Asset Management Plan

Municipality of Callander

2021

This Asset Management Program was prepared by:

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

Key Statistics

Replacement cost of asset portfolio
$87.8 million

Replacement cost of infrastructure per household
$49,000(2020)

Percentage of assets in fair or better condition
Core Assets – 68%
Non-Core Assets – 84%

Percentage of assets with assessed condition data
Core Assets – 44%
Non-Core Assets – 0%

Annual capital infrastructure deficit
$542,000

Recommended timeframe for eliminating annual infrastructure deficit
20 Years

Target reinvestment rate
2.66%

Actual reinvestment rate
2.04%

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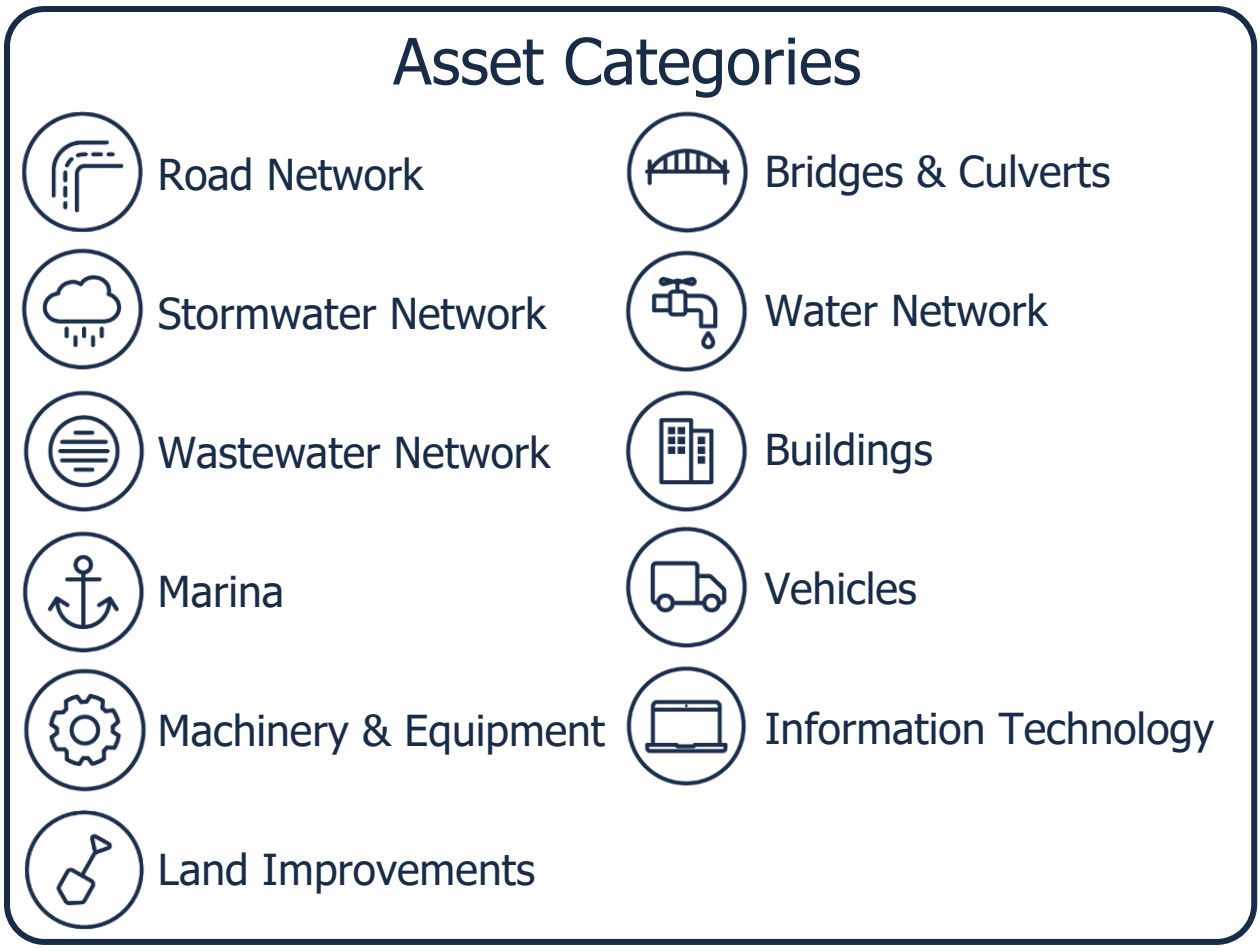
Executive Summary

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

Scope

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

This AMP include the following asset categories:



With the development of this AMP the Municipality has achieved compliance with O. Reg. 588/17 to the extent of the requirements that must be completed by July 1, 2022. There are additional requirements concerning 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 $87.8 million. 68% of core assets and 84% of non-core assets analysed in this AMP are in fair or better condition and assessed condition data was available for 44% of core assets and 0% for non-core assets. For the remaining assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.

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

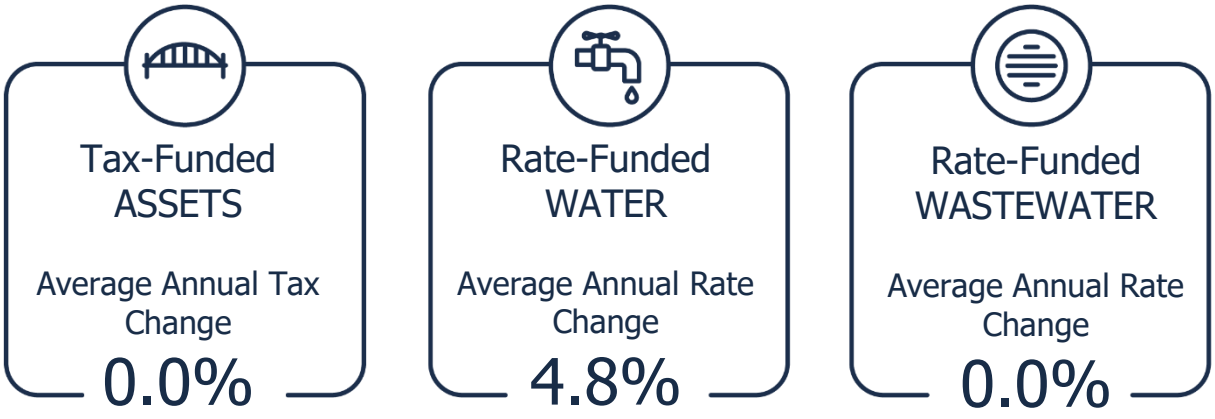
To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Municipality's average annual capital requirement totals $2.3 million. Based on a historical analysis of sustainable capital funding sources, the Municipality is committing approximately $1.8 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $542,000; which translates to approximately $300 per household.

Annual Deficit Per Household

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

Recommendations

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



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

- Review data to update and maintain a complete and accurate dataset
- Develop a data governance framework; including a condition assessment strategy
- Review and update lifecycle management strategies
- Development and regularly review short- and long-term plans to meet capital requirements
- Track current levels of service and identify sustainable proposed levels of service

1 Introduction & Context

Key Insights

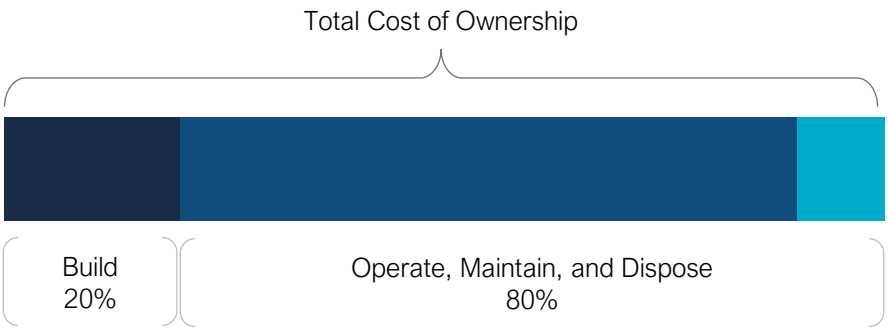
The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio

- The Municipality's asset management policy provides clear direction to staff on their roles and responsibilities regarding asset management
- An asset management plan is a living document that should be updated regularly to inform long-term planning
- Ontario Regulation 588/17 outlines several key milestone and requirements for asset management plans in Ontario between July 1, 2022 and 2025

1.1 An Overview of Asset Management

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

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



These costs can span decades, requiring planning and foresight to ensure financial responsibility is spread equitably across generations. An asset management plan is critical to this planning, and an essential element of broader asset management program. The industry-standard approach and sequence to developing a practical asset management program begins with a Strategic Plan, followed by an Asset Management Policy and an Asset Management Strategy, concluding with an Asset Management Plan.

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

1.1.1 Asset Management Policy

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

The Municipality adopted an Asset Management Policy in June of 2019 in accordance with Ontario Regulation 588/17. The Policy states that the Municipality will continue to develop its best practices to management all current and future assets.

The objectives of the policy include:

- Minimization of service interruptions
- Adoption of effective fiscal planning
- Achieving existing and expected levels of service

1.1.2 Asset Management Strategy

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

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

1.1.3 Asset Management Plan

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

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

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

1.2 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.

1.2.1 Lifecycle Management Strategies

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

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

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

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

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

The Municipality's approach to lifecycle management is described within each asset category outlined in this AMP. Developing and implementing a proactive lifecycle strategy will help staff to determine which activities to perform on an asset and when they should be performed to maximize useful life at the lowest total cost of ownership.

1.2.2 Risk Management Strategies

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

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

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

1.2.3 Levels of Service

A level of service (LOS) is a measure of what the Municipality is providing to the community and the nature and quality of that service. Within each asset category in this AMP, technical metrics and qualitative descriptions that measure both technical and community levels of service have been established and measured as data is available.

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

Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories (Roads, Bridges & Culverts, Water, Wastewater, Stormwater) the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in this AMP. For non-core asset categories, the Municipality has determined the qualitative descriptions that will be used to determine the community level of service provided. These descriptions can be found in the Levels of Service subsection within each asset category.

Technical Levels of Service

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

For core asset categories (Roads, Bridges & Culverts, Water, Wastewater, Stormwater) the Province, through O. Reg. 588/17, has provided technical metrics that are required to be included in this AMP.

Current and Proposed Levels of Service

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

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

1.3 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

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

2025

Asset Management Policy Update and 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

1.3.1 O. Reg. 588/17 Compliance Review

The following table identifies the requirements outlined in Ontario Regulation 588/17 for municipalities to meet by July 1, 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 Scope and Methodology

Key Insights

- This asset management plan includes 11 asset categories and is divided between tax-funded and rate-funded categories
- The source and recency of replacement costs impacts the accuracy and reliability of asset portfolio valuation
- Accurate and reliable condition data helps to prevent premature and costly rehabilitation or replacement and ensures that lifecycle activities occur at the right time to maximize asset value and useful life

2.1 Asset categories included in this AMP

This asset management plan for the Municipality of Callander 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 & culverts, water, wastewater, and stormwater).

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

Asset Category	Source of Funding
Road Network	Tax Levy
Bridges & Culverts	
Stormwater Network	
Buildings	
Marina	
Vehicles	
Machinery & Equipment	
Information Technology	
Land Improvements	
Water Network	User Rates
Wastewater Network	

2.2 Deriving Replacement Costs

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

- **User-Defined Cost and Cost/Unit**: Based on costs provided by municipal staff which could include average costs from recent contracts; data from engineering reports and assessments; staff estimates based on knowledge and experience
- **Cost Inflation/CPI Tables**: Historical cost of the asset is inflated based on Consumer Price Index or Non-Residential Building Construction Price Index

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

2.3 Estimated Useful Life and Service Life Remaining

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

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

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

2.4 Reinvestment Rate

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

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

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

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

2.5 Deriving Asset Condition

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

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

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 is used as a proxy to determine asset condition. Appendix E includes additional information on the role of asset condition data and provides basic guidelines for the development of a condition assessment program.

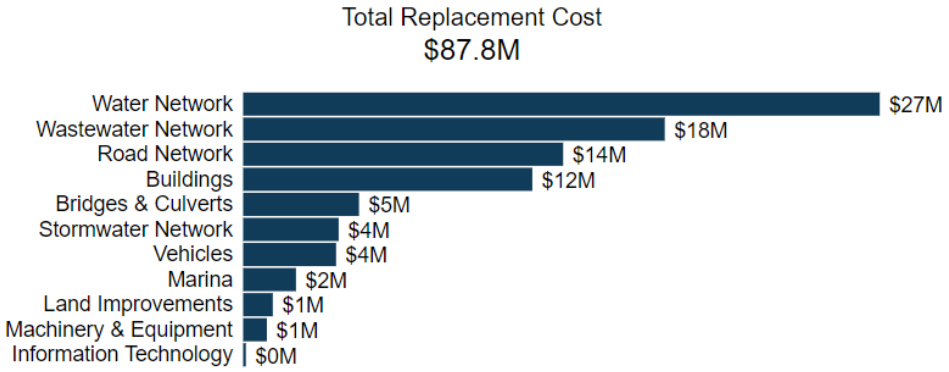
3 Portfolio Overview

Key Insights

- The total replacement cost of the Municipality's asset portfolio is $87.8 million
- The Municipality's target re-investment rate is 2.66%, and the actual re-investment rate is 2.04%, contributing to an expanding infrastructure deficit
- Average annual capital requirements total $2.3 million per year across all assets

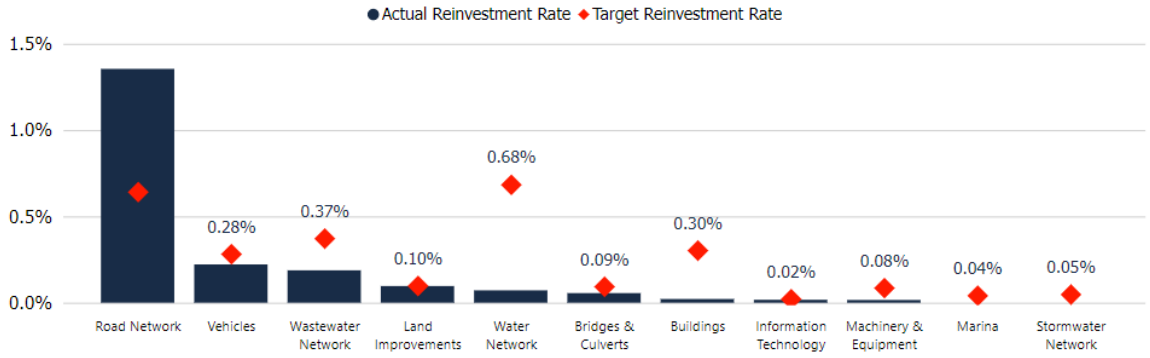
3.1 Total Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of $87.8 million based on inventory data from 2020 primarily; however, staff have chosen to include a few critical 2021 assets to capture their impact on the outcomes of this plan. 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[1].



3.2 Target vs. Actual Reinvestment Rate

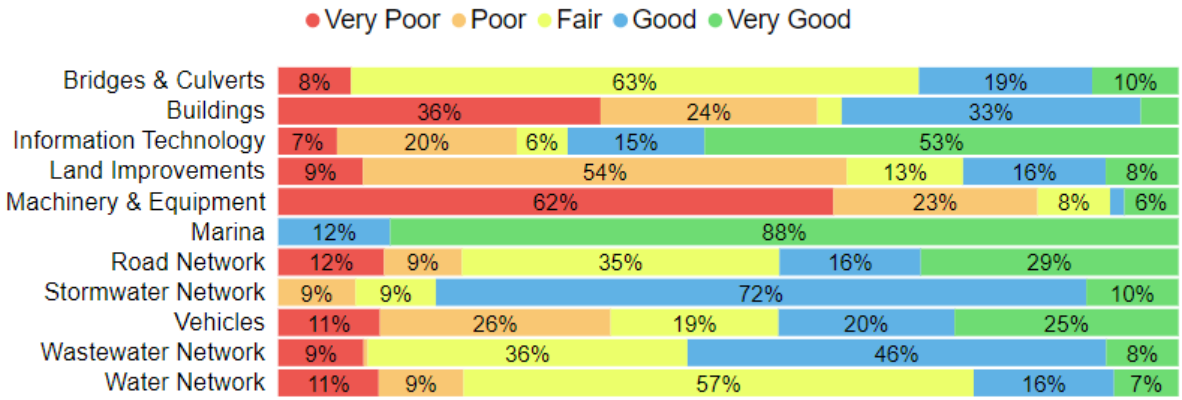
The graph below depicts funding gaps or surpluses by comparing target vs actual reinvestment rate. To meet the long-term replacement needs, the Municipality should be allocating approximately $2.3 million annually, for a target reinvestment rate of 2.66%. Actual annual spending on infrastructure totals approximately $1.8 million, for an actual reinvestment rate of 2.04%.



[1] Note that Unpaved roads are not included in the replacement cost; they are typically repaired under the operating and maintenance (O&M) budget with capital repairs occurring every 8-10 years.

3.3 Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 68% of core assets and 84% of non-core assets in Callander are in fair or better condition. This estimate relies on both age-based and field condition data.

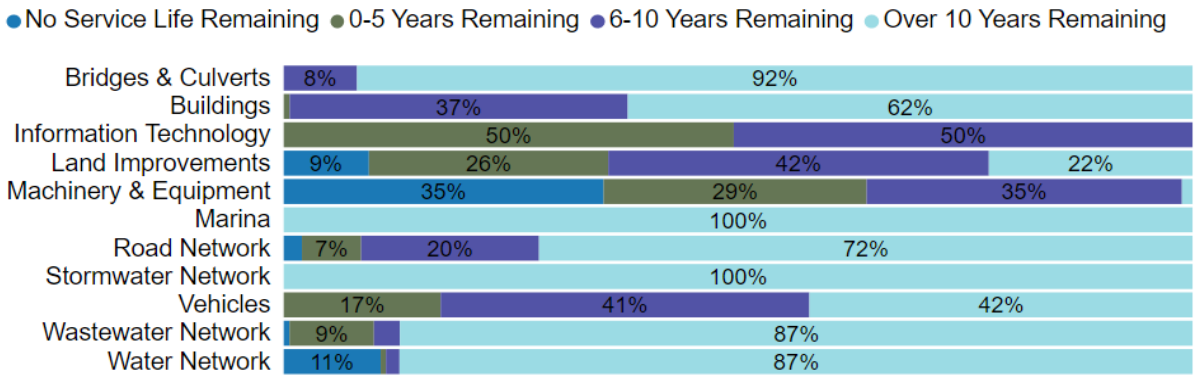


This AMP relies on assessed condition data for 44% of core assets; for the remaining portfolio and non-core assets in particular, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data used throughout this AMP.

Asset Category	Asset Segment	% of Assets with Assessed Condition	Source of Condition Data
Road Network	Road Surface	84%	Staff Assessments
Bridges & Culverts	Bridges	90%	OSIM Report
Stormwater Network	All	0%	Age-based
Water Network	All	10%	Staff Assessments
Wastewater Network	All	5%	Staff Assessments
Buildings	All	0%	Age-based
Marina	All	0%	Age-based
Vehicles	All	0%	Age-based
Machinery & Equipment	All	0%	Age-based
Information Technology	All	0%	Age-based
Land Improvements	All	0%	Age-based

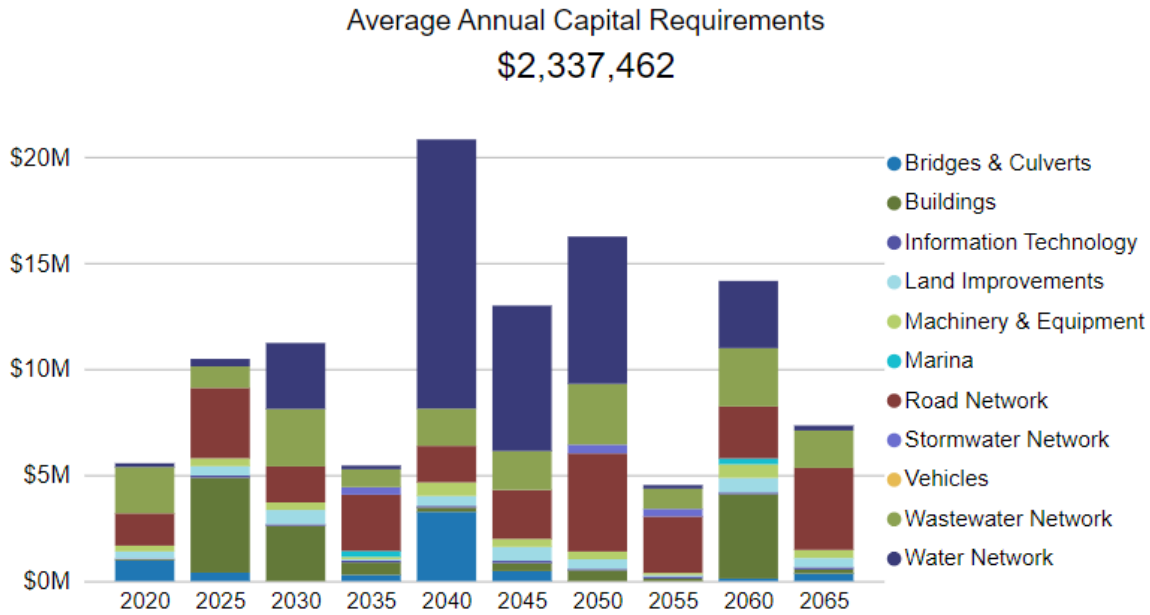
3.4 Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 17% of the Municipality's assets will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix B.



3.5 Forecasted Capital Requirements

The development of a long-term capital forecast should include both asset rehabilitation and replacement requirements. With the development of asset-specific lifecycle strategies that include the timing and cost of future capital events, the Municipality can produce an accurate long-term capital forecast. The following graph identifies capital requirements over the next 45 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins.



