# Asset Management Plan 2025

TOWNSHIP OF BILLINGS

**SEPTEMBER 2025**

psdcitywide

This Asset Management Plan was prepared by:

psdcitywide

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

# Key Statistics

| | |
|---|---|
| **$103m** | 2024 Replacement Cost of Asset Portfolio |
| **$153k** | Replacement Cost of Infrastructure Per Household |
| **62%** | Percentage of Assets in Fair or Better Condition |
| **53%** | Percentage of Assets with Assessed Condition Data |
| **$1.7m** | Annual Capital Infrastructure Deficit |
| **20 Years** | Recommended Timeframe for meeting Proposed Levels of Service |
| **1.79%** | Target Reinvestment Rate to meet the Proposed Level of Service |
| **0.69%** | Actual Reinvestment Rate |

# Table of Contents

# 1. Executive Summary

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

## 1.1 Scope

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

This AMP includes the following asset categories:

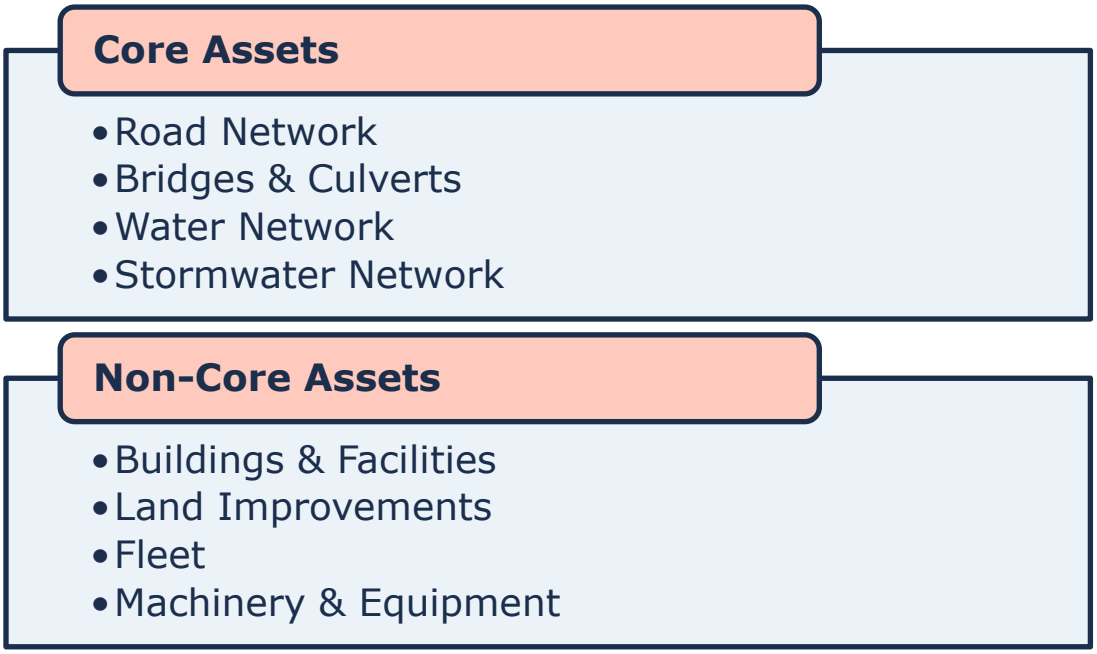



*Figure 1 Core and Non-Core Asset Categories*

## 1.2 O. Reg. 588/17 Compliance

With the development of this AMP the Township of Billings has achieved compliance with July 1, 2025, requirements under O. Reg. 588/17. This includes requirements for proposed levels of service and inventory reporting for all asset categories. More details on compliance can be found in section 2.5.1 O. Reg. 588/17 Compliance Review.

## 1.3 Findings

The overall replacement cost of the asset categories included in this AMP totals $102.9 million. 62% of all assets analyzed in this AMP are in fair or better condition and assessed condition data was available for 53% of assets. For the remaining 47% of assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.

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

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, achieve long-term sustainability, and reach the proposed levels of service, the Township's average annual capital requirement totals $2.45 million. Based on a historical analysis of sustainable capital funding sources, the Township is committing approximately $700,000 towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $1.75 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 Township. 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 and to meet the Township's desired proposed levels of service. The following graphic shows annual tax/rate change required to meet the proposed levels of service based on a 20-year plan:

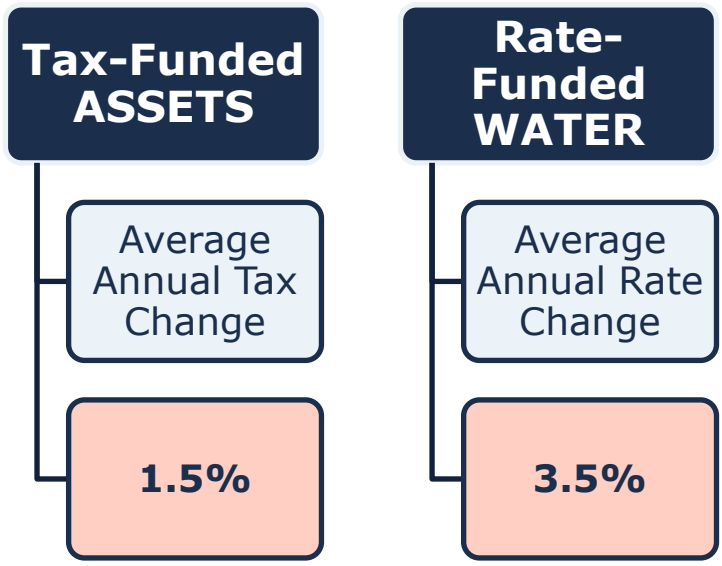



*Figure 2 Proposed Tax/Rate Changes*

# 2. Introduction & Context

## 2.1 Community Profile

| Census Characteristic | Township of Billings | Ontario |
|---|---|---|
| Population 2021 | 753 | 14,223,942 |
| Population Change 2016-2021 | 24.9% | 5.8% |
| Total Private Dwellings | 675 | 5,929,250 |
| Population Density | 3.6/km2 | 15.9/km$^2$ |
| Land Area | 208.81 km2 | 892,411.76 km$^2$ |

*Table 1 Township of Billings Community Profile*

The Township of Billings is located on the northern shore of Manitoulin Island in Ontario's Manitoulin District, with its main community, Kagawong, situated along Mudge Bay on Lake Huron. Covering approximately 208.81 km², the township is known for its stunning natural features including Bridal Veil Falls, forests, and waterfronts, as well as access to the nearby Benjamin Islands and the North Channel. According to the 2021 Census by Statistics Canada, Billings has a growing population of 753, showing a 24.9% increase since 2016. The local economy is driven largely by tourism, seasonal recreation, small-scale agriculture, and service-based businesses that benefit from the township's natural beauty and rural lifestyle.

Billings is committed to preserving its rural character, protecting the natural environment, and fostering a strong sense of community, as outlined in the 2024 to 2028 Strategic Plan. The plan emphasizes service excellence, community well-being, environmental stewardship, and sustainable infrastructure. To support these priorities, the Township aims to manage its infrastructure assets through sustainable asset management practices that focus on ongoing maintenance, condition assessments, and proactive capital planning. This integrated framework ensures reliable, cost-effective services, and strengthens long-term resilience to guide well-coordinated community growth.

## 2.2 Climate Profile

The changing climate poses a significant risk to the Canadian economy, society, environment, and infrastructure. Between 1948 and 2016, the average temperature across Canada increased by 1.7°C, which is double the global average. Similarly, observed precipitation has increased by approximately 20% between 1948 and 2012.

The Township of Billings is expected to experience notable effects of climate change that align with these national trends. According to data from Climatedata.ca, the Township may experience the following:

**Higher Average Annual Temperature:**
Between 1971 and 2000, the average annual temperature was 5.1°C. Under a high emissions scenario, this is projected to rise to 8.0°C by 2050 and over 10.1°C by the end of the century.

**Increased Precipitation:**
Billings is projected to experience a 13% increase in precipitation by 2050 and a 17% increase by the end of the century. According to the Township's Community Energy and Emissions Plan (CEEP), heavy precipitation events (+20mm) are expected to increase by 20% by 2030, and freezing rain events by 60% before 2050.

**Declining Water Levels in Lake Huron:**
A key challenge for Billings is the contrast between increasing local precipitation and the fluctuating water levels of Lake Huron. While it seems paradoxical, higher temperatures can lead to less ice cover on the Great Lakes during winter. This exposes more of the lake's surface to dry, cold air, which significantly increases evaporation. This water loss can offset the gains from increased local rainfall, impacting marina operations, shoreline property, and the local ecosystem. The declining water levels pose direct impacts on Billings, including challenges to marina operations, shoreline erosion, and pressures on local water resources and economic activities like tourism and fishing.

**Extreme Weather:**
Longer droughts, increased flood risks, and more severe storms are anticipated, driven by the island’s unique location within the Great Lakes and the Northern Hemisphere’s faster warming trend. Wildfire risk is predicted to increase by nearly 30% by 2050.

### 2.2.1 Integration with Asset Management

Asset management practices are designed to provide sustainable service delivery, ensuring that the needs of current residents are met without compromising the wellbeing of future generations. This goal is threatened by climate change, which can shorten the useful life of community assets and heighten the risk of failure due to impacts like flooding, high heat, drought, and increasingly frequent and severe storms. To achieve sustainable service delivery, it is essential to incorporate climate change considerations into asset management. Integrating climate adaptation with asset management aligns with industry best practices and fosters a more holistic approach to risk management.

To address these challenges, the Township of Billings launched its Community Energy and Emissions Plan (CEEP) initiative in 2019. The plan outlines a strategy to integrate climate risk into all operational and planning processes with the goal of creating a resilient, net-zero community by 2050.

Key initiatives from the CEEP include:

- **Shared Natural Spaces:** The plan aims to protect, restore, and enhance the Township's natural systems, which currently absorb more carbon than the community emits (22,069 tCO2e per year). This involves promoting sustainability in agriculture, forestry, and tourism.
- **Buildings:** The CEEP targets a 50% reduction in GHG emissions from buildings by 2030, as they account for 43% of the community's total emissions. Actions include increasing energy efficiency and promoting renewable energy to combat high rates of energy poverty on Manitoulin Island.

- **Transportation:** The plan seeks to reduce vehicle trips and accelerate the adoption of low-carbon transportation options. To meet GHG reduction goals, it is estimated that 14 internal combustion vehicles will need to be replaced by electric vehicles in the Township each year.
- **Waste Reduction:** The strategy focuses on reducing overall consumption and increasing waste diversion through better recycling and composting programs. A significant target for reduction is food waste, which constitutes approximately 40% of the material in the Billings landfill.

## 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.

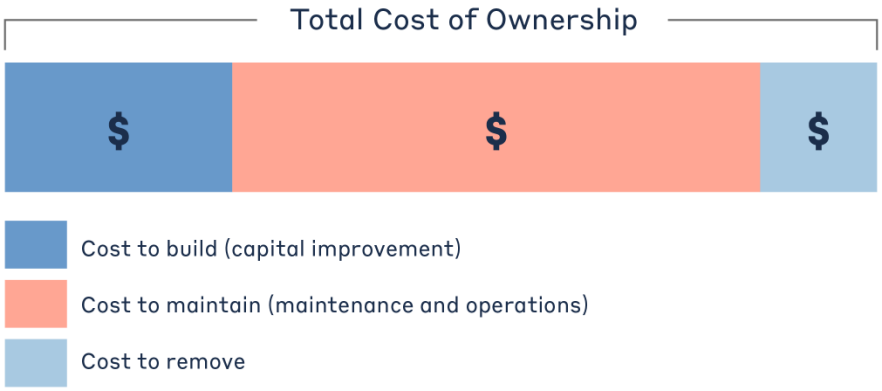



*Figure 3 Total Cost of Asset Ownership*

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.

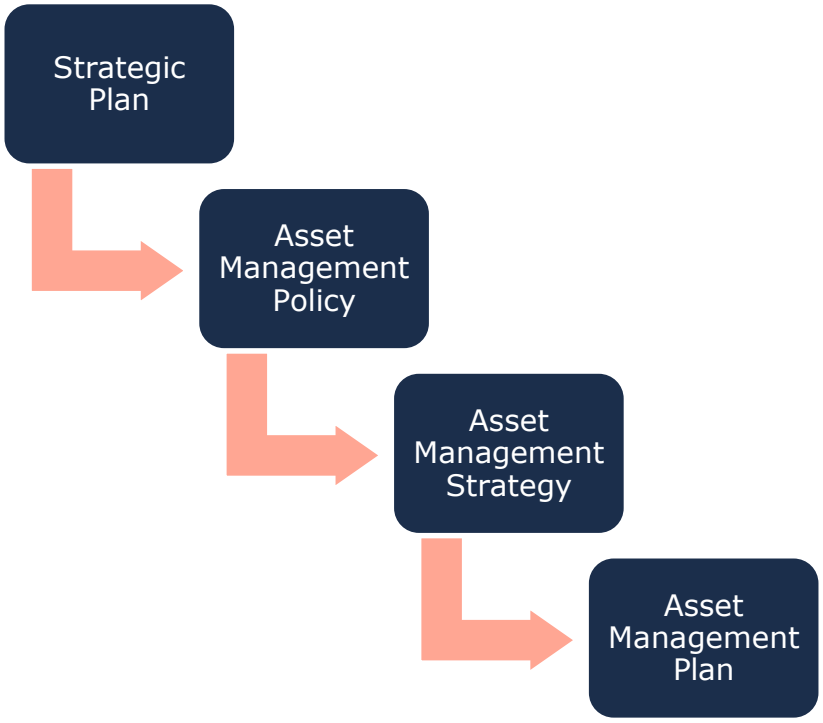



*Figure 4 Foundational Asset Management Documents*

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 Township'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 Township of Billings adopted By-law No. 2019-24 "Asset Management Policy" on May 7th, 2019, in accordance with accordance with Ontario Regulation 588/17. The objectives of the policy include:

- Continue to develop and implement long-term roads maintenance and improvement.
- Continue to pursue rational, cost-effective, and efficient use of municipal property.
- Continue to improve/increase public use washroom facilities.

- Continue with the waterfront development as outlined in the Waterfront Master Plan Study and the project intent.
- Continue to improve municipal waste site efficiency including waste diversion and recycling.
- Continue to ensure the most efficient and effective operations of the municipal water treatment and distribution system for the hamlet of Kagawong.
- Engage in joint municipal energy planning initiatives.
- Update our Asset management program with supporting long-term financial plan of major assets to guide the Township's future growth.

The policy provides a foundation for the development of an asset management program within the Township. It covers the key components that define a comprehensive asset management policy:

- The policy's principles dictate the use of asset management practices to ensure all assets meet the agreed levels of service in the most efficient and effective manner.
- The policy commits to, where appropriate, incorporating asset management in the Township's other plans.
- There are formally defined roles and responsibilities of internal staff and stakeholders.
- The policy includes the use of a cost/benefit analysis as well as the acknowledgement of climate change in the management of risk; and
- The policy principles are well defined.

### *Asset Management Strategy*

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

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

### *Asset Management Plan*

The asset management plan (AMP) presents the outcomes of the Township'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 Township 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 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***<br>Activities that prevent defects or deteriorations from occurring | **$** | ♦ Balancing limited resources between planned maintenance and reactive, emergency repairs and interventions;<br>♦ Diminishing returns associated with excessive maintenance activities, despite added costs;<br>♦ Intervention selected may not be optimal and may not extend the useful life as expected, leading to lower payoff and potential premature asset failure; |

| Lifecycle Activity | Cost | Typical Associated Risks |
|---|---|---|
| ***Rehabilitation/ Renewal***<br>Activities that rectify defects or deficiencies that are already present and may be affecting asset performance | **$$$** | ♦ Useful life may not be extended as expected;<br>♦ May be costlier in the long run when assessed against full reconstruction or replacement;<br>♦ Loss or disruption of service, particularly for underground assets; |
| ***Replacement/ Reconstruction***<br>Asset end-of-life activities that often involve the complete replacement of assets | **$$$$$** | ♦ Incorrect or unsafe disposal of existing asset;<br>♦ Costs associated with asset retirement obligations;<br>♦ Substantial exposure to high inflation and cost overruns;<br>♦ Replacements may not meet capacity needs for a larger population;<br>♦ Loss or disruption of service, particularly for underground assets; |

*Table 2 Lifecycle Management: Typical Lifecycle Interventions*

The Township'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.

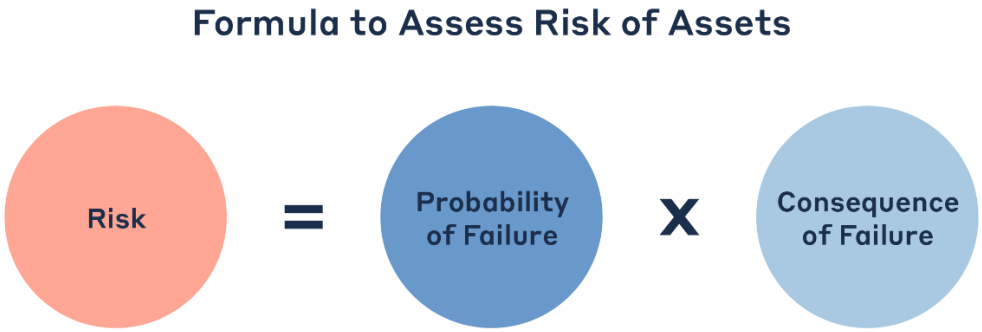



*Figure 5 Risk Equations*

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. |

| Type of Consequence | Description |
|---|---|
| ***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 Township 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 Township 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 Township 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, Bridges & Culverts, 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 Township's asset management strategies on the physical condition of assets or the quality/capacity of the services they provide.

For core asset categories as applicable (Roads, Bridges & Culverts, 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

Current LOS are the past performance metrics of an asset category up until present day. In contrast, Proposed LOS looks toward the municipality's goal for asset performance by a defined future date.

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

## 2.4 Scope & Methodology

### 2.4.1 Asset Categories for this AMP

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

The AMP summarizes the state of the infrastructure for the Township'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.

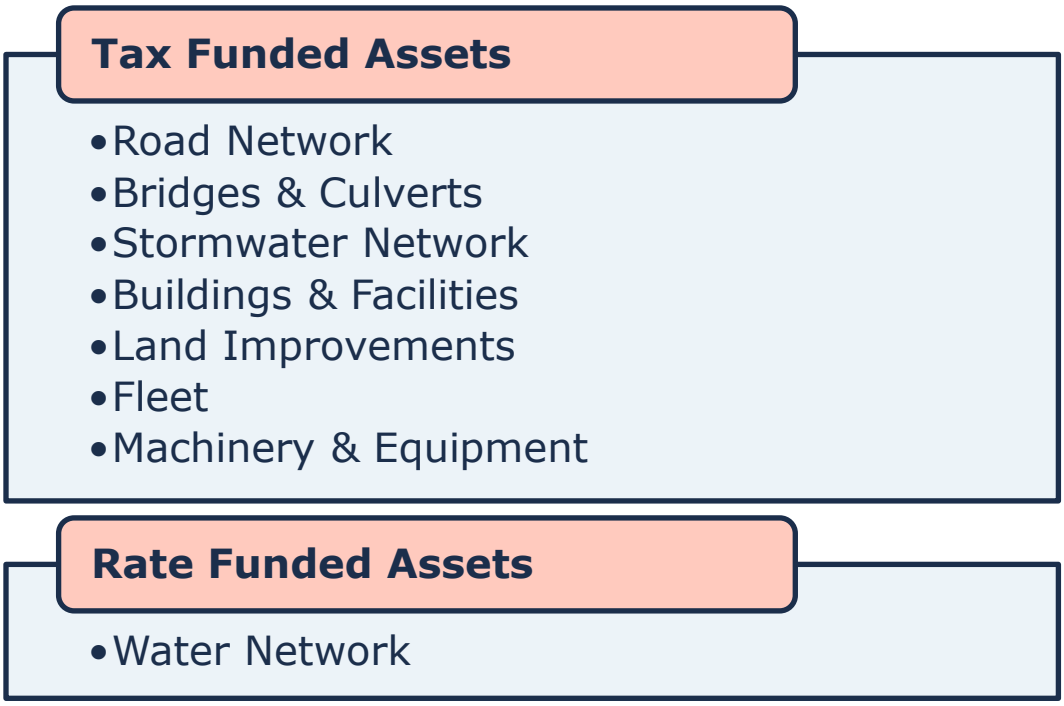



*Figure 6 Tax Funded and Rate Funded Asset Categories*

### 2.4.2 Data Effective Date

It is important to note that this plan is based on data as of **December 2024**; therefore, it represents a snapshot in time using the best available processes, data, and information at the Township. 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 Township 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 Township 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 Township can determine the service life remaining (SLR) for each asset. Using condition data and the asset's SLR, the Township 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 Township can determine the extent of any existing funding gap. The reinvestment rate is calculated as follows:


*Figure 8 Target Reinvestment Rate Calculation*

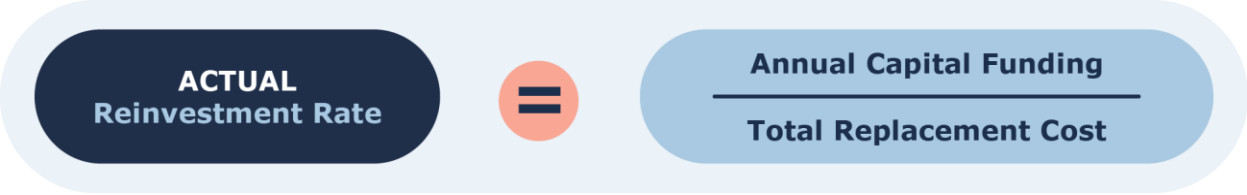



*Figure 9 Actual Reinvestment Rate Calculation*

### 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.

| 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*

A condition assessment rating system provides a standardized descriptive framework that allows comparative benchmarking across the Township'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.

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 10 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, 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.

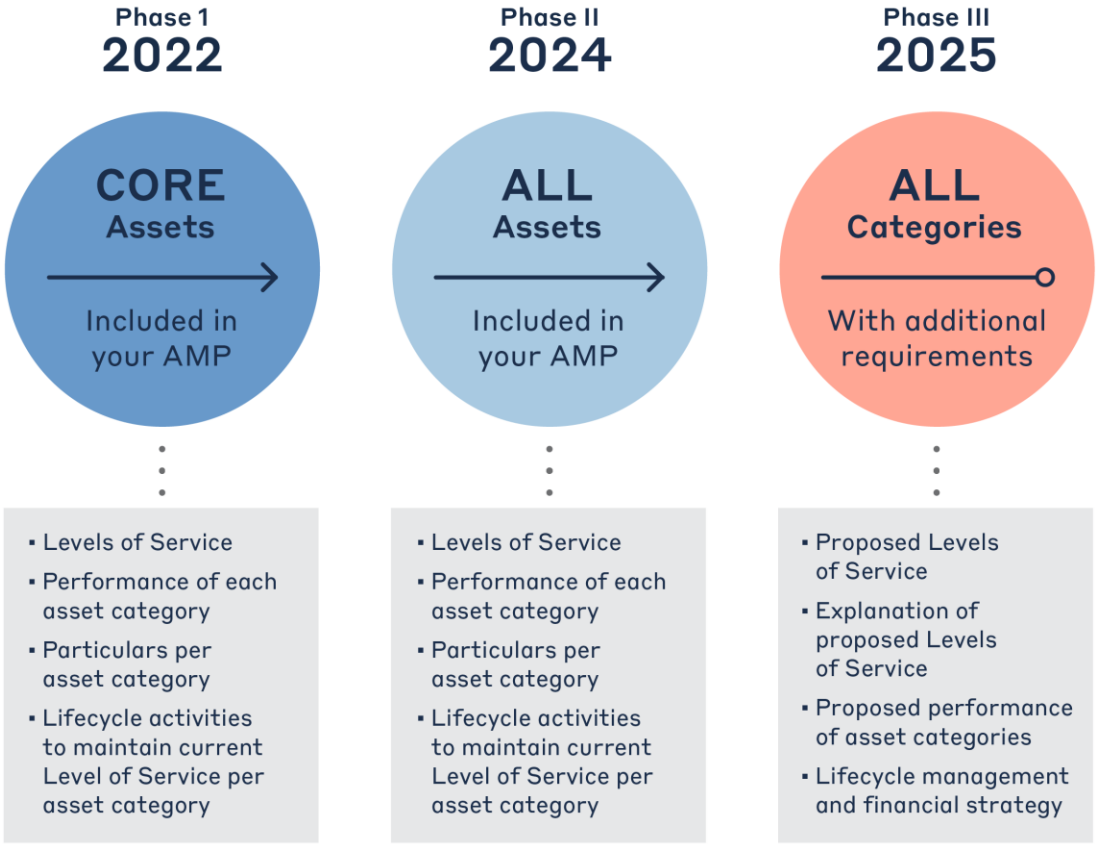



*Figure 10 O. Reg. 588/17 Requirements and Reporting Deadlines*

[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) | 5.1 – 13.1 | Complete |
| Replacement cost of assets in each category | S.5(2), 3(ii) | 5.1 – 13.1 | Complete |
| Average age of assets in each category | S.5(2), 3(iii) | 5.3 – 13.3 | Complete |
| Condition of core assets in each category | S.5(2), 3(iv) | 5.2 – 13.2 | Complete |
| Description of municipality's approach to assessing the condition of assets in each category | S.5(2), 3(v) | 5.4 – 13.4 | Complete |
| Current levels of service in each category | S.5(2), 1(i-ii) | 5.7 – 13.7 | Complete |
| Current performance measures in each category | S.5(2), 2 | 5.7 – 13.7 | Complete |
| Lifecycle activities needed to maintain current levels of service for 10 years | S.5(2), 4 | 5.4 – 13.4 | Complete |
| Costs of providing lifecycle activities for 10 years | S.5(2), 4 | 5.5 – 13.5 | Complete |
| Growth considerations | S.6(1), 5 | 14.1 – 14.2 | Complete |
| Proposed levels of service for each category for next 10 years | S.6(1), 1(i-ii) | 5.8 – 13.8 | Complete |
| Explanation of appropriateness of proposed levels of service | S.6(1), 2(i-iv) | 4.2 | Complete |
| Lifecycle management activities for proposed levels of service | S.6(1), 4(i) | 4.2 | Complete |
| 10-year capital costs for proposed levels of service | S.6(1), 4(ii) | Appendix B | Complete |
| Annual funding availability projections | S.6(1), 4(iii) | 4.2 | Complete |

*Table 5 O. Reg. 588/17 Compliance Review*

# Portfolio Overview

# 3. State of the Infrastructure

The state of the infrastructure (SOTI) summarizes the inventory, condition, age profiles, and other key performance indicators for the Township'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.

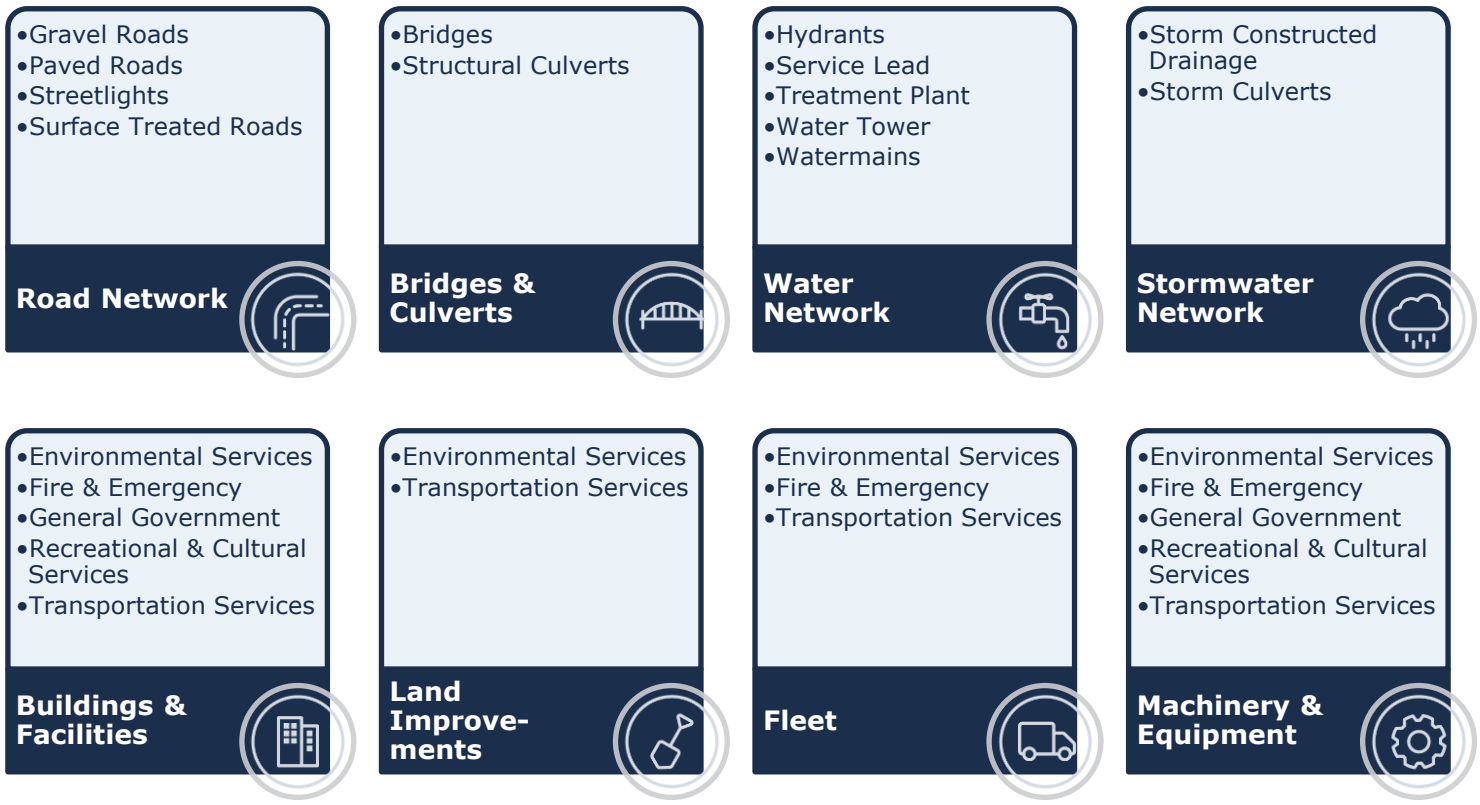



*Figure 11 Asset Hierarchy and Data Classification*[2]

[2] Segment classifications may share similar naming conventions. For consistency and transparency, detailed definitions and descriptions of each classification are outlined in the relevant sections of this Asset Management Plan.

## 3.2 Portfolio Overview

### 3.2.1 Total Replacement Cost of Asset Portfolio

The eight asset categories analyzed in this Asset Management Plan have a total current replacement cost of $103 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 49% of the total portfolio, the road network forms the largest share of the Township's asset portfolio, followed by the water network at 24%.

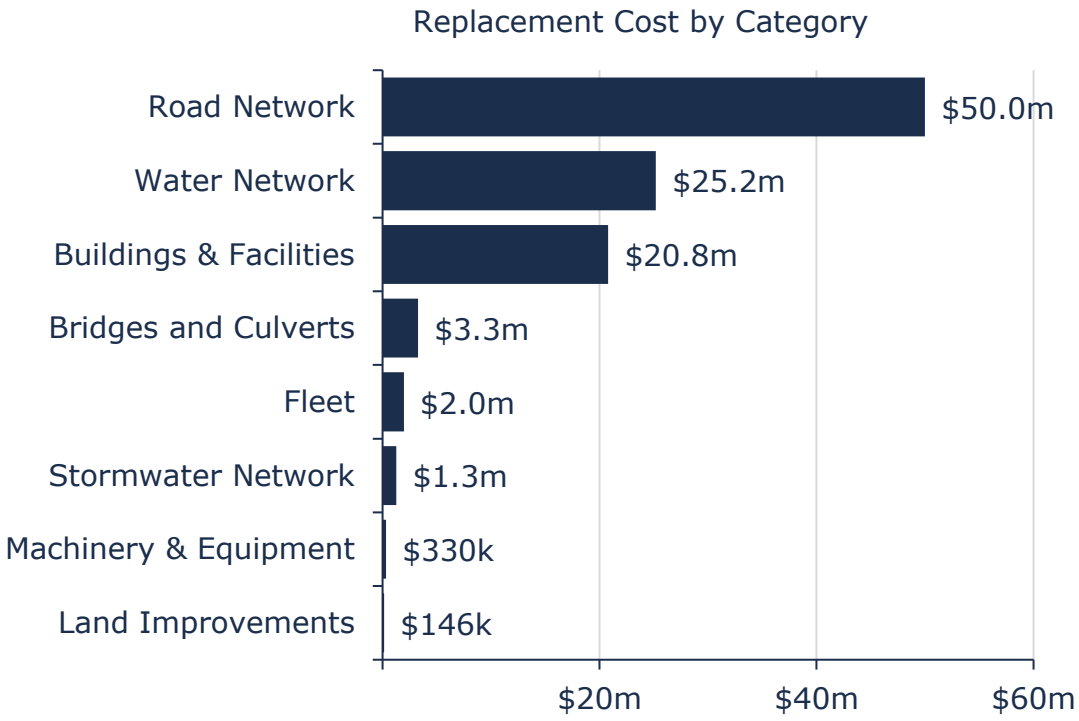



*Figure 12 Current Replacement Cost by Asset Category*

### 3.2.2 Target vs. Actual Reinvestment Rate

The graph below depicts funding gaps by comparing the target to the current reinvestment rate.

Note: The target reinvestment rate in this section is based on current lifecycle management approaches and does not consider proposed changes to service levels. For analysis of proposed levels of service, refer to Section 4.

To meet the proposed long-term capital requirements (at current service levels), the Township requires an annual capital investment of $2.45 million, for a target portfolio reinvestment rate of 2.38%. Currently, the annual investment from sustainable revenue sources is $706 thousand, for a current portfolio reinvestment rate of 0.69%. Target and current re-investment rates by asset category are detailed below.

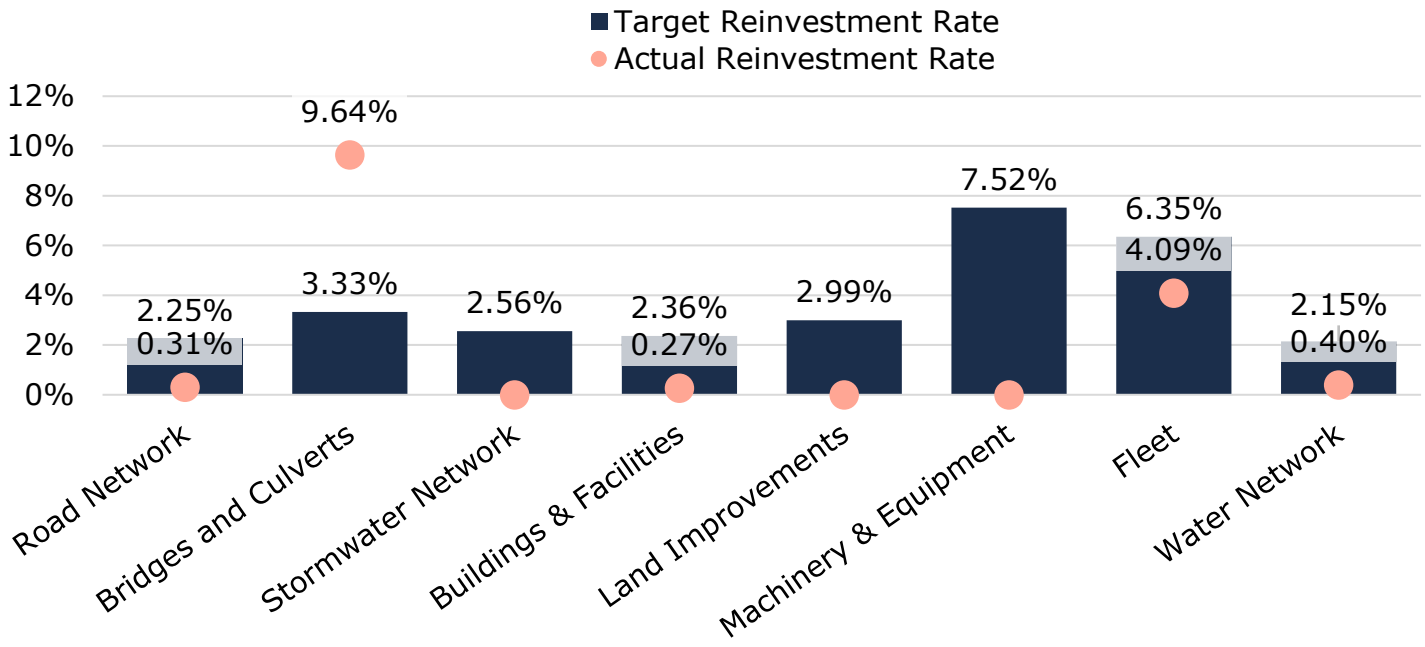



*Figure 13 Current Vs. Target Reinvestment Rate*

### 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, 62% of the Township's infrastructure portfolio is in fair or better condition, with the remaining 38% in poor or worse condition. Typically, assets in poor or worse conditions 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, bridges & culverts, and buildings & facilities. For all remaining assets, including major infrastructure such as storm 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 (2025). This 'projected condition' can generate lower condition ratings than those established at the time of the condition assessment. The rate of this deterioration will also depend on lifecycle curves used to project conditions over time.

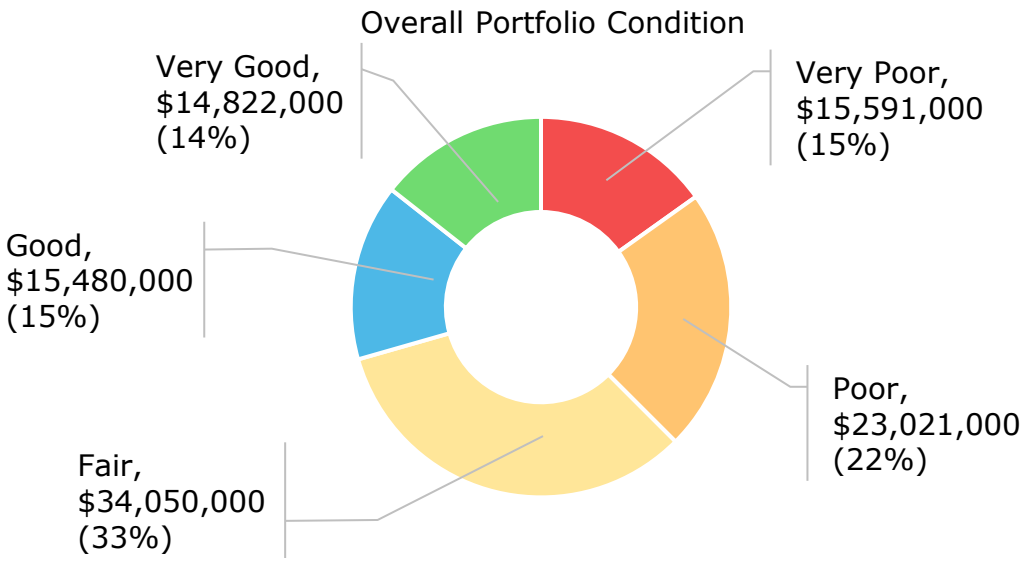



*Figure 14 Asset Condition: Portfolio Overview*

As further illustrated in Figure 15 at the category level, the majority of major, core infrastructure including roads, bridges, and structural culverts are in fair or better condition, based on in-field condition assessment data and age-based condition projections. See Table 6 for details on how condition data was derived for each asset segment.

