Asset Management Plan

Municipality of South Huron

2024

This Asset Management Plan was prepared by:

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

Key Statistics

Replacement cost of asset portfolio
$668.6 million

Annual tax increase per household for full funding
$37.84 (2021)

Percentage of assets in fair or better condition
55%

Percentage of assets with assessed condition data
48%

Annual capital infrastructure deficit
$7.5 million

Recommended timeframe for eliminating annual infrastructure deficit
20 Years

Target reinvestment rate
2.14%

Actual reinvestment rate
1.02%

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Executive Summary

Municipal infrastructure provides the foundation for the economic, social, and environmental health and growth of a community through the delivery of critical services. The goal of asset management is to deliver an adequate level of service in the most cost-effective manner. This involves the development and implementation of asset management strategies and long-term financial planning.

Scope

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

This AMP includes the following asset categories:

With the development of this AMP the municipality has achieved compliance with O. Reg. 588/17 to the extent of the requirements that must be completed by July 1, 2024. There are additional requirements concerning proposed levels of service and growth that must be met by July 1, 2025.

Findings

The overall replacement cost of the asset categories included in this AMP totals $668.6 million. 55% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 48% of assets. For the remaining 52% of assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.

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

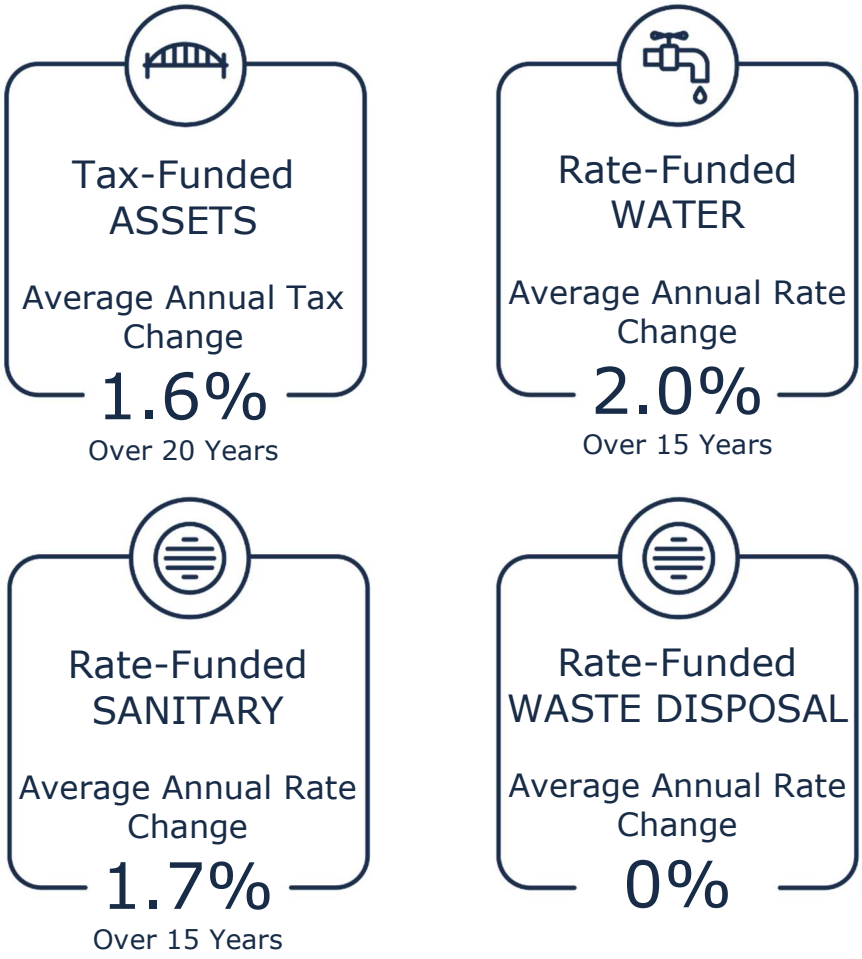
To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Municipality's average annual capital requirement totals $14.3 million. Based on a historical analysis of sustainable capital funding sources, the Municipality is committing approximately $6.8 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $7.5 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 Municipality. Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources.

Annual Tax Increase Per Household for Full Funding

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 Municipality's infrastructure deficit based on a 20-year plan:



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

- Review data to update and maintain a complete and accurate dataset.
- Develop a condition assessment strategy with a regular schedule.
- Review and update lifecycle management strategies.
- Development and regularly review short- and long-term plans to meet capital requirements.
- Measure current levels of service and identify sustainable proposed levels of service.

1 Introduction & Context

Key Insights

- The Municipality of South Huron is a small municipality in southwestern Ontario and has identified infrastructure investment/asset management as a priority

- The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio

- The Municipality's asset management policy provides clear direction to staff on their roles and responsibilities regarding asset management

- An asset management plan is a living document that should be updated regularly to inform long-term planning

- Ontario Regulation 588/17 outlines several key milestone and requirements for asset management plans in Ontario between July 1, 2022 and 2025

1.1 South Huron Community Profile

Census Characteristic	Municipality of South Huron	Ontario
Population 2021	10,063	14,223,942
Population Change 2016-2021	-0.3[1]	5.8
Total Private Dwellings	4,722	5,929,250
Population Density	23.7/km^2	15.9/km^2
Land Area	425.12 km^2	892,411.76 km^2

The Municipality of South Huron is situated in Southwestern Ontario, encompassing a mix of rural and small urban areas. Located in the southerly portion of Huron County near Lake Huron, the region benefits from its proximity to natural beauty and recreational opportunities.

While the community maintains its small-town charm, its close proximity to larger cities such as London and Kitchener offers residents the ability to commute for work. These factors have contributed to growth projections for the municipality additionally driven by urban sprawl and affordable housing options. South Huron's scenic landscapes, thriving agricultural industry, and emerging cottage community provide a strong foundation for economic diversification. Additionally, the area hosts various cultural and heritage events that draw visitors and promote community engagement.

South Huron aims to foster economic growth and development while preserving its identity as a community. The Municipality's strategic goals include planning for and managing sustainable growth, safe and reliable service delivery, and encouraging sustainable practices. The Municipality has an ongoing commitment to prioritizing strategy and communication around it’s services and assets, these are exemplified by the ongoing work on the master fire services plan and the asset management plan.

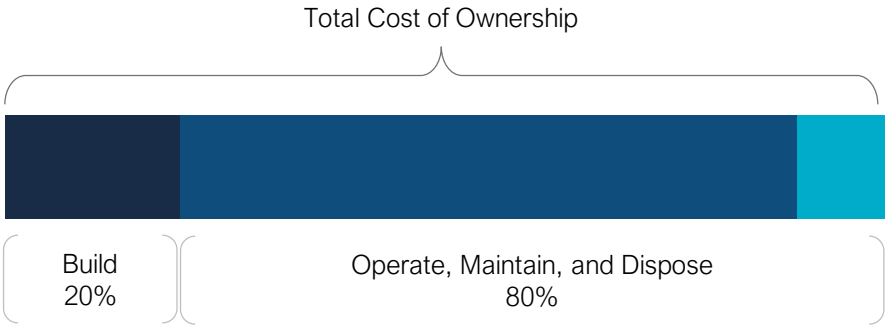
With a commitment to sustainable growth, South Huron aims to leverage its natural resources and strategic location to enhance economic opportunities for residents and visitors alike. By investing in critical infrastructure and supporting a vibrant local economy, the Municipality aspires to strengthen its appeal as a desirable place to live, work, and visit.

[1] Decrease in population caused by undergoing planning applications to create a plan of subdivision led to dwelling units being vacant for an extended period. Long term planning shows substantial growth of the community in the future.

1.2 An Overview of Asset Management

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

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



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.

1.2.1 Asset Management Policy

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

The Municipality adopted By-law No. 23-2019 "A By-law to Adopt a Strategic Asset Management Policy" on March 4th, 2019 in accordance with Ontario Regulation 588/17.

The objectives of the policy included: Forward Looking, Service Based, Transparency, Consistency, and Community Focused

1.2.2 Asset Management Strategy

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

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

1.2.3 Asset Management Plan

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

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

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

1.3 Key Concepts in Asset Management

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

1.3.1 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.

Lifecycle Activity	Description	Example (Roads)	Cost
Maintenance	Activities that prevent defects or deteriorations from occurring	Crack Seal	**$**
Rehabilitation / Renewal	Activities that rectify defects or deficiencies that are already present and may be affecting asset performance	Mill & Re-surface	**$$**
Replacement/ Reconstruction	Asset end-of-life activities that often involve the complete replacement of assets	Full Reconstruction	**$$$**

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.

The Municipality's approach to lifecycle management is described within each asset category outlined in this AMP. Developing and implementing a proactive lifecycle strategy will help staff 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.

1.3.2 Risk Management Strategies

Municipalities generally take a 'worst-first' approach to infrastructure spending. Rather than prioritizing assets based on their importance to service delivery, assets in the worst condition are fixed first, regardless of their criticality. However, not all assets are created equal. Some are more important than others, and their failure or disrepair poses more risk to the community than that of others. For example, a road with a high volume of traffic that provides access to critical services poses a higher risk than a low volume rural road. These high-value assets should receive funding before others.

By identifying the various impacts of asset failure and the likelihood that it will fail, risk management strategies can identify critical assets, and determine where maintenance efforts, and spending, should be focused.

This AMP includes a high-level 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.

1.3.3 Levels of Service

A level of service (LOS) is a measure of what the Municipality is providing to the community and the nature and quality of that service. 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.

These measures include a combination of those that have been outlined in O. Reg. 588/17 in addition to performance measures identified by the Municipality as worth measuring and evaluating. The Municipality measures the level of service provided at two levels: Community Levels of Service, and Technical Levels of Service.

Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories (roads, bridges and culverts, water, wastewater, Storm Sewer) the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in this AMP. For non-core asset categories, the Municipality has determined the qualitative descriptions that will be used to determine the community level of service provided. These descriptions can be found in the Levels of Service subsection within each asset category.

Technical Levels of Service

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

For core asset categories (roads, bridges and culverts, water, wastewater, Storm Sewer) the Province, through O. Reg. 588/17, has provided technical metrics that are required to be included in this AMP. For non-core asset categories, the Municipality has determined the technical metrics that will be used to determine the technical level of service provided. These metrics can be found in the Levels of Service subsection within each asset category.

Current and Proposed Levels of Service

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

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

1.4 Climate Change

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

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

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

1.4.1 South Huron Climate Profile

The Municipality of South Huron is located in Southern Ontario along the shore of Lake Huron. The Municipality is expected to experience notable effects of climate change which include higher average annual temperatures, an increase in total annual precipitation, and an increase in the frequency and severity of extreme events. According to Climatedata.ca – a collaboration supported by Environment and Climate Change Canada (ECCC) – the Municipality of South Huron may experience the following trends:

Higher Average Annual Temperature:

- Between the years 1971 and 2010 the annual average temperature was 7.8 ºC

- Under a high emissions scenario, the annual average temperatures are projected to increase by 2 ºC by the year 2050 and over 4 ºC by the end of the century.

Increase in Total Annual Precipitation:

- Under a high emissions scenario, South Huron is projected to experience an 12% increase in precipitation by the year 2050 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.
- In some areas, extreme weather events will occur with greater frequency and severity than others especially those impacted by Great Lake winds.

1.4.2 Lake Huron

The Great Lakes are one of the largest sources of fresh water on earth, containing 21 percent of the world's surface freshwater. There are 35 million people living in the Great Lakes watershed and nearly one-third are within the Lake Erie watershed. The physical impacts of climate change are most noticeable from: flooding, extreme weather events such as windstorms and tornados, and/or rising water levels eroding shorelines and natural spaces. Erosion and flooding pose a threat to the surrounding built infrastructure such as park assets, bridges, and roads. Communities located in the Great Lakes region may experience more severe windstorms or tornados as a result of climate change, causing damage to both the natural and built environment.

1.4.3 Integration Climate change and Asset Management

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

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. 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). 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.

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

2019

Strategic Asset Management Policy

2022

Asset Management Plan for Core Assets with the following components:

- Current levels of service
- Inventory analysis
- Lifecycle activities to sustain LOS
- Cost of lifecycle activities
- Population and employment forecasts
- Discussion of growth impacts

2024

Asset Management Plan for Core and Non-Core Assets (same components as 2022) and Asset Management Policy Update (as necessary)

2025

Asset Management Plan for All Assets with the following additional components:

- Proposed levels of service for next 10 years
- Updated inventory analysis
- Lifecycle management strategy
- Financial strategy and addressing shortfalls
- Discussion of how growth assumptions impacted lifecycle and financial strategies

1.4.4 O. Reg. 588/17 Compliance Review

The following table identifies the requirements outlined in Ontario Regulation 588/17 for municipalities to meet by July 1, 2024. Next to each requirement a page or section reference is included in addition to any necessary commentary.

Requirement	O. Reg. Section	AMP Section Reference	Status
Summary of assets in each category	S.5(2), 3(I)	4.1.1 - 5.2.1	Complete
Replacement cost of assets in each category	S.5(2), 3(II)	4.1.1 - 5.2.1	Complete
Average age of assets in each category	S.5(2), 3(III)	4.1.3 - 5.2.3	Complete
Condition of core assets in each category	S.5(2), 3(IV)	4.1.2 – 5.2.2	Complete
Description of Municipality's approach to assessing the condition of assets in each category	S.5(2), 3(V)	4.1.2 – 5.2.2	Complete
Current levels of service in each category	S.5(2), 1(I-II)	4.1.6 - 5.2.6	Complete
Current performance measures in each category	S.5(2), 2	4.1.6 - 5.2.6	Complete
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	4.1.4 - 5.2.4	Complete
Costs of providing lifecycle activities for 10 years	S.5(2), 4	Appendix B	Complete
Growth assumptions	S.5(2), 5(I-II) S.5(2), 6(I-VI)	6.1-6.2	Complete

2 Scope and Methodology

Key Insights

- This asset management plan includes 10 asset categories and is divided between tax-funded and rate-funded categories

- The source and recency of replacement costs impacts the accuracy and reliability of asset portfolio valuation

- 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

2.1 Asset Categories Included in This AMP

This asset management plan for the Municipality of South Huron is produced in compliance with Ontario Regulation 588/17. The July 2024 deadline under the regulation—the second of three AMPs—requires analysis of both core assets (Roads, Bridges & Culverts, Water System, Sanitary Sewer System, and Storm Sewer System) and non-core assets (Buildings, Rolling Stock, Equipment, Land Improvements, Waste Disposal).

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

Asset Category	Source of Funding
Road Network	Tax Levy[2]
Bridges & Culverts	
Storm Sewer System	
Facilities	
Rolling Stock	
Equipment	
Land Improvements	
Water System	User Rates
Sanitary Sewer System	
Waste Disposal	

[2] Due to the diverse nature of non-core asset groups, the assets are indicated to be tax levy-funded but may be funded by user rates dependent on the service they enable.

2.2 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/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 cost of the asset is inflated based on Consumer Price Index or Non-Residential Building Construction Price Index

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

2.3 Estimated Useful Life and Service Life Remaining

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

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

$$Service\ Life\ Remaining\ (SLR) = In\ Service\ Date + Estimated\ Useful\ Life (EUL) - Current\ Year$$

2.4 Reinvestment Rate

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

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

$$Target\ Reinvestment\ Rate = \frac{Annual\ Capital\ Requirement}{Total\ Replacement\ Cost}$$

$$Actual\ Reinvestment\ Rate = \frac{Annual\ Capital\ Funding}{Total\ Replacement\ Cost}$$

2.5 Deriving Asset Condition

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

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

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. Appendix D includes additional information on the role of asset condition data and provides basic guidelines for the development of a condition assessment program.

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

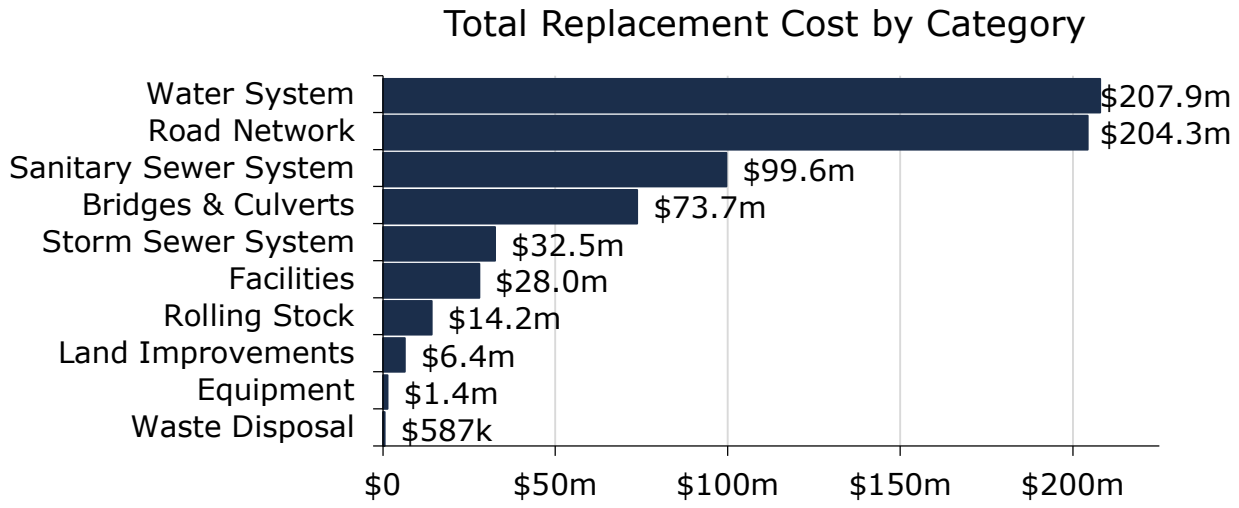
3 Portfolio Overview

Key Insights

- The total replacement cost of the Municipality’s asset portfolio is $668.6 million
- The Municipality’s target re-investment rate is 2.14%, and the actual re-investment rate is 1.02%, contributing to an expanding infrastructure deficit
- 55% of all assets are in fair or better condition
- Average annual capital requirements total $14.3 million per year across all assets

3.1 Total Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of $668.6 million based on inventory data from 2022. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.



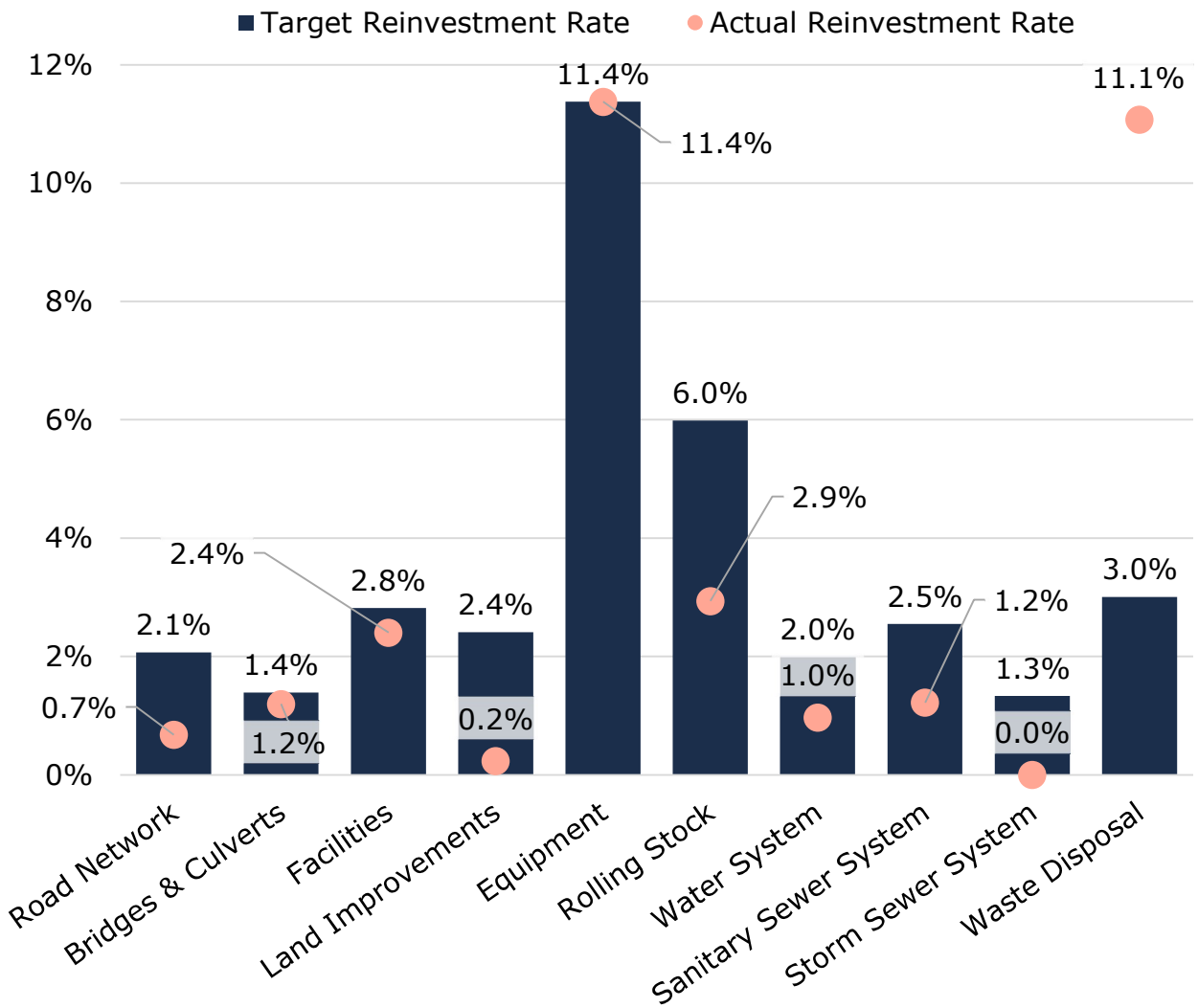
The following table identifies the methods employed to determine replacement costs across each asset category:

Asset Category	Replacement Cost Method	
	User-Defined	Notes
Road Network	100%	Data Source is 2021 State of Roads Infrastructure Report and inflated to 2022 dollars
Bridges & Culverts	100%	Data source is 2023 Ontario Structure Inspection Manual (OSIM) report
Storm Sewer System	97%	GM BluePlan
Water System	76%	GM BluePlan
Sanitary Sewer System	55%	GM BluePlan
Facilities	78%	Backup Export
Equipment	52%	Backup Export

Rolling Stock	72%	Staff Estimates and Previous AMP values, inflated to 2022 dollars
Land Improvements	74%	Previous Replacement Costing
Overall	**85%**	

3.2 Target vs. Actual Reinvestment Rate

The graph below depicts funding gaps or surpluses by comparing target vs actual reinvestment rate. To meet the long-term replacement needs, the Municipality should be allocating approximately $14.3 million annually, for a target reinvestment rate of 2.14%. Actual annual spending on infrastructure totals approximately $6.8 million, for an actual reinvestment rate of 1.02%.



3.3 Condition of Asset Portfolio

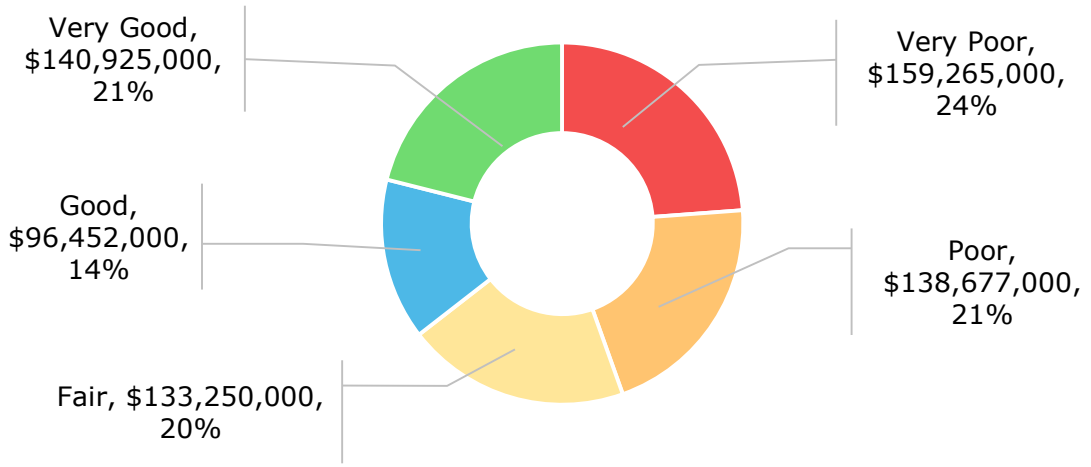
The current condition of the assets is central to all asset management planning. Collectively, 55% of assets in South Huron are in fair or better condition.

This AMP relies on assessed condition data for 48% of assets; for the remaining portfolio, 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.

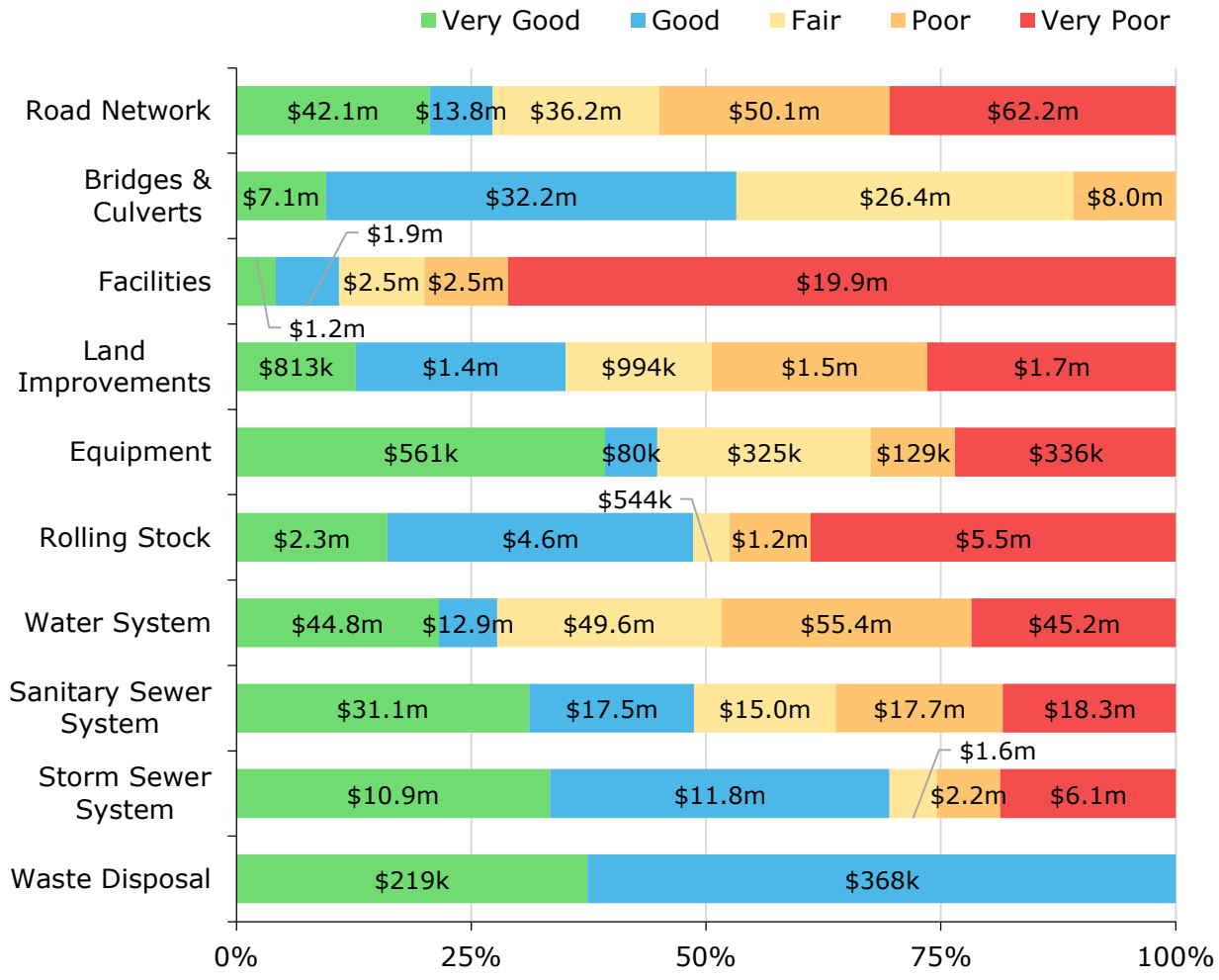
Asset Category	% of Assets with Assessed Condition[3]	Source of Condition Data
Road Network	79%	2021 State of Roads Infrastructure Report
Bridges & Culverts	100%	2023 OSIM Report
Storm Sewer System	41%	GM BluePlan CCTV Inspections
Facilities	85%	GM BluePlan, WalterFedy, Nustadia Recreation Assessments
Rolling Stock	6%	Staff Assessments
Equipment	0%	N/A
Land Improvements	0%	N/A
Water System	13%	GM BluePlan and Staff Assessments
Sanitary Sewer System	41%	GM BluePlan CCTV Inspections
Waste Disposal	0%	N/A

The entire asset portfolio condition, weighted by replacement cost, is shown below:

[3] The % assessed of the Storm Sewer, Water, and Sanitary Sewer systems will see a large increase in the 2025 AMP as recent assessment efforts are integrated within the system.



The asset portfolio condition, broken down by asset category and weighted by replacement cost is shown in the following chart:



3.4 Service Life Remaining

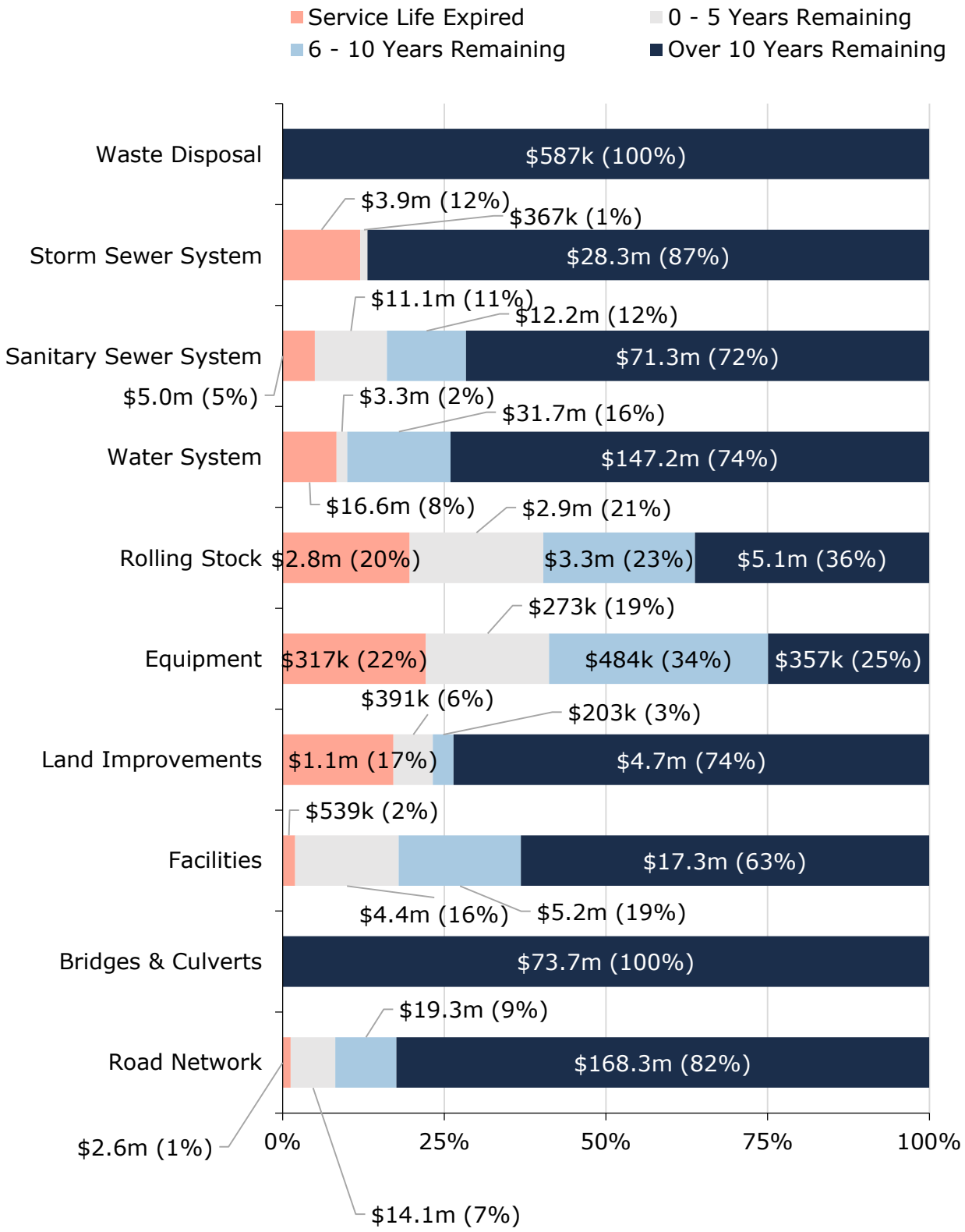
While capital planning horizons tend to be short (<10 Years), a sustainable lifecycle and financial strategy should consider the full lifecycle of all assets.