4 Analysis of Tax-funded Assets

Key Insights

- Tax-funded assets are valued at $43.2 million
- 68% of tax-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for tax-funded assets is approximately $1.4 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

4.1 Road Network

The Road Network is a critical component of the provision of safe and efficient transportation services and represents the highest value asset category in the Municipality's asset portfolio. It includes all municipally owned and maintained roadways in addition to supporting roadside infrastructure including sidewalks, road culverts and streetlights.

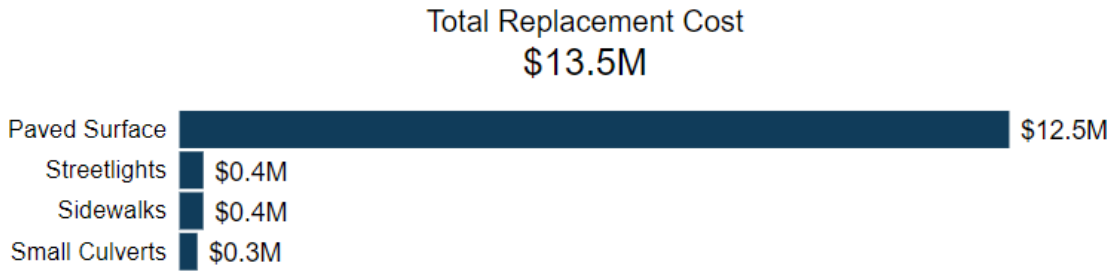
The Municipality's roads and sidewalks are maintained by the Public Works department who is also responsible for winter snow clearing, ice control and snow removal operations.

An inventory of the Municipality's paved road surfaces can be found in Appendix F.

4.1.1 Asset Inventory & Replacement Cost

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Paved Surface	107 lane-km	Unit-Cost/CPI	$12,515,143[2]
Sidewalks	6,259 m	User-Defined Cost	$360,221
Small Culverts	85	Unit-Cost /CPI	$271,229
Streetlights	278	User-Defined Cost	$361,400
Unpaved Surface	38 lane-km	Not Planned for Replacement[3]	
			$13,507,993

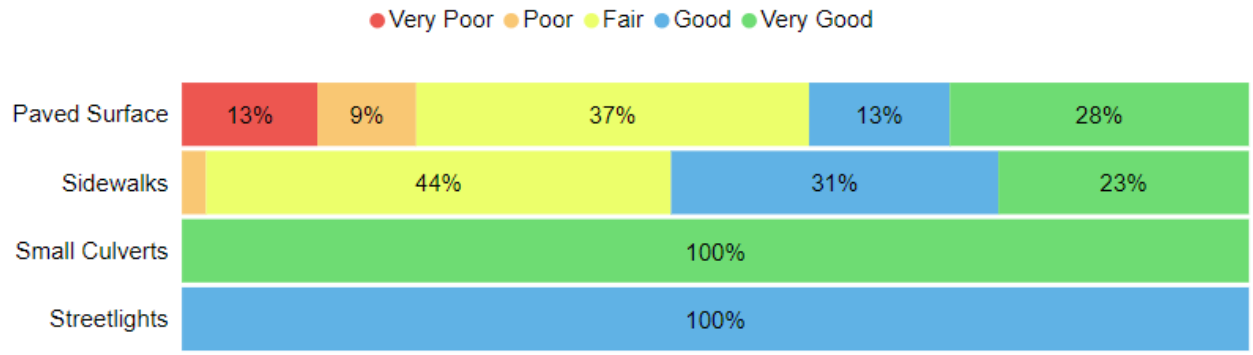


[2] Note: The replacement cost of paved surfaces includes the cost of reconstructing the base layer.
[3] Gravel roads have been included as they comprise a significant portion of the Municipality's road network. However, the lifecycle management strategies for these assets primarily consist of perpetual maintenance activities, with a capital rehabilitation every 8-10 years.

4.1.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Paved Surface	63%	Fair	95% Assessed
Sidewalks	66%	Fair	100% Assessed
Small Culverts	100%	Very Good	Age-Based
Streetlights	75%	Good	Age-Based
Average	64%	Good	84% Assessed



Current Approach to Condition Assessment

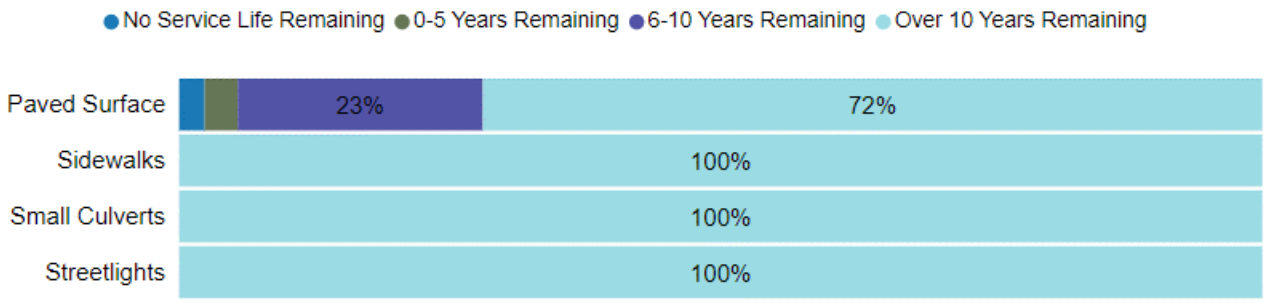
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- The road network is visually assessed by municipal staff on a regular basis to note deficiencies and create work orders.
- Road Needs Studies are conducted on a 5-year cycle, the most recent study was completed in July of 2019. The studies include a detailed assessment of the condition of each road segment which informs capital planning.
- Regulatory signs, although not formally inventoried within Citywide, undergo reflectivity testing as required.

4.1.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Road Network assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Paved Surface	15-25	21.7	12.6
Sidewalks	30-50	31.3	28.8
Small Culverts	50	1.2	48.8
Streetlights	20	4.9	15.1
Average		**11.4**	**15.5**



Each asset's Estimated Useful Life should 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.

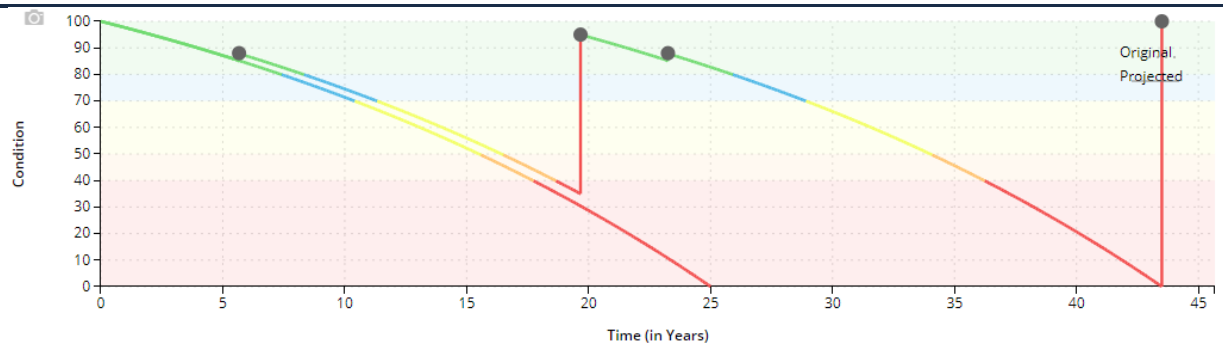
4.1.4 Lifecycle Management Strategy

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.

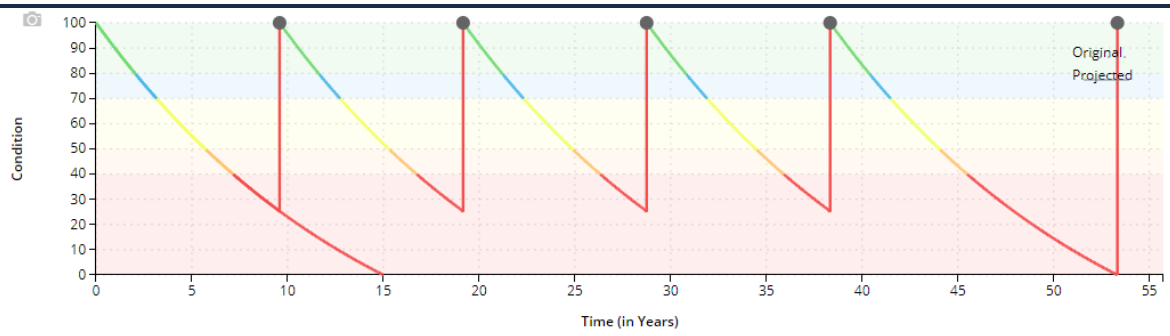
Current Lifecycle Strategies

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

Asphalt Roads (HCB)		
Event Name	**Event Class**	**Event Trigger**
Crack Sealing	Preventative Maintenance	85% Condition
Mill & Pave	Rehabilitation	35% Condition
Full Reconstruction	Replacement	0% Condition



Surface Treated Roads (LCB)		
Event Name	**Event Class**	**Event Trigger**
Surface Treatment	Rehabilitation	25% Condition
Full Reconstruction	Replacement	0% Condition

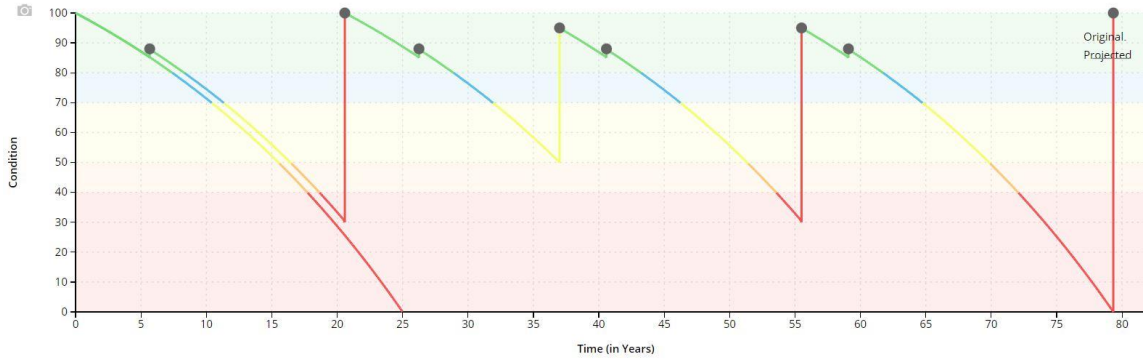


Proposed Lifecycle Strategies

A proposed scenario is presented, upgrading surface treated roads (LCB) to asphalt roads (HCB). Due to the rising costs of surface treatments, the average capital costs of LCB roads are almost 50% of HCB roads but provide less than half the service life. It may be more cost-effective and strategic in the long-term to upgrade certain LCB roads to maintain the desired level of service for the Road Network.

The following table outlines a potential strategy approach for upgrading LCB roads.

Surface Treated Roads (LCB) to Asphalt Roads (HCB)		
Event Name	**Event Class**	**Event Trigger**
Crack Sealant	Preventive Maintenance	85% Condition
Mill & Pave (Full Depth)	Rehabilitation	30% Condition
Single Lift Overlay	Rehabilitation	50% Condition
Mill & Pave	Rehabilitation	30% Condition
Full Reconstruction	Replacement	0% Condition

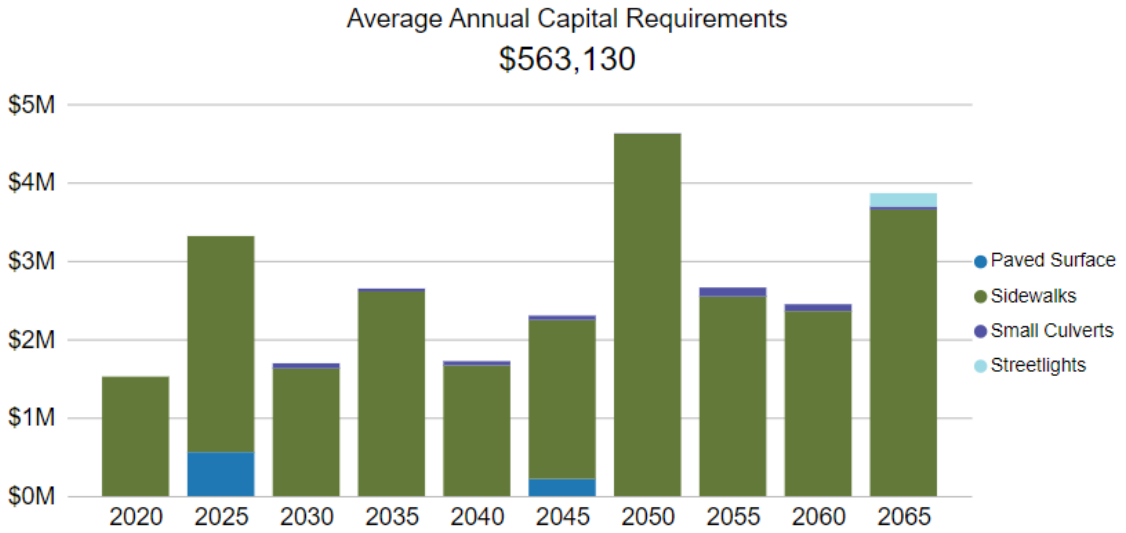


The current lifecycle strategy scenario for surface treated roads provides a 5.6% reduction to annual capital requirements over the life of surface treated roads. The proposed scenario examined the possibility of converting LCB roads to HCB roads at end-of-life. Transition from LCB to HCB can result in more cost savings (7.5%) than the current lifecycle strategy scenario, which includes multiple surface treatments. Staff will consider these proactive strategies when planning their future capital projects in order to maximize the useful life of their roads, where possible.

Forecasted Capital Requirements

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

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

4.1.5 Risk & Criticality

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 2020 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

Risks to Current Asset Management Strategies

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

Lifecycle Management Strategies

The Municipality is currently considering alternative lifecycle management strategies to create cost and time efficiencies. Surface treated roads (LCB) have a shorter useful life and the costs of surface treatments are rising, thus making it more efficient to transition surface treated roads to asphalt roads (HCB).

4.1.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2020)
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity	See Appendix C
Quality	Description or images that illustrate the different levels of road class pavement condition	Roads are given a PCI (Pavement Condition Index) rating from 0-100 in the 2020 Road Needs Study. A road in "very good" condition (rating between 80-100) is considered well maintained, exhibits few pavement distresses with a low severity and provides a smooth and pleasant ride for drivers. A road in "very poor" condition (rating between 0-40) exhibits several pavement distresses of increasing severity and is very rough and bumpy for drivers.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2020)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	0.26
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	0.01
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	1.05
Quality	Average pavement condition index for paved roads in the municipality	63.8%
	Average surface condition for unpaved roads in the municipality (e.g. excellent, good, fair, poor)	Fair
Performance	Current annual capital reinvestment rate	1.35%
	% of road network in poor/very poor condition	33%
	Average risk rating associated to road network	10.2

4.1.7 Recommendations

Replacement Costs

- Update replacement costs on a regular basis to ensure the accuracy of capital projections.

Condition Assessment Strategies

- Maintain a regular condition assessment cycle for paved roads and sidewalks and upload condition ratings to Citywide (ex. every 3-5 years).
- Consider gathering visual condition assessments for other point assets within the Road Network, such as streetlights, to minimize relying on age-based assessments.

Lifecycle Management Strategies

- Implement the identified lifecycle management strategies for roads to realize potential cost avoidance and maintain a high quality of road pavement condition.
- Evaluate the efficacy of the Municipality's lifecycle management strategies at regular intervals to determine the impact cost, condition and risk. Consider the benefits of maintaining surface treated roads with the identified strategy or transition surface treated roads to asphalt.

Risk Management Strategies

- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.

Levels of Service

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

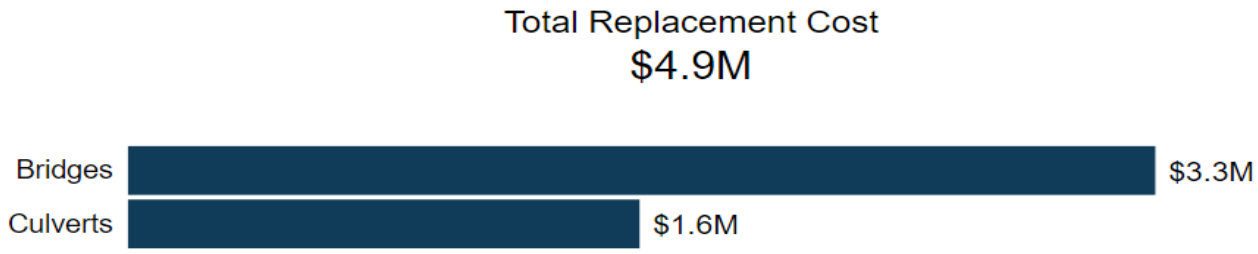
4.2 Bridges & Culverts

Bridges & Culverts represent a critical portion of the transportation services provided to the community. The Department of Public Works is responsible for the maintenance of all bridges and culverts located across municipal roads with the goal of keeping structures in an adequate state of repair and minimizing service disruptions.

4.2.1 Asset Inventory & Replacement Cost

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

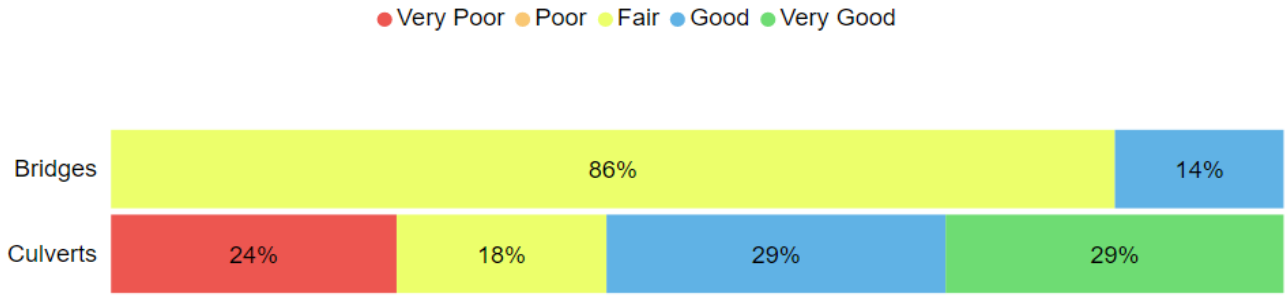
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Bridges	3	User-Defined Cost	$3,265,000
Culverts	14	CPI/ User-Defined Costs	$1,626,222
Total			**$4,891,222**



4.2.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Bridges	69%	Fair	100% Assessed
Culverts	74%	Good	71% Assessed
Average	70%	Good	90% Assessed



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

Current Approach to Condition Assessment

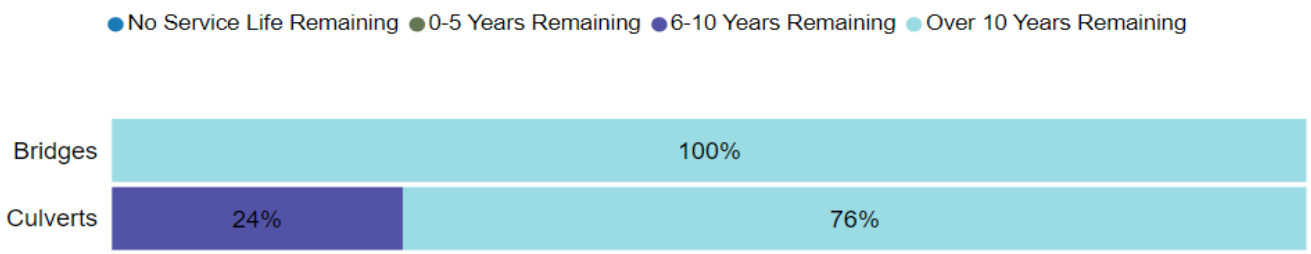
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- Condition assessments of all bridges and culverts with a span greater than or equal to 3 meters are completed every 2 years in accordance with the Ontario Structure Inspection Manual (OSIM)
- Visual inspections are performed regularly, between OSIM inspections, to ensure the performance and condition of the structures has not deteriorated unexpectedly.

4.2.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Bridges & Culverts assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Bridges	75	52.5	21.3
Culverts	50-75	6.8	39.7
Average		**14.9**	**36.4**



Each asset's Estimated Useful Life should 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.

4.2.4 Lifecycle Management Strategy

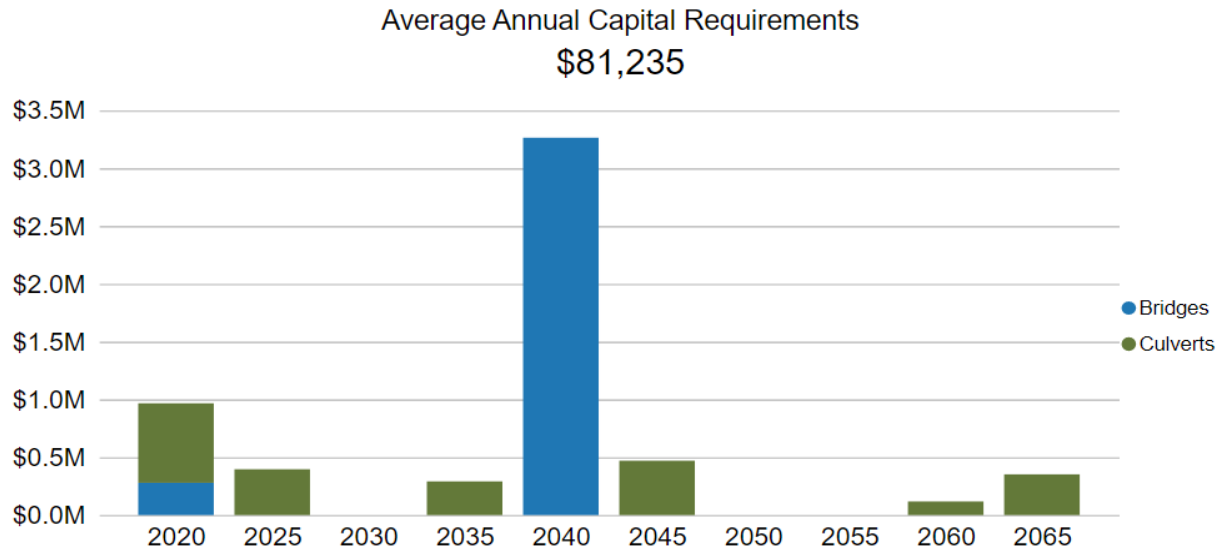
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance, Rehabilitation and Replacement	All lifecycle activities are driven by the results of mandated structural inspections competed according to the Ontario Structure Inspection Manual (OSIM)
Inspection	The most recent inspection report was completed in 2020 by HP Engineering.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



The 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.