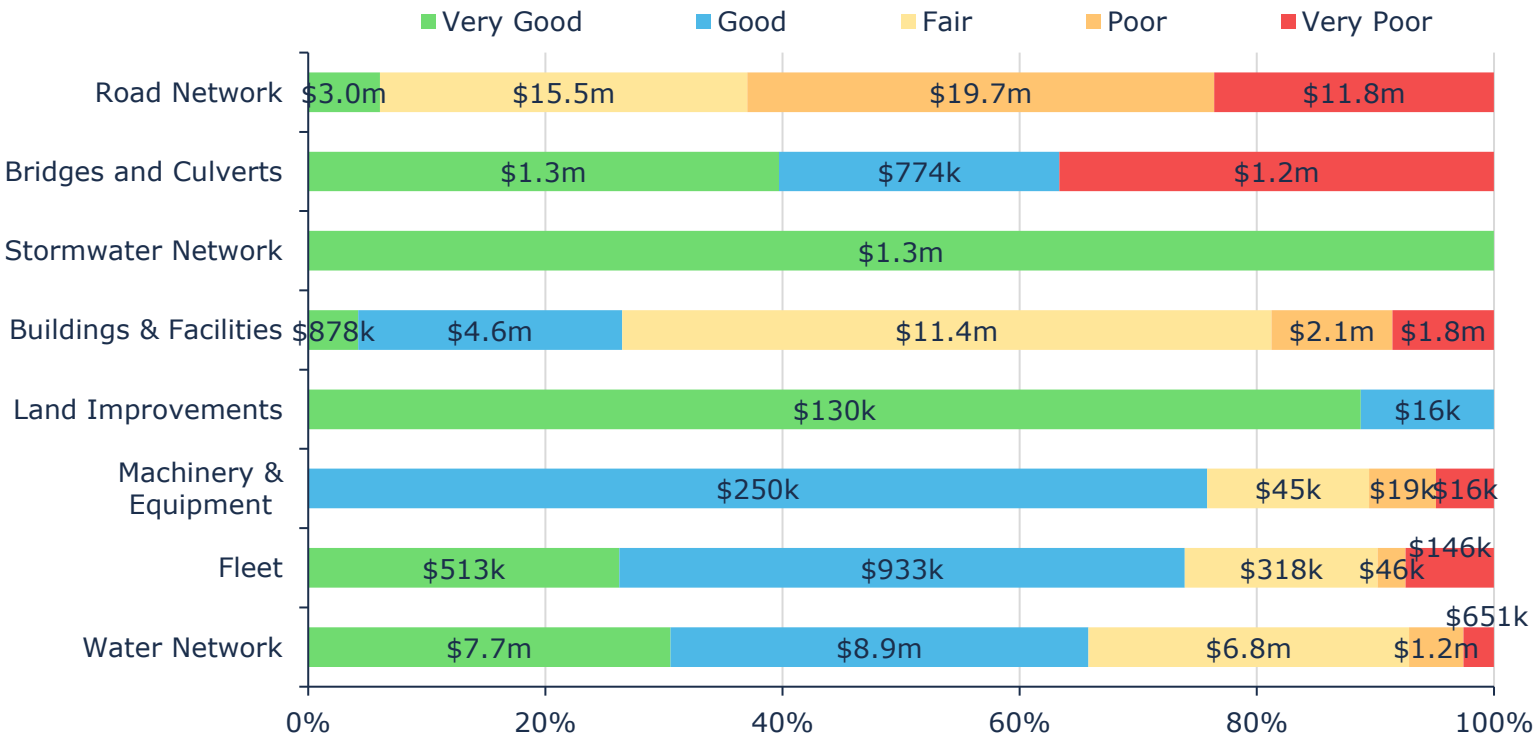



*Figure 15 Asset Condition by Asset Category*

### *Source of Condition Data*

This AMP relies on assessed condition for 61% 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 | Gravel Roads | 99% | Staff assessments (2021) |
| | Surface Treated Roads | 50% | Staff assessments (2021) |
| | Paved Roads | 0% | Age-based |
| | Streetlights | 14 | Staff assessments (2021) |
| Bridges & Culverts | Bridges<br>Structural Culverts | 100% | 2024 OSIM Report |
| Water Network | Water Treatment Plant | 64% | ABSI (2024) |
| | Watermains | 10% | Staff Assessments (2020) |
| | All Other | 0% | Age-based |
| Stormwater Network | All | 0% | Age-based |
| Buildings & Facilities | All Other | 0% | Age-based |
| | General Government | 100% | ABSI (2024) |
| | Recreational and Cultural Services | 92% | ABSI (2024) |
| | Transportation Services | 100% | ABSI (2024) |
| Land Improvements | All | 0% | Age-based |
| Fleet | All | 0% | Age-based |
| Machinery & Equipment | All | 0% | Age-based |

*Table 6 Source of Condition Data*

### 3.2.4 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.

| 1 - 4<br>**Very Low**<br>$57,709,000<br>(56%) | 5 - 7<br>**Low**<br>$28,651,000<br>(28%) | 8 - 9<br>**Moderate**<br>$5,767,000<br>(6%) | 10 - 14<br>**High**<br>$7,156,000<br>(7%) | 15 - 25<br>**Very High**<br>$3,681,000<br>(4%) |
|---|---|---|---|---|

*Figure 16 Risk Matrix: All Assets*

The analysis shows that based on current risk models, approximately 4% of the Township's assets, with a current replacement cost of approximately $3.7 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 Township.

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 consequences 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 Township 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.

### 3.2.5 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 150-year time horizon. On average, $2.5 million is required each year to remain current with capital replacement needs for the Township's current lifecycle approach for the asset portfolio, represented by the red dotted line.

> *These projections do not consider any changes from current service levels to proposed service levels.*

Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise. This figure relies on age and available condition data.

The chart also illustrates a backlog of more than $688,000, 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.

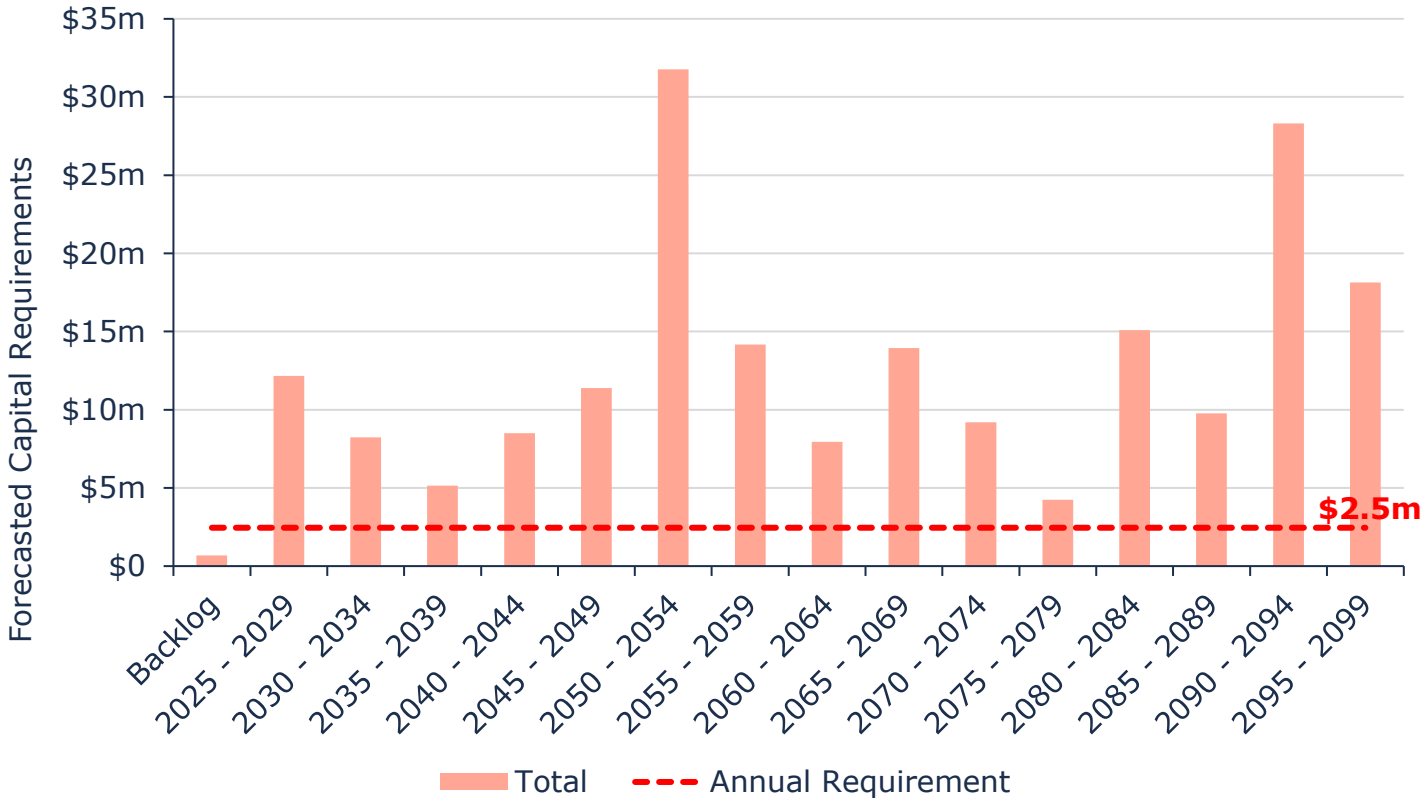



*Figure 17 Capital Replacement Needs: Portfolio Overview 2025-2099*

# Proposed Levels of Service

# 4. Proposed Levels of Service Analysis

## 4.1 Overview

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

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

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

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

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

### 4.1.2 Considerations

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

#### *Financial Impact Assessments*

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

#### *Infrastructure Condition Assessments*

- Regularly assess the condition of critical infrastructure components
- Use standardized condition assessment protocols (where possible) to quantify the state of the infrastructure
- Identify non-critical components where maintenance could potentially be deferred without causing severe degradation
- Use current condition metrics as benchmarks to gauge feasibility of large adjustments to LOS

#### *Service Metrics*

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

#### *Service Impact Assessments*

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

### *Key Lifecycle Activities*

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

### *Risk Management*

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

### *Infrastructure Condition Enhancements*

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

### *Timelines*

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

### *Stakeholder Engagement*

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

### *Flexibility*

- Priorities may change over time due to a variety of factors, such as:
  - Financial state of the municipality
  - Availability of grants
  - Significant increases or decreases in population
  - Changes in political priorities

- Changes in resident priorities
- New technologies
- Changes in legislation

- Any proposed changes to LOS should be flexible and able to adapt to changes listed above, and other unforeseen circumstances

## 4.2 Proposed Levels of Service Scenarios

The three scenarios outlined in the following section were analyzed as options for proposed service levels for all categories included in this Asset Management Plan.

While all three scenarios were reviewed, ***the Township of Billings selected Scenario 2 as their preferred path forward regarding proposed levels of service***, which is reflected in the financial strategy and 10-year capital replacement forecasts.

### 4.2.1 Scenario 1: Achieving Full Funding in 20 Years

This scenario assumes gradual tax and rate increases, stabilizing at 100% of recommended funding in 20 years.

- Annual Tax Increase ~2.4%
- Annual Water Rate Increase ~4.5%

Note: any asset categories currently classified as 'over-funded' were reduced to the recommended target funding levels.

While this scenario was modelled for consideration, the Township of Billings did not elect to move forward with this scenario.

#### *Lifecycle Changes Required for Scenario 1*

To achieve scenario 1 for all asset classes, no changes to lifecycle strategies are required, only an annual increase in funding is required.

#### *Affordability/Achievability of Scenario 1*

Of the three scenarios analyzed, Scenario 1 is the most expensive option. Achieving 100% of the recommended funding immediately would require a 59.9% increase in tax revenue, and a 140.5% increase in water rates, an approach that is neither reasonable nor feasible in the short term. Instead, a phased implementation over 20 years is recommended for both tax-funded and rate-funded assets. A phased implementation would see tax revenue increasing gradually from $2.1 million to $3.5 million and water rates increasing from $314 thousand to $754 thousand.

The projected available capital funding over the next 20 years for Scenario 1 is presented in the table below. The values in the table represent the proportional increase to capital funding from the overall recommended increase to both taxes and rates.

| Categories | Available Capital Funding | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **2026** | **2027** | **2028** | **2029** | **2030** | **2031** | **2032** | **2033** | **2034** | **2035** |
| **Tax-Funded** | $657k | $711k | $766k | $899k | $957k | $1.0m | $1.1m | $1.1m | $1.2m | $1.3m |
| **Rate-Funded (Water)** | $115k | $130k | $145k | $162k | $178k | $196k | $214k | $233k | $253k | $274k |
| **Total** | **$773k** | **$841k** | **$911k** | **$1.1m** | **$1.1m** | **$1.2m** | **$1.3m** | **$1.4m** | **$1.5m** | **$1.5m** |

*Table 7 Scenario 1 Available Capital Funding Over Next 10 Years*

It is important to note that an AMP is a dynamic document which should be reviewed regularly to ensure up-to-date information is incorporated including accurate replacement costs, changes in inventory, changes in available funding sources, and reflection on progress made on previous recommendations.

### *Risks Associated with Scenario 1*

There are pros and cons associated with each scenario analyzed, and each benefit is counter-balanced with consequences. For Scenario 1, the following risks have been identified:

- Increased infrastructure backlog
  - While mitigating the impact of financial increases on residents and businesses, taking 20 years to reach the targeted funding levels means 20 years of sub-optimal lifecycle management of assets. Being unable to complete strategic lifecycle interventions and replacements may result in increased asset failures, reduced reliability, and the potential for costly unbudgeted repairs to maintain services.

- Financial Impact
  - While reaching a full funding scenario supports long-term asset sustainability and reduces infrastructure risk, it can also introduce short- and medium-term challenges. The primary risk lies in the financial impact on residents and businesses, as rapidly increasing tax rates, utility fees, or other revenue sources to close the funding gap may cause affordability concerns

- Missed opportunities for efficiencies
  - While analyzing Scenario 1, no alternative lifecycle strategies were proposed. This creates a potential risk of overcommitting financial resources without the administrative or operational capacity to effectively deliver infrastructure projects. Accelerated funding, if not guided by a clear understanding of asset lifecycle events and priority activities, may outpace the township's ability to plan, design, and implement capital works efficiently. Without a strategic approach that identifies the right interventions at the right time—such as maintenance, renewal, and replacement—funding may be used inefficiently, leading to delays, cost overruns, or underutilized budgets.

### 4.2.2 Scenario 2: Achieving 75% of Target Funding in 20 Years

This scenario assumes gradual tax and rate increases, stabilizing at 100% funding in 15 years.

- Annual Tax Increase ~1.7%
- Annual Water Rate Increase ~3.5%

#### *Lifecycle Changes Required for Scenario 2*

For all asset classes, no changes to lifecycle strategies are required in order to achieve Scenario 2, only increases to current funding levels. In future iterations of the AMP, it is recommended to more closely analyze changes to lifecycle management strategies to find long-term cost savings and efficiencies.

#### *Affordability/Achievability of Scenario 2*

Of the three scenarios analyzed, Scenario 2 represents a middle ground between the minimal investment of the 50% funding level and the full funding target. Achieving 75% of full funding would require a 38.9% increase in tax revenue and 97.3% increase in water rates if implemented immediately. However, under the recommended 20-year phased approach, tax revenue would gradually increase from $2.1 million to $3.0 million, and water revenue from $314 thousand to $622 thousand. This scenario provides a practical path forward—improving funding levels significantly without the greater financial impact of full funding. With these gradual increases and continued reliance on sustainable grant funding, the total projected capital funding available over the next 10 years for Scenario 2 is summarized in the table below:

| Categories | Available Capital Funding | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **2026** | **2027** | **2028** | **2029** | **2030** | **2031** | **2032** | **2033** | **2034** | **2035** |
| **Tax-Funded** | $642k | $680k | $718k | $834k | $874k | $914k | $955k | $997k | $1.0m | $1.1m |
| **Rate-Funded (Water)** | $112k | $124k | $135k | $147k | $160k | $173k | $186k | $200k | $215k | $230k |
| **Total** | **$754k** | **$803k** | **$853k** | **$982k** | **$1.0m** | **$1.1m** | **$1.1m** | **$1.2m** | **$1.3m** | **$1.3m** |

*Table 8 Scenario 2 Available Capital Funding Over Next 10 Years*

The above table accounts for both current and future expenditures in order to achieve and maintain the proposed levels of service. This requires a combination of capital spending and saving (i.e. reserves) to ensure future large expenditures can be financed. It is likely that there will be years with less or no capital expenditures, however, this does not mean that the Township should ignore the funding requirements in these years. Instead, annual funding should be set aside in the form of reserves to ensure funding for upcoming lifecycle events is available when required.

As the Township has selected Scenario 2 as their preferred proposed level of service, a further breakdown of projected capital expenditures by asset category can be found in Appendix B.

It is important to note that an AMP is a dynamic document which should be reviewed regularly to ensure up-to-date information is incorporated including accurate replacement costs, changes in inventory, changes in available funding sources, and reflection on progress made on previous recommendations.

### *Risks Associated with Scenario 2*

There are pros and cons associated with each scenario analyzed, and each benefit is counter-balanced with consequences. For Scenario 2, the following risks have been identified:

- Increased infrastructure backlog
  - Although the gradual 20-year approach helps ease the financial burden on residents and businesses, it also extends the period of sub-optimal lifecycle management. Delays in strategic interventions and asset replacements may lead to increased asset failures, reduced reliability, and costly unplanned repairs.

    In addition to the risks of reaching the desired funding levels gradually, Scenario 2 only targets 75% funding. By intentionally underfunding the Township's asset portfolio, there is an increased risk of services being impacted by deteriorating asset conditions.
- Impact of Intentional Underfunding
  - By targeting only 75% of the recommended funding levels, Scenario 2 inherently accepts some level of underfunding. This increases the risk that deteriorating asset conditions will negatively affect service delivery over time. In some cases where assets have been receiving sufficient funding, they may be unintentionally underfunded, which will potentially defer lifecycle events, and a backlog may develop.
- Reliance on Conditional Grants
  - With partial funding, the Township becomes more dependent on conditional grants to bridge the gap. While grants help alleviate tax and rate pressures, they are inherently unpredictable and considered an unsustainable revenue source. This reliance exposes the Township to vulnerabilities stemming from changes in provincial and federal policies or funding programs.
- Missed Opportunities for Cost Efficiencies
  - In Scenario 2, all asset categories rely solely on existing strategies. Mid-lifecycle interventions such as pipe relining can significantly extend asset lifespans and lower long term costs. Continuing to rely solely on current strategies may result in higher expenditures over the life of the assets and a less efficient use of available funds.

### *Appropriateness of Scenario 2 to Meet the Township's Needs*

Township staff emphasized the need to balance financial impacts on residents with the reality of the current state of infrastructure within the municipality. Upon review of all three scenarios, Scenario 2 was selected as the most appropriate option as an annual tax increase of 1.7%, and rate increase of 3.5% over the modelled period, was determined to be subjectively manageable to implement, while still increasing investment in infrastructure, working towards and creating a sustainable future for the Township's infrastructure.

### 4.2.3 Scenario 3: Achieving 50% Funding in 20 Years

This scenario assumes gradual tax and rate increases, stabilizing at 50% of recommended funding in 20 years.

- Annual Tax Increase ~0.8%
- Annual Water Rate Increase ~2.2%

While this scenario was modelled for consideration, the Township did not elect to move forward with this scenario.

#### *Lifecycle Changes Required for Scenario 3*

For all asset categories, no changes to lifecycle strategies are required to achieve Scenario 3, only increases to annual funding. In future iterations of the AMP, it is recommended to more closely analyze changes to lifecycle management strategies to find long-term cost savings and efficiencies.

#### *Affordability/Achievability of Scenario 3*

Among the three scenarios analyzed, Scenario 3 represents the least costly option. The Township is currently funding 31.6% of the annual tax-supported asset requirements and 18.7% for rate funded assets. Achieving 50% funding would require only a 16.2% increase in tax revenue and a 54.1% increase in water revenue. Under the recommended 20-year implementation period, tax revenue would gradually increase from $2.1 million to $2.6 million. For rate-supported assets, revenue would gradually increase from $314 thousand to $483 thousand. Based on these gradual increases and the assumption of continued sustainable grant funding, the projected capital funding available over the next 10 years for Scenario 3 is summarized in the table below.

| Categories | Available Capital Funding | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **2026** | **2027** | **2028** | **2029** | **2030** | **2031** | **2032** | **2033** | **2034** | **2035** |
| **Tax-Funded** | $622k | $640k | $658k | $753k | $771k | $789k | $807k | $826k | $844k | $863k |
| **Rate-Funded (Water)** | $108k | $115k | $122k | $130k | $137k | $145k | $153k | $161k | $169k | $177k |
| **Total** | **$730k** | **$755k** | **$780k** | **$882k** | **$908k** | **$934k** | **$960k** | **$986k** | **$1.0m** | **$1.0m** |

*Table 9 Scenario 3 Available Capital Funding Over Next 10 Years*

It is important to note that an AMP is a dynamic document which should be reviewed regularly to ensure up-to-date information is incorporated including accurate replacement costs, changes in inventory, changes in available funding sources, and reflection on progress made on previous recommendations.

### *Risks Associated with Scenario 3*

There are pros and cons associated with each scenario analyzed, and each benefit is counter-balanced with consequences. For Scenario 3, the following risks have been identified:

- Increased infrastructure backlog
  - While mitigating the impact of financial increases on residents and businesses, taking 20 years to reach the targeted funding levels means 20 years of sub-optimal lifecycle management of assets. Being unable to complete strategic lifecycle interventions and replacements may result in increased asset failures, reduced reliability, and the potential for costly unbudgeted repairs to maintain services.
  - In addition to the risks of reaching the desired funding levels gradually, Scenario 3 only targets 50% funding. By intentionally underfunding the Townships asset portfolio, there is increased risk of services being impacted by deteriorating asset conditions.
- Reliance on Grants
  - As Scenario 3 targets 50% of recommended funding levels, the Township will be more reliant on conditional grants, as they become available. While these are beneficial to all municipalities to secure to reduce their tax/rate burden on residents, they are considered an unsustainable revenue source. The Township will be more vulnerable to changes in provincial and federal policy and funding programs.
- Missed opportunities for efficiencies
  - While analyzing Scenario 3, no alternative lifecycle strategies were proposed. Mid-lifecycle interventions, such as asphalt overlays and sewer lining, can result in extended lifespans of assets and reduced costs over the lifetime of the assets. By relying on existing lifecycle strategies, the Township risks paying more than necessary to maintain their asset inventory.

# Core Assets

# 5. Road Network

The Township's road network comprises the largest share of its infrastructure portfolio, with a current replacement cost of almost $50 million. The Township also owns and manages other supporting infrastructure and capital assets such as streetlights.

## 5.1 Inventory & Valuation

Table 10 summarizes the quantity and current replacement cost of the Township's various road network assets as managed in its primary asset management register, Citywide.

| Segment | Quantity | Unit of Measure | Replacement Cost | Primary RC Method |
|---|---|---|---|---|
| Gravel Roads | 34,200 | Meters | $8,453,165 | CPI |
| Paved Roads (HCB) | 1 | Assets | $2,996,115 | CPI |
| Streetlights | 29 | Assets | $35,525 | CPI |
| Surface Treated Roads | 61,240 | Meters | $38,503,047 | CPI |
| **TOTAL** | | | **$49,987,852** | |

*Table 10 Detailed Asset Inventory: Road Network*

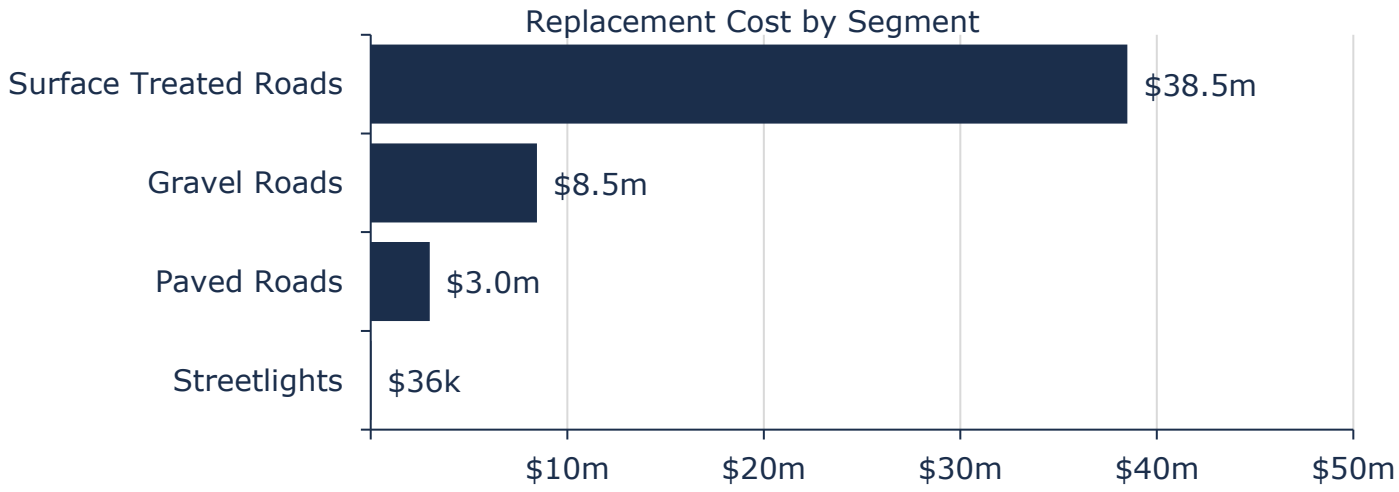



*Figure 18 Portfolio Valuation: Road Network*

## 5.2 Asset Condition

Figure 19 summarizes the replacement cost-weighted condition of the Township's road network. Based on a combination of field inspection data and age, 37% of assets are in fair or better condition; the remaining 63% of assets are in poor to very poor condition. Condition assessments were available for 99% of gravel roads, and 50% of surface-treated roads, based

on replacement cost. This condition data was projected from inspection date to current year to estimate their condition today.

Assets in poor or worse condition may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition. As illustrated in Figure 19, the majority of the Township's road network assets are in poor or worse condition based on the weighted replacement costs and current assessment data available.

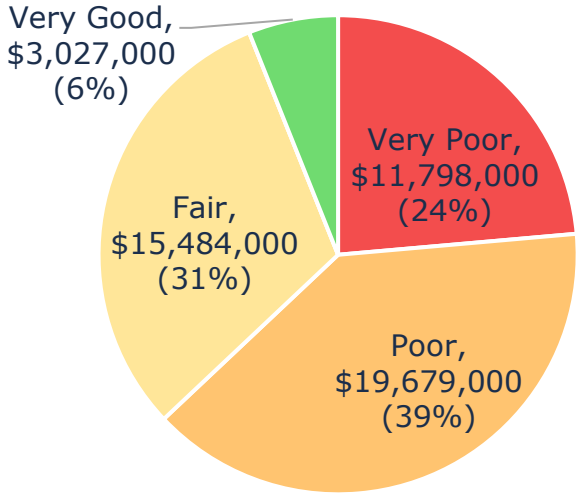
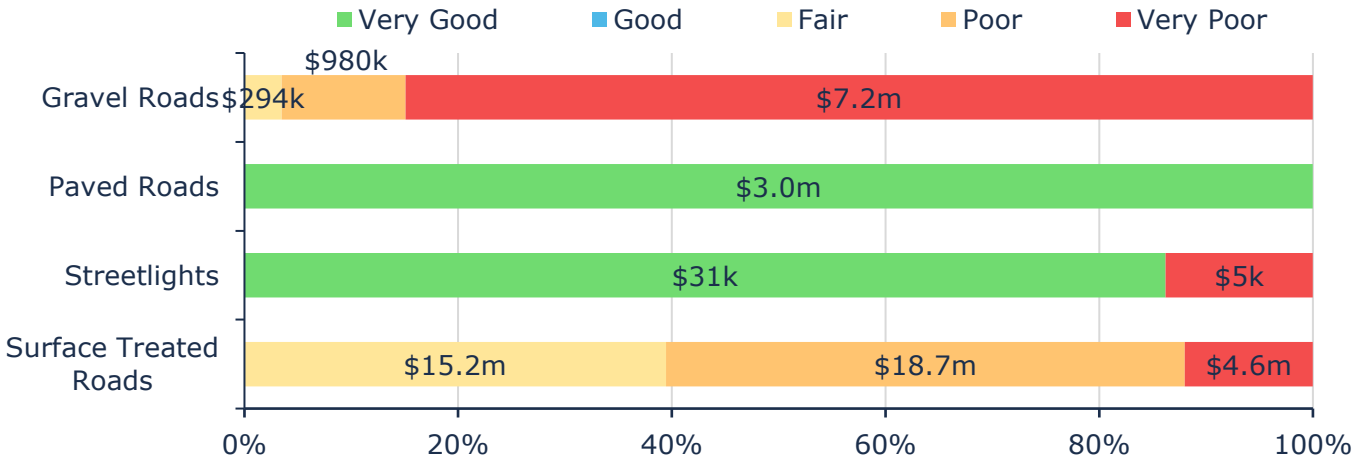



*Figure 19 Asset Condition: Road Network Overall*

As illustrated in Figure 20, based on condition assessments, all of the Township's paved road network is in very good condition; however, a majority of gravel, and surface treated roads are in poor or worse condition[3].




[3] The reported condition of gravel and surface-treated roads is based on the current Citywide inventory; however, actual conditions are expected to be better than reflected in the data. The Township resurfaces approximately 4 km of gravel roads each year, invests $105,000 annually in gravel road maintenance, and allocates $200,000 annually for the resurfacing and maintenance of surface-treated roads.

*Figure 20 Asset Condition: Road Network by Segment*

## 5.3 Age Profile

An asset's age profile compares two values: its weighted average age and its weighted average estimated useful life (EUL). Both measures are weighted by replacement cost to better reflect the overall investment at risk rather than treating all assets equally. The EUL represents the period during which an asset can reliably perform its intended function and provide value to users. As assets near the end of their design life, performance typically declines, often at an accelerating rate.

When combined with condition data, age profiles provide a more complete picture of infrastructure health. They help identify candidates for more detailed condition assessments, support the selection of effective lifecycle strategies, and improve long-term replacement planning.

Figure 21 illustrates that the majority of paved roads and streetlights are in the early stages of their expected useful lives. On the other hand, gravel and surface treated roads have surpassed their expected useful lives, with an average age of 62.4 years against a design life of 39.7 years (gravel) and 21.2 years against a design life of 20.3 years (LCB).

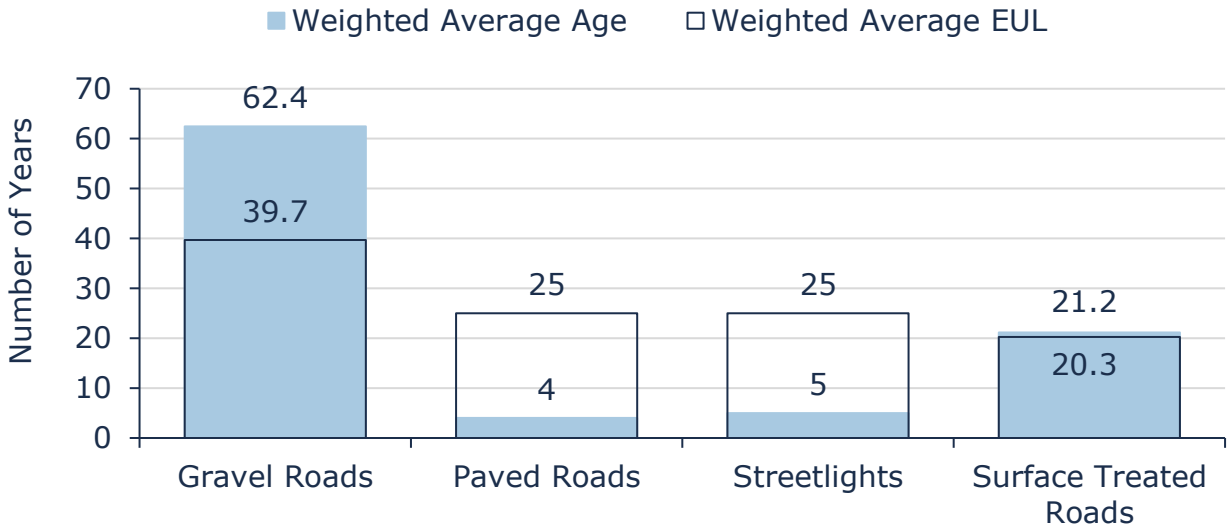



*Figure 21 Estimated Useful Life vs. Asset Age: Road Network*

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

## 5.4 Current Approach to Lifecycle Management

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

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

| Paved Roads | | |
|---|---|---|
| **Event Name** | **Event Class** | **Event Trigger** |
| Crack Sealing & Asphalt Patching | Preventative Maintenance | Condition: 75 - 85 |
| Cold Mix & Single Surface Treatment | Rehabilitation | Condition: 70 - 85 |
| Base Repairs & 40mm asphalt overlay | Rehabilitation | Condition: 20 - 70 |
| Full Reconstruction | Replacement | Condition: 20 |

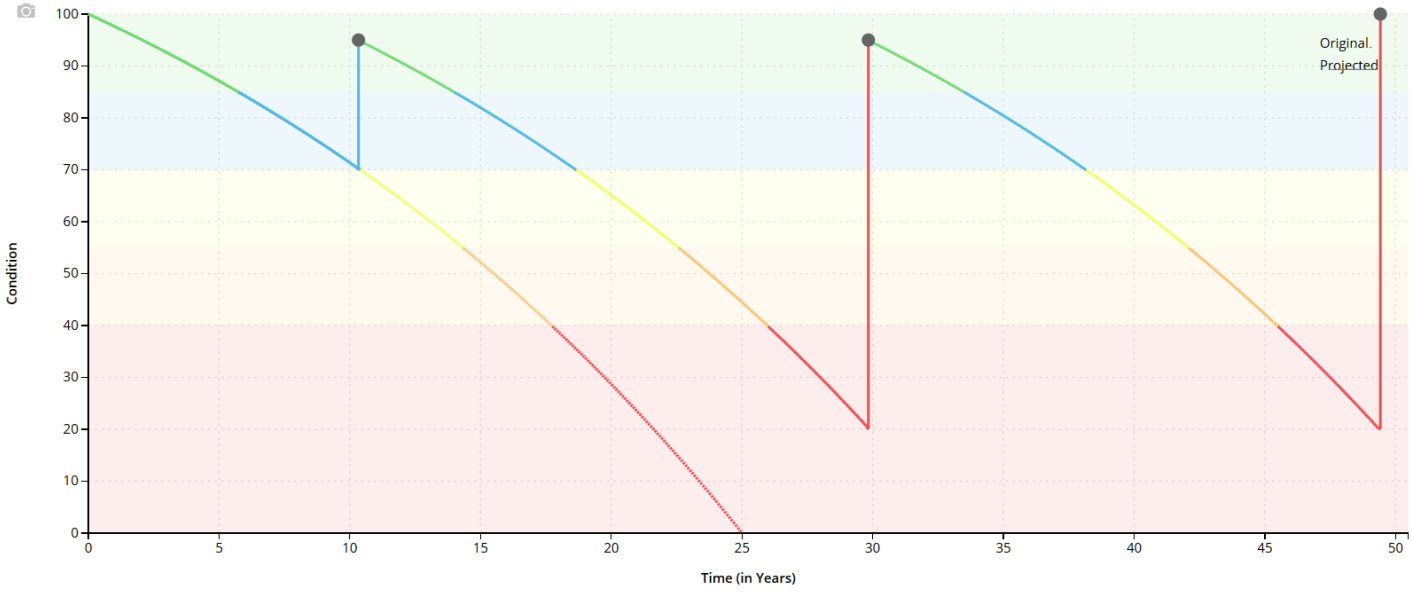



*Table 11 Lifecycle Management Strategy: Paved Roads*

| Surface Treated Roads | | |
|---|---|---|
| **Event Name** | **Event Class** | **Event Trigger** |
| Single Surface Treatment | Rehabilitation | Condition: 65 - 85 |
| Double Surface Treatment | Rehabilitation | Condition: 35 - 65 |
| G/ST Rehabilitation | Rehabilitation | Condition: 20 - 35 |
| Full Reconstruction | Replacement | Condition: 20 |

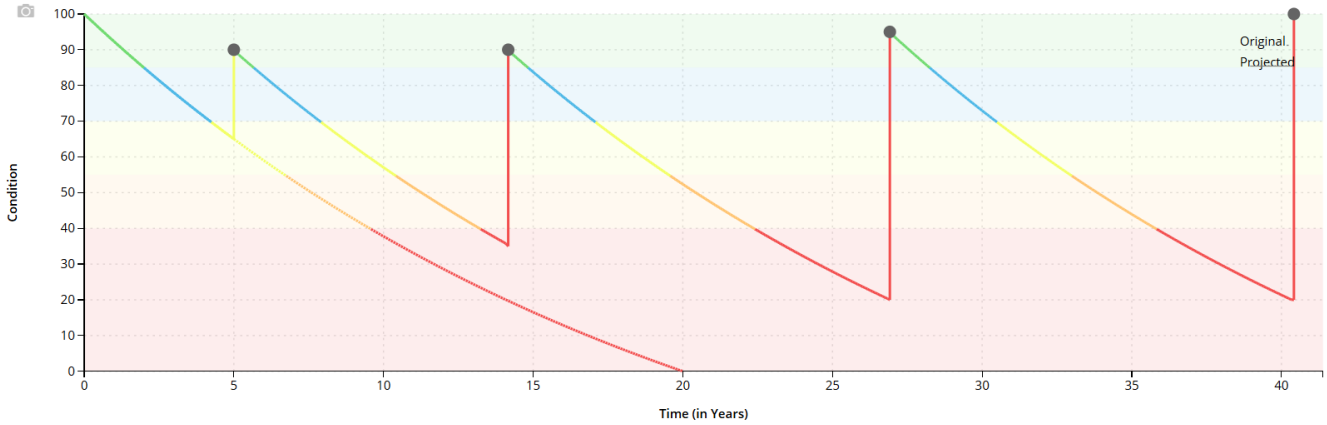



*Table 12 Lifecycle Management Strategy: Surface Treated Roads*

| Gravel Roads | | |
|---|---|---|
| **Event Name** | **Event Class** | **Event Trigger** |
| Annual Grading (2 Treatments) | Maintenance | Condition: 85 - 95 |
| G/ST Rehabilitation | Rehabilitation | Condition: 35 - 85 |
| Full Reconstruction | Replacement | Condition: 20 |

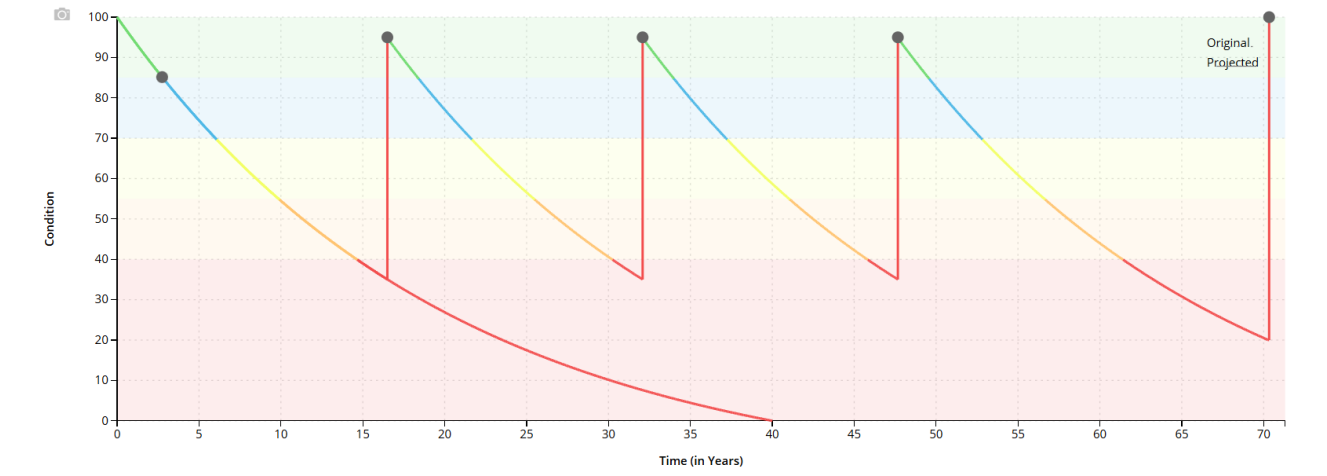



*Table 13: Lifecycle Management Strategy: Gravel Roads*

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

| Activity Type | Description of Current Strategy |
|---|---|
| Maintenance | Pothole repairs are completed annually based on deficiencies identified through routine route patrols and feedback from the public |
| | Roads are graded twice annually. |
| | Seasonal maintenance activities include asphalt patching, graveling, and tree cutting. |
| | Summer maintenance activities include asphalt patching, sidewalk repairs, grading, re-graveling, vegetation management, road sign installation/maintenance, and line painting |
| | Winter maintenance activities include snow plowing and snow removal |
| Rehabilitation | On an annual basis, Staff aim to hard surface about 5 km of roads |
| | Rehabilitation activities include cold mix & single surface treatment, base repairs & 40mm asphalt overlay, single surface treatment, double surface treatment, and G/ST rehabilitation. |
| | Road replacement prioritization is determined by consideration of growth, risk, condition, health and safety, and social impact. |
| Replacement | Road reconstruction projects (base & surface) are identified based on road condition, risk, and sub-surface asset requirements (water/storm) |

*Table 14 Lifecycle Management Strategy: Road Network*

## 5.5 Forecasted Long-Term Replacement Needs

Figure 22 illustrates the cyclical short-, medium- and long-term infrastructure rehabilitation and replacement requirements for the Township's road network. This analysis was run until 2089 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Township's primary asset management system and asset register. The Township's average annual requirements (red dotted line) total $1.1 million per year 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 from 2050-2054. It also shows a backlog $5,000. These projections are based on asset replacement costs, age analysis, and condition data when available, as well as lifecycle modeling (roads only). They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

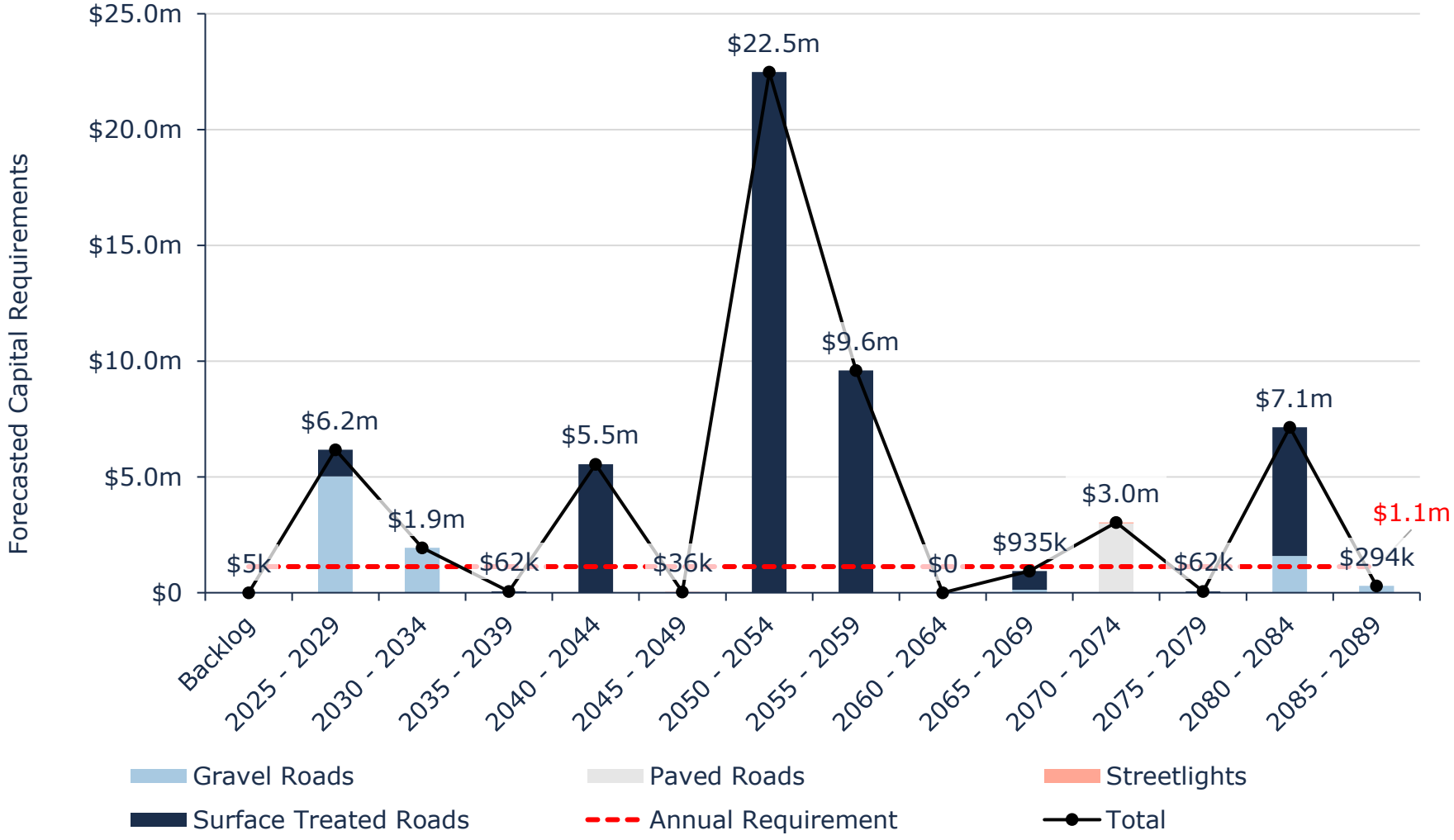



*Figure 22: Forecasted Capital Replacement Needs: Road Network 2025-2089*

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.

