Asset Management Plan 2024

Town of Marathon

November 2024

psdcitywide

This Asset Management Plan was prepared by:

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

Key Statistics

$247m	2023 Replacement Cost of Asset Portfolio
$154k	Replacement Cost of Infrastructure Per Household
42%	Percentage of Assets in Fair or Better Condition
51%	Percentage of Assets with Assessed Condition Data
$4.4m	Annual Capital Infrastructure Deficit
20 Years	Recommended Timeframe for Eliminating Annual Infrastructure Deficit
2.4%	Target Reinvestment Rate
0.6%	Actual Reinvestment Rate

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1. Executive Summary

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

1.1 Scope

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

This AMP include the following asset categories:

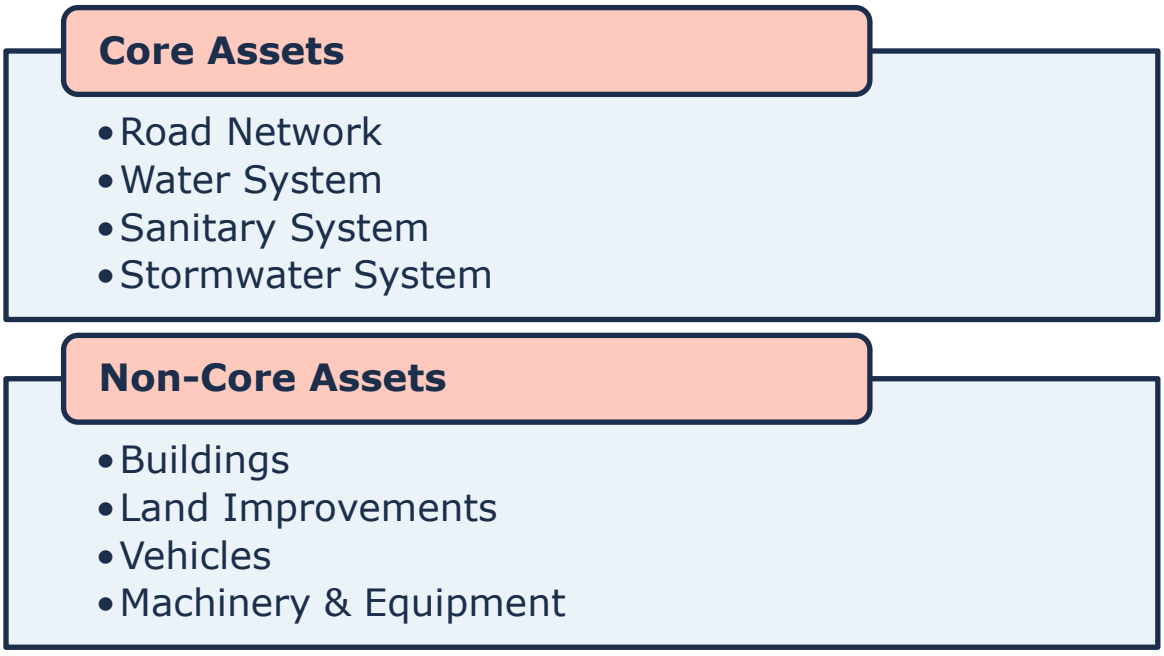


Figure 1 Core and Non-Core Asset Categories

1.2 O. Reg. 588/17 Compliance

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

1.3 Findings

The overall replacement cost of the asset categories included in this AMP totals $247 million. 47% of all assets analyzed in this AMP are in fair or better condition and assessed condition data was available for 51% of assets. For the remaining 49% 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 Town's average annual capital requirement totals $6.0 million. Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately $1.6 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $4.4 million.

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 Town. Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources.

1.4 Recommendations

A financial strategy was developed to address the annual capital funding gap. The following graphics shows annual tax/rate change required to eliminate the Town's infrastructure deficit based on a 20-year plan:

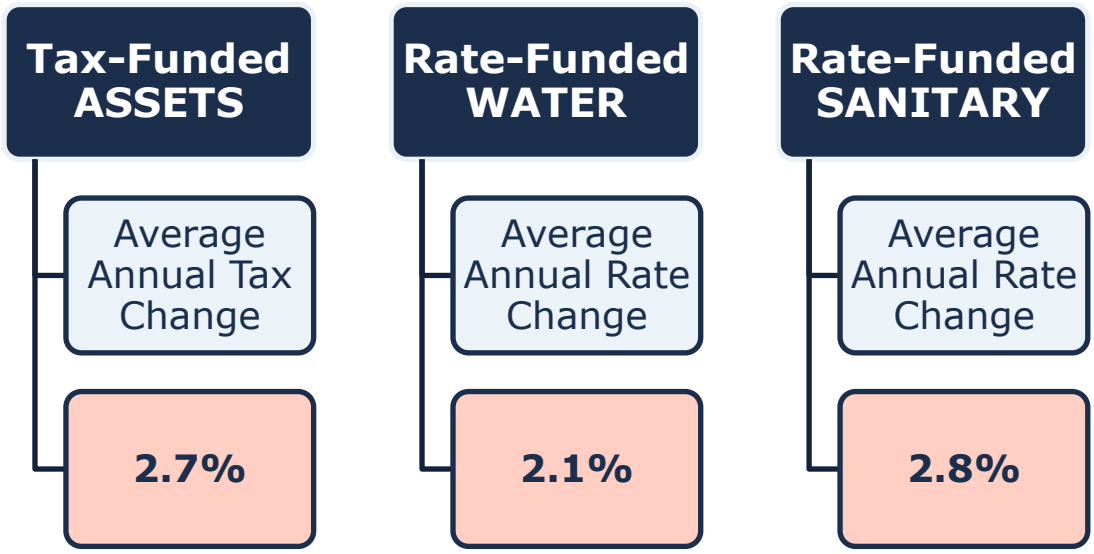


Figure 2 Proposed Tax/Rate Changes

2. Introduction & Context

2.1 Community Profile

The Town of Marathon is a single-tier municipality located in northern Ontario within the District of Thunder Bay on the shores of Lake Superior. Marathon is adjacent to Peninsula Harbour with a natural deep-water port. It has several coves including Carden Cove, Sturdee Cove and Craddock Cove; all three are located west-northwest of Marathon. Located just off Trans-Canada Highway 17, the community finds itself in a convenient location within a major transportation corridor.

Originally established in the 1940s as a company town for the pulp and paper industry, Marathon has transformed into a vibrant community with a diverse economy. Located on the north shore of Lake Superior and strategically positioned along the Trans-Canada Highway, Marathon is renowned for its outdoor recreational opportunities, including hiking, fishing, boating, and camping, enhanced by its proximity to Pukaskwa National Park.

Historically driven by forestry and mining, the Town's economy has diversified to include tourism and service industries, supported by a strong community spirit and numerous cultural events. Despite challenges such as economic dependency and population decline, Marathon's natural beauty, proactive governance, and commitment to sustainable development offer promising opportunities for growth, making it a cherished destination in Northern Ontario.

The Town has experienced a decrease in population between the past two census years (2016-2021). During this period, the Municipality saw a -4.1% decrease in population, resulting in a loss of 135 residents. The demographic profile of the Municipality reveals an average population distribution, with 15.4% of residents between the ages of 0-14, which is within 1% of the provincial average. Conversely, the 65+ age group constitutes 16.1% of the population, 2.4% below the provincial average.

Marathon, Ontario, originally a company town, has evolved into a dynamic community with a diverse economy and strong commitment to sustainability, poised for continued growth in Northern Ontario despite population challenges.

Census Characteristic	Town of Marathon	Ontario
Population 2021	3,138	14,223,942
Population Change 2016-2021	- 4.1%	5.8%
Total Private Dwellings	1,601	5,929,250
Population Density	18.8/km^2	15.9/km^2
Land Area	167.03 km^2	892,411.76 km^2

Table 1 Town of Marathon Community Profile

2.2 Climate Change

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

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

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

2.2.1 Town of Marathon Climate Profile

Marathon is located in Northern Ontario just off of the Trans Canada Highway, and right on Lake Superior. The Town is expected to experience notable effects of climate change which include higher average annual temperatures, an increase in total annual precipitation, and an increase in the frequency and severity of extreme events. According to Climatedata.ca – a collaboration supported by Environment and Climate Change Canada (ECCC) – the Town of Marathon may experience the following trends:

Higher Average Annual Temperature:

- Between the years 1971 and 2000 the annual average temperature was 4.5 ºC
- Under a high emissions scenario, the annual average temperatures are projected to increase to 6.9 ºC by the year 2050 and over 8.7 ºC by the end of the century.

Increase in Total Annual Precipitation:

- Under a high emissions scenario, Marathon is projected to experience a 13% increase in precipitation by the year 2050 and a 18% increase by the end of the century.

Increase in Frequency of Extreme Weather Events:

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

The Town has completed a climate risk assessment on the proposed construction of a new community center to identify the project's risks, impacts and mitigation strategies for the new facility. A Resilient Building Planning Worksheet was developed for the site, identifying medium and high risks for 2050 and 2100 future climate scenarios. The top climate change risk identified was the increase in wildfires followed by poor air quality relating to wildfires and warm summer and winter temperatures.

2.2.2 Integration of Climate Change and Asset Management

Asset management practices aim to deliver sustainable service delivery - the delivery of services to residents today without compromising the services and well-being of future residents. Climate change threatens sustainable service delivery by reducing the useful life of an asset and increasing the risk of asset failure. Desired levels of service can be more difficult to achieve as a

result of climate change impacts such as flooding, high heat, drought, and more frequent and intense storms.

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

2.3 Asset Management Overview

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

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

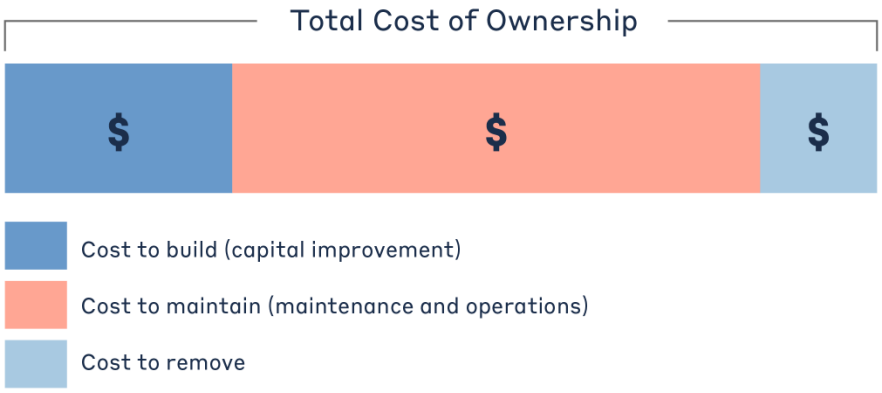


Figure 3 Total Cost of Asset Ownership

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

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

2.3.1 Foundational Asset Management Documentation

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

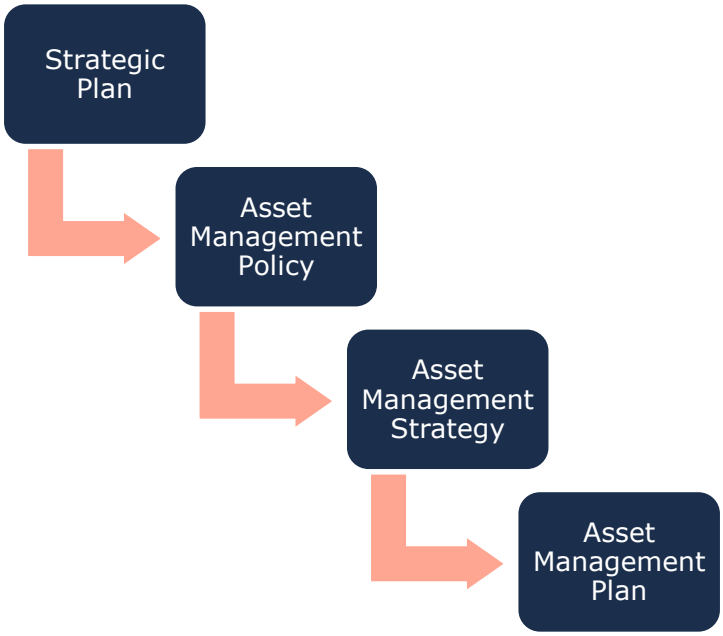


Figure 4 Foundational Asset Management Documents

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

Asset Management Policy

An asset management policy represents a statement of the principles guiding the Town'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 Town adopted Guideline No. AD0029, "Strategic Asset Management", on September 28, 2020 in accordance with Ontario Regulation 588/17.

The objectives of the policy include:

- Implementing an asset management program through all departments
- Implementing continuous improvement protocols and adopting best practices regarding asset management planning
- Developing and maintaining an asset inventory of all municipal infrastructure assets
- Developing an asset management plan that incorporates all infrastructure categories and municipal infrastructure assets
- Integrating asset management plans and practices with long-term financial planning and budgeting strategies
- Exploring innovative funding and service delivery opportunities
- Developing meaningful performance metrics to display the current state of asset management practices
- Considering the risks and vulnerabilities of municipal infrastructure to climate change

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 Town plans to achieve asset management objectives through planned activities and decision-making criteria.

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

Asset Management Plan

The asset management plan (AMP) presents the outcomes of the Town'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 Town to re-evaluate the state of infrastructure and identify how the organization's asset management and financial strategies are progressing.

2.3.2 Key Concepts in Asset Management

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

Lifecycle Management Strategies

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

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

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

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

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

Table 2 Lifecycle Management: Typical Lifecycle Interventions

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

Risk & Criticality

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

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

Figure 5 Risk Equations

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

Probability of Failure

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

Consequence of Failure

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

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

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

Table 3 Risk Analysis: Types of Consequences of Failure

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

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

Levels of Service

A level of service (LOS) is a measure of the services that the Town 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 Town measures the level of service provided at two levels: Community Levels of Service, and Technical Levels of Service. This AMP includes those LOS that are required under O. Reg. 588/17 as well as any additional metrics the Town wishes to track.

Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories as applicable (Roads, Stormwater, Water, and Sanitary) 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 Town's asset management strategies on the physical condition of assets or the quality/capacity of the services they provide.

For core asset categories as applicable (Roads, Stormwater, Water, and Sanitary) the province, through O. Reg. 588/17, has also provided technical metrics that are required to be included in this AMP.

Current and Proposed Levels of Service

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

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

2.4 Scope & Methodology

2.4.1 Asset Categories for this AMP

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

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

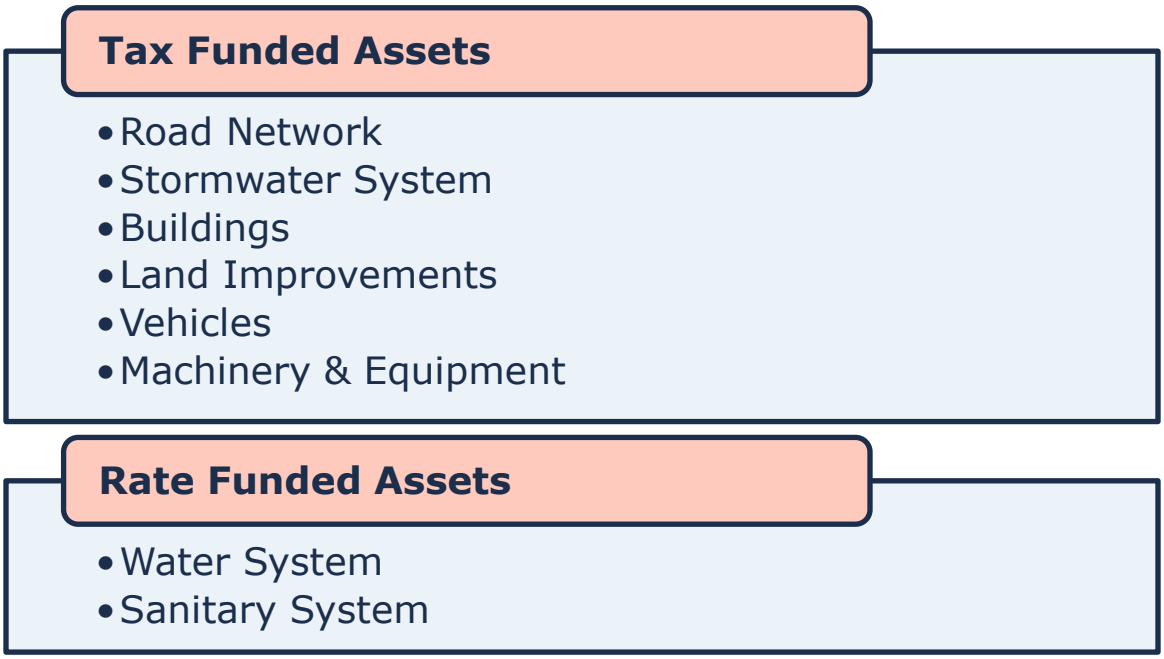


Figure 6 Tax Funded and Rate Funded Asset Categories

2.4.2 Data Effective Date

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

2.4.3 Deriving Replacement Costs

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

User-Defined Cost and Cost Per Unit

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

Cost Inflation / CPI Tables

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

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

2.4.4 Estimated Service Life & Service Life Remaining

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

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

Figure 7 Service Life Remaining Calculation

2.4.5 Reinvestment Rate

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

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

Figure 8 Target Reinvestment Rate Calculation

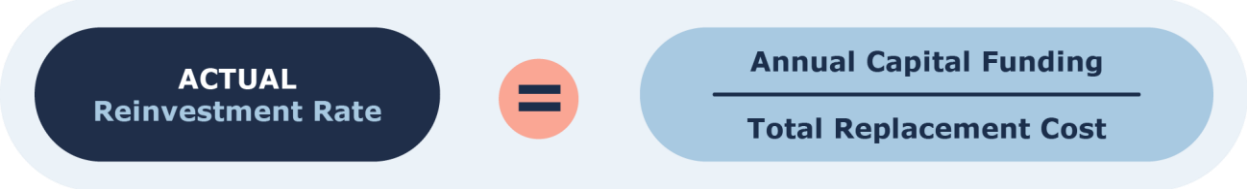


Figure 9 Actual Reinvestment Rate Calculation

2.4.6 Deriving Asset Condition

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

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

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

Table 4 Standard Condition Rating Scale

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

Condition vs. Suitability

It is important to note that condition is only one aspect of determining an asset's suitability to providing the service intended. Other factors, such as capacity, should be considered on a category level.

For example, a Town Hall Office Facility may be in good condition with sufficient service life remaining, but only has office space for 20 employees. If the municipality requires office space for 30 employees, solutions should be considered which may include replacement amongst other alternatives such as secondary office space, remote work options, etc. As these considerations are nuanced for the specific asset, suitability factors may not be directly addressed as part of this Asset Management Plan.

2.5 Ontario Regulation 588/17

As part of the Infrastructure for Jobs and Prosperity Act, 2015, the Ontario government introduced Regulation 588/17 - Asset Management Planning for Municipal Infrastructure (O. Reg 588/17)[1]. Along with creating better performing organizations, more liveable and sustainable communities, 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.