4.2.5 Risk & Criticality

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 2020 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

Risks to Current Asset Management Strategies

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

Levels of Service

Many of the Municipality's bridges have load restrictions, thus limiting accessibility for heavier vehicles and equipment. The Municipality is developing a capital funding strategy to reduce dependency on grant funding, prevent deferral of capital works, and eventually improve accessibility.

4.2.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2020)
Scope	Description of the traffic that is supported by municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Bridges and structural culverts are a key component of the municipal transportation network. None of the municipality's structures have loading or dimensional restrictions.
Quality	Description or images of the condition of bridges & culverts and how this would affect use of the bridges & culverts	See Appendix C

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2020)
Scope	% of bridges in the Municipality with loading or dimensional restrictions	0%
Quality	Average bridge condition index value for bridges in the Municipality	70.0
	Average bridge condition index value for structural culverts in the Municipality	73.5
Performance	Current annual capital reinvestment rate	0.06%
	% of Bridges & Culverts in poor/very poor condition	8%
	Average risk rating associated to bridges & culverts	9.26

4.2.7 Recommendations

Data Review

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

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

- This AMP includes capital costs associated with the rehabilitation and/or reconstruction of bridges and structural culverts. The Municipality should continue to integrate the OSIM recommended capital activities into their long-term planning.

Levels of Service

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

4.3 Stormwater Network

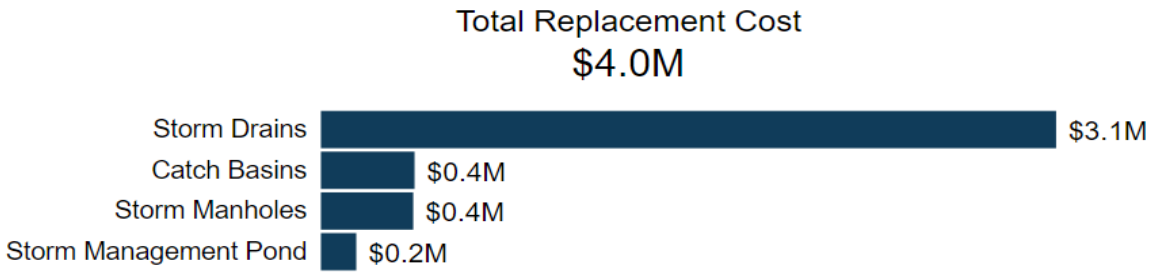
The Municipality is responsible for owning and maintaining a stormwater network of an unknown length of storm sewer mains, catch basins and other supporting infrastructure.

Staff are working towards improving the accuracy and reliability of their Stormwater Network inventory to assist with long-term asset management planning.

4.3.1 Asset Inventory & Replacement Cost

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

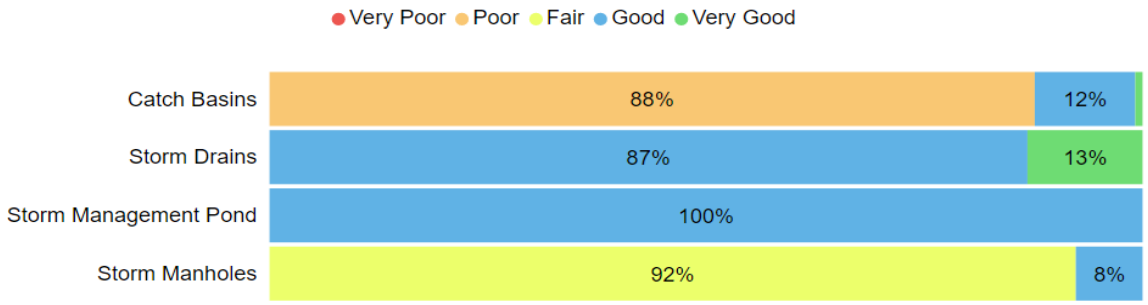
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Catch Basins	113	Cost/Unit	$395,500
Storm Drains	6,412 m	Cost/Unit & CPI	$3,097,860
Storm Management Pond	3	Cost/Unit	$150,000
Storm Manholes	52	Cost/Unit	$390,000
Total			**$4,033,360**



4.3.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Catch Basins	44%	Fair	Age-Based
Storm Drains	80%	Very Good	Age-Based
Storm Management Pond	78%	Good	Age-Based
Storm Manholes	57%	Fair	Age-Based
Average	**74%**	**Good**	**Age-Based**



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

Current Approach to Condition Assessment

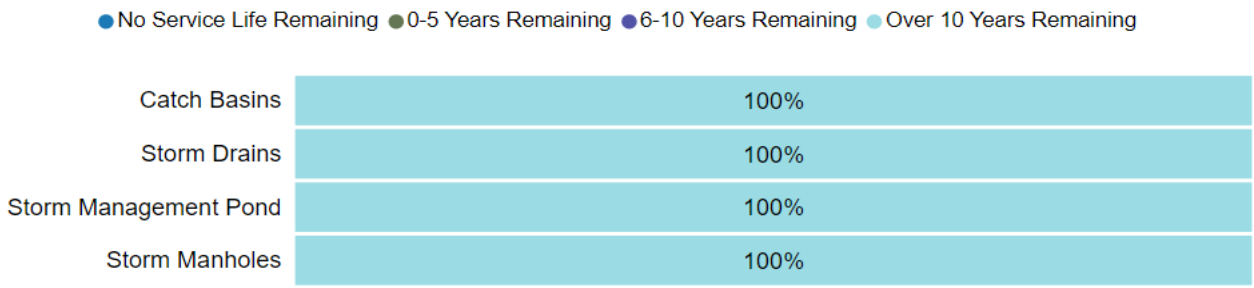
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- There are no formal condition assessment programs in place for the stormwater network, however, catch basins and ponds are visually inspected annually through road patrols.
- CCTV inspections are performed on an as-needed basis for the storm sewers.
- As the Municipality refines the available asset inventory for the stormwater network, a regular assessment cycle will be established.

4.3.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Stormwater Network assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Catch Basins	30-75	23.9	36.1
Storm Drains	75	41.8	33.2
Storm Management Pond	100	22.1	77.9
Storm Manholes	100	33.6	66.4
Average		**40.6**	**34.8**



Each asset's Estimated Useful Life should 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.

4.3.4 Lifecycle Management Strategy

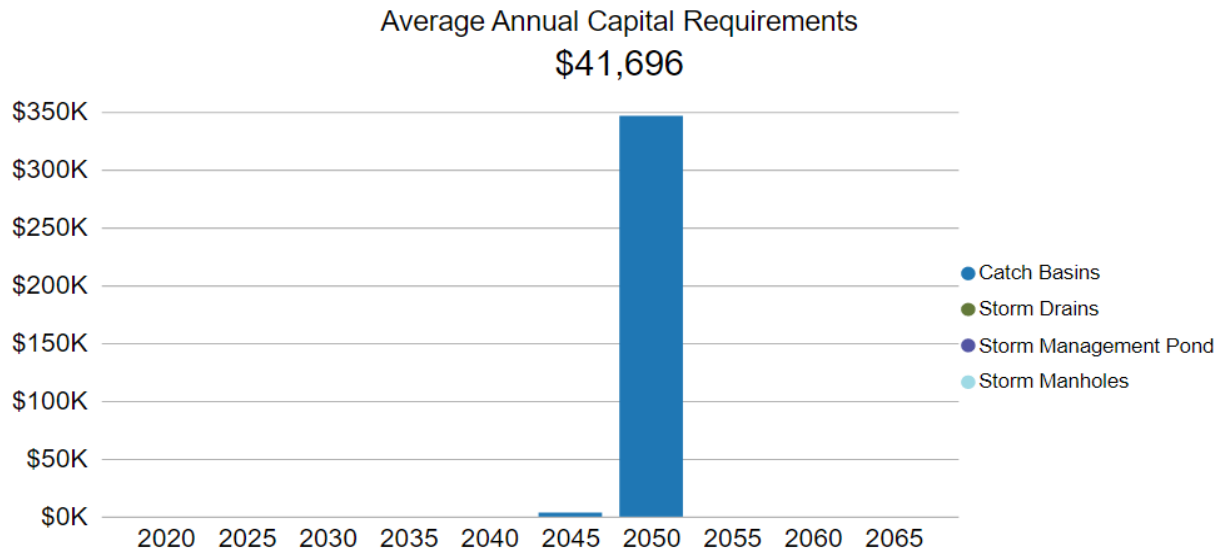
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Primary activities include catch basin cleaning and storm main flushing, but only a small percentage of the entire network is completed per year.
Rehabilitation	Trenchless re-lining has the potential to reduce total lifecycle costs but would require a formal condition assessment program to determine viability.
Replacement	Without the availability of up-to-date condition assessment information replacement activities are based on age and main break history.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



The 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.

4.3.5 Risk & Criticality

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 2020 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

Risks to Current Asset Management Strategies

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

Asset Data and Information

There is a lack of confidence in the available inventory data for storm sewers. Staff are in the process of evaluating the resources and activities required to build and/or improve the existing asset inventory. The Municipality has some unassumed private assets that are in poor condition and some an unknown number o f undiscovered underground assets. Staff plan to prioritize data refinement efforts to increase confidence in the accuracy and reliability of asset data and information.

Climate Change & Extreme Weather Events

The network is prone to surcharging as a result of heavy precipitation events. Areas around the rivers and creeks experience frequent flooding. Certain elements of the stormwater network do not have the capacity to withstand extreme weather events. Staff are working towards enhancing the data and information for the stormwater network to support capital planning that will enable system expansion.

4.3.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2020)
Scope	Description, which may include map, of the user groups or areas of the municipality that are protected from flooding, including the extent of protection provided by the municipal stormwater system	See Appendix C

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2020)
Scope	% of properties in municipality resilient to a 100-year storm	2%[4]
	% of the municipal stormwater management system resilient to a 5-year storm	100%[5]
Performance	Current annual capital reinvestment rate	0%
	% of storm network in poor/very poor condition	9%
	Average risk rating associated to storm network	7.8

[4] The Municipality does not currently have data available to determine this technical metric. The rate of properties that are expected to be resilient to a 100-year storm is expected to be low.
[5] This is based on the observations of municipal staff.

4.3.7 Recommendations

Asset Inventory

- The Municipality's Stormwater Network inventory remains at a basic level of maturity and staff do not have a high level of confidence in its accuracy or reliability. The development of a comprehensive inventory of the stormwater network should be prioritized.

Condition Assessment Strategies

- The development of a comprehensive inventory should be accompanied by a system-wide assessment of the condition of all assets in the Stormwater Network through network-wide 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 the Stormwater Network on a regular basis to achieve the lowest total cost of ownership while maintaining adequate service levels.

Levels of Service

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

4.4 Buildings

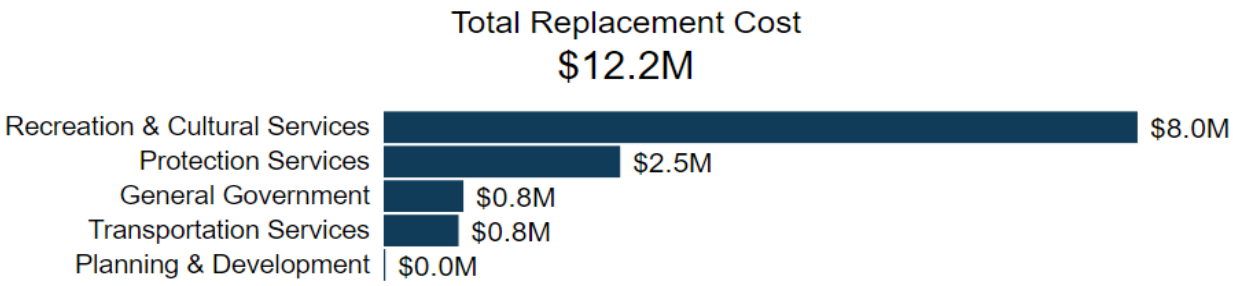
The Municipality of Callander owns and maintains several facilities and recreation centres that provide key services to the community. These include:

- Administrative offices
- A Public library, community centre, and park buildings
- Fire stations and the medical centre
- Public works garages and storage sheds

4.4.1 Asset Inventory & Replacement Cost

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

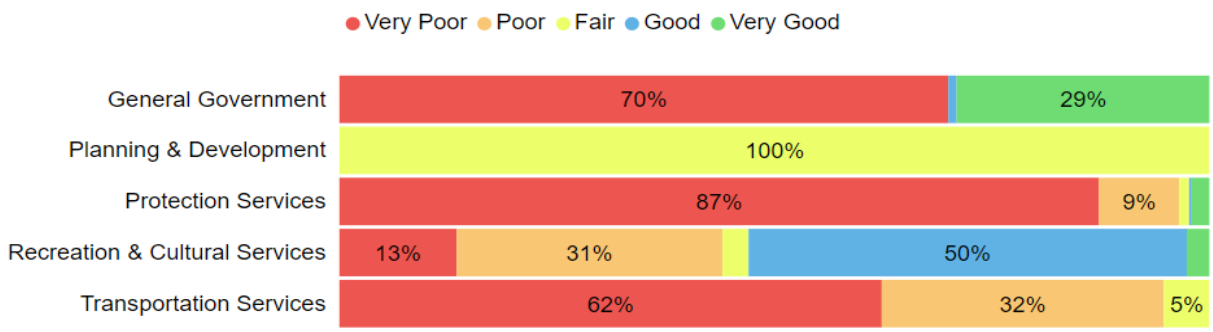
Asset Segment	Quantity (Components)	Replacement Cost Method	Total Replacement Cost
General Government	7	CPI/ User-Defined Costs	$849,396
Planning & Development	1	CPI Tables	$18,126
Protection Services	8	CPI/ User-Defined Costs	$2,517,409
Recreation & Cultural Services	262	CPI/ User-Defined Costs	$8,024,056
Transportation Services	4	CPI/ User-Defined Costs	$797,663
			$12,206,650



4.4.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Administration	37%	Poor	Age-Based
Library	45%	Fair	Age-Based
Protective Services	20%	Poor	Age-Based
Public Works	54%	Fair	Age-Based
Recreation	24%	Poor	Age-Based
Average	**44%**	**Fair**	**Age-Based**

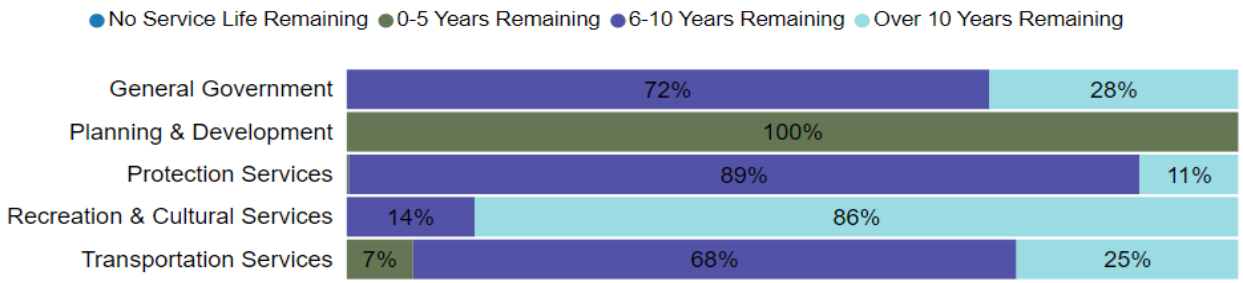


To ensure that the Municipality's Buildings continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance,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

4.4.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Buildings & Facilities assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

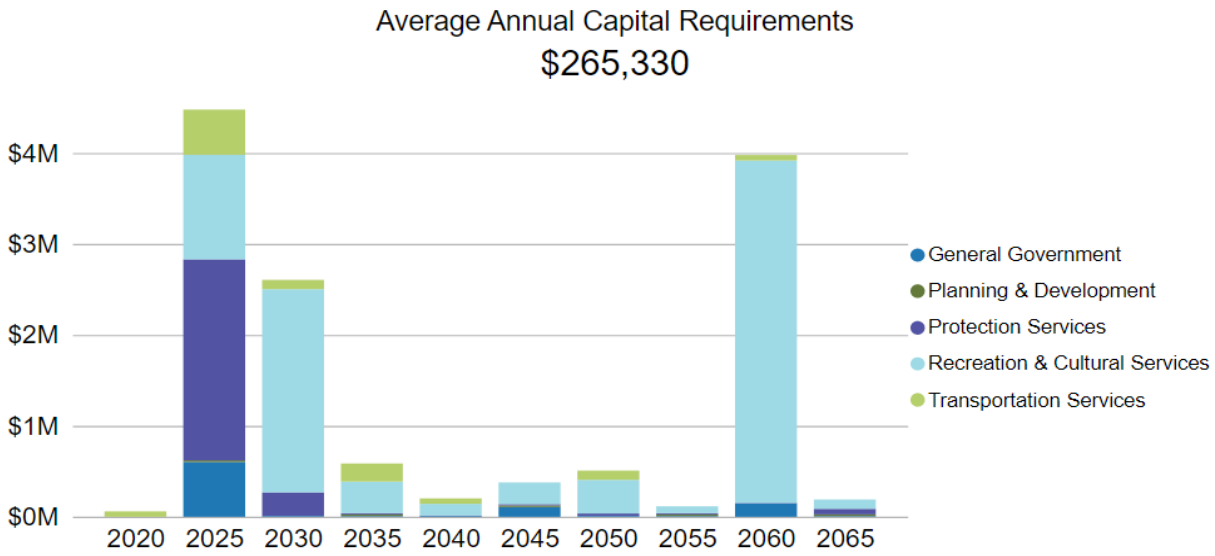
Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
General Government	10-50	9.8	20.2
Planning & Development	10	5.5	4.5
Protection Services	10-50	18.4	12.8
Recreation & Cultural Services	10-50	11.2	20.7
Transportation Services	10-50	22.8	9.8
Average		**13.1**	**17.9**



Each asset's Estimated Useful Life should 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.

4.4.4 Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



The 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.

4.4.5 Asset Management Strategies

The documentation of lifecycle management strategies, current levels of service, and risk are critical to the development of a comprehensive asset management program. These components of the asset management plan support effective short- and long-term capital planning and contribute to more proactive asset management practices, thus extending the estimated useful life of many assets and providing a higher level of service.

In accordance with O. Reg. 588/17, the Municipality will continue to gather data and information in order to detail and review the lifecycle management strategies, levels of service, and risk of all non-core asset categories by July 1, 2024.

4.4.6 Recommendations

Asset Inventory

- The Municipality's asset inventory contains a number of non-segmented buildings. Buildings consist of several separate capital components that have unique estimated useful lives and require asset-specific lifecycle strategies. Staff should work towards a component-based inventory of all facilities to allow for component-based lifecycle planning; utilizing the UNIFORMAT II Code Classification as a guide.

Condition Assessment Strategies

- This AMP utilizes age-based condition for all buildings. The Municipality should consider conducting building condition assessments for all its critical buildings to better inform their short- and long-term decision-making.

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 Strategies

- Document lifecycle management strategies for buildings. Review current lifecycle management strategies to achieve the lowest total cost of ownership while maintaining adequate service levels.

Levels of Service

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

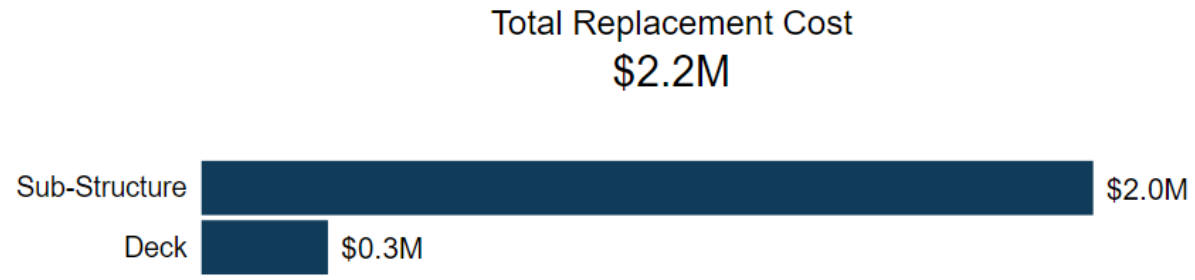
4.5 Marina

The Municipality of Callander owns and maintains several facilities and recreation centres that provide key services to the community, including the marina. The marina includes the deck and sub-structures that are maintained by municipal staff for public use.