Short-term capital costs may be low for asset categories with long useful lives where infrastructure is relatively new. However, planning and saving for long-term capital costs is a key component of asset management planning.

The calculation of an average annual capital requirement considers the estimated useful life and cost of infrastructure to identify the amount that the Municipality should be allocating to meet capital needs regardless of whether the project costs will be incurred in the short- or long-term.

Based on asset age, available assessed condition data and estimated useful life, 22% of the Municipality's assets are projected to require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix B: 10-Year Capital Requirements.

Asset Segment	Service Life Expired	0 – 5 Years Remaining	6 – 10 Years Remaining	Over 10 Years Remaining
Road Network	$2.6m (1%)	$14.1m (7%)	$19.3m (9%)	$168.3m (82%)
Bridges & Culverts	-	-	-	$73.7m (100%)
Facilities	$539k (2%)	$4.4m (16%)	$5.2m (19%)	$17.3m (63%)
Land Improvements	$1.1m (17%)	$391k (6%)	$203k (3%)	$4.7m (74%)
Equipment	$317k (22%)	$273k (19%)	$484k (34%)	$357k (25%)
Rolling Stock	$2.8m (20%)	$2.9m (21%)	$3.3m (23%)	$5.1m (36%)
Water System	$16.6m (8%)	$3.3m (2%)	$31.7m (16%)	$147.2m (74%)
Sanitary Sewer System	$5.0m (5%)	$11.1m (11%)	$12.2m (12%)	$71.3m (72%)
Storm Sewer System	$3.9m (12%)	$367k (1%)	-	$28.3m (87%)
Waste Disposal	-	-	-	$587k (100%)
Total	**$32.8m (5%)**	**$36.9m (6%)**	**$72.4m (11%)**	**$516.9m (78%)**

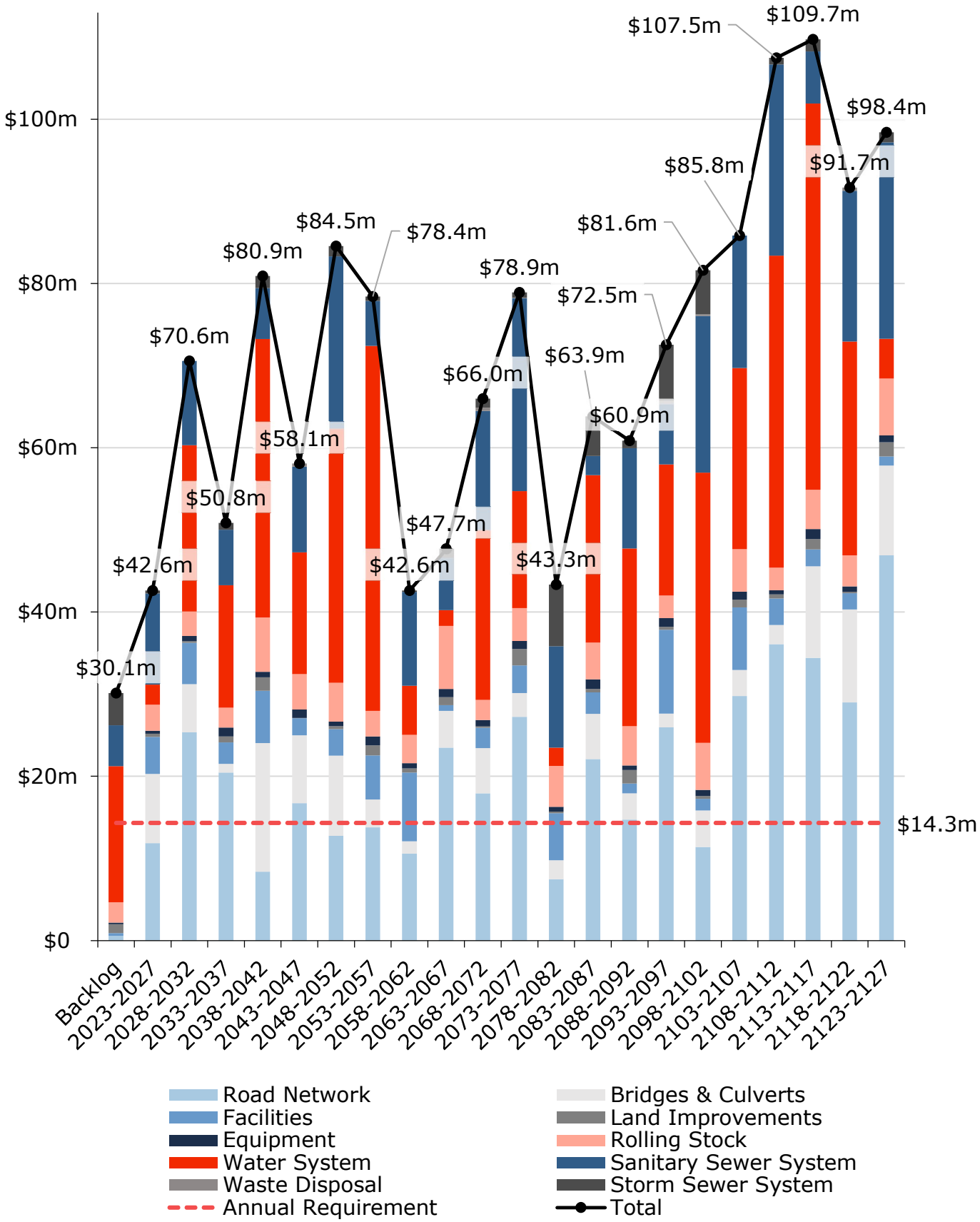

Service Life Expired
0 - 5 Years Remaining
6 - 10 Years Remaining
Over 10 Years Remaining
Waste Disposal
$587k (100%)
Storm Sewer System
$3.9m (12%)
$367k (1%)
$28.3m (87%)
Sanitary Sewer System
$11.1m (11%)
$12.2m (12%)
$71.3m (72%)
$5.0m (5%)
Water System
$3.3m (2%)
$31.7m (16%)
$147.2m (74%)
$16.6m (8%)
Rolling Stock
$2.9m (21%)
$2.8m (20%)
$3.3m (23%)
$5.1m (36%)
Equipment
$273k (19%)
$317k (22%)
$484k (34%)
$357k (25%)
Land Improvements
$391k (6%)
$203k (3%)
$1.1m (17%)
$4.7m (74%)
Facilities
$539k (2%)
$17.3m (63%)
$4.4m (16%)
$5.2m (19%)
Bridges & Culverts
$73.7m (100%)
Road Network
$19.3m (9%)
$168.3m (82%)
$2.6m (1%)
$14.1m (7%)
0%
25%
50%
75%
100%

3.5 Forecasted Capital Requirements

The development of a long-term capital forecast should include both asset rehabilitation and replacement requirements. With the development of asset-specific lifecycle strategies that include the timing and cost of future capital events, the Municipality can produce an accurate long-term capital forecast. The following table indicates the average annual capital requirement for each asset category.

Asset Category	Replacement Cost	Average Annual Requirement
Road Network	$204,342,000	$4,228,000
Bridges & Culverts	$73,695,000	$1,024,000
Storm Sewer System	$32,549,000	$434,000
Facilities	$27,959,000	$788,000
Rolling Stock	$14,166,000	$848,000
Equipment	$1,431,000	$163,000
Land Improvements	$6,381,000	$154,000
Water System	$207,900,000	$4,127,000
Sanitary Sewer System	$99,561,000	$2,538,000
Waste Disposal	$587,000	$18,000

The following chart identifies capital requirements over the next 105 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.


$100m
$80m
$60m
$40m
$20m
$0
$30.1m
$42.6m
$70.6m
$50.8m
$80.9m
$58.1m
$84.5m
$78.4m
$42.6m
$47.7m
$66.0m
$78.9m
$43.3m
$63.9m
$72.5m
$60.9m
$81.6m
$85.8m
$107.5m
$109.7m
$91.7m
$98.4m
$14.3m
Backlog
2023-2027
2028-2032
2033-2037
2038-2042
2043-2047
2048-2052
2053-2057
2058-2062
2063-2067
2068-2072
2073-2077
2078-2082
2083-2087
2088-2092
2093-2097
2098-2102
2103-2107
2108-2112
2113-2117
2118-2122
2123-2127
Road Network
Facilities
Equipment
Water System
Waste Disposal
Annual Requirement
Bridges & Culverts
Land Improvements
Rolling Stock
Sanitary Sewer System
Storm Sewer System
Total

4 Analysis of Tax-funded Assets

Key Insights

- Tax-funded assets are valued at $360.5 million
- 55% of tax-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for tax-funded assets is approximately $7.6 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

4.1 Road Network

The Road Network is a critical component of the provision of safe and efficient transportation services. It includes all municipally owned and maintained roadways in addition to supporting roadside infrastructure including sidewalks, streetlights, and traffic signals.

Replacement Cost	Condition	Financial Capacity	
$204.3 million	Good (68%)	Annual Requirement:	$4,228,000
		Funding Available:	$1,383,000
		Annual Deficit:	$2,844,000

4.1.1 Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Municipality's Road Network inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement (End-of-Life)	Annual Capital Requirement (Lifecycle)
Gravel Roads	174.4 km	Not Planned for Replacement[4]		
Paved Roads (HCB[5])	118.7 km	$172,793,000	$6,912,000	$3,418,000
Paved Roads (LCB[6])	20.1 km	$19,347,000	$1,986,000	$514,000
Sidewalks	45.9 km	$9,628,000	$193,000	$193,000
Streetlights - Fixtures	887	$1,294,000	$52,000	$52,000

[4] Gravel roads undergo perpetual operating and maintenance activities. If maintained properly, they can theoretically have a limitless service life. As this asset is not funded by capital dollars, it is not included.
[5] HCB refers to High Class Bituminous paved surfaced, meaning asphalt.
[6] LCB refers to Low Class Bituminous paved surface, meaning asphalt emulsion and chip—commonly known as tar and chip.

Streetlights - Poles	314	$540,000	$22,000	$22,000
Traffic Signals[7]	16	$739,000	$30,000	$30,000
Total		**$204,342,000**	**$9,193,000**	**$4,228,000**

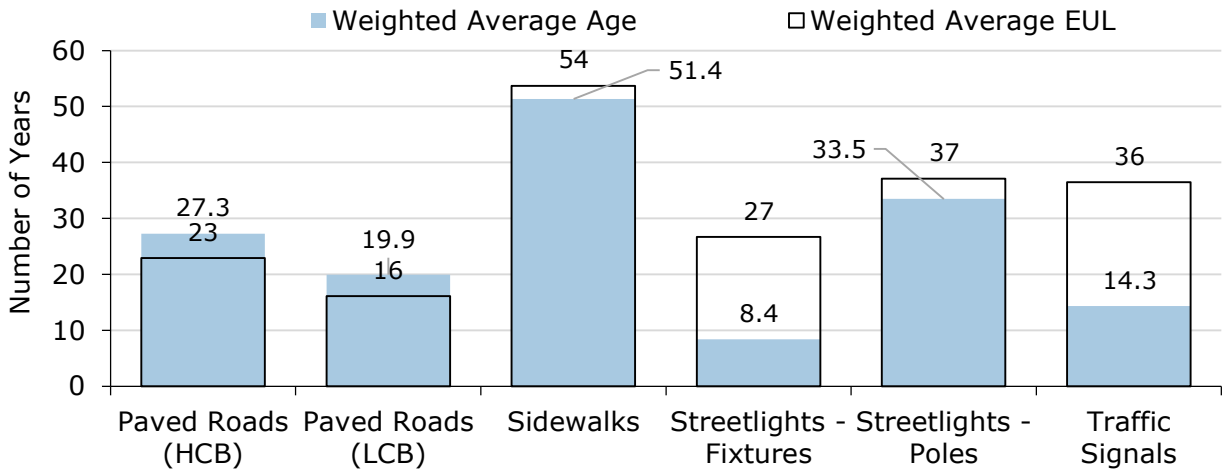
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

4.1.2 Asset Condition & Age

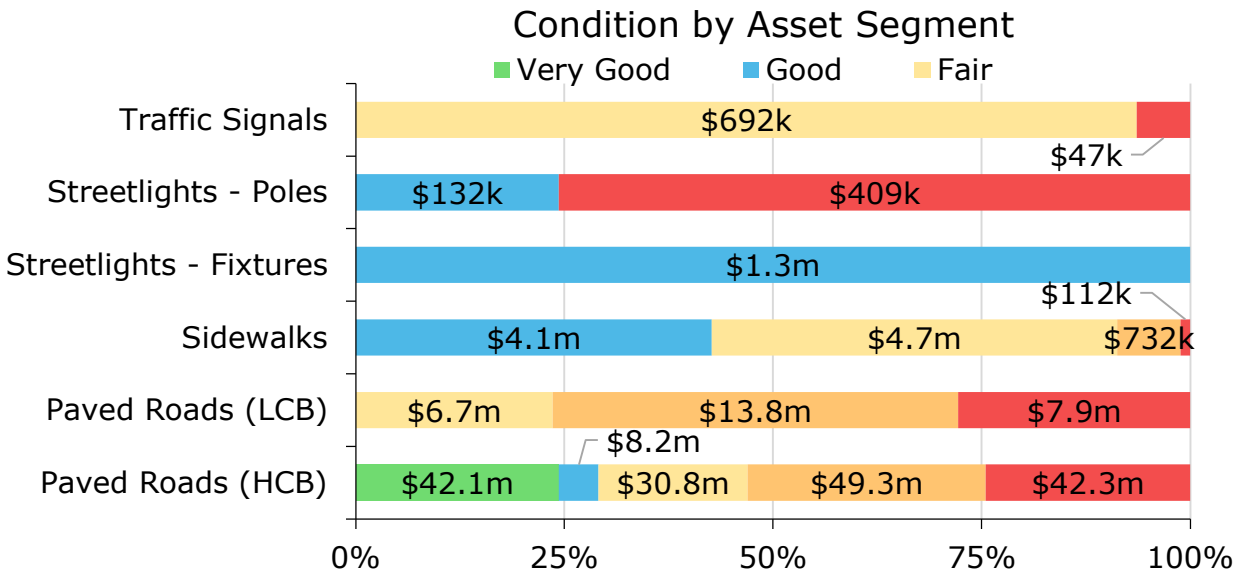
The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Weighted Average Age (Years)	Weighted Average Estimated Useful Life (Years)	Average Condition
Paved Roads (HCB)	27.3	23	Good (71%)
Paved Roads (LCB)	19.9	16	Fair (43%)
Sidewalks	51.4	54	Very Good (85%)
Streetlights - Fixtures	8.4	27	Good (74%)
Streetlights - Poles	33.5	37	Very Poor (19%)
Traffic Signals	14.3	36	Fair (52%)
Average			**Good (68%)**

[7] Traffic signals category refers to the components of the Municipalities two sets of traffic lights and pedestrian crossing.



The following chart visually illustrates the average condition for each asset segment on a very good to very poor scale, which is outlined in the Current Approach to Condition Assessment section.



To ensure that the Municipality's Road Network continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation, and replacement activities is required to increase the overall condition of the roads.

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

Based on asset age, available assessed condition data and estimated useful life, 18% of the Municipality's Road Network assets will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix B: 10-Year Capital Requirements. Service life remaining is outlined by replacement value below.

Asset Segment	Service Life Expired	0 – 5 Years Remaining	6 – 10 Years Remaining	Over 10 Years Remaining
Paved Roads (HCB)	$2.1m (1%)	$5.2m (3%)	$8.9m (5%)	$156.6m (91%)
Paved Roads (LCB)	-	$9.0m (46%)	$10.4m (54%)	-
Sidewalks	$20k (<1%)	-	-	$9.6m (100%)
Streetlights - Fixtures	-	-	-	$1.3m (100%)
Streetlights - Poles	$409k (76%)	-	-	$132k (24%)
Traffic Signals	$47k (6%)	-	-	$692k (94%)
Total	**$2.6m (1%)**	**$14.1m (7%)**	**$19.3m (9%)**	**$168.3m (82%)**

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 Municipality's current approach:

- Visual inspections are completed by Municipality staff
- A Road Needs Study was completed in 2021 that included a detailed assessment of the condition of each road segment. Network-wide assessments are expected to be completed every five years.
- The Road Needs Study is reviewed every year and additional roads are assessed as needed

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

Condition	Rating
Very Good	9 ≤ condition ≤ 10

Good	8 ≤ condition < 9
Fair	7 ≤ condition < 8
Poor	6 ≤ condition < 7
Very Poor	0 ≤ condition < 6

4.1.3 Lifecycle Management Strategy

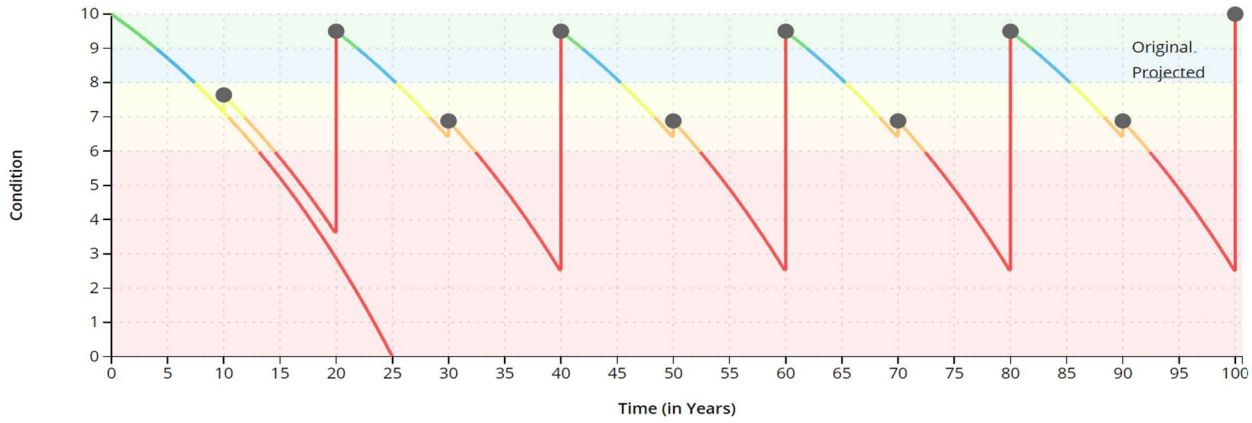
The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment.

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 Municipality in its care of Road Network:

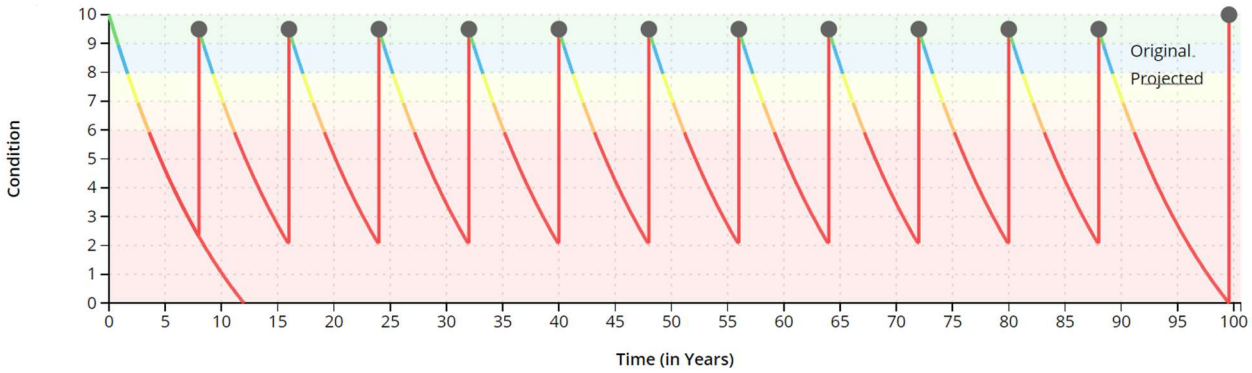
Paved Roads (HCB)		
Event Name	**Event Class**	**Event Trigger**
Cold Patch Asphalt Repair	Preventative Maintenance	Year 10, 30, 50, 70, 90
Crack Sealing	Preventative Maintenance	5, 10, 15, 20…
Pulverize and Pave	Rehabilitation	Year 20, 40, 60, 80
Full Reconstruction	End of Life Replacement	Year 100

Lifecycle Deterioration Curve Given Current HCB Roads Maintenance Strategy:



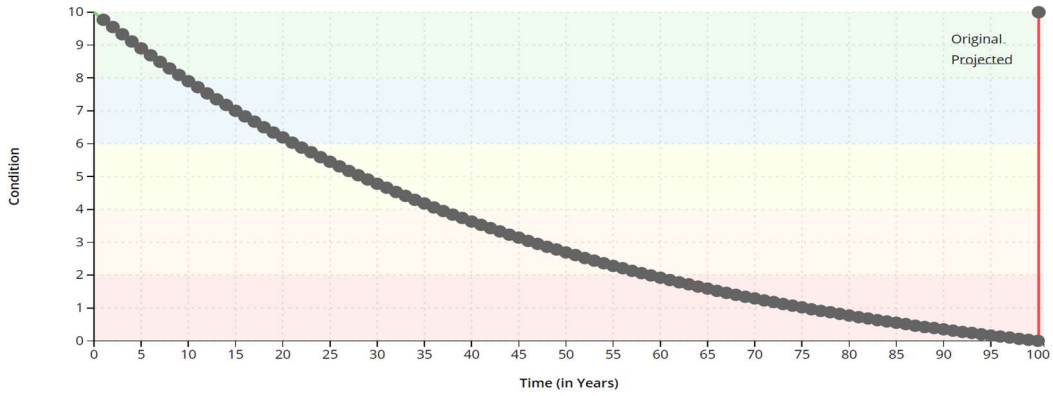
Paved Roads (LCB)		
Event Name	**Event Class**	**Event Trigger**
Surface Treatment	Rehabilitation	Every 8 years
Full Reconstruction	End of Life Replacement	Year 100

Lifecycle Deterioration Curve Given Current LCB Roads Maintenance Strategy:



Gravel Roads		
Event Name	**Event Class**	**Event Trigger**
Dust Control	Maintenance	Every 2 years
Grading	Maintenance	Five times per year
Re-Graveling	Preventative Maintenance	Every 2 years

Lifecycle Deterioration Curve Given Current Gravel Roads Maintenance Strategy:



As indicated in section 4.1.1 Asset Inventory & Costs, annual requirements without following the above indicated strategy are $9.2 million. The implementation of this strategy can reduce the annual requirement to approximately $4.2 million, a 54% reduction in cost. A more detailed explanation of the activities completed by the Municipality is available in the following table:

Activity Type	Description of Current Strategy
HCB Maintenance Strategy	• Cold patching is applied as needed, typically 2% - 5% of the road surface. • A crack sealing program has been implemented by the Municipality. The 2021 Road Needs Study recommended considering a crack sealing program to prolong pavement lifespan by mitigating moisture infiltration into the road base. Ideal candidates for crack sealing are newer pavements showing initial crack formation. As these road surfaces typically remain in good condition, crack sealing needs may not have been previously identified. • Pulverize and pave applies 40mm of HL-4. Locations are chosen based on location. The 2021 SOI Report evaluates this strategy. • Full replacement occurs after ~100 years, when deformation of the road base is excessive and requires reconstruction.
LCB Maintenance Strategy	• Over time LCB roads are expected to gradually be converted to HCB roads as an end-of-life strategy.

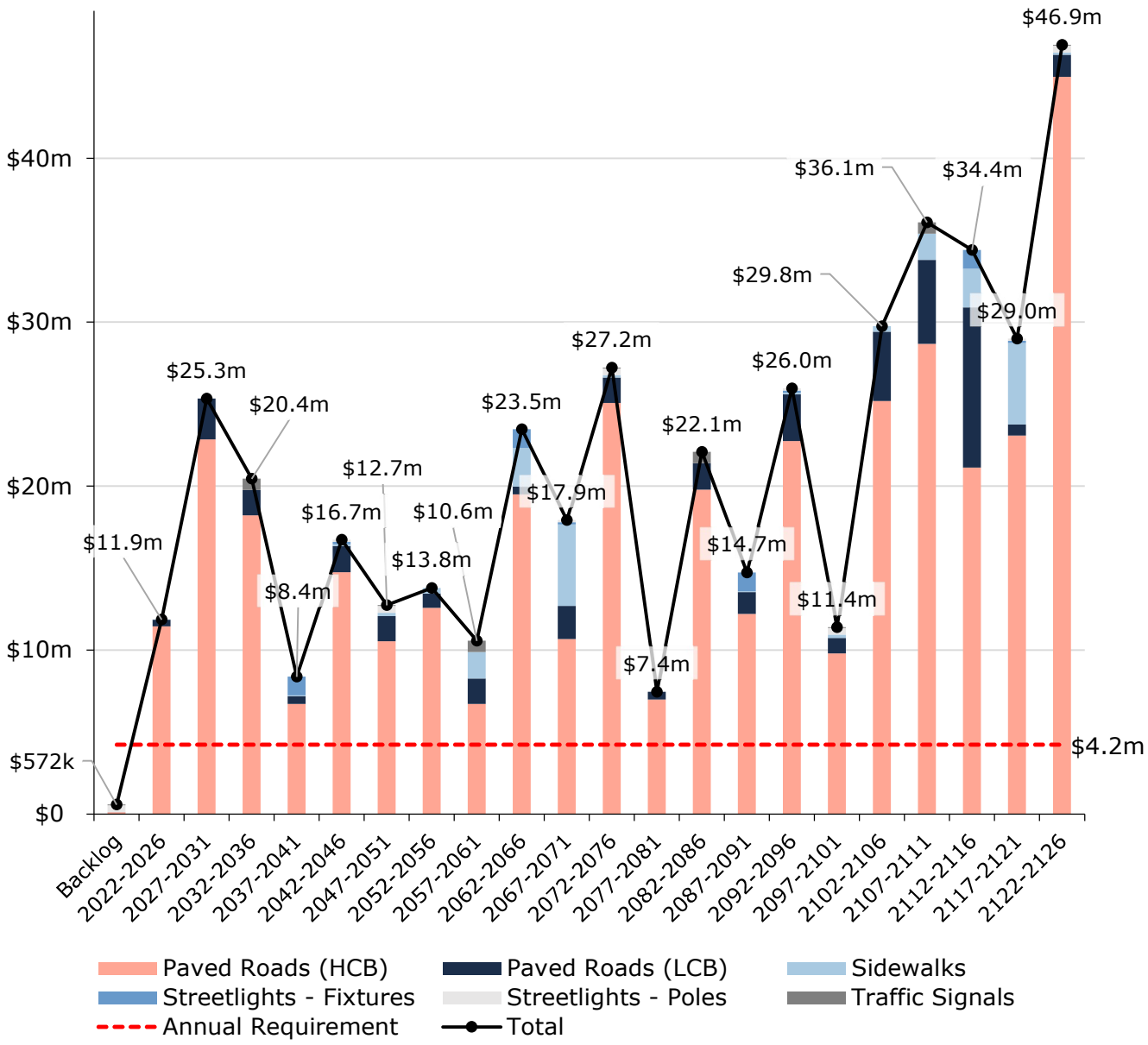
Activity Type	Description of Current Strategy
Gravel Maintenance Strategy	• Dust Control is applied every two years. Although there is no impact on the condition of the road, it improves service provision by reducing improving visibility to commuters. • Grading is applied five times per year to provide a smoother riding surface. • An application of a new gravel surface every 2 years provides for a smoother, more even riding surface. Surface distresses, such as rutting and bald spots can be resolved. • Gravel roads are not scheduled for replacement but are instead maintained until it is time for disposal or repurposing.

Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for HCB and LCB roads, and assuming the end-of-life replacement of all other assets in this category, the following graph forecasts long-term capital requirements for the Road Network.

The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. The graph identifies capital requirements over the next 105 years, which ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.

The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix B: 10-Year Capital Requirements.

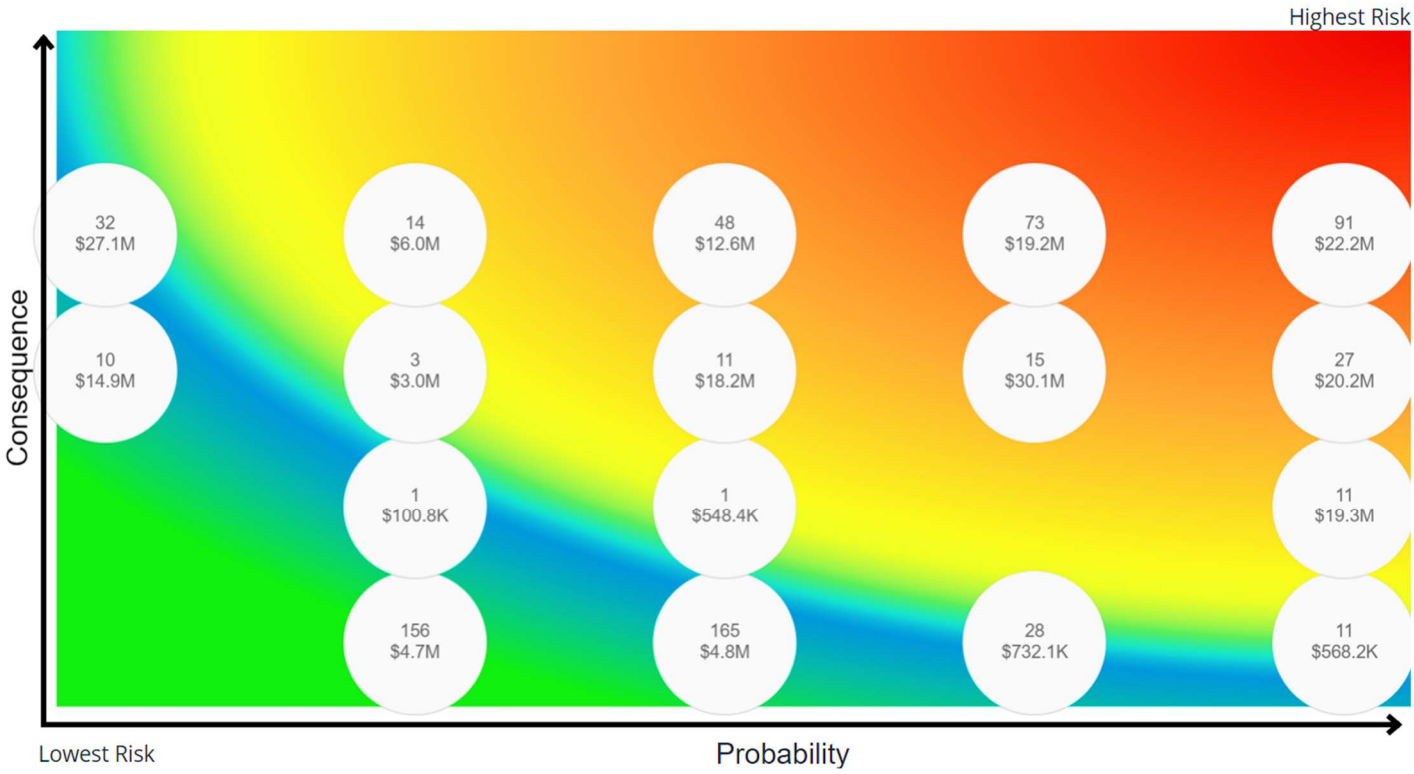


4.1.4 Risk & Criticality

Risk Heatmap

The following risk heatmap provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data. See Appendix C: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

By asset count and replacement cost:



This is a high-level model developed for the purposes of this AMP and Municipality staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

Asset Segment	Average Probability of Failure	Average Consequence of Failure	Average Overall Risk Rating
Paved Roads (HCB)	3.24 / 5	3.52 / 5	11.31 / 25
Paved Roads (LCB)	5.00 / 5	2.01 / 5	10.07 / 25
Sidewalks	2.67 / 5	1.01 / 5	2.69 / 25
Streetlights - Fixtures	2.00 / 5	2.12 / 5	4.23 / 25
Streetlights - Poles	4.27 / 5	1.00 / 5	4.27 / 25
Traffic Signals	3.13 / 5	1.74 / 5	5.35 / 25
Total	**3.38 / 5**	**3.23 / 5**	**10.70 / 25**

The identification of critical assets allows the Municipality to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-

specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

Risks to Current Asset Management Strategies

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

Installation and Co-Linear Assets

Long-term Road Network planning necessitates a nuanced consideration of underground infrastructure, particularly utility lines encompassing water supply, wastewater disposal, and storm water infrastructure. Neglecting these aspects during planning overlooks the opportunity to streamline construction and municipal projects due to the interconnected nature of underground infrastructure with road systems.