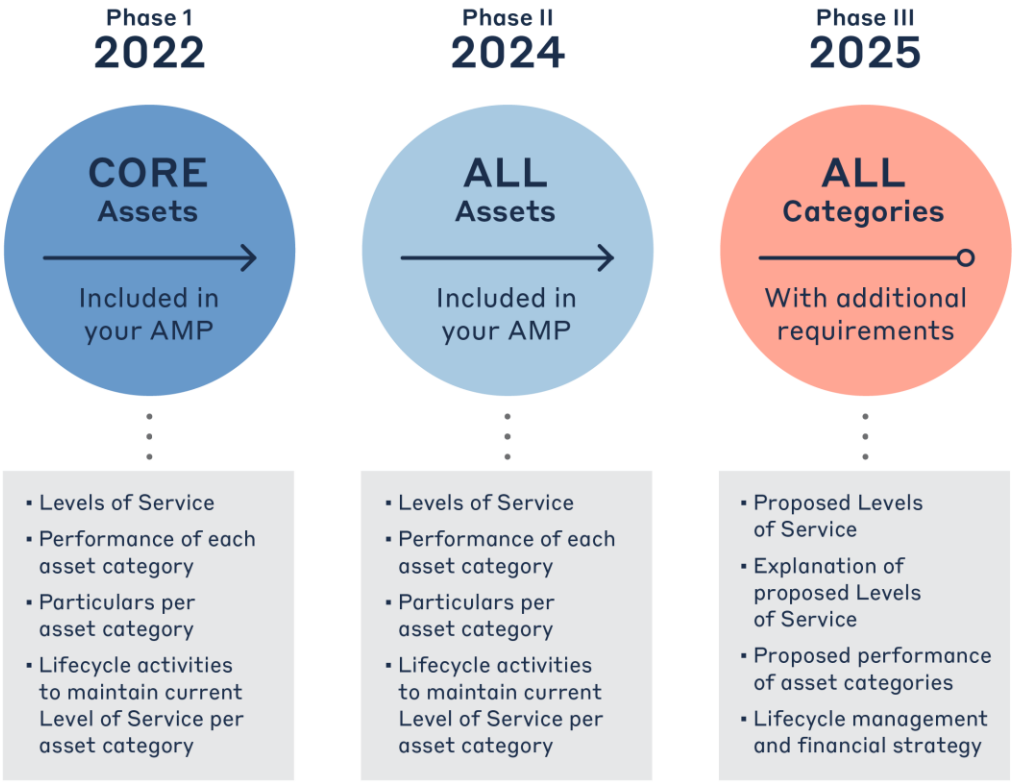


Figure 10 O. Reg. 588/17 Requirements and Reporting Deadlines

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

2.5.1 O. Reg. 588/17 Compliance Review

Requirement	O. Reg. 588/17 Section	AMP Section Reference	Status
Summary of assets in each category	S.5(2), 3(i)	4.1 – 11.1	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	4.1 – 11.1	Complete
Average age of assets in each category	S.5(2), 3(iii)	4.3 – 11.3	Complete
Condition of core assets in each category	S.5(2), 3(iv)	4.2 – 11.2	Complete
Description of municipality's approach to assessing the condition of assets in each category	S.5(2), 3(v)	4.4 – 11.4	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	4.7 – 11.7	Complete
Current performance measures in each category	S.5(2), 2	4.7 – 11.7	Complete
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	4.4 – 11.4	Complete
Costs of providing lifecycle activities for 10 years	S.5(2), 4	Appendix B	Complete
Growth assumptions	S.5(2), 5(i-ii) S.5(2), 6(i-vi)	12.1 – 12.2	Complete

Table 5 O. Reg. 588/17 Compliance Review

3. Portfolio Overview – State of the Infrastructure

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

3.1 Asset Hierarchy & Data Classification

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

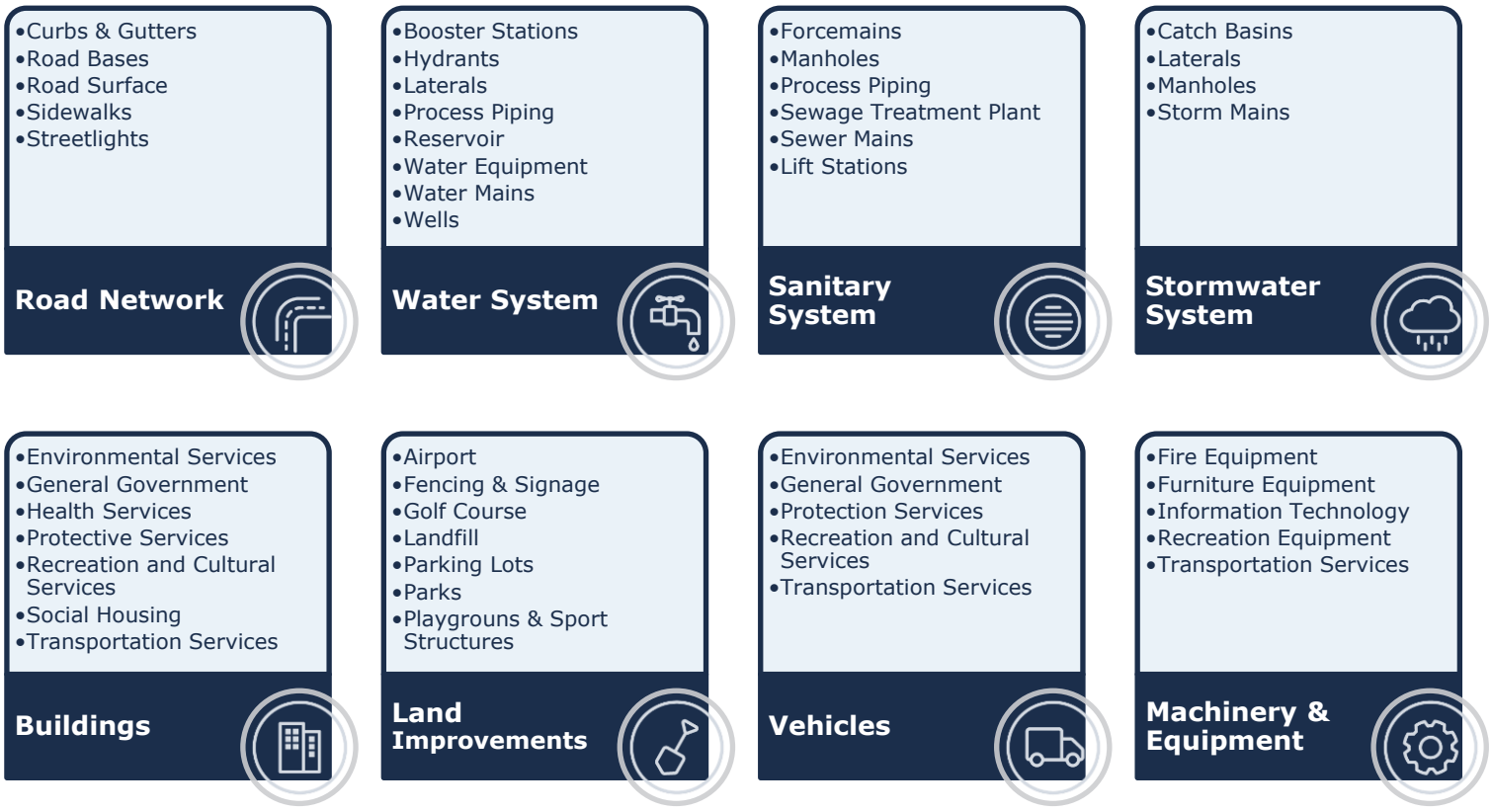


Figure 11 Asset Hierarchy and Data Classification

3.2 Portfolio Overview

3.2.1 Total Replacement Cost of Asset Portfolio

The nine asset categories analyzed in this Asset Management Plan have a total current replacement cost of $247 million. This estimate was calculated using user-defined costing, as well as inflation of historical or original costs to current date. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today. Figure 12 illustrates the replacement cost of each asset category; at 28% of the total portfolio, the buildings form the largest share of the Town's asset portfolio, followed by the sanitary system at 23%.

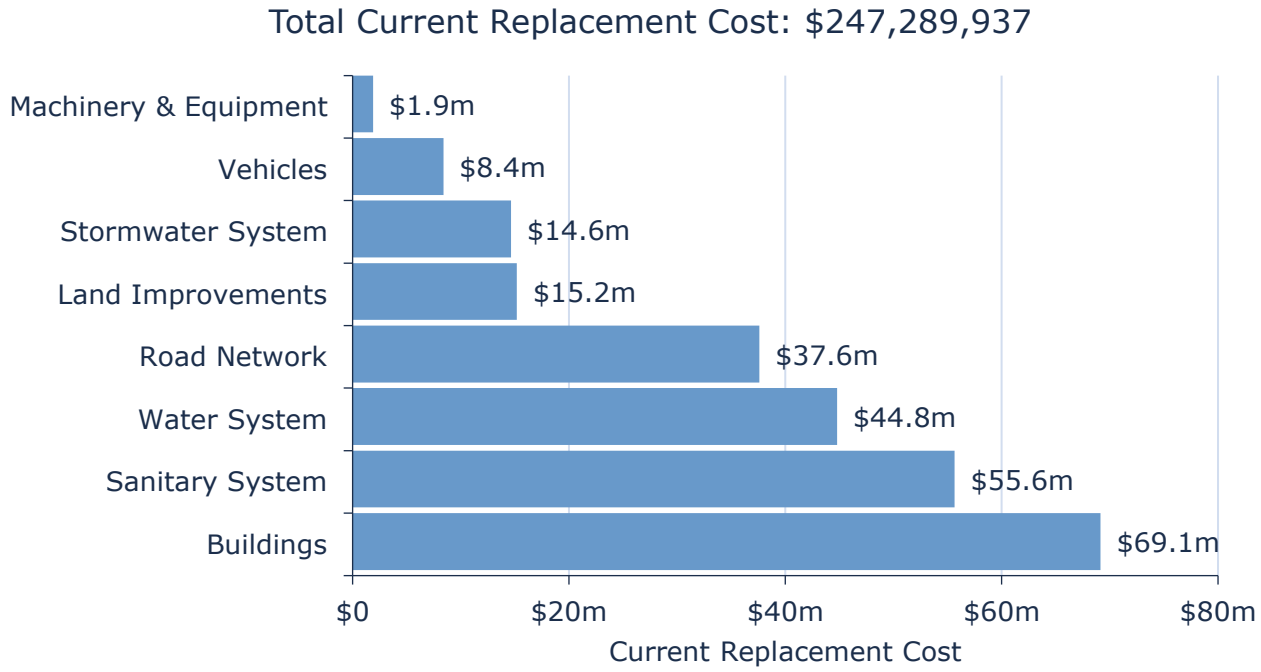


Figure 12 Current Replacement Cost by Asset Category

3.2.2 Target vs. Actual Reinvestment Rate

The graph below depicts funding gaps by comparing the target to the current reinvestment rate (as presented in the 2024 budget). To meet the existing long-term capital requirements, the Town requires an annual capital investment of $6.0 million, for a target portfolio reinvestment rate of 2.4%. Currently, the annual investment from sustainable revenue sources is $4.4 million, for a current portfolio reinvestment rate of 0.6%. Target and current re-investment rates by asset category are detailed below.

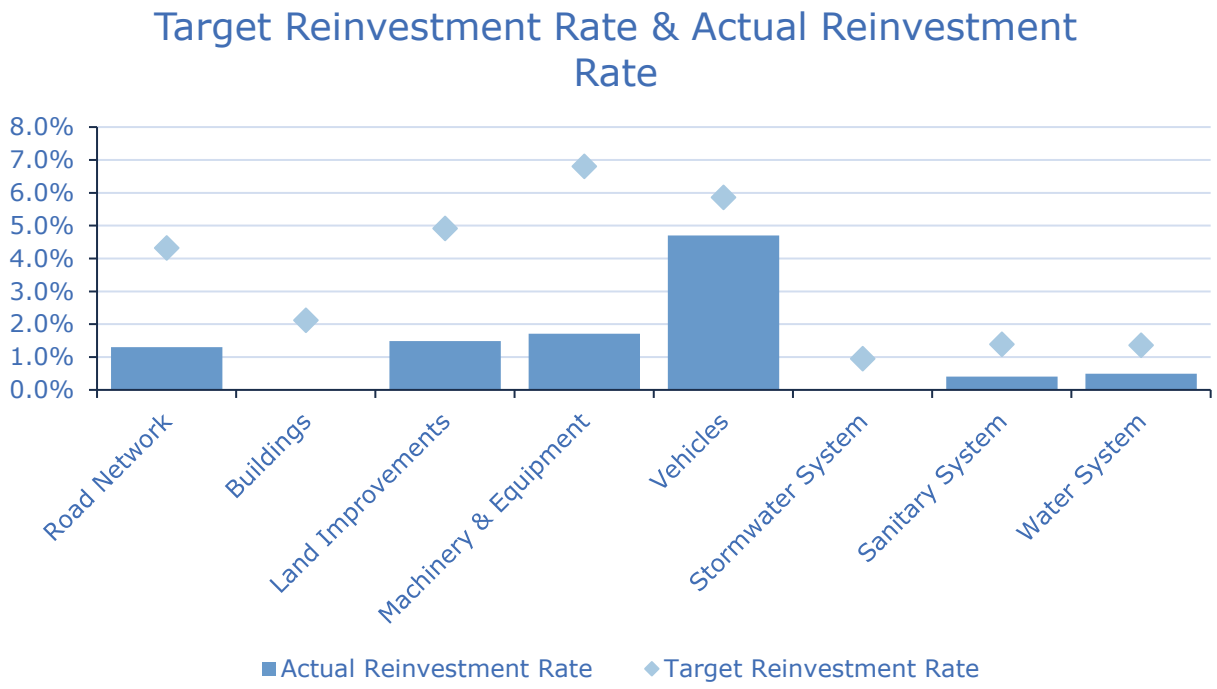


Figure 13 Current Vs. Target Reinvestment Rate

3.2.3 Condition of Asset Portfolio

Figure 14 and Figure 15 summarize asset condition at the portfolio and category levels, respectively. Based on both assessed condition and age-based analysis, 47% of the Town's infrastructure portfolio is in fair or better condition, with the remaining 53% in poor or worse condition. Typically, assets in poor or worse condition may require replacement or major rehabilitation in the immediate or short-term. Targeted condition assessments may help further refine the list of assets that may be candidates for immediate intervention, including potential replacement or reconstruction.

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

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

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

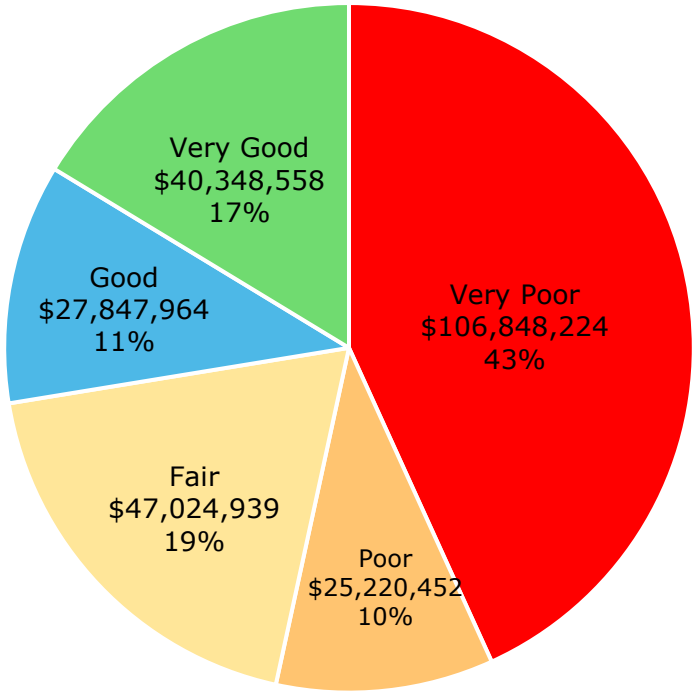


Figure 14 Asset Condition: Portfolio Overview

As further illustrated in Figure 15 at the category level, the majority of major, infrastructure including roads, buildings and stormwater system assets are in fair or better condition, based on in-field condition assessment data and age-based condition projections.

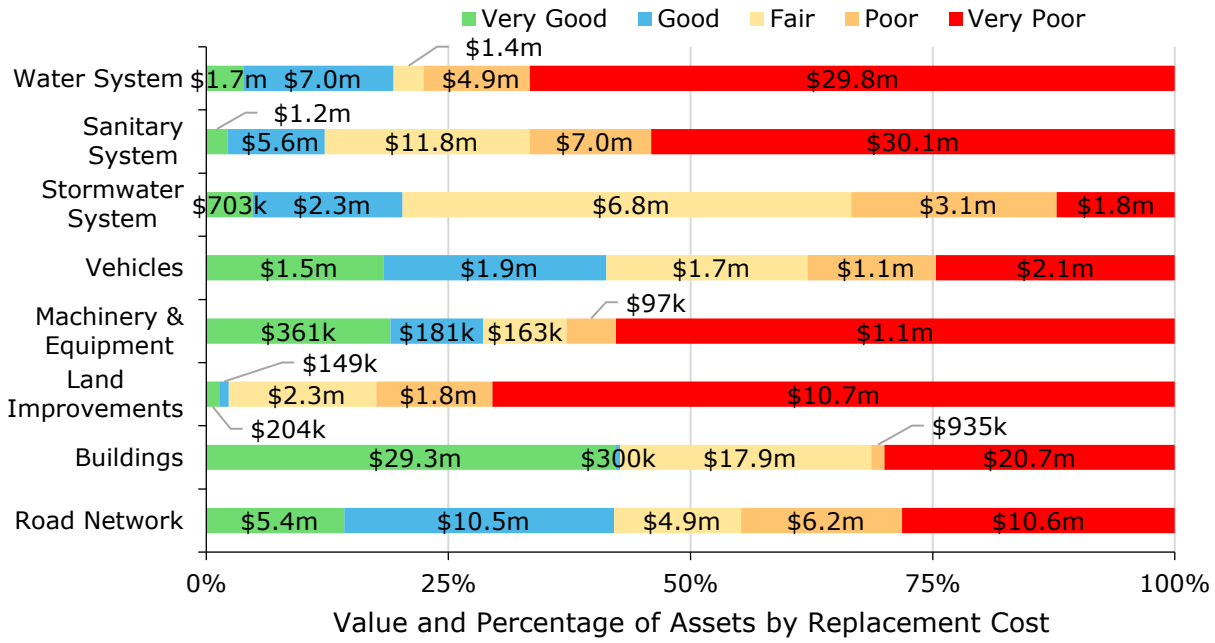


Figure 15 Asset Condition by Asset Category

Source of Condition Data

This AMP relies on assessed condition for 51% of assets, based on and weighted by replacement cost. For the remaining assets, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data used throughout this AMP.

Asset Category	Asset Segment(s)	% of Assets with Assessed Conditions	Source of Condition Data
Road Network	Road Surfaces	100%	2022 Roadway Evaluation
	Streetlights	78%	Staff Assessments
Water System	All	8%	2023 Facility Condition Assessment
Sanitary System	All	31%	2023 Facility Condition Assessment
Stormwater System	All	0%	Age-Based
Buildings	All	94%	2023 Facility Condition Assessment
Land Improvements	All	45%	2023 Facility Condition Assessment
Vehicles	All	0%	Age-Based
Machinery & Equipment	All	0%	Age-Based

Table 6 Source of Condition Data

3.2.4 Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 25% of the Town's assets will require replacement within the next 10 years (not accounting for asset replacement backlog). Details of the capital requirements are identified in each asset section.

3.2.5 Risk Matrix

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

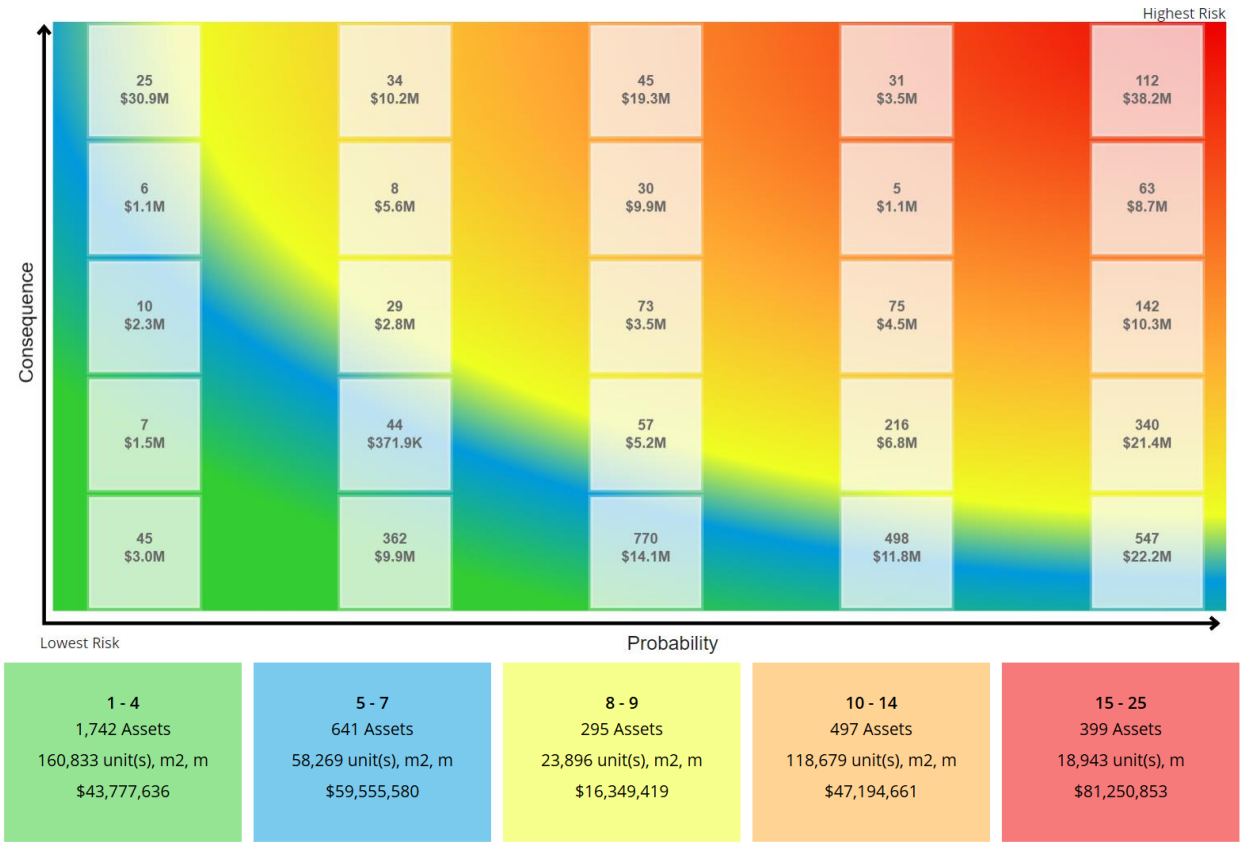


Figure 16 Risk Matrix: All Assets

The analysis shows that based on current risk models, approximately 32% of the Town's assets, with a current replacement cost of approximately $81 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 Town.

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

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

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

3.2.6 Forecasted Capital Requirements

Aging assets require maintenance, rehabilitation, and replacement. Figure 17 below illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for all asset categories analyzed in this AMP over a 100-year time horizon.

On average, $6.0 million is required each year to remain current with capital replacement needs for the Town's asset portfolio ($29.9 million allocated to each 5-year time block), represented by the 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.