4.5.1 Asset Inventory & Replacement Cost

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

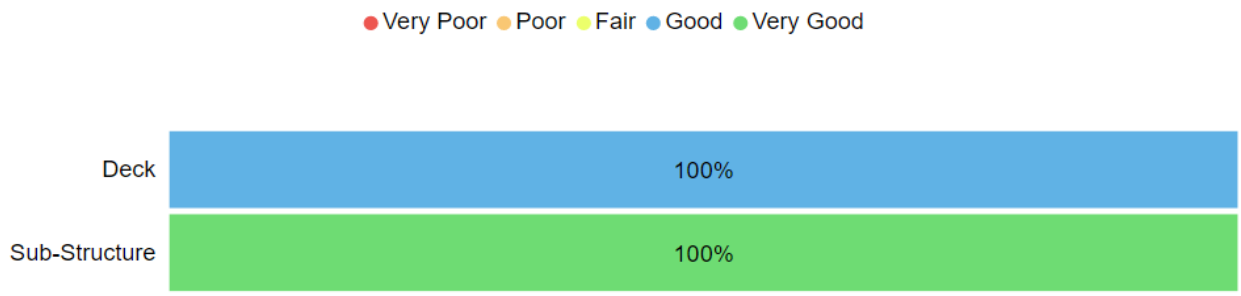
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Deck	1	CPI Tables	$277,607
Sub-Structure	1	CPI Tables	$1,952,905
Total			**$2,230,512**



4.5.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Deck	74%	Good	Age-Based
Sub-Structure	91%	Very Good	Age-Based
Average	**90%**	**Very Good**	**Age-Based**

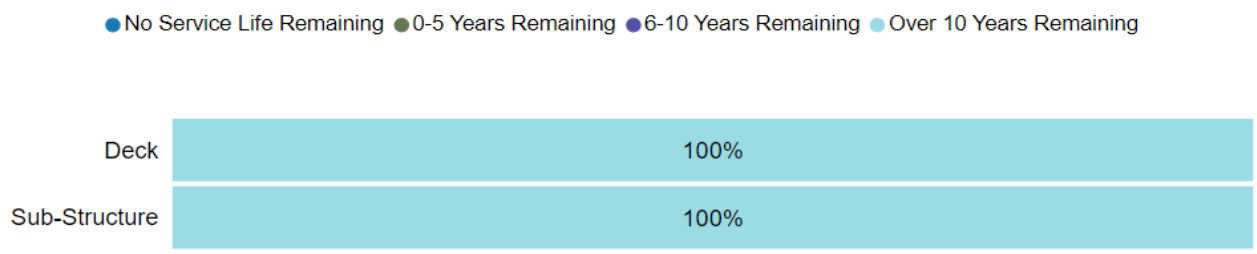


To ensure that the Municipality's Marina continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance,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

4.5.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Marina assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

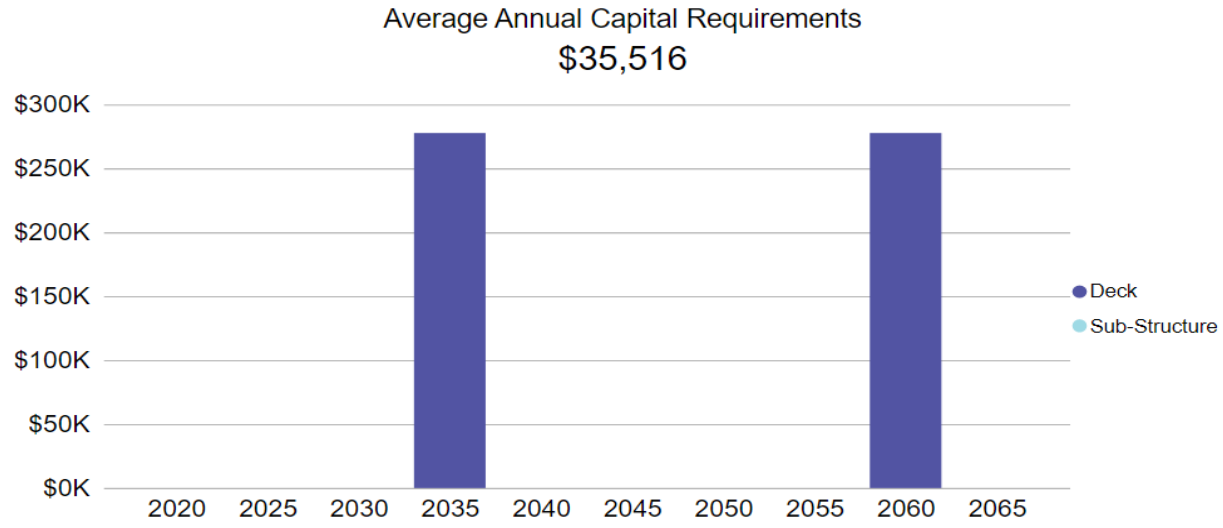
Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Deck	25	6.5	18.5
Sub-Structure	80	6.5	73.4
Average		**6.5**	**46.0**



Each asset's Estimated Useful Life should 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.

4.5.4 Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



The 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.

4.5.5 Asset Management Strategies

The documentation of lifecycle management strategies, current levels of service, and risk are critical to the development of a comprehensive asset management program. These components of the asset management plan support effective short- and long-term capital planning and contribute to more proactive asset management practices, thus extending the estimated useful life of many assets and providing a higher level of service.

In accordance with O. Reg. 588/17, the Municipality will continue to gather data and information in order to detail and review the lifecycle management strategies, levels of service, and risk of all non-core asset categories by July 1, 2024.

4.5.6 Recommendations

Replacement Costs

- All replacement costs for Marina assets in this AMP are 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

- This AMP utilizes age-based condition only. Staff should identify condition assessment strategies for high value and high-risk asset components.
- Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly.

Risk Management Strategies

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

Lifecycle Strategies

- Document lifecycle management strategies for marina assets. Review current lifecycle management strategies to achieve the lowest total cost of ownership while maintaining adequate service levels.

Levels of Service

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

4.6 Vehicles

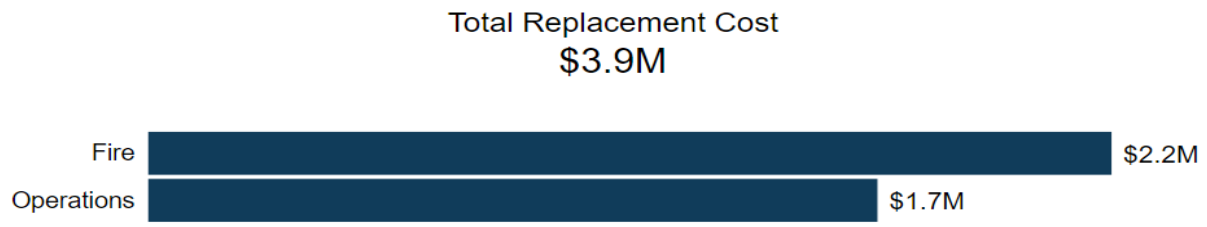
Vehicles allow staff to efficiently deliver municipal services and personnel. Municipal vehicles are used to support several service areas, including:

- Fire rescue vehicles to provide emergency services
- Backhoes, tractors, graders, and mowers to maintain municipal parks and the transportation network
- Pick-up trucks to support the maintenance of the transportation network and address service requests

4.6.1 Asset Inventory & Replacement Cost

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

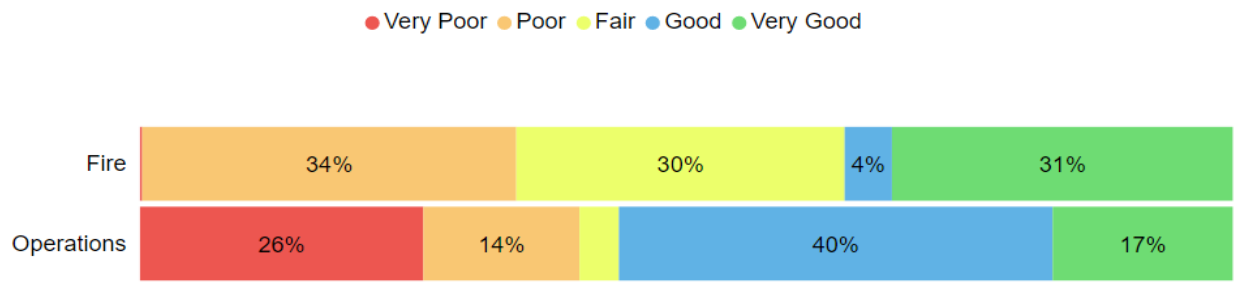
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Fire	8	CPI Tables	$2,233,113
Operations	13	CPI Tables	$1,690,659
Total			**$3,923,772**



4.6.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Fire	56%	Fair	Age-Based
Operations	53%	Fair	Age-Based
Average	**55%**	**Fair**	**Age-Based**

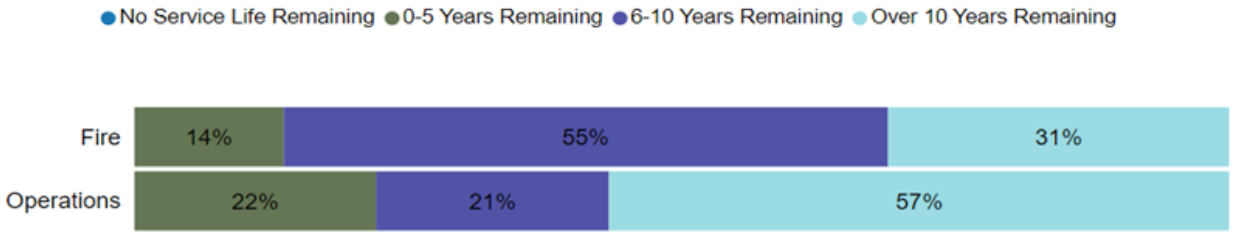


To ensure that the Municipality's Vehicles continue to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance,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

4.6.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Vehicles assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

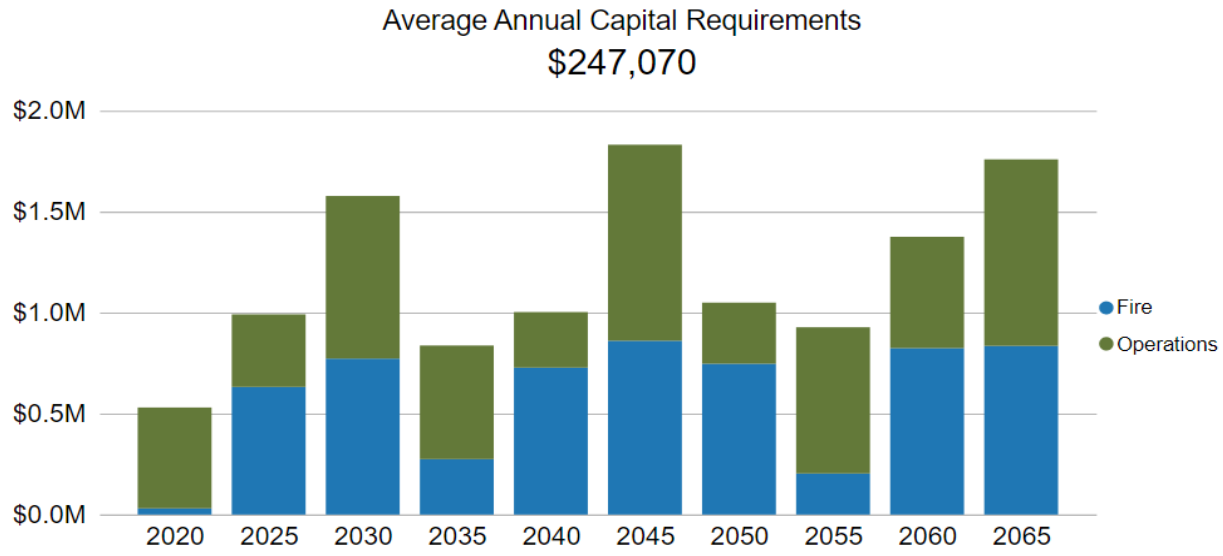
Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Fire	7-20	7.7	6.9
Operations	8-20	7.3	7.3
Average		**7.3**	**7.2**



Each asset's Estimated Useful Life should 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.

4.6.4 Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



The 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.

4.6.5 Asset Management Strategies

The documentation of lifecycle management strategies, current levels of service, and risk are critical to the development of a comprehensive asset management program. These components of the asset management plan support effective short- and long-term capital planning and contribute to more proactive asset management practices, thus extending the estimated useful life of many assets and providing a higher level of service.

In accordance with O. Reg. 588/17, the Municipality will continue to gather data and information in order to detail and review the lifecycle management strategies, levels of service, and risk of all non-core asset categories by July 1, 2024.

4.6.6 Recommendations

Replacement Costs

- All replacement costs for vehicles in this AMP are 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

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

Risk Management Strategies

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

Lifecycle Strategies

- Document lifecycle management strategies for vehicles. Review current lifecycle management strategies to achieve the lowest total cost of ownership while maintaining adequate service levels.

Levels of Service

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

4.7 Machinery & Equipment

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

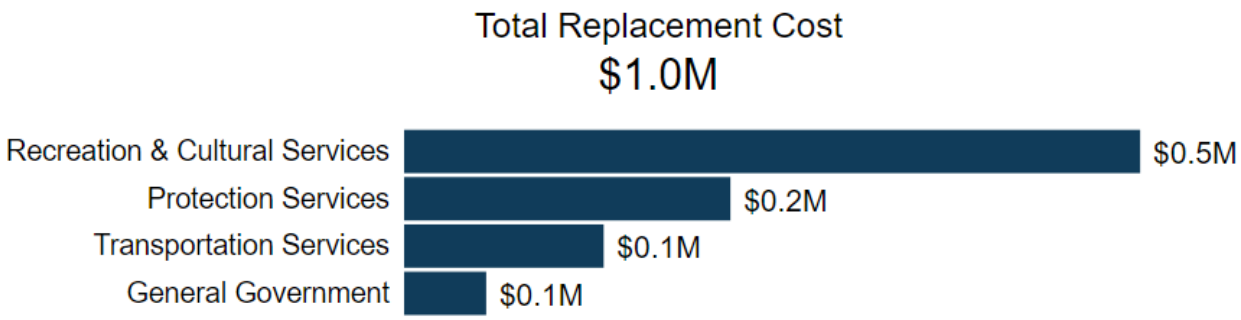
- Landscaping equipment to maintain public parks
- Fire equipment to support the delivery of emergency services
- Generators for municipal buildings

Keeping machinery & equipment in an adequate state of repair is important to maintain a high level of service.

4.7.1 Asset Inventory & Replacement Cost

The following table includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Machinery & Equipment inventory.

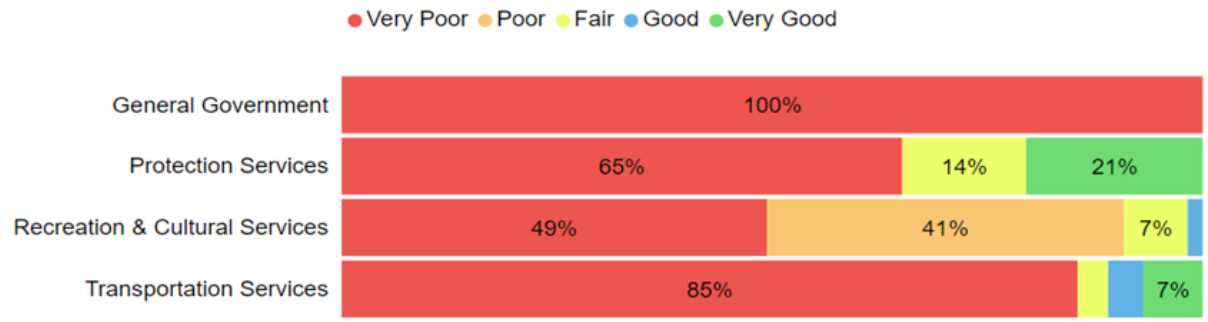
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
General Government	4	CPI Tables	$61,322
Protection Services	10	CPI/ User-Defined Costs	$243,600
Recreation & Cultural Services	17	CPI/ User-Defined Costs	$549,408
Transportation Services	8	CPI/ User-Defined Costs	$149,012
Total			**$1,003,342**



4.7.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
General Government	0%	Very Poor	Age-Based
Protection Services	28%	Poor	Age-Based
Recreation & Cultural Services	19%	Very Poor	Age-Based
Transportation Services	14%	Very Poor	Age-Based
Average	**19%**	**Very Poor**	**Age-Based**

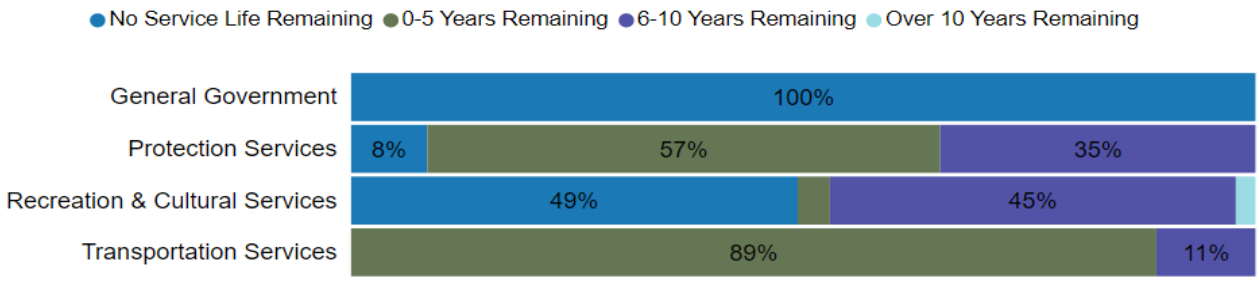


To ensure that the Municipality's Machinery & Equipment continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination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

4.7.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Machinery & Equipment assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

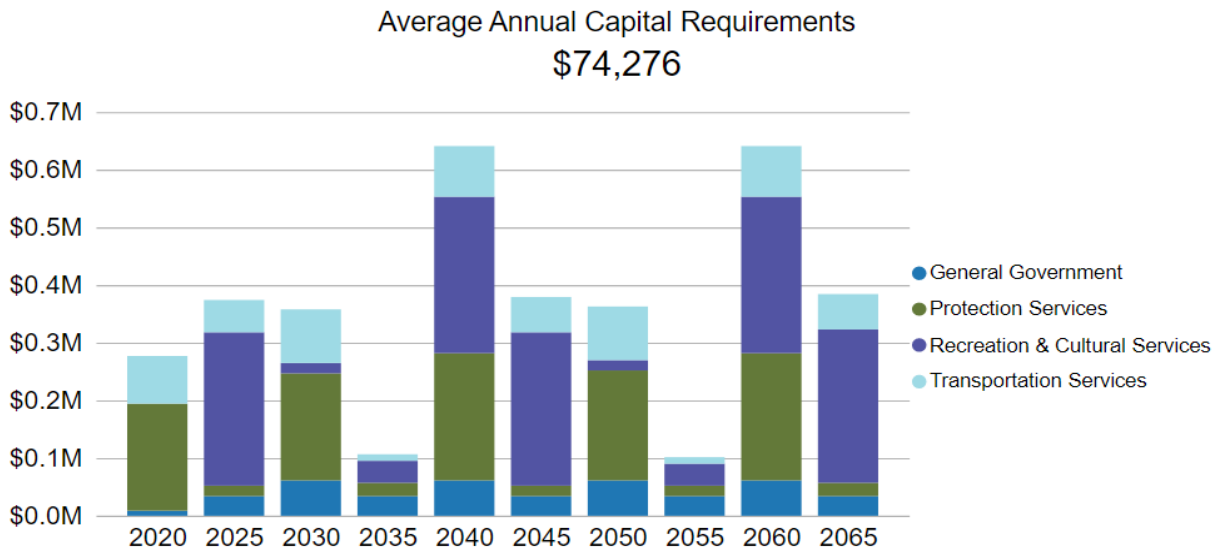
Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
General Government	5-10	15.0	-6.3
Protection Services	10-20	10.3	3.2
Recreation & Cultural Services	10-20	15.1	1.4
Transportation Services	10-20	9.4	2.7
Average		**12.8**	**1.3**



Each asset's Estimated Useful Life should 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.

4.7.4 Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



The 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.

4.7.5 Asset Management Strategies

The documentation of lifecycle management strategies, current levels of service, and risk are critical to the development of a comprehensive asset management program. These components of the asset management plan support effective short- and long-term capital planning and contribute to more proactive asset management practices, thus extending the estimated useful life of many assets and providing a higher level of service.

In accordance with O. Reg. 588/17, the Municipality will continue to gather data and information in order to detail and review the lifecycle management strategies, levels of service, and risk of all non-core asset categories by July 1, 2024.

4.7.6 Recommendations

Replacement Costs

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

Risk Management Strategies

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

Lifecycle Strategies

- Document lifecycle management strategies for machinery and equipment. Review current lifecycle management strategies to achieve the lowest total cost of ownership while maintaining adequate service levels.

Levels of Service

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

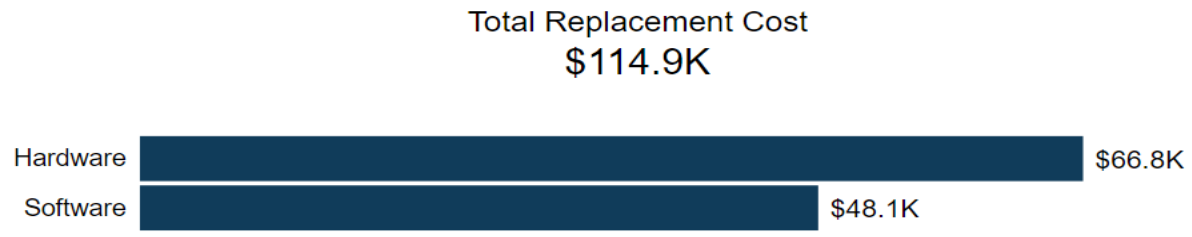
4.8 Information Technology

In order to maintain the high quality of public service and support the delivery of core services, Municipality staff own and employ various types of information technology. This includes computer software and hardware. Keeping information technology in an adequate state of repair and up to date is important to maintain a high level of service.

4.8.1 Asset Inventory & Replacement Cost

The following table includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Information Technology inventory.