## 5.6 Risk Analysis

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

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

| 1 - 4<br>**Very Low** | 5 - 7<br>**Low** | 8 - 9<br>**Moderate** | 10 - 14<br>**High** | 15 - 25<br>**Very High** |
|---|---|---|---|---|
| $37,381,000<br>(75%) | $12,420,000<br>(25%) | -<br>(0%) | -<br>(0%) | $187,000<br>(<1%) |

*Figure 23 Risk Matrix: Road Network*

## 5.7 Current Levels of Service

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

### 5.7.1 Community Levels of Service

| Service Attribute | Qualitative Description | Current LOS (2024) |
|---|---|---|
| Scope | Description, which may include maps, of the road network in the municipality and its level of connectivity | The road network is comprised of gravel, surface-treated, and HCB roads. The network mostly consists of roads with MMS classes of 3,4, and 6. In addition, the network is supported by streetlights, and other roadside appurtenances. |
| Quality | Description or images that illustrate the different levels of road class pavement condition | The Condition Rating number is a visual assessment of the structural condition or integrity of the road. The rating numbers were assigned on a scale of 1 to 10 with the lower numbers describing those roads with the most structural distress or poorest shaped road cross section.<br>• (1-5) Road surface exhibits moderate to significant deterioration and requires improvement.<br>• (6-10) Road surface is in generally good condition, with localized deficiencies. |

*Table 15 O. Reg. 588/17 Community Levels of Service: Road Network*

### 5.7.2 Technical Levels of Service

| Service Attribute | Technical Metric | Current LOS (2024) |
|---|---|---|
| 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$^2$) | 0.36 km/km$^2$ |
| | Lane-km of local roads (MMS classes 5 and 6) per land area (km/km$^2$)[4] | 0.33 km/km$^2$ |
| Quality | Average pavement condition index for paved roads in the municipality | Paved: 91%% |
| | | Surface Treated: 49% |
| | Average surface condition for unpaved roads in the Township (e.g. excellent, good, fair, poor) | 29% |
| Affordable | Capital Reinvestment Rate – The measure of funding allocated towards saving for future capital investments. | 0.31% |

[4] Includes both paved and gravel roads.

| Service Attribute | Technical Metric | Current LOS (2024) |
|---|---|---|
| | (Higher is typically better) | |

*Table 16 O. Reg. 588/17 Technical Levels of Service: Road Network*

## 5.8 Proposed Levels of Service

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

The tables below and graphs explain the proposed levels of service scenarios that were analyzed for the road network. Further PLOS analysis at the portfolio level can be found in section *4. Proposed Level of Service Analysis.*

### 5.8.1 PLOS Scenarios Analyzed

The analysis for the road network was ran with a 75-year outlook. Using a longer time period and accounting for a full lifecycle of assets provides a better average.

| Scenario | Replacement Cost | Average Condition | Average Risk | Average Annual Investment | Capital Reinvestment Rate |
|---|---|---|---|---|---|
| Scenario 1 (100% Funded) | $49,988,000 | 56% | 4.12 | $1,011,000 | 2.25% |
| Scenario 2 (75% Funded) | $49,988,000 | 49% | 4.41 | $779,000 | 1.56% |
| Scenario 3 (50% Funded) | $49,988,000 | 41% | 4.86 | $542,000 | 1.08% |

*Table 17 Road Network PLOS Scenario Descriptions*

### 5.8.2 Projected Condition Comparison

The graph below presents and compares the projected condition for each scenario analyzed.

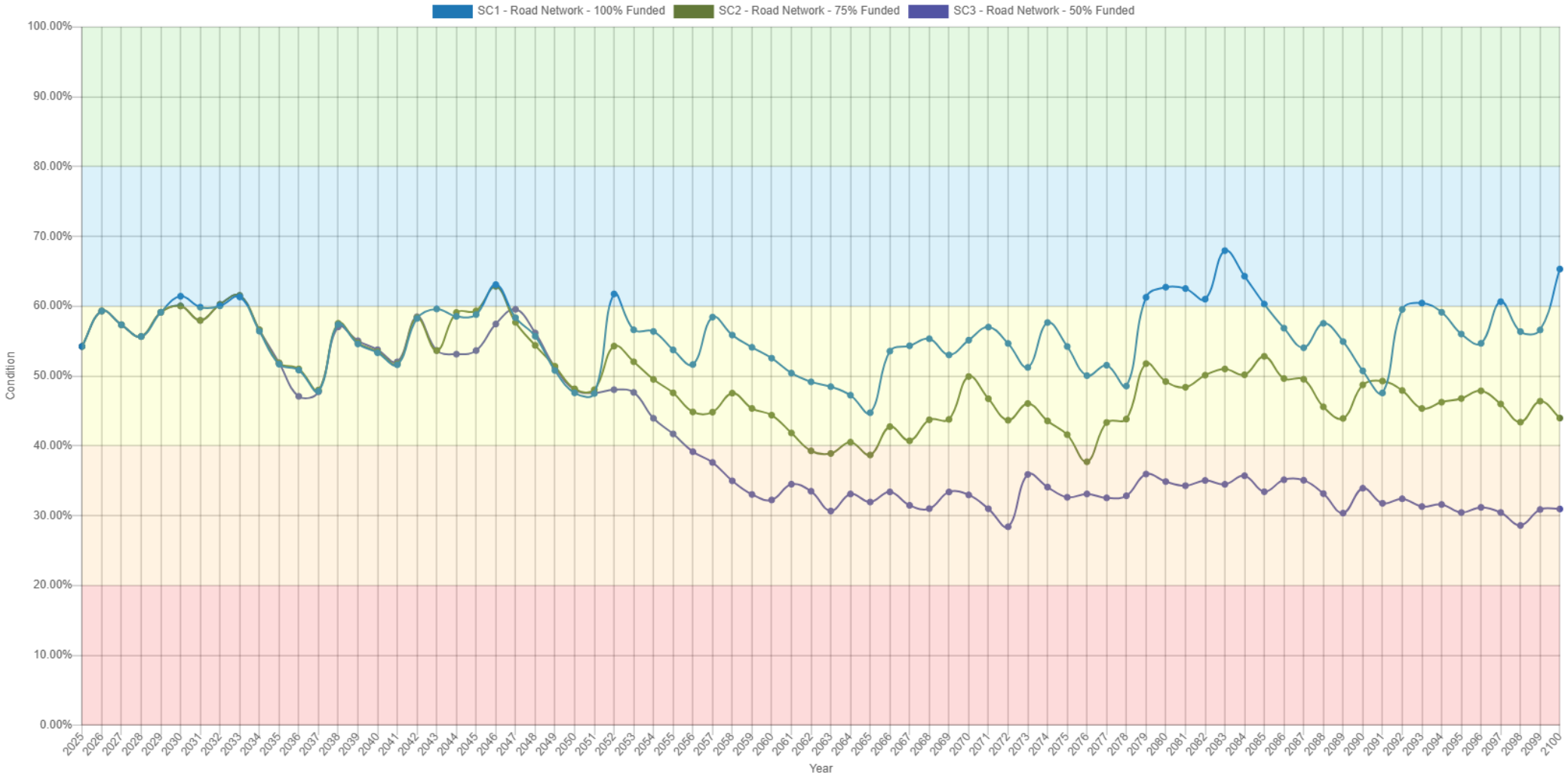



*Figure 24 Road Network PLOS Scenarios: Condition Results*

### 5.8.3 Projected Risk Comparison

The graph below presents and compares the projected risk impact for each scenario analyzed.

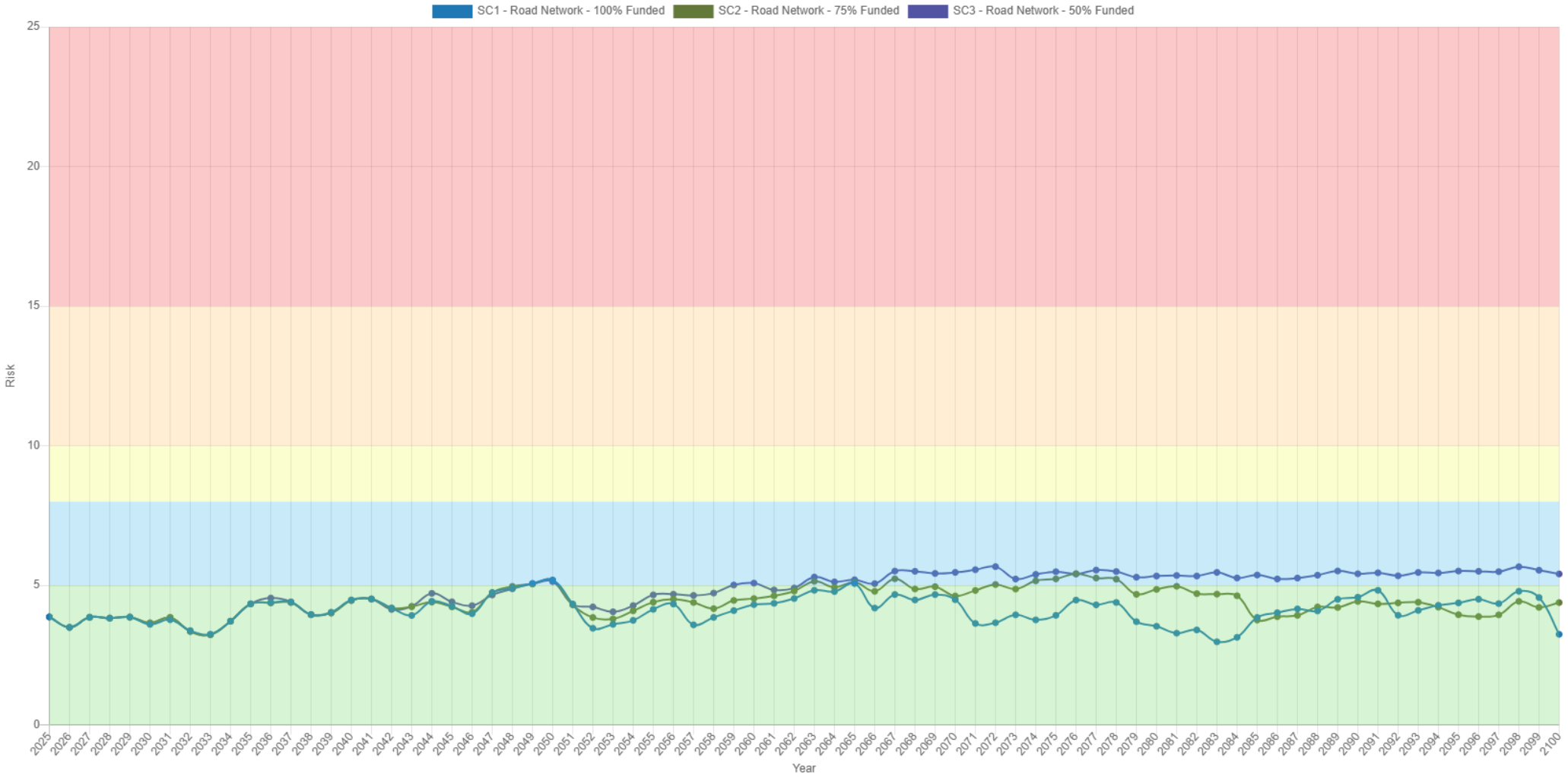



*Figure 25 Road Network PLOS Scenarios: Risk Results*

### 5.8.4 10-Year PLOS Financial Projections

As outlined in Section *4. Proposed Levels of Service Analysis*, the Township of Billings selected Scenario 2 as their preferred proposed levels of service. The main objective is to increase spending gradually to reach a more sustainable funding level to manage the Township's current inventory of assets. The following table outlines the funding trajectory over the next 10 years and shows the target reached in year 20, for the road network if the financial strategy for Scenario 2 is implemented. The table clearly shows the direct correlation between target spending and reducing the infrastructure deficit over time.

| | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | | 2045 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Targeted Capital Spending** | **$845k** | **$845k** | **$845k** | **$845k** | **$845k** | **$845k** | **$845k** | **$845k** | **$845k** | **$845k** | | **$845k** |
| **Projected Capital Spending** | $330k | $354k | $379k | $454k | $480k | $506k | $533k | $560k | $588k | $616k | | $845k |
| **Funding Deficit** | $515k | $490k | $466k | $390k | $364k | $338k | $312k | $284k | $257k | $229k | | - |
| **Target Reinvestment Rate** | **1.7%** | **1.7%** | **1.7%** | **1.7%** | **1.7%** | **1.7%** | **1.7%** | **1.7%** | **1.7%** | **1.7%** | | **1.7%** |
| **Projected Reinvestment Rate** | 0.7% | 0.7% | 0.8% | 0.9% | 1.0% | 1.0% | 1.1% | 1.1% | 1.2% | 1.2% | | 1.7% |

*Table 18 Road Network 10-Year PLOS Financial Projections*

# 6. Bridges & Culverts

The Township's transportation network also includes bridges and structural culverts, with a current replacement cost of approximately $3.2 million.

## 6.1 Inventory & Valuation

Table 19 summarizes the quantity and current replacement cost of bridges and culverts. The Township owns and manages 2 bridges and 1 structural culvert.

| Segment | Quantity | Unit of Measure | Replacement Cost | Primary RC Method |
|---|---|---|---|---|
| Bridges | 2 | Assets | $2,500,000 | CPI |
| Structural Culverts | 1 | Assets | $774,280 | CPI |
| **TOTAL** | | | **$3,274,280** | |

*Table 19 Detailed Asset Inventory: Bridges & Culverts*

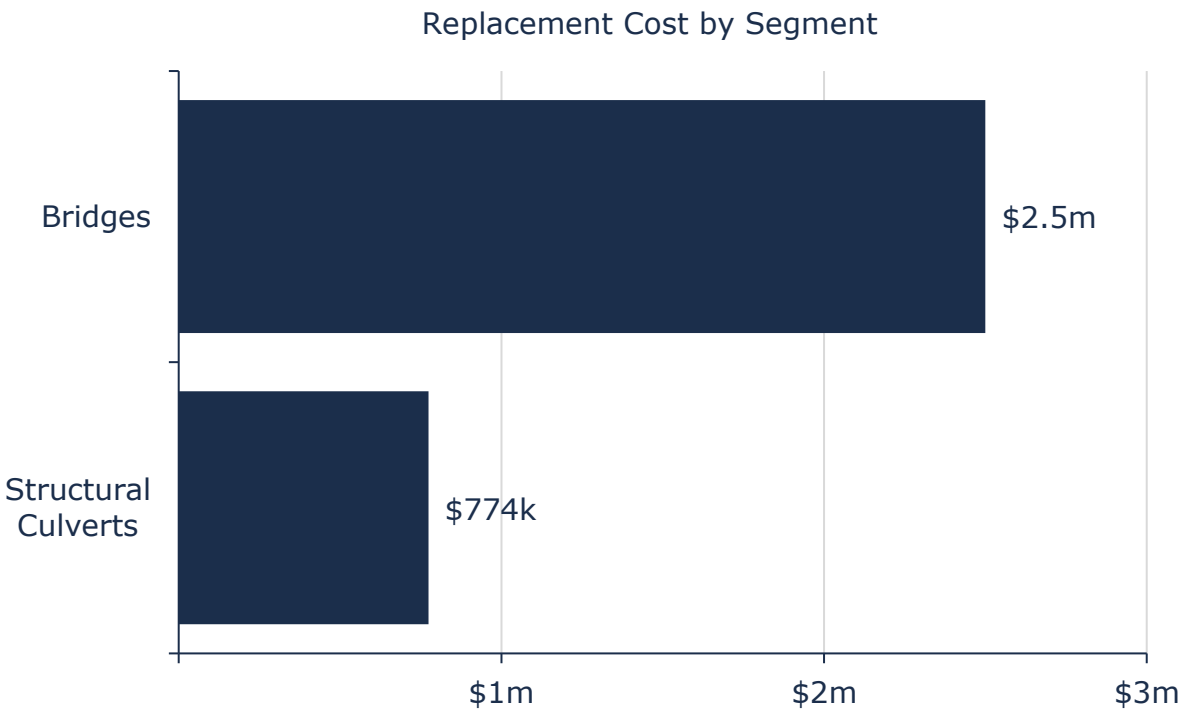



*Figure 26 Portfolio Valuation: Bridges & Culverts*

## 6.2 Asset Condition

Figure 27 summarizes the replacement cost-weighted condition of the Township's bridges and culverts. Based on the Township's recent Ontario Structures Inspection Manual (OSIM) assessments, 63% of bridges and culverts are in fair or better condition. Some elements or components of these structures may be candidates for replacement or rehabilitation in the medium term and should be monitored for further degradation in condition. At 37% of the total bridges and culverts portfolio, assets in poor or worse condition may require replacement in the immediate or short term.

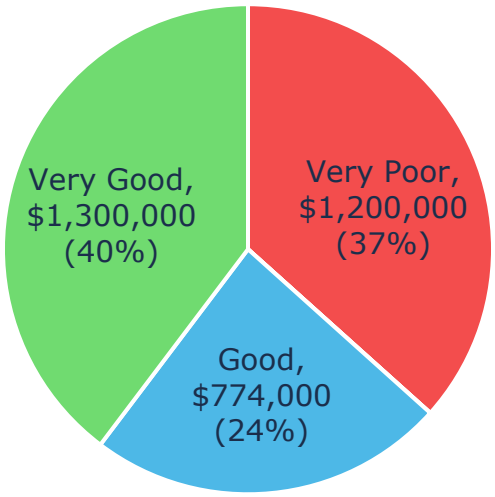



*Figure 27 Asset Condition: Bridges & Culverts Overall*

As further detailed in Figure 28, based on in-field condition assessments, 50% of bridge assets were identified in very poor condition. As bridges and structures reach a poor or worse rating (i.e., a bridge condition index of less than 40), they are not necessarily unsafe for regular use, individual circumstances must be considered. The OSIM ratings are designed to identify repairs needed to elevate condition ratings to a fair or higher.

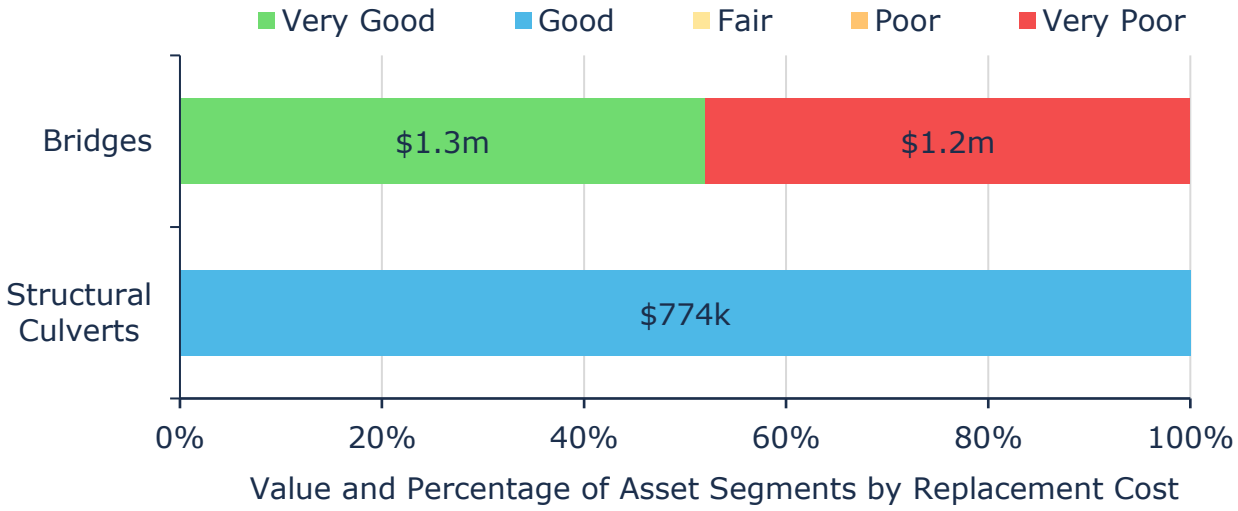



*Figure 28 Asset Condition: Bridges & Culverts by Segment*

## 6.3 Age Profile

An asset's age profile compares two values: its weighted average age and its weighted average estimated useful life (EUL). Both measures are weighted by replacement cost to better reflect the overall investment at risk rather than treating all assets equally. The EUL represents the period during which an asset can reliably perform its intended function and provide value to users. As assets near the end of their design life, performance typically declines, often at an accelerating rate.

When combined with condition data, age profiles provide a more complete picture of infrastructure health. They help identify candidates for more detailed condition assessments, support the selection of effective lifecycle strategies, and improve long-term replacement planning.

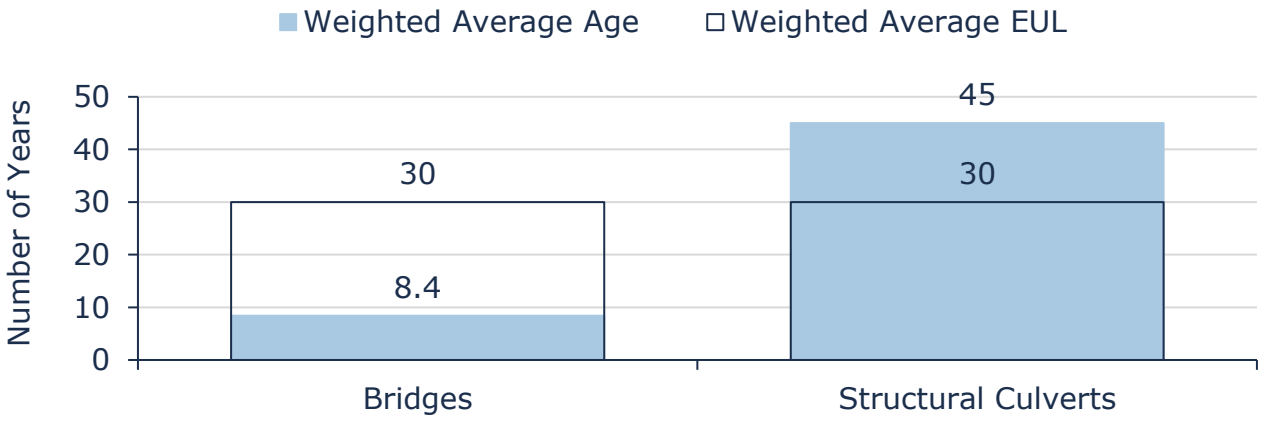



*Figure 29 Estimated Useful Life vs. Asset Age: Bridges & Culverts*

Figure 29 illustrates that on average, bridge assets are in early stages of their lifecycle, whereas the culvert has virtually all of its estimated useful life. OSIM assessments should continue to be used in conjunction with age and asset criticality to prioritize capital and maintenance expenditures.

## 6.4 Current Approach to Lifecycle Management

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

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

| Activity Type | Description of Current Strategy |
|---|---|
| Maintenance | Typical maintenance includes:<br>♦ Obstruction removal<br>♦ Cleaning/sweeping<br>♦ Erosion control<br>♦ Brush/tree removal |
| | Biennial OSIM inspection reports include a list of recommended maintenance activities that the Township considers and completes according to cost and urgency. |
| Rehabilitation / Replacement | Biennial OSIM inspection reports include a Capital Needs List identifying recommended rehabilitation and replacement activities with estimated costs. |

*Table 20 Lifecycle Management Strategy: Bridges & Culverts*

## 6.5 Forecasted Long-Term Replacement Needs

Figure 30 illustrates the cyclical short-, medium- and long-term infrastructure rehabilitation and replacement requirements for the Township's bridges and culverts. This analysis was run until 2039 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Township's primary asset management system and asset register. The Township's average annual requirements (red dotted line) for bridges and culverts total $109,000 per year. 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 that the capital needs are expected to peak from 2025-2029 at $1.2 million and significantly rise again from 2035-2039 at $774,000 as assets reach the end of their useful life. These projections and estimates are based on asset replacement costs, age analysis, and condition data. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

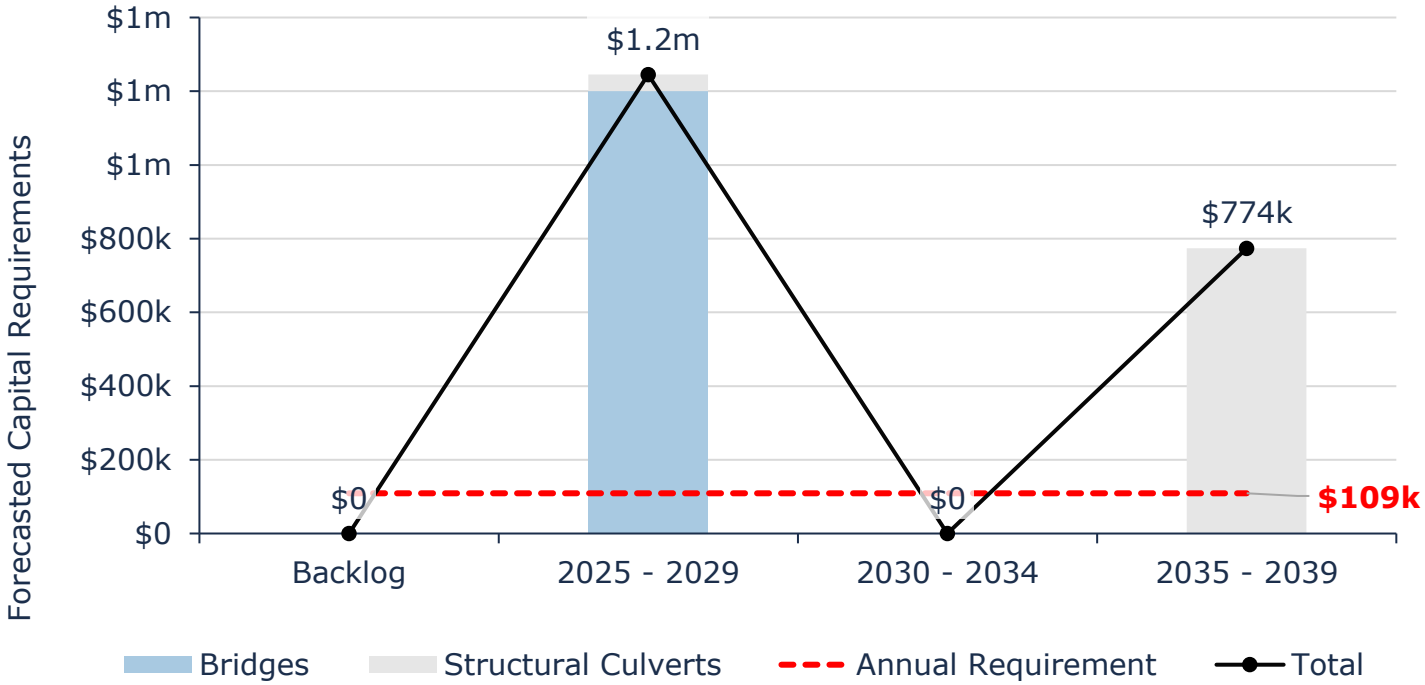



*Figure 30 Forecasted Capital Replacement Needs: Bridges & Culverts 2025-2039*

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

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

## 6.6 Risk Analysis

The risk matrix below is generated using available asset data, including condition, service life remaining, detour length 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 Township 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 Township's Asset Management Database (Citywide Assets). See Appendix C – Risk Rating Criteria, for further details on approach used to determine asset risk ratings and classifications.

| 1 - 4<br>**Very Low**<br>-<br>(0%) | 5 - 7<br>**Low**<br>$1,300,000<br>(40%) | 8 - 9<br>**Moderate**<br>-<br>(0%) | 10 - 14<br>**High**<br>$774,000<br>(24%) | 15 - 25<br>**Very High**<br>$1,200,000<br>(37%) |
|---|---|---|---|---|

*Figure 31 Risk Matrix: Bridges & Culverts*

## 6.7 Levels of Service

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

### 6.7.1 Community Levels of Service

| Service Attribute | Qualitative Description | Current LOS (2024) |
|---|---|---|
| Scope | Description of the traffic that is supported by municipal bridges (e.g., heavy transport Fleet, motor Fleet, emergency Fleet, pedestrians, cyclists) | Bridges and structural culverts are a key component of the municipal transportation network. The 2024 OSIM report has no recommendations for load restrictions |
| Quality | Description or images of the condition of bridges & culverts and how this would affect use of the bridges & culverts | • **Good (BCI 70-100):** Generally considered to be in good-excellent condition, and repair or rehabilitation work is not usually required within the next 5 years. Routine maintenance, such as sweeping, cleaning, and washing are still recommended.<br>• **Fair (BCI 50-70):** Generally considered to be in good-fair condition. Repair or rehabilitation work recommended is ideally scheduled to be completed within the next 5 years.<br>• **Poor (BCI Less than 50):** Generally considered poor with lower numbers representing structures nearing the end of their service life.<br>• The repair or rehabilitation of these structures is ideally best scheduled to be completed within approximately 1 year. However, if it is determined that |

| Service Attribute | Qualitative Description | Current LOS (2024) |
|---|---|---|
| | | the replacement of the structure would be a more viable, the structure can be identified for continued monitoring and scheduled for replacement within the short term. |

*Table 21 O. Reg. 588/17 Community Levels of Service: Bridges & Culverts*

### 6.7.2 Technical Levels of Service

| Service Attribute | Technical Metric | Current LOS (2024) |
|---|---|---|
| Scope | % of bridges in the Township with loading or dimensional restrictions | 0% |
| Quality | Average bridge condition index value for bridges in the Township | 53% |
| | Average bridge condition index value for structural culverts in the Township | 82% |
| Performance | Capital Reinvestment Rate | 9.64% |

*Table 22 O. Reg. 588/17 Technical Levels of Service: Bridges & Culverts*

## 6.8 Proposed Levels of Service

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

The tables and graphs below explain the proposed levels of service scenarios that were analyzed for bridges and culverts. Further PLOS analysis at the portfolio level can be found in section *4. Proposed Level of Service Analysis.*

### 6.8.1 PLOS Scenarios Analyzed

| Scenario | Replacement Cost | Average Condition | Average Risk | Capital Reinvestment Rate | Average Annual Investment |
|---|---|---|---|---|---|
| Scenario 1 (100% Funded) | $3,274,000 | 73% | 10.06 | 3.3% | $102,000 |
| Scenario 2 (75% Funded) | $3,274,000 | 57% | 12.98 | 2.1% | $69,000 |
| Scenario 3 (50% Funded) | $3,274,000 | 73% | 16.02 | 1.6% | $52,000 |

*Table 23 Bridges & Culverts PLOS Scenarios*

### 6.8.2 Projected Condition Comparison

The graph below presents and compares the projected condition for each scenario analyzed.

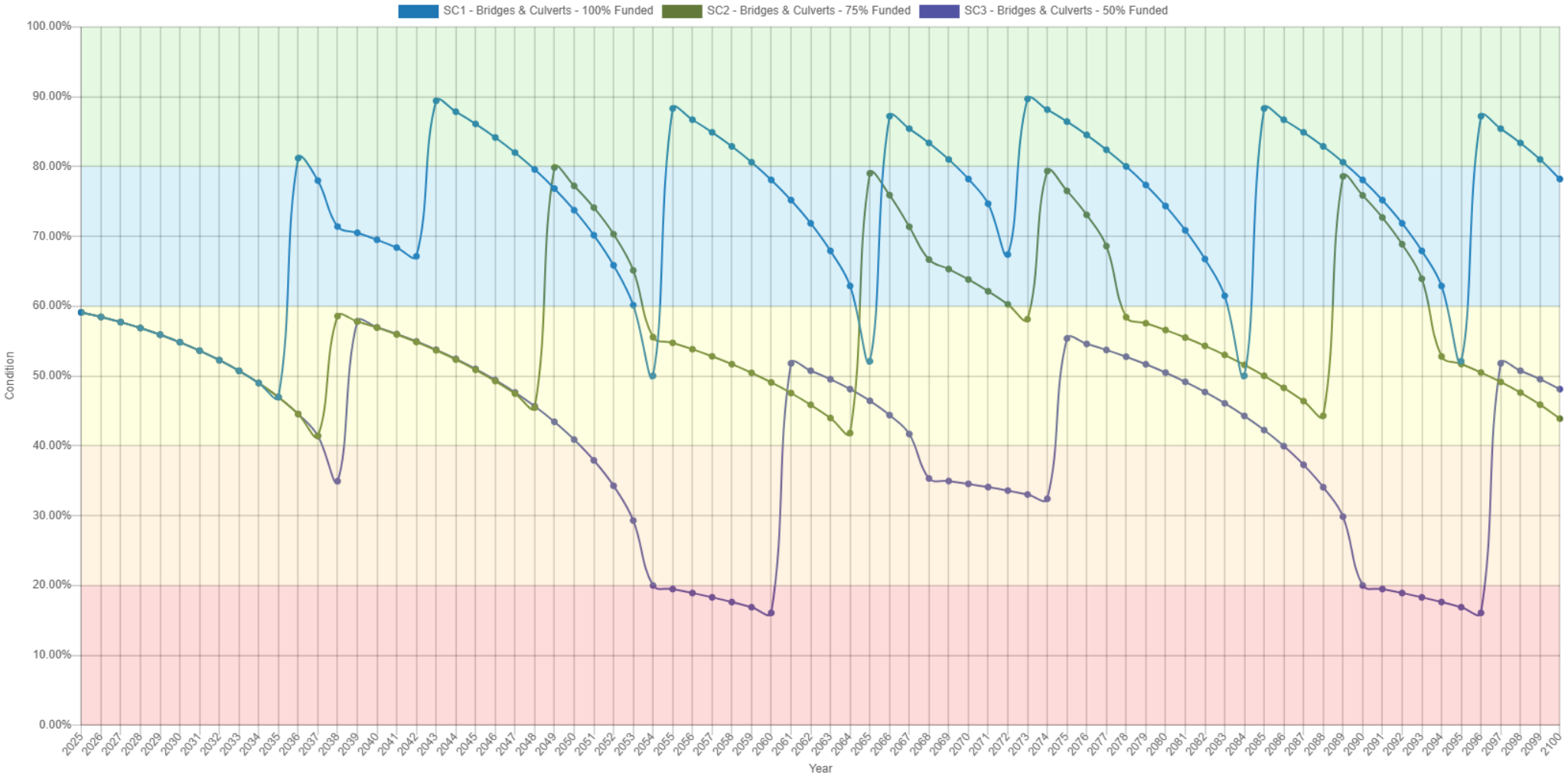



*Figure 32 Bridges & Culverts PLOS Scenario Condition Results*

### 6.8.3 Projected Risk Comparison

The graph below presents and compares the projected risk impact for each scenario analyzed.

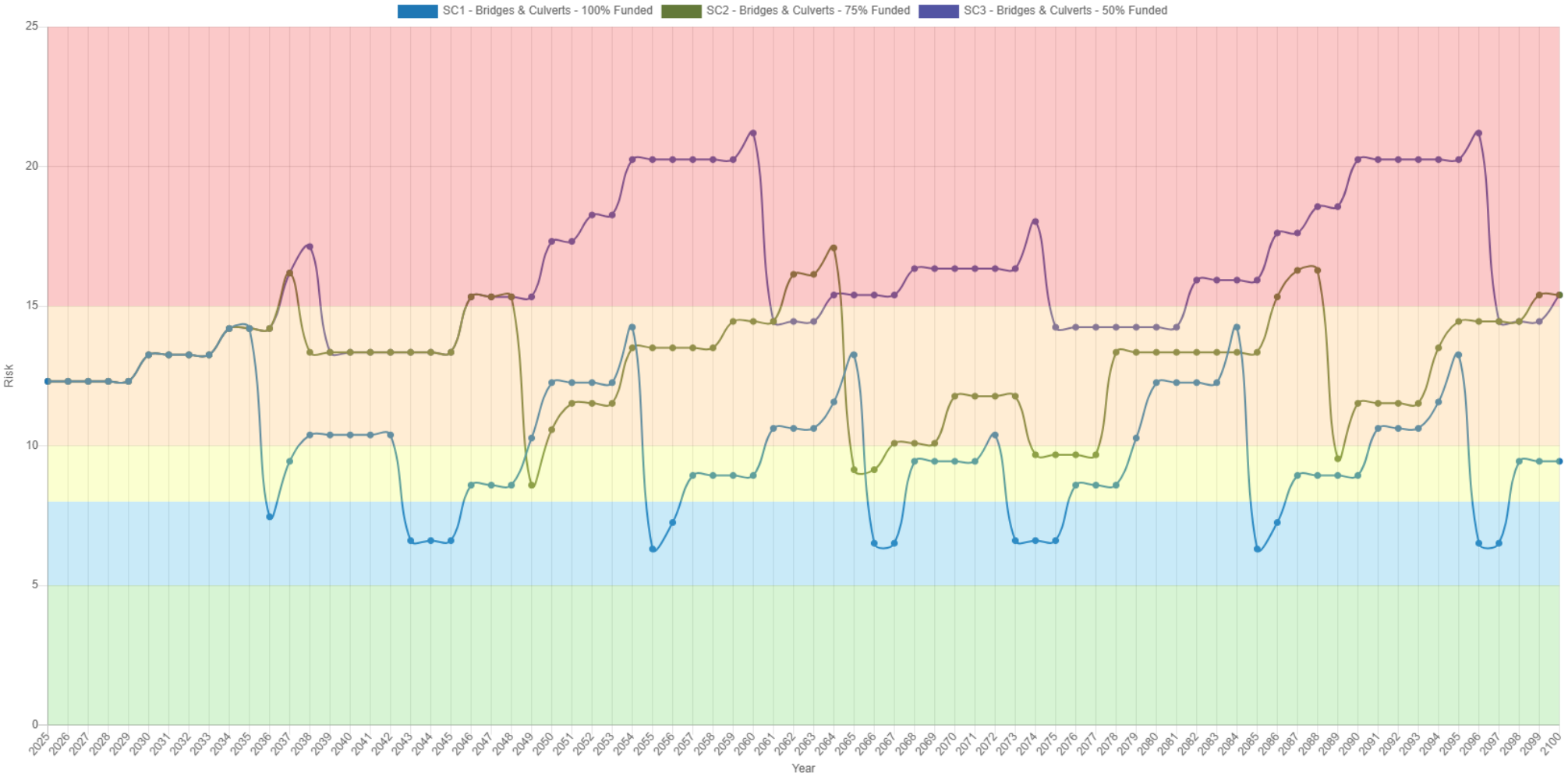



*Figure 33: Projected Risk Comparison: All Scenarios*

### 6.8.4 10-Year PLOS Financial Projections

As outlined in Section *4. Proposed Levels of Service Analysis*, the Township of Billings selected Scenario 2 as their preferred proposed levels of service. The main objective is to increase spending gradually to reach a more sustainable funding level to manage the Township's current inventory of assets. The following table outlines the funding trajectory over the next 10 years and shows the target reached in year 20, for bridges and culverts if the financial strategy for Scenario 2 is implemented. The table clearly shows the direct correlation between target spending and reducing the infrastructure deficit over time.

| | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | | 2045 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Targeted Capital Spending** | **$82k** | **$82k** | **$82k** | **$82k** | **$82k** | **$82k** | **$82k** | **$82k** | **$82k** | **$82k** | | **$82k** |
| **Projected Capital Spending** | $82k | $82k | $82k | $82k | $82k | $82k | $82k | $82k | $82k | $82k | | $82k |
| **Funding Deficit** | - | - | - | - | - | - | - | - | - | - | | - |
| **Target Reinvestment Rate** | **2.5%** | **2.5%** | **2.5%** | **2.5%** | **2.5%** | **2.5%** | **2.5%** | **2.5%** | **2.5%** | **2.5%** | | **2.5%** |
| **Projected Reinvestment Rate** | 2.5% | 2.5% | 2.5% | 2.5% | 2.5% | 2.5% | 2.5% | 2.5% | 2.5% | 2.5% | | 2.5% |

*Table 24 Bridges & Culverts 10-Year PLOS Financial Projections*

In this analysis, the current funding for bridges and culverts was considered to be 'over funded', meaning that the municipality has budgeted more than the annual requirement. This is normal, as some years will see larger capital investment than others. For this financial projection, the values remain constant as the category was meeting or exceeding the average annual requirement, the value was adjusted down to the target level and the analysis carried out. In this case, there is not currently a funding deficit in place for this asset category, given the proactive replacement strategy in place by the Township.

