2022

Town of Penetanguishene | Asset Management Plan

The preparation of this project was carried with assistance from the Government of Canada and Federation of Canadian Municipalities. Notwithstanding this support, the views expressed are the personal view of the authors, and the Federation of Canadian Municipalities and the Government of Canada accept no responsibility for them.

This Asset Management Plan was prepared by:

psdcitywide

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

Key Statistics

Replacement cost of asset portfolio

$284 million

Replacement cost of infrastructure per household

$71,538 (2021)

Percentage of assets in fair or better condition

84%

Percentage of assets with assessed condition data

31%

Annual capital infrastructure deficit

$3.84 million

Recommended timeframe for eliminating annual infrastructure deficit

10 and 20 Years

Target reinvestment rate

2.16%

Actual reinvestment rate

0.81%

Table of Contents

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

This AMP includes the following asset categories:

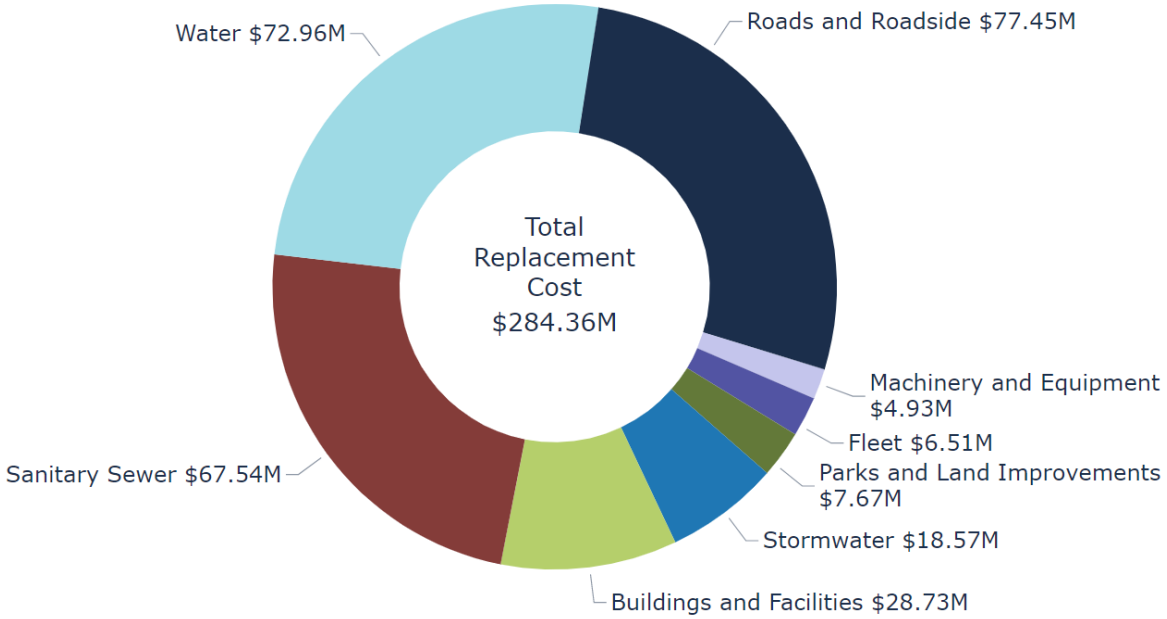
Asset Category

- Roads and Roadside
- Buildings and Facilities
- Stormwater
- Parks and Land Improvements
- Machinery and Equipment
- Fleet
- Sanitary Sewer
- Water

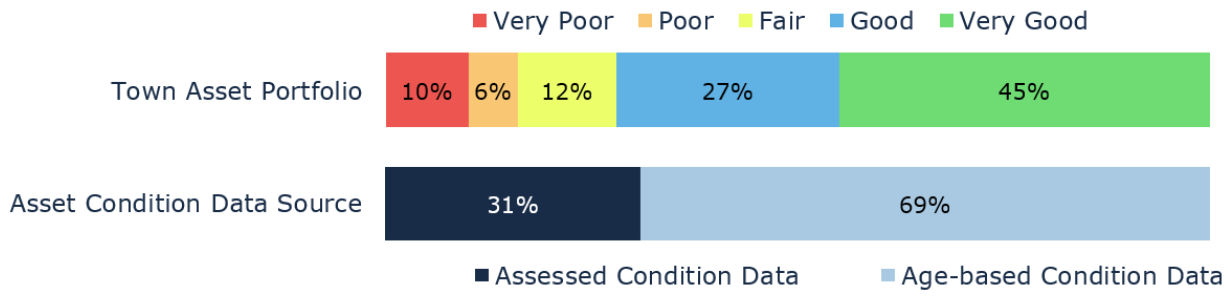
With the development of this AMP, the Town has achieved compliance with O. Reg. 588/17 to the extent of the requirements that must be completed by July 1, 2022. There are additional requirements concerning non-core asset categories, proposed levels of service and growth that must be met by July 1, 2024 and 2025.

Findings

The overall replacement cost of the asset categories included in this AMP totals $284.36 million and is based on the Town's capital asset inventories as of December 31st, 2021.



About 84% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 31% of assets.



For the remaining 69% of assets, assessed condition data was not available, 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 asset condition assessments essential to asset management planning, and a recurring recommendation in this AMP.

Another essential element to asset management planning is the accuracy and completeness of the asset inventory. It is important to review and update the Town's primary capital asset inventory to ensure that it is at a higher level of data maturity for the next iteration of the AMP.

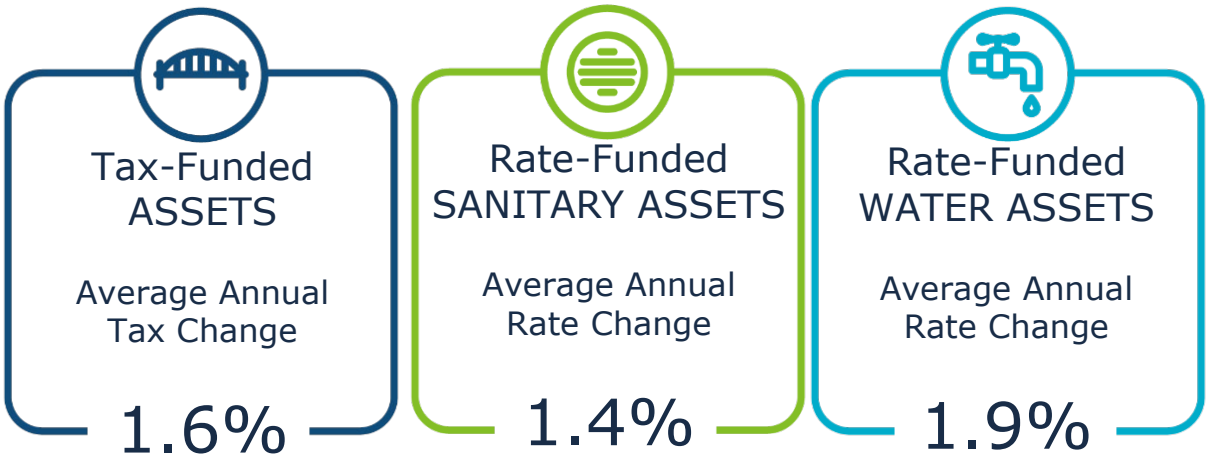
The development of a long-term, sustainable financial plan requires an analysis of whole lifecycle costs. This AMP uses a combination of proactive lifecycle strategies (for asphalt roads, surface treated roads and sanitary mains) and replacement only strategies (all other assets) to determine the lowest 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 Town's average annual capital requirement totals $6.15 million. Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately $2.31 million towards capital projects or reserves per year. As a result, there is currently an annual capital deficit of $3.84 million.

It is important to note that this AMP represents a snapshot in time and is based on the best available processes, data, and information at the Town. Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources.

Recommendations

A financial strategy was developed to address the annual capital funding gap. The following graphics shows the average annual tax increase required to eliminate the Town's infrastructure capital deficit based on a 10-year plan for Tax-Funded assets, a 20-year plan for Sanitary Rate-Funded assets and, a 20-year plan for Water Rate-Funded assets:



Recommendations[1] to guide continuous refinement of the Town's asset management program. These include:

- Reviewing asset data to develop a complete and accurate asset inventory in a centralized database
- Implementing a data governance strategy to increase confidence in the asset data and continuing to operationalize asset management through the use of the asset management database and database functionality
- Developing a condition assessment strategy with a regular schedule
- Reviewing and updating lifecycle management strategies
- Developing and regularly reviewing short and long-term plans to meet capital requirements
- Continuing to measure current levels of service and identifying sustainable proposed levels of service

[1] Appendix E contains a customized list of next steps developed to advance the Town's asset management program.

1 Introduction and Context

Key Insights

- 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 Town'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 Penetanguishene Community Profile

Census Characteristic	Town of Penetanguishene	Ontario
Population 2021	10,077	14,223,942
Population Change 2016-2021	12.4%	6%
Total Private Dwellings	4,357	5,929,250
Population Density	396.4/km^2	15.9/km^2
Land Area	25.42 km^2	892,411.76 km^2

The Town of Penetanguishene (meaning "the place of the rolling white sands" in Abinaki) is located on the southeasterly tip of Georgian Bay, within Simcoe County in Central Ontario. It has a unique urban form oriented towards the water with rolling hills, woodlands and wetlands. Incorporated in 1882, the Town takes pride in its 400 years of history and the influence of four founding cultures.

There is a significant concentration of Franco-Ontarians within the Town which makes it one of only three municipalities in Central and Southwestern Ontario where the francophone population exceeds the provincial average. The Town is also home to a sizeable population of the Metis community that exceeds the provincial average.

Based on the 2021 Census, the Town's thriving bilingual community has grown to approximately 10,077 residents, indicating a 12% increase over the 2016 population and closer to the 11,000 population projection in 2031 that has been forecasted in previous official documents.

The Town is located just 90 minutes north of Toronto and benefits from the region's proximity to major urban markets. The Town's economy is primarily composed of tourism and service-based businesses.

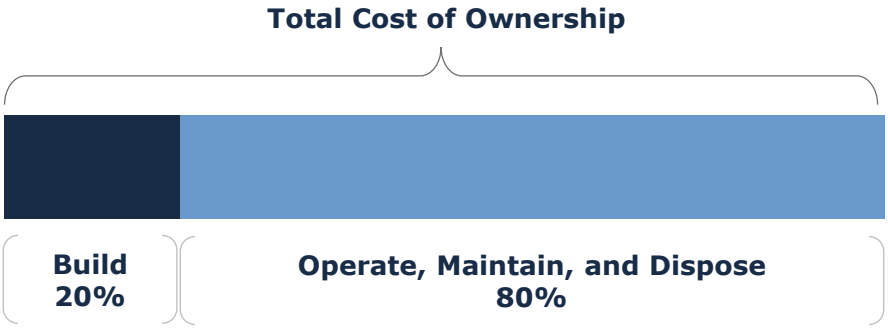
Municipal staff have acknowledged the need to operationalize asset management through the establishment of a centralized asset inventory and identifying missing infrastructure data. This will allow for effective decision-making and the use of risk-based project prioritization, which is essential for capital planning since major infrastructure projects are heavily reliant on the availability of grants.

Staff and Council intend to support continuous growth within the Town by investing in critical infrastructure and advancing their asset management program.

1.2 An Overview of Asset Management

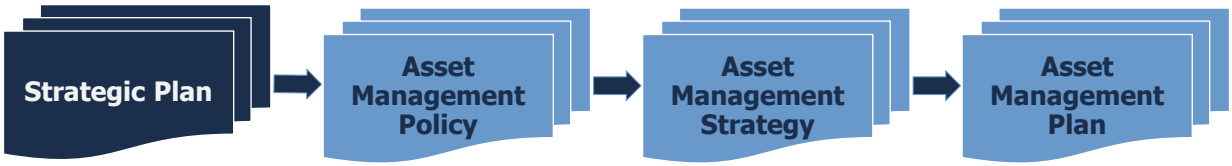
Municipalities are responsible for managing and maintaining a broad portfolio of infrastructure assets to deliver services to the community. The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers 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 diagram below depicts an industry standard approach and sequence developing a practical asset management program. Beginning 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 Strategic Plan

The development of the Town's latest Strategic Plan (2019-2023) included engagement and feedback from the public. The plan provides a detailed list of strategic initiatives that ensure alignment with the Town's vision and mission and are based on the Town's community goals:

- Economic Opportunities
- Heritage, Culture and Natural Environment
- Recreation Opportunities
- Attainable Housing
- Responsible Finance
- Communication and Engagement

1.2.2 Asset Management Policy

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

The Town of Penetanguishene's "Strategic Asset Management Policy" was approved by Council as Policy No. 012-2019 on June 26th, 2019 in accordance with Ontario Regulation 588/17.

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

- The policy's statements dictate the use of asset management practices to ensure all assets meet the agreed levels of service in the most efficient and effective manner;
- the policy commits to, where appropriate, incorporating asset management in the Town's other plans;
- there are formally defined roles and responsibilities of internal staff and stakeholders;
- the guiding principles include the use of a long-term view and effective prioritization in the management of infrastructure; and
- the policy statements are well defined.

As per Ontario Regulation 588/17, the Town will be required to review and update its Strategic Asset Management Policy in 2024.

1.2.3 Asset Management Strategy

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

While not a static document, the strategy should not evolve and change frequently—unlike the asset management plan. The strategy provides a long-term outlook on the overall asset management program development and strengthening key elements of its framework.

The Town's Strategic 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.

1.2.4 Asset Management Plan

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

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

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

The Town's last iteration of the AMP was completed in 2013. Since then, the asset inventory has been consolidated critical asset data and undergone revisions for core assets. This document is an AMP that uses the updated asset inventory and has been prepared in accordance with O. Reg. 588/17.

1.3 Key Concepts in Asset Management

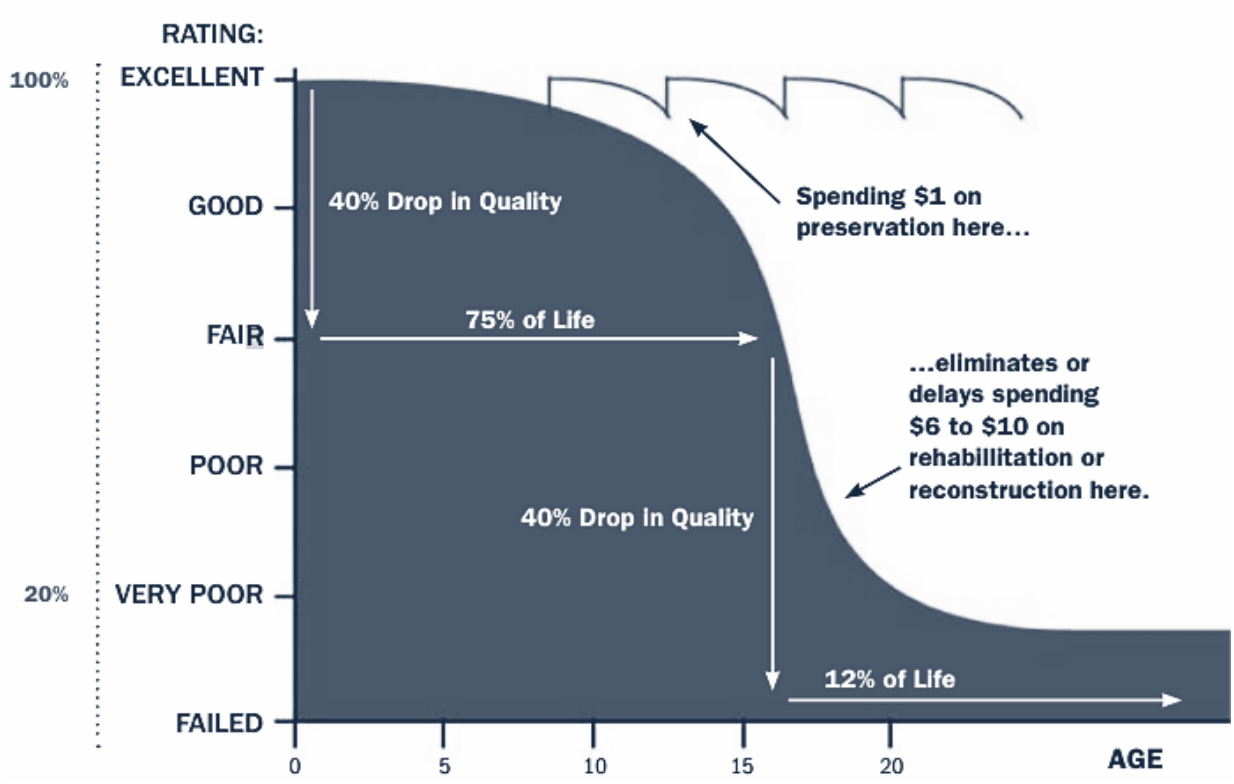
Effective asset management integrates several key components, including lifecycle management, risk management, and levels of service. These concepts are applied throughout this asset management plan and are described below in greater detail.

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. Since costs to rehabilitate tend to increase towards the end of life of an asset, proactive and timely intervention will lead to lower lifecycle costs.

This concept is further illustrated by the figure below, highlighting the cost impact of a maintenance activity contrasted by the cost impact of a rehabilitative activity later in the life of the asset.



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	$$
Replacement/ Reconstruction	Asset end-of-life activities that often involve the complete replacement of assets	Full Reconstruction	$$$
Replacement Upgrade	Asset end-of-life activities that involve the replacement of an asset to an 'upgraded' asset	Gravel Road to a Surface Treated Road	$$$

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 Town's approach to lifecycle management is described within each core 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 and Criticality

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

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

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

Probability of Failure

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

Consequence of Failure

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

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

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

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

1.3.3 Levels of Service

A level of service (LOS) is a measure of what the Town 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 Town as worth measuring and evaluating. The Town 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, stormwater) the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in this AMP. These descriptions can be found in the Levels of Service subsection within each asset category.

For non-core asset categories, the Town will need to define the qualitative descriptions that will be used to determine the established levels of service by the July 2024 deadline.

Technical Levels of Service

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

For core asset categories (Roads, Bridges & Culverts, Water, Sanitary, Storm Water) the Province, through O. Reg. 588/17, has provided technical key performance indicators (KPIs) that are required to be included in this AMP. These KPIs, along with those that the Town has identified, can be found in the Levels of Service subsection within each asset category.

For non-core asset categories, the Town will need to define the technical KPIs that will be used to determine the established level of service by the July 2024 deadline.

Current and Proposed Levels of Service

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

Proposed levels of service should be realistic and achievable within the timeframe outlined by the Town. They should also be determined with consideration of a variety of community expectations, fiscal capacity, regulatory requirements, corporate goals and long-term sustainability. Once proposed levels of service have been established, and prior to July 2025, the Town 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 Penetanguishene's Climate Profile

The Town of Penetanguishene is expected to experience notable effects of climate change which include higher average annual temperatures, an increase in total annual precipitation, and an increase in the frequency and severity of extreme events. According to Climatedata.ca – a collaboration supported by Environment and Climate Change Canada (ECCC) – the Town of Penetanguishene will likely experience the following trends:

Higher Average Annual Temperature:

1. Between the years 1981 to 2010 the annual average temperature was 6.9 ºC
2. Under a high emissions scenario, the annual average temperatures are projected to be 8.8 ºC by the year 2050 and around 12.2 ºC by the end of the century.

Increase in Average Annual Precipitation:

3. Under a high emissions scenario, Penetanguishene is projected to experience a 7% increase in precipitation by 2050 and a 15% increase by the end of the century.

Increase in Frequency of Extreme Weather Events:

4. It is expected that the frequency and severity of extreme weather events will change.
5. In some areas, extreme weather events will occur with greater frequency and severity than others.

1.4.2 Integrating Climate Change into Asset Management

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

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

Since 2018, the Town has been involved with the development of a Local Climate Change Action Plan (LCCAP) through the Sustainable Severn Sound (SSS) regional sustainability program, which is supported by seven municipalities within the County of Simcoe and the District Municipality of Muskoka.

In February 2018, Council approved a model resolution to join the Federation of Canadian Municipalities (FCM) Partners for Climate Protection (PCP) program. The PCP program provides a comprehensive framework to take action on climate change by reducing emissions within the community.

In June 2018, the SSS released the first LLCAP which outlined the following:

- A corporate and community inventory of Greenhouse Gas (GHG) emissions for each municipal partner
- Regional GHG reduction targets to be achieved by 2028
- 18 high-level actions to reduce municipal and community contributions to climate change

In July 2018, the Town successfully achieved milestone 1 of the PCP program and through the adoption of the GHG reduction targets outlined in the LLCAP, will achieve milestones 2 and 3.

1.5 Ontario Regulation 588/17

As part of the *Infrastructure for Jobs and Prosperity Act, 2015*, the Ontario government introduced Regulation 588/17 - Asset Management Planning for Municipal Infrastructure (O. Reg 588/17). 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:

1. Current levels of service
2. Inventory analysis
3. Lifecycle activities to sustain LOS
4. Cost of lifecycle activities
5. Population and employment forecasts
6. Discussion of growth impacts

2024

An Asset Management Plan for **Core and Non-Core Assets with the same components as 2022** and a Strategic Asset Management Policy Update

2025

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

1. Proposed levels of service for next 10 years
2. Updated inventory analysis
3. Lifecycle management strategy
4. Financial strategy and addressing shortfalls
5. Discussion of how growth assumptions impacted lifecycle and financial strategies

1.5.1 O. Reg. 588/17 Compliance Review

The following table[2] identifies the requirements outlined in Ontario Regulation 588/17 for municipalities to meet by July 1, 2022. 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 for Core Assets Only
Current performance measures in each category	S.5(2), 2	4.1.6 - 5.2.6	Complete for Core Assets Only
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] Appendix F contains an overall compliance snapshot that includes 2024 and 2025 requirements.

2 Scope and Methodology

Key Insights

- This asset management plan includes 8 asset categories and is divided between tax-funded and rate-funded categories
- Asset data from various data sources was consolidated into the Town’s tangible capital asset inventory to establish it as the primary asset inventory
- 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 in this AMP

This asset management plan for the Town of Penetanguishene is produced in compliance with Ontario Regulation 588/17. The July 2022 deadline under the regulation—the first of three AMPs—requires analysis of only core assets (roads, bridges and culverts, water, sanitary, and stormwater).

The AMP summarizes the state of the infrastructure for the Town's asset portfolio and for core assets it establishes current levels of service and the associated technical and customer oriented 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
Roads and Roadside	Tax Levy
Stormwater	
Buildings and Facilities	
Machinery and Equipment	
Fleet	
Parks and Land Improvements	
Sanitary Sewer	User Rates
Water	

2.2 Asset Inventory

The asset information presented in this AMP has been developed from the asset inventory that is stored in the Citywide™ Asset Manager database as of December 31, 2021. This inventory serves as the Town's primary tangible capital asset inventory and has been consolidated with additional asset data from the data sources listed below.

Asset Category	Asset Data Sources
Water	Geographic Information System (GIS) infrastructure attribute data
	Staff, Consultant and Market Data
Roads and Roadside	GIS infrastructure attribute data
	2018 Road Asset Management Plan (RNS) by StreetScan Inc.
	Staff, Consultant and Market Data
Sanitary Sewer	GIS infrastructure attribute data
	Staff, Consultant and Market Data
Stormwater	GIS infrastructure attribute data
	Staff, Consultant and Market Data
Buildings and Facilities	2019 GHD Building Condition Assessments (BCAs)
	2022 Municipal Property Valuation
Parks and Land Improvements	2022 Municipal Property Valuation

2.3 Deriving Replacement Costs

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

- **User-Defined Cost and Cost/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 Town incurred. As assets age, and new products and technologies become available, cost inflation becomes a less reliable method.

2.4 Estimated Useful Life and Service Life Remaining

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

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

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

2.5 Deriving Annual Capital Requirements

By dividing the replacement cost of an asset with the asset's estimated useful life and factoring in the cost and impact of any lifecycle activities, the average annual capital requirements can be derived. The average annual requirement is calculated as follows:

$$Annual\ Capital\ Requirement\ (Lifecycle\ Scenario) = \\ = \frac{(Replacement\ Cost + Cost\ of\ Lifecycle\ Activities)}{(Estimated\ Useful\ Life\ (EUL) + Impact\ of\ Lifecycle\ Activities)}$$

$$Annual\ Capital\ Requirement\ (Replacement\ Only\ Scenario) = \\ = \frac{Replacement\ Cost}{Estimated\ Useful\ Life\ (EUL)}$$

2.6 Reinvestment Rate

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

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

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

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

2.7 Deriving Asset Condition

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

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

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

The analysis in this AMP is based on assessed condition data only as available. In the absence of assessed condition data, asset age and a deterioration curve are used as proxies 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.

2.8 Limitations and Assumptions

During the development of this AMP, specific limitations were realized that are obstacles to the advancement of asset management practices within the Town. These limitations persist across all municipalities and are summarized below:

- As available, field condition assessment data was used to illustrate the state of infrastructure and develop the requisite financial strategies. However, in the absence of observed data, asset age and estimated useful life was used to derive the asset condition.

- The use of inflation measures in the absence of actual replacement cost are not always reflective of market prices and may over- or understate the value of the Town's infrastructure portfolio and the resulting capital requirements.

- The calculations, projections and recommendations are derived from the relevant asset data that was available and the completeness of the asset inventory during the development period of this AMP.

- The focus of this plan is restricted to capital expenditures and does not capture operating and maintenance (O&M) expenditures on infrastructure.