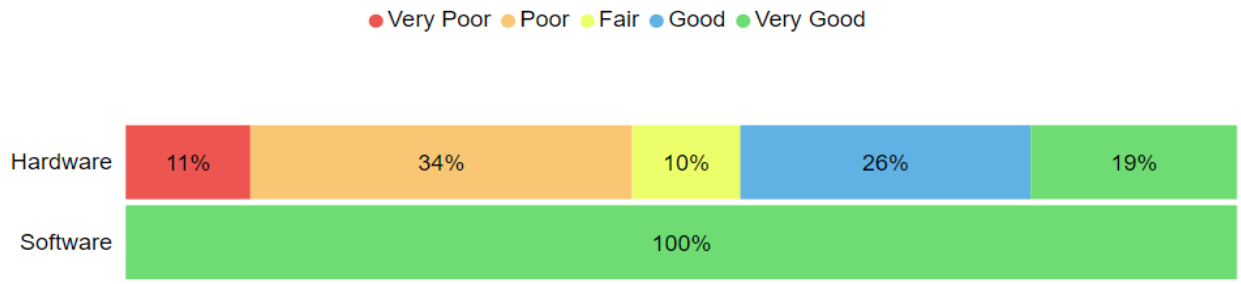
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Hardware	25	Cost/Unit/ CPI/ User-Defined Cost	$66,834
Software	3	CPI Tables	$48,068
Total			**$114,902**



4.8.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Hardware	53%	Fair	Age-Based
Software	90%	Very Good	Age-Based
Average	**68%**	**Good**	**Age-Based**

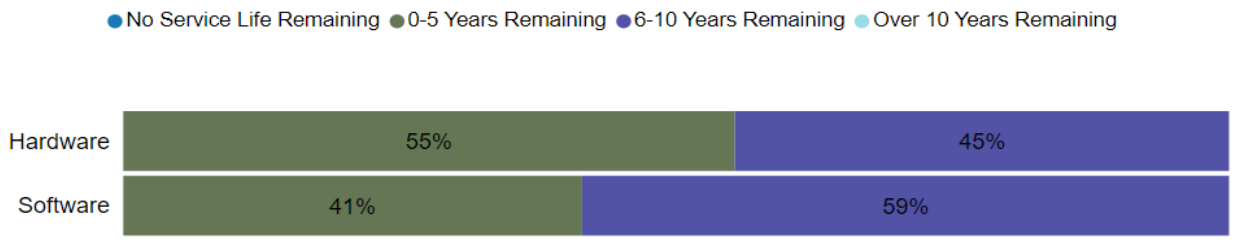


To ensure that the Municipality's Information Technology continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination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

4.8.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Information Technology assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

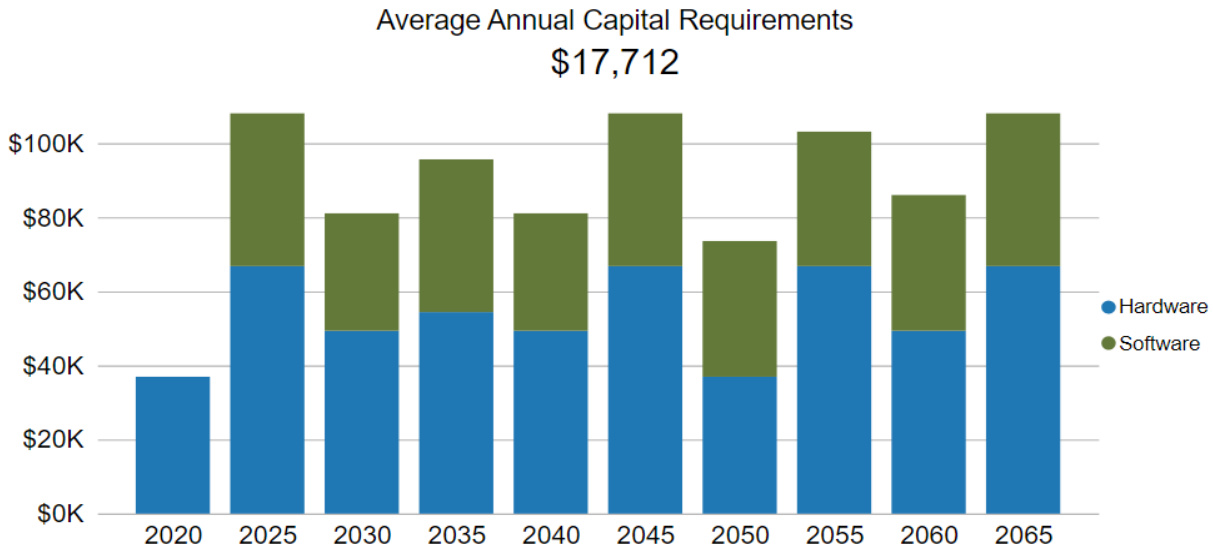
Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Hardware	5-10	2.3	4.2
Software	5-10	0.8	7.4
Average		**1.8**	**5.3**



Each asset's Estimated Useful Life should 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.

4.8.4 Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



The 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.

4.8.5 Asset Management Strategies

The documentation of lifecycle management strategies, current levels of service, and risk are critical to the development of a comprehensive asset management program. These components of the asset management plan support effective short- and long-term capital planning and contribute to more proactive asset management practices, thus extending the estimated useful life of many assets and providing a higher level of service.

In accordance with O. Reg. 588/17, the Municipality will continue to gather data and information in order to detail and review the lifecycle management strategies, levels of service, and risk of all non-core asset categories by July 1, 2024.

4.8.6 Recommendations

Replacement Costs

- Most replacement costs for information technology assets in this AMP are 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

- This AMP utilizes age-based condition for all information technology assets. Staff should 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.

Lifecycle Strategies

- Document lifecycle management strategies for information technology assets. Review current lifecycle management strategies to achieve the lowest total cost of ownership while maintaining adequate service levels.

Levels of Service

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

4.9 Land Improvements

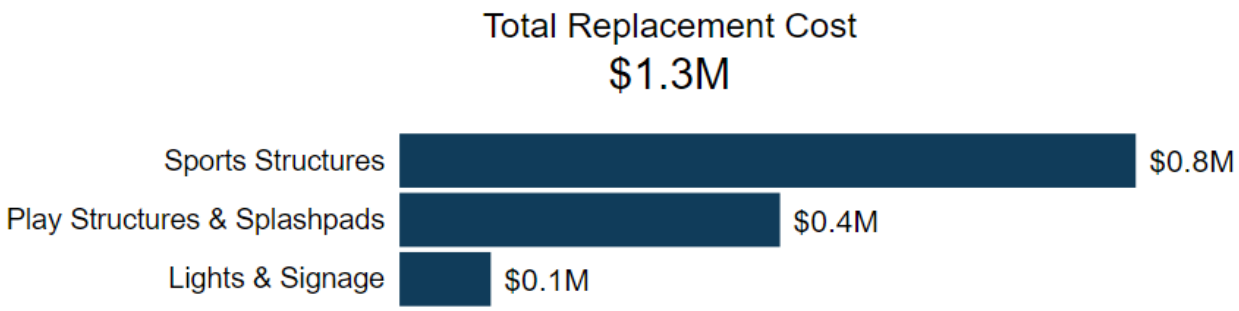
The Municipality of Callander owns a small number of assets that are considered Land Improvements. This category includes:

- Parking lots for municipal facilities
- Fencing and signage
- Miscellaneous park equipment and other assets

4.9.1 Asset Inventory & Replacement Cost

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

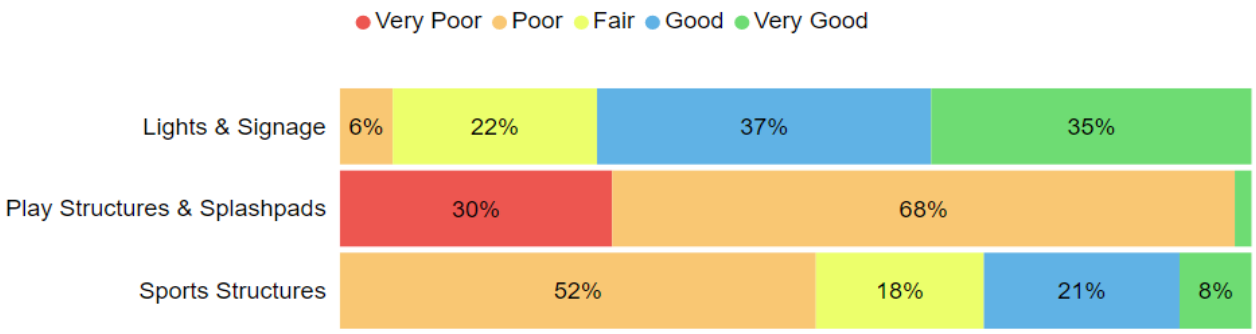
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Lights & Signage	21	CPI/ User-Defined Costs	$94,678
Play Structures & Splashpads	4	CPI/ User-Defined Costs	$394,507
Sports Structures	22	CPI Tables	$763,332
Total			**$1,252,517**



4.9.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Lights & Signage	74%	Good	Age-Based
Play Structures & Splashpads	19%	Very Poor	Age-Based
Sports Structures	47%	Fair	Age-Based
Average	**40%**	**Fair**	**Age-Based**

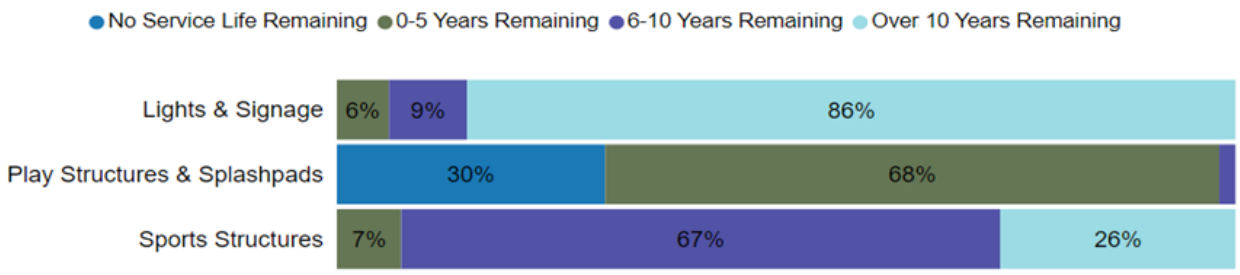


To ensure that the Municipality's Land Improvements continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of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

4.9.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Land Improvements assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

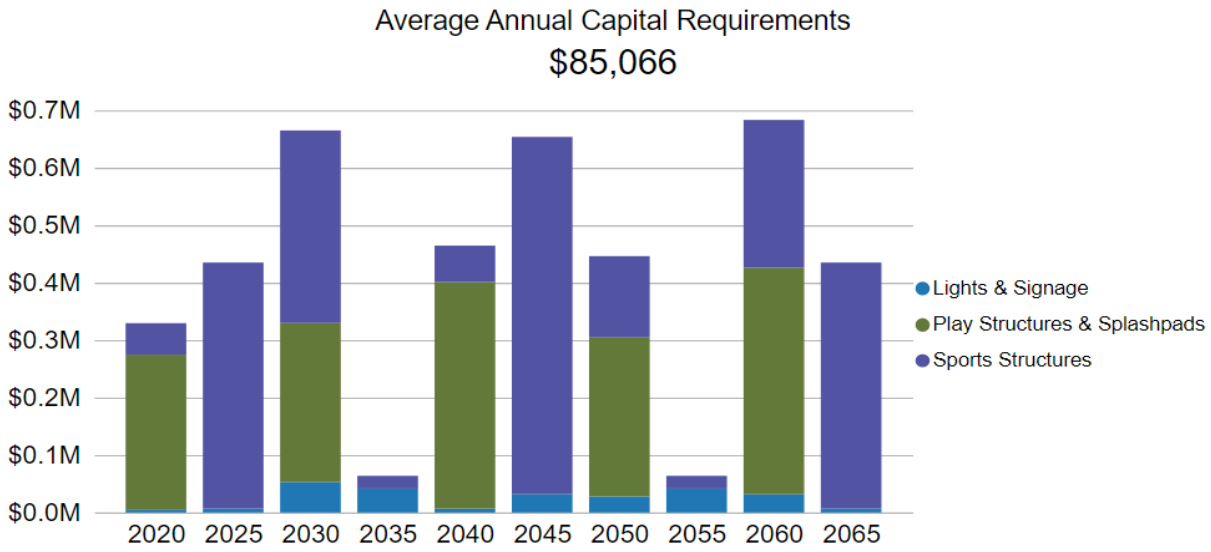
Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Lights & Signage	10-20	4.8	10.2
Play Structures & Splashpads	10-20	10.3	2.3
Sports Structures	10-20	6.5	8.5
Average		**6.7**	**7.9**



Each asset's Estimated Useful Life should 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.

4.9.4 Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



The 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.

4.9.5 Asset Management Strategies

The documentation of lifecycle management strategies, current levels of service, and risk are critical to the development of a comprehensive asset management program. These components of the asset management plan support effective short- and long-term capital planning and contribute to more proactive asset management practices, thus extending the estimated useful life of many assets and providing a higher level of service.

In accordance with O. Reg. 588/17, the Municipality will continue to gather data and information in order to detail and review the lifecycle management strategies, levels of service, and risk of all non-core asset categories by July 1, 2024.

4.9.6 Recommendations

Replacement Costs

- Most replacement costs used in this AMP are 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

- This AMP utilizes age-based condition for all land improvement assets. Staff should 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.

Lifecycle Strategies

- Document lifecycle management strategies for land improvement assets. Review current lifecycle management strategies to achieve the lowest total cost of ownership while maintaining adequate service levels.

Levels of Service

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

5 Analysis of Rate-funded Assets

Key Insights

- Rate-funded assets are valued at $44.7 million
- 84% of rate-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for rate-funded assets is approximately $926,000
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

5.1 Water Network

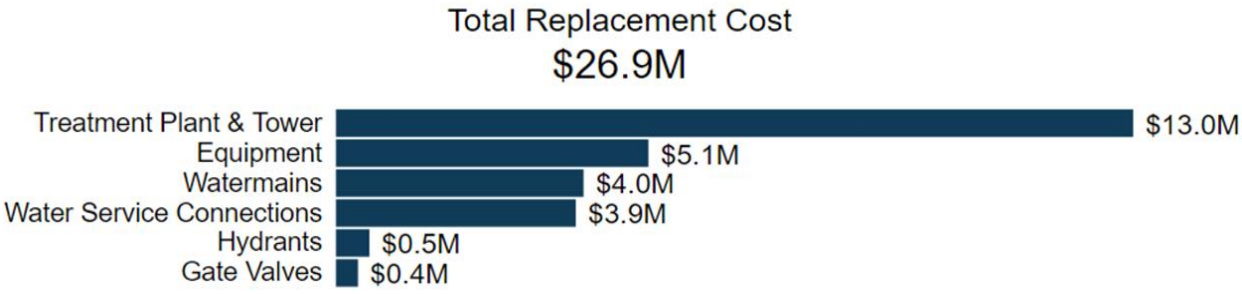
The water services provided by the Municipality are delivered and maintained by municipal staff and OCWA (Ontario Clean Water Agency). The Water Network includes the following assets:

- Machinery and equipment for system maintenance
- Water valves, hydrants, mains, and service connections
- A water treatment plant and tower

5.1.1 Asset Inventory & Replacement Cost

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

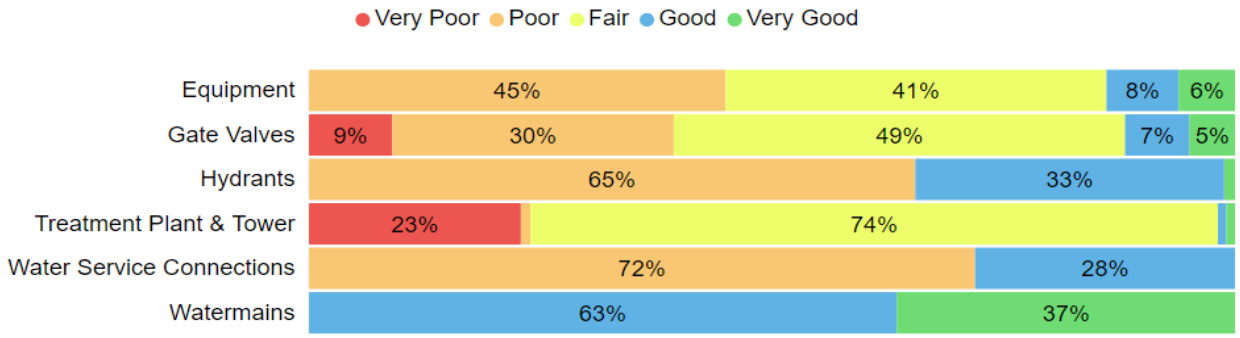
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Equipment	796	Cost/Unit/ CPI	$5,080,271
Gate Valves	90	CPI/ User-Defined Cost	$360,410
Hydrants	84	User-Defined Cost	$546,000
Treatment Plant & Tower	32	CPI/ User-Defined Cost	$12,958,678
Water Service Connections	780	Cost/Unit	$3,900,000
Watermains	11,922 m	Cost/Unit	$4,025,978
Total			**$26,871,337**



5.1.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Equipment	43%	Fair	Age-Based
Gate Valves	46%	Fair	84% Assessed
Hydrants	59%	Fair	100% Assessed
Treatment Plant & Tower	37%	Poor	Age-Based
Water Service Connections	62%	Good	100 % Assessed
Watermains	84%	Very Good	Age-Based
Average	**49%**	**Fair**	**10% Assessed**



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

Current Approach to Condition Assessment

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

- Staff primarily rely on the age and material of water mains to determine the projected condition of watermains. However, there have been staff discussions around the viability

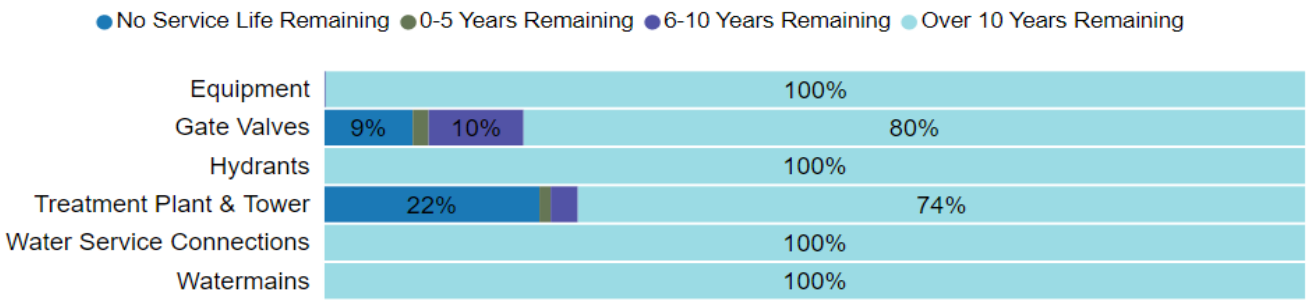
of inspecting the pipes directly (CCTV inspections, electromagnetic and/or ultrasonic inspections) to gain a better understanding of their true physical condition.

- Visual assessments are conducted on above ground assets, equipment, and buildings within the network. Formal condition assessments are conducted as needed for critical assets.

5.1.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Water Network assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Equipment	10-60	18.8	26.2
Gate Valves	10-40	38.7	15.6
Hydrants	75	39.3	44
Treatment Plant & Tower	10-60	8.0	9.3
Water Service Connections	75	33.6	48.5
Watermains	75	42.8	32.3
Average		**34.9**	**27.1**



Each asset's Estimated Useful Life should 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.

5.1.4 Lifecycle Management Strategy

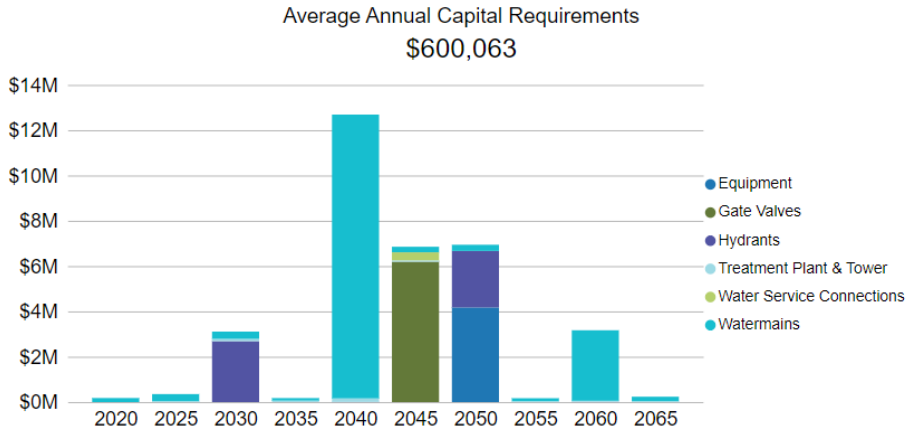
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Main flushing is completed in the spring and fall to maintain the water system.
	Hydrant flow testing takes place every 3 years.
	Valve turning exercises are done on the entire system every 5 to 7 years.
Rehabilitation	Trenchless re-lining of water mains presents significant challenges and is not always a viable option. OCWA provides 5-year capital rehabilitation and replacement recommendations for vertical assets.
Replacement	In the absence of mid-lifecycle rehabilitative events, most mains are simply maintained with the goal of full replacement once it reaches its end-of-life.
	Replacement activities are identified based on an analysis of the main break rate as well as any issues identified during regular maintenance activities.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



The 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.

5.1.5 Risk & Criticality

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 2020 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

Risks to Current Asset Management Strategies

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

Asset Data & Information

Staff is actively working towards improving the quality of the available inventory data for the water network. Staff plan to prioritize data refinement efforts to increase confidence in the accuracy and reliability of asset data and information. Staff plan to improve the accuracy of condition data for above ground asset components. Once completed there will be greater confidence in the development of data-driven strategies to address infrastructure needs.

5.1.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2020)
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
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	See Appendix C
Reliability	Description of boil water advisories and service interruptions	The Municipality has not experienced any service interruptions in 2020. The Town follows Ontario's Drinking Water Quality Management Standard (DWQMS). The Municipality delivers boil water advisories to affected households.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2020)
Scope	% of properties connected to the municipal water system	45%
	% of properties where fire flow is available	100%
Reliability	# of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	0
	# of connection-days per year where water is not available due to water main breaks compared to the total number of properties connected to the municipal water system	0
Performance	Current annual capital reinvestment rate	0.07%
	% of water network in poor/very poor condition	33%
	Average risk rating associated to water network	8.46

5.1.7 Recommendations

Replacement Costs

- Many of the replacement costs for water assets in this AMP are 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

- This AMP utilizes age-based condition for most water assets. Staff should identify condition assessment strategies for high value and high-risk water network assets.
- It can be challenging to gather assessed condition for watermains. Consider optimizing other attributes to approximate condition, such as age, material, soil type, history of main breaks, etc.

