Support (DS) module within the Citywide software to model the scenarios over a 100-year period. These scenarios were built to maintain the selected target condition as the service level goal and determine the resulting AAR[10].

Table 13 Proposed Levels of Service: Target Average Conditions

Asset Category	Asset Segment	Target Average Condition
Road Network	HCB & LCB Roads	65
	Sidewalks	45
	Streetlights	65
	Traffic Signals	65
Bridges & Culverts	Bridges	65
	Culverts	65
	Pedestrian Bridges	65
Water Network	Hydrants	Current Average Condition
	Pumps	Current Average Condition
	Water Facilities	Current Average Condition
	Water Mains	Current Average Condition
Sanitary Sewer Network	Manholes	Current Average Condition
	Pumps	Current Average Condition
	Sanitary Mains	Current Average Condition
	Sanitary Sewer Facilities	Current Average Condition
Stormwater Network	Culverts	Current Average Condition
	Oil/Grit Separator	Current Average Condition

[10] For further clarification on average annual requirement (AAR), see section 2.3.5 Average Annual Requirement (AAR).

Asset Category	Asset Segment	Target Average Condition
	Storm Conduit	Current Average Condition
	Storm Structure	Current Average Condition
	Stormwater Management Facilities	Current Average Condition
Facilities	Cemetery	60
	Emergency Services	60
	General Government	60
	Marina	60
	Outdoor Washroom Facilities	60
	Public Works	60
	Recreation	60
Land Improvements	Cemetery	40
	Concrete Stairs	55
	Entrance Signs	40
	Fencing	40
	Outdoor Lighting	60
	Parking Lots	40
	Parkland	40
	Playground Equipment	55
	Retaining Walls	50
	Sports Areas	40
	Trails & Pathways	40
Machinery & Equipment	Athletic Equipment	40
	Facilities Systems	60
	Fire Equipment	65
	Fuel Storage Tanks	60
	Furniture & Fixtures	40
	Sanitary Treatment Equipment	50
	Small Equipment & Tools	40
	Technology and Communications Equipment	50
	Water Treatment Equipment	50
Fleet & Fleet Equipment	Emergency Services	65
	Heavy Duty Vehicles	40
	Light Duty Vehicle	40
	Medium Duty Vehicles	40

Asset Category	Asset Segment	Target Average Condition
	Off Road Vehicles	40
	Public Transit	65
	Public Works / Parks	40
	Snow Control	65
	Trailers	40

The DS tool helps predict when assets will need major rehabilitation or replacement. When an asset reaches the point where work is recommended, the software checks whether deferring that work to the following year would cause the **overall average condition of all assets in the scenario** to fall below the target. If the target would still be met without immediate action, the work is deferred to the following year and the process is repeated. This method reduces unnecessary spending by allowing the Municipality to postpone work that is not yet critical—without lowering the overall quality of service.

Table 14 provides the AAR for each of the scenarios outlined above.

Table 14 Proposed Levels of Service: Average Annual Requirements (AAR)

Asset Category	Asset Segment	AAR
Road Network	HCB & LCB Roads	$5,112,000
	Sidewalks	$277,000
	Streetlights	$136,000
	Traffic Signals	$120,000
Bridges & Culverts	Bridges	$271,000
	Culverts	$216,000
	Pedestrian Bridges	$20,000
Water Network	Hydrants	$60,000
	Pumps	$2,000
	Water Facilities	$1,294,000
	Water Mains	$1,780,000
Sanitary Sewer Network	Manholes	$86,000
	Pumps	$2,000
	Sanitary Mains	$1,352,000
	Sanitary Sewer Facilities	$1,807,000
Stormwater Network	Culverts	$1,000
	Oil/Grit Separator	$1,000
	Storm Conduit	$1,200,000
	Storm Structure	$187,000

Asset Category	Asset Segment	AAR
	Stormwater Management Facilities	$55,000
Facilities	Cemetery	$20,000
	Emergency Services	$653,000
	General Government	$439,000
	Marina	$18,000
	Outdoor Washroom Facilities	$131,000
	Public Works	$420,000
	Recreation	$1,232,000
Land Improvements	Cemetery	$12,000
	Concrete Stairs	$0
	Entrance Signs	$18,000
	Fencing	$44,000
	Outdoor Lighting	$49,000
	Parking Lots	$255,000
	Parkland	$2,000
	Playground Equipment	$63,000
	Retaining Walls	$16,000
	Sports Areas	$149,000
	Trails & Pathways	$40,000
Machinery & Equipment	Athletic Equipment	$22,000
	Facilities Systems	$1,000
	Fire Equipment	$46,000
	Fuel Storage Tanks	$6,000
	Furniture & Fixtures	$24,000
	Sanitary Treatment Equipment	$40,000
	Small Equipment & Tools	$60,000
	Technology and Communications Equipment	$198,000
	Water Treatment Equipment	$83,000
Fleet & Fleet Equipment	Emergency Services	$746,000
	Heavy Duty Vehicles	$179,000
	Light Duty Vehicle	$100,000
	Medium Duty Vehicles	$105,000
	Off Road Vehicles	$264,000
	Public Transit	$112,000

Asset Category	Asset Segment	AAR
	Public Works / Parks	$46,000
	Snow Control	$467,000
	Trailers	$84,000
TOTAL		**$20,129,000**

4.2.2 Lifecycle Changes

The current lifecycle strategy remains appropriate, as it is based on the overall average condition of the Municipality's assets. No immediate changes to the strategy are necessary. However, to better align with target condition levels, it is recommended to adjust the timing of specific maintenance and renewal activities to follow the 10-year capital requirements as outlined in Appendix B. By scheduling these interventions during optimal periods—when they are most effective and cost-efficient—the Municipality can enhance asset performance and extend their service life.

This proactive approach will allow the Municipality to maintain high service standards and fiscal responsibility while following the existing strategy. Regular monitoring will ensure that these timing adjustments continue to meet the Municipality's evolving infrastructure needs.

4.2.3 Affordability / Achievability

For a more in-depth breakdown on achievability, see the financial strategy outlined in section 15.

4.2.4 Changes to Community & Technical Levels of Service

The Municipality does not anticipate any changes to qualitative community levels of services for any of the asset categories included within this AMP. All asset categories will see adjustments to their technical levels of service over time, particularly relating to the average condition of assets. Refer to each asset category for more details.

4.2.5 Proposed LOS Risks

The majority of the proposed LOS are designed to adjust average asset conditions only. As a result, the implementation of these scenarios does not introduce any new or additional risks to service delivery.

The risk profile associated with each asset category remains unchanged. Previously identified risks—such as those related to aging infrastructure and environmental factors—continue to apply under the proposed approach. These risks have already been evaluated and documented as part of the Municipality's overall asset management planning.

Ongoing monitoring and regular updates to the risk register will ensure that any changes in asset performance or external conditions are promptly addressed.

Category Analysis: Core Assets

5 Road Network

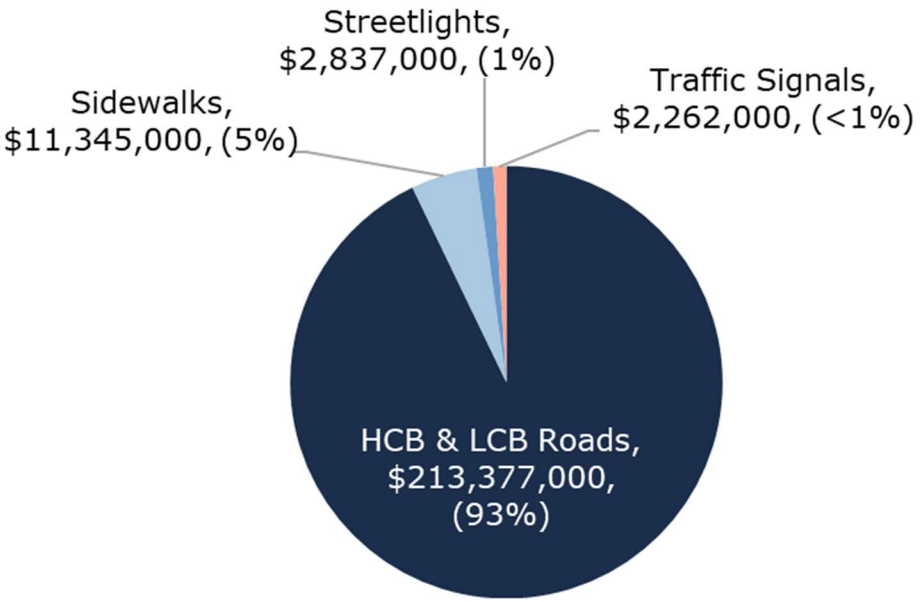
5.1 Inventory & Valuation

Table 15 summarizes the quantity and current replacement cost of the Municipality's various road network assets as managed in its primary asset management register, Citywide Assets.

Table 15 Detailed Asset Inventory: Road Network

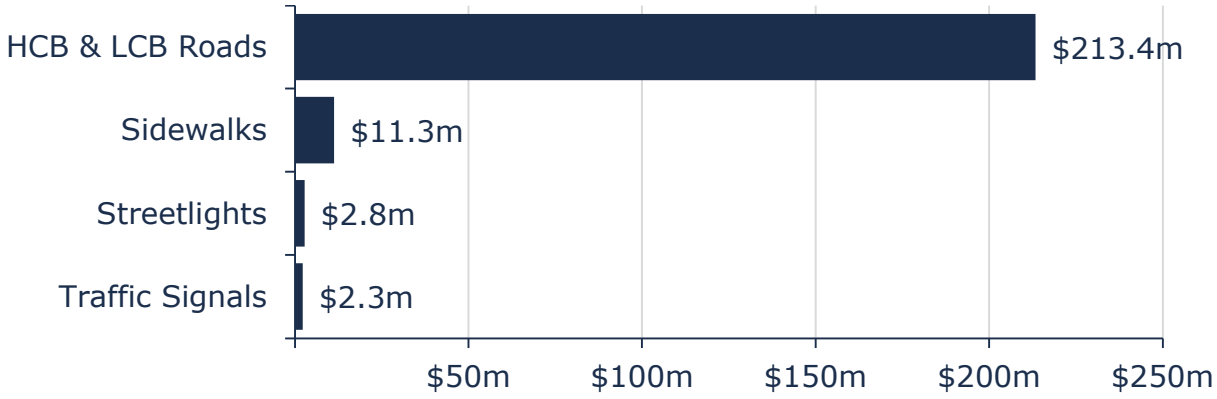
Asset Segment	Quantity	Unit of Measure	Replacement Cost (RC)	Primary RC Method	AAR[11]
HCB & LCB Roads	284	KM	$213,377,000	Cost per Unit	$5,112,000
Sidewalks	72	KM	$11,345,000	User-Defined	$277,000
Streetlights	1,648	Assets	$2,837,000	User-Defined	$136,000
Traffic Signals	10	Assets	$2,262,000	CPI	$120,000
TOTAL			**$229,821,000**	**Cost per Unit**	**$5,645,000**

Figure 21 Portfolio Valuation Overview: Road Network



[11] For further clarification on average annual requirement (AAR), see section 2.3.5 Average Annual Requirement (AAR)

Figure 22 Portfolio Valuation by Segment: Road Network



5.2 Asset Condition

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the Municipality's current approach:

- In 2022, the Municipality completed a road network condition assessment through Street Scan. Road assets were scanned using specialized hardware to provide condition values. This condition assessment program is typically completed every four years, pending operational budget approval. In the future, this may be converted to a manual process.
- Core operating equipment is inspected twice a year (spring and fall) for functionality and compliance.
- Sidewalks are inspected annually for trip hazards and are repaired accordingly, following minimum maintenance standards.

In this AMP, the rating criteria used to determine the current condition of road network assets and forecast future capital requirements can be broken down as follows:

Table 16 Condition Ranges: Road Network

Condition Ranges	Description	
Very Good (75% – 100%)	The pavement is in excellent condition, showing little to no visible signs of deterioration. Only routine preventative maintenance is required to preserve the surface.	
Good (55% – 74%)	The pavement is in good condition with some minor, low-severity surface issues. Preventative maintenance is sufficient to maintain the road's condition.	
Fair (35% – 54%)	The pavement shows a mix of low- and medium-severity distresses. While still functional, it may require more frequent maintenance and could need minor to major rehabilitation in the near future.	
Poor (20% – 34%)	The pavement has widespread surface problems of varying severity, including some areas with significant deterioration. Maintenance needs are more urgent and may range from substantial rehabilitation to full reconstruction.	

Condition Ranges	Description	
Very Poor (0% –19%)	The pavement is in severely deteriorated condition, with extensive surface damage, including frequent potholes and structural failures. Major rehabilitation or complete reconstruction is typically required. While the road may still be usable, it is approaching the end of its service life. It should be noted that a Very Poor condition rating does not mean the road is unsafe for travel.	

Figure 23 Asset Condition Overview: Road Network

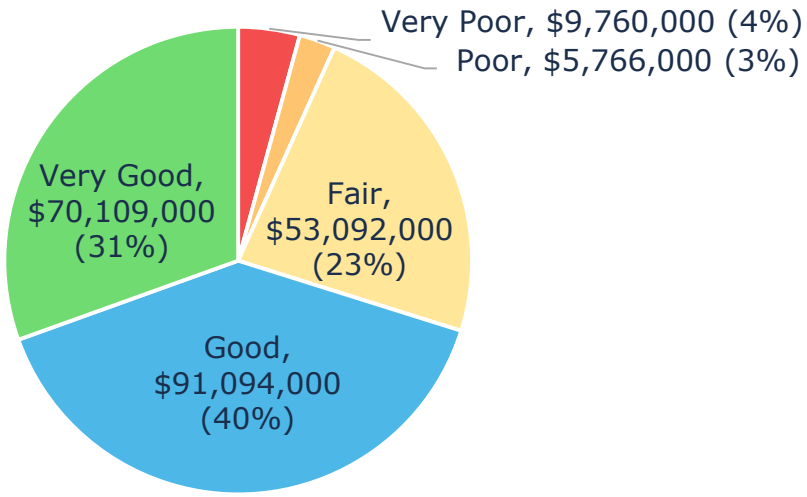


Figure 24 Asset Condition by Segment: Road Network

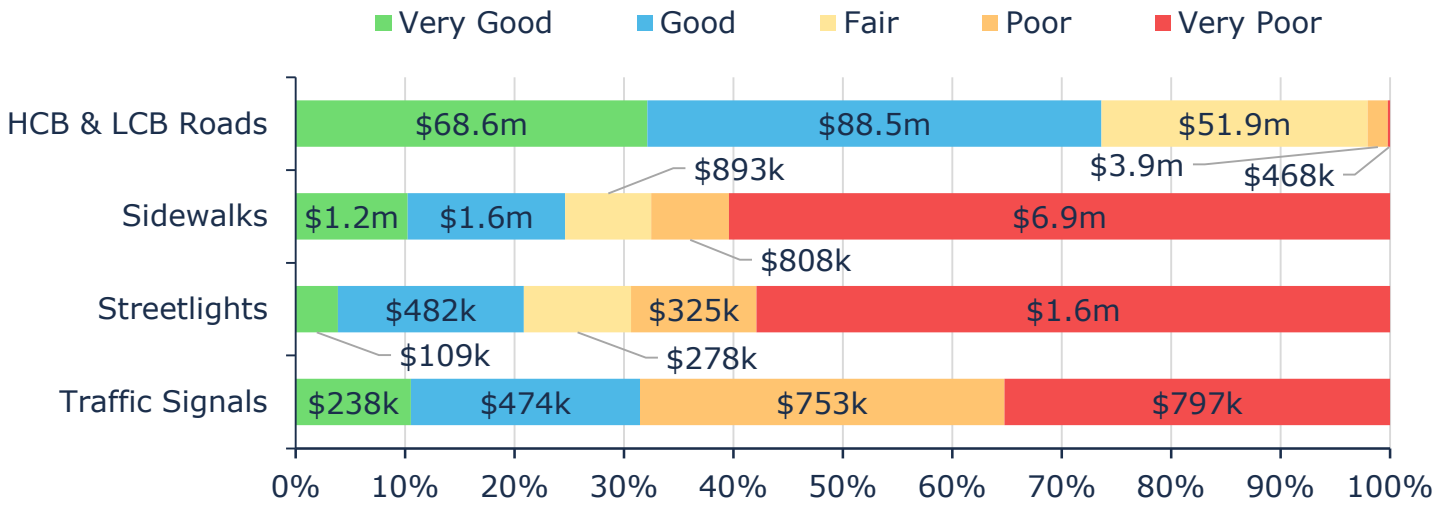


Figure 23 summarizes the replacement cost-weighted condition of the Municipality's road network assets while Figure 24 and Table 18 further breaks the condition down by segment. Based on primarily assessed condition, 93% of assets are in fair or better condition and an overall average condition rating of 63%.

Table 17 Percentage Assessed by Segment: Road Network

Asset Segment	% of Assets with Assessed Condition[12]
HCB & LCB Roads	96%
Sidewalks	0%
Streetlights	0%
Traffic Signals	80%
TOTAL	**90%**

[12] Weighted by replacement cost.

Table 18 Asset Condition by Segment: Road Network

Asset Segment	≤ Poor $	≤ Poor %	≥ Fair $	≥ Fair %	Average Condition[13]
HCB & LCB Roads	$4,349,000	2%	$209,028,000	98%	Good (66%)
Sidewalks	$7,660,000	68%	$3,685,000	32%	Poor (21%)
Streetlights	$1,968,000	69%	$870,000	31%	Poor (19%)
Traffic Signals	$1,550,000	69%	$712,000	31%	Fair (26%)
TOTAL	**$15,527,000**	**7%**	**$214,295,000**	**93%**	**Good (63%)**

For the Municipality's road network assets, assessed condition data was available for 90% of the category (as outlined in Table 17). While the majority of the roads and traffic signals have assessed condition data, no data is available for sidewalks and streetlights.

Typically, assets in poor or lower 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 lower.

5.3 Age Profile

An asset's age profile is comprised of 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. Service life remaining (SLR) is the difference between an asset's EUL and its age.

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.

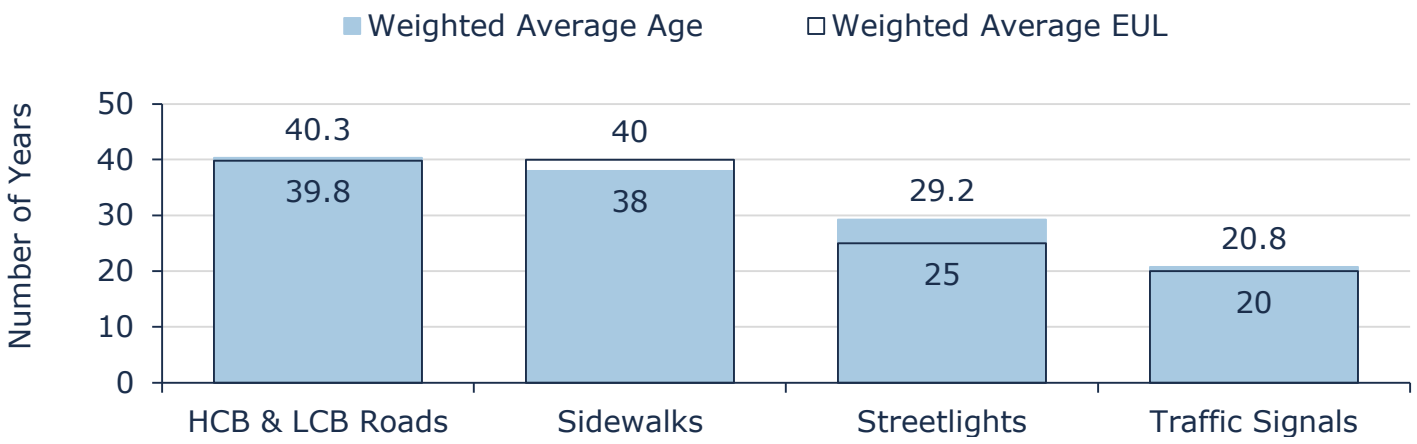
Table 19 summarizes and Figure 25 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

[13] Weighted by replacement cost.

Table 19 Detailed Asset Age: Road Network

Asset Segment	Weighted Average EUL	Weighted Average Age
HCB & LCB Roads	39.8	40.3
Sidewalks	40	38
Streetlights	25	29.2
Traffic Signals	20	20.8

Figure 25 Estimated Useful Life vs. Asset Age: Road Network

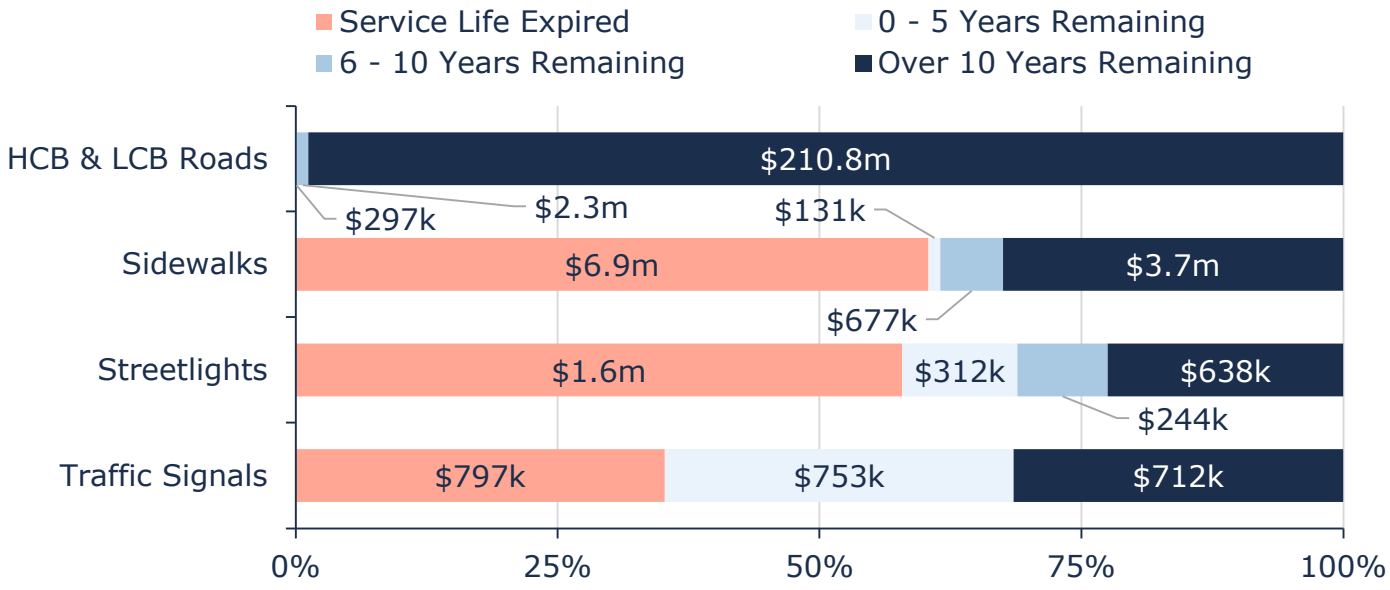


Age analysis shows that the majority of assets are nearing or have entered the latter stages of their expected useful life. Although asset age is an important measurement for long-term planning, condition assessments provide a more accurate indication of actual asset needs. An asset may perform past the established useful life if it has been maintained and kept in good condition. Therefore, it is important to consider asset condition when comparing asset age to its serviceable lifespan.

However, each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type. Further, useful life estimates established as part of the PSAB 3150 implementation may not be accurate and may not reflect in-field asset performance.

As seen in Figure 26, based on asset age, available assessed condition data, and estimated useful life, 6% of the Municipality's assets will require replacement within the next 10 years. Refer to Appendix B for further breakdown.

Figure 26 Service Life Remaining: Road Network



5.4 Current Approach to Lifecycle Management

The condition or performance of most assets will deteriorate over time. To ensure that the Municipality's road network 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 20 outlines the Municipality's current lifecycle management strategy for road network assets.

Table 20 Lifecycle Management Strategy: Road Network

Activity Type	Description of Current Strategy
Maintenance	Municipal staff conduct regular maintenance in accordance with best practices.
	Additional maintenance is performed reactively in response to failures or community-reported service disruptions.
	Seasonal maintenance and tasks, such as snow clearing, are also managed by municipal staff.
	External contractors are engaged when the complexity or scale of work exceeds the capacity of municipal staff.

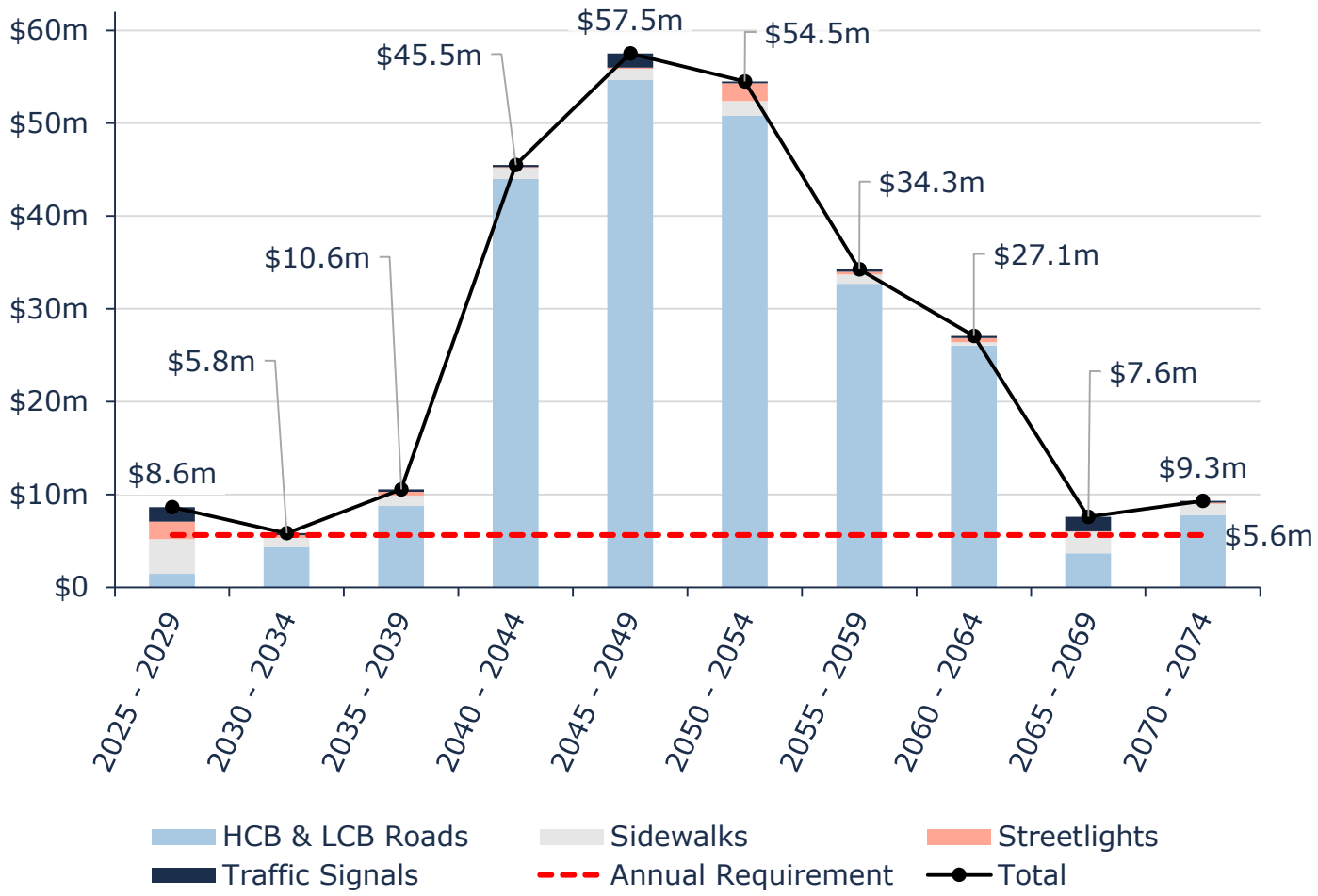
Activity Type	Description of Current Strategy
Rehabilitation	Rehabilitation efforts are guided by staff and consultants whenever possible. For co-linear assets like sidewalks and curb stops, additional rehabilitation may be conducted.
	Municipal staff may also initiate further rehabilitation to extend asset life or enhance community safety.
Replacement	Replacement activities are aligned with long-term planning and available capital. Replacements are prioritized to optimize service delivery and ensure the continued availability and functionality of the transportation network.
	Annual needs study is performed to ensure the safety of the pedestrian network. Sidewalks are replaced when sidewalks replacement is more cost effective than minor maintenance. Funding is allocated through operating budget

5.5 Forecasted Long-Term Replacement Needs

Figure 27 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Municipality's road network portfolio over a 100-year time horizon to ensure at least one replacement of every asset included in Citywide Assets, the Municipality's primary asset management system and asset register the inventory. For clarity, the chart shows a 50-year window. The forecasted requirements are aggregated into 5-year bins while the trend line (red dotted line) represents the average annual capital requirements, which total $5.65 million for all road network assets.

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 continuously rise until a peak of $57.5 million in 2045-2049 and then decrease over time.

Figure 27 Forecasted Capital Replacement Needs: Road Network 2025-2074



Additionally, there is currently an approximate $10.1 million backlog comprised of assets that remain in service beyond their estimated useful life. The 10-year capital requirements expanded in Appendix B have accounted for removing this accumulation and continuing to rehabilitate or replace assets in alignment with the proposed levels of service.

These projections and estimates are based on asset replacement costs, age analysis, and condition data where 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.

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.

A summary of the 10-year replacement forecast can be found in Appendix B.

5.6 Risk Analysis

5.6.1 Quantitative Risk

The following risk matrices provide a visual representation of the relationship between the probability of failure and the consequence of failure for the road network assets based on 2023 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

Figure 28 Risk Matrix: Road Network: HCB & LCB Roads

Figure 29 Risk Matrix: Road Network: Remaining Asset Segments

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from one to five. 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 over time, 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 Quantitative Risk under Section 2.2.3 as well as Section 2.3.8 Evaluating Quantitative Risk for further details on the approach used to determine asset risk ratings and classifications.

The following risk ratings are first shown for the overall category and then by segment for the road network assets.

Figure 30 Risk Ratings: Road Network

1 - 4 **Very Low**	5 - 7 **Low**	8 - 9 **Moderate**	10 - 14 **High**	15 – 25 **Very High**
$86,405,000 (37%)	$85,178,000 (37%)	$32,536,000 (14%)	$27,537,000 (12%)	$1,340,000 (<1%)

Table 21 Risk Ratings by Segment: Road Network

Asset Segment	Probability of Failure	Consequence of Failure	Risk Rating
HCB & LCB Roads	1.96 / 5	2.97 / 5	5.85 / 25
Sidewalks	3.93 / 5	2.05 / 5	7.99 / 25
Streetlights	4.03 / 5	2.28 / 5	9.08 / 25
Traffic Signals	3.62 / 5	3.88 / 5	14.19 / 25
TOTAL	**2.1 / 5**	**2.93 / 5**	**6.08 / 25**

Overall, the average risk rating for road network assets is 6.08, which is considered Low.

The identification of critical assets allows the Municipality to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

5.6.2 Qualitative Risk

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Installation and Co-Linear Assets

Coordinating the replacement of co-linear infrastructure assets—such as watermains, sewer lines, and road surfaces—minimizes disruption, avoids redundant work, and ensures better long-term investment outcomes. When linear assets are replaced without coordination, there is a risk of excavating recently upgraded infrastructure or deferring necessary work to avoid service interruptions, both of which reduce overall efficiency and increase costs.

By aligning timelines, designs, and construction schedules, the Municipality reduces contractor mobilization costs, minimizes impacts to the public, and extends the life of all assets involved. Effective interdepartmental coordination also ensures that materials used are compatible, future-proof, and aligned with expected infrastructure lifecycles.

Institutionalizing collaborative capital planning, stakeholder involvement, and formal review processes will support consistent implementation of co-linear asset strategies across departments.

Climate Change & Extreme Weather Events

Climate change introduces significant risks to the road network, especially to LCB and gravel roads. These types of roads are more vulnerable than paved surfaces because they rely on material stability and proper drainage to remain functional. Heavy rain and flash flooding can wash away the surface layer of gravel roads or cause sections of LCB roads to erode, especially on sloped areas or roads without proper drainage. Without proper drainage, prolonged saturation can weaken the subgrade, leading to rutting, potholes, and in some cases, complete road failure.

Temperature fluctuations above and below freezing also contribute to the expansion and contraction of pavement and sidewalk materials, resulting in surface cracking and accelerated deterioration. These effects increase maintenance needs and reduce service levels.

The Municipality has had to adjust winter maintenance strategies to address more frequent freeze-thaw events, increasing reliance on materials and requiring greater staff coverage for unpredictable conditions. These operational shifts have increased material and overtime costs.

Capital Funding Strategies

Insufficient capital funding can pose significant risks to municipalities in maintaining the integrity and safety of Transportation assets. Major rehabilitation and replacement projects can require substantial financial resources. When funding is limited, critical maintenance may be deferred, increasing the risk of asset failure and safety hazards.

Delaying maintenance can also lead to higher long-term costs, as issues may worsen, requiring more extensive and expensive repairs or replacements. This not only strains municipal budgets but also compromises the reliability and safety of infrastructure.

Strategic investment in maintenance is essential for preserving these assets. By prioritizing proactive care and adhering to recommended schedules, municipalities can mitigate risks, extend infrastructure lifespan, and maintain safe transportation networks. To address budget challenges, municipalities must explore innovative financing and collaboration to ensure sustainable infrastructure management.

5.7 Current 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

Table 22 Community Levels of Service: Road Network

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	The scope of the Municipality's road network is illustrated by the map in Appendix F. The maps show the geographical distribution of municipal roads by surface type and class.
Quality	Description or images that illustrate the different levels of road class pavement condition	The transportation network supports comfortable passage of vehicles. A general description of each condition state is provided in Section 5.2

5.7.2 Technical Levels of Service

Table 23 Technical Levels of Service: Road Network

Service Attribute	Technical Metric	Current LOS (2023)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	0.7
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	0.5
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	1.8
Quality	Average pavement condition index for paved roads in the municipality	67
	Average surface condition for unpaved roads in the municipality (e.g. excellent, good, fair, poor)	75
	% of Path Infrastructure that provides low traffic stress	1%
Safety	Percentage of walking and cycling infrastructure that provides Low Traffic Stress	Future Measure
Sustainability	Community greenhouse gas emissions from transportation (kt CO_2e)	Future Measure

Service Attribute	Technical Metric	Current LOS (2023)
Performance	Average condition of assets	Good (63%)
	% of assets in fair or better condition	93%
	% of assets in poor or lower condition	7%
	Actual annual capital budget : average annual capital requirement	$2.5m: $5.6m (0.45 : 1)

5.8 Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service, discuss the associated risks and long-term sustainability of these service levels, and explain the Municipality's ability to afford the proposed LOS.

Table 24 outlines the proposed LOS for road network assets. Further explanation and proposed LOS analysis at the portfolio level can be found in Section 4 Proposed Levels of Service Analysis.

Table 24 Proposed LOS: Road Network

Asset Segment	Target Maintenance Condition	AAR
HCB & LCB Roads	65	$5,112,000
Sidewalks	45	$277,000
Streetlights	65	$136,000
Traffic Signals	65	$120,000
TOTAL		**$5,645,000**

6 Bridges & Culverts

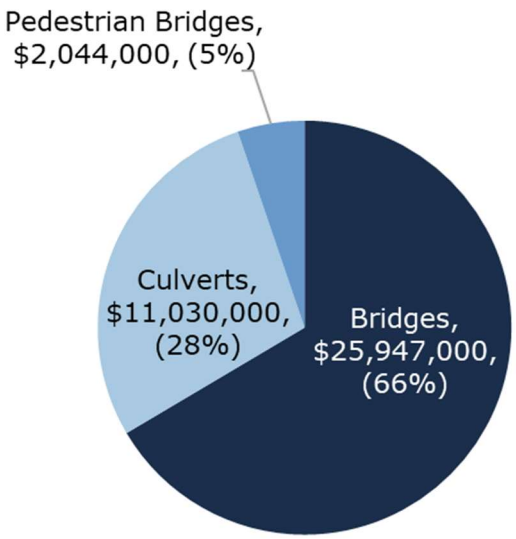
6.1 Inventory & Valuation

Table 25 summarizes the quantity and current replacement cost of the Municipality's various bridges and culverts assets as managed in its primary asset management register, Citywide Assets.

Table 25 Detailed Asset Inventory: Bridges & Culverts

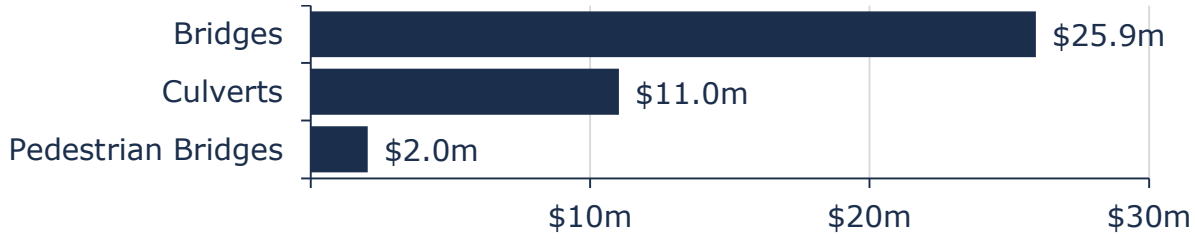
Asset Segment	Quantity	Unit of Measure	Replacement Cost (RC)	Primary RC Method	AAR[14]
Bridges	20	Assets	$25,947,000	User-Defined	$271,000
Culverts	41	Assets	$11,030,000	User-Defined	$216,000
Pedestrian Bridges	4	Assets	$2,044,000	User-Defined	$20,000
TOTAL	**20**	**Assets**	**$39,021,000**	**User-Defined**	**$508,000**

Figure 31 Portfolio Valuation Overview: Bridges & Culverts



[14] For further clarification on average annual requirement (AAR), see section 2.3.5 Average Annual Requirement (AAR)

Figure 32 Portfolio Valuation by Segment: Bridges & Culverts



6.2 Asset Condition

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the Municipality's current approach:

- Bridge and structural culverts OSIMs assessments are completed biannually as per Ontario regulations.

In this AMP, the following rating criteria is used to determine the current condition of bridges and culverts assets and forecast future capital requirements:

Table 26 Condition Ranges: Bridges & Culverts

Condition Ranges	Description
Very Good (75% – 100%)	Considered to be in excellent condition, and repair or rehabilitation work is rarely required within the next 5 years. Routine maintenance is still recommended.
Good (50% – 74%)	Considered to be in good condition, and repair or rehabilitation work is not usually required within the next 5 years. Routine maintenance is still recommended.
Fair (25% – 49%)	Generally considered to be in good-fair condition. Repair work is ideally scheduled to be completed within the next 5 years.
Poor (1% – 24%)	Generally considered poor and nearing the end of service life. The rehabilitation of these structures is ideally best scheduled to be completed within 1 year. However, if the replacement of the structure is more viable, the structure can be scheduled for replacement within the short-term.
Very Poor (0% –0.99%)	Generally considered very poor and at the end of service life. The rehabilitation of these structures is ideally best scheduled immediately. However, if the replacement of the structure is more viable, the structure can be scheduled for replacement within the short-term.

It is important to note that a structure may have a low index but if a structure is deemed unsafe, action will immediately be taken to remedy the situation which could include rerouting and closing the structure or limiting traffic while repairs are completed if deemed safe to do so.

Figure 33 Asset Condition Overview: Bridges & Culverts

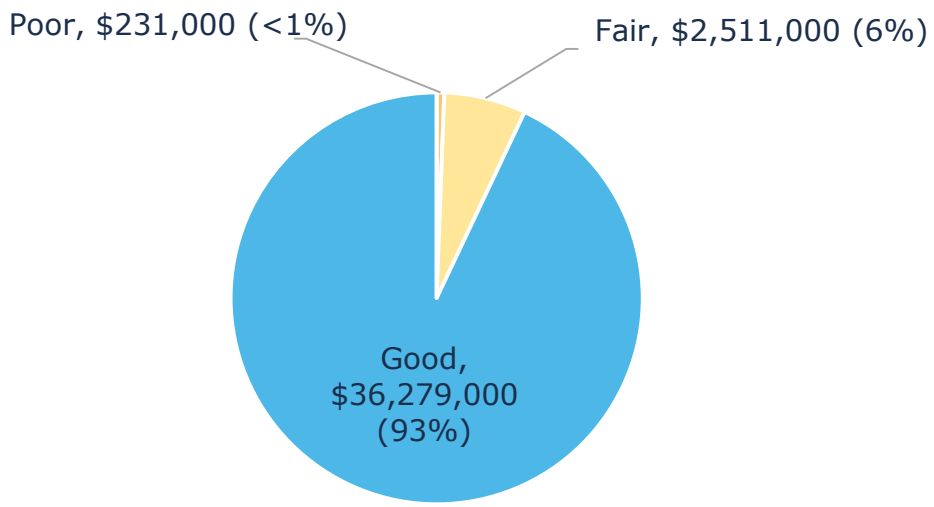


Figure 34 Asset Condition by Segment: Bridges & Culverts

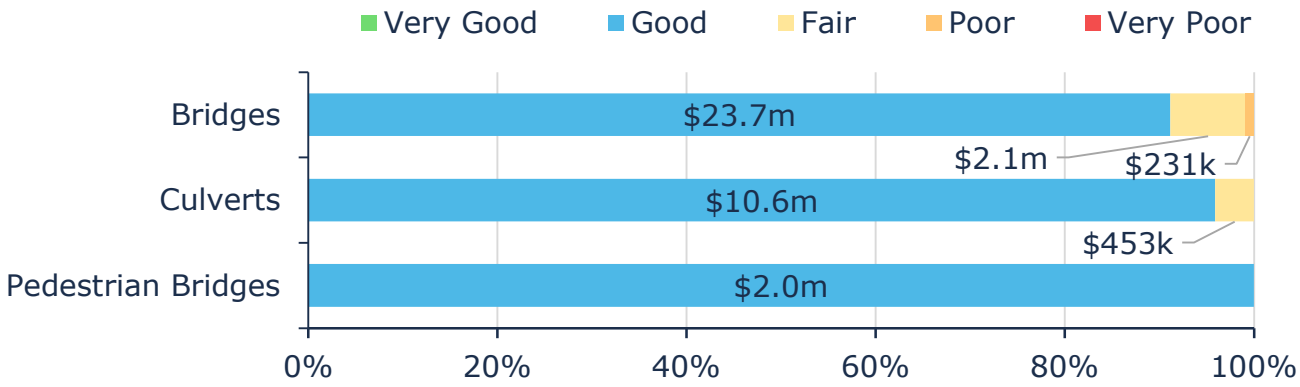


Figure 33 summarizes the replacement cost-weighted condition of the Municipality's bridges and culverts assets while Figure 34 and Table 28 further breaks the condition down by segment. Based fully on field inspection data, 99% of assets are in fair or better condition and an overall average condition rating of 67%.

Table 27 Percentage Assessed by Segment: Bridges & Culverts

Asset Segment	% of Assets with Assessed Condition[15]
Bridges	100%
Culverts	100%
Pedestrian Bridges	100%
TOTAL	**100%**

Table 28 Asset Condition by Segment: Bridges & Culverts

Asset Segment	≤ Poor $	≤ Poor %	≥ Fair $	≥ Fair %	Average Condition[16]
Bridges	$231,000	1%	$25,716,000	99%	Good (67%)
Culverts	-	0%	$11,030,000	100%	Good (66%)
Pedestrian Bridges	-	0%	$2,044,000	100%	Good (68%)
TOTAL	**$231,000**	**1%**	**$38,790,000**	**99%**	**Good (67%)**

For the Municipality's bridges and culverts assets, assessed condition data was available for 100% of the category (as outlined in Table 27).

Typically, assets in poor or lower condition may require replacement or major rehabilitation in the immediate- or short-term. Targeted condition assessments may help 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 lower.

6.3 Age Profile

An asset's age profile is comprised of 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

[15] Weighted by replacement cost.

[16] Weighted by replacement cost.

end of their design life. Service life remaining (SLR) is the difference between an asset's EUL and its age.

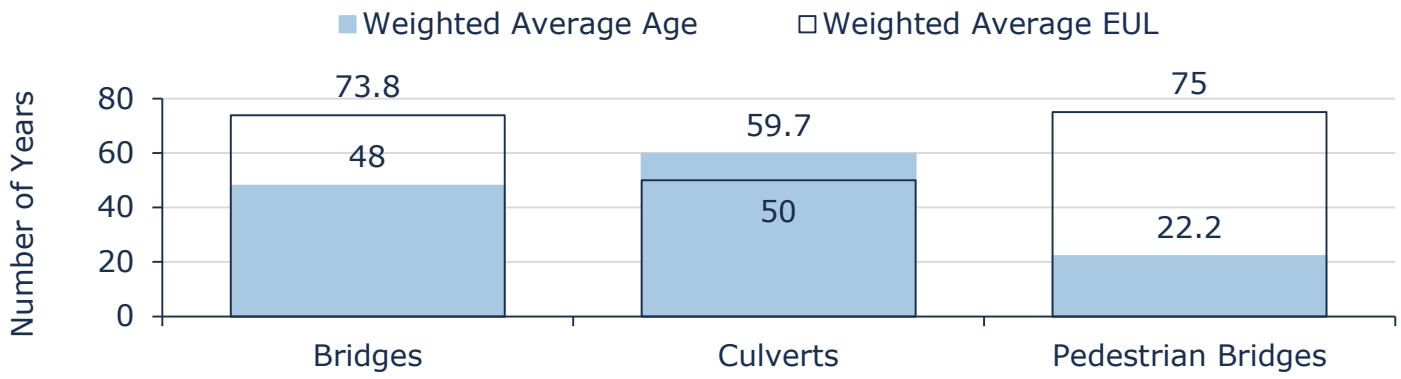
In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning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

Table 29 summarizes and 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.