# 7. Water Network

The Township's Water Network inventory is valued at approximately $25 million, and is comprised of mains, hydrants and service leads, as well as several water facilities like the treatment plant, and water tower.

## 7.1 Inventory & Valuation

Table 25 summarizes the quantity and current replacement cost of the Township's various water network assets as managed in its primary asset management register, Citywide.

| Segment | Quantity | Unit of Measure | Replacement Cost | Primary RC Method |
|---|---|---|---|---|
| Hydrants | 8 | Assets | $90,832 | CPI |
| Service Lead | 273 | Assets | $2,336,700 | CPI |
| Treatment Plant | 153 | Assets | $6,878,600 | CPI |
| Water Tower | 2 | Assets | $1,741,195 | CPI |
| Watermains | 213 | Assets | $14,147,990 | CPI |
| **TOTAL** | | | **$25,195,317** | |

*Table 25 Detailed Asset Inventory: Water Network*

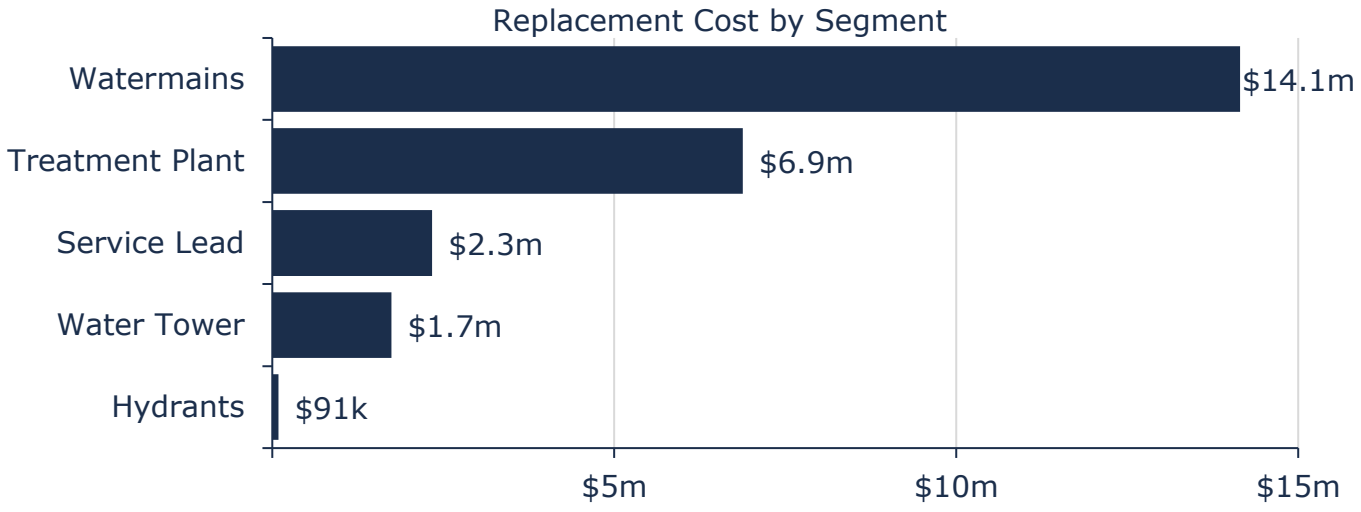



*Figure 34 Portfolio Valuation: Water Network*

## 7.2 Asset Condition

Figure 35 summarizes the replacement cost-weighted condition of the Township's water network. Based on a combination of field inspection data and age, 93% of assets are in fair or better condition; the remaining 7% of assets are in poor to very poor condition.

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.

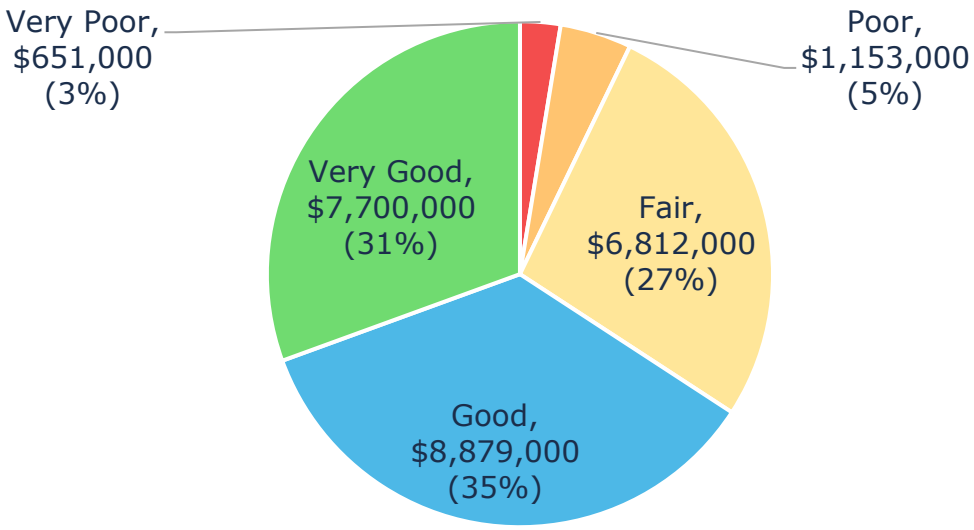



*Figure 35 Asset Condition: Water Network Overall*

As illustrated in Figure 36, based on condition assessments and age-based conditions, the majority of the Township's water network assets are in fair or better conditions.

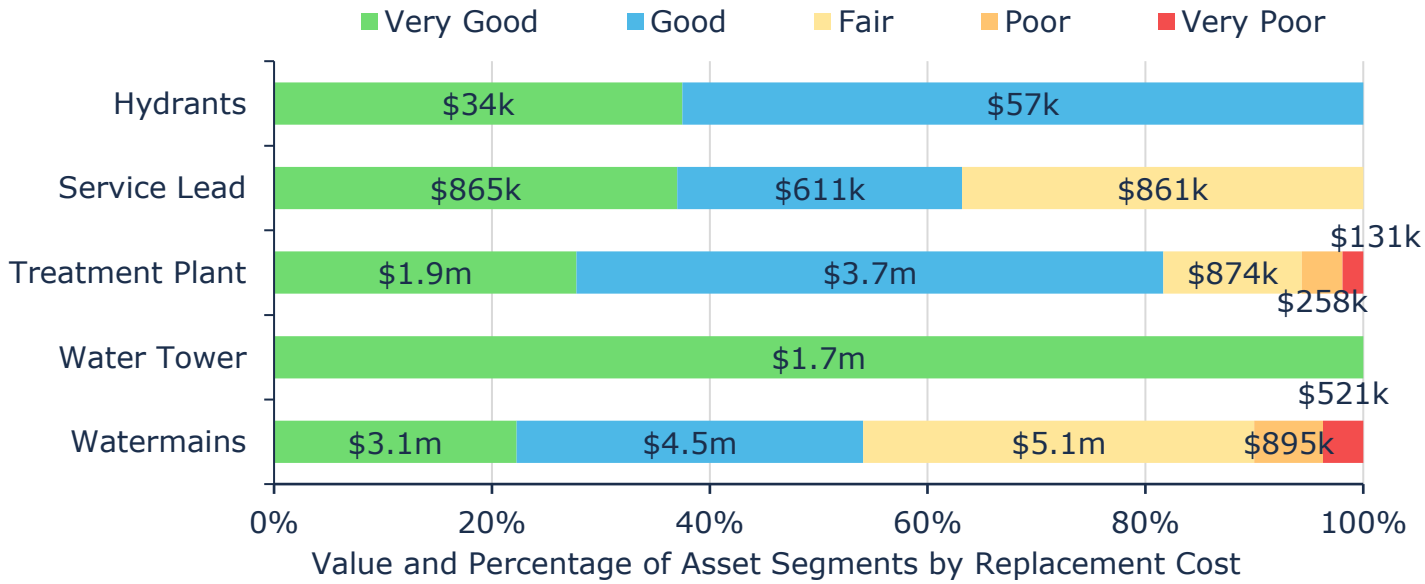



*Figure 36 Asset Condition: Water Network by Segment*

## 7.3 Age Profile

An asset's age profile compares two values: its weighted average age and its weighted average estimated useful life (EUL). Both measures are weighted by replacement cost to better reflect the overall investment at risk rather than treating all assets equally. The EUL represents the period during which an asset can reliably perform its intended function and provide value to users. As assets near the end of their design life, performance typically declines, often at an accelerating rate.

When combined with condition data, age profiles provide a more complete picture of infrastructure health. They help identify candidates for more detailed condition assessments, support the selection of effective lifecycle strategies, and improve long-term replacement planning.

Figure 37 illustrates that all Water Network assets are well within their estimated useful lives.

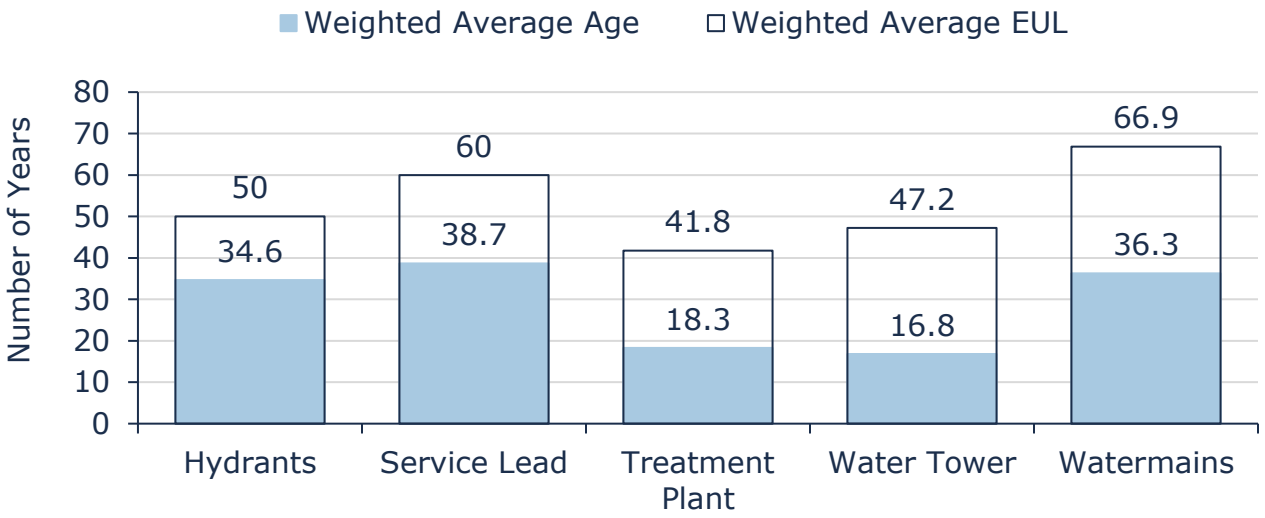



*Figure 37 Estimated Useful Life vs. Asset Age: Water Network*

## 7.4 Current Approach to Lifecycle Management

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

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

- OCWA provides the Township with multi-year forecasts and inspections as required under O. Reg. 170/3 are conducted
- Staff primarily rely on the age and material of water mains to determine the projected condition of water mains

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

| Activity Type | Description of Current Strategy |
|---|---|
| Maintenance | Valves undergo annual maintenance |
| | Periodic pressure testing to identify deficiencies and potential leaks |
| | Mains are flushed annually, and hydrants are flushed biannually |
| Rehabilitation / Replacement | 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 |
| | The Water System Financial Plan (2021 - 2027) provides capital projections that include replacement and rehabilitative activities for specific assets and components |
| | Other replacement activities are identified based on an analysis of the main break rate as well as any issues identified during regular maintenance activities |

*Table 26 Lifecycle Management Strategy: Water Network*

## 7.5 Forecasted Long-Term Replacement Needs

Figure 38 illustrates the cyclical short-, medium- and long-term infrastructure rehabilitation and replacement requirements for the Township's water network. This analysis was run until 2099 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Township's primary asset management system and asset register. The Township's average annual requirements (red dotted line) total $541,000 per year for all assets in the water network. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

The chart illustrates substantial capital needs throughout the forecast period. It also shows a backlog $521,000, dominated by water 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.

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 highly critical 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.

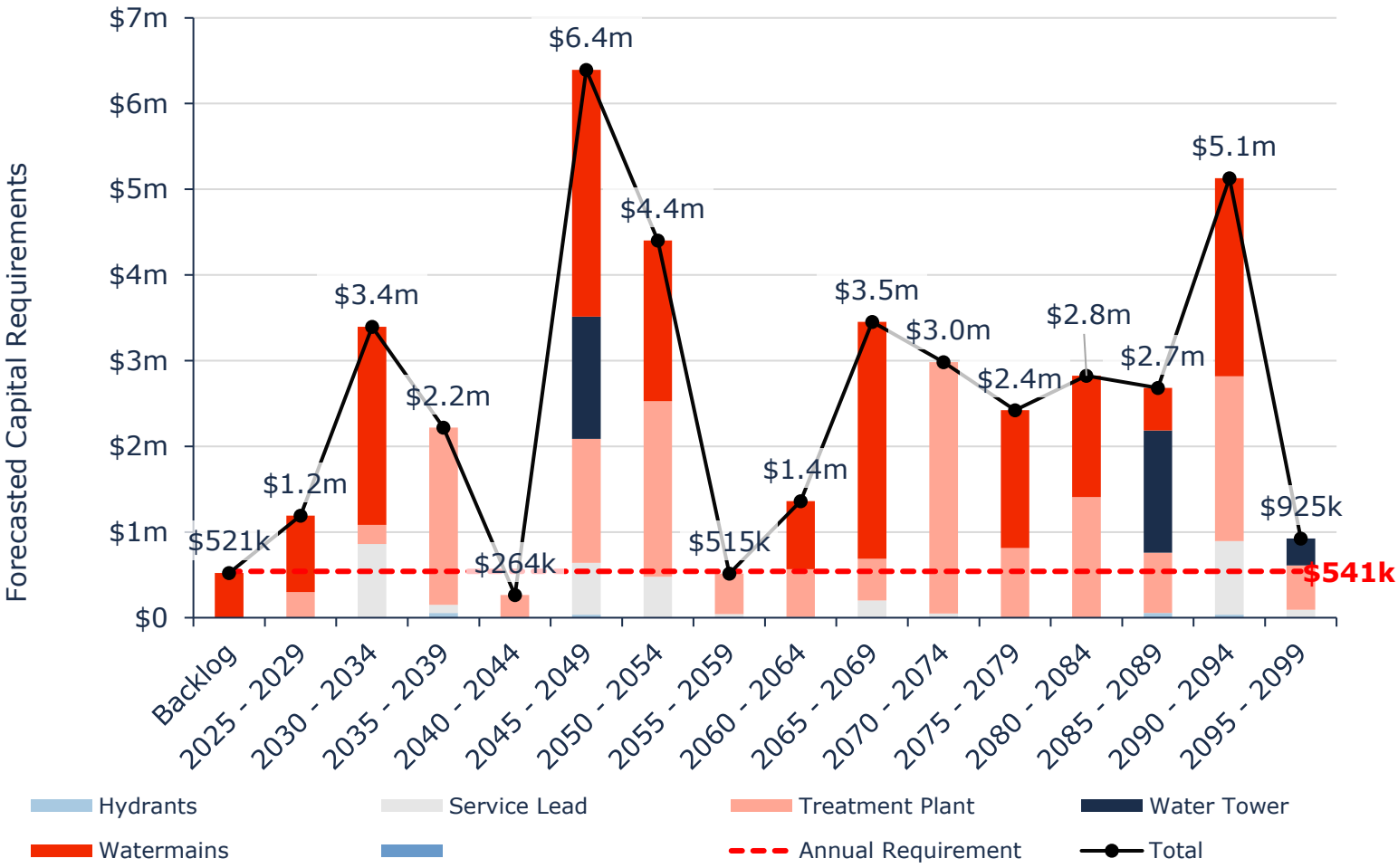



*Figure 38 Forecasted Capital Replacement Needs: Water Network 2025-2099*

## 7.6 Risk Analysis

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

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

| 1 - 4<br>Very Low | 5 - 7<br>Low | 8 - 9<br>Moderate | 10 - 14<br>High | 15 - 25<br>Very High |
|---|---|---|---|---|
| $11,136,000<br>(44%) | $9,086,000<br>(36%) | $2,209,000<br>(9%) | $2,764,000<br>(11%) | -<br>(0%) |

*Figure 39 Risk Matrix: Water Network*

## 7.7 Levels of Service

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

### 7.7.1 Community Levels of Service

| Service Attribute | Qualitative Description | Current LOS (2024) |
|---|---|---|
| Scope | Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system | The utility has over 9,594 meters of pipeline of various sizes constructed solely from PVC, approximately 11 hydrants and 32 valves. The Kagawong Water Treatment Facility's distribution system includes various chlorine residual check points, which are sampled for chlorine residual weekly.<br>An elevated water storage tank with a capacity of 600 m3 is located on the southwest corner of Beach Road and Rainbow Road. Located inside the base of the storage tank is a valve and control room, inlet pipe from the water treatment plant, discharge pipe, overflow pipe, ladder, electric power supply, access road, controls, provisions for residual chlorine measurements and all other items necessary to have a complete and operable system. |
| | Description, which may include maps, of the user groups or areas of the municipality that have fire flow | There are hydrants within the Township that provide flow, however, they are not rated for fire flow capacity. Fire services utilize pumpers and natural water sources for firefighting. |
| Reliability | Description of boil water advisories and service interruptions | The Township did not experience any boil water advisories or service interruptions in 2024 |

*Table 27 O. Reg. 588/17 Community Levels of Service: Water Network*

### 7.7.2 Technical Levels of Service

| Service Attribute | Technical Metric | Current LOS (2024) |
|---|---|---|
| Scope | % of properties connected to the municipal water system | 13%[5] |
| | % of properties where fire flow is available | 0%[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 |
| | # 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 |
| Performance | Capital Reinvestment Rate | 0.40% |

*Table 28 O. Reg. 588/17 Technical Levels of Service: Water Network*

## 7.8 Proposed Levels of Service

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

The below tables and graphs explain the proposed levels of service scenarios that were analyzed for the water network. Further PLOS analysis at the portfolio level can be found in section *4. Proposed Level of Service Analysis.*

### 7.8.1 PLOS Scenarios Analyzed

| Scenario | Replacement Cost | Average Condition | Average Risk | Capital Reinvestment Rate | Average Annual Investment |
|---|---|---|---|---|---|
| Scenario 1 (100% Funded) | $25,195,000 | 61% | 7.27 | 1.8% | $456,000 |
| Scenario 2 (75% Funded) | $25,195,000 | 52% | 8.83 | 1.4% | $356,000 |
| Scenario 3 (50% Funded) | $25,195,000 | 41% | 10.02 | 0.97% | $246,000 |

*Table 29 Water Network PLOS Scenarios*

[5] Although the Township has experience growth, the new developments have not connected to the municipal water system.
[6] Although the Township has hydrants in place, they do not meet fire flow capacity requirements. Due to geographic positioning the Township utilizes pumper trucks and natural water sources to meet firefighting demand.

### 7.8.2 Projected Condition Comparison

The graph below presents and compares the projected condition for each scenario analyzed.

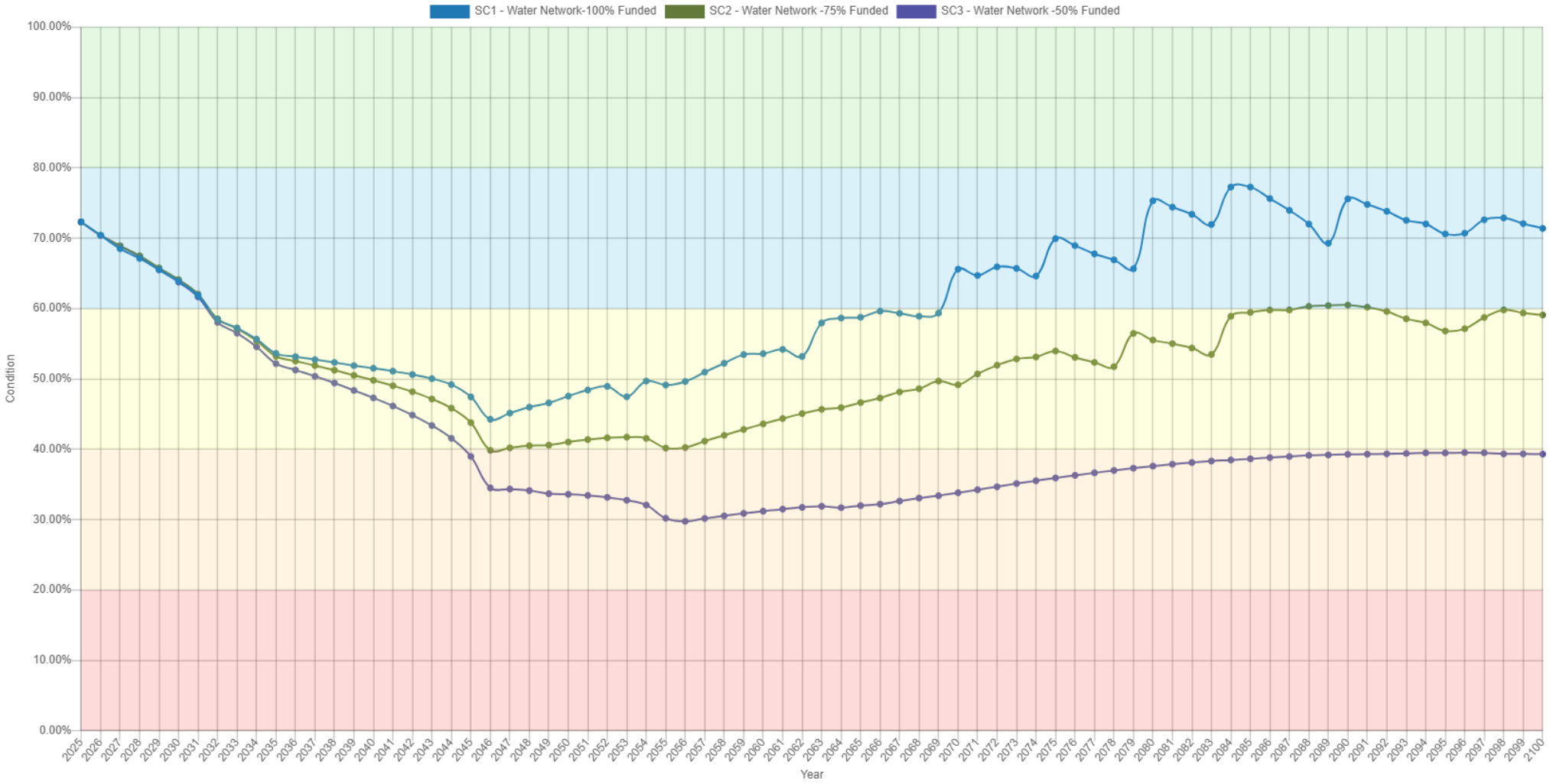



*Figure 40 Water Network PLOS Scenario Condition Results*

### 7.8.3 Projected Risk Comparison

The graph below presents and compares the projected risk impact for each scenario analyzed.

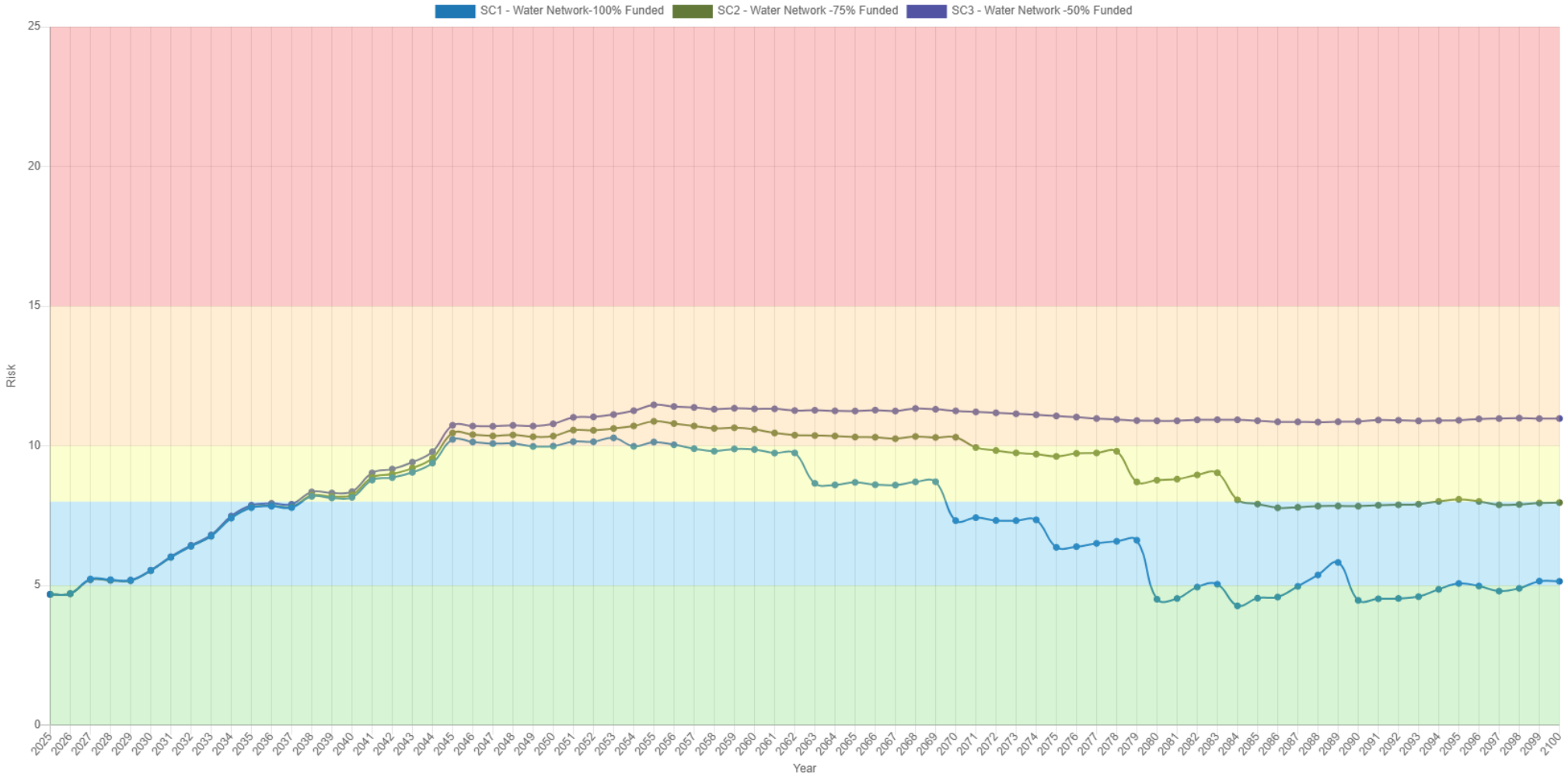



*Figure 41: Projected Risk Comparison*

### 7.8.4 10-Year PLOS Financial Projections

As outlined in Section *4. Proposed Levels of Service Analysis*, the Township of Billings selected Scenario 2 as their preferred proposed levels of service. The main objective is to increase spending gradually to reach a more sustainable funding level to manage the Township's current inventory of assets. The following table outlines the funding trajectory over the next 10 years and shows the target reached in year 20, for the water network assets if the financial strategy for Scenario 2 is implemented. The table clearly shows the direct correlation between target spending and reducing the infrastructure deficit over time.

| | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | | 2045 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Targeted Capital Spending** | **$406k** | **$406k** | **$406k** | **$406k** | **$406k** | **$406k** | **$406k** | **$406k** | **$406k** | **$406k** | | **$406k** |
| **Projected Capital Spending** | $112k | $124k | $135k | $147k | $160k | $173k | $186k | $200k | $215k | $230k | | $406k |
| **Funding Deficit** | $293k | $282k | $270k | $258k | $246k | $233k | $219k | $205k | $191k | $176k | | - |
| **Target Reinvestment Rate** | **1.6%** | **1.6%** | **1.6%** | **1.6%** | **1.6%** | **1.6%** | **1.6%** | **1.6%** | **1.6%** | **1.6%** | | **1.6%** |
| **Projected Reinvestment Rate** | 0.4% | 0.5% | 0.5% | 0.6% | 0.6% | 0.7% | 0.7% | 0.8% | 0.9% | 0.9% | | 1.6% |

*Table 30 Water Network 10-Year PLOS Financial Projections*

# 8. Stormwater Network

The Township is responsible for maintaining a small stormwater network of storm line, culverts and ditches valued at approximately $1.27 million.

## 8.1 Inventory & Valuation

Table 31 summarizes the quantity and current replacement cost of all stormwater management assets available in the Township's asset register.

| Segment | Quantity | Unit of Measure | Replacement Cost | Primary RC Method |
|---|---|---|---|---|
| Storm Constructed Drainage | 1 | Assets | $1,224,712 | CPI |
| Storm Culverts | 1 | Assets | $49,396 | CPI |
| **TOTAL** | 2 | | **$1,274,108** | |

*Table 31 Detailed Asset Inventory: Stormwater Network*

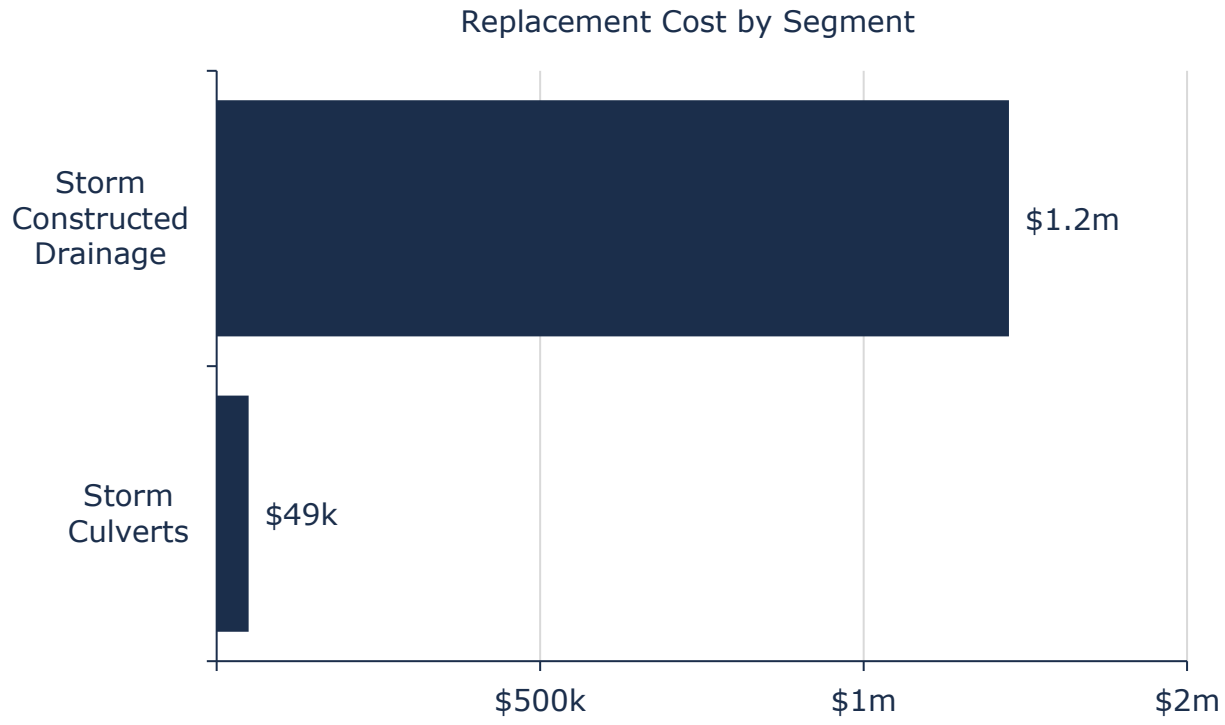



*Figure 42 Portfolio Valuation: Stormwater Network*

## 8.2 Asset Condition

Figure 43 summarizes the replacement cost-weighted condition of the Township's stormwater management assets. Based on age data only, all of the stormwater network assets are in very good condition.


*Figure 43 Asset Condition: Stormwater Network Overall*

Figure 44 provides a further breakdown by asset segment.

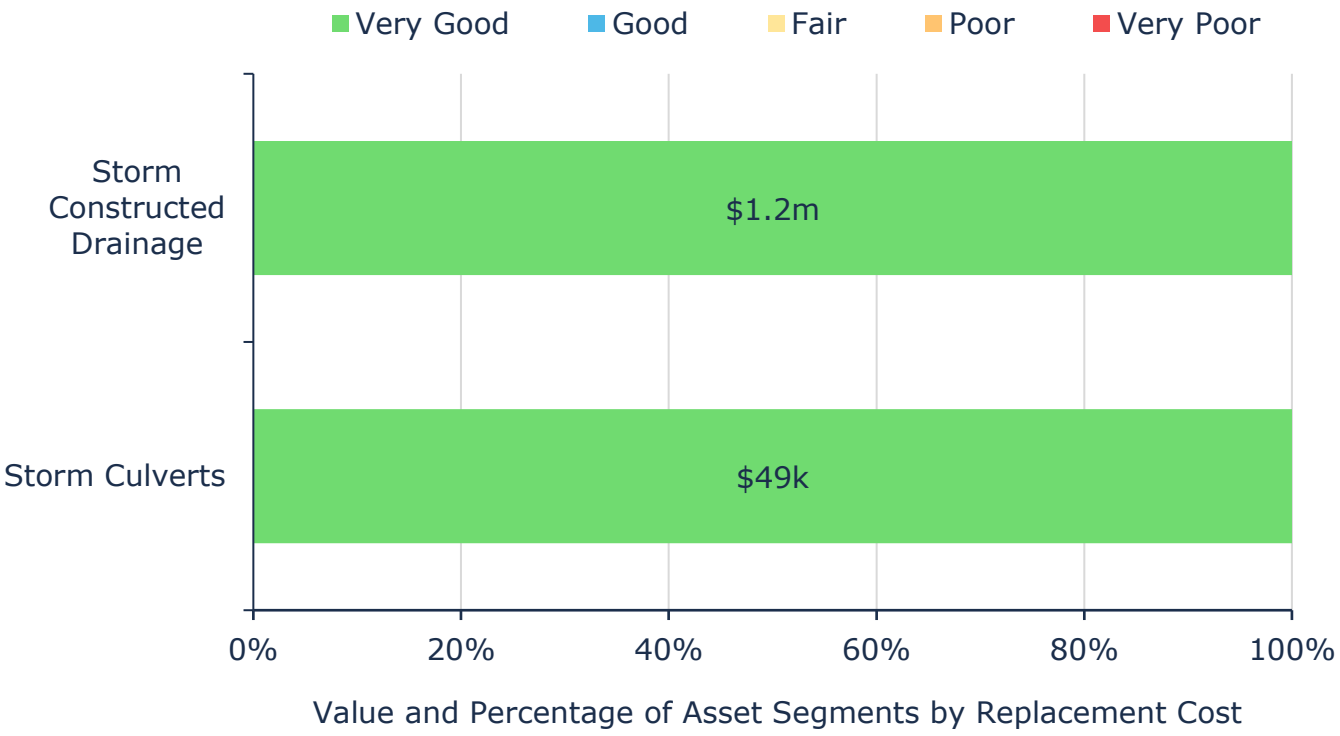



*Figure 44 Asset Condition: Stormwater Network by Segment*

## 8.3 Age Profile

An asset's age profile compares two values: its weighted average age and its weighted average estimated useful life (EUL). Both measures are weighted by replacement cost to better reflect the overall investment at risk rather than treating all assets equally. The EUL represents the period during which an asset can reliably perform its intended function and provide value to users. As assets near the end of their design life, performance typically declines, often at an accelerating rate.

When combined with condition data, age profiles provide a more complete picture of infrastructure health. They help identify candidates for more detailed condition assessments, support the selection of effective lifecycle strategies, and improve long-term replacement planning.

Figure 45 illustrates that stormwater network assets are well within their estimated useful lives.

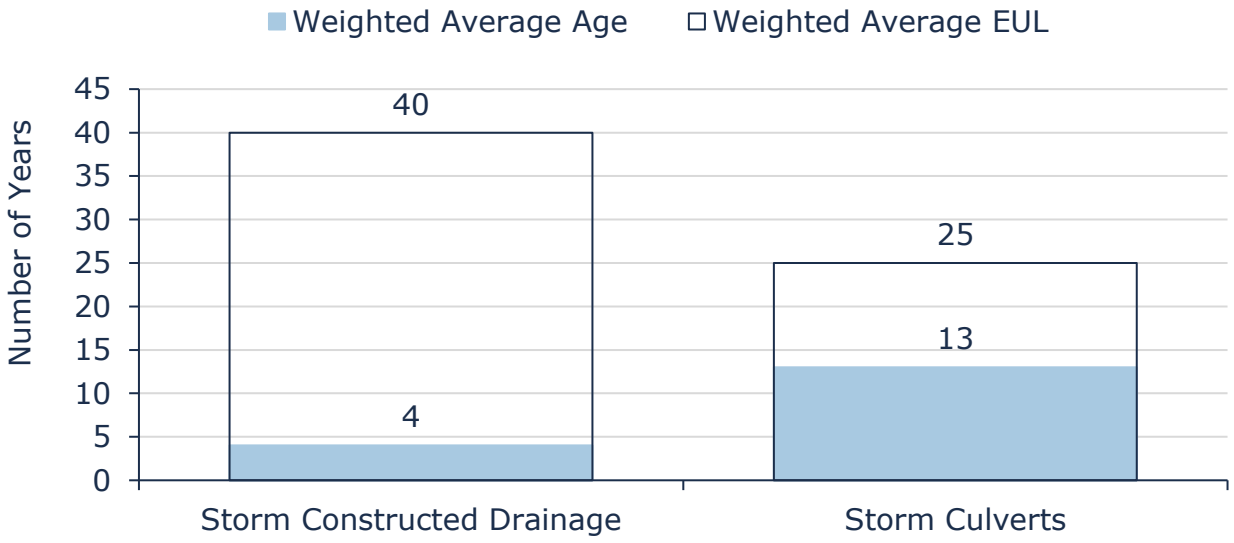



*Figure 45 Estimated Useful Life vs. Asset Age: Stormwater Network*

## 8.4 Current Approach to Lifecycle Management

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

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

| Activity Type | Description of Current Strategy |
|---|---|
| Maintenance | Catch basins are cleaned annually and outlets are inspected regularly to ensure unobstructed flow |
| | With the installation of new stormwater infrastructure in 2021, Staff have indicated that there will be a flushing and cleaning program implemented in the near future. |
| | All other maintenance activities are completed on a reactive basis when operational issues are identified (e.g., blockages, backups) |
| 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 |

*Table 32 Lifecycle Management Strategy: Stormwater Network*

It is worth noting that the Township is considering increasing their inspections to include ditch assessments to ensure comprehensive infrastructure management.