As per NRC best management practice, aligning water, wastewater, and stormwater infrastructure development with road construction projects brings forth many advantages. It facilitates cost savings by avoiding repetitive/redundant digging and road disruptions. Ultimately, this coordinated effort benefits communities by optimizing resources and reducing long-term maintenance expenses.

4.1.5 Levels of Service

The following tables identify the Municipality's current level of service for the Road Network. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by the Road Network.

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include maps, of the road network in the Municipality and its level of connectivity	The Municipality owns and manages a road network comprised of both collector and local roads, along with various roadside appurtenances.

Service Attribute	Qualitative Description	Current LOS (2022)
		Refer to Technical Levels of Service for lane km metrics.
Quality	Description or images that illustrate the different levels of road class pavement condition	The Municipality completed a State of Roads Infrastructure report in 2021 in coordination with BM Ross. Every road section received a surface condition rating (1-10). Roads were broken down by condition, and appropriate replacement schedules were communicated in the report.

Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the Road Network.

Service Attribute	Technical Metric	Current LOS (2022)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	0
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	0.91
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	0.31
Quality	Average pavement condition index for paved roads in the Municipality	HCB: 71% LCB: 43%
	Average surface condition for unpaved roads in the Municipality (e.g. excellent, good, fair, poor)	Good
Performance	% of paved surfaces in good or very good condition	26%
	% of paved surfaces in poor or very poor condition	58%

Average condition of sidewalks (e.g. very good, good, fair, poor, very poor)	Fair
% of sidewalks in good or very good condition	43%
% of sidewalks in poor or very poor condition	9%
Actual annual capital budget : average annual capital requirement	$1.4 million : $4.2 million (0.33 : 1)

4.1.6 Recommendations

Lifecycle Management Strategies

- Continue performing the identified lifecycle management strategies for HCB and LCB roads to realize potential cost avoidance and maintain a high quality of road pavement condition.
- Evaluate the efficacy of the Municipality's lifecycle management strategies at regular intervals to determine the impact cost, condition and risk.

Risk Management Strategies

- Continue to coordinate Road Network projects with underground infrastructure within the same corridor to optimize resources and avoid redundant road disruptions.
- Continue the risk-based decision-making as part of the 2021 State of Roads Infrastructure report for asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics identified in O. Reg. 588/17 and those metrics that the Municipality believes to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

4.2 Bridges & Culverts

Bridges & Culverts represent a critical portion of the transportation services provided to the community. The Municipality is responsible for the maintenance of all bridges and structural culverts (≥3m in span) located across municipal roads with the goal of keeping structures in an adequate state of repair and minimizing service disruptions.

The state of the infrastructure for bridges and culverts is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$73.7 million	Good (62%)	Annual Requirement:	$1,024,000
		Funding Available:	$882,000
		Annual Deficit:	$141,000

4.2.1 Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Municipality's bridges and culverts inventory.

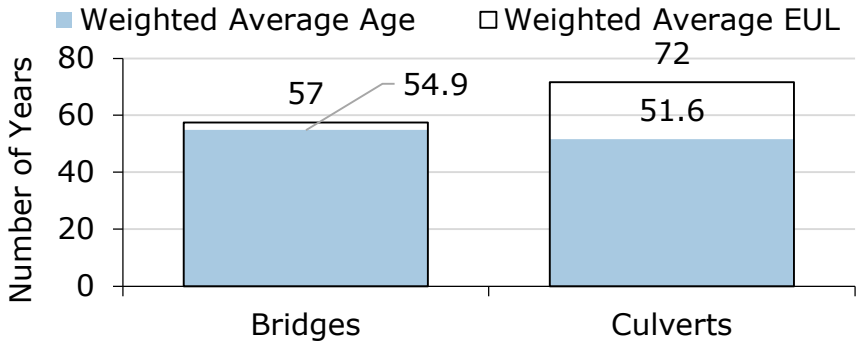
Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Bridges	3,741 m^2	$36,916,000	$497,000
Culverts	3,975 m^2	$36,779,000	$527,000
Total		**$73,695,000**	**$1,024,000**

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

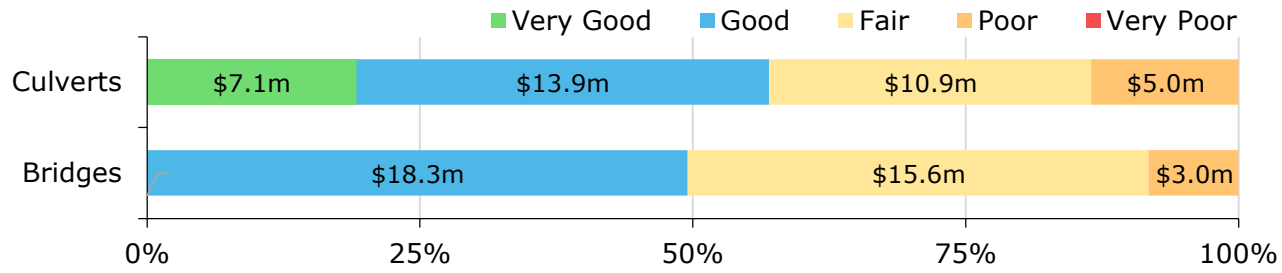
4.2.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Weighted Average Estimated Useful Life (Years)	Weighted Average Age (Years)	Average Condition
Bridges	57	54.9	60% (Good)
Culverts	72	51.6	63% (Good)
Average			**62% (Good)**



The following chart visually illustrates the average condition for each asset segment on a very good to very poor scale, which is outlined in the Current Approach to Condition Assessment section.



To ensure that the Municipality's Bridges & Culverts continue to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation, and replacement activities is required to increase the overall condition of the bridges and culverts.

Each asset's Estimated Useful Life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type. Condition assessments may point to assets whose condition indicates it will exceed its estimated useful life whether through successes in design or maintenance.

Based on asset age, available assessed condition data and estimated useful life, 0% of the Municipality's Bridges & Culverts will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix B: 10-Year Capital Requirements. Service life remaining is outlined by replacement value below.

Asset Segment	Service Life Expired	0 – 5 Years Remaining	6 – 10 Years Remaining	Over 10 Years Remaining
Bridges	-	-	-	$36.9m (100%)
Culverts	-	-	-	$36.8m (100%)
Total	**-**	**-**	**-**	**$73.7m (100%)**

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 Municipality's current approach:

- Condition assessments of all bridges and culverts with a span greater than or equal to 3 meters are completed every 2 years in accordance with the Ontario Structure Inspection Manual (OSIM)

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

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

The bridge condition index (BCI) value for each structure was calculated based on the Ministry of Transportation's "Bridge Condition Index (BCI) – An Overall Measure of Bridge Condition" (July 30, 2009), updated as required for new element types and materials.

4.2.3 Lifecycle Management Strategy

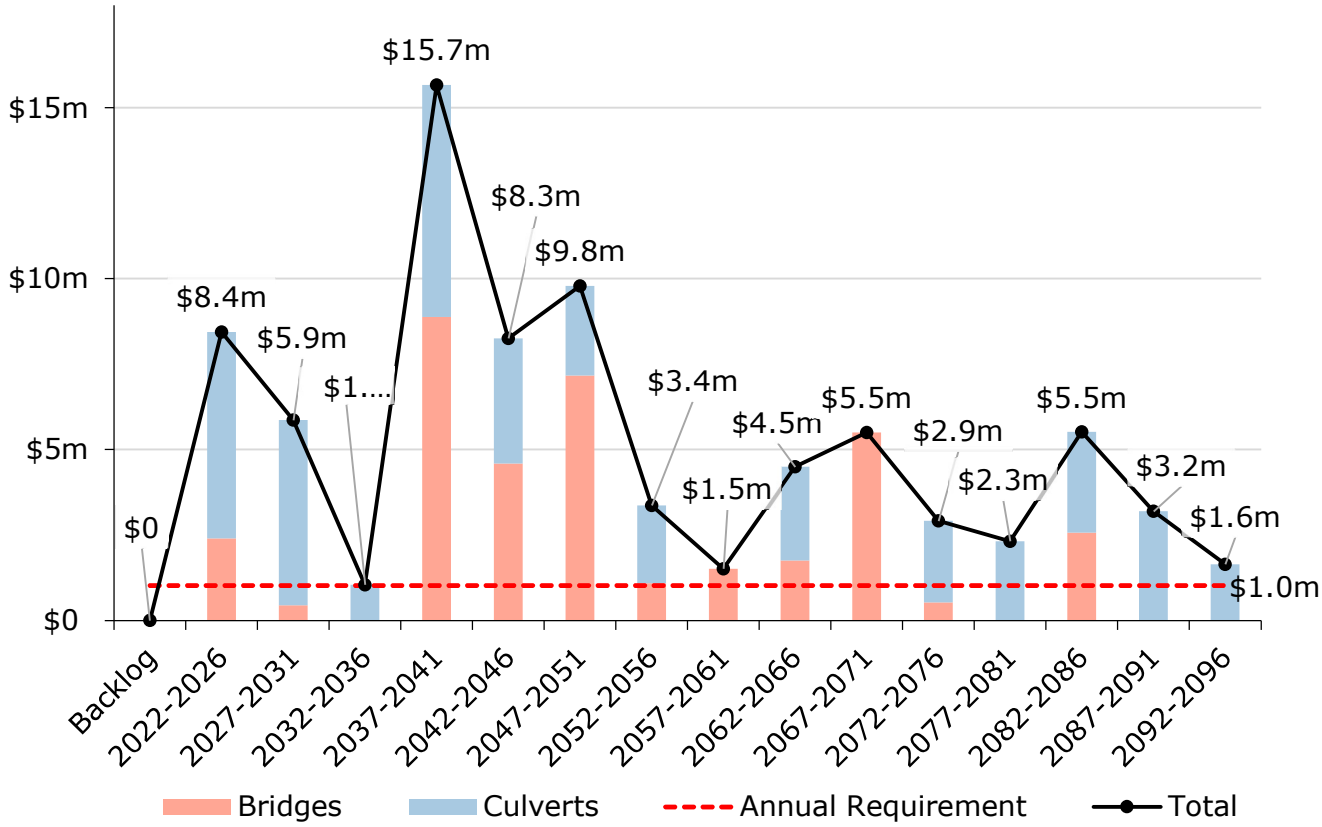
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	All lifecycle activities are driven by the results of mandated structural inspections competed according to the Ontario Structure Inspection Manual (OSIM).
	Annual maintenance is completed by the Roads Department, and includes deck cleaning in spring, and guiderail and signage repairs.
	Other more significant maintenance items are contracted out as required.
Inspection	The most recent inspection report was completed in 2023 by GM BluePlan Engineering.
Rehabilitation	The OSIM recommendations are generally followed, completing renewal/rehabilitation in line with the advised criticality of the repair and municipal staff's expertise.
Replacement	Structures are prioritized by multiple factors including priorities in the OSIM report, grant funding opportunities, criticality of the structure to the community, and coordination opportunities.
	The Municipality follows the 10-year planning horizon of the OSIM report.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 75 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



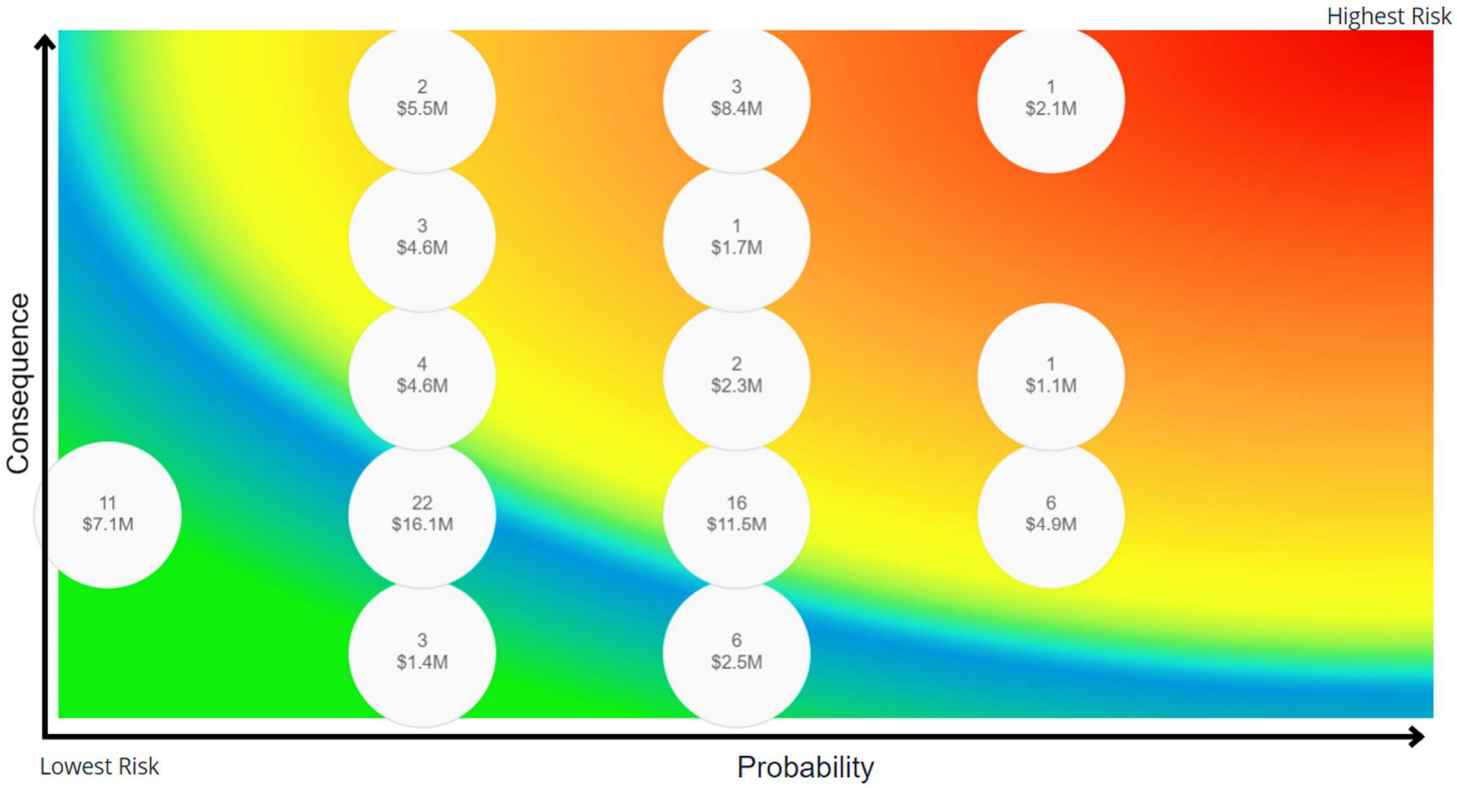
The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix B: 10-Year Capital Requirements.

4.2.4 Risk & Criticality

Risk Heatmap

The following risk heatmap provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data. See Appendix C: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

By asset count and replacement cost:



This is a high-level model developed for the purposes of this AMP and Municipality staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

Asset Segment	Average Probability of Failure	Average Consequence of Failure	Average Overall Risk Rating
Bridges	2.59 / 5	3.83 / 5	10.00 / 25
Culverts	2.37 / 5	1.92 / 5	4.58 / 25
Total	**2.48 / 5**	**2.88 / 5**	**7.30 / 25**

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

Risks to Current Asset Management Strategies

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

Climate Change and Extreme Weather Events

The maintenance and lifecycle activities of bridges and culverts may encounter significant challenges as extreme weather events increase in frequency and intensity. Intensity-Duration-Frequency (IDF) curves are used to determine culvert sizing, and these curves are changing to account for climate change. This, coupled with more frequent and intense rainfall and flooding, pose risks to these structures. These events can lead to erosion around supports and foundations, potentially compromising their integrity. Furthermore, the rise in high water levels and swift currents can transport debris, posing a threat to culverts by causing blockages, water backups, and subsequent flooding. The escalating environmental conditions are contributing to accelerated wear and tear on infrastructure, necessitating more frequent and extensive repairs and consequently reducing their expected lifespan.

In response to these challenges, proactive measures such as reinforcing foundations and enhancing debris management systems are crucial to safeguarding these assets against the impacts of extreme weather events in the future. Strategic planning that considers these evolving climate conditions is essential to ensure the resilience and longevity of infrastructure systems.

Capital Funding Strategies

The required biannual inspection reports for bridges and structural culverts typically includes detailed recommendations regarding necessary rehabilitation and replacement timeframes. These recommendations serve as invaluable guidance for municipalities in effectively managing their infrastructure assets. However, implementing these recommendations can pose significant challenges, particularly in the context of budgetary constraints.

Major capital rehabilitation and replacement projects for bridges and culverts often demand substantial financial resources to maintain structural integrity and ensure public safety. When municipalities encounter limitations in funding availability, these critical projects may be deferred or postponed, potentially exacerbating the risk of asset failure. Furthermore, delaying necessary maintenance can lead to increased costs in the long term, as issues may escalate and necessitate more extensive repairs or replacements.

Consistent and deliberate investments in bridge maintenance activities are paramount for the ongoing care and preservation of these essential infrastructure assets. By prioritizing proactive maintenance and adhering to recommended rehabilitation and replacement schedules, municipalities can mitigate risks, prolong the lifespan of their bridges, and uphold the safety and functionality of transportation networks for the benefit of communities. Therefore, fostering collaboration and exploring innovative financing mechanisms are crucial steps towards ensuring the sustainable management of bridge infrastructure amidst budgetary constraints.

4.2.5 Levels of Service

The following tables identify the Municipality's current level of service for bridges and culverts. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by bridges and culverts.

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description of the traffic that is supported by municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Bridges and structural culverts are a key component of the municipal transportation network. None of the Municipality's structures have loading or dimensional restrictions meaning that most types of vehicles, including heavy transport, motor vehicles, emergency vehicles and cyclists can cross them without restriction.
Quality	Description or images of the condition of bridges and culverts and how this would affect use of the bridges and culverts	As per Ontario Regulation 104/97, every bridge and structural culvert (>3m) owned by the Municipality is subject to a biennial inspection, following best practices as laid out in the Ontario Structure Inspection Manual (OSIM).

Service Attribute	Qualitative Description	Current LOS (2022)
		All structures are assessed and assigned a Bridge Condition Index (BCI) score, which ranges from 0-100. Condition directly affects the usability of structures, whether it is the paved surface for vehicles, sidewalks for bikes and pedestrians, and so on.

Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by bridges and culverts.

Service Attribute	Technical Metric	Current LOS (2022)
Scope	% of bridges in the Municipality with loading or dimensional restrictions	0%
Quality	Average bridge condition index value for bridges in the Municipality	60%
	Average bridge condition index value for structural culverts in the Municipality	63%
Performance	% of bridges and structural culverts in good or very good condition	53%
	% of bridges and structural culverts in poor or very poor condition	11%
	Actual annual capital budget : average annual capital requirement	$0.9 million : $1.0 million (0.86 : 1)

4.2.6 Recommendations

Data Review/Validation

- Continue to review and validate inventory data, assessed condition data and replacement costs for all bridges and structural culverts upon the completion of OSIM inspections every 2 years.

Lifecycle management

- In the event of a costly rehabilitation, the municipality should continue to review the impact of these activities with respect to the impact and cost of a full replacement.

Risk Management Strategies

- Continue to implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics identified in O. Reg. 588/17 and those metrics that the Municipality believe to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

4.3 Storm Sewer System

The Municipality is responsible for owning and maintaining a Storm Sewer System of storm sewer mains and retention pond assets. The state of the infrastructure for the Storm Sewer System is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$32.5 million	Good (65%)	Annual Requirement:	$434,000
		Funding Available:	$0
		Annual Deficit:	$434,000

4.3.1 Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Municipality's Storm Sewer System inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Retention Ponds	2	$442,000	$6,000
Storm Mains	42.8 km	$32,106,000	$428,000
Total		**$32,549,000**	**$434,000**

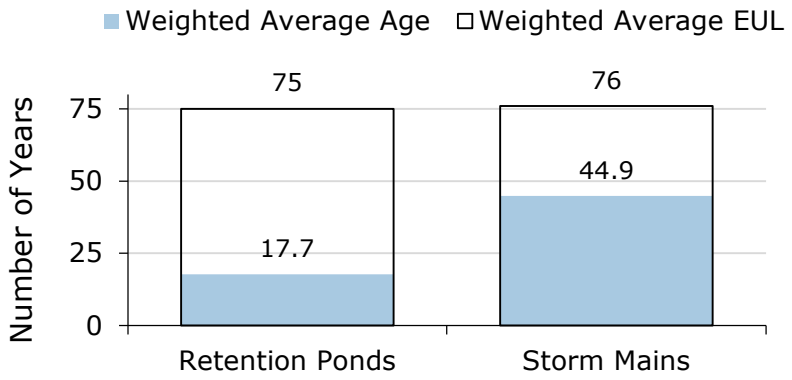
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.3.2 Asset Condition & Age

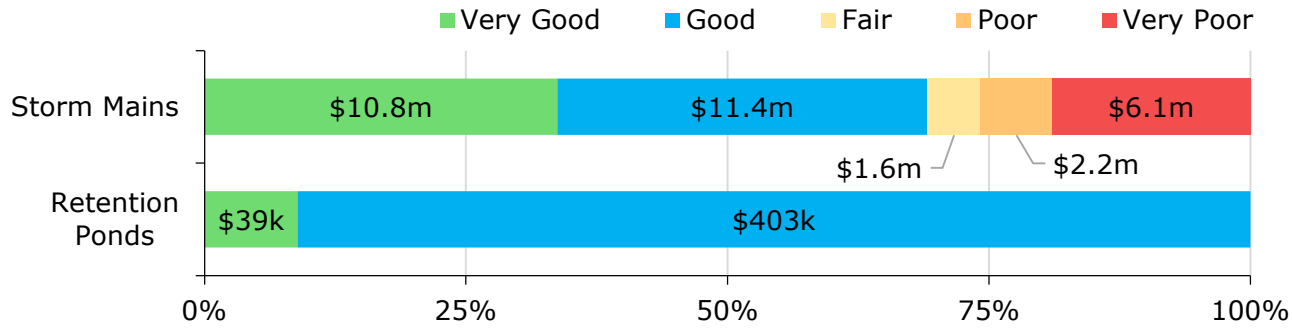
The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Weighted Average Estimated Useful Life (Years)	Weighted Average Age (Years)	Average Condition

Retention Ponds	75	17.7	79% (Good)
Storm Mains	76	44.9	65% (Good)
Average			**65% (Good)**



The following chart visually illustrates the average condition for each asset segment on a very good to very poor scale, which is outlined in the Current Approach to Condition Assessment section.



To ensure that the Municipality's Storm Sewer System continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the Storm Sewer System.

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

Based on asset age, available assessed condition data and estimated useful life, 13% of the Municipality's Storm Sewer System assets will require replacement

within the next 10 years. Capital requirements over the next 10 years are identified in Appendix B: 10-Year Capital Requirements. Service life remaining is outlined by replacement value below.

Asset Segment	Service Life Expired	0 – 5 Years Remaining	6 – 10 Years Remaining	Over 10 Years Remaining
Retention Ponds	-	-	-	$442k (100%)
Storm Mains	$3.9m (12%)	$367k (1%)	-	$27.8m (87%)
Total	**$3.9m (12%)**	**$367k (1%)**		**$28.3m (87%)**

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 Municipality's current approach:

- CCTV inspections are completed in coordination with larger planned projects to rehabilitate or replace other infrastructure (water, sanitary, roads etc.)
- Additional condition assessments are done both seasonally and reactively to storm occurrences and seasonal climate.

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

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

4.3.3 Lifecycle Management Strategy

The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of

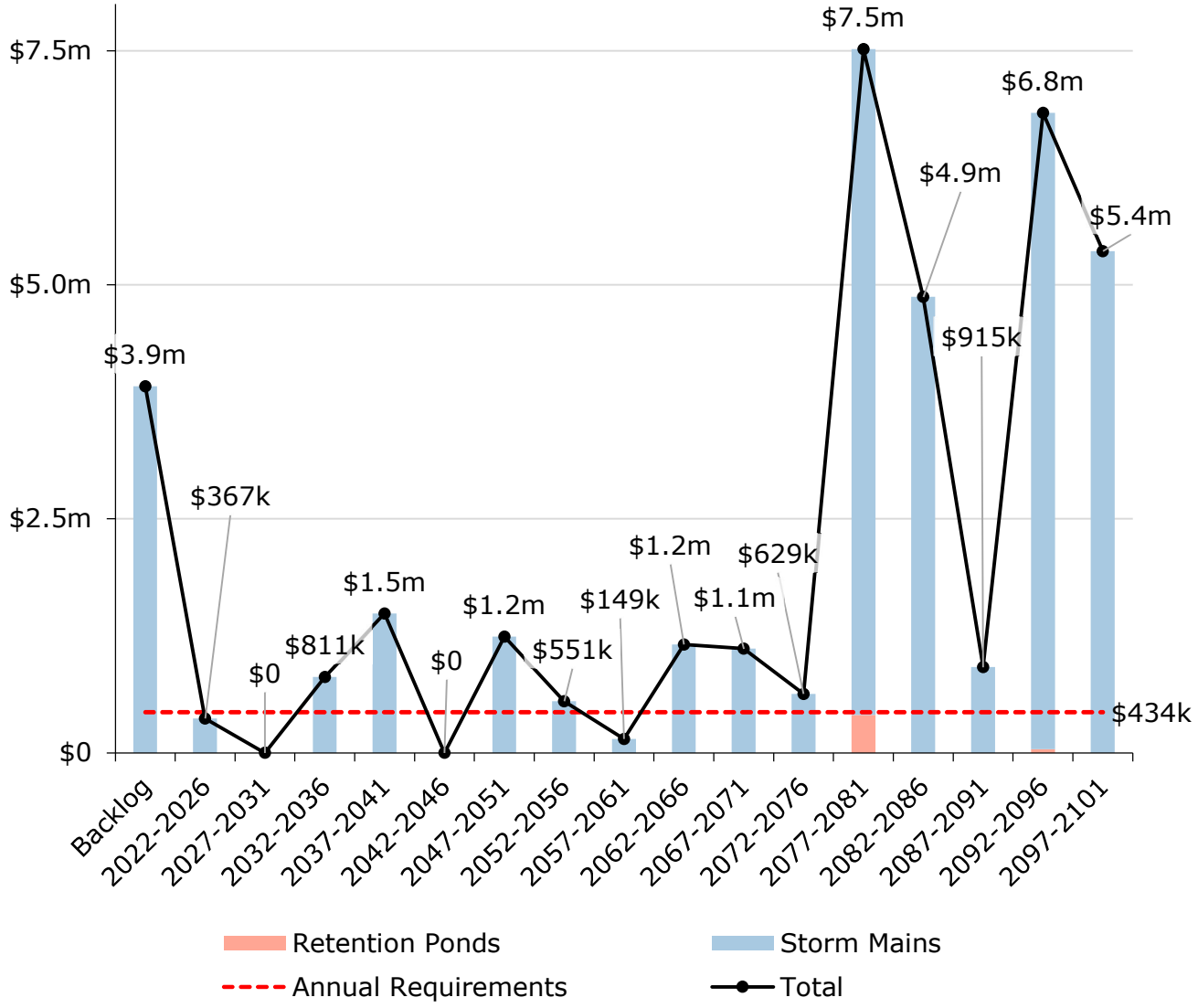
customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Catch basins are cleaned annually and repaired/flushed additionally as needed.
	Storm Sewer assets are part of a regular inspection cycle that ensures the network operates without risks to service delivery.
Replacement	All Storm Sewer replacements are based on coordinated projects with other asset types (roads, water, sewer). Additionally, replacements are conducted if an emergent need arises.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 80 years and the current capital backlog which accounts for assets that have passed their end of useful life but were not replaced. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



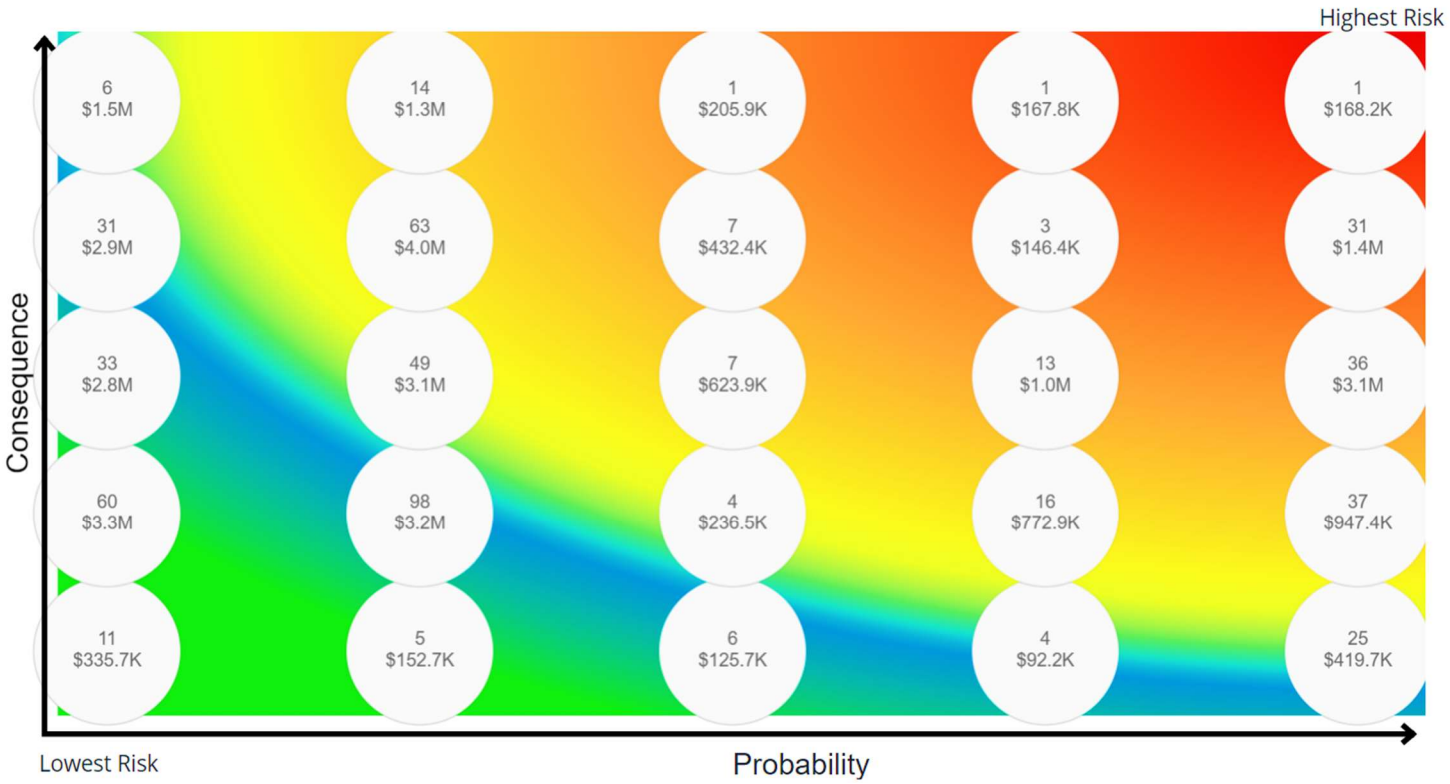
The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix B: 10-Year Capital Requirements.