Table 29 Detailed Asset Age: Bridges & Culverts

Asset Segment	Weighted Average EUL	Weighted Average Age
Bridges	73.8	48
Culverts	50	59.7
Pedestrian Bridges	75	22.2

Figure 35 Estimated Useful Life vs. Asset Age: Bridges & Culverts



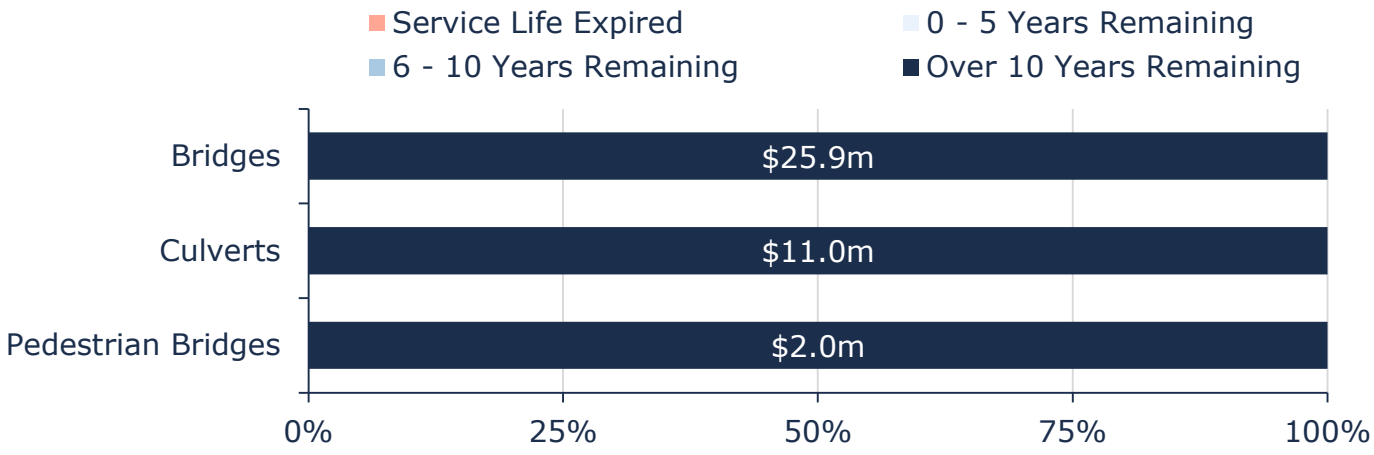
Age analysis shows that the majority of pedestrian bridges are in the earlier stages of their expected useful life, with an average age of 22.2 years against a design life of 75 years. Bridges have, on average, surpassed the midpoint of their expected useful lives. Culverts continue to remain in service slightly beyond their expected lifespans.

Although asset age is an important measurement for long-term planning, condition assessments provide a more accurate indication of actual asset needs. An asset may perform past the established useful life if it has been maintained and kept in good condition. Therefore, it is important to consider asset condition when comparing asset age to its serviceable lifespan.

However, each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type. Further, useful life estimates established as part of the PSAB 3150 implementation may not be accurate and may not reflect in-field asset performance.

As seen in Figure 36, based on asset age, available assessed condition data, and estimated useful life, 0% of the Municipality's assets will require replacement within the next 10 years. Refer to Appendix B for further breakdown.

Figure 36 Service Life Remaining: Bridges & Culverts



6.4 Current Approach to Lifecycle Management

The condition or performance of most assets will deteriorate over time. To ensure that the Municipality's bridges and culverts 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 30 outlines the Municipality's current lifecycle management strategy for bridges and culverts assets.

Table 30 Lifecycle Management Strategy: Bridges & Culverts

Activity Type	Description of Current Strategy
Maintenance	Municipal staff conduct regular maintenance in accordance with best practices.
	OSIM inspection reports guide lifecycle and capital activities for bridge and culvert assets.
	External contractors are engaged when the complexity or scale of work exceeds the capacity of municipal staff.
	OSIM recommendations are critical in planning rehabilitation activities, with repairs prioritized based on their criticality and staff recommendations.
	Municipal staff may also initiate further rehabilitation to extend asset life or enhance community safety.

Activity Type	Description of Current Strategy
	Replacement activities are aligned with long-term planning and available capital. Replacements are prioritized to optimize service delivery and ensure the continued availability and functionality of the transportation network.
Replacement	Bridges and structural culverts are typically scheduled for replacement based on a 75-year lifecycle. Bridges and culverts are assessed bi-annually, and their condition is based on contractor provided OSIM inspections. These assessments can extend or shorten the lifecycle of these assets.

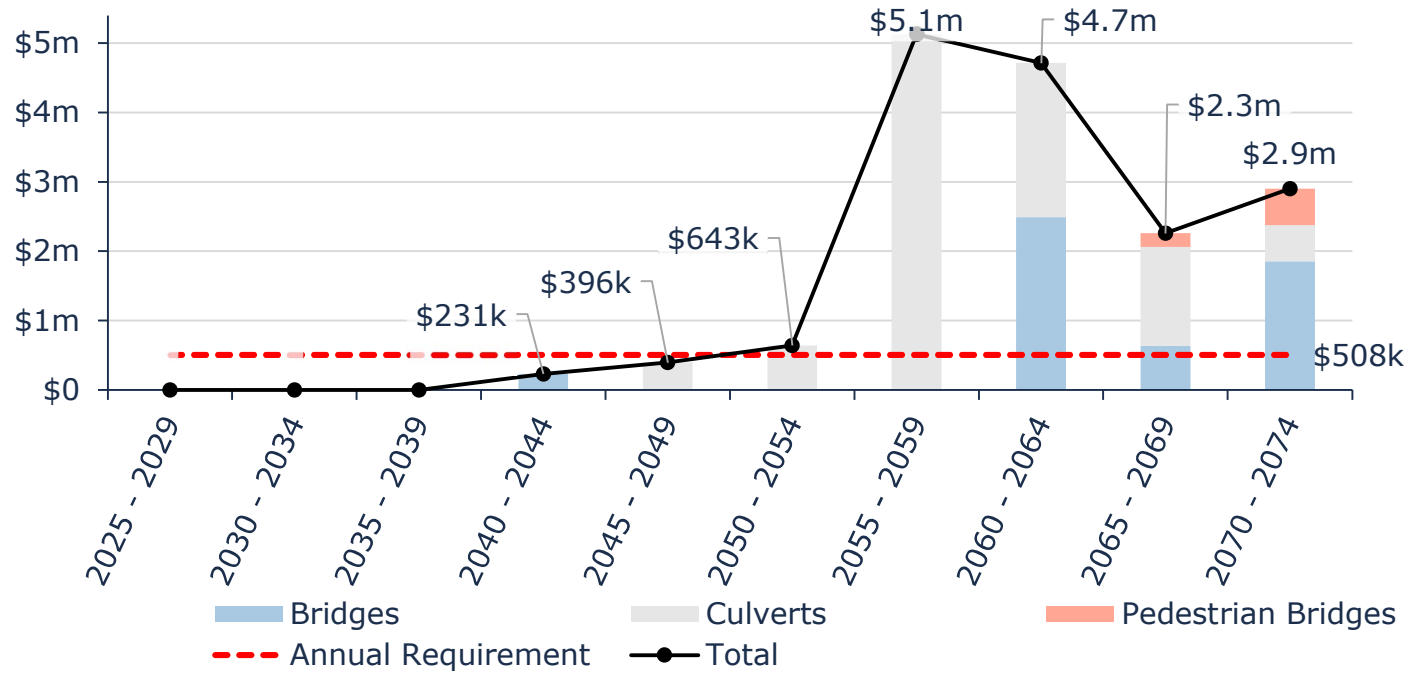
6.5 Forecasted Long-Term Replacement Needs

Figure 37 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Municipality's bridges and culverts portfolio over a 100-year time horizon to ensure at least one replacement of every asset included in Citywide Assets, the Municipality's primary asset management system and asset register the inventory. For clarity, the chart shows a 50-year snapshot. The forecasted requirements are aggregated into 5-year bins while the trend line (red dotted line) represents the average annual capital requirements, which total $508,000 for all bridges and culverts assets.

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 peak in 2055-2059 and 2060-2064 as assets reach the end of their useful life.

These projections and estimates are based on asset replacement costs, age analysis, and condition data where 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: Bridges & Culverts 2025-2074



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.

A summary of the 10-year replacement forecast can be found in Appendix B.

6.6 Risk Analysis

6.6.1 Quantitative Risk

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the bridges and culverts assets based on 2023 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

Figure 38 Risk Matrix: Bridges & Culverts

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from one to five. 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 over time, 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 Quantitative Risk under Section 2.2.3 as well as Section 2.3.8 Evaluating Quantitative Risk for further details on the approach used to determine asset risk ratings and classifications.

The following risk ratings are first shown for the overall category and then by segment for the bridges and culverts assets.

Figure 39 Risk Ratings: Bridges & Culverts

1 - 4 **Very Low**	**5 - 7** **Low**	**8 - 9** **Moderate**	**10 - 14** **High**	**15 - 25** **Very High**
- (0%)	$10,830,000 (28%)	$25,506,000 (65%)	$2,685,000 (7%)	- (0%)

Table 31 Risk Ratings by Segment: Bridges & Culverts

Asset Segment	Probability of Failure	Consequence of Failure	Risk Rating
Bridges	2.1 / 5	4.31 / 5	9.02 / 25
Culverts	2.04 / 5	3.26 / 5	6.66 / 25
Pedestrian Bridges	2 / 5	3.96 / 5	7.92 / 25
TOTAL	**2.08 / 5**	**3.99 / 5**	**8.30 / 25**

Overall, the average risk rating for bridges and culverts assets is 8.30, which is considered Moderate.

The identification of critical assets allows the Municipality to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

6.6.2 Qualitative Risk

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Climate Change & Extreme Weather Events

Bridges and culverts are highly sensitive to changes in climate, especially the increasing intensity and frequency of precipitation events. Many culverts are sized based on historical Intensity-Duration-Frequency (IDF) curves, which are becoming outdated due to the effects of climate change. As a result, existing infrastructure may no longer be adequate to convey extreme stormwater volumes.

Undersized culverts and bridges are at risk of overtopping, erosion, and structural undermining. Rapid flows can also transport debris, which may clog inlets and exacerbate flooding. In turn, this can damage roadways, compromise public safety, and disrupt access during emergencies.

Actions to address these risks can include:

- Reassessing IDF curves in collaboration with conservation authorities and climate experts
- Prioritizing upgrades to assets with known capacity limitations or history of flooding
- Using reinforced structures and erosion control measures at vulnerable crossings

Capital Funding Strategies

Capital funding for bridges and culverts is essential for implementing recommendations from Ontario Structure Inspection Manual (OSIM) reports and ensuring long-term safety. These structures are high-cost assets, and delaying recommended maintenance or replacement can lead to structural failure, service disruptions, and higher emergency repair costs.

Limited capital availability often forces municipalities to defer non-urgent but necessary work, leading to risk accumulation and a growing backlog. Deferred maintenance also increases lifecycle costs and reduces the effectiveness of asset preservation strategies.

By prioritizing proactive care and adhering to recommended schedules, municipalities can mitigate risks, extend infrastructure lifespan, and maintain safe transportation networks. To address budget challenges, municipalities can explore innovative financing and collaboration to ensure sustainable infrastructure management.

6.7 Current 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

Table 32 Community Levels of Service: Bridges & Culverts

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)	The Municipality's bridges and culverts enable the movement of people and goods within and through the Municipality. In addition to passenger vehicles, the Municipality's bridges culverts also support public transit, commercial truck traffic, movement of agricultural equipment, and reliable emergency vehicle access to all areas of the Municipality. The broader transportation network also supports other transportation modes such as walking, cycling, and horseback riding.
Quality	Description or images of the condition of bridges and how this would affect use of the bridges	The transportation network supports comfortable passage of vehicles. A general description of each condition state is provided in Section 6.2
	Description or images of the condition of culverts and how this would affect use of the culverts	

6.7.2 Technical Levels of Service

Table 33 Technical Levels of Service: Bridges & Culverts

Service Attribute	Technical Metric	Current LOS (2023)
Scope	% of bridges and structural culverts in the municipality with loading or dimensional restrictions	15%
Quality	Average bridge condition index value for bridges in the municipality	67
	Average bridge condition index value for structural culverts in the municipality	66

Service Attribute	Technical Metric	Current LOS (2023)
Performance	Average condition of assets	Good (67%)
	% of assets in fair or better condition	99%
	% of assets in poor or lower condition	1%
	Actual annual capital budget : average annual capital requirement	$227k : $508k (0.45 : 1)

6.8 Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service, discuss the associated risks and long-term sustainability of these service levels, and explain the Municipality's ability to afford the proposed LOS.

Table 34 outlines the proposed LOS for bridges and culverts assets. Further explanation and proposed LOS analysis at the portfolio level can be found in Section 4 Proposed Levels of Service Analysis.

Table 34 Proposed LOS: Bridges & Culverts

Asset Segment	Target Maintenance Condition	AAR
Bridges	65	$271,000
Culverts	65	$216,000
Pedestrian Bridges	65	$20,000
TOTAL		**$508,000**

7 Water Network

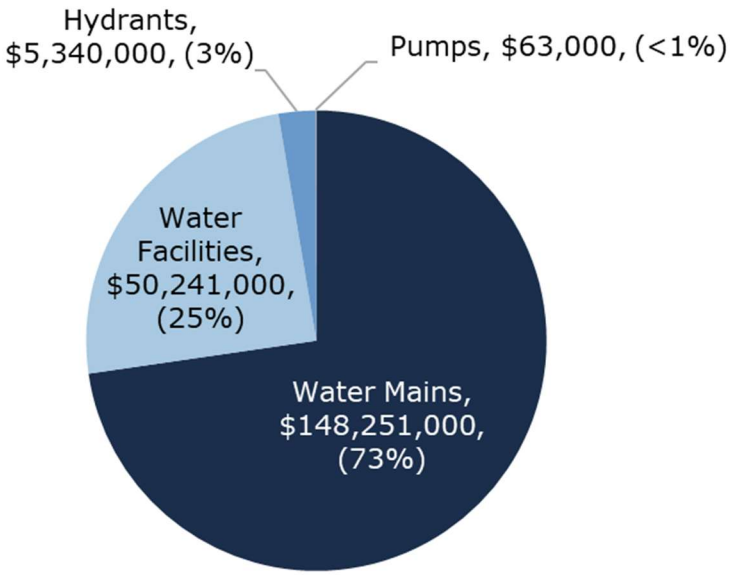
7.1 Inventory & Valuation

Table 35 summarizes the quantity and current replacement cost of the Municipality's various water network assets as managed in its primary asset management register, Citywide Assets.

Table 35 Detailed Asset Inventory: Water Network

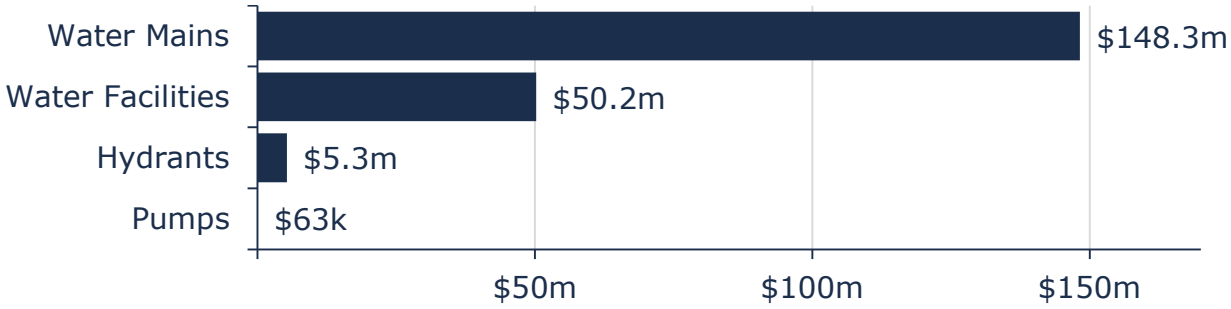
Asset Segment	Quantity	Unit of Measure	Replacement Cost (RC)	Primary RC Method	AAR[17]
Hydrants	541	Assets	$5,340,000	Cost per Unit	$60,000
Pumps	2	Assets	$63,000	CPI	$2,000
Water Facilities	11	Assets	$50,241,000	User-Defined	$1,294,000
Water Mains	97	KM	$148,251,000	Cost per Unit	$1,780,000
TOTAL			**$203,896,000**	**Cost per Unit**	**$3,136,000**

Figure 40 Portfolio Valuation Overview: Water Network



[17] For further clarification on average annual requirement (AAR), see section 2.3.5 Average Annual Requirement (AAR)

Figure 41 Portfolio Valuation by Segment: Water Network



7.2 Asset Condition

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the Municipality's current approach:

- The Municipality has an extensive leak detection data collection system. A 3rd party company is contracted every few years that utilize acoustic detection equipment to detect breaks and leaks. This system was previously internal, but was externalized due to staffing limitations.
- Assessment programs are currently in place for electrical, structural, and asset-specific systems for the water network.
- Fire hydrants are pressure tested once per year, in the fall.
- Facilities are inspected every 5 years. These inspections are spread out throughout the 5 year window, as identified within the utility rate study.

In this AMP, the following rating criteria is used to determine the current condition of water network assets and forecast future capital requirements:

Table 36 Condition Ranges: Water Network

Condition Ranges	Description
Very Good (75% – 100%)	♦ New or recently upgraded infrastructure, with no defects or performance issues. ♦ Highly efficient system, with minimal water loss and strong pressure throughout the network. ♦ Pipes, pumps, and treatment facilities in excellent condition, requiring only routine inspections. ♦ Long-term sustainability and resilience, with no major capital investments needed in the near future.
Good (50% – 74%)	♦ Reliable water supply with minimal leaks or service disruptions. ♦ Well-maintained infrastructure, with pipes and components in good working condition. ♦ Consistent water pressure and flow, meeting demand efficiently. ♦ Routine maintenance and minor upgrades are sufficient to maintain performance.
Fair (25% – 49%)	♦ Some leaks or minor breaks, but overall system remains functional. ♦ Aging pipes and components showing signs of wear but still providing acceptable service. ♦ Moderate water pressure and flow, though occasional issues may arise during peak demand. ♦ Regular maintenance required, and planning for future upgrades or replacements is needed.
Poor (1% – 24%)	♦ Significant leaks or breaks occurring regularly, leading to noticeable water loss. ♦ Aging infrastructure with corroded or weakened pipes, increasing the risk of failure. ♦ Reduced water pressure and occasional service interruptions in some areas. ♦ High maintenance costs due to frequent repairs; sections of the network may need replacement soon.
Very Poor (0% –0.99%)	♦ Frequent and severe leaks or breaks, causing major water loss and service disruptions. ♦ High risk of contamination due to corroded pipes, failing joints, or outdated materials. ♦ Inadequate pressure and flow, leading to unreliable service for residents and businesses. ♦ Requires emergency repairs and imminent replacement of major sections to ensure public health and safety.

Figure 42 Asset Condition Overview: Water Network

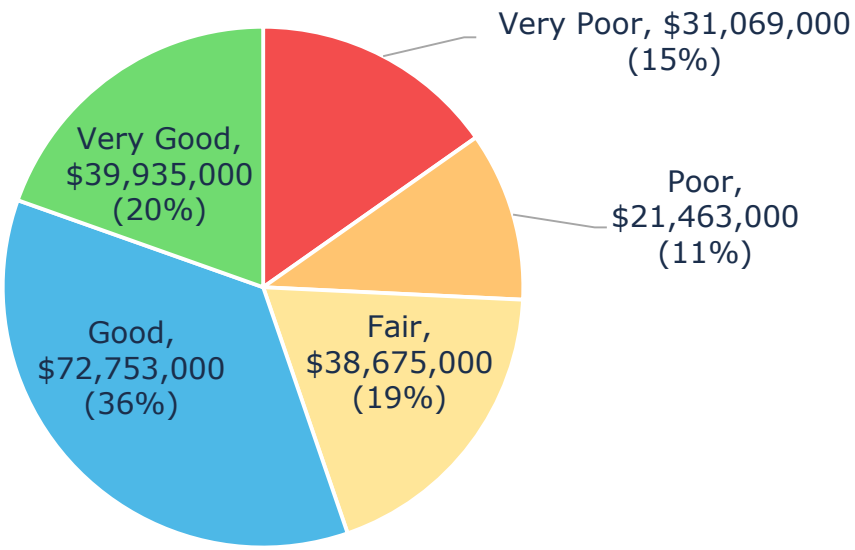


Figure 43 Asset Condition by Segment: Water Network

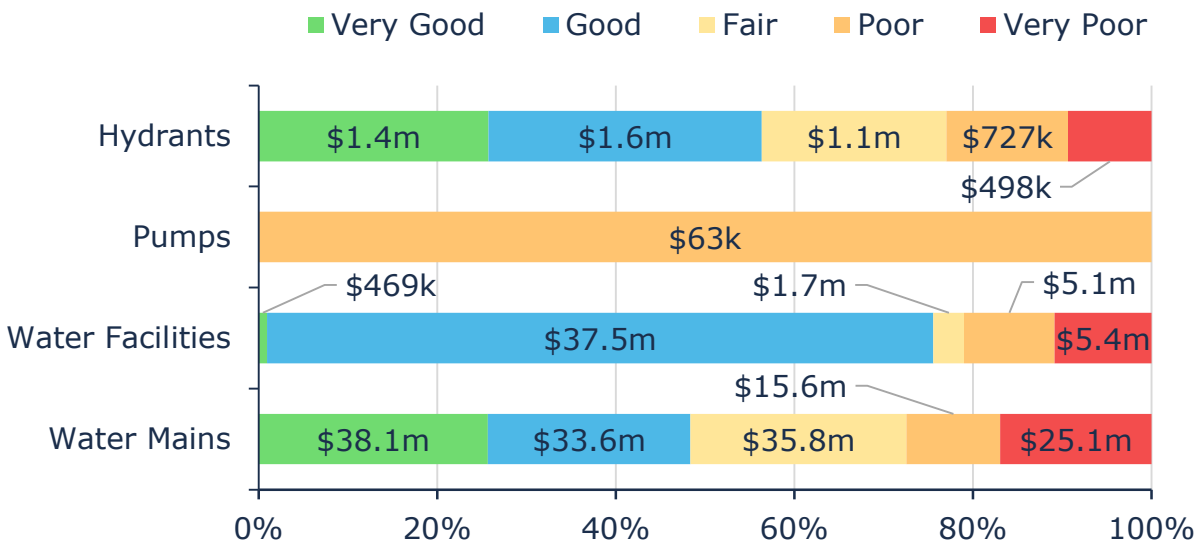


Figure 42 summarizes the replacement cost-weighted condition of the Municipality's water network assets while Figure 43 and Table 38 further breaks the condition down by segment. Based on primarily on age, 74% of assets are in fair or better condition and an overall average condition rating of 46%.

Table 37 Percentage Assessed by Segment: Water Network

Asset Segment	% of Assets with Assessed Condition[18]
Hydrants	0%
Pumps	0%
Water Facilities	48%
Water Mains	0%
TOTAL	**12%**

Table 38 Asset Condition by Segment: Water Network

Asset Segment	≤ Poor $	≤ Poor %	≥ Fair $	≥ Fair %	Average Condition[19]
Hydrants	$1,225,000	23%	$4,115,000	77%	Fair (49%)
Pumps	$63,000	100%	-	0%	Poor (9%)
Water Facilities	$10,538,000	21%	$39,703,000	79%	Good (50%)
Water Mains	$40,705,000	27%	$107,546,000	73%	Fair (45%)
TOTAL	**$52,532,000**	**26%**	**$151,364,000**	**74%**	**Fair (46%)**

For the Municipality's water network assets, assessed condition data was available for 12% of the category, and only for water facilities (as outlined in Table 37).

Typically, assets in poor or lower 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 lower.

7.3 Age Profile

An asset's age profile is comprised of 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

[18] Weighted by replacement cost.

[19] Weighted by replacement cost.

efficiently. As assets age, their performance diminishes, often more rapidly as they approach the end of their design life. Service life remaining (SLR) is the difference between an asset's EUL and its age.

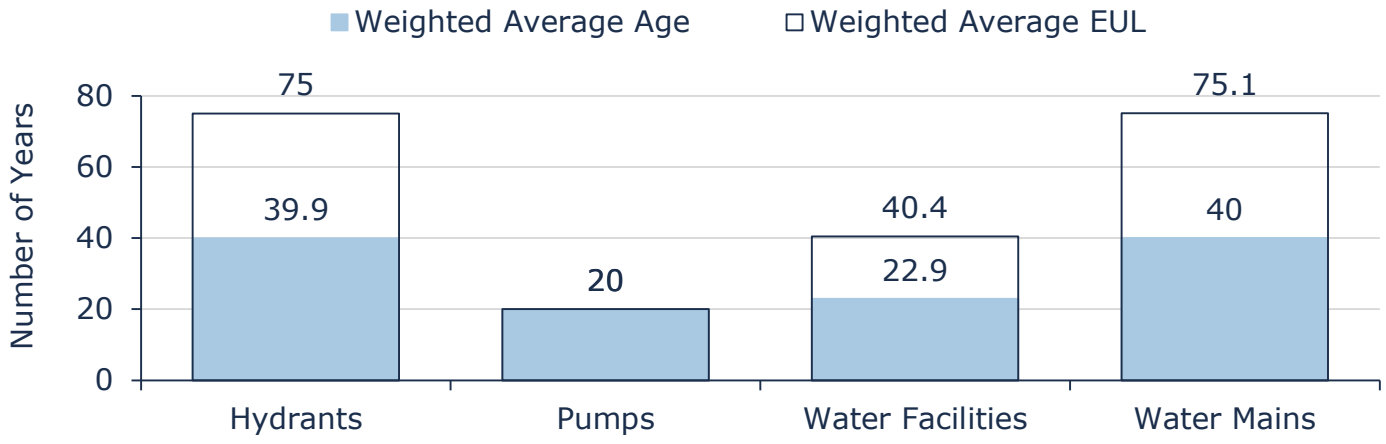
In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning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

Table 39 summarizes and Figure 44 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.

Table 39 Detailed Asset Age: Water Network

Asset Segment	Weighted Average EUL	Weighted Average Age
Hydrants	75	39.9
Pumps	20	20
Water Facilities	40.4	22.9
Water Mains	75.1	40

Figure 44 Estimated Useful Life vs. Asset Age: Water Network



Age analysis shows that the pumps have reached the endpoint of their expected useful life, while the remaining segments are, on average, at the midpoints of their design lives.

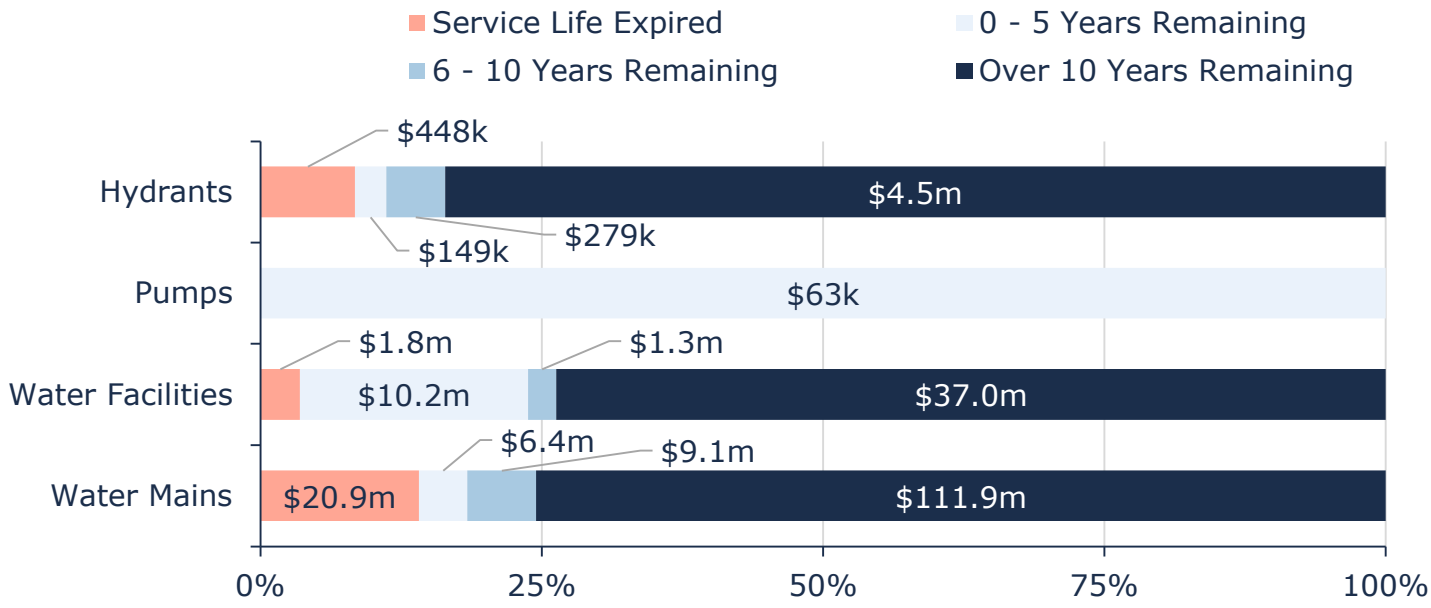
Although asset age is an important measurement for long-term planning, condition assessments provide a more accurate indication of actual asset needs. An asset may perform past the established useful life if it has been maintained and kept in good condition. Therefore, it is important to consider asset condition when comparing asset age to its serviceable lifespan.

However, each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for

each asset type. Further, useful life estimates established as part of the PSAB 3150 implementation may not be accurate and may not reflect in-field asset performance.

As seen in Figure 45, based on asset age, available assessed condition data, and estimated useful life, 25% of the Municipality's assets will require replacement within the next 10 years. Refer to Appendix B for further breakdown.

Figure 45 Service Life Remaining: Water Network



7.4 Current Approach to Lifecycle Management

The condition or performance of most assets will deteriorate over time. To ensure that the Municipality's water network 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 40 outlines the Municipality's current lifecycle management strategy for water network assets.

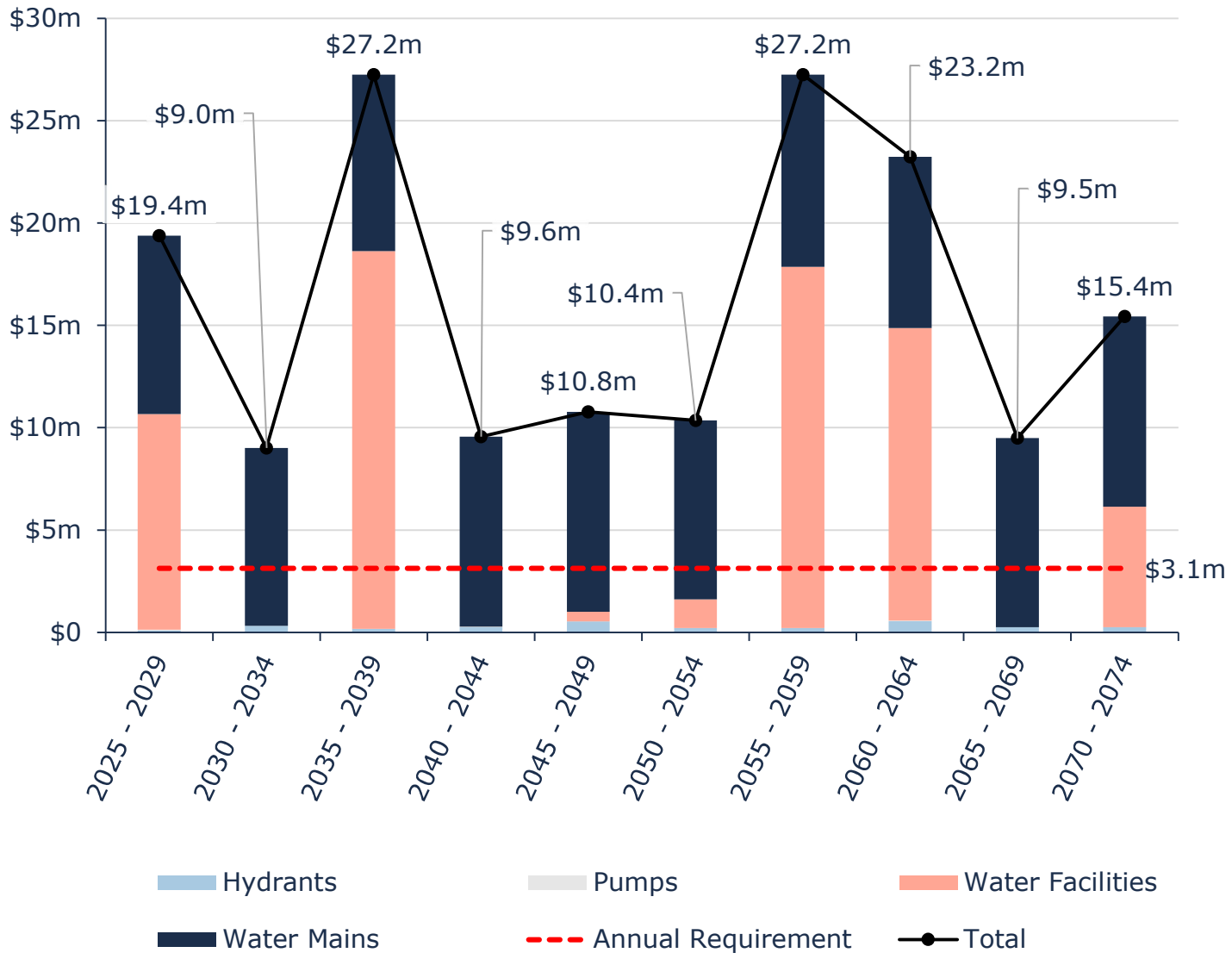
Table 40 Lifecycle Management Strategy: Water Network

Activity Type	Description of Current Strategy
Inspection / Maintenance	To ensure the availability and reliability of water for fire protection services, the Municipality conducts semi-annual flushing activities and hydrant flow testing.
	Drinking water facilities use preventative maintenance, based on manufacturer recommendations, to deter service outages. The recommendations for this maintenance come from both formal and visual condition assessments. The outcome of this actions usually results in replacing consumable components.
	Operational effectiveness testing of specific assets are conducted daily to ensure proper functioning. They are functionally tested by internal staff.
Rehabilitation / Replacement	Drinking water facilities are replaced in line with long-term forecasting. The Municipality uses a 10-year maintenance/rehabilitation plan, that is revisited every five years and is a requirement for the Municipality's water license to be renewed.
	Water meters are replaced in line with their expected useful life, which is 18-20 years.
	Planned replacement activities are coordinated with replacements for storm, wastewater, and road assets. This practice ensures that co-linear assets are maximizing useful lives and cutting down on unnecessary replacements. The Municipality is also beginning to coordinate the replacement of assets with the Port Hope and Area Initiative to ensure deteriorated assets are replaced if remediation is being performed in that area.

7.5 Forecasted Long-Term Replacement Needs

Figure 46 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Municipality's water network portfolio over a 100-year time horizon to ensure at least one replacement of every asset included in Citywide Assets, the Municipality's primary asset management system and asset register the inventory. For clarity, the chart shows a 50-year snapshot. The forecasted requirements are aggregated into 5-year bins while the trend line (red dotted line) represents the average annual capital requirements, which total $3.14 million for all water network assets.

Figure 46 Forecasted Capital Replacement Needs: Water Network 2025-2074



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 significantly over time.

Additionally, there is currently an approximate $24.0 million backlog comprised of assets that remain in service beyond their estimated useful life. The 10-year capital requirements expanded in Appendix B have accounted for removing this accumulation and continuing to rehabilitate or replace assets in alignment with the proposed levels of service.

These projections and estimates are based on asset replacement costs, age analysis, and condition data where 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.

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.

A summary of the 10-year replacement forecast can be found in Appendix B.

7.6 Risk Analysis

7.6.1 Quantitative Risk

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the water network assets based on 2023 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from one to five. 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 over time, 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 Quantitative Risk under Section 2.2.3 as well as Section 2.3.8 Evaluating Quantitative Risk for further details on the approach used to determine asset risk ratings and classifications.

Figure 47 Risk Matrix: Water Network

The following risk ratings are first shown for the overall category and then by segment for the water network assets.

Figure 48 Risk Ratings: Water Network

1 - 4 Very Low $38,904,000 (19%)	5 - 7 Low $47,906,000 (23%)	8 - 9 Moderate $24,662,000 (12%)	10 - 14 High $41,937,000 (21%)	15 - 25 Very High $50,486,000 (25%)

Table 41 Risk Ratings by Segment: Water Network

Asset Segment	Probability of Failure	Consequence of Failure	Risk Rating
Hydrants	2.5 / 5	2.6 / 5	6.5 / 25
Pumps	4 / 5	2.6 / 5	10.4 / 25
Water Facilities	2.55 / 5	3.9 / 5	10.14 / 25
Water Mains	2.7 / 5	4.15 / 5	11.03 / 25
TOTAL	**2.66 / 5**	**4.05 / 5**	**10.69 / 25**

Overall, the average risk rating for water network assets is 10.69, which is considered High.

The identification of critical assets allows the Municipality to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

7.6.2 Qualitative Risk

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Staff and Organizational Cognizance/Capacity

Staffing shortages in the water department present serious operational and compliance risks. The growing demand for skilled water professionals has intensified competition for talent, leading to elevated turnover and difficulty in recruitment.

A reduced workforce can result in slower response times for repairs, delayed compliance reporting, and increased reliance on overtime or external contractors. This compromises both service quality and system reliability.

To address this issue, a strategic focus can be applied to the following:

- Invest in employee retention strategies and training
- Promote cross-training to increase internal flexibility

- Develop a succession plan for critical roles

By investing in human resources, the Municipality can enhance the efficiency, reliability, and capacity of its water department, thereby ensuring it can consistently meet the needs of the community.

Infrastructure Design / Installation

The delayed replacement of aging assets—particularly linear infrastructure such as watermains—poses several asset management risks. Many of these assets are well beyond their expected service life, which increases the likelihood of system failures, watermain breaks, and costly emergency repairs.

Proactive replacement of undersized and deteriorated pipes is essential to ensure service reliability and reduce emergency repair costs.

Capital planning should prioritize:

- Fire flow modelling to identify undersized mains
- Replacement of cast iron and AC pipes with modern materials

Improved interdepartmental consultation during capital planning and construction design phases would support better long-term asset coordination and optimize limited resources.

Infrastructure Reinvestment

Despite rate studies identifying funding requirements, water infrastructure reinvestment remains underfunded. Competing financial priorities and public resistance to rate increases can limit the Municipality's ability to implement long-term recommendations.

As assets age beyond their expected service life, they become more susceptible to failure, leading to service interruptions, elevated maintenance costs, and resident dissatisfaction. Deferred replacement of aging assets leads to an accumulation of overdue work, escalating future costs and limiting the Municipality's ability to act proactively.

Without sufficient funding, the Municipality risks falling further behind in addressing aging infrastructure and may face compounding financial and operational challenges

Regulatory Compliance

Water systems operate in a highly regulated environment, with strict standards for water quality, operational procedures, and reporting. Any legislative changes—such as updates to the Safe Drinking Water Act, environmental discharge requirements, or fire protection standards—necessitate adjustments in infrastructure, operations, and long-term asset planning.

The risks related to regulatory compliance can include sudden capital pressures. New regulations may require immediate infrastructure upgrades or new capital investments, which are difficult to fund without a contingency plan.

Operational strain can be another factor. Staff may need new training, processes may need updating, and existing systems may need upgrades or replacements to remain compliant.

Additionally, non-compliance can lead to regulatory penalties, audits, and loss of public confidence.

Incorporating regulatory forecasting into asset management planning can help mitigate these risks. By building flexibility into capital and operational budgets, and maintaining ongoing communication with provincial and federal regulators, the Municipality can better prepare for emerging compliance requirements.

7.7 Current 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

Table 42 Community Levels of Service: Water Network

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	The water system provides potable water within the Municipality for residential and business consumption, as well as for recreational uses and maintenance operations. All properties within the Municipality's urban boundary have water servicing available. The scope of the Municipality's water system is illustrated by the map in Appendix F.
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	The water system provides water flows within the Municipality for fire protection. All properties within the urban boundary, have fire flow available. The Welcome community hydrants in the rural area are for main flushing only. The scope of the Municipality's water system is illustrated by the map in Appendix F.

Service Attribute	Qualitative Description	Current LOS (2023)
Reliability	Description of boil water advisories and service interruptions	The Municipality did not experience any service interruptions in 2023. On occasion, water service interruptions may occur due to unexpected main breaks, maintenance activities, or water infrastructure replacement. Staff make every effort to keep service interruptions to a minimum.

7.7.2 Technical Levels of Service

Table 43 Technical Levels of Service: Water Network

Service Attribute	Technical Metric	Current LOS (2023)
Scope	% of properties connected to the municipal water system	66%[20]
	Percentage of fire hydrants with fire flow greater than 500 gallons per minute	94.9%
	% of properties where fire flow is available	56%[21]
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
	Percentage of water mains beyond expected useful life (percentage by network length).	23%
	Percentage of water facilities beyond expected useful life. (Percentage by network value)	4.7%

[20] Of the total properties in the municipality 66% are connected to municipal drinking water. 100% of urban properties have access to municipal drinking water.

[21] 99% of urban properties and 56% of total properties.

Service Attribute	Technical Metric	Current LOS (2023)
	Number of pressure complaints received during reporting period, as a result of municipal infrastructure during the previous reporting period.	0
	Percentage of water meters beyond expected useful life of 18 years	0
Safety	Incidents of non-compliance per reporting year	0
Sustainability	Residential Water consumption (liters per customer per day)	1,047 L[22]
Performance	Average condition of assets	Fair (46%)
	% of assets in fair or better condition	74%
	% of assets in poor or lower condition	26%
	Actual annual capital budget : average annual capital requirement	$1.9m : $3.1m (0.61 : 1)

7.8 Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service, discuss the associated risks and long-term sustainability of these service levels, and explain the Municipality's ability to afford the proposed LOS.

Table 44 outlines the proposed LOS for water network assets. Further explanation and proposed LOS analysis at the portfolio level can be found in Section 4 Proposed Levels of Service Analysis.

Table 44 Proposed LOS: Water Network

Asset Segment	Target Maintenance Condition	AAR
Hydrants	Current Average Condition	$60,000
Pumps	Current Average Condition	$2,000
Water Facilities	Current Average Condition	$1,294,000
Water Mains	Current Average Condition	$1,780,000
TOTAL		**$3,136,000**

[22] 5,086,000 liters average per day and approx. 1,047 liters per customer.

8 Sanitary Sewer Network

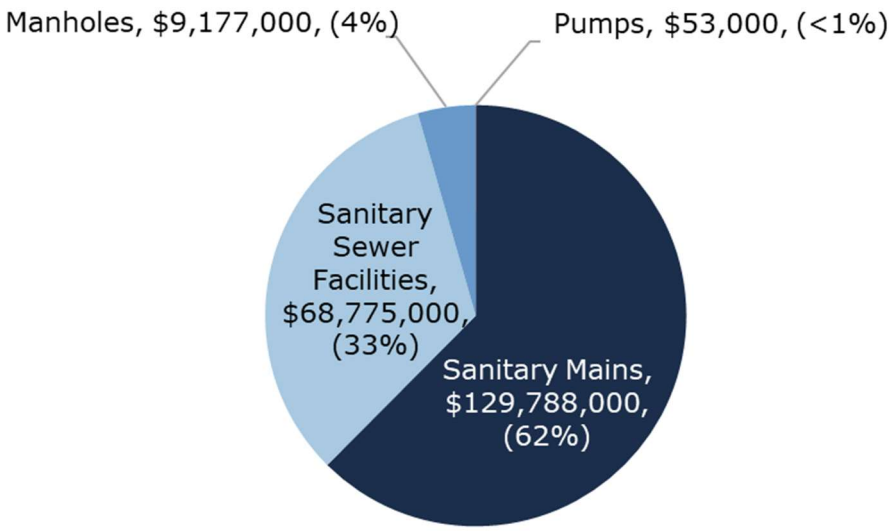
8.1 Inventory & Valuation

Table 45 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 Assets.

Table 45 Detailed Asset Inventory: Sanitary Sewer Network

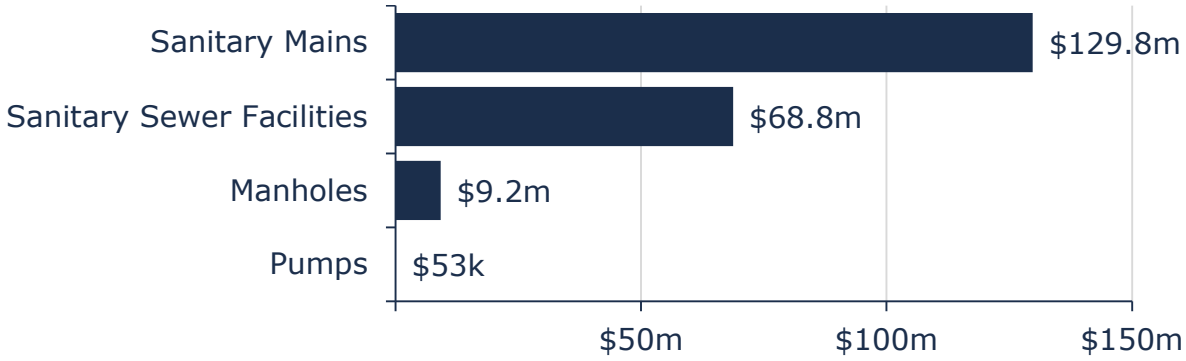
Asset Segment	Quantity	Unit of Measure	Replacement Cost (RC)	Primary RC Method	AAR[23]
Manholes	1,234	Assets	$9,177,000	User-Defined	$86,000
Pumps	2	Assets	$53,000	CPI	$2,000
Sanitary Mains	82	KM	$129,788,000	Cost per Unit	$1,352,000
Sanitary Sewer Facilities	19	Components	$68,775,000	User-Defined	$1,807,000
TOTAL	**1,234**	**Assets**	**$207,793,000**	**Cost per Unit**	**$3,247,000**

Figure 49 Portfolio Valuation Overview: Sanitary Sewer Network



[23] For further clarification on average annual requirement (AAR), see section 2.3.5 Average Annual Requirement (AAR)

Figure 50 Portfolio Valuation by Segment: Sanitary Sewer Network



8.2 Asset Condition

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the Municipality's current approach:

- CCTV inspections are completed for sanitary mains on a regular cycle to identify and characterise main condition.
- When CCTV inspections are undergone, maintenance structures are also assessed and provided a score
- Assessments are completed in line with the NASSCO assessment scheme where they are each provided a Quick Score Rating. The overall condition of the asset it determined by the use of the Quick Score as well as the Maintenance and Operational requirements.
- Facilities are assessed on a five-year cycle, and are typically completed when the utilities rate study is revisited. However, the last assessments were completed seven years ago.

