Asset Management Plan

Town of Laurentian Hills

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
$51.2 million

Replacement cost of infrastructure per household
$37,000 (2021)

Percentage of assets in fair or better condition
29%

Percentage of assets with assessed condition data
13%

Annual capital infrastructure deficit
$2.1 million

Recommended timeframe for eliminating annual infrastructure deficit
20 Years

Target reinvestment rate
4.0%

Actual reinvestment rate
1.0%

Table of Contents

Executive Summary

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

Scope

This AMP identifies the current practices and strategies that are in place to manage public infrastructure and makes recommendations where they can be further refined. Through the implementation of sound asset management strategies, the Town 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 Town has achieved compliance with O. Reg. 588/17 to the extent of the requirements that must be completed by July 1, 2024. There are additional requirements concerning proposed levels of service and growth that must be met by July 1, 2025.

Findings

The overall replacement cost of the asset categories included in this AMP totals $51.2 million. 29% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 13% of assets. For the remaining 87% of assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.
The development of a long-term, sustainable financial plan requires an analysis of whole lifecycle costs. This AMP uses a combination of proactive lifecycle strategies (paved roads) and replacement only strategies (all other assets) to determine the lowest cost option to maintain the current level of service.

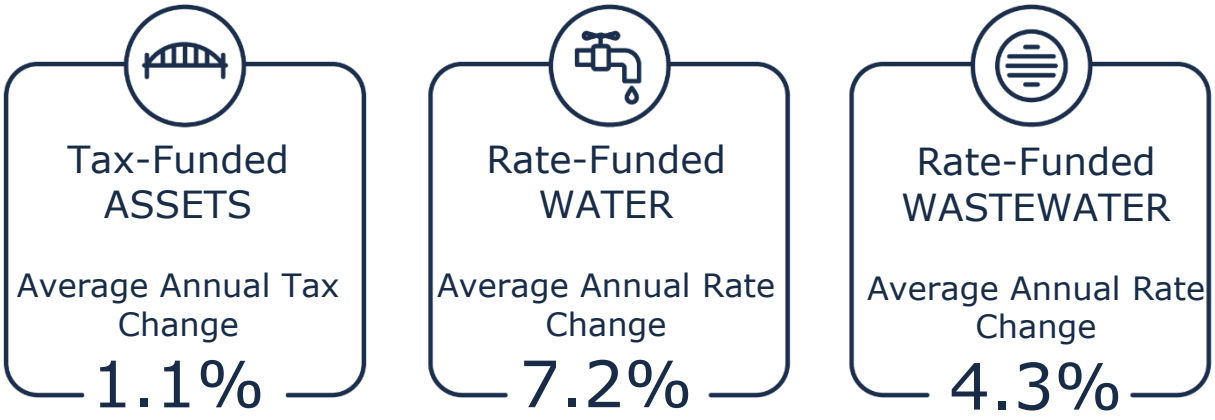
To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Town's average annual capital requirement totals $2.1 million. Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately $492,000 towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $1.6 million.

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 Town. Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources.

Recommendations

A financial strategy was developed to address the annual capital funding gap. The following graphics shows annual tax/rate change required to eliminate the Town's infrastructure deficit based on a 10-year plan for tax-funded assets and a 20-year plan for rate-funded assets:



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

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

1 Introduction & Context

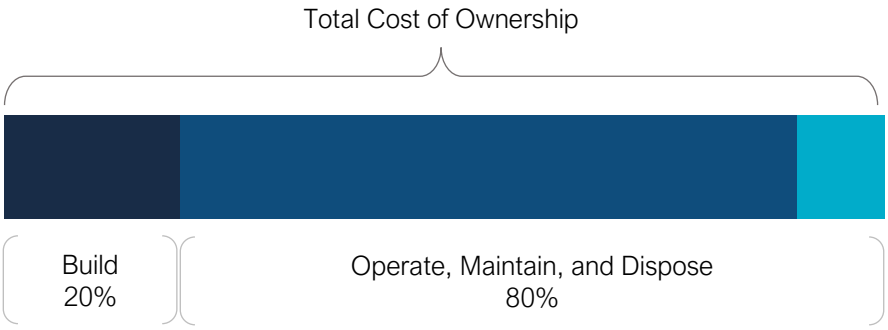
Key Insights

- The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio
- The Town's asset management policy provides clear direction to staff on their roles and responsibilities regarding asset management
- An asset management plan is a living document that should be updated regularly to inform long-term planning
- Ontario Regulation 588/17 outlines several key milestone and requirements for asset management plans in Ontario between July 1, 2022, and 2025

1.1 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 Town's approach to asset management activities. It aligns with the organizational strategic plan and provides clear direction to municipal staff on their roles and responsibilities as part of the asset management program.

The Town adopted the "Strategy Asset Management Policy" on October 1st, 2019, in accordance with Ontario Regulation 588/17. The policy defines the following asset management principles, the Town shall:

- take a long-term view while taking into consideration economic and demographic trends;
- take into account budgets and fiscal plans; and
- ensure the continued provision of core public services.

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 Town plans to achieve asset management objectives through planned activities and decision-making criteria.

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

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

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

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 Town'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 Town is providing to the community and the nature and quality of that service. Within each asset category in this AMP, technical metrics and qualitative descriptions that measure both technical and community levels of service have been established and measured as data is available.

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

Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories (roads, bridges and culverts, water, wastewater, stormwater) the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in

this AMP. For non-core asset categories, the Town 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 Town's asset management strategies on the physical condition of assets or the quality/capacity of the services they provide.

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

Current and Proposed Levels of Service

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

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

1.3 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) and Asset Management Policy Update

2025

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, 2024. Next to each requirement a page or section reference is included in addition to any necessary commentary.

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

2 Scope and Methodology

Key Insights

- This asset management plan includes 6 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 Town of Laurentian Hills is produced in compliance with Ontario Regulation 588/17. The July 2024 deadline under the regulation—the first of three AMPs—requires analysis of only core assets (roads, bridges and culverts, water, wastewater, and stormwater).

The AMP summarizes the state of the infrastructure for the Town'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
Buildings & Facilities	
Vehicles	
Machinery & Equipment	
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 Town incurred. As assets age, and new products and technologies become available, cost inflation becomes a less reliable method.

