Asset Management Plan 2025

TOWNSHIP OF RUSSELL

2025

psdcitywide

This Asset Management Plan was prepared by:

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

Key Statistics

$553m	2024 Replacement Cost of Asset Portfolio
$67.5k	Replacement Cost of Infrastructure Per Household
78%	Percentage of Assets in Fair or Better Condition
51%	Percentage of Assets with Assessed Condition Data
$12.84m	Average Annual Requirement
$6.48m	Actual Funding Level (2024)
2.32%	Target Reinvestment Rate
1.17%	Actual Reinvestment Rate
10 Years	Recommended Timeframe for Eliminating Annual Infrastructure Deficit

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1. Executive Summary

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

1.1 Scope

This Asset Management Plan (AMP) identifies the 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 include the following asset categories:

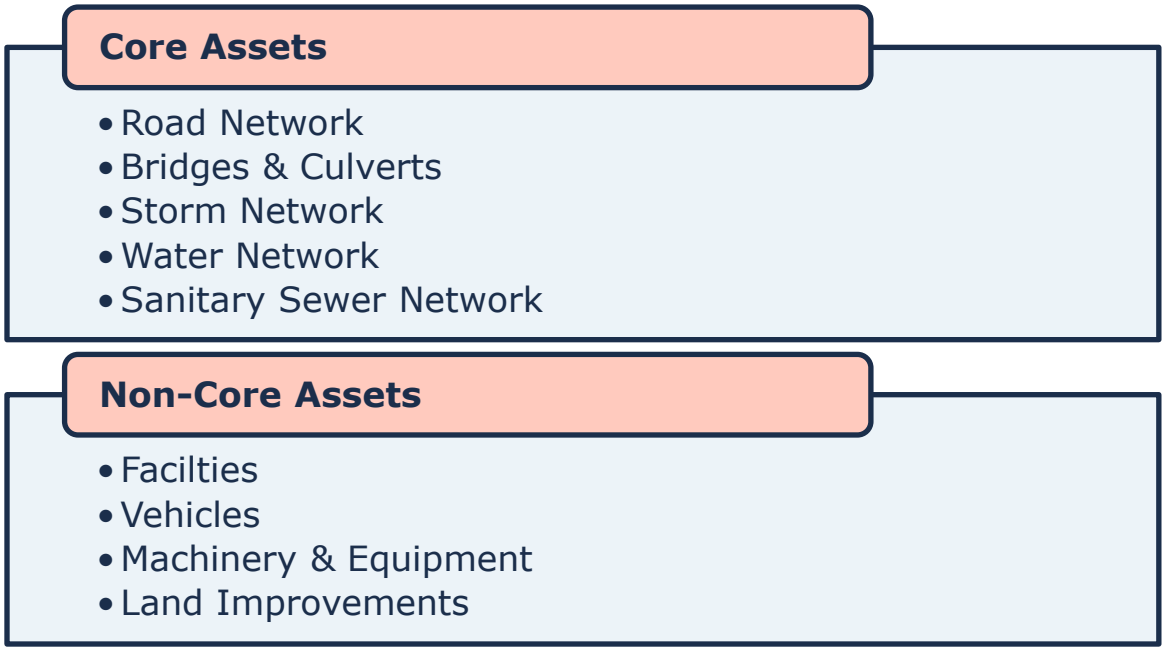


Figure 1 Core and Non-Core Asset Categories

1.2 O. Reg. 588/17 Compliance

With the development of this AMP the Township has achieved compliance with July 1, 2025, requirements under O. Reg. 588/17. This includes requirements

for levels of service and inventory reporting for all asset categories. More detail on compliance can be found in section 2.5.1 O. Reg. 588/17 Compliance Review.

1.3 Findings

The overall replacement cost of the asset categories included in this AMP totals $553 million. 78% of all assets analyzed in this AMP are in fair or better condition and assessed condition data was available for 51% of assets. For the remaining 49% of assets, assessed condition data was unavailable. In lieu of assessed condition assessments, 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 Township has taken proactive steps to address this gap by establishing condition assessment timelines, specific to each asset category. Furthermore, the Township has established a designated reserve specifically for condition assessments.

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Township's average annual capital requirement totals $12.84 million. Based on a historical analysis of sustainable capital funding sources, the Township is committing approximately $6.48 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $6.36 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.[1] Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources.

[1] Year-end 2024.

1.4 Recommendations

A financial strategy was developed to address the annual capital funding gap. The following graphics shows annual tax/rate change required to eliminate the Township's infrastructure deficit.

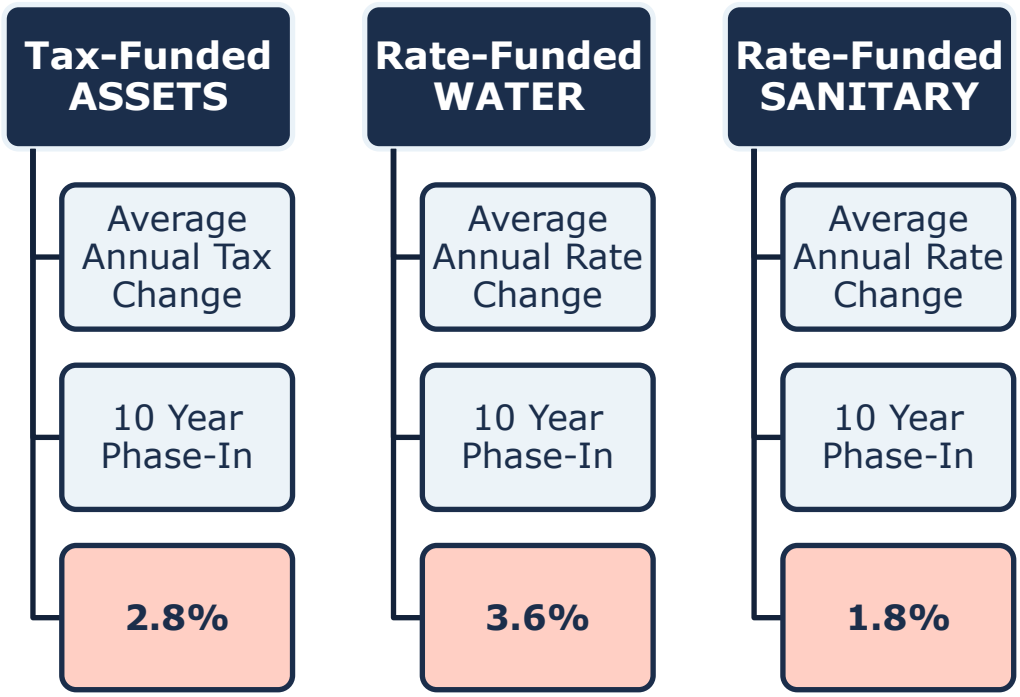


Figure 2 Proposed Tax/Rate Changes

2. Introduction & Context

2.1 Community Profile

Census Characteristic	Township of Russell[2]	Ontario[3]
Population 2021	22,534	14,223,942
Total Private Dwellings	8,197	5,929,250
Population Density	98.6/km^2	15.9/km^2
Land Area	198.78 km^2	892,411.76 km^2

Table 1 Township of Russell Township Community Profile

The Township of Russell is a lower-tier Township, part of United Counties of Prescott and Russell, which is located within eastern Ontario. It is situated east of Ottawa, Ontario.

Russell was incorporated as a Township in 1857. This incorporation marked the official recognition of the Russell as a municipal entity, allowing it to establish local governance and provide services to its residents. The Township comprises several communities, including Embrun, Russell, Limoges, and Marionville. Embrun and Russell are the largest, serving as the primary hubs for residential, commercial, and social activities.

The Township offers a variety of rich rural settings, including farms, forests, and rivers, along with facilities for outdoor activities. With plenty of parks and trails, it's easy for residents to enjoy walking, biking, and getting closer to nature. It's a welcoming place with a strong sense of community, highlighted by regular events and festivals that celebrate its culture and history, providing entertainment and opportunities for community engagement.

Demand in the Township of Russell is driven by its proximity to Ottawa, offering a quiet lifestyle with easy urban access. Beautiful landscapes, and a close-knit community attract diverse individuals. The area's growth brings new residential and commercial opportunities while maintaining its rural charm. Agriculture supports the rural character and green spaces, fostering a lifestyle connected to nature. This blend of urban accessibility, community services, and agricultural landscapes fuels demand in the Township.

The infrastructure priorities of the Township include sustainable and efficient development. The Township aims to ensure new growth is compatible with

[2] 2024 figures provided by Russell Township's planning department
[3] 2021 Census

existing infrastructure, minimizing adverse impacts on current services and the character of established areas.

2.2 Climate Change

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

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

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

2.2.1 Russell Township Climate Profile

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

Higher Average Annual Temperature:

- Between the years 1971 and 2010 the annual average temperature was 6.0 ºC
- Under a high emissions scenario, the annual average temperatures are projected to increase by 4.8 ºC by the year 2050 and over 6.6 ºC by the end of the century.

Increase in Total Annual Precipitation:

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

Increase in Frequency of Extreme Weather Events:

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

2.2.2 Integration of Climate Change and Asset Management

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

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

2.3 Asset Management Overview

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

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.

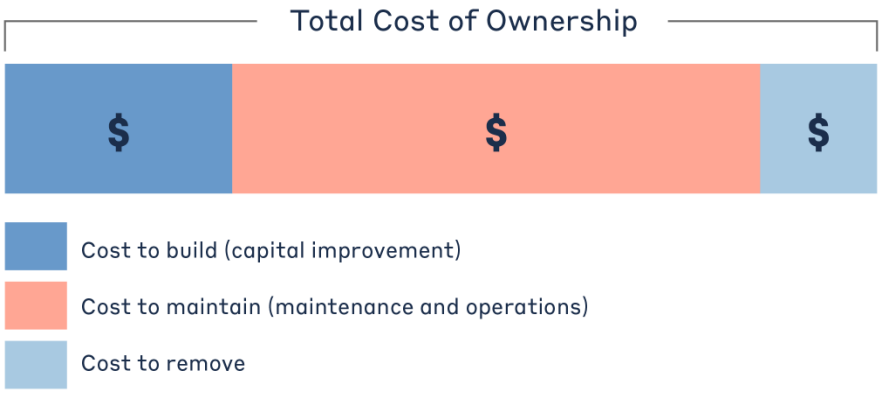


Figure 3 Total Cost of Asset Ownership

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/Priorities, followed by an Asset Management Policy and an Asset Management Strategy, concluding with an Asset Management Plan.

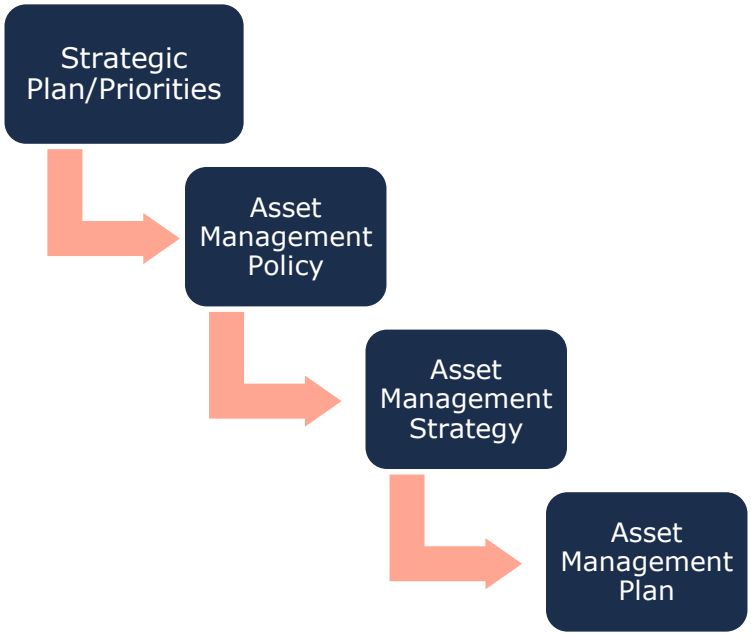


Figure 4 Foundational Asset Management Documents

This industry standard, defined by the Institute of Asset Management (IAM), emphasizes the alignment between the corporate strategic plan/priorities 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 adopted its Asset Management Policy in December of 2024, in accordance with Ontario Regulation 588/17.[4] The Policy outlines the Town's commitment to managing their assets with improved accountability and transparency using consistent standards that reflect the Town's present and future needs.

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

[4] Bylaw #2024-103

management objectives through planned activities and decision-making criteria.

The Township's 2023-2026 Strategic Plan focuses on six key strategies: leadership in sustainable development, modernized service delivery, fiscal and infrastructure sustainability, balanced environmental initiatives, inclusive community practices, and enhanced safety and well-being through improved services and infrastructure.

This strategy aims to build a thriving, innovative, and sustainable community for current and future residents. It reflects the Township's dedication to long-term progress and quality of life for residents. The strategy demonstrates a commitment to strategic growth and community resilience, including targeted investments in infrastructure to support economic development and enhance public amenities.

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 an asset's characteristics, location, utilization, maintenance history and environment. Asset deterioration has a negative effect on the ability of an asset to fulfill its intended function, and may be characterized by increased cost, risk and even service disruption.

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

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

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

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

Lifecycle Activity	Cost	Typical Associated Risks
Asset end-of-life activities that often involve the complete replacement of assets		• Replacements may not meet capacity needs for a larger population • Loss or disruption of service, particularly for underground assets

Table 2 Lifecycle Management: Typical Lifecycle Interventions

The 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 Township. In addition, some assets are simply more important to the community than others, based on their financial significance, their role in delivering essential services, the impact of their failure on public health and safety, and the extent to which they support a high quality of life for community stakeholders.

Risk is a product of two variables: the probability that an asset will fail, and the resulting consequences of that failure event. It can be a qualitative measurement, (i.e. low, medium, high) or quantitative measurement (i.e. 1-5), that can be used to rank assets and projects, identify appropriate lifecycle

strategies, optimize short- and long-term budgets, minimize service disruptions, and maintain public health and safety.

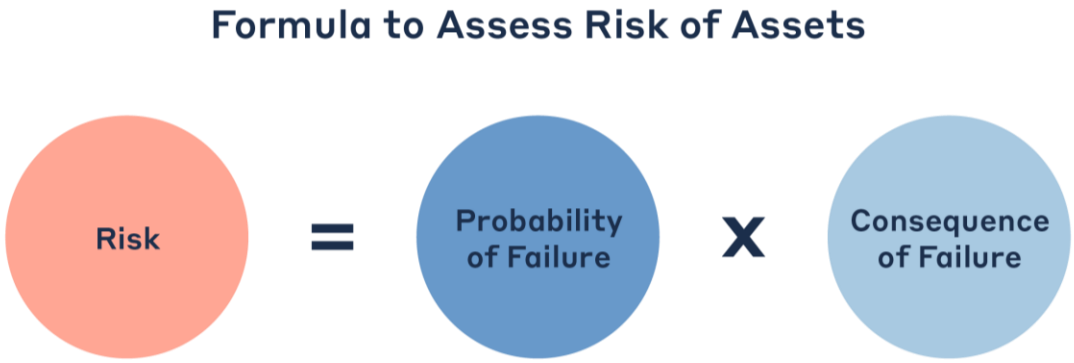


Figure 5 Risk Equations

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

Probability of Failure

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

Consequence of Failure

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

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

Type of Consequence	Description
Direct Financial	Direct financial consequences are typically measured as the replacement costs of the asset(s) affected by the failure event, including interdependent infrastructure.
Economic	Economic impacts of asset failure may include disruption to local economic activity and commerce, business closures, service disruptions, etc. Whereas direct financial impacts can be seen immediately or estimated within hours or days, economic impacts can take weeks, months and years to emerge, and may persist for even longer.
Socio-political	Sociopolitical 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 Township.
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 (roads, bridges, storm, water, and sanitary sewer) asset categories as applicable 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, 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

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

Core Values

The core values behind levels of service reflect the Township's commitment to delivering services that meet community needs in a fair, responsible, and sustainable way. These values help guide how infrastructure is managed and how service expectations are set. By aligning asset management decisions with these values, the Township can provide services that people trust.

Value	Description
Accessible	Services are available and accessible for customers who require them
Reliable	Services are provided with minimal service disruption and are available to customers in line with needs and expectations
Safe	Services are delivered such that they minimize health, safety, and security risks
Affordable	Services are delivered at an affordable cost for both the organization and customer
Sustainable	Services are designed to be used efficiently. Long-term plans are in place to ensure that they are available to all customers into the future

Table 4 Levels of Service: Core Values

Public Engagement

The Russell Township public engagement questionnaire was undertaken to document and capture public responses and opinions related to municipal infrastructure and service priorities. The questionnaire results were collated in October of 2024, with over 650 responses.

The Township of Russell's Public Engagement Survey reveals that most residents (75%) are satisfied with the quality of services provided, with fire emergency services, parks and recreation services, and water/sewer services receiving the highest satisfaction ratings. However, roads and sidewalks were frequently cited as areas needing improvement, with mixed feedback. Residents also expressed concerns about the prioritization of new developments over maintenance of core infrastructure, and many highlighted the need for better traffic control and pedestrian safety measures.

Regarding infrastructure investments, residents appear cautiously optimistic. While some agree with current investments, many are neutral or skeptical, especially regarding future plans. Roads, fire services, and snow removal are

the most valued services, while amenities like parks and community centers are seen as lower priorities. Most residents are open to pragmatic trade-offs, favoring balanced and cost-effective improvements, with some willing to pay more for better service quality. Key recommendations include improving roads and sidewalks, enhancing safety measures, supporting seniors, and increasing transparency in infrastructure planning.

Refer to Appendix C for a summary of the public engagement questionnaire.

2.4 Scope & Methodology

2.4.1 Asset Categories for this AMP

This asset management plan for the Township of Russell is produced in compliance with O. Reg. 588/17. The July 2025 deadline under the regulation—the last of three AMPs—requires analysis of core and non-core asset categories, along with the proposed levels of service for the following ten years.

The AMP summarizes the state of the infrastructure for the Township's asset portfolio, establishes 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.

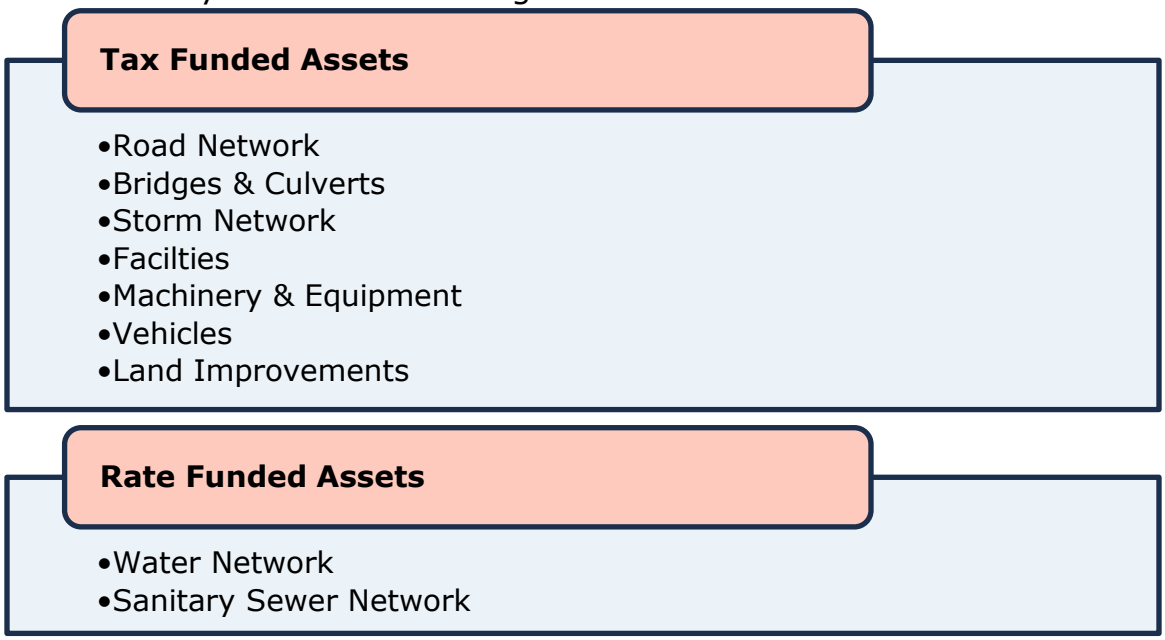


Figure 6 Tax Funded and Rate Funded Asset Categories

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

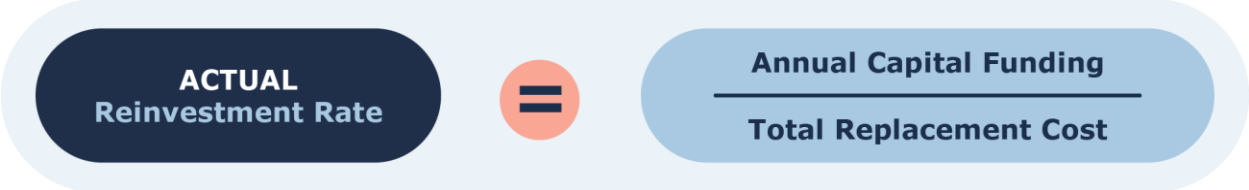


Figure 9 Actual Reinvestment Rate Calculation

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.

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.

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 5 Standard Condition Rating Scale

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

The table above summarizes the standard methodology for determining asset condition within this AMP. For those categories in which there is a different rating scale for condition assessment, they will be outlined within that category's "Approach to Condition Assessment" subsection. For instances where the scale is the same, only the approach for condition assessment will be outlined.

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)[5]. Along with creating better performing organizations, more liveable and sustainable communities, the regulation is a key, mandated driver of asset management planning and reporting. It places substantial emphasis on current and proposed levels of service and the lifecycle costs incurred in delivering them.

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

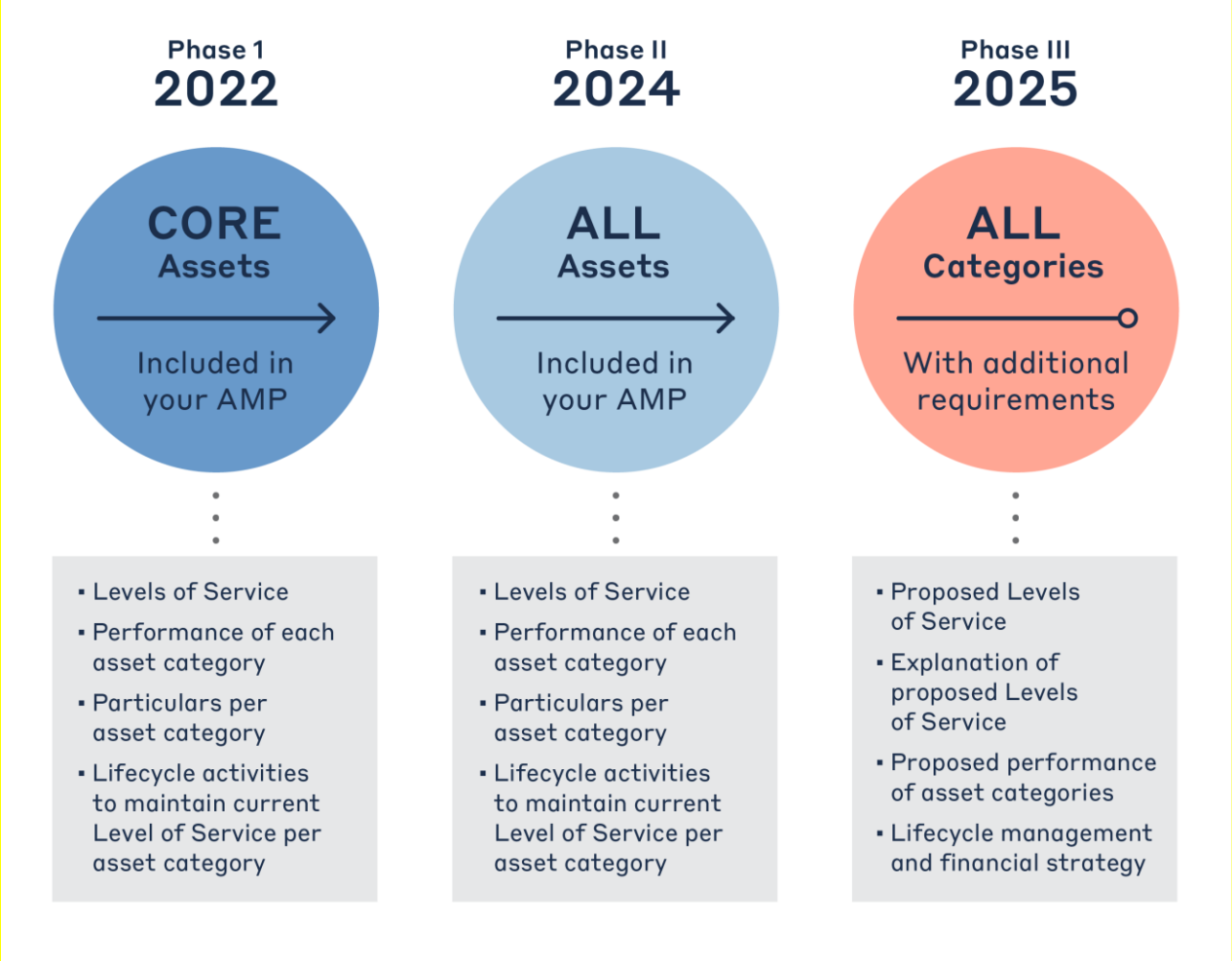


Figure 10 O. Reg. 588/17 Requirements and Reporting Deadlines

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

2.5.1 O. Reg. 588/17 Compliance Review

Requirement	O. Reg. 588/17 Section	AMP Section Reference	Status
Summary of assets in each category	S.5(2), 3(i)	4.1 – 12.1	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	4.1 – 12.1	Complete
Average age of assets in each category	S.5(2), 3(iii)	4.3 – 12.3	Complete
Condition of core assets in each category	S.5(2), 3(iv)	4.2 – 12.2	Complete
Description of Township's approach to assessing the condition of assets in each category	S.5(2), 3(v)	4.2 & 4.4 – 12.2 & 12.4	Complete
Current/proposed levels of service in each category	S.5(2), 1(i-ii) S.6 (1)	4.6 – 12.6	Complete
Performance measures in each category	S.5(2), 2 S. 6 (1), 2	4.6 – 12.6	Complete
Lifecycle activities needed for proposed levels of service for 10 years	S.5(2), 4 S. 6 (1), 4	4.4 – 12.4	Complete
Costs of providing lifecycle activities for 10 years	S.5(2), 4 S. 6 (1), 4	4.6.3 – 12.6.3	Complete
Growth assumptions	S.5(2), 5(i-ii) S.5(2), 6(i-vi)	13	Complete

Table 6 O. Reg. 588/17 Compliance Review

3. Portfolio Overview – State of the Infrastructure

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

3.1 Asset Hierarchy & Data Classification

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

Figure 11 Asset Hierarchy and Data Classification

3.2 Portfolio Overview

3.2.1 Total Replacement Cost of Asset Portfolio

The nine asset categories analyzed in this Asset Management Plan have a total current replacement cost of $553 million. This estimate was calculated using user-defined costing, cost per unit, 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.

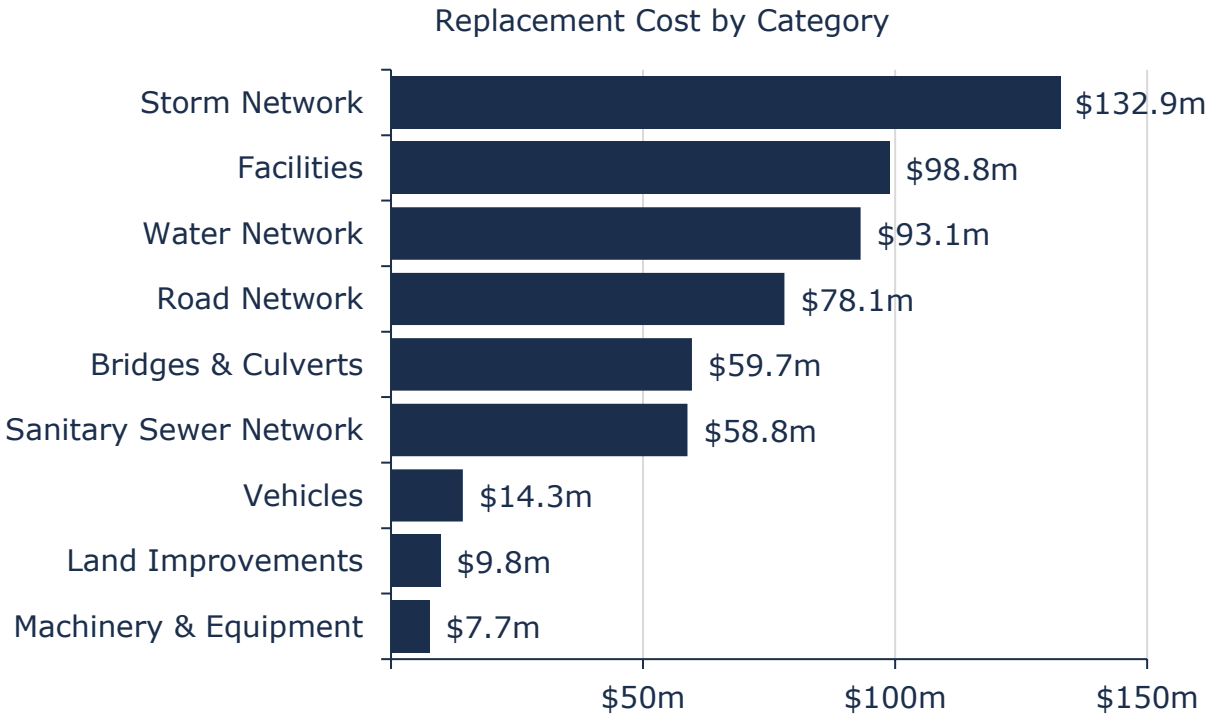


Figure 12 Current Replacement Cost by Asset Category

3.2.2 Target vs. Actual Reinvestment Rate

The graph below depicts funding gaps by comparing the target to the current reinvestment rate. To meet the existing long-term capital requirements, the Township requires an annual capital investment of $12.84 million, for a target portfolio reinvestment rate of 2.32%. Currently, the annual investment from sustainable revenue sources is $6.48 million, for a current portfolio reinvestment rate of 1.17%. Target and current re-investment rates by asset category are detailed below.