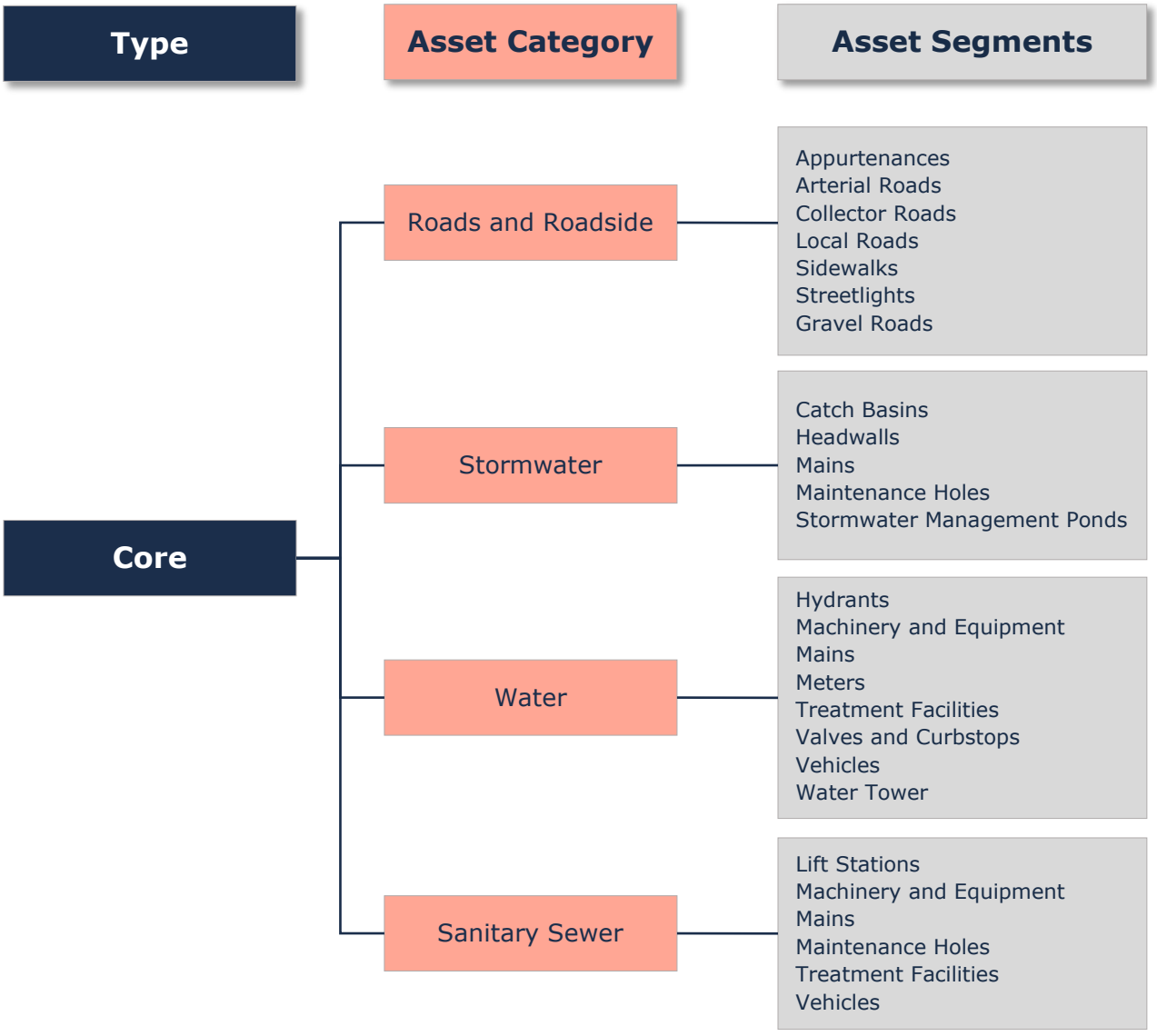
3 Portfolio Overview

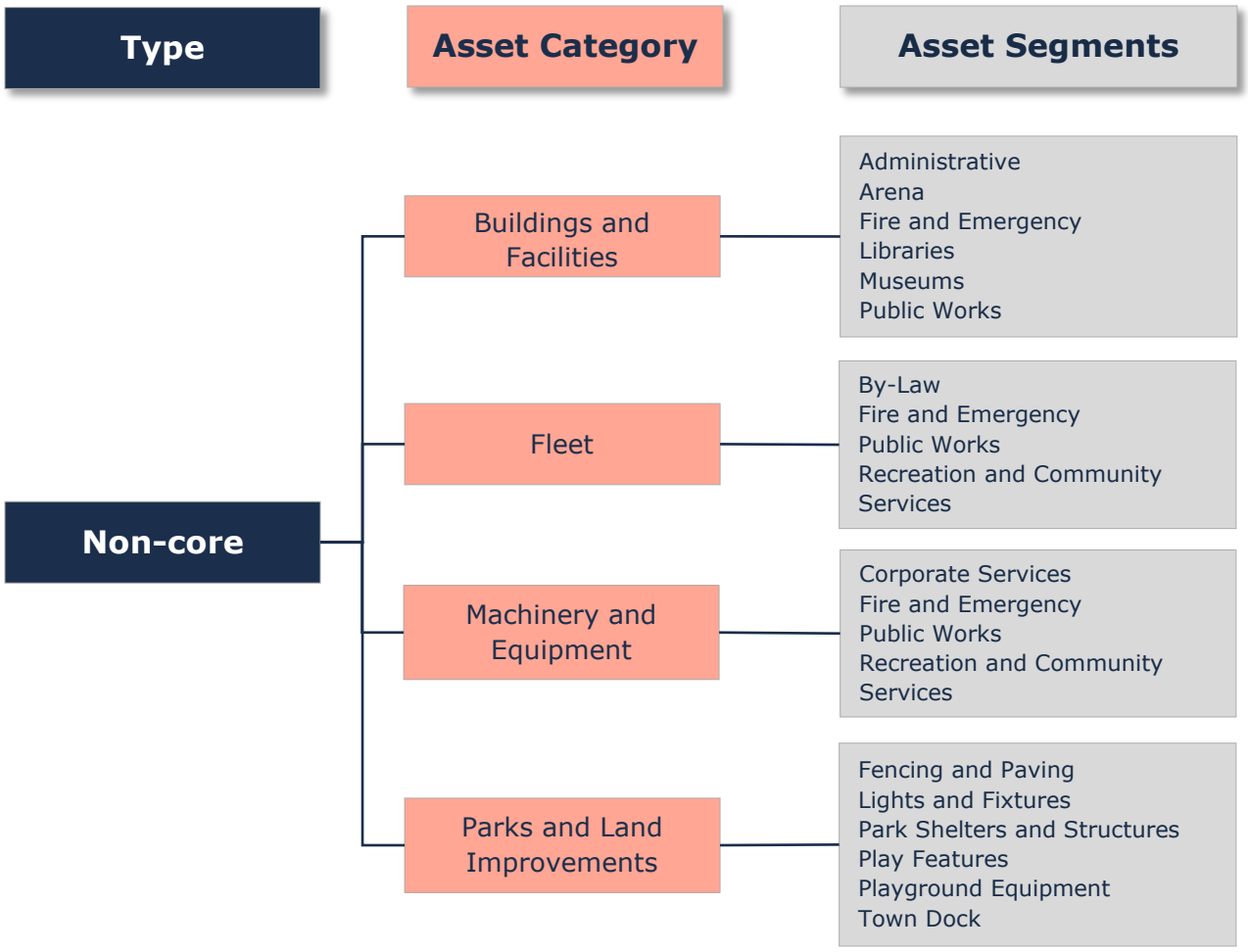
Key Insights

- The total replacement cost of the Town's asset portfolio is $284.36 million
- The Town's total target re-investment rate is 2.16%, and the actual total re-investment rate is 0.81%, contributing to an expanding infrastructure deficit
- 84% of all assets are in fair or better condition
- 8% of assets have exceeded their service life and about 13% of assets may require replacement in the next 10 years
- Average annual capital requirements total $6.15 million per year across all assets

3.1 Asset Hierarchy

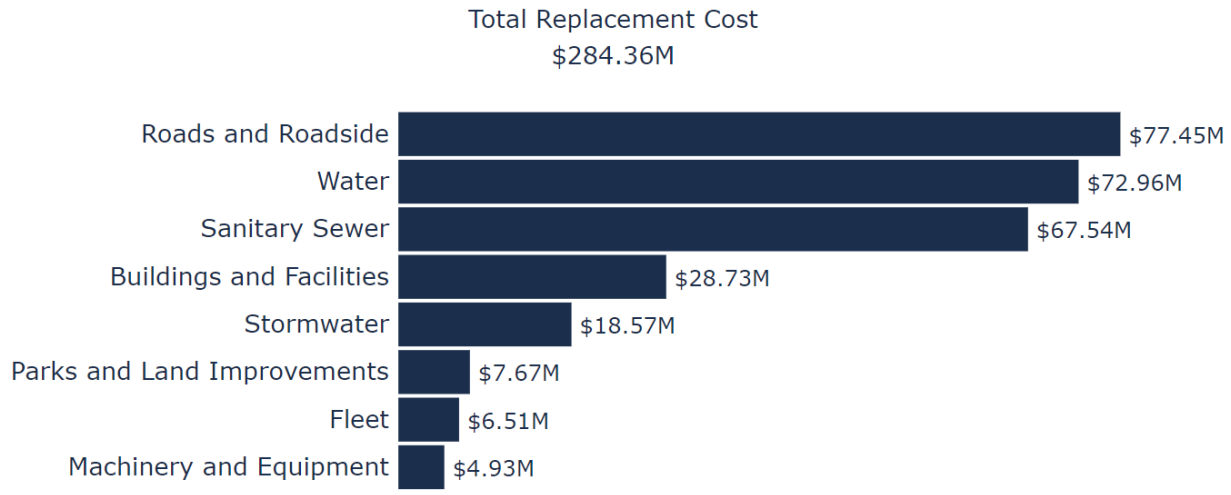
Asset hierarchy explains the relationship between individual assets and their components, and a wider, more expansive network and system. How assets are grouped in a hierarchy structure can impact how data is interpreted. Assets were structured to support meaningful, efficient reporting and analysis.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




Type
Asset Category
Asset Segments
Non-core
Buildings and Facilities
Administrative
Arena
Fire and Emergency
Libraries
Museums
Public Works
Fleet
By-Law
Fire and Emergency
Public Works
Recreation and Community Services
Machinery and Equipment
Corporate Services
Fire and Emergency
Public Works
Recreation and Community Services
Parks and Land Improvements
Fencing and Paving
Lights and Fixtures
Park Shelters and Structures
Play Features
Playground Equipment
Town Dock

3.2 Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of $284.36 million based on inventory data from 2021. 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.

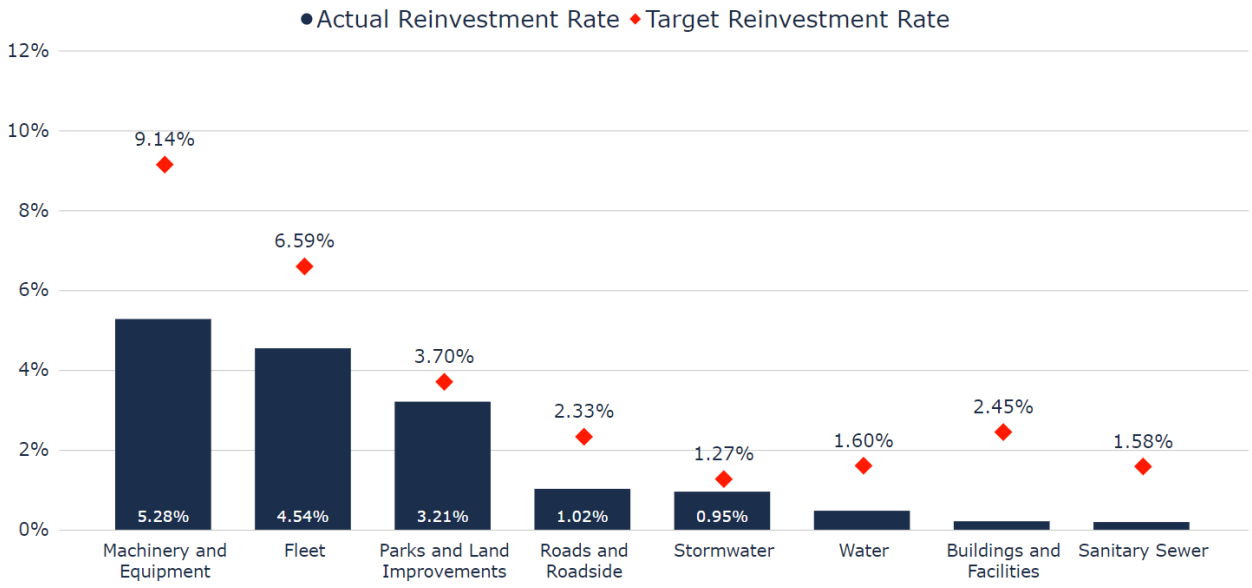


The following table identifies the methods employed to determine replacement costs across each asset category:

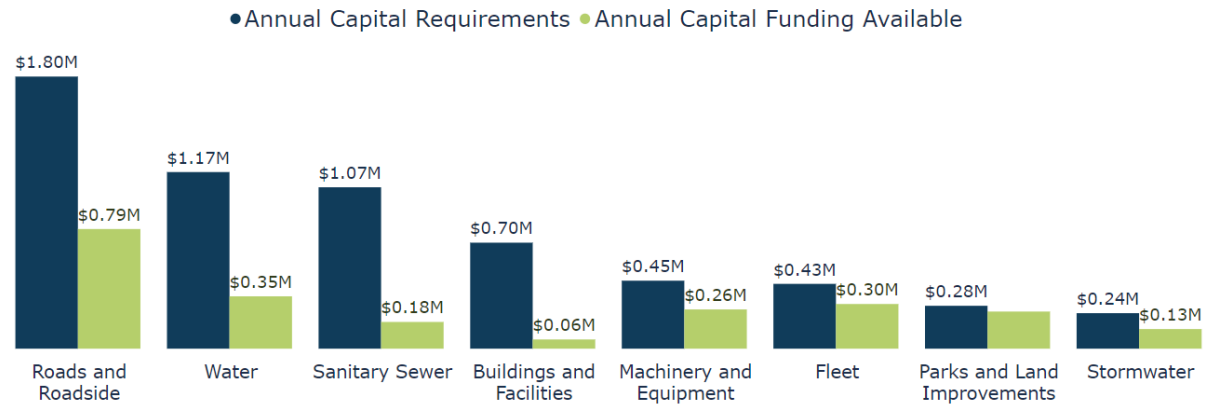
Asset Category	Replacement Cost Method		
	Defined Replacement Cost	Historical Cost Inflation	Replacement Cost Source
Roads and Roadside	92%	8%	Staff, Consultant and Market Data
Water	85%	15%	
Sanitary Sewer	82%	18%	
Buildings and Facilities	72%	28%	2022 Municipal Property Valuation
Stormwater	100%	0%	Staff, Consultant and Market Data
Parks and Land Improvements	7%	93%	2022 Municipal Property Valuation
Fleet	0%	100%	Historical Cost Inflation
Machinery and Equipment	31%	69%	2022 Municipal Property Valuation
Overall	**81%**	**19%**	

3.3 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 Town should be allocating approximately $6.15 million annually, for a target reinvestment rate of 2.16%. Actual annual spending on infrastructure totals approximately $2.31 million, for an actual reinvestment rate of 0.81%.



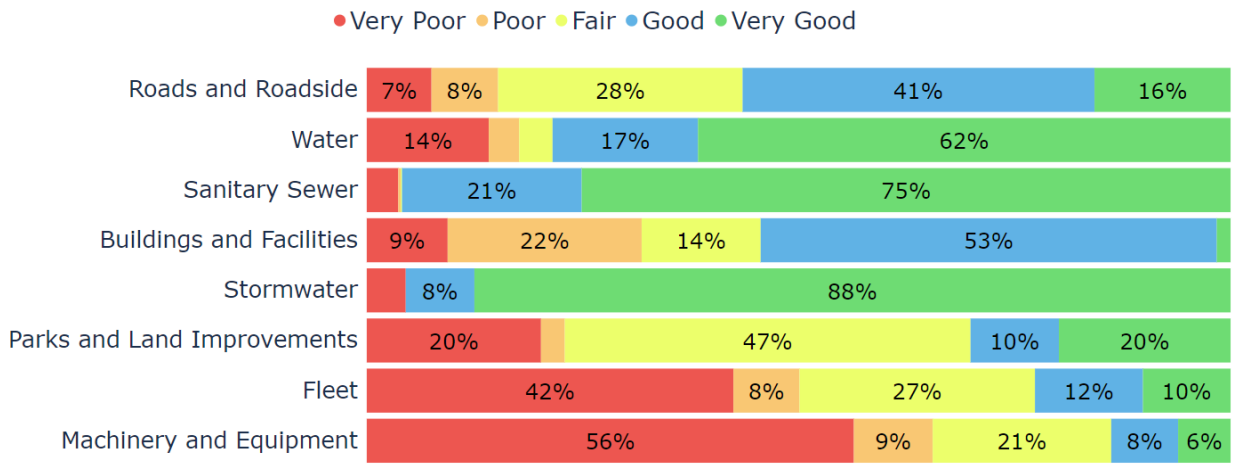
To highlight the monetary magnitude of the reinvestment rates, the graph below compares the annual capital requirements (target reinvestment) versus the current annual capital funding (actual reinvestment) that is available.



This comparison is examined in more detail under Section 13.1.1.

3.4 Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. The graph below illustrates the average condition across the asset portfolio. Collectively, 84% of assets in the Town are in fair or better condition. This estimate relies on both age-based and field condition data.

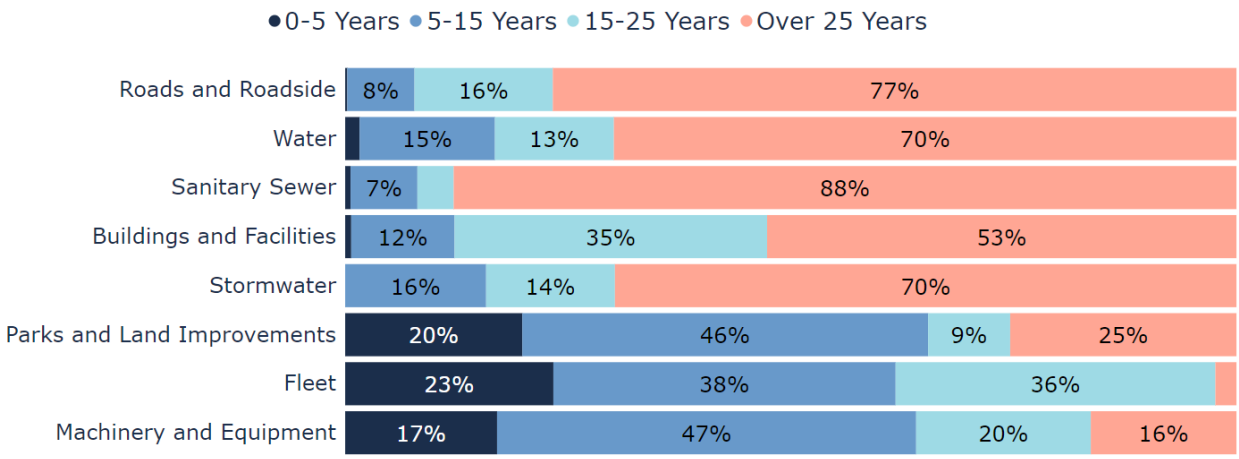


This AMP relies on assessed condition data for 28% of assets; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data used throughout this AMP.

Asset Category	% of Assets with Age-based Condition	% of Assets with Assessed Condition	Source of Condition Data
Roads and Roadside	11%	89%	2018 RNS
Water	97%	3%	2021 Municipal Staff
Sanitary Sewer	100%	0%	Age-based
Buildings and Facilities	50%	50%	2019 BCAs
Parks and Land Improvements	79%	21%	
Stormwater System	100%	0%	Age-based
Parks and Land Improvements	79%	21%	
Fleet	100%	0%	
Machinery and Equipment	100%	0%	
Overall	**72%**	**28%**	

3.5 Age of Asset Portfolio

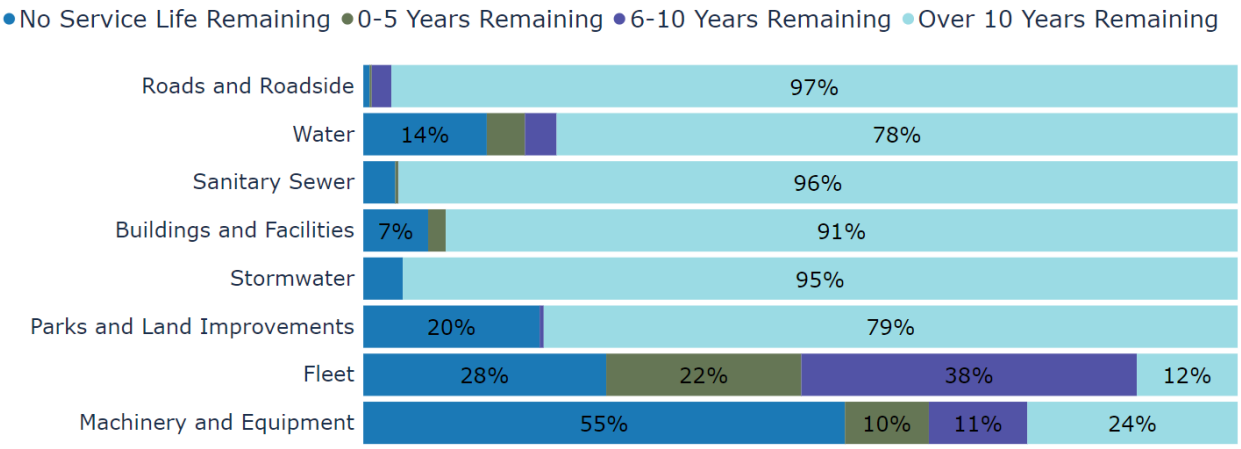
Based on the asset install year and asset estimated useful life, 71% of assets in the Town were installed over 25 years ago while 2% of assets were installed in the last 5 years ago. The graph below illustrates the overall age profile across the asset portfolio.



Each asset's established 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.

3.6 Service Life Remaining

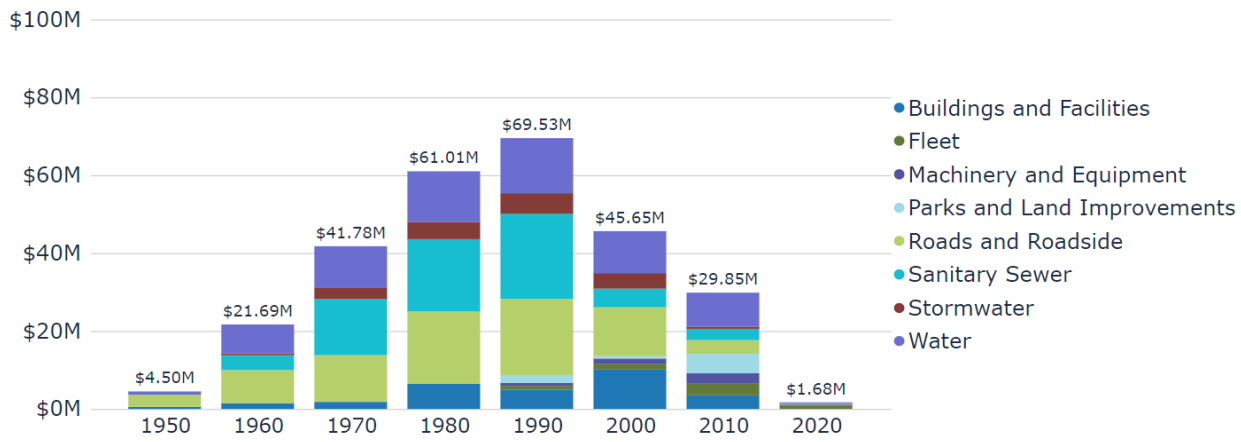
Based on the asset install year, asset condition data and asset estimated useful life, 8% of the Town's assets have exceeded their service life and 13% assets may require replacement within the next 10 years.



3.7 Historical Investment

The graph below shows the level of investment the Town of Penetanguishene has made in its asset portfolio since 1950. The majority of infrastructure within the Town was installed in the 1980s and 1990s.

The data reflects only the Town's current or active inventory; assets that have been disposed or decommissioned over time are not included.

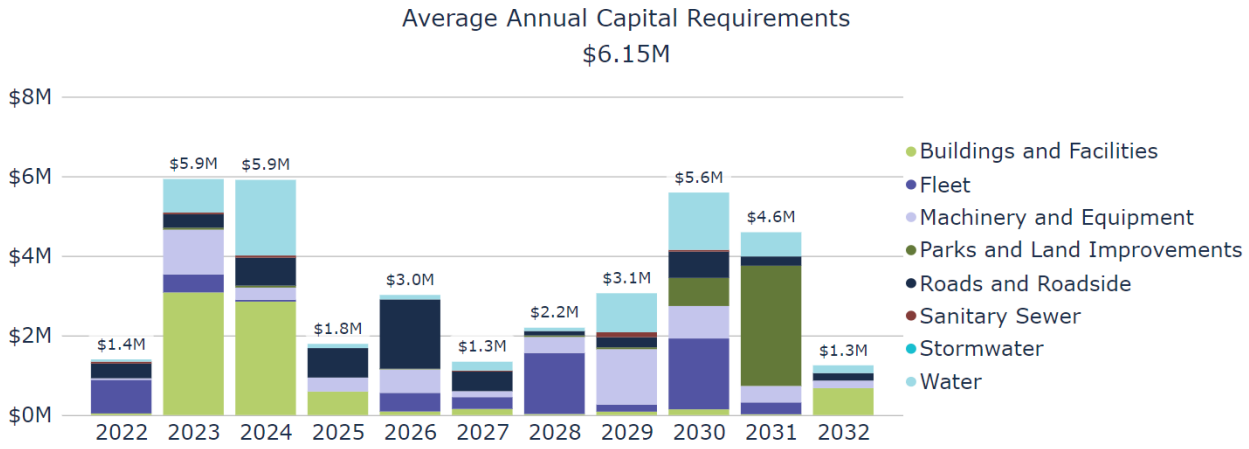


Although community infrastructure needs and expectations can evolve significantly over decades, understanding past investment patterns can be informative in planning for future needs.

3.8 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 Town can produce an accurate long-term capital forecast.

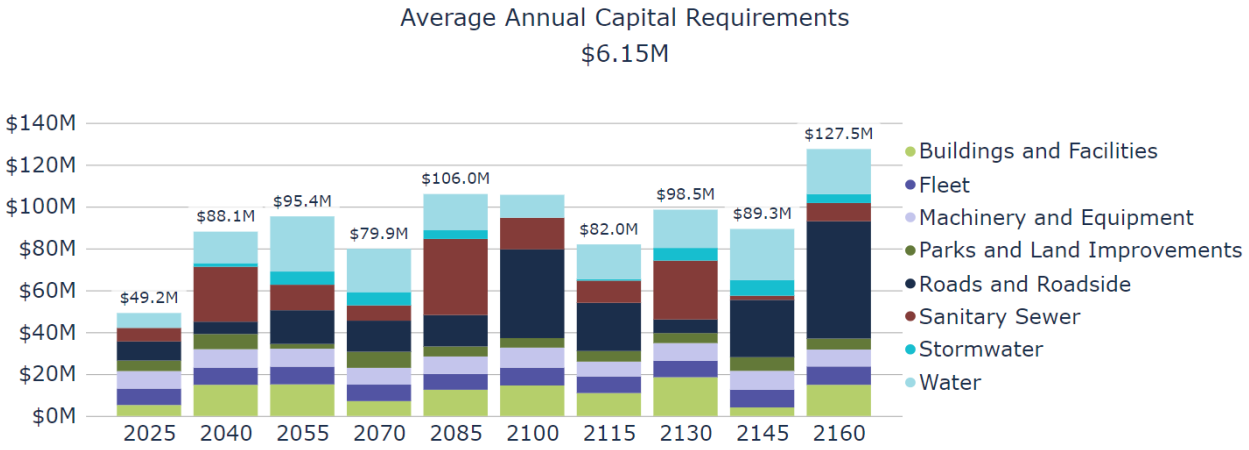
The graph below identifies the average annual capital requirements over the next 10 years and is based on the Town's inventory as of the end of 2021, not including assets that may be required due to growth.



The specific projected cost of lifecycle activities required over the next 10 years, in order to maintain the current level of service, can be found in Appendix B.

The graph below identifies capital requirements over the next 148 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement.

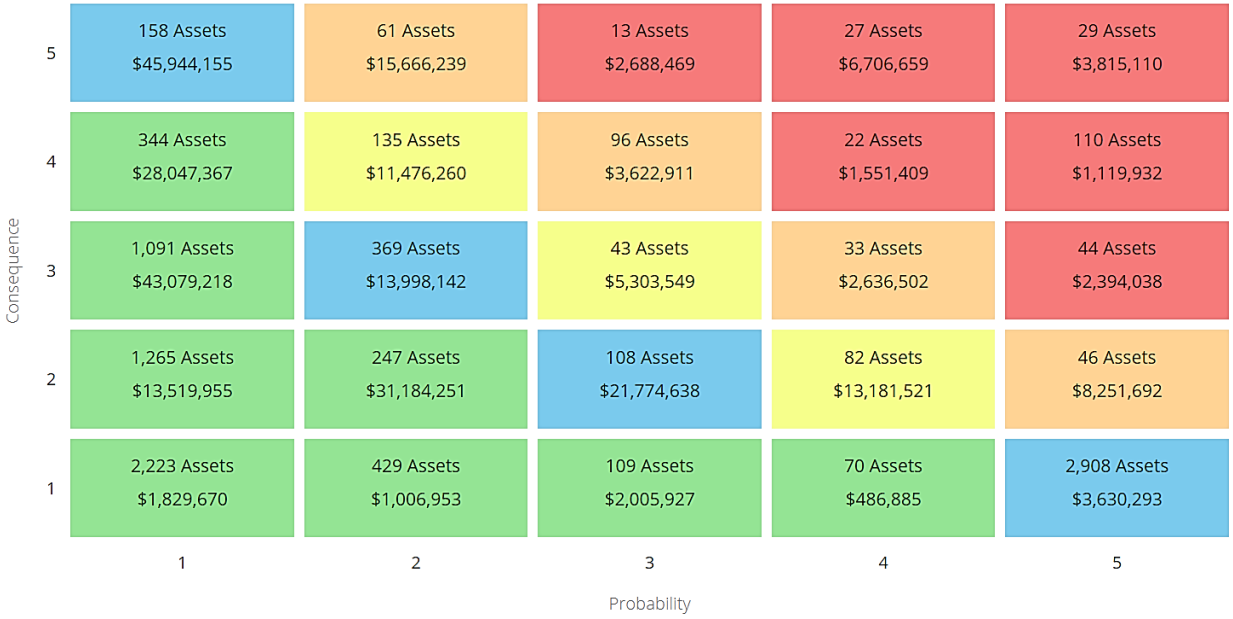
The forecasted requirements are aggregated into 15-year bins, are based on the Town's asset inventory as of the end of 2021, and do not include assets that may be required for growth.



3.9 Risk & Criticality

Advanced risk models for core linear assets and high-level risk models for all other assets were developed as part of this asset management plan.

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the asset portfolio and is based on 2021 inventory data.



4 Roads and Roadside

Roads and roadside assets are a critical component of the provision of safe and efficient transportation services, connecting the urban and rural areas that comprise the Town. These assets usually represent the highest value asset categories in the Town's asset portfolio. It includes all municipally owned and maintained roadways in addition to supporting roadside infrastructure.

The Public Works department manages the Town's roads and roadside assets, through the maintenance, rehabilitation and construction of roads and supporting roadside infrastructure. The department is also responsible for winter snow clearing, ice control and snow removal operations.

The Town's current approach to roads emphasizes the benefits of preventative maintenance treatments in order to extend the life of road assets and minimize capital costs associated with rehabilitation and reconstruction. This has been evident in the development of the 2022-2026 Preventative Road Maintenance Plan.

The Town's roads and roadside inventory is managed in Citywide and consists of 520 active assets.