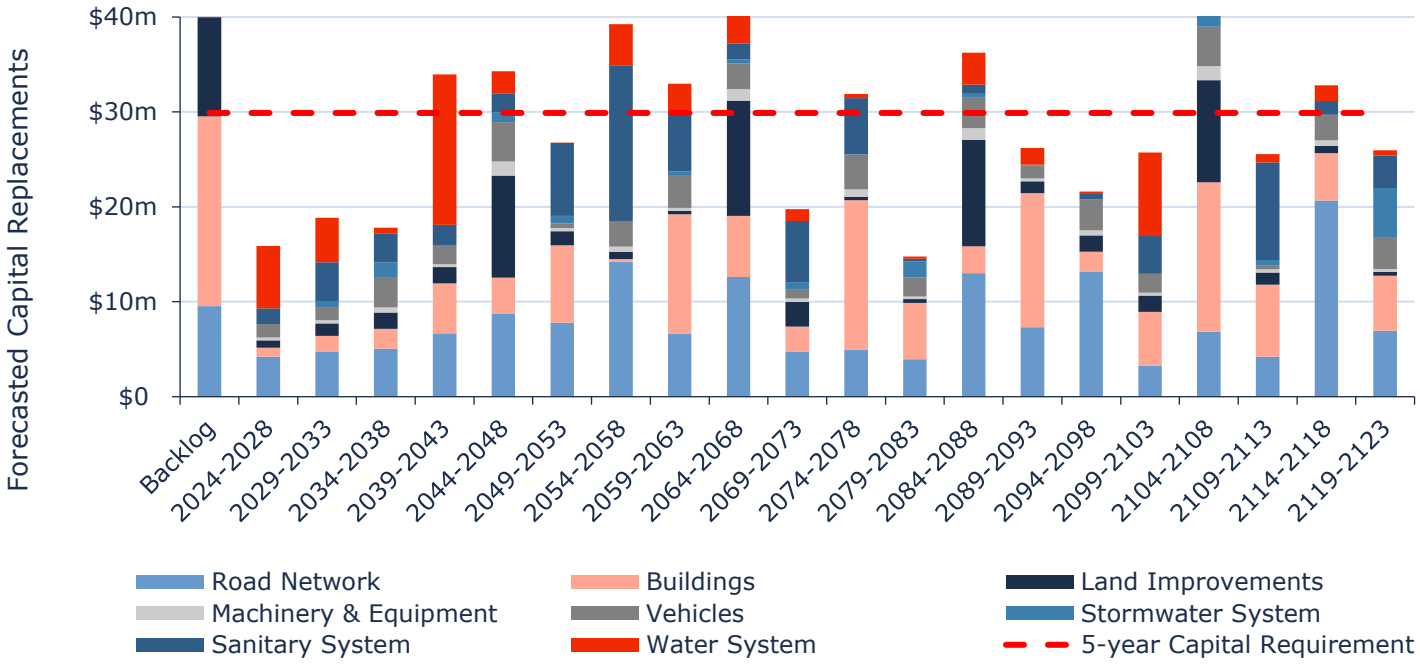


Figure 17 Capital Replacement Needs: Portfolio Overview 2024-2123

The chart also illustrates a backlog of more than $40 million, comprising assets that remain in service beyond their estimated useful life. It is unlikely that all such assets are in a state of disrepair, requiring immediate replacements. This makes continued and expanded targeted and consistent condition assessments integral. Risk frameworks, proactive lifecycle strategies, and levels of service targets can then be used to prioritize projects, continuously refine estimates for both backlogs and ongoing capital needs and help select the right treatment for each asset. In addition, more effective componentization of buildings will improve these projections, including backlog estimates.

Core Assets

Road Network

Replacement Cost	Average Condition	Financial Capacity	
$37.6 m	**Fair**	Annual Requirement:	$1,624,000
		Funding Available:	$490,000
		Annual Deficit:	**$1,134,000**

Water System

Replacement Cost	Average Condition	Financial Capacity	
$44.8 m	**Fair**	Annual Requirement:	$609,000
		Funding Available:	$222,767
		Annual Deficit:	**$386,234**

Sanitary System

Replacement Cost	Average Condition	Financial Capacity	
$55.6 m	**Poor**	Annual Requirement:	$774,000
		Funding Available:	$222,766
		Annual Deficit:	**$551,234**

Stormwater System

Replacement Cost	Average Condition	Financial Capacity	
$14.6 m	**Fair**	Annual Requirement:	$139,000
		Funding Available:	$0
		Annual Deficit:	**$139,000**

4. Road Network

The Town's road network comprises a large share of its infrastructure portfolio, with a current replacement cost of more than $37 million. The Town also owns and manages other supporting infrastructure and capital assets, including sidewalks, curbs and gutters, and streetlights.

4.1 Inventory & Valuation

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

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Road Bases	248,222	Area (m^2)	Not Planned for Replacement	
Curbs & Gutters	12,401	Length (m)	$1,178,000	CPI
Road Surface	32,460	Length (m)	$22,201,000	User-Defined
Sidewalks	31,202	Area (m^2)	$12,481,000	CPI
Streetlights	498	Quantity	$1,728,000	CPI
TOTAL			**$37,588,000**	

Table 7 Detailed Asset Inventory: Road Network

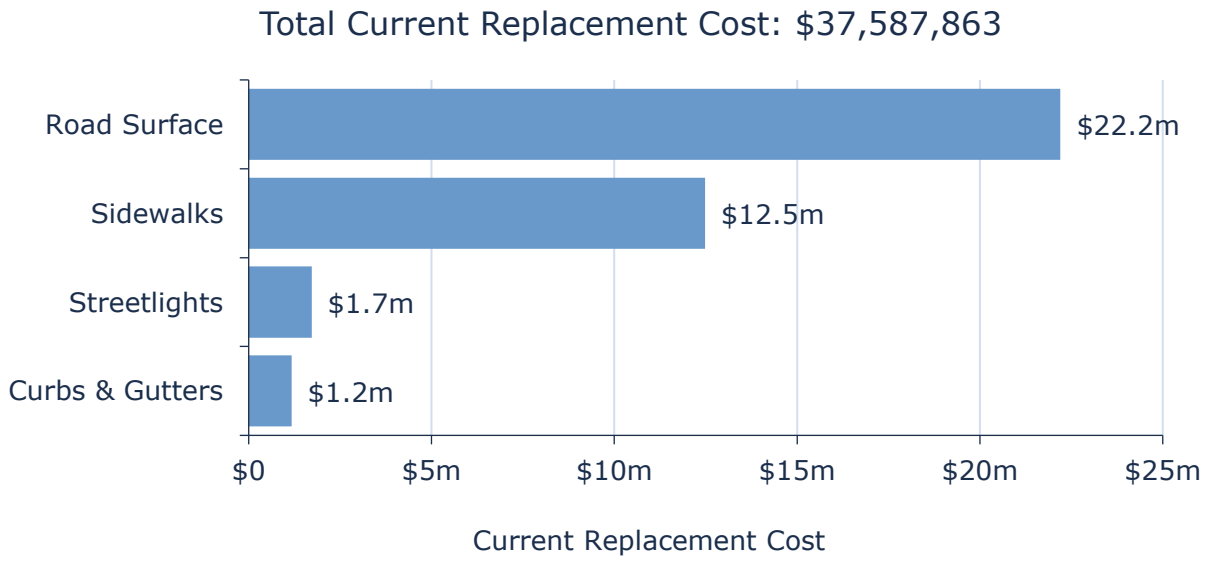


Figure 18 Portfolio Valuation: Road Network

4.2 Asset Condition

Figure 19 summarizes the replacement cost-weighted condition of the Town's road network. Based on a combination of field inspection data and age, 55% of assets are in fair or better condition; the remaining 45% of assets are in poor to very poor condition. Condition assessments were available for 100% of roads and 67% of streetlights, based on replacement cost. This condition data was projected from inspection date to current year to estimate their condition today. No condition data was available for the remaining asset types.

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

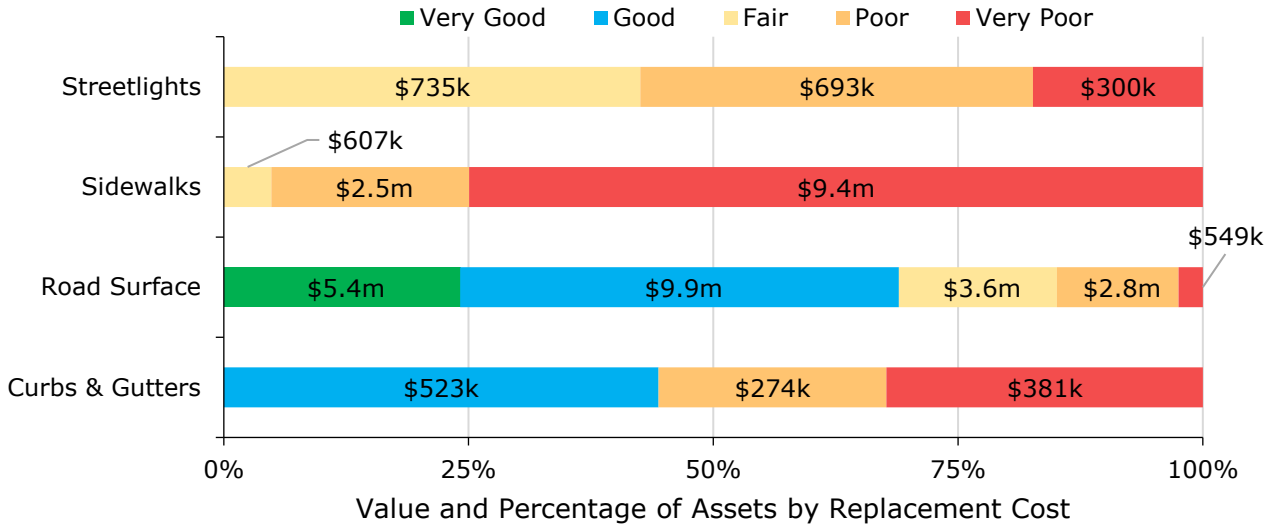


Figure 19 Asset Condition: Road Network by Segment

4.3 Current Approach to Lifecycle Management

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

The following lifecycle strategies have been developed as a proactive approach to managing the lifecycle of road network assets. Instead of allowing the roads to deteriorate until replacement is required, strategic rehabilitation is expected to extend the service life of roads at a lower total cost.

The following table expands on maintenance and inspection activities for road network assets.

Activity Type	Description of Current Strategy
Maintenance	Road Surface Management activities include patching potholes and cracks in asphalt, shoulder grading, grading loose top, dust control, washout and base repairs, sweeping, crack sealing, and shouldering and ditching. The 2022 Roadway Evaluation identifies the timeline for which maintenance activities should be completed.
	Winter maintenance activities include snow plowing and snow removal
Inspection	Road inspections are typically conducted during routine route patrols to identify maintenance tasks
	The most recent Roadway Evaluation was completed in 2022
Rehabilitation & Replacement	The 2022 Roadway Evaluation identifies the recommended rehabilitation activities for each road section and provides a timeline for when they should be completed

Table 8 Lifecycle Management Strategy: Road Network

4.4 Forecasted Long-Term Replacement Needs

Figure 20 illustrates the cyclical short-, medium- and long-term infrastructure rehabilitation and replacement requirements for the Town's road network. This analysis was run until 2073 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets - the Town's primary asset management system and asset register.

The Town's average annual requirements (red dotted line) total $1.6 million ($8.1 million per 5-year bucket) for all assets in the road network. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

The chart illustrates substantial capital needs throughout the forecast period. It also shows a backlog $9.5 million, dominated by sidewalks. These projections are based on asset replacement costs, age analysis, and condition data when available. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

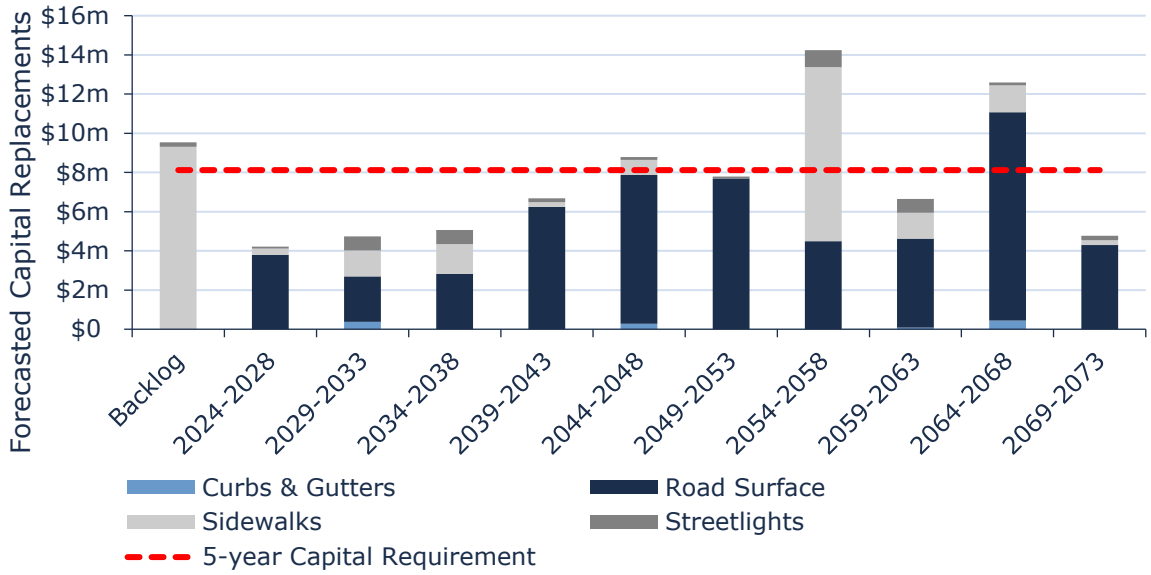


Figure 20 Forecasted Capital Replacement Needs: Road Network 2024-2073

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

A detailed 10-year capital replacement forecast can be found in Appendix B – 10-Year Capital Requirements.

4.5 Risk Analysis

The risk matrix below is generated using available asset data, including condition, service life remaining, replacement costs, and road class.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability

of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Town 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 Town's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

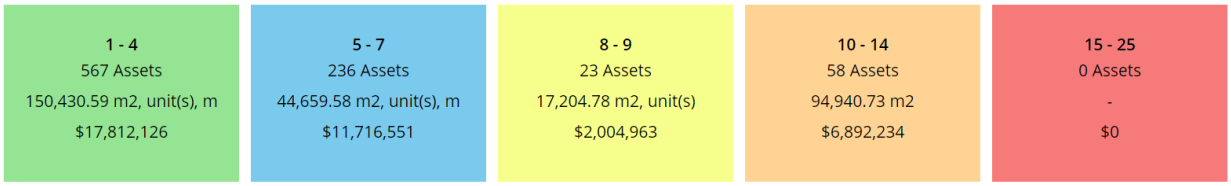


Figure 21 Risk Matrix: Road Network

4.6 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 Town selected for this AMP.

4.6.1 Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity	See Appendix C

Service Attribute	Qualitative Description	Current LOS (2023)
Quality	Description or images that illustrate the different levels of road class pavement condition	The Town completed a Roadway Evaluation in 2022. Every road section received a pavement condition rating (1-100). (0 - 40) – Very Poor (41 - 55) – Poor (56 – 70) – Fair (71 – 85) – Good (86 – 100) – Very Good

Table 9 O. Reg. 588/17 Community Levels of Service: Road Network

4.6.2 Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2023)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	0 km/km^2
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	0.20 km/km^2
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)[2]	0.21 km/km^2
Quality	Average pavement condition index for paved roads in the Town	77%
	Average surface condition for unpaved roads in the Town (e.g. excellent, good, fair, poor)	Fair

Table 10 O. Reg. 588/17 Technical Levels of Service: Road Network

[2] Includes both paved and gravel roads.

5. Water System

The Town of Marathon and Northern Waterworks Inc. are responsible for overseeing the Town's water system with a total current replacement cost of approximately $45 million. The Town is responsible for the following:

- Groundwater wells
- Industrial Park Booster Station
- Penn Lake Heights Reservoir & Booster Station
- Marathon water distribution system

5.1 Inventory & Valuation

Table 11 summarizes the quantity and current replacement cost of the Town's various water system assets as managed in Citywide.

The replacement cost of water mains does not include the cost of installation.

Segment	Quantity (# of components)	Unit of Measure	Replacement Cost	Primary RC Method
Booster Stations	2	Quantity	$1,496,000	CPI
Hydrants	214	Quantity	$2,140,000	Cost/Unit
Laterals	1,398	Length (m)	$1,165,000	Cost/Unit
Process Piping	880	Quantity	$600,000	Cost/Unit
Reservoir	1 (2)	Quantity	$4,366,000	CPI
Water Equipment	52	Quantity	$1,516,000	CPI
Water Mains	32,425	Length (m)	$30,049,000	Cost/Unit
Wells	5	Quantity	$3,449,000	CPI
TOTAL			**$44,780,000**	

Table 11 Detailed Asset Inventory: Water System

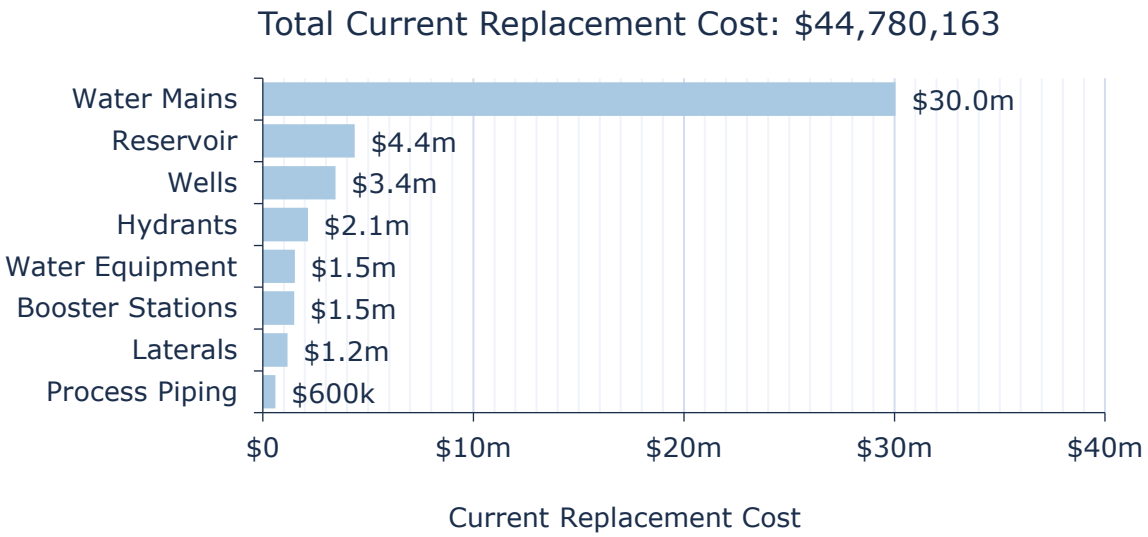


Figure 22 Portfolio Valuation: Water System

5.2 Asset Condition

Figure 23 summarizes the replacement cost-weighted condition of the Town's water system. Based on a combination of field inspection data and age, 22% of assets are in fair or better condition; the remaining 78% of assets are in poor to very poor condition. Condition assessments were available for 100% of booster stations, based on replacement cost. This condition data was projected from inspection date to current year to estimate their condition today. Age-based condition was used as an approximate condition for the remainder of the water system assets.

Assets in poor or worse condition may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition.

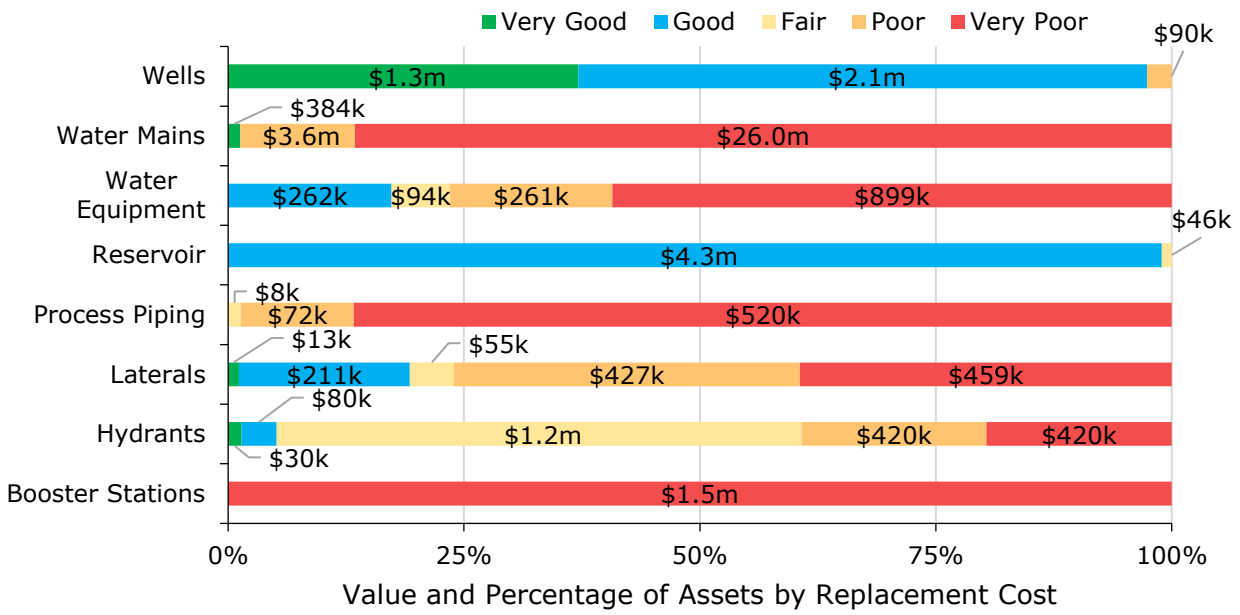


Figure 23 Asset Condition: System by Segment

5.3 Current Approach to Lifecycle Management

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

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

Activity Type	Description of Current Strategy
Maintenance	Annual flushing of mains is completed on the water distribution network
	Water mains are inspected in coordination with road rehabilitation activities to determine if maintenance or renewal is required
Rehabilitation/ Replacement	Trenchless re-lining is being considered; however, the current maintenance program is suitable presently
	In the absence of mid-lifecycle rehabilitative events, most mains are simply maintained with the goal of full replacement once it reaches its end-of-life

Activity Type	Description of Current Strategy
	Other replacement activities are identified based on an analysis of the asset functionality and design capacity as well as any issues identified during regular maintenance activities
	Similar to other sub-surface infrastructure, Staff attempt to coordinate water reconstruction projects with road reconstruction project to produce cost efficiencies
Inspection	Northern Waterworks Inc. provides an annual report on the Marathon Drinking Water System which summarizes the water quality monitoring results, adverse water quality incidents, system expenses, and chemicals used in the water treatment process

Table 12 Lifecycle Management Strategy: Water System

5.4 Forecasted Long-Term Replacement Needs

Figure 24 illustrates the cyclical short-, medium- and long-term infrastructure rehabilitation and replacement requirements for the Town's water system. This analysis was run until 2108 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets - the Town's primary asset management system and asset register. The Town's average annual requirements (red dotted line) total $609,000 ($3.0 million per 5-year bucket) for all assets in the water system. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

The chart illustrates substantial capital needs throughout the forecast period. It also shows a backlog $1.2 million, dominated by water equipment. These projections are based on asset replacement costs, age analysis, and condition data when available. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

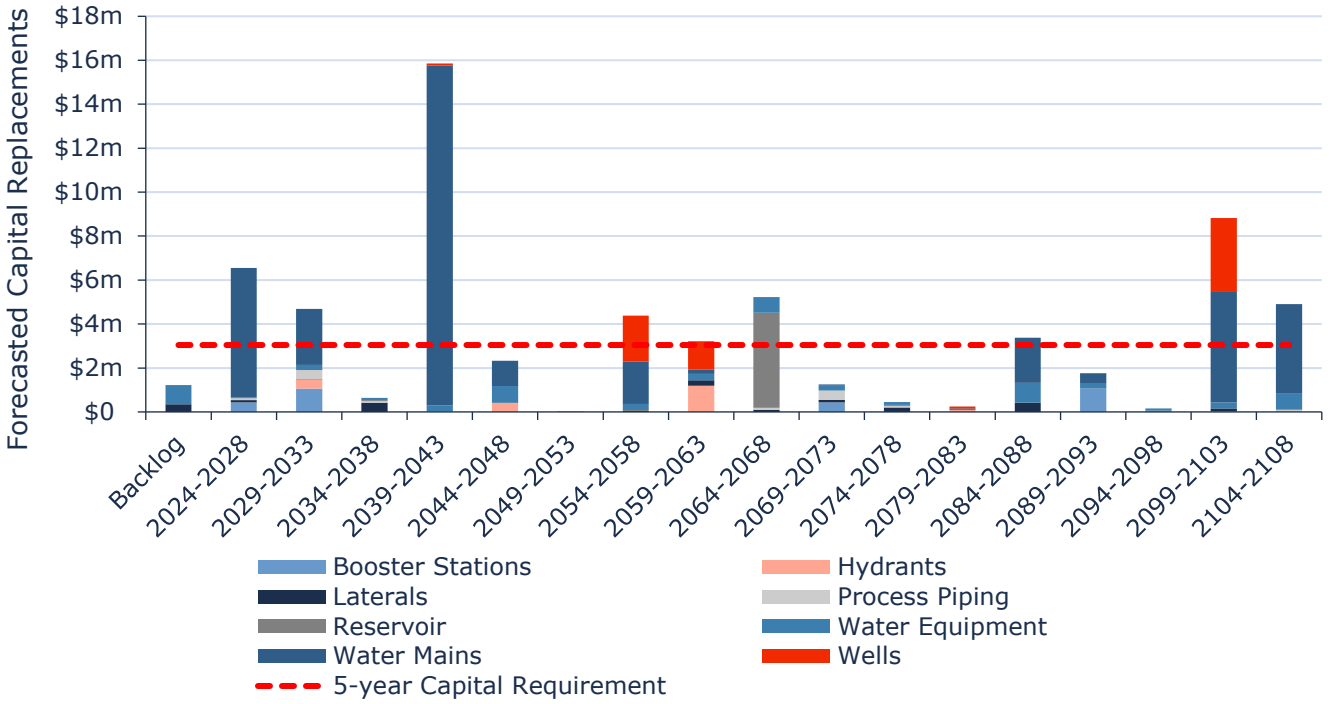


Figure 24 Forecasted Capital Replacement Needs: Water System 2024-2108

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

A detailed 10-year capital replacement forecast can be found in Appendix B – 10-Year Capital Requirements.