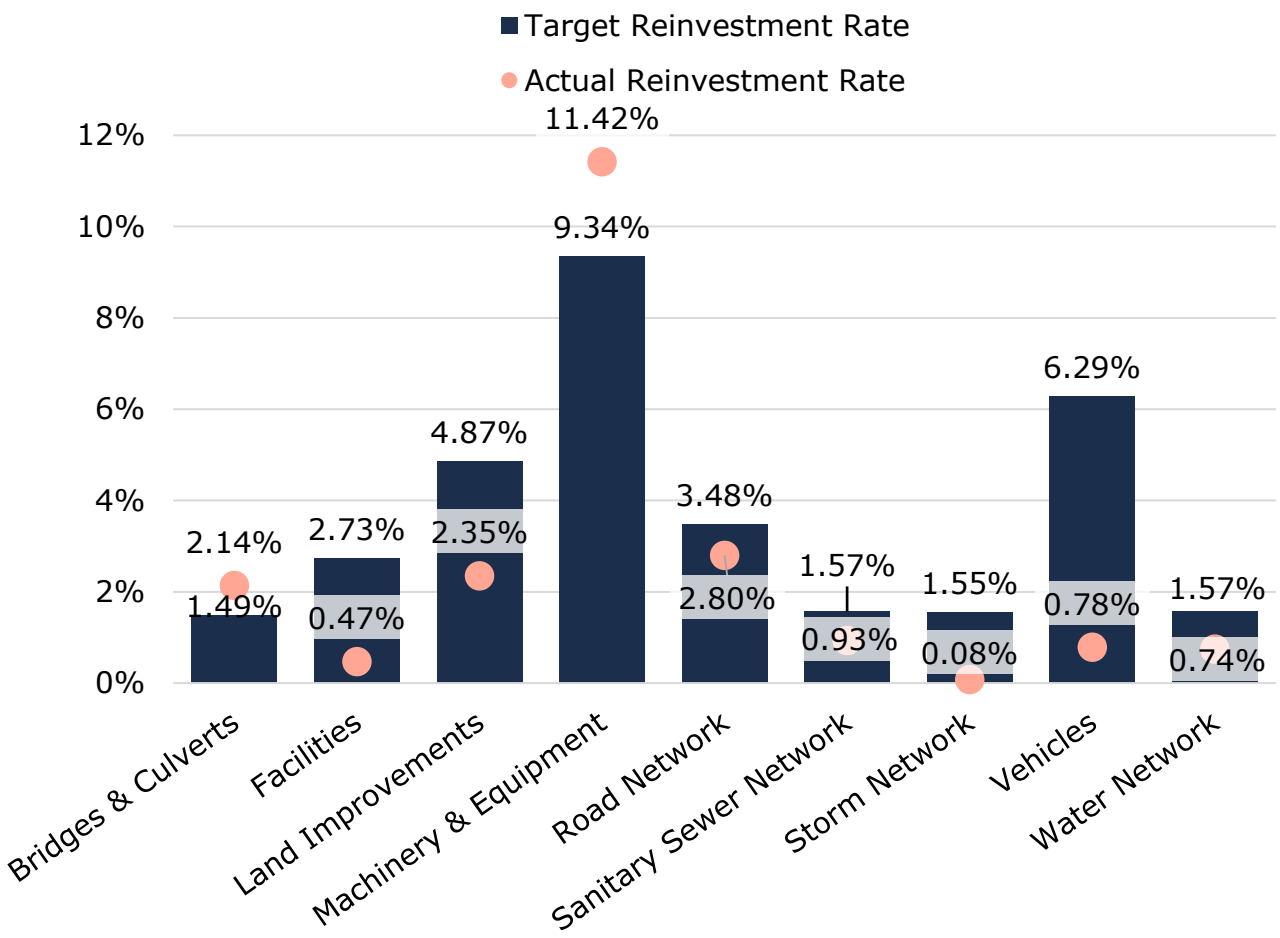


Figure 13 Current Vs. Target Reinvestment Rate

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, 78% of the Township's infrastructure portfolio is in fair or better condition, with the remaining 22% in poor or worse condition. Typically, assets in poor or worse condition may require replacement or major rehabilitation in the immediate or short-term. Targeted condition assessments may help further refine the list of assets that may be candidates for immediate intervention, including potential replacement or reconstruction.

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

Condition data was available for just over half (51%) of assets. For all remaining assets, 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.

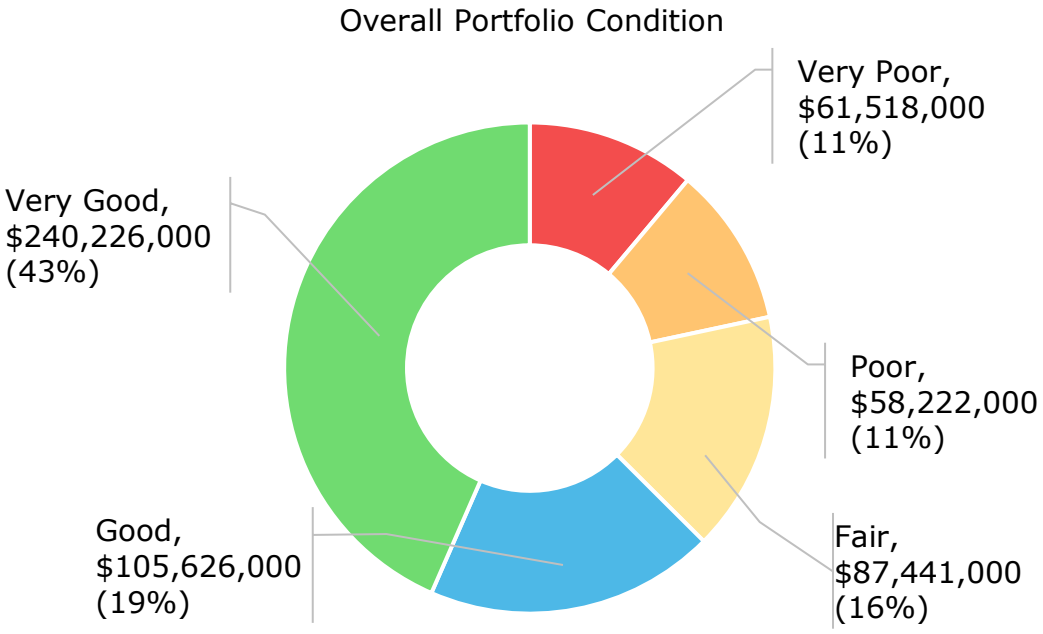
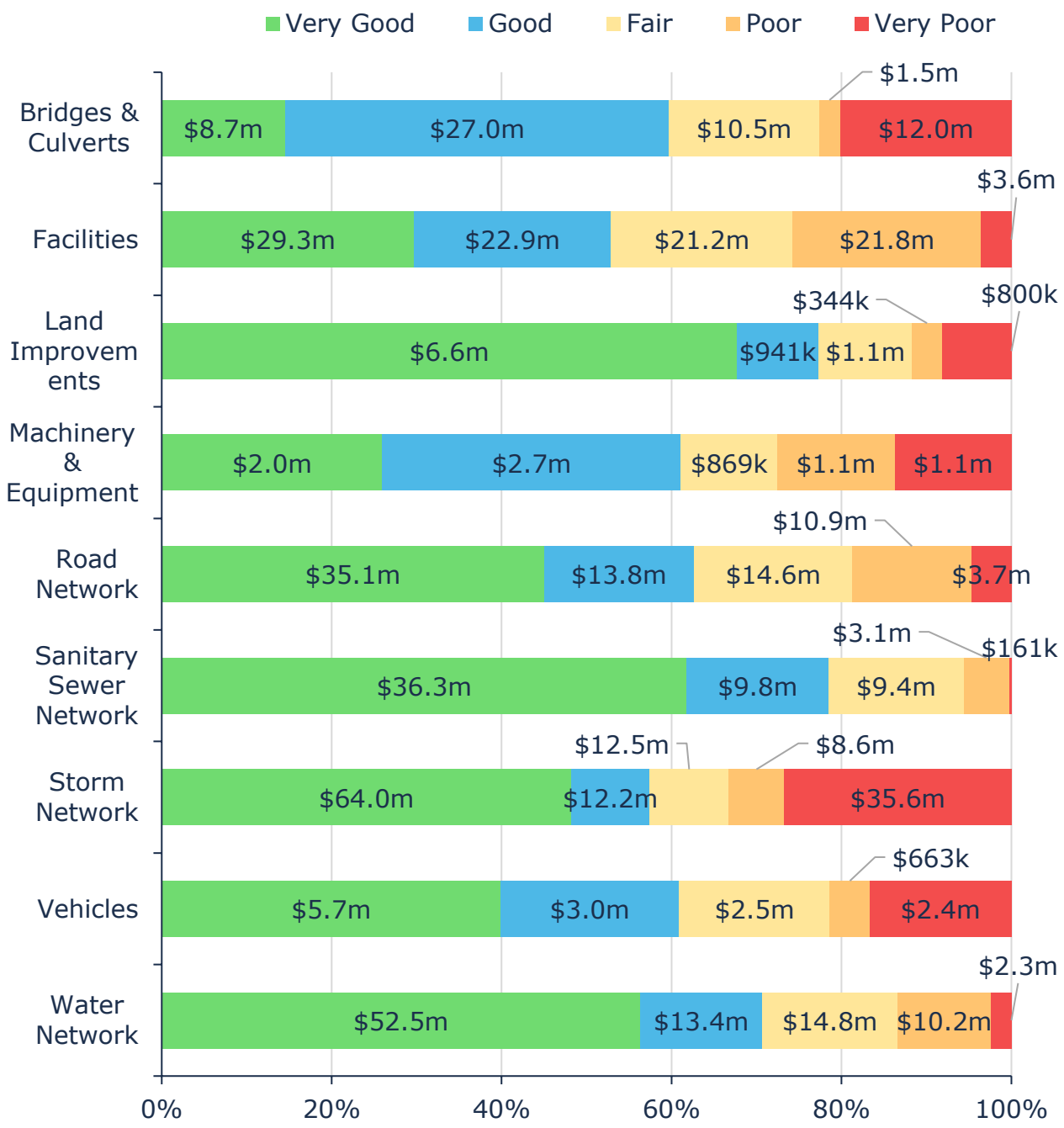


Figure 14 Asset Condition: Portfolio Overview

As further illustrated in Figure 15 at the category level, the majority of major, core infrastructure is in fair or better condition. These findings are based on in-field condition assessment data and age-based condition projections. See Table 7 for details on how condition data was derived for each asset segment.



Value and Percentage of Asset Segments by Replacement Cost

Figure 15 Asset Condition by Asset Category

Source of Condition Data

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

Asset Category	% of Assets with Assessed Condition	Source of Condition Data
Road Network	77%	Road Needs Study 2022 Sidewalks Canada Assessment Staff Assessments
Bridges & Culverts	94%	2023 OSIM Report
Storm Network	0%[6]	N/A
Facilities	100%	2023 Building Condition Assessment
Vehicles	100%	Staff Assessments
Machinery & Equipment	82%	Staff Assessments
Land Improvements	93%	Staff Assessments
Water Network	24%	2023 Building Condition Assessment Staff Assessments
Sanitary Sewer Network	23%	2023 Building Condition Assessment Staff Assessments

Table 7 Source of Condition Data

[6] The Township is in the process of updating its storm network data. Approximately 29% of all storm sewer mains have received a CCTV inspection in recent years.

3.2.4 Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 18% of the Township's assets will require replacement within the next 10 years (not accounting for asset replacement backlog).

3.2.5 Risk Matrix

Figure 16 shows how the Township's assets across the different asset categories are stratified within a risk matrix.

1 - 4 **Very Low** $199,648,056 (36%)	5 - 7 **Low** $117,144,763 (21%)	8 - 9 **Moderate** $53,102,595 (10%)	10 - 14 **High** $87,086,523 (16%)	15 - 25 **Very High** $96,051,584 (17%)

Figure 16 Risk Matrix: All Assets

The analysis shows that based on current risk models, approximately 17% of the Township's assets, with a current replacement cost of approximately $96.5 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.

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

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

Core Assets

4. Road Network

4.1 Inventory & Valuation

Table 8 summarizes the quantity, unit of measure, total replacement cost, and primary replacement cost method of each asset segment in the Township's road network inventory.

Segment[7]	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Curbs	22,154	Metres	$1,968,957	CPI
HCB Roads	193.7	Kilometres	$63,994,849	Cost per Unit
LCB Roads	30.1	Kilometres	$2,645,728	Cost per Unit
Sidewalks & Pathways	23,760	Metres	$7,306,717	CPI
Signs	1,456	Assets	$210,360	CPI
Streetlights	1,578	Assets	$1,946,250	User-Defined
	Total		**$78,072,861**	

Table 8 Detailed Asset Inventory: Road Network

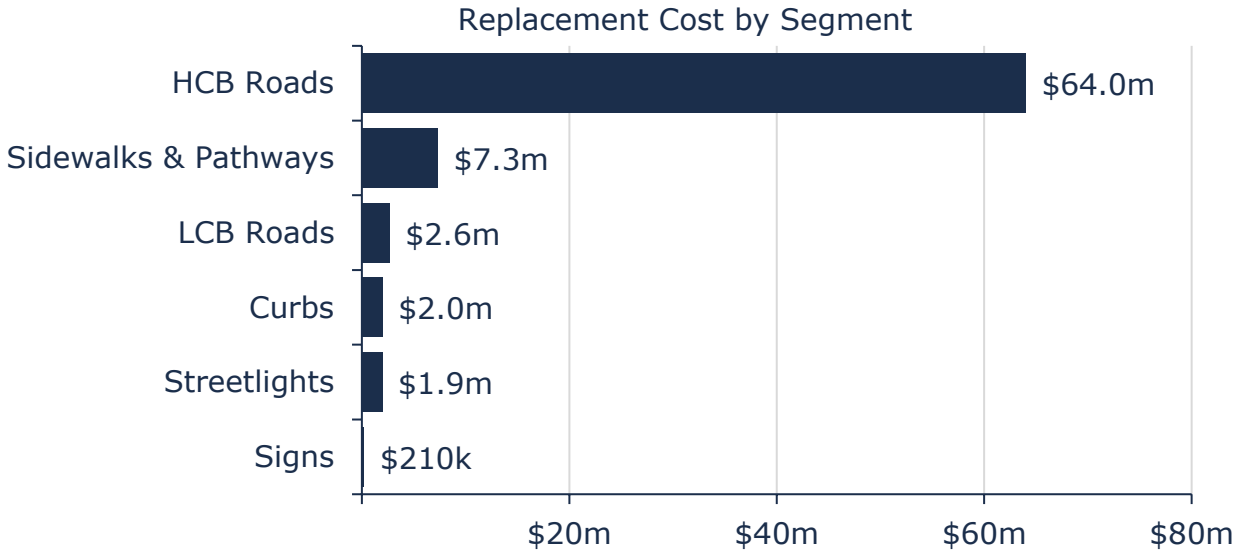


Figure 17 Portfolio Valuation: Road Network

[7] The Township also owns and manages 61.3 kms of unpaved (dirt, earth, and gravel) roads. Since both road types don't carry significant operating or capital costs, they have been excluded from this AMP.

4.2 Asset Condition

Figure 18 summarizes the replacement cost-weighted condition of the Township's Road network. Based on a combination of field inspection data and age, 81% of assets are in fair or better condition; the remaining 19% of assets are in poor to very poor condition. Condition assessments were available for 80% of HCB roads, 75% of LCB Roads and 85% of sidewalks, 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 18, most Township road network assets are in fair or better condition.

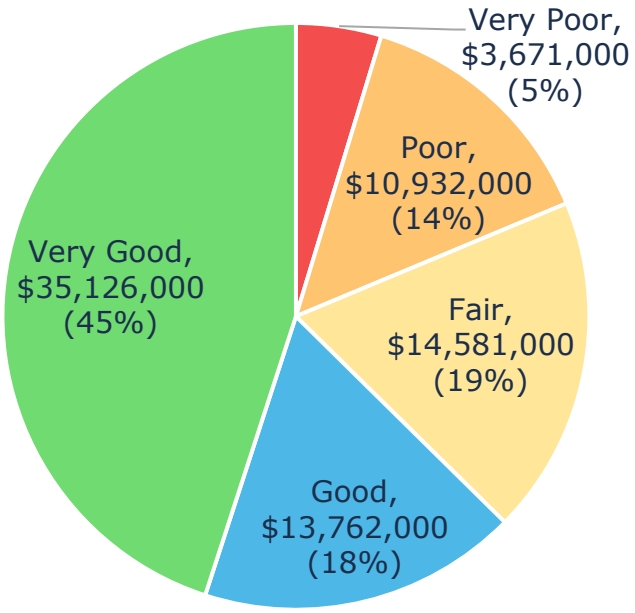


Figure 18 Asset Condition: Road Network Overall

As illustrated in Figure 19, based on condition assessments, the majority of the Township's Road network is in fair or better condition.

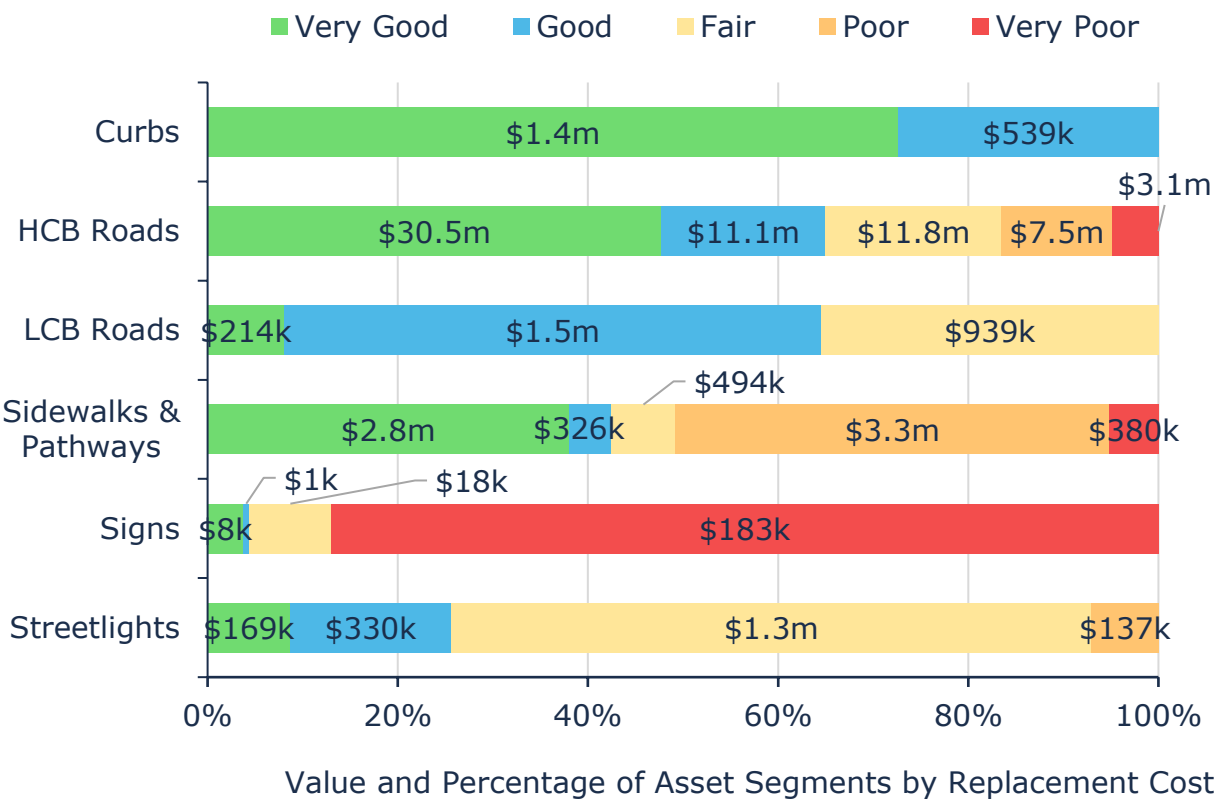


Figure 19 Asset Condition: Road Network by Segment

4.2.1 Current Approach to Condition Assessment

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 Township's current approach:

- Road assessments are performed every 5 years by a third-party consultant. The last assessment was in 2024. The Township aims to eventually conduct condition assessments every 3 years
- Streetlights are inspected once per year, at night, to ensure they function properly
- Sidewalks are inspected annually for accessibility concerns and evaluated for tripping hazards
- Street signs are evaluated annually for reflectivity
- Supporting infrastructure assessments are performed internally, as per MMS

4.3 Age Profile

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

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

Figure 20 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

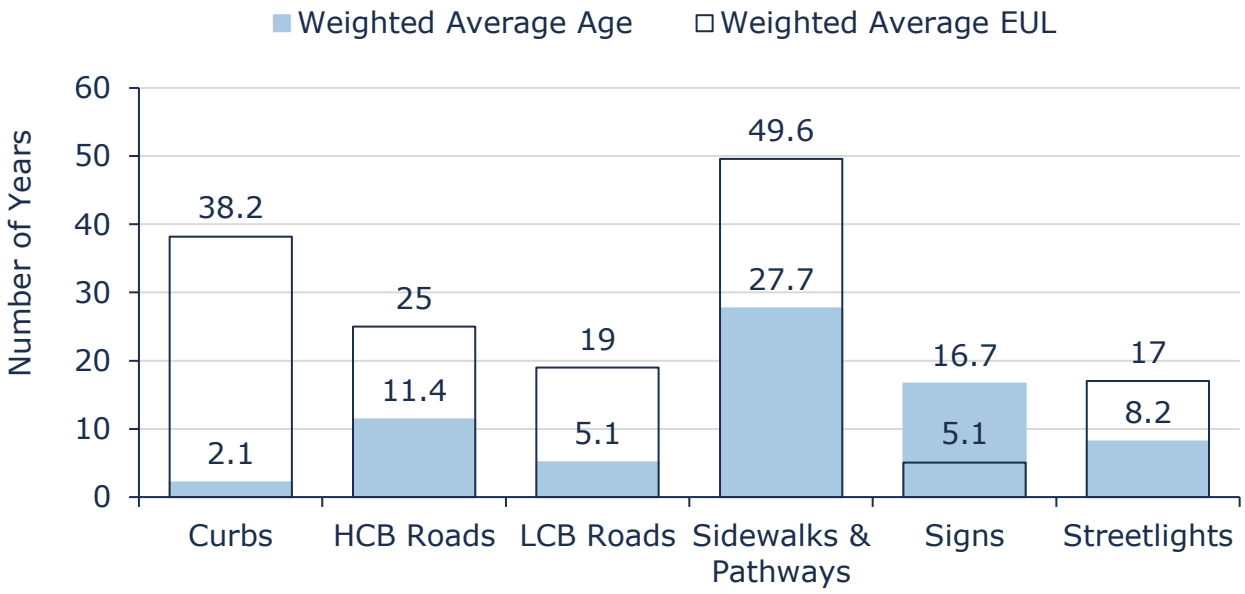


Figure 20 Estimated Useful Life vs. Asset Age: Road Network

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

4.4 Current Approach to Lifecycle Management

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

The following lifecycle strategies have been developed as a proactive approach to managing the lifecycle of LCB and HCB 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.

The following schedules outline the events taken by the Township in its care of Road Network:

Paved Roads (Rural HCB)[8]		
Event Name	**Event Class**	**Event Trigger**
Crack Sealing	Preventative Maintenance	6 Years 10 Months
Basic Resurfacing - 50mm (Rural)	Rehabilitation	15 Years 10 Months
Basic Resurfacing - 100mm (Rural)	Rehabilitation	33 Years 2 Months
Full Reconstruction	End of Life Replacement	58 Years 2 Months

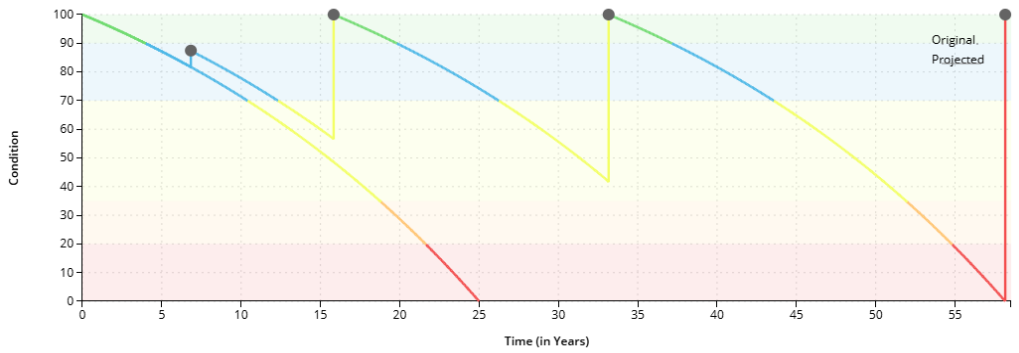


Table 9 Lifecycle Management Strategy: Road Network (Rural HCB)

Paved Roads (Urban HCB)[9]		
Event Name	**Event Class**	**Event Trigger**
Crack Sealing	Preventative Maintenance	6 Years 7 Months

[8] The lifecycle strategies for the rural HCB roads with grade restriction 100mm and 150mm.
[9] The lifecycle strategies for the urban HCB roads with grade restriction 90mm, 100mm, 150mm.

Full Reconstruction	End of Life Replacement	26 Years 11 Months

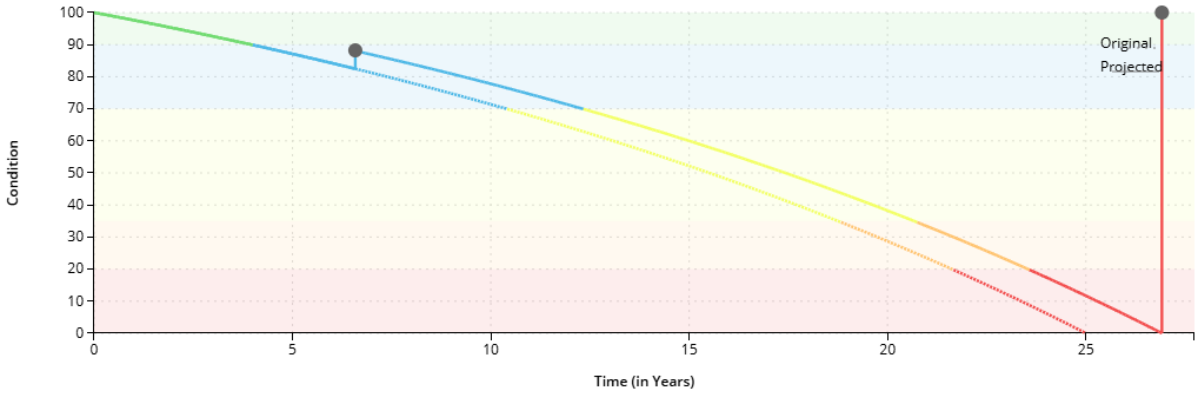


Table 10 Lifecycle Management Strategy: Road Network (Urban HCB)

Paved Roads (Urban HCB)[10]		
Event Name	**Event Class**	**Event Trigger**
Crack Sealing	Preventative Maintenance	6 Years 7 Months
Surface Course Paving (By Others)	Rehabilitation	8 Years
Full Reconstruction	End of Life Replacement	33 Years

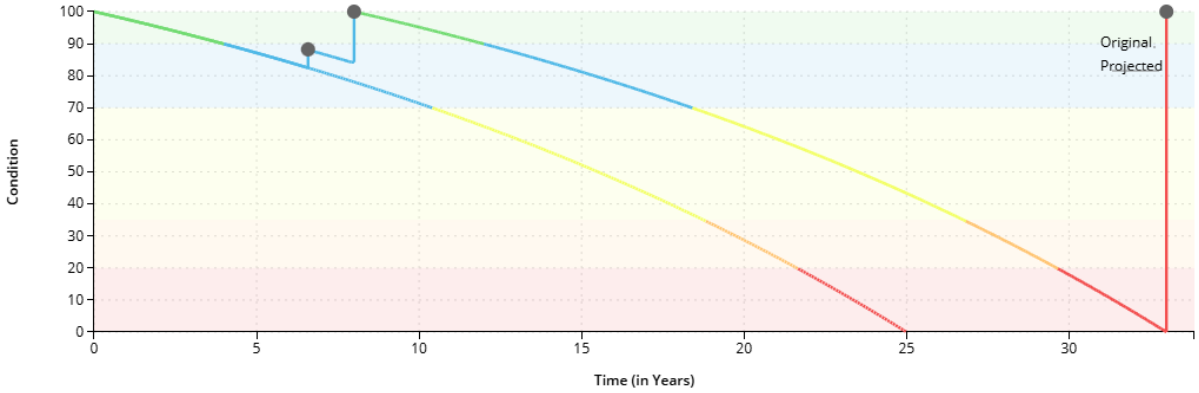


Table 11 Lifecycle Management Strategy: Road Network (Urban HCB)

Paved Roads (Urban HCB)[11]		
Event Name	**Event Class**	**Event Trigger**

[10] The lifecycle strategies for the urban HCB roads with grade restriction on base course 100mm.
[11] The lifecycle strategies for the urban HCB roads without grade restriction.

Crack Sealing	Preventative Maintenance	6 Years 7 Months
Basic Resurfacing - 50mm (Urban)	Rehabilitation	15 Years 10 Months
Basic Resurfacing - 100mm (Urban)	Rehabilitation	34Years 6 Months
Full Reconstruction	End of Life Replacement	59 Years 6 Months

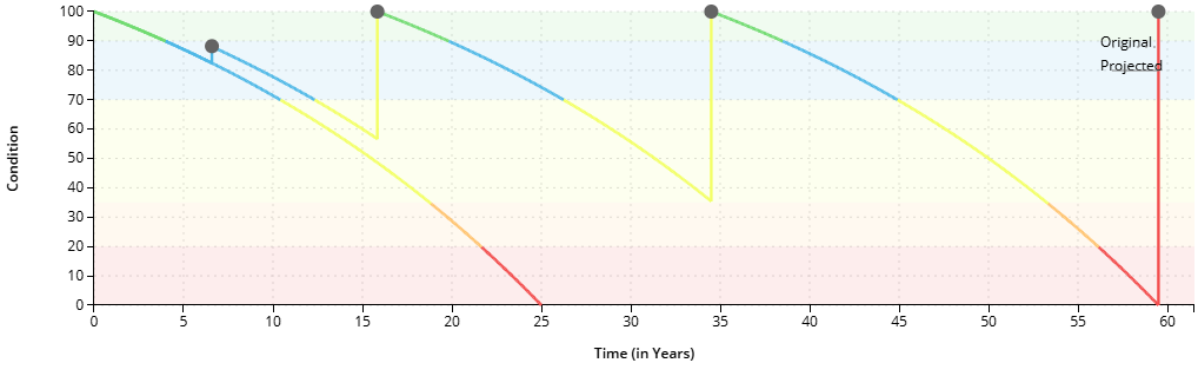


Table 12 Lifecycle Management Strategy: Road Network (Urban HCB)

Paved Roads (Rural LCB)		
Event Name	**Event Class**	**Event Trigger**
Crack Sealing	Preventative Maintenance	2 Years 4 Months
Full Reconstruction	End of Life Replacement	20 Years 11 Months

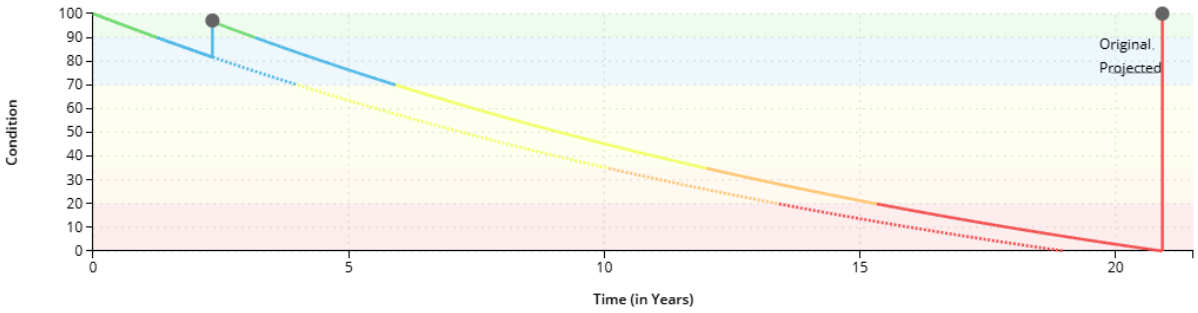


Table 13 Lifecycle Management Strategy: Road Network (Paved Roads - LCB)

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

Activity Type	Description of Current Strategy
Maintenance	Routine road patrols are performed in accordance with Ontario Minimum Maintenance Standards (MMS). Maintenance is triggered by visual inspection during routine patrols or upon notification from residents
	Potholes are repaired when notified by residents or discovered through road patrols
	Street sweeping is performed every spring season
	Vegetation control within road ditches and around guiderails is performed as necessary
	Crack sealing and overlay are undertaken on roads wherever feasible. Crack sealing is initiated when the total length of cracks equals the total length of the road and is inspected annually.
Rehabilitation	To streamline projects, the Township will concurrently rehabilitate aging sewers pipes (via CIPP), provided that the piping ovality remains intact
Replacement	Replacement is considered when an asset's condition has deteriorated significantly, making rehabilitation no longer cost-effective. Assets are replaced upon failure or prior to road paving if the asset is not expected to last longer than the surface

Table 14 Lifecycle Management Strategy: Road Network

4.5 Risk Analysis

The risk matrix below is generated using available asset data, including condition, service life remaining, replacement costs, and road class. The 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 **Very Low** $18,561,339 (24%)	5 - 7 **Low** $23,436,847 (30%)	8 - 9 **Moderate** $7,963,097 (10%)	10 - 14 **High** $13,696,987 (18%)	15 - 25 **Very High** $14,414,591 (18%)

Figure 21 Risk Matrix: Road Network

4.6 Levels of Service

The table that follows summarize the Township's current and proposed 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.