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

5.2 Wastewater Network

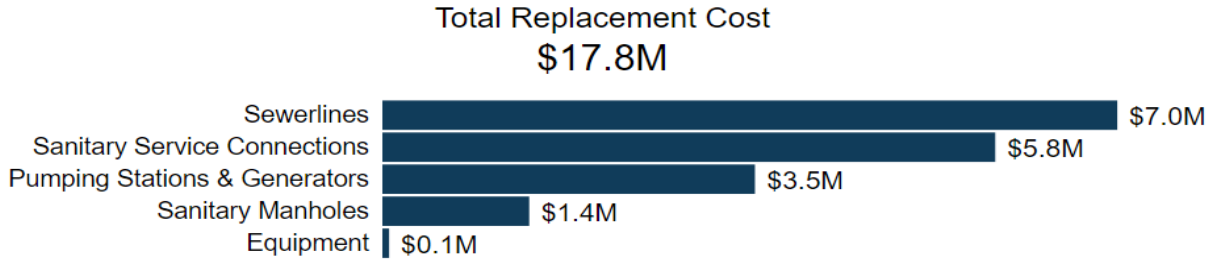
The sewer services provided by the Municipality are overseen by municipal staff. The department is responsible for the following:

- Sanitary manholes, mains, and service connections
- Pumping stations
- Machinery and equipment used for system maintenance

5.2.1 Asset Inventory & Replacement Cost

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

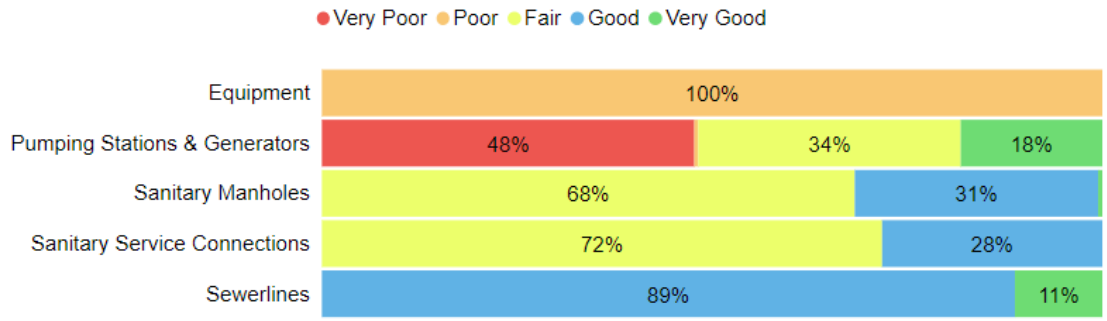
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Equipment	3	CPI Tables	$64,500
Pumping Stations & Generators	20	User-Defined Cost/ CPI	$3,538,291
Sanitary Manholes	186	Cost/Unit	$1,395,000
Sanitary Service Connections	776	Cost/Unit	$5,820,000
Sewerlines	16,292 m	Cost/Unit	$6,978,409
Total			**$17,796,200**



5.2.2 Asset Condition

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

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Equipment	25%	Poor	Age-Based
Pumping Stations & Generators	35%	Poor	Age-Based
Sanitary Manholes	62%	Good	Age-Based
Sanitary Service Connections	62%	Good	100% Assessed
Sewerlines	79%	Good	Age-Based
Average	**63%**	**Good**	**5% Age-Based**



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

Current Approach to Condition Assessment

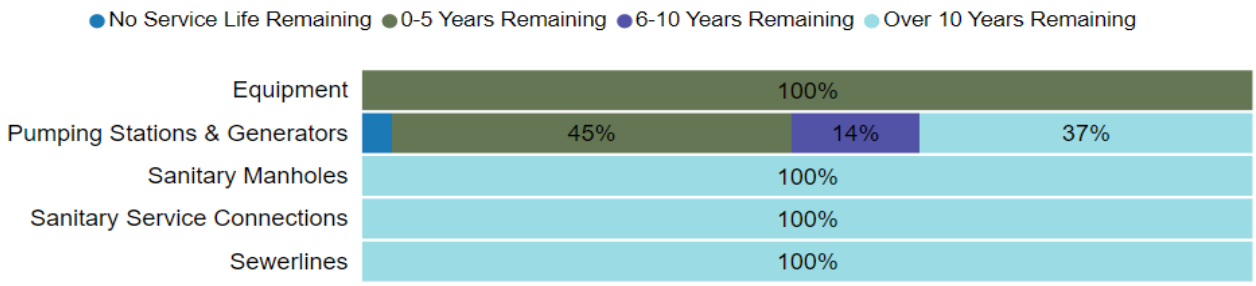
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- CCTV inspections are completed for the sanitary system on 3-year cycle, with one third of the network complete every year. The footage is used to discover deficiencies; however, condition ratings are not calculated or documented.

5.2.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Wastewater Network assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Equipment	10	7.5	2.5
Pumping Stations & Generators	10-50	21.0	6.8
Sanitary Manholes	60-100	24.6	62.1
Sanitary Service Connections	75	33.6	48.5
Sewerlines	75	47.5	27.5
Average		**36.2**	**22.3**



Each asset's Estimated Useful Life should 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.

5.2.4 Lifecycle Management Strategy

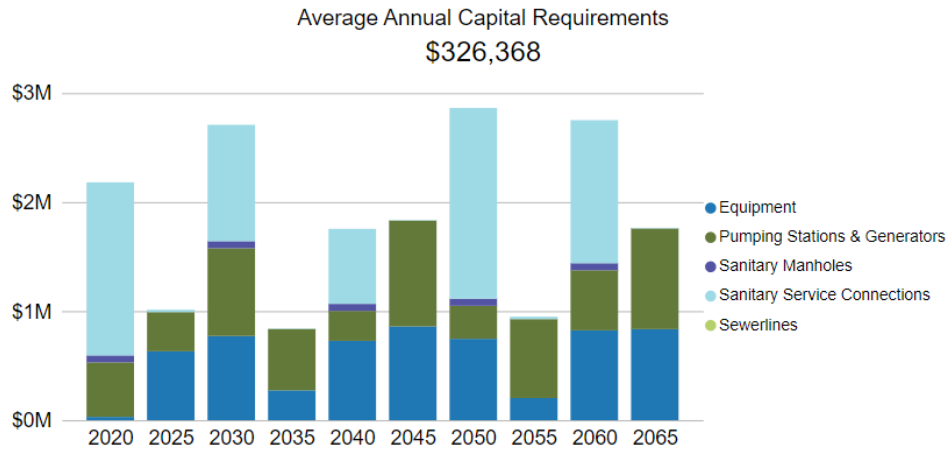
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	CCTV inspections are conducted in conjunction with flushing. Flushign is conducted on a 3 year cycle, with one third of the network complete annually.
Rehabilitation	Sanitary sewer lining presents significant challenges, and it is not always a viable option. OCWA provides 5-year capital rehabilitation and replacement recommendations for vertical assets.
Replacement	In the absence of mid-lifecycle rehabilitative events, most mains are simply maintained with the goal of full replacement once it reaches its end-of-life.
	Replacement activities are identified based on an analysis of the main break rate as well as any issues identified during CCTV inspection.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



The 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.

5.2.5 Risk & Criticality

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 2020 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

Risks to Current Asset Management Strategies

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

Environmental Risks

The sanitary network is in close proximity to natural bodies of water. Due to the close proximity, there is a higher risk of polluting the natural environment in the case of a line breaks. Municipal staff should continue to monitor higher-risk assets to proactively replace assets before failure occurs.

5.2.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2020)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	See Appendix C
Reliability	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes	The Municipality does not own any combined sewers
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	The Municipality does not own any combined sewers
	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	Stormwater can enter into sanitary sewers due to cracks in sanitary mains or through indirect connections (e.g. weeping tiles). In the case of heavy rainfall events, sanitary sewers may experience a volume of water and sewage that exceeds its designed capacity. In some cases, this can cause water and/or sewage to overflow backup into homes. the disconnection of weeping tiles from sanitary mains and the use of sump pumps and pits directing storm water to the storm drain

Service Attribute	Qualitative Description	Current LOS (2020)
		system can help to reduce the chance of this occurring.
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	The municipality follows a series of design standards that integrate servicing requirements and land use considerations when constructing or replacing sanitary sewers. These standards have been determined with consideration of the minimization of sewage overflows and backups.
	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.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2020)
Scope	% of properties connected to the municipal wastewater system	46%
Reliability	# of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system	0
	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	0
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0
Performance	Current annual capital reinvestment rate	0.19%
	% of wastewater network in poor/very poor condition	33%
	Average risk rating associated to the wastewater network	6.03

5.2.7 Recommendations

Condition Assessment Strategies

- This AMP utilizes age-based condition for all wastewater assets. Staff should identify condition assessment strategies for high value and high-risk water network 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.

Lifecycle Management Strategies

- Continue to evaluate the efficacy of the Municipality's lifecycle management strategies at regular intervals to determine the impact cost, condition and risk. Consider trenchless relining for potential sewer main candidates, when possible.

Levels of Service

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

6 Impacts of Growth

Key Insights

- Understanding the key drivers of growth and demand will allow the Municipality to more effectively plan for new infrastructure, and the upgrade or disposal of existing infrastructure
- Moderate population and employment growth is expected
- The costs of growth should be considered in long-term funding strategies that are designed to maintain the current level of service

6.1 Description of Growth Assumptions

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

6.1.1 Callander Official Plan (March 2010)

The Municipality of Callander's Official Plan is intended to manage land use change in a manner that has the greatest positive impact on the Municipality while ensuring the sustainability of the environment and the character of the community. The Plan is based on the basic assumptions, observations and forecasts derived from a series of detailed background studies dealing with growth management, local planning, and the environment. The Official Plan is intended to guide the future development of the Municipality to the year 2026.

The Official Plan has been approved at Municipal Council as of March 16th, 2010.

As per the plan objectives, the growth and development shall be focused and encouraged within the settlement areas to strengthen their role as economic, natural, commercial, transportation, residential, social, and cultural centres for the Municipality, as well as to enhance their function in providing services.

This plan includes the growth forecasts in terms of population and housing for which the Municipality will be required to provide services. The following table outlines the population and housing unit forecasts allocated to Callander.

	Year	Population	Housing Units
Historical	2007	3,579	1,432
Projections	2012	3,829	1,532
	2017	4,079	1,632
	2021	4,279	1,712
	2022	4,329	1,732
	2026	4,579	1,832

6.2 Impact of Growth on Lifecycle Activities

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

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

7 Financial Strategy

Key Insights

- The Municipality is committing approximately $1.8 million towards capital projects per year from sustainable revenue sources
- Given the annual capital requirement of $2.3 million, there is currently a funding gap of $542,000 annually
- For tax-funded assets, we recommend increasing taxes as necessary for infrastructure deficit over the next 20 years to achieve a sustainable level of funding
- For the Wastewater Network, we recommend increasing rate revenues as necessary for infrastructure deficit over the next 20 years to achieve a sustainable level of funding
- For the Water Network, we recommend increasing rate revenues by 4.8% annually for the next 20 years to achieve a sustainable level of funding

7.1 Financial Strategy Overview

For an asset management plan to be effective and meaningful, it must be integrated with financial planning and long-term budgeting. The development of a comprehensive financial plan will allow the Municipality of Callander 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.

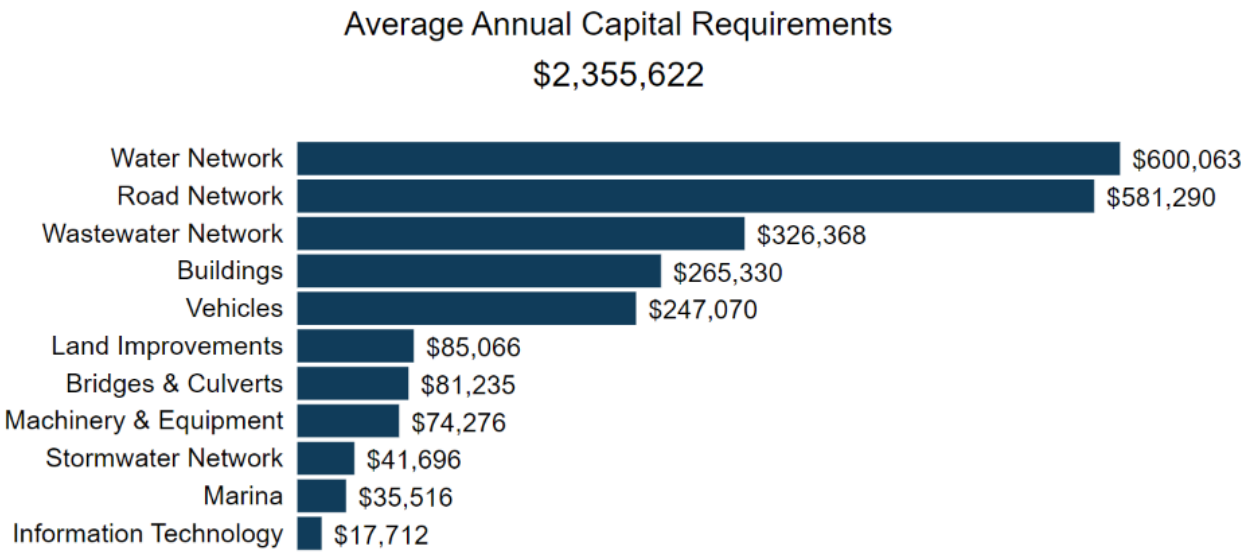
If the financial plan component results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Municipality's approach to the following:

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

7.1.1 Annual Requirements & Capital Funding

Annual Requirements

The annual requirements represent the amount the Municipality should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlog and achieve long-term sustainability. In total, the Municipality must allocate approximately $2.3 million annually to address capital requirements for the assets included in this AMP.



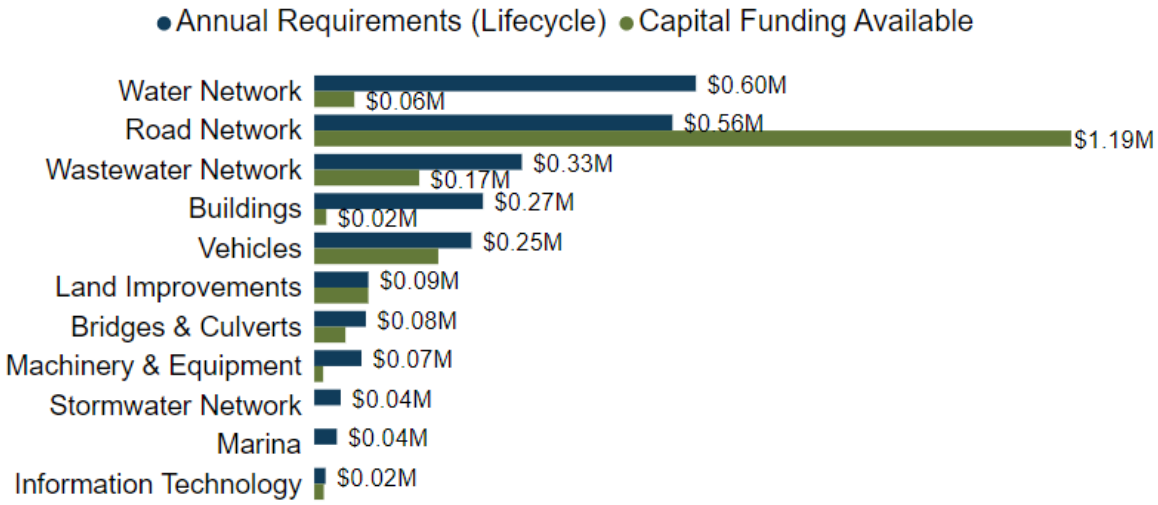
For most asset categories the annual requirement has been calculated based on a "replacement only" scenario, in which capital costs are only incurred at the construction and replacement of each asset. However, for the Road Network and Bridges & Culverts, lifecycle management strategies have been developed to identify capital costs that can be realized through strategic rehabilitation and renewal activities. The development of these strategies allows for a comparison of potential cost avoidance if the strategies were to be implemented.

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.

The implementation of a proactive lifecycle strategy can lead to direct and indirect cost savings. Potential cost savings are influenced by current costs, the coordination of multiple projects, and the criticality of the assets and projects. Beyond cost savings, having proactive lifecycle strategies can also decrease the number of complaints received, lower health and safety hazards, and maintain the desired level of service that the Municipality wants to sustain.

Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Municipality is committing approximately $1.8 million towards capital projects per year from sustainable revenue sources. Given the annual capital requirement of $2.3 million, there is currently a funding gap of $542,000 annually.



7.2 Funding Objective

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

1. **Tax Funded Assets:** Road Network, Stormwater Network, Bridges & Culverts, Buildings, Marina, Machinery & Equipment, Information Technology, Land Improvements, and Vehicles
2. **Rate-Funded Assets:** Water Network, Wastewater Network

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

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

7.3 Financial Profile: Tax Funded Assets

7.3.1 Current Funding Position

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

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Taxes	Gas Tax	OCIF	Total Available	
Road Network	563,000	869,000	245,000	76,000	1,190,000	-627,000
Bridges & Culverts	81,000	49,000	0	0	49,000	32,000
Stormwater Network	42,000	0	0	0	0	42,000
Buildings	265,000	19,000	0	0	19,000	246,000
Marina	36,000	0	0	0	0	36,000
Vehicles	247,000	195,000	0	0	195,000	52,000
Machinery & Equipment	74,000	14,000	0	0	14,000	60,000
Information Technology	18,000	15,000	0	0	15,000	3,000
Land Improvements	85,000	85,000	0	0	85,000	0
Total	**1,411,000**	**1,246,000**	**245,000**	**76,000**	**1,567,000**	**-156,000**

The average annual capital expenditure requirement for the above categories is $1.4 million. Annual revenue currently allocated to these assets for capital purposes is $1.6 million leaving an annual surplus of $156,000. Put differently, these infrastructure categories are currently funded at 111% of their long-term requirements.

7.3.2 Full Funding Requirements

In 2021, Municipality of Callander has annual tax revenues of $5.7 million. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

Asset Category	Tax Change Required for Full Funding
Road Network	-11.0%
Bridges & Culverts	0.6%
Stormwater Network	0.7%
Buildings	4.3%
Marina	0.6%
Vehicles	0.9%
Machinery & Equipment	1.0%
Information Technology	0.1%
Land Improvements	0.0%
Total	-2.8%

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

a) Callander's debt payments for these asset categories will be decreasing by $35,000 over the next 5 years and by $90,000 over the next 10 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	-156,000	-156,000	-156,000	-156,000	-156,000	-156,000	-156,000	-156,000
Change in Debt Costs	N/A	N/A	N/A	N/A	-35,000	-90,000	-90,000	-90,000
Change in OCIF Grants	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Resulting Infrastructure Deficit	-156,000	-156,000	-156,000	-156,000	-191,000	-246,000	-246,000	-246,000
Tax Increase Required	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Annually	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**

7.3.3 Financial Strategy Recommendations

Considering all the above information, we recommend keeping capital expenditure annual funding at current levels and:

a) increasing taxes as necessary for infrastructure deficits due to any increases in operational requirements over the next 20 years.
b) allocating the current gas tax and OCIF revenue as outlined previously.
c) reallocating appropriate revenue from categories in a surplus position to those in a deficit position.
d) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included any applicable OCIF formula-based funding since this funding is a multi-year commitment[6].
2. We realize that tax revenues currently are sufficiently funding the average annual capital expenditure requirements for Callander and no tax increases for capital expenditure are required at present time. The municipality should adjust its strategy as asset data is further refined and/or operational needs for the municipality result in a reduction to the annual funding available for capital expenditure.
3. Tax increases required for operations would be in addition to any increases required for capital expenditure.

Although this AMP 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 $118,000 for the Land Improvements, $324,000 for the Machinery & Equipment, and 2,284,000 for the Road Network.

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

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

7.4 Financial Profile: Rate Funded Assets

7.4.1 Current Funding Position

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

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Rates	To Operations	OCIF	Total Available	
Water Network	600,000	563,000	-500,000	0	63,000	537,000
Wastewater Network	326,000	699,000	-534,000	0	165,000	161,000
Total	**926,000**	**1,262,000**	**-1,034,000**	**0**	**228,000**	**698,000**

The average annual capital expenditure requirement for the above categories is $926,000. Annual revenue currently allocated to these assets for capital purposes is $228,000 leaving an annual deficit of $698,000. Put differently, these infrastructure categories are currently funded at 25% of their long-term requirements.

7.4.2 Full Funding Requirements

In 2021, Callander had annual budgeted sanitary revenues of $699,000 and annual water revenues of $563,000. 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	Tax Change Required for Full Funding
Water Network	23.0%
Wastewater Network	95.4%

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:

	Wastewater Network				Water Network			
	5 Years	**10 Years**	**15 Years**	**20 Years**	**5 Years**	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	161,000	161,000	161,000	161,000	537,000	537,000	537,000	537,000
Less: Decrease in debt payments	0	-115,000	-200,000	-200,000	0	0	0	0
Resulting Infrastructure Deficit	161,000	46,000	-39,000	-39,000	537,000	537,000	537,000	537,000
Rate Increase Required	23.0%	6.6%	-5.6%	-5.6%	95.4%	95.4%	95.4%	95.4%
Annually:	**4.6%**	**0.7%**	**-0.4%**	**-0.3%**	**19.1%**	**9.5%**	**6.4%**	**4.8%**

7.4.3 Financial Strategy Recommendations

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

a) when realized, reallocating the debt cost reductions to the infrastructure deficit as outlined above for the Wastewater Network.
b) increasing rate revenues by 4.8% for the Water Network and maintaining user rates for Wastewater Network each year for the next 20 years.
c) these rate revenue increases are solely for the purpose of phasing in full funding to the respective asset categories covered in this 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 capital expenditure 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 $2,842,000 for the Water Network and $101,000 for the Wastewater Network.