5.5 Risk Analysis

The risk matrix below is generated using available asset data, including condition, pipe material, replacement costs, and pipe diameter.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Town 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 Town's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

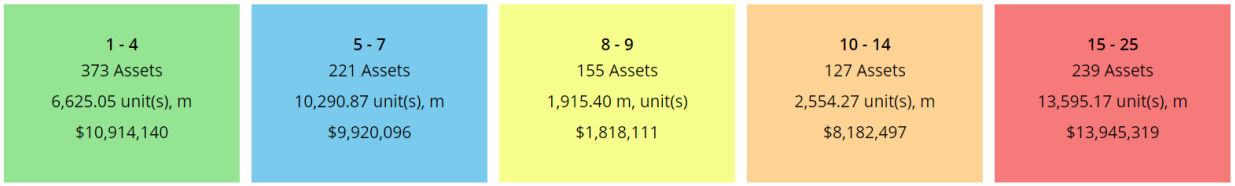


Figure 25 Risk Matrix: Water System

5.6 Levels of Service

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

5.6.1 Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	The Marathon water distribution services the following number of accounts: Family – 1,281 Apartment Units – 272 Single Office – 40 Large Retail – 25 Department Stores – 14 Restaurants & Garages – 19 Schools – 5 Hospital – 1

		There are very few properties that are not connected to the municipality's water distribution system. The water distribution system extends north to 217 Peninsula Road. Properties on Highway 17 are not connected to the municipal system. Additionally, the following properties in the main townsite are not connected to the municipal water distribution system: 112 Peninsula Road 2 Industrial Court 3 Penn Lake Road Street
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	The Industrial Park area is the only are within the main townsite where fire flow is not available.
Reliability	Description of boil water advisories and service interruptions	No boil water advisories were issued in 2023.

Table 13 O. Reg. 588/17 Community Levels of Service: Water System

5.6.2 Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2023)
Scope	% of properties connected to the municipal water system	99%
	% of properties where fire flow is available	98.6%
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

Service Attribute	Technical Metric	Current LOS (2023)
	# 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

Table 14 O. Reg. 588/17 Technical Levels of Service: Water System

6. Sanitary System

The Town's sanitary system has a total current replacement cost of approximately $56 million. The system is comprised of the following:

- The Wastewater Treatment Facility
- The Wastewater Collection System

6.1 Inventory & Valuation

Table 15 summarizes the quantity and current replacement cost of the Town's various sanitary system assets as managed in its primary asset management register, Citywide Assets.
The replacement cost of sewer mains does not include the cost of installation.

Segment	Quantity (# of components)	Unit of Measure	Replacement Cost	Primary RC Method
Forcemains	725	Length (m)	$638,000	Cost/Unit
Manholes	363	Quantity	$5,445,000	Cost/Unit
Process Piping	1,870	Quantity	$1,159,000	Cost/Unit
Sewage Treatment Plant	1 (34)	Quantity	$18,810,000	CPI
Sewer Mains	27,253	Length (m)	$28,694,000	Cost/Unit
Lift Stations	2	Quantity	$897,000	CPI
TOTAL			**$55,642,000**	

Table 15 Detailed Asset Inventory: Sanitary System

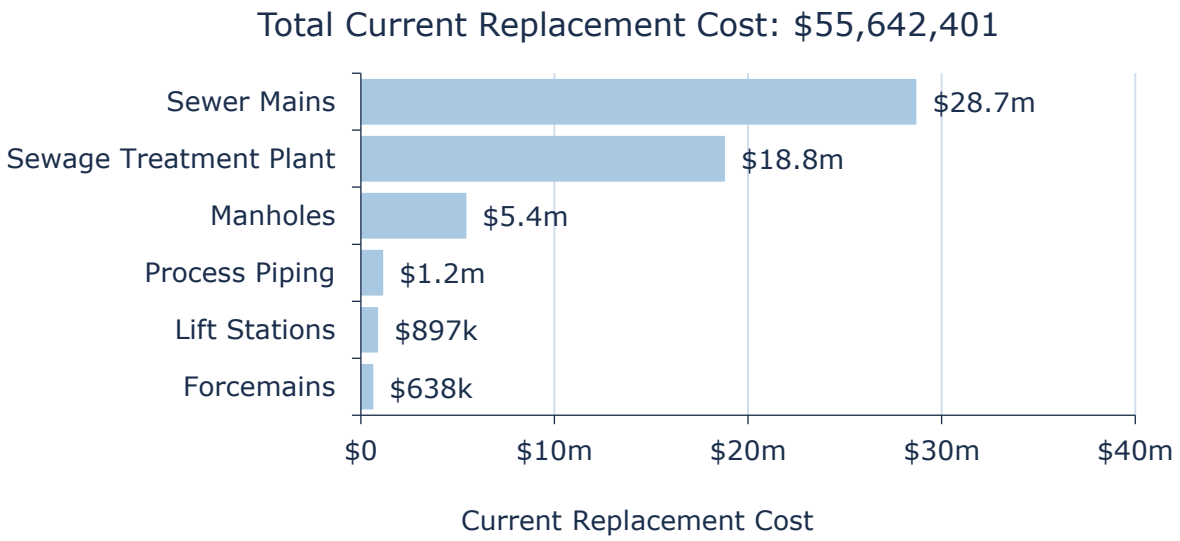


Figure 26 Portfolio Valuation: Sanitary Sewer Network

6.2 Asset Condition

Figure 27 summarizes the replacement cost-weighted condition of the Town's sanitary system. Based on a combination of field inspection data and age, 33% of assets are in fair or better condition; the remaining 67% of assets are in poor to very poor condition. Condition assessments were available for 87% of sewage treatment plant assets, based on replacement cost. The condition of lift stations is based on the 2023 Facilities Condition Assessment. This condition data was projected from inspection date to current year to estimate their condition today. Age-based condition was used for the remainder of the sanitary system.

Assets in poor or worse condition may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition.

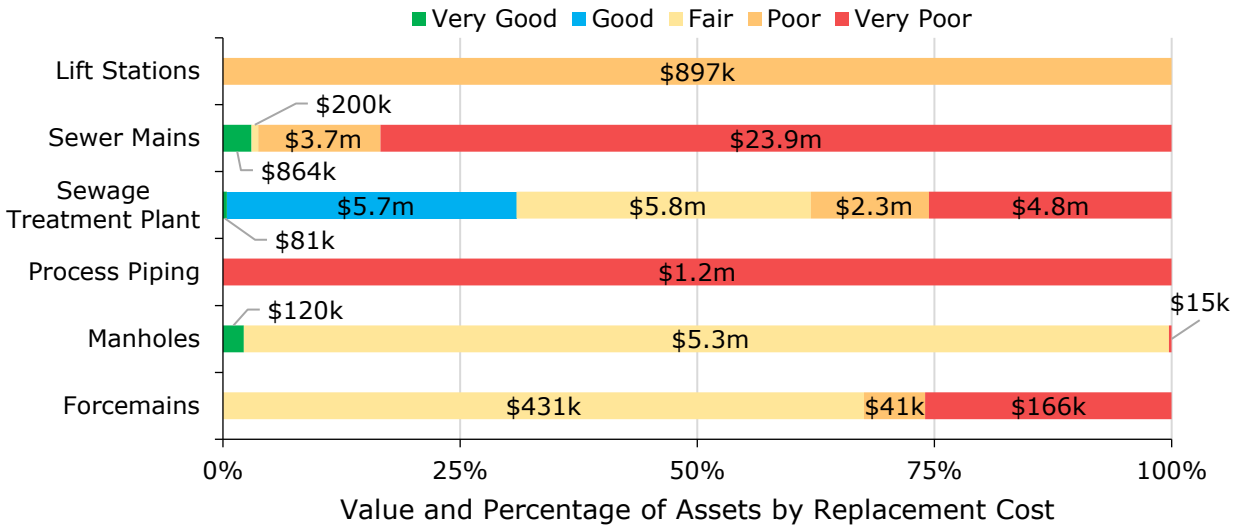


Figure 27 Asset Condition: Sanitary System by Segment

6.3 Current Approach to Lifecycle Management

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

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

Activity Type	Description of Current Strategy
Maintenance	Annual maintenance of mains that consists of main flushing
Rehabilitation/ Replacement	In the absence of mid-lifecycle rehabilitative events mains are maintained with the goal of full replacement once it reaches its end-of-life
	When mains are replaced, PVC pipe material is used
	Similar to other sub-surface infrastructure, Staff coordinate sanitary reconstruction projects with road construction projects to produce cost efficiencies

Activity Type	Description of Current Strategy
Inspection	No formal condition assessment is currently in place. Sanitary assets are inspected in coordination with road rehabilitation activities.

Table 16 Lifecycle Management Strategy: Sanitary System

6.4 Forecasted Long-Term Replacement Needs

Figure 28 illustrates the cyclical short-, medium- and long-term infrastructure rehabilitation and replacement requirements for the Town's sanitary system. This analysis was run until 2113 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets - the Town's primary asset management system and asset register. The Town's average annual requirements (red dotted line) total $774,000 ($3.9 million per 5-year bucket) for all assets in the sanitary system. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

The chart illustrates substantial capital needs throughout the forecast period. It also shows a backlog of $4.5m split between process piping, sewage treatment plant, and sewer mains. These projections are based on asset replacement costs, age analysis, and condition data when available. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

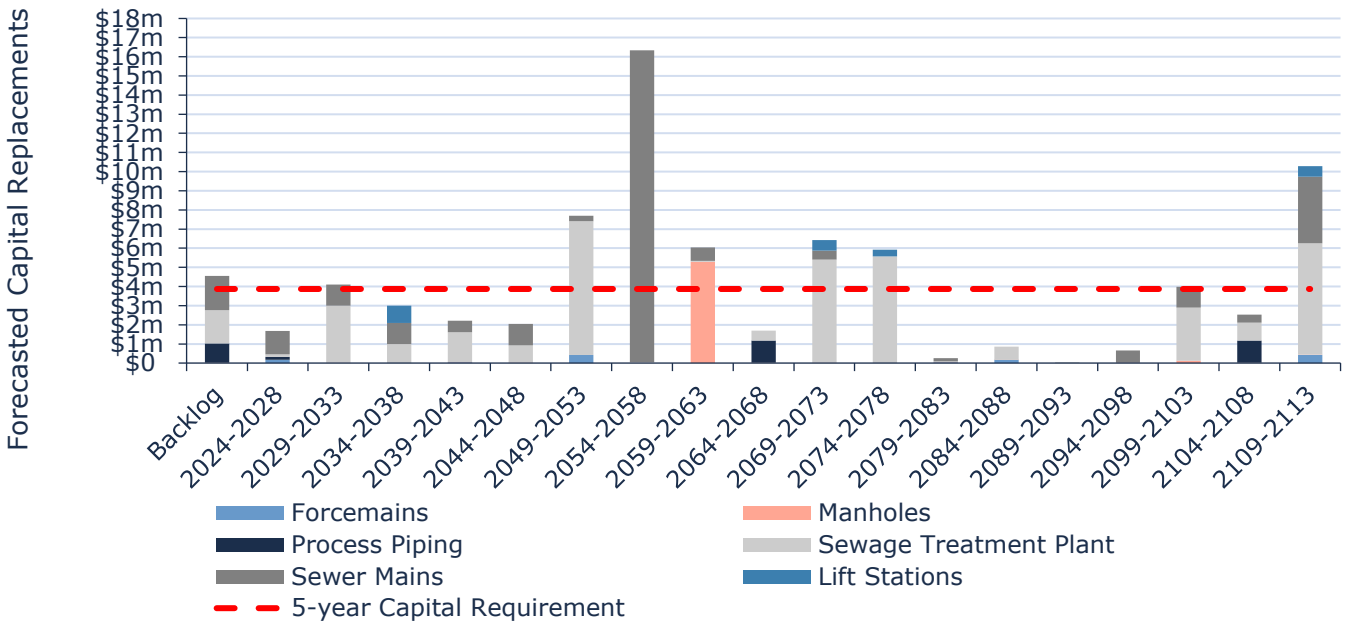


Figure 28 Forecasted Capital Replacement Needs: Sanitary System 2024-2113

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

A detailed 10-year capital replacement forecast can be found in Appendix B – 10-Year Capital Requirements.

6.5 Risk Analysis

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

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Town 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 Town's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

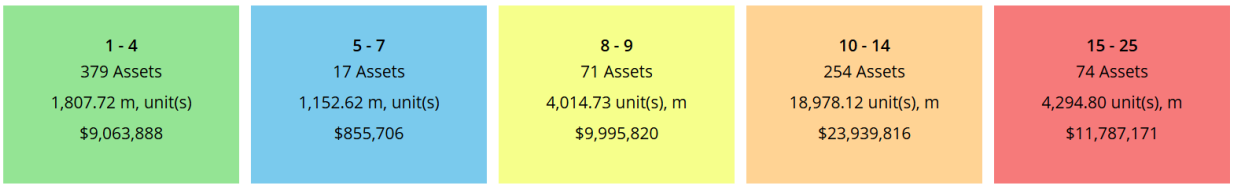


Figure 29 Risk Matrix: Sanitary System

6.6 Levels of Service

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

6.6.1 Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	See Appendix C
Reliability	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes	The Town does not own any combined sewers

Service Attribute	Qualitative Description	Current LOS (2023)
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	The Town 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). In the case of heavy rainfall events, sanitary sewers may experience a volume of water and sewage that exceeds its designed capacity. In some cases, this can cause water and/or sewage to overflow backup into homes. The disconnection of weeping tiles from sanitary mains and the use of sump pumps and pits directing storm water to the storm drain system can help to reduce the chance of this occurring.
	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.

Table 17 O. Reg. 588/17 Community Levels of Service: Sanitary System

6.6.2 Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2023)
Scope	% of properties connected to the municipal wastewater system	98.6%
Reliability	# of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system	0
	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	0
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0.0006

Table 18 O. Reg. 588/17 Technical Levels of Service: Sanitary System

7. Stormwater System

The Town is responsible for owning and maintaining a stormwater system of an 5 km of storm mains, catch basins, manholes and other supporting infrastructure.

7.1 Inventory & Valuation

Table 19 summarizes the quantity and current replacement cost of all stormwater management assets available in the Town's asset register. **The replacement cost of storm mains does not include the cost of installation**.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Catch Basins	195	Quantity	$975,000	Cost/Unit
Laterals	2,347	Length (m)	$2,907,000	Cost/Unit
Manholes	85	Quantity	$1,275,000	Cost/Unit
Storm Mains	5,089	Length (m)	$9,492,000	Cost/unit
TOTAL			**$14,649,000**	

Table 19 Detailed Asset Inventory: Stormwater System

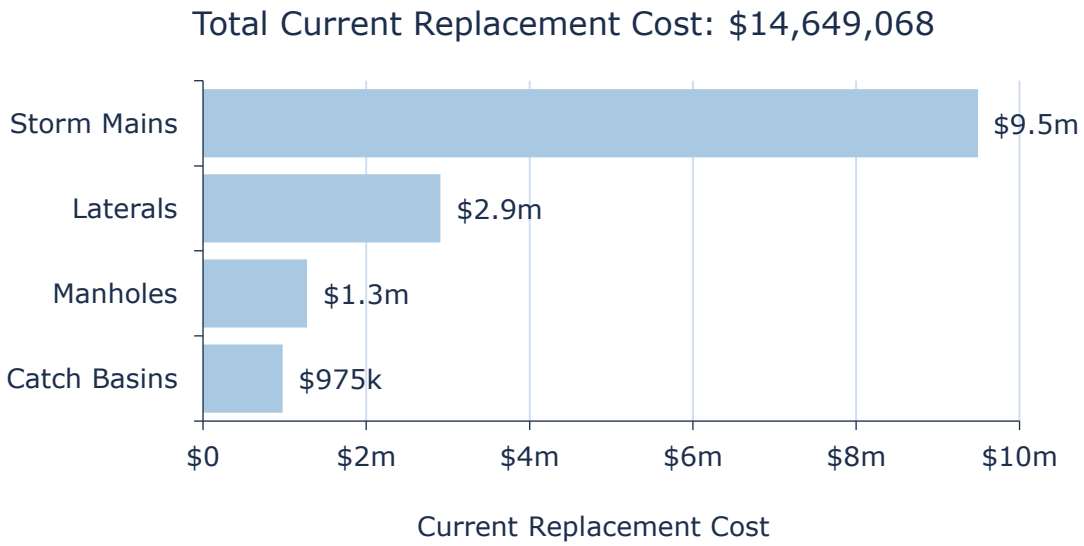


Figure 30 Portfolio Valuation: Stormwater System

7.2 Asset Condition

Figure 31 summarizes the replacement cost-weighted condition of the Town's stormwater management assets. Based on age data only, approximately 33% of assets are in poor to very poor condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition.

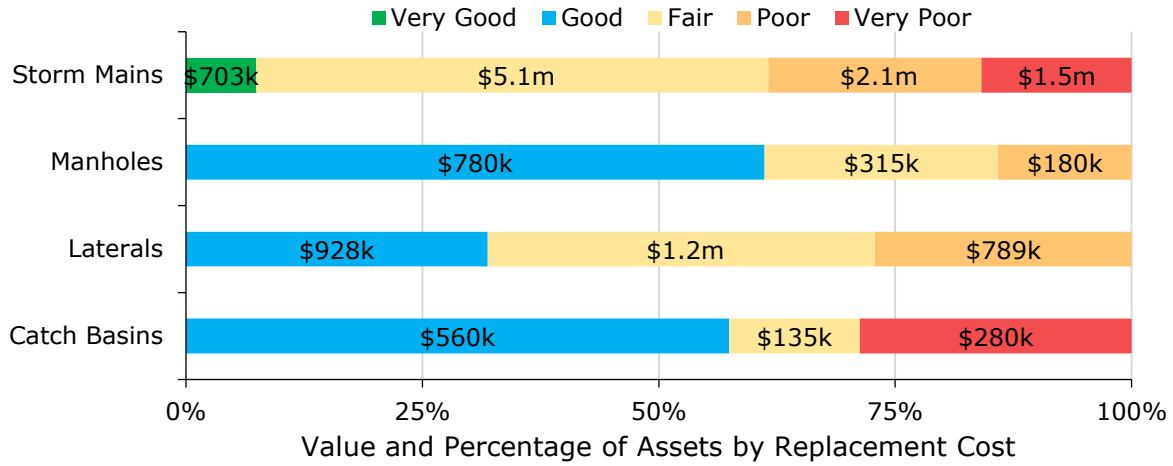


Figure 31 Asset Condition: Stormwater System by Segment

7.3 Current Approach to Lifecycle Management

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

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

Activity Type	Description of Current Strategy
Maintenance	Primary maintenance activities include catch basin cleaning and flushing of storm mains on an as-needed basis
	Maintenance activities are completed to a lesser degree compared to other underground linear infrastructure

Activity Type	Description of Current Strategy
Rehabilitation	Trenchless re-lining has the potential to reduce total lifecycle costs but would require a formal condition assessment program to determine viability
Replacement	Without the availability of up-to-date condition assessment information replacement activities are purely reactive in nature
Inspection	No formal inspection process is in place for Stormwater system assets

Table 20 Lifecycle Management Strategy: Stormwater System

7.4 Forecasted Long-Term Replacement Needs

Figure 32 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Town's stormwater system assets. This analysis was run until 2173 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets - the Town's primary asset management system and asset register. The Town's average annual requirements (red dotted line) total $139,000 ($696,000 per 5-year bucket) for all assets in the stormwater system. 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.