## 8.5 Forecasted Long-Term Replacement Needs

Figure 46 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Township's stormwater network assets. This analysis was run until 2064 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Township's primary asset management system and asset register. The Township's average annual requirements (red dotted line) total $33,000 per year for all assets in the stormwater network. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

The chart illustrates no backlog for stormwater assets. The largest replacement spike is forecasted in 2060-2064 as drainage assets are anticipated to reach the end of their expected design life. These projections and estimates are based on asset replacement costs and age analysis. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

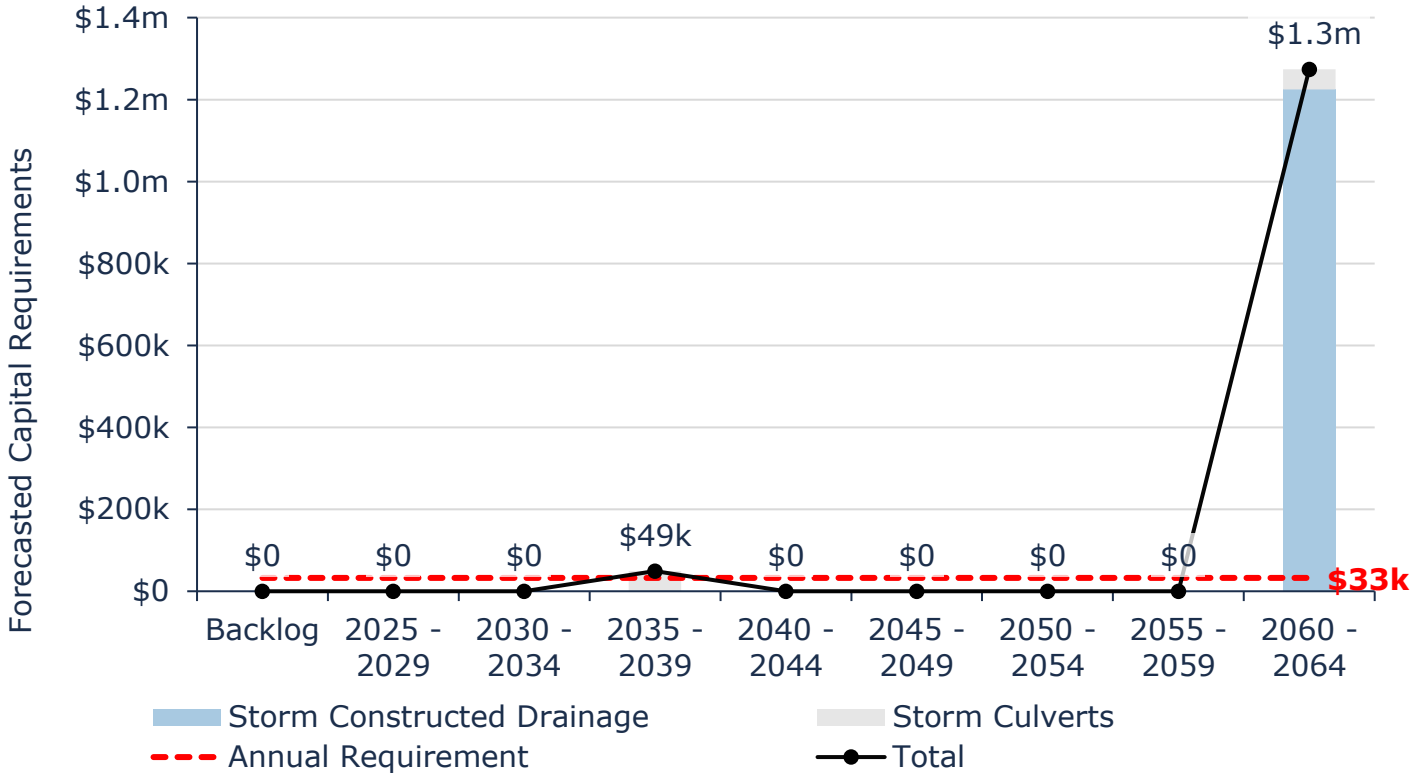



*Figure 46 Forecasted Capital Replacement Needs Stormwater Network 2025-2064*

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.

## 8.6 Risk Analysis

The risk matrix below is generated using available asset data, including condition, service life remaining, pipe material, 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 Township 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 Township's Asset Management Database (Citywide Assets). See Appendix C – Risk Rating Criteria, for further details on approach used to determine asset risk ratings and classifications.

| 1 - 4<br>Very Low | 5 - 7<br>Low | 8 - 9<br>Moderate | 10 - 14<br>High | 15 - 25<br>Very High |
|---|---|---|---|---|
| $1,274,000<br>(100%) | -<br>(0%) | -<br>(0%) | -<br>(0%) | -<br>(0%) |

*Figure 47 Risk Matrix: Stormwater Network*

## 8.7 Levels of Service

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

### 8.7.1 Community Levels of Service

| Service Attribute | Qualitative Description | Current LOS (2024) |
|---|---|---|
| Scope | Description, which may include map, of the user groups or areas of the municipality that are protected from flooding, including the extent of protection provided by the municipal storm water network | The Main Street Stormwater Management (SWM) System serving the in-hamlet portion of Main Street (approx. 1 Km) in the Hamlet of Kagawong, within the Township of Billings. It is a stormwater system only (i.e., designed not to convey sanitary sewage, combined sewage) within the Lower Kagawong River and Mudge Bay (Lake Huron) watersheds. The Municipal SWM System consists of storm sewers, culverts, ditches, Stormwater Management Facilities and outlets. This Approval covers the entire Municipal Stormwater Management System owned and operated by the Township of Billings. This Approval does not cover municipally, or Privately Owned Stormwater Works on industrial, commercial, or institutional land. |

*Table 33 O. Reg. 588/17 Community Levels of Service: Stormwater Network*

### 8.7.2 Technical Levels of Service

| Service Attribute | Technical Metric | Current LOS (2024) |
|---|---|---|
| Scope | % of properties in municipality designed to be resilient to a 100-year storm | 0%[7] |
| | % of the municipal stormwater management system designed to be resilient to a 5-year storm | 0%[8] |
| Affordable | Capital Reinvestment Rate | 0% |

*Table 34 O. Reg. 588/17 Technical Levels of Service: Stormwater Network*

[7] Currently, the Township lacks studies or data to assess infrastructure resiliency. The township may explore the feasibility of commissioning a study to obtain this information
[8] Currently, the Township lacks studies or data to assess infrastructure resiliency. The township may explore the feasibility of commissioning a study to obtain this information. Further staff knowledge indicate that the 2021 stormwater infrastructure installation located on the Main Street in Kagawong has been designed to be resilient to a 25-year storm.

## 8.8 Proposed Levels of Service

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

The tables below and graphs explain the proposed levels of service scenarios that were analyzed for the stormwater network. Further PLOS analysis at the portfolio level can be found in section *4. Proposed Level of Service Analysis*.

### 8.8.1 PLOS Scenarios Analyzed

| Scenario | Replacement Cost | Average Condition | Average Risk | Capital Reinvestment Rate | Average Annual Investment |
|---|---|---|---|---|---|
| Scenario 1 (100% Funded) | $1,274,000 | 84% | 5.89 | 2.56% | $18,000 |
| Scenario 2 75% Funded) | $1,274,000 | 79% | 6.71 | 2.56% | $18,000 |
| Scenario 3 (50% Funded) | $1,274,000 | 58% | 10.14 | 0.15% | $1,900 |

*Table 35 Stormwater Network PLOS Scenarios*

Note: This category includes only two individual assets, which limits the available data and may result in a skewed analysis. The primary difference between the scenarios lies in the municipality's ability to fund replacement events as they arise. At a 50% funding level, the municipality would be unable to afford end-of-life replacements when needed, leading to potential deferrals or reliance on debt financing or alternative external funding sources

In this analysis, Scenarios 1 and 2 results in the same capital reinvestment rate and average annual investment. However, Scenario 2 shows a slight decline in average condition and a marginal increase in risk. This outcome is attributed to the reallocation of surplus funds in Scenario 2, which provides a higher initial budget. Despite this advantage, under the 75% funding model, Scenario 2 takes slightly longer to reach a fully funded position for the required investment. While the reinvestment rate remains the same, the extended timeline leads to a modest deterioration in asset condition.

### 8.8.2 Projected Condition Comparison

The graph below presents and compares the projected condition for each scenario analyzed.

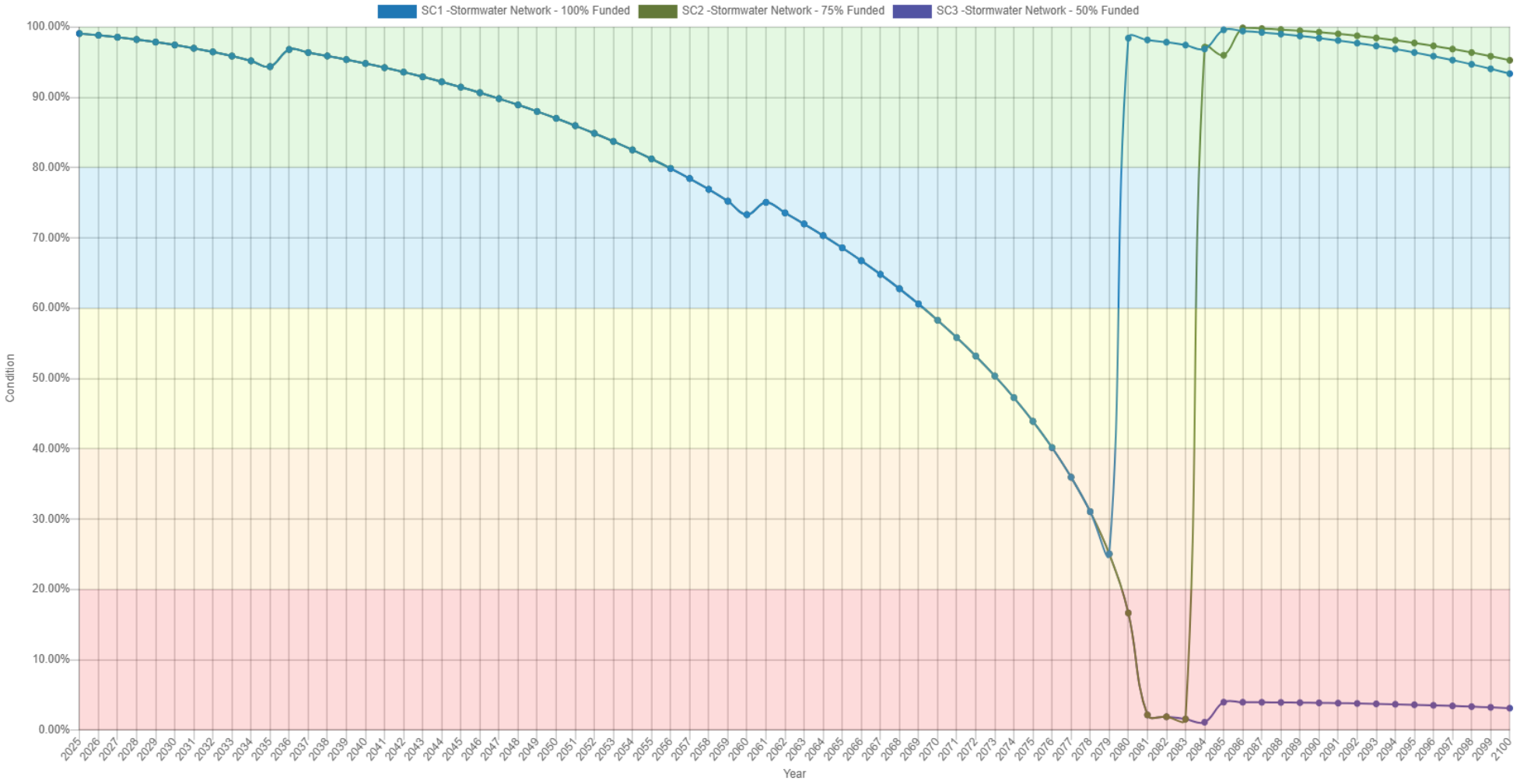



*Figure 48 Stormwater Network PLOS Scenario Condition Results*

### 8.8.3 Projected Risk Comparison

The graph below presents and compares the projected risk impact for each scenario analyzed.

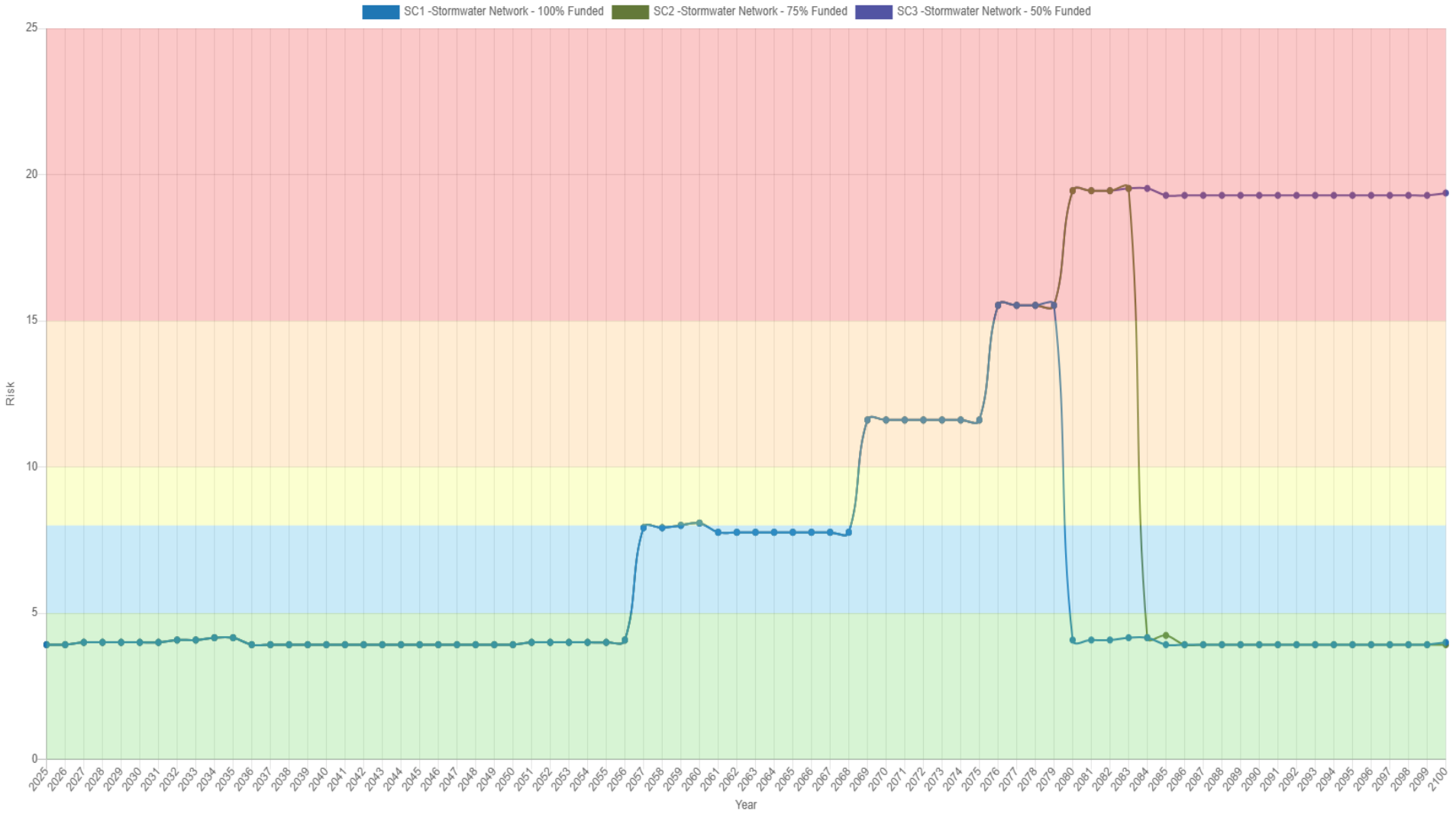



*Figure 49: Projected Risk Comparison*

### 8.8.4 10-Year PLOS Financial Projections

As outlined in Section *4. Proposed Levels of Service Analysis*, the Township of Billings selected Scenario 2 as their preferred proposed levels of service. The main objective is to increase spending gradually to reach a more sustainable funding level to manage the Township's current inventory of assets. The following table outlines the funding trajectory over the next 10 years and shows the target reached in year 20, for the stormwater network assets if the financial strategy for Scenario 2 is implemented. The table clearly shows the direct correlation between target spending and reducing the infrastructure deficit over time.

| | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | | 2045 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Targeted Capital Spending** | **$25k** | **$25k** | **$25k** | **$25k** | **$25k** | **$25k** | **$25k** | **$25k** | **$25k** | **$25k** | | **$25k** |
| **Projected Capital Spending** | $6k | $7k | $8k | $11k | $12k | $13k | $14k | $15k | $16k | $17k | | $25k |
| **Funding Deficit** | $18k | $18k | $17k | $14k | $13k | $12k | $11k | $10k | $9k | $8k | | - |
| **Target Reinvestment Rate** | **1.9%** | **1.9%** | **1.9%** | **1.9%** | **1.9%** | **1.9%** | **1.9%** | **1.9%** | **1.9%** | **1.9%** | | **1.9%** |
| **Projected Reinvestment Rate** | 0.5% | 0.6% | 0.6% | 0.8% | 0.9% | 1.0% | 1.1% | 1.1% | 1.2% | 1.3% | | 1.9% |

*Table 36 Stormwater Network 10-Year PLOS Financial Projections*

# Non-Core Assets

# 9. Buildings & Facilities

The Township's buildings portfolio includes a fire station, various administrative and public works facilities, as well as a public library and recreational assets. The total current replacement of buildings is estimated at approximately $20.8 million.

## 9.1 Inventory & Valuation

Table 37 summarizes the quantity and current replacement cost of all building and facility assets available in the Municipality's asset register. The majority of the buildings and facilities assets have been componentized through a recent assessment study. The quantity listed represents the number of asset records currently available for each department.

| Segment | Quantity | Unit of Measure | Replacement Cost | Primary RC Method |
|---|---|---|---|---|
| Environmental Services | 1 | Assets | $23,102 | CPI |
| Fire & Emergency | 1 | Assets | $1,433,918 | CPI |
| General Government | 77 | Assets | $2,802,115 | User-Defined |
| Recreational and Cultural Services | 495 | Assets | $13,756,474 | User-Defined |
| Transportation Services | 71 | Assets | $2,783,970 | User-Defined |
| **TOTAL** | | | **$20,799,579** | |

*Table 37 Detailed Asset Inventory: Buildings & Facilities*

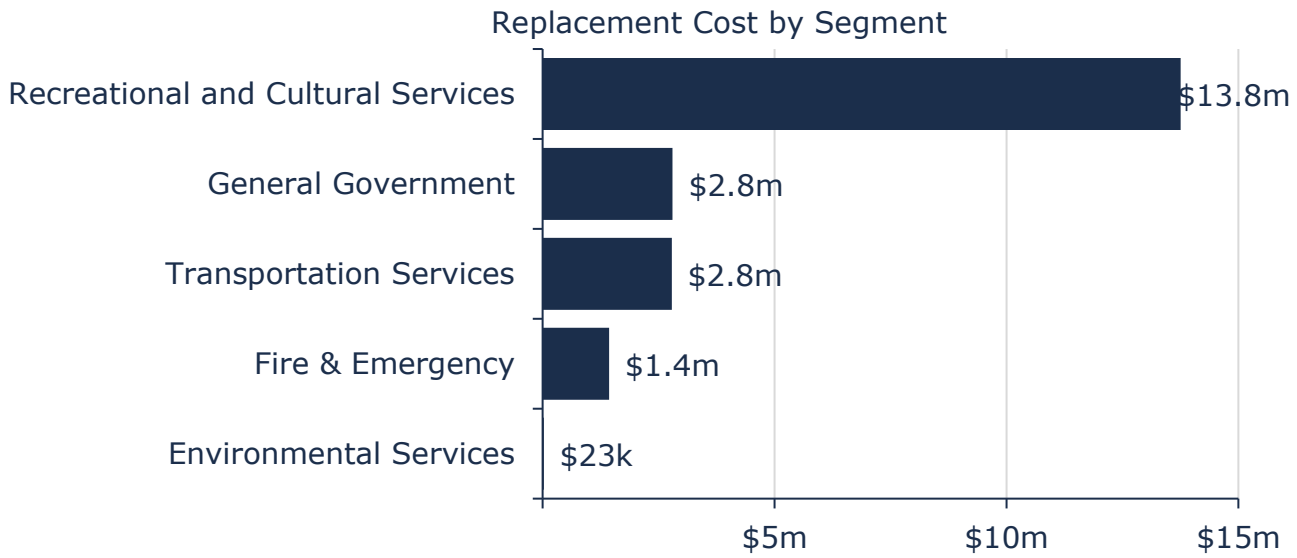



*Figure 50 Portfolio Valuation: Buildings & Facilities*

## 9.2 Asset Condition

Figure 51 summarizes the replacement cost-weighted condition of the Township's buildings portfolio. 81% of buildings assets are in fair or better condition; however, 19%, with a current replacement cost of more than $3 million are in poor or worse condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition.

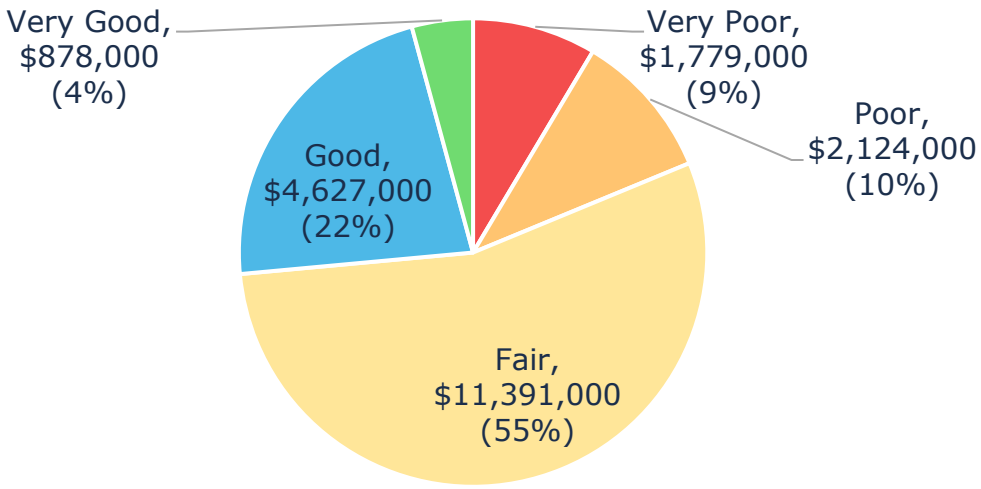



*Figure 51 Asset Condition: Buildings & Facilities Overall*

Figure 52 summarizes the condition of buildings by each department. Assets that belong to the Environmental Services are in poor condition. Majority of assets across all other segments are in fair or better condition.

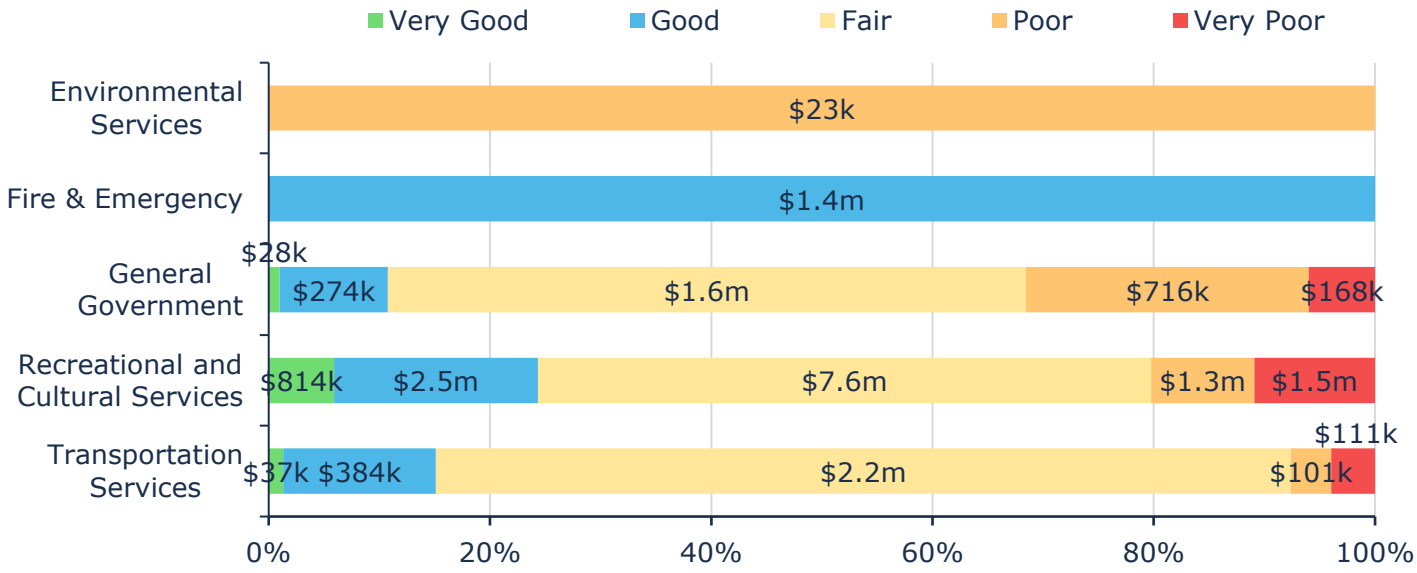



*Figure 52 Asset Condition: Buildings & Facilities by Segment*

Buildings and facilities 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 on the asset's ability to serve the purpose originally intended.

## 9.3 Age Profile

An asset's age profile compares two values: its weighted average age and its weighted average estimated useful life (EUL). Both measures are weighted by replacement cost to better reflect the overall investment at risk rather than treating all assets equally. The EUL represents the period during which an asset can reliably perform its intended function and provide value to users. As assets near the end of their design life, performance typically declines, often at an accelerating rate.

When combined with condition data, age profiles provide a more complete picture of infrastructure health. They help identify candidates for more detailed condition assessments, support the selection of effective lifecycle strategies, and improve long-term replacement planning.

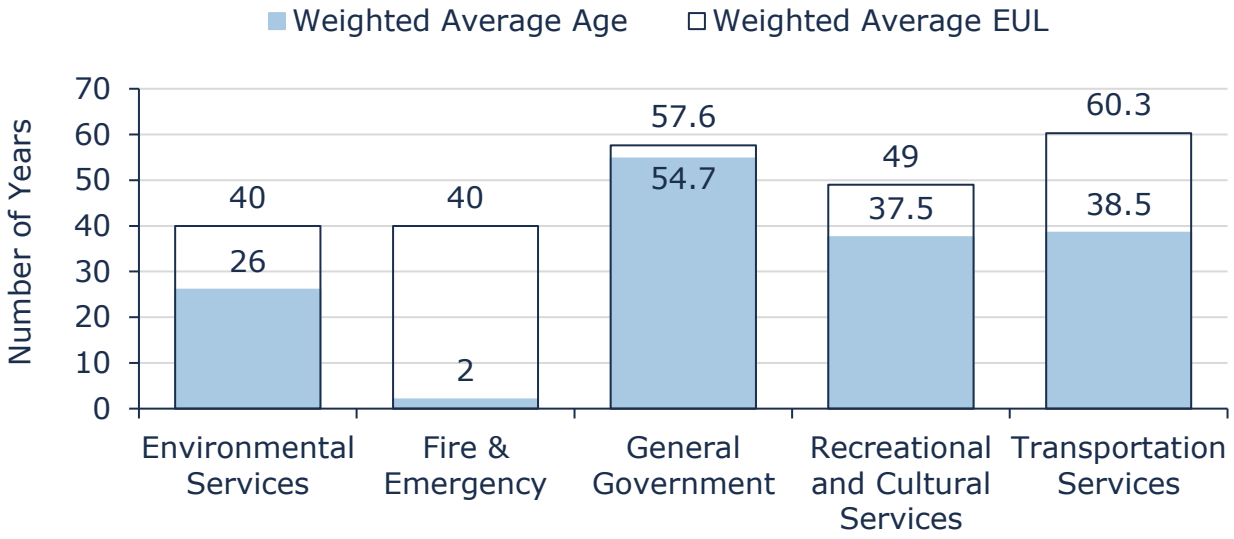



*Figure 53 Estimated Useful Life vs. Asset Age: Buildings & Facilities*

Figure 53 illustrates that, on average, buildings assets are approaching their serviceable life except for Fire & Emergency asset. This analysis presented primarily at the at the individual element or component level based on a recent study. The fire hall and the landfill buildings were not included within the study. Useful and meaningful age analysis for buildings is entirely predicated on effective componentization.

## 9.4 Current Approach to Lifecycle Management

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

Table 38 outlines the Township's current lifecycle management strategy.

| Activity Type | Description of Current Strategy |
|---|---|
| Maintenance/ Rehabilitation | Municipal buildings are subject to regular inspections to identify health & safety requirements as well as structural deficiencies that require additional attention. |
| | Critical buildings have a detailed maintenance and rehabilitation schedule, while the maintenance of other facilities are dealt with on a case-by-case basis |
| Replacement | Assessments are completed strategically as buildings approach their end-of-life to determine whether replacement or rehabilitation is appropriate |

*Table 38 Lifecycle Management Strategy: Buildings & Facilities*

## 9.5 Forecasted Long-Term Replacement Needs

Figure 54 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Township's buildings portfolio. This analysis was run until 2064 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Township's primary asset management system and asset register. The Township's average annual requirements (red dotted line) total $492,000 per year for all buildings. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

Replacement needs are forecasted to rise consistently over the next 40 years, reaching $4.8 million between 2060 and 2064. 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.

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.

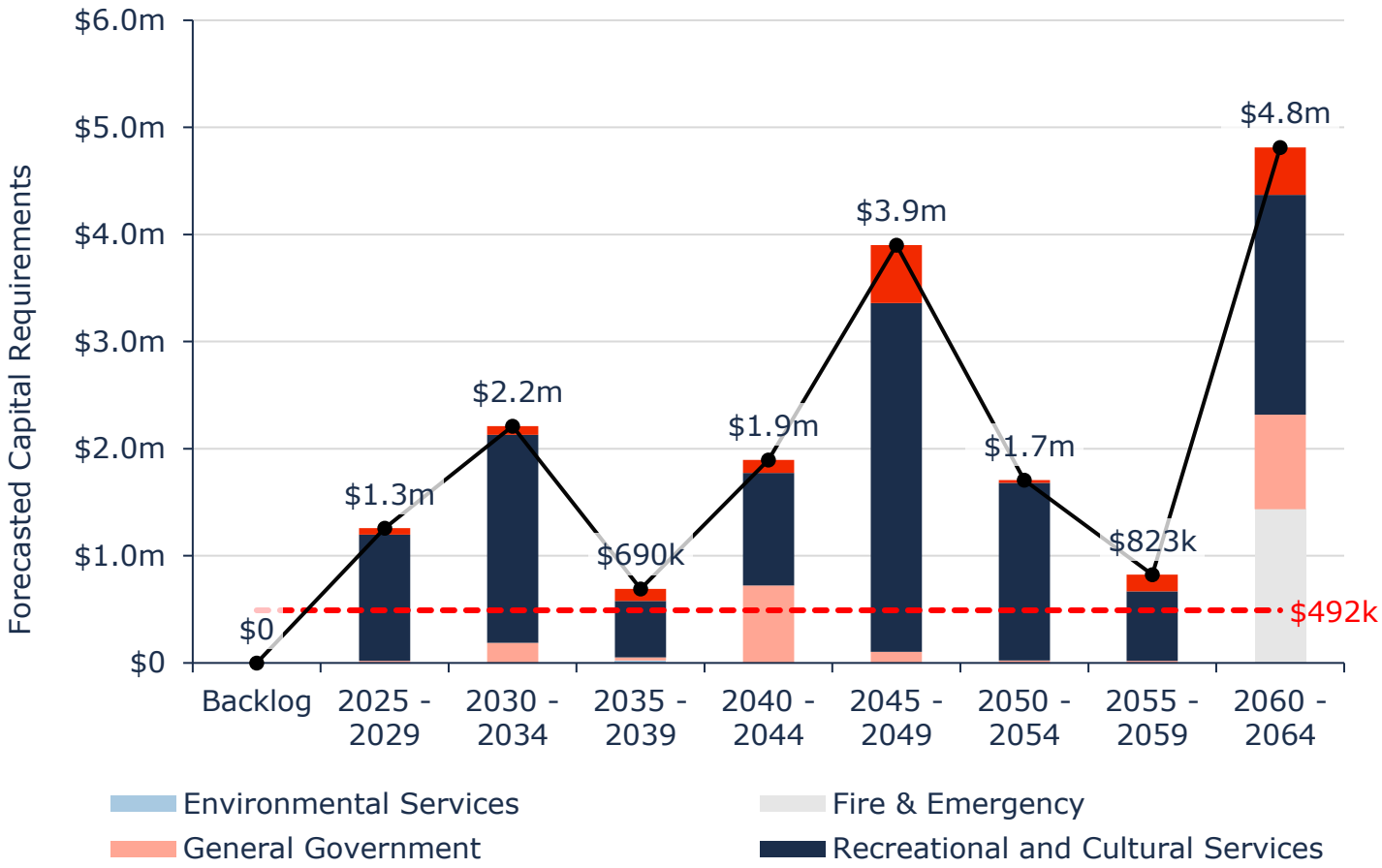



*Figure 54:Forecasted Capital Replacement Needs: Buildings & Facilities 2025-2064*

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

## 9.6 Risk Analysis

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

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

| 1 - 4<br>Very Low<br>$7,233,000<br>(35%) | 5 - 7<br>Low<br>$5,559,000<br>(27%) | 8 - 9<br>Moderate<br>$3,381,000<br>(16%) | 10 - 14<br>High<br>$2,771,000<br>(13%) | 15 - 25<br>Very High<br>$1,856,000<br>(9%) |
|---|---|---|---|---|

*Figure 55 Risk Matrix: Buildings & Facilities*

## 9.7 Levels of Service

The tables that follow summarize the Township'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 Township has selected for this AMP.

### 9.7.1 Community Levels of Service

| Service Attribute | Qualitative Description | Current LOS (2024) |
|---|---|---|
| Accessible and Reliable | List of Facilities that meet accessibility standards and any work that has been undertaken to achieve alignment | The Township currently has projects underway to improve accessibility standards. Current projects include:<br>•The Old Mill and Heritage Centre: automated doors and replacement of upper deck<br>•Kagawong Park Centre: Automated doors, upper and lower. |
| Safe & Regulatory | Description of monthly and annual facilities inspection process | The Township conducts regular inspections of all facilities in accordance with internal policies through the Joint Health and Safety Committee and in alignment with the Health and Safety Act |
| Affordable | Description of the lifecycle activities (maintenance, rehabilitation, and replacement) performed on municipal facilities | Facility asset rehabilitation and replacement decisions are predominantly based on opportunities for accessibility improvement, risk to occupant health and safety, legislative compliance, and cost and construction feasibility. |
| Sustainable | Description of the current condition of municipal facilities and the plans that are in place to maintain or improve the levels of service provided | The Township conducted a Building Condition Assessment study in 2024. Currently 80% of the facilities are considered in fair or better condition. The Township acknowledges that there are facilities that require significant attention and are identifying and prioritizing rehabilitations using these assessments as a reference point. |

*Table 39 Community Levels of Service: Buildings & Facilities*

### 9.7.2 Technical Levels of Service

| Service Attribute | Technical Metric | Current LOS (2024) |
|---|---|---|
| Sustainable | % of facilities that are in fair or better condition | 81% |
| | % of facilities that are in poor or very poor condition | 19% |
| Affordable | Capital Reinvestment Rate – The measure of funding allocated towards saving for future capital investments. (Higher is typically better) | 2.36% vs. 0.27% |

*Table 40 Technical Levels of Service: Buildings & Facilities*

## 9.8 Proposed Levels of Service

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

The below tables and graphs explain the proposed levels of service scenarios that were analyzed for buildings and facilities. Further PLOS analysis at the portfolio level can be found in section *4. Proposed Level of Service Analysis.*

### 9.8.1 PLOS Scenarios Analyzed

| Scenario | Replacement Cost | Average Condition | Average Risk | Capital Reinvestment Rate | Average Annual Investment |
|---|---|---|---|---|---|
| Scenario 1 (100% Funded) | $20,800,000 | 48% | 6.94 | 2.05% | $428,000 |
| Scenario 2 (75% Funded) | $20,800,000 | 39% | 9.22 | 1.63% | $340,000 |
| Scenario 3 (50% Funded) | $20,800,000 | 31% | 9.96 | 1.14% | $237,000 |

*Table 41 Buildings & Facilities PLOS Scenarios*

Note: These scenarios include all current Buildings & Facilities assets. It has been noted the named facility "91 Main St (The Gym) is in poor condition. Indications are that this building may be considered for decommissioning. If the current replacement cost and average annual requirement for this specific asset were removed, it would decrease the overall average annual requirement of this asset category by $21,000 and the replacement cost reduced by $775,000.

### 9.8.2 Projected Condition Comparison

The graph below presents and compares the projected condition for each scenario analyzed.

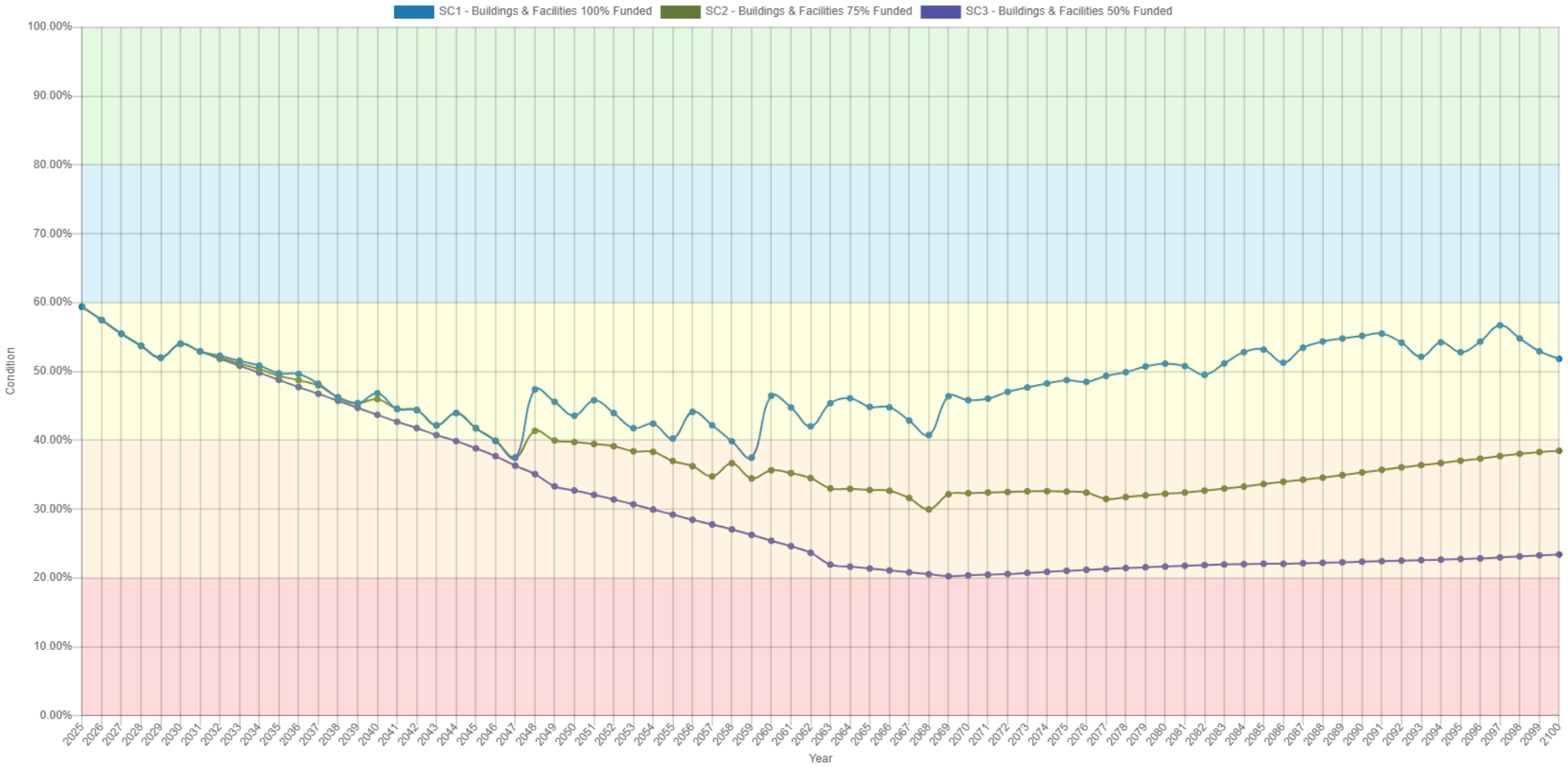



*Figure 56: PLOS Condition Comparison*

### 9.8.3 Projected Risk Comparison

The graph below presents and compares the projected risk impact for each scenario analyzed.