Note: *While the Municipality has completed condition scoring for the entirety of the Sanitary Network, the majority of that data has yet to be entered into Citywide. Most of the condition scoring for these assets is based on EUL.*

In this AMP, the following rating criteria is used to determine the current condition of sanitary sewer network assets and forecast future capital requirements:

Table 46 Condition Ranges: Sanitary Sewer Network

Condition Ranges	Description
Very Good (75% – 100%)	♦ New or recently rehabilitated infrastructure, with no structural defects. ♦ Highly efficient system, with smooth flow and optimal capacity management. ♦ No significant infiltration and inflow (I&I) issues, keeping treatment costs low. ♦ No odor complaints, overflows, or service disruptions. ♦ Minimal maintenance required beyond routine inspections and cleaning.
Good (50% – 74%)	♦ Reliable wastewater flow with minimal blockages or overflows. ♦ Well-maintained pipes and pump stations, with only minor signs of wear. ♦ Infiltration and inflow (I&I) under control, with no significant capacity concerns. ♦ No major odor or service issues, and all infrastructure meets regulatory standards. ♦ Routine maintenance and minor rehabilitation ensure continued reliability.
Fair (25% – 49%)	♦ Some minor cracks, leaks, or blockages, but the system remains functional. ♦ Pipes show signs of aging, with moderate corrosion or root intrusion in some areas. ♦ Infiltration and inflow (I&I) manageable, but potential for future capacity concerns. ♦ Occasional odor complaints or localized backups during peak flows. ♦ Requires regular maintenance and planning for future upgrades.
Poor (1% – 24%)	♦ Regular blockages and minor collapses, requiring frequent maintenance. ♦ Corroded, aging, or deteriorating pipes, increasing the risk of failures. ♦ Infiltration and inflow (I&I) present, reducing system efficiency and increasing treatment costs. ♦ Odor issues and occasional overflows, especially during heavy rainfall. ♦ High maintenance costs, with sections of the network needing rehabilitation or replacement soon.

Condition Ranges	Description
Very Poor (0% –0.99%)	♦ Frequent blockages, overflows, and pipe collapses causing major service disruptions and environmental hazards. ♦ Severe structural deterioration, including cracked, broken, or collapsed pipes. ♦ High risk of infiltration and inflow (I&I) leading to overloading of treatment facilities. ♦ Significant public health and environmental risks due to sewage backups and contamination. ♦ Requires emergency repairs and imminent system replacement.

Figure 51 Asset Condition Overview: Sanitary Sewer Network

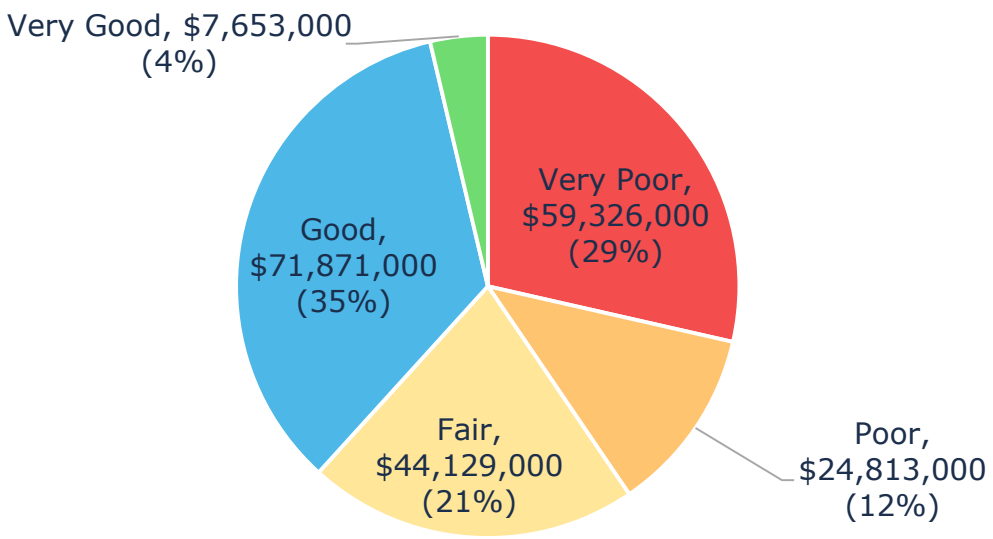


Figure 52 Asset Condition by Segment: Sanitary Sewer Network

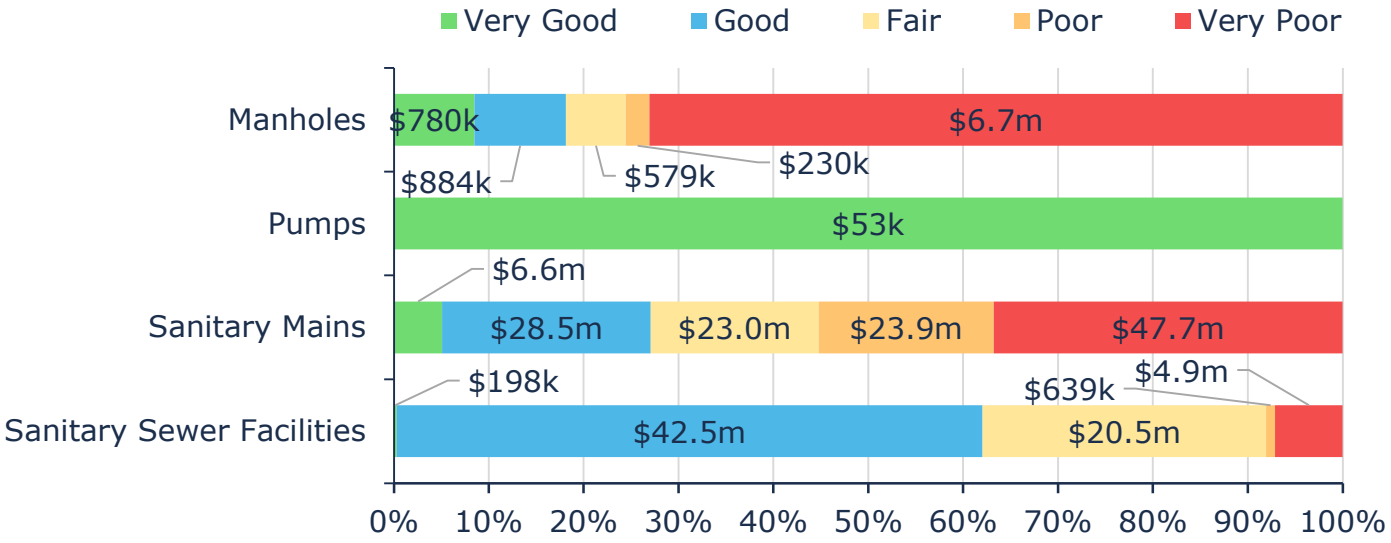


Figure 51 summarizes the replacement cost-weighted condition of the Municipality's sanitary sewer network assets while Figure 52 and Table 48 further breaks the condition down by segment. Based on both assessed and age-based data, 60% of assets are in fair or better condition and an overall average condition rating of 42%.

Table 47 Percentage Assessed by Segment: Sanitary Sewer Network

Asset Segment	% of Assets with Assessed Condition[24]
Manholes	11%
Pumps	0%
Sanitary Mains	22%
Sanitary Sewer Facilities	60%
TOTAL	**34%**

[24] Weighted by replacement cost.

Table 48 Asset Condition by Segment: Sanitary Sewer Network

Asset Segment	≤ Poor $	≤ Poor %	≥ Fair $	≥ Fair %	Average Condition[25]
Manholes	$6,935,000	76%	$2,242,000	24%	Poor (20%)
Pumps	-	0%	$53,000	100%	Very Good (86%)
Sanitary Mains	$71,657,000	55%	$58,132,000	45%	Fair (38%)
Sanitary Sewer Facilities	$5,548,000	8%	$63,226,000	92%	Good (53%)
TOTAL	**$84,140,000**	**40%**	**$123,653,000**	**60%**	**Fair (42%)**

For the Municipality's sanitary sewer network assets, assessed condition data was available for 34% of the category (as outlined in Table 47). This is primarily for the sanitary sewer facilities as data for the remaining segments is limited.

Typically, assets in poor or lower 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 lower.

8.3 Age Profile

An asset's age profile is comprised of 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. Service life remaining (SLR) is the difference between an asset's EUL and its age.

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.

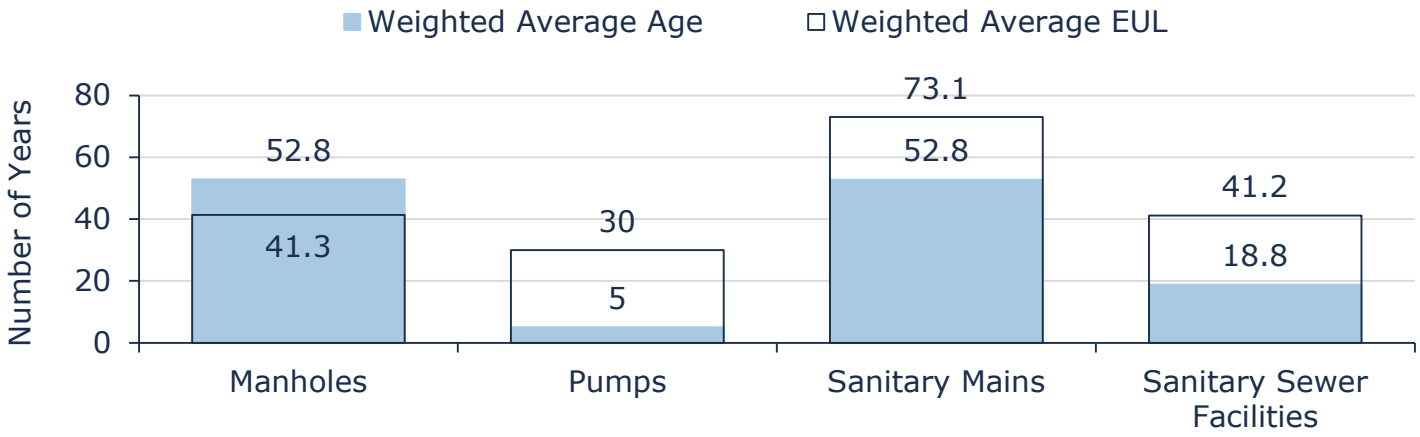
Table 49 summarizes and Figure 53 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

[25] Weighted by replacement cost.

Table 49 Detailed Asset Age: Sanitary Sewer Network

Asset Segment	Weighted Average EUL	Weighted Average Age
Manholes	41.3	52.8
Pumps	30	5
Sanitary Mains	73.1	52.8
Sanitary Sewer Facilities	41.2	18.8

Figure 53 Estimated Useful Life vs. Asset Age: Sanitary Sewer Network



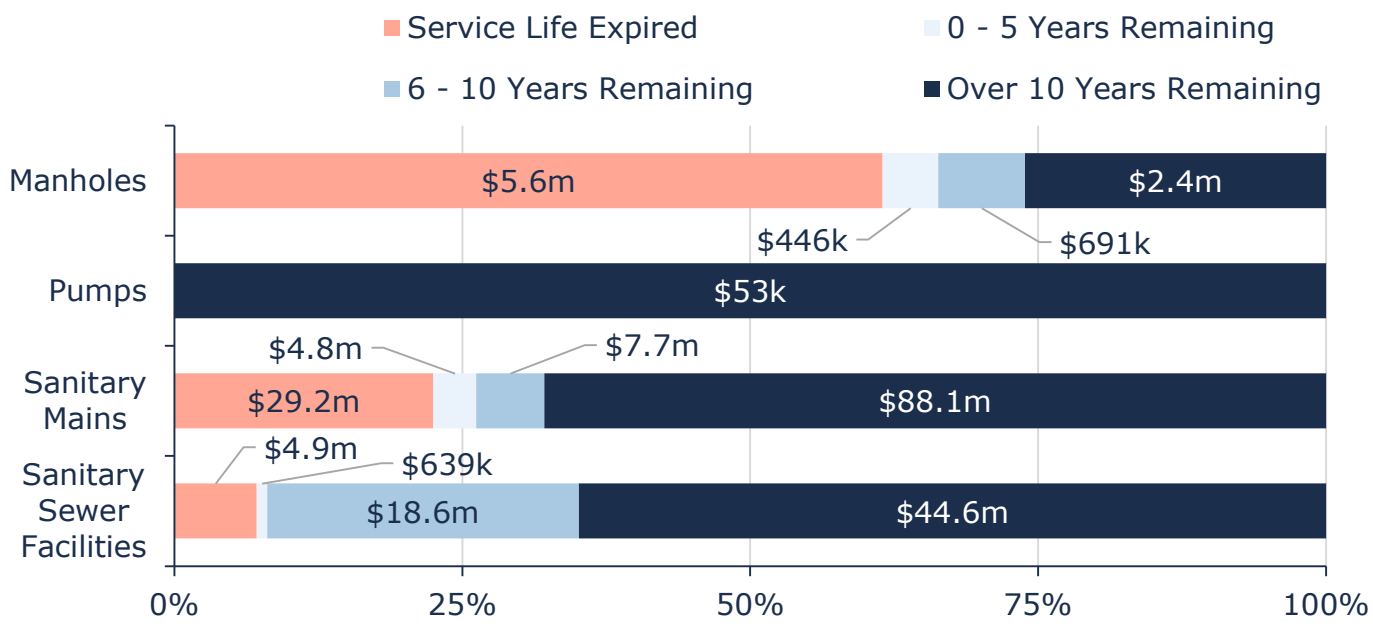
Age analysis shows that the majority of pumps are in the early stages of their expected useful life, with an average age of 5 years against a design life of 30 years. Sanitary sewer facilities are around the midpoint of their expected lifespan while sanitary mains have entered the latter stages of their expected useful life. Manholes continue to remain in service beyond their expected useful life.

Although asset age is an important measurement for long-term planning, condition assessments provide a more accurate indication of actual asset needs. An asset may perform past the established useful life if it has been maintained and kept in good condition. Therefore, it is important to consider asset condition when comparing asset age to its serviceable lifespan.

However, each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type. Further, useful life estimates established as part of the PSAB 3150 implementation may not be accurate and may not reflect in-field asset performance.

As seen in Figure 54, based on asset age, available assessed condition data, and estimated useful life, 35% of the Municipality's assets will require replacement within the next 10 years. Refer to Appendix B for further breakdown.

Figure 54 Service Life Remaining: Sanitary Sewer Network



8.4 Current Approach to Lifecycle Management

The condition or performance of most assets will deteriorate over time. To ensure that the Municipality's sanitary sewer network 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 50 outlines the Municipality's current lifecycle management strategy for sanitary sewer network assets.

Table 50 Lifecycle Management Strategy: Sanitary Sewer Network

Activity Type	Description of Current Strategy
Inspections / Maintenance	Wastewater laterals undergo maintenance and inspections reactively to community or system grievances. Laterals with a history or high risk of failure are subjected to regular inspections to minimize the service impact of potential failures.
	The Municipality conducts flushing operations in conjunction with CCTV inspections every 4-5 years.
	Facilities, grounds, and equipment receive regular maintenance, as well as reactive maintenance following inspections or grievances.

Activity Type	Description of Current Strategy
Rehabilitation / Replacement	Assets within the wastewater facilities, grounds, and equipment are replaced according to the 10-year plan outlined within the utilities rate study, with prioritization based on criticality, condition, and staff expertise.
	Linear assets are replaced in groups based on their location, service type, and connectivity, considering their estimated useful life. This approach ensures that new mains are aligned with new valves and maintenance holes. Long-term planning and staff expertise strategically plan these activities.
	Planned replacement activities are coordinated with replacements for stormwater, water, and road assets. This practice ensures that co-linear assets are maximizing useful lives, and cutting down on unnecessary replacements.

8.5 Forecasted Long-Term Replacement Needs

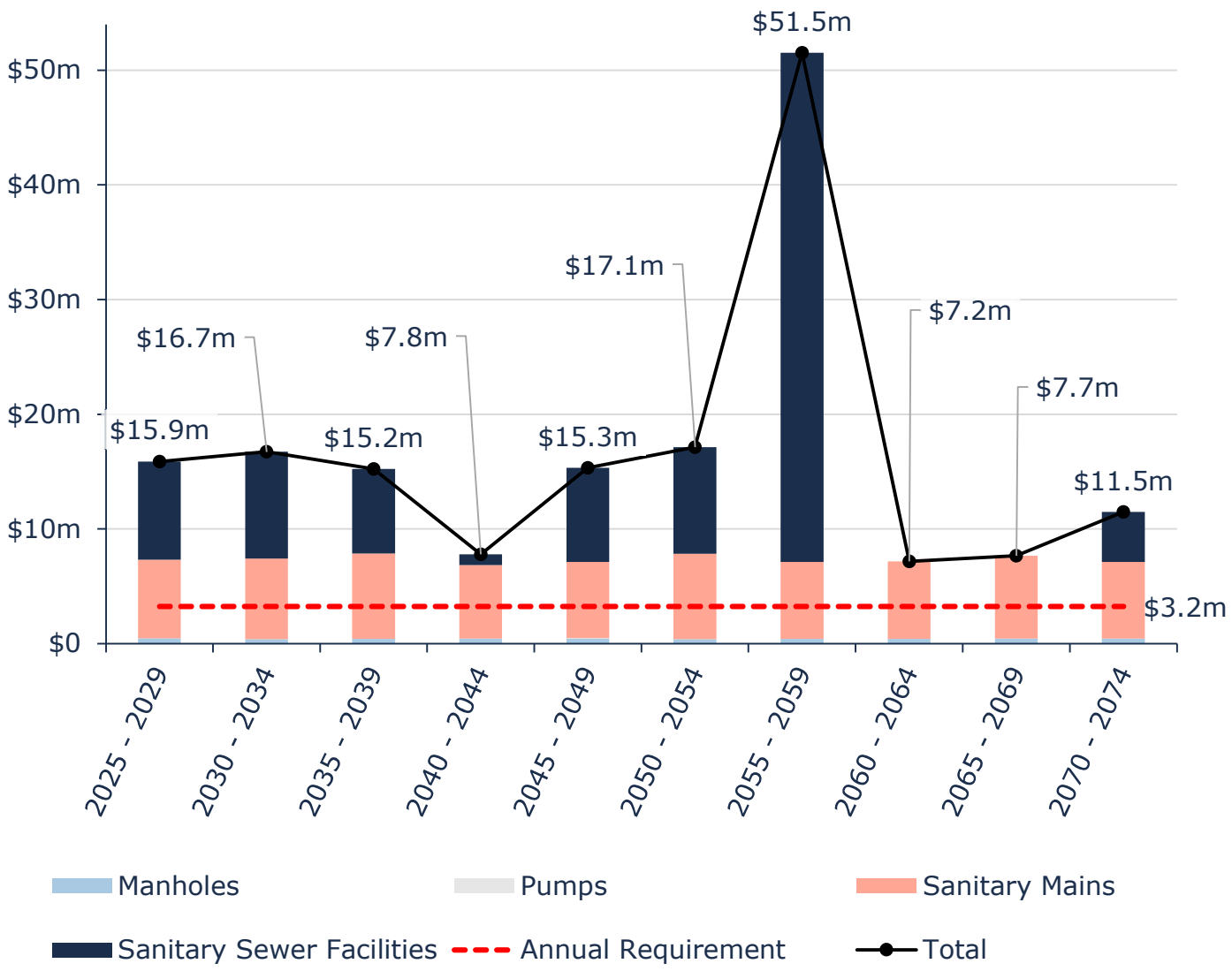
Figure 55 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Municipality's sanitary sewer network portfolio over a 100-year time horizon to ensure at least one replacement of every asset included in Citywide Assets, the Municipality's primary asset management system and asset register the inventory. For clarity, the chart shows a 50-year snapshot. The forecasted requirements are aggregated into 5-year bins while the trend line (red dotted line) represents the average annual capital requirements, which total $3.25 million for all sanitary sewer network assets.

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 with a major peak from 2055-2059 related to sanitary sewer facilities capital needs.

Additionally, there is currently an approximate $40.1 million backlog comprised of assets that remain in service beyond their estimated useful life. The 10-year capital requirements expanded in Appendix B have accounted for removing this accumulation and continuing to rehabilitate or replace assets in alignment with the proposed levels of service.

These projections and estimates are based on asset replacement costs, age analysis, and condition data where 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 55 Forecasted Capital Replacement Needs: Sanitary Sewer Network 2025-2074



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.

A summary of the 10-year replacement forecast can be found in Appendix B.

8.6 Risk Analysis

8.6.1 Quantitative Risk

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the sanitary sewer network assets based

on 2023 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

Figure 56 Risk Matrix: Sanitary Sewer Network

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from one to five. 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 over time, 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 Quantitative Risk under Section 2.2.3 as well as Section 2.3.8 Evaluating Quantitative Risk for further details on the approach used to determine asset risk ratings and classifications.

The following risk ratings are first shown for the overall category and then by segment for the sanitary sewer network assets.

Figure 57 Risk Ratings: Sanitary Sewer Network

1 - 4 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$8,537,000 (4%)	$68,318,000 (33%)	$12,486,000 (6%)	$61,987,000 (30%)	$56,466,000 (27%)

Table 51 Risk Ratings by Segment: Sanitary Sewer Network

Asset Segment	Probability of Failure	Consequence of Failure	Risk Rating
Manholes	4.22 / 5	2 / 5	8.44 / 25
Pumps	1 / 5	2.6 / 5	2.6 / 25
Sanitary Mains	3.6 / 5	3.45 / 5	12.45 / 25
Sanitary Sewer Facilities	2.53 / 5	3.79 / 5	9.57 / 25
TOTAL	**3.27 / 5**	**3.5 / 5**	**11.32 / 25**

Overall, the average risk rating for sanitary sewer network assets is 11.32, which is considered High.

The identification of critical assets allows the Municipality to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

8.6.2 Qualitative Risk

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Growth & Community Expectations

Population growth and evolving community expectations can place increasing demand on the Municipality's sanitary system. As more homes and businesses are connected, the volume of wastewater requiring treatment rises. Without system upgrades, this can lead to capacity constraints, treatment inefficiencies, and compliance risks.

Additionally, the public expects environmentally responsible and reliable wastewater services. Failure to modernize the system in line with these expectations may result in reputational impacts and regulatory scrutiny.

To meet future needs, the Municipality could:

- Integrate growth projections into wastewater master planning
- Identify treatment and conveyance constraints
- Invest in emerging technologies to improve treatment capacity and efficiency

Investing in human resources, technology, and infrastructure is essential. Strategic capital planning will ensure the long-term sustainability, reliability, and efficiency of the wastewater service, supporting both public health and community growth.

Aging Infrastructure & Infrastructure Reinvestment

Although the Wastewater Treatment Plant (WWTP), constructed in 2009, is a relatively modern facility with an overall estimated useful life of 50–75 years, many of its critical internal systems—such as HVAC, electrical, and mechanical components—have much shorter life cycles, typically around 20 years.

As these components near or reach the end of their service life, the risk of equipment failure increases significantly. Failure to address these renewal needs proactively could result in service disruptions, particularly during peak flow periods or extreme weather events, increased emergency maintenance costs, which are typically more expensive than scheduled replacements, and non-compliance with environmental regulations, especially if system performance deteriorates.

While asset management planning has identified proactive renewal projects, limited funding availability poses a significant barrier. In many cases, necessary projects are deferred or abandoned due to a lack of sustainable funding sources, increasing long-term risk and potential liability.

Moreover, the Municipality's reliance on grant funding introduces financial uncertainty. Grant programs are competitive and subject to changes in provincial or federal priorities, making it difficult to plan long-term reinvestment strategies with confidence. This dependency on external funding limits the ability to schedule infrastructure projects predictably, increases backlog of deferred renewals, and elevates the risk of service level degradation over time. Componentization of facilities assets would further aid asset management planning.

Developing a more resilient and stable infrastructure funding model is essential to ensure that essential assets, like the WWTP, remain in good working condition and continue to provide safe and reliable service to the community.

Organizational Capacity

The Municipality faces potential staffing capacity risks, particularly at the management level. The possibility of multiple key personnel being on long-term leave simultaneously poses a significant operational risk. Without adequate cross-training and succession planning, the Municipality may struggle to maintain the continuity of asset management functions and project delivery, coordinate infrastructure investments and oversee compliance activities, and respond effectively to emergency events or unexpected asset failures.

While some responsibilities could be temporarily reassigned, this would require pre-emptive training and a well-defined contingency plan. Without it, there is a risk of institutional knowledge loss, reduced efficiency, and delays in decision-making. These challenges are compounded in smaller municipalities where staff wear multiple hats and institutional redundancy is limited.

To mitigate this risk, the Municipality should prioritize cross-training programs for key asset management, engineering, and operations staff, documented procedures and knowledge transfer plans to preserve institutional knowledge, and capacity assessments to ensure staffing levels align with asset management demands.

Infrastructure Design / Installation

Some existing infrastructure in the community presents inherent design issues that pose ongoing risks to performance, efficiency, and service delivery. Notable concerns include operating some assets near maximum capacity and the presence of bottlenecks, where larger diameter pipes feed into smaller diameter segments within the sanitary network. This can lead to reduced system efficiency and flow capacity, increased risk of backups and overflows, and accelerated deterioration due to pressure surges or turbulence at transition points.

Correcting these deficiencies requires both capital investment and careful planning to avoid unintended consequences on adjacent systems. If not addressed, these infrastructure limitations will continue to impact levels of service and increase the risk of infrastructure failure.

Legacy systems with these issues should be prioritized for upgrades in the capital planning process.

Climate Change & Extreme Weather Events

Municipal infrastructure is increasingly affected by climate-related risks, especially extreme weather events and changing precipitation patterns. The following threats are becoming more frequent and severe:

- High inflow and infiltration (I&I) into the wastewater system during storm events can exceed system capacity, leading to overflows, treatment challenges, and environmental compliance risks. Older infrastructure and aging pipe joints are particularly vulnerable to infiltration, especially during freeze-thaw cycles or high groundwater events.
- Damaging winds pose a risk to above-ground infrastructure such as facility roofs, HVAC units, and structural enclosures. Even relatively new facilities may be vulnerable if not designed with resilience in mind. Such events can result in sudden, costly repairs and temporarily interrupt operations.
- Power failures, especially during extreme weather, jeopardize the functionality of critical infrastructure such as pumping stations, water treatment systems, and SCADA controls. Without sufficient backup power systems, service disruptions can affect water quality, fire protection capabilities, and public health.

To manage these risks, municipalities could:

- Increase investment in resilient infrastructure design, including weather-resistant materials and secure building envelopes.
- Prioritize the replacement of aging infrastructure vulnerable to I&I.
- Enhance emergency preparedness, including expanded use of backup generators and real-time monitoring systems.

Proactive climate adaptation planning is essential to reduce the long-term costs and impacts of extreme weather on municipal infrastructure.

8.7 Current 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

Table 52 Community Levels of Service: Sanitary Sewer Network

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 F
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	The Municipality does not own any combined sewers.
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	The Municipality does not own any combined sewers.
	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	Stormwater can enter into sanitary sewers due to cracks in sanitary mains or through indirect connections (e.g. weeping tiles).
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	The municipality follows a series of design standards that integrate servicing requirements and land use considerations when constructing or replacing sanitary sewers. These standards have been determined with consideration of the minimization of sewage overflows and backups.

Service Attribute	Qualitative Description	Current LOS (2023)
	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	Effluent refers to water pollution that is discharged from a wastewater treatment plant, and may include suspended solids, total phosphorous and biological oxygen demand. The Environmental Compliance Approval (ECA) identifies the effluent criteria for municipal wastewater treatment plants.

8.7.2 Technical Levels of Service

Table 53 Technical Levels of Service: Sanitary Sewer Network

Service Attribute	Technical Metric	Current LOS (2023)
Scope	% of properties connected to the municipal wastewater system	69%[26]
Scope	# 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	N/A
	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	31 connection days / 4,757 properties
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0
	# of odor complaints received annually.	9
Safety	Treatment Plant incidents resulting in a bypass or overflow	0
Sustainability	Annual Average Daily Influent Flow compared to the Max Day Influent Flow	Avg: 4,831 m^3

[26] 4,757 properties connect to municipal wastewater system compared to 6,914 total properties.

Service Attribute	Technical Metric	Current LOS (2023)
		Max: 16,132 m^3
Performance	Average condition of assets	Fair (42%)
	% of assets in fair or better condition	60%
	% of assets in poor or lower condition	40%
	Actual annual capital budget : average annual capital requirement	$1.2m : $3.2m (0.35 : 1)

8.8 Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service, discuss the associated risks and long-term sustainability of these service levels, and explain the Municipality's ability to afford the proposed LOS.

Table 54 outlines the proposed LOS for sanitary sewer network assets. Further explanation and proposed LOS analysis at the portfolio level can be found in Section 4 Proposed Levels of Service Analysis.

Table 54 Proposed LOS: Sanitary Sewer Network

Asset Segment	Target Maintenance Condition	AAR
Manholes	Current Average Condition	$86,000
Pumps	Current Average Condition	$2,000
Sanitary Mains	Current Average Condition	$1,352,000
Sanitary Sewer Facilities	Current Average Condition	$1,807,000
TOTAL		**$3,247,000**

9 Stormwater Network

9.1 Inventory & Valuation

Table 55 summarizes the quantity and current replacement cost of the Municipality's various stormwater network assets as managed in its primary asset management register, Citywide Assets.

Table 55 Detailed Asset Inventory: Stormwater Network

Asset Segment	Quantity	Unit of Measure	Replacement Cost (RC)	Primary RC Method	AAR[27]
Culverts[28]	17	Assets	$128,000	CPI	$1,000
Oil/Grit Separator	2	Assets	$60,000	User-Defined	$1,000
Storm Conduit	68	KM	$95,601,000	User-Defined	$1,200,000
Storm Structure	1,758	Assets	$13,085,000	User-Defined	$187,000
Stormwater Management Facilities	8	Assets	$4,960,000	User-Defined	$55,000
TOTAL			**$113,834,000**	**User-Defined**	**$1,445,000**

[27] For further clarification on average annual requirement (AAR), see section 2.3.5 Average Annual Requirement (AAR)

[28] Municipality's culvert inventory is incomplete, and information included in this segment reflects only those culverts which are currently listed in the Municipality's Citywide inventory. Further review should be conducted on benefit of including this asset segment in future iterations of the AMP.

Figure 58 Portfolio Valuation Overview: Stormwater Network

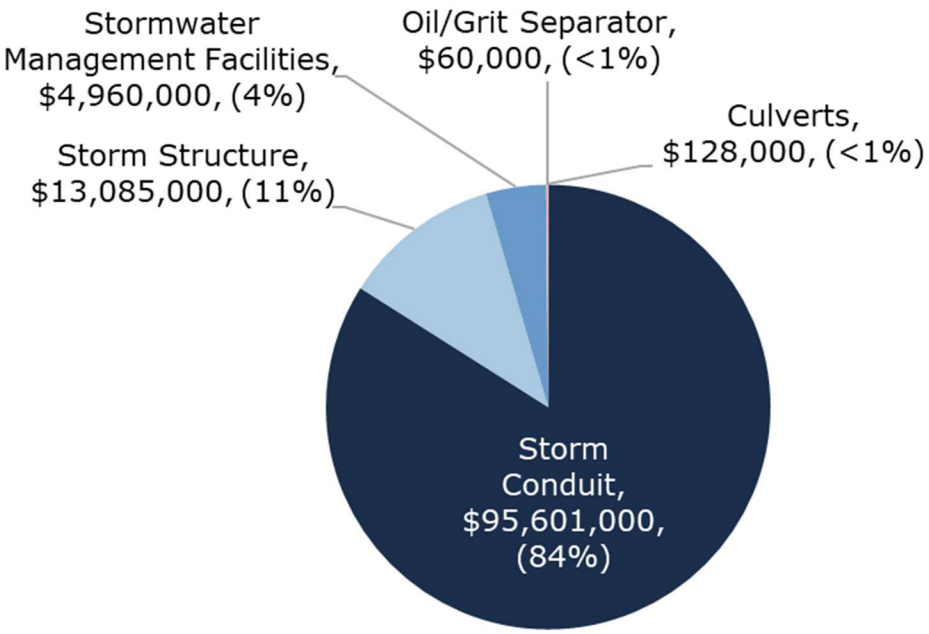
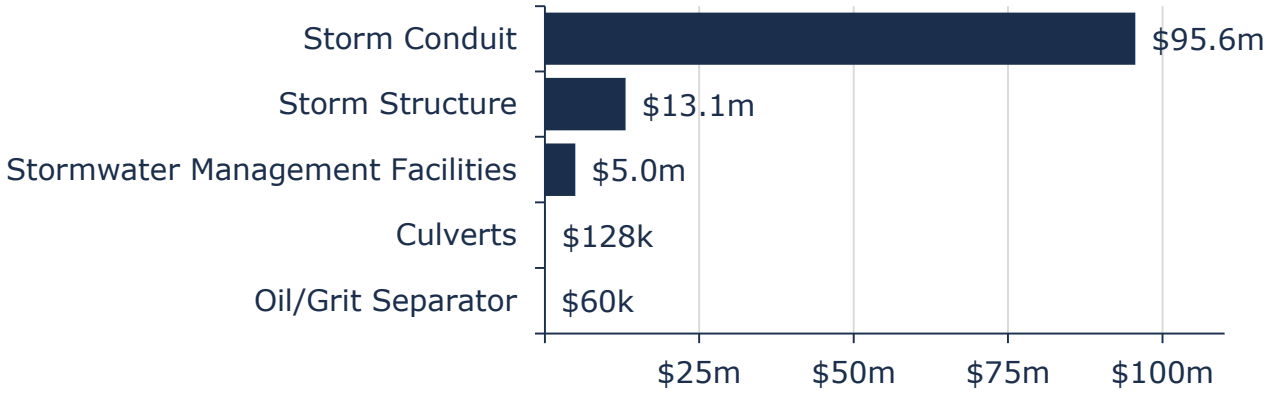


Figure 59 Portfolio Valuation by Segment: Stormwater Network



9.2 Asset Condition

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the Municipality's current approach:

- CCTV inspections are completed on stormwater mains and maintenance holes.
- Assessments are completed in line with the NASSCO assessment scheme where they are each provided a Quick Score Rating.
- Additional condition assessment ratings are completed visually on a scheduled basis and reactively as needed.

Note: *While some sections of the Storm Water network have been CCTV'd, these inspections have not been entered into Citywide and all condition information is reliant on EUL.*

In this AMP, the following rating criteria is used to determine the current condition of stormwater network assets and forecast future capital requirements:

Table 56 Condition Ranges: Stormwater Network

Condition Ranges	Description
Very Good (75% – 100%)	♦ New or well-maintained system, with all components functioning optimally. ♦ No flooding, pooling, or capacity concerns, even during heavy rainfall. ♦ Pipes, culverts, and catch basins are clear of debris and in excellent condition. ♦ Stable drainage channels and outfalls with no erosion or infrastructure risks. ♦ Minimal maintenance required beyond routine inspections and cleaning.
Good (50% – 74%)	♦ Effective drainage with minimal pooling or slow runoff after storms. ♦ Infrastructure is in good shape, with only minor signs of wear such as light corrosion or small cracks. ♦ Minimal sediment buildup and blockages, with regular maintenance keeping the system functional. ♦ Stable outfalls and drainage channels, with little erosion or scouring. ♦ Routine maintenance and minor repairs ensure continued performance.
Fair (25% – 49%)	♦ Occasional drainage issues, such as slow runoff or minor standing water after storms. ♦ Pipes and structures show signs of wear, but no immediate structural concerns. ♦ Moderate sediment accumulation in stormwater ponds, ditches, or pipes. ♦ Some erosion and minor infrastructure damage that require monitoring. ♦ Regular maintenance and future planning needed to prevent further decline.
Poor (1% – 24%)	♦ Regular flooding or ponding in low-lying areas, especially during heavy rainfall. ♦ Aging pipes, culverts, and drains with visible corrosion, cracks, or joint failures.

Condition Ranges	Description
	♦ Moderate blockages from debris, sediment, or root intrusion, requiring frequent maintenance. ♦ Erosion and scouring present near outfalls and channels, threatening infrastructure stability. ♦ System requires significant repairs or partial replacements to improve function.
Very Poor (0% –0.99%)	♦ Frequent and severe flooding due to major blockages, collapsed pipes, or inadequate capacity. ♦ Severely damaged or failing infrastructure, including cracked or collapsed culverts, pipes, and catch basins. ♦ Significant sediment buildup, erosion, or vegetation overgrowth, reducing flow efficiency. ♦ High risk of property damage and environmental contamination due to untreated runoff. ♦ Requires immediate emergency repairs or full system replacement.

Figure 60 Asset Condition Overview: Stormwater Network

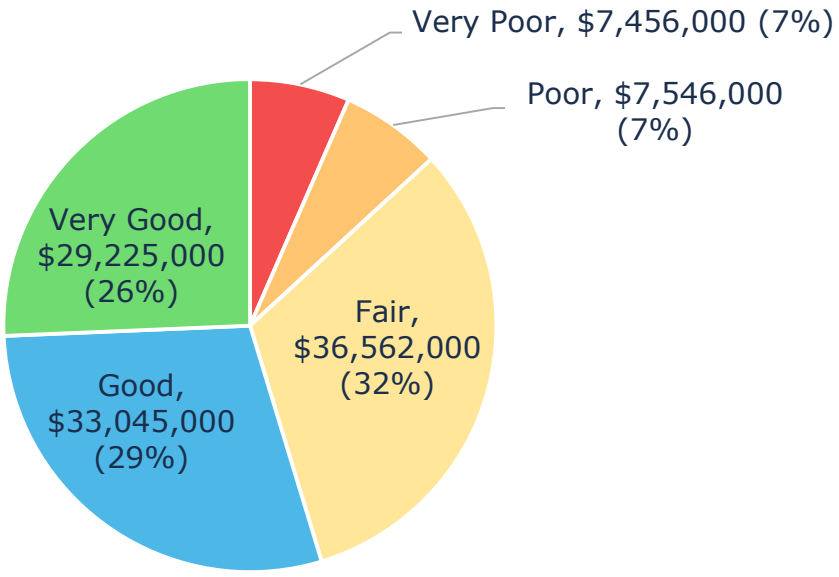


Figure 61 Asset Condition by Segment: Stormwater Network

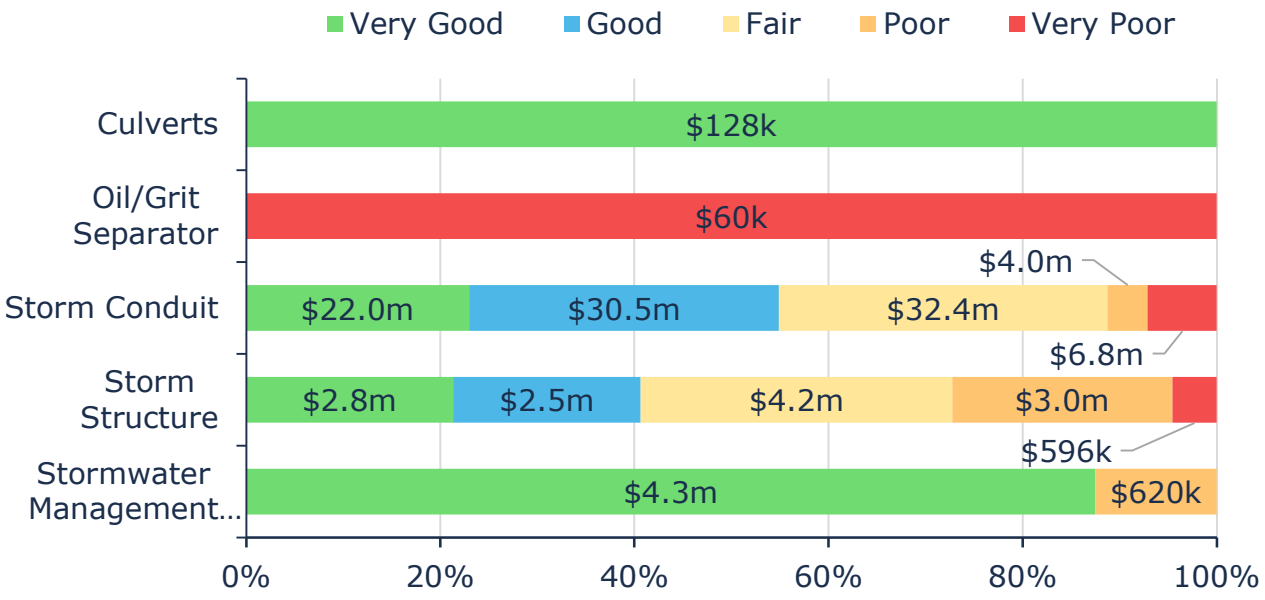


Figure 60 summarizes the replacement cost-weighted condition of the Municipality's stormwater network assets while Figure 61 and Table 58 further breaks the condition down by segment. Based on age, 87% of assets are in fair or better condition and an overall average condition rating of 54%.

Table 57 Percentage Assessed by Segment: Stormwater Network

Asset Segment	% of Assets with Assessed Condition[29]
Culverts	0%
Oil/Grit Separator	0%
Storm Conduit	0%
Storm Structure	0%
Stormwater Management Facilities	13%
TOTAL	**<1%**

[29] Weighted by replacement cost.

Table 58 Asset Condition by Segment: Stormwater Network

Asset Segment	≤ Poor $	≤ Poor %	≥ Fair $	≥ Fair %	Average Condition[30]
Culverts	-	0%	$128,000	100%	Very Good (96%)
Oil/Grit Separator	$60,000	100%	-	0%	Very Poor (0%)
Storm Conduit	$10,758,000	11%	$84,843,000	89%	Good (52%)
Storm Structure	$3,564,000	27%	$9,521,000	73%	Good (58%)
Stormwater Management Facilities	$620,000	13%	$4,340,000	88%	Very Good (86%)
TOTAL	**$15,002,000**	**13%**	**$98,832,000**	**87%**	**Good (54%)**

For the Municipality's stormwater network assets, assessed condition data was available for less than 1% of the category (as outlined in Table 57). Limited data is available for the stormwater management facilities while none is available for the remaining segments.

Typically, assets in poor or lower 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 lower.

9.3 Age Profile

An asset's age profile is comprised of 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. Service life remaining (SLR) is the difference between an asset's EUL and its age.

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.

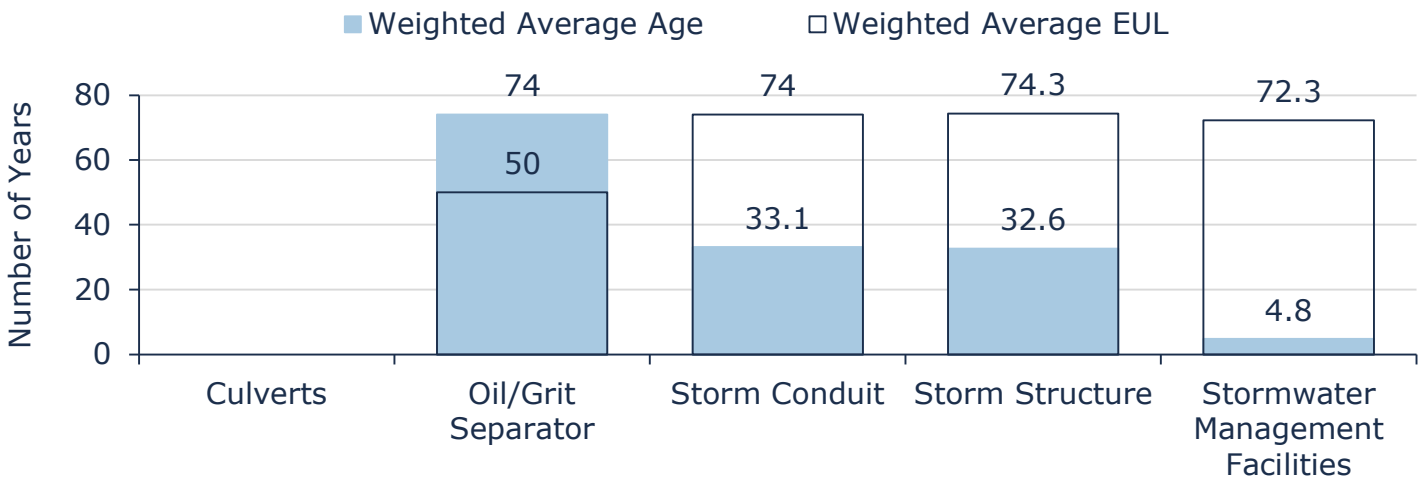
[30] Weighted by replacement cost.

Table 59 summarizes and Figure 62 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.

Table 59 Detailed Asset Age: Stormwater Network

Asset Segment	Weighted Average EUL	Weighted Average Age
Culverts	0	0
Oil/Grit Separator	50	74
Storm Conduit	74	33.1
Storm Structure	74.3	32.6
Stormwater Management Facilities	72.3	4.8

Figure 62 Estimated Useful Life vs. Asset Age: Stormwater Network



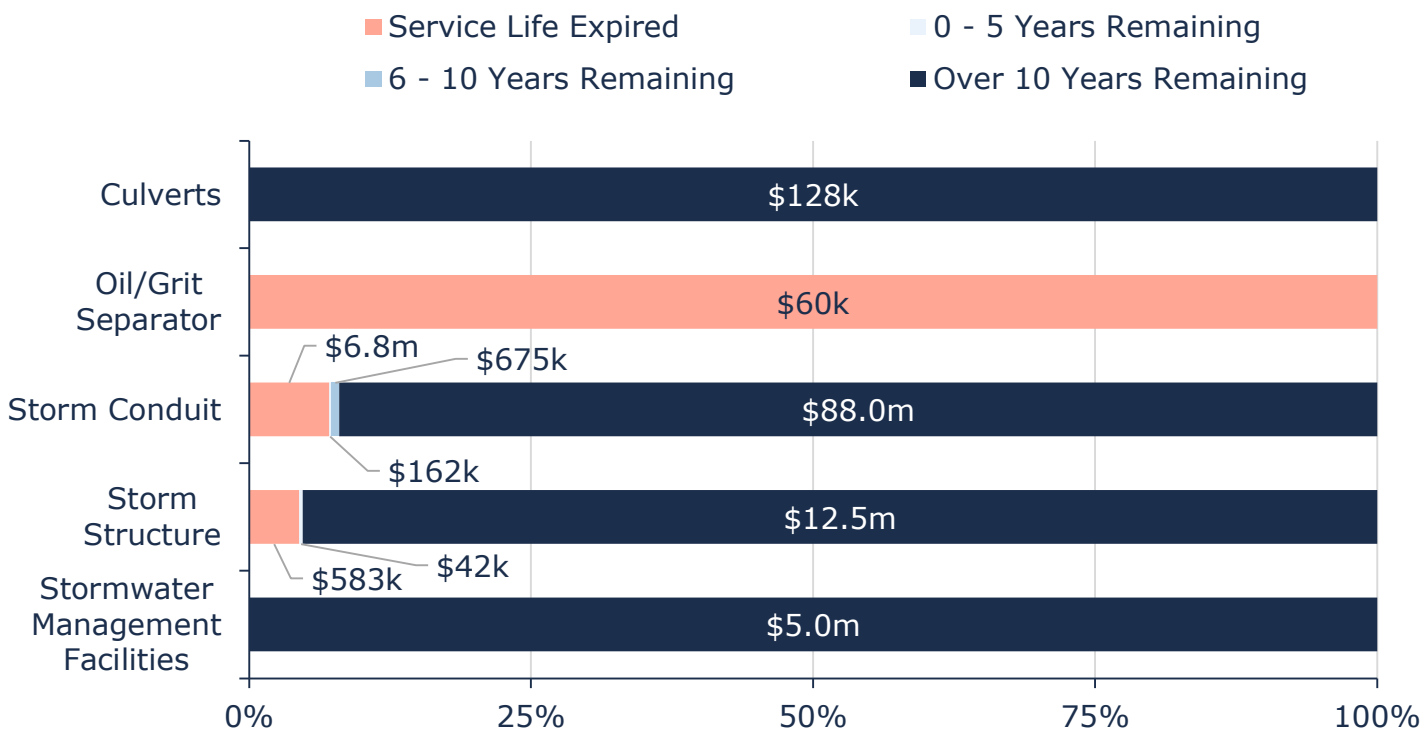
Age analysis shows that the majority of segments have not reached the midpoints of their expected useful life, while the oil/grit separators continue to remain in service well beyond their expected useful life.