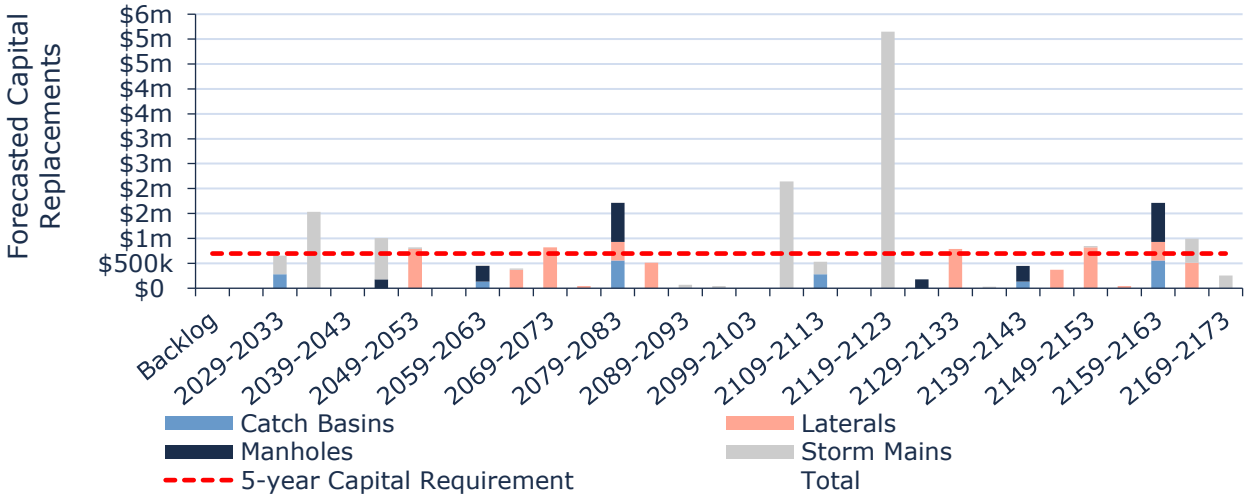


Figure 32 Forecasted Capital Replacement Needs Stormwater System 2024-2173

These projections and estimates are based on asset replacement costs and age analysis. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

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 detailed 10-year capital replacement forecast can be found in Appendix B – 10-Year Capital Requirements.

7.5 Risk Analysis

The risk matrix below is generated using available asset data, including condition, pipe diameter, and replacement costs.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Town 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 Town's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

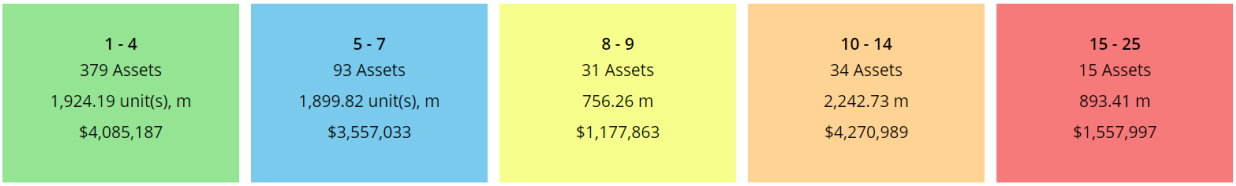


Figure 33 Risk Matrix: Stormwater System

7.6 Levels of Service

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

7.6.1 Community Levels of Service

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

Table 21 O. Reg. 588/17 Community Levels of Service: Stormwater System

7.6.2 Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2023)
Scope	% of properties in municipality designed to be resilient to a 100-year storm	100%
	% of the municipal stormwater management system designed to be resilient to a 5-year storm	100%

Table 22 O. Reg. 588/17 Technical Levels of Service: Stormwater System

Non-Core Assets

Buildings

Replacement Cost	Average Condition	Financial Capacity	
$69.1 m	**Fair**	Annual Requirement:	$1,465,000
		Funding Available:	$0
		Annual Deficit:	**$1,465,000**

Land Improvements

Replacement Cost	Average Condition	Financial Capacity	
$15.2 m	**Poor**	Annual Requirement:	$746,000
		Funding Available:	$255,924
		Annual Deficit:	**$520,076**

Vehicles

Replacement Cost	Average Condition	Financial Capacity	
$8.4 m	**Fair**	Annual Requirement:	$493,000
		Funding Available:	$395,012
		Annual Deficit:	**$97,988**

Machinery & Equipment

Replacement Cost	Average Condition	Financial Capacity	
$ 1.9 m	**Poor**	Annual Requirement:	$129,000
		Funding Available:	$32,340
		Annual Deficit:	**$96,660**

8. Buildings

The Town's buildings portfolio includes fire stations, various administrative and public works facilities, as well as social housing and recreational assets. The total current replacement of buildings is estimated at approximately $69 million.

8.1 Inventory & Valuation

Table 23 summarizes the quantity and current replacement cost of all buildings assets available in the Municipality's asset register. The replacement costs shown are based largely on the insurance values obtained from the 2023 Facilities Condition Assessment. **The replacement values are based on replacement of the existing building, and do not account for any expansions or improvements.** The quantity listed represents the number of asset records currently available for each department.

Segment	Quantity (# of components)	Unit of Measure	Replacement Cost	Primary RC Method
Environmental Services	2	Quantity	$1,206,000	User-defined
General Government	3 (7)	Quantity	$6,053,000	User-defined
Health Services	1	Quantity	$98,000	User-defined
Protection Services	2 (8)	Quantity	$4,440,000	User-Defined
Recreation and Cultural Services	9 (27)	Quantity	$39,773,000	User-Defined
Social Housing	1 (4)	Quantity	$14,207,000	User-defined
Transportation Services	4 (8)	Quantity	$3,359,000	User-defined
TOTAL	**21 Buildings (148,289 m^2)**		**$69,136,000**	

Table 23 Detailed Asset Inventory: Buildings

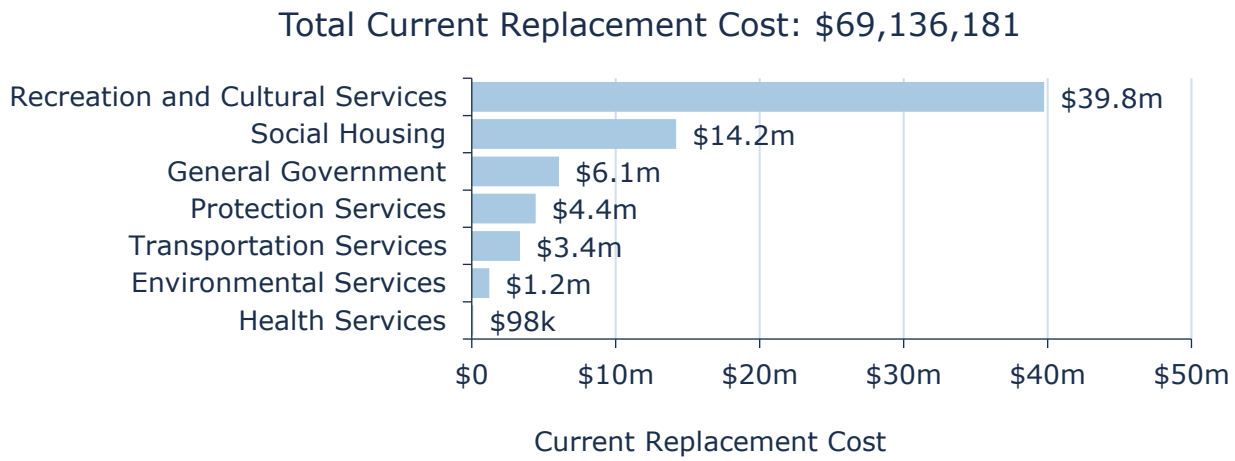


Figure 34 Portfolio Valuation: Buildings

8.2 Asset Condition

Figure 35 summarizes the replacement cost-weighted condition of the Town's buildings portfolio. Based on the assessed condition data obtained from the 2023 Facilities Condition Assessment, 69% of buildings assets are in fair or better condition; however, 31% are in poor or worse condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition. As buildings are not fully componentized, condition data is presented only at the site level, rather than at the individual element or component level within each building.

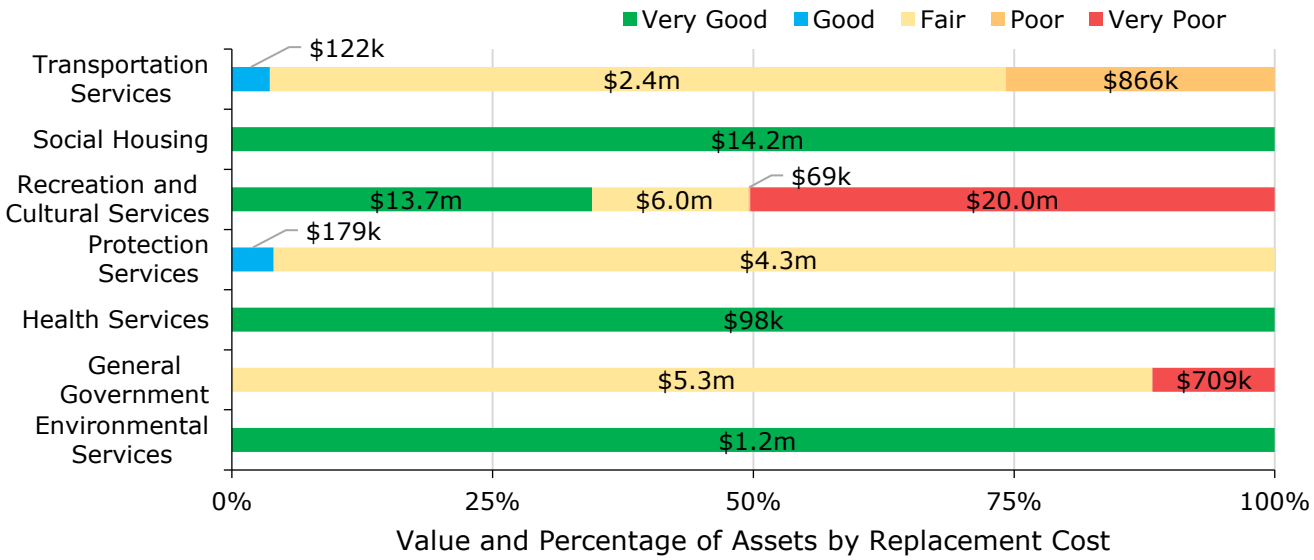


Figure 35 Asset Condition: Buildings & Facilities by Segment

Buildings assets are unique in that they rarely require the need for replacement based solely on condition. It is typical that, in addition to condition, other factors, such as capacity, will impact the asset's ability to serve the purpose originally intended.

8.3 Current Approach to Lifecycle Management

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

Table 24 outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Maintenance is triggered by monthly inspections identifying safety, accessibility, functionality, and structural issues
	The maintenance of facilities are dealt with on a case-by-case basis, a work order is submitted for any identified issues
Rehabilitation/ Replacement	Rehabilitations such as roof replacements or HVAC component replacements are considered on an as-needed basis
	The primary considerations for asset replacement are asset failure, availability or grant funding, safety issues, volume of use, and recommendations from facility needs assessments
Inspection	Internal inspections are conducted monthly for health and safety requirements, as well as to identify any maintenance concerns
	Facility Needs Assessment Studies are conducted by an internal staff approximately every 5 years
	Assessments are completed strategically as buildings approach their end-of-life to determine whether replacement or rehabilitation is appropriate

Table 24 Lifecycle Management Strategy: Buildings

8.4 Forecasted Long-Term Replacement Needs

Figure 36 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Town's buildings portfolio. This analysis was run until 2093 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets - the Town's primary asset management system and asset register. The Town's average annual requirements (red dotted line) total $1.5 million ($7.3 million per 5-year bucket) for all buildings. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

The chart also illustrates a backlog of more than $20 million for recreation and cultural facilities and comprising assets that have reached the end of their useful life but still remain in operation. These projections and estimates are based on current asset records, their replacement costs, and age analysis. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

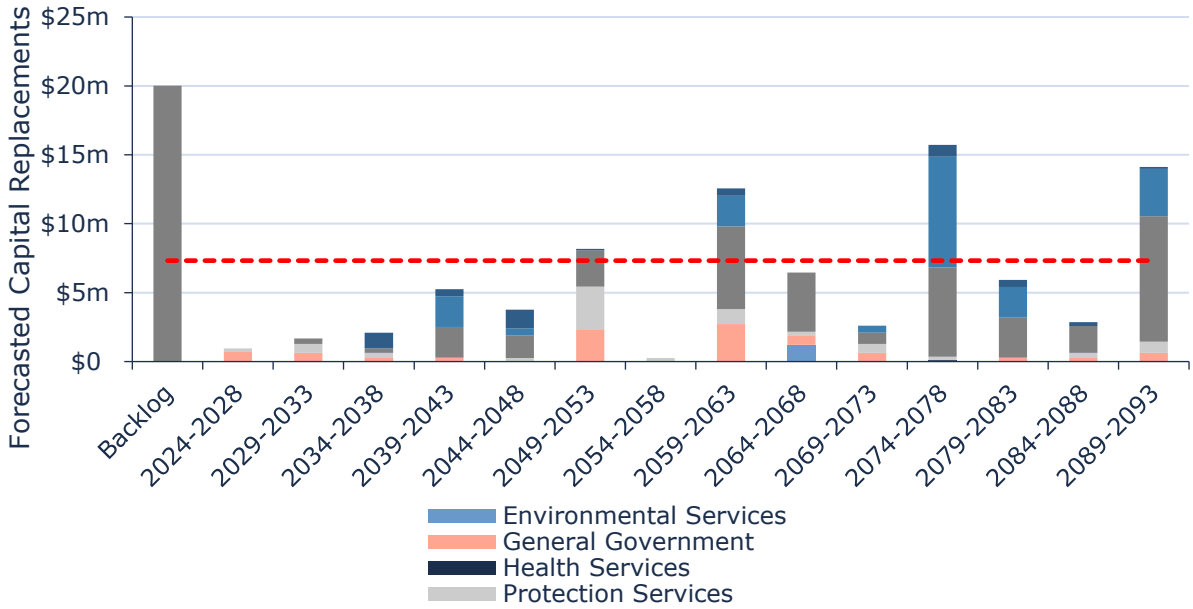


Figure 36 Forecasted Capital Replacement Needs Buildings & Facilities 2024-2093

Often, the magnitude of replacement needs is substantially higher than most municipalities can afford to fund. In addition, most assets may not need to be replaced. However, quantifying and monitoring these spikes is essential for long-term financial planning, including establishing dedicated reserves. In

addition, a robust risk framework will ensure that high-criticality assets receive proper and timely lifecycle intervention, including replacements. In the case of buildings and facilities, detailed componentization is necessary to develop more reliable lifecycle forecasts that reflect the needs of individual elements and components.

A detailed 10-year capital replacement forecast can be found in Appendix B – 10-Year Capital Requirements.

8.5 Risk Analysis

The risk matrix below is generated using available asset data, including condition, replacement costs, and building type.

The matrix classifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Town 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 Town's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

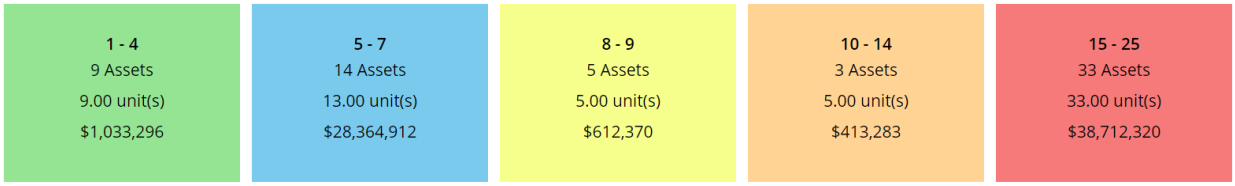


Figure 37 Risk Matrix: Buildings

8.6 Levels of Service

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

8.6.1 Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description, which may include maps, of the types of facilities that the municipality operates and maintains	Facilities within Marathon include those dedicated to general government, such as the Administration Office, and two Doctor recruitment houses. Protection services are supported by a fire station, and dog pound. Transportation services is supported by various equipment garages and airport facilities. Recreation provides its services through a variety of facilities such as arenas, pools, libraries, recreation centers, and golf course facilities. The Town also owns social housing, cemetery facilities, and landfill facilities.

Table 25 Community Levels of Service: Buildings

8.6.2 Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2023)
Quality	% of buildings in fair or better condition	69%
	% of buildings in poor or very poor condition	31%
Performance	Target vs. Actual capital reinvestment rate	2.1% vs. 0.7%

Table 26 Technical Levels of Service: Buildings

9. Land Improvements

The Town's land improvements portfolio includes parking lots, fencing, signage, the airport, golf course, landfill, parks and sport structures. The total current replacement of land improvements is estimated at approximately $15.2 million.

9.1 Inventory & Valuation

Table 27 summarizes the quantity and current replacement cost of all land improvements assets available in the Town's asset register. The airport, golf course, and parks account for the majority of land improvement assets.

Segment	Quantity (# of components)	Unit of Measure	Replacement Cost	Primary RC Method
Airport	1 (8)	Quantity	$9,996,000	CPI
Fencing & Signage	7	Quantity	$588,000	CPI
Golf Course	1 (5)	Quantity	$1,942,000	CPI
Landfill	1 (24)	Quantity	$974,000	CPI
Parking Lots	7	Quantity	$210,000	CPI
Parks	4	Quantity	$1,054,000	CPI
Playgrounds & Sport Structures	8	Quantity	$427,000	CPI
TOTAL			**$15,191,000**	

Table 27 Detailed Asset Inventory: Land Improvements

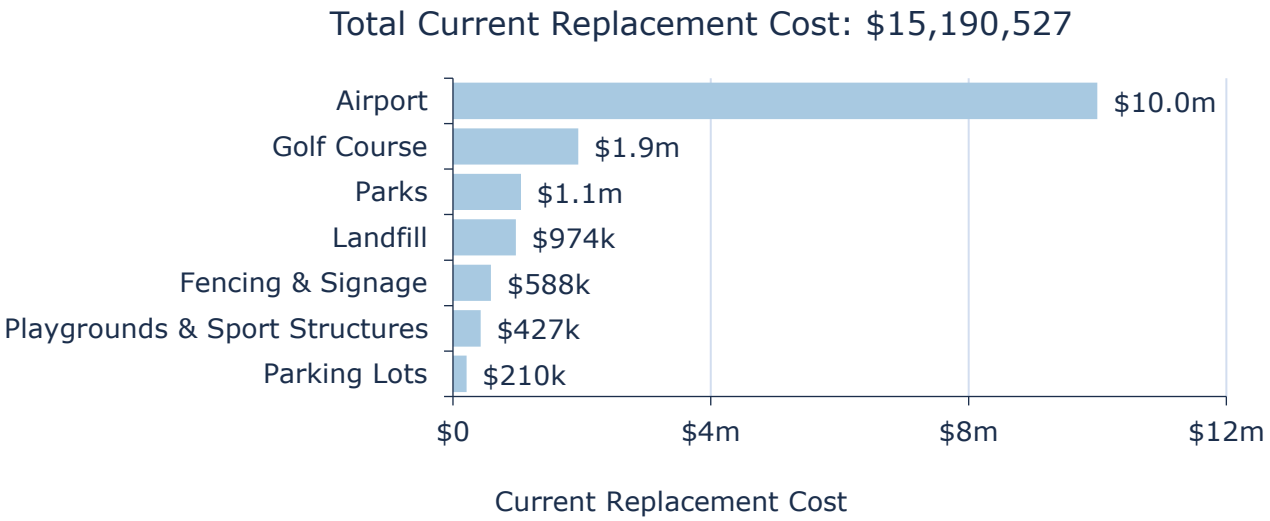


Figure 38 Portfolio Valuation: Land Improvements

9.2 Asset Condition

Figure 39 summarizes the replacement cost-weighted condition of the Municipality's land improvement portfolio. Based on assessed condition and age data, 18% of assets are in fair or better condition, the remaining 82% are in poor or worse condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition.

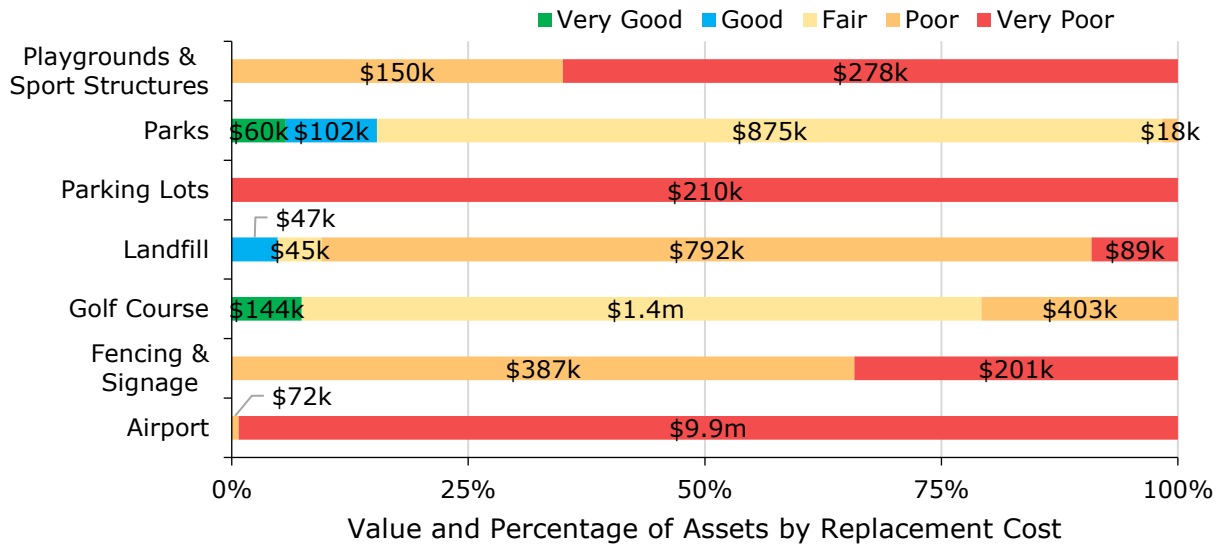


Figure 39 Asset Condition: Land Improvements by Segment

9.3 Current Approach to Lifecycle Management

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

Table 28 outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Maintenance activities are completed on a reactive basis when operational issues are identified, through complaints, service requests, or ad-hoc inspections
Rehabilitation / Replacement	Without the availability of up-to-date condition assessment information replacement activities are purely reactive in nature
Inspections	Inspections are conducted on an ad-hoc basis. Daily inspections are completed on playgrounds during operating season.