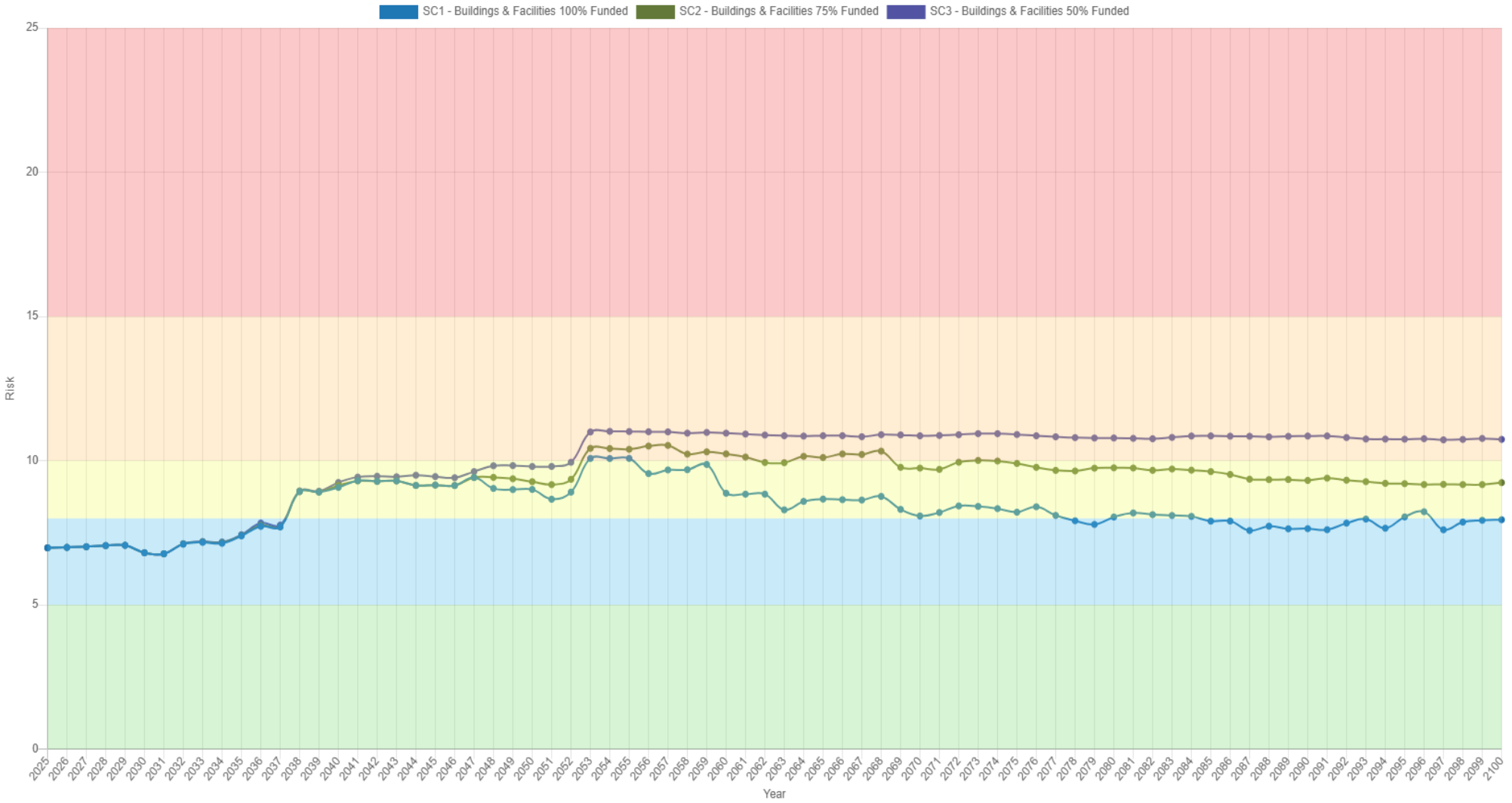



*Figure 57: Projection Risk Comparison*

### 9.8.4 10-Year PLOS Financial Projections

As outlined in Section *4. Proposed Levels of Service Analysis*, the Township of Billings selected Scenario 2 as their preferred proposed levels of service. The main objective is to increase spending gradually to reach a more sustainable funding level to manage the Township's current inventory of assets. The following table outlines the funding trajectory over the next 10 years and shows the target reached in year 20, for the buildings and facilities assets if the financial strategy for Scenario 2 is implemented. The table clearly shows the direct correlation between target spending and reducing the infrastructure deficit over time.

| | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | | 2045 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Targeted Capital Spending** | **$369k** | **$369k** | **$369k** | **$369k** | **$369k** | **$369k** | **$369k** | **$369k** | **$369k** | **$369k** | | **$369k** |
| **Projected Capital Spending** | $135k | $146k | $158k | $192k | $204k | $216k | $228k | $240k | $252k | $265k | | $369k |
| **Funding Deficit** | $234k | $223k | $211k | $177k | $165k | $153k | $141k | $129k | $117k | $104k | | - |
| **Target Reinvestment Rate** | **1.8%** | **1.8%** | **1.8%** | **1.8%** | **1.8%** | **1.8%** | **1.8%** | **1.8%** | **1.8%** | **1.8%** | | **1.8%** |
| **Projected Reinvestment Rate** | 0.7% | 0.7% | 0.8% | 0.9% | 1.0% | 1.0% | 1.1% | 1.2% | 1.2% | 1.3% | | 1.8% |

*Table 42 Buildings 10-Year PLOS Financial Projections*

# 10. Land Improvements

The current Land Improvements inventory is comprised of 4 assets that include parking lots and hard surface assets.

## 10.1 Inventory & Valuation

Table 43 summarizes the quantity and current replacement cost of all land improvement assets available in the Township's asset register.

| Segment | Quantity | Unit of Measure | Replacement Cost | Primary RC Method |
|---|---|---|---|---|
| Environmental Services | 2 | Assets | $116,154 | CPI |
| Transportation Services | 2 | Assets | $30,233 | CPI |
| **TOTAL** | | | **$146,387** | |

*Table 43 Detailed Asset Inventory: Land Improvements*

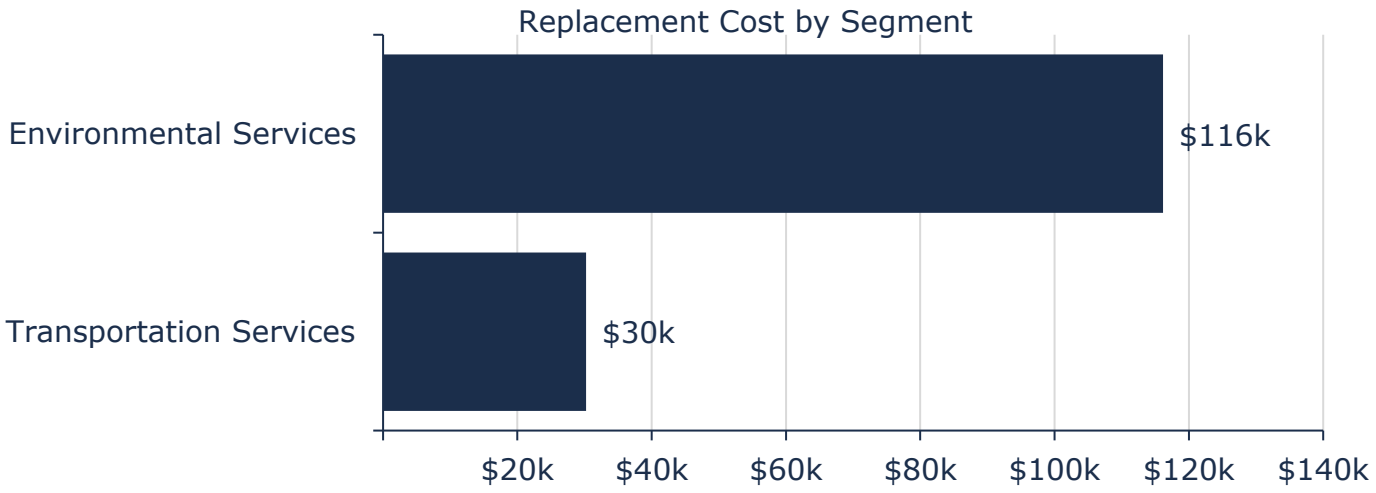



*Figure 58 Portfolio Valuation: Land Improvements*

## 10.2 Asset Condition

Figure 59 summarizes the replacement cost-weighted condition of the Municipality's land improvement portfolio. Based entirely on age data, all assets are in good or better condition.

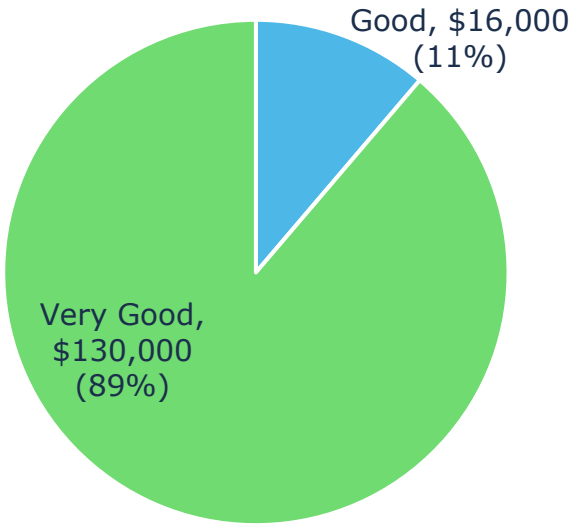



*Figure 59 Asset Condition: Land Improvements Overall*

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

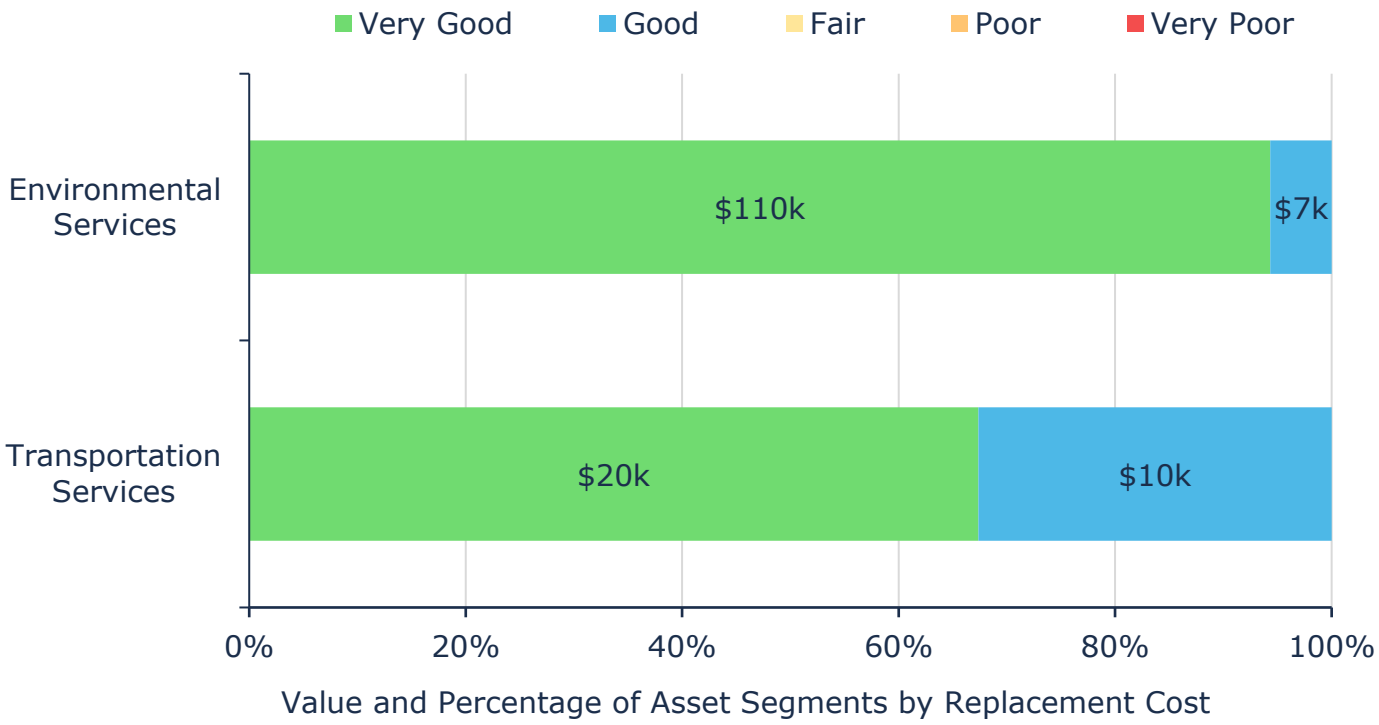



*Figure 60 Asset Condition: Land Improvements by Segment*

## 10.3 Age Profile

An asset's age profile compares two values: its weighted average age and its weighted average estimated useful life (EUL). Both measures are weighted by replacement cost to better reflect the overall investment at risk rather than treating all assets equally. The EUL represents the

period during which an asset can reliably perform its intended function and provide value to users. As assets near the end of their design life, performance typically declines, often at an accelerating rate.

When combined with condition data, age profiles provide a more complete picture of infrastructure health. They help identify candidates for more detailed condition assessments, support the selection of effective lifecycle strategies, and improve long-term replacement planning.

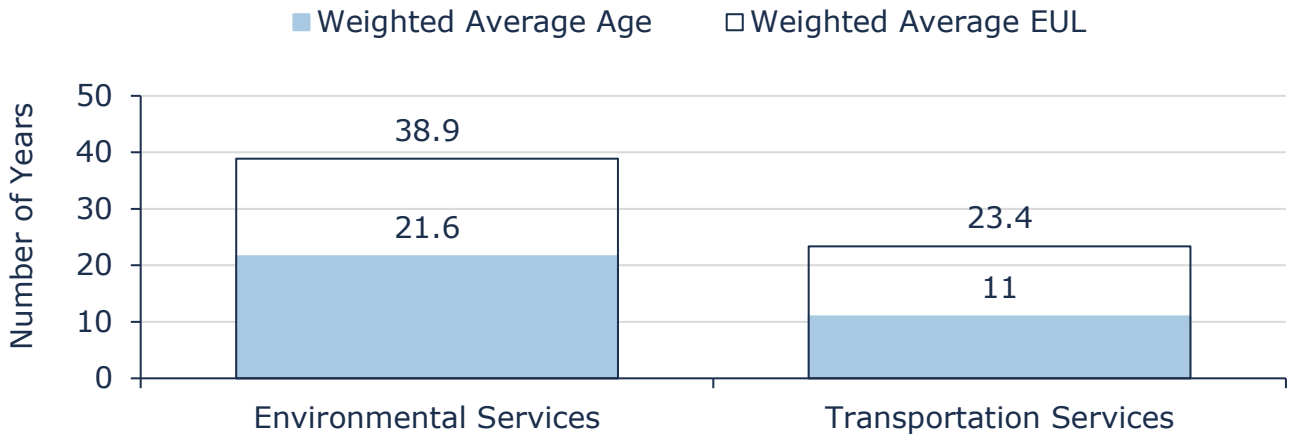



*Figure 61 Estimated Useful Life vs. Asset Age: Land Improvements*

Figure 61 illustrates that, on average, most land improvement assets are in the moderate stages of their expected life.

## 10.4 Current Approach to Lifecycle Management

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

Table 44 outlines the Township'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 |

*Table 44 Lifecycle Management Strategy: Land Improvements*

## 10.5 Forecasted Long-Term Replacement Needs

Figure 62 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Township's land improvements portfolio. This analysis was run until 2044 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 Township's average annual requirements (red dotted line) total $4,000 per year for all land improvements. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

Replacement needs are forecasted to remain relatively minimal over the next 20-year time horizon, rising at $130,000 between 2040 and 2044 as assets reach the end of their useful life. These projections and estimates are based on asset replacement costs and age analysis. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

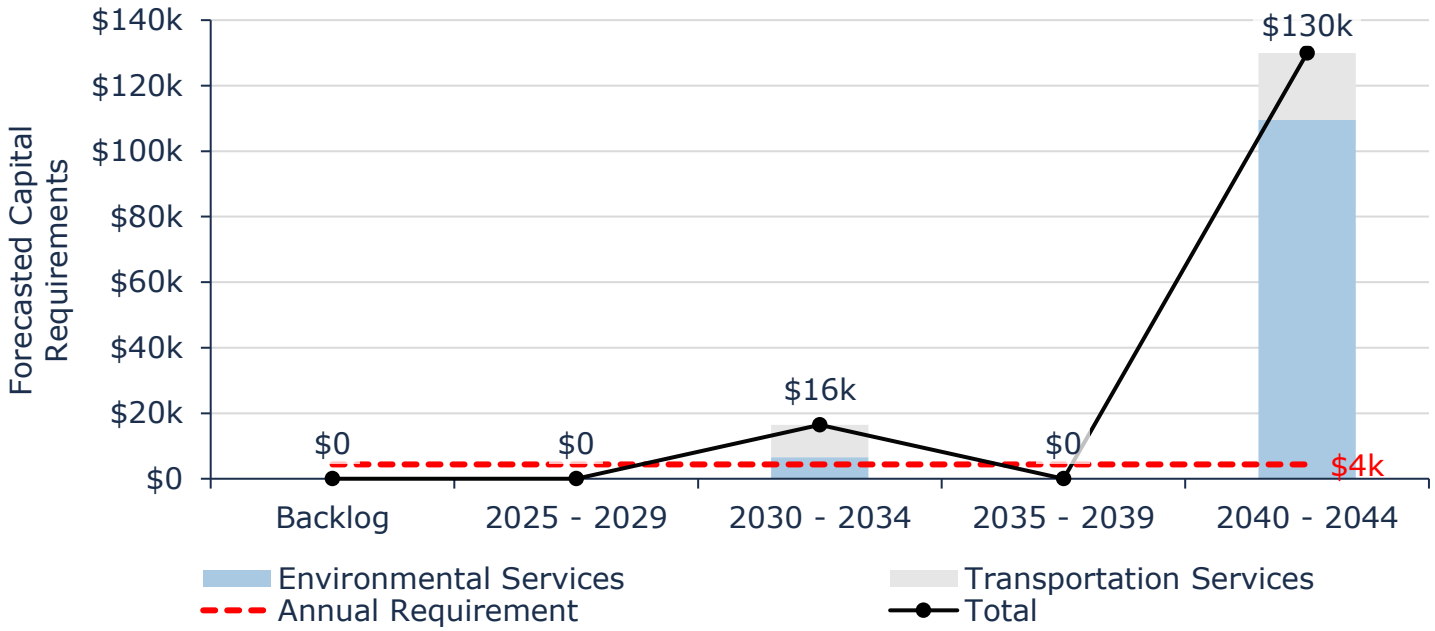



*Figure 62 Forecasted Capital Replacement Needs: Land Improvements 2024-2053*

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

## 10.6 Risk Analysis

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

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

| 1 - 4<br>**Very Low** | 5 - 7<br>**Low** | 8 - 9<br>**Moderate** | 10 - 14<br>**High** | 15 - 25<br>**Very High** |
|---|---|---|---|---|
| $130,000<br>(89%) | $16,000<br>(11%) | -<br>(0%) | -<br>(0%) | -<br>(0%) |

*Figure 63 Risk Matrix: Land Improvements*

## 10.7 Levels of Service

The tables that follow summarize the Township'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 Township has selected for this AMP.

### 10.7.1 Community Levels of Service

| Service Attribute | Qualitative Description | Current LOS (2024) |
|---|---|---|
| Accessible & Reliable | Description, which may include maps, of the outdoor recreational facilities that the municipality operates and maintains | Municipal trails are not maintained on a structured schedule and do not meet accessibility standards |
| Safe & Regulatory | Description of the park inspection process and timelines for inspection | Parks are inspected on receipt of a complaint. There is an annual inspection, and garbage pickup two or three times per week during summer that provides cursory inspections |
| Affordable | Description of the lifecycle activities (maintenance, rehabilitation and replacement) performed on parks and recreation assets | As required, no regular schedule, upgrades are usually funding based |
| Sustainable | Description of the current condition of parks and the plans that are in place to maintain or improved the provided level of service | • Fair Condition<br>• Walking bridge was replaced in 2023 |

*Table 45 Community Levels of Service: Land Improvements*

### 10.7.2 Technical Levels of Service

| Service Attribute | Technical Metric | Current LOS (2024) |
|---|---|---|
| Accessible & Reliable | Square meters of park area per resident | 56.87% |
| | % park area in the Township | 0.02% |
| Affordable | Capital Reinvestment Rate – The measure of funding allocated towards saving for future capital investments. (Higher is typically better) | 0% |

*Table 46 Technical Levels of Service: Land Improvements*

The levels of service metrics listed in the above tables refer to park areas and trails that are present and maintained within the Township. However these assets are not currently reflected within the asset listing and therefore not captured within the overall analysis of this asset management plan. These assets will be reviewed, captured and included within future improvements and revisions of the asset management plan.

## 10.8 Proposed Levels of Service

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

The tables below and graphs explain the proposed levels of service scenarios that were analyzed for land improvements. Further PLOS analysis at the portfolio level can be found in section *4. Proposed Level of Service Analysis*.

### 10.8.1 PLOS Scenarios Analyzed

| Scenario | Replacement Cost | Average Condition | Average Risk | Capital Reinvestment Rate | Average Annual Investment |
|---|---|---|---|---|---|
| Scenario 1 (100% Funded) | $146,000 | 44% | 10.19 | 2.0% | $3,000 |
| Scenario 2 (75% Funded) | $146,000 | 35% | 11.35 | 0.47% | $700 |
| Scenario 3 (50% Funded) | Same as Scenario 2 | | | | |

*Table 47 Land Improvements PLOS Scenarios*

### 10.8.2 Projected Condition Comparison

The graph below presents and compares the projected condition for each scenario analyzed.

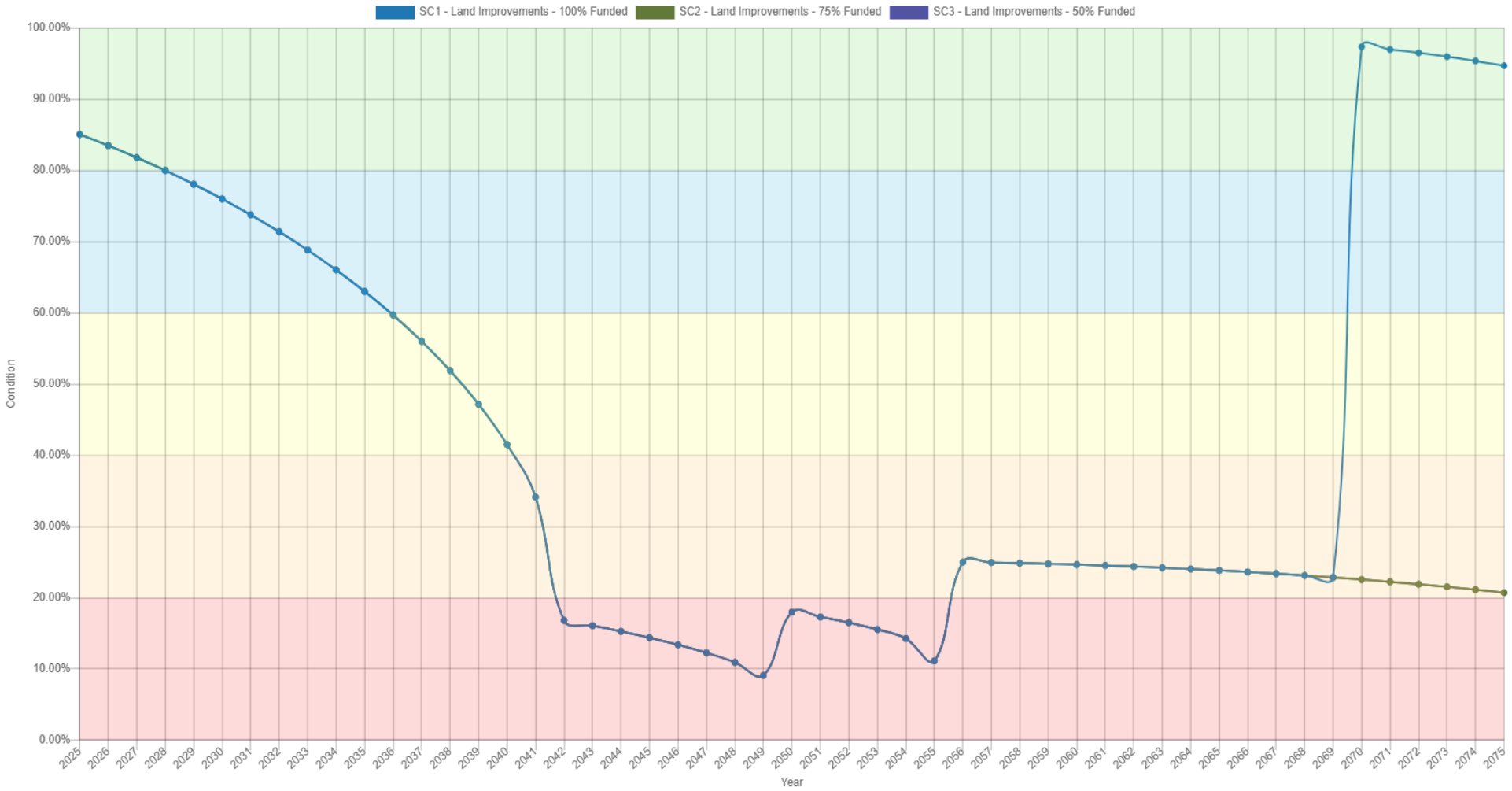



*Figure 64 Land Improvements PLOS Scenario Condition*

### 10.8.3 Projected Risk Comparison

The graph below presents and compares the projected risk impact for each scenario analyzed.

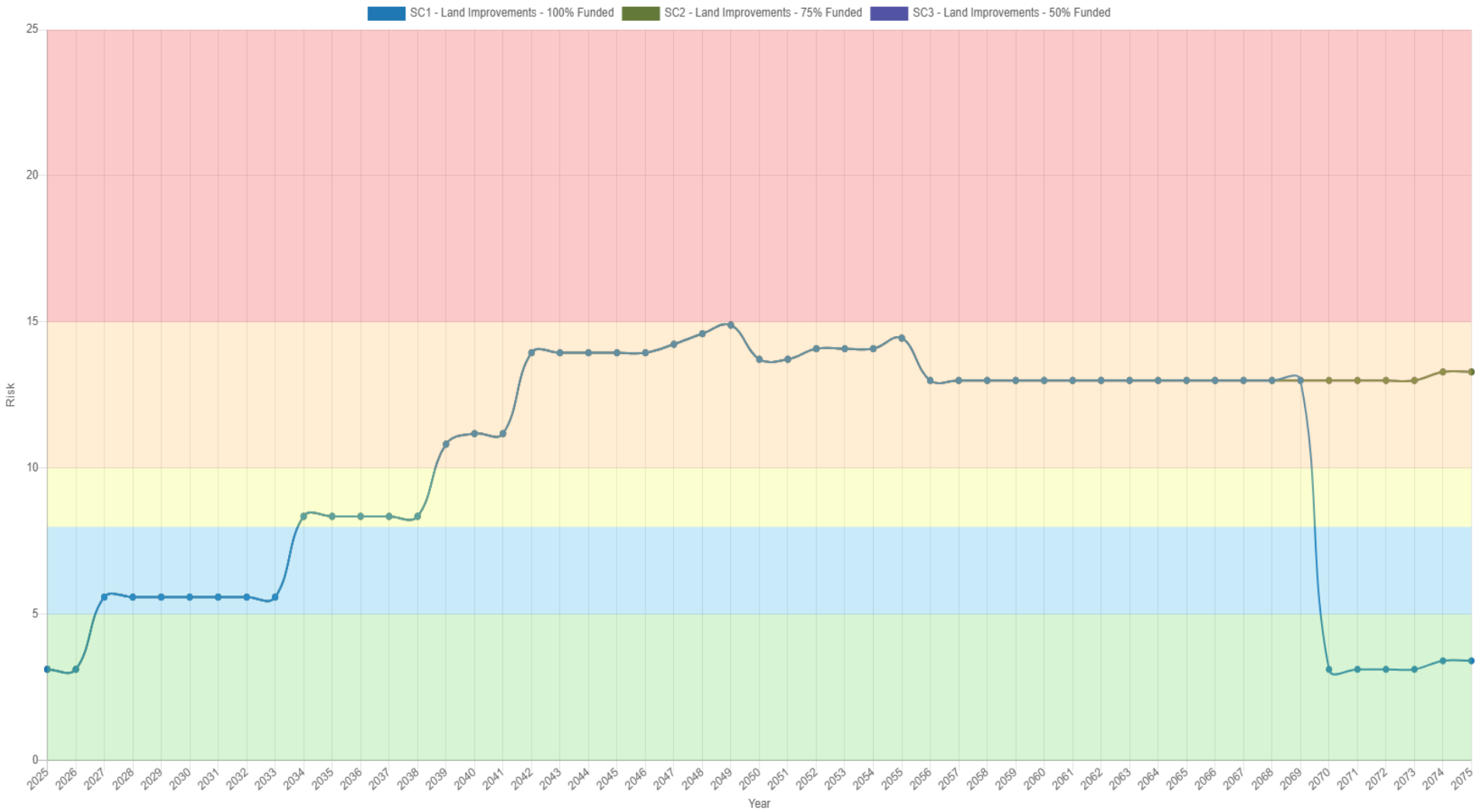



*Figure 65: Projected Risk Comparison*

### 10.8.4 10-Year PLOS Financial Projections

As outlined in Section *4. Proposed Levels of Service Analysis*, the Township of Billings selected Scenario 2 as their preferred proposed levels of service. The main objective is to increase spending gradually to reach a more sustainable funding level to manage the Township's current inventory of assets. The following table outlines the funding trajectory over the next 10 years and shows the target reached in year 10 for the buildings and facilities assets if the financial strategy for Scenario 2 is implemented. The table clearly shows the direct correlation between target spending and reducing the infrastructure deficit over time.

| | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | | 2045 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Targeted Capital Spending** | **$3k** | **$3k** | **$3k** | **$3k** | **$3k** | **$3k** | **$3k** | **$3k** | **$3k** | **$3k** | | **$3k** |
| **Projected Capital Spending** | - | - | - | $1k | $1k | $2k | $2k | $2k | $2k | $2k | | $3k |
| **Funding Deficit** | $2k | $2k | $2k | $2k | $2k | $1k | $1k | $1k | $1k | - | | - |
| **Target Reinvestment Rate** | **0.9%** | **0.9%** | **0.9%** | **0.9%** | **0.9%** | **0.9%** | **0.9%** | **0.9%** | **0.9%** | **0.9%** | | **0.9%** |
| **Projected Reinvestment Rate** | 0.2% | 0.3% | 0.3% | 0.4% | 0.4% | 0.5% | 0.5% | 0.5% | 0.6% | 0.6% | | 0.6% |

*Table 48 Land Improvements 10-Year PLOS Financial Projections*

The land improvement assets carry a relatively small value, and so in this scenario analysis, the target funding level is achieved in year 10. As there is currently no budget allocated to these assets, the first 3 years of increased spending are less than $1 thousand dollars and therefore do not display a value until year 4.

# 11. Fleet

The Township's Fleet inventory is comprised of 15 assets. Fleet assets allow staff to efficiently deliver municipal services and personnel. Municipal fleet assets are used to support several service areas, some of which include the use of:

- Fire rescue and emergency vehicles to support emergency services, and
- Light-duty and heavy-duty vehicles to support the maintenance of municipal infrastructure and address service requests.

## 11.1 Inventory & Valuation

Table 49 summarizes the quantity and current replacement cost of all vehicle assets available in the Township's asset register. Public works and the fire department account for the largest share of the Fleet portfolio.

| Segment | Quantity | Unit of Measure | Replacement Cost | Primary RC Method |
|---|---|---|---|---|
| Environmental Services | 1 | Assets | $8,097 | CPI |
| Fire & Emergency | 2 | Assets | $364,524 | CPI |
| Transportation Services | 12 | Assets | $1,584,064 | CPI |
| **TOTAL** | 15 | | **$1,956,685** | |

*Table 49 Detailed Asset Inventory: Fleet*

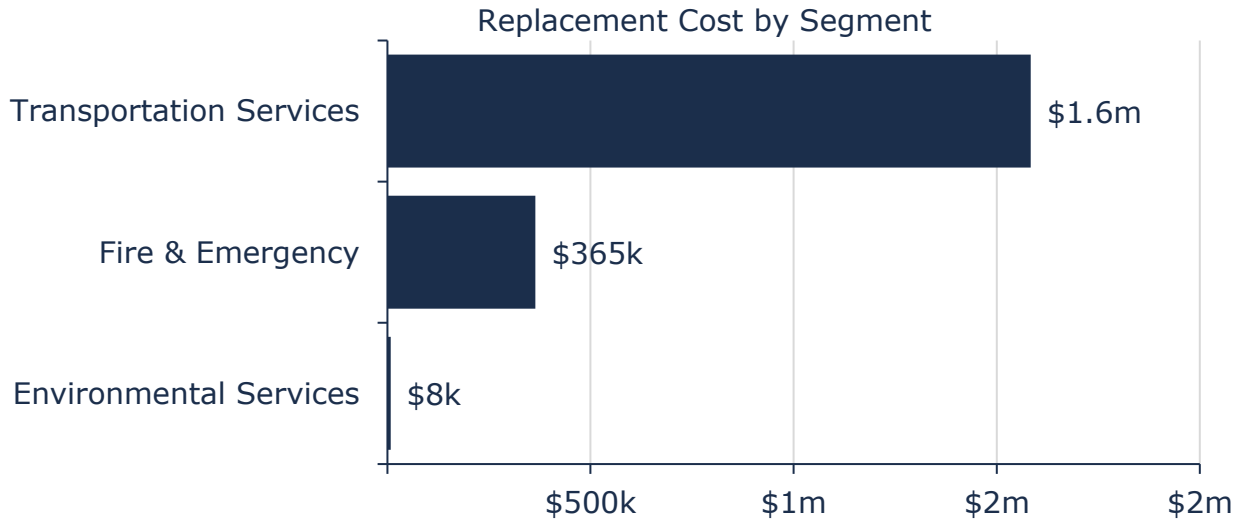


*Figure 66 Portfolio Valuation: Fleet*

## 11.2 Asset Condition

Figure 67 summarizes the replacement cost-weighted condition of the Township's Fleet portfolio. Based primarily on age-based data, 90% of Fleet are in fair or better condition, with the remaining 10% 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.

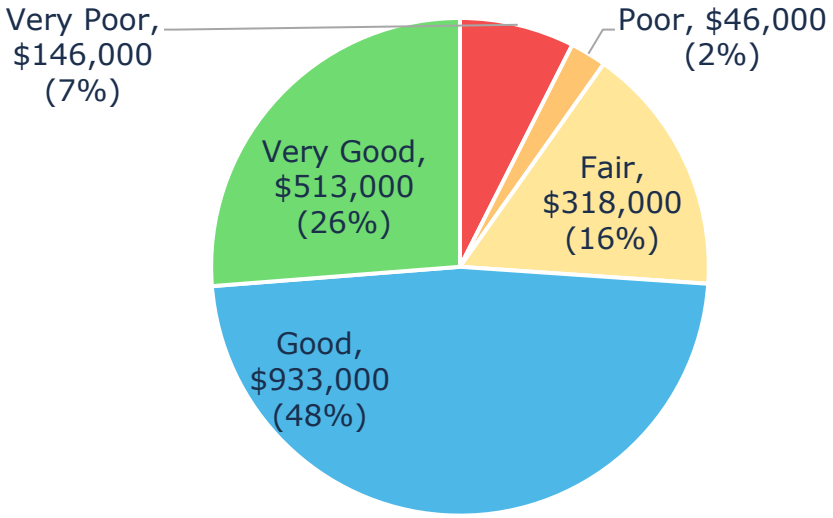



*Figure 67 Asset Condition: Fleet Overall*

Figure 68 summarizes the condition of Fleet by each department. The majority of Fleet assets across all segments are in fair or better condition.

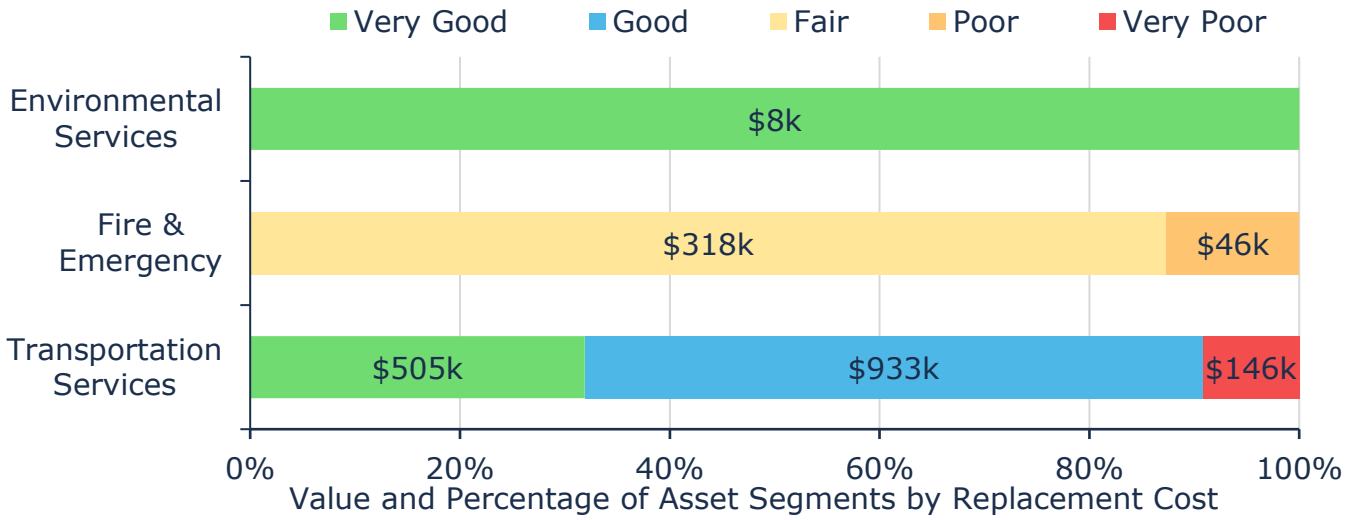



*Figure 68 Asset Condition: Fleet by Segment*

## 11.3 Age Profile

An asset's age profile compares two values: its weighted average age and its weighted average estimated useful life (EUL). Both measures are weighted by replacement cost to better reflect the overall investment at risk rather than treating all assets equally. The EUL represents the period during which an asset can reliably perform its intended function and provide value to users. As assets near the end of their design life, performance typically declines, often at an accelerating rate.

When combined with condition data, age profiles provide a more complete picture of infrastructure health. They help identify candidates for more detailed condition assessments, support the selection of effective lifecycle strategies, and improve long-term replacement planning.

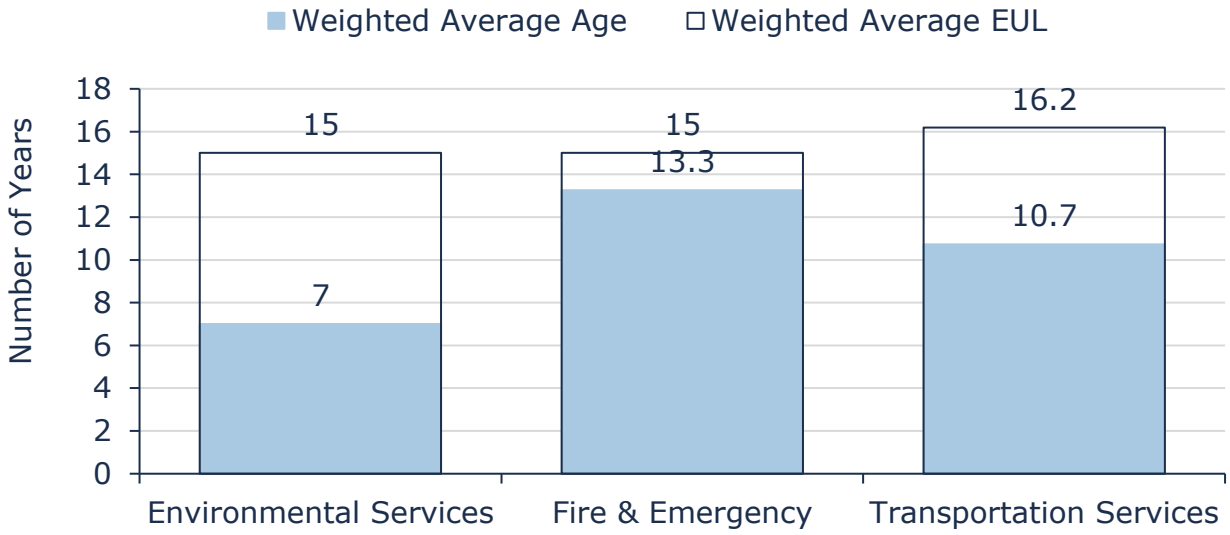



*Figure 69 Estimated Useful Life vs. Asset Age: Fleet*

Figure 69 illustrates that, on average, most Fleet are in moderate stages of their expected life.