Although asset age is an important measurement for long-term planning, condition assessments provide a more accurate indication of actual asset needs. An asset may perform past the established useful life if it has been maintained and kept in good condition. Therefore, it is important to consider asset condition when comparing asset age to its serviceable lifespan.

However, each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type. Further, useful life estimates established as part of the PSAB 3150 implementation may not be accurate and may not reflect in-field asset performance.

As seen in Figure 63, based on asset age, available assessed condition data, and estimated useful life, 7% of the Municipality's assets will require replacement within the next 10 years. Refer to Appendix B for further breakdown.

Figure 63 Service Life Remaining: Stormwater Network



9.4 Current Approach to Lifecycle Management

The condition or performance of most assets will deteriorate over time. To ensure that the Municipality's stormwater network 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 60 outlines the Municipality's current lifecycle management strategy for stormwater network assets.

Table 60 Lifecycle Management Strategy: Stormwater Network

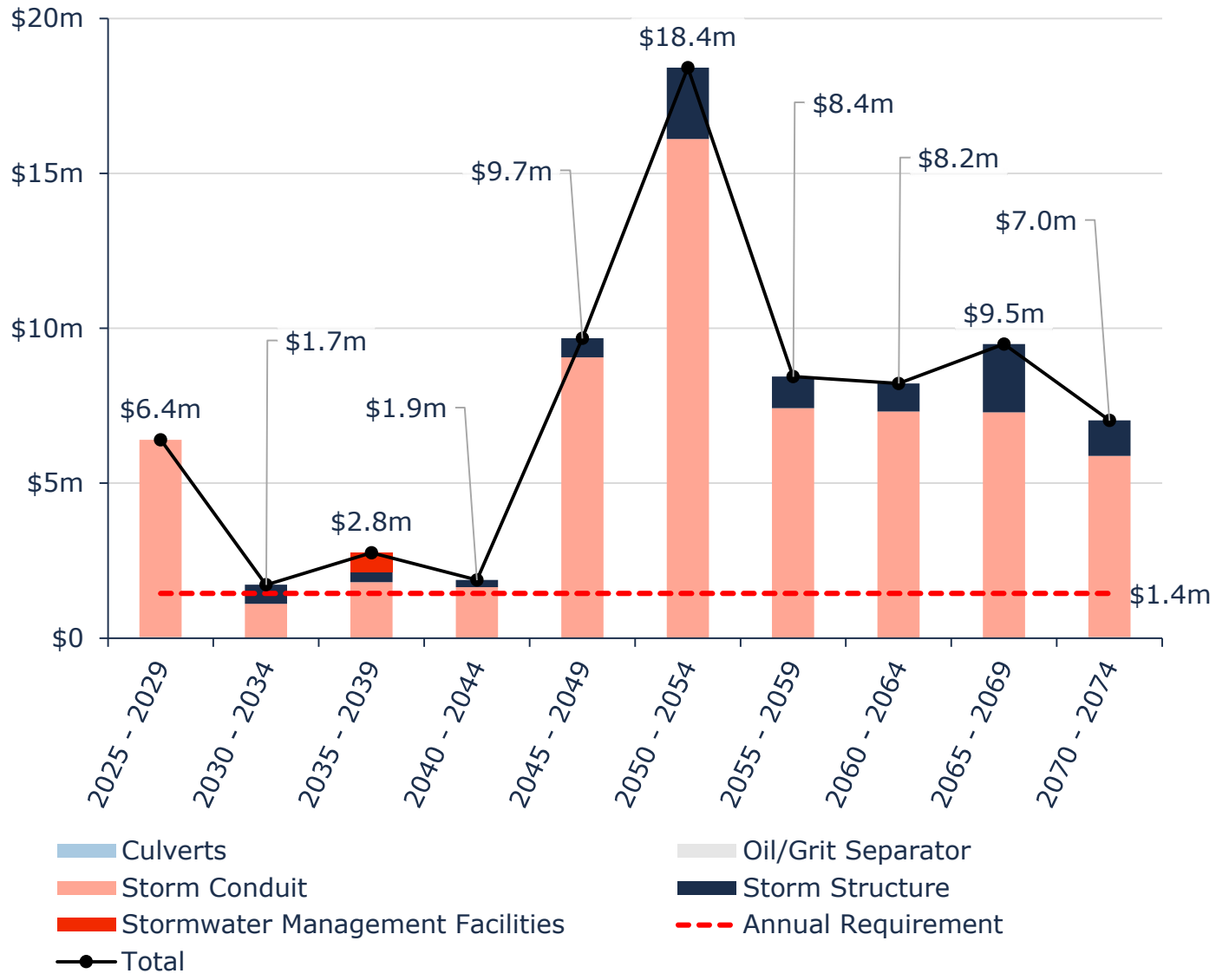
Activity Type	Description of Current Strategy
Maintenance	Main flushing is conducted every 4-5 years in conjunction with inspection efforts to optimize resource allocation. Main flushing frequency may be adjusted based on inspection results.
	Maintenance holes are visually inspected by staff and maintained as needed.

Activity Type	Description of Current Strategy
	Stormwater facilities are visually inspected to leverage staff expertise in detecting and addressing asset failures, with actions prioritized based on criticality and safety concerns.
	Catch basins undergo an inspection and flushing in a time frame similar to that of mains.
	Maintenance is performed on stormwater assets when unexpected failures occur to ensure their continued availability.
Replacement	Stormwater facility assets are managed with a long-term maintenance strategy that includes planned rehabilitation and replacement. Condition assessments are used to develop needs lists and long-term forecasts.
	Planned replacement activities are coordinated with the replacement of water, wastewater, and road assets. This practice maximizes the useful lives of co-linear assets and reduces unnecessary replacements.

9.5 Forecasted Long-Term Replacement Needs

Figure 64 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Municipality's stormwater network portfolio over a 100-year time horizon to ensure at least one replacement of every asset included in Citywide Assets, the Municipality's primary asset management system and asset register the inventory. For clarity, the chart shows a 50-year snapshot. The forecasted requirements are aggregated into 5-year bins while the trend line (red dotted line) represents the average annual capital requirements, which total $1.4 million for all stormwater network assets.

Figure 64 Forecasted Capital Replacement Needs: Stormwater Network 2025-2074



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 significantly over time with a major peak from 2050-2054 attributed primarily to storm conduits.

Additionally, there is currently an approximate $7.5 million backlog comprised of assets that remain in service beyond their estimated useful life. The 10-year capital requirements expanded in Appendix B have accounted for removing this accumulation and continuing to rehabilitate or replace assets in alignment with the proposed levels of service.

These projections and estimates are based on asset replacement costs, age analysis, and condition data where 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.

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.

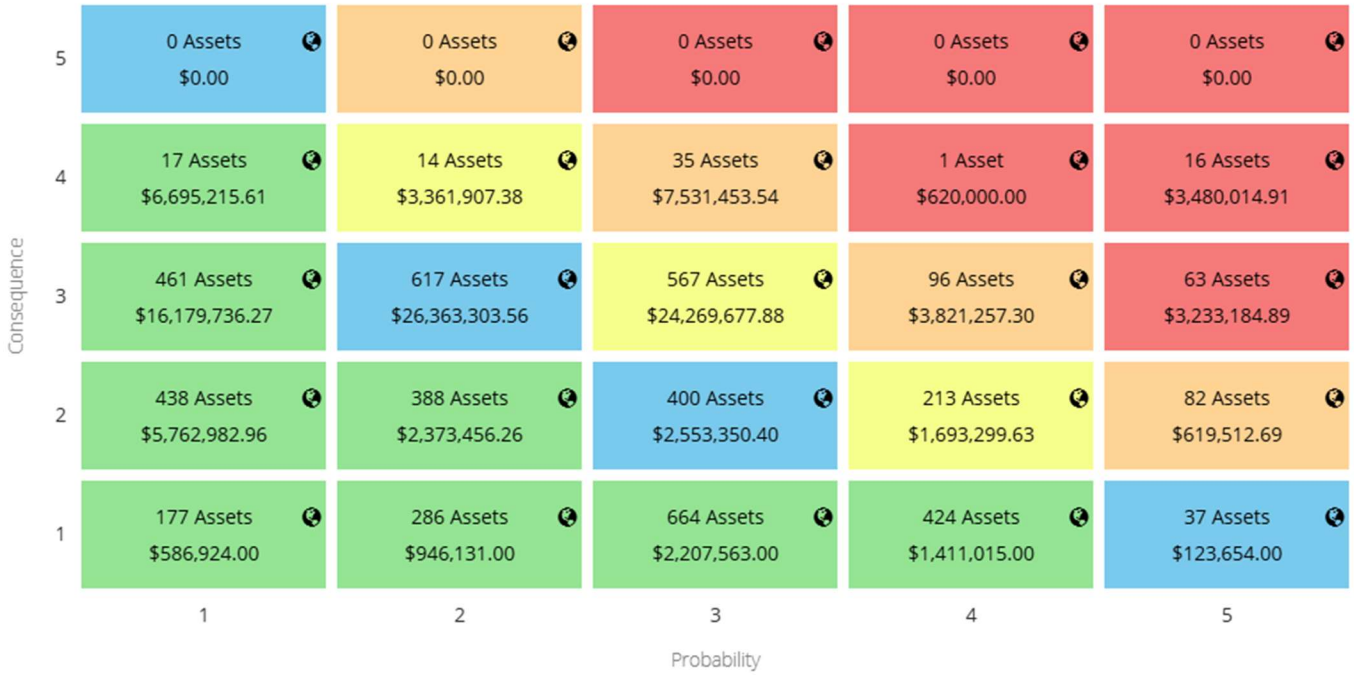
A summary of the 10-year replacement forecast can be found in Appendix B.

9.6 Risk Analysis

9.6.1 Quantitative Risk

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the stormwater network assets based on 2023 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

Figure 65 Risk Matrix: Stormwater Network



The matrix stratifies assets based on their individual probability and consequence of failure, each scored from one to five. 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 over time, 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 Quantitative Risk under Section 2.2.3 as well as Section 2.3.8 Evaluating

Quantitative Risk for further details on the approach used to determine asset risk ratings and classifications.

The following risk ratings are first shown for the overall category and then by segment for the stormwater network assets.

Figure 66 Risk Ratings: Stormwater Network

1 - 4 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$33,962,000 (30%)	$30,585,000 (27%)	$17,795,000 (16%)	$24,159,000 (21%)	$7,333,000 (6%)

Table 61 Risk Ratings by Segment: Stormwater Network

Asset Segment	Probability of Failure	Consequence of Failure	Risk Rating
Culverts	1 / 5	3.17 / 5	3.17 / 25
Oil/Grit Separator	5 / 5	2 / 5	10 / 25
Storm Conduit	2.4 / 5	3.44 / 5	8.38 / 25
Storm Structure	2.7 / 5	1.84 / 5	4.93 / 25
Stormwater Management Facilities	1.38 / 5	4 / 5	5.5 / 25
TOTAL	**2.39 / 5**	**3.28 / 5**	**7.85 / 25**

Overall, the average risk rating for stormwater network assets is 7.85, which is considered Low.

The identification of critical assets allows the Municipality to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

9.6.2 Qualitative Risk

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Infrastructure Reinvestment

The Municipality is in the early stages of developing a structured reinvestment strategy for its stormwater infrastructure. With minimal historical data on asset condition, funding priorities and maintenance practices are difficult to establish, and there is a heightened risk of asset deterioration going unnoticed. Stormwater management ponds, for example, have not undergone professional inspections

since 2017. Without these evaluations, the Municipality cannot accurately determine sediment levels, vegetation encroachment, or structural integrity.

This underinvestment exposes the community to increased risks of urban flooding, environmental degradation, and non-compliance with provincial regulations. As extreme weather events become more frequent, the consequences of deferring investment will intensify, making the system less resilient.

Implementing a phased condition assessment program and aligning funding decisions with asset performance data will be critical to addressing these vulnerabilities.

Lifecycle Management Strategies

The Municipality's stormwater lifecycle planning is currently limited by insufficient condition data and time constraints on field operations. These constraints hinder the ability to assess the effectiveness of existing maintenance practices and complicate the development of a proactive maintenance regime.

Without reliable indicators for asset condition and performance, staff are more likely to adopt reactive rather than preventative approaches, increasing the risk of service disruptions and escalating repair costs. The lack of formal inspection protocols and performance benchmarks also limits the Municipality's ability to prioritize rehabilitation efforts effectively.

To strengthen lifecycle management, the Municipality should implement condition grading frameworks and centralized reporting tools to enhance planning and decision-making.

Organizational Cognizance / Capacity

Internal knowledge gaps and the current organizational structure present significant risks to effective stormwater infrastructure management. Responsibility for various components of the network is distributed across multiple departments, which can lead to inconsistencies in planning, asset data management, and decision-making.

Currently, the Transportation department oversees day-to-day operations, while the Wastewater department conducts condition assessments. This division of roles, without coordinated oversight, can create confusion and reduce accountability.

To improve operational effectiveness, the Municipality should invest in staff training specific to stormwater systems, establish a centralized oversight function, and create formalized procedures for interdepartmental collaboration.

Climate Change & Extreme Weather Events

Climate change poses escalating risks to the performance and reliability of the stormwater network. More frequent and intense storms increase sedimentation, debris accumulation, and hydraulic loading in stormwater systems. Without enhanced maintenance schedules and capacity improvements, these pressures can lead to blockages, overflows, and localized flooding.

Currently, no comprehensive hydraulic capacity study has been completed, limiting the Municipality's ability to confirm which sections of the system are undersized or vulnerable. Advanced modelling and hydro studies are necessary to guide infrastructure upgrades and justify capital investments.

In addition, the Municipality should implement actionable planning triggers—such as sediment load thresholds, number of surcharge events, or frequency of resident complaints—to support proactive investment in stormwater upgrades.

Resilience planning can include:

- Expanded use of sensors and flow monitors
- Scheduled maintenance or upgrading of retention basins
- Upgrades to undersized or failing infrastructure
- Development of green infrastructure solutions

By adapting to evolving climate conditions, the Municipality can safeguard property, public health, and environmental quality.

Growth

Future growth outside of the current serviced area will require the extension of stormwater infrastructure, increasing long-term operational and capital responsibilities. New subdivisions, commercial developments, and road extensions will necessitate storm sewers, ditches, and retention basins designed to accommodate both existing and future runoff volumes under changing climate conditions.

While infill development may not immediately strain the current network, cumulative effects—such as reduced green space and higher runoff rates—can impact system performance over time. The Municipality should monitor development patterns and model stormwater flows to ensure the system remains resilient.

Comprehensive stormwater planning should be integrated into the broader land-use planning framework to anticipate and mitigate future impacts.

9.7 Current 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.

9.7.1 Community Levels of Service

Table 62 Community Levels of Service: Stormwater Network

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 stormwater system	See Appendix F

9.7.2 Technical Levels of Service

Table 63 Technical Levels of Service: Stormwater Network

Service Attribute	Technical Metric	Current LOS (2023)
Scope	% of properties in municipality resilient to a 100-year storm	0%
	% of the municipal stormwater management system resilient to a 5-year storm	32%
Performance	Average condition of assets	Good (54%)
	% of assets in fair or better condition	87%
	% of assets in poor or lower condition	13%
	Actual annual capital budget : average annual capital requirement	$410,000 : $1,445,000 (0.28 : 1)

9.8 Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service, discuss the associated risks and long-term sustainability of these service levels, and explain the Municipality's ability to afford the proposed LOS.

Table 64 outlines the proposed LOS for stormwater network assets. Further explanation and proposed LOS analysis at the portfolio level can be found in Section 4 Proposed Levels of Service Analysis.

Table 64 Proposed LOS: Stormwater Network

Asset Segment	Target Maintenance Condition	AAR
Culverts	Current Average Condition	$1,000
Oil/Grit Separator	Current Average Condition	$1,000
Storm Conduit	Current Average Condition	$1,200,000
Storm Structure	Current Average Condition	$187,000
Stormwater Management Facilities	Current Average Condition	$55,000
TOTAL		**$1,445,000**

Category Analysis: Non-Core Assets

10 Facilities

10.1 Inventory & Valuation

Table 65 summarizes the quantity and current replacement cost of the Municipality's various facilities assets as managed in its primary asset management register, Citywide Assets.

Table 65 Detailed Asset Inventory: Facilities

Asset Segment	Quant.	Unit of Measure	Replacement Cost (RC)	Primary RC Method	AAR[31]
Cemetery	2	Facilities	$1,021,000	User-Defined	$20,000
Emergency Services	3	Facilities	$33,000,000	User-Defined	$653,000
General Government	5	Facilities	$22,181,000	User-Defined	$439,000
Marina	1	Facilities	$900,000	User-Defined	$18,000
Outdoor Washroom Facilities	7	Facilities	$6,718,000	User-Defined	$131,000
Public Works	7	Facilities	$21,757,000	User-Defined	$420,000
Recreation	11	Facilities	$62,241,000	User-Defined	$1,232,000
TOTAL			**$147,817,000**	**User-Defined**	**$2,914,000**

Note: *Facilities related to utility operations (i.e. water treatment plant, pumping stations, etc.) are accounted for within their respective asset categories and are not included in the Facilities category.*

[31] For further clarification on average annual requirement (AAR), see section 2.3.5 Average Annual Requirement (AAR)

Figure 67 Portfolio Valuation Overview: Facilities

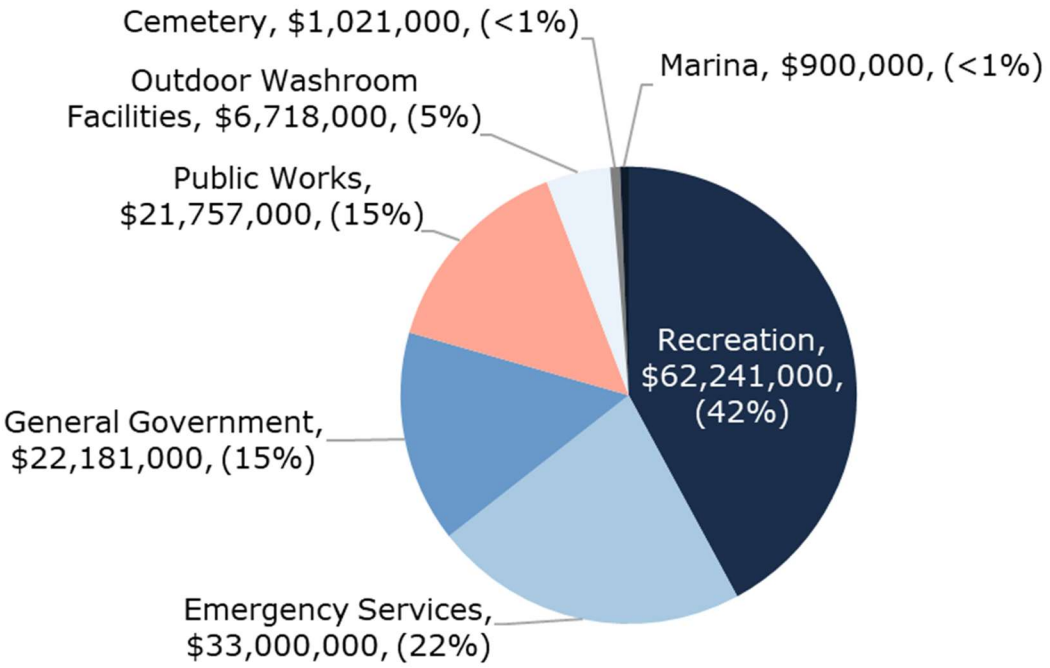
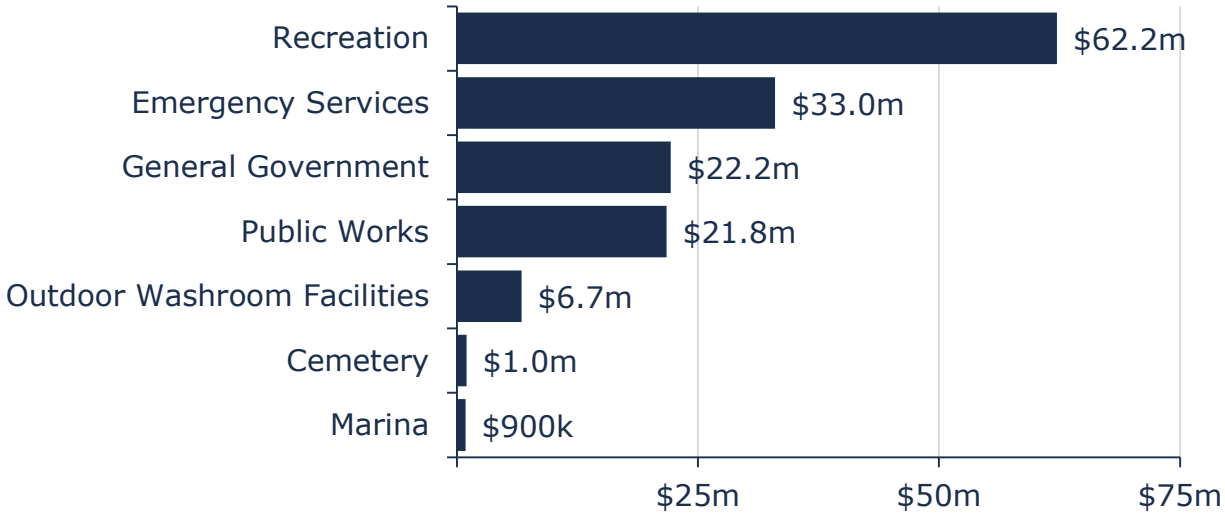


Figure 68 Portfolio Valuation by Segment: Facilities



10.2 Asset Condition

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the Municipality's current approach:

- Detailed structural assessments have been completed for a number of facilities to provide a comprehensive breakdown of the facilities components.

- Structural assessments are conducted by external contractors as a part of major project. Assessments indicate reactive needs for the facility asset.
- Gaps in assessments, or ad hoc assessments are conducted by staff who utilize their expertise and familiarity with assets to report on condition and maintenance needs.
- There are preliminary discussions to expand condition assessments in the master planning process and possibly establishing a standard operating procedure.

In this AMP, the following rating criteria is used to determine the current condition of facilities assets and forecast future capital requirements:

Table 66 Condition Ranges: Facilities

Condition Ranges	Description
Very Good (75% – 100%)	♦ Newly built or recently renovated with no visible defects. ♦ Modern, efficient, and fully functional mechanical, electrical, and plumbing systems. ♦ Well-maintained structural elements, finishes, and overall aesthetic. ♦ Minimal maintenance required beyond routine inspections and minor upkeep.
Good (50% – 74%)	♦ Structurally sound with no major defects; minor wear and tear on finishes. ♦ Functional and well-maintained mechanical, electrical, and plumbing systems. ♦ Up-to-date aesthetics, with only minor improvements needed for modernization. ♦ Requires only regular maintenance to keep in good condition.
Fair (25% – 49%)	♦ Some visible signs of aging, such as minor wall cracks, roof wear, or uneven flooring. ♦ Mechanical, electrical, and plumbing systems function but may require repairs or efficiency upgrades. ♦ Cosmetic issues like faded paint, worn flooring, or outdated interior elements. ♦ Routine maintenance and moderate renovations can extend the facility's service life.
Poor (1% – 24%)	♦ Noticeable structural issues, such as sagging floors, cracked walls, or roof leaks. ♦ Frequent repairs needed for electrical, plumbing, or HVAC systems due to aging components. ♦ Significant cosmetic wear, including peeling paint, damaged finishes, and outdated fixtures.

Condition Ranges	Description
	♦ Requires major repairs or system upgrades to maintain functionality.
Very Poor (0% –0.99%)	♦ Severe structural deterioration, with major foundation issues, roof failures, or extensive wall cracking. ♦ Significant water damage, mold growth, or rot affecting habitability. ♦ Outdated or failing mechanical, electrical, and plumbing (MEP) systems, posing safety risks. ♦ Facility is unsafe for occupancy without extensive rehabilitation or potential demolition.

Figure 69 Asset Condition Overview: Facilities

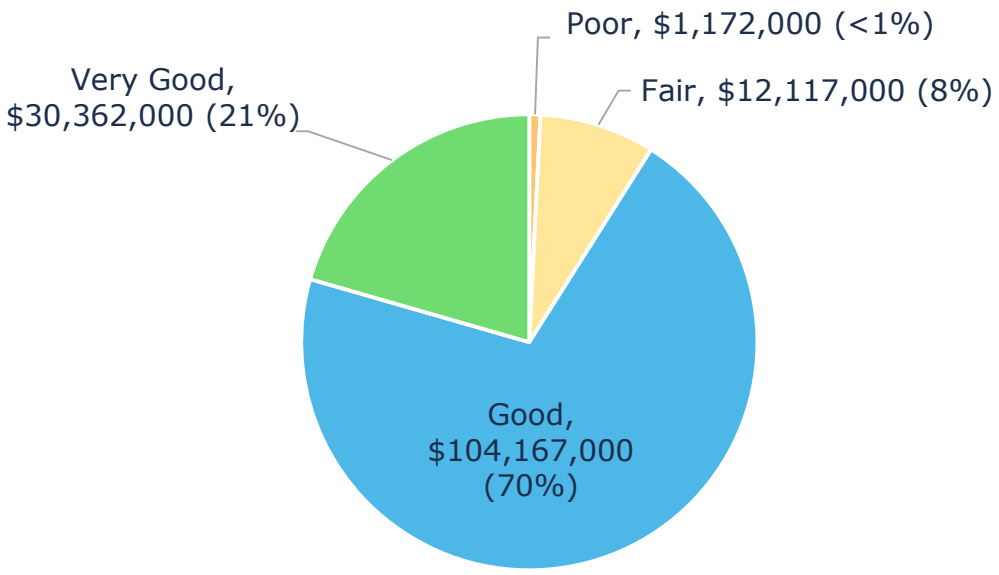


Figure 70 Asset Condition by Segment: Facilities

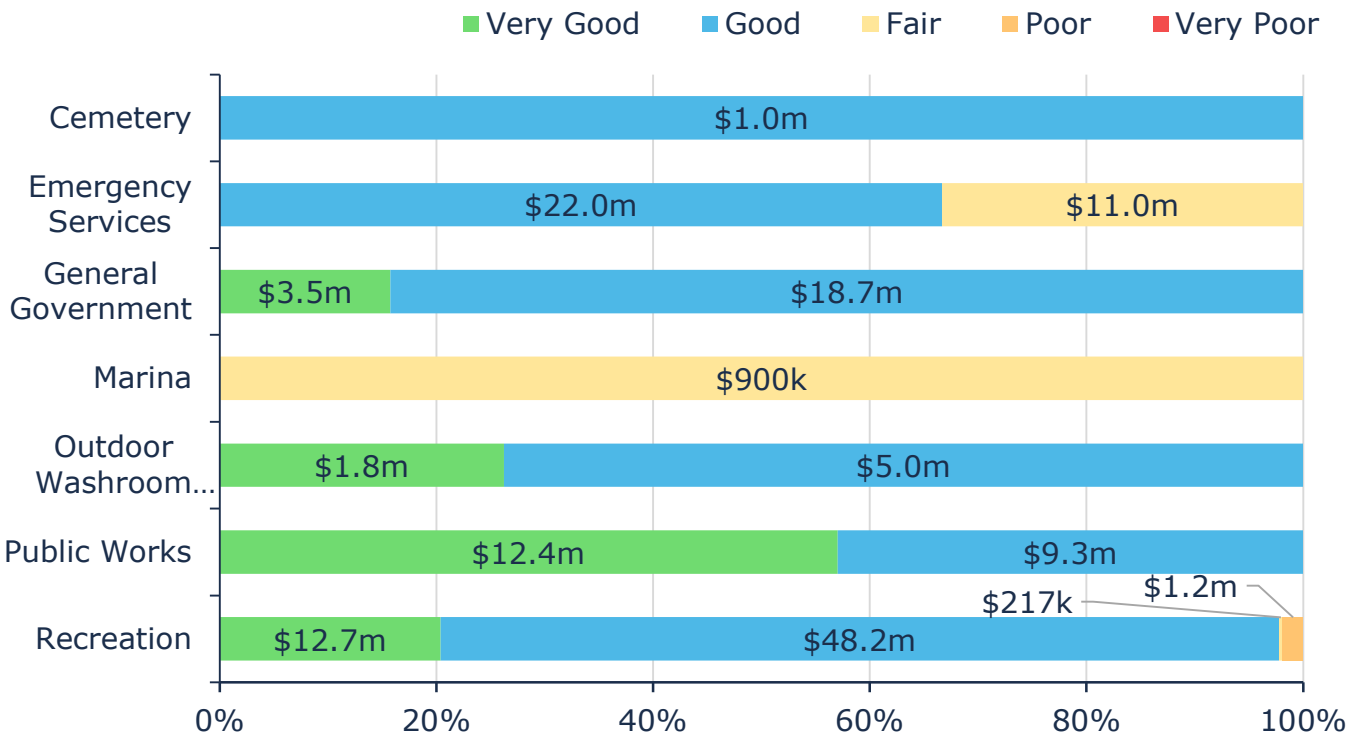


Figure 69 summarizes the replacement cost-weighted condition of the Municipality's facilities assets while Figure 70 and Table 68 further breaks the condition down by segment. Based primarily on assessed condition, 99% of assets are in fair or better condition and an overall average condition rating of 68%.

Table 67 Percentage Assessed by Segment: Facilities

Asset Segment	% of Assets with Assessed Condition[32]
Cemetery	100%
Emergency Services	100%
General Government	67%
Marina	100%
Outdoor Washroom Facilities	100%
Public Works	100%
Recreation	100%
TOTAL	**95%**

[32] Weighted by replacement cost.

Table 68 Asset Condition by Segment: Facilities

Asset Segment	≤ Poor $	≤ Poor %	≥ Fair $	≥ Fair %	Average Condition[33]
Cemetery	-	0%	$1,021,000	100%	Good (65%)
Emergency Services	-	0%	$33,000,000	100%	Good (60%)
General Government	-	0%	$22,181,000	100%	Good (70%)
Marina	-	0%	$900,000	100%	Good (50%)
Outdoor Washroom Facilities	-	0%	$6,718,000	100%	Good (70%)
Public Works	-	0%	$21,757,000	100%	Very Good (76%)
Recreation	$1,172,000	2%	$61,070,000	98%	Good (68%)
TOTAL	**$1,172,000**	**1%**	**$146,646,000**	**99%**	**Good (68%)**

For the Municipality's facilities assets, assessed condition data was available for 95% of the category (as outlined in Table 67). Assessed condition was available for all segments with the exception of general government facilities.

Typically, assets in poor or lower 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 lower.

10.3 Age Profile

An asset's age profile is comprised of 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. Service life remaining (SLR) is the difference between an asset's EUL and its age.

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

[33] Weighted by replacement cost.

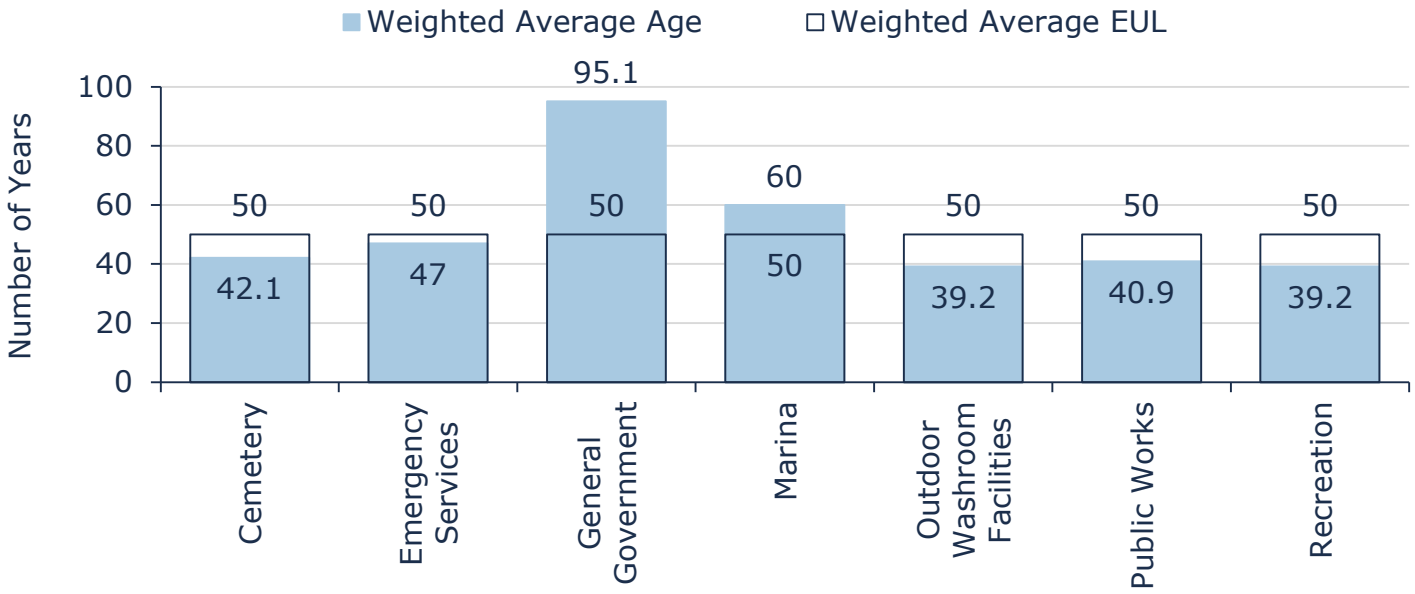
through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning for potential long-term replacement spikes.

Table 69 summarizes and Figure 71 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.

Table 69 Detailed Asset Age: Facilities

Asset Segment	Weighted Average EUL	Weighted Average Age
Cemetery	50	42.1
Emergency Services	50	47
General Government	50	95.1
Marina	50	60
Outdoor Washroom Facilities	50	39.2
Public Works	50	40.9
Recreation	50	39.2

Figure 71 Estimated Useful Life vs. Asset Age: Facilities



Age analysis shows that the majority of segments are nearing the end stages of their expected useful life, while the marina, and especially the general government facilities, continue to remain in service well beyond their expected useful life.

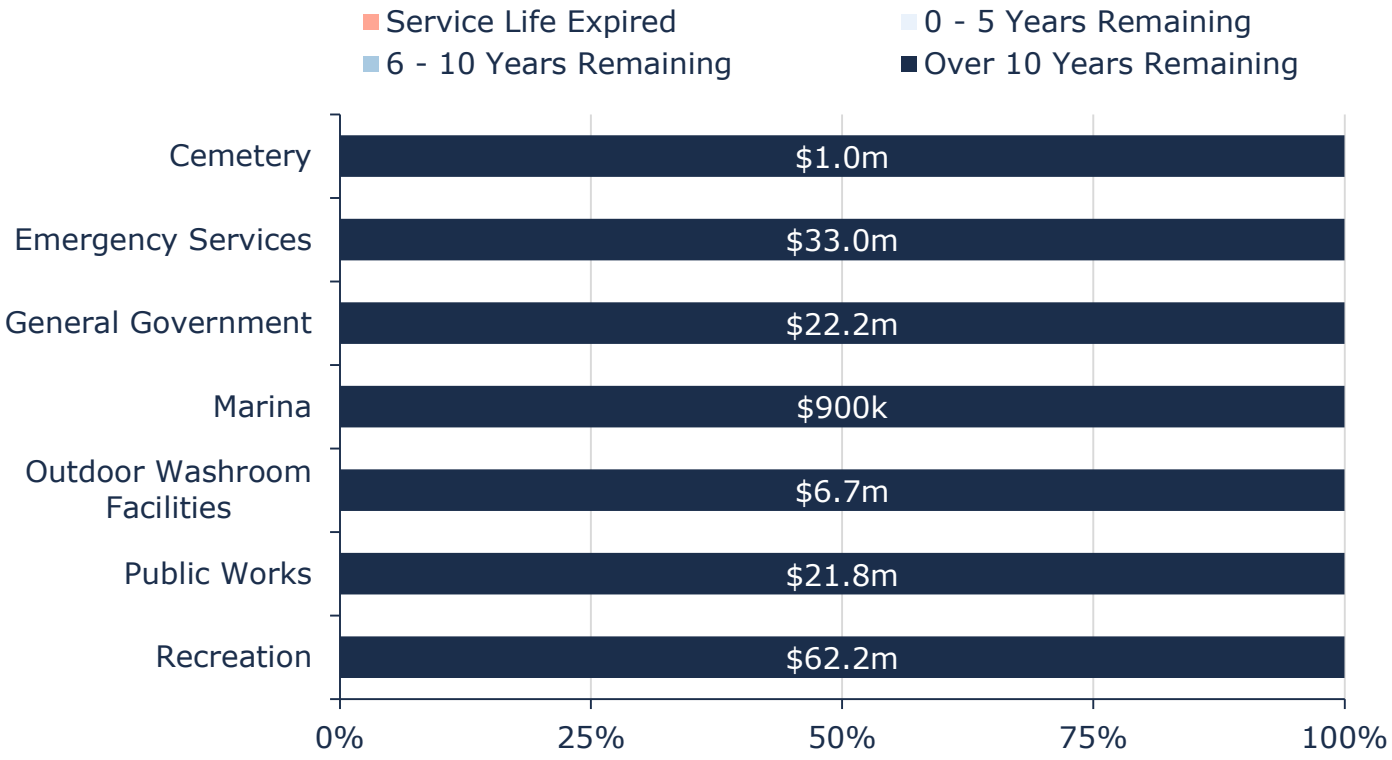
Although asset age is an important measurement for long-term planning, condition assessments provide a more accurate indication of actual asset needs. An asset may perform past the

established useful life if it has been maintained and kept in good condition. Therefore, it is important to consider asset condition when comparing asset age to its serviceable lifespan.

However, each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type. Further, useful life estimates established as part of the PSAB 3150 implementation may not be accurate and may not reflect in-field asset performance.

As seen in Figure 72, based on asset age, available assessed condition data, and estimated useful life, 0% of the Municipality's assets will require replacement within the next 10 years. Refer to Appendix B for further breakdown.

Figure 72 Service Life Remaining: Facilities



10.4 Current Approach to Lifecycle Management

The condition or performance of most assets will deteriorate over time. To ensure that the Municipality's facilities 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 70 outlines the Municipality's current lifecycle management strategy for facilities assets.

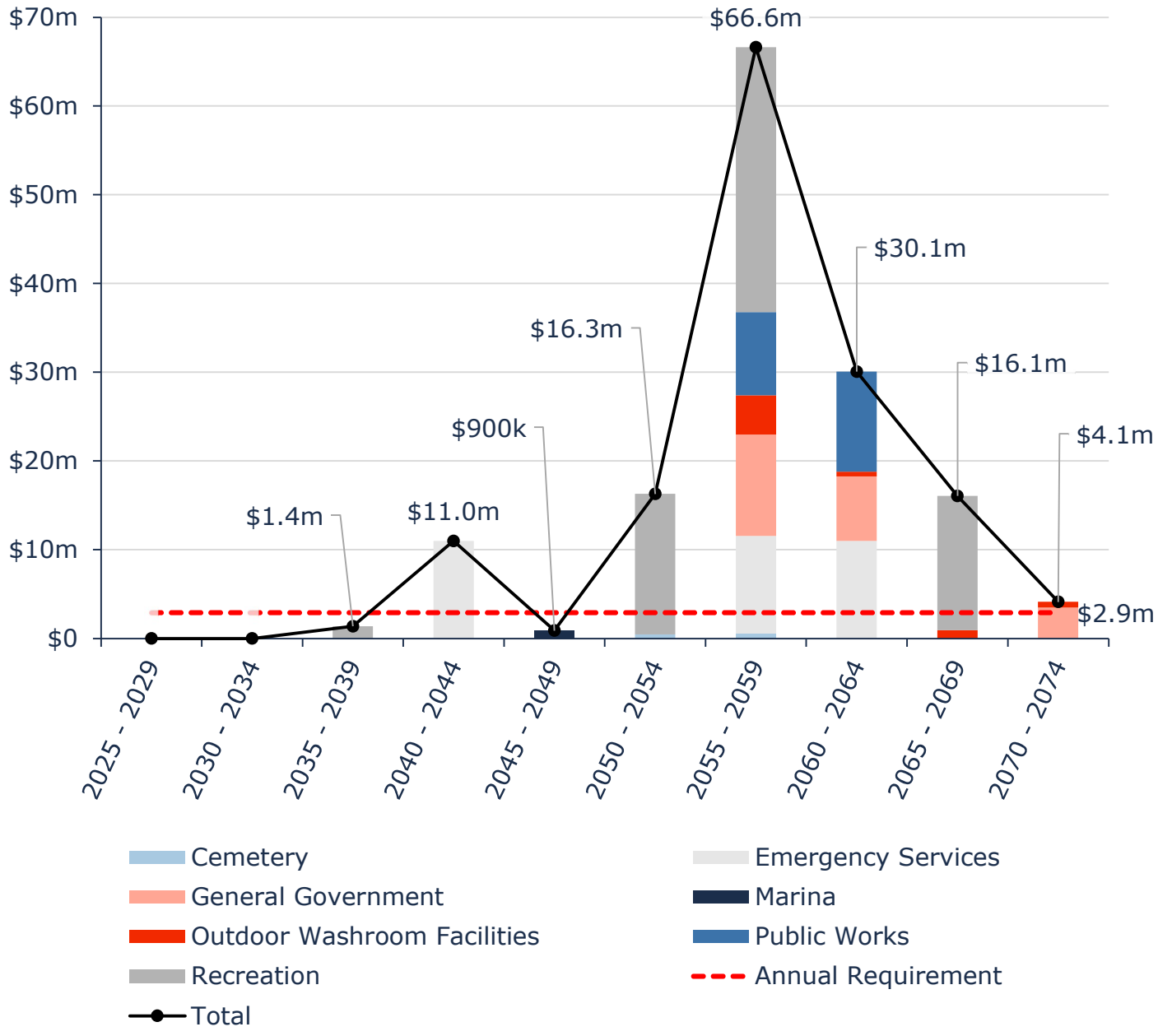
Table 70 Lifecycle Management Strategy: Facilities

Activity Type	Description of Current Strategy
Maintenance	All facility assets are maintained reactively by staff during normal use or in response to a community members report. In addition to reactive maintenance, the Municipality also employs the following maintenance programs: ♦ HVAC Systems (Quarterly) ♦ Fire and Safety Systems (Annually) ♦ Refrigeration Devices (Biannually)
	Routine maintenance for electrical and plumbing infrastructure is based on both condition and age, while facility shells are based on condition only.
	Age and/or condition of an asset are used as triggers for asset maintenance activities. Actions may also be triggered by safety concerns, equipment failure, staff observation, along with typical preventative maintenance and scheduling requirements.
Rehabilitation / Replacement	Assets are replaced in line with annual capital budgets that take into consideration the estimated useful lives of assets and their condition. Ad hoc risk assessment is conducted by staff to determine replacement criticality.
	Reactive replacement and rehabilitation may occur in the case of uncharacteristic failure or the inability to maintain public safety standards.

10.5 Forecasted Long-Term Replacement Needs

Figure 73 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Municipality's facilities portfolio over a 100-year time horizon to ensure at least one replacement of every asset included in Citywide Assets, the Municipality's primary asset management system and asset register the inventory. For clarity, the chart shows a 50-year snapshot. The forecasted requirements are aggregated into 5-year bins while the trend line (red dotted line) represents the average annual capital requirements, which total $2.91 million for all facilities assets.

Figure 73 Forecasted Capital Replacement Needs: Facilities 2025-2074



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 peak significantly in 2055-2059 due to assets in multiple segments reaching the end of their expected useful life.

These projections and estimates are based on asset replacement costs, age analysis, and condition data where 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.

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.

A summary of the 10-year replacement forecast can be found in Appendix B.

10.6 Risk Analysis

10.6.1 Quantitative Risk

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the facilities assets based on 2023 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from one to five. 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 over time, 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 Quantitative Risk under Section 2.2.3 as well as Section 2.3.8 Evaluating Quantitative Risk for further details on the approach used to determine asset risk ratings and classifications.

Figure 74 Risk Matrix: Facilities

The following risk ratings are first shown for the overall category and then by segment for the facilities assets.

Figure 75 Risk Ratings: Facilities

1 - 4 Very Low $30,362,000 (21%)	5 - 7 Low $82,167,000 (56%)	8 - 9 Moderate $22,217,000 (15%)	10 - 14 High $11,900,000 (8%)	15 - 25 Very High $1,172,000 (<1%)

Table 71 Risk Ratings by Segment: Facilities

Asset Segment	Probability of Failure	Consequence of Failure	Risk Rating
Cemetery	2 / 5	3.4 / 5	6.8 / 25
Emergency Services	2.33 / 5	4.4 / 5	10.27 / 25
General Government	1.84 / 5	3.44 / 5	6.31 / 25
Marina	3 / 5	3.4 / 5	10.2 / 25
Outdoor Washroom Facilities	1.74 / 5	3.59 / 5	6.31 / 25
Public Works	1.43 / 5	3.8 / 5	5.42 / 25
Recreation	1.84 / 5	3.79 / 5	6.96 / 25
TOTAL	**1.89 / 5**	**3.86 / 5**	**7.36 / 25**

Overall, the average risk rating for facilities assets is 7.36, which is considered Low.