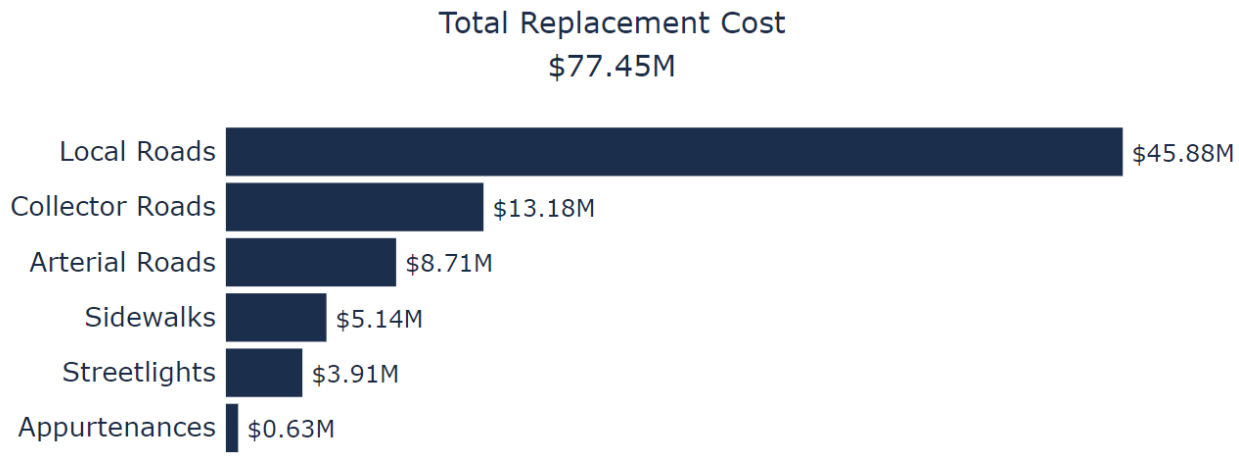
The state of the infrastructure for roads and roadside assets is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$77.4 million	Good (70%)	Annual Requirement:	$1,799,522
		Funding Available:	$793,000
		Annual Deficit:	$1,006,522

4.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Local Roads	58 km	$45,650,204	$1,086,411
Collector Roads	16 km	$13,177,489	$309,664
Arterial Roads	11 km	$8,708,999	$205,907
Sidewalks	19 km	$5,143,845	$109,970
Streetlights	936 assets	$3,913,998	$69,893
Appurtenances	4 Assets	$626,599	$21,813
Gravel Roads[3]	8 km		Not Planned for Replacement
Total		**$77,446,784**	**$1,803,658**



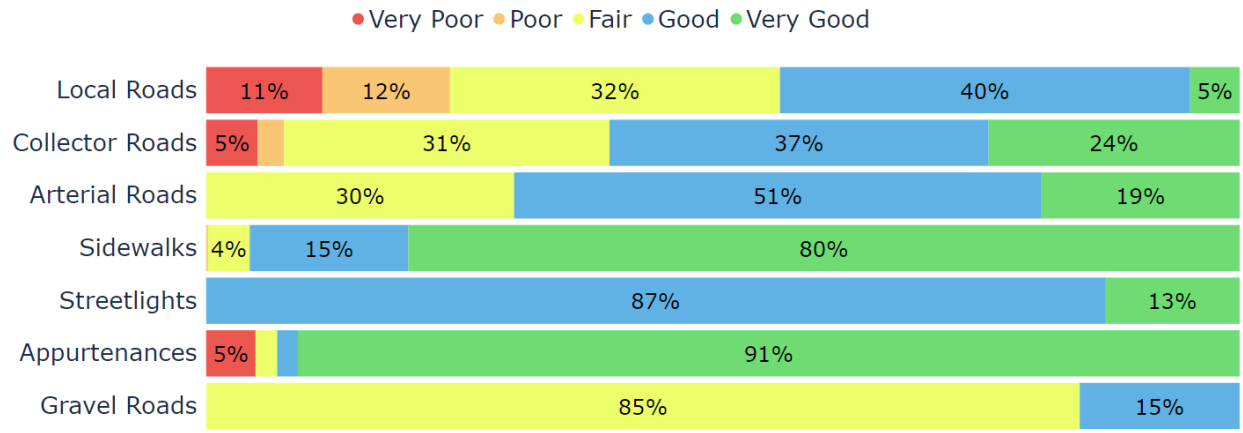
[3] Gravel roads undergo perpetual operating and maintenance activities, and therefore are not capitalized. If maintained properly, they can theoretically have a limitless service life.

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	Estimated Useful Life (Years)[4]	Average Age (Years)	Average Condition
Local Roads	10-15	22.2	64% (Fair)
Collector Roads	15	20.0	74% (Good)
Arterial Roads	15	16.2	76% (Good)
Sidewalks	20-50	20.8	88% (Very Good)
Streetlights	56	21.8	75% (Good)
Appurtenances	20	15.3	90% (Good)
Average		**21.0**	**70% (Good)**

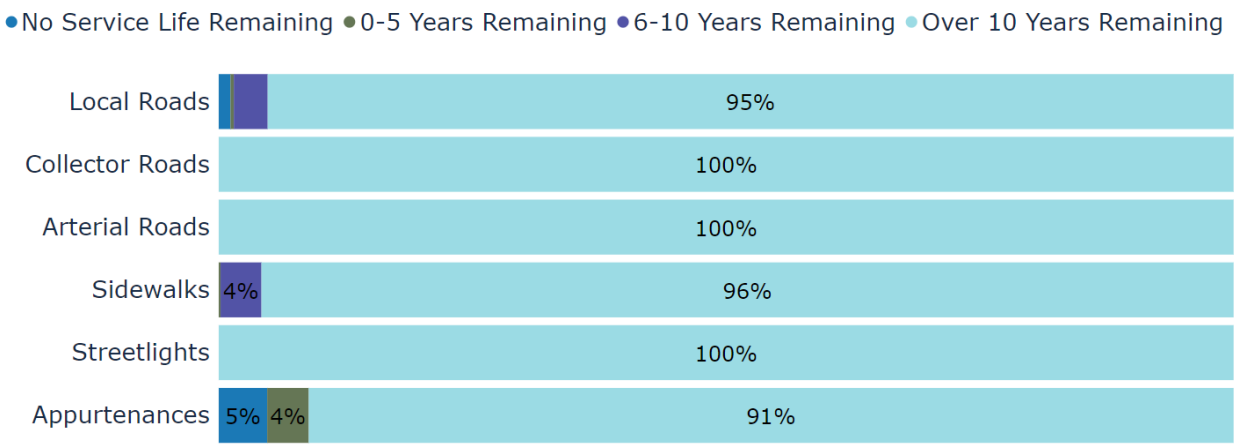
The graph below visually illustrates the average condition for each asset segment on a very good to very poor.



To ensure that the Town's roads and roadside assets continue to provide an acceptable level of service, the Town 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, replacement activities, and funding is required to increase the overall condition of the roads.

[4] The estimated useful life of road assets in this AMP is derived from the estimated useful life of the surface component of the road asset.

The graph below visually illustrates the average service life remaining for each asset segment, ranging from service life exceeded to over 10 years remaining.



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.

4.2.1 Current Approach to Condition Assessment

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

- A road needs study, through an external consultant, is conducted every 5 years. The most recent road needs study was prepared by StreetScan in 2018. Staff intend to reduce the assessment interval from 5 to 3 years by ensuring that internal staff assessments are conducted on a regular basis
- Routine road patrols are undertaken weekly, in compliance with the Minimum Maintenance Standards (MMS)
- Granular roads also visually inspected during grading activities and throughout the year
- Other roads and roadside assets are inspected as per O. Reg. 239/02

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

Condition (Roads)	PCI Rating
Very Good	85-100
Good	70-85
Fair	55-70
Poor	40-55
Very Poor	20-40

For all other assets the following rating criteria is used to determine the current condition and forecast future capital requirements:

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

4.3 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 Town currently has a 5-Year Preventative Road Maintenance Plan (2022-2026) that identifies specific road sections suitable for various preventative maintenance and rehabilitative treatments.

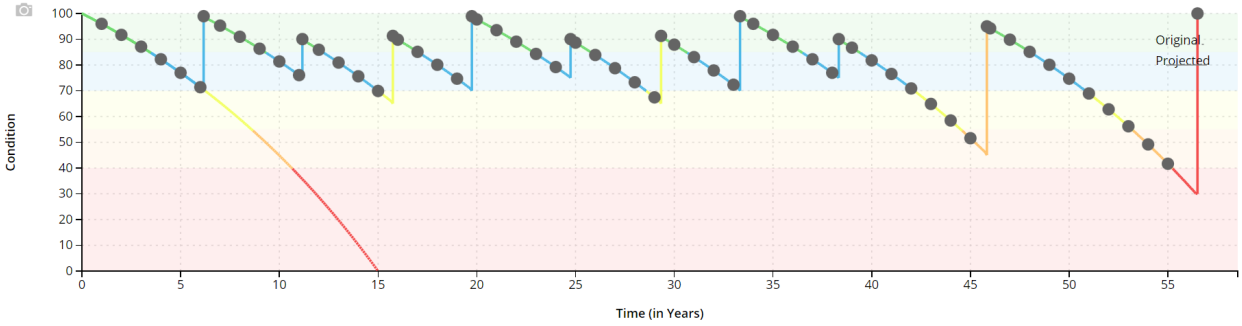
The following table outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Preventative Maintenance/ General Maintenance	Pothole patching occurs regularly and is based on deficiencies identified through regular road patrols, feedback from the public and as identified in the 2022-2026 Preventative Road Maintenance Plan. Potholes are repaired using a cold patch asphalt material that is applied throughout the year.
	Summer maintenance activities include sidewalk repairs, grading, re-gravelling, applying dust suppressant, ditching, roadside mowing, tree trimming, brush cleanup, road sign installation/maintenance, and line painting.
	Winter maintenance activities include snow plowing, salting, and snow removal.
	A crack seal and microsurfacing program is in place for roads as identified in the 2022-2026 Preventative Road Maintenance Plan.
Rehabilitation	Rehabilitative activites include microsurfacing, hot mix asphalt treatments, asphalt rejuvenation, and pulverize and pave.
	Road replacement prioritization is determined by consideration of growth, risk, condition, health and safety, and social impact.
Replacement	Road reconstruction projects (base and surface) are identified based on road condition, risk, and sub-surface asset requirements (stormwater, sanitary sewer and water infrastructure).

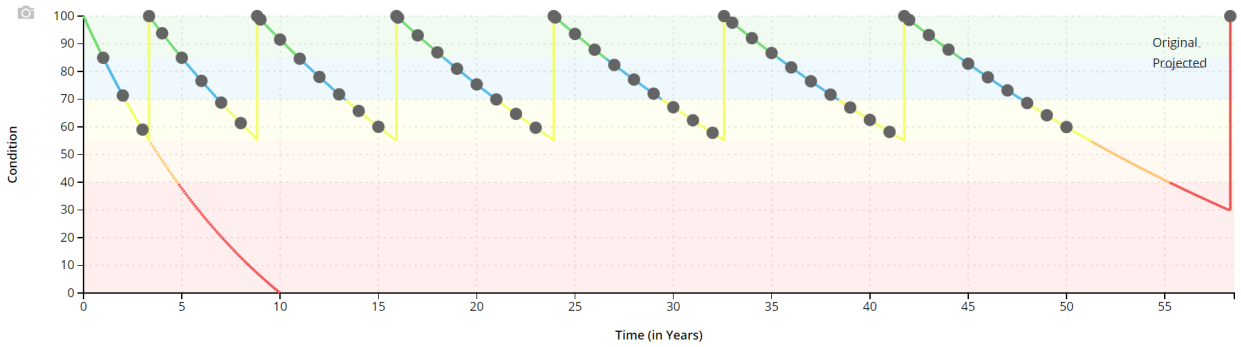
The following lifecycle strategies have been developed to formalize the current approach to managing the lifecycle of HCB, LCB, and Gravel roads.

Instead of allowing the roads to deteriorate until replacement is required, strategic preventative maintenance and rehabilitation is expected to extend the service life of roads at a lower total cost.

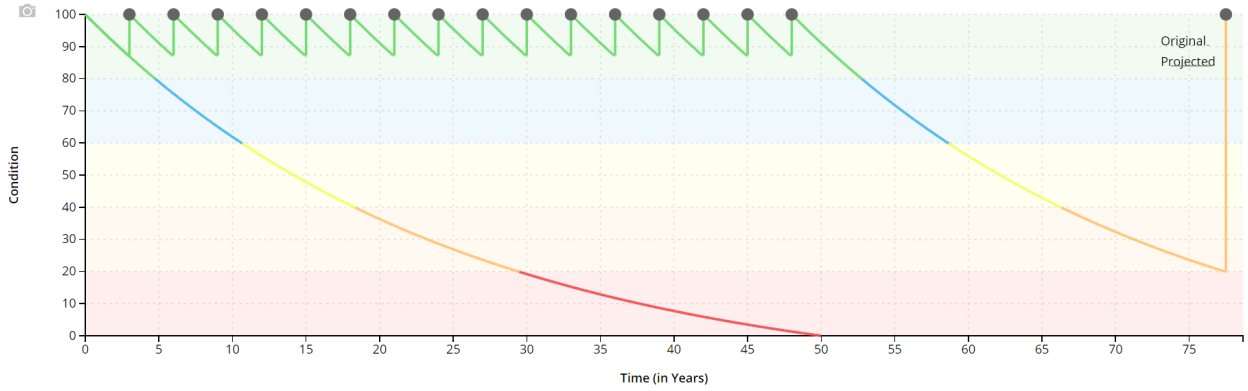
HCB Roads		
Event Name	**Event Class**	**Event Trigger**
General Maintenance	General Maintenance	As needed
Crack Sealing	Preventative Maintenance	Condition: 75-95
Asphalt Rejuvenation	Preventative Maintenance	Condition: 70-95
Microsurfacing	Maintenance	Condition: 65-90
Pulverize and Pave	Rehabilitation	Condition: 45-70
Full Reconstruction	Replacement	Condition: 30



LCB Roads		
Event Name	**Event Class**	**Event Trigger**
General Maintenance	Maintenance	As needed
Tar and Chip Patching	Preventative Maintenance	Annually
Rehabilitative Treatment	Rehabilitation	Condition: 55-70
Full Reconstruction	Replacement	Condition: 30



Gravel Roads		
Event Name	**Event Class**	**Event Trigger**
Annual Calcium Application	Preventative Maintenance	Annually
Single Surface Treatment (75 mm Granular A)	Rehabilitation	Every 3 Years
Asset Replacement and/or Asset Upgrade	Replacement	Condition: 20

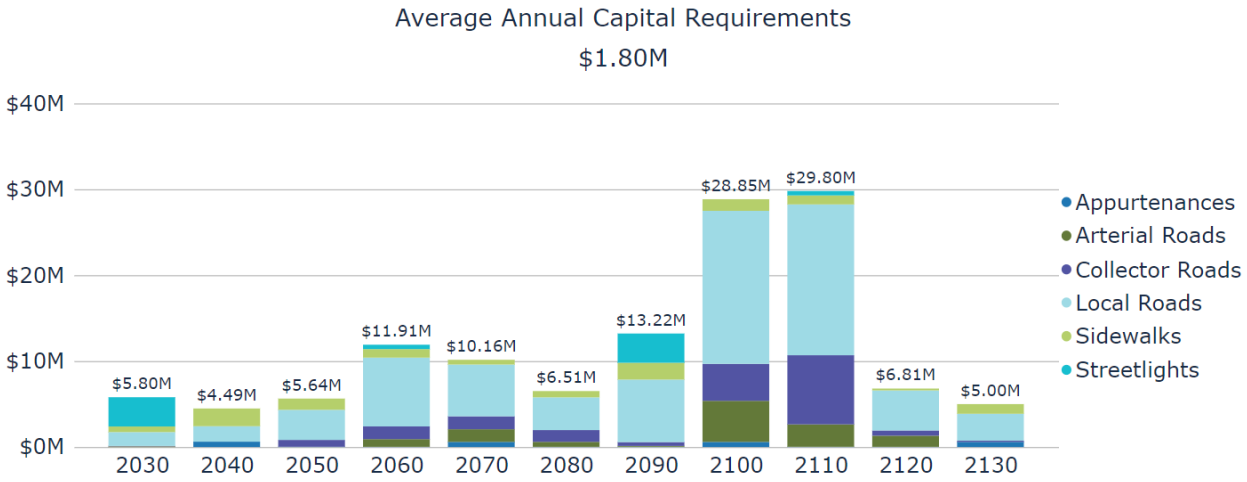


4.3.1 Forecasted Capital Requirements

Based on the lifecycle strategies formalized for road assets, scheduled treatments from the 2022-2026 Preventative Road Maintenance Plan and assuming end-of-life replacement of all other assets, the following graph forecasts long-term capital requirements over the next 108 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 10-year bins and do not include assets that may be required due to growth.

The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs.

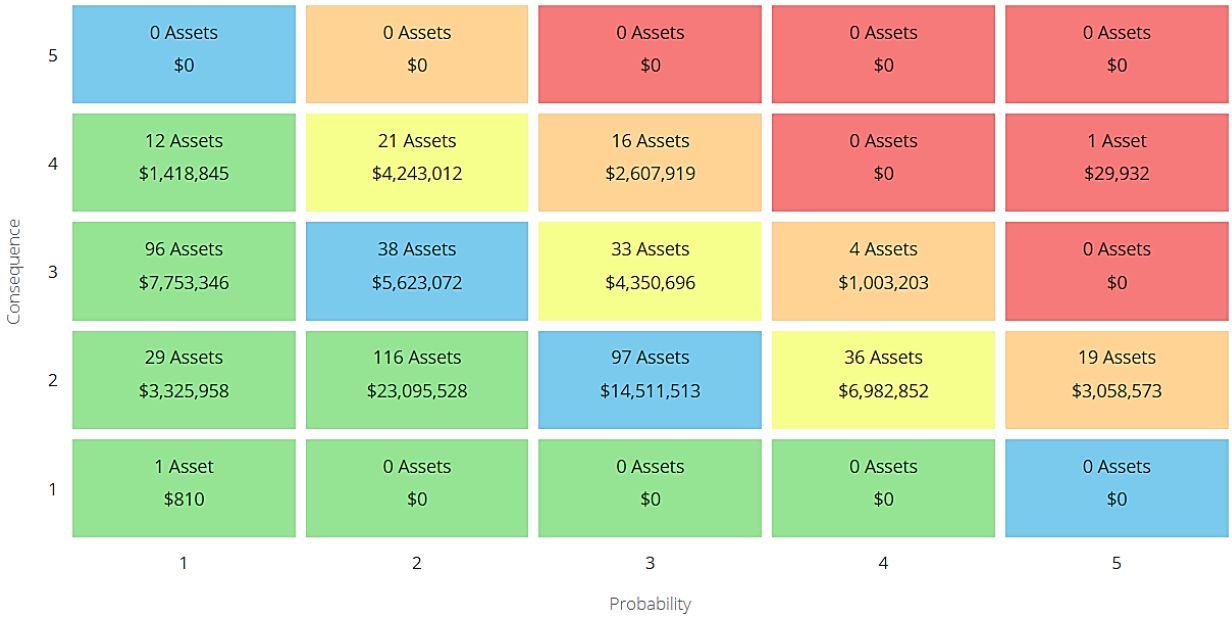


The specific projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can also be found in Appendix B.

4.4 Risk & Criticality

4.4.1 Risk Matrix

The following risk matrix 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 2021 inventory data.



This is an advanced risk model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of roads and roadside assets are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
Service Life Remaining	Functional Class (Operational)
	AADT (Strategic)
	Speed Limit (km/h) (Health and Safety)

The identification of critical assets allows the Town 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.

4.4.2 Risks to Current Asset Management Strategies

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

Climate Change and Extreme Events

An increase in freeze/thaw cycles causes road pavement to heave and settle. This can cause the accelerated deterioration of road surface pavement which leads to an increased need for maintenance and rehabilitation. The uncertainty surrounding the impact of extreme weather events can make changing conditions difficult to plan for.

Asset Data and Information

Some of the roadside asset data is pooled, missing in the inventory, and/or incomplete. Both short- and long-term planning requires the regular collection, storage and maintenance of infrastructure data to support asset management decision-making.

4.5 Levels of Service

The following tables identify the Town's current level of service for roads and roadside 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 Town has selected for this AMP.

4.5.1 Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by the roads and roadside assets.

<table>
<tr><th>Service Attribute</th><th>Qualitative Description</th><th>Current LOS (2021)</th></tr>
<tr><td>Scope</td><td>Description, which may include maps, of the road network in the municipality and its level of connectivity</td><td>The Town's road network spans a total of 93 km primarily within a rural setting, with areas of urban development. The network also includes other roadside appurtenances such as traffic signal systems, streetlights, sidewalks, and retaining walls.

See Appendix C for a map that further illustrates the level of connectivity.</td></tr>
<tr><td>Quality</td><td>Description or images that illustrate the different levels of road class pavement condition</td><td>A RNS was prepared for the Town by StreetScan in 2018. The collected road distress data was used to calculate an overall Pavement Condition Index (PCI).

Each road section received a numerical PCI rating from a scale of 0 to 100 and the corresponding PCI label.

<table><tr><th>PCI Label</th><th>PCI Range</th></tr><tr><td>Excellent</td><td>85-100</td></tr><tr><td>Good</td><td>70-85</td></tr><tr><td>Fair</td><td>55-70</td></tr><tr><td>Poor</td><td>40-55</td></tr><tr><td>Very Poor</td><td>20-40</td></tr><tr><td>Failed</td><td>0-20</td></tr></table>
See Appendix C for a map that provides an overview of road connection within the Town and a table that provides description of road distresses based on the PCI range and label.</td></tr>
</table>

4.5.2 Technical Levels of Service

The following table outlines the quantitative metrics that determine the technical level of service provided by the roads and roadside assets.

Service Attribute	Technical Metric	Current LOS (2021)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	1.35 km/km^2
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	1.17 km/km^2
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	5.14 km/km^2
Quality	Average pavement condition index for paved roads in the municipality	68% - Fair
	Average surface condition for unpaved roads in the municipality (e.g., excellent, good, fair, poor)	46% - Poor
Performance	Target reinvestment rate	2.33%
	Capital reinvestment rate	1.02%

4.6 Recommendations

Asset Inventory

- The current asset inventory does not account for additional roadside assets such as signs, traffic signal systems and guardrails. Consolidate these assets and relevant asset attribute data in the asset inventory
- The streetlight inventory includes several pooled assets that should be broken down into individual assets to allow for coordinated planning and analysis
- Continue to consolidate critical roads and roadside asset information from other asset data sources into the Town's centralized asset inventory.

Lifecycle Management Strategies

- Gather unit costs for assets that have relied primarily on historical inflation and review periodically to ensure a higher level of accuracy and within the context of current market condition
- Evaluate the efficacy of the Town's lifecycle management strategies at regular intervals to determine the impact cost, condition and risk.

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 identified in O. Reg. 588/17 and those metrics that the Town 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.

5 Stormwater

The Town is responsible for owning and maintaining a stormwater infrastructure of around 24 km of storm mains, 563 catch basins, 281 maintenance holes, approximately 41,025 m^2 of land designated as Stormwater Management Ponds (SWMPs) and supporting assets like headwalls and non-structural culverts. The current asset inventory is managed in Citywide and consists of 1,627 active assets.

The Town's Public Works department is responsible for planning and managing stormwater infrastructure.

Stormwater infrastructure generally poses the greatest uncertainty for municipalities, including Penetanguishene. Staff have expressed a lack of confidence in the current inventory but are working towards improving the accuracy and reliability to assist with long-term asset management planning.

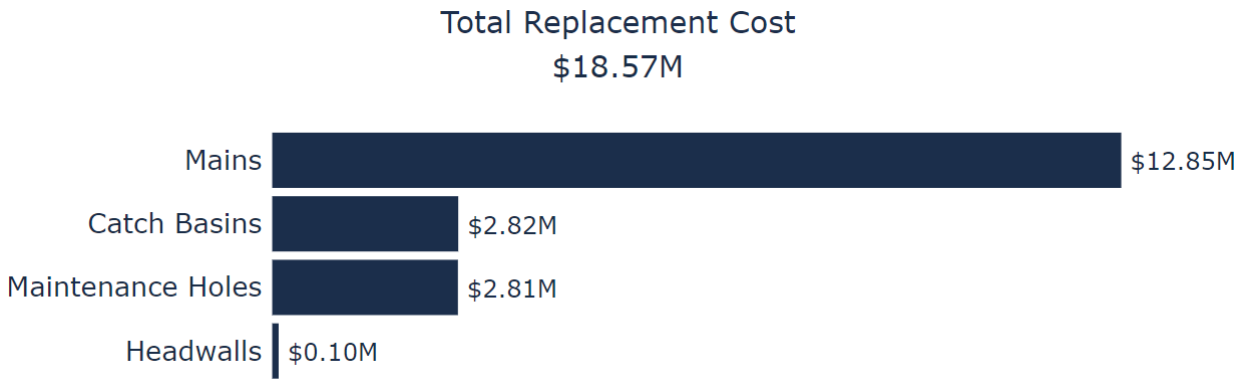
The state of the infrastructure for stormwater infrastructure is summarized in the following table. It is important to recognize that the current stormwater inventory is incomplete, and the resulting output values will be revised.

Replacement Cost	Condition	Financial Capacity	
$18.57 million	Very Good (87%)	Annual Requirement:	$235,350
		Funding Available:	$130,000
		Annual Deficit:	$105,350

5.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Mains	24 km	$12,846,134	$163,819
Catch Basins	563 assets	$2,815,000	$35,188
Maintenance Holes	281 assets	$2,810,000	$35,125
Headwalls	15 assets	$97,500	$1,219
SWMPs	8 (41,025 m^2)	$0[5]	$0[5]
Total		**$18,568,634**	**$235,350**



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

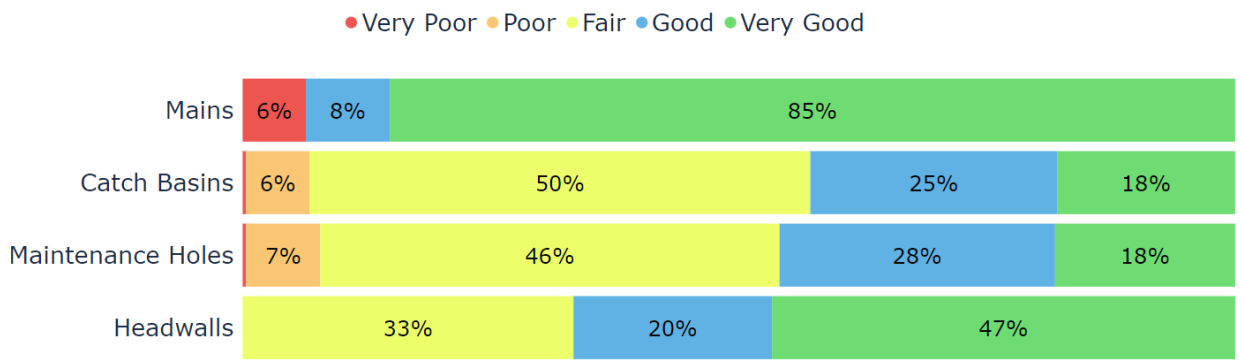
[5] Stormwater management ponds are considered to be in a state of perpetual maintenance and typically undergo rehabilitative and growth-related activities.

5.2 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.

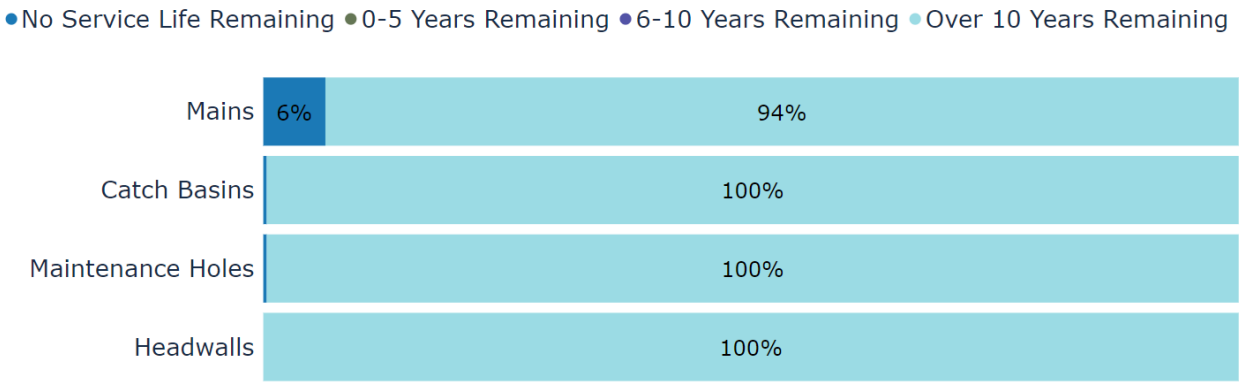
Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Mains	80	35.1	86% (Very Good)
Catch Basins	80	32.9	90% (Very Good)
Maintenance Holes	80	31.9	90% (Very Good)
Headwalls	80	23.8	94% (Very Good)
SWMPs	50	TBD	TBD
Average		**33.7**	**87% (Very Good)**

The graph below visually illustrates the average condition for each asset segment on a very good to very poor.