4.6.1 Levels of Service – Current

Metric Type	KPI Metric	Service Attribute	Current LOS
Community	Description, which may include maps, of the road network in the Township and its level of connectivity	Scope	Appendix B: Level of Service Maps
	Description or images that illustrate the different levels of road class pavement condition	Quality	The Township completed a Roads Needs Study in 2024 in coordination with Streetscan. Assets are groups as per the five-tier condition rating scale: Very Good: 90+ Good: 70-89 Fair: 35-69 Poor: 20-34 Very Poor: 0-19
Technical	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km2)	Scope	0

Metric Type	KPI Metric	Service Attribute	Current LOS
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km2)		1.12
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km2)		0.97
Technical	Average pavement condition index for paved roads in the Township	Quality	74

Table 15: Road Network – Current Levels of Service

4.6.2 Levels of Service – Proposed

The scenarios that were used to analyse Russell Township's inventory were run for 60-years to ensure all the lifecycles were included at least once. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Target Condition Good - this scenario utilizes a target average condition of 70% of the infrastructure within each asset category. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for the road network.

Scenarios	Replacement Cost	Average Condition	Average Risk Rating (0-25)[12]	Annual Capital Reinvestment
Scenario 1 – Lifecycle **(selected)**	$78,072,000	62%	10.39	$2,718,000
Scenario 2 - Current Capital Investment Rate		54%	12.08	$2,139,000
Scenario 3 - Maintain Condition 70%		70%	9.19	$3,284,000

4.6.3 10-Year Capital Forecast

Below is the projected ten-year capital forecast (scenario 1) needed to obtain full funding, within the recommended timeframe (see 1.4).

Segment	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Curbs	-	-	-	-	-	-	-	-	-	-
HCB Roads	$1.8m	$2.2m	$2.7m	$2.0m	$2.3m	$1.7m	$2.0m	$1.7m	$1.1m	$932k
LCB Roads	$8k	-	-	-	-	-	$77k	$300k	$91k	$19k
Sidewalks & Pathways	-	-	-	-	-	-	-	$25k	-	$258k
Signs	$2k	-	$18k	$1k	-	$183k	$8k	$18k	$1k	-
Streetlights	-	-	-	-	-	$63k	$74k	$12k	$1.3m	-
Total	**$1.8m**	**$2.2m**	**$2.7m**	**$2.0m**	**$2.3m**	**$1.9m**	**$2.2m**	**$2.1m**	**$2.5m**	**$1.2m**

[12] See 2.3.2

5. Bridges & Culverts

5.1 Inventory & Valuation

Table 16 summarizes the quantity, unit of measure, total replacement cost, and primary replacement cost method of each asset segment in the Township's bridges & culverts.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Bridges	14	Assets	$39,678,830	User-Defined
Pedestrian Bridges	2	Assets	$715,800	User-Defined
Structural Culverts	9	Assets	$19,279,900	User-Defined
TOTAL			**$59,674,530**	

Table 16 Detailed Asset Inventory: Bridges & Culverts

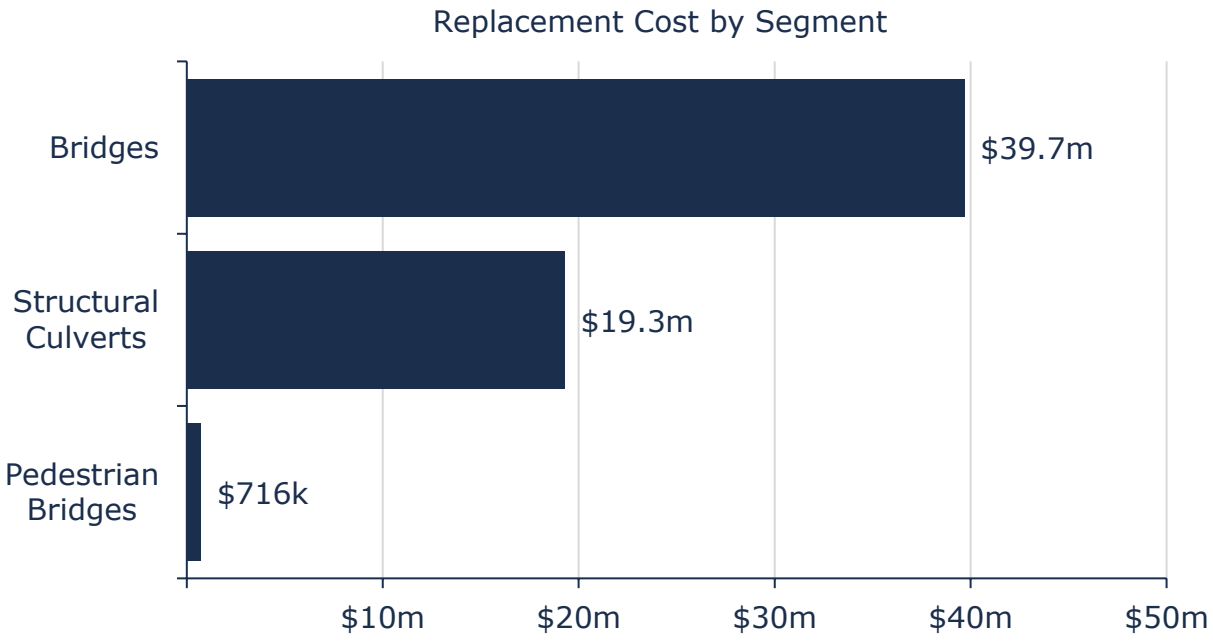


Figure 22 Portfolio Valuation: Bridges & Culverts

5.2 Asset Condition

Figure 23 summarizes the replacement cost-weighted condition of the Township's bridges and culverts. Based on the Township's latest Ontario Structures Inspection Manual (OSIM) assessments, 78% bridges and

structural 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.

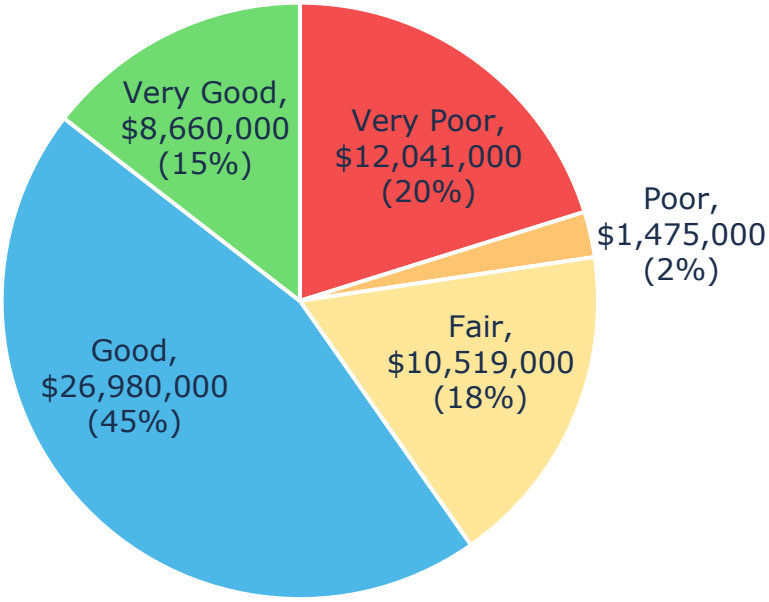


Figure 23 Asset Condition: Bridges & Culverts Overall

As illustrated in Figure 24, based on condition assessments, the majority of the Township's bridges & culverts are in fair or better condition.

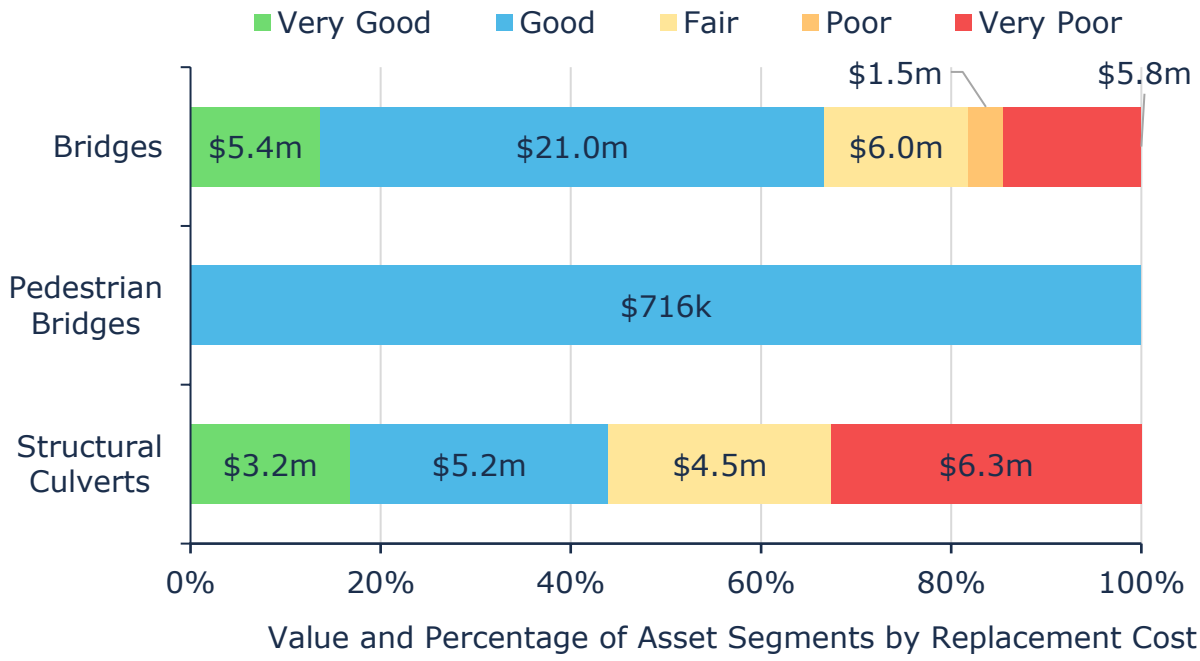


Figure 24 Asset Condition: Bridges & Culverts by Segment

5.2.1 Current Approach to Condition Assessment

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 Township's current approach:

- Condition assessments for all bridges and culverts within the Township are conducted biennially, following the guidelines of the Ontario Structure Inspection Manual (OSIM). The last inspection was performed in 2023 by TSI Inc.

5.3 Age Profile

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

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

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

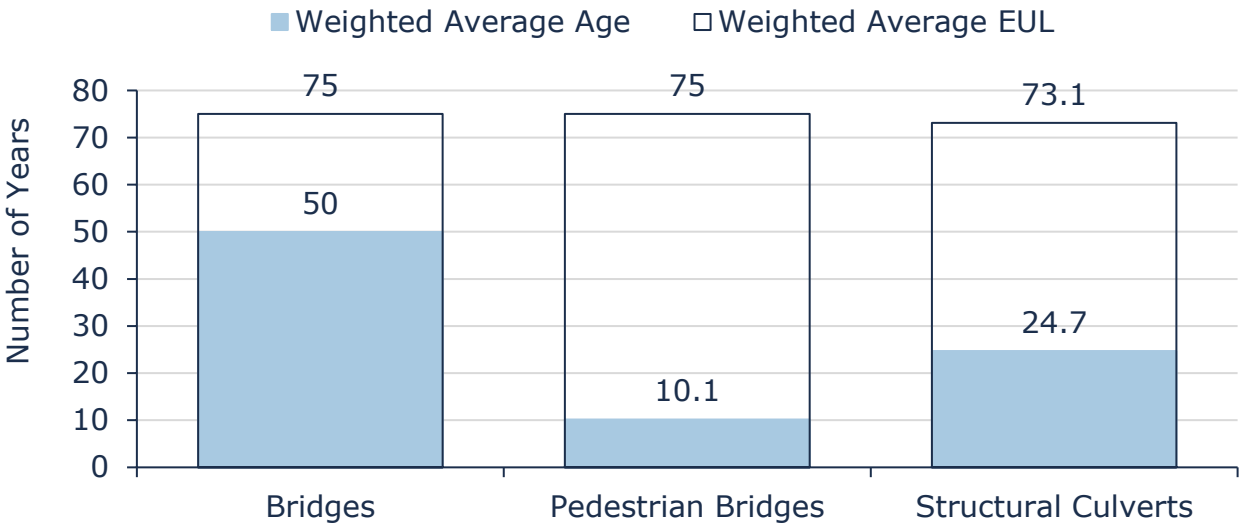


Figure 25 Estimated Useful Life vs. Asset Age: Bridges & Culverts

5.4 Current Approach to Lifecycle Management

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

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

Activity Type	Description of Current Strategy
Maintenance	Routine maintenance activities for bridges and culverts include inspections, cleaning, minor repairs, and vegetation management
	Cleaning and minor repairs are completed annually or on an as-needed basic
Rehabilitation / Replacement	Rehabilitation and replacement activities are driven by the results of mandated structural inspections competed according to the Ontario Structure Inspection Manual (OSIM)
Inspection	The most recent inspection report was completed in 2023 by TSI Inc.

Table 17 Lifecycle Management Strategy: Bridges & Culverts

5.5 Risk Analysis

The risk matrix below is generated using available asset data, including condition 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 *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

1 - 4 **Very Low** $253,665 (<1%)	5 - 7 **Low** $8,637,810 (14%)	8 - 9 **Moderate** $5,986,100 (10%)	10 - 14 **High** $29,437,360 (49%)	15 - 25 **Very High** $15,359,595 (26%)

Figure 26 Risk Matrix: Bridges & Culverts

5.6 Levels of Service

The table that follows summarize the Township's current and proposed 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.

5.6.1 Levels of Service – Current

Metric Type	KPI Metric	Service Attribute	Current LOS
Community	Description of the traffic that is supported by municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Scope	Bridges and structural culverts are a key component of the municipal transportation network. Structures allow for most types of vehicles, including heavy transport, emergency vehicles, and cyclists Within the Township, only bridge structure R-027 has a loading limit (14 tons).

Metric Type	KPI Metric	Service Attribute	Current LOS
	Description or images of the condition of bridges and culverts and how this would affect use of the bridges and culverts	Quality	Appendix B: Level of Service Maps
Technical	% of bridges in the Township with loading or dimensional restrictions	Scope	1.4%[13]
	Average bridge condition index value for bridges in the Township	Quality	69
	Average bridge condition index value for structural culverts in the Township		68

Table 18: Bridges & Structural Culverts – Current Levels of Service

5.6.2 Levels of Service – Proposed

The scenarios that were used to analyse Russell Township's inventory were run for 85-years to ensure all the lifecycles were included at least once. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Target Condition Good - this scenario utilizes a target average condition of 70% of the infrastructure within each asset category. The condition value was held, and the annual investment was then determined.

[13] 1 of the Township's 29 bridges and culvert assets (3.4%) has a loading limit/restriction. Replacement cost weighted: 1.4%

The table below outlines the results for each scenario for the Township's bridges & structural culverts.

Scenarios	Replacement Cost	Average Condition	Average Risk Rating (0-25)[14]	Annual Capital Reinvestment
Scenario 1 – Lifecycle **(selected)**	$59,675,000	54%	16.99	$ 887,903
Scenario 2 - Current Capital Investment Rate		53%	16.99	$ 1,252,000
Scenario 3 - Maintain Condition 70%		72%	12.37	$1,394,000

Table 19: Bridges & Structural Culverts - Proposed Levels of Service Scenarios

5.6.3 10-Year Capital Forecast

Below is the projected ten-year capital forecast (scenario 1) needed to obtain full funding, within the recommended timeframe (see 1.4).

Segment	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Bridges	$1.1m	$737k	$509k	$566k	$484k	$468k	$747k	-	-	-
Pedestrian Bridges	-	-	-	-	-	-	-	-	-	-
Structural Culverts	$1.9m	$145k	$1.9m	$220k	-	$2.7m	$13k	$230k	-	-
Total	**$3.0m**	**$882k**	**$2.4m**	**$786k**	**$484k**	**$3.2m**	**$760k**	**$230k**	**-**	**-**

Table 20: Bridges & Structural Culverts - 10-Year Capital Forecast

[14] See 2.3.2

6. Water Network

6.1 Inventory & Valuation

Table 21 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 (Components)	Unit of Measure	Replacement Cost	Primary RC Method
Booster Station	1	Facilities	$2,205,620	User-Defined
Hydrants	723	Assets	$3,940,625	User-Defined
Misc. Equipment	2	Assets	$6,310	CPI
Reservoirs	1	Facilities	$6,262,350	User-Defined
Valves	1,648	Assets	$8,465,809	User-Defined
Water Standpost	38,312	Assets	$19,380,009	Cost per Unit
Water Towers	3	Facilities	$12,659,166	User-Defined
Watermains	131,550	Metres	$40,209,474	Cost per Unit
TOTAL			**$93,129,364**	

Table 21 Detailed Asset Inventory: Water Network

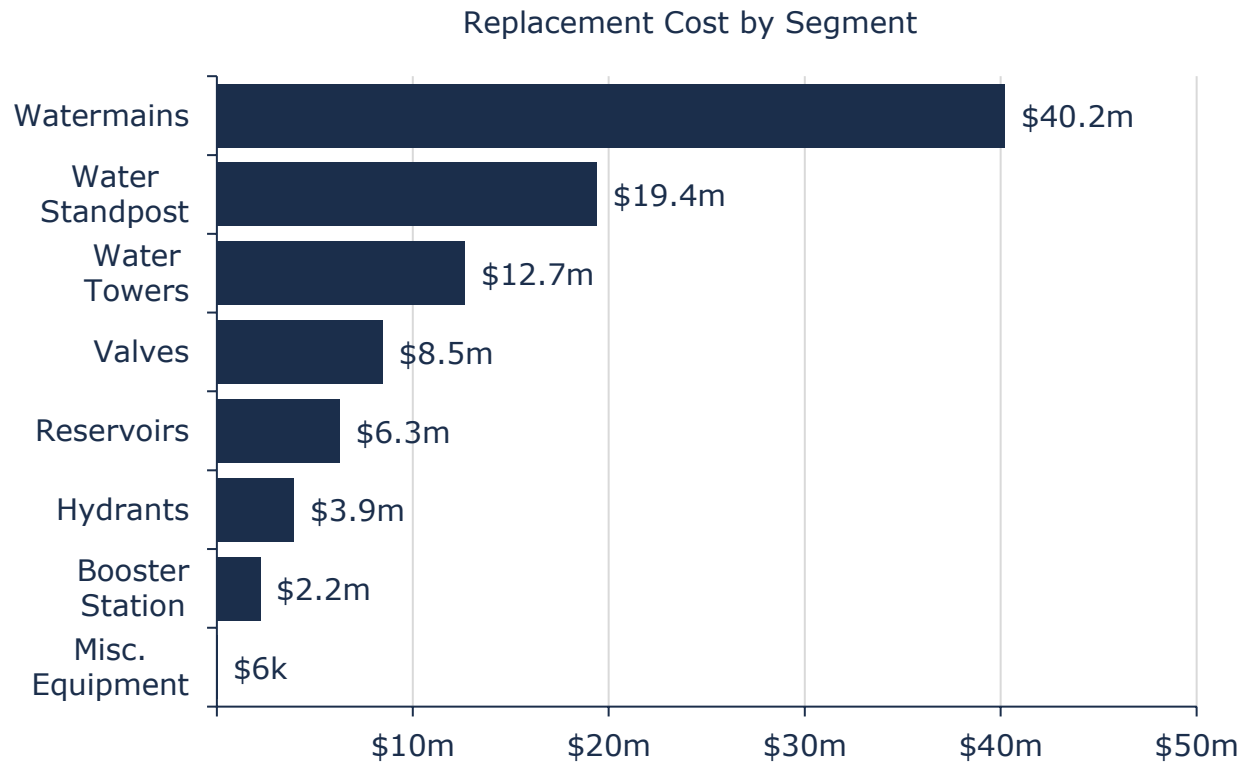


Figure 27 Portfolio Valuation: Water Network

6.2 Asset Condition

Figure 28 summarizes the replacement cost-weighted condition of the Township's water network. Based on a combination of field inspection data and age, 87% of assets are in fair or better condition; the remaining 13% of assets are in poor to very poor condition. Condition assessments were available for 24% of assets in the category.

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.

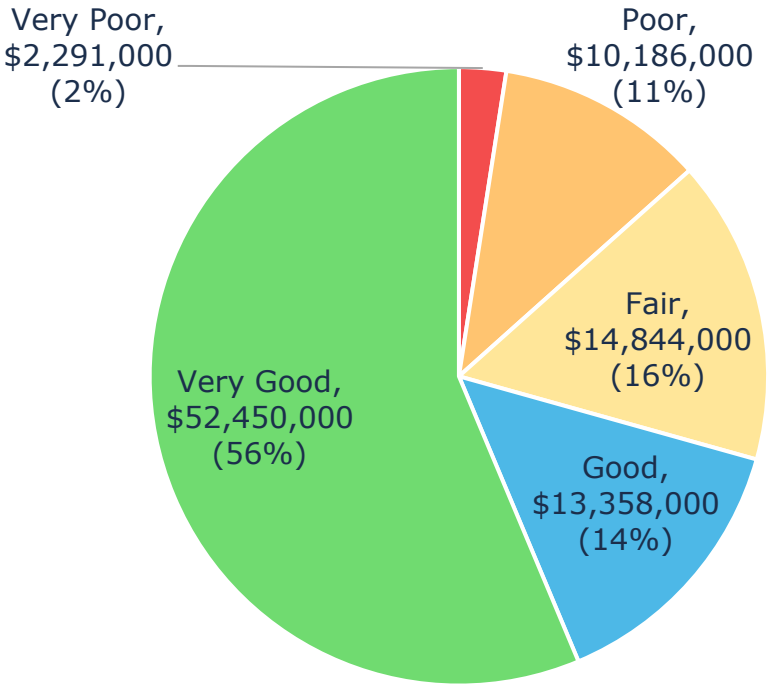


Figure 28 Asset Condition: Water Network Overall

As illustrated in Figure 29, most of the Township's water network assets are in fair or better condition.

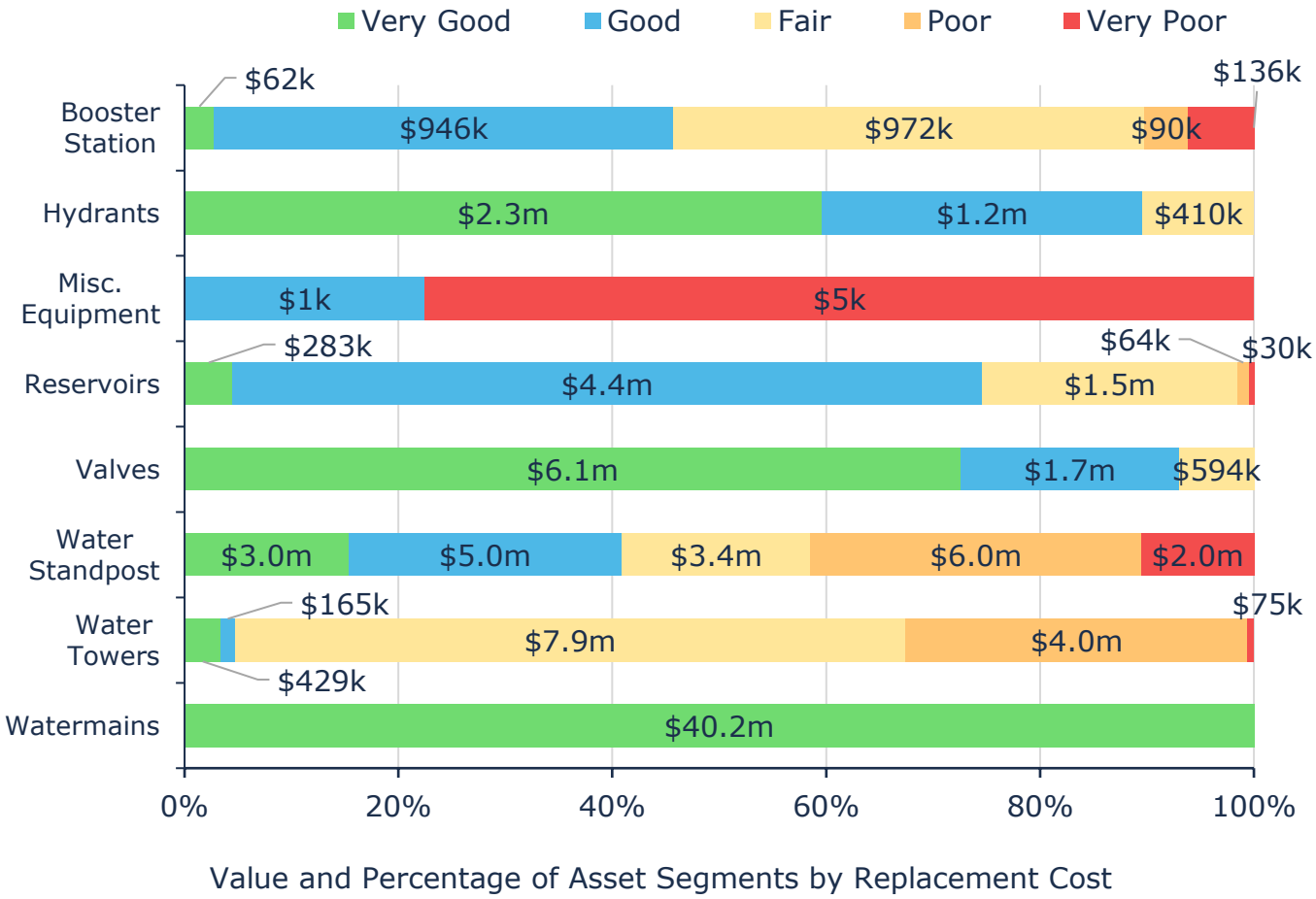


Figure 29 Asset Condition: Water Network by Segment

6.2.1 Current Approach to Condition Assessment

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 Township's current approach:

- There is currently no program in place for the condition assessment of water main pipes and standposts
- Valves, valve chambers, pumps, and air release valves are inspected annually, and fire hydrants are inspected semi-annually to ensure safety and functionality
- The reservoir and booster station, along with their components, are inspected weekly through visual and audible checks

- A standardized checklist is used for inspecting hydrants, components of the booster stations, and the reservoir
- Condition assessments for supporting infrastructure are performed by internal staff

6.3 Age Profile

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

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

Figure 30 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

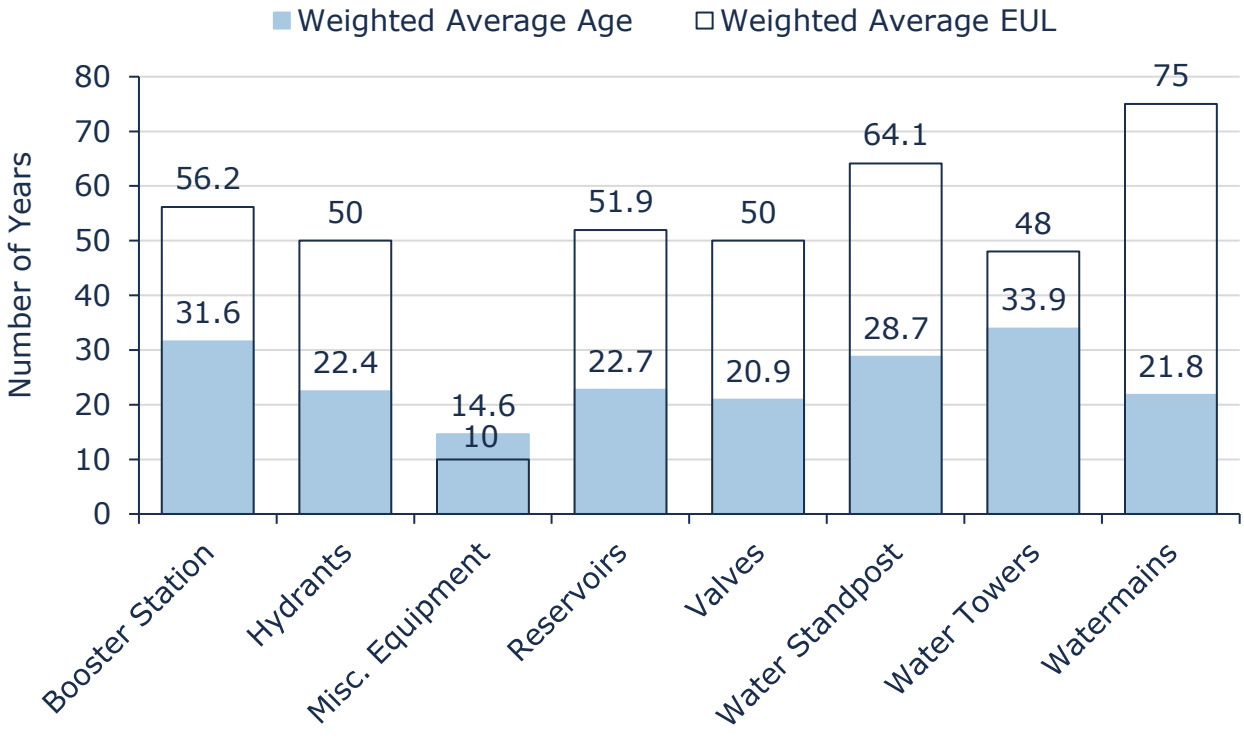


Figure 30 Estimated Useful Life vs. Asset Age: Water Network

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/Rehabilitation	Routine maintenance activities include flushing, flow testing, minor repairs, and valve turning. Flushing is conducted annually, flow testing every five years, valve turning annually, and minor repairs as required. Inspections are typically performed weekly, with maintenance triggered by visual inspections
	Rehabilitation programs are initiated as required, often triggered by component failure or visual inspections indicating deterioration
Replacement	Pump components, water valve components, hydrant components, or entire hydrants, and standposts are replaced on an as-needed basis
	Assets nearing the end of their expected service life, or those incurring frequent and costly repairs, are prioritized for replacement. Additionally, assets with a higher risk or consequence of failure are given priority for replacement

Table 22 Lifecycle Management Strategy: Water Network

6.5 Risk Analysis

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

The matrix stratifies assets based on their individual probability and consequence of failure; each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the 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 **Very Low** $54,969,189 (59%)	5 - 7 **Low** $21,516,389 (23%)	8 - 9 **Moderate** $5,068,150 (5%)	10 - 14 **High** $8,009,435 (9%)	15 - 25 **Very High** $3,566,200 (4%)

Figure 31 Risk Matrix: Water Network

6.6 Levels of Service

The table that follows summarizes the Township's current and proposed 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.