The identification of critical assets allows the Municipality to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

10.6.2 Qualitative Risk

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Climate Change & Extreme Weather Events

The increasing frequency and intensity of extreme weather events present growing risks to municipal facilities. Facilities face heightened exposure to damage from heavy rainfall, high winds, and temperature fluctuations. These conditions accelerate the deterioration of roofs, HVAC systems, siding, and other facility components, often leading to unanticipated repairs and maintenance costs.

Additionally, changing seasonal patterns have increased the use of heating and cooling systems, placing additional stress on mechanical infrastructure. This intensifies wear, drives up energy costs, and complicates budget forecasting.

For example, a windstorm caused significant roof damage to a 20-year-old water treatment plant, underscoring the vulnerability of even relatively modern structures.

To address these risks, the Municipality can prioritize resilience measures, such as:

- Use of durable, weather-resistant building materials
- Incorporation of climate adaptation into design standards
- Preventative maintenance programs targeting known vulnerabilities

Such investments will help ensure that municipal facilities remain operational and safe during increasingly volatile weather events.

Data Confidence

The Municipality currently lacks condition assessments for some of the facilities inventory, which presents challenges for proactive lifecycle planning. In the absence of comprehensive data, facility managers must rely on anecdotal information or reactive maintenance responses, which can result in missed opportunities to address issues before they escalate.

Standardized condition assessments are a critical tool for evaluating infrastructure health and prioritizing repair and replacement projects. They also support cost-effective budgeting by helping staff allocate resources where they will have the greatest long-term impact.

Improving data collection through consistent inspections will enable better decision-making and optimize the use of limited capital funds.

Infrastructure Design & Installation

Many municipal facilities face operational limitations due to outdated designs and aging infrastructure. Accessibility remains a particular concern, as some older facilities do not comply with current Accessibility for Ontarians with Disabilities Act (AODA) standards.

Examples include:

- The archives building, which requires significant redesign to accommodate a compliant ramp
- Fire Station 2, whose layout cannot feasibly be retrofitted, requiring full replacement

Heritage-designated structures pose additional challenges, where design upgrades must be balanced against the need to preserve historical character. In some

facilities, space constraints—such as those at the Joint Operations Centre—have disrupted workflows and reduced meeting capacity.

Furthermore, outdated or malfunctioning building systems, such as HVAC units and generators, can frequently require unplanned maintenance, resulting in service interruptions and increased costs.

To mitigate these issues, the Municipality can:

- Prioritize upgrades to facilities with accessibility deficiencies
- Assess spatial needs in high-traffic facilities
- Ensure major renovations align with both modern standards and heritage preservation requirements

Community Growth

As the population grows and community expectations evolve, municipal facilities must be capable of meeting increased demand. Recreation facilities, libraries, and administrative offices often feel these pressures first, with rising usage leading to faster wear and reduced user satisfaction.

New residents, particularly those relocating from larger urban centers, may expect modern, high-performing facilities and expanded programming. Demographic shifts such as increased remote work also influence space requirements and service needs.

Without appropriate planning, infrastructure may become overcrowded or obsolete, resulting in:

- Higher maintenance costs
- Declining service levels
- Community dissatisfaction

Strategic infrastructure planning should integrate:

- Demographic forecasting
- Resident engagement to understand evolving expectations
- Scalable building designs that can adapt to future service demands

To manage these risks, municipalities need to plan ahead, engage with residents, and invest in infrastructure that supports long-term growth while maintaining a high quality of life.

Low-Level Radioactive Remediation

The Port Hope Area Initiative involves the cleanup of low-level radioactive waste and poses several unique challenges to the Municipality’s capital planning and asset management.

Remediation efforts often disrupt capital project timelines. Because the exact timing of remediation work is sometimes uncertain, municipalities face a "hurry up and wait" situation. This makes it difficult to plan infrastructure upgrades.

Example: The roof of the marina building may need to be replaced, but uncertainty around possible demolition due to remediation has delayed decisions—resulting in inefficiencies and the risk of wasted investment.

Close coordination with Canadian Nuclear Laboratories (CNL) is essential but can add complexity. Aligning municipal infrastructure projects with remediation work requires strong communication and coordination, as differing priorities and timelines can create delays.

Despite these challenges, remediation is a necessary and valuable process. With careful planning and collaboration, the Municipality can minimize disruptions and ensure projects proceed efficiently.

10.7 Current Levels of Service

The tables that follow summarize the current levels of service with respect to performance measures that the Municipality has selected for this AMP.

10.7.1 Community Levels of Service

Table 72 Community Levels of Service: Facilities

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description of the types of facilities that the Municipality operates and maintains	The Municipality of Port Hope has an inventory of 37 facilities, these include: 18 Administrative structures, 10 Maintenance facilities, 3 Multi-use Recreational, 3 Fire/EMS Stations, 1 Performing Arts Building, 1 Library, 1 Community Aquatic Facility.
Quality	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Facility asset rehabilitation and replacement decisions are predominantly based on opportunities for accessibility improvement, risk to occupant health and safety, legislative compliance, and cost and construction feasibility. Currently, decisions to replace components of facilities through capital investment projects are planned on an as needed basis and are typically forecasted one year in advance.

10.7.2 Technical Levels of Service

Table 73 Technical Levels of Service: Facilities

Service Attribute	Technical Metric		Current LOS (2023)
Accessibility	Providing Facility Management Services that are AODA Compliant	% of facilities that are AODA compliant where technically feasible	97%
Security	Provide facility management services to ensure that facilities are safe	% of facilities that meet security requirements	100%
Performance	Average condition of assets		Good (68%)
	% of assets in fair or better condition		99%
	% of assets in poor or lower condition		1%
	Actual annual capital budget : average annual capital requirement		$927k : $2.914m (0.32 : 1)

10.8 Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service, discuss the associated risks and long-term sustainability of these service levels, and explain the Municipality's ability to afford the proposed LOS.

Table 74 outlines the proposed LOS for facilities assets. Further explanation and proposed LOS analysis at the portfolio level can be found in Section 4 Proposed Levels of Service Analysis.

Table 74 Proposed LOS: Facilities

Asset Segment	Target Maintenance Condition	AAR
Cemetery	60	$20,000
Emergency Services	60	$653,000
General Government	60	$439,000
Marina	60	$18,000
Outdoor Washroom Facilities	60	$131,000
Public Works	60	$420,000
Recreation	60	$1,232,000
TOTAL		**$2,914,000**

11 Land Improvements

11.1 Inventory & Valuation

Table 75 summarizes the quantity and current replacement cost of the Municipality's various land improvements assets as managed in its primary asset management register, Citywide Assets.

Table 75 Detailed Asset Inventory: Land Improvements

Asset Segment	Quantity	Unit of Measure	Replacement Cost (RC)	Primary RC Method	AAR[34]
Cemetery	2	Assets	$240,000	CPI	$12,000
Concrete Stairs	6	Assets	-	CPI	$0[35]
Entrance Signs	5	Assets	$264,000	CPI	$18,000
Fencing	33	Assets	$802,000	CPI	$44,000
Outdoor Lighting	40	Assets	$1,145,000	CPI	$49,000
Parking Lots	53	Assets	$6,240,000	CPI	$255,000
Parkland	1	Assets	$19,000	CPI	$2,000
Playground Equipment	24	Assets	$1,239,000	CPI	$63,000
Retaining Walls	8	Assets	$775,000	CPI	$16,000
Sports Areas	29	Assets	$3,580,000	CPI	$149,000
Trails & Pathways	13	Assets	$1,463,000	CPI	$40,000
TOTAL			**$15,768,000**	**CPI**	**$649,000**

[34] For further clarification on average annual requirement (AAR), see section 2.3.5 Average Annual Requirement (AAR)

[35] No replacement costs were available within the Asset Inventory at the time of publication.

Figure 76 Portfolio Valuation Overview: Land Improvements

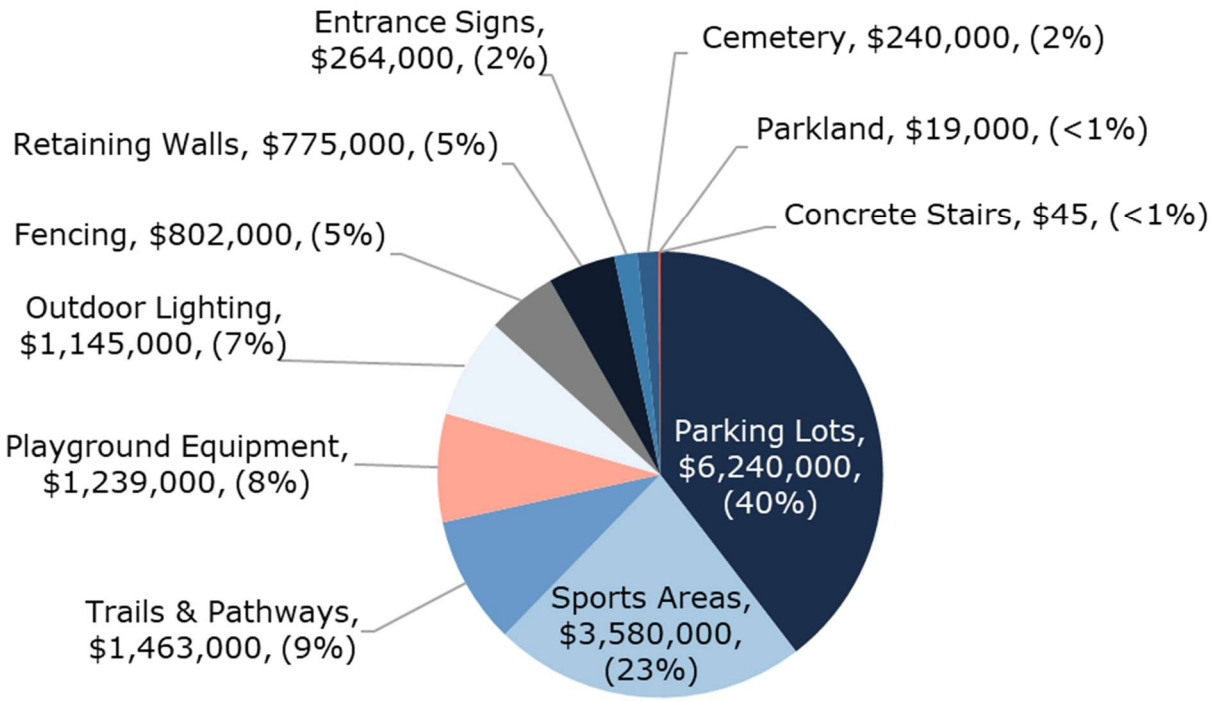
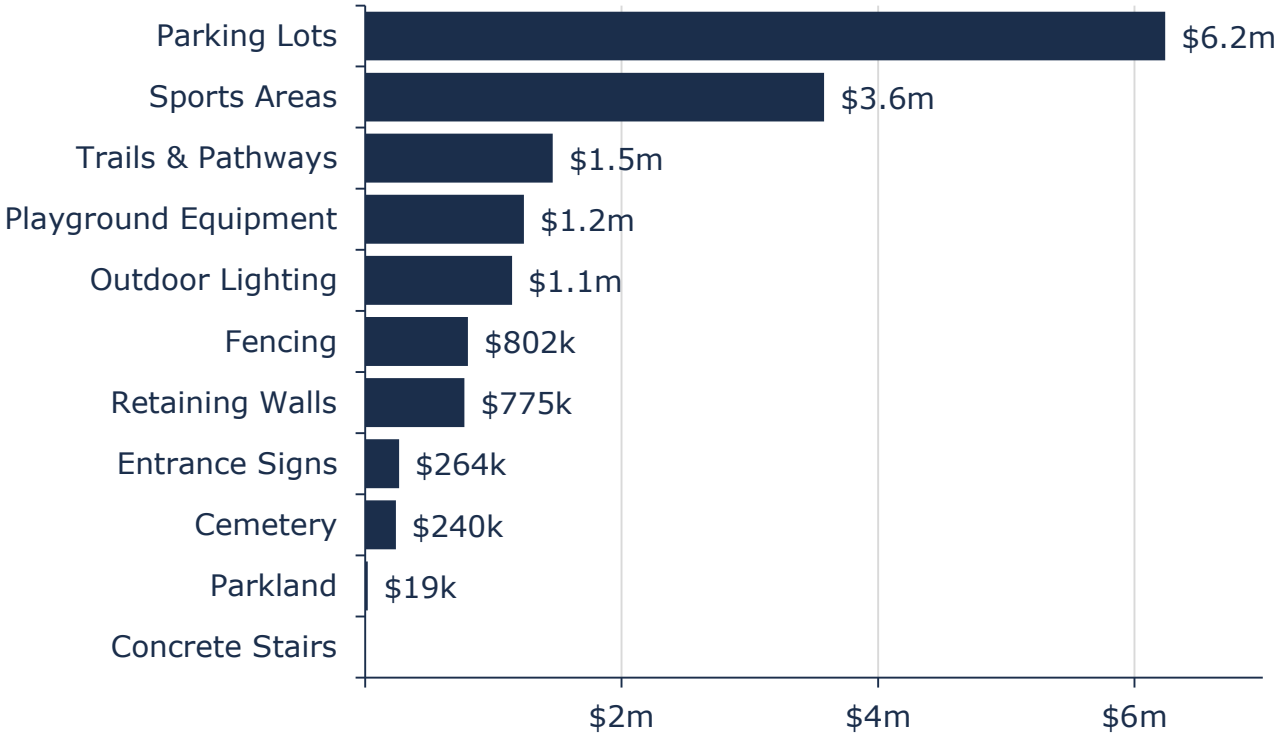


Figure 77 Portfolio Valuation by Segment: Land Improvements



11.2 Asset Condition

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the Municipality's current approach:

- Assessments are conducted internally by staff or by external contractors where appropriate. For example, infectious weed control assessments are carried out by external contractors.
- Trails and playgrounds are inspected between May and October. Trails are assessed on an ordinal system for condition with respect to the surface type.
- Recreation fields are inspected based on usage frequency.
- Grant enabled trail assessments are conducted in line with funding availability. There are currently plans to expand trail assessments and classify trails into categories based on surface type for better risk management and maintenance.

In this AMP, the following rating criteria is used to determine the current condition of land improvements assets and forecast future capital requirements:

Table 76 Condition Ranges: Land Improvements

Condition Ranges	Description
Very Good (75% – 100%)	♦ The asset is new, recently rehabilitated, or very well maintained. ♦ It functions as intended with no significant signs of deterioration. ♦ No immediate maintenance or repair needs are present. ♦ Examples: A newly installed playground, freshly resurfaced trail, or pristine fencing and landscaping in a public park.
Good (50% – 74%)	♦ The asset is in overall good condition, showing minor wear from regular use. ♦ It is fully operational and meets community expectations for use, safety, and appearance. ♦ Only routine or preventative maintenance is needed. ♦ Examples: A well-maintained sports field, a dock with slight wear on surface materials, or a parking lot with minor surface cracking.
Fair (25% – 49%)	♦ The asset is functional but aging, with noticeable wear and some minor safety or usability concerns. ♦ It meets basic performance standards but may require minor repairs or surface improvements to avoid accelerated decline. ♦ Examples: A trail with minor erosion, faded playground surfacing, or a parking lot with cracked pavement and early signs of edge failure.

Condition Ranges	Description
Poor (1% – 24%)	♦ The asset has serious signs of deterioration and frequent functional issues. ♦ It may still be partially usable but fails to meet service expectations. ♦ Corrective maintenance or planning for replacement should be prioritized. ♦ Examples: A dock with unstable decking, fencing with missing sections, or sports fields with bare patches and poor drainage.
Very Poor (0% –0.99%)	♦ The asset is in critical condition with extensive structural or surface deterioration. ♦ It is unsafe, unusable, or completely non-functional, posing a risk to public safety or the environment. ♦ Immediate action is required, including potential closure, major rehabilitation, or full replacement. ♦ Examples: A playground with broken equipment, a trail washed out or impassable, or a parking lot with large potholes and failing subbase.

Figure 78 Asset Condition Overview: Land Improvements

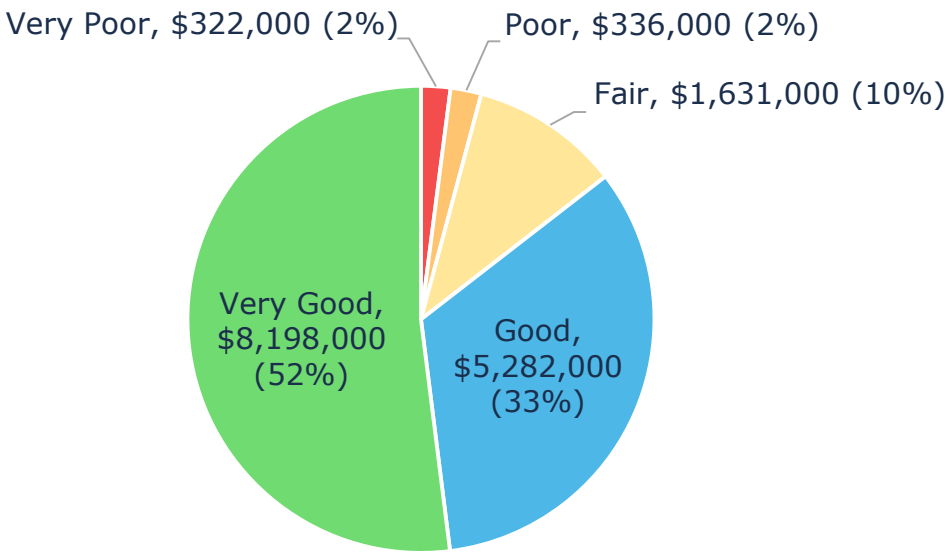


Figure 79 Asset Condition by Segment: Land Improvements

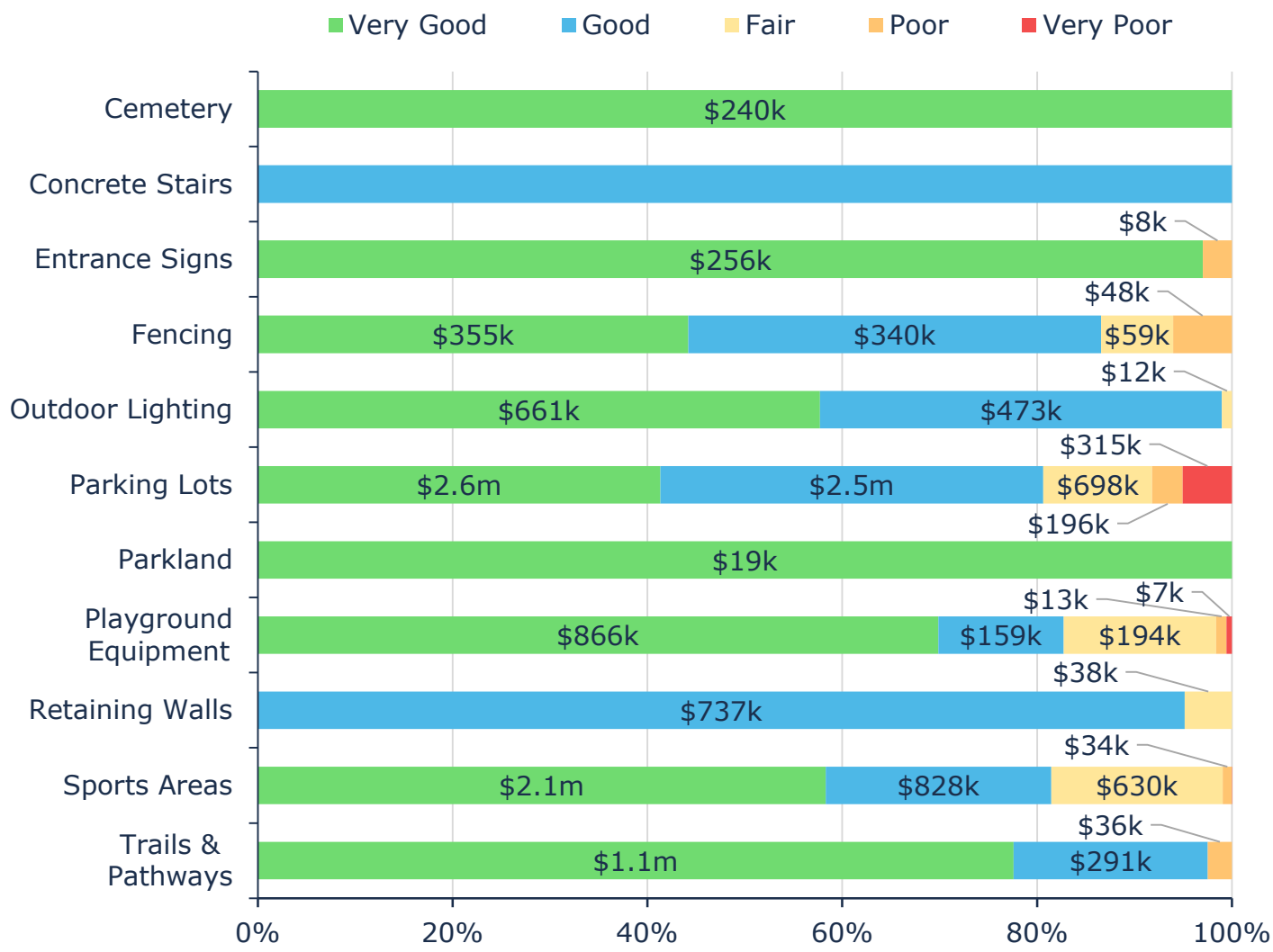


Figure 78 summarizes the replacement cost-weighted condition of the Municipality's land improvements assets while Figure 79 and Table 78 further breaks the condition down by segment. Based primarily on assessed condition, 96% of assets are in fair or better condition and an overall average condition rating of 72%.

Table 77 Percentage Assessed by Segment: Land Improvements

Asset Segment	% of Assets with Assessed Condition[36]
Cemetery	100%
Concrete Stairs	100%
Entrance Signs	100%
Fencing	94%

[36] Weighted by replacement cost.

Asset Segment	% of Assets with Assessed Condition[36]
Outdoor Lighting	93%
Parking Lots	95%
Parkland	100%
Playground Equipment	99%
Retaining Walls	100%
Sports Areas	99%
Trails & Pathways	100%
TOTAL	**97%**

Table 78 Asset Condition by Segment: Land Improvements

Asset Segment	≤ Poor $	≤ Poor %	≥ Fair $	≥ Fair %	Average Condition[37]
Cemetery	-	0%	$240,000	100%	Very Good (91%)
Concrete Stairs	-	0%	$0	100%	Good (64%)
Entrance Signs	$8,000	3%	$256,000	97%	Very Good (79%)
Fencing	$48,000	6%	$754,000	94%	Good (68%)
Outdoor Lighting	-	0%	$1,145,000	100%	Very Good (80%)
Parking Lots	$511,000	8%	$5,730,000	92%	Good (68%)
Parkland	-	0%	$19,000	100%	Very Good (84%)
Playground Equipment	$20,000	2%	$1,219,000	98%	Very Good (79%)
Retaining Walls	-	0%	$775,000	100%	Good (69%)
Sports Areas	$34,000	1%	$3,546,000	99%	Good (71%)
Trails & Pathways	$36,000	2%	$1,427,000	98%	Very Good (78%)
TOTAL	**$657,000**	**4%**	**$15,111,000**	**96%**	**Good (72%)**

For the Municipality's land improvements assets, assessed condition data was available for 97% of the category (as outlined in Table 77).

Typically, assets in poor or lower condition may require replacement or major rehabilitation in the immediate- or short-term. Targeted condition assessments may help further refine the list of

[37] Weighted by replacement cost.

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 lower.

11.3 Age Profile

An asset's age profile is comprised of 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. Service life remaining (SLR) is the difference between an asset's EUL and its age.

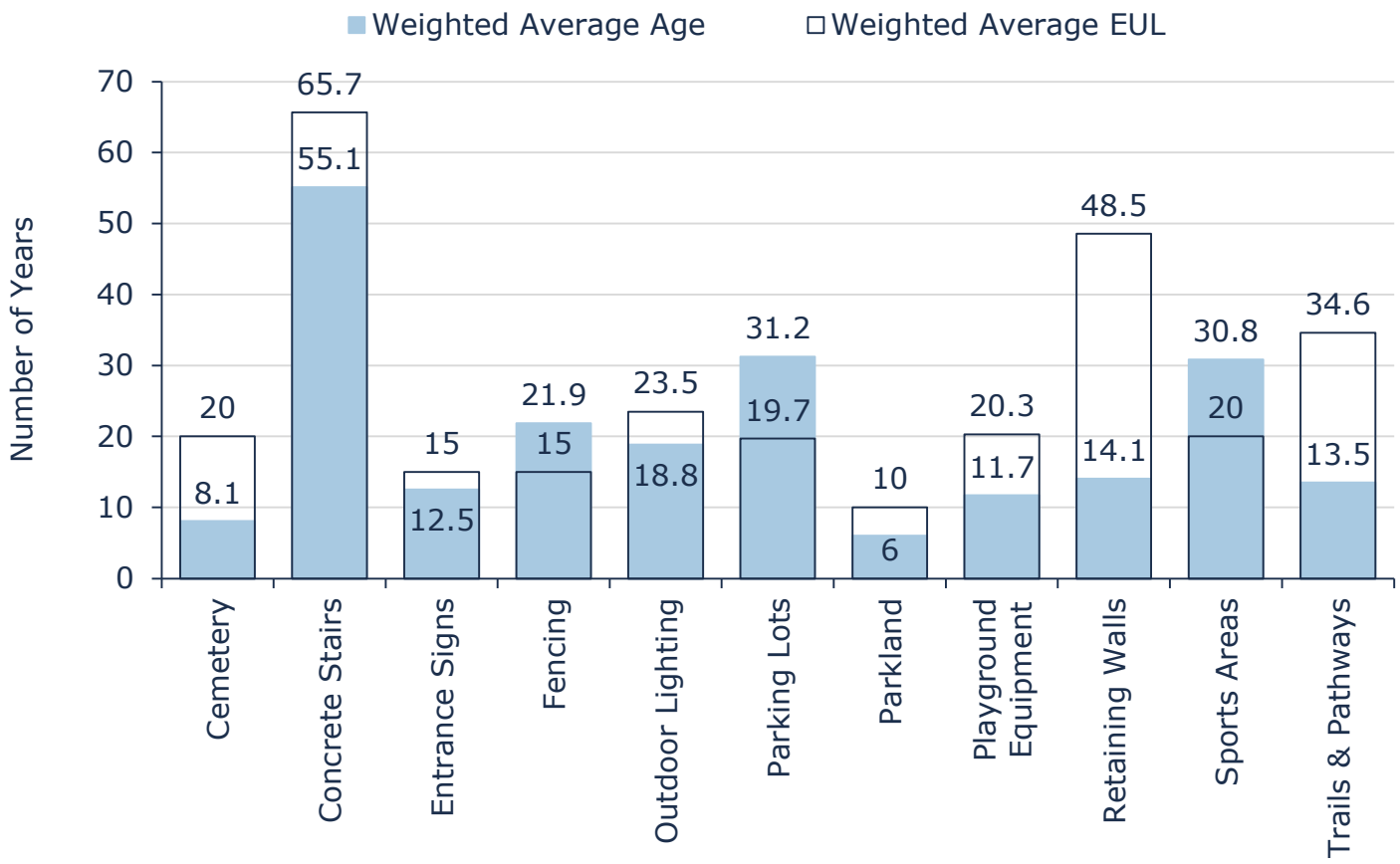
In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning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

Table 79 summarizes and Figure 80 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.

Table 79 Detailed Asset Age: Land Improvements

Asset Segment	Weighted Average EUL	Weighted Average Age
Cemetery	20	8.1
Concrete Stairs	65.7	55.1
Entrance Signs	15	12.5
Fencing	15	21.9
Outdoor Lighting	23.5	18.8
Parking Lots	19.7	31.2
Parkland	10	6
Playground Equipment	20.3	11.7
Retaining Walls	48.5	14.1
Sports Areas	20	30.8
Trails & Pathways	34.6	13.5

Figure 80 Estimated Useful Life vs. Asset Age: Land Improvements

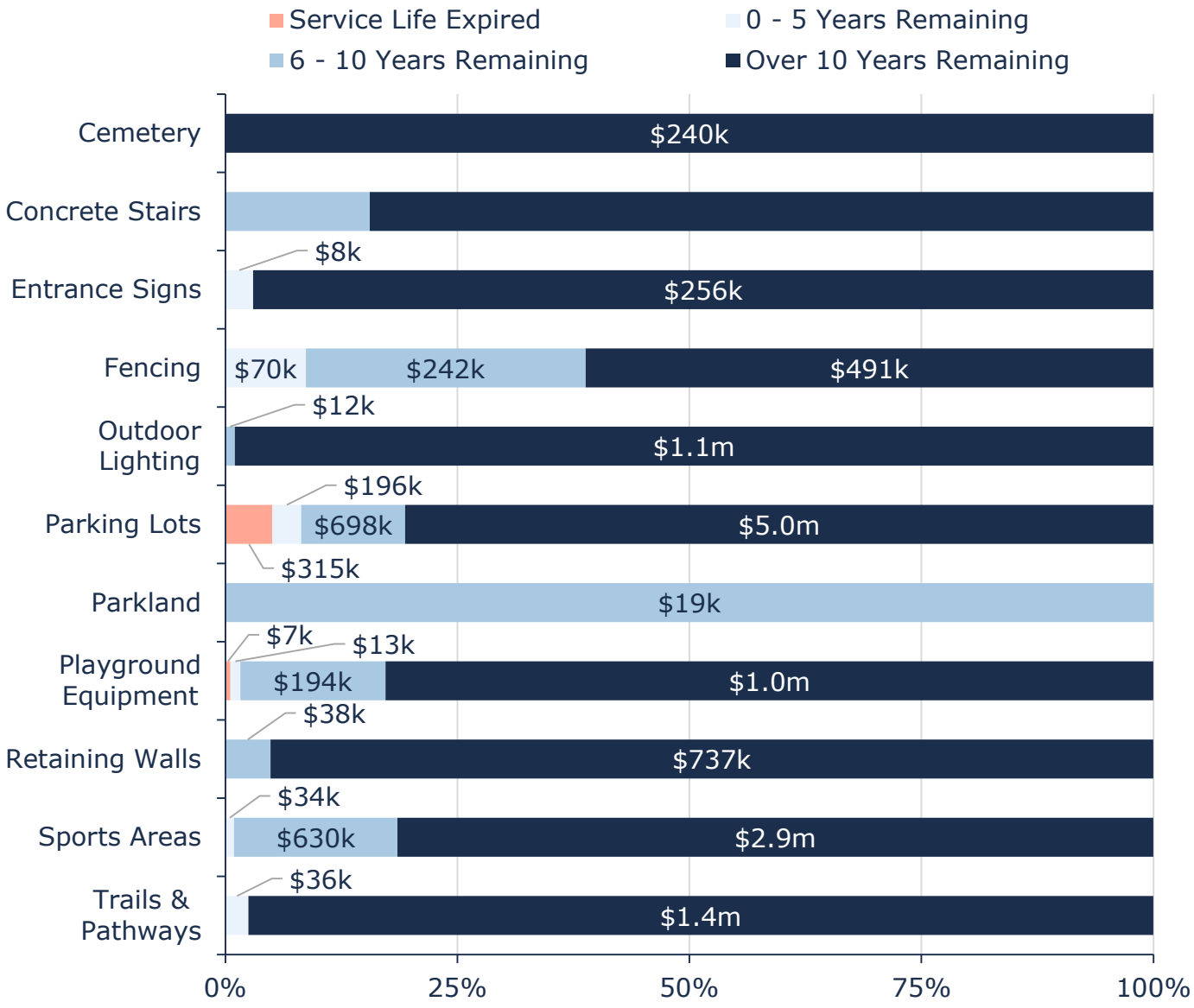


Age analysis fluctuates significantly from one segment to the next. Although asset age is an important measurement for long-term planning, condition assessments provide a more accurate indication of actual asset needs. An asset may perform past the established useful life if it has been maintained and kept in good condition. Therefore, it is important to consider asset condition when comparing asset age to its serviceable lifespan.

However, each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type. Further, useful life estimates established as part of the PSAB 3150 implementation may not be accurate and may not reflect in-field asset performance.

As seen in Figure 81, based on asset age, available assessed condition data, and estimated useful life, 16% of the Municipality's assets will require replacement within the next 10 years. Refer to Appendix B for further breakdown.

Figure 81 Service Life Remaining: Land Improvements



11.4 Current Approach to Lifecycle Management

The condition or performance of most assets will deteriorate over time. To ensure that the Municipality's land improvements 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 80 outlines the Municipality's current lifecycle management strategy for land improvements assets.

Table 80 Lifecycle Management Strategy: Land Improvements

Activity Type	Description of Current Strategy
Inspections	Seasonal and regular inspections occur with parks assets during the assets season of use.
Maintenance	Grass cutting is completed on a weekly basis during the active season. Trimming of grass surrounding trails occurs multiple times a year.
	Trail maintenance is done on an as-needed basis, with operators performing trail trimming several times a year during the active season. Common trigger points for maintenance include service life intervals, trail washouts, trip hazards, and other safety concerns.
Rehabilitation / Replacement	Rehabilitation activities include sign repair, trail washouts, removal of trees from trails, and repairing trip hazards. Rehabilitation activities are initiated as needed based on condition assessments and maintenance triggers.
	Play structures are replaced on a 15-year cycle or if any safety concerns arise. Paved trails are replaced when safety concerns arise due to infrastructure failure.
	Replacement is undergone when structures or assets may be considered to pose a risk to public safety. Age-based condition is used to plan replacements in an effort to prevent these public risks from occurring. Prioritization for replacement includes play structures, sports fields, and trails based on estimated community usage and need.
	In addition to safety and age, the usage of land improvements and criticality to the community's recreation is considered when prioritizing replacement and rehabilitation activities.

11.5 Forecasted Long-Term Replacement Needs

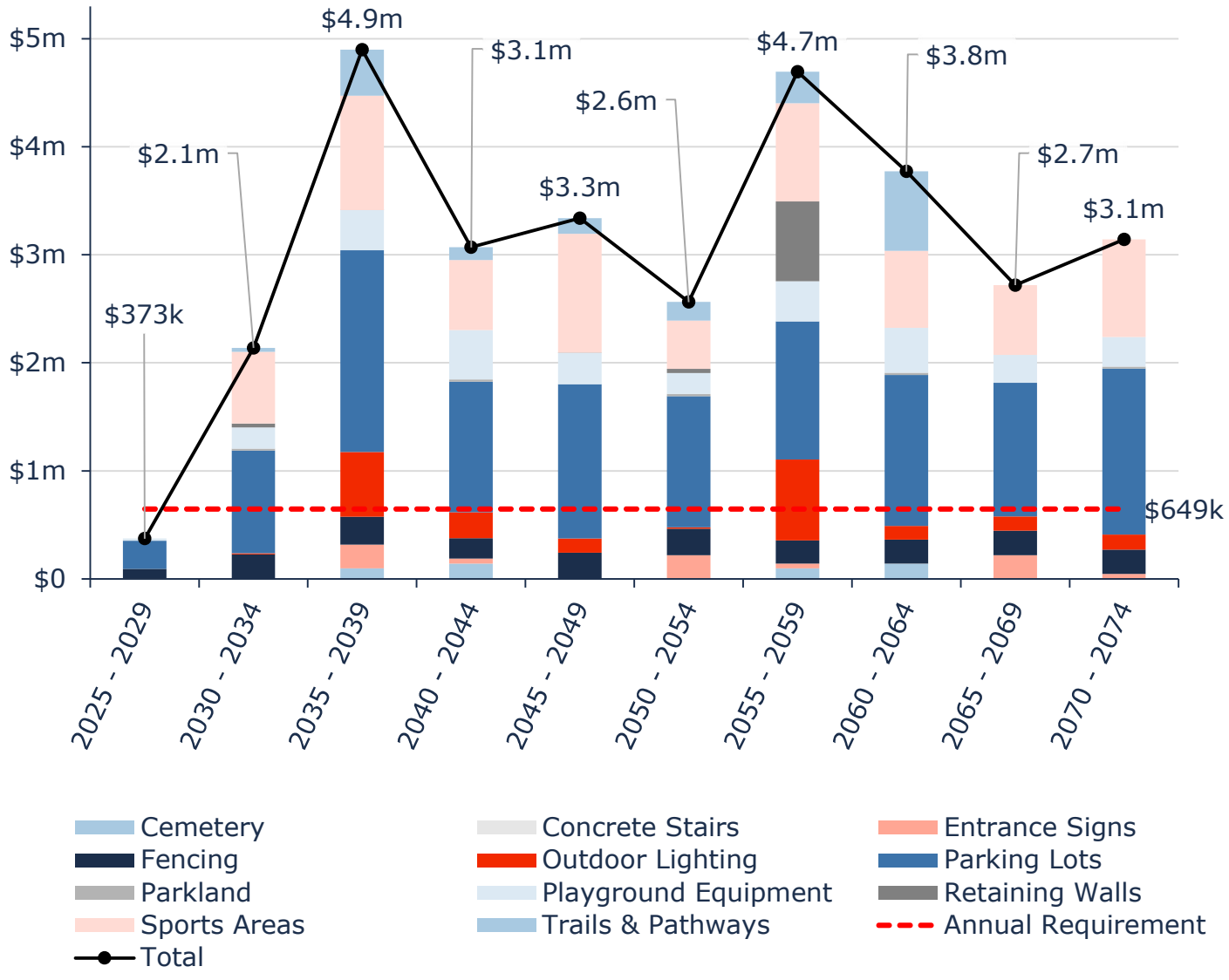
Figure 82 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Municipality's land improvements portfolio over a 100-year time horizon to ensure at least one replacement of every asset included in Citywide Assets, the Municipality's primary asset management system and asset register the inventory. For clarity, the chart shows a 50-year snapshot. The forecasted requirements are aggregated into 5-year bins while the trend line (red dotted line) represents the average annual capital requirements, which total $649,000 for all land improvements assets.

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 with a range from $2.1 million to $4.9 million over time, with the exception of the 2025-2059 timeframe.

Additionally, there is currently an approximate $330,000 backlog comprised of assets that remain in service beyond their estimated useful life. The 10-year capital requirements expanded in Appendix B have accounted for removing this accumulation and continuing to rehabilitate or replace assets in alignment with the proposed levels of service.

These projections and estimates are based on asset replacement costs, age analysis, and condition data where 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 82 Forecasted Capital Replacement Needs: Land Improvements 2025-2074



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.

A summary of the 10-year replacement forecast can be found in Appendix B.

11.6 Risk Analysis

11.6.1 Quantitative Risk

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the land improvements assets based on 2023 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

Figure 83 Risk Matrix: Land Improvements

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from one to five. 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 over time, 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 Quantitative Risk under Section 2.2.3 as well as Section 2.3.8 Evaluating

Quantitative Risk for further details on the approach used to determine asset risk ratings and classifications.

The following risk ratings are first shown for the overall category and then by segment for the land improvements assets.

Figure 84 Risk Ratings: Land Improvements

1 - 4 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$10,459,000 (66%)	$4,420,000 (28%)	$568,000 (4%)	$322,000 (2%)	- (0%)

Table 81 Risk Ratings by Segment: Land Improvements

Asset Segment	Probability of Failure	Consequence of Failure	Risk Rating
Cemetery	1 / 5	1.64 / 5	1.64 / 25
Concrete Stairs	2 / 5	1.51 / 5	3.01 / 25
Entrance Signs	1.09 / 5	2.27 / 5	2.45 / 25
Fencing	1.75 / 5	2 / 5	3.51 / 25
Outdoor Lighting	1.43 / 5	2.66 / 5	3.84 / 25
Parking Lots	1.91 / 5	2.47 / 5	4.75 / 25
Parkland	1 / 5	1.4 / 5	1.4 / 25
Playground Equipment	1.5 / 5	2.23 / 5	3.34 / 25
Retaining Walls	2.05 / 5	3.3 / 5	6.67 / 25
Sports Areas	1.61 / 5	1.96 / 5	3.16 / 25
Trails & Pathways	1.27 / 5	2.54 / 5	3.15 / 25
TOTAL	**1.69 / 5**	**2.36 / 5**	**4.00 / 25**

Overall, the average risk rating for land improvements assets is 4.00, which is considered Very Low.

The identification of critical assets allows the Municipality to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

11.6.2 Qualitative Risk

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Climate Change & Extreme Weather Events

Municipal parks, trails, sports fields, and landfills are increasingly affected by extreme weather events. Heavy rainfall leads to trail washouts, erosion, and damage to play structures. High winds can down trees and damage park infrastructure.

These events raise maintenance costs, disrupt recreational services, and increase safety risks. Investing in climate-resilient designs and materials is essential.

Staff Capacity

Seasonal staffing shortages during peak maintenance periods hinder the Municipality's ability to perform inspections and carry out timely repairs, particularly for trails and open spaces. Overgrown vegetation and delayed hazard mitigation create safety concerns for users.

Addressing this requires:

- Early recruitment for seasonal positions
- Workforce planning based on known usage patterns and risk areas

This situation underscores the critical need for effective staffing strategies to ensure the safety and proper maintenance of municipal assets.

Fiscal Capacity

The Municipality relies heavily on grant funding for improvements to recreational amenities, such as the fish cleaning station, pickleball courts, and bike pump park. While valuable, this dependence can delay projects and impact service delivery.

For example, delays in securing funding for the retrofit of the fish cleaning station can postpone critical infrastructure upgrades, leading to the deterioration of existing facilities and missed opportunities to enhance community amenities.

Establishing a diversified funding model will improve project predictability and support long-term recreation planning.

Aging Infrastructure

Aging site assets such as lighting systems, seating, and fences require more frequent repairs. Poor lighting can impact safety, particularly in parking lots and parks.

Proactive upgrades and strategic planning are essential to address these risks and ensure reliable infrastructure.

11.7 Current Levels of Service

The tables that follow summarize the current levels of service with respect to performance measures that the Municipality has selected for this AMP.

11.7.1 Community Levels of Service

Table 82 Community Levels of Service: Land Improvements

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description, which may include maps, of the outdoor recreational facilities that the Municipality operates and maintains	Using assessed condition, land improvement assets range in condition and are in average Good (72%) condition. Land improvement assets include active and passive parkland, waterfront parks, fencing, parking lots, and trails. Wherever possible, assets are designed to serve a wide range of users.
Quality	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Replacement is undergone when structures or assets may be considered to pose a risk to public safety. Age-based condition is used to plan replacements to reduce these public risks from occurring.

11.7.2 Technical Levels of Service

Table 83 Technical Levels of Service: Land Improvements

Service Attribute	Technical Metric		Current LOS (2023)
Accessibility	Providing Parks within a reasonable proximity to every residential household	% of properties within 400m of a park	60%
		#ha of parkland per 1,000 persons	8.16
Performance	Average condition of assets		Good (72%)
	% of assets in fair or better condition		96%
	% of assets in poor or lower condition		4%

Service Attribute	Technical Metric	Current LOS (2023)
	Actual annual capital budget : average annual capital requirement	$206k : $649k (0.32 : 1)

11.8 Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service, discuss the associated risks and long-term sustainability of these service levels, and explain the Municipality's ability to afford the proposed LOS.

Table 84 outlines the proposed LOS for land improvements assets. Further explanation and proposed LOS analysis at the portfolio level can be found in Section 4 Proposed Levels of Service Analysis.

Table 84 Proposed LOS: Land Improvements

Asset Segment	Target Maintenance Condition	AAR
Cemetery	40	$12,000
Concrete Stairs	55	$0
Entrance Signs	40	$18,000
Fencing	40	$44,000
Outdoor Lighting	60	$49,000
Parking Lots	40	$255,000
Parkland	40	$2,000
Playground Equipment	55	$63,000
Retaining Walls	50	$16,000
Sports Areas	40	$149,000
Trails & Pathways	40	$40,000
TOTAL		**$649,000**

12 Machinery & Equipment

12.1 Inventory & Valuation

Table 85 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 Assets.