4.3.4 Risk & Criticality

Risk Heatmap

The following risk heatmap provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data. See Appendix C: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

By asset count and replacement cost:



This is a high-level model developed for the purposes of this AMP and Municipality staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

Asset Segment	Average Probability of Failure	Average Consequence of Failure	Average Overall Risk Rating
Retention Ponds	2.59 / 5	3.83 / 5	10.00 / 25
Storm Mains	2.37 / 5	1.92 / 5	4.58 / 25
Total	**2.48 / 5**	**2.88 / 5**	**7.30 / 25**

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

Risks to Current Asset Management Strategies

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

Climate Change and Extreme Weather Events

Enhanced maintenance schedules, including more frequent inspections and cleaning, is vital to prevent blockages and maintain optimal flow capacity during heavy rain events. Municipalities must also consider infrastructure upgrades such as expanding pipe sizes, maintaining or upgrading retention basins, and deploying advanced monitoring systems where necessary and possible. These measures are critical for effective stormwater management, reducing urban flooding risks, and safeguarding public health and property.

Climate change influences the Intensity-Duration-Frequency (IDF) curves used in culvert and storm main sizing, impacting infrastructure resilience against varying storm intensities over time. This may require infrastructure re-evaluation and potential redesign to match evolving climate patterns.

Moreover, extreme weather events accelerate infrastructure deterioration, requiring more frequent and comprehensive repairs. This increased maintenance not only strains budgets but also reduces the lifespan of critical infrastructure. Addressing these challenges demands proactive planning, resilient infrastructure investments, and collaboration among municipalities, engineers, and environmental experts.

In summary, climate change and extreme weather events compel municipalities to adopt adaptive infrastructure strategies, intensify maintenance efforts, and take a proactive stance on stormwater management. Neglecting these challenges compromises Storm Sewer System efficiency, posing risks to public health, property integrity, and community resilience.

Infrastructure Design/Installation

Upon completion, the Municipality takes ownership of newly constructed residential developments. However, challenges can arise if stormwater design or construction does not match the Municipality’s established standards. To mitigate potential risks, it is crucial to conduct a comprehensive review of the design and assess potential

future costs before assuming ownership of these developments. Aligning newly acquired assets with established stormwater management practices plays a vital role in maintaining consistent service levels and quality across the Municipality's infrastructure network. This proactive approach ensures that Storm Sewer System assets meet regulatory standards and effectively manage water flow within the Municipality.

4.3.5 Levels of Service

The following tables identify the Municipality’s current level of service for the Storm Sewer System. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by the Storm Sewer System.

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include map, of the user groups or areas of the Municipality that are protected from flooding, including the extent of protection provided by the municipal Storm Sewer system	Most of the Municipality’s landscape is comprised of rural countryside and agricultural land where Storm Sewer runoff is conveyed through a series of rural ditches and culverts. Urban developments include commercial, industrial, and residential areas that are designed with an urban road right-of-way cross section and may be serviced by storm sewers and facilities.

Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the Storm Sewer System.

Service Attribute	Technical Metric	Current LOS (2022)
Scope	% of properties in Municipality resilient to a 100-year storm	7.8%
	% of the municipal storm sewer management system resilient to a 5-year storm	100%
Performance	Average condition of storm sewer system (e.g. very good, good, fair, poor, very poor)	Good
	% of storm sewer system in good or very good condition	70%
	% of storm sewer system in poor or very poor condition	25%
	Actual annual capital budget : average annual capital requirement	$0 : $434,000 (0 : 1) [8]

4.3.6 Recommendations

Asset Inventory

- The Municipality's Storm Sewer System inventory is at a lower level of maturity than other asset categories. The further development of a comprehensive inventory should be a priority.

Condition Assessment Strategies

- Continue implementing system-wide assessments of the condition of all assets in the Storm Sewer System through CCTV inspections.

[8] Storm sewer investments and projects have historically been incorporated in the road network assets group leading to values being split between the two categories. In future renditions of the AMP, this level of service will track more closely with the 2024 budgeted value of $731,178.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Lifecycle Management Strategies

- Document and review lifecycle management strategies for the Storm Sewer System on a regular basis to achieve the lowest total cost of ownership while maintaining adequate service levels.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics that the Municipality has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

4.4 Facilities

The Municipality of South Huron owns and maintains several facilities and recreation centres that provide key services to the community. These include:

Asset Segment	Facilities Encompassed
Cemetery	Office Work Shed, Pole Shed, Mausoleum
Community Centres	Centralia, Dashwood, Kirkton, and Crediton Community Centres
Fire Halls	Dashwood, Exeter, Huron Park, and Dashwood Fire Halls
Operations Facilities	Stephen Salt & Work Shed, Usborne Salt & Work Shed, Weber Pit Pole Shed
Recreation Facilities	Agricultural Building, Kirkton Pool, Lawn Bowling Clubhouse & Storage Shed, South Huron Recreation Centre, Stephen Arena
Town Hall	Olde Town Hall

The state of the infrastructure for the Facilities is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$28.0 million	Fair (43%)	Annual Requirement:	$788,000
		Funding Available:	$672,000
		Annual Deficit:	$116,000

4.4.1 Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Municipality's Facilities inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Cemetery	1,500 ft^2	$183,000	$6,000
Community Centres	15,570 ft^2	$2,319,000	$64,000

Fire Halls	15,610 ft^2	$1,732,000	$54,000
Operations Facilities	32,519 ft^2	$3,388,000	$97,000
Recreation Facilities	119,006 ft^2	$19,217,000	$534,000
Town Hall	10,400 ft^2	$1,121,000	$33,000
Total	**194,605 ft^2**	**$27,959,000**	**$788,000**

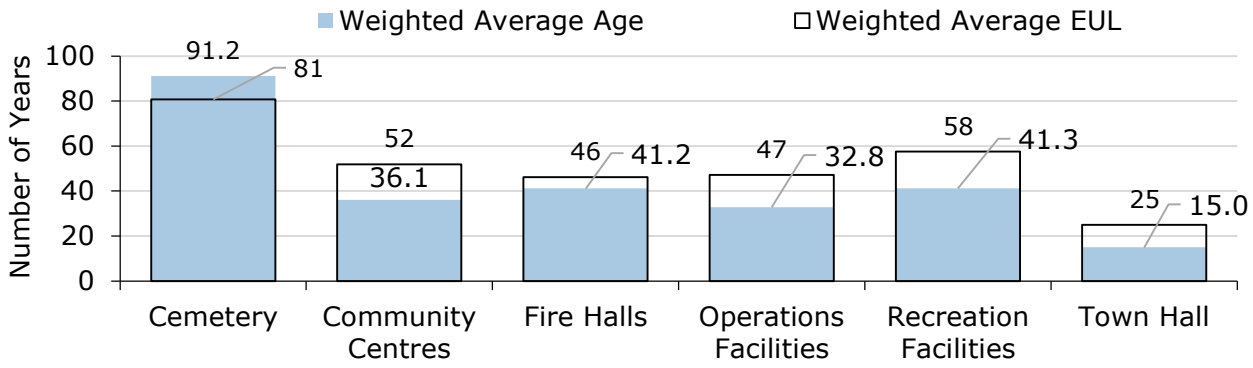
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.4.2 Asset Condition & Age

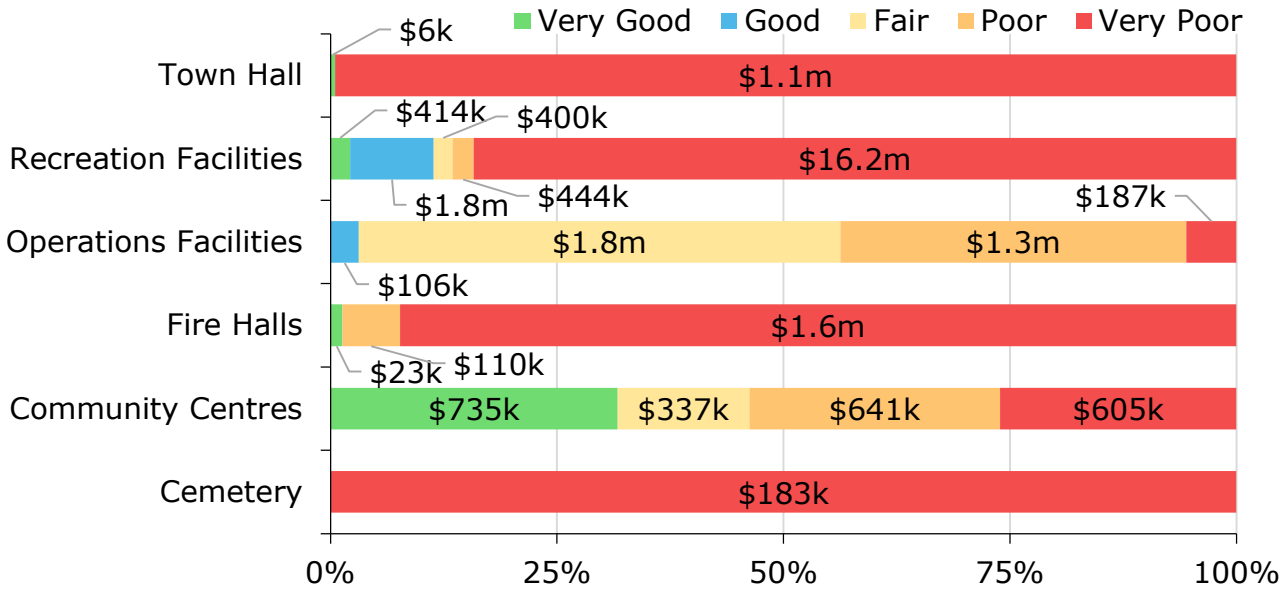
The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Weighted Average Estimated Useful Life (Years)	Weighted Average Age (Years)	Average Condition [9]
Cemetery	81	91.2	1% (Very Poor)
Community Centres	52	36.1	78% (Good)
Fire Halls	46	41.2	45% (Fair)
Operations Facilities	47	32.8	56% (Fair)
Recreation Facilities	58	41.3	36% (Poor
Town Hall	25	15.0	42% (Poor)
Average			**43% (Fair)**

[9] Building Condition Assessments (BCAs) are currently underway and will affect the average condition once applied to the inventory. Any completed assessments were incorporated into the average condition shown.



The following chart shows the average condition for each segment on a very good to very poor scale, outlined in the Current Approach to Condition Assessment section.



To ensure that the Municipality's Facilities continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of Facilities.

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

Based on asset age, available assessed condition data and estimated useful life, 37% of the Municipality's Facilities assets will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix B: 10-Year Capital Requirements. Service life remaining is outlined by replacement value.

Asset Segment	Service Life Expired	0 – 5 Years Remaining	6 – 10 Years Remaining	Over 10 Years Remaining
Cemetery	$155k (85%)	-	$28k (15%)	-
Community Centres	-	-	$182k (8%)	$2.1m (92%)
Fire Halls	-	$50k (3%)	$395k (23%)	$1.3m (74%)
Operations Facilities	-	-	$190k (6%)	$3.2m (94%)
Recreation Facilities	$384k (2%)	$4.3m (23%)	$4.0m (22%)	$10.0m (53%)
Town Hall	-	$17k (2%)	$356k (32%)	$748k (67%)
Total	**$539k (2%)**	**$4.4m (16%)**	**$5.2m (19%)**	**$17.3m (63%)**

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 Municipality's current approach:

- Detailed structural assessments have been completed for a number of Facilities to provide a comprehensive breakdown of the Facilities components. Reports were provided from both GM BluePlan and Rimkus.

The general condition methodology used in the Building Condition Assessments (BCAs) is as follows:

Good Condition:	No capital expenditure within next 10-years.
Good / Fair Condition:	Capital expenditure not expected within next 10-years. Reasonable condition, areas/items need attention
Fair Condition:	Reasonable condition as whole; deterioration and/or damage noted. Capital expenditure is anticipated within 5 – 10 years.
Fair / Poor Condition:	Deterioration and/or damage noted; component is nearing end of service life. Capital expenditure is recommended in 2 – 5 years.

Poor Condition:	Deterioration and/or damage noted; component at end of service life. Capital expenditure is recommended in 1 – 2 years.
Very Poor:	This includes structural components and hazardous conditions which cannot be deferred and which could lead to loss of life or to a critical or extremely severe injury. Recommended in Year 0.
Various:	Multiple conditions – refer to report observations for further details.

Repair and replacement prioritization for activities required within the next five years is based on health and safety, structural integrity, code requirement, building functionality, and cost-effective upgrades.

The Rimkus BCAs were expressed using the industry standard Facility Condition Index (FCI), which ranges from 0-100. A general overview of the rating scale is as follows:

Very Good **0.00 < FCI < 0.05**	**Good** **0.05 ≤ FCI < 0.10**	**Fair** **0.10 ≤ FCI < 0.15**	**Poor** **0.15 ≤ FCI < 0.30**	**Very Poor** **FCI ≥ 0.30**
Facility appears clean and functional; component failure not expected New or recently rehabilitated Regular and scheduled maintenance	Facilities appear clean and functional; equipment and component failure may occur, but is manageable Some components exhibit deficiencies; component upgrades, repairs, or replacements are minor or general in nature (e.g., painting, minor roof repair)	Deterioration visible throughout facilities; equipment and component failure more frequent Substantial component upgrades, repairs, and replacements, e.g., boiler, window replacement, some renovations Some unplanned maintenance and repairs	Significant deterioration; increasing rate of deterioration; frequent component failure; building shut down may occur Major system upgrades required as components reach end of service life, including HVAC, plumbing, facility-wide renovations; building envelop restoration	Widespread and advanced deterioration; health and safety a major concern; building shutdowns and equipment failure more frequent. Major upgrades required to multiple systems, structural issues

Very Good 0.00 < FCI < 0.05	Good 0.05 ≤ FCI < 0.10	Fair 0.10 ≤ FCI < 0.15	Poor 0.15 ≤ FCI < 0.30	Very Poor FCI ≥ 0.30
	Regular and scheduled maintenance		Reactive maintenance	Staff time dedicated primarily to reactive maintenance; 'worst-first' stage

The BCAs provided by GM BluePlan used the following rating scale which ranges from 1-5:

Condition	Rating
Very Good	1
Good	2
Fair	3
Poor	4
Very Poor	5

The condition ranges from both assessment sources were integrated into the inventory to determine the current Facilities conditions and forecast future capital requirements.

4.4.3 Lifecycle Management Strategy

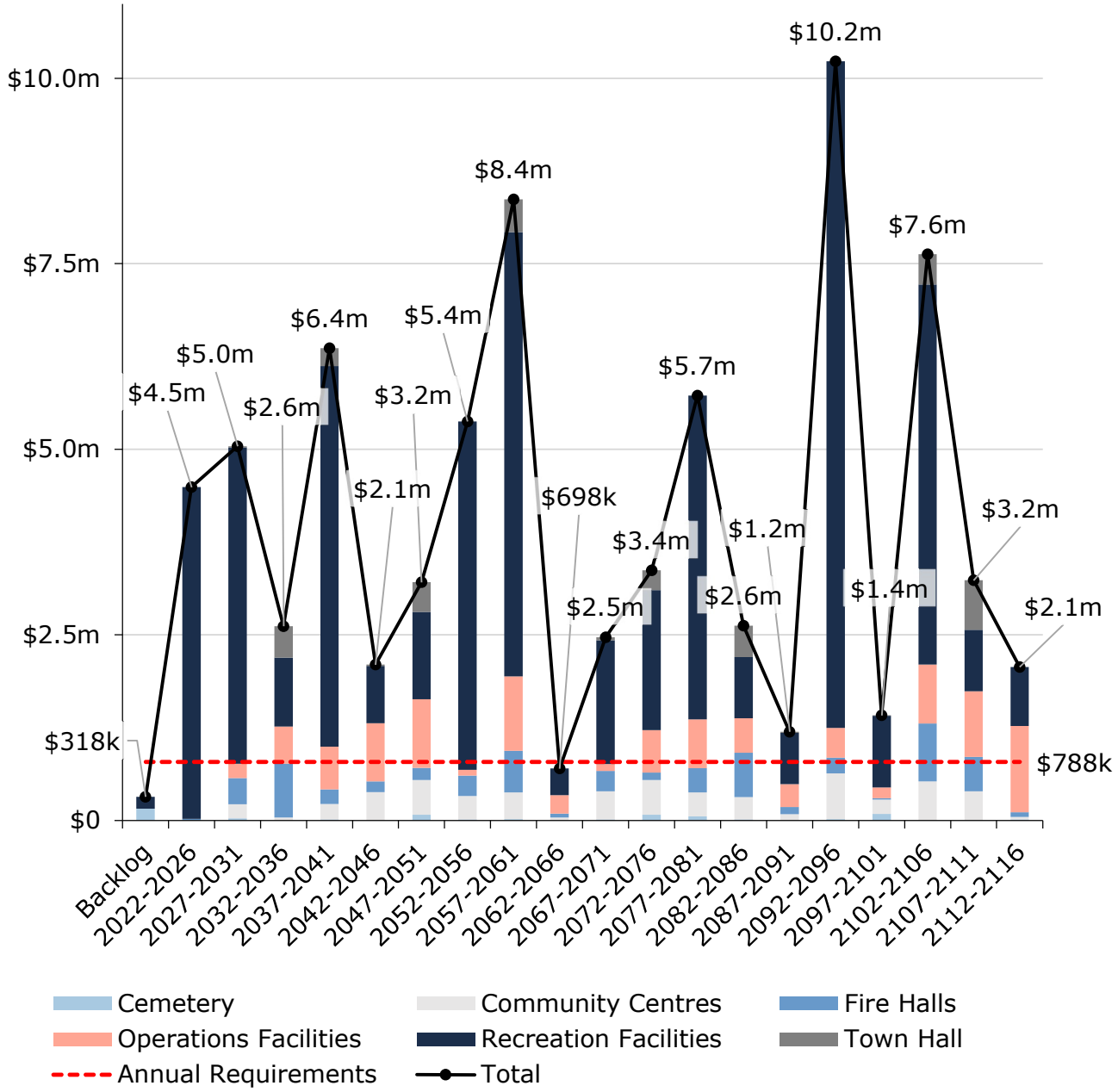
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration. The following table outlines the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

Activity Type	Description of Current Strategy
Maintenance/ Inspection	Fire Facilities were included in a Building Condition Assessment collection activity. Furnace and other essential building assets are maintained and inspected through a mixture of regular internal and external maintenance.
	Facilities are inspected monthly for issues and reactive needs. External contractors are brought into complete activities as deemed necessary.
Replacement/ Rehabilitation	Rehabilitation and replacements are completed in line with criticality, cost, and public needs. There have been recent rehabilitations to the Facilities operated by the Municipality.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. The graph identifies capital requirements over the next 95 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.

The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix B: 10-Year Capital Requirements.

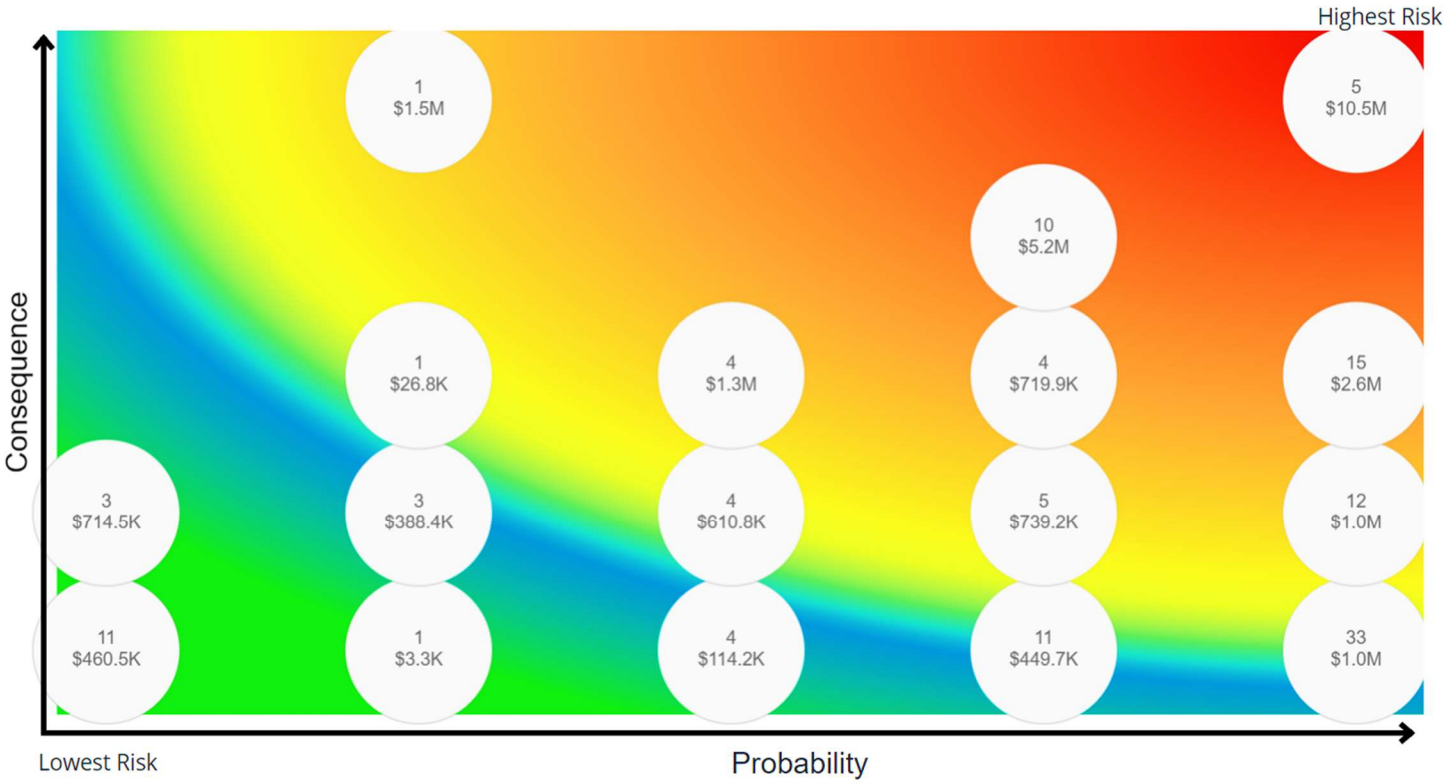


4.4.4 Risk & Criticality

Risk Heatmap

The following risk heatmap provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data. See Appendix C: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

By asset count and replacement cost:



This is a high-level model developed for the purposes of this AMP and Municipality staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

Asset Segment	Average Probability of Failure	Average Consequence of Failure	Average Overall Risk Rating
Cemetery	5.00 / 5	1.00 / 5	5.00 / 25
Community Centres	3.14 / 5	2.31 / 5	7.81 / 25
Fire Halls	4.89 / 5	2.52 / 5	12.43 / 25
Operations Facilities	3.60 / 5	2.91 / 5	10.65 / 25
Recreation Facilities	4.36 / 5	4.23 / 5	18.80 / 25
Town Hall	4.66 / 5	4.36 / 5	20.52 / 25
Total	**4.21 / 5**	**3.79 / 5**	**16.46 / 25**

The identification of critical assets allows the Municipality to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-

specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

Risks to Current Asset Management Strategies

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

Climate Change and Extreme Weather Events

Extreme weather events can have a notable impact on the maintenance needs and lifecycle management of Facilities assets. Intense storms, floods, and strong winds can lead to physical damage to buildings and equipment, necessitating immediate repairs to ensure functionality and safety. Such events can also expedite wear and tear on assets, resulting in shorter lifespans and increased maintenance frequency.

Moreover, fluctuations in climate patterns can lead to heightened demand for heating and cooling systems, placing additional strain on Facilities infrastructure. These disruptions can cause unexpected expenses and complicate budget planning and resource allocation efforts. Therefore, proactive planning and investment in resilience measures, such as improved storm-proofing techniques, are imperative to mitigate the adverse effects of extreme weather on Facilities assets and operations.

Capital Funding Strategies

Sustaining consistent funding is crucial for maintaining Facilities assets that are essential for community services. Regular maintenance and updates are needed for safe and efficient operation. Inadequate funding can lead to asset deterioration, service disruptions, safety hazards, and costly repairs. Consistent funding enables proactive maintenance, extends asset lifespan, and facilitates necessary improvements, ensuring reliable services and minimizing long-term costs. Funding is also critical due to the high costs associated with Facilities rehabilitation and replacements, underscoring the need for ongoing financial support. Delaying rehabilitation projects often incurs higher costs compared to timely maintenance, highlighting the importance of budgetary foresight.

4.4.5 Levels of Service

The following tables identify the Municipality's current level of service for the Municipality's Facilities. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by Facilities.

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include maps, of the types of facilities that the Municipality operates and maintains	Using assessed condition data as available, and age-based condition otherwise, facility assets are on average in Poor condition (34%) condition: Facility assets include structures such as arenas, pools, lawn bowling, outdoor washrooms, fire halls, community centres, and the town hall.
Quality	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Facility asset rehabilitation and replacement decisions are predominantly based on opportunities for accessibility improvement, risk to occupant health and safety, legislative compliance, and cost and construction feasibility. Currently, decisions to replace components of facilities through capital investment projects are forecasted ten (10) years in advance.

Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the Facilities.

Service Attribute	Technical Metric	Current LOS (2022)
Scope	% of facilities that meet AODA standards	Future Consideration

	Average facility utilization percentage	Future Consideration
Quality	Average facility condition index value for facilities in the Municipality	Fair
Performance	% of facilities in good or very good condition	11%
	% of facilities network in poor or very poor condition	80%
	Actual annual capital budget: average annual capital requirement	$672,000 : $788,000 (0.85 : 1)

4.4.6 Recommendations

Asset Inventory

- The Municipality's Facilities inventory could be further componentized for more accurate asset management planning. Facilities consist of several separate capital components that have unique estimated useful lives and require asset-specific lifecycle strategies. Staff should work towards further breaking down the inventory to allow for more component-based lifecycle planning.

Condition Assessment Strategies

- The recent Building Condition Assessments (BCAs) have led to a more developed inventory and has provided a better understanding of the current standing of the Facilities assets. Incorporate the rest of the BCAs when complete into the current inventory. Continue developing a condition assessment strategy to improve the accuracy of lifecycle planning.

Replacement Costs

- Gather accurate replacement costs and update on a regular basis to ensure the accuracy of capital projections.

Levels of Service

- Begin measuring current levels of service in accordance with the metrics that the Municipality has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.

- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

4.5 Rolling Stock

Rolling Stock allows staff to efficiently deliver municipal services and personnel. Municipal Rolling Stock are used to support several service areas, including:

- Mowers and Tractors
- Fire & Rescue Vehicles
- Pick-up Trucks to Support the Maintenance of the Building Department, Transportation Network, Environmental Services, and Parks & Recreation Assets
- Heavy Trucks
- Plows
- Backhoes
- Loaders

The state of the infrastructure for the Rolling Stock is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$14.2 million	Fair (47%)	Annual Requirement:	$848,000
		Funding Available:	$416,000
		Annual Deficit:	$432,000

4.5.1 Asset Inventory & Costs

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Rolling Stock.

Asset Segment	Quantity	Total Replacement Cost	Annual Capital Requirement
Fire Vehicles	9	$6,714,000	$285,000
Heavy Duty Trucks (>1 ton)	10	$3,472,000	$228,000
Heavy Machinery	8	$2,405,000	$162,000
Light Duty Trucks (<1 ton)	13	$642,000	$64,000
Tractors	16	$899,000	$104,000

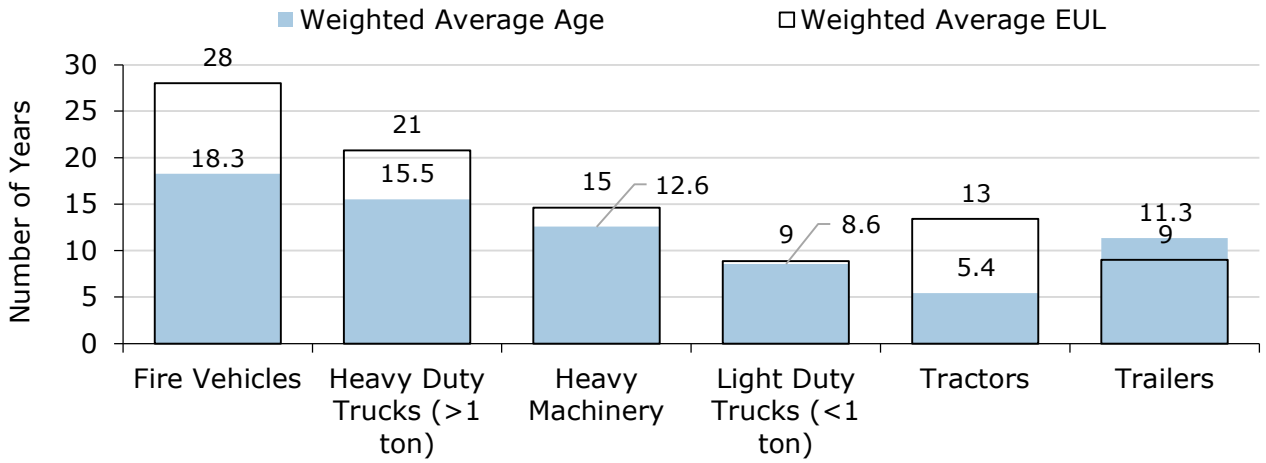
Trailers		3	$33,000	$5,000
	Total	**59**	**$14,166,000**	**$848,000**

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

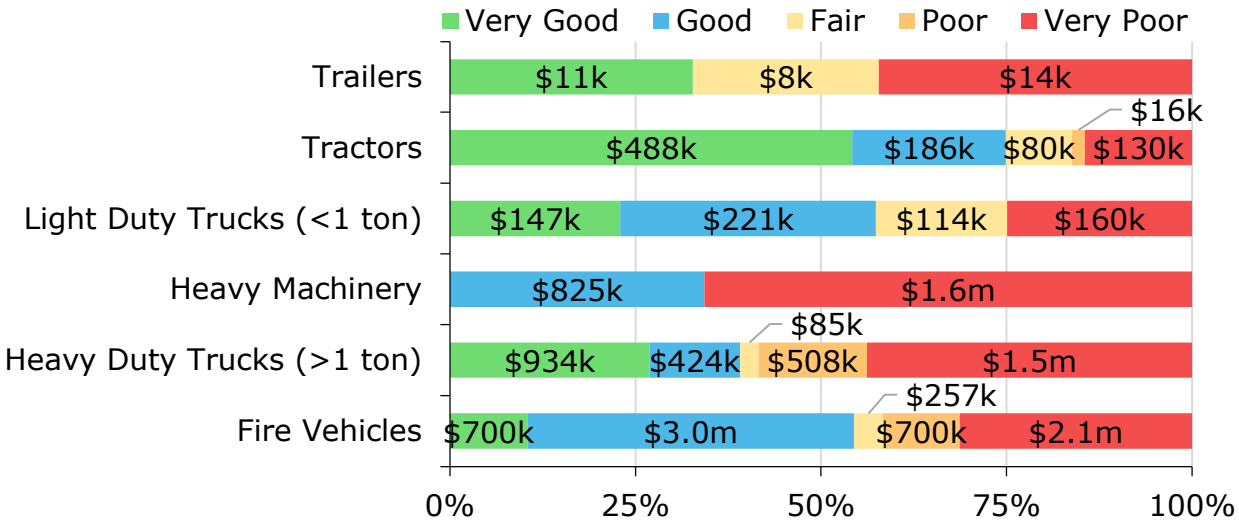
4.5.2 Asset Condition & Age

The following table identifies the current average condition and source of available condition data for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Weighted Average Estimated Useful Life (Years)	Weighted Average Age (Years)	Average Condition
Fire Vehicles	28	18.3	Fair (52%)
Heavy Duty Trucks (>1 ton)	21	15.5	Poor (38%)
Heavy Machinery	15	12.6	Poor (35%)
Light Duty Trucks (<1 ton)	9	8.6	Fair (54%)
Tractors	13	5.4	Good (73%)
Trailers	9	11.3	Fair (41%)
			Fair (47%)



The following chart visually illustrates the average condition for each asset segment on a very good to very poor scale, which is outlined in the Current Approach to Condition Assessment section.