2.3 Reinvestment Rate

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

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

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

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

2.4 Deriving Asset Condition

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

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

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

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

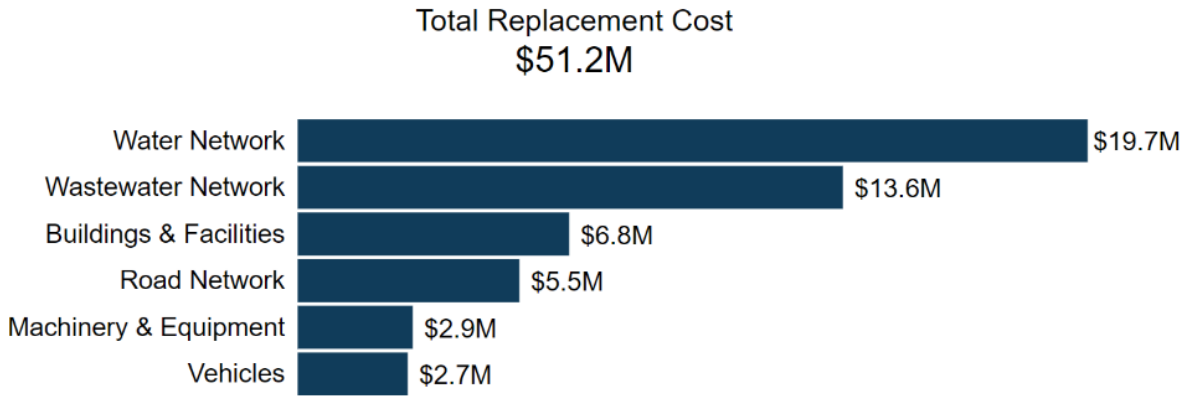
3 Portfolio Overview

Key Insights

- The total replacement cost of the Town's asset portfolio is $51.2 million
- The Town's target re-investment rate is 4.03%, and the actual re-investment rate is 0.96%, contributing to an expanding infrastructure deficit
- 29% of all assets are in fair or better condition
- 46% of assets are projected to require replacement in the next 10 years
- Average annual capital requirements total $2.1 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 $51.2 million based on inventory data from 2021. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.

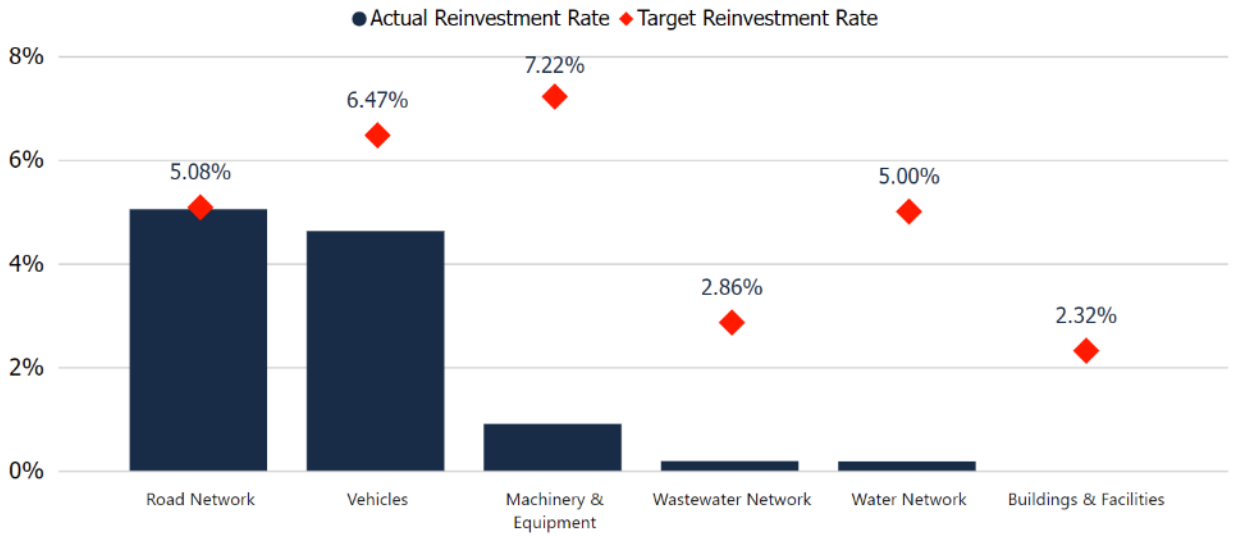


The following table identifies the methods employed to determine replacement costs across each asset category:

Asset Category	Replacement Cost Method	
	User-Defined	Notes
Road Network	81%	Replacement costs for paved roads are from 2020 project unit costs and are inflated using the 2021 CPI basis.
Water Network	1%	Replacement costs for Fire Hydrants are from 2020 project costs and are inflated using the 2021 CPI basis.
Wastewater Network	96%	Replacement costs for the Wastewater Treatment Plant are user-defined based on 2021 insurance appraisals.
Buildings & Facilities	4.3%	Replacement costs for the fire halls, municipal offices, and communication, landfill and public works buildings are user-defined from 2020 and 2021 purchase prices. 2020 replacement costs are inflated using the 2021 CPI basis.
Machinery & Equipment	31%	Replacement costs for miscellaneous machinery and equipment assets are user-defined from 2020. Replacement costs are inflated using the 2021 CPI basis.
Vehicles	56%	Replacement costs for fire trucks and other vehicles are user-defined from 2020 staff estimates and are inflated using the 2021 CPI basis.
Overall	**49%**	

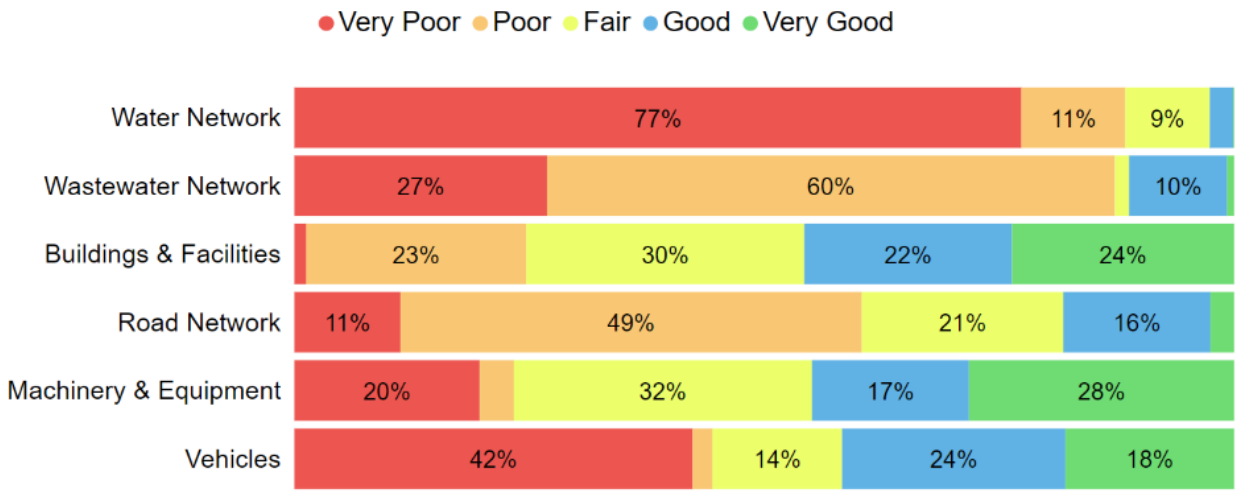
3.2 Target vs. Actual Reinvestment Rate

The graph below depicts funding gaps or surpluses by comparing target vs actual reinvestment rate. To meet the long-term replacement needs, the Town should be allocating approximately $2.1 million annually, for a target reinvestment rate of 4.0%. Actual annual spending on infrastructure totals approximately $492,000, for an actual reinvestment rate of 1.0%.