To ensure that the Town's stormwater assets continue to provide an acceptable level of service, the Town 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 stormwater infrastructure.

The graph below visually illustrates the average service life remaining for each asset segment, ranging from service life exceeded to over 10 years remaining.



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.

5.2.1 Current Approach to Condition Assessment

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

- There are no formal condition assessment programs in place for stormwater infrastructure although catch basins, maintenance holes and SWMPs are visually inspected during maintenance activities

- CCTV inspections are reactive in nature and based on complaints by residents or as identified by staff

- Current approach to determining asset condition includes considering the age of the asset, pipe material and asset location

- As the Town continues to refine the available asset inventory for stormwater infrastructure, an industry best practice assessment cycle should be established

In this AMP the following rating criteria is used to determine the current condition of stormwater 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

5.3 Lifecycle Management Strategy

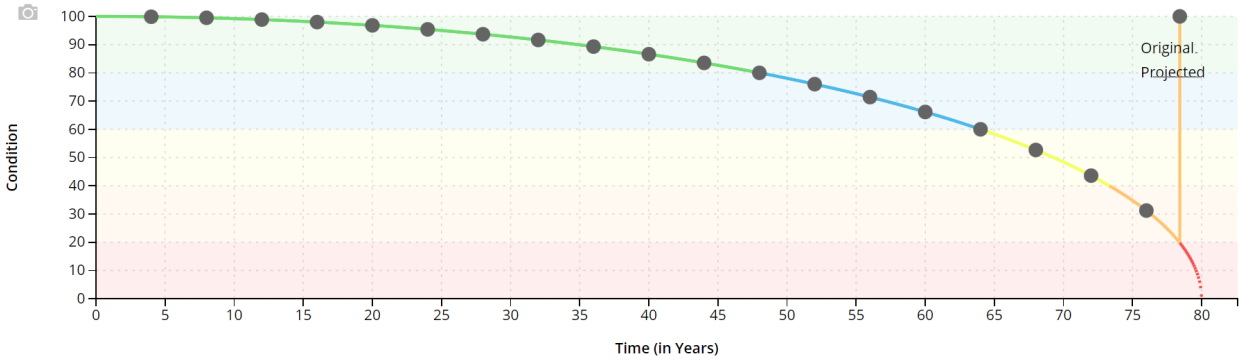
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Catch basin cleaning is conducted annually on a rotating basis, covering the entire catch basin network on a 4-year cycle
	Maintenance holes are cleaned annually, SWMPs are inspected and undergo general maintenance on a rotating basis and oil grit seperators are cleaned occasionally
	All other maintenance activities are completed on a reactive basis when operational issues are identified (e.g., blockages, backups). Staff are aware of limitations to the infrastructure and sensitive areas.
	Staff are currently refining the stormwater inventory to ensure the data maturity and reliability before developing maintenance strategies
Rehabilitation	Storm sewer rehabilitation (e.g., trenchless re-lining) is not common and most capital projects are end-of-life replacement.
Replacement	Without the availability of up-to-date condition assessment information replacement activities are purely reactive in nature
	Stormwater replacement is generally aligned with road reconstruction priorities, but also takes into account the asset location, age, pipe material and diameter when determining and prioritizing capital works

The following lifecycle strategy has been documented to formalize the current strategy to manage the lifecycle of stormwater mains

Stormwater Mains		
Event Name	**Event Class**	**Event Trigger**
CCTV/Zoom Camera Inpsection (1% of linear network per year)	Preventative Maintenance	Annually
General Maintenance	Maintenance	As needed
Flushing and Cleaning (5% of linear network per year)	Maintenance	Annually
Full Reconstruction	Replacement	Condition: 20

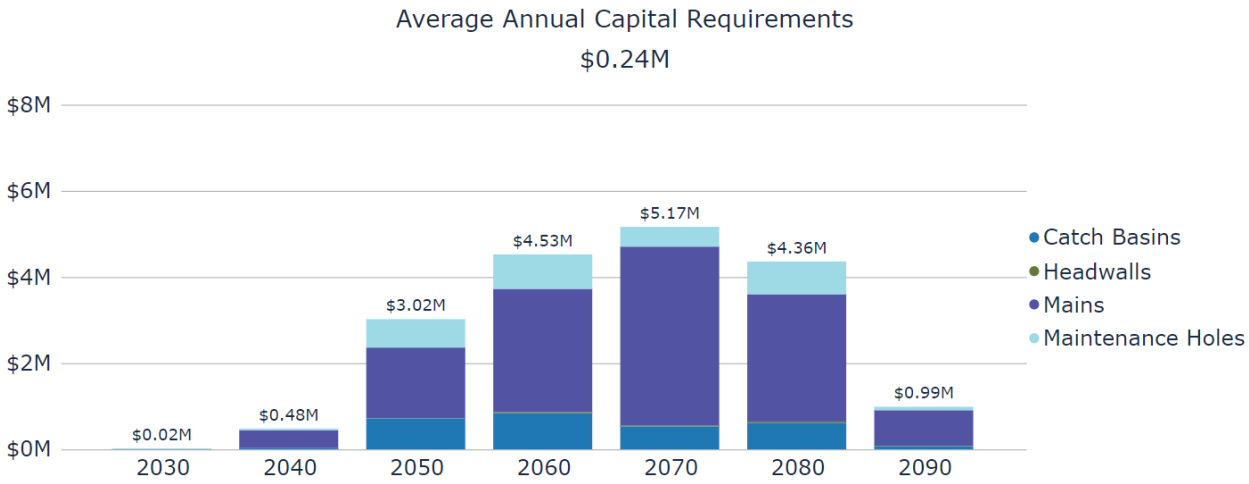


5.3.1 Forecasted Capital Requirements

Based on the current asset inventory and assuming end-of-life replacement of all assets in this category, the following graph identifies capital requirements over the next 71 years for stormwater assets.

This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 10-year bins and do not include assets that may be required due to growth.

The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs.

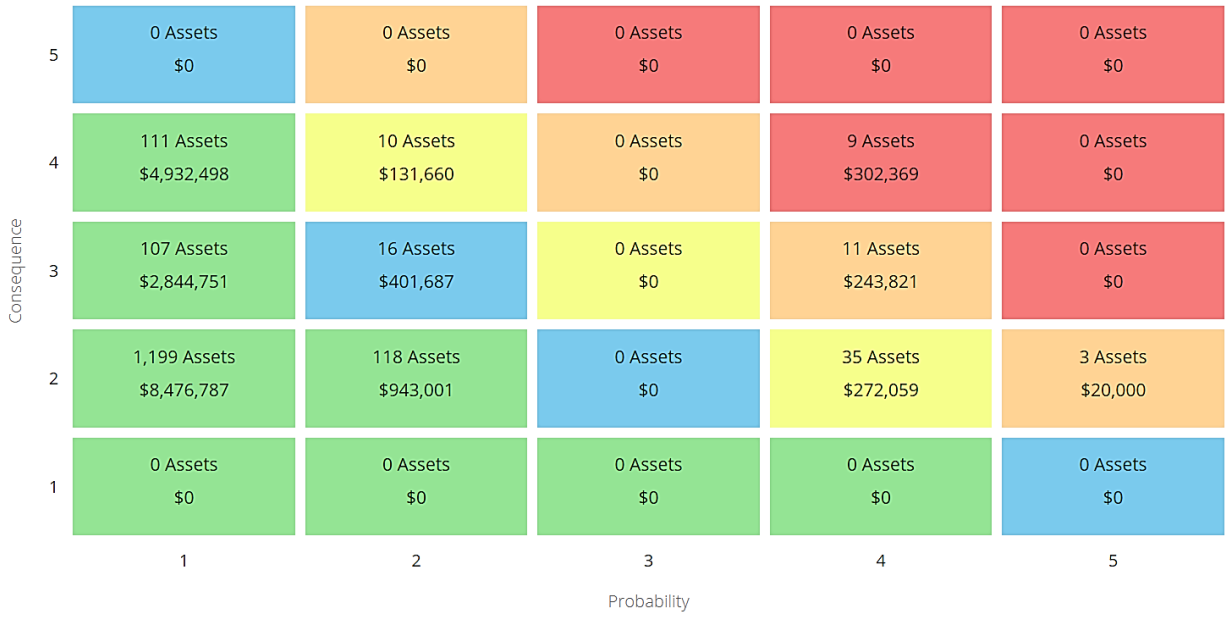


The specific projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can also be found in Appendix B.

5.4 Risk & Criticality

5.4.1 Risk Matrix

The following risk matrix 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 2021 inventory data.



This is an advanced risk model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of stormwater assets are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Direct Financial)
Pipe Material (linear assets)	Pipe Diameter (linear assets) (Operational)
Service Life Remaining	Asset Type (Strategic)

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

5.4.2 Risks to Current Asset Management Strategies

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

Asset Data and Information

There is a lack of confidence in the available inventory data for stormwater infrastructure. Flows can be very unpredictable. This poses a significant risk when trying to manage assets and planning future work.

Capital Funding Strategies

Partially owing to the substandard asset data, operations tend to be reactive rather than proactive for this category. Problems are generally only known when issues arise, and complaints are made.

5.5 Levels of Service

The following tables identify the Town's current level of service for the stormwater infrastructure. 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 Town has selected for this AMP.

5.5.1 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include map, of the relevant areas of the municipality that are protected from flooding, including the extent of protection provided by the municipal stormwater system	See Appendix C for a map that identifies the areas of the Town that are protected from flooding.

5.5.2 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of properties in municipality resilient to a 100-year storm	70%
	% of the municipal stormwater management system resilient to a 5-year storm	90%
Performance	Target reinvestment rate	1.27%
	Capital reinvestment rate	0.73%

5.6 Recommendations

Asset Inventory

- The Town's primary asset inventory remains at a basic level of maturity for stormwater infrastructure, and staff do not have a high level of confidence in its accuracy or reliability. The development of a comprehensive inventory of stormwater assets should be a priority.

Condition Assessment Strategies

- The development of a comprehensive inventory should be accompanied by a system-wide assessment of the condition of all stormwater assets through Closed Circuit Television Video (CCTV) inspections.

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 stormwater assets on a regular basis to achieve the lowest total cost of ownership while maintaining adequate service levels.

Levels of Service

- Measure current levels of service in accordance with the metrics that the Town 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 Buildings and Facilities

The Town owns and maintains several facilities and recreation centres that provide key services to the community. These include:

- administrative offices
- libraries, museum and community centre
- fire halls and associated offices and facilities
- public works garages and storage sheds

The Town's buildings and facilities inventory is managed in Citywide and comprises of 29 assets that are not componentized and represent 14 individual facilities.

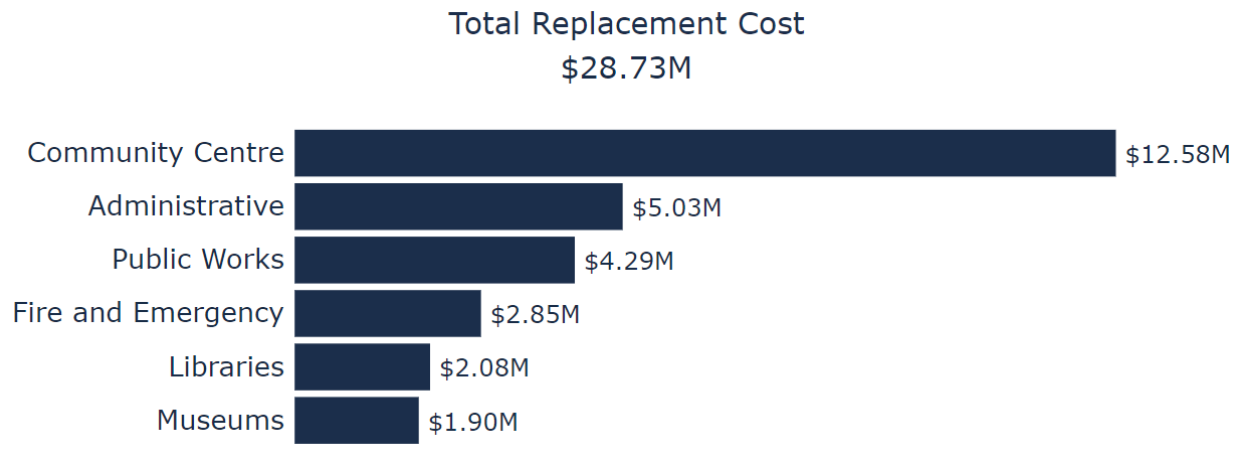
The state of the infrastructure for the buildings and facilities is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$28.73 million	Fair (50%)	Annual Requirement:	$702,531
		Funding Available:	$61,000
		Annual Deficit:	$641,531

6.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Community Centre	8 assets	$12,581,689	$251,634
Administrative	2 assets	$5,025,577	$118,082
Public Works	7 assets	$4,291,977	$178,407
Fire and Emergency	1 asset	$2,854,843	$57,097
Libraries	2 assets	$2,075,026	$51,571
Museum	9 assets	$1,901,723	$45,740
Total		**$28,730,835**	**$702,531**



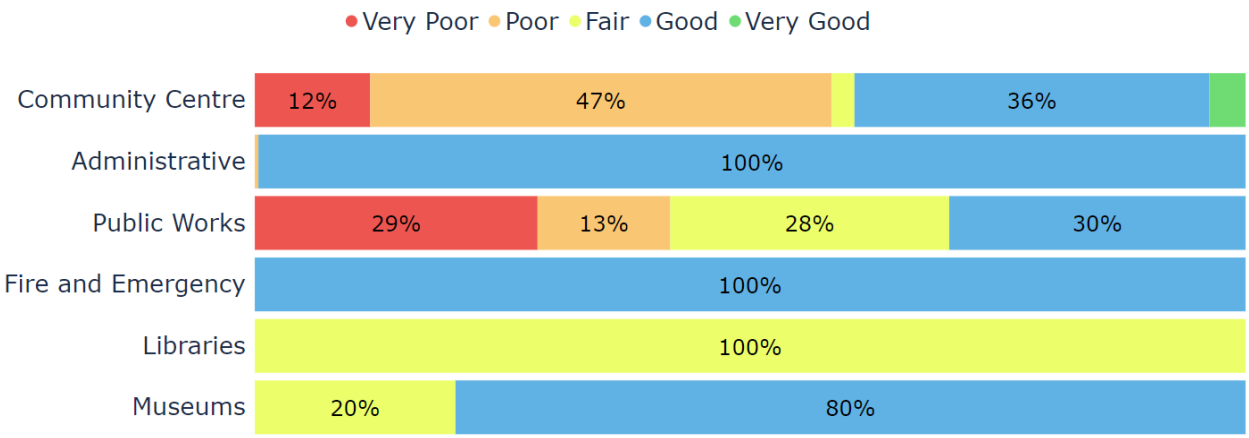
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

6.2 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	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Community Centre	50	33.2	39% (Poor)
Administrative	10 - 50	22.1	62% (Good)
Public Works	25 - 50	25.3	41% (Fair)
Fire and Emergency	50	12.2	76% (Good)
Libraries	50	21.1	58% (Fair)
Museum	25 - 50	14.8	63% (Good)
	Average	**23.3**	**50% (Fair)**

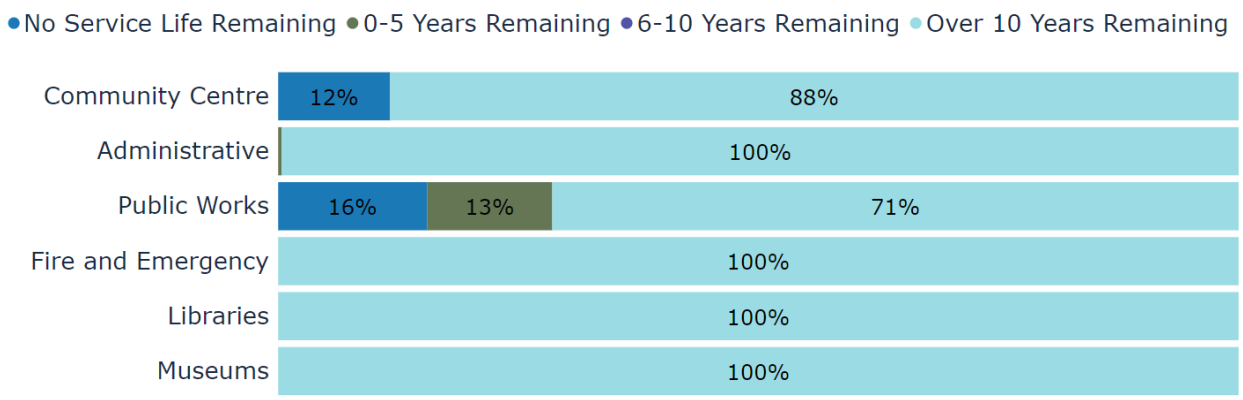
The graph below visually illustrates the average condition for each asset segment on a very good to very poor.



To ensure that the Town's buildings and facilities continue to provide an acceptable level of service, the Town 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 buildings and facilities.

The graph below visually illustrates the average service life remaining for each asset segment, ranging from service life exceeded to over 10 years remaining.



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.

6.2.1 Current Approach to Condition Assessment

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

- Building Condition Assessments (BCAs) was conducted in 2019 by GHD on 18 of the Town's facilities, that produced condition assessments and a 20 year projection of facility component repairs and/or replacements for each facility.

- Formal workplace inspections conducted every year through the Town's health and safety program.

- High-level assessments by internal staff are performed annually to determine the condition of facilities and identify deficiencies.

In this AMP the following rating criteria is used to determine the current condition of building and facilities 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

6.3 Lifecycle Management Strategy

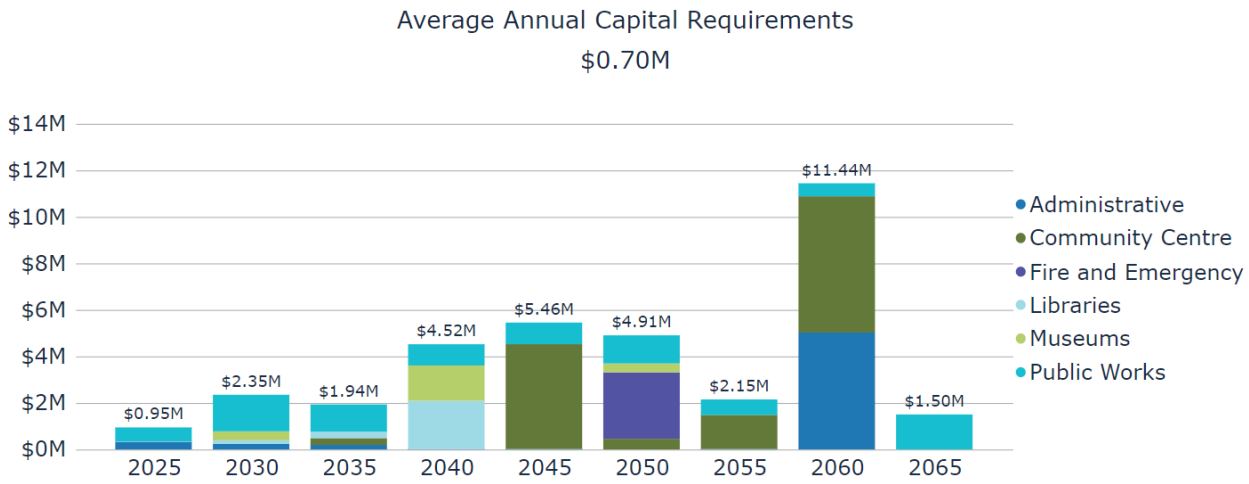
Buildings and Facilities is considered a non-core asset category. As such, the Town has until July 1, 2024, to establish and formally document the lifecycle management strategies for buildings and facilities to ensure a proactive management of asset deterioration.

6.3.1 Forecasted Capital Requirements

Based on the current asset inventory and assuming end-of-life replacement of all assets in this category the following graph forecasts long-term capital requirements over the next 43 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 do not include assets that may be required due to growth.

The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs.

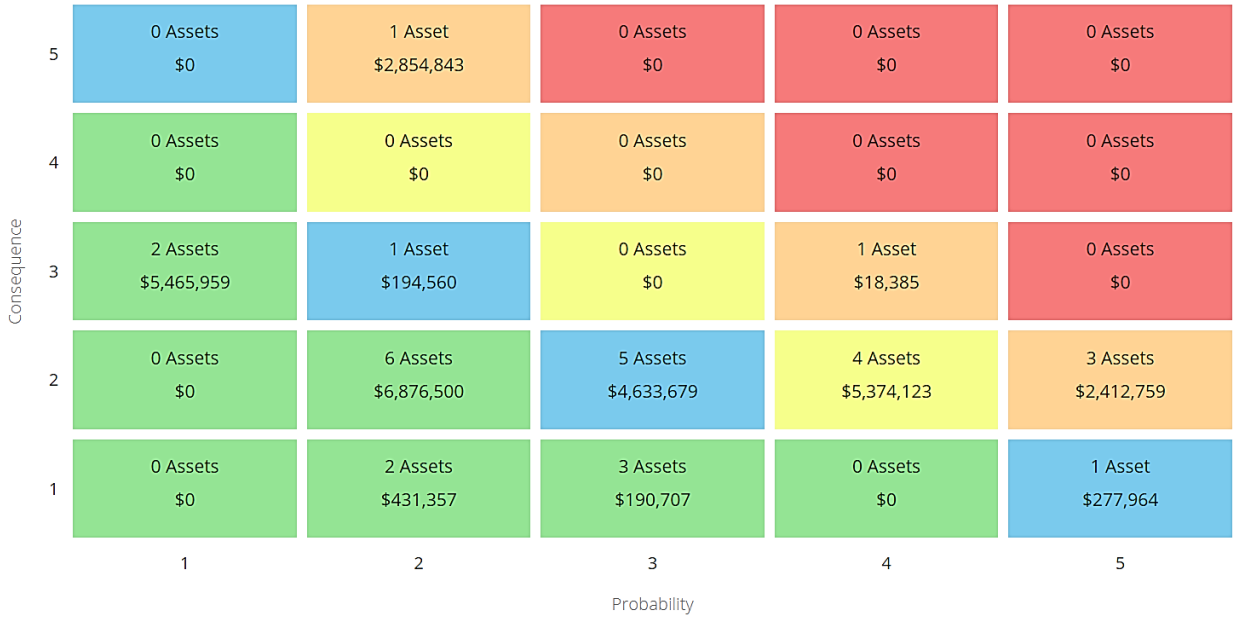


The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can also be found in Appendix B.

6.4 Risk & Criticality

6.4.1 Risk Matrix

The following risk matrix 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 2021 inventory data.



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

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of buildings and facilities are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Assessed Condition	Replacement Cost (Direct Financial)
Service Life Remaining	Facility Function / Facility Type (Strategic)

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

6.5 Levels of Service

Buildings and Facilities is considered a non-core asset category. As such, the Town has until July 1, 2024, to determine the qualitative descriptions and technical metrics that measure the current level of service provided.

6.6 Recommendations

Asset Inventory

- The Town's primary asset inventory is not componentized and consists of a limited number of assets that represent a single facility. A facility asset inventory typically contains several separate capital components that have unique estimated useful lives and require asset-specific lifecycle strategies. Staff should work towards implementing a component-based inventory of all facilities, preferably using the UNIFORMAT data structure as the established asset hierarchy.

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

- Determine the qualitative and technical metrics needed to measure current levels of service for the 2024 deadline as per O. Reg. 588/17.
- Work towards identifying proposed levels of service for the 2025 deadline as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

7 Machinery and Equipment

In order to maintain the high quality of public infrastructure and support the delivery of core and non-core services, municipal staff own and employ machinery and equipment assets that include:

- Machinery and equipment to maintain parks and recreational facilities
- Specialized machinery and equipment to support the public works department
- Emergency services equipment to support first responders and emergency services
- IT equipment for communication and data management to support corporate and administrative services

The Town's machinery and equipment inventory is managed in Citywide and consists of 42 active assets. Keeping machinery and equipment assets in an adequate state of repair is important to maintain a high level of service.

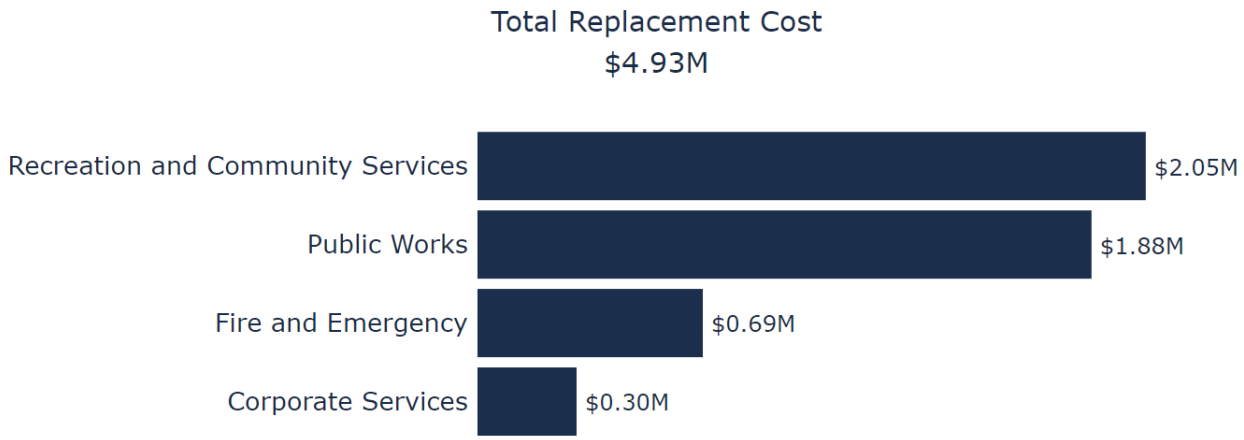
The state of the infrastructure for machinery and equipment assets is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
		Annual Requirement:	$450,529
$4.93 million	Poor (24%)	Funding Available:	$260,000
		Annual Deficit:	$190,529

7.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Recreation and Community Services	25 assets	$2,049,656	$241,473
Public Works	38 assets	$1,883,304	$95,886
Fire and Emergency	24 assets	$691,082	$83,592
Corporate Services	7 assets	$303,907	$29,578
Total		**$4,927,949**	**$450,529**



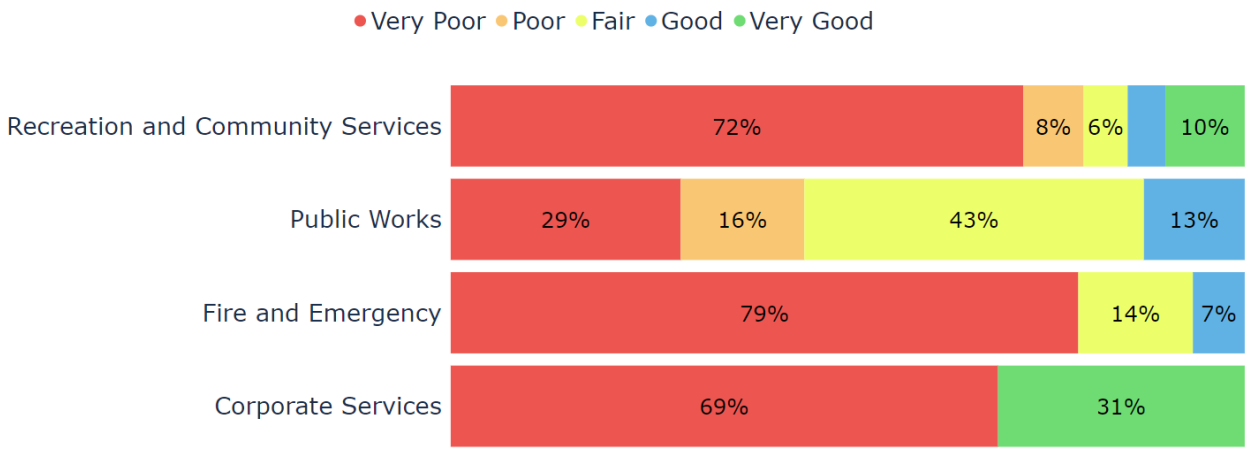
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

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.