To ensure that the Municipality's Rolling Stock continue to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the Rolling Stock.

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

Based on asset age, available assessed condition data and estimated useful life, 64% of the Municipality's Rolling Stock assets will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix B: 10-Year Capital Requirements. Service life remaining is outlined by replacement value below.

Asset Segment	Service Life Expired	0 – 5 Years Remaining	6 – 10 Years Remaining	Over 10 Years Remaining
Fire Vehicles	$700k (10%)	$1.4m (21%)	$957k (14%)	$3.7m (54%)
Heavy Duty Trucks (>1 ton)	$1.5m (44%)	$84k (2%)	$1.0m (30%)	$843k (24%)
Heavy Machinery	$307k (13%)	$1.3m (53%)	$203k (8%)	$622k (26%)

Light Duty Trucks (<1 ton)		$112k (17%)	$113k (18%)	$417k (65%)	-
Tractors		$130k (14%)	$59k (7%)	$711k (79%)	-
Trailers		$14k (42%)	-	$11k (33%)	$8k (25%)
	Total	**$2.8m (20%)**	**$2.9m (21%)**	**$3.3m (23%)**	**$5.1m (36%)**

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 Municipality's current approach:

- Staff complete a regular and structured inspection of Rolling Stock to ensure they are in state of adequate repair prior to operation.
- Fire vehicles follow a stringent schedule to ensure coherence to safety regulations.

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

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

4.5.3 Lifecycle Management Strategy

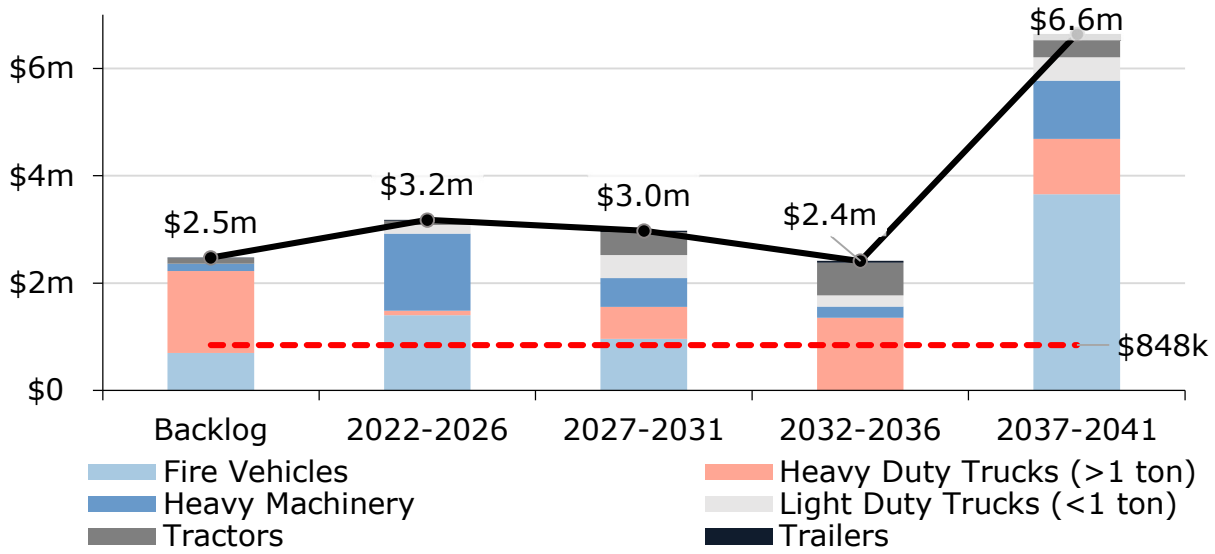
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration. The following table outlines the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

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	Fire vehicle assets are assessed in regular intervals. Vehicles undergo annual mechanical inspection by a third party mechanic.

Activity Type	Description of Current Strategy
	The Parks and Recreation Department has a Rolling Stock comprised of pickup trucks, tractors and mowers. These vehicles are inspected annually and have regular/reactive maintenance done to them accordingly.
	Roads Rolling Stock assets are tracked using run time, mileage, and asset age. These assets undergo routine maintenance with internal personnel with additional maintenance undergone by contractors. There is a desire to move forward with a formalized Rolling Stock program.
Replacement	10-year capital asks are completed and prepared by each department. These capital plans are then brought to council and are approved in line with need, criticality, and budgetary availability.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. The graph identifies capital requirements over the next 20 years, which it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



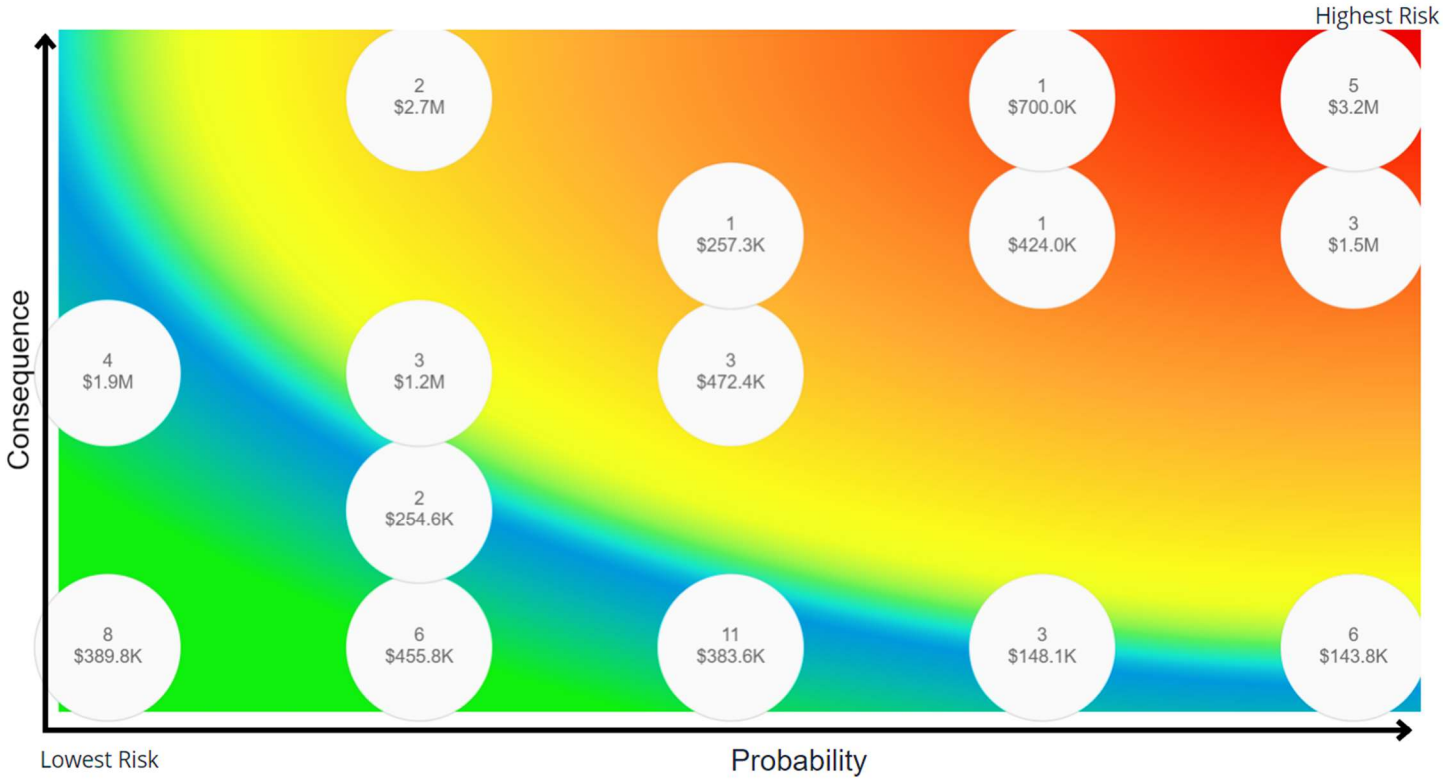
The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix B: 10-Year Capital Requirements.

4.5.4 Risk & Criticality

Risk Heatmap

The following risk heatmap provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data. See Appendix C: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

By asset count and replacement cost:



This is a high-level model developed for the purposes of this AMP and Municipality staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

Asset Segment	Average Probability of Failure	Average Consequence of Failure	Average Overall Risk Rating
Fire Vehicles	3.08 / 5	4.68 / 5	14.93 / 25
Heavy Duty Trucks (>1 ton)	3.36 / 5	3.41 / 5	12.37 / 25
Heavy Machinery	3.58 / 5	3.72 / 5	14.95 / 25
Light Duty Trucks (<1 ton)	2.69 / 5	1.00 / 5	2.69 / 25
Tractors	2.01 / 5	1.94 / 5	3.16 / 25
Trailers	3.19 / 5	1.00 / 5	3.19 / 25
Total	**3.15 / 5**	**3.86 / 5**	**12.98 / 25**

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

Risks to Current Asset Management Strategies

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

Capital Funding Strategies

As a Municipality, securing adequate capital funding is paramount for maintaining and enhancing vehicle assets, ensuring the continuity and reliability of essential services. Sufficient funding enables the Municipality to replace aging Rolling Stock in a timely manner with newer, more efficient models, optimizing Rolling Stock performance while reducing operational costs.

Investing in Rolling Stock upgrades and modernization improves not only operational efficiency but also safety for both operators and the public. Newer vehicles come equipped with advanced safety features, contributing to a safer working environment and reducing the risk of accidents on the roads. Additionally, modern vehicles offer improved fuel efficiency, resulting in long-term cost savings and a reduced environmental impact.

Proper maintenance of Rolling Stock reduces the risk of breakdowns and service disruptions, allowing the Municipality to respond promptly and effectively to the needs of the community. Prioritizing capital funding for vehicle assets is an investment in service reliability, operational resilience, and sustainable practices, aligning with the Municipality's commitment to providing high-quality services to its residents.

4.5.5 Levels of Service

The following tables identify the Municipality's current level of service for the Municipality's Rolling Stock. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by the Rolling Stock.

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description or images of the types of vehicles (e.g. light, medium and heavy-duty) that the Municipality operates and the services that they help to provide to the community	Using assessed condition data as available, and age-based condition otherwise, vehicle assets are on average in Fair condition (43%). Rolling Stock assets include diverse assets such as fire trucks, heavy machinery, light- and heavy-duty trucks, tractors, and trailers.
Quality	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Rolling Stock investments are generally planned 10 years out and consider the asset's age, condition, utility, and cost-benefit analysis of replacement.

Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the Rolling Stock.

Service Attribute	Technical Metric	Current LOS (2022)
Quality	Average condition of rolling stock (e.g. very good, good, fair, poor, very poor)	Fair
Performance	% of rolling stock in good or very good condition	49%
	% of rolling stock in poor or very poor condition	48%
	Actual annual capital budget : average annual capital requirement	$416,000 : $848,000 (0.49 : 1)

4.5.6 Recommendations

Replacement Costs

- Gather accurate replacement costs and update on a regular basis to ensure the accuracy of capital projections.

Condition Assessment Strategies

- Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Lifecycle Management Strategies

- The Municipality has been considering a transition to a natural gas fleet. Further investigation into the viability and benefit of this approach is recommended.
- A Fleet management strategy should be considered for standardizing the lifecycle events and protecting against knowledge loss in the case of staff

turnover. A draft strategy has been developed, and is being reviewed and optimized before adoption.

Levels of Service

- Begin measuring current levels of service in accordance with the metrics that the Municipality has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

4.6 Equipment

In order to maintain the high quality of public infrastructure and support the delivery of core services, Municipality staff own and employ various types of Equipment. This includes:

- Generators
- Personal Protective Equipment (PPE)
- Fire Safety and Rescue Equipment
- Information Technology Assets
- Recreation Equipment

Keeping Equipment in an adequate state of repair is important to maintain a high level of service. The state of the infrastructure for the Equipment is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$1.4 million	Fair (58%)	Annual Requirement:	$163,000
		Funding Available:	$163,000
		Annual Deficit:	$0

4.6.1 Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Municipality's Equipment inventory.

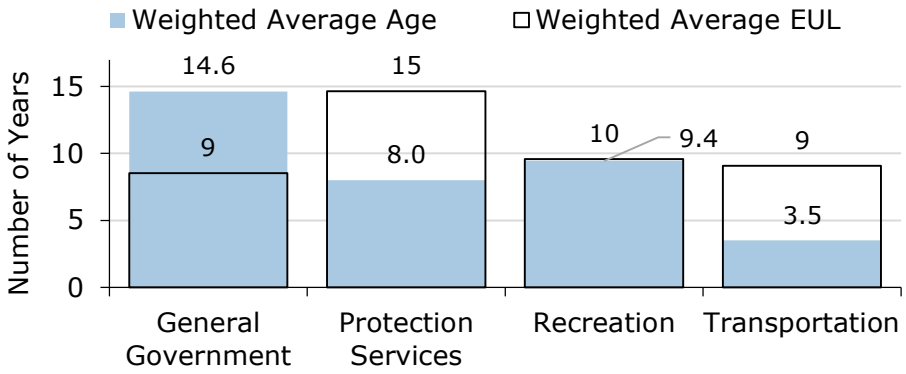
Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
General Government	8	$161,000	$35,000
Protection Services	173	$693,000	$60,000
Recreation	90	$87,000	$10,000
Transportation	16	$489,000	$58,000
Total		**$1,431,000**	**$163,000**

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

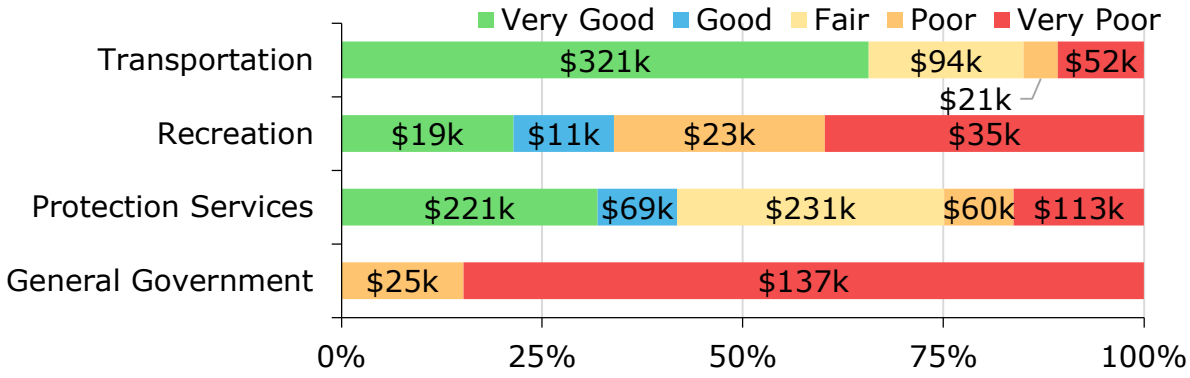
4.6.2 Asset Condition & Age

The table below identifies the current average condition and source of available condition data for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Weighted Average Estimated Useful Life (Years)	Weighted Average Age (Years)	Average Condition
General Government	9	14.6	Very Poor (6%)
Protection Services	15	8.0	Fair (58%)
Recreation	10	9.4	Poor (39%)
Transportation	9	3.5	Good (77%)
Average			**Fair (58%)**



The following chart visually illustrates the average condition for each asset segment on a very good to very poor scale, which is outlined in the Current Approach to Condition Assessment section.



To ensure that the Municipality's Equipment continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the Equipment. Each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

Based on asset age, available assessed condition data and estimated useful life, 75% of the Municipality's Equipment assets will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix B: 10-Year Capital Requirements. Service life remaining is outlined by replacement value below.

Asset Segment	Service Life Expired	0 – 5 Years Remaining	6 – 10 Years Remaining	Over 10 Years Remaining
General Government	$128k (79%)	$9k (6%)	$25k (15%)	-
Protection Services	$113k (16%)	$115k (17%)	$109k (16%)	$357k (51%)
Recreation	$35k (40%)	$23k (26%)	$30k (34%)	-
Transportation	$42k (9%)	$125k (26%)	$321k (66%)	-
Total	**$317k (22%)**	**$273k (19%)**	**$484k (34%)**	**$357k (25%)**

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 Municipality's current approach:

- Staff complete regular visual inspections of Equipment to ensure they are able to support service delivery.
- Fire equipment is assessed regularly to make certain that protective and rescue equipment is in working order.

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

Condition	Rating

Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

4.6.3 Lifecycle Management Strategy

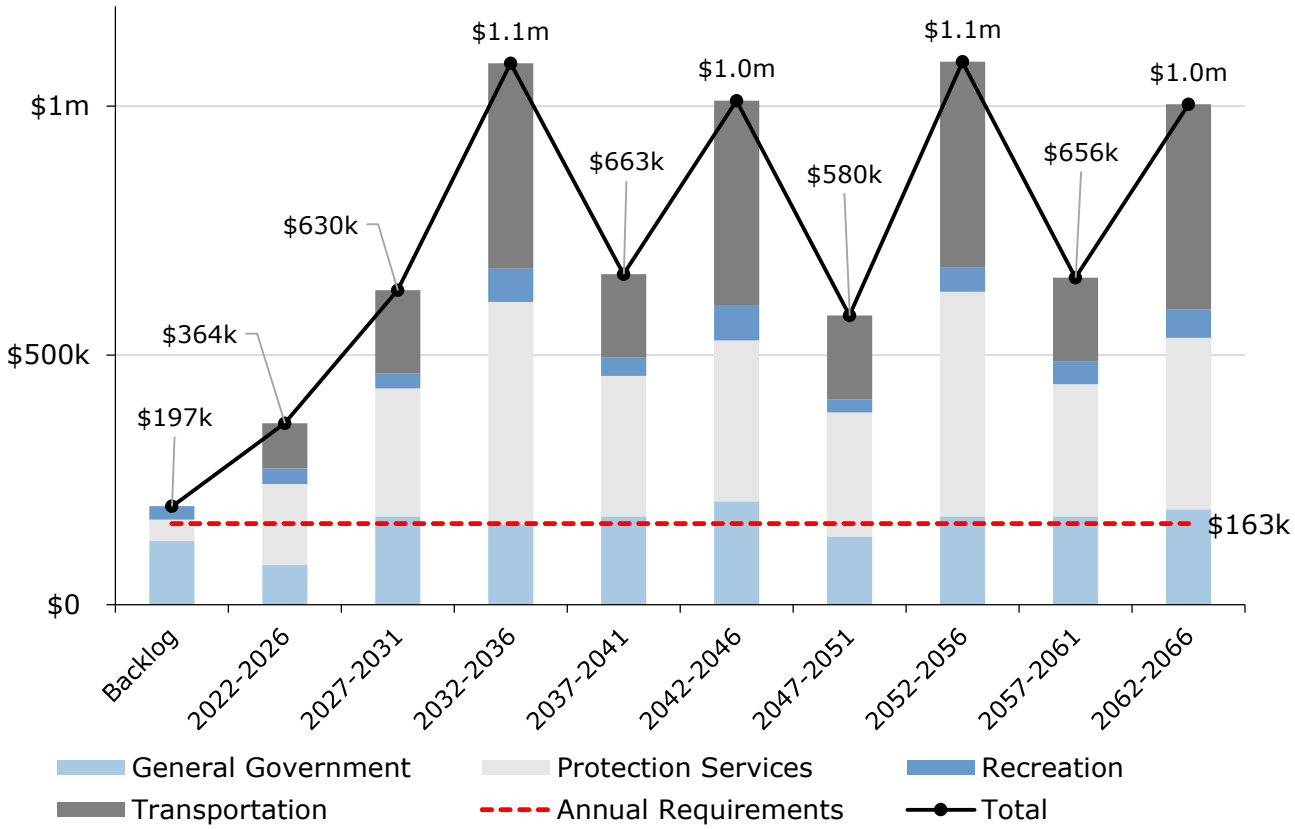
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance/ Rehabilitation	Maintenance program varies by department
	Fire Protection Services equipment is subject a rigorous inspection and maintenance program in line with fire fighting regulations.
	Equipment is maintained according to manufacturer recommended actions and supplemented by the expertise of municipal staff
Replacement	Fire Fighting Assets are replaced in accordance to regulation schedules.
	Recreation assets are replaced upon failure, when rehabilitation of the asset is deemed financially inviable.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 45 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



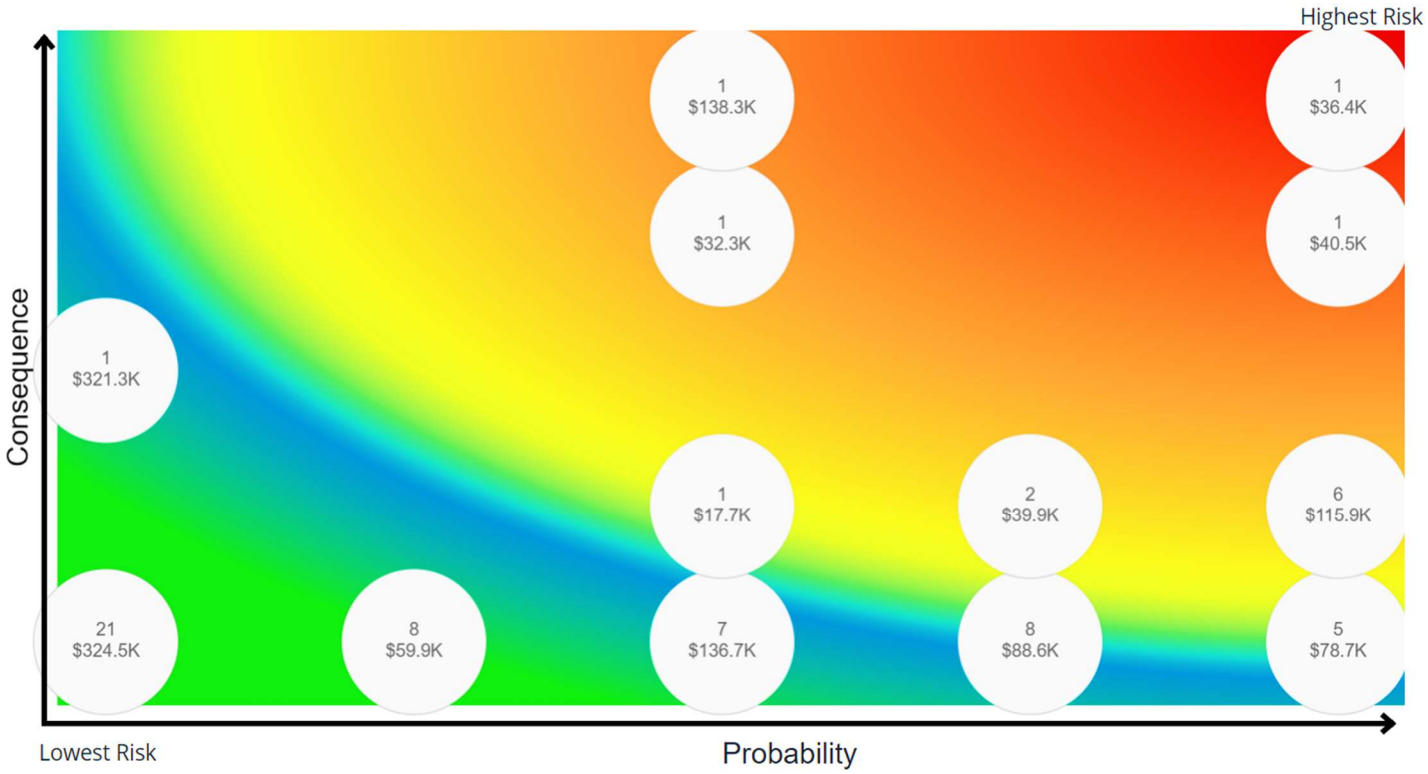
The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix B: 10-Year Capital Requirements.

4.6.4 Risk & Criticality

Risk Heatmap

The following risk heatmap provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data. See Appendix C: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

By asset count and replacement cost:



This is a high-level model developed for the purposes of this AMP and Municipality staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

Asset Segment	Average Probability of Failure	Average Consequence of Failure	Average Overall Risk Rating
General Government	4.33 / 5	2.32 / 5	10.77 / 25
Protection Services	2.55 / 5	2.24 / 5	6.84 / 25
Recreation	2.29 / 5	1.18 / 5	3.00 / 25
Transportation	1.94 / 5	2.31 / 5	3.26 / 25
Total	**2.52 / 5**	**2.21 / 5**	**5.82 / 25**

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

Risks to Current Asset Management Strategies

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

Aging Infrastructure

There is an ongoing risk that many pieces of Equipment could need replacing at the same time, straining budgets and disrupting operations. This highlights the importance of monitoring and planning for asset replacements.

When multiple Equipment items reach the end of their service lives simultaneously, the financial burden can be significant, requiring immediate investment and potentially leading to downtime. To manage this risk, it is crucial to evaluate the condition and performance of all machinery through regular inspections and assessments.

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

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

4.6.5 Levels of Service

The following tables identify the Municipality's current level of service for Equipment. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by the Equipment.

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description or images of the types of equipment that the Municipality operates and the services that they help to provide to the community	Using assessed condition data as available, and age-based condition otherwise, Equipment assets are on average in Fair condition (50%). Equipment assets are diverse and service the needs of protection services, recreation, transportation, and general government operations.
Quality	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Equipment asset replacement decisions predominantly consider asset condition, criticality, and legislative compliance. Equipment investments are currently identified and forecasted five (5) to ten (10) years in advance and presented for council approval one-year in advance with budgets determined based on departmentally identified need.

Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the Equipment.

Service Attribute	Technical Metric	Current LOS (2022)
Scope	Average condition of equipment (e.g. very good, good, fair, poor, very poor)	Fair
Performance	% of equipment in good or very good condition	45%
	% of equipment in poor or very poor condition	32%
	Actual annual capital budget: average annual capital requirement	$163,000 : $163,000 (1 : 1)

4.6.6 Recommendations

Replacement Costs

- All replacement costs used in this AMP were based on the inflation of previous replacement costs where available with historical costs used otherwise. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk Equipment.
- Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Asset Replacement

- Equipment asset replacements are approved in annual budget reviews. In practice Equipment assets may be overlooked in long-term forecasting. These assets may carry relatively lower replacement costs, but ensuring their strategic replacement scheduling can ensure that services continue in a reliable and safe manner.

Levels of Service

- Begin measuring current levels of service in accordance with the metrics that the Municipality has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.

- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

4.7 Land Improvements

The Municipality of South Huron owns a small number of assets that are considered Land Improvements. This category includes:

- Parking Lots
- Parks and Recreation Assets
- Pavilions
- Lighting Assets

The state of the infrastructure for Land Improvements is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$6.4 million	Fair (45%)	Annual Requirement:	$154,000
		Funding Available:	$15,000
		Annual Deficit:	$139,000

4.7.1 Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Municipality's Land Improvements inventory.

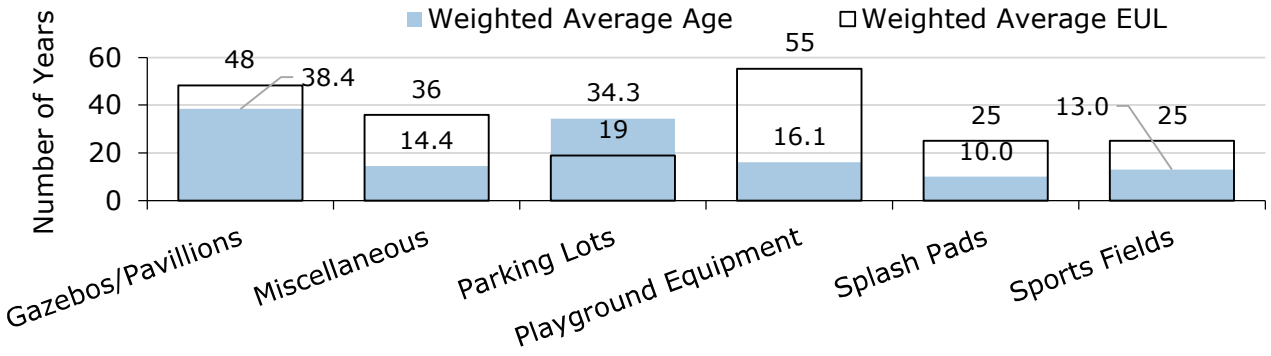
Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Gazebos/Pavilions	16,981 ft^2	$1,599,000	$32,000
Miscellaneous	10	$1,171,000	$32,000
Parking Lots	17	$2,637,000	$53,000
Playground Equipment	6	$260,000	$5,000
Splash Pads	1	$302,000	$15,000
Sports Fields	1	$412,000	$16,000
Total		**$6,381,000**	**$154,000**

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

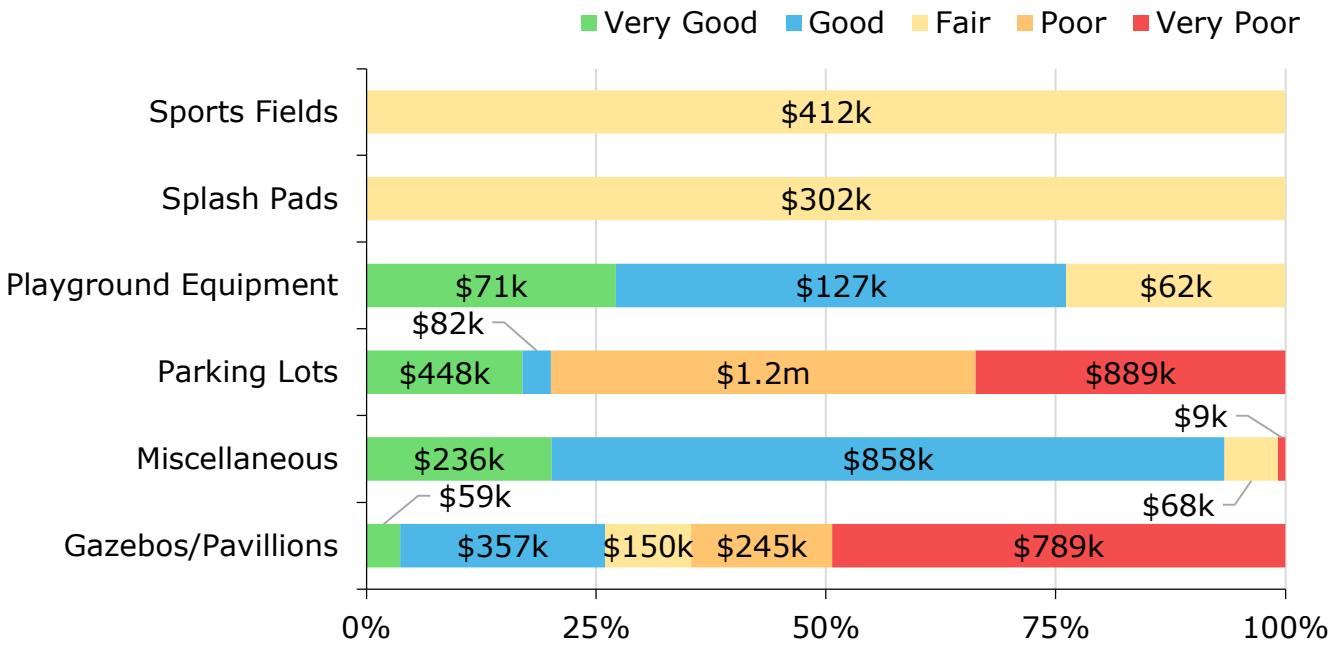
4.7.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average Condition (%) is a weighted value based on replacement cost.

Asset Segment	Weighted Average Estimated Useful Life (Years)	Weighted Average Age (Years)	Average Condition
Gazebos/Pavilions	48	38.4	Poor (31%)
Miscellaneous	36	14.4	Good (72%)
Parking Lots	19	34.3	Poor (37%)
Playground Equipment	55	16.1	Good (72%)
Splash Pads	25	10.0	Good (60%)
Sports Fields	25	13.0	Fair (56%)
Average			**Fair (45%)**



The following chart visually illustrates the average condition for each asset segment on a very good to very poor scale, which is outlined in the Current Approach to Condition Assessment section.