## 11.4 Current Approach to Lifecycle Management

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

The following describes the municipality's current approach:

- Staff complete regular visual inspections of fleet assets to ensure they are in state of adequate repair prior to operation
- The mileage of vehicles is used as a proxy to determine remaining useful life and relative vehicle condition

- Condition assessments are conducted on Fire & Emergency fleet assets in accordance with regulations for health and safety regulations including National Fire Protection Association (NFPA) codes and standards for fire service-related fleet assets

## 11.5 Forecasted Long-Term Replacement Needs

Figure 70 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Township's Fleet portfolio. This analysis was run until 2049 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Township's primary asset management system and asset register. The Township's average annual requirements (red dotted line) total $124,000 per year for all Fleet. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

Replacement needs are forecasted to peak within the next 5 years, and consistent throughout the rest of the forecast period before spiking again from 2045-2049. 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.

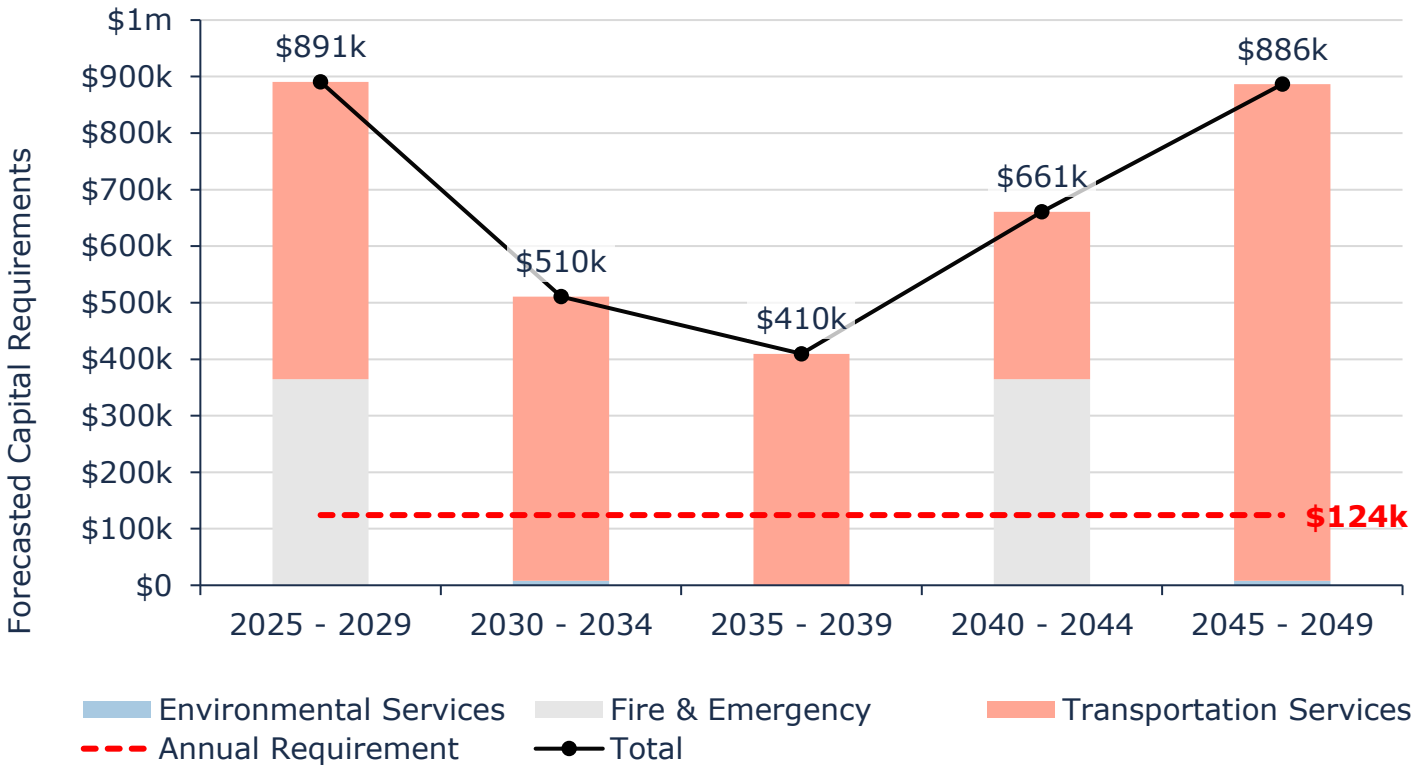



*Figure 70 Forecasted Capital Replacement Needs: Fleet 2025-2049*

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.

## 11.6 Risk Analysis

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

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

These risk models have been built into the Township's Asset Management Database (Citywide Assets). See Appendix C – Risk Rating Criteria, for further details on approach used to determine asset risk ratings and classifications.

| 1 - 4<br>**Very Low**<br>$513,000<br>(26%) | 5 - 7<br>**Low**<br>$61,000<br>(3%) | 8 - 9<br>**Moderate**<br>$150,000<br>(8%) | 10 - 14<br>**High**<br>$794,000<br>(41%) | 15 - 25<br>**Very High**<br>$438,000<br>(22%) |
|---|---|---|---|---|

*Figure 71 Risk Matrix: Fleet*

## 11.7 Levels of Service

The tables that follow summarize the Township'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 Township has selected for this AMP.

### 11.7.1 Community Levels of Service

| Service Attribute | Qualitative Description | Current LOS (2024) |
|---|---|---|
| Scope | Description of the routine maintenance and checkup procedures | Routine and regulated inspections are carried out as required. Where deficiencies are identified, repair activities are planned and completed |
| Sustainable | List of day-to-day vehicles in operation and the replacement values of those assets | • 3/4 GMC Truck 2015<br>• 1/2 Ton 2020 Chevrolet Silverado<br>• 2021 International Plow Truck<br>• 2016 Western Star Plow Truck<br>• 2021 International Plow truck |

*Table 50 Community Levels of Service: Fleet*

### 11.7.2 Technical Levels of Service

| Service Attribute | Technical Metric | Current LOS (2024) |
|---|---|---|
| Sustainable | % of fleet that are in good or very good condition | 74% |
| | % of facilities that are in poor or very poor condition | 10% |
| | % of fleet utilization | 100% |
| | % of fleet that is idle | 0% |
| Affordable | Capital Reinvestment Rate | 4.09% |

*Table 51 Technical Levels of Service: Fleet*

## 11.8 Proposed Levels of Service

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

The below tables and graphs explain the proposed levels of service scenarios that were analyzed for Fleet. Further PLOS analysis at the portfolio level can be found in section *4. Proposed Level of Service Analysis*.

### 11.8.1 PLOS Scenarios Analyzed

| Scenario | Replacement Cost | Average Condition | Average Risk | Capital Reinvestment Rate | Average Annual Investment |
|---|---|---|---|---|---|
| Scenario 1 (100% Funded) | $1,957,000 | 77% | 6.4 | 7% | $136,000 |
| Scenario 2 (75% Funded) | $1,957,000 | 52% | 10.22 | 4.5% | $88,000 |
| Scenario 3 (50% Funded) | $1,957,000 | 36% | 13.11 | 3.0% | $60,000 |

*Table 52 Fleet PLOS Scenario Descriptions*

### 11.8.2 Projected Condition Comparison

The graph below presents and compares the projected condition for each scenario analyzed.

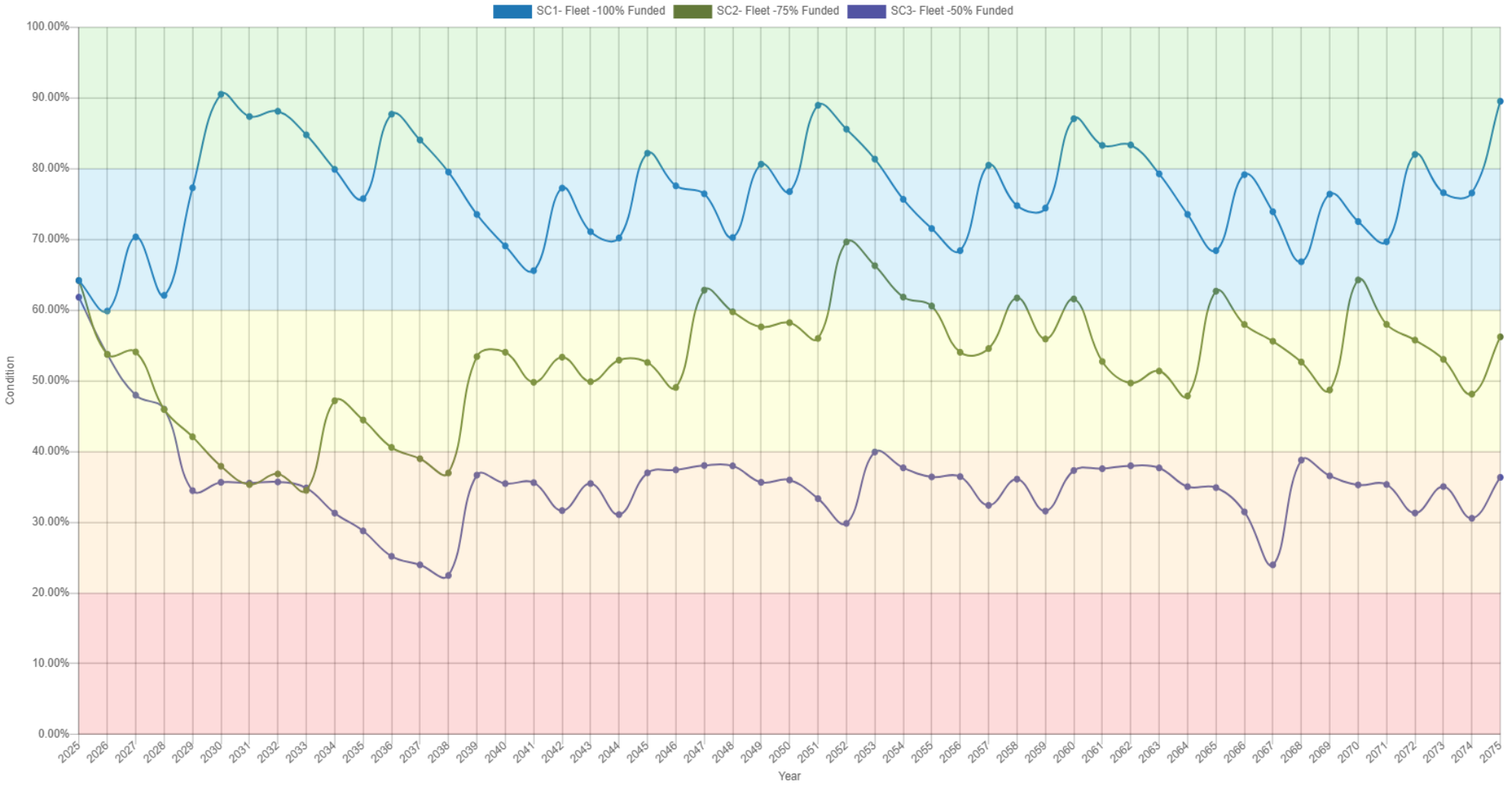



*Figure 72 Fleet PLOS Scenario Condition Results*

### 11.8.3 Projected Risk Comparison

The graph below presents and compares the projected risk impact for each scenario analyzed.

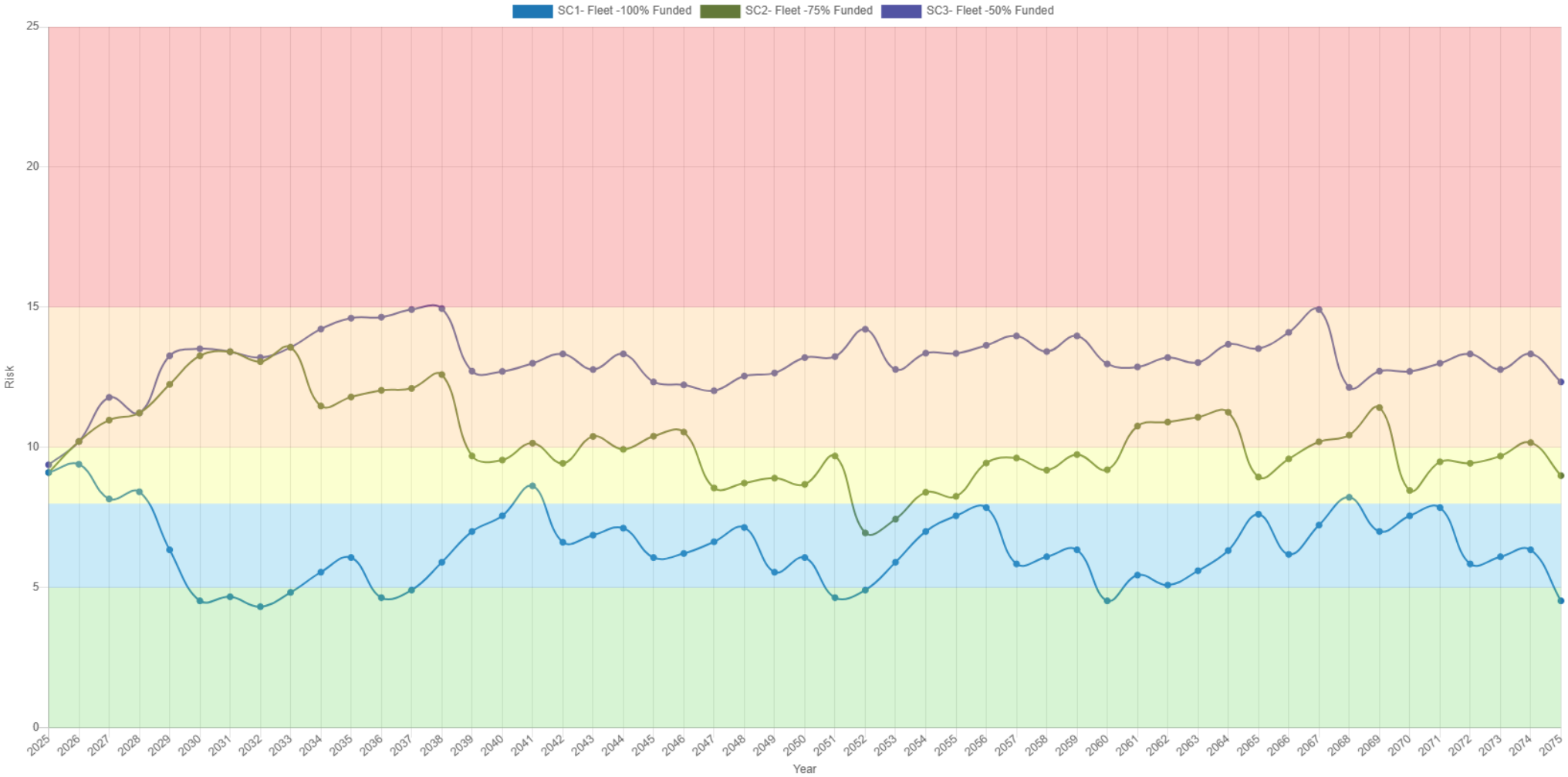



*Figure 73: Projected Risk Comparison*

### 11.8.4 10-Year PLOS Financial Projections

As outlined in Section *4. Proposed Levels of Service Analysis*, the Township of Billings selected Scenario 2 as their preferred proposed levels of service. The main objective is to increase spending gradually to reach a more sustainable funding level to manage the Township's current inventory of assets. The following table outlines the funding trajectory over the next 10 years. In year 16 the target spending level and investment rate will be reached for the fleet assets if the financial strategy for Scenario 2 is implemented. The table clearly shows the direct correlation between target spending and reducing the infrastructure deficit over time.

| | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | | 2045 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Targeted Capital Spending** | **$93k** | **$93k** | **$93k** | **$93k** | **$93k** | **$93k** | **$93k** | **$93k** | **$93k** | **$93k** | | **$93k** |
| **Projected Capital Spending** | $83k | $84k | $84k | $86k | $86k | $87k | $87k | $88k | $88k | $89k | | $93k |
| **Funding Deficit** | $10k | $9k | $9k | $7k | $7k | $6k | $6k | $5k | $5k | $4k | | - |
| **Target Reinvestment Rate** | **4.8%** | **4.8%** | **4.8%** | **4.8%** | **4.8%** | **4.8%** | **4.8%** | **4.8%** | **4.8%** | **4.8%** | | **4.8%** |
| **Projected Reinvestment Rate** | 4.3% | 4.3% | 4.3% | 4.4% | 4.4% | 4.4% | 4.5% | 4.5% | 4.5% | 4.5% | | 4.8% |

*Table 53 Fleet 10-Year PLOS Financial Projections*

# 12. Machinery & Equipment

The Township's Machinery & Equipment inventory is comprised of 8 unique assets. In order to maintain the high quality of public infrastructure and support the delivery of core and non-core services, Municipal staff own and employ machinery and equipment assets which include:

- emergency services equipment to support first responders
- public works equipment
- parks and playground equipment

## 12.1 Inventory & Valuation

Table 54 summarizes the quantity and current replacement cost of all machinery & equipment assets available in the Township's asset register.

| Segment | Quantity | Unit of Measure | Replacement Cost | Primary RC Method |
|---|---|---|---|---|
| Fire & Emergency | 2 | Assets | $34,634 | CPI |
| General Government | 1 | Assets | $32,040 | CPI |
| Recreational and Cultural Services | 3 | Assets | $234,540 | CPI |
| Transportation Services | 2 | Assets | $28,574 | CPI |
| **TOTAL** | 8 | | **$329,788** | |

*Table 54 Detailed Asset Inventory: Machinery & Equipment*

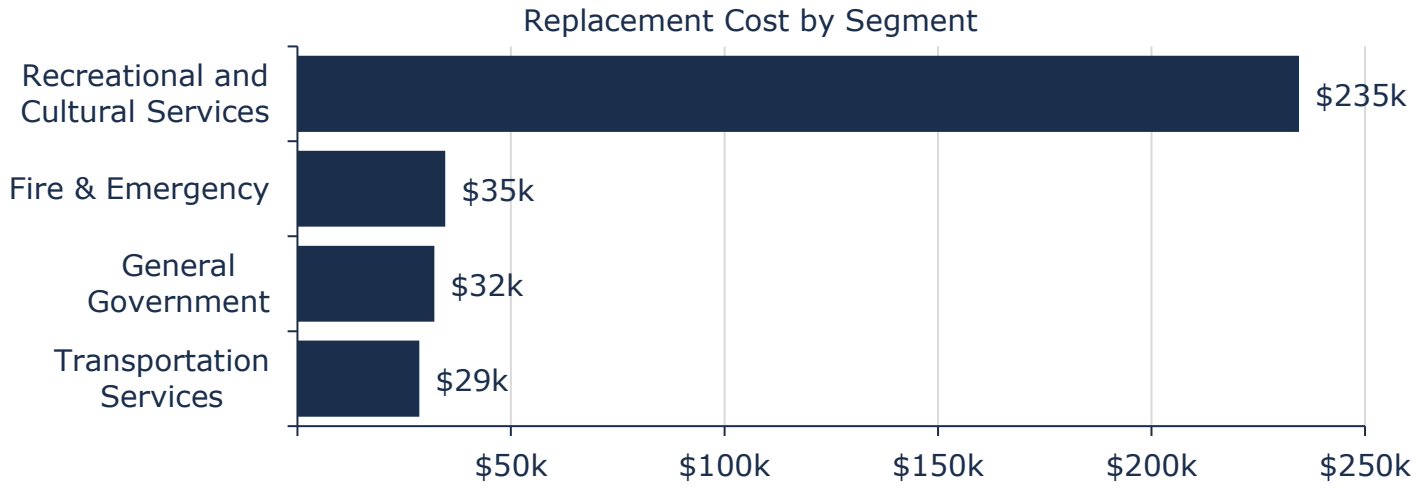



*Figure 74 Portfolio Valuation: Machinery & Equipment*

## 12.2 Asset Condition

Figure 75 summarizes the replacement cost-weighted condition of the Township's machinery and equipment portfolio. Based on a combination of assessed conditions and age data, 89% of assets are in fair or better condition; the remaining 11% 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.

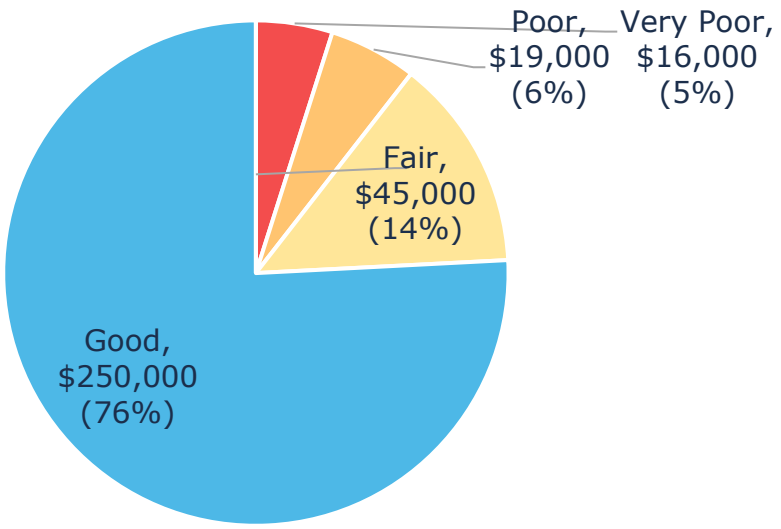



*Figure 75 Asset Condition: Machinery & Equipment Overall*

Figure 76 summarizes the age-based condition of machinery & equipment by each department. The majority of assets that are in poor or worse condition are concentrated primarily transportation, and the fire & emergency.

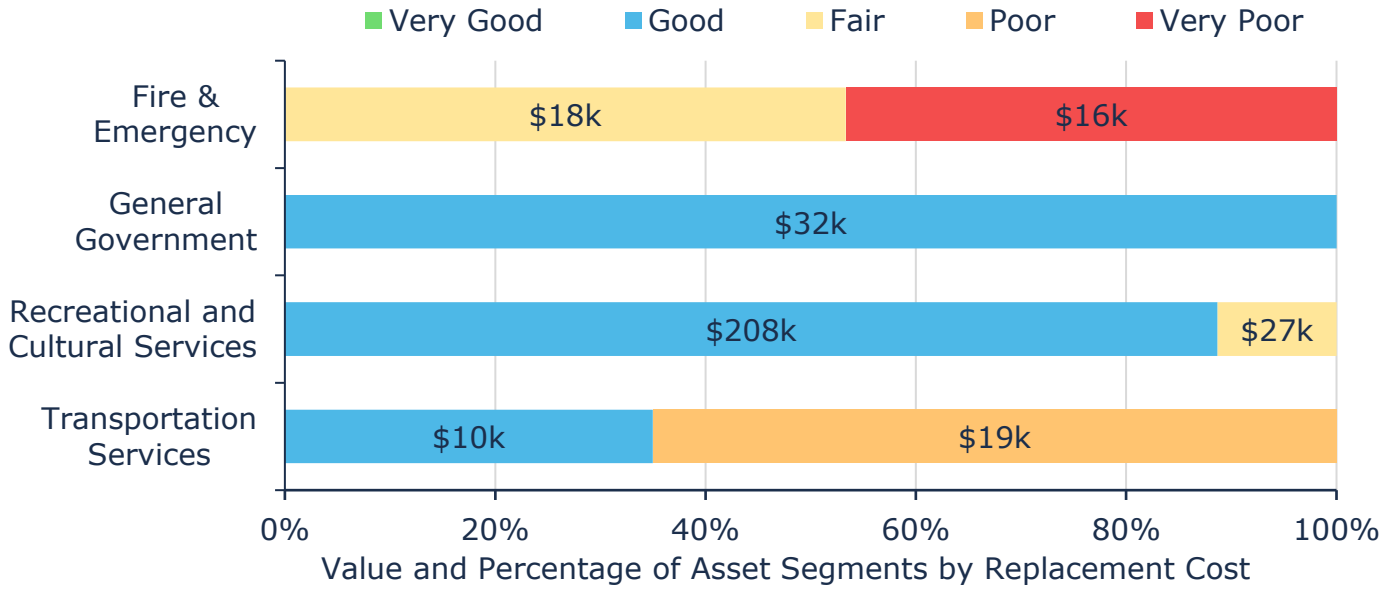



*Figure 76 Asset Condition: Machinery & Equipment by Segment*

## 12.3 Age Profile

An asset's age profile compares two values: its weighted average age and its weighted average estimated useful life (EUL). Both measures are weighted by replacement cost to better reflect the overall investment at risk rather than treating all assets equally. The EUL represents the period during which an asset can reliably perform its intended function and provide value to users. As assets near the end of their design life, performance typically declines, often at an accelerating rate.

When combined with condition data, age profiles provide a more complete picture of infrastructure health. They help identify candidates for more detailed condition assessments, support the selection of effective lifecycle strategies, and improve long-term replacement planning.

Figure 77 illustrates that Fire & Emergency services assets are beyond their expected lives, and rest of the assets are at a moderate stage of their estimated useful lives.

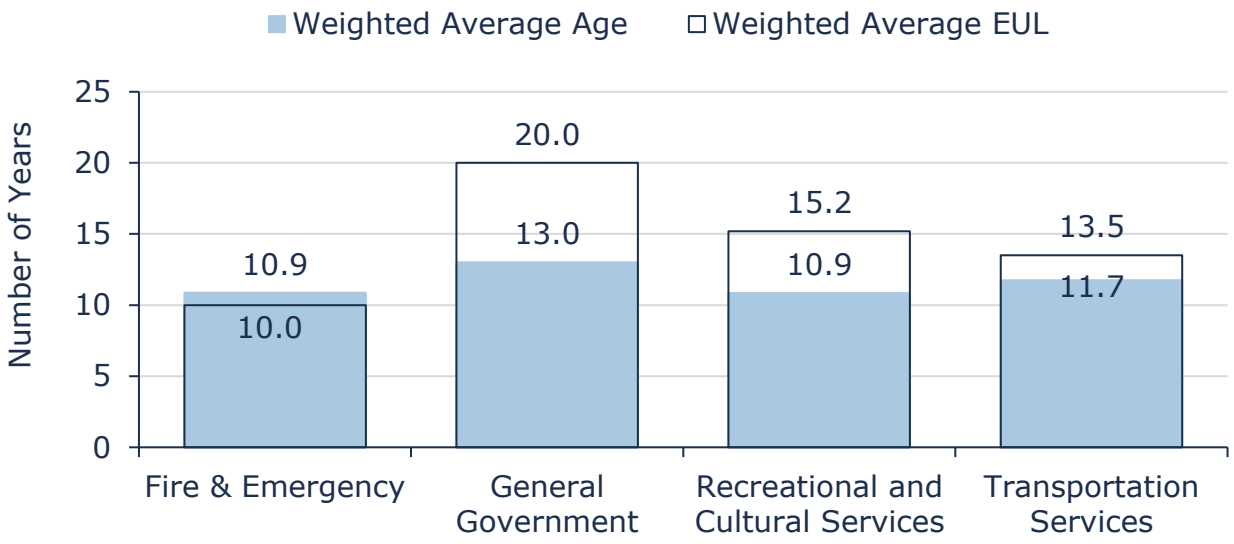



*Figure 77 Estimated Useful Life vs. Asset Age: Machinery & Equipment*

## 12.4 Current Approach to Lifecycle Management

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

- Staff complete regular visual inspections of machinery & equipment to ensure they are in a state of adequate repair
- Condition assessments are conducted on Fire & Emergency assets in accordance with health and safety regulations including National Fire Protection Association (NFPA) codes and standards for fire service-related assets

- Staff conduct formal inspections of outdoor play space, fixed play structures and surfacing in accordance with CAN/CSA-Z614 and required as per O. Reg. 137/15

## 12.5 Forecasted Long-Term Replacement Needs

Figure 78 illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Township's machinery and equipment portfolio. This analysis was run until 2034 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Township's primary asset management system and asset register. The Township's average annual requirements (red dotted line) total $25,000 per year 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.

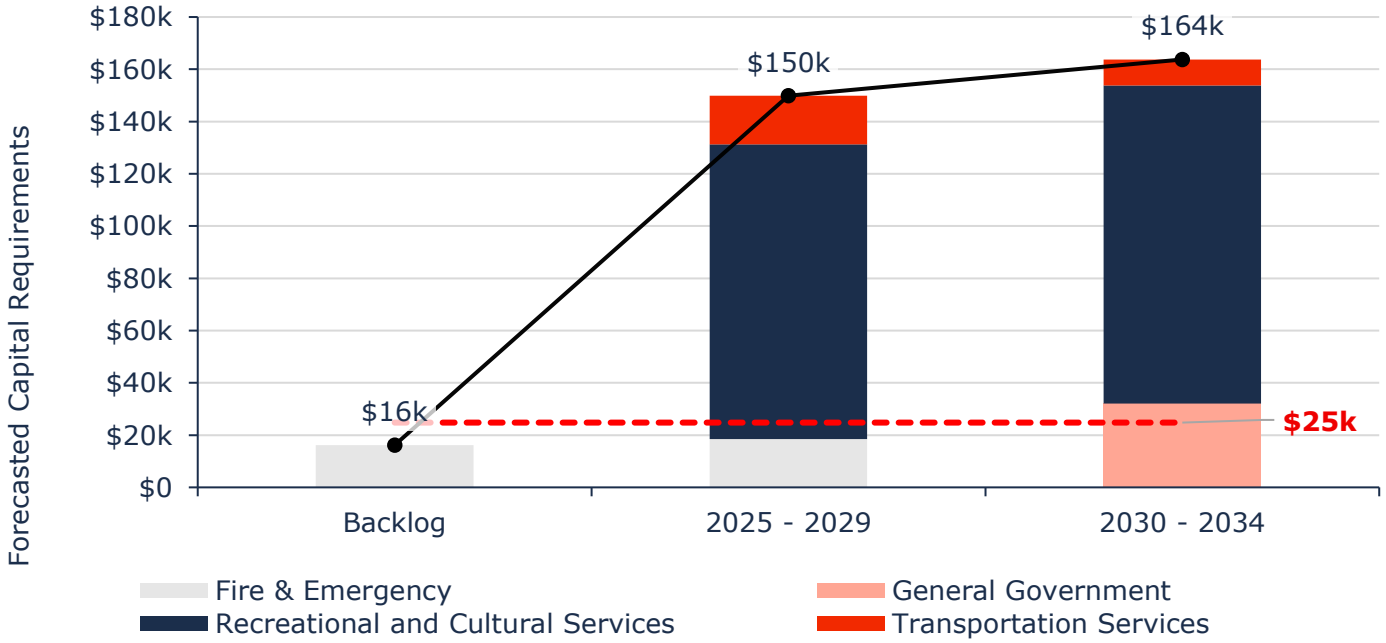



*Figure 78 Forecasted Capital Replacement Needs: Machinery & Equipment 2025-2034*

Replacement needs are forecasted to remain consistent over the next 10-year horizon. 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.

## 12.6 Risk Analysis

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

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

| 1 - 4<br>**Very Low** | 5 - 7<br>**Low** | 8 - 9<br>**Moderate** | 10 - 14<br>**High** | 15 - 25<br>**Very High** |
|---|---|---|---|---|
| $42,000<br>(13%) | $208,000<br>(63%) | $27,000<br>(8%) | $53,000<br>(16%) | -<br>(0%) |

*Figure 79 Risk Matrix: Machinery & Equipment*

## 12.7 Levels of Service

The tables that follow summarize the Township'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 Township has selected for this AMP.

### 12.7.1 Community Levels of Service

| Service Attribute | Qualitative Description | Current LOS (2024) |
|---|---|---|
| Safe & Reliable | Description of the equipment inspection process and any licensing requirements for operators | Operators are trained, properly licensed, inspection processes are in place for all machinery and equipment |
| Sustainable | Description of the current condition of equipment and the plans that are in place to maintain or improve the provided level of service. | Machinery & Equipment assets are in good to fair condition and the Township is going to maintain the current levels of service |

*Table 55 Community Levels of Service: Machinery & Equipment*

### 12.7.2 Technical Levels of Service

| Service Attribute | Technical Metric | Current LOS (2024) |
|---|---|---|
| Safe & Reliable | % of machinery & equipment assets that are in good or very good condition | 75% |
| | % of machinery & equipment assets that are in poor or very poor condition | 11% |
| Affordable | Capital Reinvestment Rate | 0.0% |

*Table 56 Technical Levels of Service: Machinery & Equipment*

## 12.8 Proposed Levels of Service

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

The tables below and graphs explain the proposed levels of service scenarios that were analyzed for machinery and equipment. Further PLOS analysis at the portfolio level can be found in section *4. Proposed Level of Service Analysis*.

### 12.8.1 PLOS Scenarios Analyzed

The scenario for Machinery & Equipment was considered over a 50 year time period to reflect the short lifecycle of these assets.

| Scenario | Replacement Cost | Average Condition | Average Risk | Capital Reinvestment Rate | Average Annual Investment |
|---|---|---|---|---|---|
| Scenario 1 (100% Funded) | $330,000 | 53% | 7.85 | 6.0% | $20,000 |
| Scenario 2 (75% Funded) | $330,000 | 38% | 9.70 | 4.5% | $15,000 |
| Scenario 3 (50% Funded) | $330,000 | 30% | 10.73 | 3.3% | $11,000 |

*Table 57 Machinery & Equipment PLOS Scenarios*

### 12.8.2 Projected Condition Comparison

The graph below presents and compares the projected condition for each scenario analyzed.

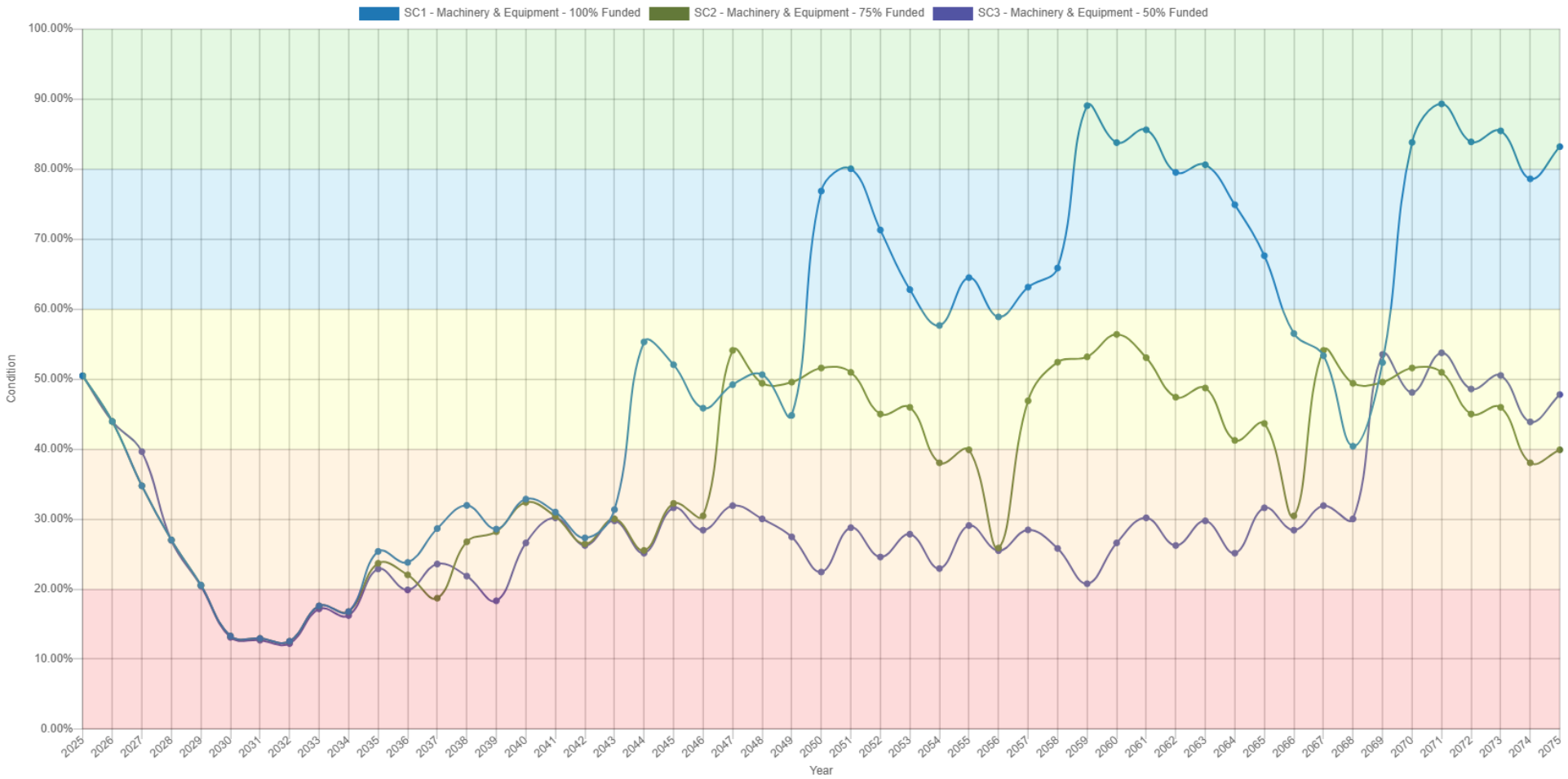



*Figure 80 Machinery & Equipment PLOS Scenario Condition Results*

### 12.8.3 Projected Risk Comparison

The graph below presents and compares the projected risk impact for each scenario analyzed.