3.3 Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 29% of assets in Laurentian Hills 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 13% of assets; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data used throughout this AMP.

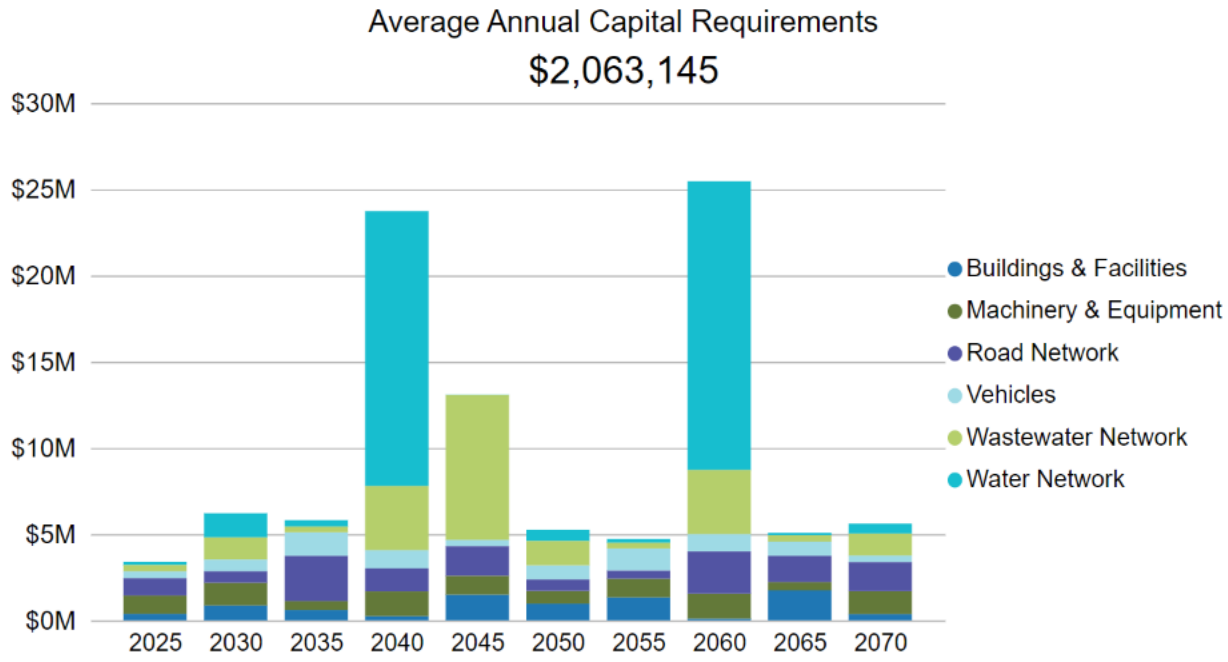
Asset Category	Asset Segment	Assessed Condition	Source of Condition Data
Road Network	Paved Roads	67%	2017 Road Needs Study
Buildings & Facilities	All	10%	Staff Assessments
Machinery & Equipment	All	44%	Staff Assessments
Vehicles	All	27%	Staff Assessments
Water Network	All	0%	Age-based
Wastewater Network	All	0%	Age-based

3.4 Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 46% of the Town'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 Town can produce an accurate long-term capital forecast. The following graph identifies capital requirements over the next 50 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 $17.9 million
- 51% 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 $823,000
- 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 Town's asset portfolio. It includes all municipally owned and maintained roadways in addition to supporting roadside infrastructure including a pedestrian bridge, road culverts and streetlights.

The Town'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.

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

Replacement Cost	Condition	Financial Capacity	
$5.5 million	Fair (48%)	Annual Requirement:	$281,000
		Funding Available:	$279,000
		Annual Deficit:	$2,000

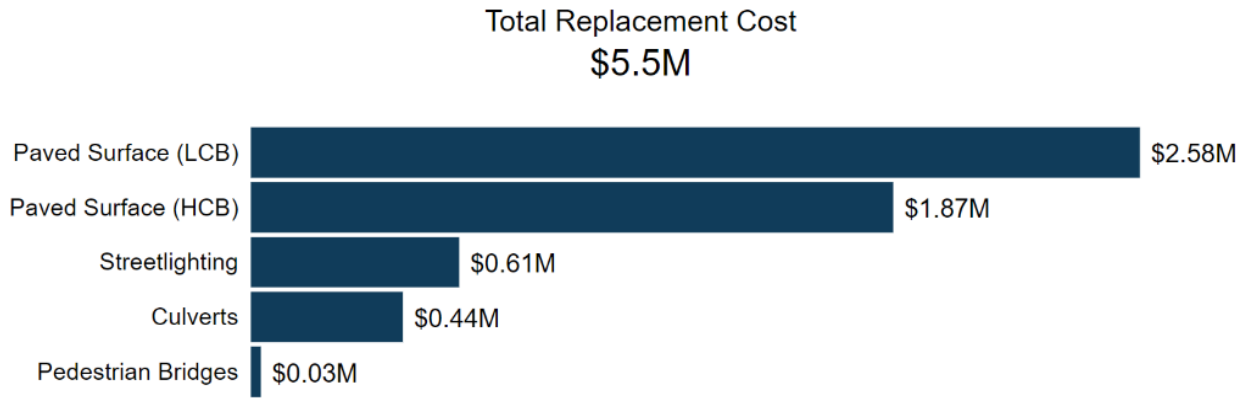
The following core values and level of service statements are a key driving force behind the Town's asset management planning:

Service Attribute	Level of Service Statement
Scope	The road network service is conveniently accessible to the whole community in sufficient capacity (meets traffic demands) and is available under all weather conditions.
Quality	The road network is in fair condition with minimal unplanned service interruptions and road closures.