To ensure that the Municipality's Land Improvements continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of Land Improvements.

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

Based on asset age, available assessed condition data and estimated useful life, 26% of the Municipality's Land Improvements assets will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix B: 10-Year Capital Requirements. Service life remaining is outlined by replacement value below.

Asset Segment	Service Life Expired	0 – 5 Years Remaining	6 – 10 Years Remaining	Over 10 Years Remaining
Gazebos/Pavilions	$789k (49%)	-	-	$810k (51%)
Miscellaneous	$9k (1%)	-	-	$1.2m (99%)
Parking Lots	$295k (11%)	$391k (15%)	$203k (8%)	$1.7m (66%)
Playground Equipment	-	-	-	$260k (100%)
Splash Pads	-	-	-	$302k (100%)
Sports Fields	-	-	-	$412k (100%)
Total	**$1.1m (17%)**	**$391k (6%)**	**$203k (3%)**	**$4.7m (74%)**

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 Municipality's current approach:

- There are plans for breakdown condition assessments to be completed on the parks and recreation assets.
- Parking lots are inspected regularly to ensure that the assets are deteriorating in line with their expected useful life.

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

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40

Very Poor	0-20

4.7.3 Lifecycle Management Strategy

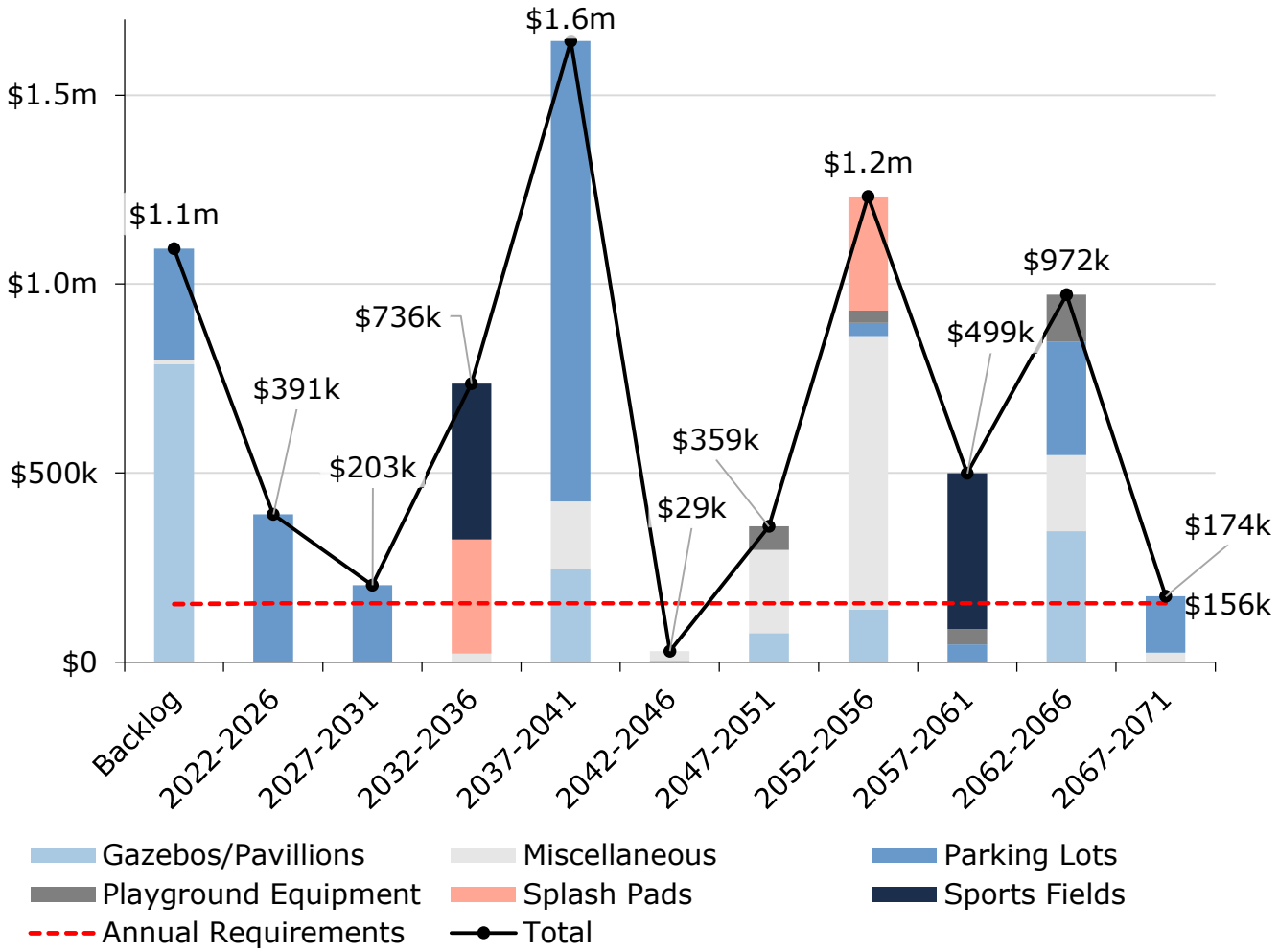
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Inspections	Seasonal and regular inspections are undergone to ensure the availability and quality of Land Improvement Assets.
Maintenance, Rehabilitation, & Replacement	The Land Improvements asset category includes several unique asset types and lifecycle requirements are dealt with on a case-by-case basis.
	Maintenance and Rehabilitation activities are conducted in line with long term planning in addition to in reaction to failure.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. The graph identifies capital requirements over the next 50 years as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



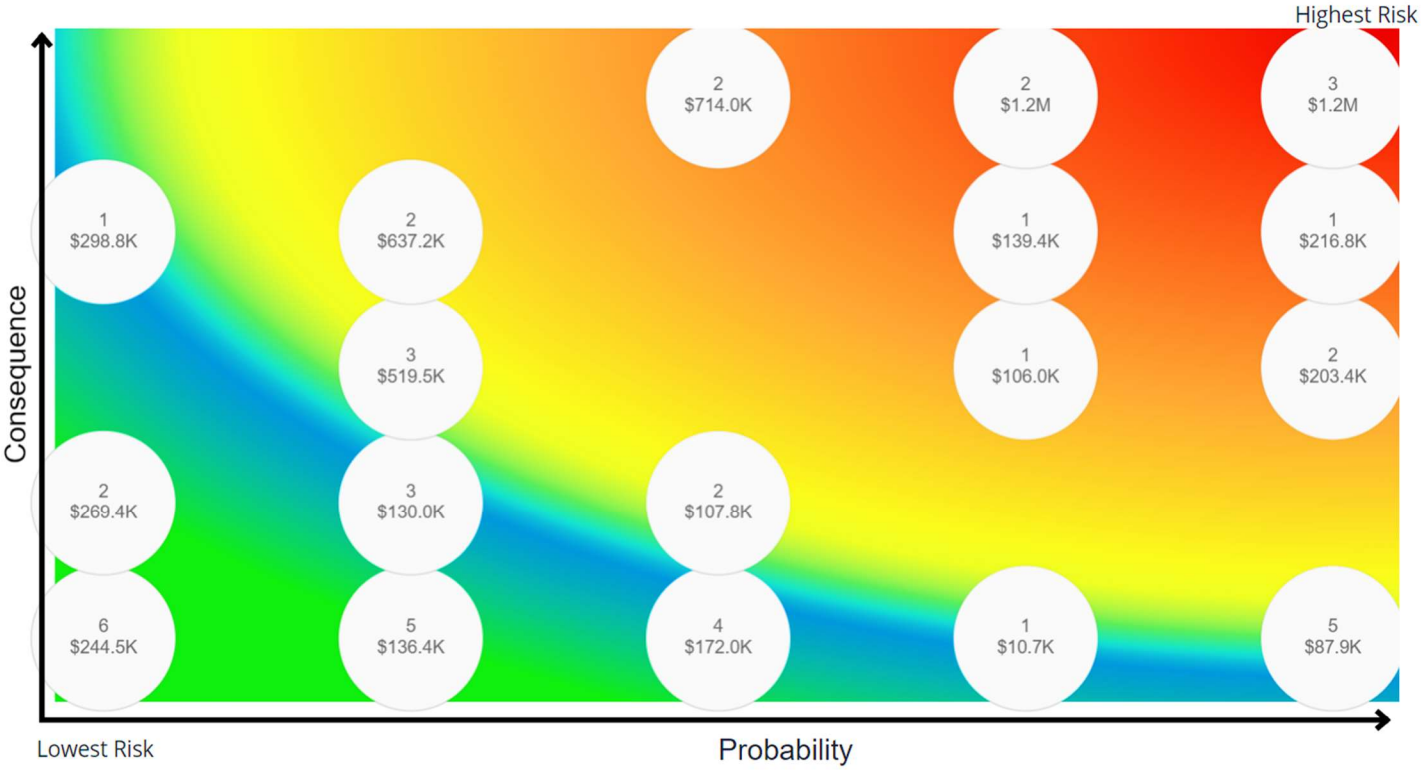
The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix B: 10-Year Capital Requirements.

4.7.4 Risk & Criticality

Risk Heatmap

The following risk heatmap provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data. See Appendix C: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

By asset count and replacement cost:



This is a high-level model developed for the purposes of this AMP and Municipality staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

Asset Segment	Average Probability of Failure	Average Consequence of Failure	Average Overall Risk Rating
Gazebos/Pavilions	3.84 / 5	4.03 / 5	16.57 / 25
Miscellaneous	1.88 / 5	2.88 / 5	5.51 / 25
Parking Lots	3.77 / 5	4.18 / 5	16.43 / 25
Playground Equipment	1.97 / 5	1.61 / 5	3.42 / 25
Splash Pads	3.00 / 5	5.00 / 5	15.00 / 25
Sports Fields	3.00 / 5	5.00 / 5	15.00 / 25
Total	**3.28 / 5**	**3.89 / 5**	**13.77 / 25**

The identification of critical assets allows the Municipality to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-

specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

Risks to Current Asset Management Strategies

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

Climate Change and Extreme Weather Events

The escalating frequency and severity of extreme weather events due to climate change impacts the lifecycle management of municipal assets like parks, playgrounds, sports fields, and landfills. Parks face challenges such as infrastructure damage from heavy rainfall and strong winds, necessitating more frequent maintenance and upgrades for safety and functionality. Extreme weather also increases risks like soil erosion and flooding, requiring restoration efforts.

4.7.5 Levels of Service

The following tables identify the Municipality's current level of service for the Land Improvements. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by the Land Improvements.

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include maps, of the land improvements that the Municipality operates and maintains	Using age-based condition, land improvement assets range are on average in Fair (43%) condition. Land improvement assets include gazebos, pavilions, parking lots, playground equipment, splash pads, signage, and sports fields. Wherever possible, assets are designed to serve a wide range of users.
Quality	Describe criteria for rehabilitation and replacement	Land improvement asset investment decisions are predominantly based on asset condition and expected future utility. Land improvement

	decisions and any related long-term forecasts	capital investment projects are identified internally identified ten (10) years in advance.

Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the Land Improvements.

Service Attribute	Technical Metric	Current LOS (2022)
Scope	Average condition of land improvement assets in the Municipality (e.g. very good, good, fair, poor, very poor)	Fair
Performance	% of land improvements in good or very good condition	35%
	% of land improvements in poor or very poor condition	49%
	Actual annual capital budget : average annual capital requirement	$15,000 : $154,000 (0.10 : 1)

4.7.6 Recommendations

Replacement Costs

- All replacement costs used in this AMP were based on the inflation of previous replacement costs where available with historical costs used otherwise. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk assets.
- Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Levels of Service

- Begin measuring current levels of service in accordance with the metrics that the Municipality has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

5 Analysis of Rate-funded Assets

Key Insights

- Rate-funded assets are valued at $308.0 million
- 56% of rate-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for rate-funded assets is approximately $6.7 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

5.1 Water System

The water services provided by the Municipality are overseen by the Environmental Services department. The department is responsible for the following:

- Water Towers
- Underground Reservoirs
- Watermains of Various Sizes and Materials
- Booster Pumping Stations
- Monitoring Control Chambers

The state of the infrastructure for the Water System is summarized in the following table:

	Condition	Financial Capacity	
$207.9 million	Fair (49%)	Annual Requirement:	$4,127,000
		Funding Available:	$2,020,000
		Annual Deficit:	$2,107,000

5.1.1 Asset Inventory & Costs

The following includes the quantity, replacement cost method, and annual capital requirements of each asset segment in the Municipality's Water System inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Booster Pumping Stations & Reservoirs	11	$35,962,000	$1,578,000
Control Chambers	16	$1,596,000	$51,000
Equipment	4	$123,000	$10,000
Rolling Stock	7	$300,000	$30,000
Water Meters	4,214	$2,197,000	$104,000
Water Towers	2 Towers	$11,259,000	$289,000
Watermains	204.2 km	$156,463,000	$2,065,000

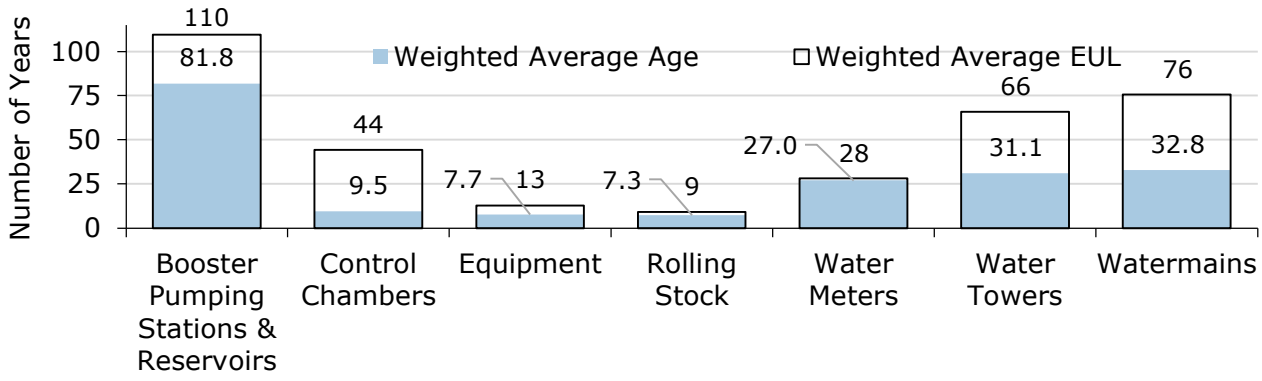
	Total	**$207,900,000**	**$4,127,000**

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

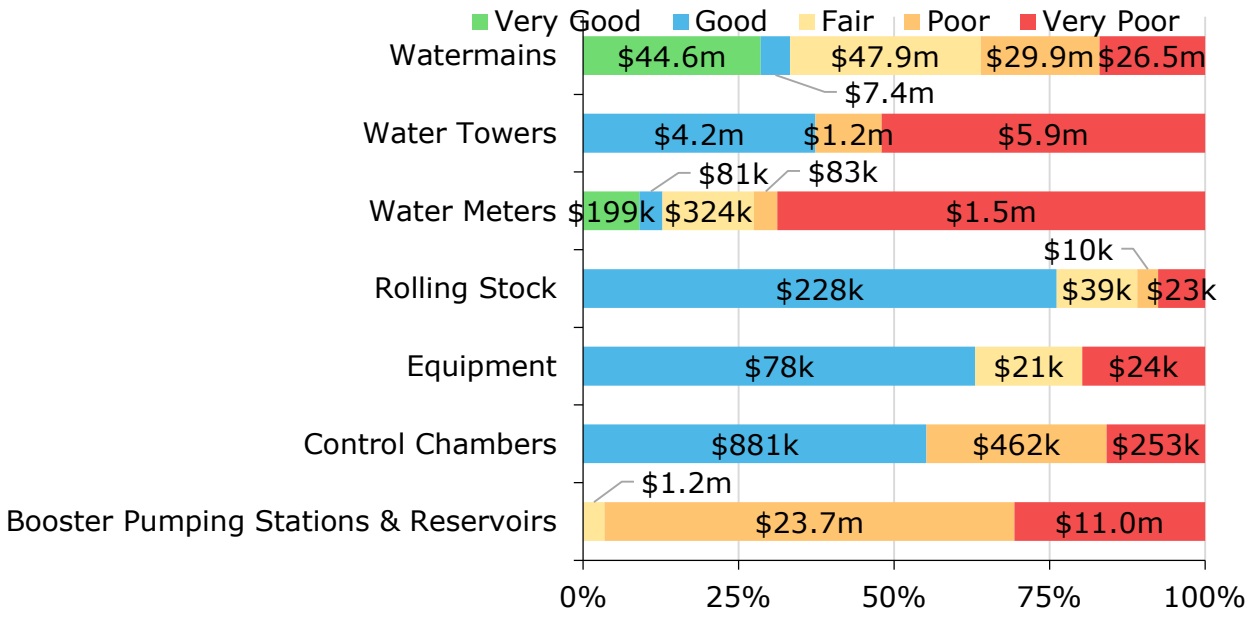
5.1.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Weighted Average Estimated Useful Life (Years)	Weighted Average Age (Years)	Average Condition
Booster Pumping Stations & Reservoirs	110	81.8	Poor (30%)
Control Chambers	44	9.5	Fair (59%)
Equipment	13	7.7	Fair (57%)
Rolling Stock	9	7.3	Good (67%)
Water Meters	28	27.0	Very Poor (19%)
Water Towers	66	31.1	Good (65%)
Watermains	76	32.8	Fair (52%)
Average			**Fair (49%)**



The following chart visually illustrates the average condition for each asset segment on a very good to very poor scale, which is outlined in the Current Approach to Condition Assessment section.



To ensure that the Municipality's Water System continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the Water System. Each asset's Estimated Useful Life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

Based on asset age, available assessed condition data and estimated useful life, 26% of the Municipality's Water System assets will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix B: 10-Year Capital Requirements. Service life remaining is outlined by replacement value below.

Asset Segment	Service Life Expired	0 – 5 Years Remaining	6 – 10 Years Remaining	Over 10 Years Remaining
Booster Pumping Stations & Reservoirs	$10.1m (28%)	$2.3m (6%)	$12.3m (34%)	$11.1m (31%)
Control Chambers	-	$446k (30%)	$32k (2%)	$1.0m (68%)
Equipment	$23k (20%)	-	$74k (63%)	$20k (17%)
Rolling Stock	$22k (8%)	$23k (8%)	$240k (84%)	-

Water Meters	$1.4m (69%)	-	$361k (17%)	$289k (14%)
Water Towers	-	$557k (5%)	$849k (8%)	$9.4m (87%)
Watermains	$5.0m (3%)	-	$17.9m (12%)	$125.3m (85%)
Total	**$16.6m (8%)**	**$3.3m (2%)**	**$31.7m (16%)**	**$147.2m (74%)**

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 Municipality's current approach:

- A full Water System assessment is completed every five years in line with updates to master plans.
- In addition, assessments are completed after maintenance activities.

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

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

5.1.3 Lifecycle Management Strategy

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

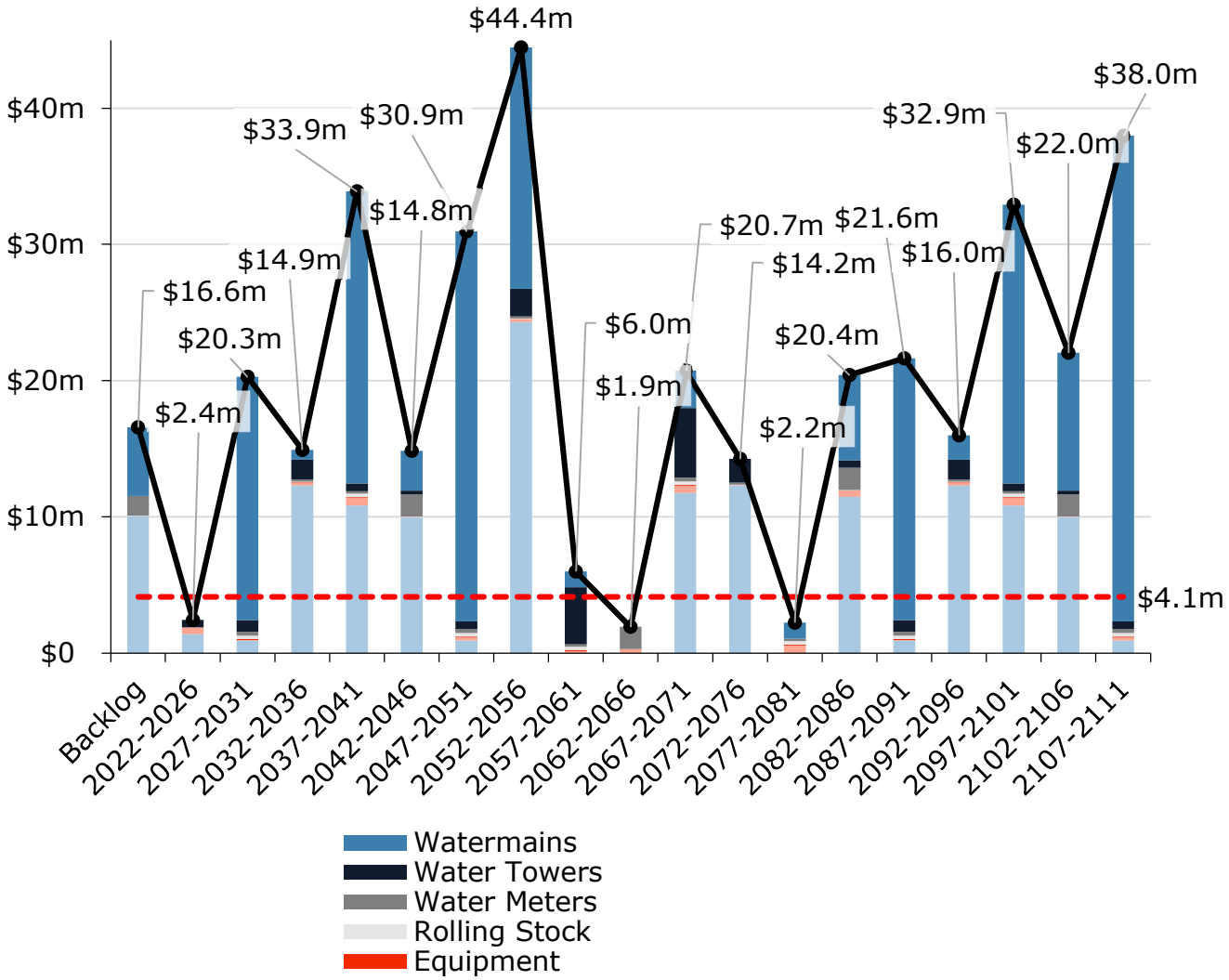
Activity Type	Description of Current Strategy

Inspection/ Maintenance	All Water System assets are inspected at a minimum every five years as part of master plan updates.
	Water towers undergo a five-year maintenance inspection cycle, report recommendations include tank cleaning, rust removal, exterior epoxy coating and repairs
	Hydrants and dead ends are flushed, and valves exercised, twice per year. Additional inspections are conducted in the winter months to protect against frost/cold caused failures.
	Water Rolling Stock assets undergo yearly safety inspections along with daily inspections during use. Additional inspections and maintenance are carried out through staff and contracted work as deemed appropriate for the activity.
	Booster stations are inspected weekly, identifying maintenance and repairs. Minor repairs identified are carried out immediately. Generators are tested monthly and generally maintenance performed annually.
	Watermain leaks are monitored continually, indicating non-revenue water and future repairs. Every identified fault results in a maintenance activity and a condition assessment. The findings of these events are fed back into the system to assist future decision-making.
Rehabilitation / Replacement	The linear system are replaced near end-of-life or when the assets are not able to sufficiently fulfill their service levels.
	Linear assets are replaced when possible, in line with colinear assets in the case of replacement on parallel Road, Sanitary Sewer, and Stormwater assets.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. The graph identifies capital requirements over the next 90 years, as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.

The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix B: 10-Year Capital Requirements.

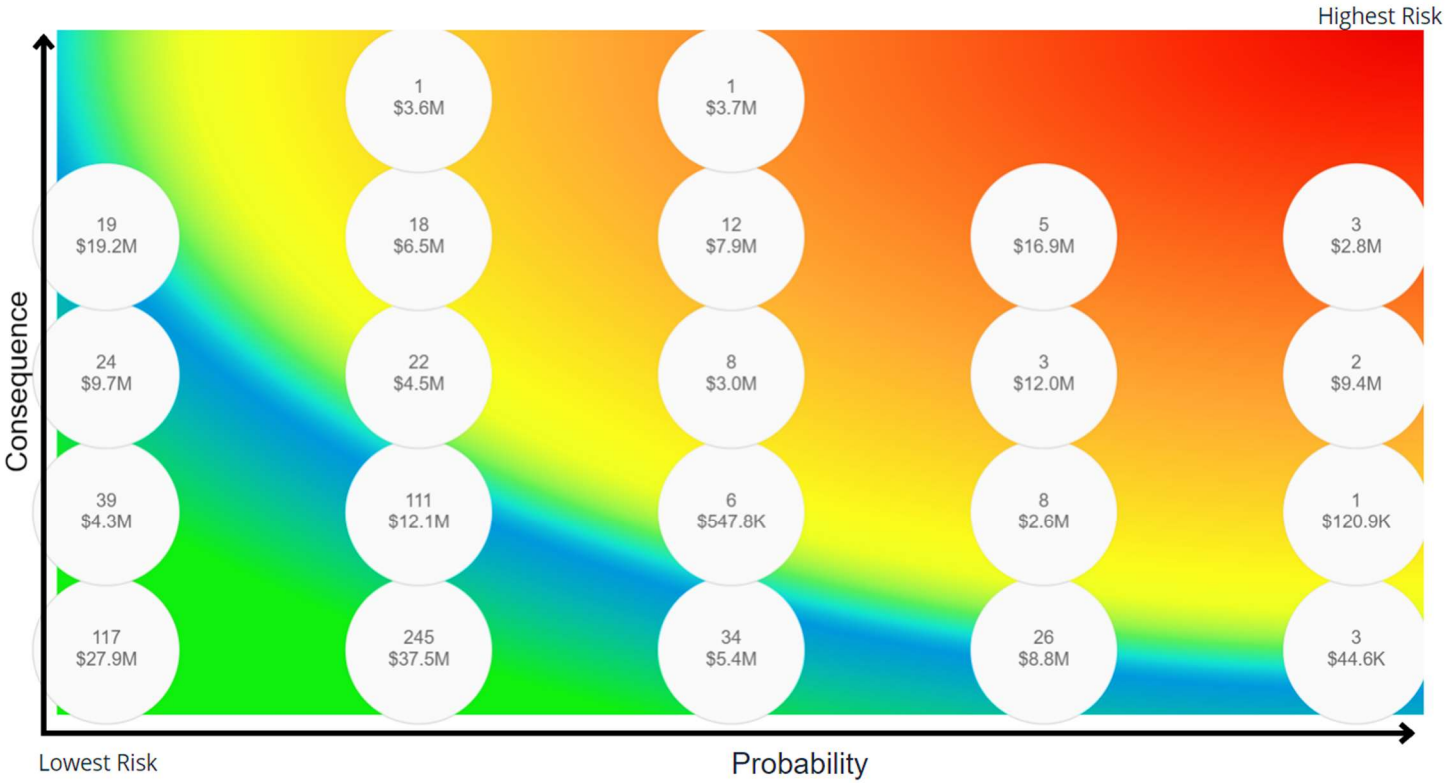


5.1.4 Risk & Criticality

Risk Heatmap

The following risk heatmap provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data. See Appendix C: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

By asset count and replacement cost:



This is a high-level model developed for the purposes of this AMP and Municipality staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

Asset Segment	Average Probability of Failure	Average Consequence of Failure	Average Overall Risk Rating
Booster Pumping Stations & Reservoirs	4.27 / 5	3.44 / 5	14.59 / 25
Control Chambers	2.51 / 5	1.91 / 5	4.72 / 25
Equipment	2.76 / 5	1.17 / 5	3.28 / 25
Rolling Stock	2.74 / 5	1.41 / 5	3.56 / 25
Water Meters	4.20 / 5	3.31 / 5	15.15 / 25
Water Towers	2.74 / 5	4.47 / 5	12.05 / 25
Watermains	2.22 / 5	2.56 / 5	5.59 / 25
Total	**2.64 / 5**	**2.82 / 5**	**7.65 / 25**

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

Risks to Current Asset Management Strategies

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

Climate Change and Extreme Weather Events

Water System networks encounter new challenges stemming from climate change, characterized by increased temperature variability and unpredictable weather patterns. These shifts may lead to harsher and more erratic winters, resulting in a higher frequency of water mains freezing. In response, the department is considering burying water mains deeper underground than the current standard to insulate them from extreme cold and prevent service interruptions and costly repairs.

Implementing such strategic adjustments necessitates meticulous planning, substantial investment, and updates to mapping and maintenance schedules. Through proactive measures to address these climate-related challenges, the department aims to ensure the continuous delivery of safe and reliable water services to the community. This approach not only mitigates potential disruptions but also enhances the overall resilience of the Water System infrastructure, preparing it for future climate uncertainties. Collaboration and support from stakeholders are crucial elements in effectively navigating these complex issues.

Staff and Organizational Cognizance/Capacity

Staffing challenges can influence service levels with the Water System. Factors such as a shortage of skilled worker applications or high turnover rates can strain existing staff, potentially causing delays in maintenance and repairs. This situation may lead to occasional disruptions in water service and longer response times for addressing issues such as leaks or water quality concerns. Additionally, having a limited number of experienced personnel can impact the department's ability to plan improvements or adapt swiftly to climate change.

Addressing these challenges involves implementing targeted recruitment efforts, retention strategies, and comprehensive training programs. By investing in human resources, the Municipality aims to maintain the department's efficiency, reliability, and capacity to meet community needs. Collaboration and support from stakeholders are crucial in effectively managing these staffing issues.

5.1.5 Levels of Service

The following tables identify the Municipality's current level of service for Water System. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by Water System.

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include maps, of the user groups or areas of the Municipality that are connected to the municipal water system	Most of South Huron's residents are connected to the municipal water system. For a detailed map of the network, refer to the Municipality's Water and Wastewater Master Plan, found online.
	Description, which may include maps, of the user groups or areas of the Municipality that have fire flow	Much of the Municipality has fire flow available. For a detailed map of the network, refer to the Municipality's Water and Wastewater Master Plan, found online.
Reliability	Description of boil water advisories and service interruptions	The Municipality has not experienced any major service interruptions in 2022. On occasion, water service interruptions may occur due to unexpected main breaks, maintenance activities, or water infrastructure replacement. Staff make

	every effort to keep service interruptions to a minimum. This is exemplified by South Huron not experiencing even a precautionary boil water advisory for the last decade.

Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the Water System.

Service Attribute	Technical Metric	Current LOS (2022)
Scope	% of properties connected to the municipal water system	90%
	% of properties where fire flow is available	81%
Reliability	# of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	0%
	# of connection-days per year where water is not available due to water main breaks compared to the total number of properties connected to the municipal water system	18
Performance	average condition of water system (e.g. very good, good, fair, poor, very poor)	Fair
	% of water system in good or very good condition	28%
	% of water system in poor or very poor condition	48%
	Actual annual capital budget: average annual capital requirement	$2.0 million : $4.1 million (0.49 : 1)

5.1.6 Recommendations

Asset Inventory

- Continue to maintain the Water System inventory.

Replacement Costs

- Gather accurate replacement costs and update on a regular basis to ensure the accuracy of capital projections.

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk Water System assets.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics that the Municipality has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

5.2 Sanitary Sewer System

The Sanitary Sewer System provided by the Municipality provides the essential service of wastewater collection, disposal, and treatment. The assets within this category include the following:

- The Wastewater Treatment Facility (WWTF) and Lagoons
- Sanitary Sewer Mains
- Pumping Stations

The state of the infrastructure for the Sanitary Sewer System is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$99.6 million	Fair (59%)	Annual Requirement:	$2,538,000
		Funding Available:	$1,217,000
		Annual Deficit:	$1,321,000

5.2.1 Asset Inventory & Costs

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Sanitary Sewer System inventory.