6.6.1 Levels of Service – Current

Metric Type	KPI Metric	Service Attribute	Current LOS
Community	Description, which may include maps, of the user groups or areas of the Township that are connected to the municipal water system	Scope	Appendix B: Level of Service Maps
	Description, which may include maps, of the user groups or areas of the Township that have fire flow		Appendix B: Level of Service Maps
Community	Description of boil water advisories and service interruptions	Reliability	The Township did not experience any service interruptions in 2024. The Township follows Ontario's Drinking Water Quality Management Standard (DWQMS). The Township delivers boil water advisories to affected households.

Metric Type	KPI Metric	Service Attribute	Current LOS
Technical	% of properties connected to the municipal water system	Scope	65%
	% of properties where fire flow is available		100%
	# 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	Reliability	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		<1

Table 23: Water Network – Current Levels of Service

6.6.2 Levels of Service – Proposed

The scenarios that were used to analyse Russell Township's inventory were run for 100-years to ensure all the lifecycles were included at least once. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Target Condition Good - this scenario utilizes a target average condition of 70% of the infrastructure within each asset category. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for the water network.

Scenarios	Replacement Cost	Average Condition	Average Risk Rating (0-25)[15]	Annual Capital Reinvestment
Scenario 1 – Lifecycle **(selected)**	$93,129,000	67%	6.97	$ 1,459,000
Scenario 2 - Current Capital Investment Rate		41%	11.05	$ 690,000
Scenario 3 - Maintain Condition 70%		70%	5.87	$2,048,000

Table 24: Water Network - Proposed Levels of Service Scenarios

[15] See 2.3.2

6.6.3 10-Year Capital Forecast

Below is the projected ten-year capital forecast (scenario 1) needed to obtain full funding, within the recommended timeframe (see 1.4).

Segment	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Booster Station	$11k	$2k	-	$40k	-	$13k	-	-	$20k	$16k
Hydrants	-	-	-	-	-	-	-	-	$5k	$3k
Misc. Equipment	-	-	-	-	-	-	-	$1k	-	-
Reservoirs	$42k	$3k	$30k	$22k	-	$42k	-	-	$6k	-
Valves	-	-	-	-	-	-	-	-	-	-
Water Standpost	-	-	-	-	-	-	-	-	-	$2.0m
Water Towers	$48k	$1k	$1k	$151k	$30k	$3k	$159k	-	$27k	$3.9m
Watermains	-	-	-	-	-	-	-	-	-	-
Total	**$100k**	**$6k**	**$31k**	**$213k**	**$30k**	**$57k**	**$159k**	**$1k**	**$57k**	**$5.9m**

Table 25: Water Network - 10-Year Capital Forecast

7. Sanitary Sewer Network

7.1 Inventory & Valuation

Table 26 summarizes the quantity and current replacement cost of the Township's various sanitary sewer network assets as managed in its primary asset management register, Citywide.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Force mains	20,953	Metres	$7,445,477	User-Defined
Lagoons	26,940	Square Feet	$6,111,282	User-Defined
Manholes	1,036	Assets	$10,039,938	User-Defined
Misc. Equipment	24	Assets	$4,949,172	CPI
Pumping Stations	76,470	Square Feet	$9,851,164	User-Defined
Sewer Mains	72,572	Metres	$20,400,190	Cost per Unit
TOTAL			**$58,797,223**	

Table 26 Detailed Asset Inventory: Sanitary Sewer Network

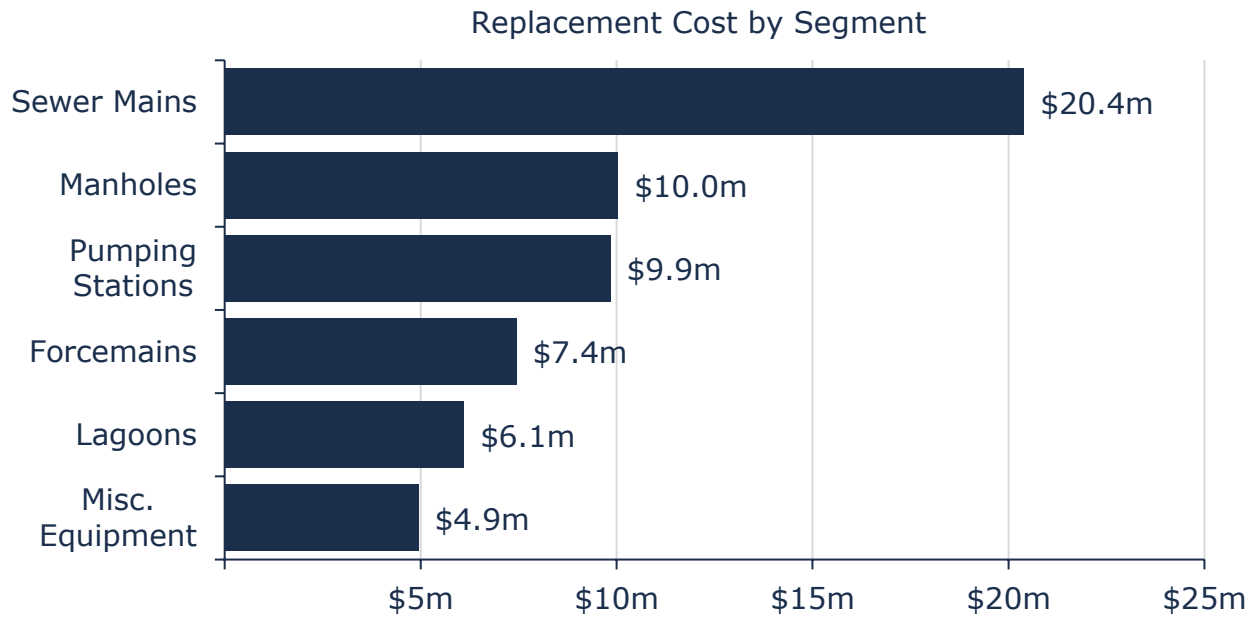


Figure 32 Portfolio Valuation: Sanitary Sewer Network

7.2 Asset Condition

Figure 33 summarizes the replacement cost-weighted condition of the Township's sanitary sewer network. Based on a combination of field inspection data and age, 94% of assets are in fair or better condition; the remaining 6% of assets are in poor to very poor condition. Condition assessments were available for 23% of sanitary sewer network assets, based on replacement cost.

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 Figure 33 in most the Township's Sanitary Sewer System assets are in fair or better condition.

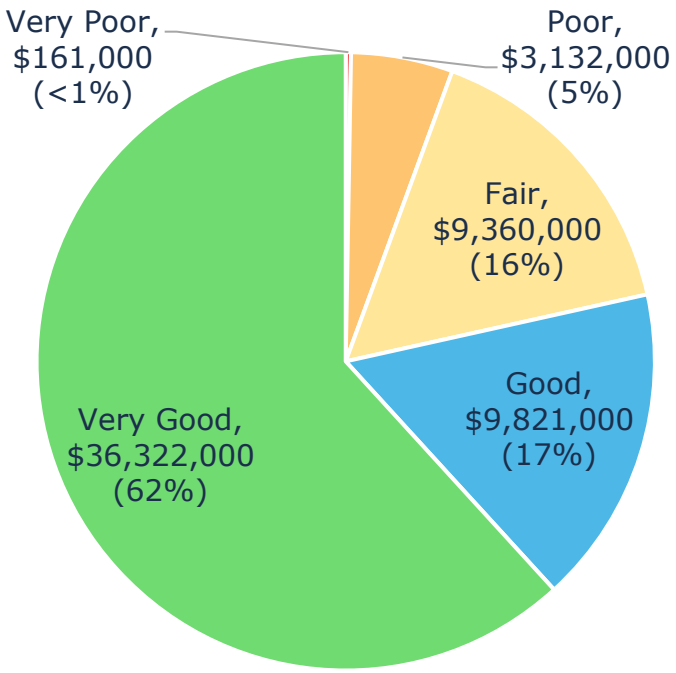


Figure 33 Asset Condition: Sanitary Sewer Network Overall

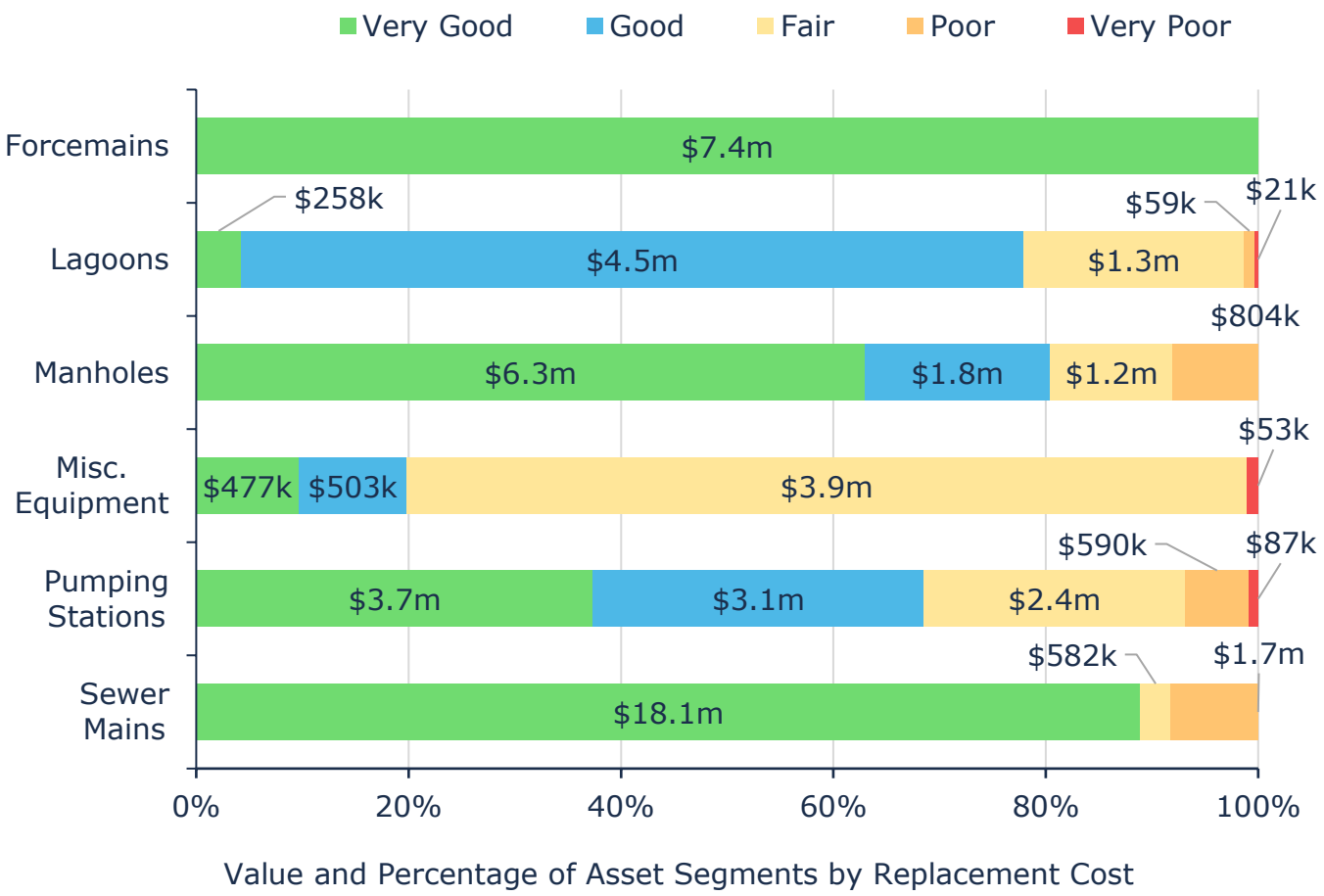


Figure 34 Asset Condition: Sanitary Sewer Network by Segment

7.2.1 Current Approach to Condition Assessment

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 Township's current approach:

- There is currently no dedicated program in place for the condition assessment of sanitary mains
- Maintenance holes are inspected on an annual basis
- Pump stations and lagoons are inspected weekly to ensure safety and functionality
- A standardized checklist is used for assessments, covering factors such as structural adequacy

- Assessments are primarily conducted by the internal maintenance team, with external contractors engaged for specialized assessments

7.3 Age Profile

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

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

Figure 35 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets. Overall, all sanitary assets are well within their expected useful life, with sewer mains and manholes being the oldest but still far from end of life.

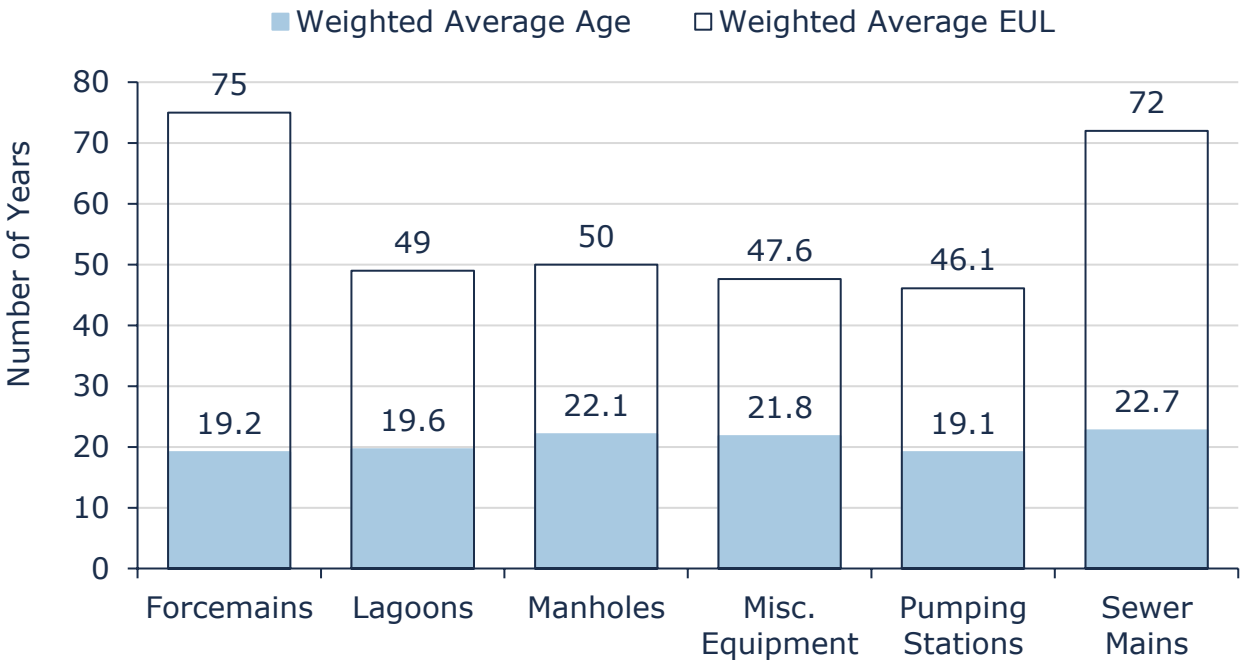


Figure 35 Estimated Useful Life vs. Asset Age: Sanitary Sewer System

7.4 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 strategy has been developed as a proactive approach to managing the lifecycle of sanitary mains. A trenchless re-lining strategy is expected to extend the service life of sanitary mains at a lower total cost of ownership.

Activity Type	Description of Current Strategy
Maintenance	Gravity mains flushed and reamed as issues are identified through CCTV inspections.
Rehabilitation	When applicable, rehabilitation activities include trenchless relining, structural repairs, and upgrading outdated systems
	Currently, there is no formal rehabilitation program, and rehabilitation is only initiated when an issue occurs
Replacement	Asset replacement occurs upon failure or when an asset is nearing the end of its life, and the consequence of failure is significant
	Trigger points for replacement are periodically reviewed to ensure they align with asset conditions and evolving best practices

Table 27 Lifecycle Management Strategy: Sanitary Sewer Network

7.5 Risk Analysis

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

The matrix stratifies assets based on their individual probability and consequence of failure; each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the 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 **Very Low** $33,238,150 (57%)	5 - 7 **Low** $13,371,974 (23%)	8 - 9 **Moderate** $6,718,916 (11%)	10 - 14 **High** $5,318,183 (9%)	15 - 25 **Very High** $150,000 (<1%)

Figure 36 Risk Matrix: Sanitary Sewer System

7.6 Levels of Service

The table that follows summarizes the Township's current and proposed 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.

7.6.1 Levels of Service – Current

Metric Type	KPI Metric	Service Attribute	Current LOS
Community	Description, which may include maps, of the user groups or areas of the Township that are connected to the municipal wastewater system	Scope	Appendix B: Level of Service Maps
	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes	Reliability	The Township does not own any combined sewers
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches		The Township does not own any combined sewers

Metric Type	KPI Metric	Service Attribute	Current LOS
	Description of how storm water can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	Reliability	Grounwater can enter sanitary sewers due to cracks in sanitary mains or through indirect connections (e.g. weeping tiles). In the case of heavy rainfall events, sanitary sewers may experience a volume of water and sewage that exceeds its designed capacity. In some cases, this can cause water and/or sewage to overflow backup into homes. the disconnection of weeping tiles from sanitary mains and the use of sump pumps and pits directing storm water to the storm drain system can help to reduce the chance of this occurring. To mitigate the negative impacts of this, the Township ensures that all new homes are installed with backwater valves
Community	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to Storm Sewer infiltration	Reliability	The Township follows a series of design standards that integrate servicing requirements and land use considerations when constructing or replacing sanitary sewers. These standards have been determined with consideration of the minimization of sewage overflows and backups.
	Description of the effluent that is discharged from sewage treatment plants in	Reliability	Effluent refers to water pollution that is discharged from a wastewater treatment plant, and may

Metric Type	KPI Metric	Service Attribute	Current LOS
	the municipal wastewater system		include suspended solids, total phosphorous and biological oxygen demand. The Environmental Compliance Approval (ECA) identifies the effluent criteria for municipal wastewater treatment plants.
Technical	% of properties connected to the municipal wastewater system	Scope	62%
Technical	# of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system	Reliability	0
Technical	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system		<1
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system		3

Table 28: Sanitary Sewer Network – Current Levels of Service

7.6.2 Levels of Service – Proposed

The scenarios that were used to analyse Russell Township's inventory were run for 100-years to ensure all the lifecycles were included at least once. They are also all based on the data available in the asset management system which

outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Target Condition Good - this scenario utilizes a target average condition of 70% of the infrastructure within each asset category. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for the sanitary sewer network.

Scenarios	Replacement Cost	Average Condition	Average Risk Rating (0-25)[16]	Annual Capital Reinvestment
Scenario 1 – Lifecycle **(selected)**		66%	7.74	$ 922,000
Scenario 2 - Current Capital Investment Rate	$58,797,000	40%	11.65	$ 548,000
Scenario 3 - Maintain Condition 70%		70%	7.22	$1,730,000

Table 29: Sanitary Sewer Network - Proposed Levels of Service Scenarios

[16] See 2.3.2

7.6.3 10-Year Capital Forecast

Below is the projected ten-year capital forecast (scenario 1) needed to obtain full funding, within the recommended timeframe (see 1.4).

Segment	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Forcemains	-	-	-	-	-	-	-	-	-	-
Lagoons	$28k	$5k	$6k	$47k	$43k	$4k	-	$4k	$547k	$14k
Manholes	-	-	-	-	-	-	-	-	-	-
Misc. Equipment	-	$28k	$5k	-	-	$24k	$46k	$5k	$5k	-
Pumping Stations	$9k	$49k	-	$28k	$217k	$45k	$185k	$2k	$113k	$337k
Sewer Mains	-	-	-	-	-	-	-	-	-	-
Total	**$36k**	**$82k**	**$11k**	**$75k**	**$261k**	**$72k**	**$231k**	**$11k**	**$665k**	**$351k**

Table 30: Sanitary Sewer Network - 10-Year Capital Forecast

8. Storm Network

8.1 Inventory & Valuation

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

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Catch Basins	2,901	Assets	$13,982,549	User-Defined
Culverts	4,219	Metres	$1,518,738	User-Defined
Manholes	929	Assets	$12,676,086	User-Defined
OGS	21	Assets	$1,184,523	Cost per Unit
Ponds	19	Assets	$400,001	User-Defined
Storm Mains	130,332	Metres	$103,091,282	Cost per Unit
TOTAL			**$132,853,179**	

Table 31 Detailed Asset Inventory: Storm Network

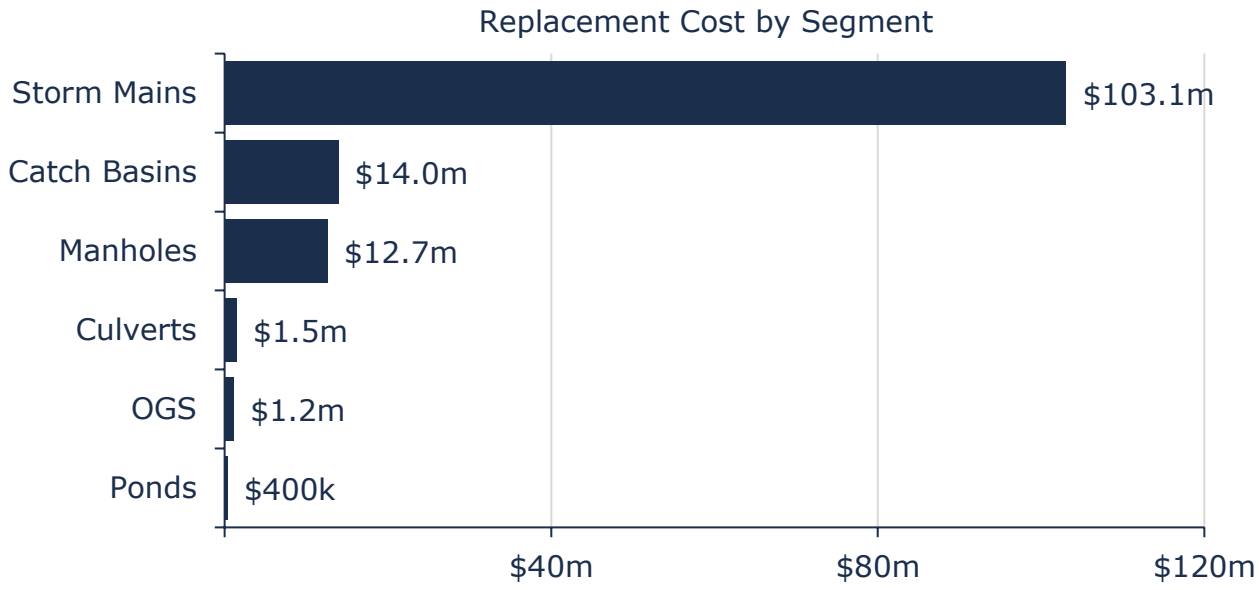


Figure 37 Portfolio Valuation: Storm Network

8.2 Asset Condition

Figure 38 summarizes the replacement cost-weighted condition of the Township's storm network assets. Based on age data, approximately 67% of assets are in fair or better 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.

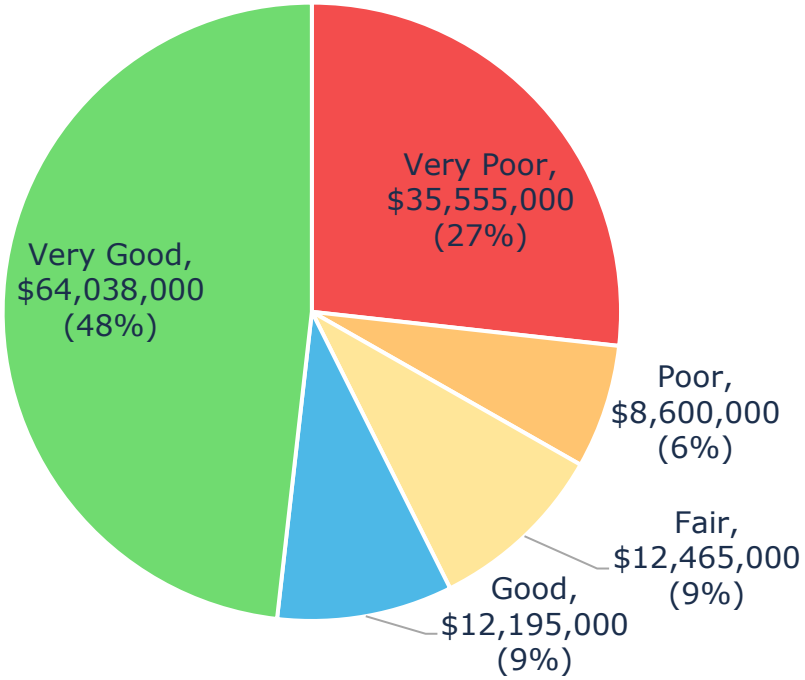


Figure 38 Asset Condition: Storm Network Overall

Figure 39 summarizes the age-based condition of storm network assets. The analysis illustrates that most storm mains are in fair or better condition. However, 39% of mains, with a current replacement cost of about $39,794,600, are in poor or worse condition.

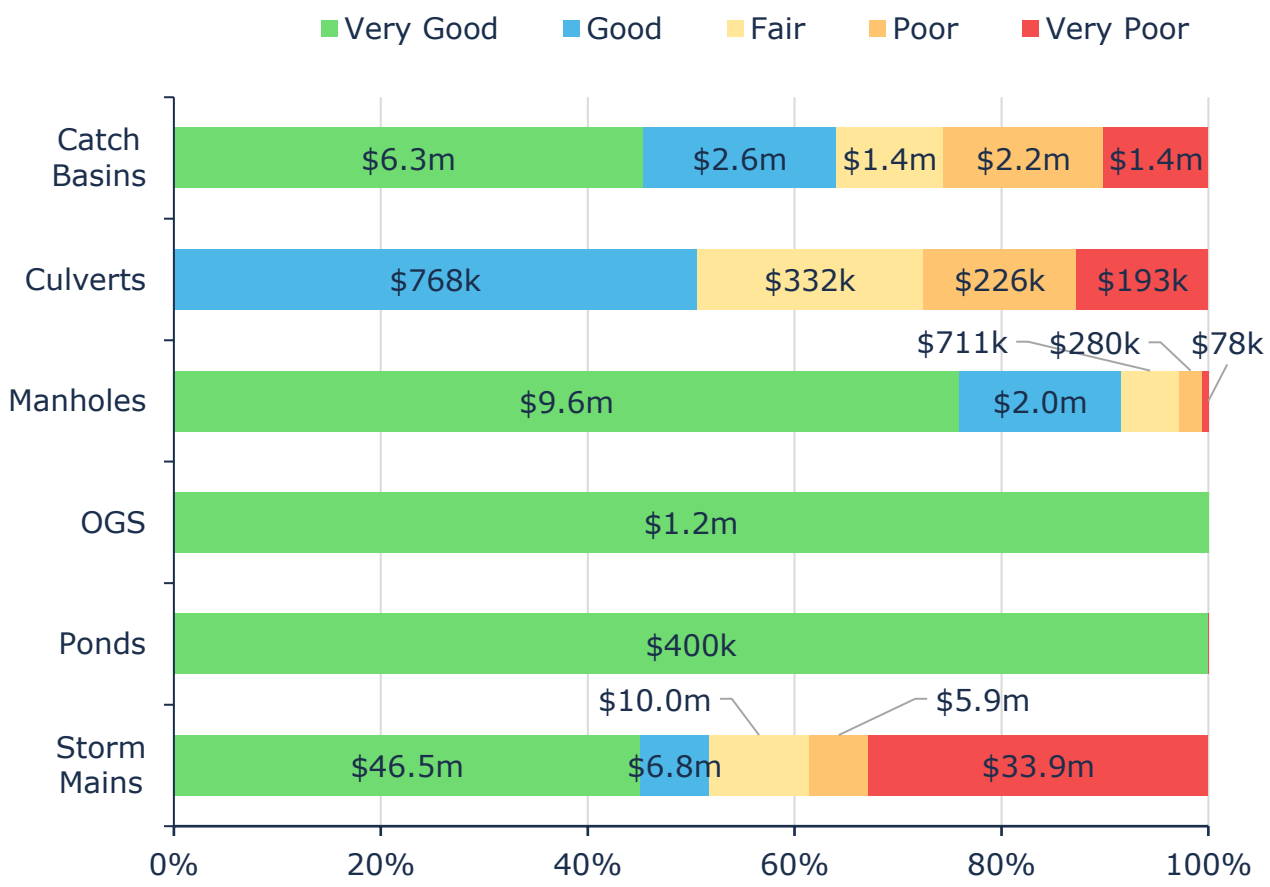


Figure 39 Asset Condition: Storm Network by Segment

8.2.1 Current Approach to Condition Assessment

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 Township's current approach:

- Storm sewer assets were partially assessed in 2012. Visual inspections have identified that sewers constructed prior to 1982 were not built using modern practices, making them difficult to maintain or inspect effectively
- Coordination and management of cleaning and CCTV inspections are performed internally. CCTV inspection reports are then submitted to an external consultant for a comprehensive masterplan study, ensuring

thorough evaluation and planning. The last storm masterplan was conducted in 2018, with the next tentatively scheduled for 2026, in conjunction with the Township's user-fee analysis

- Initial assessments of supporting infrastructure are performed internally. If concerns are identified, third-party consultants are retained for further review and to provide solutions on a reactive basis

8.3 Age Profile

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

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

Figure 40 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets. Storm network assets generally remain well within their expected useful life. Storm mains have the highest average age but still offer significant remaining service life, while ponds and OGS units are the youngest.