Table 28 Lifecycle Management Strategy: Land Improvements

9.4 Forecasted Long-Term Replacement Needs

Figure 40 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Town's land improvements portfolio. This analysis was run until 2058 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Municipality's primary asset management system and asset register. The Town's average annual requirements (red dotted line) total $746,000 ($3.7 million per 5-year bucket) for all land improvements. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

These projections and estimates are based on asset replacement costs and age analysis. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

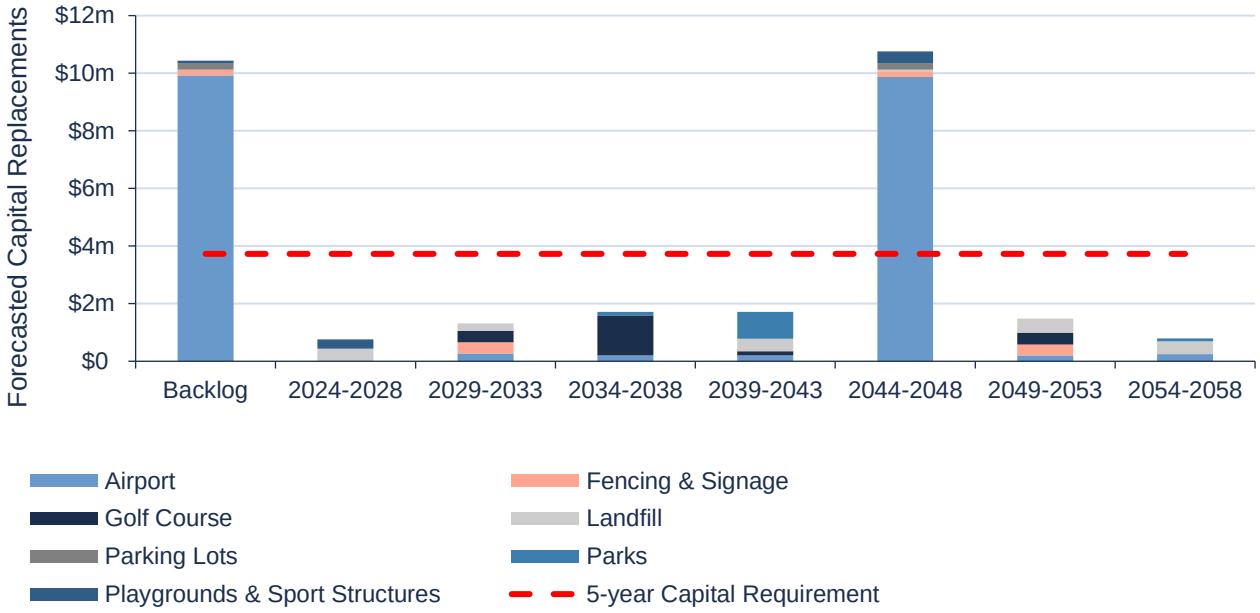


Figure 40 Forecasted Capital Replacement Needs: Land Improvements 2024-2058

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 detailed 10-year capital replacement forecast can be found in Appendix B – 10-Year Capital Requirements.

9.5 Risk Analysis

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

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Town 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 Town's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

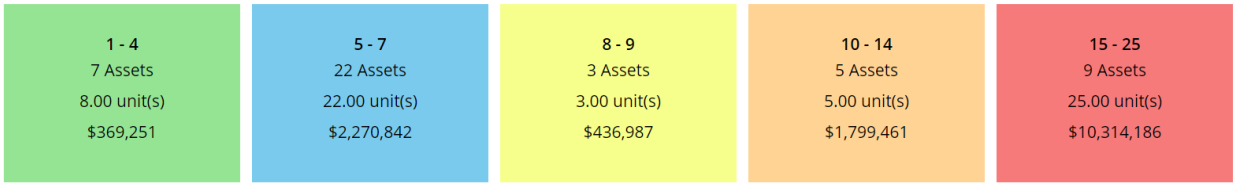


Figure 41 Risk Matrix: Land Improvements

9.6 Levels of Service

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

9.6.1 Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description, which may include maps, of the outdoor recreational facilities that the municipality operates and maintains	The Town operates a variety of outdoor supporting infrastructure such as parking lots, fencing, and recreational infrastructure (i.e. playgrounds, sport structures, and parks).

Table 29 Community Levels of Service: Land Improvements

9.6.2 Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2023)
Quality	% of land improvement assets that are in fair or better condition	18%
	% of land improvement assets that are in poor or worse condition	82%
Performance	Target vs. Actual capital reinvestment rate	4.9% vs. 1.6%

Table 30 Technical Levels of Service: Land Improvements

10. Vehicles

The Town's vehicles portfolio includes 75 assets that support a variety of general and essential services, including transportation services, environmental services, the fire department, general government and recreation. The total current replacement of vehicles is estimated at approximately $8 million.

10.1 Inventory & Valuation

Table 31 summarizes the quantity and current replacement cost of all vehicle assets available in the Town's asset register. Transportation services and the fire department account for the largest share of the vehicles portfolio.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Environmental Services	5	Quantity	$772,000	CPI
General Government	1	Quantity	$30,000	CPI
Protection Services	9	Quantity	$2,204,000	CPI
Recreation and Cultural Services	23	Quantity	$729,000	CPI
Transportation Services	37	Quantity	$4,673,000	CPI
TOTAL			**$8,407,000**	

Table 31 Detailed Asset Inventory: Vehicles

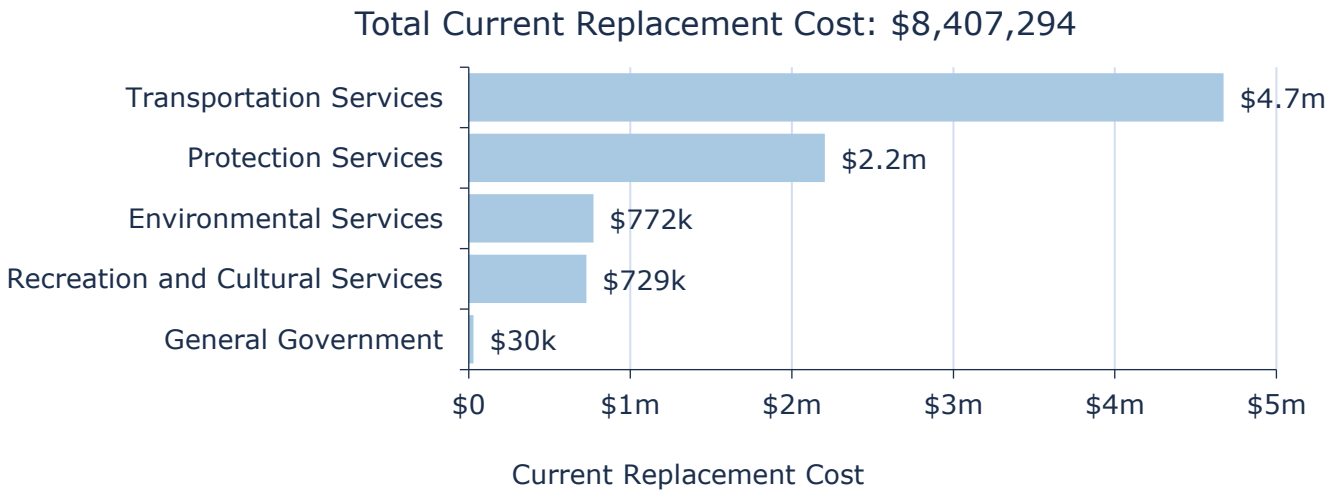


Figure 42 Portfolio Valuation: Vehicles

10.2 Asset Condition

Figure 43 summarizes the replacement cost-weighted condition of the Town's vehicles portfolio. Based primarily on age-based data, 71% of vehicles are in fair or better condition, with the remaining 38% are in poor or worse condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition. Age was used to estimate condition for the vehicle assets.

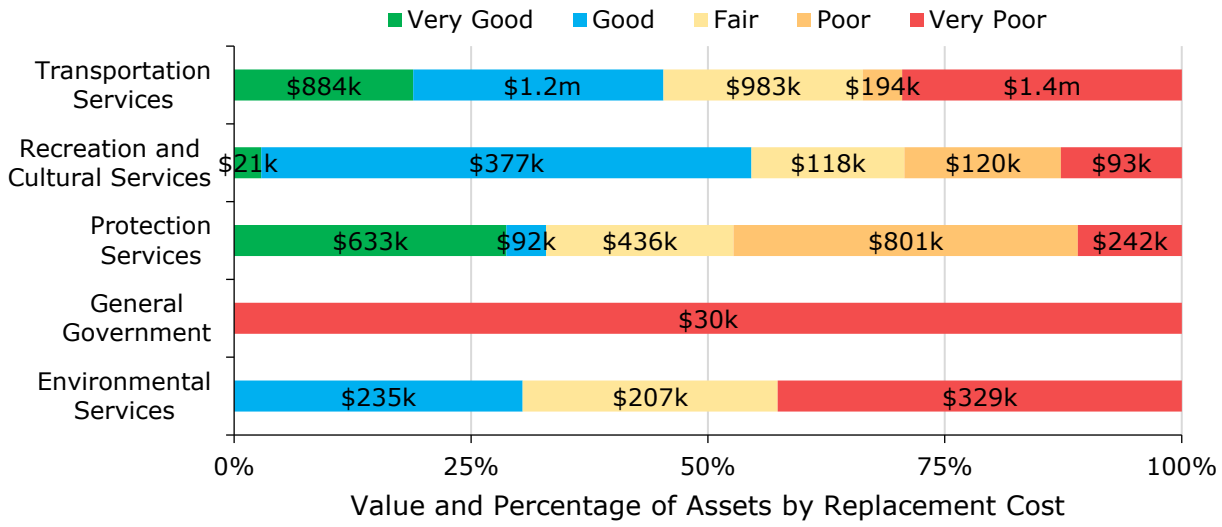


Figure 43 Asset Condition: Vehicles by Segment

10.3 Current Approach to Lifecycle Management

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

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

Activity Type	Description of Current Strategy
Maintenance	Oil changes and routine maintenance are completed regularly
	All other maintenance activities are completed on a reactive basis when operational issues are identified (e.g., mechanical breakdown, deficiencies identified during daily inspections)
Replacement	Replacements are considered on an as-needed basis and when maintenance is no longer cost effective
Inspection	Vehicles are inspected by the operator daily before use, however, these inspections identify deficiencies but do not provide overall condition ratings

Table 32 Lifecycle Management Strategy: Vehicles

10.4 Forecasted Long-Term Replacement Needs

Figure 44 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Town's vehicles portfolio. This analysis was run until 2048 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets - the Town's primary asset management system and asset register. The Town's average annual requirements (red dotted line) total $493,000 ($2.5 million per 5-year bucket) for all vehicles. 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.

These projections and estimates are based on asset replacement costs and age analysis. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

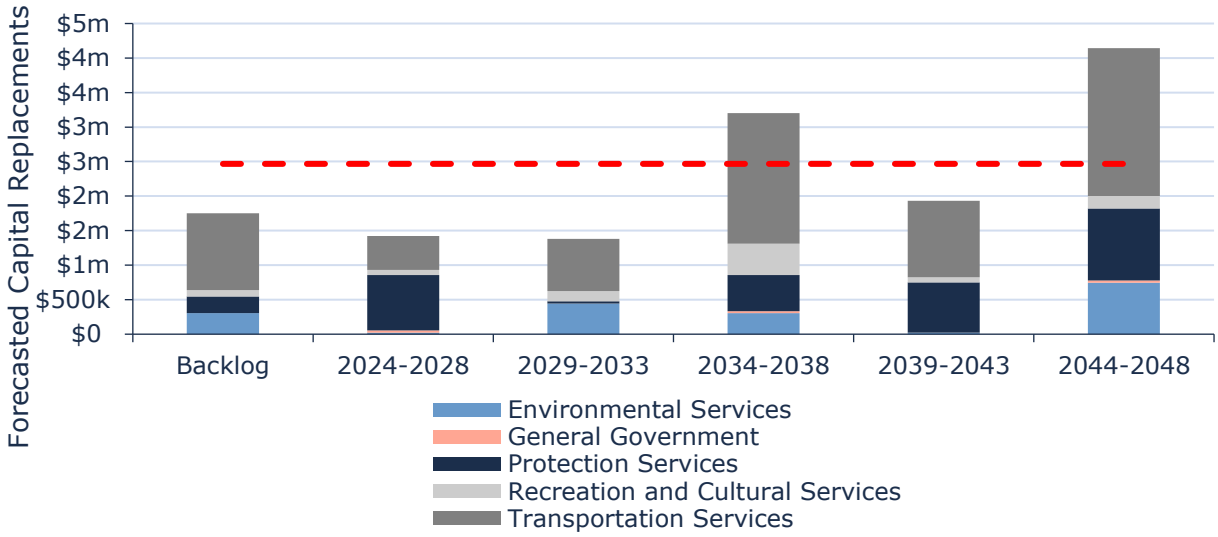


Figure 44 Forecasted Capital Replacement Needs: Vehicles 2024-2048

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 detailed 10-year capital replacement forecast can be found in Appendix B – 10-Year Capital Requirements.

10.5 Risk Analysis

The risk matrix below is generated using available asset data, including condition, fleet type, fleet purpose and replacement costs.

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

information that improves confidence in the criteria used to assess asset risk and criticality.

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

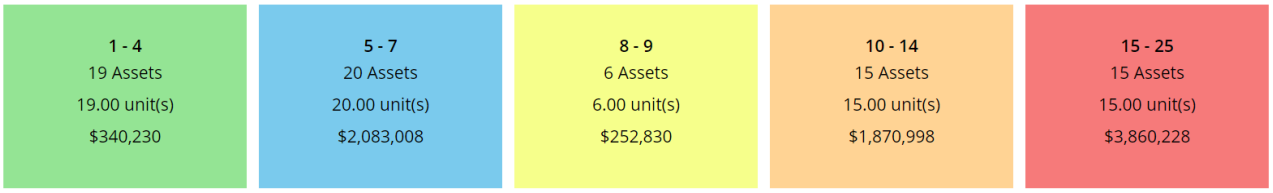


Figure 45 Risk Matrix: Vehicles

10.6 Levels of Service

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

10.6.1 Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description, which may include images, of the types of vehicles (i.e. light, medium, and heavy duty) that the municipality operates and the services that they help to provide to the community	Protection service vehicles include water tankers, pumpers, rescue trucks, and snowmobiles, ensuring readiness for emergency response. Recreation vehicles include light duty vehicles such as mowers, ATVs and golf carts for services such as park maintenance. Transportation Services vehicles include light and heavy duty trucks ranging from pick-up trucks to loaders to ensure safe road conditions and managing infrastructure during construction projects.

Service Attribute	Qualitative Description	Current LOS (2023)
		Environmental Services vehicles include garbage trucks, and heavy-duty vehicles to support landfill operations. General Government vehicles consists of a GMC Equinox to support the Town Office.

Table 33 Community Levels of Service: Vehicles

10.6.2 Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2023)
Quality	% of fire vehicles in fair or better condition	53%
	% of fire vehicles in poor or worse condition	47%
	% of other vehicles in fair or better condition	65%
	% of other vehicles in poor or worse condition	35%
Performance	Target vs. Actual capital reinvestment rate	5.9% vs. 1.9%

Table 34 Technical Levels of Service: Vehicles

11. Machinery & Equipment

The Town's machinery and equipment portfolio includes a variety of assets that support a combination of general and essential services, including recreation and fire. The total current replacement of vehicles is estimated at approximately $2 million.

11.1 Inventory & Valuation

Table 35 summarizes the quantity and current replacement cost of all machinery & equipment assets available in the Town's asset register.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Fire Equipment	6	Quantity	$182,000	CPI
Furniture & Fixtures	193	Quantity	$34,000	CPI
Information Technology	22	Quantity	$343,000	CPI
Recreation Equipment	10	Quantity	$1,240,000	CPI
Transportation Services	5	Quantity	$98,000	CPI
TOTAL			**$1,896,000**	

Table 35 Detailed Asset Inventory: Machinery & Equipment

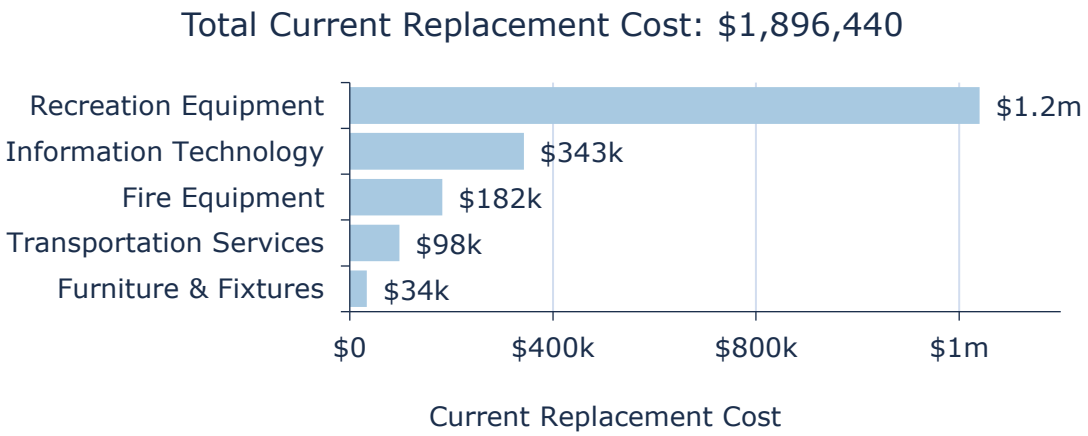


Figure 46 Portfolio Valuation: Machinery & Equipment

11.2 Asset Condition

Figure 47 summarizes the replacement cost-weighted condition of the Town's machinery and equipment portfolio. Based primarily on age data, 37% of assets are in fair or better condition; the remaining 63% are in poor or worse condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition.

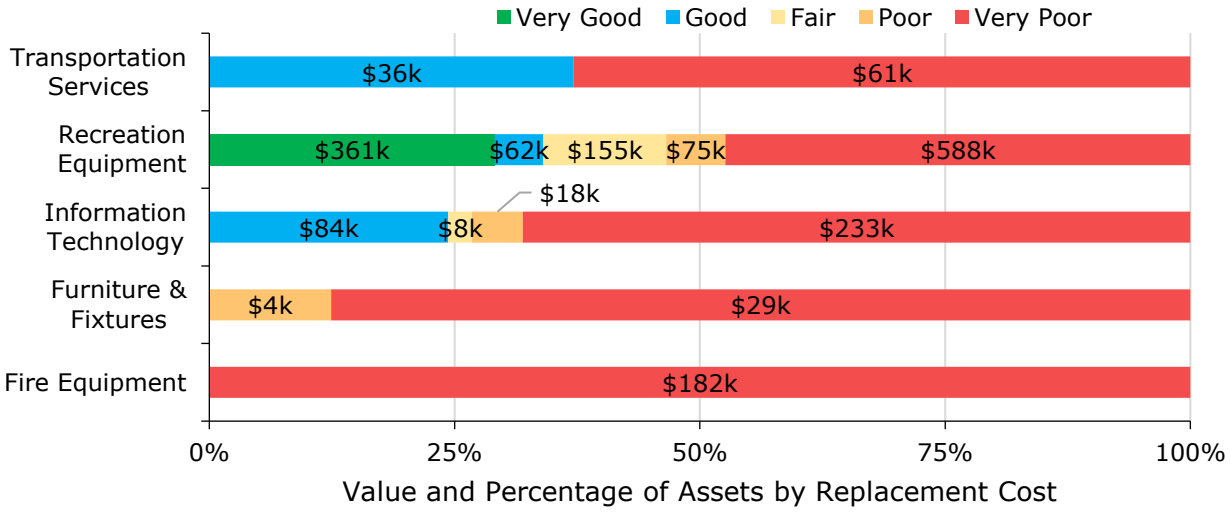


Figure 47 Asset Condition: Machinery & Equipment by Segment

11.3 Current Approach to Lifecycle Management

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

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

Activity Type	Description of Current Strategy
Maintenance	Maintenance activitied vary by department and are specific to each piece of equipment, but typically as per manufacturer recommendations

Activity Type	Description of Current Strategy
	Fire Protection Services equipment is subject to a much more rigorous inspection and maintenance program compared to most other departments
Replacement	The replacement of machinery & equipment depends on deficiencies identified by operators that may impact their ability to complete required tasks
Inspection	Machinery & equipment assets are reviewed internally during budget allocations in consultation with external mechanics

Table 36 Lifecycle Management Strategy: Machinery & Equipment

11.4 Forecasted Long-Term Replacement Needs

Figure 48 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Town's machinery and equipment portfolio. This analysis was run until 2053 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets - the Town's primary asset management system and asset register. The Town's average annual requirements (red dotted line) total $129,000 ($647,000 per 5-year bucket) for all machinery and equipment. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

These projections and estimates are based on asset replacement costs and age analysis. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

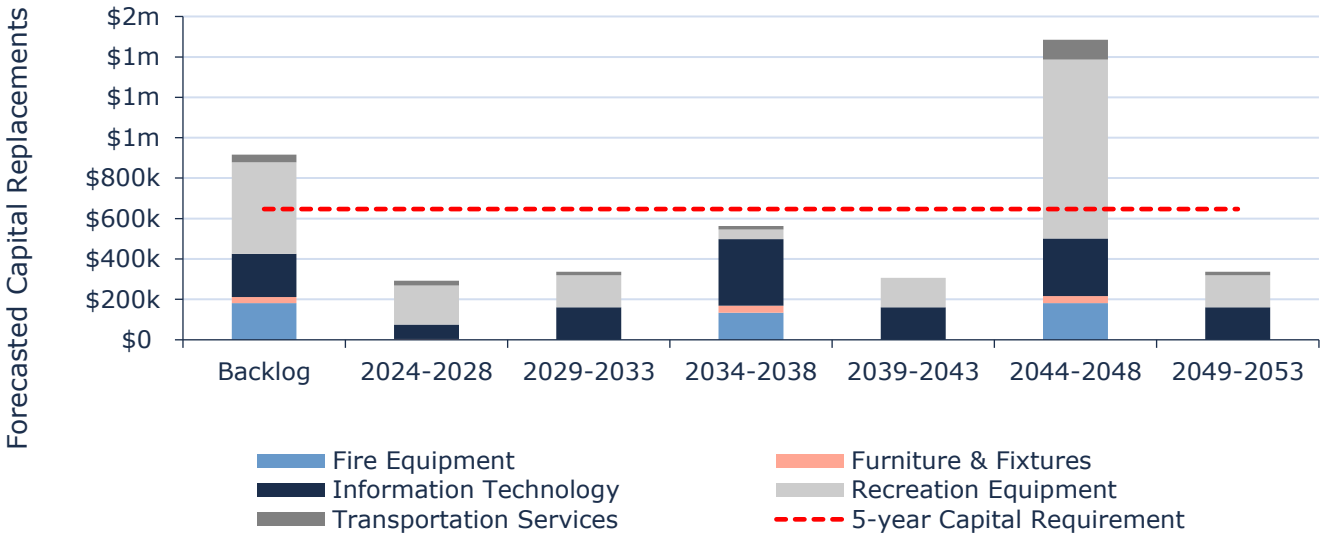


Figure 48 Forecasted Capital Replacement Needs: Machinery & Equipment 2024-2053

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 detailed 10-year capital replacement forecast can be found in Appendix B – 10-Year Capital Requirements.