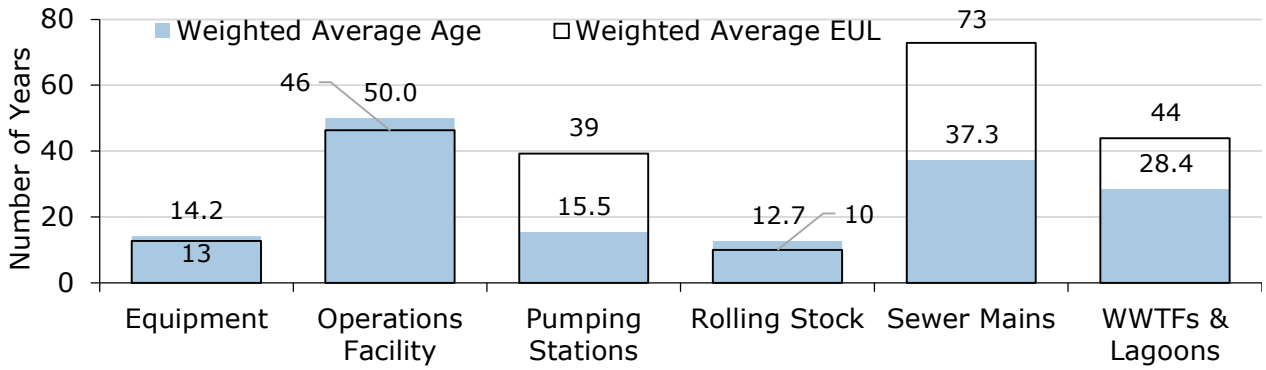
Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Equipment	2	$101,000	$8,000
Operations Facility	1 Facility	$1,318,000	$41,000
Pumping Stations	7 Stations	$14,210,000	$582,000
Rolling Stock	4	$294,000	$29,000
Sewer Mains	66.7 km	$53,028,000	$726,000
WWTFs & Lagoons	14 assets	$30,609,000	$1,152,000
Total		**$99,561,000**	**$2,538,000**

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

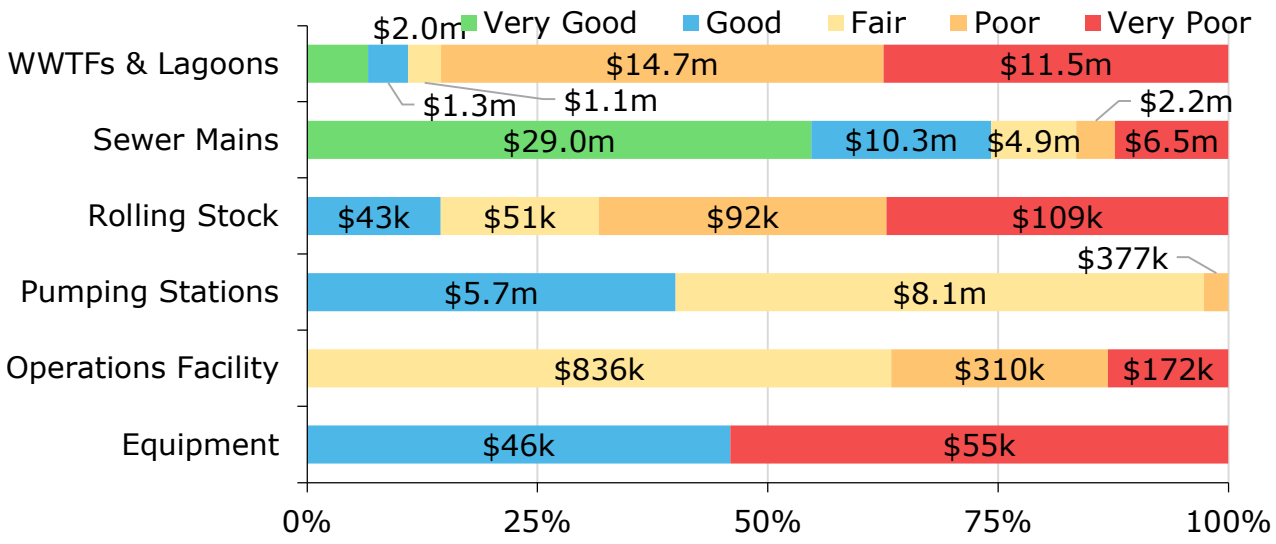
5.2.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Weighted Average Estimated Useful Life (Years)	Weighted Average Age (Years)	Average Condition (%)
Equipment	13	14.2	Poor (32%)
Operations Facility	46	50.0	Fair (55%)
Pumping Stations	39	15.5	Good (77%)
Rolling Stock	10	12.7	Poor (30%)
Sewer Mains	73	37.3	Good (71%)
WWTFs & Lagoons	44	28.4	Poor (31%)
Average			**Fair (59%)**



The following chart visually illustrates the average condition for each asset segment on a very good to very poor scale, which is outlined in the Current Approach to Condition Assessment section.



To ensure that the Municipality's Sanitary Sewer System continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the Sanitary Sewer System.

Each asset's Estimated Useful Life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

Based on asset age, available assessed condition data and estimated useful life, 28% of the Municipality's Sanitary Sewer System assets will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix B: 10-Year Capital Requirements. Service life remaining it outlined by replacement value below.

Asset Segment	Service Life Expired	0 – 5 Years Remaining	6 – 10 Years Remaining	Over 10 Years Remaining
Equipment	$55k (54%)	-	$46k (46%)	-
Operations Facility	-	-	$310k (24%)	$1.0m (76%)
Pumping Stations	-	-	$1.9m (13%)	$12.3m (87%)
Rolling Stock	$109k (37%)	$92k (31%)	$93k (32%)	-
Sewer Mains	$4.1m (8%)	$308k (1%)	$1.7m (3%)	$46.9m (88%)

WWTFs & Lagoons	$751k (2%)	$10.7m (35%)	$8.1m (26%)	$11.1m (36%)
Total	**$5.0m (5%)**	**$11.1m (11%)**	**$12.2m (12%)**	**$71.3m (72%)**

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 Municipality's current approach:

- CCTV inspections are completed for sanitary mains on a regular cycle to identify and characterise main condition.

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

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

5.2.3 Lifecycle Management Strategy

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

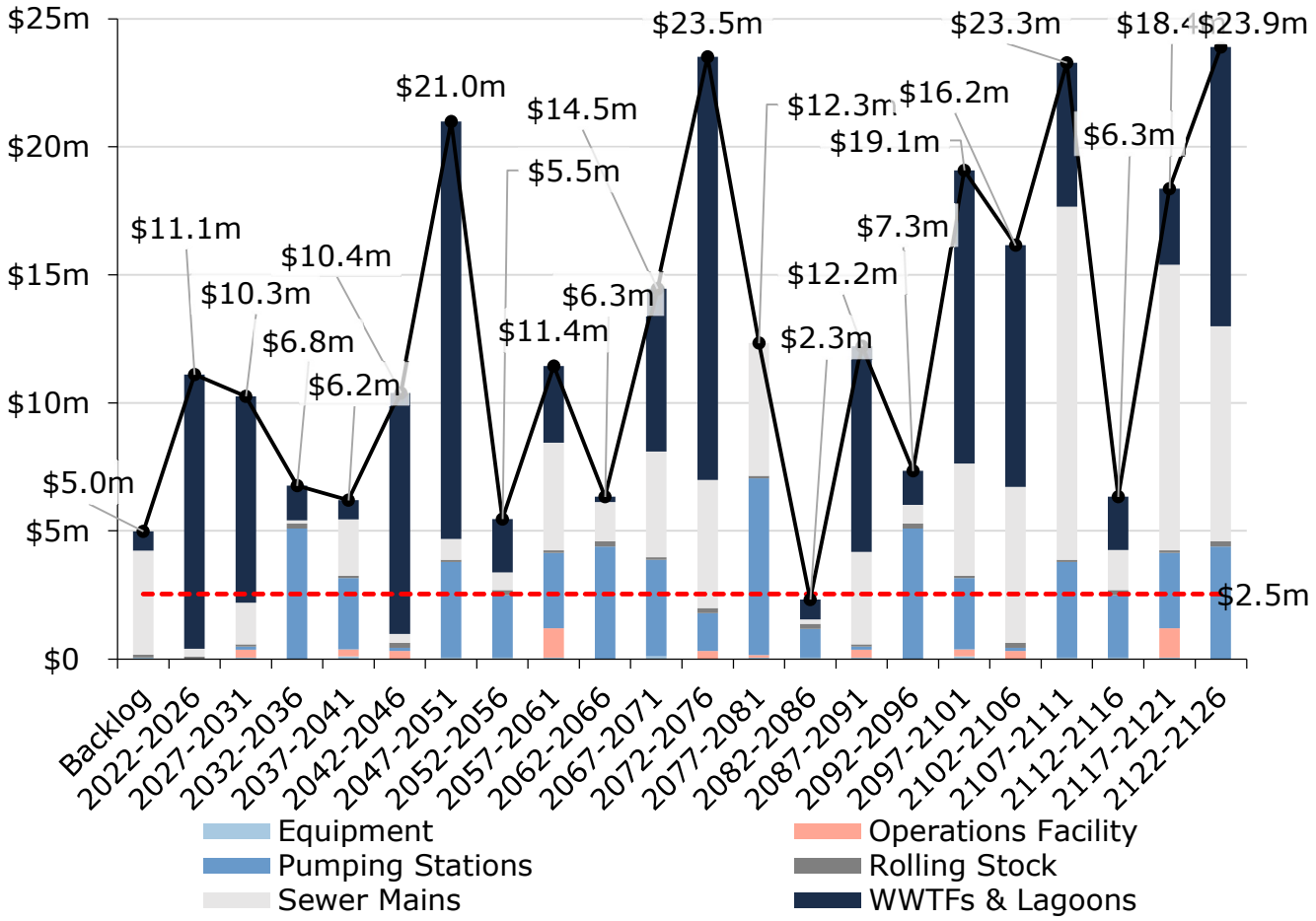
The following table outlines the Municipality's current lifecycle management strategy.

Activity Type	Description of Current Strategy

Maintenance/ Rehabilitation	Gravity mains flushed and reamed as issues are identified through CCTV inspections.
	Inflow and Infiltration monitored in Exeter, identified through analysis of flow rate to pumping stations during wet weather events.
	Blower system and aeration system rebuilt based on consultant's review.
	The Building Pumping Station has been serviced and rehabilitated as per consultants review.
	There is consistent and large investment into the efficient working of treatment facilities through process and asset management activities.
	There is ongoing maintenance, rehabilitation, and replacement of pumping station assets. This includes replacement of the William Street SPS, the rehabilitation of the Snider SPS, and the planned rehabilitation of the Huron Park SPS.
	Sand filters at the lagoons are constantly maintained. These assets can be rehabilitated as deemed necessary. Currently these assets are planned to be replaced in 2025.
Replacement	Multiple long-term capital plans of varying lengths are updated annually, identifying replacement requirements across the system. Replacement considers age, material, and service area.
	Linear assets are replaced when possible, in line with colinear assets in the case of replacement on parallel Road, Sanitary Sewer, and Stormwater assets.
	The Water and Wastewater Master Plan identifies capacity and performance requirements long-term.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 105 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



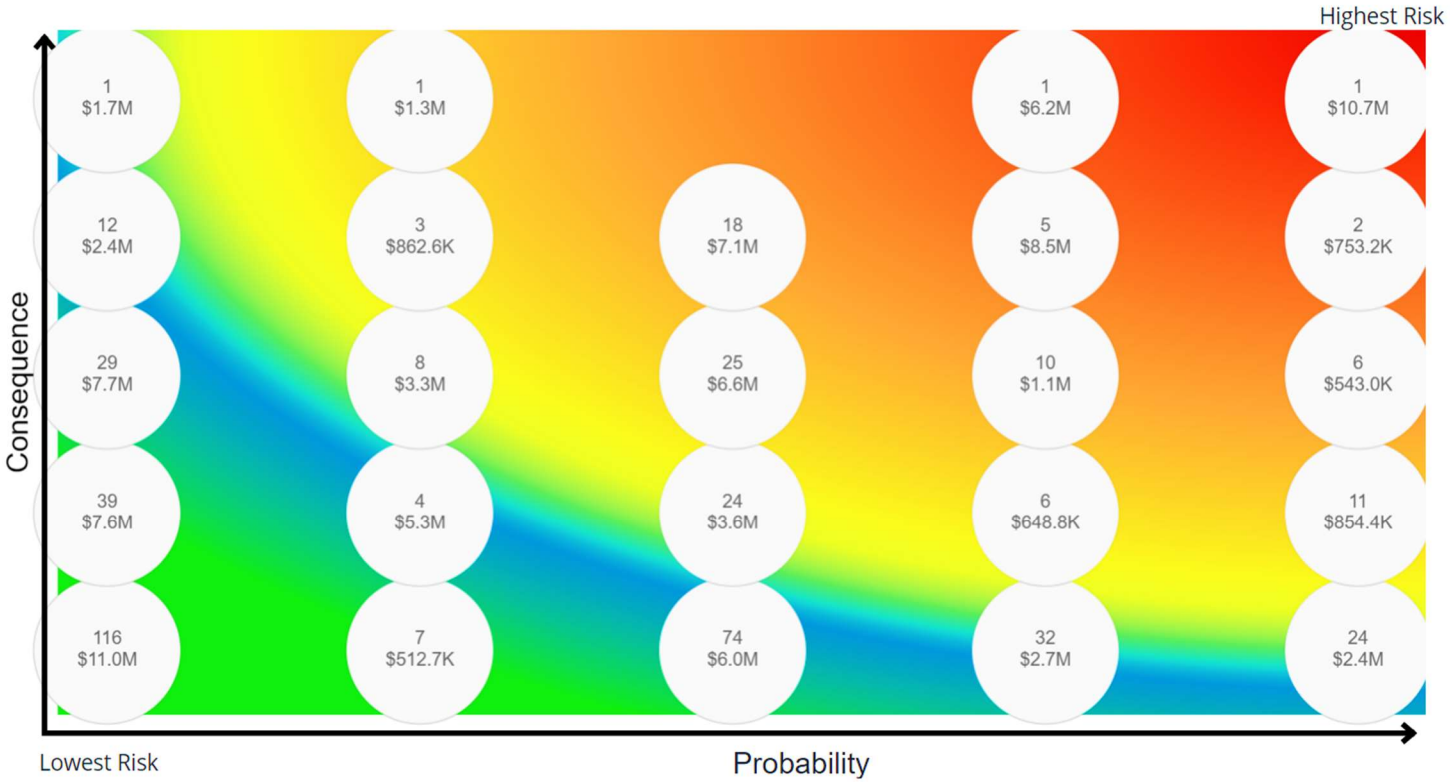
The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix B: 10-Year Capital Requirements.

5.2.4 Risk & Criticality

Risk Heatmap

The following risk heatmap provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data. See Appendix C: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

By asset count and replacement cost:



This is a high-level model developed for the purposes of this AMP and Municipality staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

Asset Segment	Average Probability of Failure	Average Consequence of Failure	Average Overall Risk Rating
Equipment	3.62 / 5	1.54 / 5	6.33 / 25
Operations Facility	3.50 / 5	1.56 / 5	5.16 / 25
Pumping Stations	2.63 / 5	3.19 / 5	8.60 / 25
Rolling Stock	4.09 / 5	1.37 / 5	5.95 / 25
Sewer Mains	2.22 / 5	2.43 / 5	5.34 / 25
WWTFs & Lagoons	4.05 / 5	4.62 / 5	18.84 / 25
Total	**2.87 / 5**	**3.20 / 5**	**9.96 / 25**

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

Risks to Current Asset Management Strategies

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

Staff and Organizational Cognizance/Capacity

The impending retirement of key personnel in the wastewater system department poses a challenge due to potential knowledge loss. To ensure continuity, the Municipality should establish a comprehensive training program for current and new staff. This program should include mentorship by retiring staff and documentation of processes and best practices. Investing in structured training and knowledge transfer will safeguard operations and maintain service standards during staff transitions.

Growth and Community Expectations

The expansion of South Huron and escalating community and environmental standards are intensifying demands on the wastewater service, necessitating adaptation to evolving requirements. With population growth, wastewater infrastructure must be strategically planned and scaled to manage higher sewage volumes while upholding stringent service quality and environmental standards. This may entail adopting new treatment technologies, modernizing current facilities, and enhancing capacity to accommodate increased loads.

Proactive measures such as thorough planning, targeted investments, and effective communication strategies are essential in addressing these challenges. By adopting a proactive stance, South Huron's wastewater service can sustain its reputation for delivering dependable and efficient services, effectively meeting the evolving needs of the community.

5.2.5 Levels of Service

The following tables identify the Municipality’s current level of service for Sanitary Sewer System. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by Sanitary Sewer System.

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include maps, of the user groups or areas of the Municipality that are connected to the municipal wastewater system	Most of South Huron's residents are connected to the municipal wastewater system. For a detailed map of the network, refer to the Municipality's Water and Wastewater Master Plan, found online.
Reliability	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes	The Municipality does not own any combined sewers
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	The Municipality does not own any combined sewers
	Description of how storm water can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	Storm water can enter into sanitary sewers due to cracks in sanitary mains or through indirect connections (e.g. weeping tiles) and through illegal connections such as sump pump connections. In the case of heavy rainfall events where storm water can enter sanitary sewers through flat roof drainage, eavestrough downspouts and foundation drains, 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

Service Attribute	Qualitative Description	Current LOS (2022)
		system can help to reduce the chance of this occurring.
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to Storm Sewer infiltration	The Municipality follows a series of design standards that integrate servicing requirements and land use considerations when constructing or replacing sanitary sewers. These standards have been determined with consideration of the minimization of sewage overflows and backups.
	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	Effluent refers to treated sewage that is discharged from a wastewater treatment plant, and may include suspended solids, total phosphorous and biological oxygen demand. The Environmental Compliance Approval (ECA) identifies the effluent criteria for municipal wastewater treatment plants.

Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the Sanitary Sewer System.

Service Attribute	Technical Metric	Current LOS (2022)
Scope	% of properties connected to the municipal wastewater system	78%
Reliability	# of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system	0%
	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	9 / 3332 (0.27%)

	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0
	Average condition of sanitary sewer system (e.g. very good, good, fair, poor, very poor)	Fair
Performance	% of sanitary sewer system in good or very good condition	49%
	% of sanitary sewer system in poor or very poor condition	36%
	Actual annual capital budget: average annual capital requirement	$1.2 million: $2.5 million (0.48: 1)

5.2.6 Recommendations

Asset Inventory

- Continue to maintain the Sanitary Sewer System inventory.

Condition Assessment Strategies

- Continue performing CCTV inspections to keep the Sanitary Sewer System assets up to date within the inventory.
- Staff review condition of sewage pumping stations and rehabilitate/upgrade as per consultants' recommendations.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Lifecycle Management Strategies

- Continue implementing the strategies outlined in the Water and Wastewater Master Plans.

- Evaluate the efficacy of the Municipality's lifecycle management strategies at regular intervals to determine the impact cost, condition and risk.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics that the Municipality has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

5.3 Waste Disposal

Waste Disposal provides an essential service to both residential and commercial areas of the Municipality. The assets within this category are in relation to the landfill site/scale house. The state of the infrastructure is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$587,000	Very Good (85%)	Annual Requirement:	$18,000
		Funding Available:	$65,000
		Annual Deficit:	$0

5.3.1 Asset Inventory & Costs

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Waste Disposal inventory.

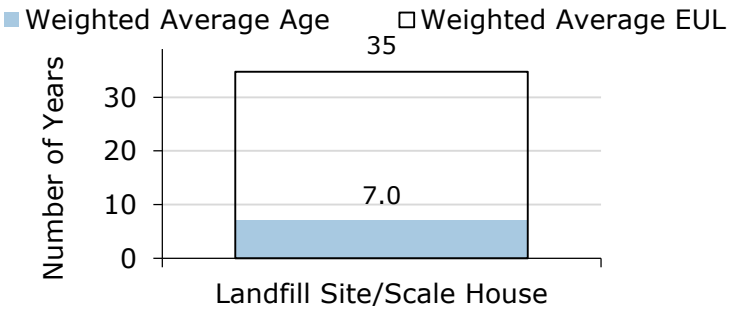
Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Landfill Site/Scale House	5 assets	$587,000	$18,000

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

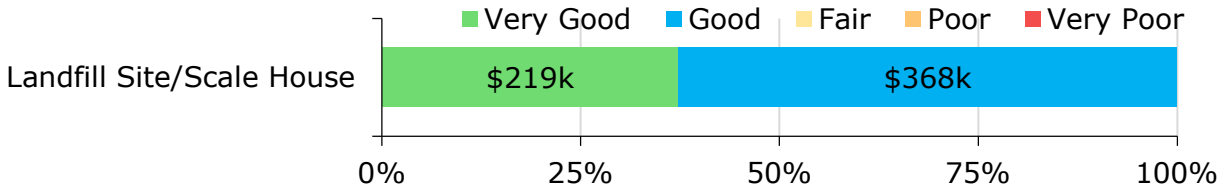
5.3.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost.

Asset Segment	Weighted Average Estimated Useful Life (Years)	Weighted Average Age (Years)	Average Condition (%)
Landfill Site/Scale House	35	7.0	85% (Very Good)



The following chart visually illustrates the average condition for each asset segment on a very good to very poor scale, which is outlined in the Current Approach to Condition Assessment section.



To ensure that the Municipality's Waste Disposal assets continue to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the Waste Disposal assets.

Each asset's Estimated Useful Life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

Based on asset age, available assessed condition data and estimated useful life, 0% of the Municipality's Waste Disposal assets will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix B: 10-Year Capital Requirements. Service life remaining it outlined by replacement value below.

Asset Segment	Service Life Expired	0 – 5 Years Remaining	6 – 10 Years Remaining	Over 10 Years Remaining
Landfill Site/Scale House	-	-	-	$587k (100%)

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.

- Waste Disposal assets are examined prior to use and any required maintenance or rehabilitation is noted at that time.
- Groundwater testing is performed in accordance with Provincial requirements.

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

Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

5.3.3 Lifecycle Management Strategy

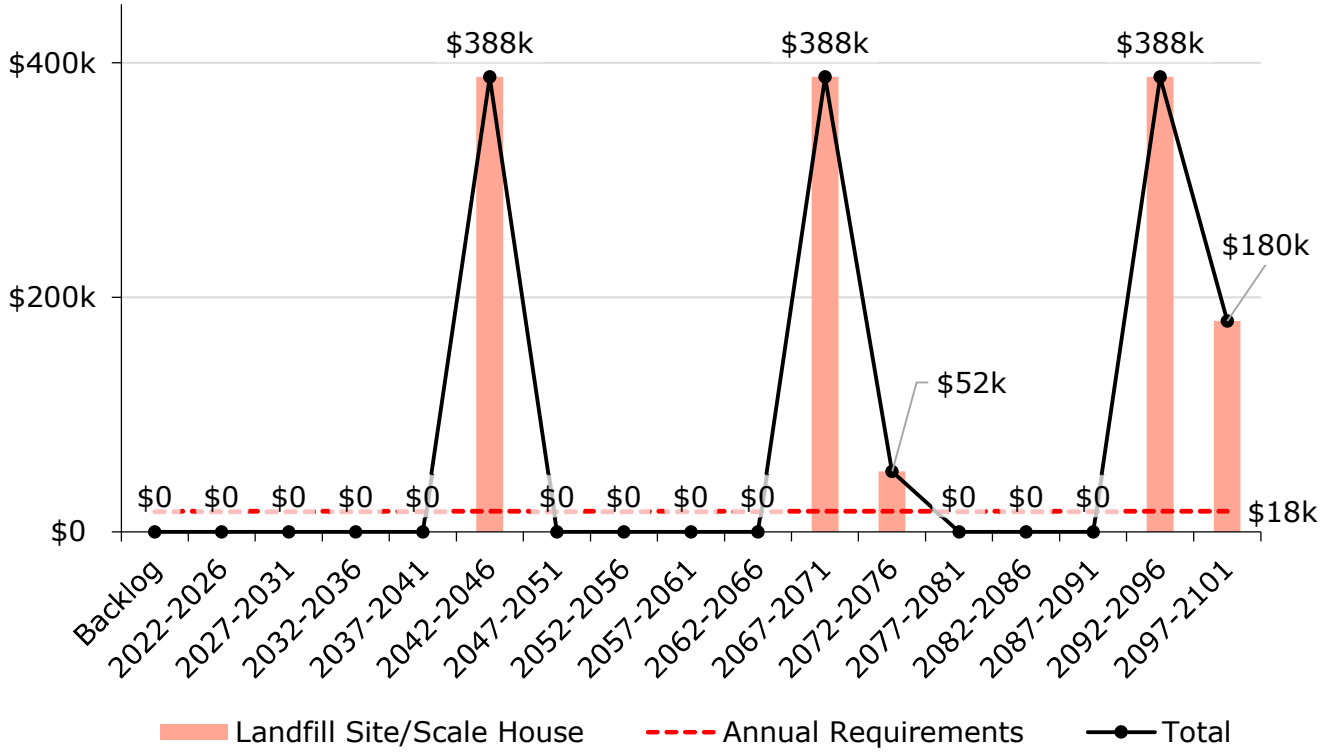
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance/ Rehabilitation	Maintenance of equipment aligns with manufacturer recommendations where applicable. Routine maintenance is performed to preserve appropriate asset operation.
	The landfill scale is maintained and calibrated on an annual basis in line with municipal and regulatory requirements.
Replacement	Assets are replaced as-needed in consideration of condition and criticality. Assets are utilized on an end-of-life basis.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 80 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix B: 10-Year Capital Requirements.

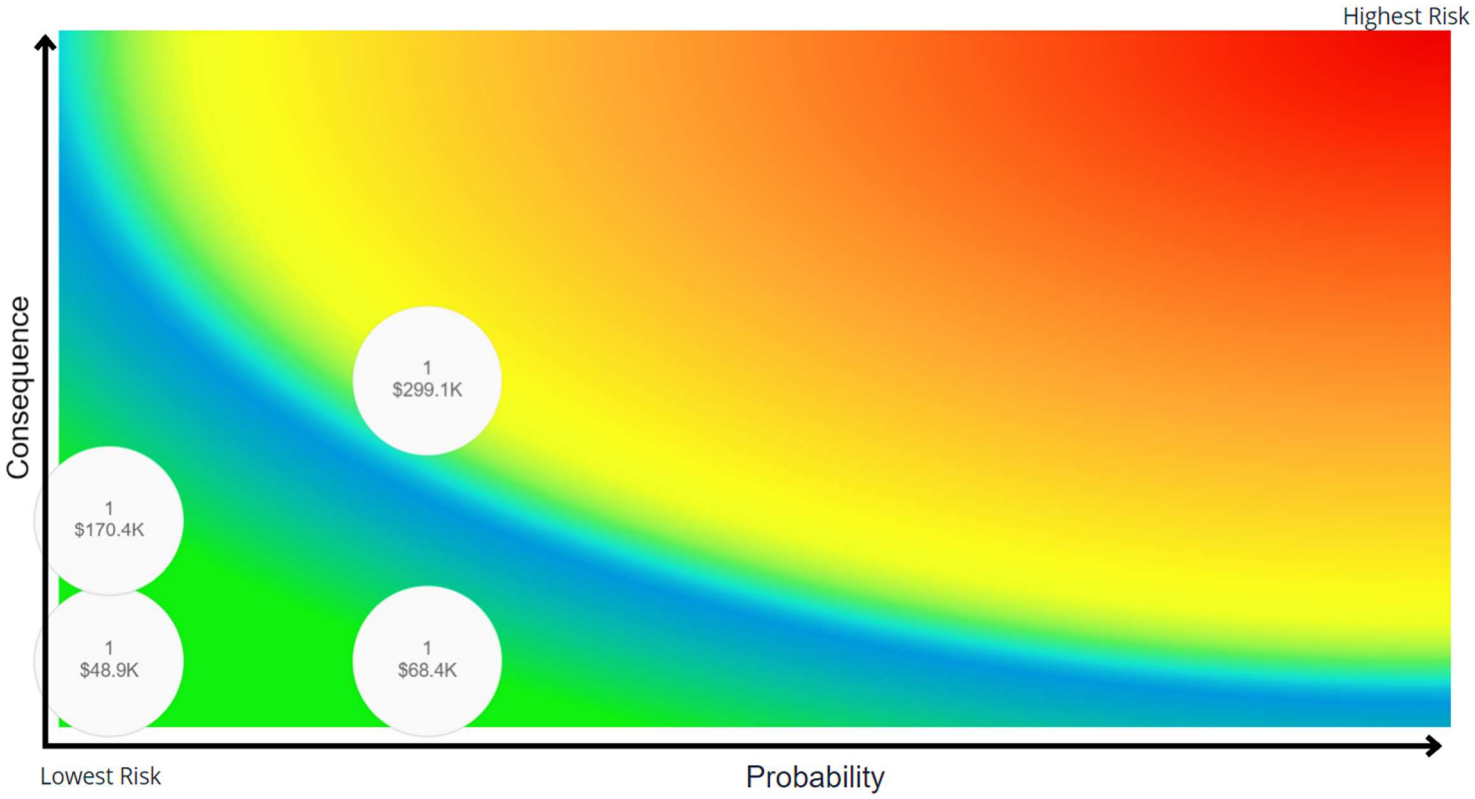
5.3.4 Risk & Criticality

Risk Heatmap

The following risk heatmap provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within

this asset category based on 2022 inventory data. See Appendix C: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

By asset count and replacement cost:



This is a high-level model developed for the purposes of this AMP and Municipality staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

Asset Segment	Average Probability of Failure	Average Consequence of Failure	Average Overall Risk Rating
Landfill Site/Scale House	1.63 / 5	2.31 / 5	3.96 / 25

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

Risks to Current Asset Management Strategies

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

Climate Change and Extreme Weather Events

The escalating frequency and severity of extreme weather events due to climate change impacts the lifecycle management of municipal assets. Exposed assets such as the scale and fencing experience the impact of climate change daily. Heavy rain and increased variability in freeze thaw cycles can wreak havoc on assets as they are pushed more and more every year. These climate impacts result in increased costs and strain on asset management. Proactive adaptation strategies and robust asset management frameworks are crucial for ensuring resilience against climate-related challenges.

5.3.5 Levels of Service

The following tables identify the Municipality's current level of service for Waste Disposal assets. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Municipality has selected for this AMP.

Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by Waste Disposal assets.

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description or images of the condition and types of waste disposal assets	Using age-based condition, assets are on average in Very Good condition (82%). Waste Disposal assets include the scale house and fencing to provide both security and public safety.
Quality	Describe criteria for rehabilitation and replacement decisions and any	Waste Disposal asset replacement and rehabilitation decisions predominantly consider asset condition/age, criticality, and legislative compliance. Ensuring the ongoing delivery of service is paramount in decision making.

	related long-term forecasts

Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by Waste Disposal assets.

Service Attribute	Technical Metric	Current LOS (2022)
Reliability	Average condition of waste disposal assets (e.g. very good, good, fair, poor, very poor)	Very Good
Performance	% of waste disposal assets in good or very good condition	100%
	% of waste disposal assets in poor or very poor condition	0%
	Actual annual capital budget: average annual capital requirement	$65,000: $18,000 (3.69: 1)

5.3.6 Recommendations

Asset Inventory

- Further componentization of some Waste Disposal assets could provide more accurate asset management planning, as estimated useful lives may vary. Additional inventory breakdown may allow for more component-based lifecycle planning.

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk Waste Disposal assets.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics that the Municipality has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

6 Impacts of Growth

Key Insights

- Understanding the key drivers of growth and demand will allow the Municipality to more effectively plan for new infrastructure, and the upgrade or disposal of existing infrastructure

- Substantial population and employment growth is expected over the next 30 years

- The costs of growth should be considered in long-term funding strategies that are designed to maintain the current level of service

6.1 Description of Growth Assumptions

The demand for infrastructure and services will change over time based on a combination of internal and external factors. Understanding the key drivers of growth and demand will allow the Municipality to more effectively plan for new infrastructure, 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.

6.1.1 South Huron Official Plan (Consolidated February 2024)

The Municipality recently consolidated its Official Plan in February 2024. The Official Plan is a planning document for the purpose of guiding the future development of the Municipality of South Huron. The Official Plan lays out the Municipalities goals for growth allocation, and the extent intensification will play a role in this. The plan indicates that growth and development will be directed first to settlement areas with full municipal sewer and water services and aims to achieve 20% of the primary settlement growth through intensification. This is to be achieved through affordable housing initiatives, investment in settlement areas, and economic growth of the Municipality.