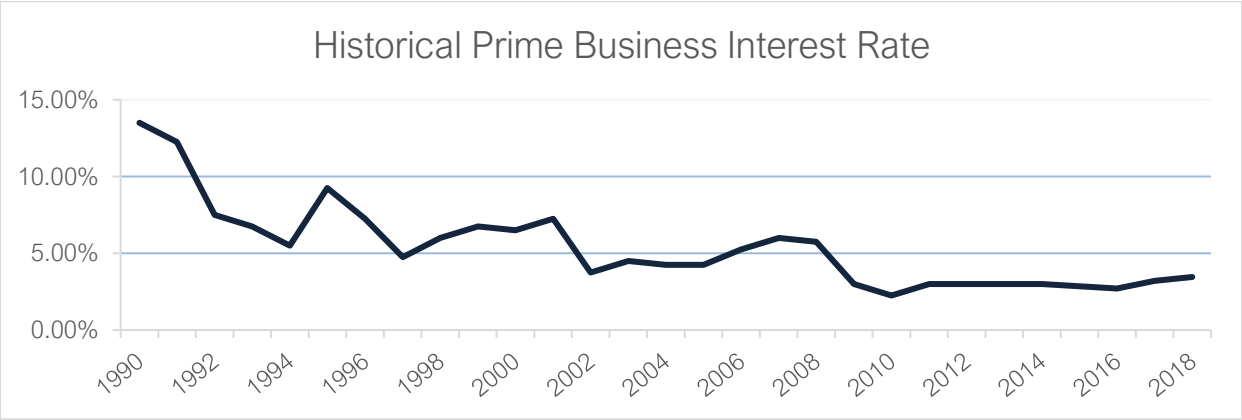
Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

7.5 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%[7] 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:



[7] 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 Callander has historically used debt for investing in the asset categories as listed. There is currently $2,248,000 of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of $290,000, well within its provincially prescribed maximum of $1,657,000.

Asset Category	Current Debt Outstanding	Use of Debt in the Last Five Years				
		2016	2017	2018	2019	2020
Road Network	100,000	0	0	0	0	0
Stormwater Network	0	0	0	0	0	0
Bridges & Culverts	0	0	0	0	0	0
Buildings	0	0	0	0	0	0
Marina	379,000	0	0	0	0	0
Vehicles	24,000	0	0	0	0	0
Machinery & Equipment	0	0	0	0	0	0
Information Technology	0	0	0	0	0	0
Land Improvements	0	0	0	0	0	0
Total Tax Funded:	**479,000**	**0**	**0**	**0**	**0**	**0**
Water Network	0	0	0	0	0	0
Wastewater Network	1,796,000	0	0	0	0	0
Total Rate Funded:	**1,796,000**	**0**	**0**	**0**	**0**	**0**

Asset Category	Principal & Interest Payments in the Next Ten Years						
	2021	2022	2023	2024	2025	2026	2031
Road Network	35,000	35,000	35,000	0	0	0	0
Stormwater Network	0	0	0	0	0	0	0
Bridges & Culverts	0	0	0	0	0	0	0
Buildings	0	0	0	0	0	0	0
Marina	55,000	55,000	55,000	55,000	55,000	55,000	0
Vehicles	0	0	0	0	0	0	0
Machinery & Equipment	0	0	0	0	0	0	0
Information Technology	0	0	0	0	0	0	0
Land Improvements	0	0	0	0	0	0	0
Total Tax Funded:	**90,000**	**90,000**	**90,000**	**55,000**	**55,000**	**55,000**	**0**
Water Network	200,000	200,000	200,000	200,000	200,000	200,000	85,000
Wastewater Network	0	0	0	0	0	0	0
Total Rate Funded:	**200,000**	**200,000**	**200,000**	**200,000**	**200,000**	**200,000**	**85,000**

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

7.6 Use of Reserves

7.6.1 Available Reserves

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

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

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

Asset Category	Balance on December 31, 2020
Road Network	2,847,000
Stormwater Network	0
Bridges & Culverts	0
Buildings	957,000
Marina	0
Machinery & Equipment	0
Information Technology	5,000
Land Improvements	47,000
Vehicles	261,000
Total Tax Funded	**4,117,000**
Water Network	0
Wastewater Network	0
Total Rate Funded	**0**

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

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

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

7.6.2 Recommendation

In 2025, Ontario Regulation 588/17 will require the Municipality of Callander 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.

8 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 several maps that have been used to visualize the current level of service
- Appendix D identifies the criteria used to calculate risk for each asset category
- Appendix E provides additional guidance on the development of a condition assessment program
- Appendix F provides an inventory of the Municipality's paved road network.

Appendix A: Infrastructure Report Card

Asset Category	Replacement Cost (millions)	Asset Condition	Financial Capacity	
Road Network	$14.5	Fair	Annual Requirement:	$563,130
			Funding Available:	$1,190,000
Bridges & Culverts	$4.9	Good	Annual Requirement:	$81,235
			Funding Available:	$49,000
Stormwater Network	$4.0	Good	Annual Requirement:	$41,696
			Funding Available:	$0
Buildings	$12.2	Fair	Annual Requirement:	$265,330
			Funding Available:	$19,000
Marina	$2.2	Very Good	Annual Requirement:	$35,516
			Funding Available:	$0
Vehicles	$3.9	Fair	Annual Requirement:	$247,070
			Funding Available:	$195,000
Machinery & Equipment	$1.0	Very Poor	Annual Requirement:	$74,276
			Funding Available:	$14,000
Information Technology	$0.1	Good	Annual Requirement:	$17,712
			Funding Available:	$15,000
Land Improvements	$1.3	Fair	Annual Requirement:	$85,066
			Funding Available:	$85,000
Water Network	$26.9	Fair	Annual Requirement:	$600,063
			Funding Available:	$63,000
Wastewater Network	17.8	Good	Annual Requirement:	$326,368
			Funding Available:	$165,000
Overall	**$87.8**	**Fair**	**Annual Requirement:**	**$2,337,462**
			Funding Available:	**$1,795,000**
			Annual Deficit:	**$542,462**

Appendix B: 10-Year Capital Requirements

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

Road Network

Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Paved Surface	$0	$0	$0	$0	$0	$561,000	$0	$0	$0	$0	$0
Sidewalks	$60,900	$260,344	$772,227	$180,488	$249,872	$846,111	$665,680	$656,004	$161,986	$426,331	$60,900
Small Culverts	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Streetlights	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	$60,900	$260,344	$772,227	$180,488	$249,872	$1,407,111	$665,680	$656,004	$161,986	$426,331	$60,900

Bridges & Culverts

Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Bridges	$0	$0	$253,300	$0	$25,500	$0	$0	$0	$0	$0	$0
Culverts	$0	$0	$154,000	$0	$534,000	$0	$0	$0	$0	$0	$396,000
Total:	$0	$0	$407,300	$0	$559,500	$0	$0	$0	$0	$0	$396,000

Stormwater Network

Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Catch Basins	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Storm Drains	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Storm Management Pond	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Storm Manholes	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total:	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Buildings											
Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
General Government	$0	$0	$0	$0	$0	$0	$0	$0	$8,112	$0	$594,284
Planning & Development	$0	$0	$0	$0	$0	$0	$18,126	$0	$0	$0	$0
Protection Services	$0	$0	$0	$0	$0	$0	$6,672	$0	$7,355	$0	$2,196,682
Recreation & Cultural Services	$0	$0	$0	$0	$0	$0	$0	$0	$12,048	$14,779	$1,122,578
Transportation Services	$0	$0	$0	$0	$59,500	$0	$0	$0	$0	$0	$497,094
Total	$0	$0	$0	$0	$59,500	$0	$24,798	$0	$27,515	$14,779	$4,410,638

Marina											
Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Deck	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sub-Structure	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Machinery & Equipment											
Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
General Government	$52,535	$8,787	$0	$0	$0	$0	$34,114	$0	$0	$0	$0
Protection Services	$0	$20,600	$0	$150,000	$15,000	$0	$8,000	$0	$0	$0	$10,000
Recreation & Cultural Services	$271,268	$0	$0	$0	$0	$0	$19,524	$41,523	$85,150	$119,726	$0
Transportation Services	$0	$0	$0	$0	$77,361	$5,246	$50,000	$0	$0	$6,022	$0
Total	$323,803	$29,387	$0	$150,000	$92,361	$5,246	$111,638	$41,523	$85,150	$125,748	$10,000

Information Technology											
Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Hardware	$0	$0	$7,500	$22,950	$6,500	$0	$0	$7,500	$35,373	$23,961	$0
Software	$0	$0	$0	$0	$0	$0	$19,941	$0	$0	$0	$21,304
Total	$0	$0	$7,500	$22,950	$6,500	$0	$19,941	$7,500	$35,373	$23,961	$21,304

Vehicles											
Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Fire	$0	$0	$0	$25,435	$5,080	$0	$71,116	$560,800	$0	$0	$0
Operations	$0	$64,926	$325,573	$108,998	$0	$0	$12,453	$0	$45,891	$296,737	$4,264
Total:	$0	$64,926	$325,573	$134,433	$5,080	$0	$83,569	$560,800	$45,891	$296,737	$4,264

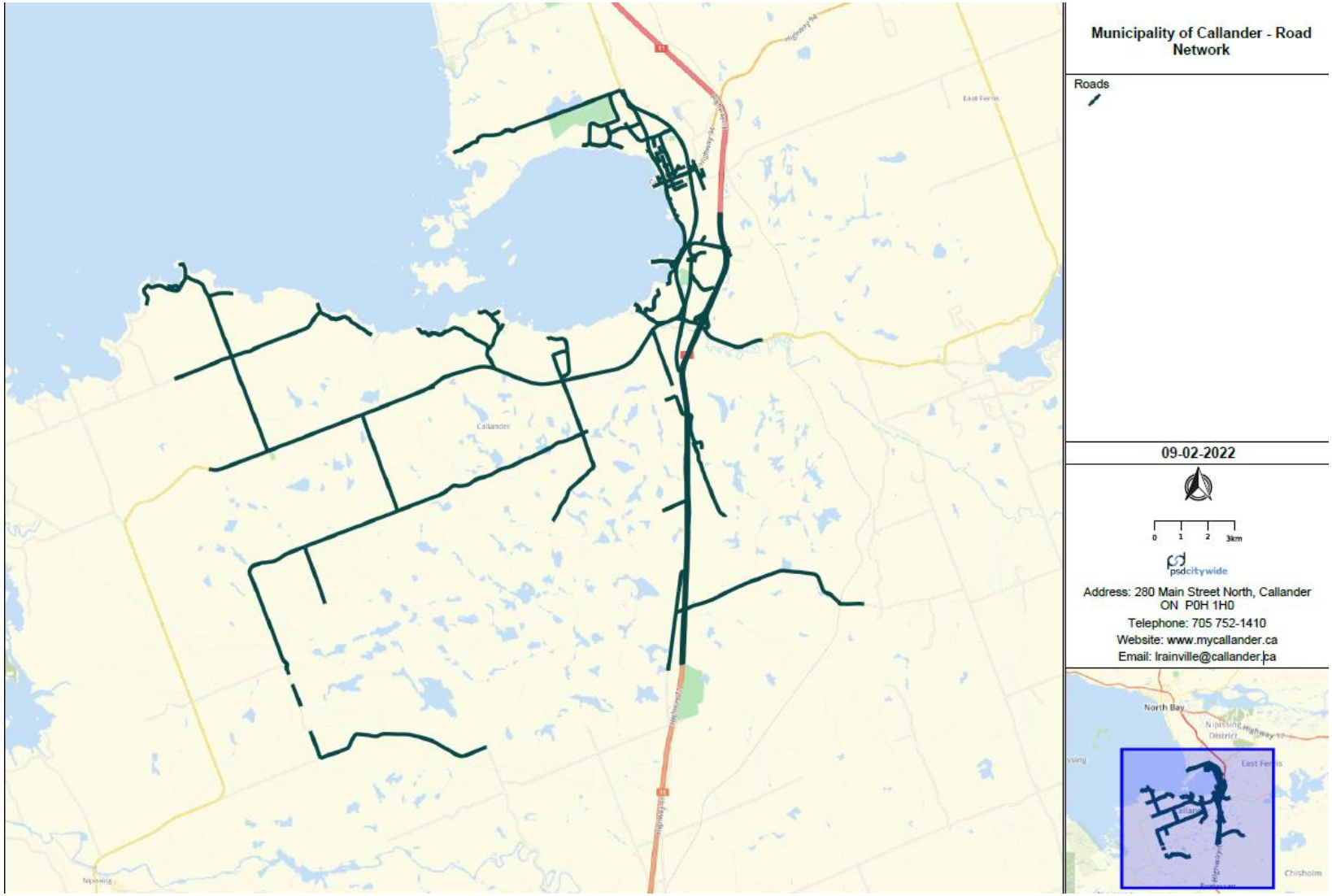
Land Improvements											
Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Lights & Signage	$0	$0	$0	$0	$5,502	$0	$0	$0	$0	$0	$6,938
Play Structures & Splashpads	$117,800	$0	$0	$0	$269,289	$0	$0	$0	$0	$0	$0
Sports Structures	$0	$0	$0	$0	$11,997	$42,771	$0	$0	$343,653	$0	$84,464
Total	$117,800	$0	$0	$0	$286,788	$42,771	$0	$0	$343,653	$0	$91,402

Water Network											
Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Equipment	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Gate Valves	$32,492	$0	$0	$0	$0	$0	$5,856	$12,983	$16,641	$5,260	$0
Hydrants	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Treatment Plant & Tower	$2,809,118	$33,025	$4,801	$5,406	$19,330	$116,259	$3,085	$125,374	$16,999	$52,098	$114,059
Water Service Connections	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Watermains	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	$2,841,610	$33,025	$4,801	$5,406	$19,330	$116,259	$8,941	$138,357	$33,640	$57,358	$114,059

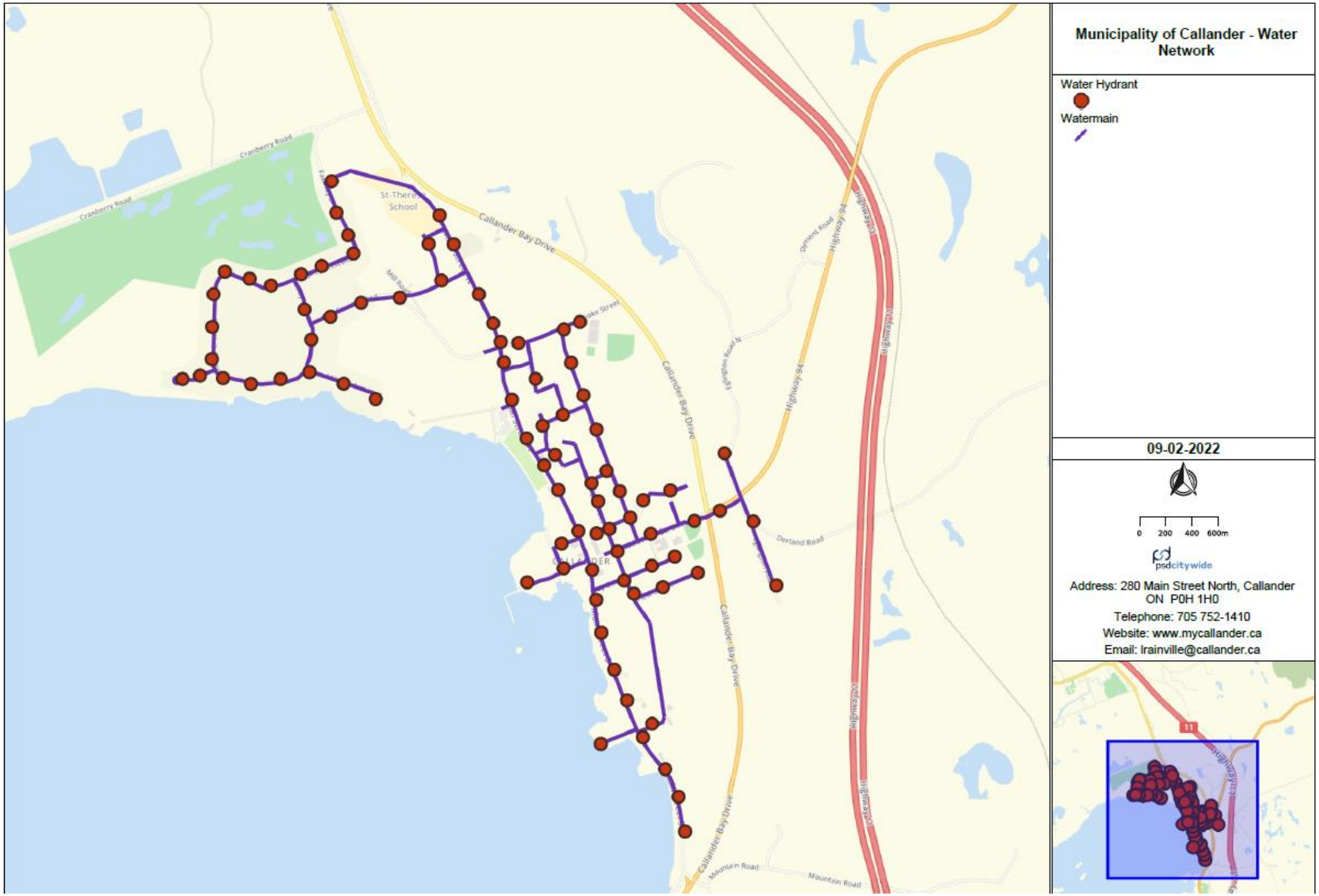
Wastewater Network											
Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Equipment	$0	$0	$0	$0	$64,500	$0	$0	$0	$0	$0	$0
Pumping Stations & Generators	$101,236	$18,290	$477,433	$0	$1,091,600	$0	$17,974	$4,197	$0	$0	$0
Sanitary Manholes	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sanitary Service Connections	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sewerlines	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total:	$101,236	$18,290	$477,433	$0	$1,156,100	$0	$17,974	$4,197	$0	$0	$0