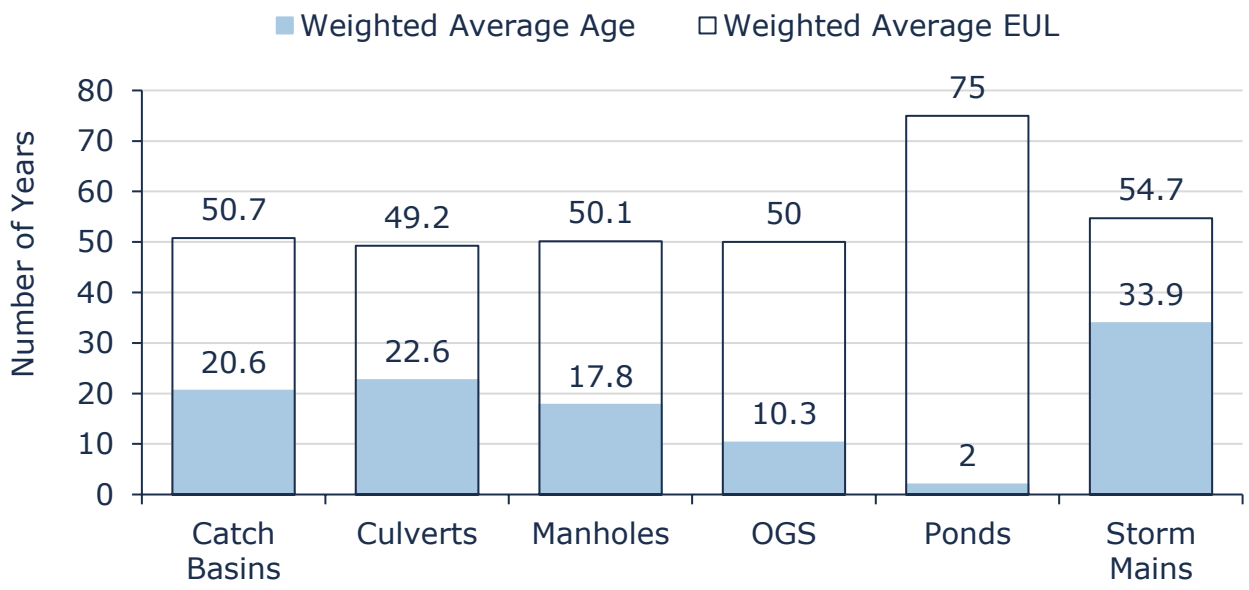


Figure 40 Estimated Useful Life vs. Asset Age: Storm Network

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	Maintenance activities are often triggered by complaints or issues observed during routine patrols
	Catch basins are cleaned every two years to maintain proper drainage function
	Storm water management ponds undergo vegetation management twice a year to prevent overgrowth
	Stormwater management ponds are measured for sediment accumulation every five years, and cleanouts are scheduled based on these measurements
Rehabilitation	Rehabilitation needs are identified through CCTV inspections, which assess the ovality of the pipe to determine suitability for relining

Activity Type	Description of Current Strategy
Replacement	Replacement is considered when an asset's condition has significantly deteriorated, the asset has failed, or it no longer has sufficient capacity. Replacements are prioritized when rehabilitation is not cost-effective and if they can be coordinated with other linear assets, such as failing road surfaces

Table 32 Lifecycle Management Strategy: Storm Network

8.5 Risk Analysis

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

The matrix stratifies assets based on their individual probability and consequence of failure; each scored from 1 to 5. Their product generates a risk index ranging from 1-25. Assets with the highest criticality and likelihood of failure receive a risk rating of 25; those with lowest probability of failure and lowest criticality carry a risk rating of 1. As new data and information is gathered, the 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 **Very Low** $67,121,439 (51%)	5 - 7 **Low** $11,817,926 (9%)	8 - 9 **Moderate** $6,811,752 (5%)	10 - 14 **High** $7,937,808 (6%)	15 - 25 **Very High** $39,164,255 (29%)

Figure 41 Risk Matrix: Storm Network

8.6 Levels of Service

The table that follows summarizes the Township's current and proposed 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.

8.6.1 Levels of Service – Current

Metric Type	KPI Metric	Service Attribute	Current LOS
Community	Description, which may include map, of the user groups or areas of the Township that are protected from flooding, including the extent of protection provided by the municipal Storm Sewer system	Scope	Appendix B: Level of Service Maps
Technical	% of properties in Township resilient to a 100-year storm	Scope	Embrun: 78% Russell: 75% Marionville: 100%
	% of the municipal storm sewer management system resilient to a 5-year storm		Embrun: 13% Russell: 59% Marionville: 100%

Table 33: Storm Network – Current Levels of Service

8.6.2 Levels of Service – Proposed

The scenarios that were used to analyse Russell Township's inventory were run for 100-years to ensure all the lifecycles were included at least once. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Target Condition Good - this scenario utilizes a target average condition of 70% of the infrastructure within each asset category. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for the storm network.

Scenarios	Replacement Cost	Average Condition	Average Risk Rating (0-25)[17]	Annual Capital Reinvestment
Scenario 1 – Lifecycle **(selected)**	$132,853,000	76%	5.17	$ 2,066,000
Scenario 2 - Current Capital Investment Rate		25%	11.71	$ 97,000
Scenario 3 - Maintain Condition 70%		70%	5.83	$1,501,000

Table 34: Storm Network - Proposed Levels of Service Scenarios

8.6.3 10-Year Capital Forecast

Below is the projected ten-year capital forecast (scenario 1) needed to obtain full funding, within the recommended timeframe (see 1.4).

Segment	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Catch Basins	-	-	-	-	-	-	-	-	-	-
Culverts	$69k	-	$126k	-	$100k	-	-	-	-	$304k
Manholes	-	-	-	-	-	-	-	-	-	-
OGS	-	-	-	-	-	-	-	-	-	-
Ponds	-	-	-	-	-	-	-	-	-	-
Storm Mains	$664k	$4.8m	-	$17k	$4.7m	$2.5m	-	$86k	$38k	-
Total	**$733k**	**$4.8m**	**$126k**	**$17k**	**$4.8m**	**$2.5m**	**-**	**$86k**	**$38k**	**$304k**

Table 35: Storm Network - 10-Year Capital Forecast

[17] See 2.3.2

Non-Core Assets

9. Facilities

9.1 Inventory & Valuation

Table 36 summarizes the quantity and current replacement cost of all Facilities assets available in the Township's asset register. Facilities assets are componentized. The quantity listed represents the number of asset records currently available for each department.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Environmental Services	2	Facilities	$3,712,530	User-Defined
General Government	5	Facilities	$17,453,834	User-Defined
Protection Services	3	Facilities	$9,755,593	User-Defined
Recreational & Cultural Services	12	Facilities	$60,815,800	User-Defined
Transportation Services	3	Facilities	$7,056,693	User-Defined
TOTAL			**$98,794,450**	

Table 36 Detailed Asset Inventory: Facilities

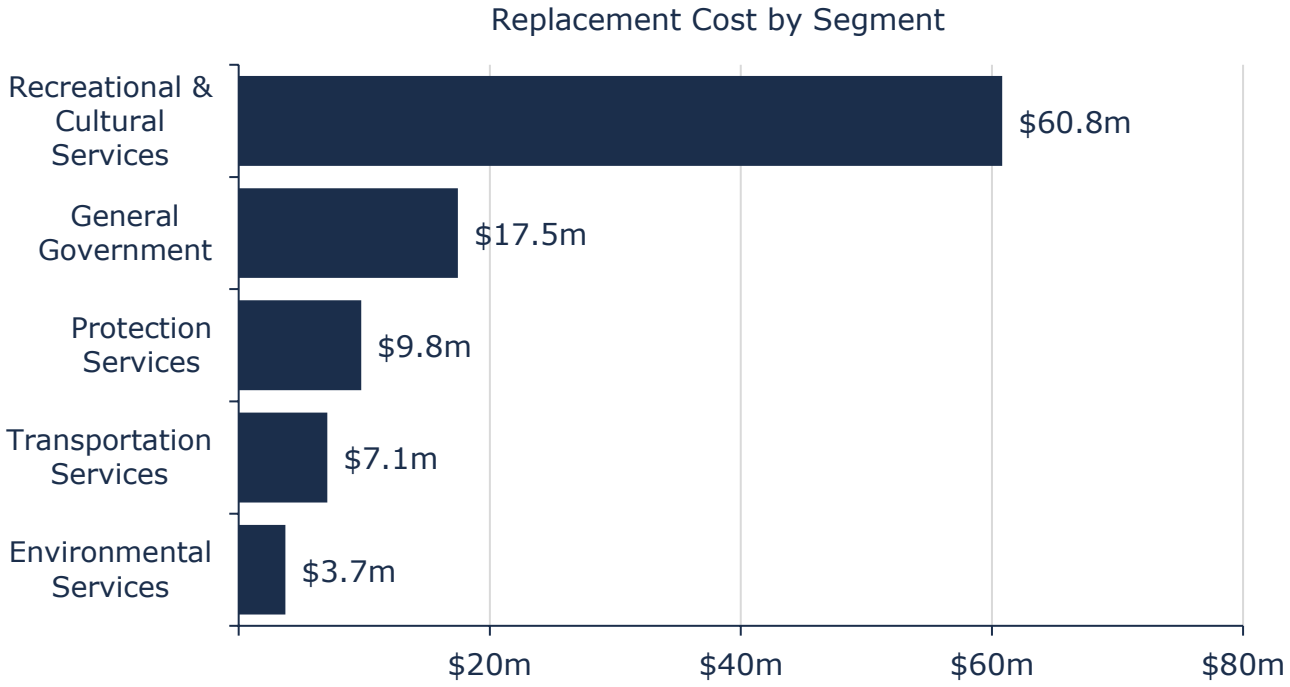


Figure 42 Portfolio Valuation: Facilities

9.2 Asset Condition

Figure 43 summarizes the replacement cost-weighted condition of the Township's Facilities portfolio. Based on assessment data, 74% of Facilities assets are in fair or better condition. Aspects of some of 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. 100% of Facilities had assessed condition ratings available.

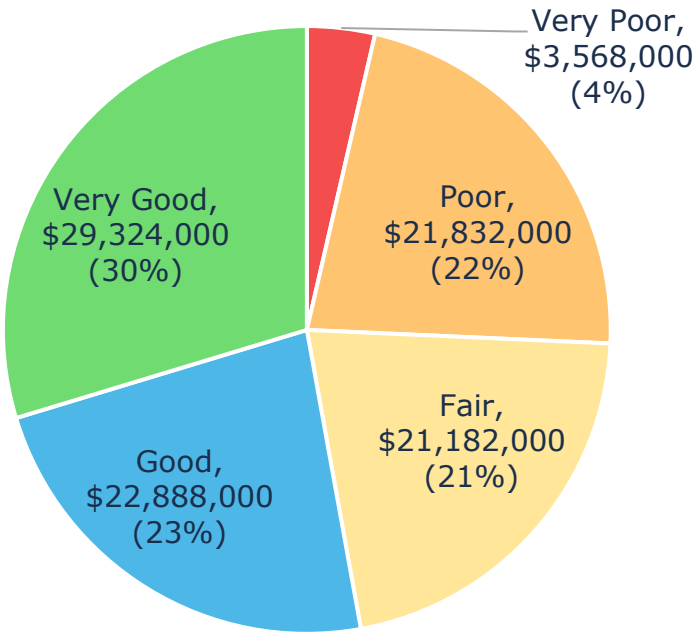
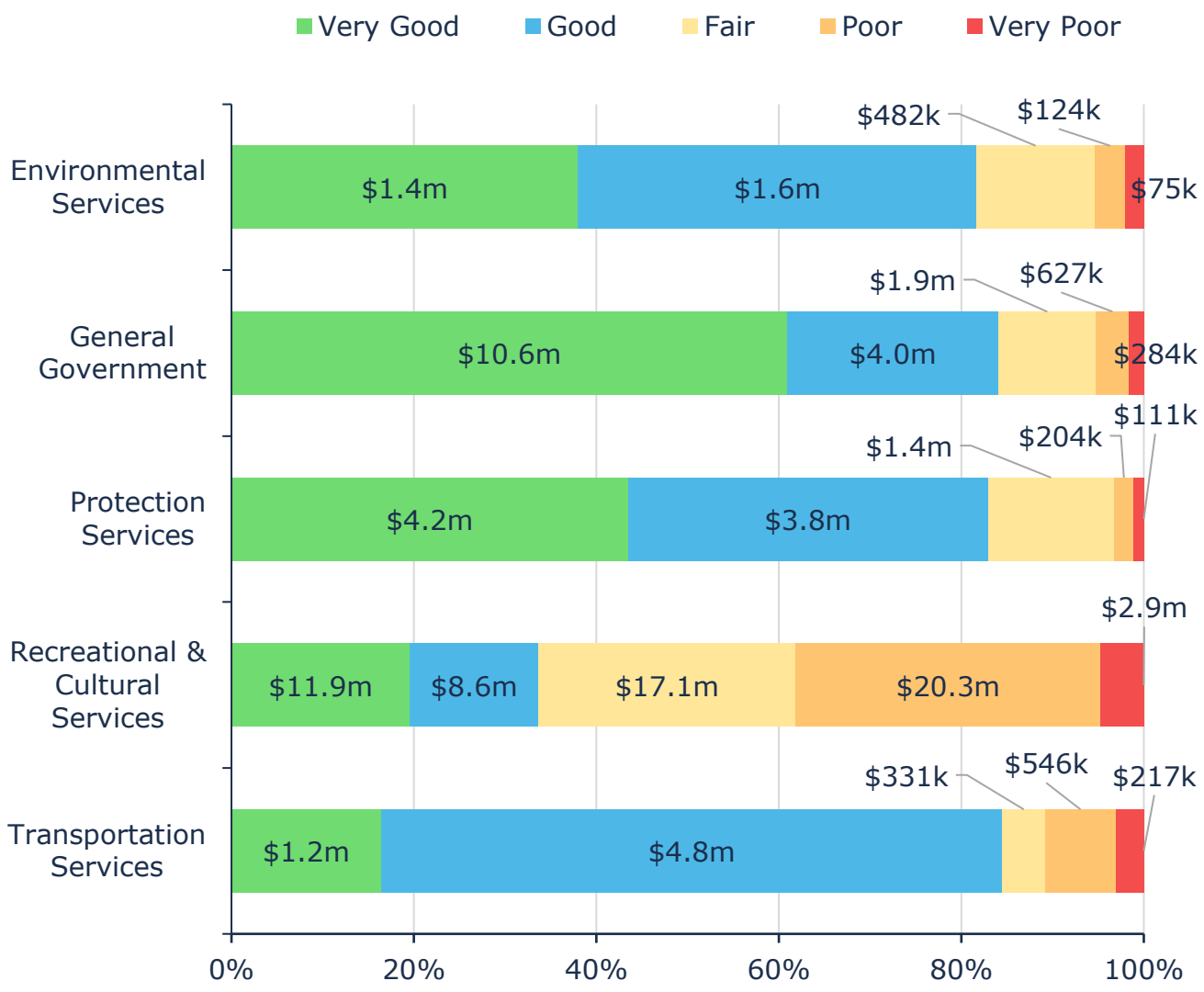


Figure 43 Asset Condition: Facilities Overall

Figure 44 summarizes the age-based condition of Facilities by each department. Overall, based on the information available, this asset category is in a very healthy state.



Value and Percentage of Asset Segments by Replacement Cost

Figure 44 Asset Condition: Facilities by Segment

Facilities assets are unique in that they rarely require the need for replacement based solely on condition. It is typical that, in addition to condition, other factors, such as capacity, will impact the asset's ability to serve the purpose originally intended.[18]

[18] Refer to section 14.

9.2.1 Current Approach to Condition Assessment

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 Township's current approach:

- Buildings are assessed every 5 years for structural, mechanical, and other conditions. Building Condition Assessments (BCAs) are conducted by external consultants
- The last assessment was conducted in 2023 by Accent Building Sciences Inc (ABSI)

9.3 Age Profile

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

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

Figure 45 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

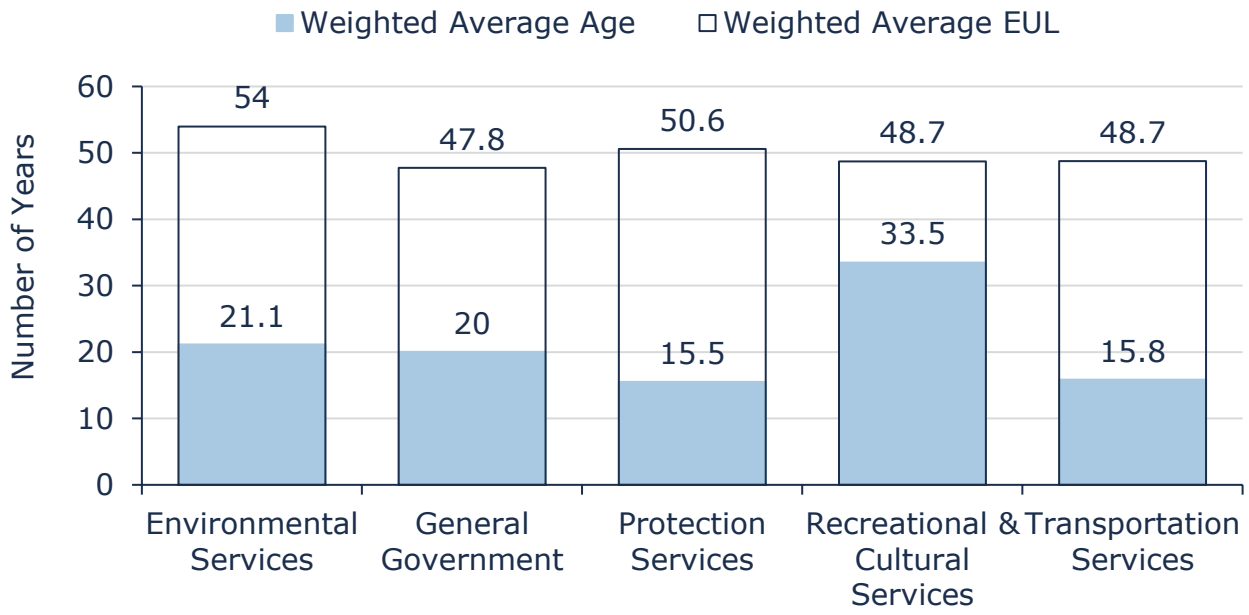


Figure 45 Estimated Useful Life vs. Asset Age: Facilities

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 37 outlines the Township's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	Routine maintenance includes furnaces, AC units, fire protection equipment, doors, HVAC repairs, electrical systems, and general housekeeping
	Maintenance is triggered by manufacturer recommendations, regulatory requirements, and inspections identifying safety, accessibility, and structural issues. It is performed as recommended through staff observations and routine checks of operating systems
	Rehabilitation activities involve roof replacements, pump repairs, structural component repairs, and HVAC system updates
	Rehabilitation is based on inspections and consultant recommendations
Replacement	Replacement is considered when an asset's condition has significantly deteriorated, making maintenance and rehabilitation no longer cost-effective
	Assets nearing the end of their expected service life or those with frequent and costly repairs are prioritized for replacement

Table 37 Lifecycle Management Strategy: Facilities

9.5 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 *Risk & Criticality* section for further details on approach used to determine asset risk ratings and classifications.

1 - 4 Very Low $17,599,432 (18%)	5 - 7 Low $29,572,816 (30%)	8 - 9 Moderate $16,410,660 (17%)	10 - 14 High $16,533,662 (17%)	15 - 25 Very High $18,677,880 (19%)

Figure 46 Risk Matrix: Facilities

9.6 Levels of Service

The table that follows summarizes 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.

9.6.1 Levels of Service – Current

Metric Type	KPI Metric	Service Attribute	Current LOS
Community	Description, which may include maps, of the types of facilities that the Township operates and maintains	Scope	Refer to section 9.1
	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Quality	Refer to sections 9.2 & 9.4
Technical	Average condition rating	Quality	Good – 67

Table 38: Facilities – Current Levels of Service

9.6.2 Levels of Service – Proposed

The scenarios that were used to analyse Russell Township's inventory were run for 75-years to ensure all the lifecycles were included at least once. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Target Condition Good - this scenario utilizes a target average condition of 70% of the infrastructure within each asset category. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for facilities.

Scenarios	Replacement Cost	Average Condition	Average Risk Rating (0-25)[19]	Annual Capital Reinvestment
Scenario 1 – Lifecycle **(selected)**	$98,794,450	51%	12.55	$ 2,698,000
Scenario 2 - Current Capital Investment Rate		22%	17.4	$ 439,000
Scenario 3 - Maintain Condition 70%		68%	9.18	$3,973,000

Table 39: Facilities - Proposed Levels of Service Scenarios

[19] See 2.3.2

9.6.3 10-Year Capital Forecast

Below is the projected ten-year capital forecast (scenario 1) needed to obtain full funding, within the recommended timeframe (see 1.4).

Segment	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Environmental Services	$5k	$2k	$12k	$51k	$85k	$27k	$12k	-	$41k	$331k
General Government	$37k	$221k	$2k	$484k	$116k	$320k	$263k	$20k	$393k	$174k
Protection Services	$94k	$30k	$71k	$21k	$668k	$9k	$78k	$2k	$112k	$913k
Recreational & Cultural Services	$1.5m	$398k	$329k	$10.0m	$567k	$763k	$158k	$638k	$2.5m	$3.3m
Transportation Services	$55k	$4k	$487k	$3k	$2k	$101k	$14k	$151k	$80k	$38k
Total	**$1.7m**	**$654k**	**$900k**	**$10.5m**	**$1.4m**	**$1.2m**	**$524k**	**$810k**	**$3.1m**	**$4.8m**

Table 40: Facilities - 10-Year Capital Forecast

10. Vehicles

10.1 Inventory & Valuation

Table 41 summarizes the quantity and current replacement cost of all vehicle assets available in the Township's asset register.

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Public Safety & Enforcement	5	Assets	$267,700	CPI
Environmental Services	9	Assets	$491,313	CPI
General Government	6	Assets	$281,742	User-Defined
Protection Services	12	Assets	$10,935,000	User-Defined
Recreational & Cultural Services	5	Assets	$196,124	CPI
Transportation Services	10	Assets	$2,102,542	CPI
TOTAL			**$14,274,422**	

Table 41 Detailed Asset Inventory: Vehicles

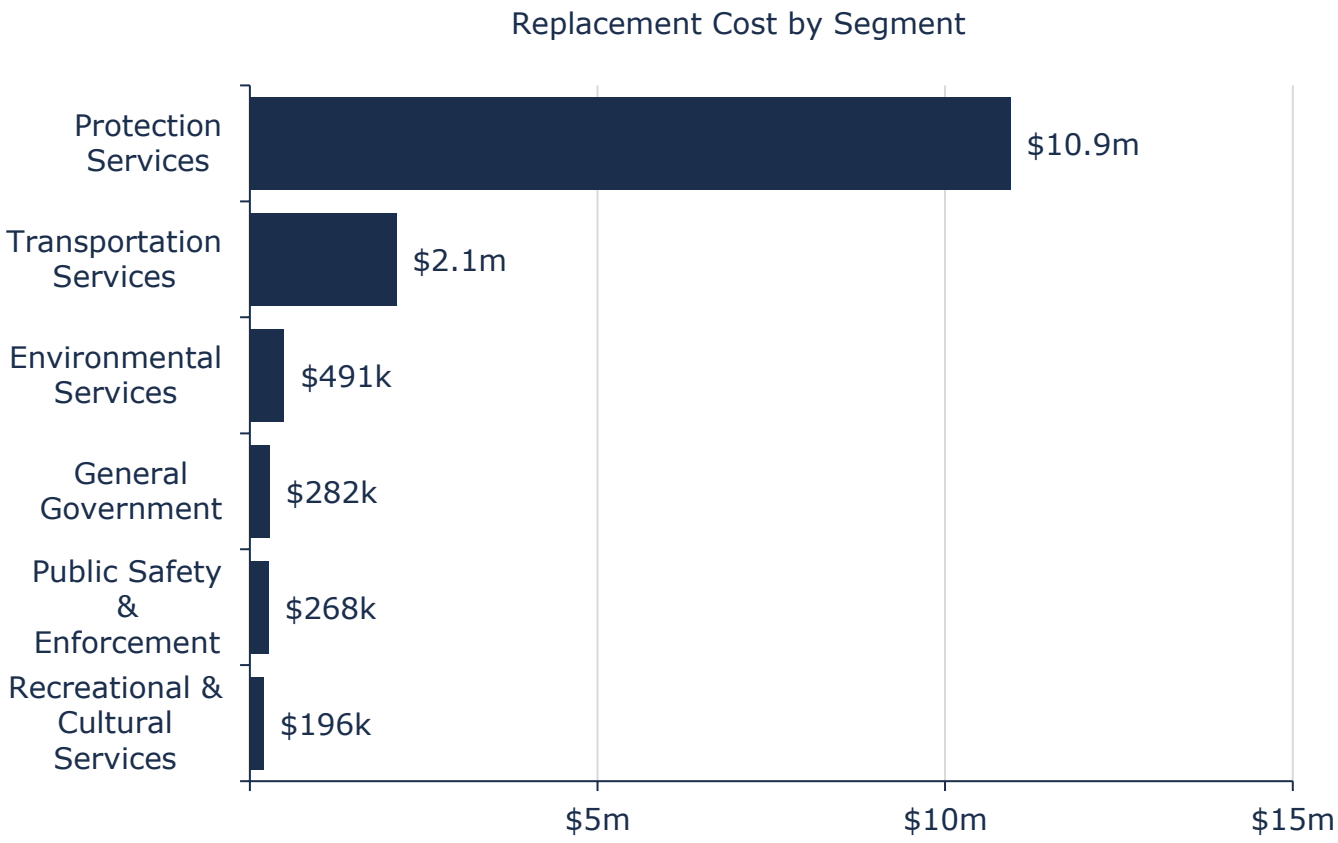


Figure 47 Portfolio Valuation: Vehicles

10.2 Asset Condition

Figure 48 summarizes the replacement cost-weighted condition of the Township's vehicles portfolio. Based primarily on assessment data, 79% of vehicles are in fair or better condition, with the remaining 21% are in poor or worse condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition. Condition data was available for 100% of vehicles, based on replacement costs.

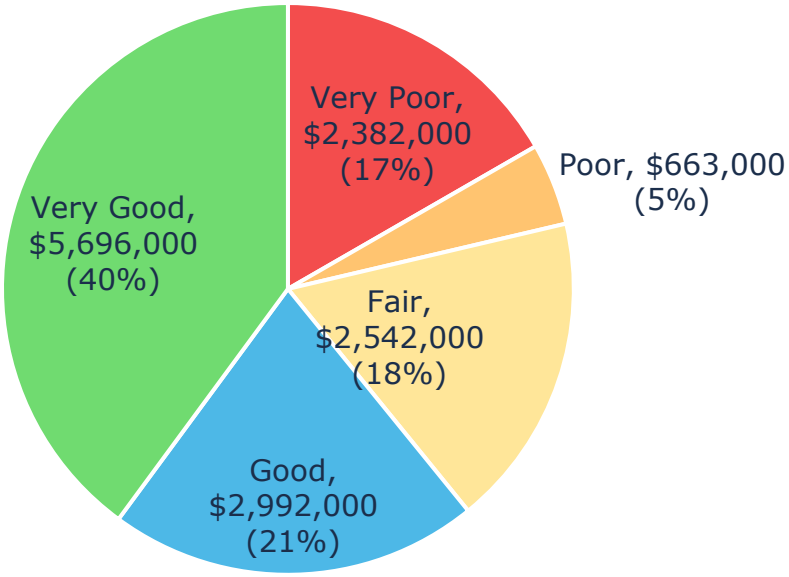


Figure 48 Asset Condition: Vehicles Overall

Figure 49 summarizes the condition of vehicles by use case. Except for environmental and recreational services assets, most vehicles across all other asset segments are in fair or better condition.

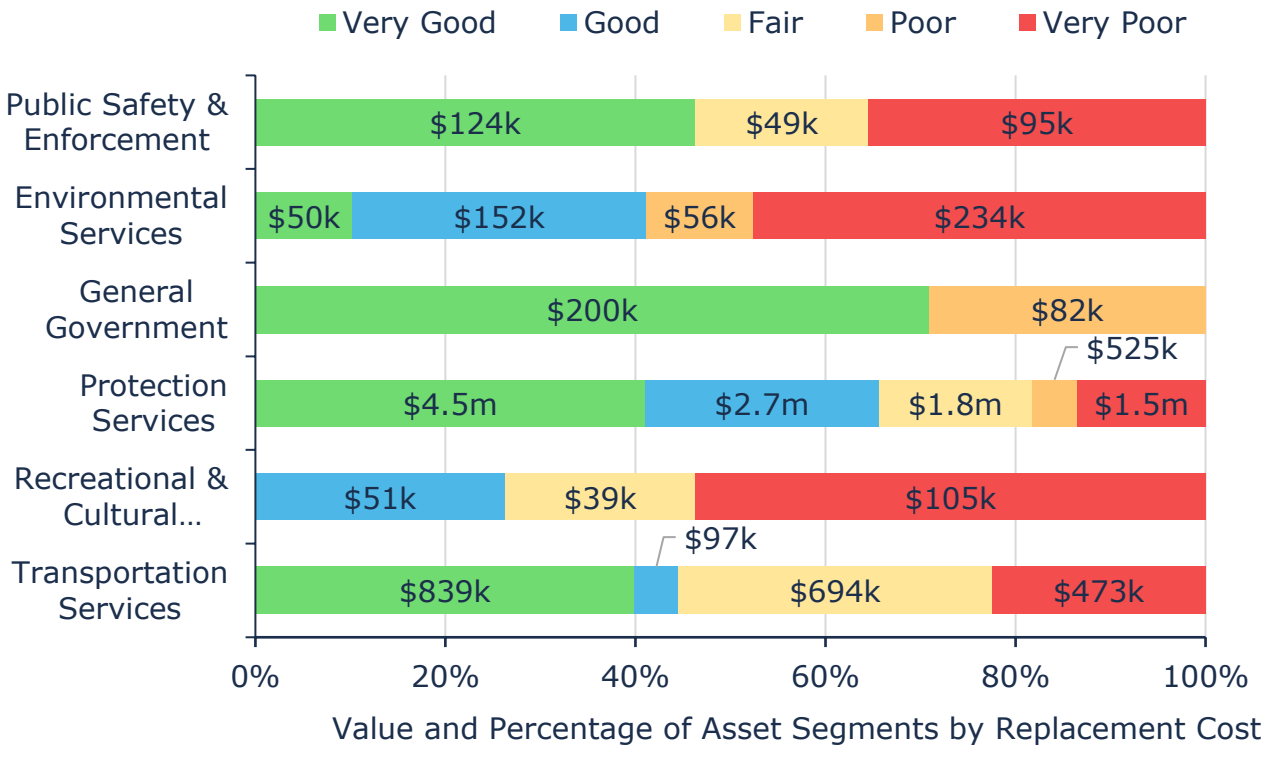


Figure 49 Asset Condition: Vehicles by Segment

10.2.1 Current Approach to Condition Assessment

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 Township's current approach:

- As per the Township's fleet policy, vehicles are evaluated annually for condition and suitability based on its Fleet Replacement Strategy Furthermore, the Township has developed a condition rating scale, along with a 5-year replacement and acquisition plan
- Vehicles also undergo an annual safety inspection as per MTO and are performed externally
- Vehicles listed under CVOR are inspected yearly
- All protection vehicles with a pump are tested annually in accordance with MTO and NFPA standards
- Internal staff conduct monthly cab lifts and biweekly truck checks

10.3 Age Profile

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

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

Figure 50 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

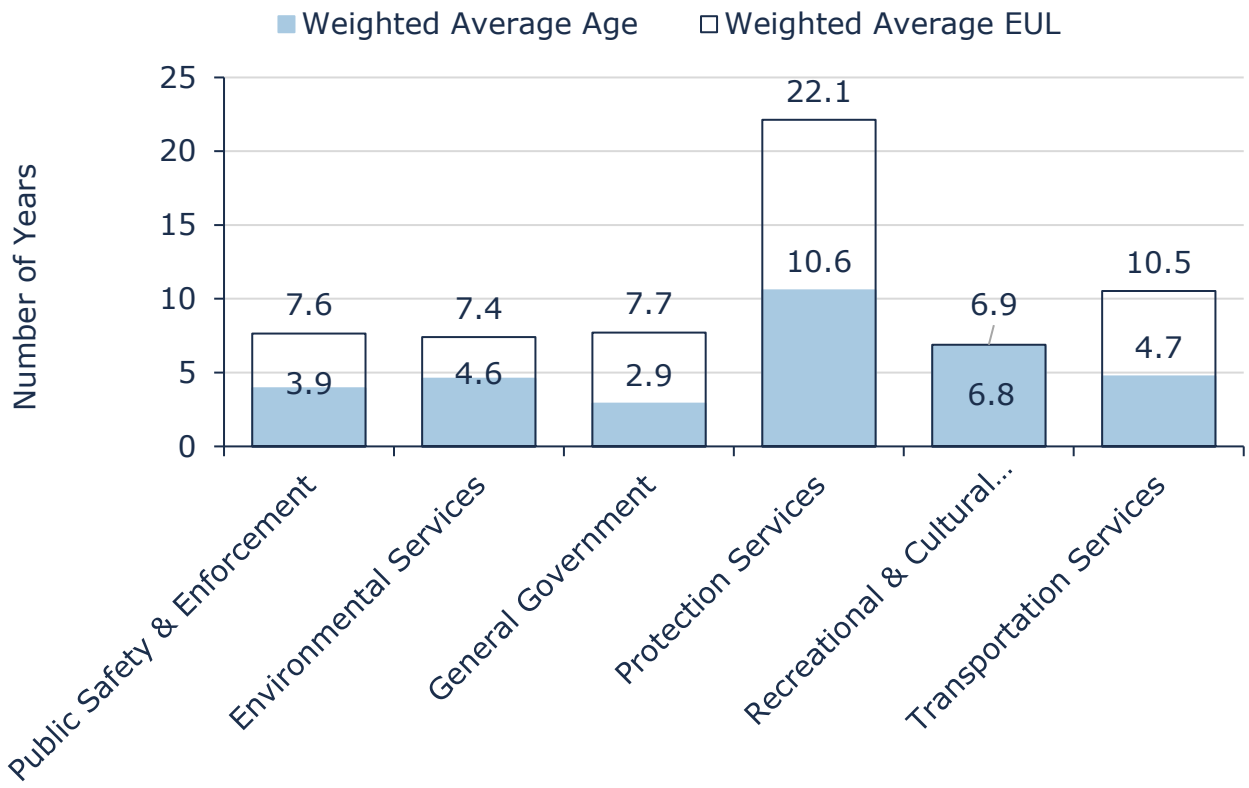


Figure 50 Estimated Useful Life vs. Asset Age: Vehicles

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.