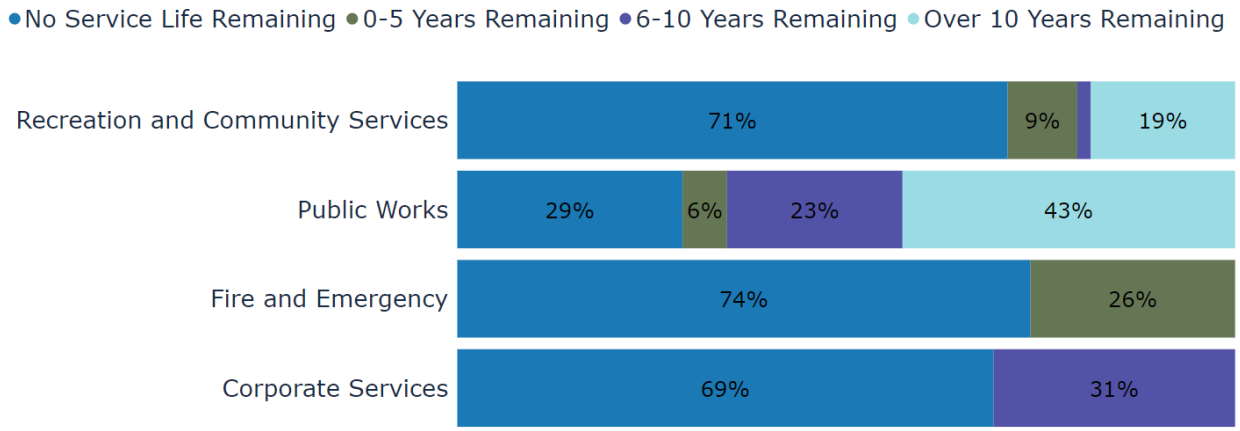
Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Recreation and Community Services	7 - 20	10.1	17%
Public Works	5 - 50	12.4	33%
Fire and Emergency	5 - 10	5.9	14%
Corporate Services	5 - 12	10.6	28%
Average		**10.1**	**24% (Poor)**

The graph below visually illustrates the average condition for each asset segment on a very good to very poor.



To ensure that the Town's machinery and equipment assets continue to provide an acceptable level of service, the Town 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 machinery and equipment assets.

The graph below visually illustrates the average service life remaining for each asset segment, ranging from service life exceeded to over 10 years remaining.



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.

7.2.1 Current Approach to Condition Assessment

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

- Staff complete regular visual inspections of machinery and equipment assets to ensure they are structurally and functionally sound. Assets typically stay true to their estimated useful life and are replaced at end of life.

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

In this AMP the following rating criteria is used to determine the current condition of fleet 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

7.3 Lifecycle Management Strategy

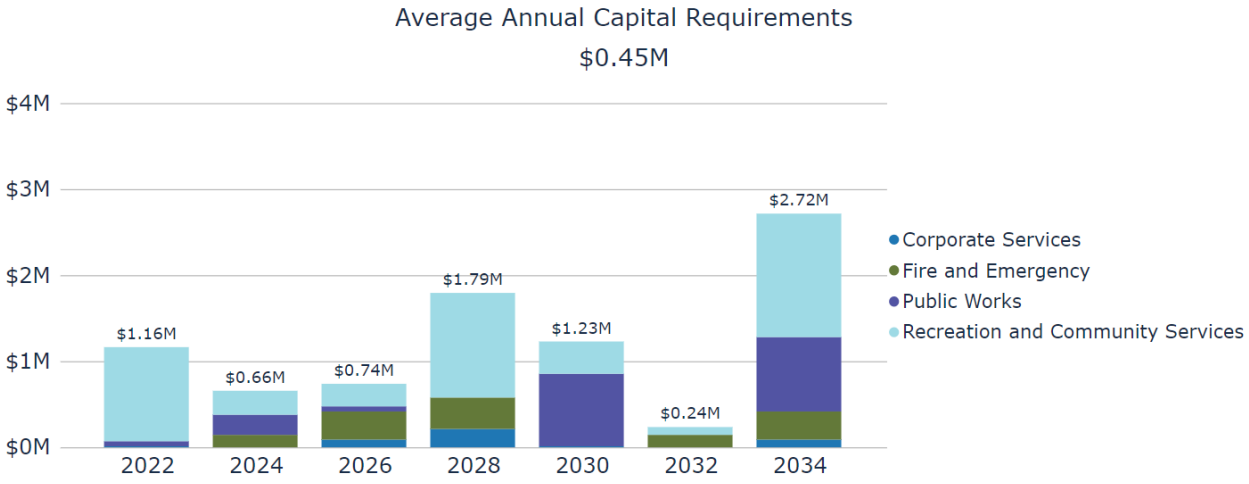
Machinery and Equipment assets is considered a non-core asset category. As such, the Town has until July 1, 2024, to establish and formally document the lifecycle management strategies for machinery and equipment assets to ensure a proactive management of asset deterioration.

7.3.1 Forecasted Capital Requirements

Based on the current asset inventory and assuming end-of-life replacement of all assets in this category, the following graph capital requirements over the next 13 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 2-year bins and do not include assets that may be required due to growth.

The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs.



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 also be found in Appendix B.

7.4 Risk & Criticality

7.4.1 Risk Matrix

The following risk matrix 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 2021 inventory data.

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

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of vehicles are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
Service Life Remaining	Machinery and Equipment Function/ Department (Strategic)

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

7.5 Levels of Service

Machinery and Equipment is considered a non-core asset category. As such, the Town has until July 1, 2024, to determine the qualitative descriptions and technical metrics that measure the current level of service provided.

7.6 Recommendations

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 fleet 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

- Determine the qualitative and technical metrics needed to measure current levels of service for the 2024 deadline as per O. Reg. 588/17.
- Work towards identifying proposed levels of service for the 2025 deadline as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

8 Fleet

Similar to machinery and equipment assets, fleet assets support staff in the efficient delivery of municipal services and personnel. These assets include

- Light-duty and heavy-duty vehicles to support the maintenance of municipal infrastructure and address service requests
- Emergency service vehicles and equipment to support first responders
- Vehicles dedicated to supporting recreational and cultural services

The Town's fleet inventory is managed in Citywide and consists of 34 active assets. Keeping fleet assets in an adequate state of repair is important to maintain a high level of service.

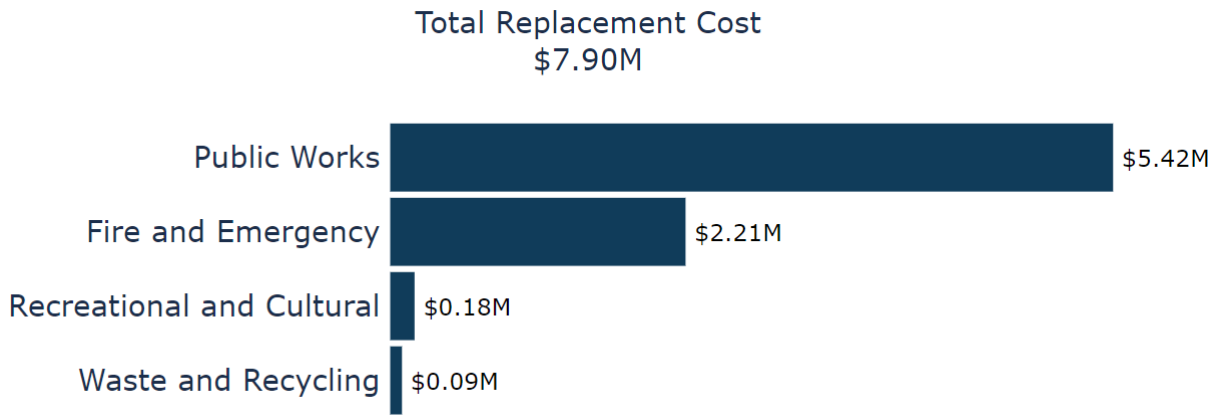
The state of the infrastructure for fleet assets is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
		Annual Requirement:	$429,492
$6.51 million	Poor (36%)	Funding Available:	$296,000
		Annual Deficit:	$133,492

8.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Public Works	17 assets	$3,074,197	$220,178
Fire and Emergency	8 assets	$2,968,008	$162,552
Recreation and Community Services	7 assets	$360,525	$38,044
By-Law	2 assets	$111,530	$8,717
Total		**$6,514,260**	**$429,492**



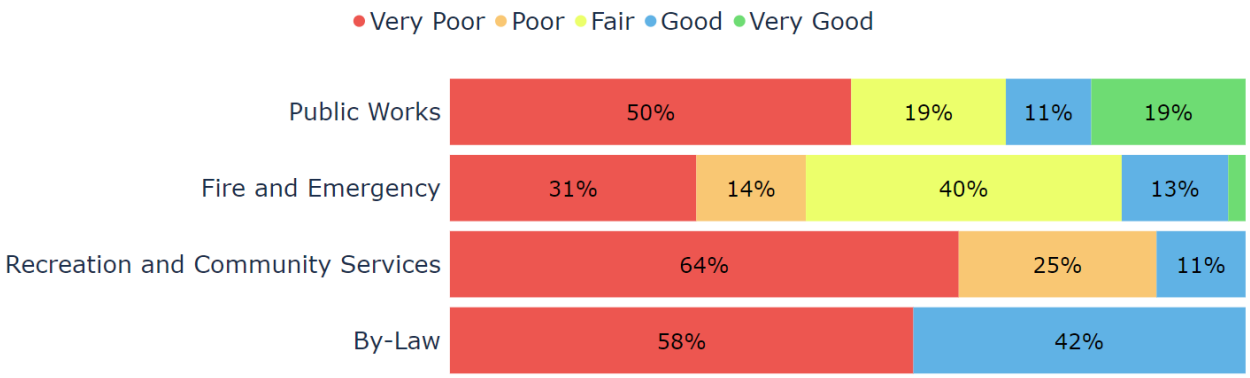
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

8.2 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.

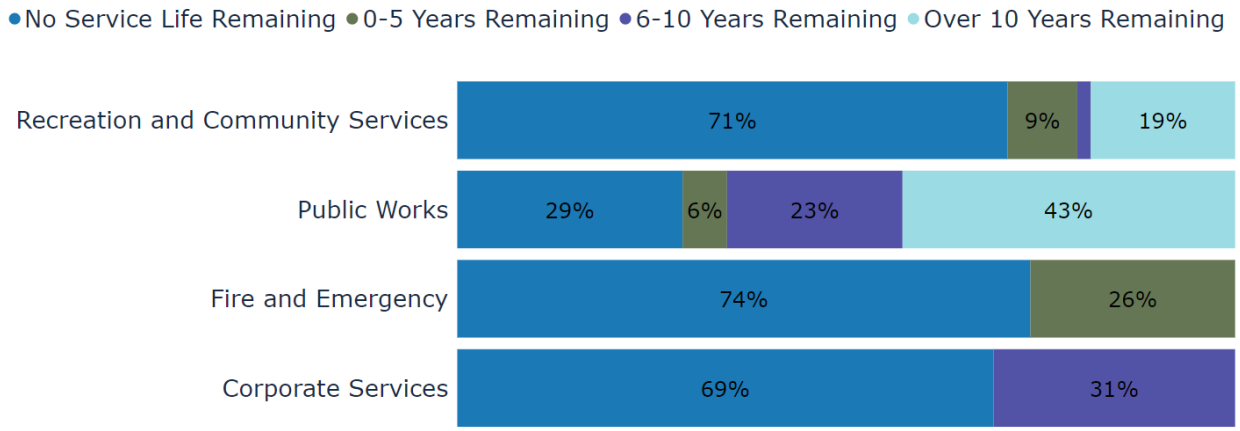
Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Public Works	7 - 20	10.8	39% (Fair)
Fire and Emergency	15 - 20	10.6	36% (Fair)
Recreation and Community Services	7 - 10	8.9	22% (Poor)
By-Law	10 - 16	9.6	33% (Poor)
Average		**10.3**	**36% (Poor)**

The graph below visually illustrates the average condition for each asset segment on a very good to very poor.



To ensure that the Town's fleet assets continue to provide an acceptable level of service, the Town 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 vehicles.

The graph below visually illustrates the average service life remaining for each asset segment, ranging from service life exceeded to over 10 years remaining.



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.

8.2.1 Current Approach to Condition Assessment

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

- Staff complete regular visual inspections of fleet assets to ensure they are in state of adequate repair prior to operation
- The mileage of vehicles is used as a proxy to determine remaining useful life and relative vehicle condition
- Condition assessments are conducted on fire and emergency vehicle assets in accordance with regulations for health and safety regulations including National Fire Protection Association (NFPA) codes and standards for fire service-related vehicle assets

In this AMP the following rating criteria is used to determine the current condition of fleet 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

8.3 Lifecycle Management Strategy

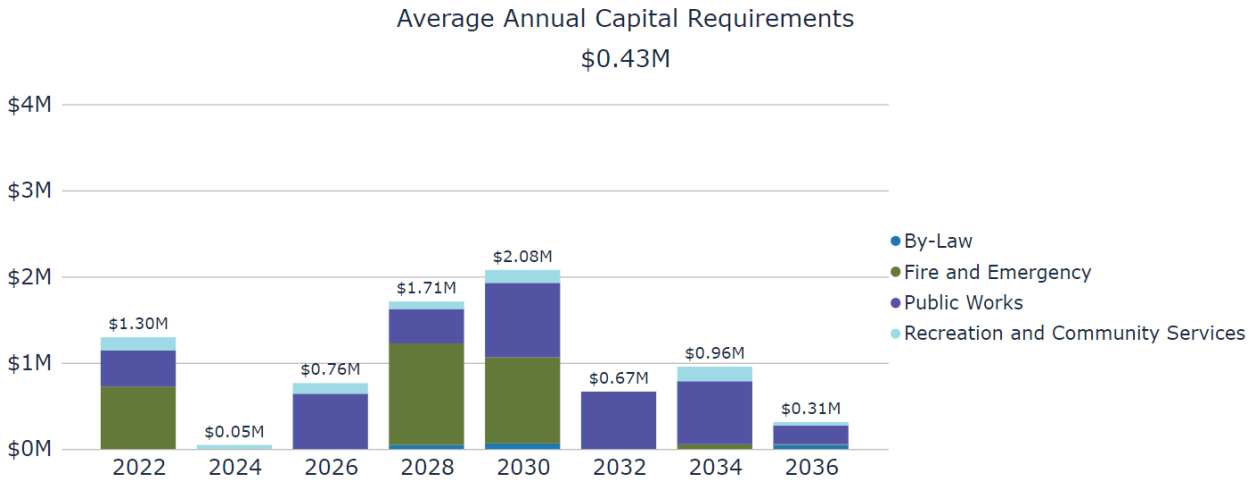
Fleet is considered a non-core asset category. As such, the Town has until July 1, 2024, to establish and formally document the lifecycle management strategy for fleet assets to ensure a proactive management of asset deterioration.

8.3.1 Forecasted Capital Requirements

Based on the current asset inventory and assuming end-of-life replacement of all assets in this category, the following graphs forecasts long-term capital requirements over the next 14 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 2-year bins and do not include assets that may be required due to growth.

The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs.



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 also be found in Appendix B.

8.4 Risk & Criticality

8.4.1 Risk Matrix

The following risk matrix 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 2021 inventory data.

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

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of vehicles are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
Service Life Remaining	Fleet Asset Function/Department (Strategic)

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

8.5 Levels of Service

Fleet assets are considered a non-core asset category. As such, the Town has until July 1, 2024, to determine the qualitative descriptions and technical metrics that measure the current level of service provided.

8.6 Recommendations

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 fleet 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

- Determine the qualitative and technical metrics needed to measure current levels of service for the 2024 deadline as per O. Reg. 588/17.
- Work towards identifying proposed levels of service for the 2025 deadline as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

9 Parks and Land Improvements

The Town of Penetanguishene owns a number of assets that are grouped under the parks and land improvements category and assist in providing the Town with community recreation, marina and natural outdoor space.

The Town's parks and land improvements inventory is managed in Citywide and consists of 22 active assets. Keeping these assets in an adequate state of repair is important to providing a high level of service.

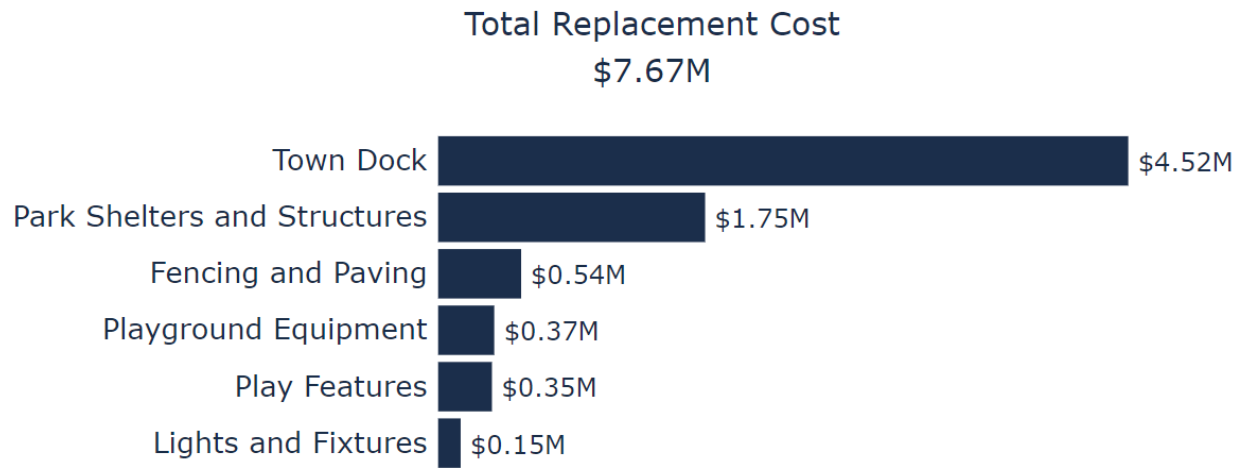
The state of the infrastructure for the land improvements is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
		Annual Requirement:	$284,163
$7.67 million	Fair (52%)	Funding Available:	$246,000
		Annual Deficit:	$38,163

9.1 Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Town's parks and land improvements inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Town Dock	4 assets	$4,515,353	$174,588
Park Shelters and Structures	7 assets	$1,746,824	$44,930
Fencing and Paving	2 assets	$543,213	$22,793
Playground Equipment	6 assets	$367,077	$18,354
Play Features	1 asset	$352,020	$17,601
Lights and Fixtures	1 asset	$147,444	$5,898
Total		**$7,671,931**	**$284,163**



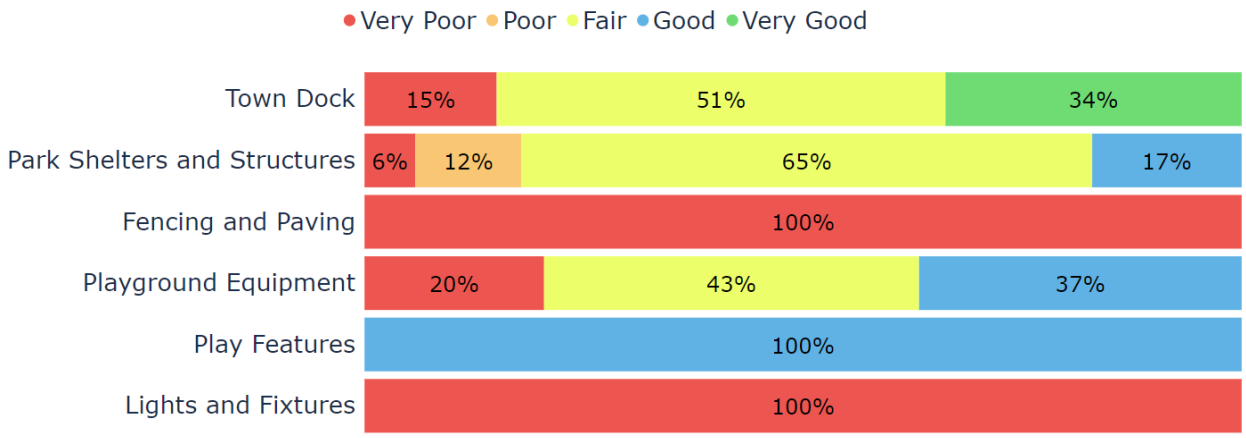
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

9.2 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.

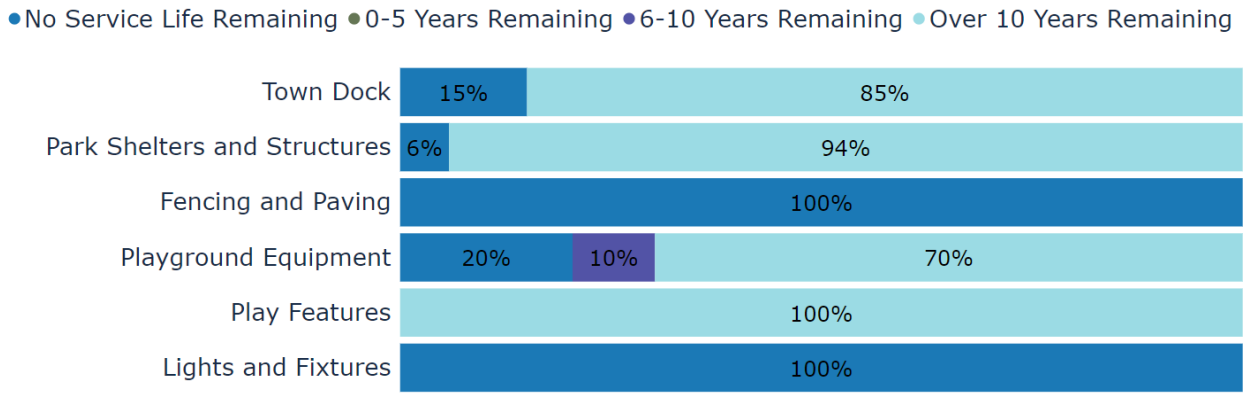
Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Town Dock	15 - 40	15.8	60% (Good)
Park Shelters and Structures	25 - 50	21.3	51% (Fair)
Fencing and Paving	10 - 25	19.6	0% (Very Poor)
Playground Equipment	20	13.4	48% (Fair)
Play Features	20	7.1	65% (Good)
Lights and Fixtures	25	32.1	0% (Very Poor)
Average		**17.7**	**52% (Fair)**

The graph below visually illustrates the average condition for each asset segment on a very good to very poor.



To ensure that the Town's parks and land improvements assets continue to provide an acceptable level of service, the Town 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 land improvements.

The graph below visually illustrates the average service life remaining for each asset segment, ranging from service life exceeded to over 10 years remaining.



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.

9.2.1 Current Approach to Condition Assessment

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

- Staff complete regular visual inspections of parks and land improvements assets to ensure they are in state of adequate repair
- Staff conduct formal inspections of outdoor play space, fixed play structures and surfacing in accordance with CAN/CSA-Z614 and required as per O. Reg. 137/15
- There are no other formal condition assessment programs in place for other parks and land improvements assets

In this AMP the following rating criteria is used to determine the current condition of land improvements 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

9.3 Lifecycle Management Strategy

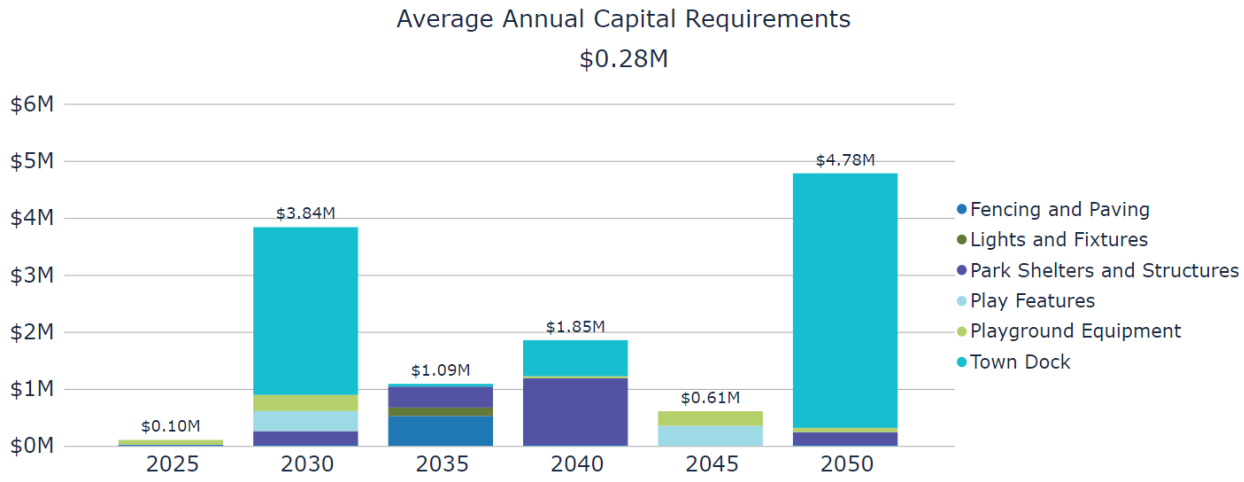
Parks and Land Improvements is considered a non-core asset category. As such, the Town has until July 1, 2024, to establish and formally document the lifecycle management strategy for parks and land improvement assets to ensure a proactive management of asset deterioration.

9.3.1 Forecasted Capital Requirements

Based on the current asset inventory and assuming end-of-life replacement of all assets in this category, the following graphs forecasts long-term capital requirements over the next 30 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 do not include assets that may be required due to growth.

The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs.

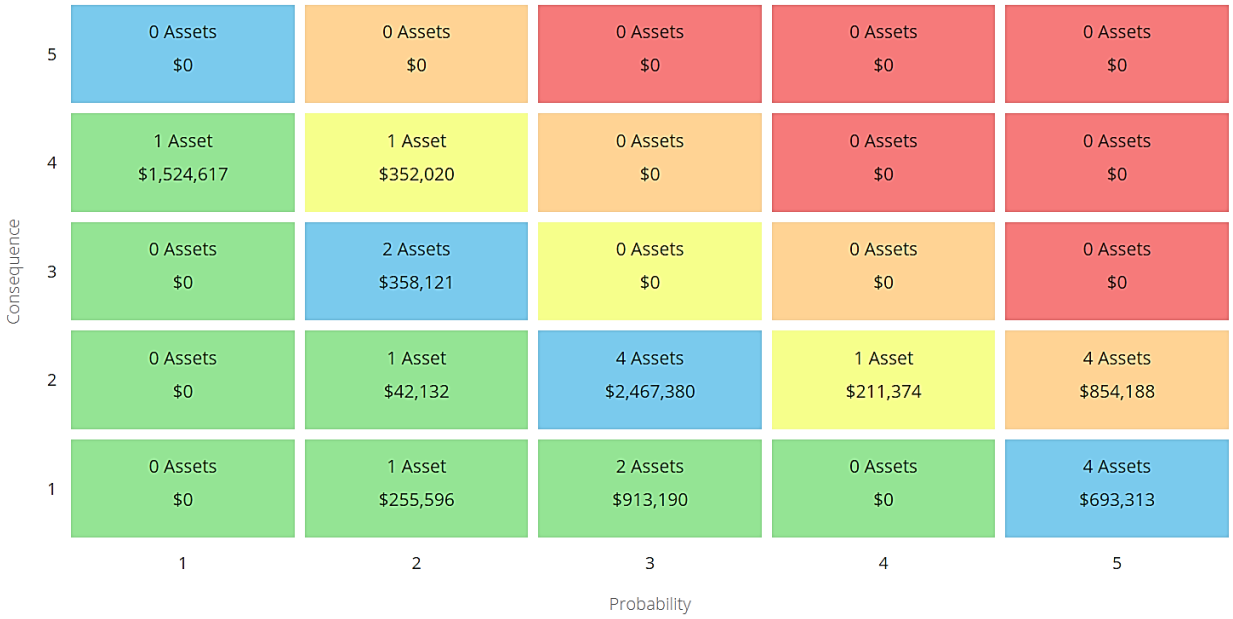


The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can also be found in Appendix B.

9.4 Risk & Criticality

9.4.1 Risk Matrix

The following risk matrix 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 2021 inventory data.



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

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of park and land improvements are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Direct Financial)
Service Life Remaining	Parks and Land Improvements Asset Type (Strategic)

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

9.5 Levels of Service

Parks and land improvements is considered a non-core asset category. As such, the Town has until July 1, 2024, to determine the qualitative descriptions and technical metrics that measure the current level of service provided.

9.6 Recommendations

Asset Inventory

- The current parks and land improvements asset inventory is incomplete and lacking a consistent asset hierarchy. The Town should conduct an inventory review, collect and consolidate asset data to ensure all relevant assets are accounted for.

Replacement Costs

- Most of the replacement costs derived for this asset category were based on the inflation of historical costs. 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

- Determine the qualitative and technical metrics needed to measure the current levels of service for the 2024 deadline as per O. Reg. 588/17.
- Work towards identifying proposed levels of service for the 2025 deadline as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

10 Sanitary Sewer

The Town is responsible for providing sanitary sewer services to residents through the collection, storage and treatment of sanitary sewage.