Table 85 Detailed Asset Inventory: Machinery & Equipment

Asset Segment	Quantity	Unit of Measure	Replacement Cost (RC)	Primary RC Method	AAR[38]
Athletic Equipment	7	Assets	$266,000	CPI	$22,000
Facilities Systems	1	Assets	$10,000	CPI	$1,000
Fire Equipment	100	Assets	$288,000	CPI	$46,000
Fuel Storage Tanks	4	Assets	$122,000	CPI	$6,000
Furniture & Fixtures	9	Assets	$366,000	CPI	$24,000
Sanitary Treatment Equipment	7	Assets	$404,000	CPI	$40,000
Small Equipment & Tools	38	Assets	$695,000	CPI	$60,000
Technology and Communications Equipment	27	Assets	$951,000	CPI	$198,000
Water Treatment Equipment	7	Assets	$652,000	CPI	$83,000
TOTAL			**$3,753,000**	**CPI**	**$481,000**

[38] For further clarification on average annual requirement (AAR), see section 2.3.5 Average Annual Requirement (AAR)

Figure 85 Portfolio Valuation Overview: Machinery & Equipment

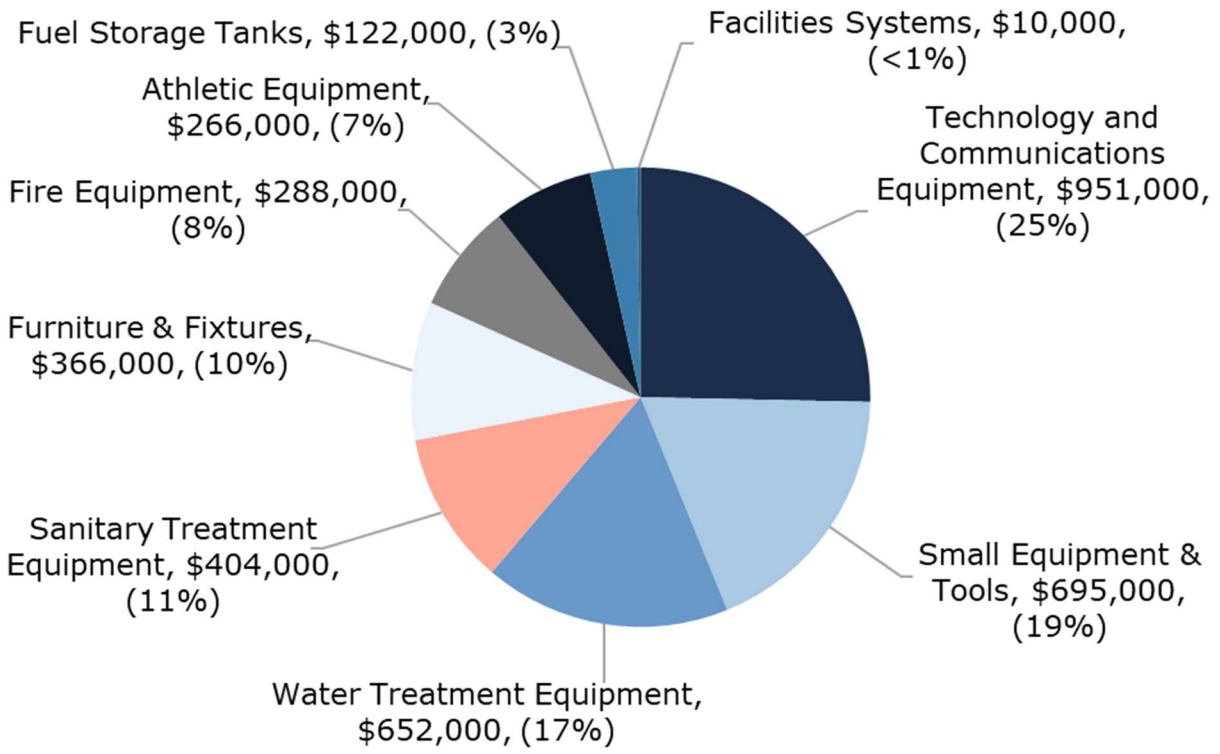
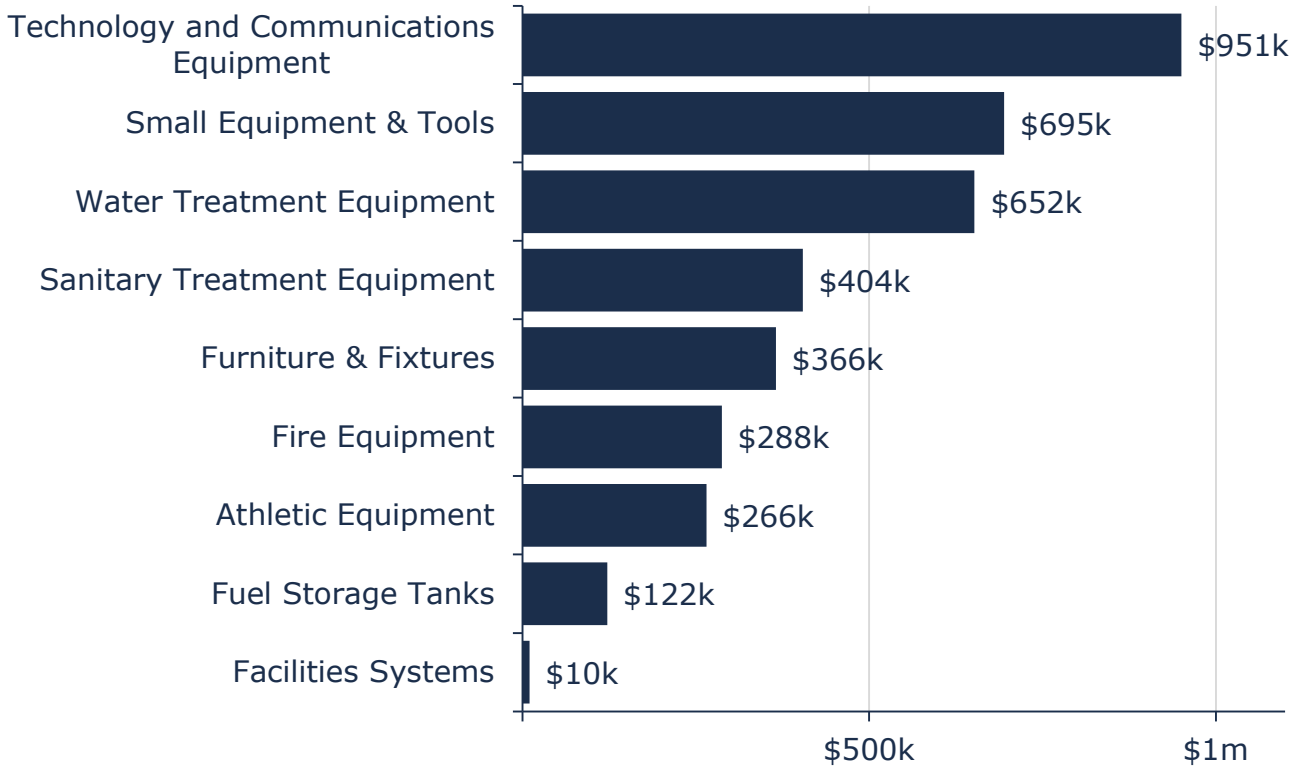


Figure 86 Portfolio Valuation by Segment: Machinery & Equipment



12.2 Asset Condition

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the Municipality's current approach:

- Monthly condition assessments are conducted on a majority of machinery and equipment assets. Assessment scheduling may vary depending on the type of asset but generally involve inspections and evaluations to identify issues and prioritize maintenance activities. For example, fuel tanks undergo annual inspections, while other equipment is assessed based on usage or manufacturer recommendations.
- Non-structured visual inspections are conducted before use of assets.

In this AMP, the following rating criteria is used to determine the current condition of machinery and equipment assets and forecast future capital requirements:

Table 86 Condition Ranges: Machinery & Equipment

Condition Ranges	Description
Very Good (75% – 100%)	♦ New or like-new condition, with no defects or performance issues. ♦ Highly efficient and reliable, operating at peak performance. ♦ No mechanical wear or cosmetic damage. ♦ All systems fully functional, with minimal maintenance required beyond routine servicing. ♦ Expected to provide years of service without major interventions.
Good (50% – 74%)	♦ Fully functional with minimal wear and tear. ♦ All major components in good condition, with only minor maintenance needed (e.g., oil changes, filter replacements). ♦ Efficient operation with no significant performance issues. ♦ Regular servicing keeps the equipment in optimal working condition. ♦ Only minor repairs or adjustments required.
Fair (25% – 49%)	♦ Occasional mechanical issues but still operational with regular maintenance. ♦ Some worn components affecting efficiency, such as aging hydraulics, belts, or electrical wiring. ♦ Moderate cosmetic wear (scratches, dents, faded paint), but no major structural damage. ♦ Requires proactive maintenance and some parts replacement to extend lifespan.

Condition Ranges	Description
Poor (1% – 24%)	♦ Regular breakdowns and performance issues requiring frequent repairs. ♦ Noticeable mechanical wear, including worn-out bearings, belts, hydraulic leaks, or electrical malfunctions. ♦ Reduced efficiency and output, causing operational delays or increased costs. ♦ Aging components and visible deterioration, such as rust, cracks, or faded controls. ♦ Significant repairs or partial replacements needed to maintain functionality.
Very Poor (0% –0.99%)	♦ Frequent mechanical failures making the equipment unreliable and unsafe to use. ♦ Severe wear and tear with major structural damage, corrosion, or missing components. ♦ High operating costs due to excessive fuel consumption, breakdowns, and inefficient performance. ♦ Parts are difficult to source or no longer available, making repairs impractical. ♦ Requires immediate replacement as repairs would not be cost-effective.

Figure 87 Asset Condition Overview: Machinery & Equipment

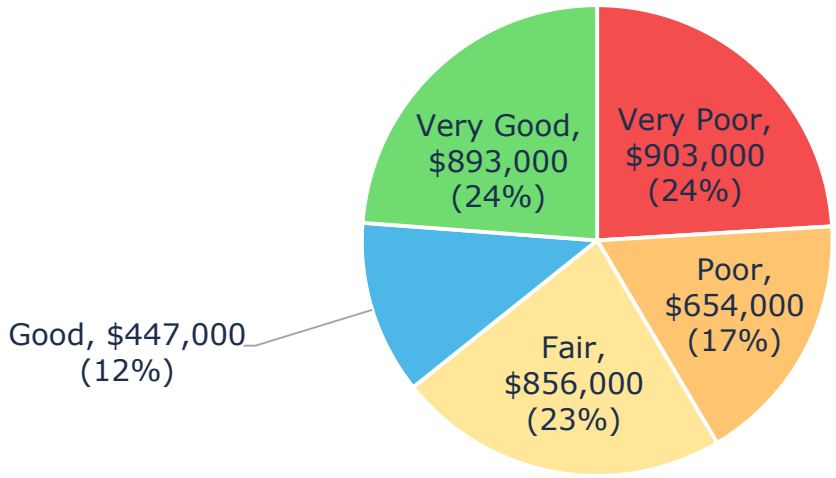


Figure 88 Asset Condition by Segment: Machinery & Equipment

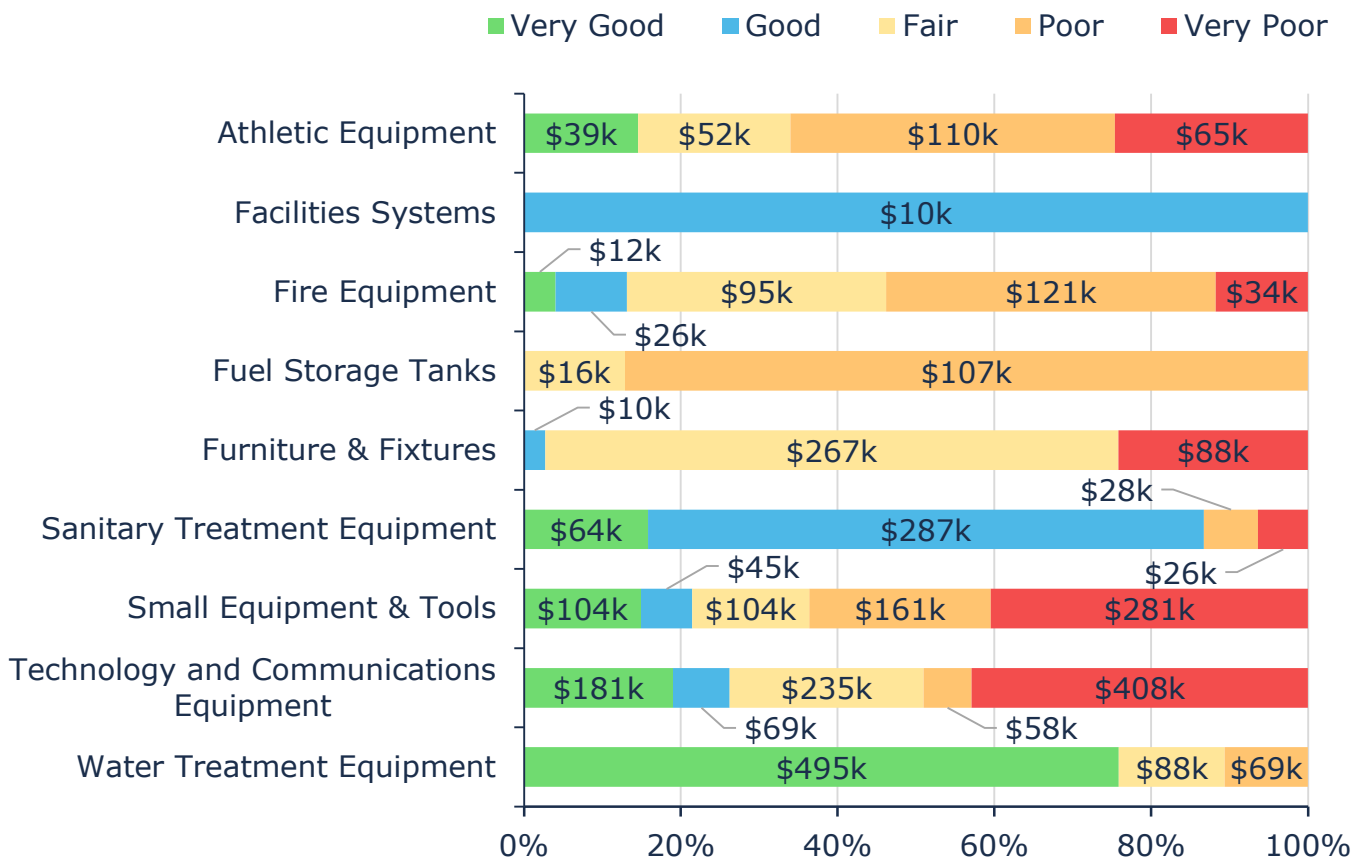


Figure 87 summarizes the replacement cost-weighted condition of the Municipality's machinery and equipment assets while Figure 88 and Table 88 further breaks the condition down by segment. Based primarily on assessed condition, 59% of assets are in fair or better condition and an overall average condition rating of 41%.

Table 87 Percentage Assessed by Segment: Machinery & Equipment

Asset Segment	% of Assets with Assessed Condition[39]
Athletic Equipment	100%
Facilities Systems	100%
Fire Equipment	97%
Fuel Storage Tanks	81%
Furniture & Fixtures	49%
Sanitary Treatment Equipment	100%
Small Equipment & Tools	100%

[39] Weighted by replacement cost.

Asset Segment	% of Assets with Assessed Condition[39]
Technology and Communications Equipment	92%
Water Treatment Equipment	100%
TOTAL	**92%**

Table 88 Asset Condition by Segment: Machinery & Equipment

Asset Segment	≤ Poor $	≤ Poor %	≥ Fair $	≥ Fair %	Average Condition[40]
Athletic Equipment	$175,000	66%	$90,000	34%	Poor (21%)
Facilities Systems	-	0%	$10,000	100%	Good (54%)
Fire Equipment	$155,000	54%	$133,000	46%	Fair (33%)
Fuel Storage Tanks	$107,000	87%	$16,000	13%	Poor (18%)
Furniture & Fixtures	$88,000	24%	$277,000	76%	Fair (32%)
Sanitary Treatment Equipment	$54,000	13%	$351,000	87%	Good (68%)
Small Equipment & Tools	$442,000	64%	$253,000	36%	Fair (27%)
Technology and Communications Equipment	$466,000	49%	$484,000	51%	Fair (30%)
Water Treatment Equipment	$69,000	11%	$583,000	89%	Good (74%)
TOTAL	**$1,556,000**	**41%**	**$2,196,000**	**59%**	**Fair (41%)**

For the Municipality's machinery and equipment assets, assessed condition data was available for 92% of the category (as outlined in Table 87). Assessed data was available for the majority of all segments with the exception of furniture and fixtures.

Typically, assets in poor or lower 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

[40] Weighted by replacement cost.

needs when they enter the latter stages of their lifecycle or decline to a lower condition rating, e.g., poor or lower.

12.3 Age Profile

An asset's age profile is comprised of 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. Service life remaining (SLR) is the difference between an asset's EUL and its age.

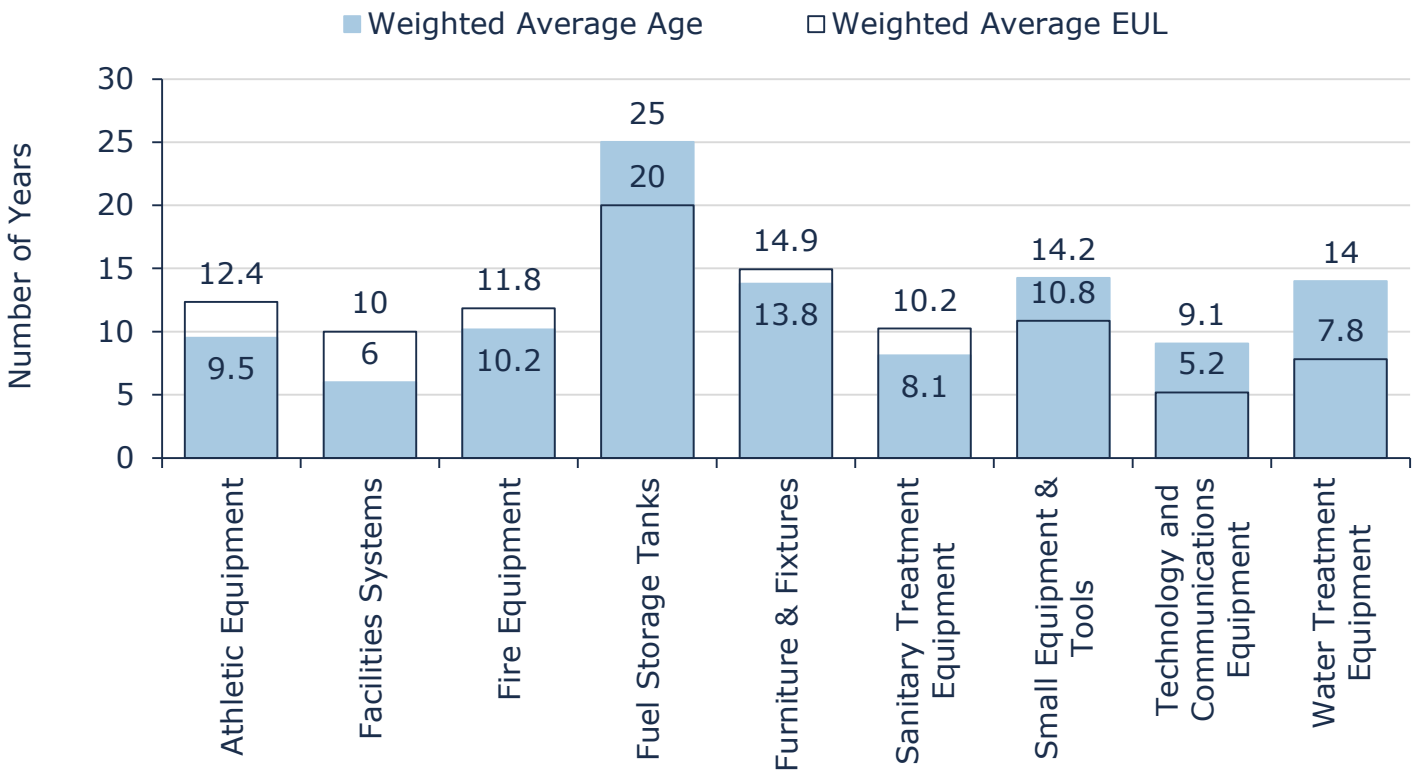
In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning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

Table 89 summarizes and Figure 89 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.

Table 89 Detailed Asset Age: Machinery & Equipment

Asset Segment	Weighted Average EUL	Weighted Average Age
Athletic Equipment	12.4	9.5
Facilities Systems	10	6
Fire Equipment	11.8	10.2
Fuel Storage Tanks	20	25
Furniture & Fixtures	14.9	13.8
Sanitary Treatment Equipment	10.2	8.1
Small Equipment & Tools	10.8	14.2
Technology and Communications Equipment	5.2	9.1
Water Treatment Equipment	7.8	14

Figure 89 Estimated Useful Life vs. Asset Age: Machinery & Equipment



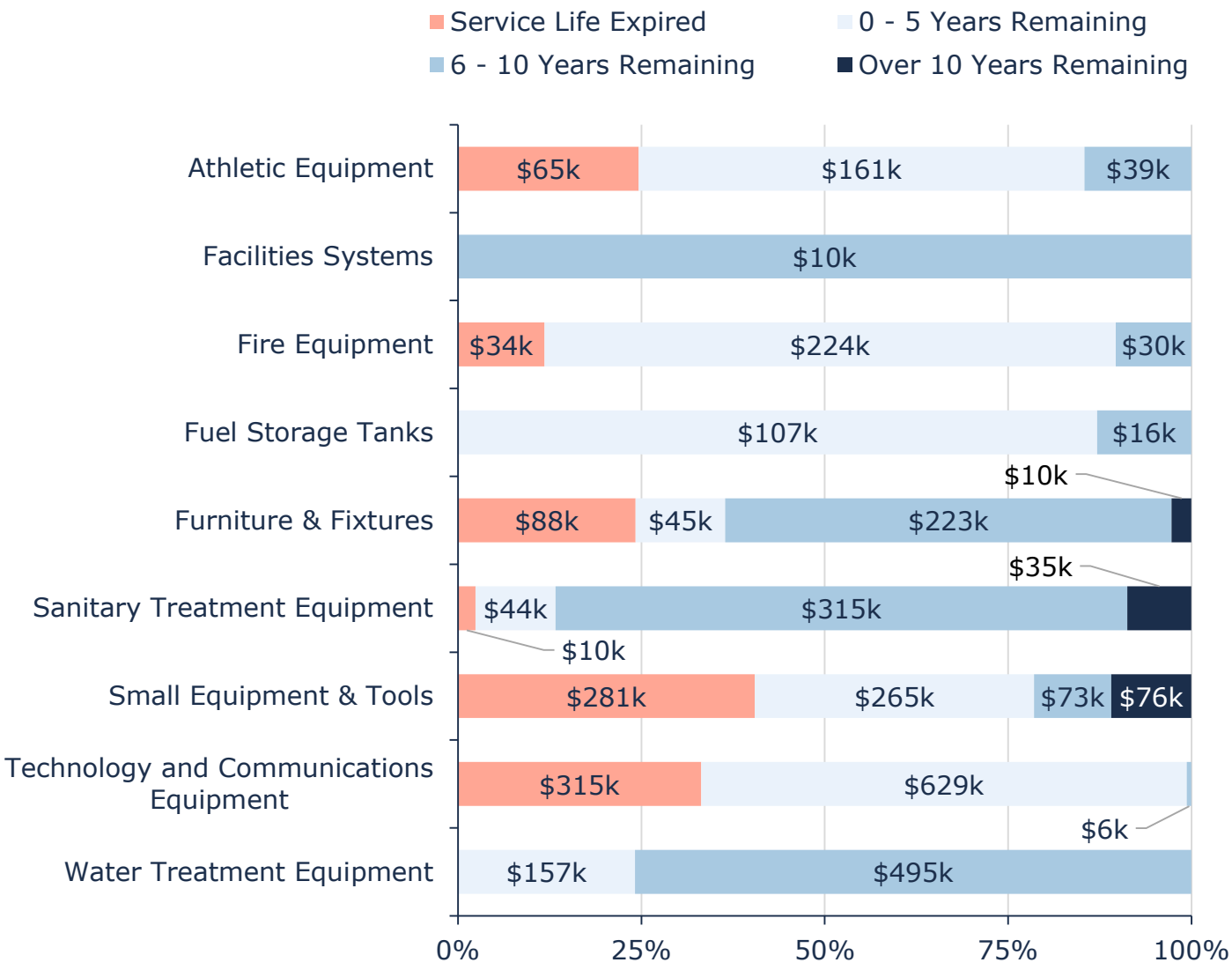
Age analysis shows that half of the segments have surpassed the midpoints of their expected useful lives and are nearing the latter stages while the other half continue to remain in service well beyond their expected useful life.

Although asset age is an important measurement for long-term planning, condition assessments provide a more accurate indication of actual asset needs. An asset may perform past the established useful life if it has been maintained and kept in good condition. Therefore, it is important to consider asset condition when comparing asset age to its serviceable lifespan.

However, each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type. Further, useful life estimates established as part of the PSAB 3150 implementation may not be accurate and may not reflect in-field asset performance.

As seen in Figure 90, based on asset age, available assessed condition data, and estimated useful life, 97% of the Municipality's assets will require replacement within the next 10 years. Refer to Appendix B for further breakdown.

Figure 90 Service Life Remaining: Machinery & Equipment



12.4 Current Approach to Lifecycle Management

The condition or performance of most assets will deteriorate over time. To ensure that the Municipality's machinery and equipment 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 90 outlines the Municipality's current lifecycle management strategy for machinery and equipment assets.

Table 90 Lifecycle Management Strategy: Machinery & Equipment

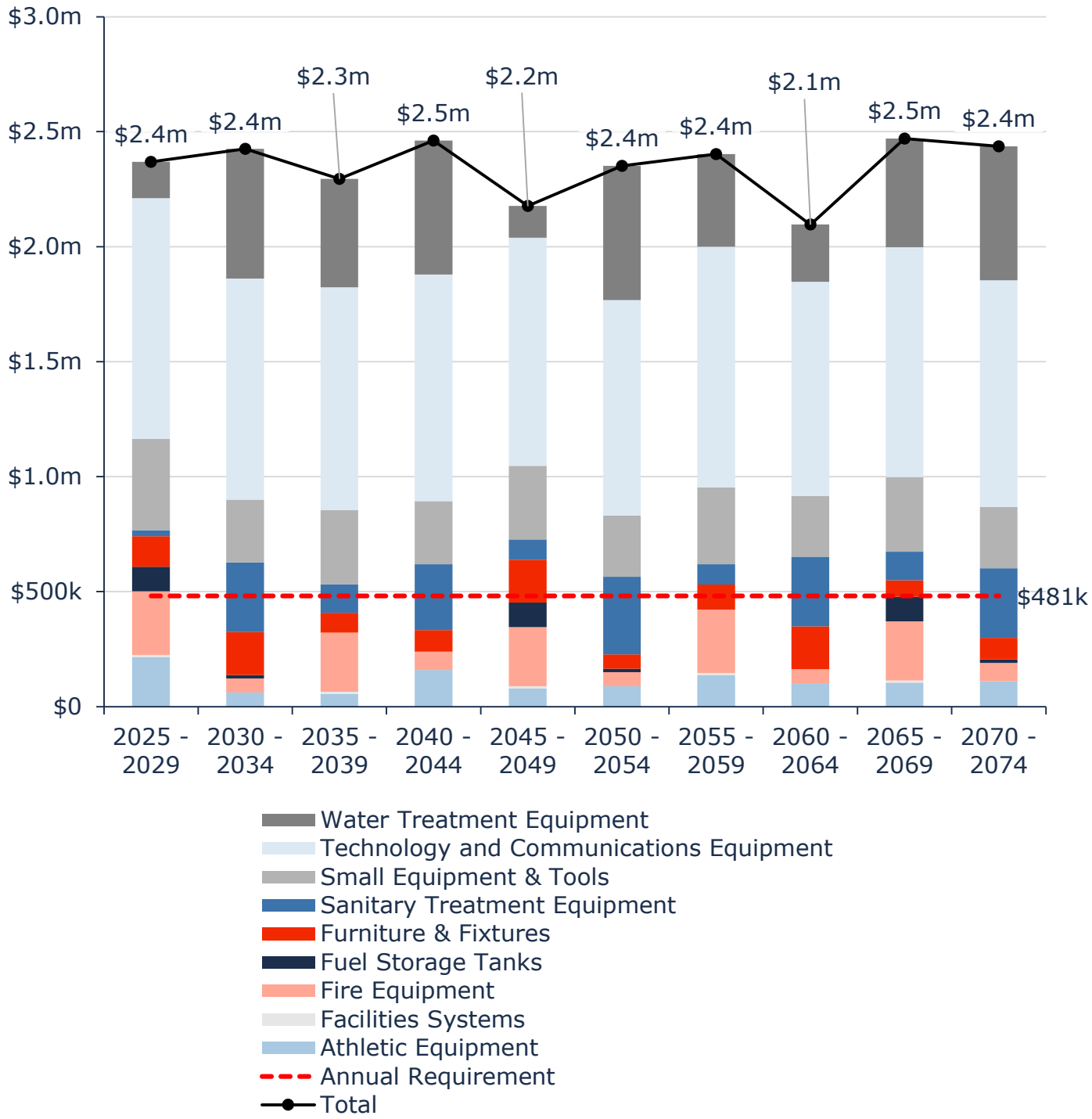
Activity Type	Description of Current Strategy
Maintenance	The asset specific maintenance program varies by department and asset type as the Municipality aligns its maintenance strategy with manufacturer recommendations and regulatory requirements.
	Data on maintenance activities and asset deterioration is stored for the Municipality to increase the efficiency of their O&M strategies.
	Routine maintenance tasks such as inspections, oil changes, and minor repairs are performed as needed to ensure asset reliability and longevity.
	Preventive maintenance schedules are established to proactively address potential issues and minimize downtime.
Rehabilitation / Rehabilitation	Machinery and equipment is replaced based on criticality, safety, cost, and age of the asset.
	Capital plans are created and followed to communicate future replacement activities in line with the factors above.

12.5 Forecasted Long-Term Replacement Needs

Figure 91 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Municipality's machinery and equipment portfolio over a 100-year time horizon to ensure at least one replacement of every asset included in Citywide Assets, the Municipality's primary asset management system and asset register the inventory. For clarity, the chart shows a 50-year snapshot. The forecasted requirements are aggregated into 5-year bins while the trend line (red dotted line) represents the average annual capital requirements, which total $481,000 for all machinery and equipment assets.

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 time.

Figure 91 Forecasted Capital Replacement Needs: Machinery & Equipment 2025-2074



Additionally, there is currently an approximate $841,000 backlog comprised of assets that remain in service beyond their estimated useful life. The 10-year capital requirements expanded in Appendix B have accounted for removing this accumulation and continuing to rehabilitate or replace assets in alignment with the proposed levels of service.

These projections and estimates are based on asset replacement costs, age analysis, and condition data where 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.

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.

A summary of the 10-year replacement forecast can be found in Appendix B.

12.6 Risk Analysis

12.6.1 Quantitative Risk

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the machinery and equipment assets based on 2023 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from one to five. 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 over time, 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 Quantitative Risk under Section 2.2.3 as well as Section 2.3.8 Evaluating Quantitative Risk for further details on the approach used to determine asset risk ratings and classifications.

Figure 92 Risk Matrix: Machinery & Equipment

The following risk ratings are first shown for the overall category and then by segment for the machinery and equipment assets.

Figure 93 Risk Ratings: Machinery & Equipment

1 - 4 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$965,000 (26%)	$1,232,000 (33%)	$251,000 (7%)	$1,064,000 (28%)	$240,000 (6%)

Table 91 Risk Ratings by Segment: Machinery & Equipment

Asset Segment	Probability of Failure	Consequence of Failure	Risk Rating
Athletic Equipment	3.62 / 5	2 / 5	7.23 / 25
Facilities Systems	2 / 5	1.4 / 5	2.8 / 25
Fire Equipment	3.48 / 5	2.71 / 5	9.42 / 25
Fuel Storage Tanks	3.87 / 5	2.6 / 5	10.07 / 25
Furniture & Fixtures	3.46 / 5	2.2 / 5	7.52 / 25
Sanitary Treatment Equipment	2.17 / 5	3.14 / 5	6.66 / 25
Small Equipment & Tools	3.68 / 5	2.26 / 5	8.57 / 25

Asset Segment	Probability of Failure	Consequence of Failure	Risk Rating
Technology and Communications Equipment	3.47 / 5	2.55 / 5	9.14 / 25
Water Treatment Equipment	1.59 / 5	3.03 / 5	4.56 / 25
TOTAL	**3.06 / 5**	**2.58 / 5**	**7.71 / 25**

Overall, the average risk rating for machinery and equipment assets is 7.71, which is considered Low.

The identification of critical assets allows the Municipality to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

12.6.2 Qualitative Risk

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Aging Infrastructure

Many pieces of machinery and equipment are approaching end of life simultaneously, creating financial and operational risks. Replacing large volumes of equipment in a short timeframe strains capital budgets and staff resources.

Without proactive planning, the Municipality may face service disruptions and emergency repair costs. To manage this risk, it is crucial to evaluate the condition and performance of all machinery through regular inspections and assessments.

By understanding the expected lifespan of equipment, the Municipality can forecast when replacements are needed and plan proactively. This allows for strategic budgeting and resource allocation, spreading costs over time and minimizing operational disruptions.

Proactive monitoring and planning help avoid unexpected expenses and maintain operational efficiency. Staying ahead of potential equipment failures ensures the Municipality meets its service commitments without interruption, providing reliable services to the community.

Design and Installation

Rapid technological advancements make it challenging to ensure newly procured equipment remains compatible with future upgrades. Equipment may quickly become obsolete, shortening asset lifecycles and necessitating frequent upgrades or replacements to maintain operational efficiency. Integrating new technologies with existing systems can pose compatibility challenges, potentially resulting in performance issues or system failures. Maintenance or troubleshooting that may

have been completed internally in the past may require external intervention, increasing both downtime and cost.

Adequate training for municipal staff becomes crucial to effectively operate and maintain new equipment, mitigating the risk of errors and optimizing operational efficiency. Financially, keeping pace with technological advancements can strain budgets due to the high costs of frequent updates and replacements. Moreover, if assets are not designed and installed to withstand environmental stresses, such as changes in weather patterns or usage demands, premature deterioration and increased maintenance needs may arise.

Therefore, proactive planning and investment in adaptable technologies are essential to mitigate these risks and ensure the Municipality's infrastructure remains resilient and efficient in the face of technological change.

Lifecycle Management Strategies

Increased lead times for acquiring Machinery & Equipment pose significant risks to the Municipality's lifecycle management of these assets. Effective management requires proactive strategies to optimize asset lifespan and performance while minimizing costs. Prolonged lead times disrupt these strategies, leading to operational inefficiencies, unexpected failures, and higher expenses.

In the past, delays in receiving new snowplows when breakdowns occurred during critical snowstorms, potentially compromised road safety and service delivery. These disruptions force reliance on aging equipment, which demands more frequent and costly maintenance.

Overall, increased lead times can lead to operational disruptions, inefficiencies, and escalated costs. Proactive planning and clear lifecycle management strategies are essential to mitigate these risks and ensure continuous, reliable municipal services.

12.7 Current Levels of Service

The tables that follow summarize the current levels of service with respect to performance measures that the Municipality has selected for this AMP.

12.7.1 Community Levels of Service

Table 92 Community Levels of Service: Machinery & Equipment

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description or images of the types of Machinery & Equipment that the	Using primarily assessed condition data, machinery and equipment assets range in

Service Attribute	Qualitative Description	Current LOS (2023)
	Municipality operates and the services that they help to provide to the community	condition and are on average in Fair condition (41%). Machinery and equipment assets are diverse and service the needs of fire, parks and recreation, and public works.
Quality	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Machinery and equipment asset replacement decisions predominantly consider asset condition, lifecycle considerations, budget constraints, criticality, and legislative compliance.

12.7.2 Technical Levels of Service

Table 93 Technical Levels of Service: Machinery & Equipment

Service Attribute	Technical Metric	Current LOS (2023)
Performance	Average condition of assets	Fair (41%)
	% of assets in fair or better condition	59%
	% of assets in poor or lower condition	41%
	Actual annual capital budget : average annual capital requirement	$137k : $481k (0.28 : 1)

12.8 Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service, discuss the associated risks and long-term sustainability of these service levels, and explain the Municipality's ability to afford the proposed LOS.

Table 94 outlines the proposed LOS for machinery and equipment assets. Further explanation and proposed LOS analysis at the portfolio level can be found in Section 4 Proposed Levels of Service Analysis.

Table 94 Proposed LOS: Machinery & Equipment

Asset Segment	Target Maintenance Condition	AAR
Athletic Equipment	40	$22,000
Facilities Systems	60	$1,000
Fire Equipment	65	$46,000
Fuel Storage Tanks	60	$6,000
Furniture & Fixtures	40	$24,000
Sanitary Treatment Equipment	50	$40,000
Small Equipment & Tools	40	$60,000
Technology and Communications Equipment	50	$198,000
Water Treatment Equipment	50	$83,000
TOTAL		**$481,000**

13 Fleet & Fleet Equipment

13.1 Inventory & Valuation

Table 95 summarizes the quantity and current replacement cost of the Municipality's various fleet and fleet equipment assets as managed in its primary asset management register, Citywide Assets.

Table 95 Detailed Asset Inventory: Fleet & Fleet Equipment

Asset Segment	Quantity	Unit of Measure	Replacement Cost (RC)	Primary RC Method	AAR[41]
Emergency Services	20	Assets	$14,173,000	CPI	$746,000
Heavy Duty Vehicles	17	Assets	$972,000	CPI	$179,000
Light Duty Vehicle	14	Assets	$772,000	CPI	$100,000
Medium Duty Vehicles	14	Assets	$884,000	CPI	$105,000
Off Road Vehicles	12	Assets	$2,341,000	CPI	$264,000
Public Transit	4	Assets	$437,000	CPI	$112,000
Public Works / Parks	7	Assets	$389,000	CPI	$46,000
Snow Control	7	Assets	$3,401,000	CPI	$467,000
Trailers	18	Assets	$536,000	CPI	$84,000
TOTAL			**$23,904,000**	**CPI**	**$2,104,000**

[41] For further clarification on average annual requirement (AAR), see section 2.3.5 Average Annual Requirement (AAR)

Figure 94 Portfolio Valuation Overview: Fleet & Fleet Equipment

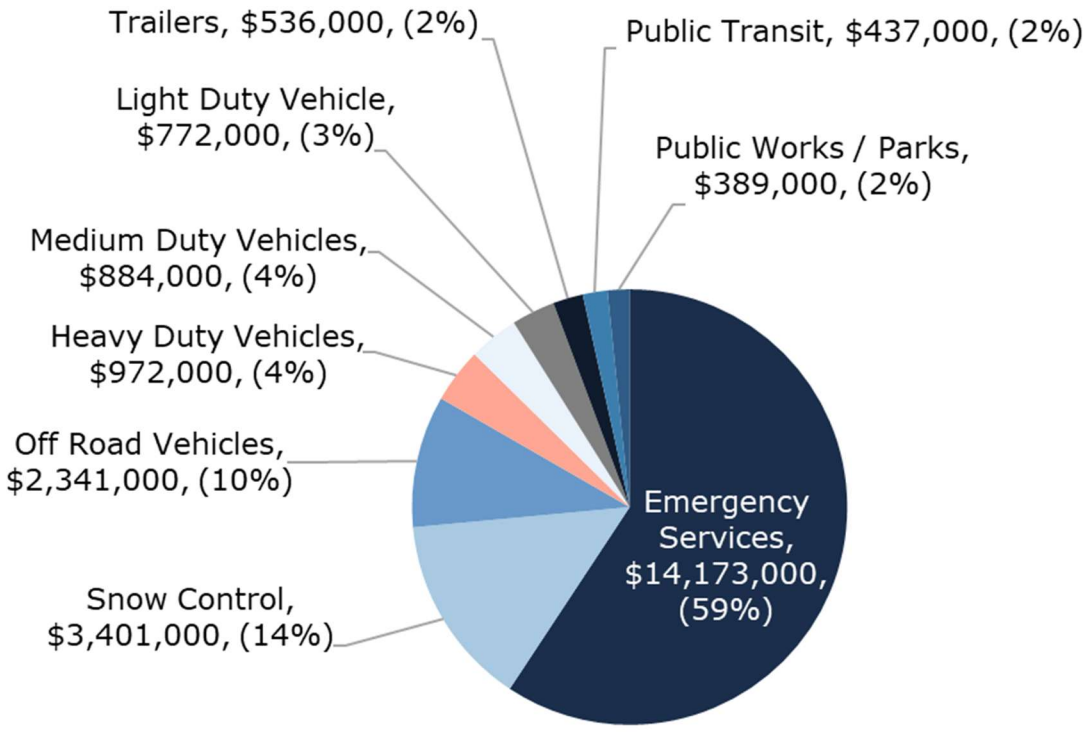
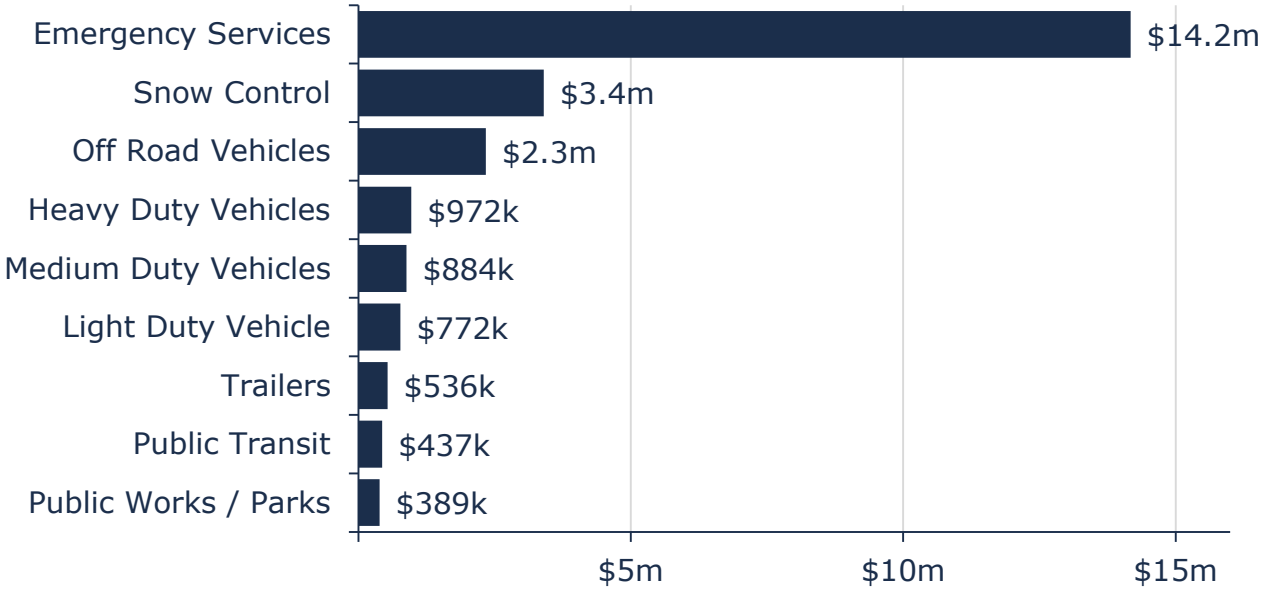


Figure 95 Portfolio Valuation by Segment: Fleet & Fleet Equipment



13.2 Asset Condition

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the Municipality's current approach:

- Monthly condition assessments are conducted on the majority of vehicles assets. Assessment scheduling may vary depending on the type of asset but generally involve inspections and evaluations to identify issues and prioritize maintenance activities. For example, fuel tanks undergo annual inspections, while other equipment is assessed based on usage or manufacturer recommendations.
- Non-structured visual inspections are conducted before use of assets.

In this AMP, the following rating criteria is used to determine the current condition of fleet and fleet equipment assets and forecast future capital requirements:

Table 96 Condition Ranges: Fleet & Fleet Equipment

Condition Ranges	Description
Very Good (75% – 100%)	♦ Like-new condition—mechanically excellent with no defects or major wear. ♦ No visible exterior damage—paint, body, and glass are in near-perfect condition. ♦ Interior is clean and well-maintained, with no significant wear on seats, controls, or dashboard. ♦ Optimal performance and fuel efficiency, with all systems (engine, brakes, electronics) fully functional. ♦ Minimal maintenance required beyond standard servicing.
Good (50% – 74%)	♦ Mechanically sound with no major issues—engine, transmission, and brakes function well. ♦ Minor cosmetic wear (small scratches or slight fading), but no major damage. ♦ Interior is in good condition, with all controls, seats, and features fully operational. ♦ Fuel efficiency and performance remain close to original specifications. ♦ Routine maintenance needed to keep it in top condition.
Fair (25% – 49%)	♦ Some mechanical wear and tear, but still operational with occasional minor repairs needed. ♦ Body has some cosmetic flaws, such as scratches, small dents, or light rust.

Condition Ranges	Description
	♦ Interior is intact but shows signs of aging, such as worn upholstery or faded controls. ♦ All major systems functional, but performance is slightly reduced compared to new. ♦ Regular maintenance required to prevent further decline.
Poor (1% – 24%)	♦ Noticeable mechanical problems, such as engine misfires, transmission slipping, or weak brakes. ♦ Frequent minor repairs needed (e.g., battery issues, fluid leaks, suspension wear). ♦ Significant body wear including rust spots, fading paint, or moderate dents. ♦ Aging interior with visible wear on seats, dashboard, and controls. ♦ Decreased fuel efficiency and performance issues becoming more noticeable.
Very Poor (0% –0.99%)	♦ Severe mechanical and structural issues—engine, transmission, or braking system may be failing or unreliable. ♦ Frequent breakdowns making the vehicle unsafe or impractical for regular use. ♦ Extensive body damage such as severe rust, dents, or missing panels. ♦ Worn-out interior with torn seats, broken controls, or non-functional components (e.g., HVAC, lights, windows). ♦ High repair costs often exceeding the vehicle's remaining value. Near end-of-life.