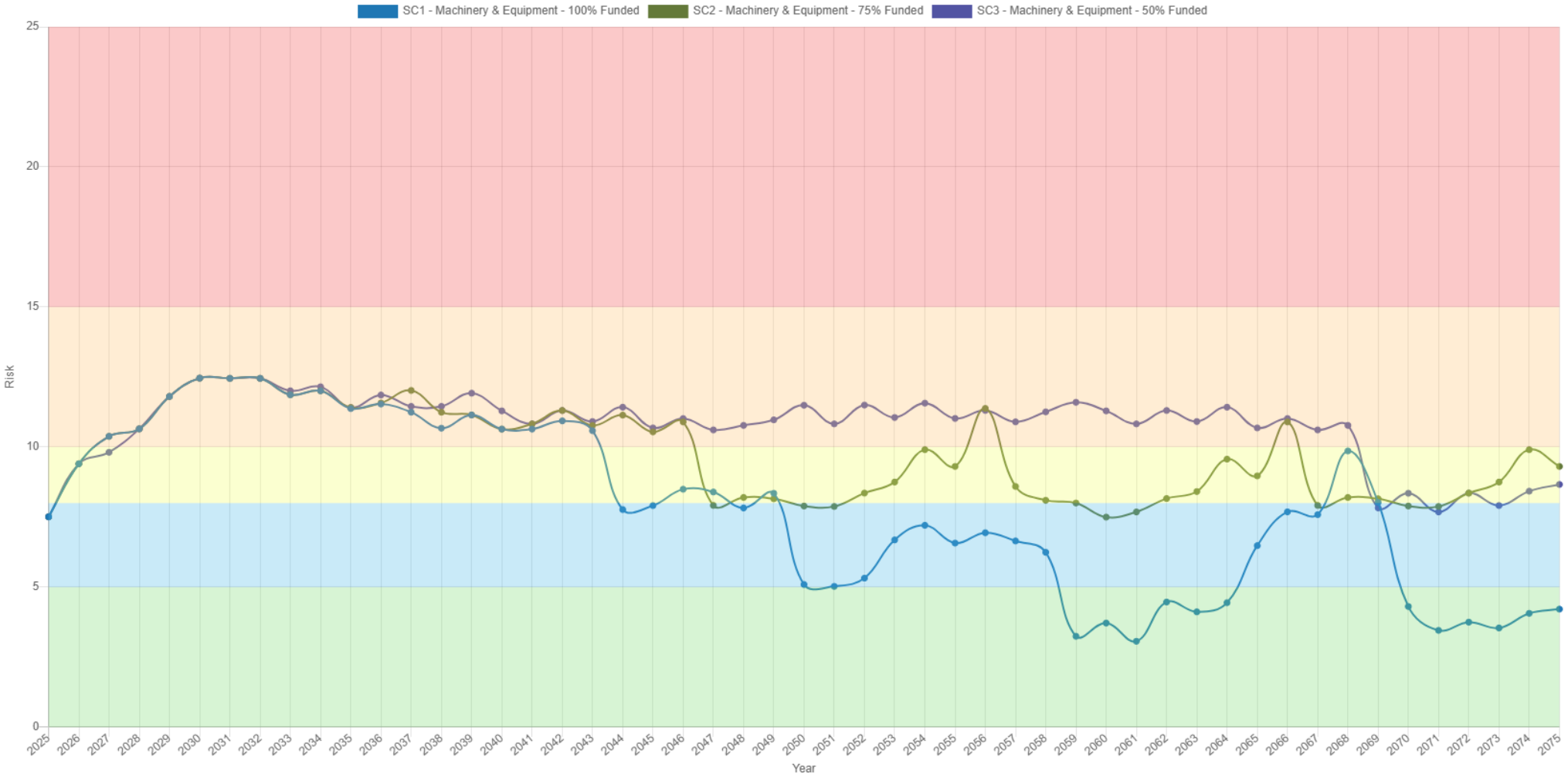



*Figure 81: Projected Risk Comparison*

### 12.8.4 10-Year PLOS Financial Projections

As outlined in Section *4. Proposed Levels of Service Analysis*, the Township of Billings selected Scenario 2 as their preferred proposed levels of service. The main objective is to increase spending gradually to reach a more sustainable funding level to manage the Township's current inventory of assets. The following table outlines the funding trajectory over the next 10 years. In year 17 the target spending level and investment rate will be reached for the fleet assets if the financial strategy for Scenario 2 is implemented. The table clearly shows the direct correlation between target spending and reducing the infrastructure deficit over time.

| | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | | 2045 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Targeted Capital Spending** | **$19k** | **$19k** | **$19k** | **$19k** | **$19k** | **$19k** | **$19k** | **$19k** | **$19k** | **$19k** | | **$19k** |
| **Projected Capital Spending** | $5k | $5k | $6k | $8k | $9k | $10k | $10k | $11k | $12k | $13k | | $19k |
| **Funding Deficit** | $14k | $13k | $13k | $11k | $10k | $9k | $8k | $8k | $7k | $6k | | - |
| **Target Reinvestment Rate** | **12.8%** | **12.8%** | **12.8%** | **12.8%** | **12.8%** | **12.8%** | **12.8%** | **12.8%** | **12.8%** | **12.8%** | | **12.8%** |
| **Projected Reinvestment Rate** | 3.3% | 3.7% | 4.2% | 5.6% | 6.1% | 6.6% | 7.1% | 7.6% | 8.1% | 8.6% | | 12.8% |

*Table 58 Machinery & Equipment 10-Year PLOS Financial Projections*

# Strategies

Growth

Financial Strategy

Recommendations

# 13. Growth

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

## 13.1 Township of Billings Strategic Plan (2024 – 2028)

The Township outlines a vision for growth that carefully balances development with preservation. A key priority is to guide the community's growth while maintaining its special rural character, rich history, and traditions. The plan commits to preserving the natural environment, including its lakes, forests, and hills, viewing these assets as crucial to the quality of life and as attractions for visitors. This approach frames growth not just as expansion, but as sustainable development that honors the township's heritage and protects its natural beauty for future generations. The overall goal is to achieve *a vibrant, sustainable, and inclusive community*.

To facilitate this managed growth, the plan details several strategic actions. It aims to foster economic growth and development by actively exploring new funding opportunities. The township plans to support its community by making Billings an *employer of choice* to attract and retain talent and by researching options for senior support services, such as independent living facilities. Essential to this growth is the management of infrastructure to meet long-term needs, which includes prioritizing projects based on critical needs and proactively planning for future requirements. Furthermore, the township will embrace modern technology to improve digital connectivity and enhance services for its citizens.

## 13.2 District of Manitoulin Official Plan (October 2018)

The District of Manitoulin adopted the Official Plan with modifications in October 2018 and replaces the last provincially approved Official Plan of 1979.

The Official Plan provides the essential tools to direct future growth, development and change within the Planning Area and to create more sustainable communities for its residents. It responds to future uncertainties through clear and resilient principles and policies.

The Plan plays a number of essential roles in the future planning of the District. Specifically, the Plan:

- Establishes the basic land use framework for all land within the jurisdiction of the District.
- Sets out a 20-year growth management regime for the District through to 2036.
- Provides for the coordination of land use planning and infrastructure deployment to ensure that the District can accommodate anticipated population levels over the 20-year planning horizon to 2036.

- Sets out policies to encourage economic development in the District, including policies for employment-based land uses, with a view to encourage synergies and collaboration between compatible businesses.
- Guides private investment through land use and development policies to ensure efficient development approvals and administrative processes that strive to achieve the District's goals through a number of objectives.
- Provides policies to improve the sustainability of the District, to ensure the quality of life and to secure the health, safety, convenience and welfare for the present and future inhabitants of the District.
- Responds to provincial policies, statements and guidelines that affect the District and appropriately incorporates them in the Official Plan.

The Plan is intended to guide Councils and the Planning Board in the consideration of their responsibilities and provides direction and certainty to the citizens and business of the District of Manitoulin.

The following table outlines the growth projections as indicated in the Plan.

| Year | Population | Dwellings | Employment |
|---|---|---|---|
| 2011 | 8,350 | 3,710 | 3,370 |
| 2016 | 8,470 | 3,760 | 3,350 |
| 2021 | 8,610 | 3,820 | 3,290 |
| 2026 | 8,730 | 3,870 | 3,220 |
| 2031 | 8,810 | 3,910 | 3,050 |
| 2036 | 8,880 | 3,940 | 2,950 |

The Official Plan projects the population of the District to grow at a slow rate and there is an expected decrease of the working population (ages 15 to 69 years) in 2036.

## 13.3 Impact of Growth on Lifecycle Activities

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

For the near- to mid-term, the projected population growth in Billings is not expected to significantly impact the current portfolio of assets required by the Township to maintain acceptable service levels.

# 14. 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 Township of Billings 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 (*refer to Section 4. Proposed Levels of Service Analysis*)
    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 Township's approach to the following:

1. In order to reduce financial requirements, consideration has been given to revising service levels downward.

2. All asset management and financial strategies have been considered. For example:

    a. If a zero-debt policy is in place, is it warranted? If not the use of debt should be considered.

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

## 14.1 Annual Requirements & Capital Funding

### 14.1.1 Annual Requirements

The annual requirements represent the amount the Township 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 Township would need to allocate approximately $2.5 million annually to address all capital requirements for the assets included in this AMP. As discussed in Section 4. Proposed Levels of Service Analysis, the Township of Billings has selected a funding scenario where the target investment level is 75% of 'full funding', which requires an

annual capital investment of $1.8 million.

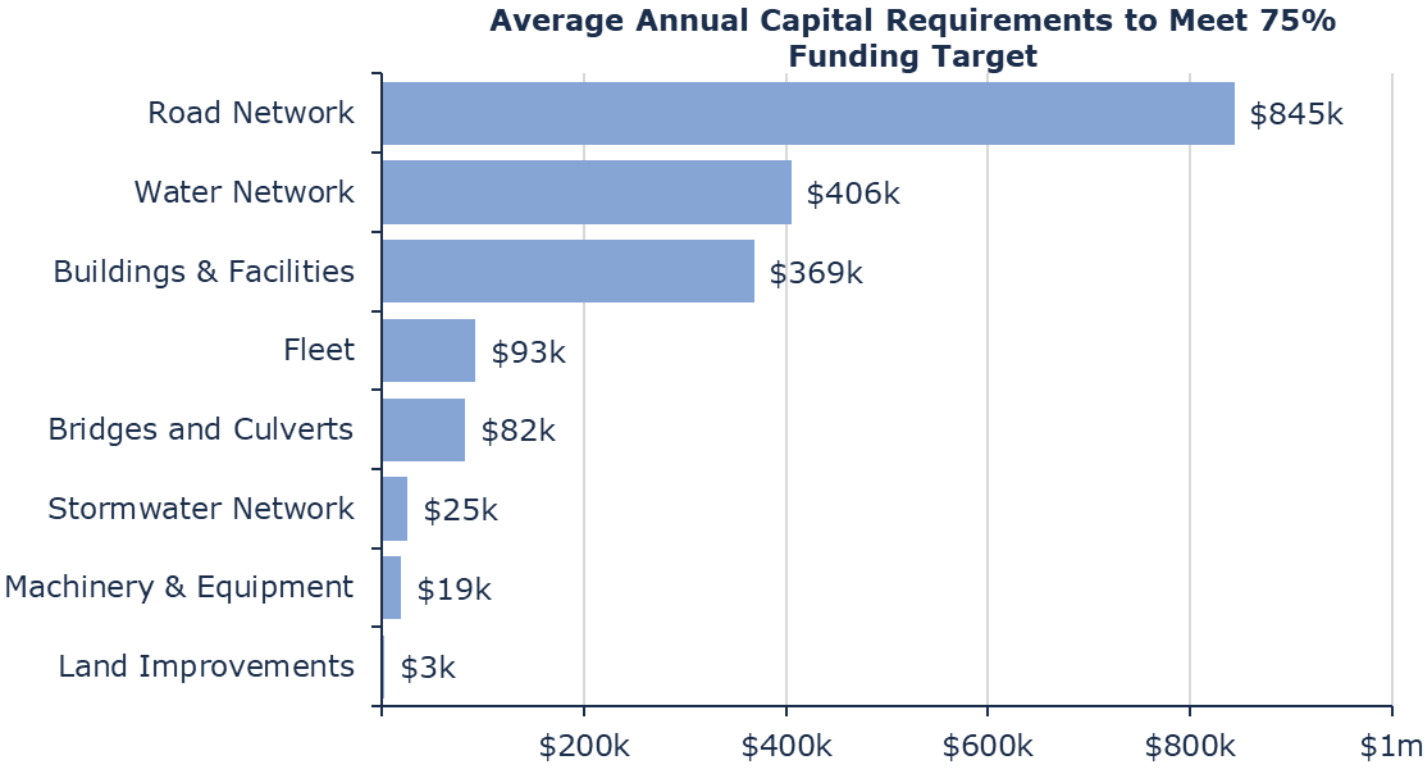



*Figure 82 Annual Capital Funding Requirements by Asset Category*

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

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

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

2. **Lifecycle Strategy Scenario**: Based on the assumption that lifecycle activities are performed at strategic intervals to extend the service life of assets until replacement is required.

| | Annual Requirements (Replacement Only) | Annual Requirements (Lifecycle Strategy) | Difference |
|---|---|---|---|
| Road Network Lifecycle - Full Funding | $2,239,000 | $1,126,000 | $1,113,000 |
| Road Network Lifecycle – Proposed LOS (75% Funding) | $1,679,250 | $844,500 | $834,750 |

*Table 59 Lifecycle Strategies Annual Savings*

The implementation of a proactive lifecycle strategy for roads leads to potential annual cost avoidance of $1.1 million for the road network in ideal funding circumstances. In the proposed 75% funding modelling, this cost avoidance is reduced to $835 thousand. As the lifecycle strategy scenario represents the lowest cost option available to the Township, we have used these annual requirements in the development of the financial strategy.

### 14.1.2 Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Township is committing approximately $706 thousand towards capital projects per year. Given the proposed LOS of 75% funding requiring an annual capital investment of $1.8 million, there is currently a funding gap of $1.1 million annually.

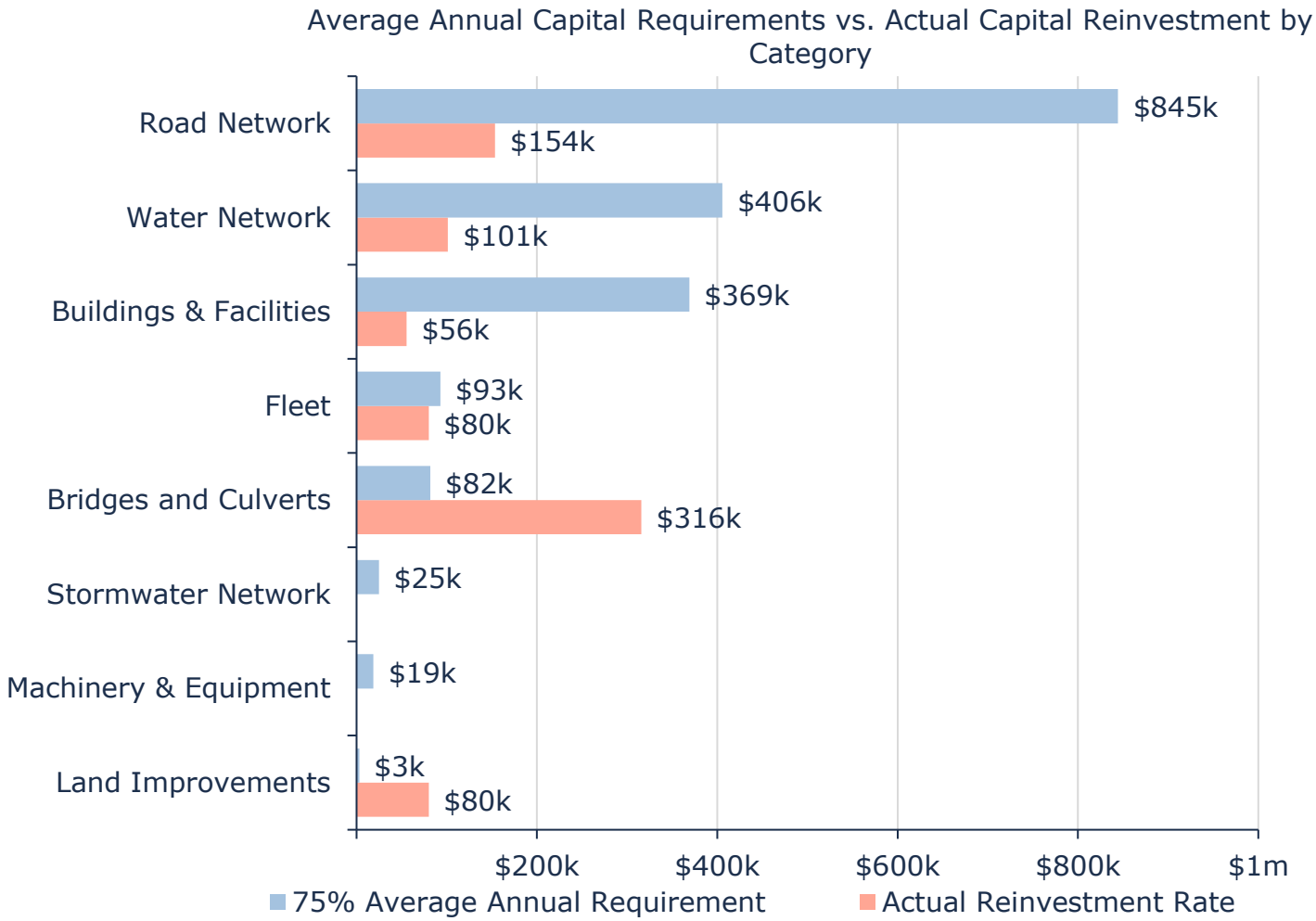



*Figure 83 75% Annual Requirements vs. Capital Funding Available*

## 14.2 Funding Objective

We have developed a scenario that would enable the Township to achieve 75% of full funding within 20 years for the following assets:

1. **Tax Funded Assets:** Road Network, Bridges & Culverts, Storm Sewer System, Buildings & Facilities, Land Improvements, Machinery & Equipment, Fleet

2. **Rate-Funded Assets:** Water Services

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

## 14.3 Financial Profile: Tax Funded Assets

### 14.3.1 Current Funding Position

The following tables show, by asset category, the average annual asset investment requirements (AAR), current funding positions, and funding increases required to achieve the proposed level of service of 75% funding for assets funded by taxes.

| Asset Category | 100% AAR | 75% AAR | Annual Funding Available | | | | Annual Deficit |
|---|---|---|---|---|---|---|---|
| | | | Taxes | CCBF | OCIF | Total Available | |
| Road Network | 1,126,000 | 844,500 | - | 41,836 | 111,271 | 153,557 | 690,943 |
| Stormwater Network | 33,000 | 24,750 | - | - | - | - | 24,750 |
| Bridges & Culverts | 109,000 | 81,750 | 315,802 | - | - | 315,802 | -234,052 |
| Buildings & Facilities | 492,000 | 369,000 | 55,500 | - | - | 55,500 | 313,500 |
| Machinery & Equipment | 25,000 | 18,750 | - | - | - | - | 18,750 |
| Land Improvements | 4,000 | 3,000 | - | - | - | - | 3,000 |
| Fleet | 124,000 | 93,000 | 80,000 | - | - | 80,000 | 13,000 |
| **Total** | **1,913,000** | **1,434,750** | **451,302** | **41,836** | **111,271** | **604,859** | **829,891** |

*Table 60 Annual Available Funding for Tax Funded Assets*

The average annual investment requirement for the above categories is $1.4 million to meet the 75% funding target. The annual revenue currently allocated to these assets for capital purposes is $605 thousand leaving an annual deficit of $830 thousand. Put differently, these infrastructure categories are currently funded at 32% of their long-term/ideal requirements, while targeting 75% within 20 years (currently 42% funded).

### 14.3.2 Proposed Levels of Service Funding Requirements

In 2024, the Township had budgeted annual tax revenues of approximately $2.1 million. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, increasing funding would require the following tax change over time:

| Asset Category | Tax Change Required for Full Funding | Tax Change Required for 75% Funding (Proposed LOS) |
|---|---|---|
| Road Network | 44.6% | 31.7% |
| Stormwater Network | 1.5% | 1.1% |
| Bridges & Culverts | No change Required | No change required |
| Buildings & Facilities | 20.0% | 14.4% |
| Machinery & Equipment | 1.1% | 0.9% |
| Land Improvements | 0.2% | 0.1% |
| Fleet | 2.0% | 0.6% |
| **Total** | **59.9%** | **38.1%** |

*Table 61 Tax Increase Requirements for Proposed Levels of Service*

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

a) Billings' debt payments for these asset categories will be decreasing by $93,000 over the next 5 years.

Our scenario modeling includes 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 | 829,891 | 829,891 | 829,891 | 829,891 |
| Change in Debt Costs | -92,641 | -92,641 | -92,641 | -92,641 |
| **Resulting Infrastructure Deficit:** | **737,250** | **737,250** | **737,250** | **737,250** |
| Tax Increase Required | 33.8% | 33.8% | 33.8% | 33.8% |
| **Annually:** | **6.0%** | **3.0%** | **2.0%** | **1.5%** |

*Table 62 Tax Increase Options 5-20 Years*

### 14.3.3 Financial Strategy Recommendations

Considering all the above information, we recommend the 20-year option. This involves 75% of full funding being achieved over 20 years by:

a) increasing tax revenues by 1.5% each year for the next 20 years solely for the purpose of phasing in the target of 75% of full funding to the asset categories covered in this section of the AMP.

b) allocating the current CCBF and OCIF revenue as outlined previously.

c) reallocating appropriate revenue from categories in a surplus position to those in a deficit position.

d) 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[9].

2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.

As the above option achieves 75% of recommended funding on an annual basis in 20 years and provides improvements to 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 $688,000 for all assets, concentrated primarily in the water network, at $521,000.

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.

[9] The Township of Billings 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.

## 14.4 Financial Profile: Rate Funded Assets

### 14.4.1 Current Funding Position

The following tables show, by asset category, the average annual asset investment requirements (AAR), current funding positions, and funding increases required to achieve the proposed level of service of 75% funding for assets funded by rates.

| Asset Category | 100% AAR | 75% AAR | Annual Funding Available | | | | Annual Deficit |
|---|---|---|---|---|---|---|---|
| | | | Rates | To Operating | OCIF | Total Available | |
| Water Network | 504,918 | 405,688 | 312,783 | -211,476 | 0 | 101,304 | 304,364 |
| **Total** | **504,918** | **405,688** | **312,783** | **-211,476** | **0** | **101,304** | **-304,364** |

*Table 63 Annual Available Funding for Rate Funded Assets*

The average annual investment requirement for the above categories is $406 thousand to meet the 75% funding target. Annual revenue currently allocated to these assets for capital purposes is $101 thousand leaving an annual deficit of $304 thousand. Put differently, these infrastructure categories are currently funded at 19% of their long-term/ideal requirements, while targeting 75% within 20 years (currently 25% funded).

### 14.4.2 Proposed Levels of Service Funding Requirements

In 2024 Billings had annual water revenues of $313 thousand. As illustrated in the table below, without consideration of any other sources of revenue, increasing funding would require the following changes over time:

| Asset Category | Rate Change Required for Full Funding | Rate Change Required for 75% Funding (Proposed LOS) |
|---|---|---|
| Water Network | 129% | 97.3% |

*Table 64 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 for up to 20 years:

| Water Network | | | | |
|---|---|---|---|---|
| | 5 Years | 10 Years | 15 Years | 20 Years |
| Infrastructure Deficit | 304,384 | 304,384 | 304,384 | 304,384 |
| Rate Increase Required | 97.3% | 97.3% | 97.3% | 97.3% |
| **Annually:** | **14.6%** | **7.1%** | **4.7%** | **3.5%** |

*Table 65 Water Rate Increase Options 5-20 Years*

### 14.4.3 Financial Strategy Recommendations

Considering all of the above information, we recommend the 20-year option. This involves 75% of full funding being achieved over 20 years by:

a) increasing rate revenues by 3.5% for water services each year for the next 20 years solely for the purpose of phasing in the target of 75% of 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.

As the above option achieves 75% of recommended funding on an annual basis in 20 years and provides improvements to 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 $521,000 for the water network.

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 be required otherwise.

## 14.5 Use of Debt

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

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

b) equitable distribution of the cost/benefits of infrastructure over its useful life

c) a secure source of funding

d) flexibility in cash flow management

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

The following tables outline how the township has historically used debt for investing in the asset categories as listed. As of year-end 2024, there is currently $1.3 million of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of $147 thousand.

***Note:*** *These debt figures exclude any debt used for purposes outside of assets covered by this AMP (for example, land purchases).*

| **Asset Category** | **Current Debt Out-standing Dec. '24** | **Use of Debt in the Last Five Years** | | | | |
|---|---|---|---|---|---|---|
| | | 2020 | 2021 | 2022 | 2023 | 2024 |
| Road Network | - | - | - | - | - | - |
| Stormwater Network | - | - | - | - | - | - |
| Bridges & Culverts | 411,978 | - | - | - | - | 411,978 |
| Buildings & Facilities | 883,084 | - | - | - | - | 883,084 |
| Machinery & Equipment | - | - | - | - | - | - |
| Land Improvements | - | - | - | - | - | - |
| Fleet | - | - | - | - | - | - |
| **Total Tax funded** | **1,295,061** | | | | | **1,295,061** |
| Water Network | - | - | - | - | - | - |
| **Total Rate Funded** | - | - | - | - | - | - |

*Table 66 Billings Use of Debt 2019-2023*

| Asset Category | Principal & Interest Payments over the Next Ten Years | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **2025** | **2026** | **2027** | **2028** | **2029** | **2030** | **2031** | **2032** | **2033** | **2034** |
| Road Network | - | - | - | - | - | - | - | - | - | - |
| Stormwater Network | - | - | - | - | - | - | - | - | - | - |
| Bridges & Culverts | 92,641 | 92,641 | 84.921 | 100,361 | 77,201 | - | - | - | - | - |
| Buildings & Facilities | 54,557 | 54,557 | 54,557 | 54,557 | 54,557 | 54,557 | 54,557 | 54,557 | 54,557 | 54,557 |
| Machinery & Equipment | - | - | - | - | - | - | - | - | - | - |
| Land Improvements | - | - | - | - | - | - | - | - | - | - |
| Fleet | - | - | - | - | - | - | - | - | - | - |
| **Total Tax Funded** | **147,198** | **147,198** | **139,478** | **154,918** | **131,757** | **54,557** | **54,557** | **54,557** | **54,557** | **54,557** |
| Water Network | - | - | - | - | - | - | - | - | - | - |
| **Total Rate Funded** | - | - | - | - | - | - | - | - | - | - |

*Table 67 Billings Principal and Interest Payments*

The revenue options outlined in this plan allow the Township of Billings to achieve 75% funding of infrastructure requirements without further use of debt, however, targeting of less than ideal funding increases uncertainty, which may result in the necessity of further use of debt.

## 14.6 Use of Reserves

### 14.6.1 Available Reserves

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

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

b) financing one-time or short-term investments

c) accumulating the funding for significant future infrastructure investments

d) managing the use of debt

e) normalizing infrastructure funding requirement

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

| Asset Category | Approximate Balance at December 31, 2024 |
|---|---|
| Road Network | - |
| Stormwater Network | - |
| Bridges & Culverts | 111,139 |
| Buildings & Facilities | 58,125 |
| Machinery & Equipment | 58,125 |
| Land Improvements | 58,125 |
| Fleet | 58,125 |
| **Total Tax Funded** | 343,637 |
| Water Network | 366,103 |
| **Total Rate Funded** | **709,741** |

*Table 68 Billings Reserve Balances*

By having reserves with broad applications across multiple asset categories the township gains the flexibility to spend funds on needs as they arise, regardless of asset type, however, risks losing sight of long-term funding requirements which may require analysis on a more granular basis.

There is considerable debate in the municipal sector as to the appropriate level of reserves that a Township 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 Billings'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.

# 15. Recommendations & Key Considerations

## 15.1 Financial Strategies

1. Review the feasibility of adopting the funding required to meet the proposed levels of service for the asset categories analyzed. This includes:
    a. Increasing taxes by1.7% per year over a period of 20 years;
    b. Increasing water rates by 3.5% per year over a period of 20 years; and
2. Continued allocation of OCIF and CCBF funding as previously outlined.
3. Reallocating appropriate revenue from categories in a surplus position to those in a deficit position.
4. Increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.
5. Continue to apply for project specific grant funding to supplement sustainable funding sources.

## 15.2 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.

4. Assess the feasibility of incorporating and aligning the data supplied by the OCWA reports, in the asset management system. This alignment will provide clarity and strengthen confidence in reporting on condition and replacement values.

5. Assess the effort required to improve the land improvements asset listing to include parks, trails and pathways that exist and are maintained, however are not currently tracked within the asset management software.

## 15.3 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, which was limited. 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 for long-term tracking of O. Reg. 588's 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 – Risk Rating Criteria

# Appendix A – Infrastructure Report Card

| Asset Category | Replacement Cost | Average Condition | Financial Capacity (Based on Proposed LOS -75%) | | % Funded |
|---|---|---|---|---|---|
| Road Network | **$50m** | **Fair (48%)** | Annual Requirement: | $844,500 | 18% |
| | | | Funding Available: | $154,000 | |
| | | | **Annual Deficit:** | **$690,500** | |
| Bridges & Culverts | **$3.2m** | **Fair (60%)** | Annual Requirement: | $82,000 | 385% |
| | | | Funding Available: | $316,000 | |
| | | | **Annual Deficit:** | **($234,000)** | |
| Water Network | **$25.2m** | **Good (70%)** | Annual Requirement: | $406,000 | 25% |
| | | | Funding Available: | $101,000 | |
| | | | **Annual Deficit:** | **$305,000** | |
| Stormwater Network | **$1.2m** | **Very Good (98%)** | Annual Requirement: | $25,000 | 0% |
| | | | Funding Available: | $0 | |
| | | | **Annual Deficit:** | **$25,000** | |
| Buildings & Facilities | **$20.8m** | **Good (61%)** | Annual Requirement: | $369,000 | 15% |
| | | | Funding Available: | $55,500 | |
| | | | **Annual Deficit:** | **$313,500** | |
| Land Improvements | **$330k** | **Very Good (83%)** | Annual Requirement: | $3,000 | 0% |
| | | | Funding Available: | $0 | |
| | | | **Annual Deficit:** | **$3,000** | |
| Fleet | **$1.9m** | **Good (67%)** | Annual Requirement: | $93,000 | 86% |
| | | | Funding Available: | $80,000 | |
| | | | **Annual Deficit:** | **$13,000** | |
| Machinery & Equipment | **$ 146k** | **Good (63%)** | Annual Requirement: | $18,750 | 0% |
| | | | Funding Available: | $0 | |
| | | | **Annual Deficit:** | **$18,750** | |

# Appendix B – 10-Year Capital Requirements

## Capital Requirements for Current Levels of Service (funding availability not considered)

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. They do not consider any proposed levels of service, or available funding, and are projected based on ideal conditions.

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 Township's capital expenditure forecasts.

### Road Network

| Segment | Backlog | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gravel Roads | - | $1.8m | $3.1m | $105k | $50k | - | $1.5m | - | - | $392k | - |
| Paved Roads | - | - | - | - | - | - | - | - | - | - | - |
| Streetlights | $5k | - | - | - | - | - | - | - | - | - | - |
| Surface Treated Roads | - | $911k | $46k | $79k | $125k | - | - | - | - | - | - |
| **Total** | **$5k** | **$2.7 m** | **$3.1m** | **$184k** | **$175k** | **-** | **$1.5m** | **-** | **-** | **$392k** | **$5k** |

*Table 69 System Generated 10-Year Capital Replacement Forecast: Road Network*

### Bridges & Culverts

| Segment | Backlog | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bridges | - | - | - | $1.2m | - | - | - | - | - | - | - |
| Structural Culverts | - | $45k | - | - | - | - | - | - | - | - | - |
| **Total** | **-** | **$45k** | **-** | **$1.2m** | - | - | - | - | - | - | - |

*Table 70 System Generated 10-Year Capital Replacement Forecast: Bridges & Culverts*

### Water Network

| Segment | Backlog | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hydrants | - | - | - | - | - | - | - | - | - | - | - |
| Service Lead | - | - | - | - | - | - | - | $861k | - | - | - |
| Treatment Plant | - | $109k | $60k | - | $104k | $25k | $62k | - | $11k | $18k | $130k |
| Water Tower | $521k | $895k | - | - | - | - | - | $2.3m | - | - | - |
| Watermains | - | - | - | - | - | - | - | - | - | - | - |
| **Total** | **$521k** | **$1.0m** | **$60k** | **-** | **$104k** | **$25k** | **$62k** | **$3.2m** | **$11k** | **$18k** | **$130k** |

*Table 71 System Generated 10-Year Capital Replacement Forecast: Water Network*

### Buildings & Facilities

| Segment | Backlog | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Environmental Services | - | - | - | - | - | - | - | - | - | - | - |
| Fire & Emergency | - | - | - | - | - | - | - | - | - | - | - |
| General Government | - | $18k | - | - | $2k | - | $18k | $3k | $147k | $3k | $18k |
| Recreational and Cultural Services | - | $751k | $21k | $113k | $48k | $245k | $170k | $174k | $503k | $1.0m | $61k |
| Transportation Services | - | $30k | - | - | $13k | $17k | $45k | - | $22k | - | $14k |
| **Total** | **-** | **$799k** | **$21k** | **$113k** | **$62k** | **$262k** | **$232k** | **$176k** | **$672k** | **$1.0m** | **$92k** |

*Table 72 System Generated 10-Year Capital Replacement Forecast: Buildings & Facilities*

### Land Improvements

| Segment | Backlog | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Environmental Services | - | - | - | - | - | - | $7k | - | - | - | - |
| Transportation Services | - | - | - | - | - | - | $10k | - | - | - | - |
| **Total** | **-** | **-** | **-** | **-** | **-** | **-** | **$17k** | **-** | **-** | **-** | **-** |

*Table 73 System Generated 10-Year Capital Replacement Forecast: Land Improvements*

### Fleet

| Segment | Backlog | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Environmental Services | - | - | - | - | - | - | - | - | - | $8k | - |
| Fire & Emergency | - | $46k | - | $318k | - | - | - | - | - | - | - |
| Transportation Services | $146k | - | - | - | - | $526k | $407k | - | $96k | - | - |
| **Total** | **$146k** | **$46k** | **-** | **$318k** | **-** | **$526k** | **$407k** | **-** | **$96k** | **$8k** | **-** |

*Table 74 System Generated 10-Year Capital Replacement Forecast: Fleet*

### Machinery & Equipment

| Segment | Backlog | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fire & Emergency | $16k | - | $18k | - | - | - | - | - | - | - | - |
| General Government | - | - | - | - | - | - | - | - | $32k | - | - |
| Recreational and Cultural Services | - | - | $27k | - | $86k | - | - | $122k | - | - | - |
| Transportation Services | - | $19k | - | - | - | - | $10k | - | - | - | - |
| **Total** | **$16k** | **$19k** | **$45k** | **-** | **$86k** | **-** | **$10k** | **$122k** | **$32k** | **-** | **-** |

*Table 75 System Generated 10-Year Capital Replacement Forecast: Machinery & Equipment*

## Proposed Levels of Service – 10 Year Capital Plan

The following table summarizes the costs of recommended lifecycle events, as generated by the Township's asset management software, Citywide, while considering annual budgets beginning at current funding levels and gradually increasing over 20 years for both tax and rate funded assets to reach a targeted 75% funding level. (Scenario 2 of the proposed levels of service analyzed). These projections consider the availability of funding as increases are implemented.

| Category | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 |
|---|---|---|---|---|---|---|---|---|---|---|
| Road Network | $127k | $441k | $269k | - | - | $808k | - | $1.5m | $392k | - |
| Bridges & Culverts | - | - | - | - | - | - | - | - | - | - |
| Water Network | $77k | $133k | $105k | $157k | $117k | $190k | $172k | $187k | $202k | $215k |
| Stormwater Network | - | - | - | - | - | - | - | - | - | - |
| Building & Facilities | - | $13k | - | $52k | $59k | $835k | $195k | $248k | $239k | $253k |
| Land Improvements | - | - | - | - | - | - | - | - | - | - |
| Fleet | $73k | - | $120k | - | $150k | $61k | - | $96k | $8k | $318k |
| Machinery & Equipment | - | - | - | $16k | - | $18k | $10k | - | $19k | - |
| Total | **$276k** | **$587k** | **$494k** | **$225k** | **$327k** | **$1.9m** | **$377k** | **$2.0m** | **$860k** | **$786k** |

*Table 76 Proposed LOS 10-Year Capital Replacement Forecast*

# Appendix C – Risk Rating Criteria

## Probability of Failure (PoF)

| Asset Category | Risk Criteria | Criteria Weighting | Value/Range | PoF Score |
|---|---|---|---|---|
| Road Network (Roads) | Condition | 60% | 85-100 | 1 |
| | | | 70-84 | 2 |
| | | | 55-69 | 3 |
| | | | 40-54 | 4 |
| | | | 0-39 | 5 |
| | Service Life Remaining (%) | 40% | 80-100 | 1 |
| | | | 60-79 | 2 |
| | | | 40-59 | 3 |
| | | | 20-39 | 4 |
| | | | 0-19 | 5 |
| Bridges & Culverts | Condition | 75% | 80-100 | 1 |
| | | | 70-79 | 2 |
| | | | 60-69 | 3 |
| | | | 50-59 | 4 |
| | | | 0-49 | 5 |
| | Service Life Remaining % | 25% | 80-100 | 1 |
| | | | 60-79 | 2 |
| | | | 40-59 | 3 |
| | | | 20-39 | 4 |

| Asset Category | Risk Criteria | Criteria Weighting | Value/Range | PoF Score |
|---|---|---|---|---|
| | | | 0-19 | 5 |
| Buildings & Facilities<br>Machinery & Equipment<br>Fleet<br>Parks & Land Improvements | Condition | 75% | 80-100 | 1 |
| | | | 60-79 | 2 |
| | | | 40-59 | 3 |
| | | | 20-39 | 4 |
| | | | 0-19 | 5 |
| | Service Life Remaining % | 25% | 80-100 | 1 |
| | | | 60-79 | 2 |
| | | | 40-59 | 3 |
| | | | 20-39 | 4 |
| | | | 0-19 | 5 |
| Road Network (Other)<br>Stormwater Network (Other)<br>Water Network (Other) | Condition | 75% | 80-100 | 1 |
| | | | 60-79 | 2 |
| | | | 40-59 | 3 |
| | | | 20-39 | 4 |
| | | | 0-19 | 5 |
| | Service Life Remaining % | 25% | 80-100 | 1 |
| | | | 60-79 | 2 |
| | | | 40-59 | 3 |
| | | | 20-39 | 4 |
| | | | 0-19 | 5 |
| Water Network (Mains) | Condition | 50% | 80-100 | 1 |
| | | | 60-79 | 2 |

| Asset Category | Risk Criteria | Criteria Weighting | Value/Range | PoF Score |
|---|---|---|---|---|
| | | | 40-59 | 3 |
| | | | 20-39 | 4 |
| | | | 0-19 | 5 |
| | Service Life Remaining % | 40% | 80-100 | 1 |
| | | | 60-79 | 2 |
| | | | 40-59 | 3 |
| | | | 20-39 | 4 |
| | | | 0-19 | 5 |
| | Pipe Material | 10% | HDPE | 2 |
| | | | PVC | 2 |
| | | | CU | 3 |
| | | | CI | 3 |
| | | | P | 4 |
| Stormwater Network (Mains) | Condition | 50% | 80-100 | 1 |
| | | | 60-79 | 2 |
| | | | 40-59 | 3 |
| | | | 20-39 | 4 |
| | | | 0-19 | 5 |
| | Service Life Remaining (%) | 40% | 80-100 | 1 |
| | | | 60-79 | 2 |
| | | | 40-59 | 3 |
| | | | 20-39 | 4 |
| | | | 0-19 | 5 |

| Asset Category | Risk Criteria | Criteria Weighting | Value/Range | PoF Score |
|---|---|---|---|---|
| | Pipe Material | 10% | Concrete | 4 |
| | | | Ductile Iron | 3 |
| | | | PVC | 2 |

*Table 77 Probability of Failure Risk Scores*

## Consequence of Failure (CoF)

| Asset Category | Risk Classification | Risk Criteria | Value/Range | Consequence of Failure Score |
|---|---|---|---|---|
| Road Network (Roads) | Economic (100%) | Historical Cost (100%) | $0-$50,000 | 1 |
| | | | $50,000-$150,000 | 2 |
| | | | $150,000-$300,000 | 3 |
| | | | $300,000-$500,000 | 4 |
| | | | $500,000+ | 5 |
| Bridges & Culverts | Economic (90%) | Replacement Cost (100%) | $0-$100,000 | 1 |
| | | | $100,000-$250,000 | 2 |
| | | | $250,000-$500,000 | 3 |
| | | | $500,000-$1,000,000 | 4 |
| | | | $1,000,000+ | 5 |
| | Socio-Political (10%) | Detour Distance (100%) | 2-5 | 2 |
| | | | 6-8 | 3 |
| | | | 9-10 | 4 |
| | | | 11-20 | 5 |
| Buildings & Facilities | Economic | Replacement Cost | $0-$50,000 | 1 |

| Asset Category | Risk Classification | Risk Criteria | Value/Range | Consequence of Failure Score |
|---|---|---|---|---|
| Machinery & Equipment<br>Fleet<br>Parks & Land Improvements | (80%) | (100%) | $50,000-$350,000 | 2 |
| | | | $350,000-$1,000,000 | 3 |
| | | | $1,000,000-$2,000,000 | 4 |
| | | | $2,000,000+ | 5 |
| | Strategic<br>(20%) | Department<br>(100%) | Recreation & Cultural Services | 2 |
| | | | General Government | 2 |
| | | | Transportation Services | 3 |
| | | | Public Works | 3 |
| | | | Environmental Services | 4 |
| | | | Health Services | 5 |
| | | | Protection Services | 5 |
| Stormwater Network (Other)<br>Water Network (Other) | Economic<br>(100%) | Replacement Cost<br>(100%) | $0-$50,000 | 1 |
| | | | $50,000-$150,000 | 2 |
| | | | $150,000-$250,000 | 3 |
| | | | $250,000-$500,000 | 4 |
| | | | $500,000+ | 5 |
| Water Network (Mains) | Economic<br>(80%) | Replacement Cost<br>(100%) | $0-$50,000 | 1 |
| | | | $50,000-$100,000 | 2 |
| | | | $100,000-$150,000 | 3 |
| | | | $150,000-$250,000 | 4 |
| | | | $250,000+ | 5 |
| | Operational<br>(20%) | Pipe Diameter<br>(100%) | 0-50 | 1 |
| | | | 51-150 | 2 |
| | | | 151-250 | 3 |

| Asset Category | Risk Classification | Risk Criteria | Value/Range | Consequence of Failure Score |
|---|---|---|---|---|
| | | | 251-450 | 4 |
| | | | 451-1000 | 5 |
| | | | Severe | 5 |
| Stormwater Network (Mains) | Economic (80%) | Replacement Cost (100%) | $0-$50,000 | 1 |
| | | | $50,000-$100,000 | 2 |
| | | | $100,000-$150,000 | 3 |
| | | | $150,000-$250,000 | 4 |
| | | | $250,000+ | 5 |
| | Operational (20%) | Pipe Diameter (100%) | 0-50 | 1 |
| | | | 51-150 | 2 |
| | | | 151-250 | 3 |
| | | | 251-450 | 4 |
| | | | 451-1000 | 5 |
| | | | 451-1000 | 5 |

*Table 78 Consequence of Failure Risk Scores*