Sanitary sewer infrastructure is managed by the Public Works Department and consists of:

- 2 sanitary treatment facilities
- 53 km of sanitary mains;
- 662 maintenance holes;
- 5 sewage pump stations; and
- vehicles, specialized machinery and equipment to support in the management and delivery of sanitary sewer services.

In 2022, the Town retained BMA Management Consulting Inc. to develop a water and wastewater financial plan as per O. Reg. 453/07, that provided a long-range financial forecast and recommended rate increases.

Staff continue to consolidate critical asset attribute data into the Town's primary central asset inventory, which is managed in Citywide and comprises of 1,392 assets.

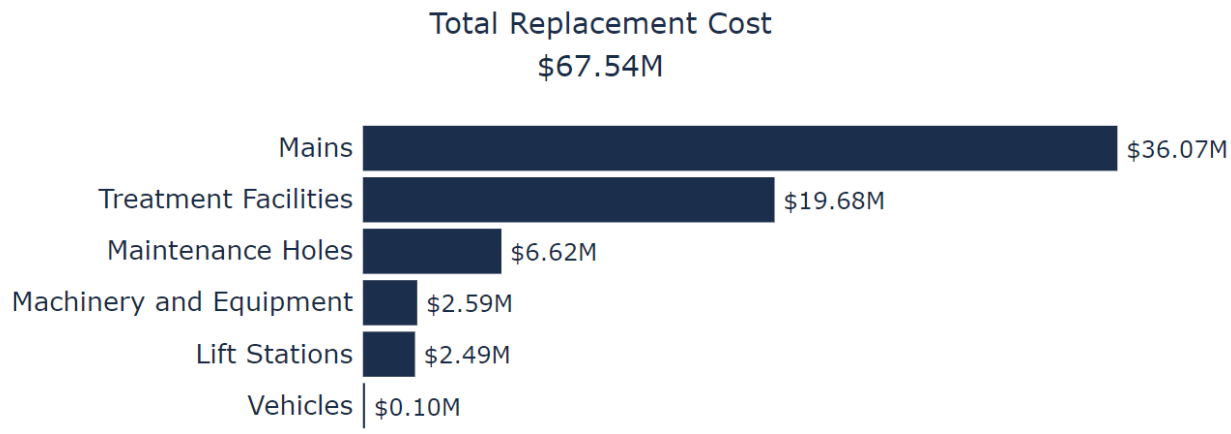
The state of the infrastructure for sanitary sewer assets is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
		Annual Requirement:	$1,069,904
$67.54 million	80% (Very Good)	Funding Available:	$177,000
		Annual Deficit:	$892,904

10.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Mains	53 km	$36,065,068	$415,976
Treatment Facilities	2 facilities	$19,675,398	$393,508
Maintenance Holes	662 assets	$6,620,000	$88,267
Machinery and Equipment	8 assets	$2,593,415	$61,834
Lift Stations	5 facilities	$2,488,484	$98,626
Vehicles	2 assets	$98,304	$11,693
Total		**$67,540,669**	**$1,069,904**



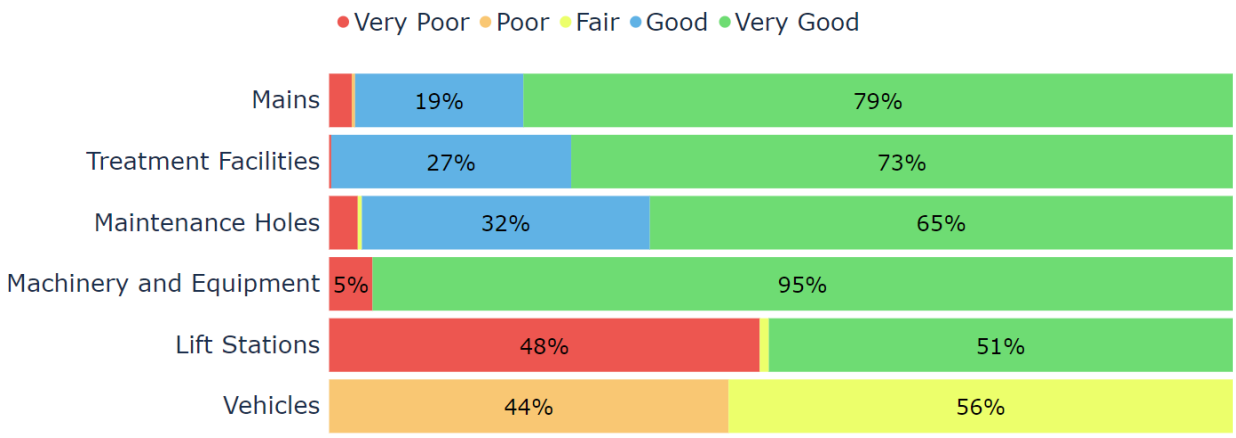
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

10.2 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.

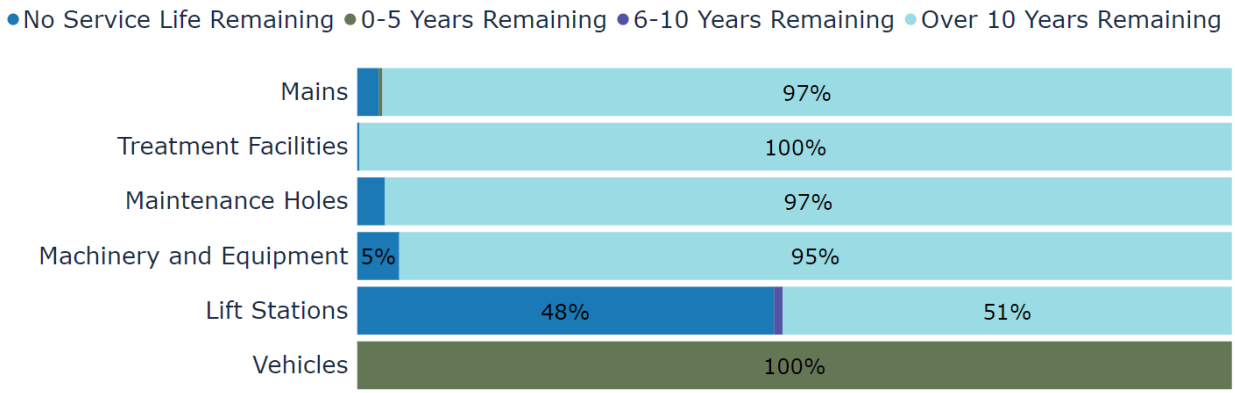
Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Mains	80	39.5	84% (Very Good)
Treatment Facilities	50	36.8	77% (Good)
Maintenance Holes	75 - 80	40.7	81% (Very Good)
Machinery and Equipment	10 - 50	13.8	80% (Very Good)
Lift Stations	25 - 50	26.5	50% (Fair)
Vehicles	7 - 10	7.5	42% (Fair)
Average		**39.8**	**80% (Very Good)**

The graph below visually illustrates the average condition for each asset segment on a very good to very poor.



To ensure that the Town's sanitary sewer assets continue to provide an acceptable level of service, the Town 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 sanitary sewer assets.

The graph below visually illustrates the average service life remaining for each asset segment, ranging from service life exceeded to over 10 years remaining.



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.

10.2.1 Current Approach to Condition Assessment

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

- CCTV inspections are conducted on an as-needed basis, during main flushing and in coordination with road and/or other subsurface construction projects

- Sanitary facilities are inspected under an established schedule and deficiencies are tracked through the Supervisory Control and Data Acquisition (SCADA) system

- As Staff rely on a variety of metrics including age, pipe material and diameter, location, and available CCTV assessments to determine the projected condition of linear assets

In this AMP the following rating criteria is used to determine the current condition of sanitary sewer 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

10.3 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.

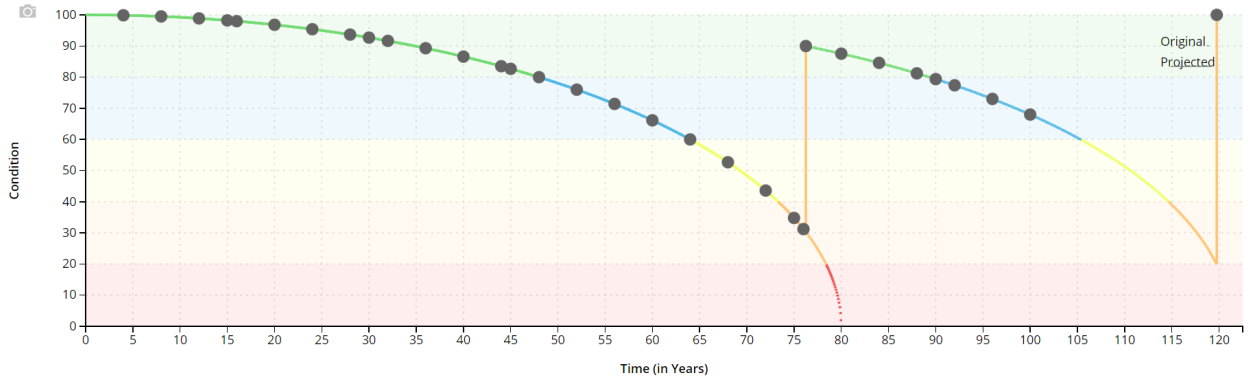
The following table outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Inspection/ Maintenance	A rotating main flushing program is in place that covers 25% of the linear network on a 4-year cycle. Staff also assess the condition of sanitary mains and maintenance holes during flushing
	Annual maintenance of maintenance holes consists of an inspection, lid replacement, lining and grouting
	Inspection and maintenance of treatment plants and lift stations are determined from through the SCADA system
Rehabilitation	There is a relining program in place as a rehabilitative strategy on high risk sanitary mains in order to mitigate critical asset failure.
Replacement	Sanitary sewer replacement is generally aligned with road and/or subsurface reconstruction priorities, but also takes into account its location, age, pipe material and diameter when determining and prioritizing capital works

The following lifecycle strategy has been documented to formalize a proactive strategy to manage the lifecycle of sanitary sewer mains.

Instead of allowing sanitary mains to deteriorate until replacement is required or critical asset failure occurs, strategic preventative maintenance and rehabilitation is expected to extend the service life of the sanitary mains at a lower total cost.

Sanitary Sewer Mains		
Event Name	**Event Class**	**Event Trigger**
CCTV/Zoom Camera Inspection (2% of linear network each year)	Preventative Maintenance	Annually
Flushing and Cleaning (25% of linear network each year)	Maintenance	Annually
Trenchless Structural Re-lining	Rehabilitation	Condition: 30
Full Reconstruction	Replacement	Condition: 20

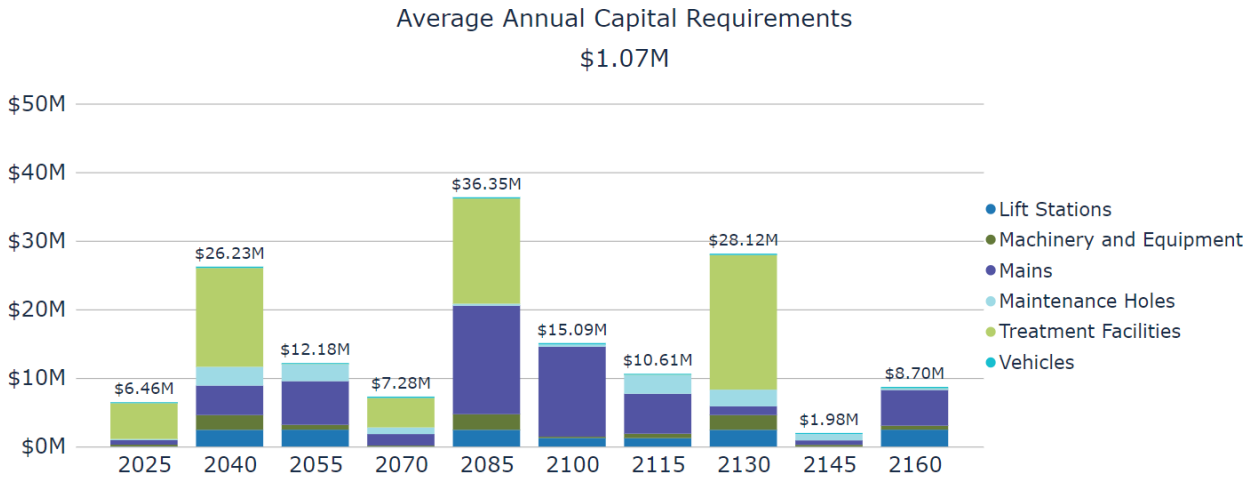


10.3.1 Forecasted Capital Requirements

Based on the lifecycle strategies formalized for sanitary mains, the current asset inventory and assuming end-of-life replacement of all assets in this category, the following graphs forecasts long-term capital requirements over the next 148 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 15-year bins and do not include assets that may be required due to growth.

The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs.



The specific projected cost of lifecycle activities required over the next 10 years, in order to maintain the current level of service, can be found in Appendix B.

10.4 Risk & Criticality

10.4.1 Risk Matrix

The following risk matrix 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 2021 inventory data.

This is an advanced model developed for the purposes of this AMP and Town staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of sanitary sewer assets are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Direct Financial)
Pipe Material (linear assets)	Pipe Diameter (linear assets) (Operational)
Service Life Remaining	Asset Type (Strategic)

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

10.4.2 Risks to Current Asset Management Strategies

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

Asset Data and Information

There is a misalignment in the current inventory data for sanitary sewer assets. Some of the assets and asset data has not been consolidated into the Town's central asset inventory. This poses a risk and will lead to discrepancies when trying to manage assets and planning future work.

Climate Change & Extreme Weather Events

With the intensity and frequency of climate change and extreme weather events increasing, the Town's sanitary sewer infrastructure faces a higher probability of inflow and infiltration issues.

10.5 Levels of Service

The following tables identify the Town's current level of service for the sanitary sewer infrastructure. 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 Town has selected for this AMP.

10.5.1 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	See Appendix C for a map that identifies the areas of the Town that are connected to the municipal wastewater system.
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	Philip H. Jones PCP (Main Street STP) Sanitary Sewer Collection System - There are a limited number of combined sewers within the collection system. The removal of these storm sewer cross connections is a priority within the Capital Plan and these will be removed over time. The Equalization storage tanks at the Main Street STP provide on-site storage of the extraneous flows (inflow and infiltration) that are received at the STP during storm or melt events. This on-site storage helps prevent treatment units within the plant from being overwhelmed resulting in by-pass events (Primary, Secondary and Tertiary).

Service Attribute	Qualitative Description	Current LOS (2021)
		Fox Street PCP Sanitary Collection System - There are a limited number of combined sewers within the collection system. The removal of these storm sewer cross connections is a priority within the Capital Plan and these will be removed over time. There is no on-site equalization store at the Fox Street STP.
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	There is a limited number of combined sewers within the collection systems. The collection systems discharge into our Pollution Control Plants where the wastewater is treated in accordance with our Certificate of Approval that was issued by the MECP. There were no by-pass events in 2020 at either the Main Street or Fox Street PCP's. There has been one by-pass event at the Fox Street PCP in 2021, no by-pass events at the Main Street STP.
	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	Stormwater can enter into sanitary sewers due to damaged sanitary mains or through indirect connections (e.g., weeping tiles). In the case of heavy rainfall events, sanitary sewers may experience a volume of water and sewage that exceeds its designed capacity. In some cases, this can cause water and/or sewage to overflow backup into homes. the disconnection of weeping tiles from sanitary mains and the use of sump pumps and pits directing storm water to the storm drain system can help to reduce the chance of this occurring.

Service Attribute	Qualitative Description	Current LOS (2021)
		The Town 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. Staff have also indicated that there is a possibility that some of the sump pumps connected to the sanitary network could lead to overflow. As part of the Town's relining program, Staff will be addressing this vulnerability.
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	The Public Works Capital Program has put a priority on the elimination of inflow/infiltration within the sanitary sewer system through the physical separation of the sanitary and storm sewers within the Town's Reconstruction Program. The design and construction of sanitary and storm sewers is in accordance with the latest design standards issued by the MECP to eliminate or minimize inflow and infiltration within the sanitary sewer system.
	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	Effluent refers to water pollution that is discharged from a wastewater treatment plant, and may include suspended solids, total phosphorous and biological oxygen demand. The Environmental Compliance Approval (ECA) identifies the effluent criteria for municipal wastewater treatment plants.

	Main STP	Fox STP
Total Phosphorus	0.08	0.11
BOD	3.1	5.6
TSS	5.7	8.2
E coli	1	8.9

10.5.2 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of properties connected to the municipal wastewater system	67%
Reliability	# of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system	0
	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	0.0024
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0.00069
Performance	Target reinvestment rate	1.58%
	Capital reinvestment rate	0.27%

10.6 Recommendations

Asset Inventory

- Continue to refine and consolidate asset infrastructure data into the Town's centralized asset inventory to ensure all critical assets are accounted and able to support accurate capital forecasting.
- Review and revise replacement costs and critical attribute data periodically

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk sanitary sewer assets.

Risk Management Strategies

- Continue monitoring the infiltration and inflow issues and plan appropriately
- 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

- Evaluate the efficacy of the Town'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 Town 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

11 Water

The Town is responsible for providing water services to residents through the collection, storage and distribution of water.

Water infrastructure is managed by the Water Division and comprises of 2 groundwater-based water systems that include:

- 68 km of water mains;
- 339 hydrants, 3,129 water meters, 2,545 valves and curbstops;
- 6 pumphouses and a water tower; and
- vehicles, specialized machinery and equipment to support in the management and delivery of water services.

In 2022, the Town retained BMA Management Consulting Inc. to develop a water and wastewater financial plan as per O. Reg. 453/07, that provided a long-range financial forecast and recommended rate increases.

Staff continue to consolidate critical asset attribute data into the Town's primary central asset inventory, which is managed in Citywide and comprises of 3,863 assets.

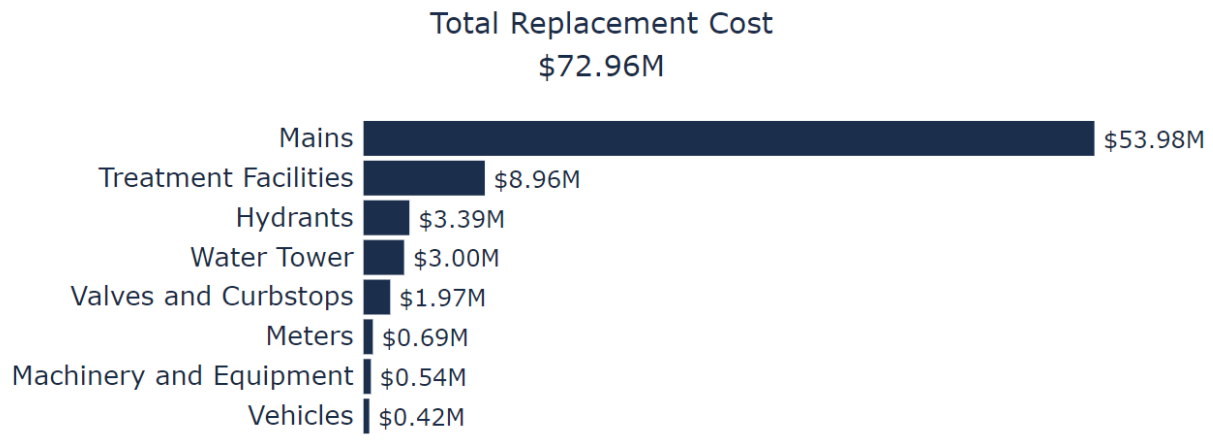
The state of the infrastructure for water assets summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$73.0 million	Good (73%)	Annual Requirement:	$1,170,618
		Funding Available:	$347,000
		Annual Deficit:	$823,618

11.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Mains	68 km	$53,984,932	$688,437
Treatment Facilities	35 assets	$8,960,390	$205,244
Hydrants	339 assets	$3,390,000	$45,200
Water Tower	1 asset	$2,996,732	$59,935
Valves and Curbstops	2,545 assets	$1,973,254	$28,189
Meters	3,129 assets	$688,380	$45,892
Machinery and Equipment	9 assets	$544,242	$50,988
Vehicles	7 assets	$424,278	$46,734
Total		**$72,962,208**	**$1,170,618**



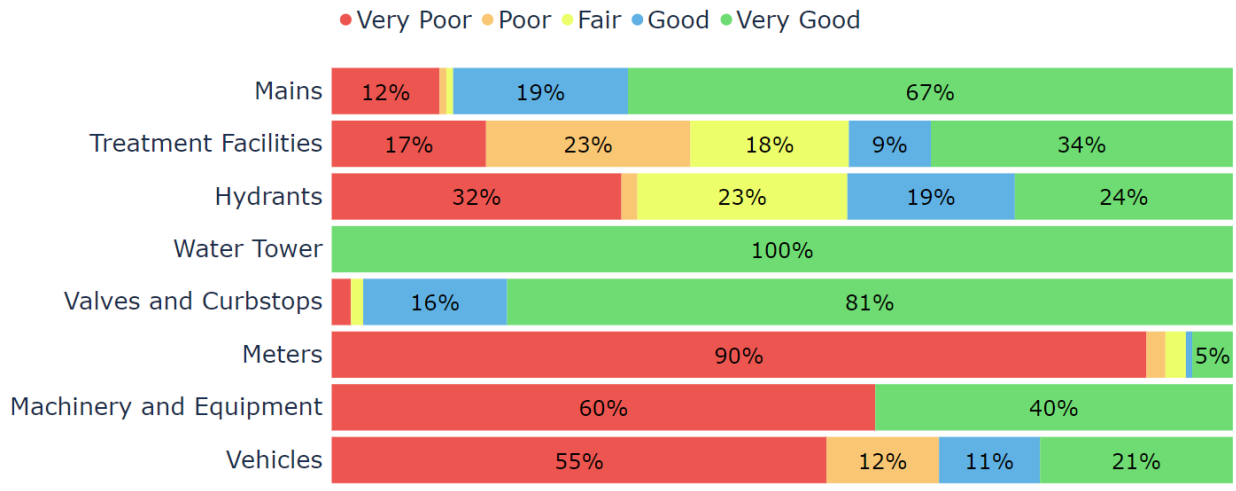
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

11.2 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.

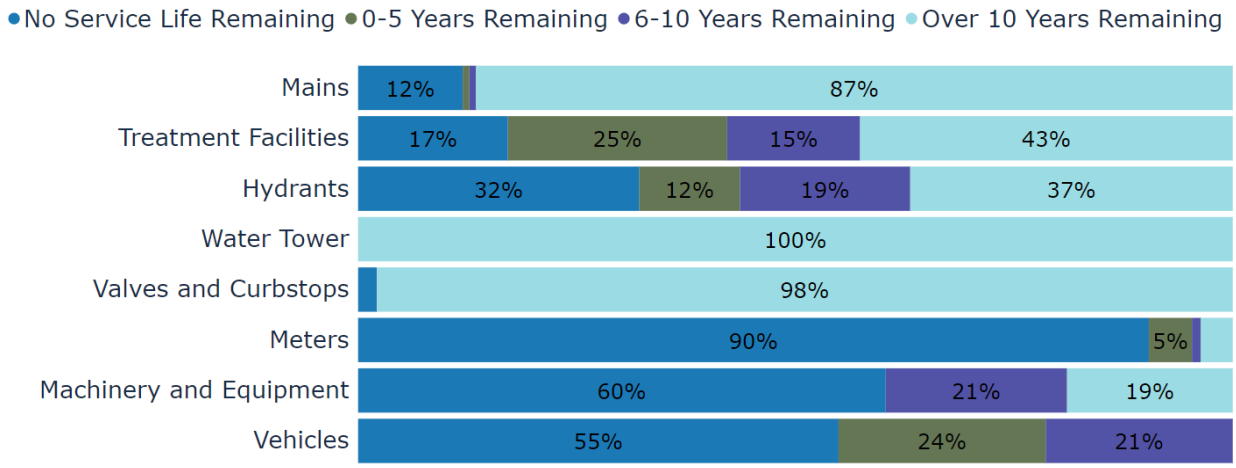
Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Mains	80 - 100	40.3	77% (Good)
Treatment Facilities	20 - 50	36.2	57% (Fair)
Hydrants	40	34.7	48% (Fair)
Water Tower	50	12.2	97% (Very Good)
Valves and Curbstops	70	28.2	87% (Very Good)
Meters	15	16.3	7% (Very Poor)
Machinery and Equipment	10 - 15	8.3	39% (Poor)
Vehicles	7 - 10	7.3	33% (Poor)
Average		**23.3**	**73% (Good)**

The graph below visually illustrates the average condition for each asset segment on a very good to very poor.



To ensure that the Town's water assets continue to provide an acceptable level of service, the Town 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 water assets.

The graph below visually illustrates the average service life remaining for each asset segment, ranging from service life exceeded to over 10 years remaining.



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.

11.2.1 Current Approach to Condition Assessment

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

- CCTV inspections are conducted on as-needed basis as well as in coordination with road and/or other subsurface construction projects
- Inspections as required under O. Reg. 170/3: Drinking Water Systems are conducted
- Pumphouses are monitored under an established schedule and deficiencies are tracked through the SCADA system
- Staff rely on a variety of metrics including age, pipe material and diameter, location, and available CCTV assessments to determine the projected condition of linear assets

In this AMP the following rating criteria is used to determine the current condition of stormwater 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

11.3 Lifecycle Management Strategy

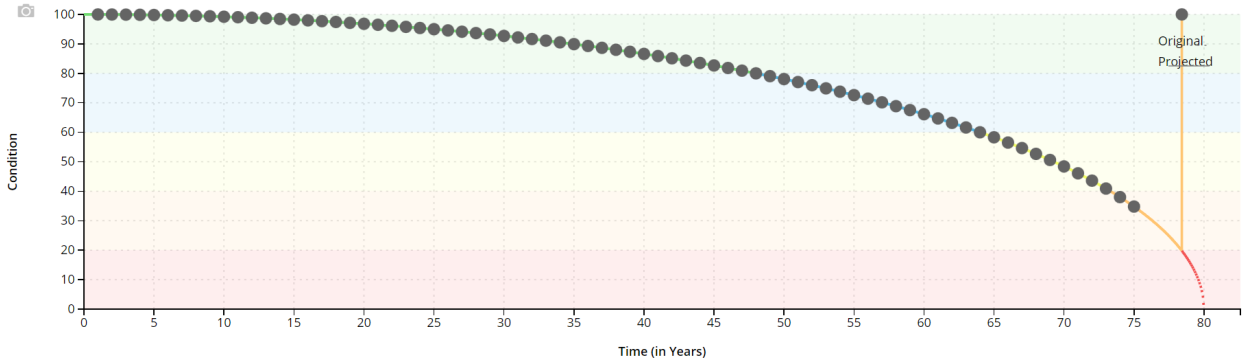
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Preventative Maintenance/ Maintenance	Hydrants and valves undergo annual maintenance
	Pumphouses are inspected and undergo maintenance under a formal schedule
	Main flushing of the entire network is conducted twice a year
	Periodic pressure testing occurs in order to identify deficiencies and potential leaks
Rehabilitation/ Replacement	In the absence of mid-lifecycle rehabilitative activities, most mains are simply maintained with the goal of full replacement once service life is exceeded
	Water main replacement is prioritized based on an analysis of the main break rate, asset functionality and design capacity as well as any issues identified during maintenance activities
	Similar to other sub-surface infrastructure, Staff coordinate water replacement projects with road reconstruction projects in order to produce cost efficiencies

The following lifecycle strategy has been documented to formalize the current strategy to manage the lifecycle of water mains

Water Mains		
Event Name	**Event Class**	**Event Trigger**
Water main flushing (100% of network)	Maintenance	Biannually
Full Reconstruction	Replacement	Condition: 20

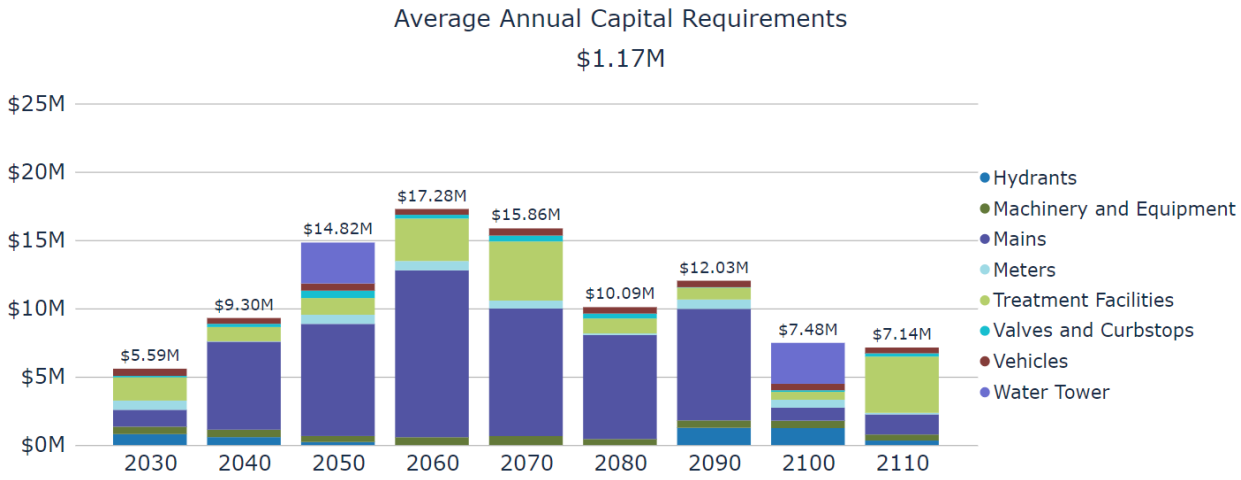


11.3.1 Forecasted Capital Requirements

Based on the current asset inventory and assuming end-of-life replacement of all assets in this category, the following graphs forecasts long-term capital requirements over the next 89 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 10-year bins and do not include assets that may be required due to growth.