11.5 Risk Analysis

The risk matrix below is generated using available asset data, including condition, equipment purpose, and replacement costs.

The matrix stratifies assets based on their individual probability and consequence of failure, each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the Town 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 Town's Asset Management Database (Citywide Assets). See *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

Figure 49 Risk Matrix: Machinery & Equipment

11.6 Levels of Service

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

11.6.1 Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2023)
Scope	Description, which may include images, of the types of equipment that the municipality operates and the services that they help to provide to the community	Information Technology equipment includes equipment such as phone systems, hardware and software. Fire is supported by equipment such as thermal imaging cameras, jaws of life, and air fill station. Recreation equipment includes assets utilized for the arena, pool, and community center. Transportation Services is supported by equipment such as fuel tanks, generators, and dust collectors. Furniture and Fixtures includes the furniture at the Library such as shelving, chairs, and cabinets.

Table 37 Community Levels of Service: Machinery & Equipment

11.6.2 Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2023)
Quality	% of fire equipment in fair or better condition	0%
	% of fire equipment in poor or worse condition	100%
	% of other equipment in fair or better condition	41%
	% of other equipment in poor or worse condition	59%
Performance	Target vs. Actual capital reinvestment rate	6.8% vs. 2.2%

Table 38 Technical Levels of Service: Machinery & Equipment

Strategies

Growth

Financial Strategy

Recommendations

12. Growth

The demand for infrastructure and services will change over time based on a combination of internal and external factors. Understanding the key drivers of growth and demand will allow the Town 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.

12.1 Town of Marathon Official Plan (2016)

The Town of Marathon's Official Plan provides a strategic framework for guiding development, emphasizing sustainability, economic growth, and environmental stewardship. It identifies the townsite as the primary area for residential, commercial, recreational, and administrative activities, while promoting harmonious development in rural areas.

The Official Plan outlines several key goals to foster community growth and improve quality of life. These goals include maintaining a high standard of living, directing physical change sustainably, and ensuring public health and safety. Conservation of natural and cultural heritage is emphasized, recognizing these assets as integral to Marathon's identity. Diversifying the economy is a major focus, reducing dependency on traditional industries by encouraging growth in tourism, services, and sustainable development practices.

Policies for land use aim to minimize environmental impacts and support sustainable development. This includes encouraging brownfield redevelopment, promoting energy efficiency, and enhancing community aesthetics. The plan also addresses affordable housing, improved municipal services, and revitalization of built-up areas to support a growing population and attract private sector investment.

Marathon's strategic location along the Trans-Canada Highway positions it as a key transportation and service hub, necessitating modern infrastructure and services to meet local and regional needs. The plan underscores the importance of maintaining relationships with surrounding communities, particularly First Nations, to support mutual growth.

Designed to guide land use planning for the next two decades, the plan includes regular reviews to ensure relevance and responsiveness to changing needs. This proactive approach ensures that Marathon can adapt to future challenges and opportunities, fostering a vibrant, economically resilient, and environmentally sustainable community.

In summary, the Town of Marathon's Official Plan envisions a sustainable, thriving community that leverages its strategic location, natural resources, and strong community spirit. Through targeted improvements and sustainable development initiatives, the plan aims to create a vibrant, economically diverse, and visually appealing community that meets the needs of current and future residents.

12.2 Town of Marathon Strategic Plan (2023 – 2026)

The Town of Marathon's Corporate Strategic Plan for 2023-2026, titled "Forging Our Future," envisions Marathon as "THE SUPERIOR Community," emphasizing health, economic progress, and a quality lifestyle through inclusive collaboration and action-oriented leadership. Grounded in core values such as accountability, service-driven culture, communication, resource stewardship, and personal leadership, the plan aims to enhance the town's livability and ensure sustainable growth.

Key initiatives focus on improving quality of life by developing an Active Living Centre, expanding recreational programming, beautifying the community, and supporting new residential developments. Efforts to recruit health professionals and foster volunteer development are also prioritized. Infrastructure and environmental strategies include updating asset management plans, developing new municipal facilities, upgrading the airport, managing roads, modernizing the fire hall, and researching alternative energy sources.

Economic development is a major focus, with strategies to support the mining sector, explore local agriculture, develop a Community Improvement Plan, enhance local tourism, improve town gateways, modernize marketing and branding, foster business retention and expansion, and pursue a natural gas virtual pipeline project. Organizational and fiscal resiliency are addressed through updating the capital replacement strategy, reviewing policies and by-laws, generating alternative revenue, and developing responsible budgets.

Progressive leadership and collaboration are emphasized through partnerships with Biigtigong Nishnaabeg and Netmizaaggamig Nishnaabeg, workforce development, supporting equity and diversity, attracting and retaining professionals, engaging with regional post-secondary institutions, and enhancing municipal communications. The plan is designed to be actionable and transformative, with the Senior Leadership Team tasked with implementation and ensuring progress through regular updates. Overall, "Forging Our Future" aims to position Marathon as a vibrant, resilient community with a sustainable future.

12.3 Impact of Growth on Lifecycle Activities

The growth of the Municipality of Marathon will present challenges to service delivery and the assets supporting these services. The Municipality is aware of these challenges and has outlined strategies in its plans and communications to mitigate the impact on services and ensure long-term viability for its residents. This includes a commitment to developing existing areas and population centers, which helps to lower the cost of increasing capacity by leveraging current infrastructure, staff, and processes. Additionally, there will be long-term funding obligations to ensure that lifecycle activities can continue and be enhanced to support a larger population.

13. 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 Town of Marathon to identify the financial resources required for sustainable asset management based on existing asset inventories, desired levels of service, and projected growth requirements.

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

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

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

If the financial plan component results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall

will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Town's approach to the following:

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

13.1 Annual Requirements & Capital Funding

13.1.1 Annual Requirements

The annual requirements represent the amount the Town 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 Town must allocate approximately $6 million annually to address capital requirements for the assets included in this AMP.

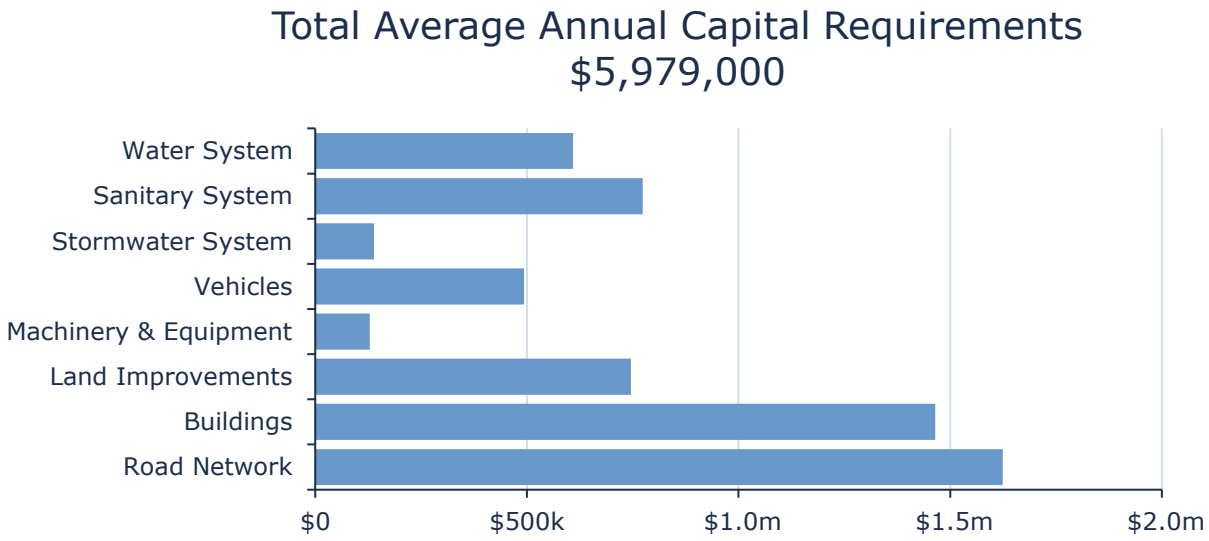


Figure 50 Annual Capital Funding Requirements by Asset Category

For all 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.

1. **Replacement Only Scenario**: Based on the assumption that assets deteriorate and – without regularly scheduled maintenance and rehabilitation – are replaced at the end of their service life.

13.1.2 Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately $1.6 million towards capital projects per year. Given the annual capital requirement of $6 million, there is currently a funding gap of $4.4 million annually.

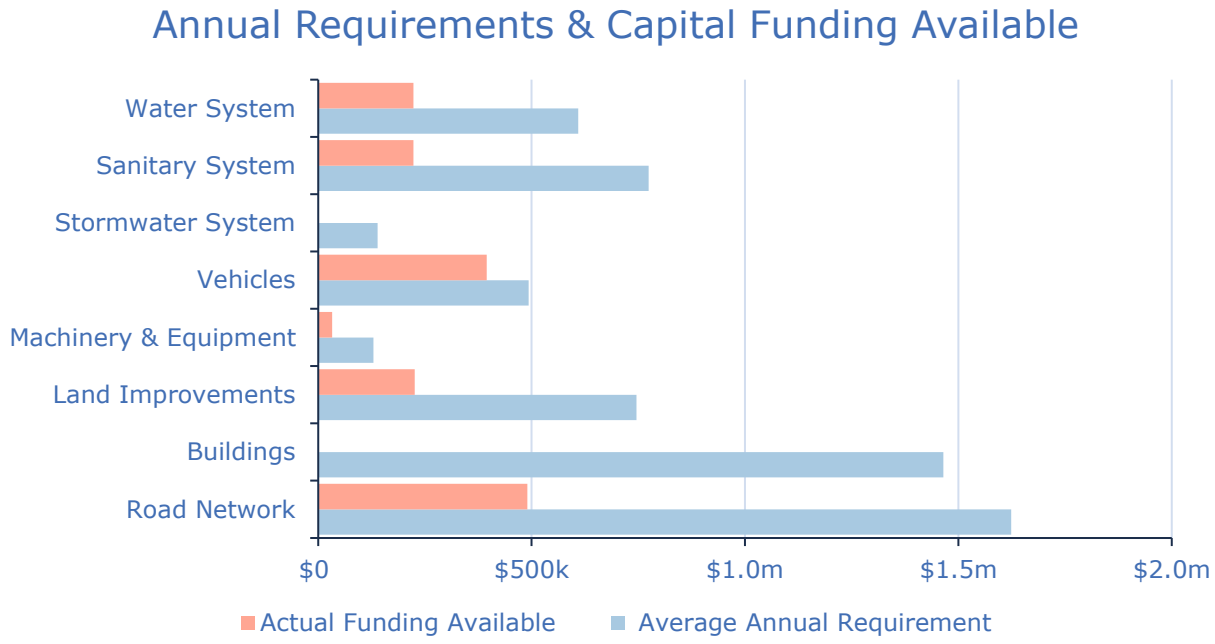


Figure 51 Annual Requirements vs. Capital Funding Available

13.2 Funding Objective

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

1. **Tax Funded Assets:** Road Network, Stormwater System, Buildings, Machinery & Equipment, Land Improvements, Vehicles

2. **Rate-Funded Assets:** Water System, Sanitary System

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.

13.3 Financial Profile: Tax Funded Assets

13.3.1 Current Funding Position

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

Asset Category	Avg. Annual Require-ment	Annual Funding Available (2024 Budget)					Annual Deficit
		Taxes	CCBF	OCIF	Reserves	Total Available	
Road Network	$1,624,000		$215,000	$275,000		$490,000	$1,134,000
Stormwater System	$139,000					$0	$139,000
Buildings	$1,465,000					$0	$1,465,000
Machinery & Equipment	$129,000	$32,340				$32,340	$96,660
Land Improve-ments	$746,000	$136,924			$89,000	$225,924	$520,076
Vehicles	$493,000	$55,012			$340,000	$395,012	$97,988
Total	**$4,596,000**	**$224,276**	**$215,000**	**$275,000**	**$429,000**	**$1,142,276**	**$3,452,724**

Table 39 Annual Available Funding for Tax Funded Assets

The average annual investment requirement for the above categories is $4.6 million. Annual revenue currently allocated to these assets for capital purposes is $1.1 million leaving an annual deficit of $3.5 million. Put differently, these infrastructure categories are currently funded at 24.9% of their long-term requirements.

13.3.2 Full Funding Requirements

In 2023, the Town of Marathon had budgeted annual tax revenues of approximately $5.57 million. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

Asset Category	Tax Change Required for Full Funding
Road Network	20.4%
Stormwater System	2.5%
Buildings	26.3%
Machinery & Equipment	1.7%
Land Improvements	9.3%
Vehicles	1.8%
Total	**62.0%**

Table 40 Tax Increase Requirements for Full Funding

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

a) Marathon's debt payments for these asset categories will be decreasing $164,322 by 2033.

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

	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	3,452,724	3,452,724	3,452,724	3,452,724
Change in Debt Costs	598,084	433,762	433,762	433,762
Resulting Infrastructure Deficit:	**4,050,808**	**3,886,486**	**3,886,486**	**3,886,486**
Tax Increase Required	72.7%	69.8%	69.8%	69.8%
Annually:	**11.6%**	**5.5%**	**3.6%**	**2.7%**

Table 41 Tax Increase Options 5-20 Years

13.3.3 Financial Strategy Recommendations

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

a) increasing tax revenues by 2.7% 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.
b) allocating the current CCBF and OCIF revenue to the road network.
c) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included OCIF formula-based funding, if applicable, since this funding is a multi-year commitment[3].
2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However,

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

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 modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of $9.5 million for the Road Network, $20.0 million for Buildings, $10.4 million for Land Improvements, $916,000 million for Machinery & Equipment, and $1.8 million for Vehicles. The pent-up investment demands are shown as Backlog in the Forecasted Capital Replacement Needs graphs displayed in the previous sections of this report.

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

13.4 Financial Profile: Rate Funded Assets

13.4.1 Current Funding Position

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

Asset Category	Avg. Annual Require-ment	Annual Funding Available				Annual Deficit
		Rates	To Operations	OCIF	Total Available	
Water System	$609,000	$766,403	-$543,637		$222,766	$386,234
Sanitary System	$774,000	$766,403	-$543,637		$222,766	$551,234
Total	**$1,383,000**	**$1,532,806**	**-$1,087,274**		**$445,532**	**$937,468**

Table 42 Annual Available Funding for Rate Funded Assets

The average annual investment requirement for the above categories is $1.38 million. Annual revenue currently allocated to these assets for capital purposes is $446,000 leaving an annual deficit of $937,000. Put differently, these infrastructure categories are currently funded at 32.2% of their long-term requirements.

13.4.2 Full Funding Requirements

Averaging from 2021-2023, had annual sanitary revenues of $766,403 and annual water revenues of $766,403. As illustrated in the table below, without consideration of any other sources of revenue, full funding would require the following changes over time:

Asset Category	Rate Change Required for Full Funding
Water System	50.4%
Sanitary System	71.9%

Table 43 Rate Increase Requirements for Full Funding

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

	Water System			
	5 Years	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	386,234	386,234	386,234	386,234
Rate Increase Required	50.4%	50.4%	50.4%	50.4%
Annually:	**8.6%**	**4.2%**	**2.8%**	**2.1%**

Table 44 Water Rate Increase Options 5-20 Years

	Sanitary System			
	5 Years	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	551,234	551,234	551,234	551,234
Rate Increase Required	71.9%	71.9%	71.9%	71.9%
Annually:	**11.5%**	**5.6%**	**3.7%**	**2.8%**

Table 45 Sanitary Rate Increase Options 5-20 Years

13.4.3 Financial Strategy Recommendations

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

a) increasing rate revenues by 2.1% for water services and 2.8% for sanitary sewer services 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.
b) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

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

Although this option achieves full funding on an annual basis in 20 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of $1.2 million for the Water System and $4.5 million for the Sanitary System.

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

13.5 Use of Debt

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

a) the ability to stabilize tax & user rates when dealing with variable and sometimes uncontrollable factors

b) equitable distribution of the cost/benefits of infrastructure over its useful life
c) a secure source of funding
d) flexibility in cash flow management

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

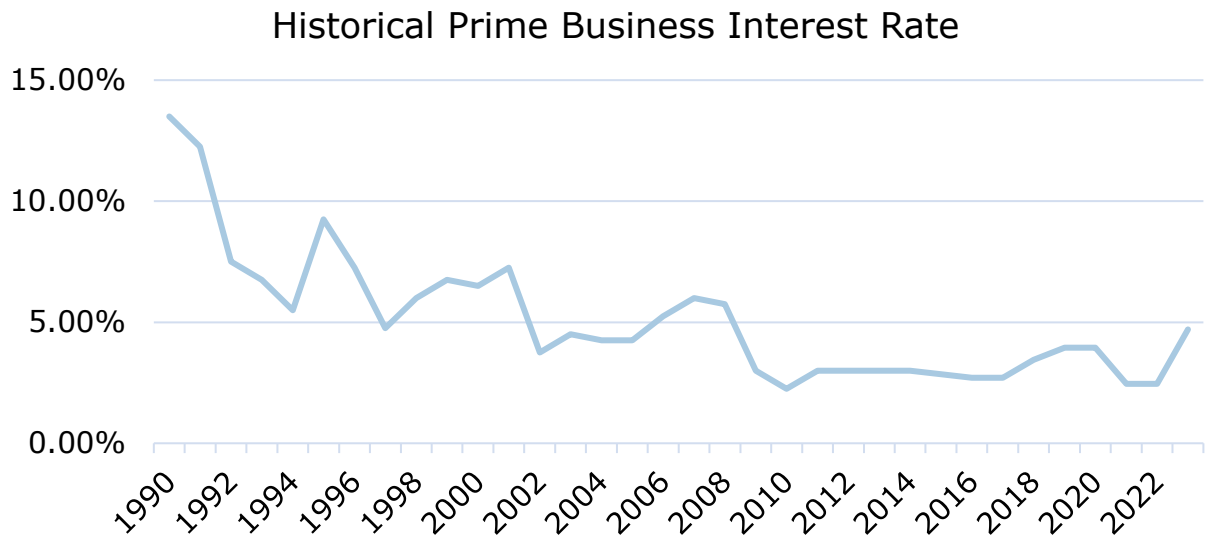


Figure 52 Historical Prime Rate

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

For reference purposes, the following table outlines the premium paid on a project if financed by debt. For example, a $1 million project financed at 3.0%[4] over 15 years would result in a 26% premium or $260,000 of increased costs due to interest payments. For simplicity, the table does not consider the time value of money or the effect of inflation on delayed projects.

[4] Current municipal Infrastructure Ontario rates for 15-year money is 3.2%.

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

Table 46 Interest Premiums Paid

The following tables outline how Marathon has historically used debt for investing in the asset categories as listed. As of year-end 2023, there is currently $11.26 million of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of $563,586, well within its provincially prescribed maximum of $2.0 million.