Figure 96 Asset Condition Overview: Fleet & Fleet Equipment

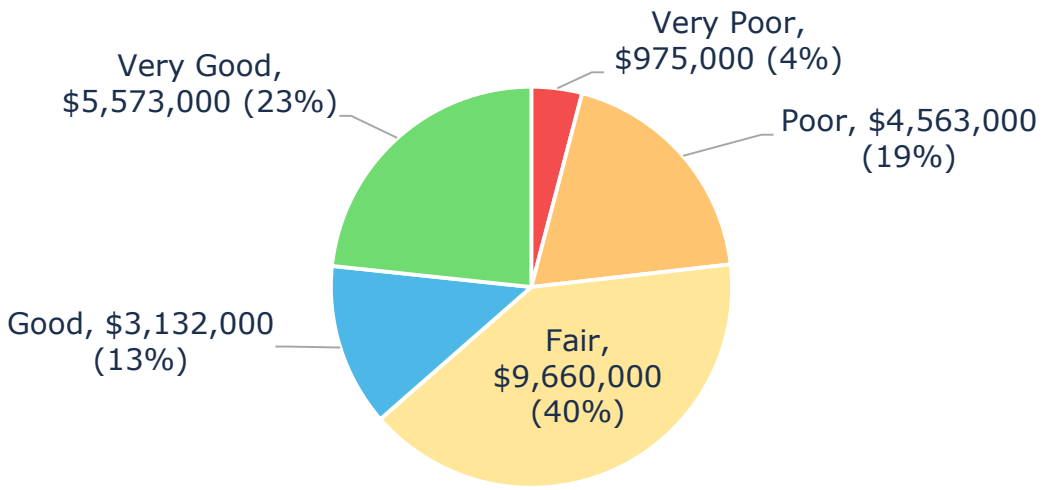


Figure 97 Asset Condition by Segment: Fleet & Fleet Equipment

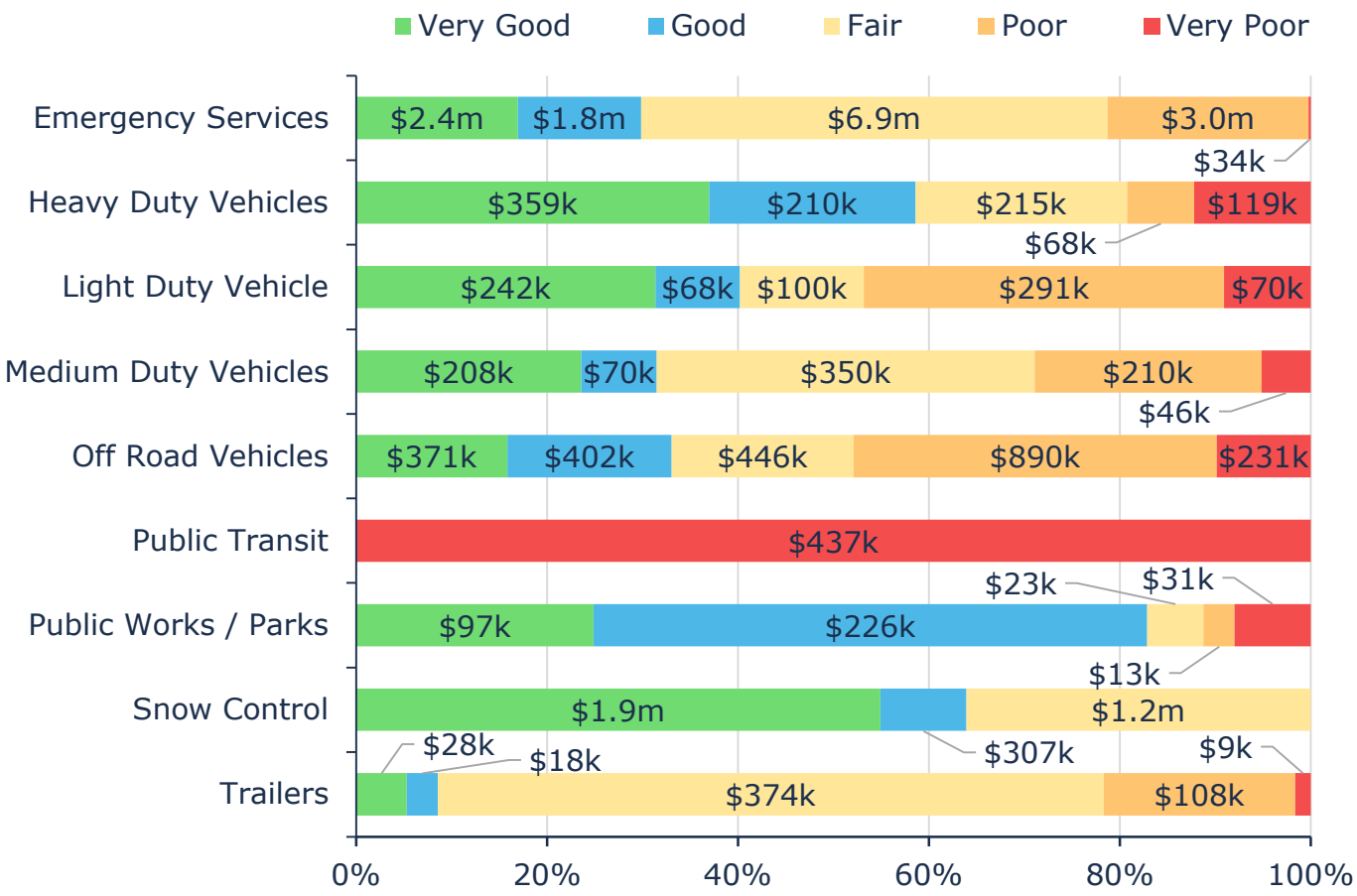


Figure 96 summarizes the replacement cost-weighted condition of the Municipality's fleet and fleet equipment assets while Figure 97 and Table 98 further breaks the condition down by segment. Based primarily on assessed condition, 77% of assets are in fair or better condition and an overall average condition rating of 49%.

Table 97 Percentage Assessed by Segment: Fleet & Fleet Equipment

Asset Segment	% of Assets with Assessed Condition[42]
Emergency Services	99%
Heavy Duty Vehicles	90%
Light Duty Vehicle	73%
Medium Duty Vehicles	88%
Off Road Vehicles	82%
Public Transit	0%

[42] Weighted by replacement cost.

Asset Segment	% of Assets with Assessed Condition[42]
Public Works / Parks	45%
Snow Control	63%
Trailers	73%
TOTAL	**88%**

Table 98 Asset Condition by Segment: Fleet & Fleet Equipment

Asset Segment	≤ Poor $	≤ Poor %	≥ Fair $	≥ Fair %	Average Condition[43]
Emergency Services	$3,017,000	21%	$11,156,000	79%	Fair (46%)
Heavy Duty Vehicles	$187,000	19%	$785,000	81%	Good (56%)
Light Duty Vehicle	$361,000	47%	$411,000	53%	Fair (42%)
Medium Duty Vehicles	$256,000	29%	$628,000	71%	Fair (46%)
Off Road Vehicles	$1,121,000	48%	$1,220,000	52%	Fair (41%)
Public Transit	$437,000	100%	-	0%	Very Poor (0%)
Public Works / Parks	$44,000	11%	$346,000	89%	Good (59%)
Snow Control	-	0%	$3,401,000	100%	Good (73%)
Trailers	$116,000	22%	$420,000	78%	Fair (41%)
TOTAL	**$5,539,000**	**23%**	**$18,365,000**	**77%**	**Fair (49%)**

For the Municipality's fleet and fleet equipment assets, assessed condition data was available for 88% of the category (as outlined in Table 97). Assessed data was available for all segments with varying levels of completeness with the exception of public transit vehicles where no data was available.

Typically, assets in poor or lower 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 lower.

[43] Weighted by replacement cost.

13.3 Age Profile

An asset's age profile is comprised of 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. Service life remaining (SLR) is the difference between an asset's EUL and its age.

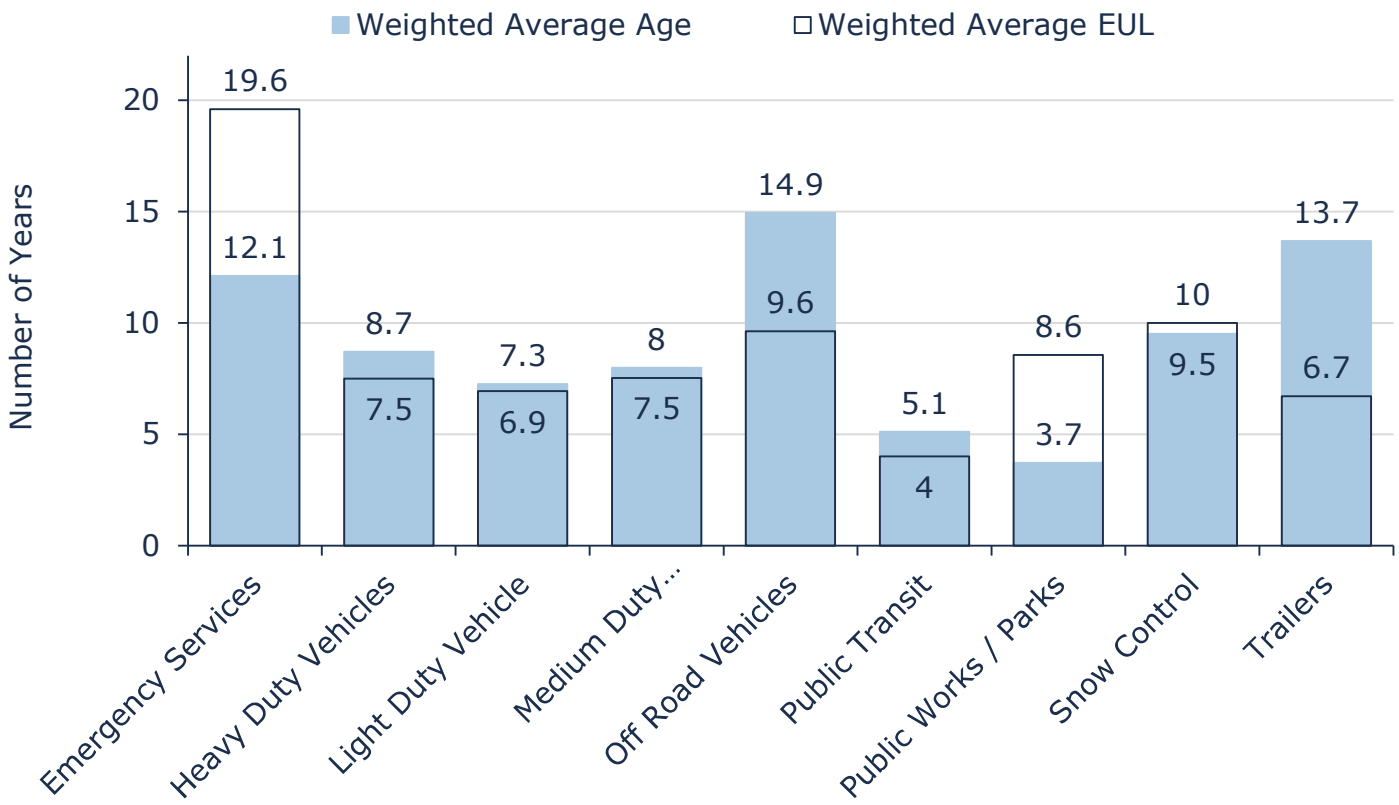
In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and improve planning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

Table 99 summarizes and Figure 98 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.

Table 99 Detailed Asset Age: Fleet & Fleet Equipment

Asset Segment	Weighted Average EUL	Weighted Average Age
Emergency Services	19.6	12.1
Heavy Duty Vehicles	7.5	8.7
Light Duty Vehicle	6.9	7.3
Medium Duty Vehicles	7.5	8
Off Road Vehicles	9.6	14.9
Public Transit	4	5.1
Public Works / Parks	8.6	3.7
Snow Control	10	9.5
Trailers	6.7	13.7

Figure 98 Estimated Useful Life vs. Asset Age: Fleet & Fleet Equipment



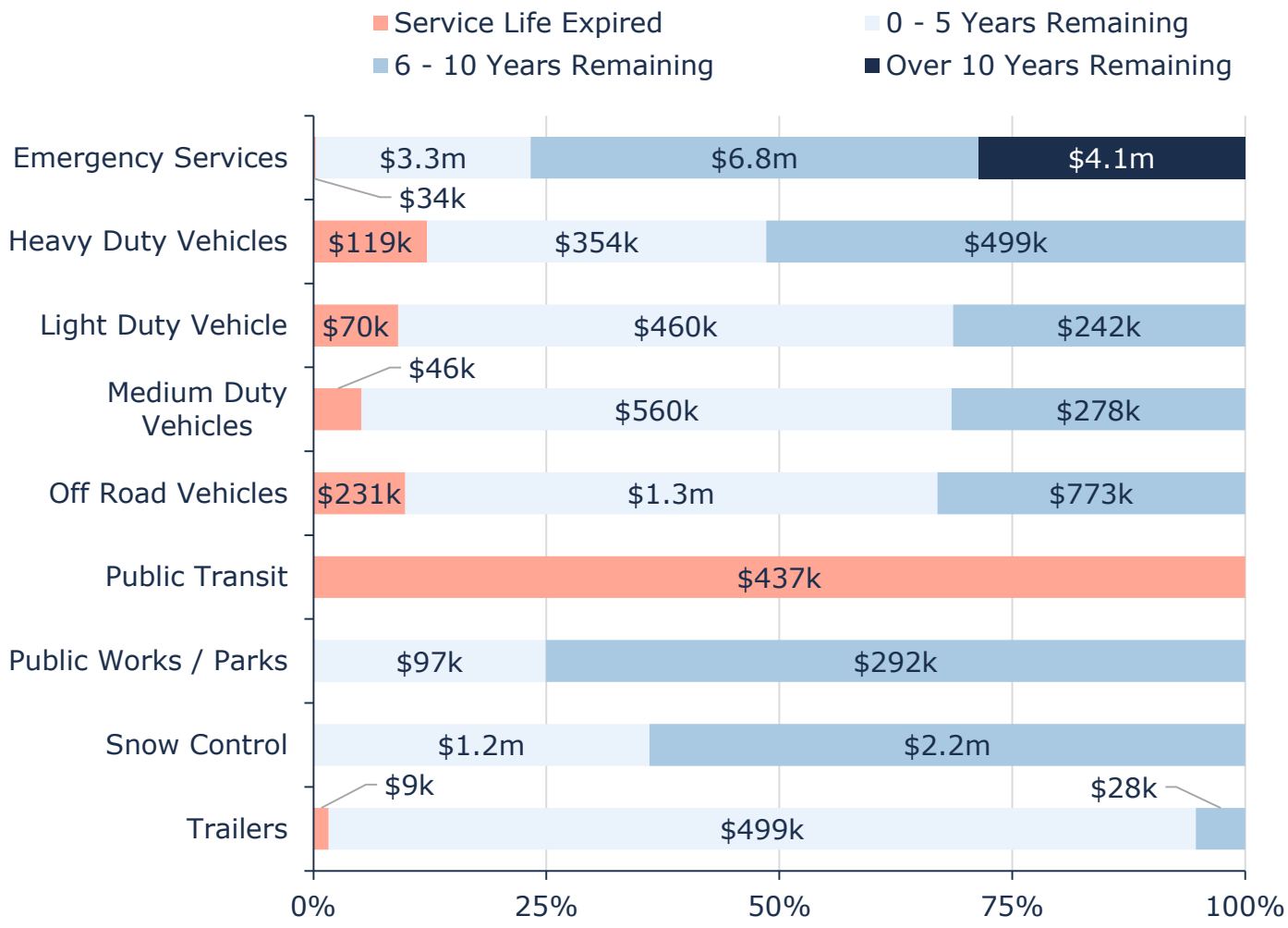
Age analysis shows that the majority of segments have reach or surpassed their expected useful life with the exception of emergency services and public works/parks vehicles that are roughly around the midpoint of their design lives.

Although asset age is an important measurement for long-term planning, condition assessments provide a more accurate indication of actual asset needs. An asset may perform past the established useful life if it has been maintained and kept in good condition. Therefore, it is important to consider asset condition when comparing asset age to its serviceable lifespan.

However, each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type. Further, useful life estimates established as part of the PSAB 3150 implementation may not be accurate and may not reflect in-field asset performance.

As seen in Figure 99, based on asset age, available assessed condition data, and estimated useful life, 83% of the Municipality's assets will require replacement within the next 10 years. Refer to Appendix B for further breakdown.

Figure 99 Service Life Remaining: Fleet & Fleet Equipment



13.4 Current Approach to Lifecycle Management

The condition or performance of most assets will deteriorate over time. To ensure that the Municipality's fleet and fleet equipment 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 100 outlines the Municipality's current lifecycle management strategy for fleet and fleet equipment assets.

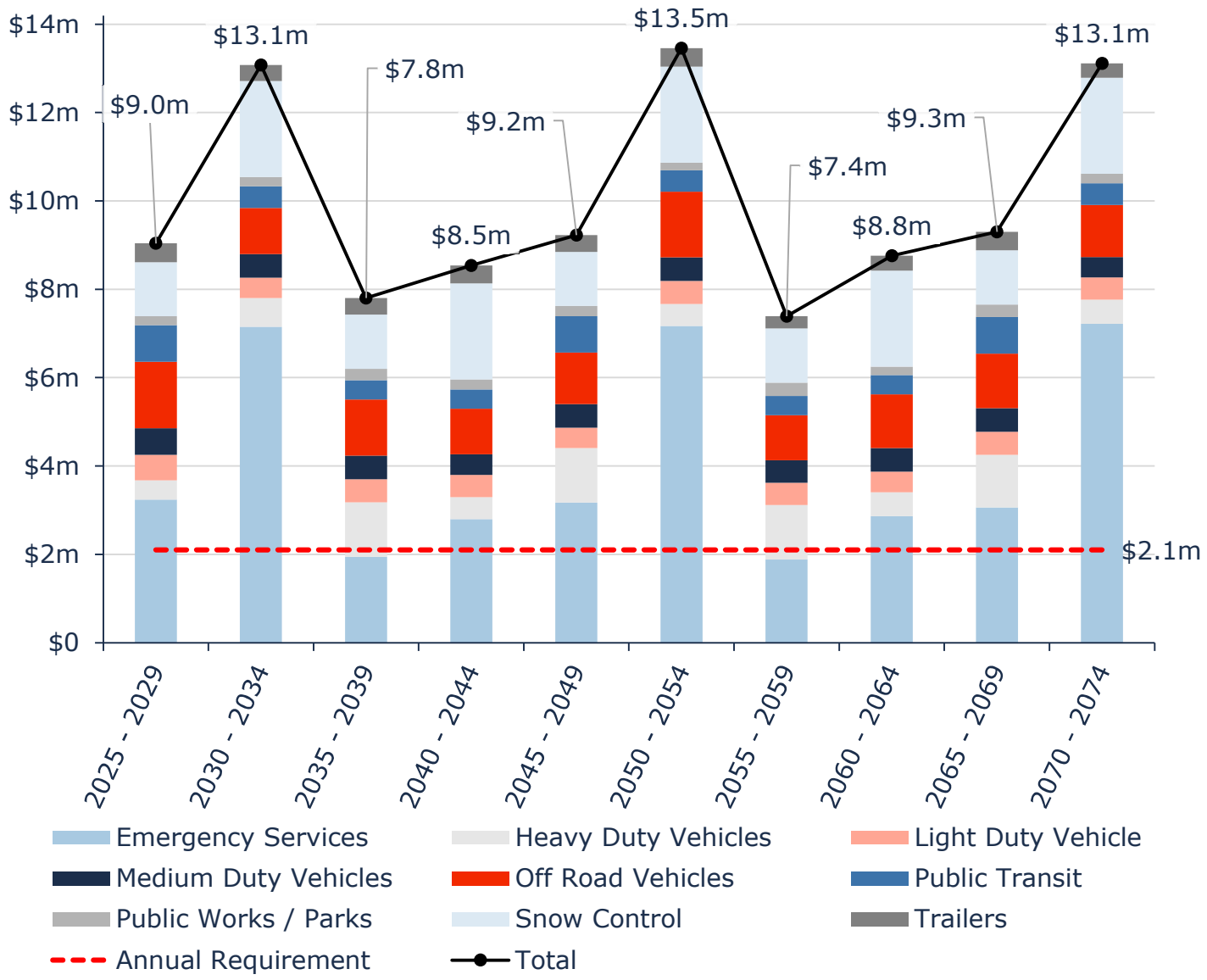
Table 100 Lifecycle Management Strategy: Fleet & Fleet Equipment

Activity Type	Description of Current Strategy
Maintenance	Light Vehicles undergo an oil change and service every 5 to 7.5 thousand kilometers.
	Medium and Heavy vehicles are inspected for reliability and safety annually, any concerns and rehabilitation needs identified by this inspection are added into the financial planning process.
	Heavy Equipment is inspected and serviced every 500 – 750 operation hours. All service and maintenance of these assets is as per manufacturers recommendations.
	Transit vehicles have a structured maintenance strategy integrated with semi-annual inspections.
Rehabilitation / Replacement	Rehabilitation activities include paint and body repairs for fleet, sandblasting and painting for trailers. Assets are inspected at mid-life. Replacement of hoses for heavy equipment occurs on an as-needed basis. Corrosion prevention is department-based.
	Vehicles assets are replaced based on criticality, safety, cost, and age of the asset. Assets prioritized for replacement include front line vehicles (emergency vehicles and snow removal equipment), road building equipment, and job-specific equipment and vehicles.
	NFPA (National Fire Protection Association) standards guide the replacement schedule for fire department assets.

13.5 Forecasted Long-Term Replacement Needs

Figure 100 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Municipality's fleet portfolio over a 100-year time horizon to ensure at least one replacement of every asset included in Citywide Assets, the Municipality's primary asset management system and asset register the inventory. For clarity, the chart shows a 50-year snapshot. The forecasted requirements are aggregated into 5-year bins while the trend line (red dotted line) represents the average annual capital requirements, which total $2.1 million for all fleet and fleet equipment assets.

Figure 100 Forecasted Capital Replacement Needs: Fleet & Fleet Equipment 2025-2074



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 time between $7.4 million and $13.5 million.

Additionally, there is currently an approximate $964,000 backlog comprised of assets that remain in service beyond their estimated useful life. The 10-year capital requirements expanded in Appendix B have accounted for removing this accumulation and continuing to rehabilitate or replace assets in alignment with the proposed levels of service.

These projections and estimates are based on asset replacement costs, age analysis, and condition data where 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.

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.

A summary of the 10-year replacement forecast can be found in Appendix B.

13.6 Risk Analysis

13.6.1 Quantitative Risk

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the fleet and fleet equipment assets based on 2023 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from one to five. 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 over time, 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 Quantitative Risk under Section 2.2.3 as well as Section 2.3.8 Evaluating Quantitative Risk for further details on the approach used to determine asset risk ratings and classifications.

Figure 101 Risk Matrix: Fleet & Fleet Equipment

The following risk ratings are first shown for the overall category and then by segment for the fleet and fleet equipment assets.

Figure 102 Risk Ratings: Fleet & Fleet Equipment

1 - 4 Very Low $6,621,000 (28%)	5 - 7 Low $1,742,000 (7%)	8 - 9 Moderate $3,400,000 (14%)	10 - 14 High $8,963,000 (37%)	15 - 25 Very High $3,177,000 (13%)

Table 101 Risk Ratings by Segment: Fleet & Fleet Equipment

Asset Segment	Probability of Failure	Consequence of Failure	Risk Rating
Emergency Services	2.75 / 5	4.27 / 5	11.64 / 25
Heavy Duty Vehicles	2.36 / 5	2.06 / 5	4.78 / 25
Light Duty Vehicle	2.84 / 5	2 / 5	5.69 / 25
Medium Duty Vehicles	2.79 / 5	2 / 5	5.58 / 25
Off Road Vehicles	3.09 / 5	2.48 / 5	7.58 / 25
Public Transit	5 / 5	2.95 / 5	14.77 / 25
Public Works / Parks	2.11 / 5	1.87 / 5	3.97 / 25
Snow Control	1.81 / 5	4 / 5	7.25 / 25
Trailers	3.09 / 5	2.09 / 5	6.46 / 25
TOTAL	**2.68 / 5**	**3.7 / 5**	**9.74 / 25**

Overall, the average risk rating for fleet and fleet equipment assets is 9.74, which is considered Moderate.

The identification of critical assets allows the Municipality to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

13.6.2 Qualitative Risk

The following section summarizes key trends, challenges, and risks to service delivery that the Municipality is currently facing:

Capital Funding Strategies

Limited capital funding for fleet replacement increases the risk of vehicle failure and reduced service delivery. When aging vehicles are not replaced on time, maintenance costs increase, and service reliability suffers.

Prioritizing capital funding for vehicle assets is vital for high-quality services. With multiple departments needing funding, the allocation process can be complex and challenging. Departments such as Fire Services are further constrained by the need to comply with NFPA replacement schedules. Failure to adhere to these standards may impact insurance ratings and emergency readiness.

Proactive, comprehensive fleet management can mitigate these issues by ensuring strategic funding distribution, especially considering the recent increase in asset delivery lead-times.

Organizational Capacity

Knowledge about fleet operations and equipment maintenance is concentrated among a small number of staff. Personnel changes or long-term absences pose continuity risks. This dependency can slow decision-making and reduce fleet efficiency, especially since these staff members may also support other departments, such as Public Works mechanics.

Additionally, the Municipality struggles to maintain sufficient manpower for essential after-hours tasks such as snow plowing. These operations are crucial for public safety, ensuring roads are clear and accessible during inclement weather conditions. A lack of personnel for these duties can lead to delays in response times, increased accident risks, and disruptions to daily life for residents.

To address these potential risk, it is essential to implement management strategies such as:

- Establishing documentation protocols
- Implementing cross-training and succession plans
- Expanding coverage for after-hours operations such as snow clearing

By ensuring that knowledge is widely shared and accessible across the team, the Municipality can strengthen operational resilience, maintain continuity in service delivery, and mitigate the impact of personnel changes on daily operations.

Additionally, the fire department faces challenges in recruiting and retaining volunteer firefighters. A shortage of personnel can severely impact emergency services, compromising the Municipality's ability to respond effectively to fires, accidents, and other emergencies. This shortage underscores the a potential need for a day crew and dedicated fire prevention officer to alleviate operational strains and ensure adequate coverage during emergencies.

Lifecycle Management Strategies

The Municipality faces operational challenges due to the current structure of its fleet department, which grew organically to match needs as they arose rather than through a structured plan. This has resulted in limitations for fleet management. Compounding this issue is the decentralized funding allocation across various

departments, rather than a unified approach to fleet management, which presents complexities for asset management and proactive planning efforts.

These factors collectively affect the Municipality's ability to efficiently manage its fleet, potentially leading to increased downtime, higher maintenance costs, and reduced overall reliability of vehicles and equipment. Addressing these challenges involves reviewing and refining fleet management practices, including centralizing funding allocation, expanding facilities strategically, and enhancing organizational structures to support proactive maintenance and long-term planning. By investing in comprehensive fleet management strategies, the Municipality can enhance operational efficiency, extend asset lifespan, and better meet the needs of its community.

Aging Infrastructure & Growth

A significant portion of the fleet is aging simultaneously, which elevates maintenance costs and increases the risk of downtime during emergencies. This strain on the fleet budget can potentially impact other essential services that rely on operational vehicles.

Limited infrastructure such as lifts and maintenance resources exacerbate these challenges, hindering the Municipality's ability to respond promptly to community needs and maintain public satisfaction.

Moreover, simultaneous fleet retirement creates logistical challenges. The Municipality may experience delays in acquiring and deploying replacements, leading to service gaps and increased pressure on remaining vehicles, especially considering recently expanding lead times.

To mitigate these risks, proactive fleet management is essential. This includes systematic replacement planning and phased fleet renewal to spread out costs and ensure continuity of service.

Furthermore, as the Municipality expands, there's a pressing need to increase the number of or upgrade fleet assets for protective services and public works. This includes replacing or upsizing vehicles to meet growing demands and integrating new technology to improve operational efficiency despite initial higher costs. These measures are essential for enhancing the Municipality's ability to address community growth effectively and ensure continued public safety.

13.7 Current Levels of Service

The tables that follow summarize the current levels of service with respect to performance measures that the Municipality has selected for this AMP.

13.7.1 Community Levels of Service

Table 102 Community Levels of Service: Fleet & Fleet Equipment

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description or images of the types of vehicles (e.g. light, medium and heavy-duty) that the Municipality operates and the services that they help to provide to the community	Using primarily assessed condition data, vehicle assets range in condition and are on average in Fair condition (49%). Fleet assets include diverse assets that service the Municipality's fire, public works, and parks and recreation departments.
Quality	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Fleet investments are generally based on the asset's age, condition, utility, and cost-benefit analysis of replacement.

13.7.2 Technical Levels of Service

Table 103 Technical Levels of Service: Fleet & Fleet Equipment

Service Attribute	Technical Metric		Current LOS (2023)
Safety	Providing safe corporate fleet vehicles and equipment	% of legislated MTO safety inspections met	100%
Reliability	Providing reliable fleet assets in an acceptable condition	% of vehicles past their optimum service life	4% of assets weighted by replacement cost
Performance	Average condition of assets		Fair (49%)
	% of assets in fair or better condition		77%
	% of assets in poor or lower condition		23%
	Actual annual capital budget : average annual capital requirement		$597k : $2.1m (0.28 : 1)

13.8 Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service, discuss the associated risks and long-term sustainability of these service levels, and explain the Municipality's ability to afford the proposed LOS.

Table 104 outlines the proposed LOS for fleet and fleet equipment assets. Further explanation and proposed LOS analysis at the portfolio level can be found in Section 4 Proposed Levels of Service Analysis.

Table 104 Proposed LOS: Fleet & Fleet Equipment

Asset Segment	Target Maintenance Condition	AAR
Emergency Services	65	$746,000
Heavy Duty Vehicles	40	$179,000
Light Duty Vehicle	40	$100,000
Medium Duty Vehicles	40	$105,000
Off Road Vehicles	40	$264,000
Public Transit	65	$112,000
Public Works / Parks	40	$46,000
Snow Control	65	$467,000
Trailers	40	$84,000
TOTAL		**$2,104,000**

Strategies

14 Growth

14.1 Growth Assumptions

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.

14.1.1 Port Hope's Community Development Department (Service Delivery Review)

The CDD's work aligns directly with the Municipality's goals as outlined in the Council's Strategic Plan (2019-2022). A key focus for the CDD is "Intentional Growth Planning." This means strategically managing future development to strengthen the Municipality's economic engine. The plan involves encouraging reinvestment and diversifying the tax base. By doing this, the CDD aims to revitalize the downtown's commercial sector and create opportunities for new businesses to flourish throughout Port Hope.

As of 2020, Port Hope's population sits at 17,902, representing 20% of Northumberland County's total (91,548). The Growth Management Strategy (2006) forecasts a significant increase, reaching 22,145 by 2034 and 24,299 by 2041, for a total projected growth of 4,243 residents. To accommodate this influx, the Municipality aims for 50% of new housing units to be built within the existing developed area (Built Boundary). Six Major Intensification Areas are designated to achieve this target, alongside limited intensification planned within Established Residential Areas and Heritage Conservation Districts, and mixed-use development planned for the Waterfront Area.

Employment is also expected to grow, with an additional 1,370 jobs anticipated between 2011 and 2034. Fortunately, currently designated lands seem sufficient to accommodate both population and job growth until 2034. However, some uncertainties remain. The proportion of serviced and readily developable land, particularly for employment purposes, is unclear. Additionally, the timeframe for adding new developable land to the inventory is unknown. The factors considered when developing these projections include the Provincial Growth Plan's expectations, historical building activity, Port Hope's share of the County's population, and its geographic location relative to the Greater Toronto Area.

14.2 Impact of Growth on Lifecycle Activities

The growth of the Municipality will present challenges to the service delivery, and service delivery assets of the Municipality. The Municipality understands this and has laid out in plans and communication documents their strategies for mitigating impact to service and ensuring long term viability for the inhabitants of the Municipality. This includes their commitment to growing existing townships and population centres. This will lower the cost of increasing capacity

as they are able to leverage the current infrastructure, staff, and processes. In addition to this, there will be long-term funding obligations to ensure that lifecycle activities can be continued and enhanced in the face of a larger population

15 Financial Strategy

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 Municipality of Port Hope 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:

- The financial requirements for:
  - Existing assets
  - Existing service levels
  - Requirements of contemplated changes in service levels (none identified for this plan)
- Use of traditional sources of municipal funds:
  - Tax levies
  - User fees
  - Debt
  - Development charges
- Use of non-traditional sources of municipal funds:
  - Reallocated budgets
  - Partnerships
  - Procurement methods
- Use of Senior Government Funds:
  - Ontario Community Infrastructure Fund (OCIF)
  - Canada Community-Building Fund (CCBF)
  - Annual grants

Traditional funding sources are modelled without consideration for infrastructure betterment, future acquisitions not replacing existing infrastructure, growth, climate change, or change in policies.

Note that future costs are in 2024 dollars and are not indexed for inflation.

Additionally, 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:

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

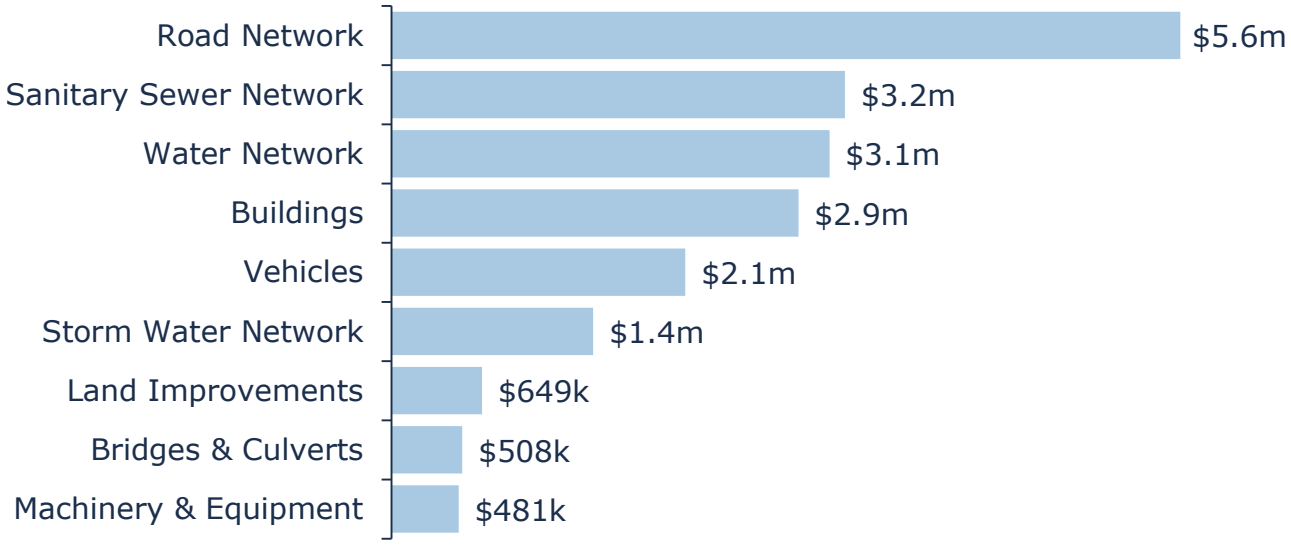
15.1 Annual Requirements & Capital Funding

15.1.1 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 $20,129,000 annually to address capital requirements for the assets included in this AMP.

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.

Figure 103 Annual Capital Funding Requirements by Asset Category



Lifecycle management strategies can be developed to identify capital costs that are realized through strategic rehabilitation and renewal of specific Municipality assets. The development of

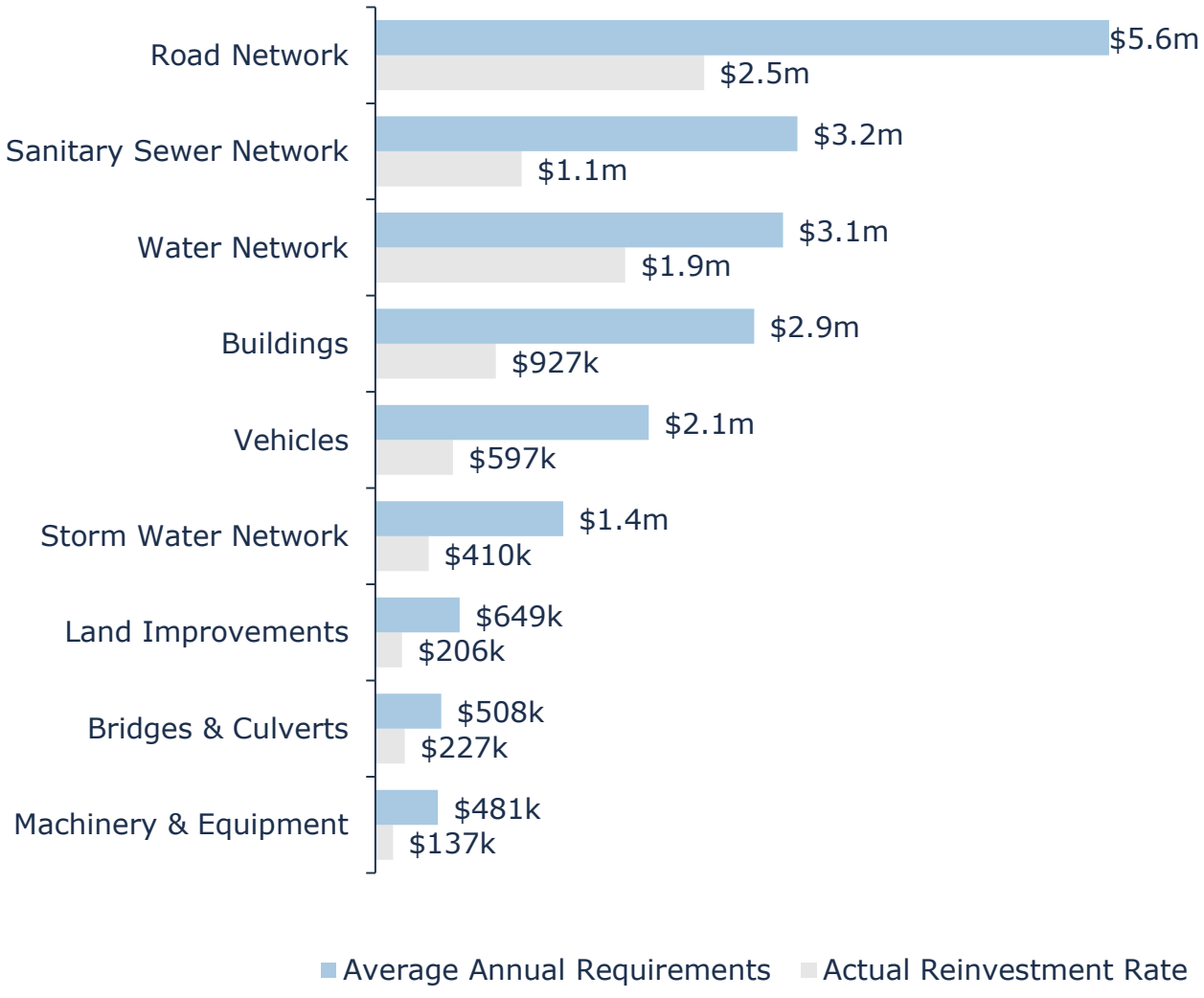
these strategies would allow for a comparison of potential cost avoidance if the strategies were to be implemented.

- **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.
- **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.

15.1.2 Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Municipality is committing approximately $8,083,000 towards capital projects per year. Given the annual capital requirement of $20,129,000, there is currently a funding gap of $12,046,000 annually.

Figure 104 Annual Requirements vs. Capital Funding Available



15.2 Funding Objective

We have developed a scenario that would enable Municipality of Port Hope to achieve full funding within 20 years for the following assets:

- **Tax-Funded Assets:** Road Network, Bridges & Culverts, Stormwater Network, Facilities, Land Improvements, Machinery & Equipment, Fleet & Fleet Equipment
- **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.

15.3 Financial Profile: Tax-Funded Assets

15.3.1 Current Funding Position

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

Table 105 Annual Available Funding for Tax-Funded Assets

Asset Category	AAR	Annual Funding Available				Annual Deficit
		Taxes	CCBF	OCIF	Total	
Road Network	$5.6m	$1.6m	$194k	$734k	$2.5m	$3.1m
Bridges & Culverts	$508k	$144k	$17k	$66k	$227k	$280k
Stormwater Network	$1.4m	$410k	-	-	$410k	$1.0m
Facilities	$2.9m	$827k	$100k	-	$927k	$2.0m
Land Improvements	$649k	$184k	$22k	-	$206k	$442k
Machinery & Equipment	$481k	$137k	-	-	$137k	$345k
Fleet & Fleet Equipment	$2.1m	$597k	-	-	$597k	$1.5m
TOTAL	**$13.7m**	**$3.9m**	**$333k**	**$800k**	**$5.0m**	**$8.7m**

The average annual investment requirement[44] for the above categories is $13,746,000. Annual revenue currently allocated to these assets for capital purposes is $5,034,000 leaving an annual deficit of $8,711,000. Put differently, these infrastructure categories are currently funded at 37% of their long-term requirements.

15.3.2 Full Funding Requirements

In 2024, the Municipality of Port Hope collected approximately $27,705,000 in annual tax revenues. 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:

Table 106 Tax Increase Requirements for Full Funding

Asset Category	% Funded	Tax Change Required for Full Funding
Road Network	44.8%	11.2%
Bridges & Culverts	44.8%	1.0%
Stormwater Network	28.4%	3.7%
Facilities	31.8%	7.2%
Land Improvements	31.8%	1.6%
Machinery & Equipment	28.4%	1.2%
Fleet & Fleet Equipment	28.4%	5.4%
TOTAL	**36.6%**	**31.4%**

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

- Municipality of Port Hope's debt payments for these asset categories will be decreasing $95,000 by 2033.

Our scenario modelling includes capturing the above changes and allocating them to the infrastructure deficit outlined above. Note that future costs are in 2024 dollars and are not indexed for inflation. The table below outlines this concept and presents several options:

[44] Note that future costs are in 2024 dollars and are not indexed for inflation.

Table 107 Tax Increase Options 5-20 Years

	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	$8,711,000	$8,711,000	$8,711,000	$8,711,000
Change in Annual Debt Repayment Costs	-($83,000)	-($95,000)	-($95,000)	-($95,000)
Resulting Infrastructure Deficit:	**$8,629,000**	**$8,616,000**	**$8,616,000**	**$8,616,000**
Tax Increase Required	31.1%	31.1%	31.1%	31.1%
Annually	**5.6%**	**2.8%**	**1.9%**	**1.4%**

15.3.3 Financial Strategy Recommendations

Considering all the above information, we recommend the 20-year option. This involves full funding[45] being achieved over 20 years by:

- Increasing tax revenues by 1.4% each year for the next 20 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP and in alignment with the targets set out in the proposed levels of service.
- Allocating the current CCBF and OCIF revenue as outlined previously.
- 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. 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, as well as CCBF funding, as they are multi-year commitments[46].
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.

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

[45] Note that future costs are in 2024 dollars and are not indexed for inflation.

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

Prioritizing future projects will require the current data to be replaced by condition-based data where none is currently available or updated over time. Although our recommendations include no further use of debt, the results of future condition-based analysis may require otherwise.

15.4 Financial Profile: Rate-Funded Assets

15.4.1 Current Funding Position

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

Table 108 Annual Available Funding for Rate-Funded Assets

Asset Category	AAR	Annual Funding Available				Annual Deficit
		Rates	CCBF	OCIF	Total	
Water Network	$3.1m	$1.4m	$108k	$408k	$1.9m	$1.2m
Sanitary Sewer Network	$3.2m	$592k	$111k	$422k	$1.1m	$2.1m
TOTAL	**$6.4m**	**$2.0m**	**$219k**	**$830k**	**$3.0m**	**$3.3m**

The average annual investment requirement[47] for the above categories is $3,136,000 for water network assets and $3,247,000 for sanitary sewer network assets. Annual revenue currently allocated to these assets for capital purposes is $1,923,000 for water network assets and $1,126,000 for sanitary sewer network assets leaving an annual deficit of $1,213,000 and $2,121,000, respectively. Put differently, these infrastructure categories are currently funded at 61% and 35% of their long-term requirements.

15.4.2 Full Funding Requirements

In 2023, the Municipality of Port Hope collected approximately $3,866,000 in user rates for water network assets and $5,545,000 for sanitary sewer network assets. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following rate changes over time:

[47] Note that future costs are in 2024 dollars and are not indexed for inflation.

Table 109 Rate Increase Requirements for Full Funding

Asset Category	Rate Change Required for Full Funding
Water Network	31.4%
Sanitary Sewer Network	38.9%

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

- Municipality of Port Hope's debt payments for sanitary sewer network assets will be decreasing by $688,000 by 2043.

Our scenario modelling includes capturing the above changes and allocating them to the infrastructure deficit outlined above. Note that future costs are in 2024 dollars and are not indexed for inflation. The tables below outline this concept and presents several options:

Table 110 Rate Increase Options 5-20 Years: Water Network

	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	$1,213,000	$1,213,000	$1,213,000	$1,213,000
Change in Annual Debt Repayment Costs	N/A	N/A	N/A	N/A
Resulting Infrastructure Deficit:	**$1,213,000**	**$1,213,000**	**$1,213,000**	**$1,213,000**
Rate Increase Required	31.4%	31.4%	31.4%	31.4%
Annually	**5.7%**	**2.8%**	**1.9%**	**1.4%**

Table 111 Rate Increase Options 5-20 Years: Sanitary Sewer Network

	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	$2,121,000	$2,121,000	$2,121,000	$2,121,000
Change in Annual Debt Repayment Costs	-($145,000)	-($327,000)	-($507,000)	-($688,000)
Resulting Infrastructure Deficit:	$1,977,000	$1,794,000	$1,614,000	$1,434,000
Rate Increase Required	36.2%	32.9%	29.6%	26.3%
Annually	**6.4%**	**2.9%**	**1.8%**	**1.2%**

15.4.3 Financial Strategy Recommendations

Considering all the above information, we recommend the 20-year option for both water network and sanitary sewer network assets. This involves full funding[48] being achieved over 20 years by:

- Increasing rate revenues by 1.4% each year for the next 20 years for water network assets and by 1.2% each year for the next 20 years for sanitary sewer network assets solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP and in alignment with the targets set out in the proposed levels of service.
- Allocating the current CCBF and OCIF revenue as outlined previously.
- 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. 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, as well as CCBF funding, as they are multi-year commitments [49].

2. We realize that raising user rates 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.

Although this option achieves full funding on an annual basis in 20 years and provides financial sustainability over the period modelled, 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 where none is currently available or updated over time. Although our recommendations include no further use of debt, the results of future condition-based analysis may require otherwise.

15.5 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:

- The ability to stabilize tax and user rates when dealing with variable and sometimes uncontrollable factors
- Equitable distribution of the cost/benefits of infrastructure over its useful life
- A secure source of funding

[48] Note that future costs are in 2024 dollars and are not indexed for inflation.

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

- 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 tables outline how the Municipality has historically used debt for investing in the asset categories as listed. As of year-end 2023, there is currently $21.2 million of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of $1.8 million, well within its provincially prescribed maximum of $8.1 million.

Table 112 Municipality of Port Hope Use of New Debt 2020-2024

Asset Category	Current Debt Outstanding	Use of Debt in the Last Five Years				
		2020	2021	2022	2023	2024
Fleet & Fleet Equipment	$270,000	-	-	-	-	-
Total Tax-Funded:	**$270,000**	**-**	**-**	**-**	**-**	**-**
Sanitary Sewer Network	$20,962,000	-	-	-	-	-
Total Rate-Funded:	$20,962,000	**-**	**-**	**-**	**-**	**-**
OVERALL TOTAL	**$21,232,000**	**-**	**-**	**-**	**-**	**-**

Table 113 Municipality of Port Hope Principal and Interest Payments

Asset Category	Principal & Interest Payments in the Next Ten Years					
	2024	2025	2026	2027	2028	2033
Fleet & Fleet Equipment	$95,000	$59,000	$57,000	$47,000	$13,000	-
Total Tax-Funded:	**$95,000**	**$59,000**	**$57,000**	**$47,000**	**$13,000**	**-**
Sanitary Sewer Network	$1,747,000	$1,709,000	$1,673,000	$1,637,000	$1,603,000	$1,420,000
Total Rate-Funded:	**$1,747,000**	**$1,709,000**	**$1,673,000**	**$1,637,000**	**$1,603,000**	**$1,420,000**
OVERALL TOTAL	**$1,843,000**	**$1,768,000**	**$1,730,000**	**$1,684,000**	**$1,615,000**	**$1,420,000**

The revenue options outlined in this plan allow the Municipality to fully fund its long-term infrastructure requirements for the selected proposed levels of service without further use of debt.