The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs.

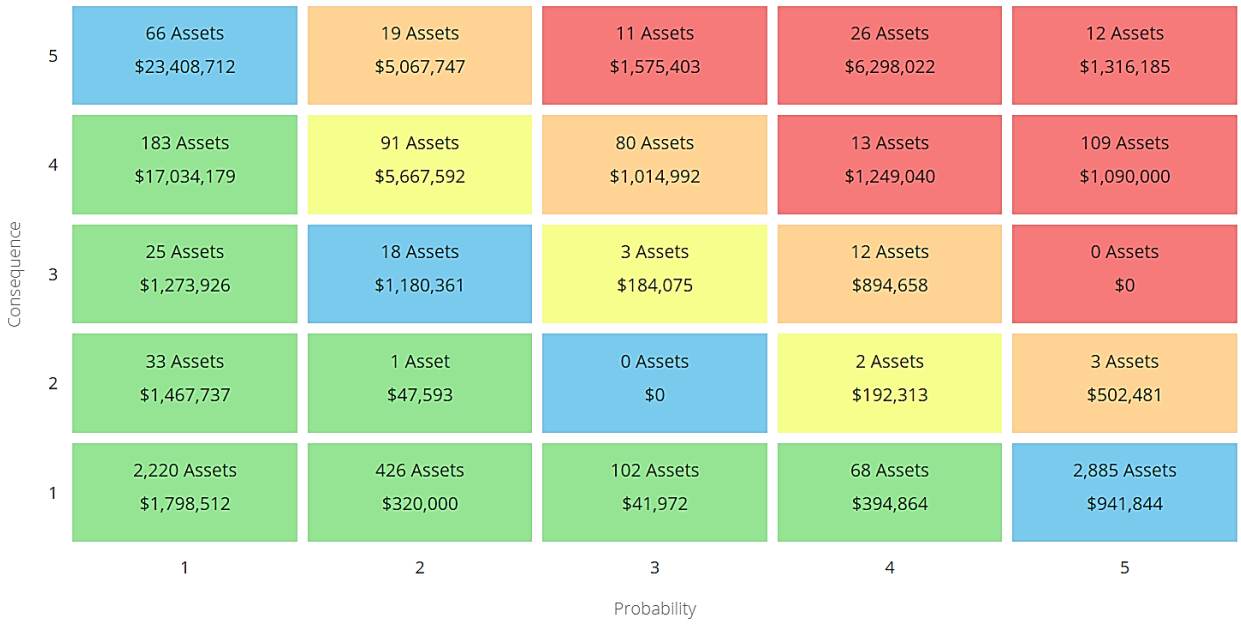


The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix B.

11.4 Risk & Criticality

11.4.1 Risk Matrix

The following risk matrix 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 2021 inventory data.



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

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the stormwater network are documented below:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Direct Financial)
Pipe Material (linear assets)	Pipe Diameter (linear assets) (Operational)
Service Life Remaining	Asset Type (Strategic)

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

11.4.2 Risks to Current Asset Management Strategies

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

Asset Data and Information

There is a misalignment in the current inventory data for water assets. Some of the assets and asset data has not been consolidated into the Town's central asset inventory. This poses a risk and will lead to discrepancies when trying to manage assets and planning future work.

Assessed Condition Data

Water assets such as mains are difficult to visually inspect, in contrast to storm and sanitary mains which can have CCTV inspections. Water main condition assessments generally rely on age-based estimates of current condition and pipe material to try and predict when mains need to be replaced.

11.5 Levels of Service

The following tables identify the Town's current level of service for the stormwater infrastructure. 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 Town has selected for this AMP.

11.5.1 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	See Appendix C for a map that identifies the areas of the Town that are connected to the municipal water system.
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	Two sections of the Town do not have fire flow. These neighbourhoods are as follows: Lepage Drive Neighbourhood & Lower section of Gilwood Park Drive. See Appendix C of the effected areas sourced from the Town's GIS.
Reliability	Description of boil water advisories and service interruptions	All service interruptions in 2020 were a result of emergency repairs of which there were 5 watermain breaks. One of these water main breaks caused a BWA as a result of an observation of potential contamination which made it a Category 2 watermain break and this requires an adverse notification to SAC and the Medical Officer of Health. There were only three homes affected by the BWA in this case for 2 days.

11.5.2 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of properties connected to the municipal water system	72%
	% of properties where fire flow is available	69%
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	0.002
	# of connection-days per year where water is not available due to water main breaks compared to the total number of properties connected to the municipal water system	0.027
Performance	Target reinvestment rate	1.60%
	Capital reinvestment rate	0.48%

11.6 Recommendations

Asset Inventory

- Continue to refine and consolidate asset infrastructure data into the Town's centralized asset inventory to ensure all critical water assets are accounted for and able to support accurate capital forecasting.
- Review and revise replacement costs and critical attribute data periodically

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk water 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 Town 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.

12 Impacts of Growth

Key Insights

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

- The 2021 census identified a 12% population increase from 2016 to 2020, exceeding the 2021 projection in the 2019 Development Charges Study

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

12.1 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 Town 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.

12.1.1 Town of Penetanguishene Official Plan (2020)

The Towns of Penetanguishene adopted an Official Plan to provide a legislative basis to direct future growth, development and change within the Town and to create a more sustainable community. The policies included in the Plan are consistent with the Provincial Policy Statement and conform with the County of Simcoe Official Plan, and the Growth Plan for the Greater Golden Horseshoe. Such policies are intended to provide the direction for managing long term development to achieve social, economic, and environmental objectives of the Town's vision.

The Town's new Official Plan came into effect on January 9th, 2020.

The Towns of Penetanguishene is noted for its small-town character and diverse natural landscape. The Official Plan considers the desire to preserve the natural environment of the Town, while encouraging balanced and diversified growth.

All lands within Penetanguishene's municipal limits are considered "Settlement Area" as identified in Growth Plan and County OP mapping. The majority of growth is directed to the Town's urban serviced area where municipal water and sewer services are available. Developed urban areas are the target for 40% of all new residential development.

New development of existing designated greenfield areas is also a primary focus of growth in the Town. These are settlement areas outside of the developed urban areas, which have been designated for development and are required to accommodate forecasted growth to the year 2031. A policy of the Town is that the Town will aim to achieve a minimum density target of 50 people and jobs combined per hectare across Designated Greenfield Areas.

12.1.2 Development Charges Background Study (2019)

In 2019, the Town of Penetanguishene retained Hemson Consulting Ltd. to undertake the D.C. study process and prepare a Development Charges Background Study, pursuant to Section 10 of the Development Charges Act, 1007 (DCA).

The following tables summarize the historical and forecasted population and employment figures allocated to the Town in the study:

Total Population Forecast from 2011 to 2031			
Municipality	**2011**	**2021**	**2031**
Town of Penetanguishene	9,111	9,598[6]	10,850

Total Employment Forecast from 2018 to 2031			
Municipality	**2016**	**2021**	**2031**
Town of Penetanguishene	4,704	5,141	6,000

As a requirement of the Development Charges Act under subsection 10(2)(c), an analysis must be undertaken to assess the long-term capital and operating cost impacts for the capital infrastructure projects identified within the Development Charges.

The background study must also include an asset management plan that deals with all assets proposed to be funded, in whole or in part, by D.C.s. The asset management plan must show that the assets are financially sustainable over their full lifecycle.

[6] The 2021 Census states the actual total population to be at 10,077.

12.1.3 Official Plan of the County of Simcoe (2013)

The Official Plan of the County of Simcoe serves as the upper tier Official Plan for the county, used to guide policy planning and physical planning of local municipalities. The Growth Management section is intended to help guide new development across the County based on Growth Projections for population and employment until 2034.

The population of the County is forecasted to increase from 27,900 in 2011, to 32,900 in 2034. The Town of Penetanguishene is allocated 7% of this forecasted growth.

The following table outlines the population and household forecasts that have been allocated to the Town:

Penetanguishene Population and Household Forecast (2016 to 2046)

	2016	2026	2036	2046
Population (permanent)	1,940	2,050	2,090	2,110
Population (seasonal)	8,550	8,860	9,180	9,370
Household (permanent)	925	995	1,045	1,070
Household (seasonal)	2,335	2,420	2,505	2,560

12.2 Impact of Growth on Lifecycle Activities

By July 1, 2025, the Town'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 Town's AMP. While the addition of residential units will add to the existing assessment base and offset some of the costs associated with growth, the Town will need to review the lifecycle costs of growth-related infrastructure. These costs should be considered in long-term funding strategies that are designed to, at a minimum, maintain the current level of service.

13 Financial Strategy

Key Insights

- The Town is committing approximately $2.31 million towards capital projects per year from sustainable revenue sources
- Given the annual capital requirement of $6.15 million, there is currently a funding gap of $3.84 million annually
- For tax-funded assets, we recommend increasing tax revenues by 1.6% each year for the next 10 years to achieve a sustainable level of capital funding
- For sanitary sewer rate-funded assets, we recommend reviewing the 2022 Water and Wastewater Financial Plan to ensure that a rate increase of 1.4% annually over a 20-year period is included in order to achieve a sustainable level of capital funding
- For water rate-funded assets, we recommend reviewing the 2022 Water and Wastewater Financial Plan to ensure that a rate increase of 1.9% annually over a 20-year period is included in order to achieve a sustainable level of capital funding

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

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

1. The financial requirements for:
    a. Existing assets
    b. Existing service levels
    c. Requirements of contemplated changes in service levels (none identified for this plan)
    d. Requirements of anticipated growth (none identified for this plan)
2. Use of traditional sources of municipal funds:
    a. Tax levies
    b. User fees
    c. 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 managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Town’s approach to the following:

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

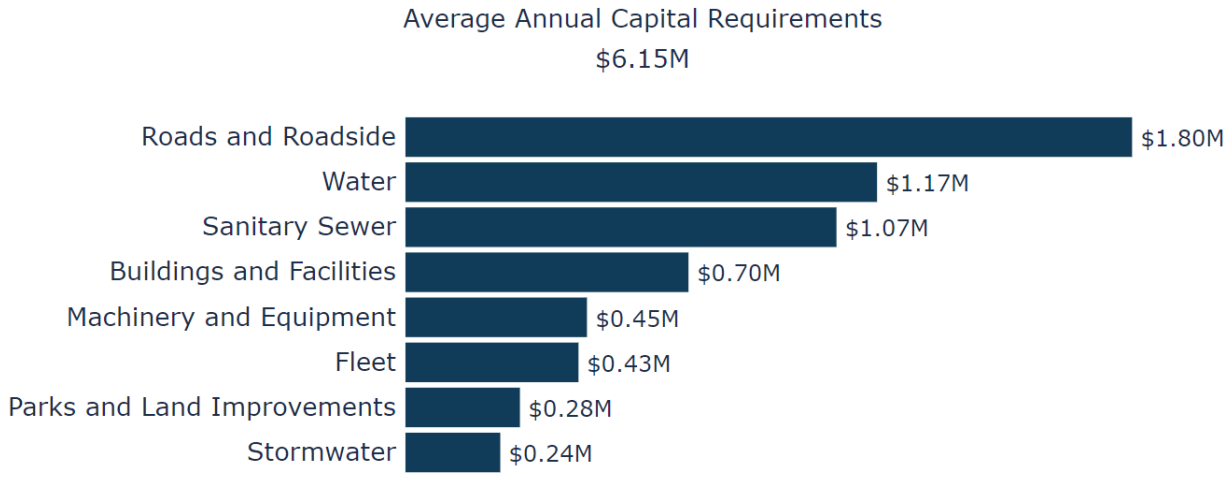
2. All asset management and financial strategies have been considered. For example:
    a. If a zero-debt policy is in place, is it warranted? If not, the use of debt should be considered.
    b. Do user fees reflect the cost of the applicable service? If not, increased user fees should be considered.

13.1.1 Annual Requirements & Capital Funding

Annual Requirements

The annual requirements represent the amount the Town should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs and achieve long-term sustainability.

In total, the Town must allocate approximately $6.15 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 HCB roads, LCB roads, and sanitary mains, lifecycle management strategies have been developed to identify capital costs that are realized through strategic rehabilitation and renewal of the Town's roads and sanitary sewer mains respectively. 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 HCB roads, LCB roads, and Sanitary mains:

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.

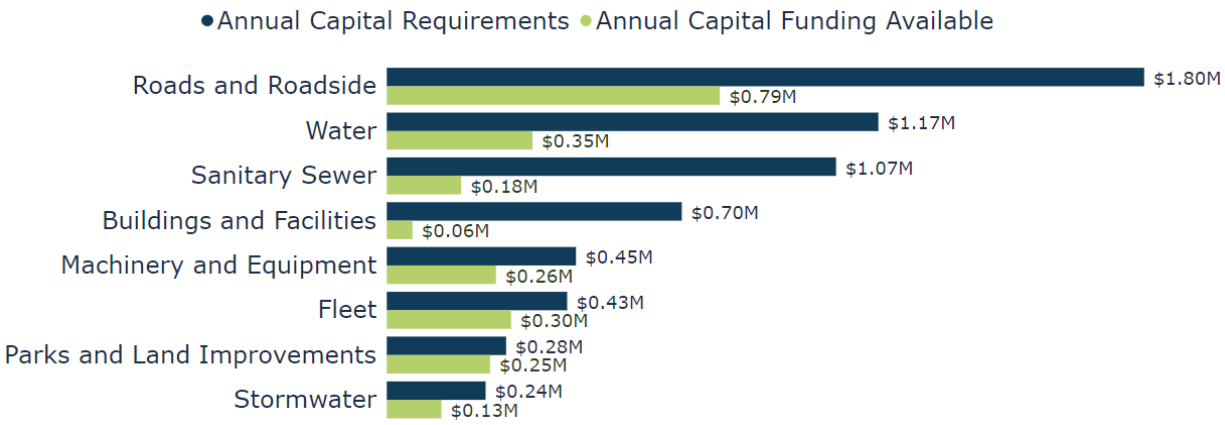
Asset Segment	Annual Requirements (Replacement Only)	Annual Requirements (Lifecycle Strategy)	Difference
HCB Roads	$4,406,975	$1,572,360	$2,834,615
LCB Roads	$165,348	$29,545	$135,803
Sanitary Mains	$450,813	$415,976	$34,837
Total	**$5,023,136**	**$2,017,882**	**$3,005,254**

The implementation of a proactive lifecycle strategy for HCB and LCB roads as well as for sanitary mains leads to a potential annual cost avoidance of $2,970,418 for roads assets and $34,837 for sanitary mains. This represents an overall reduction of the annual requirements by 60%.

As the lifecycle strategy scenario represents the lowest cost option available to the Town, 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 Town is committing approximately $2,310,000 towards capital projects per year from sustainable revenue sources. Given the annual capital requirement of $6,146,244 there is currently a funding gap of $3,836,244 annually.



13.2 Funding Objective

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

1. **Tax Funded Assets:** Roads and Roadside, Stormwater, Buildings and Facilities, Machinery and Equipment, Fleet, Parks and Land Improvements
2. **Rate-Funded Assets:** Sanitary Sewer, Water

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

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

13.3 Financial Profile: Tax Funded Assets

13.3.1 Current Funding Position

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

Asset Category	Average Annual Requirement	Annual Funding Available					Annual Deficit
		Taxes	Gas Tax	OCIF	Taxes to Reserves	Total Available	
Roads and Roadside	1,803,658	301,000	284,000	208,000	0	793,000	1,010,658
Stormwater	235,350	130,000	0	0	0	130,000	105,350
Buildings and Facilities	702,531	61,000	0	0	0	61,000	641,531
Machinery and Equipment	450,529	105,000	0	0	155,000	260,000	190,529
Fleet	429,492	141,000	0	0	155,000	296,000	133,492
Parks and Land Improvements	284,163	246,000	0	0	0	246,000	38,163
	3,905,722	**984,000**	**284,000**	**208,000**	**310,000**	**1,786,000**	**2,119,722**

The average annual investment requirement for the above categories is $3,905,722. Annual revenue currently allocated to these assets for capital purposes is $1,786,000 leaving an annual deficit of $2,119,722.

Put differently, these infrastructure categories are currently funded at 46% of their long-term requirements.

13.3.2 Full Funding Requirements

In 2021, Town of Penetanguishene has annual tax revenues of $11,504,000. 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 Increase Required for Full Funding
Roads and Roadside	8.8%
Stormwater	0.9%
Buildings and Facilities	5.6%
Machinery and Equipment	1.7%
Fleet	1.2%
Parks and Land Improvements	0.3%
	18.5%

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

a) Penetanguishene's debt payments for these asset categories will be decreasing by $34,000 over the next 5 years and by $201,000 over the next 10 years. Although not shown in the table, debt payment decreases will be $345,000 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	2,119,722	2,119,722	2,119,722	2,119,722	2,119,722	2,119,722	2,119,722	2,119,722
Change in Debt Costs	N/A	N/A	N/A	N/A	-34,000	-201,000	-345,000	-345,000
Change in OCIF Grants	N/A	N/A	N/A	N/A	0	0	0	0
Resulting Infrastructure Deficit	2,119,722	2,119,722	2,119,722	2,119,722	2,085,722	1,918,722	1,774,722	1,774,722
Tax Increase Required	18.4%	18.4%	18.4%	18.4%	18.1%	16.7%	15.4%	15.4%
Annually	**3.5%**	**1.8%**	**1.2%**	**0.9%**	**3.4%**	**1.6%**	**1.0%**	**0.8%**

13.3.3 Financial Strategy Recommendations

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

a) when realized, reallocating the debt cost reductions to the infrastructure deficit as outlined above.
b) increasing tax revenues by 1.6% each year for the next 10 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
c) adjusting tax revenue increases in future year(s) when allocations to funding exceed or fail to meet budgeted amounts.
d) allocating the current gas tax and OCIF revenue as outlined previously.
e) allocating any OCIF grant increases to the infrastructure deficit as they occur. reallocating appropriate revenue from categories in a surplus position to those in a deficit position.
f) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

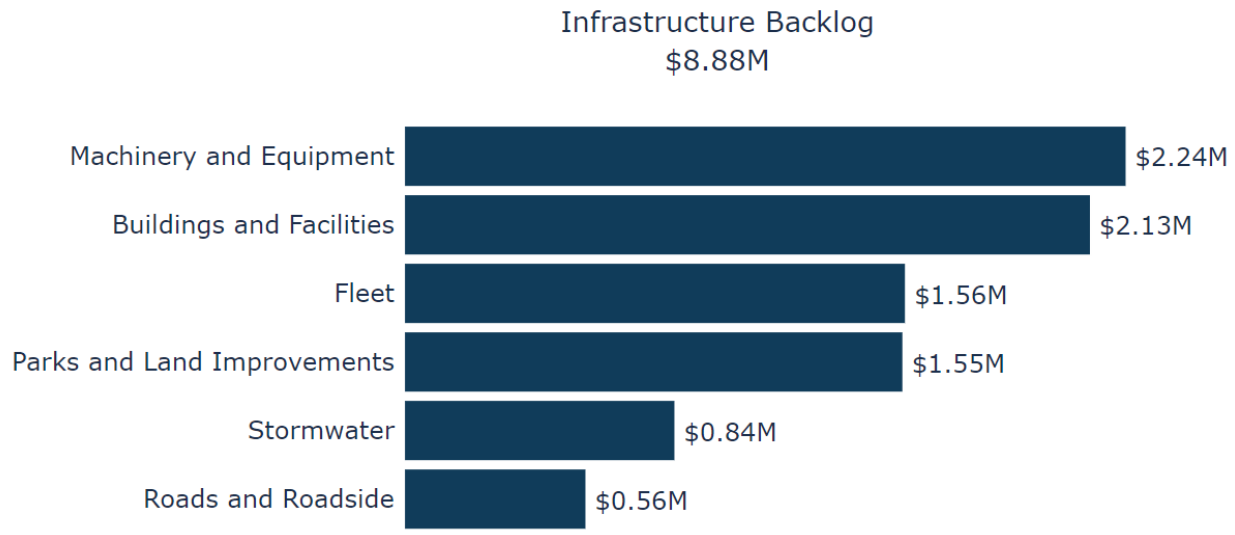
Notes:

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[7].
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.

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

Although this option achieves full CapEx funding on an annual basis in 10 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available.

Current data shows a pent-up investment demand of $2,242,102 for Machinery and Equipment, $2,131,099 for Buildings & Facilities, $1,555,456 for Fleet, $1,547,501 for Parks and Land Improvements, $838,249 for Stormwater, and $561,437 for Roads and Roadside.



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

13.4 Financial Profile: Rate Funded Assets

13.4.1 Current Funding Position

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

Asset Category	Average Annual Requirement	Annual Funding Available				Annual Deficit
		Rates	To Operations	OCIF	Total Available	
Sanitary Sewer	1,069,904	2,696,000	-2,519,000	0	177,000	892,904
Water	1,170,618	1,826,000	-1,479,000	0	347,000	823,618
	2,240,522	**4,522,000**	**-3,998,000**	**0**	**524,000**	**1,716,522**

The average annual capital investment requirement for the above categories is $2,240,522. Annual revenue currently allocated to these assets for capital purposes is $524,000 leaving an annual deficit of $1,716,522.

Put differently, these infrastructure categories are currently funded at 23% of their long-term capital requirements.

13.4.2 Full Funding Requirements

In 2022, Penetanguishene had annual sanitary revenues of $2,696,000 and annual water revenues of $1,826,000. 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
Sanitary Sewer	33.1%
Water	45.1%

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:

	Sanitary Sewer				Water			
	5 Years	**10 Years**	**15 Years**	**20 Years**	**5 Years**	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	892,904	892,904	892,904	892,904	823,618	823,618	823,618	823,618
Decrease in debt payments	0	0	-32,000	-32,000	0	0	0	0
Other adjustments	0	0	0	0	0	0	0	0
Resulting Infrastructure Deficit	892,904	892,904	860,904	860,904	823,618	823,618	823,618	823,618
Rate Increase Required	33.1%	33.1%	31.9%	31.9%	45.1%	45.1%	45.1%	45.1%
Annually:	**5.9%**	**3.0%**	**1.9%**	**1.4%**	**7.8%**	**3.8%**	**2.6%**	**1.9%**

13.4.3 Financial Strategy Recommendations

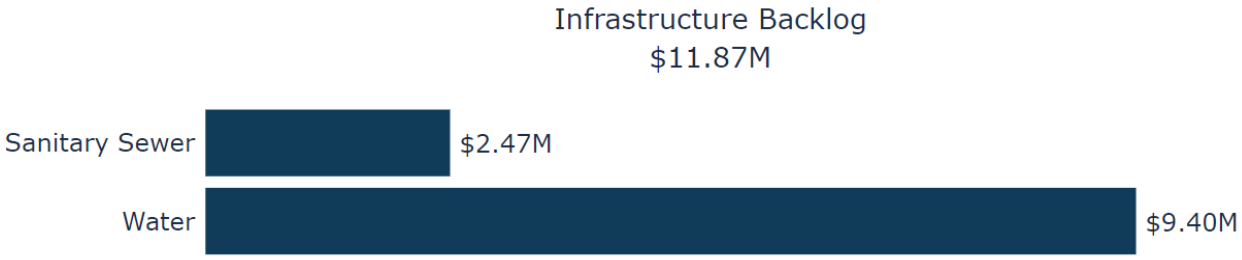
Considering the above information, we recommend the 20-year option for Sanitary Sewer and Water assets. This involves full CapEx funding being achieved by:

a) When realized, reallocating the debt cost reductions for sanitary sewer assets to the infrastructure deficit as outlined above
b) increasing rate revenues by 1.4% each year for sanitary sewer assets and increasing rate revenues by 1.9% each year for water assets over the next 20 years.
c) These rate revenue increases are solely for the purpose of phasing in full capital funding to the asset categories covered in this section of the AMP.
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. 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 strategy achieves full CapEx funding for rate-funded assets over 20 years, the recommendation does require prioritizing capital projects to fit the annual funding available. Current data shows a pent-up investment demand of $2,469,698 for sanitary sewer assets and $9,395,873 for water assets.



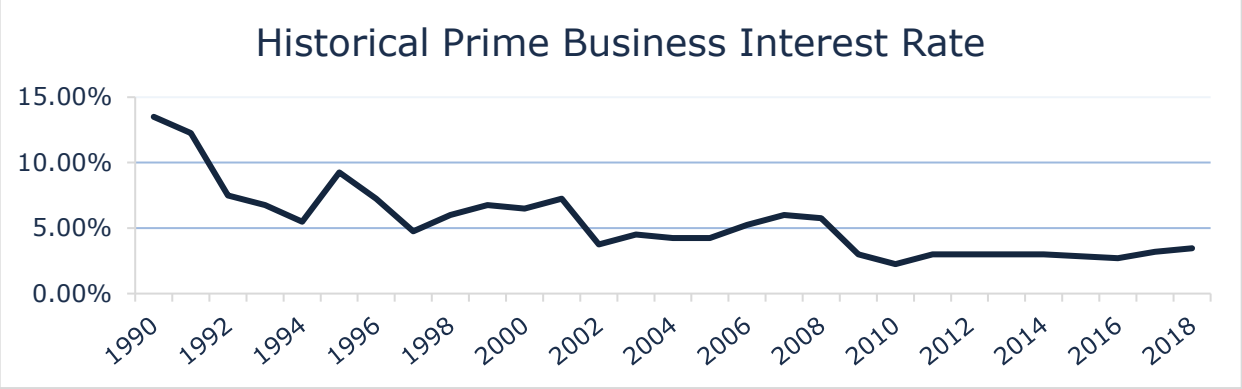
Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

13.5 Use of Debt

For reference purposes, the following table outlines the premium paid on a project if financed by debt. For example, a $1M project financed at 3.0%[8] over 15 years would result in a 26% premium or $260,000 of increased costs due to interest payments. For simplicity, the table does not consider the time value of money or the effect of inflation on delayed projects.

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

It should be noted that current interest rates are near all-time lows. Sustainable funding models that include debt need to incorporate the risk of rising interest rates. The following graph shows where historical lending rates have been:



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

A change in 15-year rates from 3% to 6% would change the premium from 26% to 54%. Such a change would have a significant impact on a financial plan.

The following tables outline how Penetanguishene has historically used debt for investing in the asset categories as listed. There is currently $15,699,000 of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of $1,093,000, well within its provincially prescribed maximum of $3,404,000

Asset Category	Current Debt Outstanding	Use of Debt in the Last Five Years				
		2017	2018	2019	2020	2021
Roads and Roadside	3,596,000	0	2,394,000	0	0	0
Stormwater	0	0	0	0	0	0
Buildings and Facilities	1,557,000	0	0	0	255,000	0
Machinery and Equipment	0	0	0	0	0	0
Fleet	0	0	0	0	0	0
Parks and Land Improvements	0	0	0	0	0	0
Total Tax Funded:	**5,153,000**	**0**	**2,394,000**	**0**	**255,000**	**0**
Sanitary Sewer	10,081,000	0	10,299,000	0	0	400,000
Water	465,000	0	494,000	0	0	0
Total Rate Funded:	**10,546,000**	**0**	**10,793,000**	**0**	**0**	**400,000**

Asset Category	Principal & Interest Payments in the Next Ten Years						
	2022	2023	2024	2025	2026	2027	2032
Roads and Roadside	286,000	286,000	286,000	286,000	275,000	257,000	257,000
Stormwater	0	0	0	0	0	0	0
Buildings and Facilities	192,000	192,000	192,000	187,000	187,000	187,000	20,000
Machinery and Equipment	0	0	0	0	0	0	0
Fleet	0	0	0	0	0	0	0
Parks and Land Improvements	0	0	0	0	0	0	0
Total Tax Funded:	**478,000**	**478,000**	**478,000**	**473,000**	**462,000**	**444,000**	**277,000**
Sanitary Sewer	588,000	588,000	588,000	588,000	588,000	588,000	588,000
Water	27,000	27,000	27,000	27,000	27,000	27,000	27,000
Total Rate Funded:	**615,000**	**615,000**	**615,000**	**615,000**	**615,000**	**615,000**	**615,000**

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

13.6 Use of Reserves

13.6.1 Available Reserves

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

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

By asset category, the table below outlines the totals of the reserves currently available towards the Town's capital asset inventory.