4.1.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Gravel Roads	36 km	Not Planned for Replacement[1]	
Paved Surface (HCB)	17 km	$1,867,640	$100,290
Paved Surface (LCB)	33 km	$2,584,905	$138,129
Culverts	34	$441,777	$17,671
Streetlighting	490	$605,569	$24,223
Pedestrian Bridges	1	$29,048	$581
Total		**$5,528,939**	**$280,894**



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

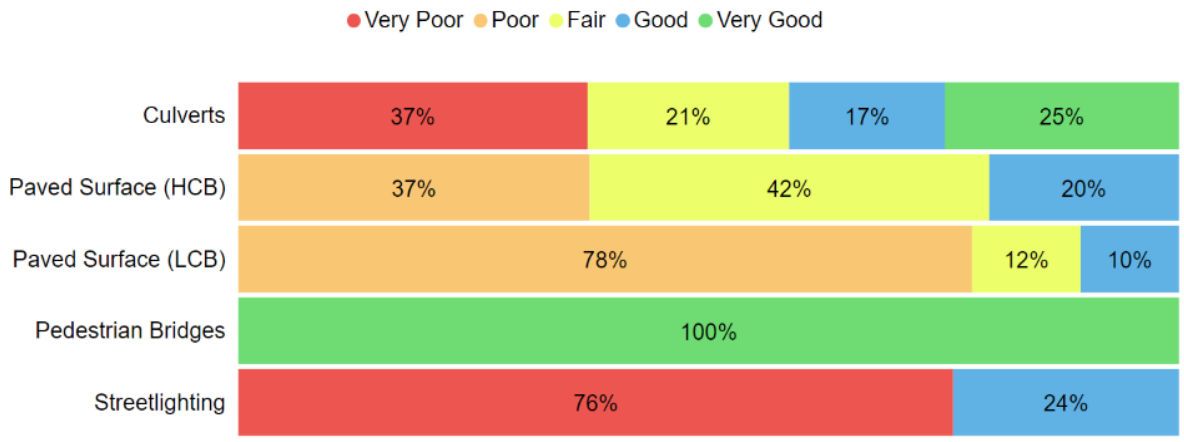
[1] Gravel roads undergo perpetual operating and maintenance activities. If maintained properly, they can theoretically have a limitless service life.

4.1.2 Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Paved Surface (HCB)	41	8 Years 8 Months	45% (Fair)
Paved Surface (LCB)	24	25 Years 9 Months	61% (Good)
Culverts	25	26 Years 2 Months	45% (Fair)
Streetlighting	25	16 Years 4 Months	18% (Poor)
Pedestrian Bridges	50	2 Years 4 Months	95% (Very Good)
Average		**20 Years 3 Months**	**48% (Fair)**

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



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

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

Current Approach to Condition Assessment

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

- A Road Needs Study was completed in 2017 that included a detailed assessment of the condition of each road segment. A Roads Needs Study is typically completed on a 5–7-year cycle.
- Culverts, road appurtenances, and the pedestrian bridge are visually inspected on an ad-hoc basis. Deficiencies are noted to inform rehabilitation and replacement activities.

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

Paved Roads	
Condition	**Rating**
Very Good	10.00
Good	8.00-10.00
Fair	5.00-8.00
Poor	1.00-5.00
Very Poor	0-1.00

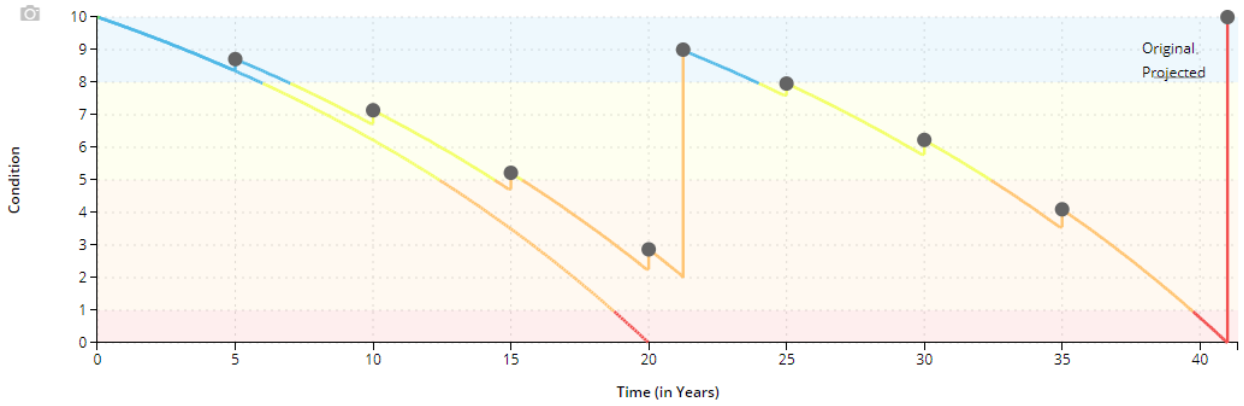
Culverts & Street Appurtenances	
Condition	**Rating**
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

4.1.3 Lifecycle Management Strategy

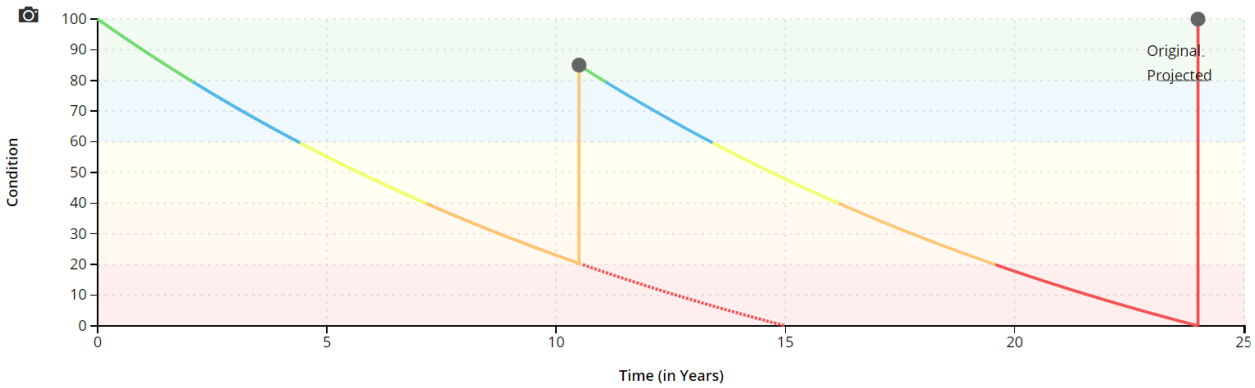
The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment.