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

Activity Type	Description of Current Strategy
Maintenance/ Rehabilitation	Daily circle checks are performed and every two weeks, all vehicles receive a maintenance check, including fluid levels, air brakes, pump checks, and functional checks of all items on the vehicles
	Routine maintenance includes oil changes, tire replacements, and necessary repairs
	Cab-over vehicles have their cabs lifted, with fluids and belts checked monthly

Activity Type	Description of Current Strategy
	Annually, pump tests, aerial inspections, a five-year NDT, and safety checks are performed by a licensed mechanic
	Maintenance is triggered by legislated requirements or if issues such as leaks or breaks occur between maintenance intervals.
Replacement	Pumper trucks, tankers, and aerial ladders are replaced at 20-year intervals as required by Fire Underwriters Survey requirements
	Although not mandated, rescue vehicles are replaced every 25-30 years
	Vehicle replacement is considered based on age requirements listed in the fleet policy, significant deterioration, minimal estimated useful life, and when maintenance is no longer cost-effective

Table 42 Lifecycle Management Strategy: Vehicles

10.5 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 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 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$722,261 (5%)	$3,910,007 (27%)	$2,635,441 (18%)	$4,317,499 (30%)	$2,689,214 (19%)

Figure 51 Risk Matrix: Vehicles

10.6 Levels of Service

The table that follows summarizes the Township's current and proposed 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.

10.6.1 Levels of Service – Current

Metric Type	KPI Metric	Service Attribute	Current LOS
Community	Description or images of the types of vehicles (e.g. light, medium and heavy-duty) that the Township operates and the services that they help to provide to the community	Scope	Refer to section 10.1
	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Quality	Refer to sections 10.2 & 10.4
Technical	Average condition rating	Quality	Good – 64

Table 43: Vehicles – Current Levels of Service

10.6.2 Levels of Service – Proposed

The scenarios that were used to analyse Russell Township's inventory were run for 25-years to ensure all the lifecycles were included at least once. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Target Condition Good - this scenario utilizes a target average condition of 70% of the infrastructure within each asset category. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for vehicles assets.

Scenarios	Replacement Cost	Average Condition	Average Risk Rating (0-25)[20]	Annual Capital Reinvestment
Scenario 1 – Lifecycle **(selected)**	$14,274,422	50%	14.29	$ 898,000
Scenario 2 - Current Capital Investment Rate		20%	20.36	$ 106,500
Scenario 3 - Maintain Condition 70%		72%	9.16	$1,641,000

Table 44: Vehicles - Proposed Levels of Service Scenarios

[20] See 2.3.2

10.6.3 10-Year Capital Forecast

Below is the projected ten-year capital forecast (scenario 1) needed to obtain full funding, within the recommended timeframe (see 1.4).

Segment	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Public Safety & Enforcement	$46k			$49k	$49k		$68k	$101k		
Environmental Services		$56k		$77k		$152k	$75k	$132k	$56k	
General Government		$82k					$123k	$77k	$82k	
Protection Services		$1.2m				$132k		$213k		
Recreational & Cultural Services					$39k	$51k		$105k		
Transportation Services	$80k	$333k			$338k	$356k		$296k		
Total	**$126k**	**$1.7m**		**$126k**	**$426k**	**$691k**	**$266k**	**$924k**	**$138k**	

Table 45: Vehicles - 10-Year Capital Forecast

11. Machinery & Equipment

11.1 Inventory & Valuation

Table 46 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
Public Safety & Enforcement	7	Assets	$225,228	CPI
General Government	347	Assets	$2,205,006	CPI
Protection Services	521	Assets	$1,623,988	CPI
Recreational & Cultural Services	276	Assets	$1,846,807	CPI
Transportation Services	64	Assets	$1,754,078	CPI
TOTAL			**$7,655,107**	

Table 46 Detailed Asset Inventory: Machinery & Equipment

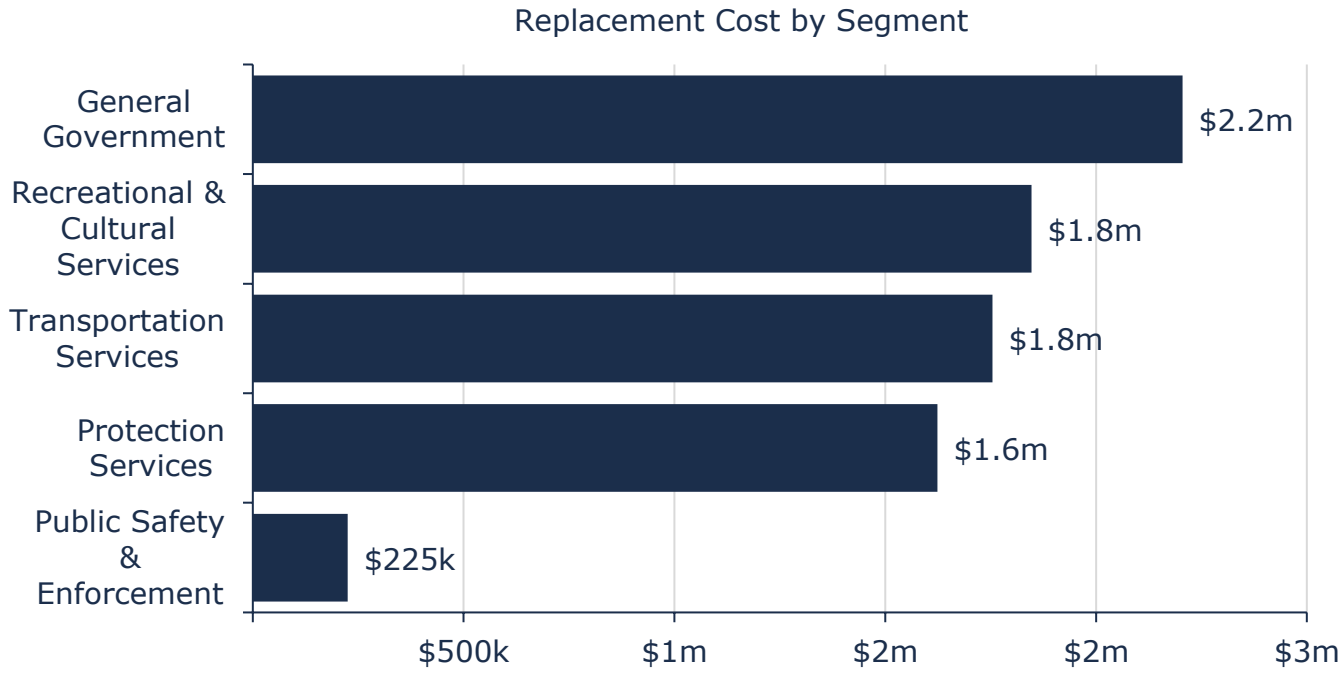


Figure 52 Portfolio Valuation: Machinery & Equipment

11.2 Asset Condition

Figure 53 summarizes the replacement cost-weighted condition of the Township's equipment portfolio. Based on a combination of assessed conditions and age data, 72% of assets are in fair or better condition; the remaining 28% 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.

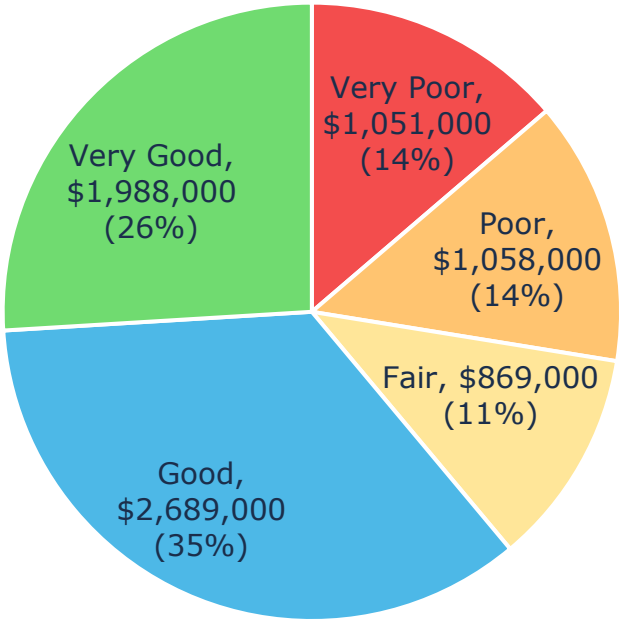


Figure 53 Asset Condition: Machinery & Equipment Overall

Figure 54 summarizes the age-based condition of machinery and equipment by each department. Most assets in poor or worse condition are concentrated in the recreational & cultural services segment.

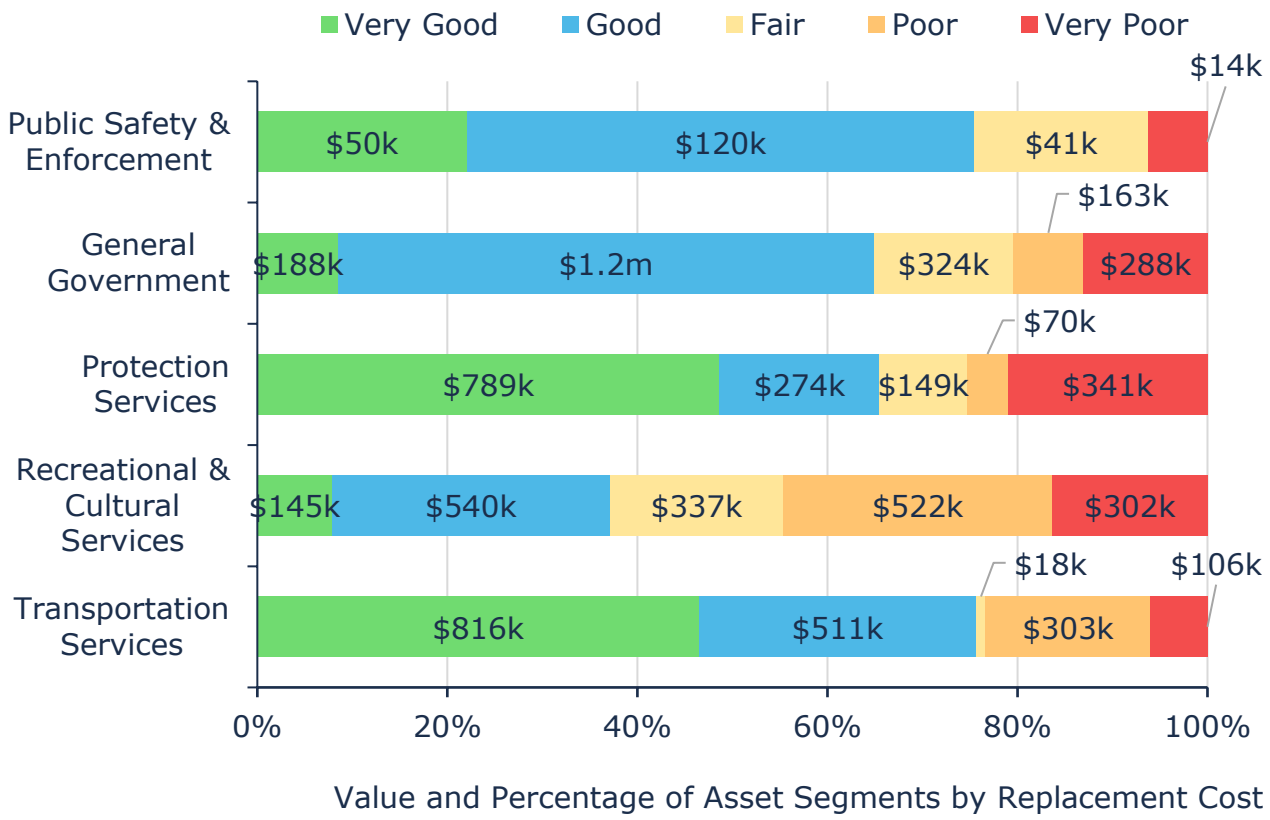


Figure 54 Asset Condition: Equipment by Segment

11.2.1 Current Approach to Condition Assessment

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 Township's current approach:

- Machinery and equipment are inspected before each use, though there are no formal policies or scheduled assessments
- Other equipment is spot-checked and tested according to manufacturers' recommendations or regulatory requirements
- Backup generators are assessed annually by an external contractor

11.3 Age Profile

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

age, their performance diminishes, often more rapidly as they approach the end of their design life.

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

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

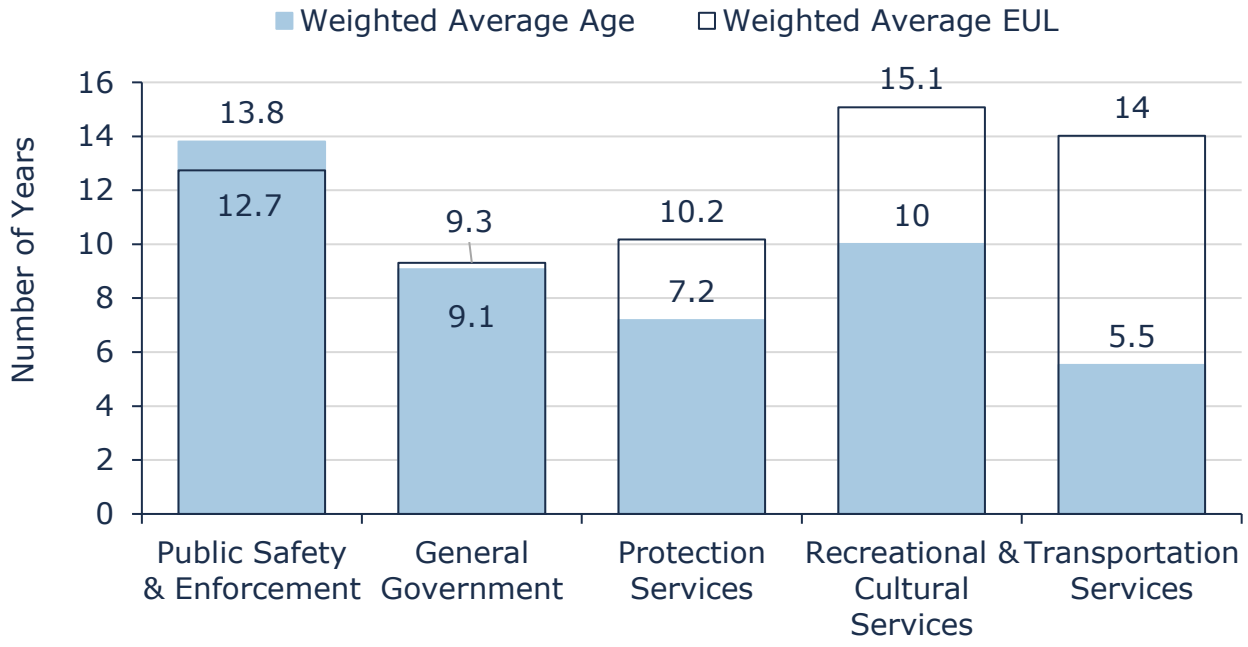


Figure 55 Estimated Useful Life vs. Asset Age: Machinery & Equipment

11.4 Current Approach to Lifecycle Management

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

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

Activity Type	Description of Current Strategy
Maintenance/ Rehabilitation	Manufacturers' recommended practices and any other regulatory requirements are followed for maintenance
	Operational tests are conducted biweekly on small equipment and as per manufacturers' recommendations and regulatory requirements for other equipment
	Routine maintenance activities include inspections, minor repairs, and oil changes
	Inspections are conducted monthly, while minor repairs are performed as required
Replacement	Replacement is considered when an asset's condition has deteriorated significantly, making maintenance no longer cost-effective
	Assets nearing the end of their life as per regulation or manufacturers' recommendations are prioritized for replacement

Table 47 Lifecycle Management Strategy: Machinery & Equipment

11.5 Risk Analysis

The risk matrix below is generated using available asset data, including condition, service life remaining, 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 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$2,274,690 (30%)	$1,987,456 (26%)	$1,330,266 (17%)	$1,292,037 (17%)	$770,658 (10%)

Figure 56 Risk Matrix: Machinery & Equipment

11.6 Levels of Service

The table that follows summarizes the Township's current and proposed 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.

11.6.1 Levels of Service – Current

Metric Type	KPI Metric	Service Attribute	Current LOS
Community	Description or images of the types of equipment that the Township operates and the services that they help to provide to the community	Scope	Refer to section 11.1
	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Quality	Refer to sections 11.2 & 11.4
Technical	Average condition rating	Quality	Good – 60

Table 48: Machinery & Equipment – Current Levels of Service

11.6.2 Levels of Service – Proposed

The scenarios that were used to analyse Russell Township's inventory were run for 15-years to ensure all the lifecycles were included at least once. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Target Condition Good - this scenario utilizes a target average condition of 70% of the infrastructure within each asset category. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for machinery & equipment assets.

Scenarios	Replacement Cost	Average Condition	Average Risk Rating (0-25)[21]	Annual Capital Reinvestment
Scenario 1 – Lifecycle **(selected)**	$7,655,107	51%	9.28	$ 715,000
Scenario 2 - Current Capital Investment Rate		51%	9.28	$ 888,000
Scenario 3 - Maintain Condition 70%		70%	6.14	$1,249,000

Table 49: Machinery & Equipment - Proposed Levels of Service Scenarios

[21] See 2.3.2

11.6.3 10-Year Capital Forecast

Below is the projected ten-year capital forecast (scenario 1) needed to obtain full funding, within the recommended timeframe (see 1.4).

Segment	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Public Safety & Enforcement	-	-	-	-	-	-	-	$120k	$15k	$35k
General Government	$53k	$145k	$214k	$144k	$169k	$116k	$91k	$1.2m	$99k	$134k
Protection Services	$102k	$14k	$70k	-	$95k	$49k	$43k	$368k	$574k	$75k
Recreational & Cultural Services	$33k	$30k	$57k	$325k	$18k	$22k	$115k	$108k	$216k	$8k
Transportation Services	-	$37k	$222k	$20k	$55k	-	$83k	$15k	$20k	$46k
Total	**$187k**	**$226k**	**$563k**	**$488k**	**$337k**	**$187k**	**$331k**	**$1.8m**	**$924k**	**$297k**

Table 50: Machinery & Equipment - 10-Year Capital Forecast

12. Land Improvements

12.1 Inventory & Valuation

Table 51 summarizes the quantity and current replacement cost of all land improvements assets available in the Township's asset register.

Segment	Quantity (Components)	Unit of Measure	Replacement Cost	Primary RC Method
Boat Launch	1 (6)	Assets	$100,590	CPI
Misc. Land Improvements	20,915	Assets	$3,162,462	CPI
Parklands & Trails	2,601	Square Meters	$254,166	CPI
Parks & Playground Equipment	28,896	Square Meters	$3,318,616	User-Defined
Splashpads & Pools	15	Assets	$264,990	User-Defined
Sport Fields & Courts	9,536	Square Meters	$2,681,562	User-Defined
TOTAL			**$9,782,386**	

Table 51 Detailed Asset Inventory: Land Improvements

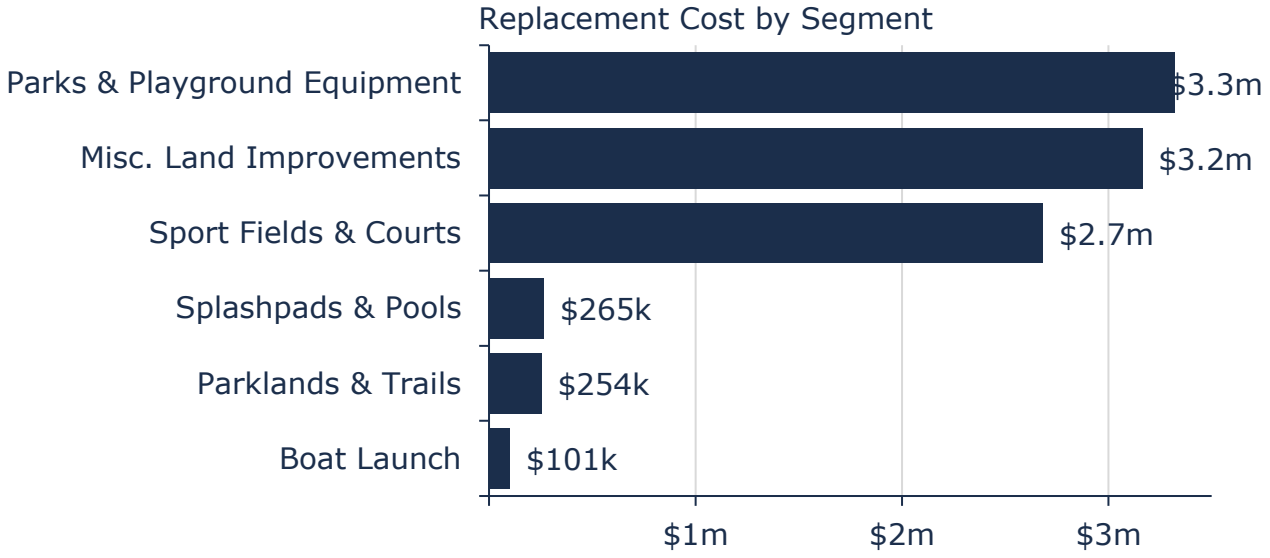


Figure 57 Portfolio Valuation: Land Improvements

12.2 Asset Condition

Figure 58 summarizes the replacement cost-weighted condition of the Township's land improvements portfolio. Based on a combination of assessed condition and age data, 88% of assets are in fair or better condition; the remaining 12% 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.

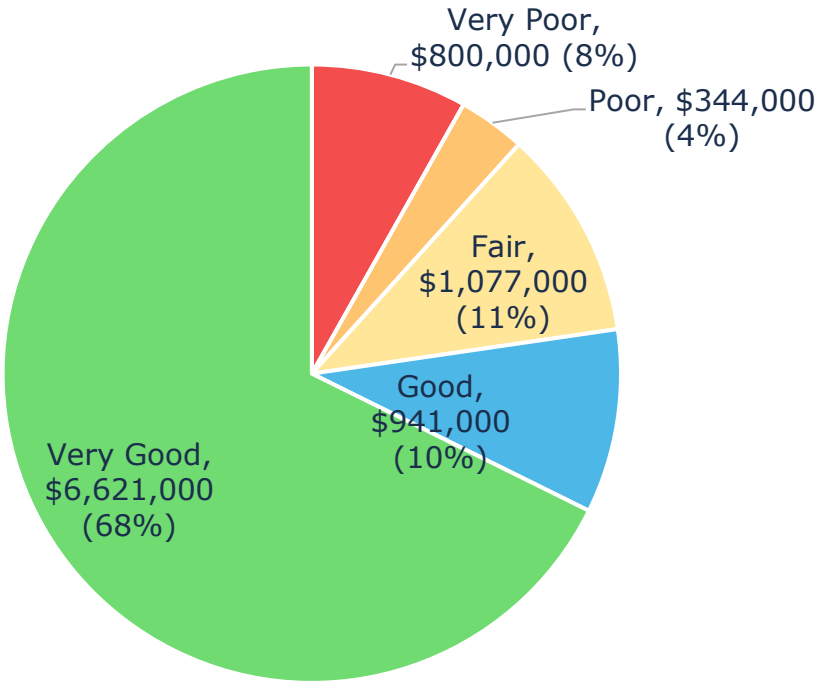


Figure 58 Asset Condition: Land Improvements Overall

Figure 59 summarizes the age-based condition of land improvements by each department. Most assets in poor or worse condition are concentrated primarily administration and the sports fields & courts, and parks & playgrounds segments.

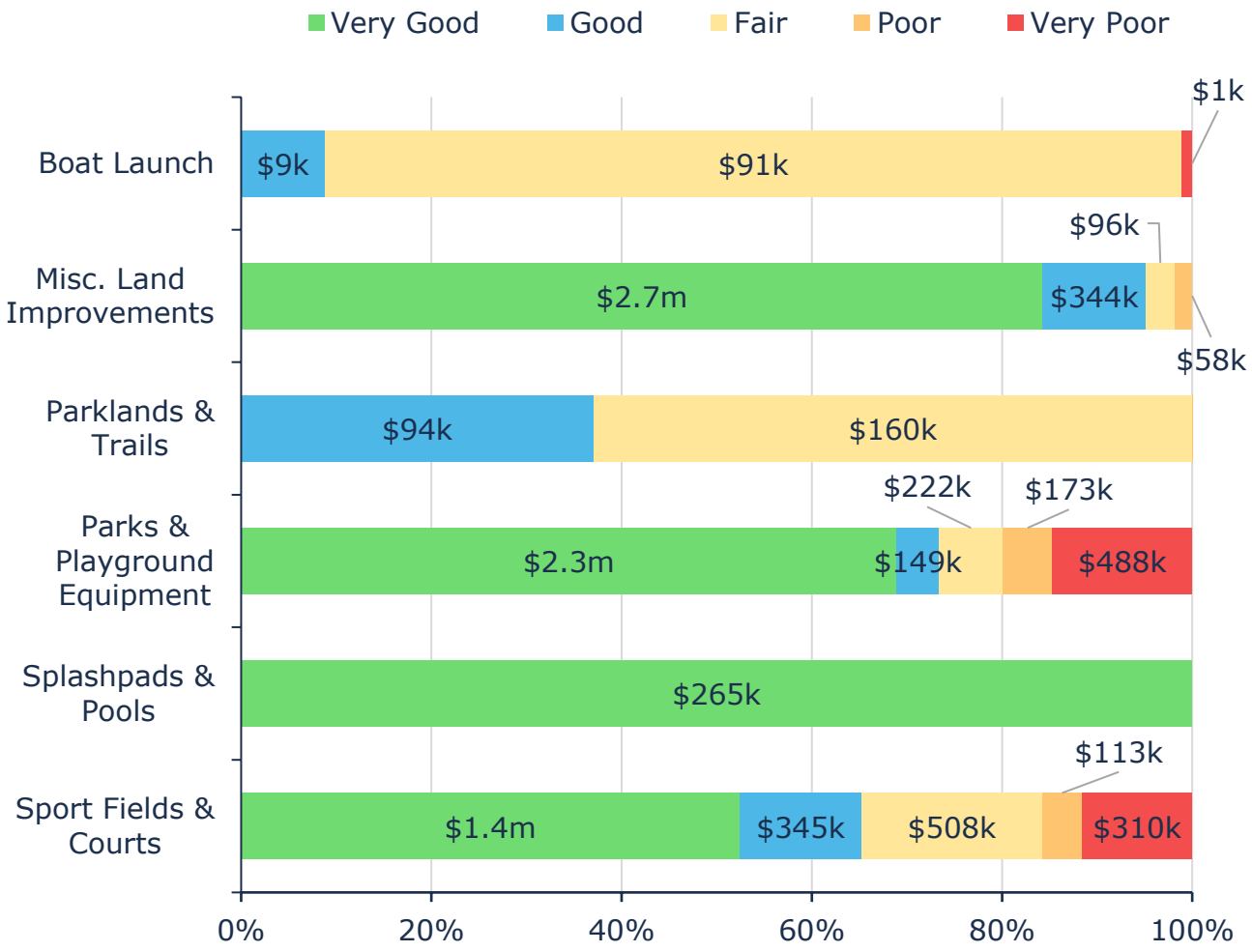


Figure 59 Asset Condition: Land Improvements by Segment

12.2.1 Current Approach to Condition Assessment

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 Township's current approach:

- Land improvements and park assets are assessed annually by internal staff to ensure they meet safety and maintenance standard

12.3 Age Profile

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

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

Figure 60 illustrates the average current age of each asset type and its estimated useful life. Both values are weighted by the replacement cost of individual assets.