Asset Category	Current Debt Outstanding	Use of Debt in the Last Five Years				
		2019	2020	2021	2022	2023
Road Network	0	0	0	0	0	0
Stormwater System	0	0	0	0	0	0
Buildings	11,255,991	163,472	163,472	642,190	562,657	587,119
Machinery & Equipment	0	0	0	0	0	0
Land Improvements	0	0	0	0	0	0
Vehicles	0	0	0	0	0	0
Total Tax Funded	**11,255,991**	**163,472**	**163,472**	**642,190**	**562,657**	**587,119**
Water System	0	0	0	0	0	0
Sanitary System	0	0	0	0	0	0
Total Rate Funded	**0**	**0**	**0**	**0**	**0**	**0**

Table 47 Marathon Use of Debt 2019-2023

Asset Category	Principal & Interest Payments in the Next Ten Years						
	2023	2024	2025	2026	2027	2028	*2033*
Road Network	0	0	0	0	0	0	*0*
Stormwater System	0	0	0	0	0	0	*0*
Buildings	563,586	563,586	1,161,670	1,161,670	1,161,670	1,161,670	*997,348*
Machinery & Equipment	0	0	0	0	0	0	*0*
Land Improvements	0	0	0	0	0	0	*0*
Vehicles	0	0	0	0	0	0	*0*
Total Tax Funded	**563,586**	**563,586**	**1,161,670**	**1,161,670**	**1,161,670**	**1,161,670**	***997,348***
Water System	0	0	0	0	0	0	*0*
Sanitary System	0	0	0	0	0	0	*0*
Total Rate Funded	**0**	**0**	**0**	**0**	**0**	**0**	***0***

Table 48 Marathon Principal and Interest Payments

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

13.6 Use of Reserves

13.6.1 Available Reserves

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

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

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

Asset Category	Balance at December 31, 2023
Vehicles	933,103
Unspecified (All Categories)	2,113,716
Total Tax Funded:	**3,046,819**
Water System	2,528,000
Sanitary System	2,528,000
Total Rate Funded:	**5,056,015**

Table 49 Marathon Reserve Balances

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

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

These reserves are available for use by applicable asset categories during the phase-in period to full funding. This coupled with Marathon'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.

13.6.2 Recommendation

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

14. Recommendations & Key Considerations

14.1 Financial Strategies

1. Review the feasibility of adopting a full-funding scenario to achieve 100% of average annual funding requirement for the asset categories analyzed. This includes:
    a. Increasing taxes by 2.7% per year over a period of 20 years;
    b. Increasing water rates by 2.1% per year over a period of 20 years; and
    c. Increasing sanitary rates by 2.8% per year over a period of 20 years.

2. Continued allocation of OCIF and CCBF funding to the road network.

3. Increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

4. Continue to apply for project specific grant funding to supplement sustainable funding sources.

14.2 Asset Data

1. Continuously review, refine, and calibrate lifecycle and risk profiles to better reflect actual practices and improve capital projections. In particular:
    a. the timing of various lifecycle events, the triggers for treatment, anticipated impacts of each treatment, and costs
    b. the various attributes used to estimate the likelihood and consequence of asset failures, and their respective weightings

2. 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.

3. 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.

14.3 Risk & Levels of Service

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

2. Available data on current performance should be centralized and tracked to support any calibration of service levels ahead of O. Reg. 588's 2025 requirements on proposed levels of service.

3. 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.

Appendices

Appendix A – Infrastructure Report Card

Appendix B – 10-Year Capital Requirements

Appendix C – Level of Service Maps

Appendix D – Risk Rating Criteria

Appendix A – Infrastructure Report Card

Asset Category	Replacement Cost	Average Condition	Financial Capacity	
Road Network	**$37.6 m**	**Fair**	Annual Requirement:	$1,624,000
			Funding Available:	$490,000
			Annual Deficit:	**$1,134,000**
Water System	**$44.8 m**	**Fair**	Annual Requirement:	$609,000
			Funding Available:	$222,767
			Annual Deficit:	**$386,234**
Sanitary System	**$55.6 m**	**Poor**	Annual Requirement:	$774,000
			Funding Available:	$222,766
			Annual Deficit:	**$551,234**
Stormwater System	**$14.6 m**	**Fair**	Annual Requirement:	$139,000
			Funding Available:	$0
			Annual Deficit:	**$139,000**
Buildings	**$69.1 m**	**Fair**	Annual Requirement:	$1,465,000
			Funding Available:	$0
			Annual Deficit:	**$1,465,000**
Land Improvements	**$15.2 m**	**Poor**	Annual Requirement:	$746,000
			Funding Available:	$255,924
			Annual Deficit:	**$520,076**
Vehicles	**$8.4 m**	**Fair**	Annual Requirement:	$493,000
			Funding Available:	$395,012
			Annual Deficit:	**$97,988**
Machinery & Equipment	**$ 1.9 m**	**Poor**	Annual Requirement:	$129,000
			Funding Available:	$32,340
			Annual Deficit:	**$96,660**

Appendix B – 10-Year Capital Requirements

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

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

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

Road Network

Segment	Back-log	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Curbs & Gutters	$0	$0	$0	$0	$0	$0	$0	$381k	$0	$0	$0
Road Surface	$0	$908k	$586k	$637k	$980k	$676k	$255k	$509k	$708k	$841k	$0
Sidewalks	$9.3m	$0	$0	$0	$45k	$283k	$0	$0	$0	$1.3m	$0
Streetlights	$233k	$8k	$5k	$0	$55k	$28k	$40k	$93k	$0	$13k	$570k
Total	**$9.5m**	**$916k**	**$591k**	**$637k**	**$1.1m**	**$987k**	**$295k**	**$982k**	**$708k**	**$2.2m**	**$570k**

Table 50 System Generated 10-Year Capital Replacement Forecast: Road Network

Water System

Segment	Back-log	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Booster Stations	$0	$0	$0	$0	$0	$434k	$1.1m	$0	$0	$0	$0
Hydrants	$0	$0	$0	$0	$0	$0	$0	$0	$420k	$0	$0
Laterals	$354k	$0	$4k	$98k	$0	$0	$4k	$0	$0	$0	$0
Process Piping	$0	$0	$94k	$0	$0	$0	$378k	$0	$47k	$0	$0
Reservoir	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Equipment	$864k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Mains	$0	$0	$34k	$0	$0	$0	$0	$0	$0	$173k	$53k
Wells	$0	$0	$5.6m	$271k	$0	$0	$0	$189k	$2.4m	$0	$0
Total	**$1.2m**	**$0**	**$5.7m**	**$369k**	**$0**	**$434k**	**$1.4m**	**$189k**	**$2.8m**	**$173k**	**$53k**

Table 51 System Generated 10-Year Capital Replacement Forecast: Water System

Sanitary System

Segment	Back-log	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Forcemains	$0	$0	$0	$0	$166k	$0	$0	$0	$0	$0	$0
Manholes	$15k	$0	$0	$0	$0	$0	$0	$0	$15k	$0	$0
Process Piping	$1.0m	$0	$151k	$0	$0	$0	$0	$0	$0	$0	$0
Sewage Treatment Plant	$1.7m	$0	$0	$0	$132k	$0	$0	$20k	$3.0m	$0	$0
Sewer Mains	$1.8m	$311k	$263k	$49k	$582k	$22k	$22k	$0	$0	$0	$16k
Lift Stations	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$4.5m**	**$311k**	**$414k**	**$49k**	**$880k**	**$22k**	**$22k**	**$20k**	**$3.0m**	**$0**	**$16k**

Table 52 System Generated 10-Year Capital Replacement Forecast: Sanitary System

Stormwater System

Segment	Back-log	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Catch Basins	$0	$0	$0	$0	$0	$0	$0	$0	$280k	$0	$0
Laterals	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Manholes	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Storm Mains	$0	$0	$0	$0	$0	$0	$0	$363k	$0	$0	$8k
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$363k**	**$280k**	**$0**	**$8k**

Table 53 System Generated 10-Year Capital Replacement Forecast: Stormwater System

Buildings

Segment	Back-log	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Environmental Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
General Government	$0	$0	$0	$0	$709k	$0	$0	$0	$0	$0	$642k
Health Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Protection Services	$0	$0	$0	$0	$0	$253k	$0	$0	$0	$0	$631k
Recreation and Cultural Services	$20.0m	$0	$0	$0	$0	$0	$69k	$0	$0	$862k	$526k
Social Housing	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Transportation Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$20.0m**	**$0**	**$0**	**$0**	**$709k**	**$253k**	**$69k**	**$0**	**$0**	**$862k**	**$1.8m**

Table 54 System Generated 10-Year Capital Replacement Forecast: Buildings

Land Improvements

Segment	Back-log	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Airport	$9.9m	$0	$0	$0	$0	$0	$200k	$0	$0	$72k	$0
Fencing & Signage	$201k	$0	$0	$0	$0	$0	$0	$387k	$0	$0	$0
Golf Course	$0	$0	$0	$0	$0	$0	$0	$387k	$12k	$0	$0
Landfill	$0	$89k	$0	$0	$0	$350k	$202k	$0	$0	$0	$45k
Parking Lots	$210k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Parks	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Playground & Sport Structures	$105k	$173k	$0	$0	$0	$150k	$0	$0	$0	$0	$0
Total	**$10.4m**	**$262k**	**$0**	**$0**	**$0**	**$499k**	**$402k**	**$778k**	**$12k**	**$72k**	**$45k**

Table 55 System Generated 10-Year Capital Replacement Forecast: Land Improvements

Vehicles

Segment	Back-log	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Environmental Services	$305k	$12k	$0	$12k	$0	$0	$0	$207k	$0	$0	$235k
General Government	$0	$30k	$0	$0	$0	$0	$0	$0	$0	$0	$0
Protection Services	$242k	$0	$0	$0	$51k	$750k	$0	$36k	$0	$0	$0
Recreation and Cultural Services	$93k	$0	$0	$38k	$0	$40k	$27k	$39k	$27k	$0	$0
Transportation Services	$1.1m	$36k	$37k	$234k	$91k	$91k	$25k	$51k	$25k	$241k	$241k
Total	**$1.8m**	**$78k**	**$37k**	**$284k**	**$141k**	**$881k**	**$51k**	**$333k**	**$52k**	**$241k**	**$241k**

Table 56 System Generated 10-Year Capital Replacement Forecast: Vehicles

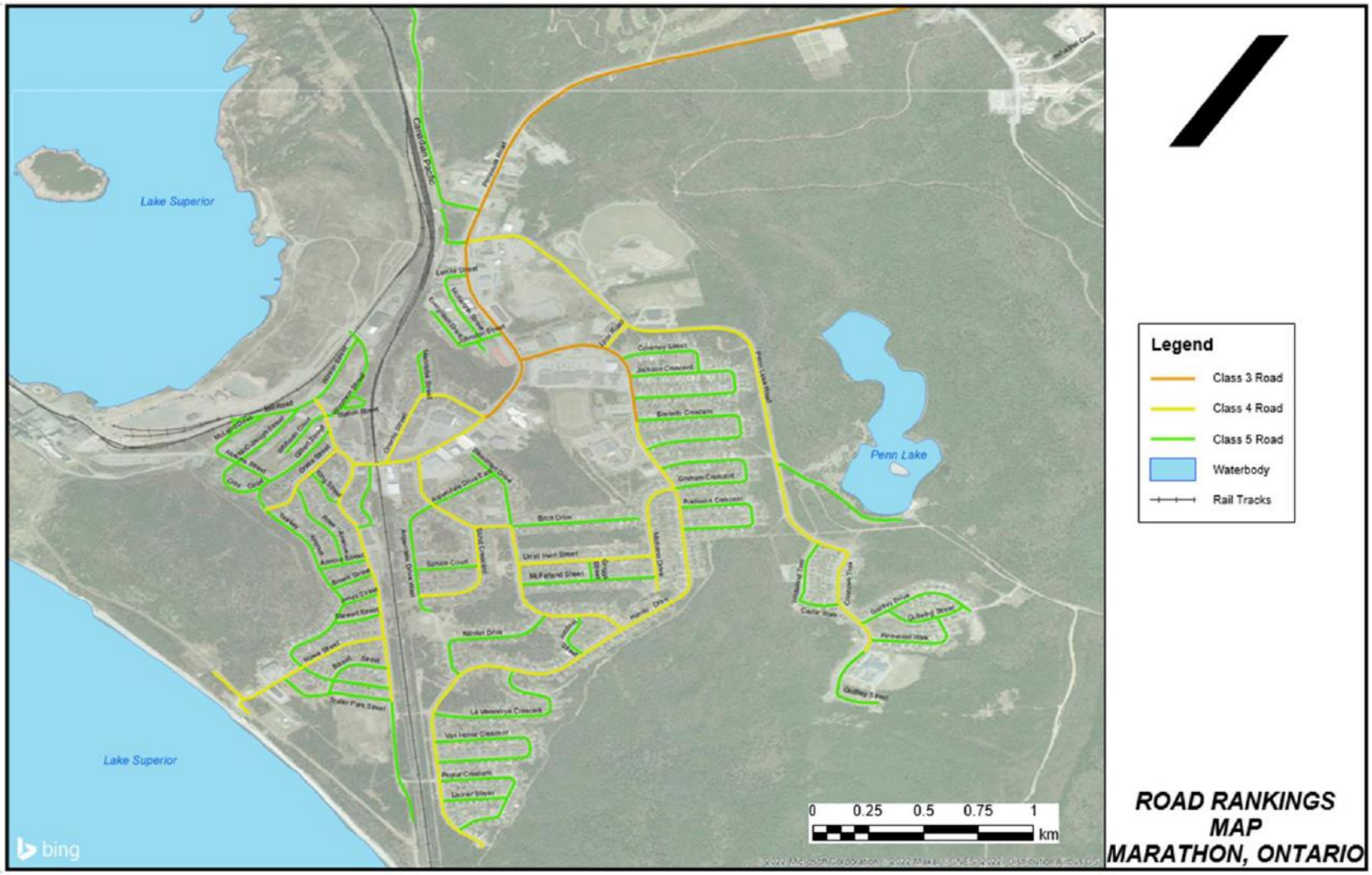
Machinery & Equipment

Segment	Back-log	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Fire Equipment	$182k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Furniture & Fixtures	$29k	$0	$0	$0	$4k	$0	$0	$0	$0	$0	$0
Information Technology	$213k	$0	$20k	$18k	$24k	$10k	$95k	$42k	$8k	$16k	$0
Recreation Equipment	$453k	$0	$0	$135k	$0	$58k	$16k	$0	$0	$45k	$98k
Transportation Services	$38k	$0	$0	$23k	$0	$0	$0	$0	$16k	$0	$0
Total	**$916k**	**$0**	**$20k**	**$176k**	**$28k**	**$68k**	**$111k**	**$42k**	**$25k**	**$61k**	**$98k**

Table 57 System Generated 10-Year Capital Replacement Forecast: Machinery & Equipment

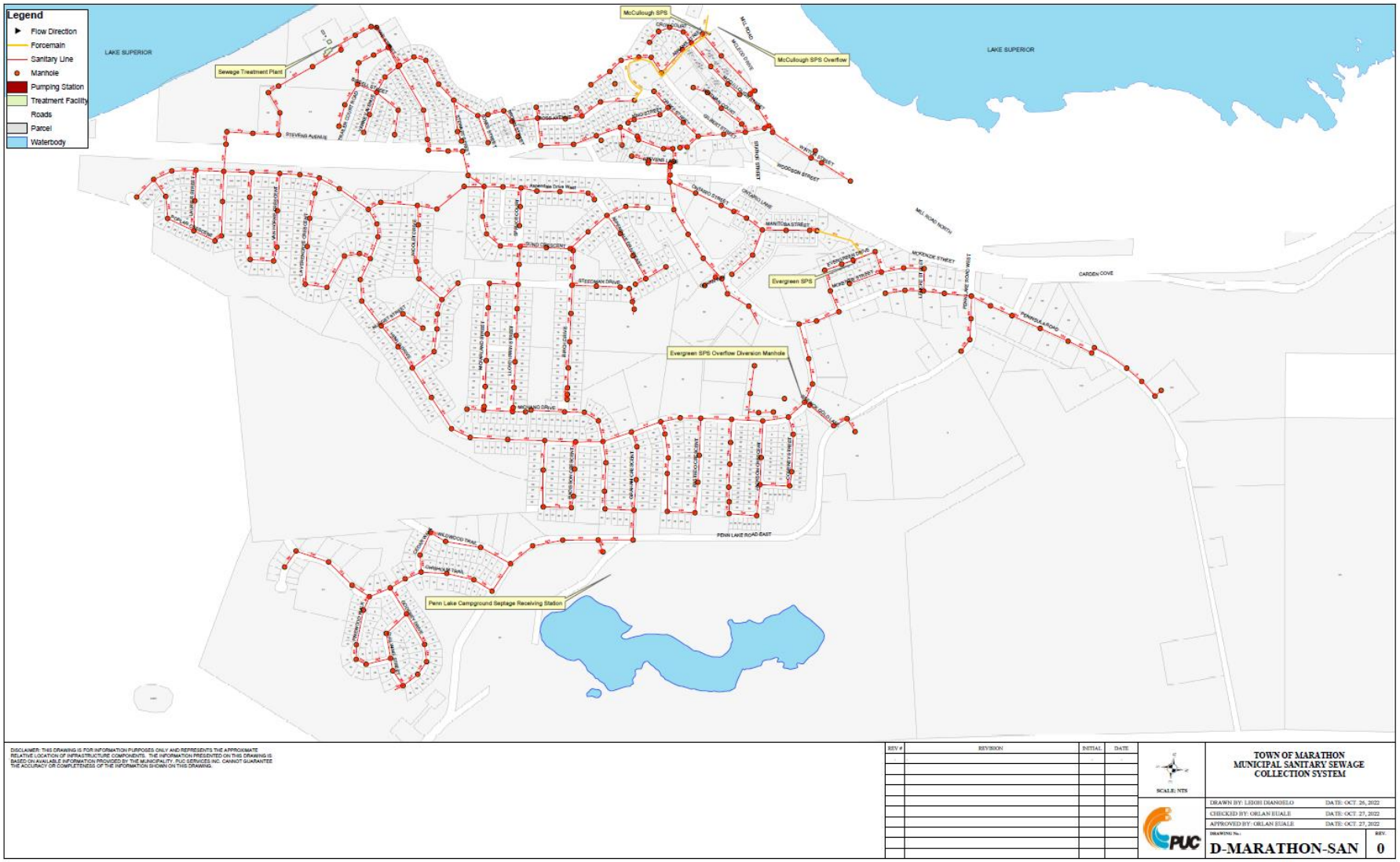
Appendix C – Level of Service Maps & Photos

Road Network Map



Stormwater Network Map

Sanitary System Map



Appendix D – Risk Rating Criteria

Probability of Failure

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Road Network (Roads)	Condition	60%	86-100	1
			71-85	2
			56-70	3
			41-55	4
			0-40	5
	Service Life Remaining	30%	20 Years +	1
			10 – 20 Years	2
			5 – 10 Years	3
			1 – 5 Years	4
			< 1 Year	5
	Road Class	10%	5	1
			4	3
			3	5

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Buildings Machinery & Equipment Vehicles Land Improvements	Condition	100%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
Stormwater System (Mains) Sanitary System (Mains)	Condition	100%	90-100	1
			80-89	2
			60-79	3
			30-59	4
			0-29	5
Water System (Mains)	Condition	50%	90-100	1
			80-89	2
			60-79	3
			30-59	4
			0-29	5
	Pipe Material	50%	PVC	2
			Cast Iron	3
			Clay	4

Consequence of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Road Network (Roads)	Economic (20%)	$/m^2 (100%)	0 – 25	1
			26 – 50	2
			51 – 75	3
			76 – 100	4
			101 +	5
	Social (80%)	Road Class (100%)	5	2
			4	4
			3	5
Stormwater System (Mains)	Economic (60%)	Replacement Cost (100%)	$0-$50,000	1
			$50,000-$150,000	2
			$150,000-$250,000	3
			$250,000-$500,000	4
			$500,000+	5
	Social (40%)	Diameter (100%)	300	1
			375	1
			450	2
			525	3
			530	3
			600	3
			675	4
			750	4

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
			825	4
			900	4
			1050	5
Buildings	Economic (40%)	Replacement Cost (100%)	$0-$50,000	1
			$50,001-$100,000	2
			$100,001-$150,000	3
			$150,001-$200,000	4
			$200,001+	5
	Social (60%)	Building Type (100%)	Cemetery	1
			Storage	1
			Community Hall	2
			Library	3
			Administration	3
			Fire Training Facility	3
			Cultural	3
			Recreation Center	4
			Operations	4
			Fire Station	5
Machinery & Equipment	Economic (50%)	Replacement Cost (100%)	$0-$5,000	1
			$5,001-$10,000	2
			$10,001-$25,000	3
			$25,001-$50,000	4

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
			$50,001+	5
	Social (50%)	Equipment Purpose (100%)	Administration	1
			Cemetery	1
			Recreation	3
			Maintenance	3
			Environmental	4
			Operations	4
			Fire & Rescue	5
Vehicles	Economic (60%)	Replacement Cost (100%)	$0-$25,000	1
			$25,001-$50,000	2
			$50,001-$100,000	3
			$100,001-$125,000	4
			$125,001+	5
	Operational (20%)	Vehicles Type (100%)	Off Road (ATV)	1
			Small Equipment	1
			Light Duty Vehicle	1
			Medium Duty Vehicle	2
			Light Duty Machinery	2
			Heavy Duty Vehicle	3
			Attachment	3

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
			Medium Duty Machinery	4
			Heavy Machinery	5
	Social (20%)	Fleet Purpose (100%)	Cemetery	1
			Maintenance	1
			Administration	2
			Recreation	2
			Environmental	3
			Operations	4
			Fire Rescue	5
Land Improvements	Economic (50%)	Replacement Cost (100%)	$0-$20,000	1
			$20,001-$40,000	2
			$40,001-$60,000	3
			$60,001-$80,000	4
			$80,001 +	5
	Social (50%)	Recreation Type (100%)	Naturalized Area	1
			Trails	2
			Parkette	2
			Golf Course	3
			Special Use Park	4
			Community Park	5

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Water System (Water Mains)	Economic (60%)	Replacement Cost (100%)	$0-$50,000	1
			$50,001 - $100,000	2
			$100,001-$150,000	3
			$150,001-$200,000	4
			$200,001 +	5
	Social (40%)	Diameter (100%)	25	1
			75	1
			150	2
			200	3
			250	3
			300	3
			350	4
			500	5
Sanitary System (Sanitary Mains)	Economic (50%)	Replacement Cost (100%)	$0-$20,000	1
			$20,001-$40,000	2
			$40,001-$60,000	3
			$60,001-$80,000	4
			$80,001 +	5
	Environmental (20%)	Asset Segment (50%)	Sanitary Sewer Mains	3
			Sanitary Forcemains	5

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
	Social (30%)	Diameter (100%)	150	1
			200	2
			250	2
			300	3
			350	3
			375	3
			450	4
			525	5