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

Paved Roads (HCB)		
Event Name	**Event Class**	**Event Trigger**
Mill & Pave – Spot Treatment	Maintenance	Every 5 Years
Pulverize and Pave	Rehabilitation	20% Condition
Full Road Reconstruction	Replacement	End of Life



Paved Roads (LCB)		
Event Name	**Event Class**	**Event Trigger**
Single Surface Treatment	Rehabilitation	60% Condition
Full Reconstruction	Replacement	End of Life



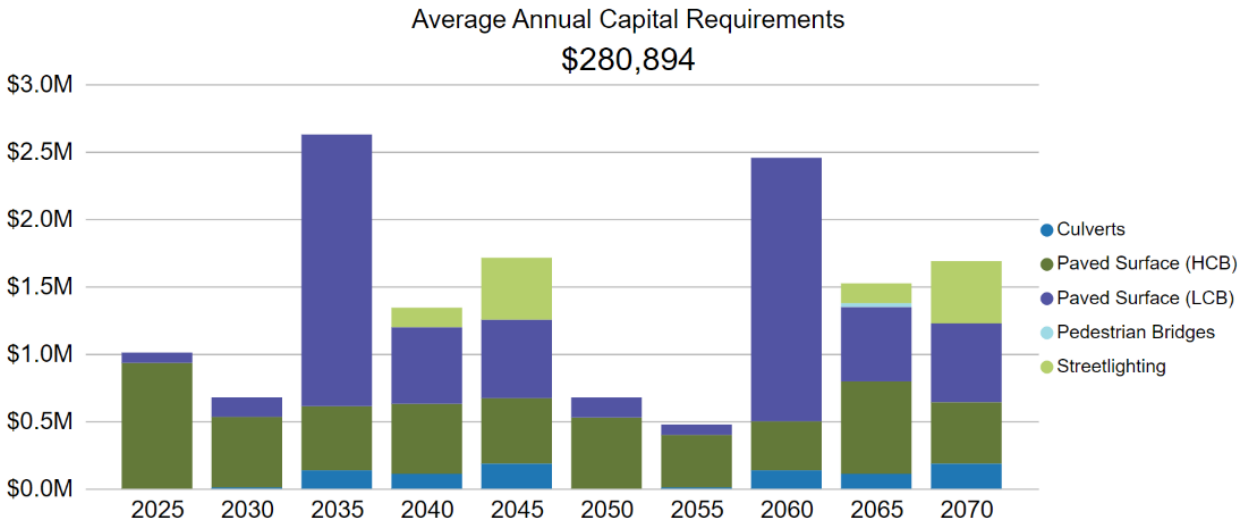
The following table outlines the Town's current lifecycle management strategies that are not defined by the above strategies.

Activity Type	Description of Current Strategy
Maintenance	Maintenance activities for roads include winter maintenance such as snow removal and salt/sand for ice removal as needed. Gravel roads are graded and new gravel is added as needed. Most gravel roads are treated with calcium chloride on an annual basis. Road culverts and the pedestrian bridge are cleaned as needed.
Renewal/ Replacement	Replacement activities are prioritized based on asset condition and health and safety risks.

Forecasted Capital Requirements

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

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 50 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.



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.

4.1.4 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 2021 inventory data.

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

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
Service Life Remaining	Road Class
Drainage Adequacy	

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

Risks to Current Asset Management Strategies

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

Climate Change & Extreme Events

An increase in the frequency and intensity of precipitation events can result in flooding of sections of the road network. The drainage capacity of the road network is not sufficient to withstand heavy water flow, particularly in areas located near the local wetlands. Further issues can arise as a result of flooding and poor drainage including accelerated deterioration caused by freeze/thaw cycles. To improve asset resiliency, Staff should identify problem areas and improve drainage through enhanced lifecycle strategies.

Infrastructure Design

Municipal staff suspect that the road network experiences higher rates of deterioration as a result of poor foundation due to wetlands, heavy vehicle traffic, and frequent snow removal. Staff should identify areas that are at risk of higher deterioration and consider more sustainable road base and road surface options to improve the useful life of these assets.

4.1.5 Levels of Service

The following tables identify the Town'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 Town 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	Very Poor: Widespread signs of deterioration. Requires remedial work to bring road up to standard. Service is affected Poor: Large portions of road exhibiting deterioration with rutting, potholes, distortions, longitude and lateral cracking. Road is mostly below standard. Fair: Some sections of road starting to deteriorate. Requires some remedial work and surface upgrade in near future. Good: Road is in overall good condition. Few sections are starting to show signs of minimal deterioration. Very Good: Road is well maintained and in excellent condition. Surface was newly or recently upgraded. No signs of deterioration or remedial work required.

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 km / 634 km2
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	0 km / 634 km2
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	0.27 km / 634 km2
Quality	Average pavement condition index for paved roads in the municipality	HCB: 45% LCB: 61%
	Average surface condition for unpaved roads in the municipality (e.g. excellent, good, fair, poor)	Good
Performance	Capital reinvestment rate	5.05%

4.1.6 Recommendations

Asset Inventory

- Review road culverts and streetlight inventory to determine whether all municipal assets within these asset segments have been accounted for. The streetlight inventory includes several pooled assets that should be broken into discrete segments to allow for detailed planning and analysis.
- Critical attribute information should be collected and uploaded into the asset management database to improve strategic planning and prioritization for road assets. This includes attribute information such as road class, number of lanes, drainage adequacy, traffic counts, asset dimensions and material.

Condition Assessment Strategies

- The last assessment of the linear road network was completed in 2017. Consider completing an assessment of all roads every 5-7 years.

Lifecycle Management Strategies

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

Risk Management Strategies

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

Levels of Service

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

4.2 Buildings & Facilities

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

- administrative offices
- public libraries
- fire stations and associated offices and facilities
- public works garages and storage sheds
- arenas

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

Replacement Cost	Condition	Financial Capacity	
$6.8 million	Fair (58%)	Annual Requirement:	$157,000
		Funding Available:	$0
		Annual Deficit:	$157,000

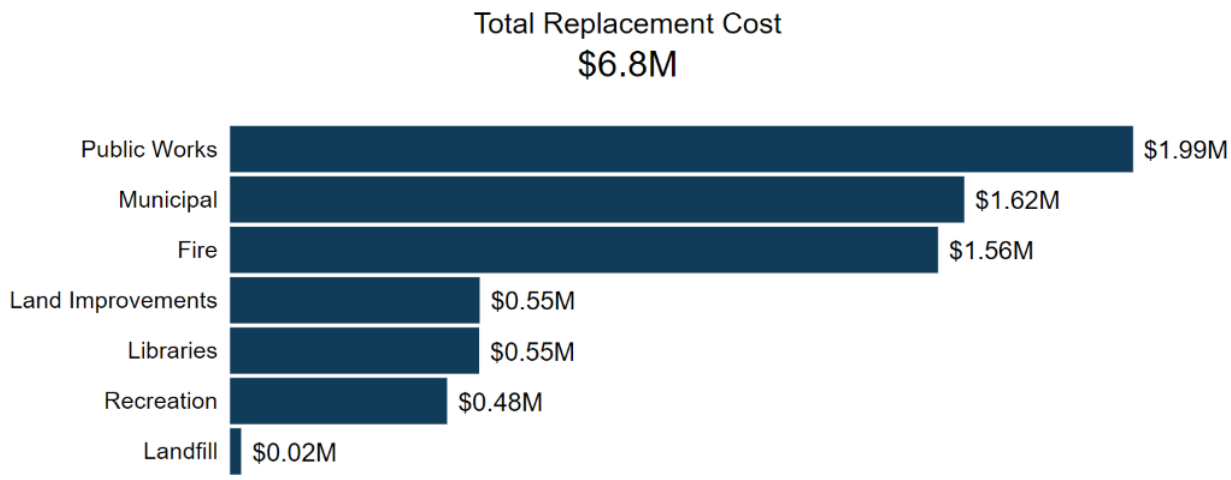
The following core values and level of service statements are a key driving force behind the Town's asset management planning:

Service Attribute	Level of Service Statement
Scope	Building and facilities are conveniently accessible to the whole community in sufficient capacity.
Quality	Buildings and facilities are in fair condition with minimal unplanned service interruptions.