Appendix C: Level of Service Maps

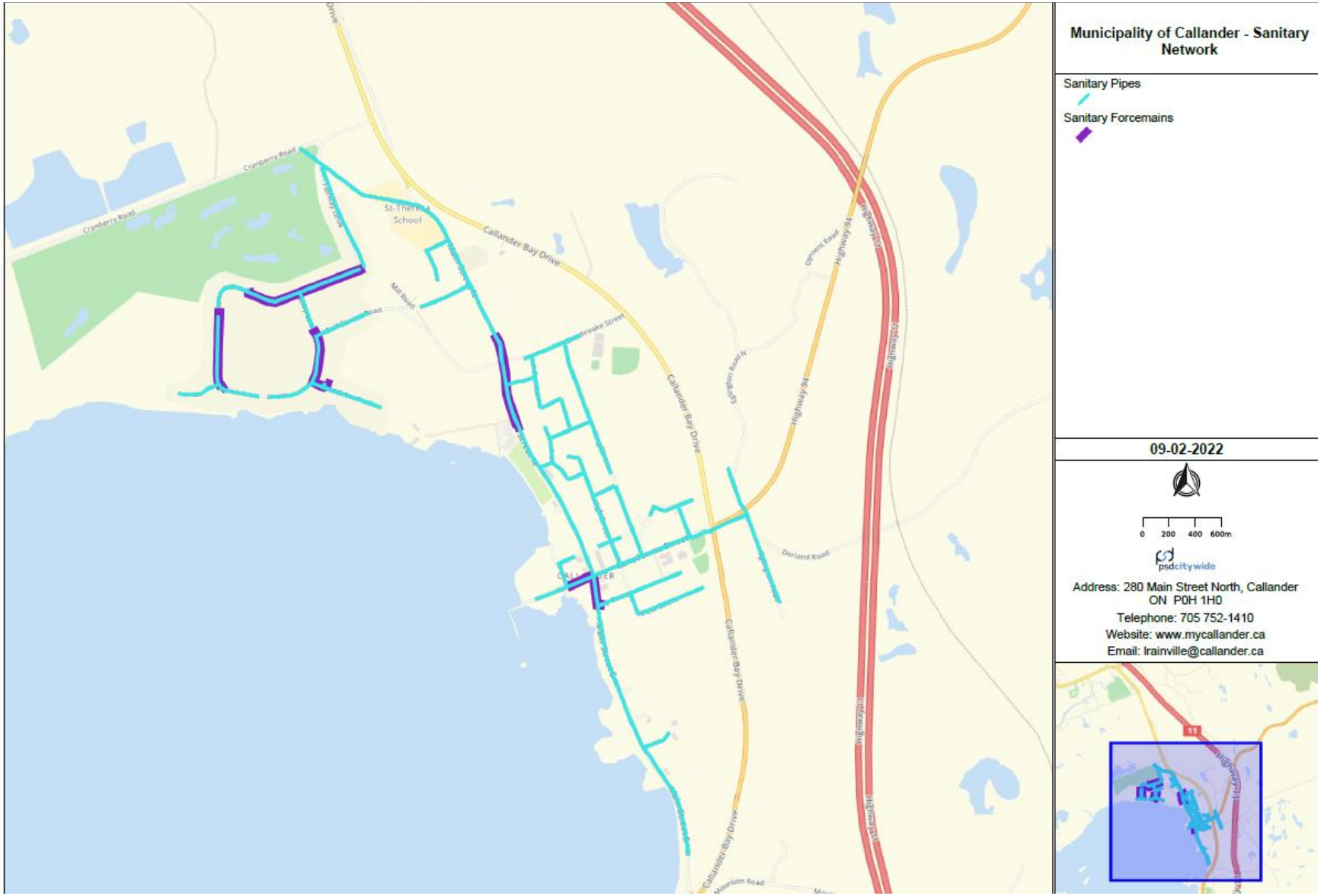
Road Network



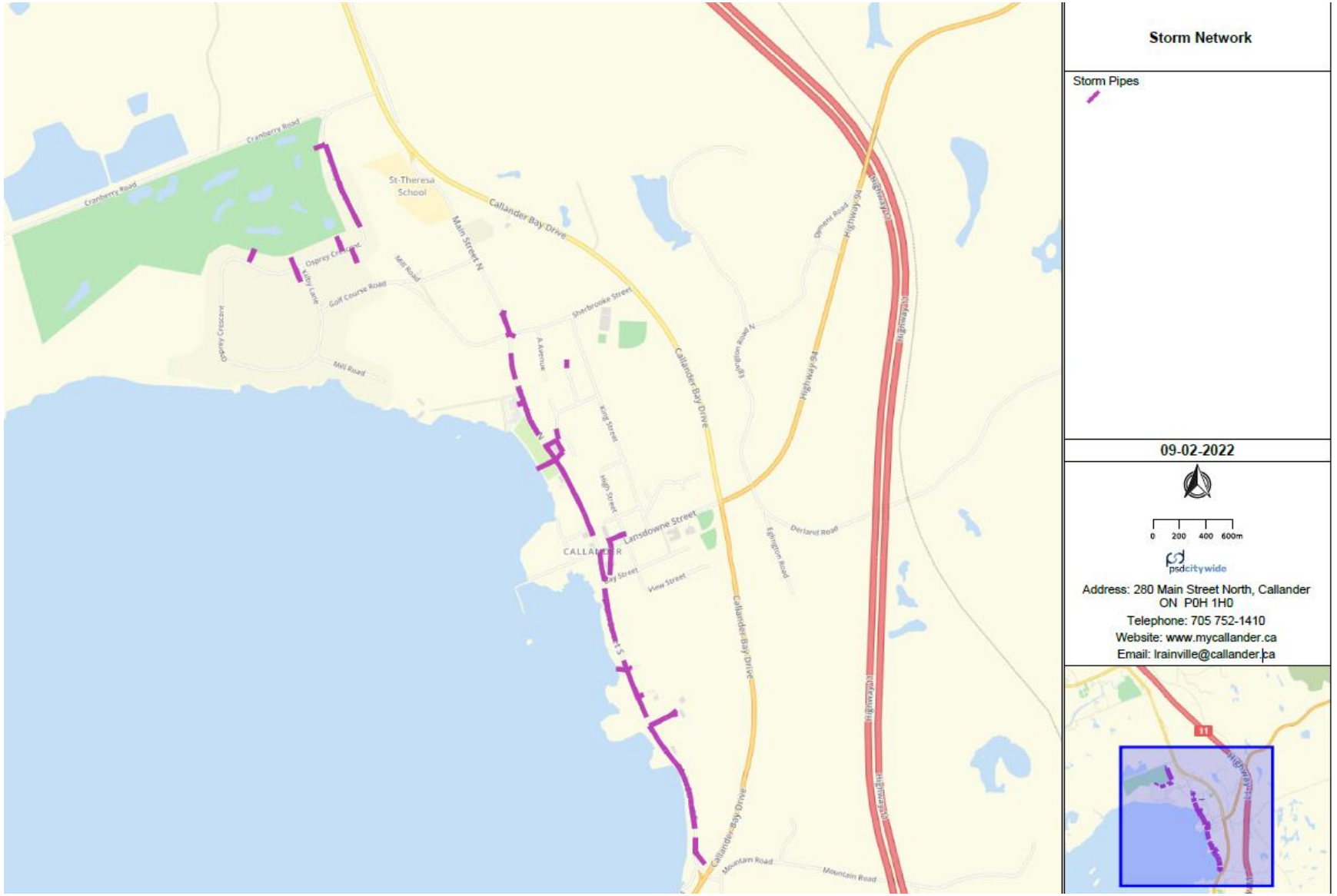
Water Network



Wastewater Network



Stormwater Network



Appendix D: Risk Rating Criteria

Probability of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Probability of Failure Score
Road Network (Roads)	Structural (70%)	Condition (%) (85%)	80-100	1
			70-80	2
			50-70	3
			40-50	4
			0-40	5
		Service Life Remaining (%) (15%)	40-100	1
			30-40	2
			20-30	3
			10-20	4
			0-10	5
	Functional (30%)	AADT (70%)	1,000+	5
			500-1,000	4
			200-500	3
			50-200	2
			0-50	1
		Truck Route (30%)	No	3
			Yes	4

Asset Category	Risk Classification	Risk Criteria	Value/Range	Probability of Failure Score
Bridges & Structural Culverts	Structural (75%)	Condition (%) (85%)	80-100	1
			70-80	2
			60-70	3
			50-60	4
			0-50	5
		Service Life Remaining (%) (15%)	40-100	1
			30-40	2
			20-30	3
			10-20	4
			0-10	5
	Functional (25%)	AADT (60%)	1,000+	5
			500-1,000	4
			200-500	3
			50-200	2
			0-50	1
		Dimensional Restrictions (20%)	No	3
			Yes	4
		Loading Restrictions (20%)	No	3
			Yes	4

Asset Category	Risk Classification	Risk Criteria	Value/Range	Probability of Failure Score
Forcemains Sanitar Sewers	Structural (85%)	Condition (%) (65%)	80-100	1
			60-80	2
			40-60	3
			20-40	4
			0-20	5
		Service Life Remaining (%) (10%)	40-100	1
			30-40	2
			20-30	3
			10-20	4
			0-10	5
		Material Type (10%)	PVC	2
			Asbestos Cement, HDPE	3
			Ductile Iron	4
			Cast Iron	5
		Surcharge/ Blockage (15%)	No	3
			Yes	4
	Functional (15%)	Slope	1	5
			0.75	4
			0.5	3
			0.25	1
			0	4

Asset Category	Risk Classification	Risk Criteria	Value/Range	Probability of Failure Score
Storm Drains	Structural (85%)	Condition (%) (70%)	80-100	1
			60-80	2
			40-60	3
			20-40	4
			0-20	5
		Service Life Remaining (%) (15%)	40-100	1
			30-40	2
			20-30	3
			10-20	4
			0-10	5
		Material Type (15%)	PVC	2
			Asbestos Cement, HDPE	3
			Ductile Iron	4
			Cast Iron	5

Asset Category	Risk Classification	Risk Criteria	Value/Range	Probability of Failure Score
Watermains	Structural (85%)	Condition (%) (65%)	80-100	1
			60-80	2
			40-60	3
			20-40	4
			0-20	5
		Service Life Remaining (%) (10%)	40-100	1
			30-40	2
			20-30	3
			10-20	4
			0-10	5
		Material Type (10%)	PVC	2
			Asbestos Cement, HDPE	3
			Ductile Iron	4
			Cast Iron	5
		No. of Watermain Breaks (15%)	1	1
			3	2
			5	3
			7	4
			10	5

Consequence of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Road Network (Roads)	Economic (35%)	Replacement Cost Per Sq. M ($/m2)	0-15	1
			15-30	2
			30-45	3
			45-60	4
			60-75	5
	Social (30%)	Functional Class (60%)	Local	2
			Collector	3
			Minor Arterial	4
			Arterial	5
		Ride Condition Rating (40%)	8+	1
			6-8	2
			4-6	3
			2-4	4
			0-2	5
	Strategic (10%)	Tourism/Business Impact	No	3
			Yes	4
	Health and Safety (25%)	Proximity to Critical Services (50%)	Residential	2
			Schools	3
			Downtown	4
			Emergency Services	5
		Speed (kmph) (50%)	0-40	1
			40-50	2
			50-60	3
			60-80	4
			80-100	5

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Bridges & Structural Culverts	Economic (40%)	Replacement Cost ($)	0-100,000	1
			100,000-300,000	2
			300,000-500,000	3
			500,000-800,000	4
			800,000+	5
	Social (30%)	Functional Class (40%)	Local	2
			Collector	3
			Minor Arterial	4
			Arterial	5
		Detour Distance (km) (60%)	0-1	1
			1-5	2
			5-10	3
			10-15	4
			15-20	5
	Strategic (10%)	Tourism/Business Impact	No	3
			Yes	4
	Health and Safety (20%)	Proximity to Critical Services (50%)	Residential	2
			Schools	3
			Downtown	4
			Emergency Services	5
		Speed (kmph) (50%)	0-40	1
			40-50	2
			50-60	3
			60-80	4
			80-100	5

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Forcemains Sanitar Sewers Watermains	Economic (40%)	Replacement Cost ($/m) (70%)	0-150	1
			150-250	2
			250-350	3
			350-450	4
			450-550	5
		Bury Depth (m) (30%)	0-1.5	1
			1.5-2.5	2
			2.5-3.5	3
			3.5-4.5	4
			4.5-5.5	5
	Social (30%)	AADT	0-50	2
			50-200	3
			200-500	4
			500-1,000	5
			1,000-2,000	
		Service Connection Density (# per 100m)	0-2	1
			2-4	2
			4-6	3
			6-8	4
			8-10	5
	Operational (15%)	Size	0-100	1
			100-150	2
			150-200	3
			200-250	4
			250-350	5
	Health and Safety (15%)	Proximity to Critical Services	Residential	2
			Schools	3
			Downtown	4
			Emergency Services	5

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Storm Drains	Economic (50%)	Replacement Cost ($/m) (70%)	0-150	1
			150-250	2
			250-350	3
			350-450	4
			450-550	5
		Bury Depth (m) (30%)	0-1.5	1
			1.5-2.5	2
			2.5-3.5	3
			3.5-4.5	4
			4.5-5.5	5
	Social (30%)	AADT	0-50	2
			50-200	3
			200-500	4
			500-1,000	5
			1,000-2,000	
	Operational (15%)	Size	0-100	1
			100-200	2
			200-375	3
			375-525	4
			525-750	5
	Health and Safety (15%)	Proximity to Critical Services	Residential	2
			Schools	3
			Downtown	4
			Emergency Services	5

Appendix E: Condition Assessment Guidelines

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

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

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

Role of Asset Condition Data

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

In addition to the optimization of lifecycle management strategies, asset condition data also impacts the Municipality's risk management and financial strategies. Assessed condition is a key variable in the determination of an asset's probability of failure. With a strong understanding of the probability of failure across the entire asset portfolio, the Municipality can develop strategies to mitigate both the probability and consequences of asset failure and service disruption. Furthermore, with condition-based determ55inations of future capital expenditures, the Municipality can develop long-term financial strategies with higher accuracy and reliability.

Guidelines for Condition Assessment

Whether completed by external consultants or internal staff, condition assessments should be completed in a structured and repeatable fashion, according to consistent and objective assessment criteria. Without proper guidelines for the completion of condition assessments there can be little confidence in the validity of condition data and asset management strategies based on this data.

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

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

Developing a Condition Assessment Schedule

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

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

Appendix F: Paved Road Inventory (2019 Condition Assessments)

Name	Street From	Street To	In-Service Date	Quantity (m)	Replacement Cost ($)	Condition
Bay street	High street	End	2003-07-01	217	30,912	27
Birchgrove drive east	Tillicum bay road	Unknown point	2003-07-01	1066	151,852	26
Birchgrove drive east	Unknown point	Ninovan rd.	2003-07-01	1001	142,592	47
Birchgrove drive east	Tillicum bay road	West boundary	2003-07-01	1224	174,359	83
Cedar lane	Terrace road	Easterly to end	2003-07-01	628	89,459	35
Davis avenue	Mountain road	Northerly to end	2003-07-01	192	27,350	23
Hart road	Mcdonald road	Byers road	2003-07-01	2019	287,607	47
Hart road	Hart road	Hart road	2003-07-01	1890	269,231	21
Hart road	Mcdonald road	Pinecreek road	2003-07-01	4020	572,649	45
Long point drive	Tillicum bay road	Northerly	2003-07-01	371	52,849	26
Mcdonald road	Highway 654	Hart road	2003-07-01	2072	295,168	0
Mountain road	Unknown point	Scottsfield road	2003-07-01	850	121,083	52
Mountain road	Davis avenue	Unknown point	2003-07-01	167	23,789	47
Mountain road	Terrace road	Davis avenue	2003-07-01	284	40,456	45
Nichols street	Toronto street	Southerly	2003-07-01	71	10,114	25
Ninovan road	Birchgrove drive east	End	2003-07-01	559	79,630	19
Ninovan road east	Birchgrove drive east	End	2003-07-01	192	27,350	52
Pebble beach drive	Wasi falls road	End	2003-07-01	736	104,843	60
Pinecreek road north	Pinecreek crescent	Keeling drive	2003-07-01	499	159,944	91
Rousseau lane	Tillicum bay road	Westerly	2003-07-01	72	10,256	83
Soul road	Pinecreek crescent	Easterly	2003-07-01	131	18,661	51
Tillicum bay road	Sunrise bay road	Waltonian drive	2003-07-01	659	93,875	73
Tillicum bay road	Birchgrove drive east	Sunrise bay drive	2003-07-01	1310	186,610	73

Name	Street From	Street To	In-Service Date	Quantity (m)	Replacement Cost ($)	Condition
Toronto street	King street	Mckever street	2003-07-01	71	22,758	35
Toronto street	Nichols	Easterly to end	2003-07-01	74	10,541	31
Toronto street	Mckever street	Nichols street	2003-07-01	159	50,964	8
Waltonian drive	Tillicum bay road	Rousseau lane	2003-07-01	226	32,194	83
Wasi falls road	Wistawasing	End	2003-07-01	68	9,687	56
Wasi falls road	Pebble beach	Wistawasing lane	2003-07-01	139	19,801	62
Wasi falls road	Highway 654	Pebble beach drive	2003-07-01	482	68,661	56
Avenue a	Swale street	Southerly to end	1997-07-01	212	67,952	72
Bay street	Main street	High street	1997-07-01	150	48,080	65
Burritt street	High street	King street	1997-07-01	104	33,335	47
Callander bay drive	Callander bay drive	Sherbrooke street	1997-07-01	821	375,936	88
Callander bay drive	Cranberry road	Off ramp	1997-07-01	143	65,480	90
Callander bay drive	Morel street	City of north bay	1997-07-01	36	16,484	89
Callander bay drive	Sherbrooke street	Main street north	1997-07-01	1019	466,600	84
Callander bay drive	Off ramp	Main street north	1997-07-01	108	49,453	90
Catherine street east	High street	Westerly	1997-07-01	55	17,629	22
Catherine street west	First street	Main street	1997-07-01	112	35,899	65
Catherine street east	High street	King street	1997-07-01	102	32,694	47
Cedargrove court	Woodland drive	North end	1997-07-01	139	44,554	73
Centennial street	Main street	Westerly to end	1997-07-01	37	11,860	61
Cranberry road	Callander bay drive	Fairview drive	1997-07-01	215	68,914	60
Fairway drive	Cranberry road	Osprey crescent	1997-07-01	615	197,126	57

Name	Street From	Street To	In-Service Date	Quantity (m)	Replacement Cost ($)	Condition
First street	Lansdowne street	Catherine street	1997-07-01	92	29,489	40
Fleet street	Main street south	Easterly to end	1997-07-01	47	15,065	61
Golf course road	Kilby lane	Mlll road	1997-07-01	262	84,010	55
Golf course road	Mill road north	Main street	1997-07-01	196	62,792	65
Golf course rd	Mill road	Main street	1997-07-01	142	45,516	61
Green road	Main street south	Greenwood road	1997-07-01	398	56,695	45
Greenwood road	Green road	Stevens place	1997-07-01	109	34,938	71
Greenwood road	Stevens place	Westerly to end	1997-07-01	391	125,327	84
High street	Lansdowne street	Bay street	1997-07-01	123	39,425	62
High street	Lansdowne street	Catherine street	1997-07-01	101	32,374	42
High street	Catherine street	Burritt street	1997-07-01	201	64,427	39
High street	Bay street	View street	1997-07-01	80	25,642	46
Keeling drive	Pinecreek road	Pinecreek road	1997-07-01	278	89,107	91
Kilby lane	Golf course road	Marine road	1997-07-01	195	62,503	72
Kilby lane	Osprey crescent	Golf course road	1997-07-01	187	59,939	73
King street	Burritt street	Woodlands drive	1997-07-01	285	91,351	100
King street	Woodlands drive	Swale street	1997-07-01	336	107,698	100
King street	Lansdowne street	Toronto street	1997-07-01	72	23,078	100
King street	Toronto street	Catherine street	1997-07-01	31	9,936	100
King street	Catherine street	Burritt street	1997-07-01	204	65,388	100
Lake nosbonsing road	Highway 654	Township boundary	1997-07-01	1300	595,270	89
Landsdowne street east	High street	King street	1997-07-01	104	47,622	74
Landsdowne street west	Unknown point	Lake nipisisng	1997-07-01	35	16,027	47

Name	Street From	Street To	In-Service Date	Quantity (m)	Replacement Cost ($)	Condition
Landsdowne street west	First street	Unknown point	1997-07-01	134	61,359	39
Landsdowne street	Main street	First street	1997-07-01	110	50,369	65
Landsdowne street east	Highway 94	King street	1997-07-01	315	144,239	66
Landsdowne street east	High street	Main street	1997-07-01	114	52,201	77
Lighthouse road	Bayview road	Unknown point	1997-07-01	1000	142,450	45
Lighthouse road	Unknown point	End	1997-07-01	725	103,276	23
Lighthouse road	Highway 654	Bayview road	1997-07-01	428	60,969	53
Main street south	Fleet street	Water street	1997-07-01	118	54,032	67
Main street north	Catherine street	Lansdown e street	1997-07-01	106	48,537	74
Main street north	Off ramp	Golf course road	1997-07-01	822	376,394	59
Main street south	Green road	Callander bay drive	1997-07-01	49	22,437	47
Main street south	Lansdowne street	Bay street	1997-07-01	119	54,490	63
Main street north	Park street	Centennial street	1997-07-01	417	190,944	56
Main street north	Mill road	Park street	1997-07-01	234	107,149	63
Main street south	Water street	Green road	1997-07-01	618	282,982	57
Main street north	Centennial street	Catherine street	1997-07-01	197	90,206	72
Main street north	Callander bay drive	Main street	1997-07-01	116	53,116	89
Main street south	Bay street	Fleet street	1997-07-01	374	171,255	72
Main street south	Water street	Nipissing street	1997-07-01	128	58,611	61
Marine drive	Kilby lane	Easterly	1997-07-01	314	100,646	76
Morel boulevard	Pinewood drive	Baywood drive	1997-07-01	102	32,787	0
Nipissing street	Main street south	Easterly to end	1997-07-01	76	24,360	54
Osprey crescent	O-point on road	Point on road	1997-07-01	410	131,417	0
Osprey crescent	Kilby lane	Westerly	1997-07-01	716	229,499	60

Name	Street From	Street To	In-Service Date	Quantity (m)	Replacement Cost ($)	Condition
Osprey crescent	Fairway drive	Kilby lane	1997-07-01	217	69,555	57
Osprey crescent	Marine road	Westerly	1997-07-01	405	129,815	74
Pinecreek crescent	Keeling drive	Southerly	1997-07-01	626	200,652	91
Pinecreek crescent	Keeling drive	Northerly	1997-07-01	599	191,997	91
Pinecreek road south	Highway 654	Hart road	1997-07-01	1137	161,966	74
Pinecreek road north	Highway 654	Pinecreek crescent	1997-07-01	79	11,254	63
Pleasantview place	Woodlands drive	North end	1997-07-01	248	79,491	57
Pleasantview place	Woodlands drive	South end	1997-07-01	248	79,491	57
Rivers road east	Highway 11	Rivers road east	1997-07-01	38	5,413	63
Rivers road east	Rivers road east	Highway 11	1997-07-01	540	76,923	57
Rivers road west	Rivers road east	Rivers road west	1997-07-01	473	67,379	53
Rivers road west	Highway 11	Rivers road west	1997-07-01	38	12,199	0
Steven place	Greenwood road	Southerly to end	1997-07-01	142	45,515	68
Stones road	Highway 654	Southerly to end	1997-07-01	1041	333,672	42
Sunrise bay drive	Tillicum bay road	Easterly to end	1997-07-01	510	72,650	56
Swale street	Main street	Avenue a	1997-07-01	116	37,181	39
Swale street	Avenue a	Sherbrooke street	1997-07-01	144	46,156	41
Swale street	Swale street	Callander bay drive	1997-07-01	275	88,146	37
Terrace road	Unknown point	Mountain road	1997-07-01	172	55,131	79
Terrace road	Country lane	Unknown point	1997-07-01	89	28,527	74
Terrace road	Mountain road	Callander bay drive	1997-07-01	62	19,873	51
Terrace road	Callander bay drive	South end	1997-07-01	146	46,797	73
Terrace road	Cedar lane	Country lane	1997-07-01	294	94,236	77
Terrace road	South end	Cedar lane	1997-07-01	623	199,690	77
Tillicum bay road	Highway 654	Birchgrove drive	1997-07-01	2048	656,445	79

Name	Street From	Street To	In-Service Date	Quantity (m)	Replacement Cost ($)	Condition
View street	Unknown	End	1997-07-01	224	31,909	51
View street	High street	Unknown	1997-07-01	57	8,120	84
Waltonian drive	Rousseau lane	West boundary	1997-07-01	1000	142,450	47
Water street	Main street south	Easterly to end	1997-07-01	64	20,514	74
Watson	Highway 11 sbl	Highway 11 nbl	1997-07-01	600	186,823	0
Woodlands street	Cedargrove court	Pleasantview place	1997-07-01	92	29,489	66
Woodlands street	King street	Cedargrove court	1997-07-01	91	29,168	55
Alexandra court	Osprey cres	End	2013-07-01	200	82,422	89
Cross walk phase I-main st. North	Intersection of royal bank and loulou's restaurant		2017-07-01	1 unit	14,981	85
Cross-walks main st. Phase II	75 main street south (in front of foodland) 200 main street north		2018-07-01	1 unit	14,529	89