15.6 Use of Reserves

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

- The ability to stabilize tax rates when dealing with variable and sometimes uncontrollable factors
- Financing one-time or short-term investments
- Accumulating the funding for significant future infrastructure investments
- Managing the use of debt
- Normalizing infrastructure funding requirement

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:

- Breadth of services provided
- Age and condition of infrastructure
- Use and level of debt
- Economic conditions and outlook
- Internal reserve and debt policies

The Municipality continues to contribute to their reserve funds which may be available for use by applicable asset categories during the phase-in period to full funding or as a contingency if needed. This coupled with the Municipality's 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.

16 Recommendations & Key Considerations

While considering the below recommendations, it is important to recognize that asset management is an organization objective is not intended to be assigned to a single individual, title, or department. Recommendations should be reviewed with the Municipality's Asset Management Team and utilize a collaborative approach to operationalize any program improvements.

16.1 Financial Strategies

- Review the feasibility of adopting a full-funding scenario to achieve 100% of average annual funding requirements necessary for the proposed levels of service outlined in Section 4. This includes increasing taxes by 1.4% per year over a period of 20 years, water network user rates by 1.4% per year over a period of 20 years, and sanitary sewer network user rates by 1.2% per year over a period of 20 years.
    - ***Note:*** *The above recommendations are based on 2025 dollars and do not account for inflation. The Municipality should consider additional increases (if required) to address annual inflationary pressures.*
- Continued allocation of OCIF and CCBF funding as previously outlined.
- Increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.
- Continue to apply for project specific grant funding to supplement sustainable funding sources.

16.2 Asset Data

- Asset management planning is highly sensitive to replacement costs. Periodically update replacement costs based on recent projects, invoices, or estimates, as well as condition assessments, or any other technical reports and studies.
    - Material and labour costs can fluctuate due to local, regional, and broader market trends, and substantially so during major world events.
    - 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.
    - Consider incorporating depth of pipe into the replacement cost methodology for linear mains.

- Like replacement costs, an asset's established serviceable life can have dramatic impacts on all projections and analyses, including condition, long-range forecasting, and financial recommendations. Periodically reviewing and updating these values to better reflect in-field performance and staff judgement is recommended.
- The Municipality's buildings inventory could be further componentized for more accurate asset management planning. Buildings consist of several separate capital components that have unique estimated useful lives and require asset-specific lifecycle strategies. Staff should work towards further breaking down the inventory to allow for more component-based lifecycle planning.
    - Componentizing assets where possible allows for more accurate condition assessments, determination of maintenance needs, and estimation of replacement costs.
- Continue with condition assessments to maintain an updated inventory. Consider collecting any additional attributes that you may find useful to track in the future.
    - Consider developing a condition assessment program that identifies assessment methodology, persons responsible, frequency of assessment, and updates of assessment information to the asset management database. Where resources are limited, consider prioritizing assessments to assets based on their criticality to the organization or another means of prioritization.
    - The Municipality should implement regular condition assessments for all buildings to better inform short- and long-term capital requirements.

16.3 Lifecycle Management Strategies

- Continuously review, refine, and calibrate lifecycle profiles 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.
- Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.
- This AMP only includes capital costs associated with the reconstruction of assets. Port Hope should work towards identifying projected capital rehabilitation and renewal costs for assets, especially where they may be significant, and integrate these costs into long-term planning.
- Continue to execute OSIM inspections every 2 years and keep projected capital rehabilitation and renewal costs up to date.
- Continue to coordinate road network projects with underground infrastructure within the same corridor to optimize resources and avoid redundant road disruptions.
- Incorporate investment recommendations from the mechanic into the asset management system as a lifecycle event against the corresponding asset.
    - As best as possible, consider the rapidity of technological advancements during capital planning.

  - Consider developing a comprehensive fleet management strategy, which will provide a unified approach to fleet management. This strategy should review and refine fleet management practices, including centralizing funding allocation, expanding facilities strategically, and enhancing organizational structures to support proactive maintenance and long-term planning.
- Evaluate the efficacy of the Municipality's lifecycle management strategies at regular intervals to determine the impact cost, condition, and risk. This could be done by updating the condition assessment data whenever new data becomes available and rerunning the capital projections and risk reports.

16.4 Risk & 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. Models have been built into Citywide for all asset groups. These models reflect current data.
  - As the data evolves and new attribute information is obtained, continuously review, refine, and calibrate risk profiles to better reflect actual practices and improve capital projections. In particular, the various attributes used to estimate the likelihood and consequence of asset failures, and their respective weightings.
- Available data on current performance should be centralized and tracked to support any calibration of service levels on proposed levels of service in the future.
- 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 review service level targets.
- Consider developing a plan to address accessibility deficits for buildings assets. Future considerations may involve retrofitting projects to address these issues comprehensively.

Appendices

Appendix A Infrastructure Report Card

Asset Category	Replacement Cost	Average Condition	Financial Capacity	
Road Network	**$229.8 m**	**Good (63%)**	Annual Requirement:	$5,645,000
			Funding Available:	$2,530,000
			Annual Deficit:	**$3,115,000**
Bridges & Culverts	**$39.0 m**	**Good (67%)**	Annual Requirement:	$508,000
			Funding Available:	$227,000
			Annual Deficit:	**$281,000**
Water Network	**$203.9 m**	**Fair (46%)**	Annual Requirement:	$3,136,000
			Funding Available:	$1,923,000
			Annual Deficit:	**$1,213,000**
Sanitary Sewer Network	**$207.8 m**	**Fair (42%)**	Annual Requirement:	$3,247,000
			Funding Available:	$1,126,000
			Annual Deficit:	**$2,121,000**
Stormwater Network	**$113.8 m**	**Good (54%)**	Annual Requirement:	$1,445,000
			Funding Available:	$410,000
			Annual Deficit:	**$1,035,000**
Facilities	**$147.8 m**	**Good (68%)**	Annual Requirement:	$2,914,000
			Funding Available:	$927,000
			Annual Deficit:	**$1,987,000**
Land Improvements	**$15.8 m**	**Good (72%)**	Annual Requirement:	$649,000
			Funding Available:	$206,000
			Annual Deficit:	**$443,000**
Machinery & Equipment	**$3.8 m**	**Fair (41%)**	Annual Requirement:	$481,000
			Funding Available:	$137,000
			Annual Deficit:	**$344,000**
Fleet & Fleet Equipment	**$23.9 m**	**Fair (49%)**	Annual Requirement:	$2,104,000
			Funding Available:	$597,000
			Annual Deficit:	**$1,507,000**
TOTAL	**$985.6 m**	**Fair (55%)**	**Annual Requirement:**	$20,129,000
			Funding Available:	$8,083,000
			Annual Deficit:	**$12,046,000**

Appendix B 10-Year Capital Requirements

Annual capital requirements included in this appendix will not match recommended Average Annual Requirements (AAR). This is because AAR refers to the average annual expenditure over a long period of time, whereas the capital requirements below are year-by-year. In years where capital expenditures are less than the AAR, the financial strategy requires the excess funds be placed in reserves to be utilized in future years where capital expenditures exceed the AAR.

Road Network										
Segment	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
HCB & LCB Roads	$166k	$293k	$33k	$610k	$353k	-	$667k	$946k	$498k	$2.2m
Sidewalks	$2.9m	$185k	$192k	$204k	$211k	$226k	$172k	$368k	$54k	$211k
Streetlights	$1.6m	$115k	$109k	$44k	$33k	$58k	$9k	$29k	$194k	-
Traffic Signals	$797k	$518k	-	$235k	-	-	-	-	-	$216k
TOTAL	**$5.5m**	**$1.1m**	**$333k**	**$1.1m**	**$598k**	**$284k**	**$847k**	**$1.3m**	**$746k**	**$2.6m**

Bridges & Culverts										
Segment	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
Bridges	-	-	-	-	-	-	-	-	-	-
Culverts	-	-	-	-	-	-	-	-	-	-
Pedestrian Bridges	-	-	-	-	-	-	-	-	-	-
TOTAL	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Water Network										
Segment	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
Hydrants	-	-	-	$30k	$70k	$60k	$70k	$60k	$70k	$60k
Pumps	$32k	-	-	-	-	-	-	-	-	-
Water Facilities	$1.8m	$3.7m	-	$5.1m	-	-	-	-	-	-
Water Mains	$2.0m	$2.0m	$1.7m	$1.4m	$1.6m	$1.7m	$1.8m	$1.7m	$1.7m	$1.7m
TOTAL	**$3.8m**	**$5.6m**	**$1.7m**	**$6.6m**	**$1.7m**	**$1.8m**	**$1.9m**	**$1.8m**	**$1.7m**	**$1.8m**

Sanitary Sewer Network										
Segment	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
Manholes	$89k	$89k	$89k	$89k	$89k	$89k	$74k	$74k	$74k	$82k
Pumps	-	-	-	-	-	-	-	-	-	-
Sanitary Mains	$1.5m	$1.2m	$1.4m	$1.5m	$1.3m	$1.2m	$1.5m	$1.5m	$1.4m	$1.4m
Sanitary Sewer Facilities	$639k	$473k	-	-	$7.4m	$1.9m	$1.9m	$1.9m	$1.9m	$1.9m
TOTAL	**$2.2m**	**$1.8m**	**$1.5m**	**$1.6m**	**$8.8m**	**$3.2m**	**$3.4m**	**$3.4m**	**$3.3m**	**$3.4m**

Stormwater Network										
Segment	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
Culverts	-	-	-	-	-	-	-	-	-	-
Oil/Grit Separator	$30k	-	-	-	-	-	-	-	-	-
Storm Conduit	$1.4m	$1.4m	$1.1m	$1.4m	$1.1m	$430k	-	-	$675k	-
Storm Structure	-	-	-	-	-	-	$87k	$130k	$218k	$184k
Stormwater Management Facilities	-	-	-	-	-	-	-	-	-	-
TOTAL	**$1.4m**	**$1.4m**	**$1.1m**	**$1.4m**	**$1.1m**	**$430k**	**$87k**	**$130k**	**$893k**	**$184k**

Facilities										
Segment	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
Cemetery	-	-	-	-	-	-	-	-	-	-
Emergency Services	-	-	-	-	-	-	-	-	-	-
General Government	-	-	-	-	-	-	-	-	-	-
Marina	-	-	-	-	-	-	-	-	-	-
Outdoor Washroom Facilities	-	-	-	-	-	-	-	-	-	-
Public Works	-	-	-	-	-	-	-	-	-	-
Recreation	-	-	-	-	-	-	-	-	-	-
TOTAL	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Land Improvements										
Segment	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
Cemetery	-	-	-	-	-	-	-	-	-	-
Concrete Stairs	-	-	-	-	-	-	-	-	-	-
Entrance Signs	-	-	$8k	-	-	-	-	-	-	-
Fencing	-	-	-	$33k	$52k	-	$23k	$121k	$83k	-
Outdoor Lighting	-	-	-	-	-	-	-	-	$12k	-
Parking Lots	-	-	-	-	$260k	$197k	$218k	-	$534k	-
Parkland	-	-	-	-	-	-	-	$19k	-	-
Playground Equipment	-	-	-	-	$20k	-	-	-	$194k	-
Retaining Walls	-	-	-	-	-	-	-	-	$38k	-
Sports Areas	-	-	-	-	-	$155k	$146k	$146k	$182k	$34k
Trails & Pathways	-	-	-	-	-	-	-	-	-	$36k
TOTAL	**-**	**-**	**$8k**	**$33k**	**$333k**	**$352k**	**$387k**	**$287k**	**$1.0m**	**$70k**

Machinery & Equipment										
Segment	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
Athletic Equipment	$163k	-	-	-	$52k	-	-	$39k	-	$23k
Facilities Systems	-	-	-	-	$10k	-	-	-	-	-
Fire Equipment	$80k	$124k	$10k	$36k	$26k	$27k	$22k	$12k	-	-
Fuel Storage Tanks	$24k	$59k	-	-	$23k	-	-	-	$16k	-
Furniture & Fixtures	$77k	$11k	-	$45k	-	$186k	-	-	-	-
Sanitary Treatment Equipment	-	$10k	-	$16k	-	-	$287k	-	-	$16k
Small Equipment & Tools	$150k	$85k	$22k	$50k	$89k	$23k	$55k	$56k	$58k	$80k
Technology and Communications Equipment	$472k	$221k	$143k	$186k	$24k	$370k	$182k	$222k	$108k	$78k
Water Treatment Equipment	$69k	-	-	$88k	-	$403k	-	$92k	$69k	-
TOTAL	**$1.0m**	**$510k**	**$176k**	**$421k**	**$224k**	**$1.0m**	**$546k**	**$421k**	**$252k**	**$197k**

Fleet & Fleet Equipment										
Segment	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
Emergency Services	$162k	$1.4m	$750k	$866k	$50k	-	$4.4m	$1.3m	$1.3m	$80k
Heavy Duty Vehicles	-	-	$70k	$230k	$140k	$175k	$146k	$210k	$117k	-
Light Duty Vehicle	$190k	$102k	$68k	$68k	$144k	$102k	$70k	$140k	$102k	$50k
Medium Duty Vehicles	$186k	$70k	$140k	$140k	$70k	$70k	$116k	$138k	$70k	$140k
Off Road Vehicles	$231k	$496k	$165k	$240k	$374k	$184k	$351k	-	$204k	$305k
Public Transit	$387k	$51k	-	-	$387k	$51k	-	-	$387k	$51k
Public Works / Parks	$13k	$54k	$30k	-	$105k	$70k	$103k	-	-	$39k
Snow Control	-	$307k	$307k	$613k	-	$307k	-	$613k	$1.3m	-
Trailers	$124k	$125k	$97k	-	$81k	$72k	$46k	$95k	$147k	-
TOTAL	**$1.3m**	**$2.6m**	**$1.6m**	**$2.2m**	**$1.4m**	**$1.0m**	**$5.2m**	**$2.5m**	**$3.6m**	**$665k**

Appendix C Condition Assessment Guidelines

The foundation of good asset management practice is accurate and reliable data on the current condition of infrastructure. Assessing the condition of an asset at a single point in time allows staff to have a better understanding of the probability of asset failure due to deteriorating condition.

Condition data is vital to the development of data-driven asset management strategies. Without accurate and reliable asset data, there may be little confidence in asset management decision-making which can lead to premature asset failure, service disruption and suboptimal investment strategies. To prevent these outcomes, the Municipality's condition assessment strategy should outline several key considerations, including:

- The role of asset condition data in decision-making
- Guidelines for the collection of asset condition data
- A schedule for how regularly asset condition data should be collected

Role of Asset Condition Data

The goal of collecting asset condition data is to ensure that data is available to inform maintenance and renewal programs required to meet the desired level of service. Accurate and reliable condition data allows municipal staff to determine the remaining service life of assets, and identify the most cost-effective approach to deterioration, whether it involves extending the life of the asset through remedial efforts or determining that replacement is required to avoid asset failure.

In addition to the optimization of lifecycle management strategies, asset condition data also impacts the Municipality's risk management and financial strategies. Assessed condition is a key variable in the determination of an asset's probability of failure. With a strong understanding of the probability of failure across the entire asset portfolio, the Municipality can develop strategies to mitigate both the probability and consequences of asset failure and service disruption. Furthermore, with condition-based determinations of future capital expenditures, the Municipality can develop long-term financial strategies with higher accuracy and reliability.

Guidelines for Condition Assessment

Whether completed by external consultants or internal staff, condition assessments should be completed in a structured and repeatable fashion, according to consistent and objective assessment criteria. Without proper guidelines for the completion of condition assessments there can be little confidence in the validity of condition data and asset management strategies based on this data.

Condition assessments must include a quantitative or qualitative assessment of the current condition of the asset, collected according to specified condition rating criteria, in a format that can be used for asset management decision-making. As a result, it is important that staff adequately define the condition rating criteria that should be used and the assets that require a discrete condition rating. When engaging with external consultants to complete condition assessments, it is critical that these details are communicated as part of the contractual terms of the project.

There are many options available to the Municipality to complete condition assessments. In some cases, external consultants may need to be engaged to complete detailed technical assessments of infrastructure. In other cases, internal staff may have sufficient expertise or training to complete condition assessments.

Developing a Condition Assessment Schedule

Condition assessments and general data collection can be both time-consuming and resource-intensive. It is not necessarily an effective strategy to collect assessed condition data across the entire asset inventory. Instead, the Municipality should prioritize the collection of assessed condition data based on the anticipated value of this data in decision-making. The International Infrastructure Management Manual (IIMM) identifies four key criteria to consider when making this determination:

1. **Relevance:** every data item must have a direct influence on the output that is required
2. **Appropriateness:** the volume of data and the frequency of updating should align with the stage in the assets life and the service being provided
3. **Reliability:** the data should be sufficiently accurate, have sufficient spatial coverage and be appropriately complete and current
4. **Affordability:** the data should be affordable to collect and maintain

Appendix D Risk Rating Criteria

Probability of Failure Metrics

Asset Profiles	Risk Classification	Risk Criteria	Value/Range	Probability	Probability of Failure Score
Gravel Roads, Mechanical & Electrical (Water Network)	Economic (100%)	Condition (100%)	79 - 100	Rare	1
			60 - 79	Unlikely	2
			30 - 59	Possible	3
			1 – 29	Likely	4
			0 – 1	Almost Certain	5
HCB & LCB Roads	Economic (100%)	Condition (100%)	75 - 100	Rare	1
			55 - 74	Unlikely	2
			35 - 54	Possible	3
			20 - 34	Likely	4
			0 – 19	Almost Certain	5
Sanitary Sewer Mains, Sanitary Structures	Economic (100%)	Condition (100%)	1	Rare	1
			2	Unlikely	2
			3	Possible	3
			4	Likely	4
			5	Almost Certain	5
All Remaining Asset Profiles[50]	Economic (100%)	Condition (100%)	75 – 100	Rare	1
			50 – 74	Unlikely	2
			25 – 49	Possible	3
			1 – 24	Likely	4
			0 – 1	Almost Certain	5

[50] Refer to the Port Hope Citywide database for a complete overview of all asset profiles that meet the specified Probability of Failure criteria.

Consequence of Failure Metrics

Asset Profiles	Risk Classification	Risk Criteria	Value/Range	Consequence	Consequence of Failure Score
General Government Buildings	Economic (50%)	Replacement Cost (100%)	$5,000 - $100,000	Insignificant	1
			$100,000– $250,000	Minor	2
			$250,000 – $1,000,000	Moderate	3
			$1,000,000 - $100,000,000	Major	4
			$100,000,000+	Severe	5
	Strategic (50%)	Building Type (100%)	Cemetery	Insignificant	1
			Recreational & Cultural Facility		
			Administrative Facility	Minor	2
			Standpipe		
			Water Reservoir		
			Booster Station	Moderate	3
			Fire Facility		
			Police Facility		
			Transportation Facility		
			Water Tower		
			Wastewater Treatment, Other	Major	4
			JOC Facility	Severe	5
			Wastewater Treatment Plant		
			Water Treatment Plant		
HCB & LCB Roads	Economic (40%)	Replacement Cost (100%)	$5,000 - $100,000	Insignificant	1
			$100,000– $250,000	Minor	2
			$250,000 – $1,000,000	Moderate	3
			$1,000,000 - $100,000,000	Major	4
			$100,000,000+	Severe	5
	Strategic (60%)	Road Class (50%)	Local St	Minor	2
			Collector	Moderate	3
			Arterial	Major	4

Asset Profiles	Risk Classification	Risk Criteria	Value/Range	Consequence	Consequence of Failure Score
			Major Arterial	Severe	5
		Class (50%)	General Capital	Minor	2
			Infrastructure		
			No Class		
Storm Conduit	Economic (25%)	Replacement Cost (100%)	$5,000 - $100,000	Insignificant	1
			$100,000– $250,000	Minor	2
			$250,000 – $1,000,000	Moderate	3
			$1,000,000 - $100,000,000	Major	4
			$100,000,000+	Severe	5
	Operational (25%)	Conduit Width (mm) (100%)	200	Insignificant	1
			375	Minor	2
			600	Moderate	3
			900	Major	4
			1,350	Severe	5
	Strategic (50%)	Class (100%)	General Capital	Major	4
			Infrastructure		
			No Class		
Wastewater - Sanitary Sewer Mains	Economic (25%)	Replacement Cost (100%)	$5,000 - $100,000	Insignificant	1
			$100,000– $250,000	Minor	2
			$250,000 – $1,000,000	Moderate	3
			$1,000,000 - $100,000,000	Major	4
			$100,000,000+	Severe	5
	Operational (25%)	Pipe Size (mm) (100%)	150	Insignificant	1
			200	Minor	2

Asset Profiles	Risk Classification	Risk Criteria	Value/Range	Consequence	Consequence of Failure Score
			300	Moderate	3
			450	Major	4
			1,000	Severe	5
	Strategic (50%)	Class (100%)	General Capital Infrastructure No Class	Major	4
Water Mains	Economic (25%)	Replacement Cost (100%)	$5,000 - $100,000	Insignificant	1
			$100,000– $250,000	Minor	2
			$250,000 – $1,000,000	Moderate	3
			$1,000,000 - $100,000,000	Major	4
			$100,000,000+	Severe	5
	Operational (25%)	Pipe Size (mm) (100%)	100	Insignificant	1
			150	Minor	2
			200	Moderate	3
			250	Major	4
			600	Severe	5
	Strategic (50%)	Class (100%)	General Capital Infrastructure No Class	Severe	5
All Remaining Asset Profiles[51]	Economic (40%)	Replacement Cost (100%)	$5,000 - $100,000	Insignificant	1
			$100,000– $250,000	Minor	2

[51] Refer to the Port Hope Citywide database for a complete overview of all asset profiles that meet the specified Consequence of Failure criteria.

Asset Profiles	Risk Classification	Risk Criteria	Value/Range	Consequence	Consequence of Failure Score
			$250,000 – $1,000,000	Moderate	3
			$1,000,000 - $100,000,000	Major	4
			$100,000,000+	Severe	5
	Strategic (60%)	Asset Profile (100%)	Tablets, Sports Fields, Cathodic Protection Anode Station	Insignificant	1
			Light & Medium Duty Vehicles, Furniture & Fixtures, Generators	Minor	2
			Building Envelope Components, Mechanical & Electrical Components, Computer Hardware	Moderate	3
			Bridges, Force Mains, Fire Stations	Major	4
			Standpipes, Water Service	Severe	5

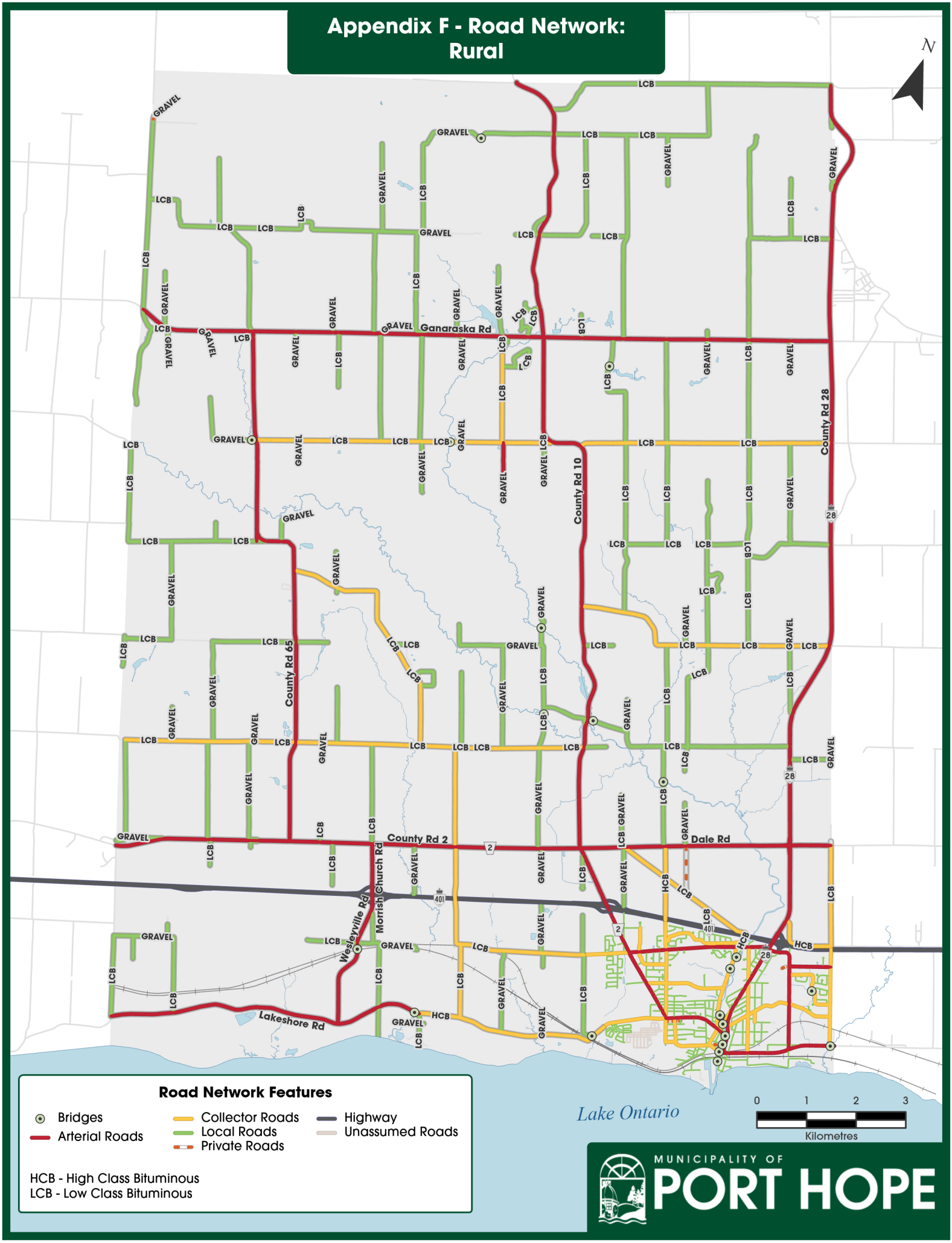
Appendix E Proposed LOS Criteria

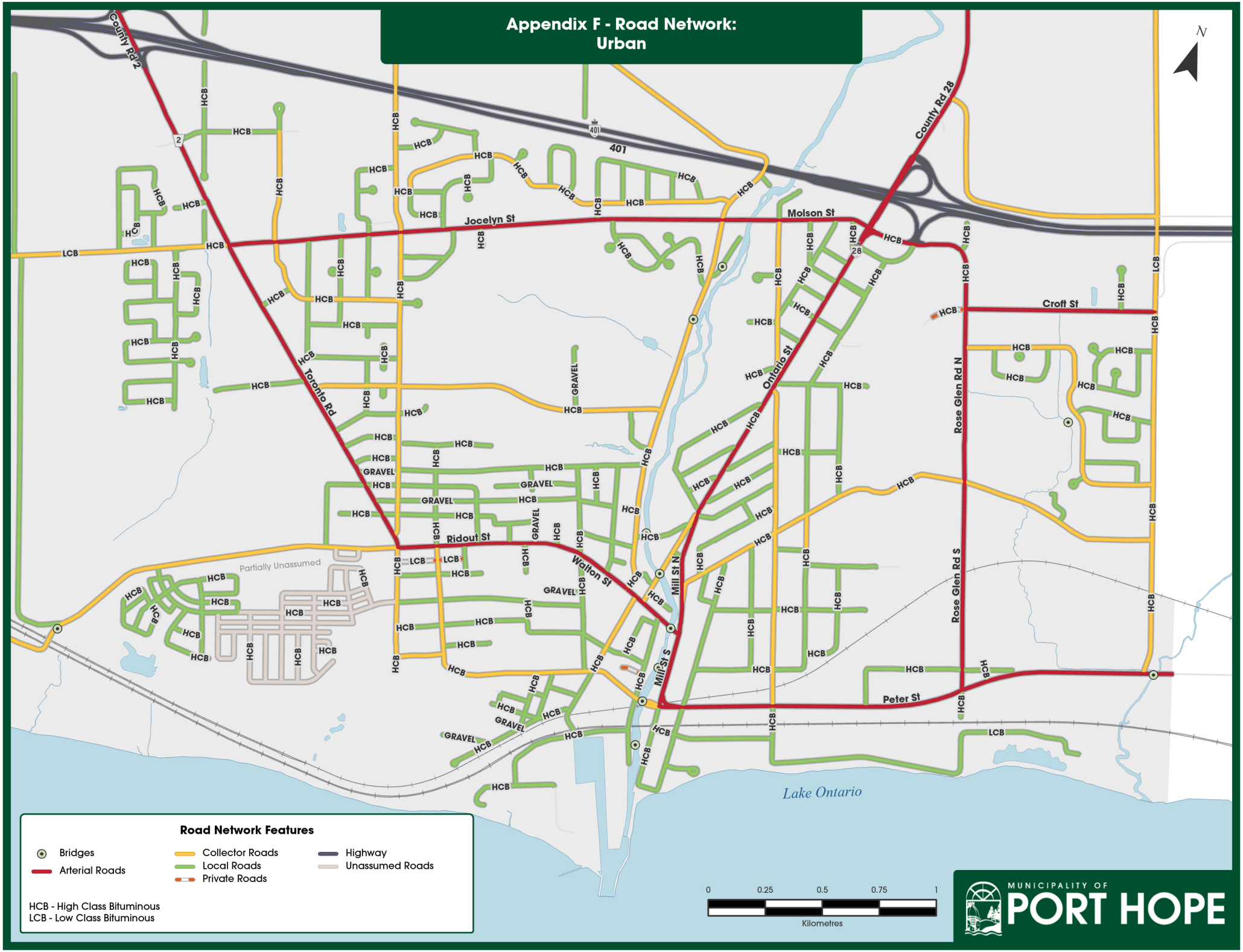
Category	Impact				
	1 Negligible	2 Low	3 Moderate	4 High	5 Catastrophic
Strategic	No effect on Community well-being and Organization's Strategic Goals. No media exposure	Negligible impact on Community well-being and Organization's Strategic Goals. Minor local media exposure	Moderate impact on Community well-being and Organization's Strategic Goals. Moderate local media exposure lasting for several days	Significant impact on Community well-being and Organization's Strategic Goals. Intense local media exposure lasting several weeks and/or provincial	Major impact on Community well-being and Organization's Strategic Goals. Significant national exposure lasting several days or weeks
Environmental	Very negligible impact. Reversible within 1 week	Material damage of local importance. Minor, short-term (within 6 months) very isolated damage to the environment	Significant short term (less than 1 year) local damage to the environment	Significant long-term (greater than 1 year) widespread damage to the environment. County wide implication	Major long-term (greater than 5 years) or permanent widespread damage to the environment. Some provincial implication
Health and Safety	No obvious potential for injury or affects to health	Minor medical attention may be required	Potential for minor injury or affects to health of an individual. Full recovery is expected	Hospitalization of some individuals may be required for a short period of time	Emergency and / or long-term hospitalization required for one or more individuals

Category	Impact				
	1 Negligible	2 Low	3 Moderate	4 High	5 Catastrophic
Compliance	Breach of local standard operating procedures but not any mandatory policies or procedures	Ad hoc as opposed to systematic breaches of policies and procedures but not of laws or regulation	Breach of laws/ licenses, including a notifiable breach resulting in recommendations and active monitoring by regulator/ instances of breach of operational policies	Prosecution: Fines=< 1M Show cause notice from regulator, enforceable undertaking; Significant and systematic breach of policy	Prosecution with potential for executives to be jailed. Fines> $1M , Loss of critical license/accreditation. Significant and systematic breach of governance policies
Operational	Small number of customers experiencing service disruption. No impact or reduced quality of service or service loss for few residents	Service disruption at a localized level. Reduced quality of service or service loss for critical users for less than an hour. An increase in complaints from the community (<10%)	Significant localized service disruption. Service loss or major quality of service concern for critical users. An increase in complaints from the community (10%-25%)	Major service disruption. Major service loss (less than a day and not able to maintain fire supply). A marked increase in complaints from the community (25%-50%)	Very major, widespread service disruption. Disastrous service loss (for more than a day). Significant increase in complaints from the community (increase of 50% or more)
Financial Impact (Proposed)	Less than $5,000	$5,000 - $100,000	$100,000 - $250,000	$250,000 - $1M	Restoration is impossible or greater than $1M
Financial Impact (Current)	Less than $10,000	$10,000-$25,000	$25,000 - $50,000	$50,000 - $100,000	$100,000 - $10M

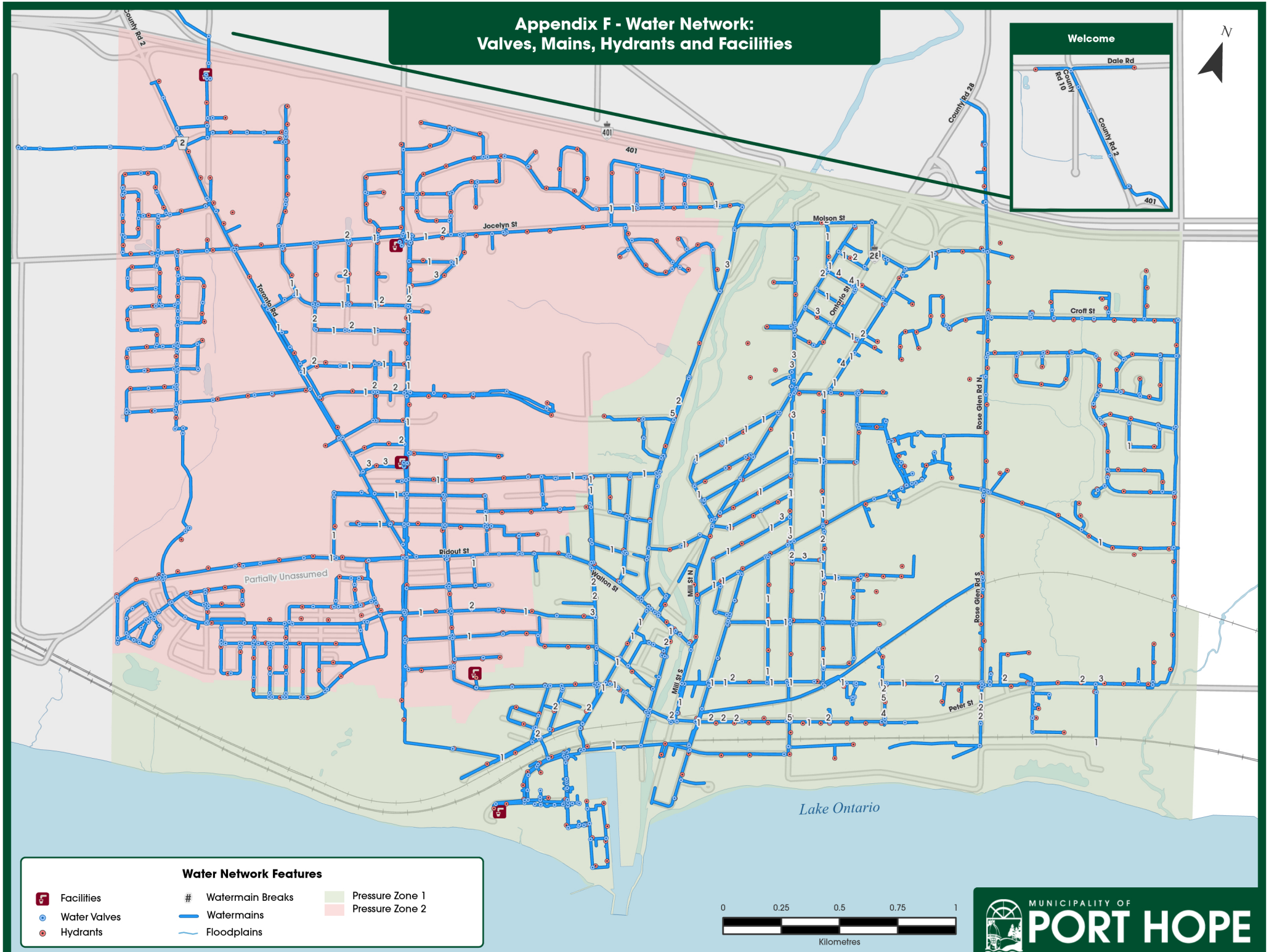
Appendix F Levels of Service Maps

Appendix F - Road Network: Rural

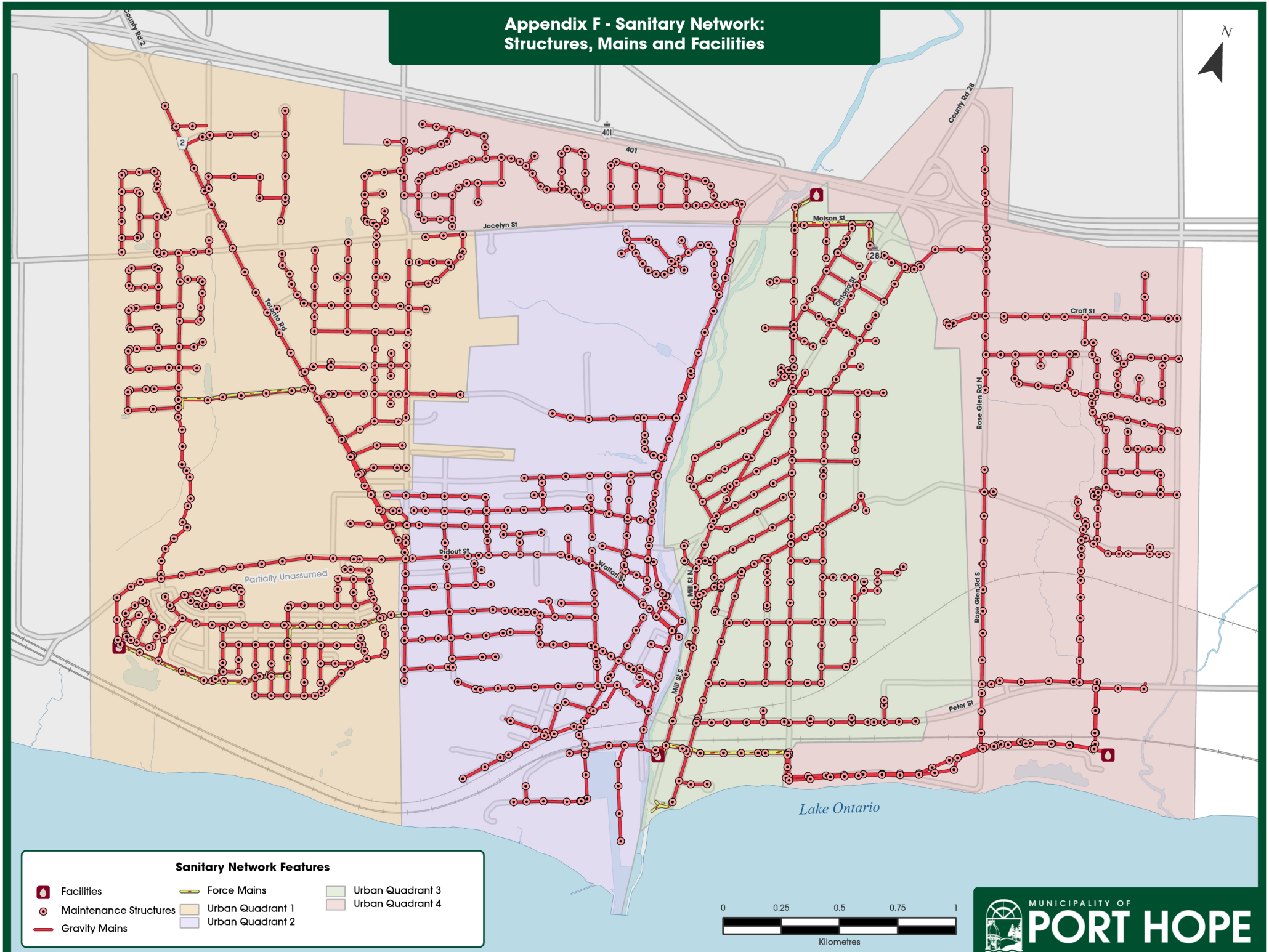



Appendix F - Road Network:
Urban
N
County Rd 2
401
County Rd 28
Jocelyn St
Molson St
Croft St
Toronto Rd
Ontario St
Rose Glen Rd N
Rose Glen Rd S
Ridout St
Walton St
Mill St N
Mill St S
Peter St
Partially Unassumed
Lake Ontario
HCB
LCB
GRAVEL
Road Network Features
Bridges
Arterial Roads
Collector Roads
Local Roads
Private Roads
Highway
Unassumed Roads
HCB - High Class Bituminous
LCB - Low Class Bituminous
0
0.25
0.5
0.75
1
Kilometres
MUNICIPALITY OF
PORT HOPE

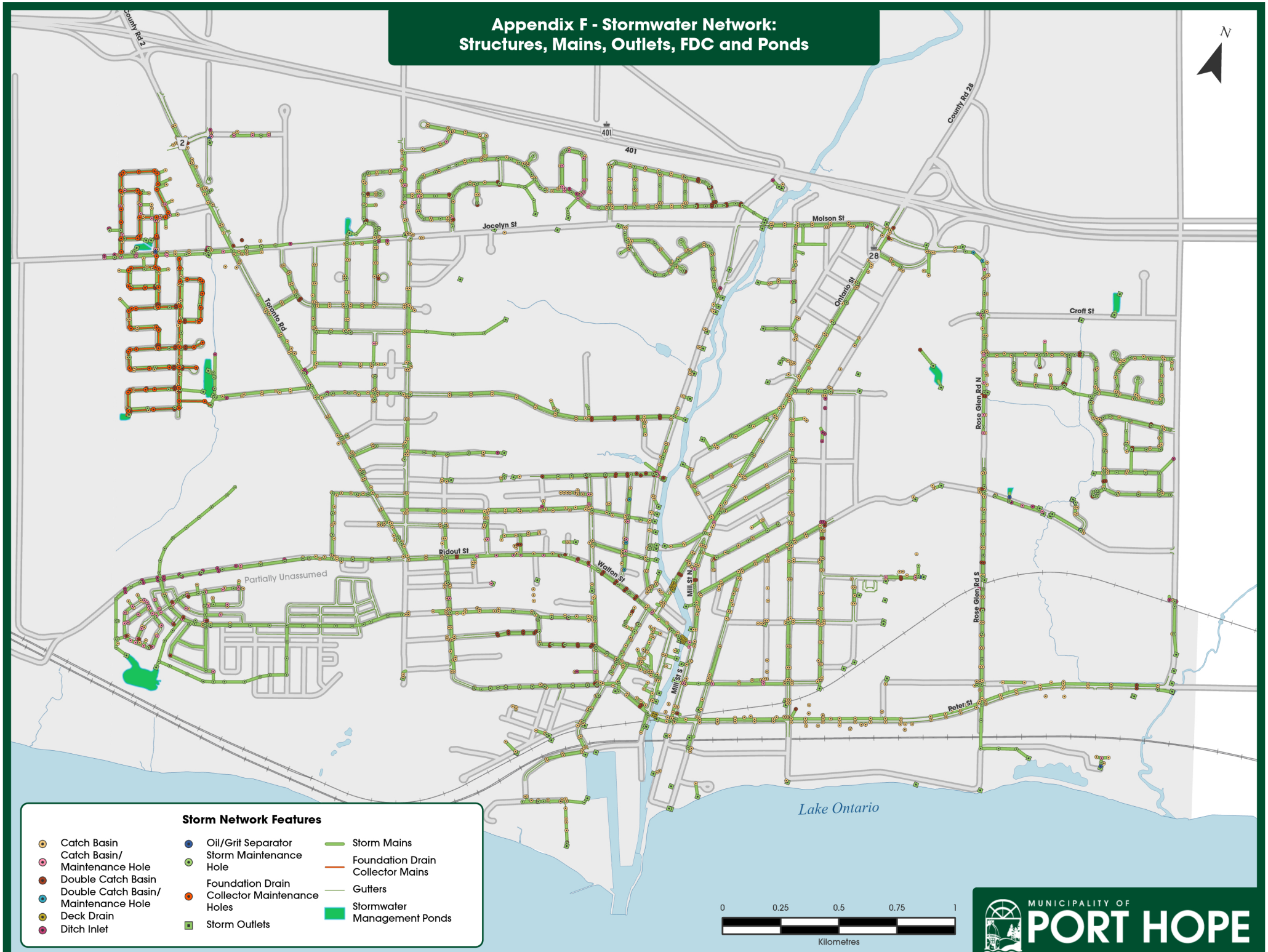
Appendix F - Water Network: Valves, Mains, Hydrants and Facilities



Appendix F - Sanitary Network: Structures, Mains and Facilities



Appendix F - Stormwater Network: Structures, Mains, Outlets, FDC and Ponds



Storm Network Features

- Catch Basin
- Catch Basin/ Maintenance Hole
- Double Catch Basin
- Double Catch Basin/ Maintenance Hole
- Deck Drain
- Ditch Inlet
- Oil/Grit Separator
- Storm Maintenance Hole
- Foundation Drain Collector Maintenance Holes
- Storm Outlets
- Storm Mains
- Foundation Drain Collector Mains
- Gutters
- Stormwater Management Ponds

MUNICIPALITY OF PORT HOPE

Appendix G Data Quality Dimensions

The quality of data affects the reliability of its outputs, and the trust organizations have in those outputs, especially when used to inform decisions. As a best practice, the quality of data can be evaluated based on the six data quality dimensions. These quality dimensions are as follows:

1. **Accuracy:** The information collected reflects reality and can be confirmed with a verifiable source (i.e., VIN information). An example of accuracy not being met is the in-service year on record is 1950 and the asset model indicates a service year of 1980. Accurate reporting assists in powerful and trusted reporting.
2. **Completeness:** Data is comprehensively collected so that it can deliver meaningful inferences and effectively inform decisions. For example, required fields are populated for all assets.
3. **Consistency:** Data on the same asset is consistent across multiple sources if applicable. For example, information in the Asset Management System matches information in the finance system.
4. **Timeliness:** Data is available when it is needed. This often requires limited lag time between the event that generates the asset data (i.e., condition assessment) and the updates to the system to reflect the event.
5. **Validity:** Consistent data format that is supported by any associated standards or structures. For example, the asset in service date is consistently formatted YYYY-MM-DD and not sometimes YYYY-DD-MM and month value is never greater than 12.
6. **Uniqueness:** Each asset appears only once in the system and there is no data duplication or overlaps. For example, each asset has a unique asset ID, no duplication of asset information.