4.2.1 Asset Inventory & Costs

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

Asset Segment	Quantity (Component)	Replacement Cost	Annual Capital Requirement
Fire	4 (6)	$1,560,743	$34,038
Land Improvements	16	$550,108	$25,025
Landfill	2	$24,226	$450
Libraries	1(4)	$549,072	$9,529
Municipal	2 (5)	$1,618,273	$35,978
Public Works	3 (4)	$1,990,567	$40,767
Recreation	3	$478,575	$11,048
Total		**$6,771,564**	**$156,835**



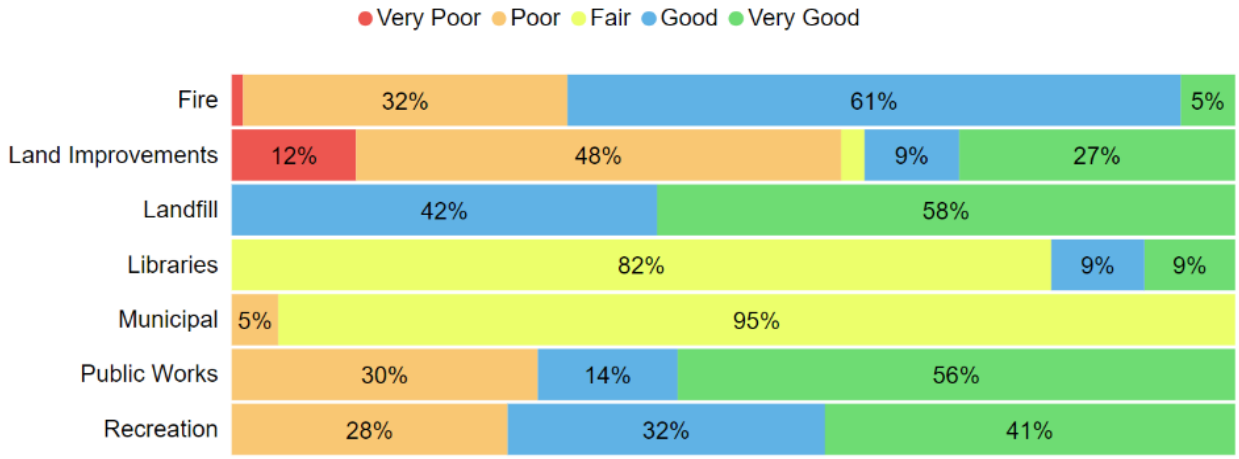
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.2.2 Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Fire	20-50	17 Years 2 Months	54% (Fair)
Land Improvements	20-25	12 Years 8 Months	50% (Fair)
Landfill	50-60	10 Years 9 Months	84% (Very Good)
Libraries	25-60	15 Years 3 Months	61% (Good)
Municipal	25-60	18 Years 9 Months	48% (Fair)
Public Works	20-50	21 Years 2 Months	68% (Good)
Recreation	25-60	17 Years 11 Months	67% (Good)
Average		**15 Years 6 Months**	**58% (Fair)**

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



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

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

Current Approach to Condition Assessment

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

- There is no formal condition assessment program in place for buildings and facilities. Building maintenance staff perform monthly inspections with a focus on health and safety.
- Visual inspections related to sprinklers, fire extinguishers, and the firehall are carried out in consideration of health and safety measures and in accordance with the guidelines set by the National Fire Protection Association (NFPA).
- Components such as HVAC, elevators and generators are inspected in accordance with the Building Code Act and manufacturer recommendations.
- Deficiencies are noted by staff during regular visual inspections and inform maintenance, rehabilitation, and replacement activities.

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

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

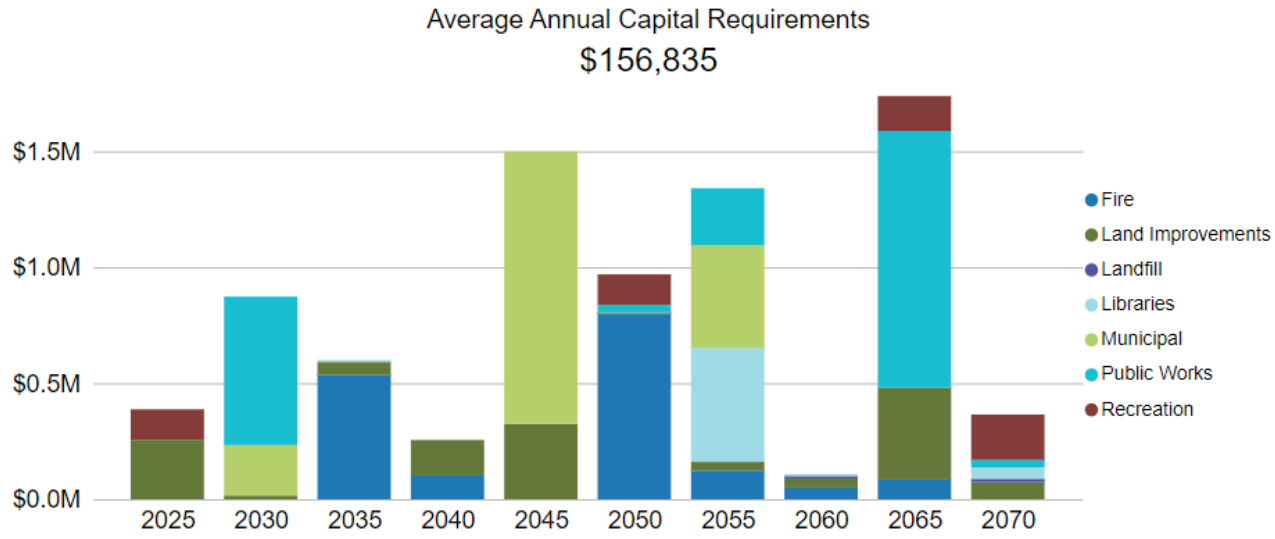
4.2.3 Lifecycle Management Strategy

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

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	Municipal buildings are subject to regular inspections to identify health & safety requirements as well as structural deficiencies that require additional attention.
	Critical buildings, including the Fire Stations, have a detailed maintenance and rehabilitation schedule, while the maintenance of other facilities are dealt with on a case-by-case basis.
Replacement	As a supplement to the knowledge and expertise of municipal staff the Town occasionally works with contractors to complete Facility Needs Assessment Studies.
	Assessments are completed strategically as buildings approach their end-of-life to determine whether replacement or rehabilitation is appropriate

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 50 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.