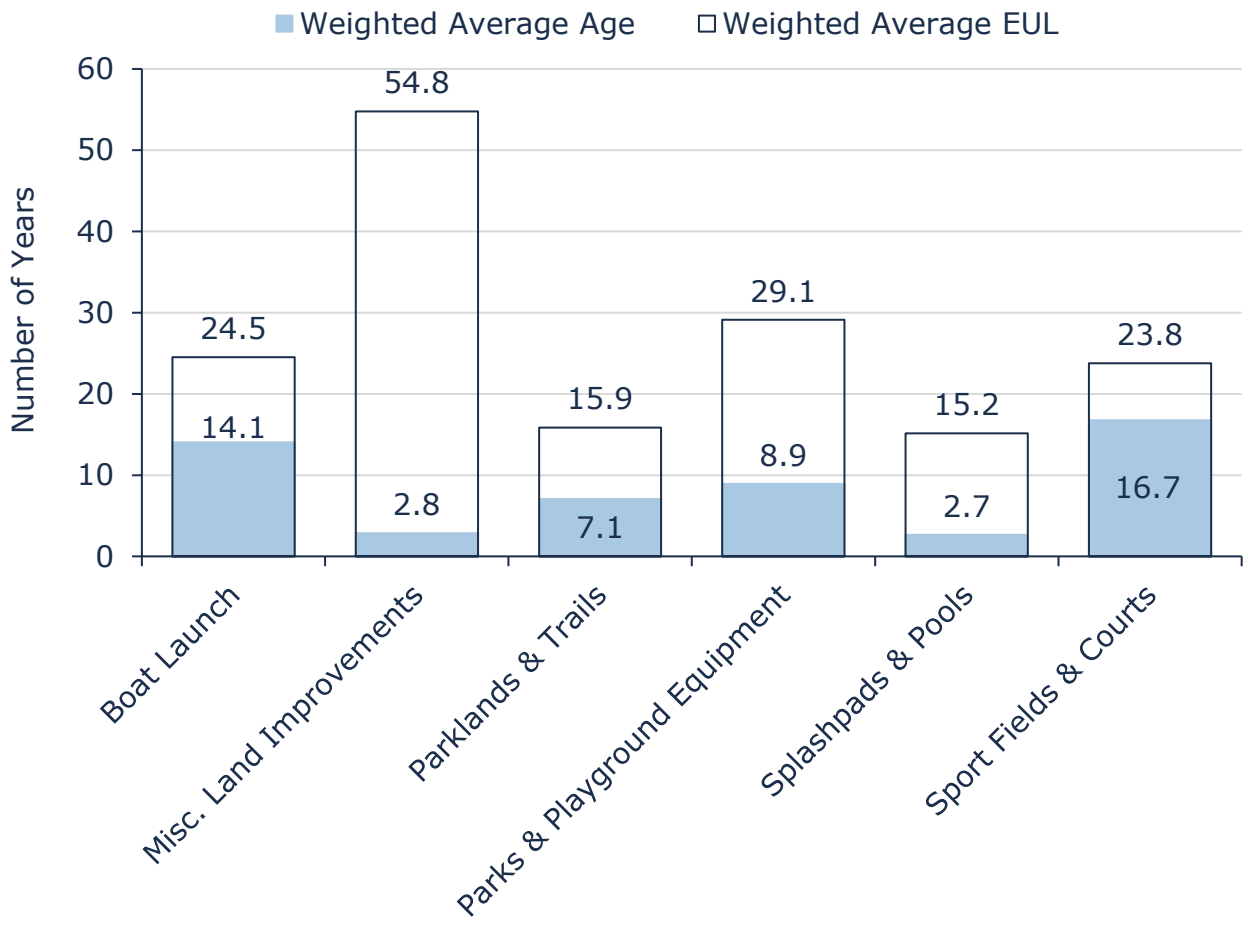


Figure 60 Estimated Useful Life vs. Asset Age: Land Improvements

12.4 Current Approach to Lifecycle Management

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

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

Activity Type	Description of Current Strategy
Maintenance & Rehabilitation	Yearly assessments and inspections are completed in the spring on all parks to ensure safety for all users
	Routine maintenance is conducted throughout the summer months, with weekly checks to ensure consistency
	Inspections are completed in early spring, with periodic inspections carried out monthly as a minimum standard
	Maintenance is triggered by visual inspections performed weekly
Replacement	Replacement is considered when an asset's condition has significantly deteriorated, making maintenance no longer cost-effective
	If structures are deemed aging and recommended for replacement, a capital submission is made along with the condition assessment of the structure

Table 52 Lifecycle Management Strategy: Land Improvements

12.5 Risk Analysis

The risk matrix below is generated using available asset data, including condition, service life remaining, 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 **Very Low** $4,907,891 (50%)	5 - 7 **Low** $2,893,538 (30%)	8 - 9 **Moderate** $178,213 (2%)	10 - 14 **High** $543,553 (6%)	15 - 25 **Very High** $1,259,191 (13%)

Figure 61 Risk Matrix: Land Improvements

12.6 Levels of Service

The table that follows summarizes the Township's current and proposed 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.

12.6.1 Levels of Service – Current

Metric Type	KPI Metric	Service Attribute	Current LOS
Community	Description, which may include maps, of the land improvements that the Township operates and maintains	Scope	Refer to section 12.1
	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Quality	Refer to sections 12.2 & 12.4
Technical	Average condition rating	Quality	Good –76

Table 53: Land Improvements – Current Levels of Service

12.6.2 Levels of Service – Proposed

The scenarios that were used to analyse Russell Township's inventory were run for 100-years to ensure all the lifecycles were included at least once.

They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Target Condition Good - this scenario utilizes a target average condition of 70% of the infrastructure within each asset category. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for land improvements.

Scenarios	Replacement Cost	Average Condition	Average Risk Rating (0-25)[22]	Annual Capital Reinvestment
Scenario 1 – Lifecycle **(selected)**	$9,782,000	51%	10.32	$ 476,000
Scenario 2 - Current Capital Investment Rate		30%	12.8	$ 211,000
Scenario 3 - Maintain Condition 70%		70%	7.81	$792,000

Table 54: Land Improvements - Proposed Levels of Service Scenarios

[22] See 2.3.2

12.6.3 10-Year Capital Forecast

Below is the projected ten-year capital forecast (scenario 1) needed to obtain full funding, within the recommended timeframe (see 1.4).

Segment	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Marina	$1k	-	-	-	-	-	-	-	-	-
Misc. Land Improvements	-	-	-	$11k	$20k	$47k	-	$65k	-	$124k
Parklands & Trails	-	-	-	-	-	-	$6k	$98k	$47k	-
Parks & Playground Equipment	$30k	-	$47k	-	$9k	$333k	$30k	$202k	$26k	$408k
Splashpads & Pools	-	-	-	-	-	-	-	-	-	-
Sport Fields & Courts	$13k	-	$44k	-	$61k	$44k	-	$151k	$31k	$15k
Total	**$44k**	**-**	**$91k**	**$11k**	**$90k**	**$424k**	**$36k**	**$515k**	**$104k**	**$547k**

Table 55: Land Improvements - 10-Year Capital Forecast

Strategies

Growth

Financial Strategy

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 Russell Draft Official Plan (2025)[23]

The Township of Russell's Draft Official Plan establishes a comprehensive framework to guide land use, infrastructure development, and community planning through to the year 2046. The Plan is focused on managing anticipated growth while promoting environmental sustainability, livable communities, and economic development. It applies to the Township's four villages—Embrun, Russell, Limoges, and Marionville—as well as designated employment areas including the Commercial Parks and the 417 Industrial Park. Developed in alignment with the United Counties of Prescott and Russell Official Plan and the 2024 Provincial Policy Statement, the Plan emphasizes intensification, compact development, and efficient use of infrastructure to accommodate an expected population increase from approximately 20,160 in 2021 to 30,740 by 2046.

The Official Plan prioritizes the development of complete communities with a full range of housing options, employment opportunities, and accessible community services. Residential areas will support diverse housing forms, including affordable and multi-unit dwellings, while economic growth will be directed toward designated employment lands, particularly the 417 Industrial Park. Infrastructure planning supports this growth by ensuring that transportation, water, wastewater, stormwater, and energy systems are in place to service both new and existing development areas. The Plan also encourages active transportation networks, future transit readiness, and climate-resilient design.

Environmental protection is a core component of the Plan, with policies aimed at conserving natural heritage features, wetlands, tree canopy coverage, and the Castor River corridor. Cultural heritage resources are similarly protected, with guidelines to ensure new development respects and integrates the Township's historical character. Community design principles are embedded

[23] Note: The Official Plan is currently under review and has not yet received formal approval. Any information contained within the Official Plan is subject to change. This asset management plan has incorporated the most current available information. The Official Plan is projected to be adopted in 2025.

throughout, promoting walkable, human-scale development and urban design that prioritizes safety, accessibility, and visual quality.

To ensure long-term implementation, the Official Plan includes tools such as zoning by-laws, site plan control, and community planning permit systems, supported by regular public consultation. The Plan will be formally reviewed every ten years, with interim updates every five years, allowing the Township to adapt its strategies to emerging needs and opportunities while maintaining alignment with provincial and county policy directions.

13.2 United Counties of Prescott & Russell Official Plan (2022)

The Approved Official Plan sets out the long-term vision for land use, growth management, and community development across the United Counties of Prescott and Russell. It is designed to guide decision-making on infrastructure, housing, economic development, transportation, and environmental protection in a way that balances growth with sustainability. The Plan is informed by the 2020 Provincial Policy Statement and supports the creation of healthy, complete communities that are compact, resilient, and efficiently serviced. It emphasizes the importance of directing development toward designated settlement areas with full municipal servicing and encourages a mix of land uses to reduce the need for car dependency and promote walkability. Anticipated growth will be accommodated primarily within urban areas to make optimal use of infrastructure and minimize sprawl.

From an infrastructure perspective, the Plan outlines policies that ensure new development is supported by appropriate servicing strategies, including water, wastewater, stormwater, transportation networks, and active transportation facilities. Priority is given to maintaining existing assets and coordinating infrastructure investments with population and employment forecasts. The Plan also incorporates environmental protection measures, safeguarding natural heritage systems, water resources, and agricultural lands, while integrating climate change adaptation into land use decisions. Cultural heritage and Indigenous engagement are also addressed, ensuring that planning decisions respect the region’s identity and history. Implementation tools include zoning by-laws, subdivision approvals, and monitoring mechanisms to evaluate progress and respond to emerging needs. The Official Plan provides a framework that aligns infrastructure and land use planning with long-term community goals, supporting the development of resilient and well-serviced municipalities within the United Counties.

13.3 Impact of Growth on Lifecycle Activities

As the municipality's population is expected to increase in the coming years, demand will evolve, and it is likely that funding will need to be reprioritized.

As growth-related assets are acquired, constructed, or retired, updated records should be integrated into the Township's asset register, and consequently, its asset management plan. Additionally, the municipality should continue to review the lifecycle costs of growth-related infrastructure. These costs should be considered in long-term funding strategies that are designed to achieve the municipality's proposed levels of service.

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

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

- The financial requirements for:
  - Existing assets
  - Existing/proposed service levels
  - Requirements of contemplated changes in service
  - Requirements of anticipated growth
- Use of traditional sources of municipal funds:
  - Tax levies
  - User fees
  - Debt
  - Development charges
- Use of non-traditional sources of municipal funds:
  - Reallocated budgets
  - Partnerships
  - Procurement methods
- Use of Senior Government Funds:
  - Canada Community-Building Fund (CCBF)
  - Annual grants (ex. OCIF)

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:

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

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 must allocate approximately $12.84 million annually to address capital requirements for the assets included in this AMP.

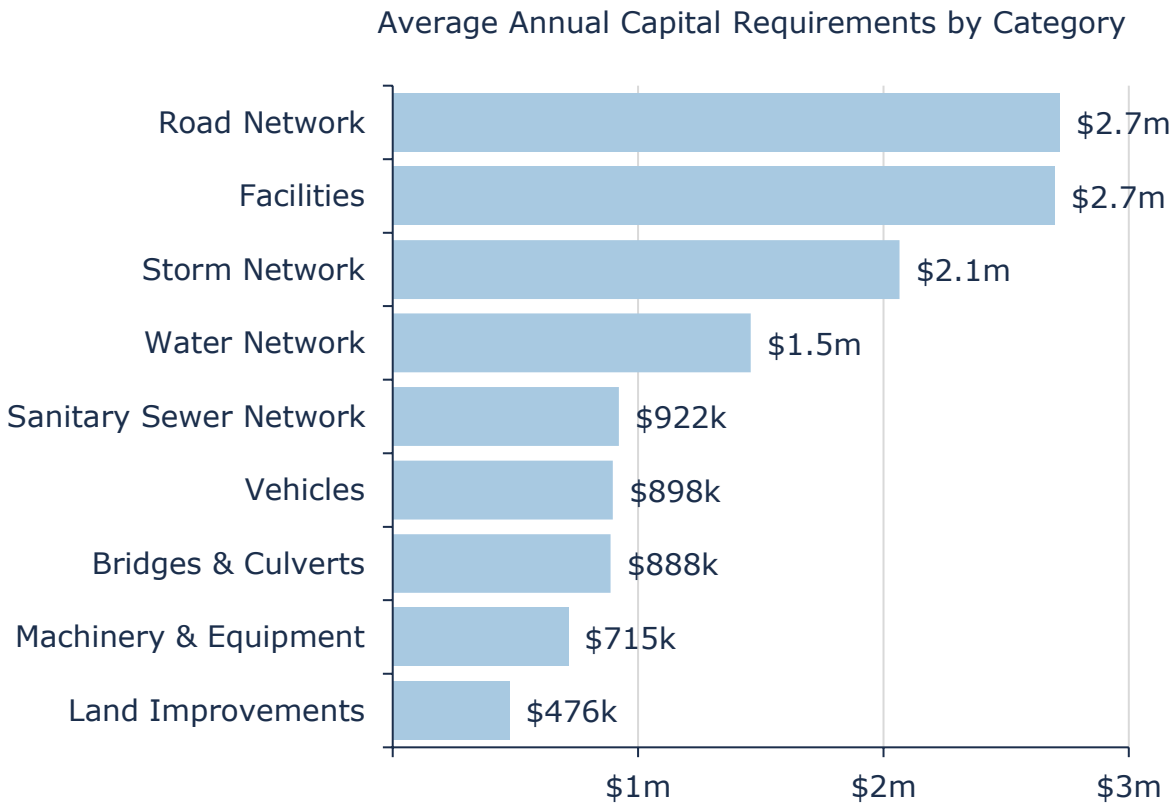


Figure 62 Annual Capital Funding Requirements by Asset Category

Where applicable, lifecycle management strategies have been developed to identify capital costs that are realized through strategic rehabilitation and renewal of some of the main assets in these categories. The development of these strategies allows for a comparison of potential cost avoidance if the strategies were to be implemented. The following compares the two different strategies:

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

The implementation of a proactive lifecycle strategy leads to potential annual cost avoidance and better overall performance. 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 $6.48 million towards capital projects per year. Given the annual capital requirement of $12.84 million, there is

currently a funding gap of $6.36 million annually.

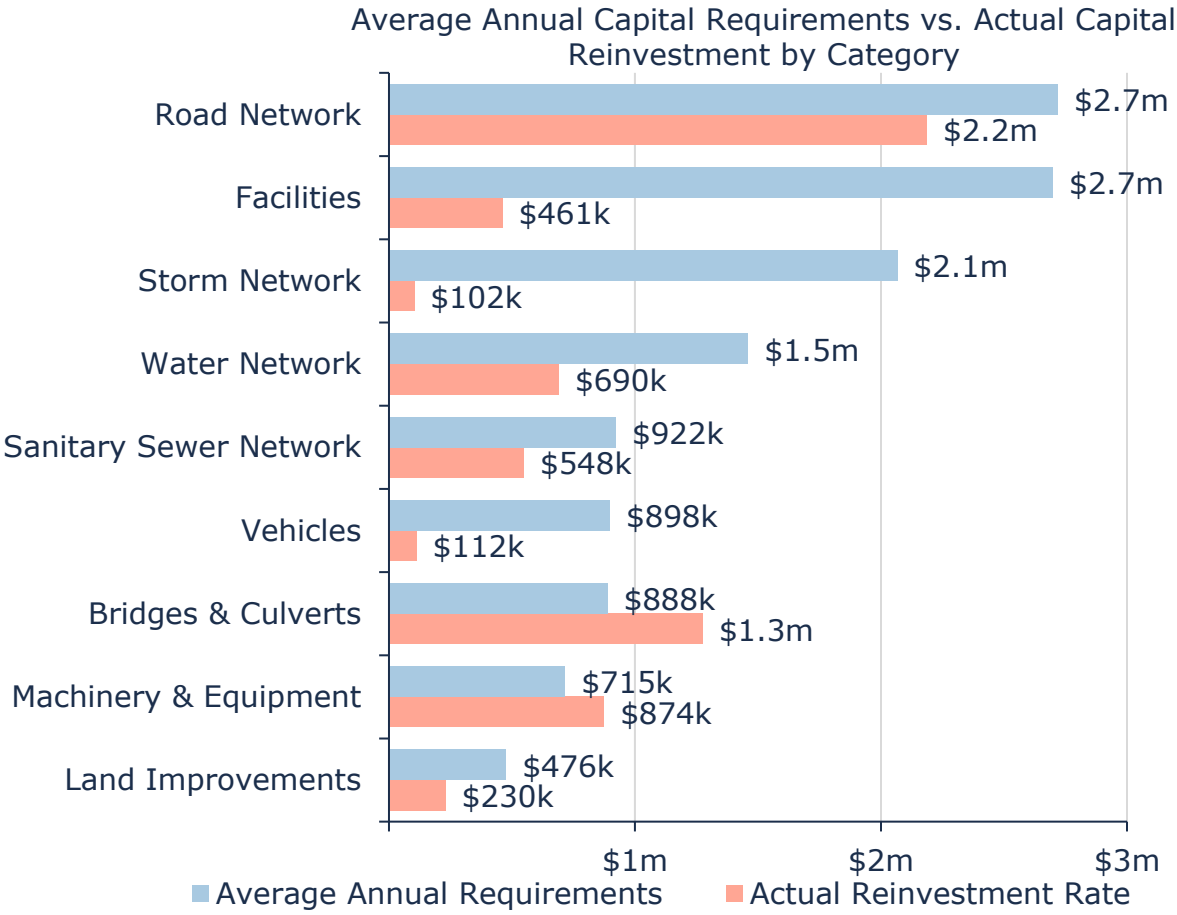


Figure 63 Annual Requirements vs. Capital Funding Available

14.2 Funding Objective

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

- **Tax Funded Assets:** road network, bridges & culverts, storm network, facilities, vehicles, machinery & equipment, and land improvements
- **Rate-Funded Assets:** water network, and sanitary sewer network

14.3 Financial Profile: Tax Funded Assets

14.3.1 Current Funding Position

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

Asset Category	Avg. Annual Require-ment	Annual Funding Available				Annual Deficit
		Property Taxation & Reserves	CCBF	OCIF	Total Available	
Bridges & Culverts	888,000	487,000	312,000	476,000	1,275,000	-387,000
Facilities	2,699,000	461,000			461,000	2,238,000
Land Improvements	476,000	230,000			230,000	246,000
Machinery & Equipment	715,000	874,000			874,000	-159,000
Road Network	2,718,000	1,398,000	312,000	476,000	2,186,000	532,000
Storm Network	2,066,000	102,000			102,000	1,964,000
Vehicles	898,000	112,000			112,000	786,000
Total	**10,460,000**	**3,664,000**	**624,000**	**952,000**	**5,240,000**[24]	**5,220,000**

Table 56 Annual Available Funding for Tax Funded Assets

The average annual investment requirement for the above categories is approximately $10.46 million. Annual revenue currently allocated to these assets for capital purposes is approximately $5.24 million leaving an annual deficit of about $5.22 million. Put differently, these infrastructure categories are currently funded at 50.1% of their long-term requirements.

14.3.2 Full Funding Requirements

In 2024, Russell Township had annual tax revenues of $17.8 million. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

[24] In 2024, the Township had $5.2 million in funding from sustainable sources. To further address the infrastructure deficit, the Township implemented an additional 1% increase in 2025. On November 10, 2025, Council approved a further 2.3% increase for the 2026 budget. These commitments demonstrate the Township's proactive approach to asset management, its dedication to reducing the infrastructure deficit, and its ongoing effort to ensure that desired levels of service are maintained for the community.

Asset Category	Tax Change Required for Full Funding
Bridges & Culverts	-2.2%
Facilities	12.5%
Land Improvements	1.4%
Machinery & Equipment	-0.9%
Road Network	3.0%
Storm Network	11.0%
Vehicles	4.4%
Total	**29.2%**[25]

Table 57 Tax Increase Requirements for Full Funding

Our recommendations include capturing the above changes and allocating them to the infrastructure deficit outlined above. The table below outlines this concept and presents several options[26]:

	5 Years	10 Years	12 Years	15 Years	20 Years
Infrastructure Deficit	5,220,000	5,220,000	5,220,000	5,220,000	5,220,000
Change in Debt Costs	-161,000	-161,000	-161,000	-219,000	-219,000
Resulting Infrastructure Deficit:	**5,059,000**	**5,059,000**	**5,059,000**	**5,001,000**	**5,001,000**
Tax Increase Required	28.4%	28.4%	28.4%	28.0%	28.0%
Annually:	**5.7%**	**2.8%**	**2.4%**	**1.9%**	**1.4%**

Table 58 Tax Increase Options 5-20 Years

[25] A negative funding figure for an asset category does not inherently mean it is overfunded; rather, it reflects a reallocation of resources within a shared property tax pool to better align with overall asset management priorities in any given year.

[26] While this AMP recommends the 10-year option, with an annual increase of 2.8%, it is highly likely that this figure will need to be reviewed each year. The Township is currently considering the retirement and decommissioning of several facility assets, including the Camille Piché Community Centre, the Embrun Arena, the Russell Arena, and the Russell Centennial Pool. If all mentioned facilities were to be decommissioned, the Township's recommended annual tax increase would be reduced to 2.2%. The Township has committed to a 2.3% increase for 2026, reflecting its commitment to addressing the evolving nature of infrastructure requirements and community needs. Additional information: 14.3.3

14.3.3 Other Considerations

The Township of Russell is projected to grow for the foreseeable future, as indicated within both the Township's Official Plan (2025) and the United Counties of Prescott & Russell Official Plan (2022). Consequently, numerous large-scale projects are either in progress or are on the horizon for the Township – most notably, the new, $104 million recreation complex, which is scheduled to open in the Fall of 2026.

With the new recreation complex, the Township has begun the process of evaluating the community's needs for its older facilities. This includes: the Camille Piché community centre, Embrun arena, Russell arena, and the Russell Centennial pool. The table below compares various scenarios by summarizing replacement costs and average annual requirements.

Scenarios	Replacement Cost	Average Annual Requirement
Scenario 1 – Current Facilities	$98.8 million	$2.7 million
Scenario 2 – Excluding Facilities[27]	$55.1 million	$1.5 million
Scenario 3 – Integration of New Facility[28]	$159.3 million	$3.6 million

The table below provides additional information pertaining to the four facilities:

Facility	Replacement Cost	Average Annual Requirement
Camille Piché Community Centre	$9.5 million	$314,000
Embrun Arena	$17.4 million	$478,000
Russell Arena	$15.6 million	$394,000
Russell Centennial Pool	$1.5 million	$45,000
Total	**$43.7 million**	**$1.2 million**

[27] This scenario excludes Camille Piché community centre, Embrun arena, Russell arena, and the Russell Centennial Pool. The assumption(s) is that these facilities would be sold, decommissioned, retired, etc., and would no longer be owned and managed by the Township.
[28] This scenario excludes the aforementioned facilities, while integrating the new recreation complex. Assumptions: replacement cost ($104 million) and estimated useful life (50 years).

In addition to the new recreation complex, there are numerous proposed capital projects which the Township is evaluating for the next 10 years. These include:

Project Details	Scheduled Year	Cost
Land purchase for Fire Station 11 (Embrun)	2026	$3.0 million
Intersection Improvements (roads)	2026-2027 & 2035	$8.25 million
Addition to Fire Station 11	2029	$4.0 million
Administrative Office	2037	$3.6 million
Dog Parks	2029 & 2031	$300 thousand
Addition to Fire Station 12 (Russell)	2031	$1.1 million

These proposed projects have not been integrated into the Township's asset register. It is prudent that if/when these projects are completed, that the Township's asset register is updated to reflect new assets, replacement costs, average annual requirements, and adjust its proposed levels of service accordingly. Furthermore, as legislatively required by O.Reg. 588/17, the Township will update its asset management plan, in 2030.

14.3.4 Financial Strategy Recommendations

Considering all the above information, we recommend the 10-year option. This involves full funding being achieved over 10 years by:

- when realized, reallocating the debt cost reductions of $161,000 to the infrastructure deficit as outlined above
- increasing tax revenues by 2.8% each year for the next 10 years solely for the purpose of phasing in the proposed levels of service for asset categories covered in this section of the AMP
- adjusting tax revenue increases in future year(s) when allocations to capital expenditure exceed or fail to meet budgeted amounts
- allocating the current CCBF and OCIF revenue as outlined previously
- reallocating appropriate revenue from categories in a surplus position to those in a deficit position, when applicable
- increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in

Notes:

- 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.[29]
- 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. Alternatively, Municipality's should consider a downward revision of certain service levels.

Although this option achieves full funding within 10 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of $35 million, for tax funded assets.[30]

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

14.4 Financial Profile: Rate Funded Assets

14.4.1 Current Funding Position

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

[29] The Township 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.
[30] While there is $35 million in assets identified as backlog, with $33 million pertaining to the storm network, it is recommended that the Township allocate resources to further refine its asset register (Citywide) in the coming years.

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Rates	Grants	To Operations	Total Available	
Water Network	1,459,000	2,133,000	0	-1,443,000	690,000[31]	769,000
Sanitary Sewer Network	922,000	2,031,000	0	-1,483,000	548,000[32]	374,000
Total	**2,381,000**	**4,164,000**	**0**	**-2,926,000**	**1,238,000**	**1,143,000**

Table 59 Annual Available Funding for Rate Funded Assets

The average annual investment requirement for the above categories is $2.4 million. Annual revenue currently allocated to these assets for capital purposes is $1.2 million leaving an annual deficit of $1.2 million. Put differently, these infrastructure categories are currently funded at 52% of their long-term requirements.

14.4.2 Full Funding Requirements

In 2024, the Russell Township had annual water and sanitary revenues of $2,133,000 and $2,031,000 respectively. As illustrated in the table below, without consideration of any other sources of revenue, full funding would require the following changes over time:

Asset Category	Rate Change Required for Full Funding
Water Network	36.1%
Sanitary Sewer Network	18.4%

Table 60 Rate Increase Requirements for Full Funding

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

[31] In 2024, the Township allocated $690,000 from sustainable funding sources. To address ongoing infrastructure challenges, this amount was increased to $942,000 for 2025, supporting improved long-term asset planning and financial resilience.
[32] In 2024, the Township allocated $548,000 from sustainable funding sources. To address ongoing infrastructure challenges, this amount was increased to $640,000 for 2025.

	Water Network				
	5 Years	**10 Years**	**12 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	769,000	769,000	769,000	769,000	769,000
Rate Increase Required	36.1%	36.1%	36.1%	36.1%	28.1%
Annually:	**7.2%**	**3.6%**	**3.0%**	**2.4%**	**1.4%**

Table 61 Water Rate Increase Options 5-20 Years

	Sanitary Sewer Network				
	5 Years	**10 Years**	**12 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	374,000	374,000	374,000	374,000	374,000
Rate Increase Required	18.4%	18.4%	18.4%	18.4%	18.4%
Annually:	**3.7%**	**1.8%**	**1.5%**	**1.2%**	**0.9%**

Table 62 Sanitary Rate Increase Options 5-20 Years

14.4.3 Other Considerations

The Township of Russell is projected to grow for the foreseeable future, as indicated within both the Township's Official Plan (2025) and the United Counties of Prescott & Russell Official Plan (2022). There are numerous large-scale projects for both the water and sanitary sewer network, which the Township is currently evaluating. These include:

Project Details	Scheduled Year	Cost
Water Reservoir Expansion	2026	$5.0 million
Watermain Upgrades (Valoris)	2027, 2033	$13.7 million
Pumping Station Upgrades	2029-2030, 2032-2033	$14.3 million
Water Supply (Ottawa)	2030	$20.0 million
Wastewater Treatment Plant	2031	$95 million
Watermain Upgrade (Route 300)	2031-2035	$10 million

Project Details	Scheduled Year	Cost
Watermain Upgrades (Craig St.)	2032	$2.0 million

These proposed projects have not been integrated into the Township's asset register. It is prudent that if/when these projects are completed, that the Township's asset register is updated to reflect new assets, replacement costs, average annual requirements, and adjust its proposed levels of service accordingly. Furthermore, as legislatively required by O.Reg. 588/17, the Township will update its asset management plan, in 2030.

14.4.4 Financial Strategy Recommendations

Considering all the above information, we recommend the 10-year option for both the water network and sanitary sewer network. This involves full funding being achieved over 10 years by:

- increasing rate revenues by 1.8% for sanitary services and 3.6% for water services each year for the next 10 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
- increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

- 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.
- 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. Alternatively, Municipality's should consider a downward revision of certain service levels.
- Any increase in rates required for operations would be in addition to the above recommendations.

Although this option achieves full funding on an annual basis of 10 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows the pent-up investment demand of $100 thousand in backlog, for rate-funded assets.

14.5 Use of Debt

The following tables outline how Russell Township has historically used debt for investing in the asset categories as listed. There is currently $3.4 million of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of $423,000 (2024), well within its provincially prescribed maximum of $7,416,368.[33]

Asset Category	Current Debt Outstanding (2024)	Use of Debt in the Last Five Years				
		2019	2020	2021	2022	2023
Bridges & Culverts	1,128,000	0	900,000	0	0	0
Facilities	35,000	0	0	0	0	0
Land Improvements	0	0	0	0	0	0
Machinery & Equipment	0	0	0	0	0	0
Road Network	0	0	0	0	0	0
Storm Network	0	0	0	0	0	0
Vehicles	263,000	0	0	0	0	0
Total Tax Funded	**1,426,000**	**0**	**900,000**	**0**	**0**	**0**
Water Network	1,982,000	0	0	0	0	0
Sanitary Sewer Network	0	0	0	0	0	0
Total Rate Funded	**1,982,000**	**0**	**900,000**	**0**	**0**	**0**

Table 63: Use of Debt 2019-2023

[33] Schedule 81, as per 2024 FIR

Asset Category	Principal & Interest Payments in the Next Ten Years						
	2025	2026	2027	2028	2029	2030	2035
Bridges & Culverts	140,000	140,000	140,000	140,000	58,000	58,000	58,000
Facilities	-	-	-	-	-	-	-
Land Improvements	-	-	-	-	-	-	-
Machinery & Equipment	-	-	-	-	-	-	-
Road Network	-	-	-	-	-	-	-
Storm Network	-	-	-	-	-	-	-
Vehicles	79,000	79,000	39,000	-	-	-	-
Total Tax Funded	**219,000**	**219,000**	**179,000**	**140,000**	**58,000**	**58,000**	**58,000**
Water Network[34]	169,000	169,000	169,000	169,000	169,000	169,000	169,000
Sanitary Sewer Network	-	-	-	-	-	-	-
Total Rate Funded	**169,000**	**169,000**	**169,000**	**169,000**	**169,000**	**169,000**	**169,000**

Table 64: Principal and Interest Payments

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

14.6 Use of Reserves

Available Reserves

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

- the ability to stabilize tax rates when dealing with variable and sometimes uncontrollable factors
- financing one-time or short-term investments

[34] $169,000 represents 19% of the Township's total water-related debt. The remaining 81%—amounting to $722,000—is funded through development charges.