Funding Source	Balance on December 31, 2021
Roads and Roadside	$2,294,000
Stormwater	$506,000
Buildings and Facilities	$1,191,000
Machinery and Equipment	$1,222,000
Fleet	$851,000
Parks and Land Improvements	$698,000
Total Tax Funded:	**$6,762,000**
Sanitary Sewer	$1,832,000
Water	$506,000
Total Rate Funded:	**$2,338,000**

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

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

These reserves are available for use by applicable asset categories during the phase-in period to full funding. This coupled with Penetanguishene's judicious use of debt in the past, allows the scenarios to assume that, if required, available reserves and debt capacity can be used for high priority and emergency infrastructure investments in the short- to medium-term.

13.6.2 Recommendation

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

14 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 includes maps to visualize the current level of service
- Appendix D provides additional guidance on the development of a condition assessment program
- Appendix E provides a tailored list of next steps to advance the Town’s asset management program
- Appendix F provides an overall O. Reg. 588/17 compliance snapshot

Appendix A: Infrastructure Report Card

Asset Category	Replacement Cost (millions)	Asset Condition	Financial Capacity	
Roads and Roadside	$77.45	70% (Good)	Annual Requirement:	$1,803,658
			Funding Available:	$793,000
			Annual Deficit:	**$1,010,658**
Stormwater	$18.57	87% (Very Good)	Annual Requirement:	$235,350
			Funding Available:	$130,000
			Annual Deficit:	**$105,350**
Buildings and Facilities	$28.73	50% (Fair)	Annual Requirement:	$702,531
			Funding Available:	$61,000
			Annual Deficit:	**$641,531**
Machinery and Equipment	$4.93	24% (Poor)	Annual Requirement:	$450,529
			Funding Available:	$260,000
			Annual Deficit:	**$190,529**
Fleet	$6.51	36% (Poor)	Annual Requirement:	$429,492
			Funding Available:	$296,000
			Annual Deficit:	**$133,492**
Parks and Land Improvements	$7.67	52% (Fair)	Annual Requirement:	$284,163
			Funding Available:	$246,000
			Annual Deficit:	**$38,163**
Sanitary Sewer	$67.54	80% (Very Good)	Annual Requirement:	$1,069,904
			Funding Available:	$177,000
			Annual Deficit:	**$892,904**
Water	$72.96	73% (Good)	Annual Requirement:	$1,170,618
			Funding Available:	$347,000
			Annual Deficit:	**$823,618**
Asset Portfolio	**$284.36**	**70% (Good)**	Annual Requirement:	$6,146,244
			Funding Available:	$2,310,000
			Annual Deficit:	**$3,836,244**

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.

Roads and Roadside											
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Appurtenances	$0	$0	$0	$0	$13,084	$12,576	$0	$0	$0	$0	$0
Arterial Roads	$0	$140,000	$0	$0	$0	$0	$0	$0	$0	$0	$78,065
Collector Roads	$0	$0	$70,000	$277,775	$0	$0	$0	$72,411	$51,435	$0	$0
Local Roads	$370,000	$198,632	$622,881	$463,272	$1,729,231	$480,564	$87,116	$107,003	$499,770	$234,258	$78,873
Sidewalks	$0	$0	$9,370	$0	$0	$0	$23,388	$73,553	$110,460	$0	$31,193
Streetlights	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$370,000	**$338,632**	**$702,251**	**$741,047**	**$1,742,315**	**$493,140**	**$110,503**	**$252,967**	**$661,665**	**$234,258**	**$188,131**

Stormwater											
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Catch Basins	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Headwalls	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Mains	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Maintenance Holes	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Buildings and Facilities

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Administrative	$18,000	$5,000	$28,385	$0	$75,000	$154,500	$11,000	$86,000	$86,000	$0	$91,385
Community Centre	$0	$3,071,724	$2,787,932	$0	$0	$0	$0	$0	$0	$0	$0
Fire and Emergency	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Libraries	$0	$5,000	$5,000	$0	$5,000	$0	$10,000	$0	$28,500	$10,000	$50,000
Museum	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$385,267
Public Works	$22,500	$0	$30,000	$590,212	$10,000	$0	$5,500	$0	$30,000	$10,000	$150,000
	$40,500	**$3,081,724**	**$2,851,317**	**$590,212**	**$90,000**	**$154,500**	**$26,500**	**$86,000**	**$144,500**	**$20,000**	**$676,652**

Machinery and Equipment

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Corporate Services	$11,765	$0	$0	$0	$90,118	$0	$119,380	$94,409	$11,765	$0	$0
Fire and Emergency	$0	$0	$99,730	$45,112	$326,284	$0	$282,731	$82,067	$0	$0	$99,730
Public Works	$0	$59,163	$48,566	$185,699	$608	$59,163	$0	$0	$585,254	$257,968	$0
Recreation and Community Services	$27,374	$1,066,064	$156,962	$121,292	$171,477	$90,689	$0	$1,215,997	$218,724	$156,215	$90,689
	$39,139	**$1,125,227**	**$305,258**	**$352,103**	**$588,487**	**$149,852**	**$402,111**	**$1,392,473**	**$815,743**	**$414,183**	**$190,419**

Fleet

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
By-Law	$0	$0	$0	$0	$0	$0	$46,568	$0	$0	$64,962	$0
Fire and Emergency	$316,950	$408,637	$0	$0	$0	$0	$1,088,036	$90,061	$999,672	$0	$0
Public Works	$420,162	$0	$0	$0	$345,239	$296,315	$359,167	$40,664	$673,168	$189,444	$0
Recreation and Community Services	$107,644	$43,160	$46,476	$0	$122,896	$0	$40,349	$46,476	$107,644	$43,160	$0
	$844,756	**$451,797**	**$46,476**	**$0**	**$468,135**	**$296,315**	**$1,534,120**	**$177,201**	**$1,780,484**	**$297,566**	**$0**

Parks and Land Improvements											
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Fencing and Paving	$0	$0	$0	$0	$17,735	$0	$0	$0	$0	$0	$0
Lights and Fixtures	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Park Shelters and Structures	$0	$50,000	$50,000	$0	$0	$0	$3,000	$0	$0	$223,126	$0
Play Features	$0	$0	$0	$0	$0	$0	$0	$0	$0	$352,020	$0
Playground Equipment	$0	$0	$0	$0	$0	$0	$35,890	$47,295	$73,763	$134,995	$0
Town Dock	$0	$0	$0	$0	$0	$0	$0	$0	$631,610	$2,310,432	$0
	$0	**$50,000**	**$50,000**	**$0**	**$17,735**	**$0**	**$38,890**	**$47,295**	**$705,373**	**$3,020,573**	**$0**

Sanitary Sewer											
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Lift Stations	$0	$0	$0	$0	$0	$0	$0	$25,030	$0	$0	$0
Machinery and Equipment	$0	$0	$0	$0	$0	$24,458	$0	$100,113	$0	$0	$0
Mains	$48,859	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Maintenance Holes	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Treatment Facilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Vehicles	$0	$43,455	$54,849	$0	$0	$0	$0	$0	$43,455	$0	$0
	$48,859	**$43,455**	**$54,849**	**$0**	**$0**	**$24,458**	**$0**	**$125,143**	**$43,455**	**$0**	**$0**

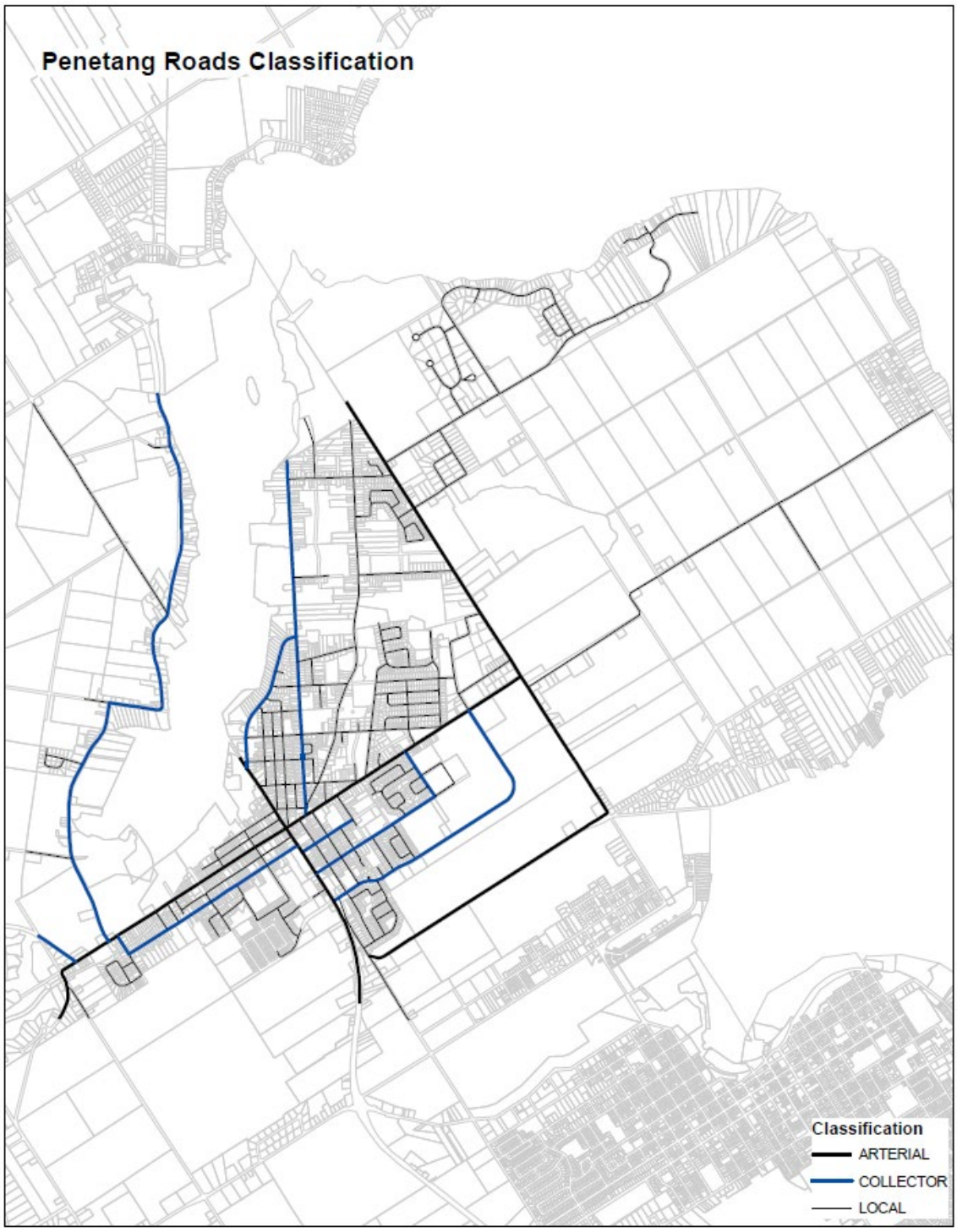
Water											
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Hydrants	$0	$0	$10,000	$50,000	$110,000	$220,000	$60,000	$250,000	$150,000	$110,000	$90,000
Machinery and Equipment	$0	$0	$0	$0	$0	$0	$0	$299,165	$141,982	$0	$0
Mains	$0	$272,696	$138,128	$0	$0	$0	$0	$101,265	$0	$307,802	$0
Meters	$8,800	$14,520	$7,260	$8,360	$1,760	$1,980	$1,100	$880	$0	$440	$7,040
Treatment Facilities	$0	$501,240	$1,744,820	$0	$0	$0	$22,418	$225,073	$1,047,858	$66,241	$0
Valves and Curbstops	$0	$0	$0	$0	$0	$630	$0	$0	$0	$0	$2,776
Vehicles	$47,614	$52,876	$0	$47,593	$0	$0	$0	$104,174	$101,157	$123,740	$95,207
Water Tower	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$56,414	**$841,332**	**$1,900,208**	**$105,953**	**$111,760**	**$222,610**	**$83,518**	**$980,557**	**$1,440,997**	**$608,223**	**$195,023**

Asset Portfolio						
Asset Category	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Roads and Roadside	$370,000	$338,632	$702,251	$741,047	$1,742,315	$493,140
Stormwater	$0	$0	$0	$0	$0	$0
Buildings and Facilities	$40,500	$3,081,724	$2,851,317	$590,212	$90,000	$154,500
Machinery and Equipment	$39,139	$1,125,227	$305,258	$352,103	$588,487	$149,852
Fleet	$844,756	$451,797	$46,476	$0	$468,135	$296,315
Parks and Land Improvements	$0	$50,000	$50,000	$0	$17,735	$0
Sanitary Sewer	$48,859	$43,455	$54,849	$0	$0	$24,458
Water	$56,414	$841,332	$1,900,208	$105,953	$111,760	$222,610
	$1,399,668	**$5,932,167**	**$5,910,359**	**$1,789,316**	**$3,018,432**	**$1,340,875**

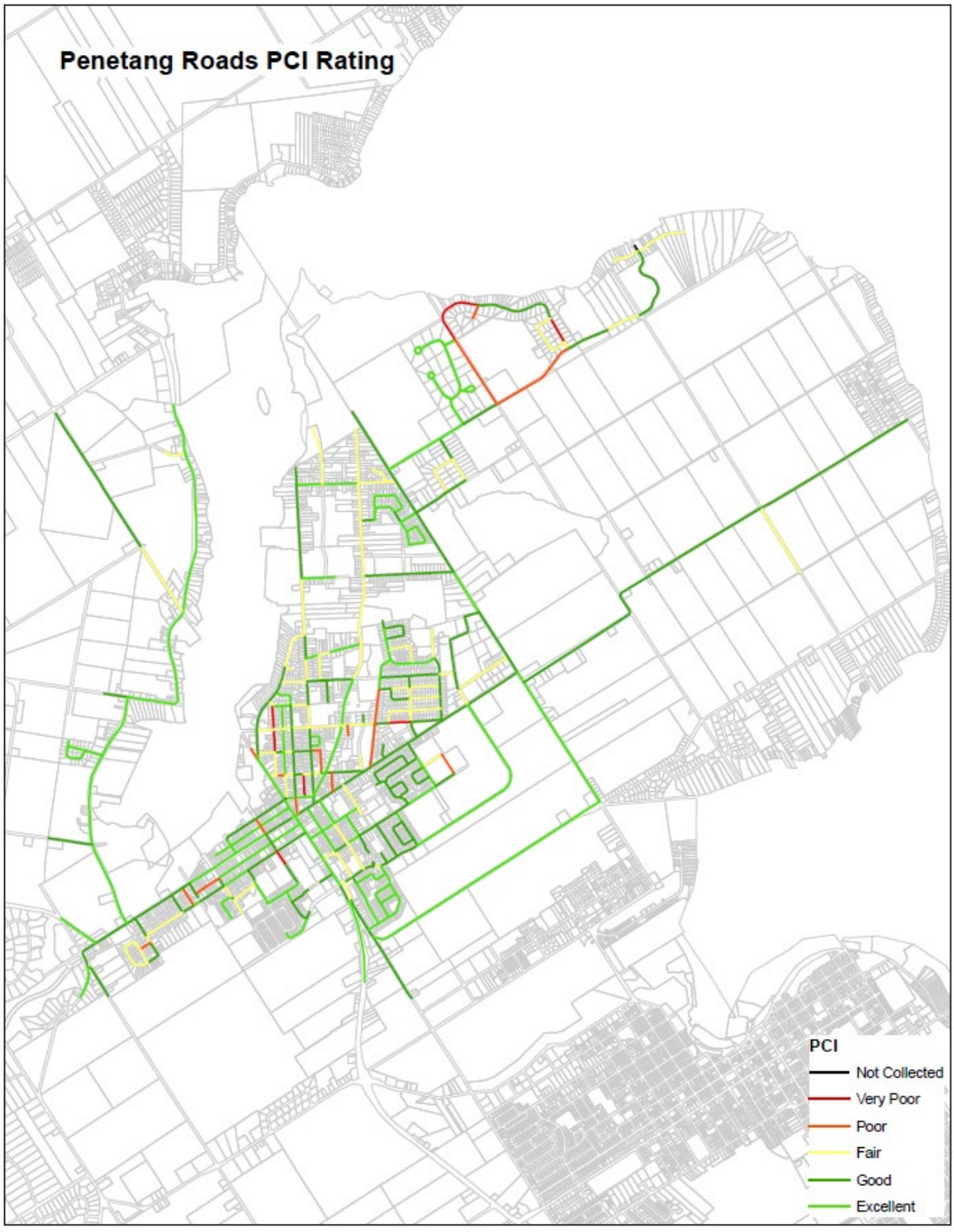
Asset Portfolio					
Asset Category	**2028**	**2029**	**2030**	**2031**	**2032**
Roads and Roadside	$110,503	$252,967	$661,665	$234,258	$188,131
Stormwater	$0	$0	$0	$0	$0
Buildings and Facilities	$26,500	$86,000	$144,500	$20,000	$676,652
Machinery and Equipment	$402,111	$1,392,473	$815,743	$414,183	$190,419
Fleet	$1,534,120	$177,201	$1,780,484	$297,566	$0
Parks and Land Improvements	$38,890	$47,295	$705,373	$3,020,573	$0
Sanitary Sewer	$0	$125,143	$43,455	$0	$0
Water	$83,518	$980,557	$1,440,997	$608,223	$195,023
	$2,195,642	**$3,061,636**	**$5,592,217**	**$4,594,803**	**$1,250,224**

Appendix C: Levels of Service Maps

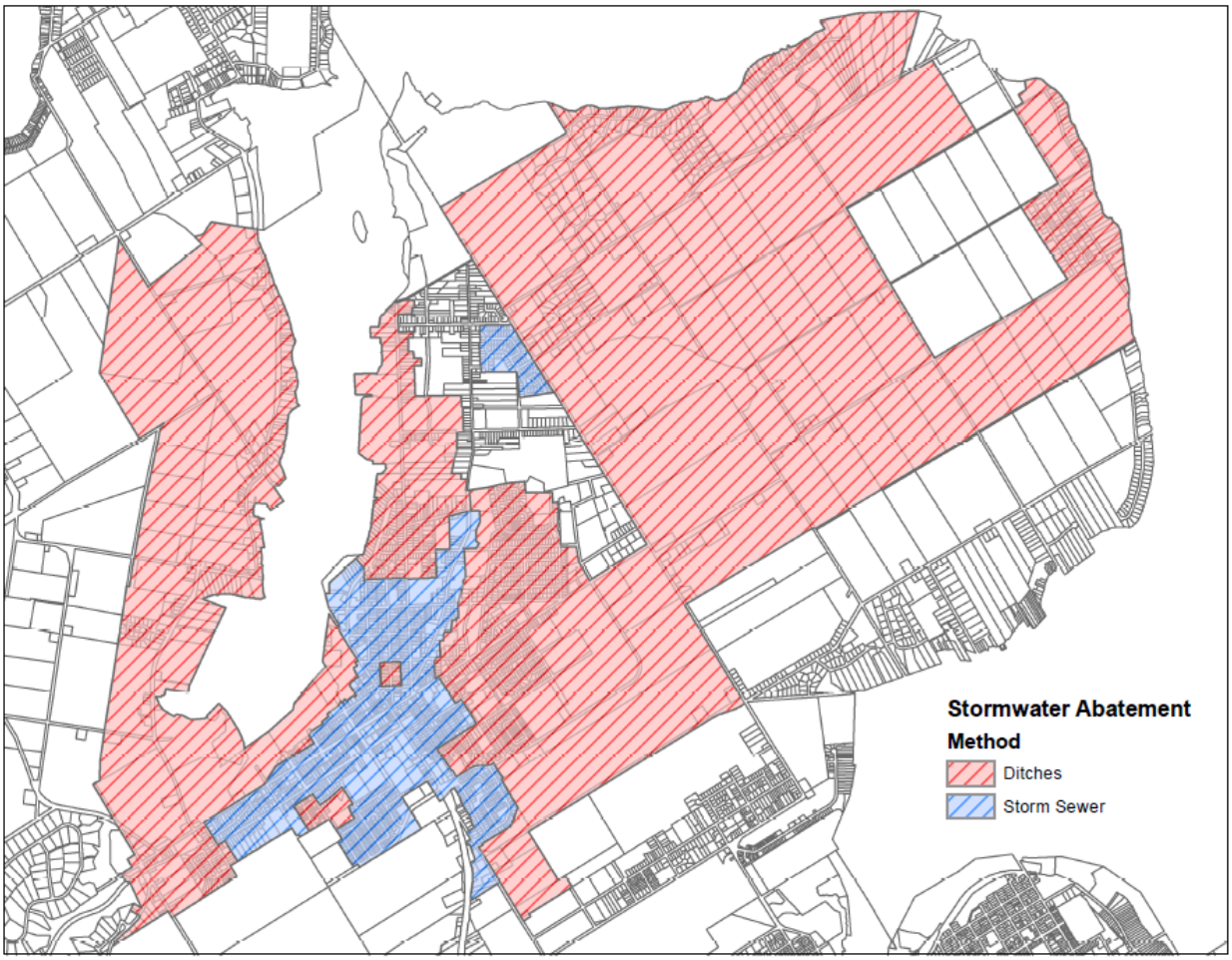
Road Network Classification



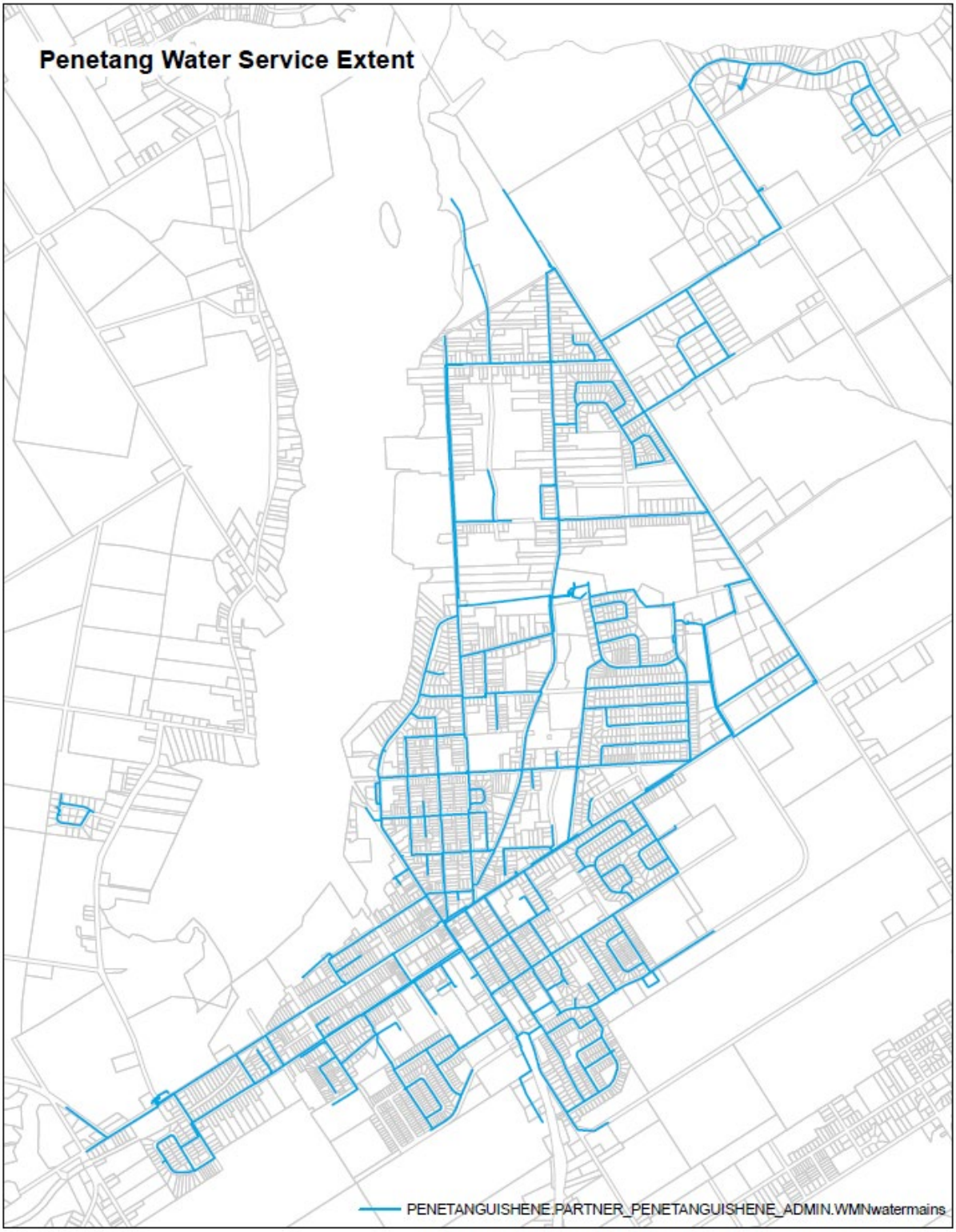
Road Network - Condition (PCI) Rating



Stormwater Network (Flood Prevention)




Penetang Sanitary Extent
Sanitary Mains
Representation: PENETANGUISHENE.PARTNER_PENETANGUISHENE_ADMIN.Active_Mains
Active
Inactive


Penetang Water Service Extent
PENETANGUISHENE.PARTNER_PENETANGUISHENE_ADMIN.WMNwatermains

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 Town'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 Town'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 Town 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 Town 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 Town 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 Town should prioritize the collection of assessed condition data based on the anticipated value of this data in decision-making. The International Infrastructure Management Manual (IIMM) identifies four key criteria to consider when making this determination:

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

Appendix E: Next Steps

A workplan has been provided to the Town to advance its Asset Management Program. These steps are ranked based on their overall asset management value to the Town. Value considers the priority and impact of a recommendation relative to its cost. Steps with a high program value have significant impact and priority and low cost.

Next Steps	AM Program Value
Conduct a TCA data review to identify inactive, missing and/or incomplete assets in the CityWide™ asset inventory.	1 (Highest)
Review and confirm that all assets have been accounted for in the asset inventory, particularly for non-core assets.	2
Develop a componentized asset inventory for buildings and facilities.	3
Verify the discrepancy in the water and sanitary sewer inventories and cross-reference with existing datasets to develop a centralized inventory for water and sanitary sewer systems.	4
Implement a data governance strategy and framework to maintain the high level of data maturity.	5
Develop detailed LOS frameworks for all assets and identify proposed LOS	6
Continue to integrate data from various studies, reports, and staff journals within CityWide™ to ensure a centralized, comprehensive, and current asset inventory.	7
Develop a process for reporting on LOS and considering LOS results in infrastructure operational and capital decisions.	8
Review, consider, and as appropriate, account for growth and demand changes to infrastructure management.	9
Provide opportunities for staff and elected officials to attend webinars, educational conferences, and workshops to expand their technical knowledge of asset management principles and practices	10
An asset management strategy enforces the asset management policy and aligns it to the asset management plan. Consider developing a formalized, documented asset management strategy.	11
Financial strategies are inextricably linked to LOS (current and proposed) and risk, both of which guide lifecycle decision-making. Frameworks for linking financial strategies to LOS and risk should be established.	12
Consider developing an infrastructure master plan that considers the strategic plan and integrates with land use planning to guide investments.	13

Appendix F: O. Reg. 588/17 - Compliance Snapshot

O. Reg. Requirement	2022 Compliance		2024 Compliance		2025 Compliance
	Core	Non-Core	Core	Non-Core	Core and Non-Core
1.0 Asset Inventory					
1.1 Asset Summary	Yes	N/A	Yes	Yes	No
1.2 Replacement Cost	Yes		Yes	Yes	No
1.3 Average Age	Yes		Yes	Yes	No
1.4 Condition	Yes		Yes	Yes	No
1.5 Condition Assessment Approach	Yes		Yes	Yes	No
2.0 Lifecycle Activities					
2.1 Identify Full Asset Lifecycle	Yes	N/A	Yes	No	No
2.2 Document Lifecycle Activities	Yes		Yes	No	No
2.3 Quantify Asset Risk	Yes		Yes	No	No
2.4 Lifecycle Cost Analysis	Yes		Yes	No	No
3.0 Growth					
3.1 Population and Economic assumptions	Yes	N/A	No	No	No
3.2 Document impact of growth on capital planning	N/A		No	No	No
4.0 Current Level of Service					
4.1 Define and document current LOS metrics	Yes	N/A	No	No	No
5.0 Proposed Level of Service					
5.1 Define Proposed LOS	N/A	N/A	N/A	N/A	No
5.2 Difference b/w Current and Proposed LOS					No
5.3 Required Lifecycle Activities and associated Risk					No
5.4 Achievability of Proposed LOS					No
5.5 Affordability of Proposed LOS					No
5.6 Lifecycle activities and risk associated with potential funding shortfall					No