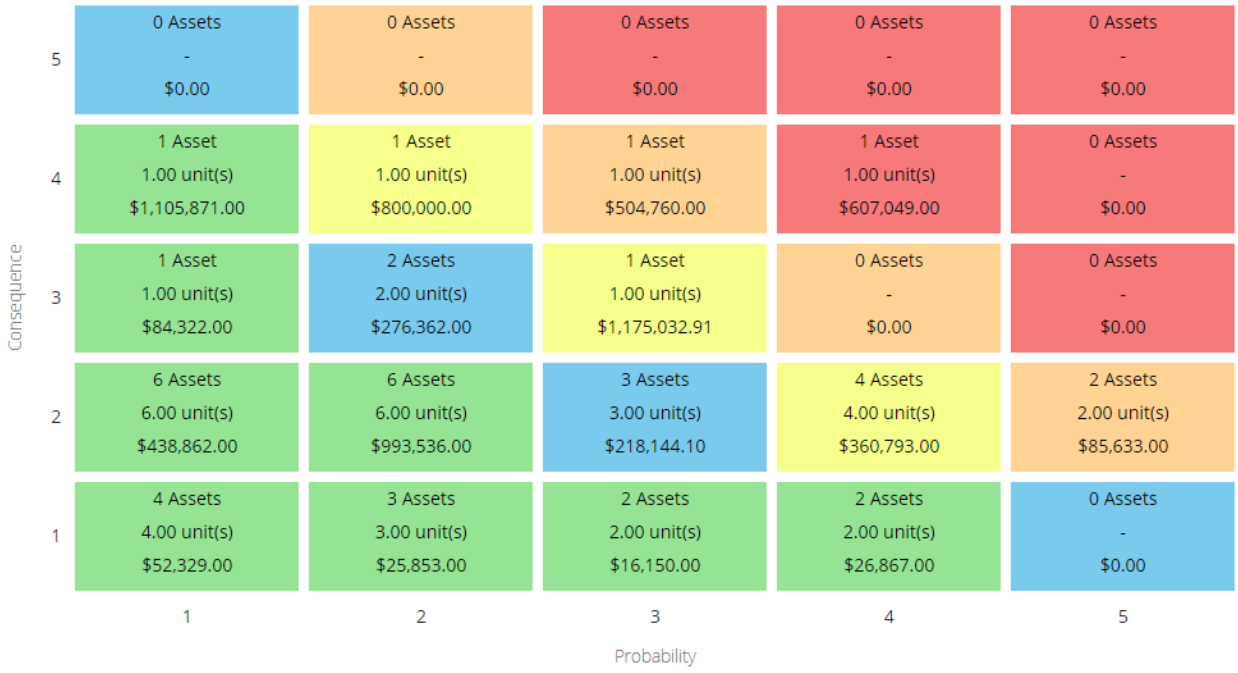


The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix B.

4.2.4 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 2021 inventory data.



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

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
Service Life Remaining	Function (Operational)

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

4.2.5 Levels of Service

The following tables identify the Town's current level of service for buildings and facilities. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Town 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 buildings and facilities.

Service Attribute	Qualitative Description	Current LOS (2020)
Scope	Description, which may include maps, of the types of buildings and facilities that the Town operates and maintains	See Appendix C

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2020)
Accessible	Percentage of buildings and facilities that meet accessibility standards	97%
Quality	Percentage of buildings and facilities that are in good and very good condition	46%
	Percentage of buildings and facilities that are in poor and very poor condition	25%
Accessible	Capital re-investment rate	0%

4.2.6 Recommendations

Asset Inventory

- The Town's asset inventory contains some segmented assets. Facilities consist of several separate capital components that have unique estimated useful lives and require asset-specific lifecycle strategies. Staff should work towards further segmenting the inventory of all facilities to allow for component-based lifecycle planning.

Replacement Costs

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

Condition Assessment Strategies

- The Town should implement regular condition assessments for all facilities to better inform short- and long-term capital requirements.

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

4.3 Vehicles

Vehicles allow staff to efficiently deliver municipal services and personnel. Municipal vehicles are used to support the fire department and public works.

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

Replacement Cost	Condition	Financial Capacity	
$2.7 million	Fair (45%)	Annual Requirement:	$178,000
		Funding Available:	$127,000
		Annual Deficit:	$51,000

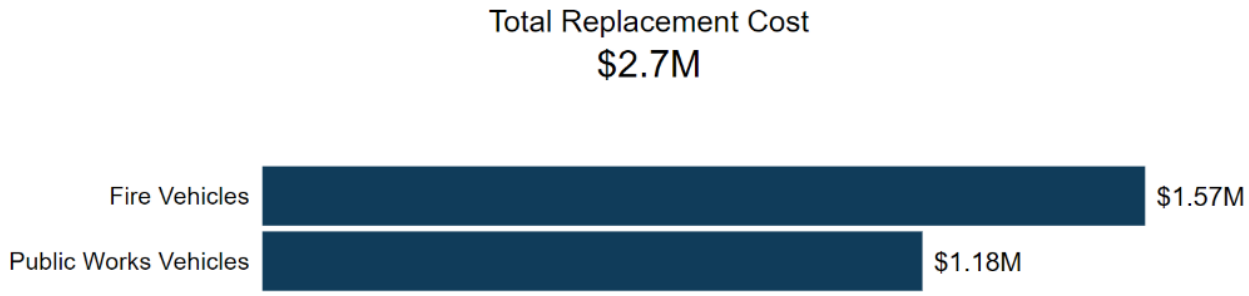
The following core values and level of service statements are a key driving force behind the Town's asset management planning:

Service Attribute	Level of Service Statement
Scope	The vehicle inventory meets municipal staff needs sufficiently and is available for the completion of necessary lifecycle activities.
Quality	Vehicles are in fair condition with a proactive maintenance program to maximize their service life.