- accumulating the funding for significant future infrastructure investments
- managing the use of debt
- normalizing infrastructure funding requirement

By asset category, the table below outlines the details of the reserves currently available to Russell Township

Asset Category	Reserve Balances
Bridges & Culverts	-37,000
Facilities	750,000
Land Improvements	357,000
Machinery & Equipment	670,000
Road Network	1,864,000
Storm Network	-1,626,000
Vehicles	628,000
Total Tax Funded:	**2,606,000**
Water Network	6,605,000
Sanitary Sewer Network	484,000
Total Rate Funded:	**7,089,000**

Table 65: Reserve Balances

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 consider when determining their capital reserve requirements include:

- breadth of services provided
- age and condition of infrastructure
- use and level of debt
- economic conditions and outlook
- internal reserve and debt policies

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

Appendices

Appendix A – Infrastructure Report Card

Appendix B – Level of Service Maps

Appendix A – Infrastructure Report Card

Asset Category	Replacement Cost	Average Condition	Current Financial Capacity	
Road Network	**$ 78.1m**	**Good**	Annual Requirement:	$2,718,000
			Funding Available:	$2,186,000
			Annual Deficit:	**$532,000**
Bridges & Culverts	**$ 59.6m**	**Good**	Annual Requirement:	$888,000
			Funding Available:	$1,275,000
			Annual Surplus:	**$387,000**
Water Network	**$ 93.1m**	**Good**	Annual Requirement:	$1,459,000
			Funding Available:	$690,000
			Annual Deficit:	**$769,000**
Sanitary Sewer Network	**$ 58.8m**	**Very Good**	Annual Requirement:	$922,000
			Funding Available:	$548,000
			Annual Deficit:	**$374,000**
Storm Network	**$ 132.8m**	**Fair**	Annual Requirement:	$2,066,000
			Funding Available:	$102,000
			Annual Deficit:	**$1,964,000**
Facilities	**$ 98.7m**	**Good**	Annual Requirement:	$2,699,000[35]
			Funding Available:	$461,000
			Annual Deficit:	**$2,238,000**
Vehicles	**$ 14.2m**	**Good**	Annual Requirement:	$898,000
			Funding Available:	$112,000
			Annual Deficit:	**$786,000**
Machinery & Equipment	**$ 7.6m**	**Good**	Annual Requirement:	$715,000
			Funding Available:	$874,000
			Annual Surplus:	**$159,000**
Land Improvements	**$ 9.7m**	**Good**	Annual Requirement:	$476,000
			Funding Available:	$230,000
			Annual Deficit:	**$246,000**
Total	**$ 553m**	**Good**	**Annual Requirement:**	**$12,840,000**
			Funding Available:	**$6,478,000**

[35] See 14.3.3

Asset Category	Replacement Cost	Average Condition	Current Financial Capacity	
			Annual Deficit:	**$6,362,000**

Appendix B – Level of Service Maps & Photos

Road Network Map

Images of a Bridge in Good Condition

St-Jacques Road

Inspected: May 22, 2023

East Elevation

Street Looking North

North Expansion Joint

Concrete End Post

West Exterior Girder and Soffit

Interior Span

Images of a Bridge in Fair Condition

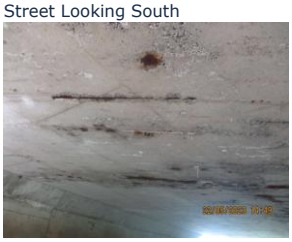
Bridge – R-14 on St-Pierre Road

Inspected: May 22, 2023

East Elevation

Street Looking South

Southwest SBGR



Interior Soffit – Medium Delamination

Wide Vertical Crack on South Abutment

Footing Bracing – Severe Section Loss

Images of a Bridge in Good Condition

St-Jacques Road

Inspected: May 22, 2023

Images of a Bridge in Fair Condition

Bridge – R-14 on St-Pierre Road

Inspected: May 22, 2023

Images of a Culvert in Very Good Condition

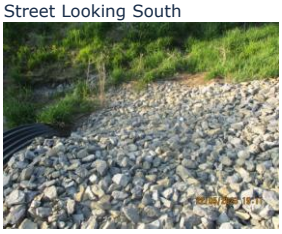
Culvert – RC-006 on Route 300

Inspected: May 22, 2023


East Elevation Outlet


Street Looking South


SBGR Steel Post Condition


Northwest Embankment


South Cell Looking East (Downstream)


Energy Attenuator

Images of a Culvert in Fair Condition

Culvert - RC-001 on Route 200 at St. Thomas Road

Inspected: May 22, 2023


Southeast Elevation (Inlet)


Street Looking North

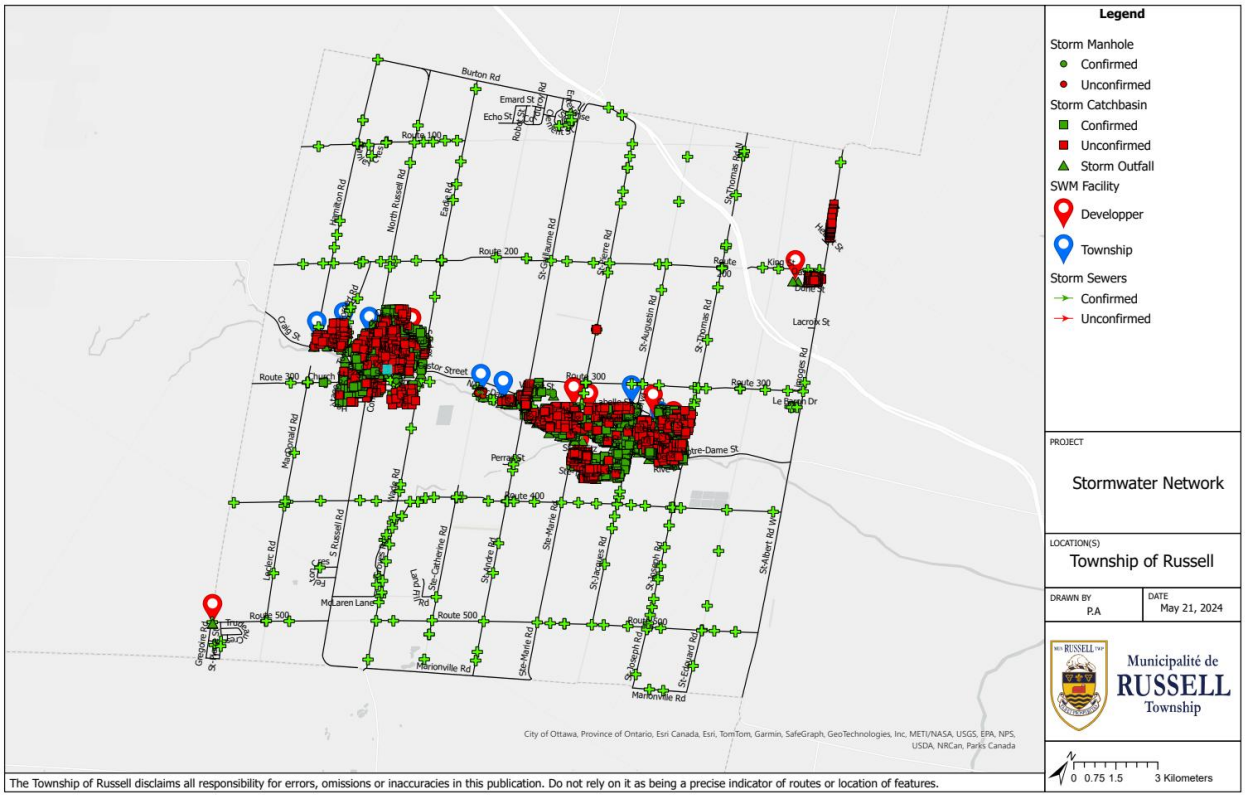

Southwest SBGR - Collision Damage


SBGR Wood Post Condition – Medium Rot


North Embankment

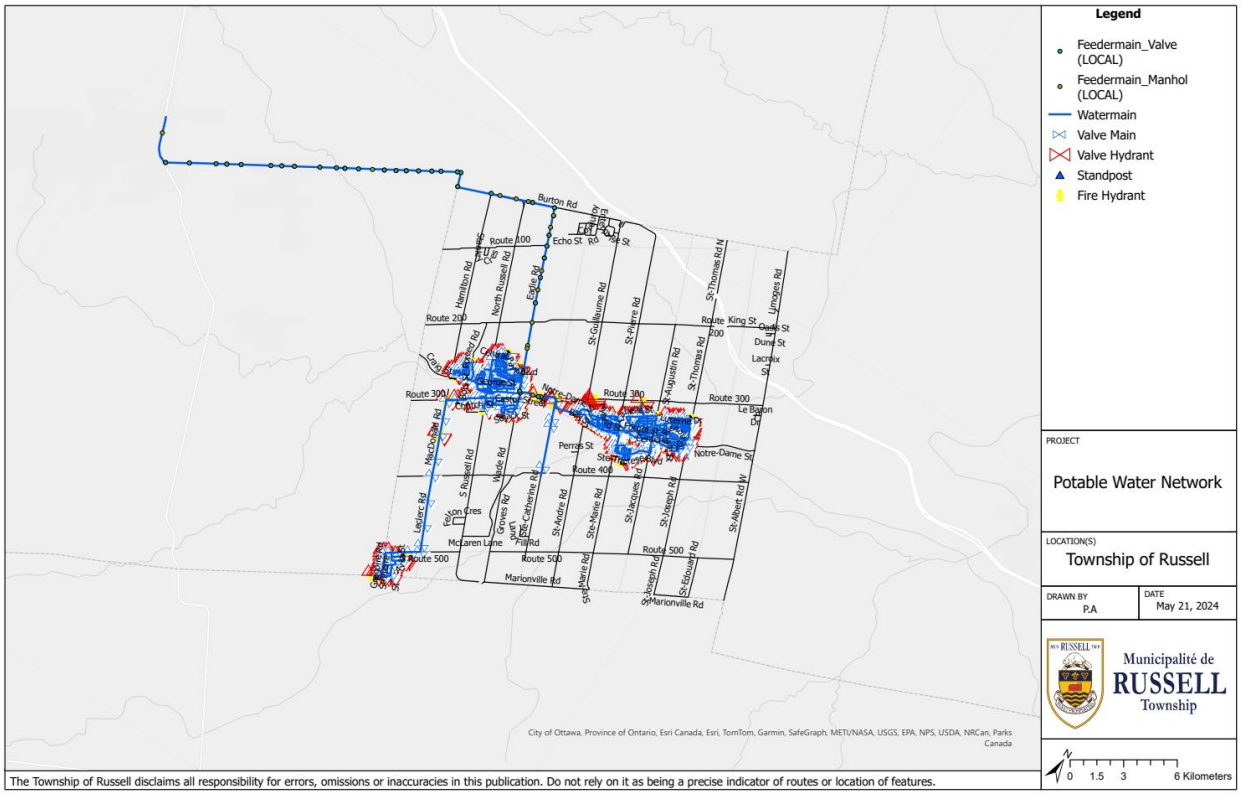

Outlet Component

Storm Network Map



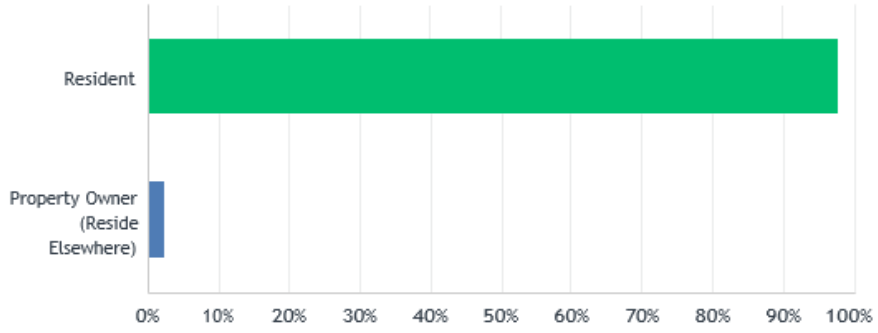
Sanitary Sewer Network Map

Water Network Map



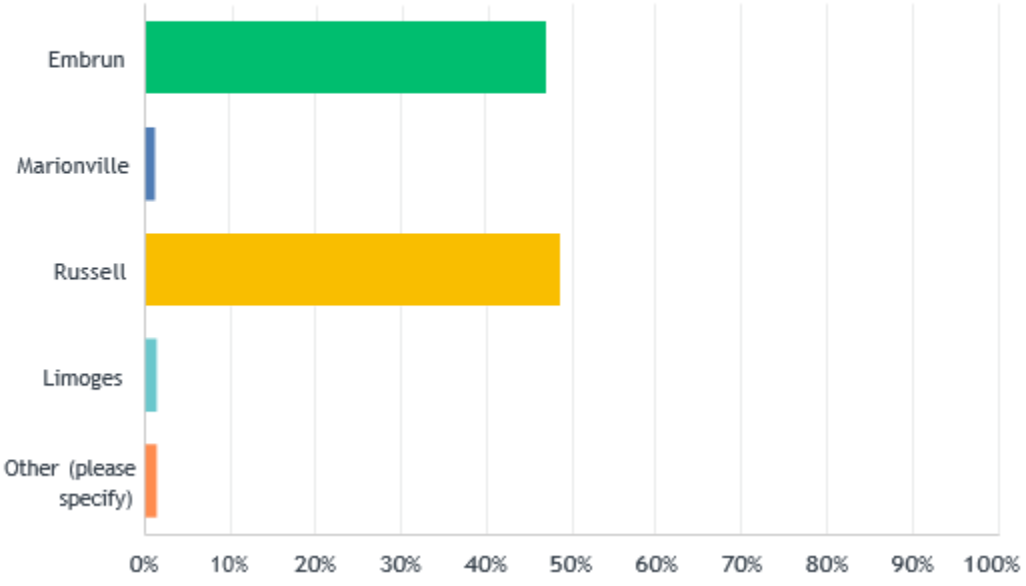
Appendix C – Public Engagement Questionnaire

Q1 Are you a full-time resident of Russell Township or do you own property and reside elsewhere?

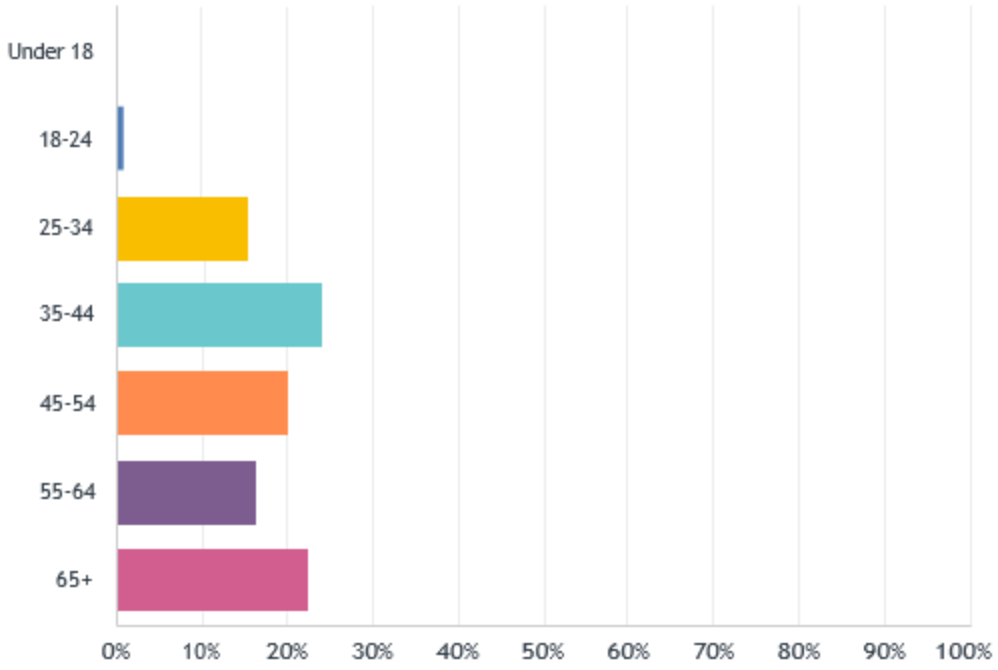


ANSWER CHOICES	RESPONSES	
Resident	97.75%	652
Property Owner (Reside Elsewhere)	2.25%	15
TOTAL		667

Q2 Please select the area you live:

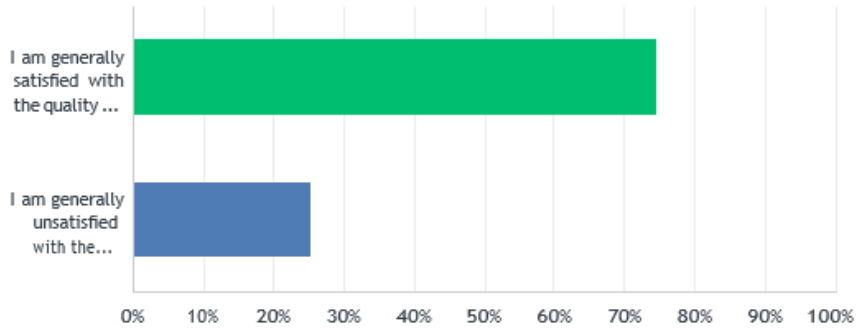


Q3 Please select your age range:



Q4 Which of the following statements best describes your daily experiences with different infrastructure services such as roads, sidewalks, parks, recreational centres, water services, etc.?

Answered: 607 Skipped: 60



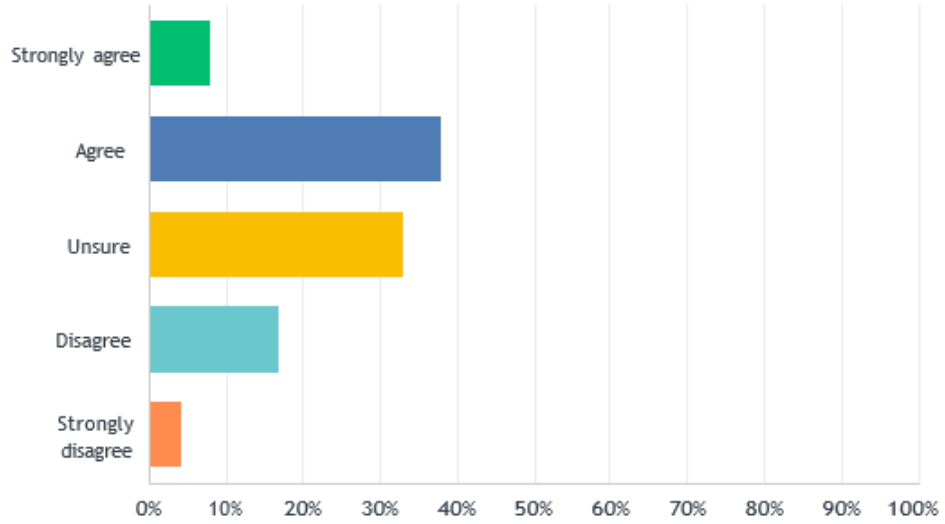
ANSWER CHOICES	RESPONSES	
I am generally satisfied with the quality of services provided.	74.63%	453
I am generally unsatisfied with the quality of services provided.	25.37%	154
TOTAL		607

Q5 How would you describe your experience with different infrastructure and their service provided:(From highly satisfied to highly dissatisfied with quality)

						N/A	TOTAL	WEIGHTED AVERAGE
Roads	6.75% 41	33.77% 205	34.43% 209	14.66% 89	10.38% 63	0.00% 0	607	3.12
Sidewalk	10.54% 64	36.24% 220	27.68% 168	13.67% 83	8.07% 49	3.79% 23	607	3.29
Bridges	20.43% 124	53.87% 327	16.80% 102	1.81% 11	0.66% 4	6.43% 39	607	3.98
Parks/Trails/Dog Park	32.13% 195	42.34% 257	12.36% 75	4.45% 27	2.97% 18	5.77% 35	607	4.02
Community Centres	11.86% 72	40.69% 247	25.70% 156	6.75% 41	3.13% 19	11.86% 72	607	3.58
Fire Emergency Services	48.93% 297	31.63% 192	4.28% 26	0.66% 4	0.33% 2	14.17% 86	607	4.49
Winter Control (snow plowing)	23.72% 144	42.34% 257	18.78% 114	8.90% 54	3.62% 22	2.64% 16	607	3.76
Water & Sewer Services	29.00% 176	39.87% 242	13.51% 82	3.29% 20	2.80% 17	11.53% 70	607	4.01
Public Safety & Enforcement	23.23% 141	40.20% 244	19.11% 116	7.25% 44	5.44% 33	4.78% 29	607	3.72

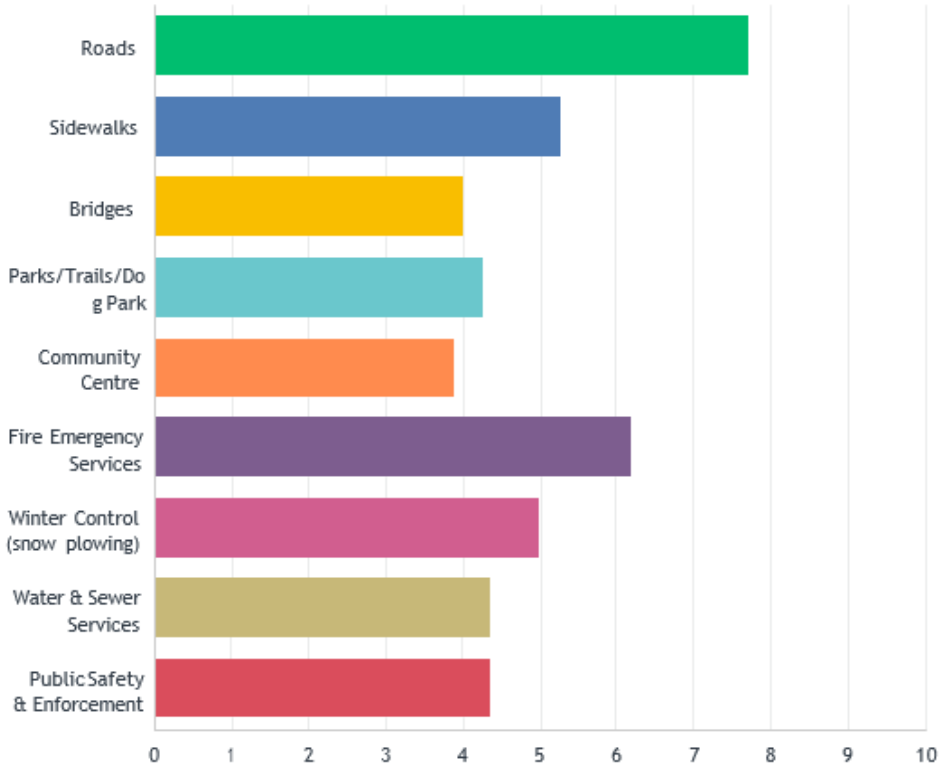
Q6 In my opinion, Russell Township is making the right investments in infrastructure for its current residents:

Answered: 607 Skipped: 60



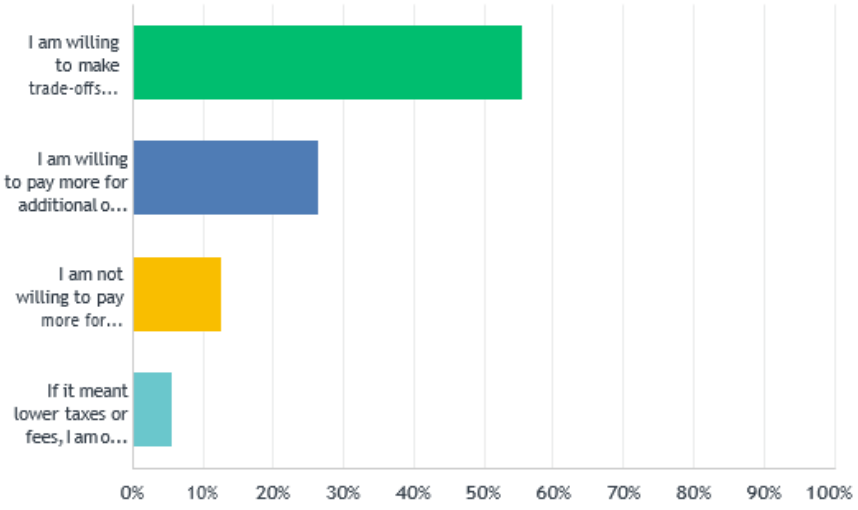
Q7 Which infrastructure services do you value the most? Please move each line in order of importance.

Answered: 607 Skipped: 60



Q8 Since funds are limited, it is often necessary to make trade-offs between different infrastructure services and programs. This could mean reducing spending on some services while increasing expenditure on others. For example, more sidewalks but fewer bike trails. Which of the following statements best represents your opinion on changing services:

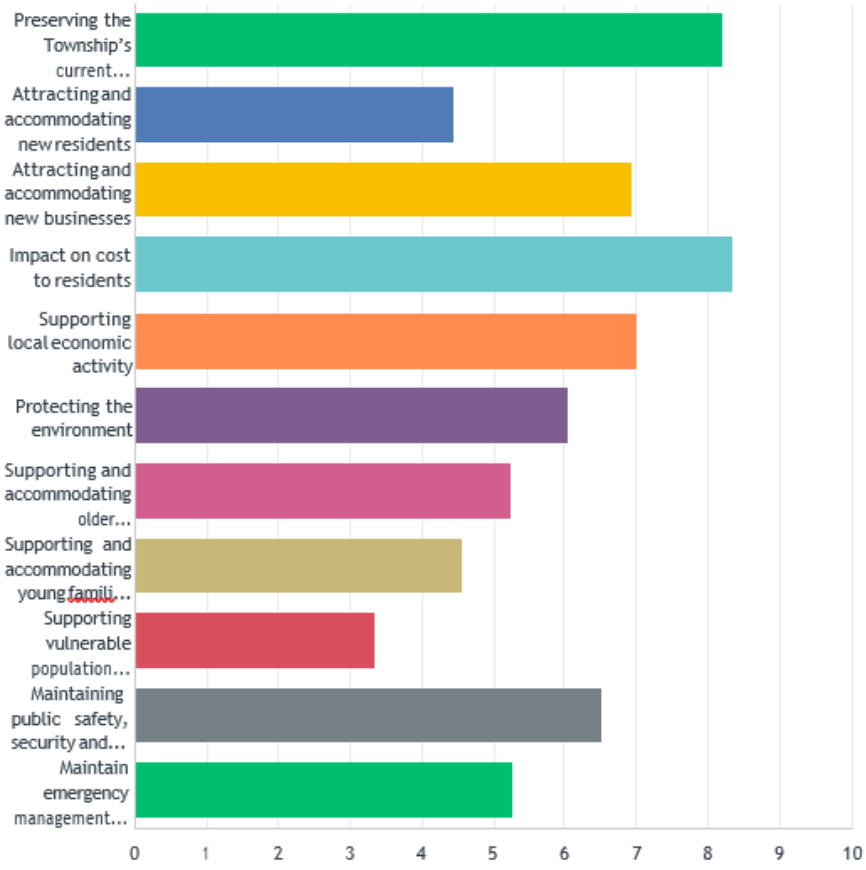
Answered: 565 Skipped: 102



ANSWER CHOICES	RESPONSES	
I am willing to make trade-offs between different infrastructure services (spending more on some, and less on others) if it means keeping costs at similar levels.	55.58%	314
I am willing to pay more for additional or better infrastructure services if it means improvement in my quality of life.	26.37%	149
I am not willing to pay more for additional or better infrastructure services.	12.57%	71
If it meant lower taxes or fees, I am open to a reduction in the quality and quantity of infrastructure services.	5.49%	31
TOTAL		565

Q9 Russell Township is growing and evolving. This means spending on infrastructure services may need to change over time to meet the needs of the community. Which factors are most important to you in deciding if Russell Township's spending on infrastructure is best for the community? Please rank the following in order of importance.

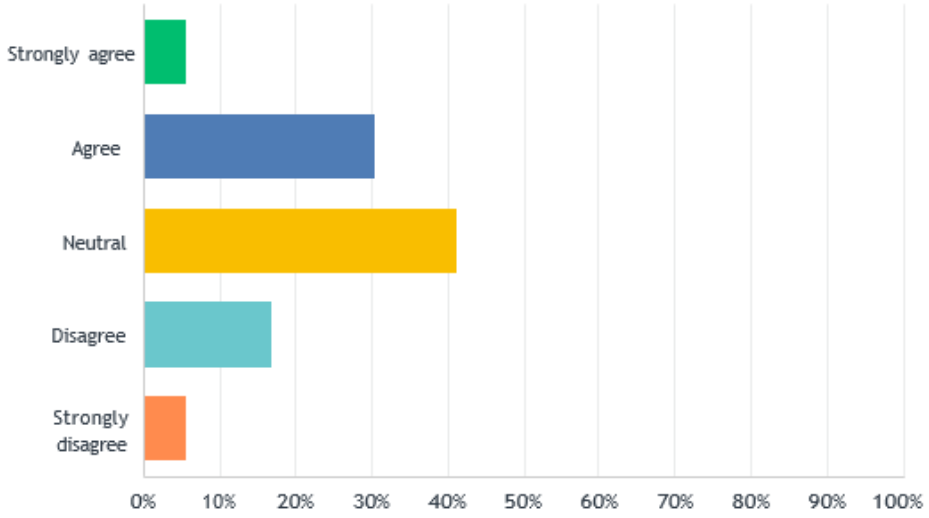
Answered: 565 Skipped: 102



	1	2	3	4	5	6	7	8	9	10	11
Preserving the Township's current character and charm	37.70% 213	13.10% 74	5.84% 33	9.38% 53	8.14% 46	5.31% 30	4.60% 26	3.54% 20	2.48% 14	3.19% 18	6.73% 38
Attracting and accommodating new residents	1.95% 11	7.96% 45	7.61% 43	5.49% 31	6.90% 39	6.90% 39	7.61% 43	6.19% 35	8.67% 49	13.63% 77	27.08% 153
Attracting and accommodating new businesses	11.50% 65	13.27% 75	15.75% 89	11.86% 67	7.96% 45	7.26% 41	7.43% 42	5.49% 31	6.37% 36	6.90% 39	6.19% 35
Impact on cost to residents	16.46% 93	22.48% 127	18.41% 104	14.34% 81	10.80% 61	6.37% 36	3.01% 17	2.48% 14	1.42% 8	2.12% 12	2.12% 12
Supporting local economic activity	1.95% 11	7.96% 45	17.88% 101	15.75% 89	20.88% 118	12.74% 72	9.20% 52	6.90% 39	4.07% 23	2.12% 12	0.53% 3
Protecting the environment	5.31% 30	6.73% 38	9.38% 53	11.33% 64	9.56% 54	16.64% 94	11.15% 63	10.80% 61	6.37% 36	6.37% 36	6.37% 36
Supporting and accommodating older population groups	1.77% 10	3.01% 17	3.89% 22	8.14% 46	10.97% 62	12.21% 69	21.42% 121	13.98% 79	15.22% 86	6.02% 34	3.36% 19
Supporting and accommodating young families and singles	2.48% 14	3.01% 17	3.89% 22	6.02% 34	5.66% 32	9.56% 54	10.80% 61	19.65% 111	16.99% 96	15.93% 90	6.02% 34
Supporting vulnerable population groups	0.35% 2	1.42% 8	2.30% 13	3.01% 17	4.78% 27	5.31% 30	5.84% 33	12.04% 68	21.59% 122	21.24% 120	22.12% 125
Maintaining public safety, security and well-being of residents	14.69% 83	10.44% 59	9.20% 52	8.14% 46	8.32% 47	9.03% 51	8.67% 49	6.55% 37	9.20% 52	12.74% 72	3.01% 17
Maintain emergency management program – Prepare for emergencies	5.84% 33	10.62% 60	5.84% 33	6.55% 37	6.02% 34	8.67% 49	10.27% 58	12.39% 70	7.61% 43	9.73% 55	16.46% 93

Q10 In my opinion, Russell Township is making the right investments in infrastructure for its future:

Answered: 565 Skipped: 102



Q11 In your opinion, is the service level provided by each of the following assets exceeding expectations, meeting expectations, or below expectations:

	EXCEED EXPECTATIONS	MEET EXPECTATIONS	BELOW EXPECTATIONS	N/A	TOTAL	WEIGHTED AVERAGE
Roads	3.89% 22	51.86% 293	43.89% 248	0.35% 2	565	1.60
Sidewalks	5.31% 30	56.64% 320	31.50% 178	6.55% 37	565	1.72
Bridges	5.52% 31	78.29% 440	4.63% 26	11.57% 65	562	2.01
Parks/Trail/Dog Park	18.94% 107	61.59% 348	11.68% 66	7.79% 44	565	2.08
Community Centres	4.97% 28	51.33% 289	30.37% 171	13.32% 75	563	1.71
Fire Emergency Services	25.84% 146	63.72% 360	3.01% 17	7.43% 42	565	2.25
Winter Control (snow plowing)	11.50% 65	63.19% 357	23.54% 133	1.77% 10	565	1.88
Water & Sewer Services	11.17% 63	63.30% 357	13.65% 77	11.88% 67	564	1.97
Public Safety & Enforcement	10.09% 57	65.49% 370	20.35% 115	4.07% 23	565	1.89