6.2 Impact of Growth on Lifecycle Activities

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

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

7 Financial Strategy

Key Insights

- The Municipality is committing approximately $6,834,000 towards capital projects per year from sustainable revenue sources

- Given the annual capital requirement of $14,321,000, there is currently a funding gap of $7,487,000 annually

- For tax-funded assets, we recommend increasing tax revenues by 1.5% each year for the next 20 years to achieve a sustainable level of funding

- For the Sanitary Sewer System, we recommend increasing rate revenues by 1.7% annually to account for asset management needs for the next 15 years to achieve a sustainable level of funding. A rate review is currently underway by the Municipality.

- For the Water System, we recommend increasing rate revenues by 2.0% annually for the next 15 years to achieve a sustainable level of funding for asset management.

- For Waste Disposal, we recommend maintaining current rate revenues with regard to asset management, rate adjustment may be necessary for other factors.

7.1 Financial Strategy Overview

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

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

1. The financial requirements for:
    a. Existing assets
    b. Existing service levels
    c. Requirements of contemplated changes in service levels (none identified for this plan)
    d. Requirements of anticipated growth (none identified for this plan)
2. Use of traditional sources of municipal funds:[10]
    a. Tax levies
    b. User fees
    c. Reserves
    d. Debt
3. Use of non-traditional sources of municipal funds:
    a. Reallocated budgets
    b. Partnerships
    c. Procurement methods
4. Use of Senior Government Funds:
    a. Gas tax
    b. Annual grants

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

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

[10] The traditional funding sources modeled without consideration for growth or change in policies.

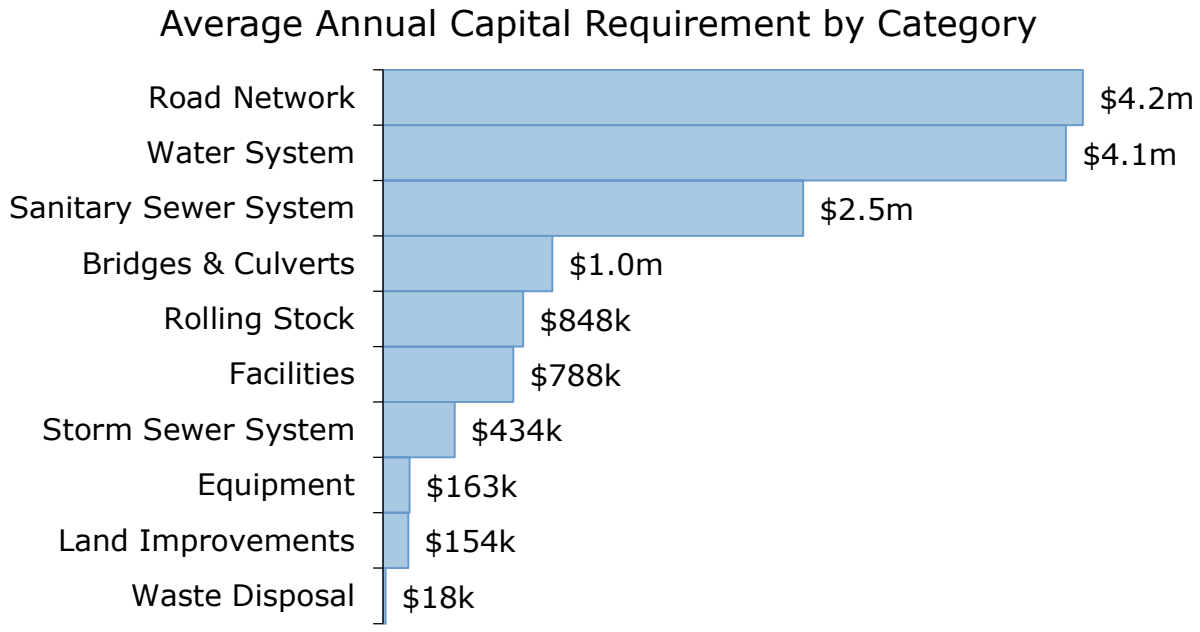
managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Municipality's approach to the following:

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

7.1.1 Annual Requirements & Capital Funding

Annual Requirements

The annual requirements represent the amount the Municipality should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs and achieve long-term sustainability. In total, the Municipality must allocate approximately $14.3 million annually to address capital requirements for the assets included in this AMP.



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

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

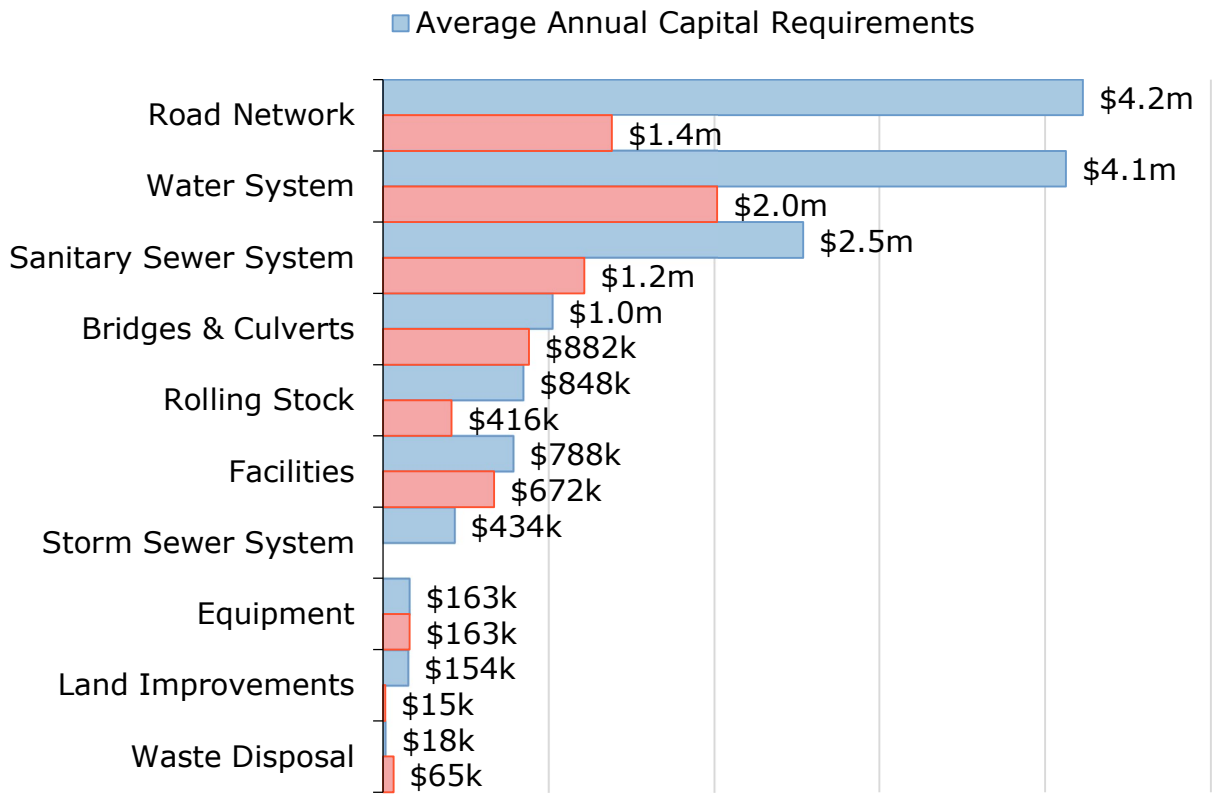
1. **Replacement Only Scenario**: Based on the assumption that assets deteriorate and – without regularly scheduled maintenance and rehabilitation – are replaced at the end of their service life.
2. **Lifecycle Strategy Scenario**: Based on the assumption that lifecycle activities are performed at strategic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

Asset Category	Annual Requirements (Replacement Only)	Annual Requirements (Lifecycle Strategy)	Difference
Road Network	$9,193,000	$4,228,000	$4,965,000

The implementation of a proactive lifecycle strategy for roads leads to a potential annual cost avoidance of $4,965,000 for the Road Network. This represents an overall reduction of the Road Network annual requirements by 54%. As the lifecycle strategy scenario represents the lowest cost option available to the Municipality, we have used this annual requirement in the development of the financial strategy.

Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Municipality is committing approximately $6,834,000 towards capital projects per year from sustainable revenue sources. Given the annual capital requirement of $14,321,000, there is currently a funding gap of $7,487,000 annually.



7.2 Funding Objective

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

1. **Tax Funded Assets:** Road Network, Bridges & Culverts, Storm Sewer System, Facilities, Rolling Stock, Equipment, Land Improvements
2. **Rate-Funded Assets:** Water System, Sanitary Sewer System, Waste Disposal

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

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

7.3 Financial Profile: Tax Funded Assets

7.3.1 Current Funding Position

The following tables show, by asset category, South Huron'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 Requirement	Annual Funding Available				Annual Deficit
		Taxes	CCBF	OCIF	Total Available	
Road Network	$4,228,000	$921,000	$276,000	$186,000	$1,383,000	$2,844,000
Bridges & Culverts	$1,024,000	$420,000	$276,000	$186,000	$882,000	$141,000
Facilities	$788,000	$672,000			$672,000	$116,000
Land Improvements	$154,000	$15,000			$15,000	$139,000
Equipment	$163,000	$163,000			$163,000	-
Rolling Stock	$848,000	$416,000			$416,000	$432,000
Storm Sewer System	$434,000				-	$434,000
	$7,639,000	$2,607,000	$553,000	$372,000	$3,532,000	$4,107,000

The average annual investment requirement for the above categories is $7,639,000. Annual revenue currently allocated to these assets for capital purposes is $3,532,000 leaving an annual deficit of $4,107,000. Put differently, these infrastructure categories are currently funded at 46.2% of their long-term requirements.

7.3.2 Full Funding Requirements

In 2022, Municipality of South Huron has annual tax revenues of $11,166,000. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

Asset Category	Tax Change Required for Full Funding
Road Network	25.5%
Bridges & Culverts	1.3%
Facilities	1.0%
Land Improvements	1.2%
Equipment	0.0%
Rolling Stock	3.9%
Storm Sewer System	3.9%
	32.9%

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

a) South Huron's debt payments for these asset categories will be decreasing by $8,000 over the next 15 years.

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

	Without Capturing Changes				With Capturing Changes			
	5 Years	**10 Years**	**15 Years**	**20 Years**	**5 Years**	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	$4,107,000	$4,107,000	$4,107,000	$4,107,000	$4,107,000	$4,107,000	$4,107,000	$4,107,000
Change in Debt Costs	N/A	N/A	N/A	N/A	N/A	N/A	($8,000)	($8,000)
Change in OCIF Grants	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Resulting Infrastructure Deficit	$4,107,000	$4,107,000	$4,107,000	$4,107,000	$4,107,000	$4,107,000	$4,098,000	$4,098,000
Tax Increase Required	36.8%	36.8%	36.8%	36.8%	36.8%	36.8%	36.7%	36.7%
Annually	**6.5%**	**3.2%**	**2.2%**	**1.6%**	**6.5%**	**3.2%**	**2.2%**	**1.6%**

7.3.3 Financial Strategy Recommendations

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

a) when realized, reallocating the debt cost reductions of $8,000 to the infrastructure deficit as outlined above.
b) increasing tax revenues by 1.6% each year for the next 20 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
c) allocating the current CCBF and OCIF revenue as outlined in section 7.3.1.
d) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included OCIF formula-based funding, if applicable, since this funding is a multi-year commitment[11].
2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.

Although this option achieves full funding on an annual basis in 20 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of $8.6 million. This consists of $3.9 million for the Storm Sewer System, $2.5 million for Rolling Stock, $1.1 million for Land Improvements, $572,000 for the Road Network, $318,000 for Facilities, and $197,000 for Equipment.

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.

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

7.4 Financial Profile: Rate Funded Assets

7.4.1 Current Funding Position

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

Asset Category	Avg. Annual Requirement	Annual Funding Available			Annual Deficit
		Rates Allocated to Capital	OCIF	Total Available	
Water System	$4,127,000	$2,020,000		$2,020,000	$2,107,000
Sanitary Sewer System	$2,538,000	$1,217,000		$1,217,000	$1,321,000
Waste Disposal	$18,000	$65,000		$65,000	- -
	$6,683,000	$3,302,000		$3,302,000	$3,381,000

The average annual investment requirement for the above categories is $6,683,000. Annual revenue currently allocated to these assets for capital purposes is $3,302,000 leaving an annual deficit of $3,381,000. Put differently, these infrastructure categories are currently funded at 49.4% of their long-term requirements.

7.4.2 Full Funding Requirements

In 2022, South Huron had annual sanitary revenues of approximately $2.5 million and annual water revenues of $4.4 million. Waste disposal generated approximately $1.4 million in revenues. As illustrated in the table below, without consideration of any other sources of revenue, full funding would require the following changes over time:

Asset Category	Rate Change Required for Full Funding
Water System	47.9%
Sanitary Sewer System	52.0%

Waste Disposal	0%

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

Water System								
	Without Capturing Changes				With Capturing Changes			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	$2,107,000	$2,107,000	$2,107,000	$2,107,000	$2,107,000	$2,107,000	$2,107,000	$2,107,000
Change in Debt Costs	N/A	N/A	N/A	N/A	($26,000)	($212,000)	($596,000)	($596,000)
Resulting Infrastructure Deficit	$2,107,000	$2,107,000	$2,107,000	$2,107,000	$2,080,000	$1,894,000	$1,511,000	$1,511,000
Rate Increase Required	47.9%	47.9%	47.9%	47.9%	47.3%	43.0%	34.3%	34.3%
Annually	**8.2%**	**4.0%**	**2.7%**	**2.0%**	**8.1%**	**3.7%**	**2.0%**	**1.5%**

Sanitary Sewer System								
	Without Capturing Changes				With Capturing Changes			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	$1,321,000	$1,321,000	$1,321,000	$1,321,000	$1,321,000	$1,321,000	$1,321,000	$1,321,000
Change in Debt Costs	N/A	N/A	N/A	N/A	($26,000)	($212,000)	($596,000)	($596,000)
Resulting Infrastructure Deficit	$1,321,000	$1,321,000	$1,321,000	$1,321,000	$1,295,000	$1,109,000	$726,000	$726,000
Rate Increase Required	52.0%	52.0%	52.0%	52.0%	51.0%	43.7%	28.6%	28.6%
Annually	**8.8%**	**4.3%**	**2.9%**	**2.2%**	**8.6%**	**3.7%**	**1.7%**	**1.3%**

Waste Disposal				
	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	-	-	-	-
Change in Debt Costs	N/A	N/A	N/A	N/A

Resulting Infrastructure Deficit	-	-	-	-
Rate Increase Required	-	-	-	-
Annually	**-**	**-**	**-**	**-**

7.4.3 Financial Strategy Recommendations

Considering all of the above information, we recommend the 15-year option that includes debt cost reallocations. This involves full funding being achieved over 15 years by:

a) when realized, reallocating the debt cost reductions to the infrastructure deficit as outlined above.
b) increasing rate revenues by 1.7% for the Sanitary Sewer System and 2.0% for the Water System each year for the next 15 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP. Waste Disposal rates can remain at the current funding level.
c) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

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

Although this option achieves full funding on an annual basis in 15 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of $21.5 million. This consists of $16.6 million for the Water System and $5.0 million for the Sanitary Sewer System.

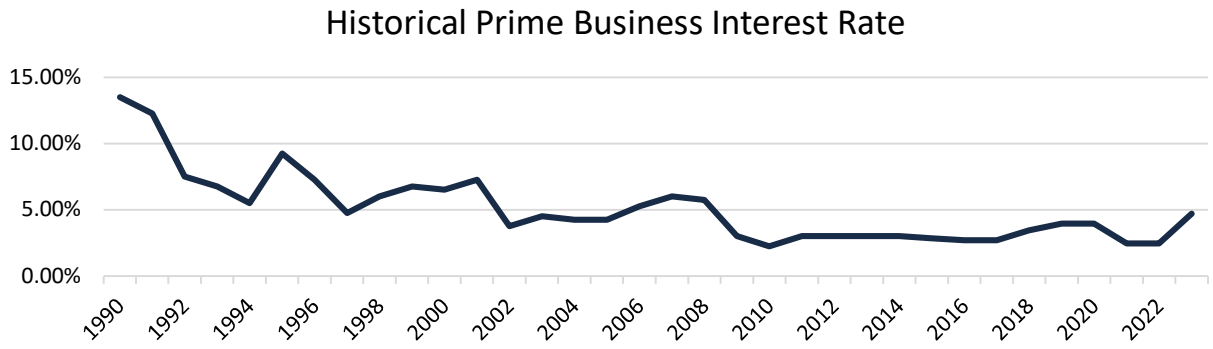
Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

7.5 Use of Debt

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

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

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



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

For reference purposes, the following table outlines the premium paid on a project if financed by debt. For example, a $1 million project financed at 3.0%[12] over 15 years would result in a 26% premium or $260 thousand of increased costs due to interest payments. For simplicity, the table does not consider the time value of money or the effect of inflation on delayed projects.

Interest Rate	Number of Years Financed					
	5	**10**	**15**	**20**	**25**	**30**
7.0%	22%	42%	65%	89%	115%	142%

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

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

The following tables outline how South Huron has historically used debt for investing in the asset categories as listed. There is $22,587,000 of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of $2,029,000, well within its provincially prescribed maximum of $3,629,000.

Asset Category	Current Debt Outstanding	Use of Debt in the Last Five Years				
		2019	2020	2021	2022	2023
Facilities	$8,530,000	$3,756,000	$3,471,000	$3,178,000	$6,783,000	$8,530,000
Total Tax Funded:[13]	**$8,530,000**	**$3,756,000**	**$3,471,000**	**$3,178,000**	**$6,783,000**	**$8,530,000**
Water System	$7,028,000	$8,695,000	$8,308,000	$7,902,000	$7,476,000	$7,028,000
Sanitary Sewer System	$7,028,000	$8,695,000	$8,308,000	$7,902,000	$7,476,000	$7,028,000
Total Rate Funded:	**$14,056,000**	**$17,391,000**	**$16,617,000**	**$15,804,000**	**$14,951,000**	**$14,056,000**

Asset Category	Principal & Interest Payments in the Next Ten Years						
	2023	2024	2025	2026	2027	2028	2033

[13] Due to the diverse nature of non-core asset groups, the assets are indicated to be tax levy-funded but may be funded by user rates dependent on the service they enable.

Facilities	$401,000	$638,000	$624,000	$624,000	$624,000	$624,000	$624,000
Total Tax Funded:	**$401,000**	**$638,000**	**$624,000**	**$624,000**	**$624,000**	**$624,000**	**$624,000**
Water System	$814,000	$801,000	$788,000	$788,000	$788,000	$788,000	$602,000
Sanitary Sewer System	$814,000	$801,000	$788,000	$788,000	$788,000	$788,000	$602,000
Total Rate Funded:	**$1,628,000**	**$1,601,000**	**$1,575,000**	**$1,575,000**	**$1,575,000**	**$1,575,000**	**$1,203,000**

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

7.6 Use of Reserves

7.6.1 Available Reserves

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

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

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

Asset Category	Balance on December 31, 2022
Bridges & Culverts	$2,136,000
Facilities	$1,575,000
Equipment	$558,000
Road Network	$3,317,000
Rolling Stock	$1,899,000
Parks	$35,000
Total Tax Funded:	**$9,521,000**
Water System	$3,302,000
Sanitary Sewer System	$123,000

Waste Disposal	$34,000
Total Rate Funded:	**$3,459,000**

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

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

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

7.6.2 Recommendation

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

Appendices

Key Insights

- Appendix A includes a one-page report card with an overview of key data from each asset category
- Appendix B identifies projected 10-year capital requirements for each asset category
- Appendix C identifies the criteria used to calculate risk for each asset category
- Appendix D provides additional guidance on the development of a condition assessment program

Appendix A: Infrastructure Report Card

Asset Category	Replacement Cost (millions)	Asset Condition	Financial Capacity	
Road Network	$204.3	Good (68%)	Annual Requirement:	$4,228,000
			Funding Available:	$1,383,000
			Annual Deficit:	**$2,844,000**
Bridges & Culverts	$73.7	Good (62%)	Annual Requirement:	$1,024,000
			Funding Available:	$882,000
			Annual Deficit:	**$141,000**
Facilities	$28.0	Fair (43%)	Annual Requirement:	$788,000
			Funding Available:	$672,000
			Annual Deficit:	**$116,000**
Land Improvements	$6.4	Fair (45%)	Annual Requirement:	$154,000
			Funding Available:	$15,000
			Annual Deficit:	**$139,000**
Equipment	$1.4	Fair (58%)	Annual Requirement:	$163,000
			Funding Available:	$163,000
			Annual Deficit:	**-**
Rolling Stock	$14.2	Fair (47%)	Annual Requirement:	$848,000
			Funding Available:	$416,000
			Annual Deficit:	**$432,000**
Water System	$207.9	Fair (49%)	Annual Requirement:	$4,127,000
			Funding Available:	$2,020,000
			Annual Deficit:	**$2,107,000**
Sanitary Sewer System	$99.6	Fair (59%)	Annual Requirement:	$2,538,000
			Funding Available:	$1,217,000
			Annual Deficit:	**$1,321,000**

Storm Sewer System	$32.5	Good (65%)	Annual Requirement:	$434,000
			Funding Available:	-
			Annual Deficit:	**$434,000**
Waste Disposal	$0.6	Very Good (85%)	Annual Requirement:	$18,000
			Funding Available:	$65,000
			Annual Deficit:	**-**
Overall	**$668.6**	**Fair (57%)**	Annual Requirement:	$14,321,000
			Funding Available:	$6,834,000
			Annual Deficit:	**$7,487,000**

Appendix B: 10-Year Capital Requirements

The following tables identify the capital cost requirements for each of the next 10 years in order to meet projected capital requirements and maintain the current level of service.

Road Network											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Paved Roads (HCB 1 Lift)	$106k	$2.0m	$663k	$474k	$3.4m	$5.0m	$1.7m	$261k	$10.9m	$313k	$9.7m
Paved Roads (HCB 2 Lifts)	$0	$0	$408k	$0	$0	$0	$1.1m	$414k	$0	$537k	$408k
Paved Roads (LCB)	$10k	$10k	$0	$0	$0	$0	$0	$0	$0	$0	$0
Streetlights - Fixtures	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Streetlights - Poles	$409k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Traffic Signals	$47k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$572k	**$2.0m**	**$1.1m**	**$474k**	**$3.4m**	**$5.0m**	**$2.8m**	**$675k**	**$10.9m**	**$850k**	**$10.1m**

Bridges & Culverts											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Bridges	$0	$0	$980k	$0	$1.4m	$65k	$0	$0	$0	$440k	$0
Culverts	$0	$0	$0	$0	$6.0m	$0	$0	$0	$0	$5.4m	$0
	$0	**$0**	**$980k**	**$0**	**$7.4m**	**$65k**	**$0**	**$0**	**$0**	**$5.9m**	**$0**

Storm Sewer System											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Retention Ponds	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Storm Mains	$3.9m	$0	$367k	$0	$0	$0	$0	$0	$0	$0	$0
	$3.9m	**$0**	**$367k**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Facilities											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Cemetery	$155k	$0	$0	$0	$0	$0	$0	$28k	$0	$0	$0
Community Centres	$0	$0	$0	$0	$0	$0	$0	$81k	$107k	$0	$0
Fire Halls	$0	$0	$0	$0	$18k	$0	$33k	$0	$257k	$64k	$0
Operations Facilities	$0	$0	$0	$0	$0	$0	$0	$43k	$0	$149k	$0
Recreation Facilities	$163k	$233k	$0	$22k	$221k	$4.0m	$222k	$0	$4.0m	$0	$0
Town Hall	$0	$0	$0	$0	$0	$0	$17k	$0	$0	$0	$0
	$318k	**$233k**	**$0**	**$22k**	**$239k**	**$4.0m**	**$272k**	**$151k**	**$4.4m**	**$213k**	**$0**

Equipment											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
General Government	$128k	$0	$9k	$0	$41k	$30k	$57k	$49k	$0	$30k	$41k
Protection Services	$43k	$69k	$0	$20k	$12k	$61k	$31k	$35k	$111k	$49k	$30k
Recreation	$26k	$8k	$0	$0	$23k	$0	$8k	$0	$0	$21k	$0

Transportation	$0	$42k	$10k	$21k	$17k	$0	$120k	$10k	$21k	$17k	$0
	$197k	**$120k**	**$19k**	**$41k**	**$92k**	**$91k**	**$216k**	**$95k**	**$132k**	**$117k**	**$70k**

Rolling Stock

Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Fire Vehicles	$700k	$0	$0	$0	$0	$1.4m	$0	$0	$0	$257k	$700k
Heavy Duty Trucks (>1 ton)	$1.5m	$0	$0	$0	$0	$84k	$0	$424k	$0	$0	$176k
Heavy Machinery	$142k	$165k	$165k	$0	$0	$1.1m	$0	$0	$0	$368k	$165k
Light Duty Trucks (<1 ton)	$0	$112k	$0	$48k	$0	$0	$65k	$49k	$50k	$171k	$98k
Tractors	$97k	$33k	$0	$16k	$31k	$0	$89k	$49k	$202k	$31k	$54k
Trailers	$14k	$0	$0	$0	$0	$14k	$0	$11k	$0	$14k	$0
	$2.5m	**$309k**	**$165k**	**$64k**	**$31k**	**$2.6m**	**$154k**	**$533k**	**$252k**	**$841k**	**$1.2m**

Land Improvements

Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Gazebos/Pavilions	$789k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Miscellaneous	$9k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Parking Lots	$295k	$0	$0	$0	$0	$391k	$0	$0	$79k	$0	$125k
Playground Equipment	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Splash Pads	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sports Fields	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$1.1m	**$0**	**$0**	**$0**	**$0**	**$391k**	**$0**	**$0**	**$79k**	**$0**	**$125k**

Water System											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Booster Pumping Stations & Reservoirs	$10.1m	$0	$0	$0	$0	$1.4m	$911k	$0	$0	$0	$0
Control Chambers	$0	$0	$0	$0	$0	$446k	$0	$0	$0	$0	$32k
Equipment	$0	$23k	$0	$0	$0	$0	$0	$0	$0	$74k	$0
Rolling Stock	$22k	$0	$0	$0	$10k	$13k	$0	$37k	$0	$203k	$13k
Water Meters	$1.4m	$0	$0	$0	$0	$0	$0	$47k	$31k	$0	$204k
Water Towers	$0	$0	$0	$0	$0	$557k	$0	$0	$0	$0	$849k
Watermains	$5.0m	$0	$0	$0	$0	$0	$0	$0	$0	$17.9m	$0
	$16.6m	**$23k**	**$0**	**$0**	**$10k**	**$2.4m**	**$911k**	**$84k**	**$31k**	**$18.1m**	**$1.1m**

Sanitary Sewer System											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Equipment	$55k	$0	$0	$0	$0	$0	$0	$0	$46k	$0	$0
Operations Facility	$0	$0	$0	$0	$0	$0	$0	$0	$0	$310k	$0
Pumping Stations	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$123k
Rolling Stock	$109k	$0	$0	$0	$92k	$0	$0	$51k	$0	$43k	$0
Sewer Mains	$4.1m	$0	$308k	$0	$0	$0	$0	$0	$365k	$476k	$786k
WWTFs & Lagoons	$751k	$0	$0	$10.7m	$0	$0	$0	$2.1m	$3.5m	$2.1m	$332k
	$5.0m	**$0**	**$308k**	**$10.7m**	**$92k**	**$0**	**$0**	**$2.2m**	**$3.9m**	**$3.0m**	**$1.2m**

Waste Disposal											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Landfill Site/Scale House	$0	$0	$0	$0	$0	$0	$0	$49k	$0	$0	$0
	$0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$49k**	**$0**	**$0**	**$0**

Appendix C: Risk Rating Criteria

Probability of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Probability of Failure Score
Road Network (Roads)	Economic (100%)	Condition (100%)	9 – 10	1
			8 – 8.9	2
			7 – 7.9	3
			6 – 6.9	4
			0 – 5.9	5
Bridges & Culverts Storm Sewer System (Mains) Equipment Land Improvements Waste Disposal	Economic (100%)	Condition (100%)	80 – 100	1
			60 – 79	2
			40 – 59	3
			20 – 39	4
			0 – 19	5
Facilities	Economic (100%)	Condition (100%)	0 – 1	1
			1 – 2	2
			2 – 3	3
			3 – 4	4
			4 – 5	5
Water System (Water Mains)	Physical Condition	Condition (50%)	80 – 100	1
			60 – 79	2

Asset Category	Risk Classification	Risk Criteria	Value/Range	Probability of Failure Score
	(50%)		40 – 59	3
			20 – 39	4
			0 – 19	5
		Pipe Material (50%)	Concrete	1
			PE	1
			PVC	1
			PVC SDR-18	1
			PVC SDR35	1
			Ductile Iron	2
			Cast Iron	3
			PVC - 160	3
			Steel	4
	Structural Performance (40%)	Overall Structural Rating (100%)	0 – 2	1
			2 – 4	2
			4 – 6	3
			6 – 8	4
			8 – 10	5
	Quality of Installation (10%)	Installation Practice (50%)	No Record	5
			Stephen Township	3
			Municipality of South Huron	3
			OCWA	2

Asset Category	Risk Classification	Risk Criteria	Value/Range	Probability of Failure Score
			Contractor	1
		Data Accuracy (50%)	No As-Built	5
			As-Built	1

Sanitary Sewer System (Sanitary Mains)	Physical Condition (100%)	Condition (50%)	80 – 100	1
			60 – 79	2
			40 – 59	3
			20 – 39	4
			0 – 19	5
		Pipe Material (50%)	HDPE	1
			PVC SDR35	1
			Polyvinyl Chloride (PVC)	2
			Reinforced Concrete	2
			Ductile Iron	3
			Concrete	4
			Steel	4
			Asbestos Cement	5
			Unknown	5

Consequence of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Road Network (Roads)	Economic (100%)	AMP Segment (50%)	Paved Roads (LCB)	2
			Paved Roads (HCB 1 Lift)	4
			Paved Roads (HCB 2 Lifts)	4
		Roadside Environment (50%)	Rural	2
			Semi-Urban	3
			Urban	4
Bridges & Culverts	Economic (100%)	Replacement Cost (100%)	$0 – $500,000	1
			$500,000 – $1,000,000	2
			$1,000,000 – $1,500,000	3
			$1,500,000 – $2,000,000	4
			$2,000,000+	5
Storm Sewer System (Mains)	Economic (100%)	Pipe Diameter (100%)	0 – 250mm	1
			250 – 400mm	2
			400 – 500mm	3
			500 – 1,000mm	4
			1,000mm+	5
Facilities Equipment Land Improvements	Economic (100%)	Historical Cost (100%)	$0 – $100,000	1
			$100,000 – $250,000	2
			$250,000 – $500,000	3

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Waste Disposal			$500,000 – $1,000,000	4
			$1,000,000+	5
Water System (Water Mains)	Social (90%)	Pipe Diameter (50%)	0 – 100mm	1
			100 – 150mm	2
			150 – 250mm	3
			250 – 300mm	4
			300mm+	5
		Overall Criticality Rating (Social Impact) 50%	0-2	1
			2-4	2
			4-6	3
			6-8	4
			8-10	5
	Fire Protection (10%)	Fire Protection Requirement (100%)	No	1
			Yes	5
Sanitary Sewer System (Sanitary Mains)	Social (100%)	Pipe Diameter (70%)	0 – 200mm	1
			200 – 250mm	2
			250 – 375mm	3
			375 – 450mm	4
			450mm+	5
		Sanitary Main Type	Gravity Main	3
			Trunk Main	4

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
		(30%)	Force Main	5

Appendix D: Condition Assessment Guidelines

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

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

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

Role of Asset Condition Data

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

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

Guidelines for Condition Assessment

Whether completed by external consultants or internal staff, condition assessments should be completed in a structured and repeatable fashion, according to consistent

and objective assessment criteria. Without proper guidelines for the completion of condition assessments there can be little confidence in the validity of condition data and asset management strategies based on this data.

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

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

Developing a Condition Assessment Schedule

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

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