4.3.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Fire Vehicles	7	$1,571,719	$75,953
Public Works Vehicles	7	$1,175,203	$101,800
Total		**$2,746,922**	**$177,753**



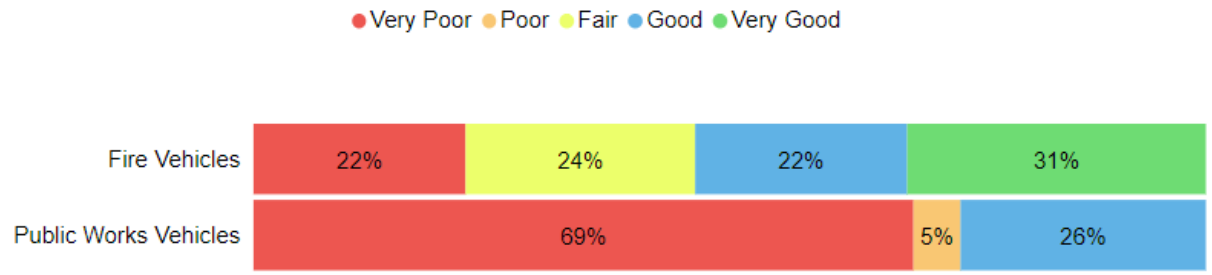
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.3.2 Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Fire Vehicles	5-25 years	9 Years 9 Months	56% (Fair)
Public Works Vehicles	5-15 years	10 Years 2 Months	31% (Poor)
Average		**10 Years**	**45% (Fair)**

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



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

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

Current Approach to Condition Assessment

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

- Staff complete regular visual inspections of vehicles to ensure they are in state of adequate repair prior to operation.
- Commercial Vehicle Operator's Registration (CVOR) vehicles are inspected and maintained by an external, certified mechanic.
- Fire vehicles are inspected in reference to vehicle manuals and in accordance with the guidelines set by the National Fire Protection Association (NFPA).

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

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

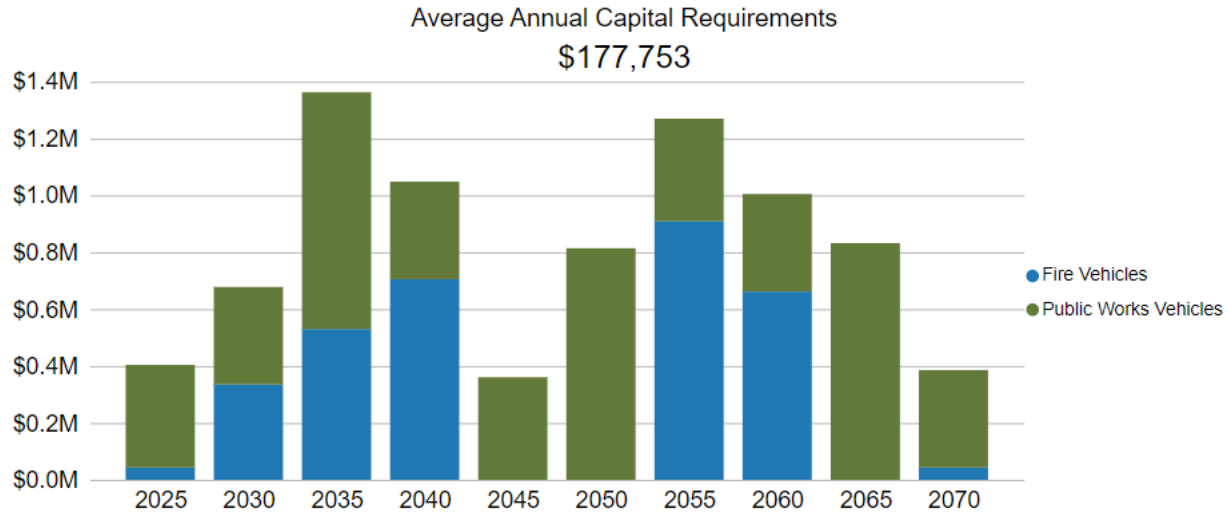
4.3.3 Lifecycle Management Strategy

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

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	Tire, fluid, and minor component changes are completed when required in accordance with the vehicle manuals inspections.
	Fire vehicles are maintained in reference to vehicle manuals and in accordance with the guidelines set by the National Fire Protection Association (NFPA).
Replacement	Vehicle age, mileage and annual repair costs are taken into consideration when determining appropriate lifecycle activities. Most vehicles have a replacement schedule of 10 years, but Staff try to maximize the service life of the assets, where possible, based on performance and function.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 50 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.



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.

4.3.4 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 2021 inventory data.

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

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
Service Life Remaining	Function (Operational)

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

4.3.5 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2020)
Scope	Description, which may include maps, of the types of vehicles that the town operates and maintains	See Appendix C

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2020)
Quality	Percentage of vehicles that are in good and very good condition	42%
	Percentage of vehicles assets that are in poor and very poor condition	44%
Reliability	Percentage of volunteer fire fighters with required licenses for fire trucks/pumpers/tankers	46%
Performance	Capital re-investment rate	4.62%

4.3.6 Recommendations

Asset Inventory

- Review the vehicles inventory to determine whether all assets have been accounted for and accurately documented.

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

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

4.4 Machinery & Equipment

In order to maintain the high quality of public infrastructure and support the delivery of core services, Town staff own and employ various types of machinery and equipment for each department.

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

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

Replacement Cost	Condition	Financial Capacity	
$2.9 million	Fair (51%)	Annual Requirement:	$207,000
		Funding Available:	$26,000
		Annual Deficit:	$181,000

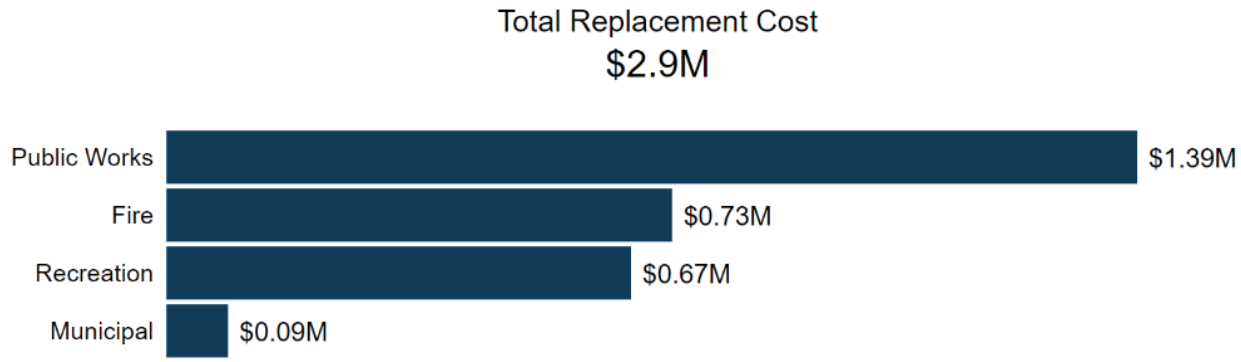
The following core values and level of service statements are a key driving force behind the Town's asset management planning:

Service Attribute	Level of Service Statement
Scope	The machinery and equipment inventory is sufficient for municipal staff needs and is available for the completion of necessary lifecycle activities.
Quality	The machinery and equipment is in fair condition with minimal unplanned service interruptions and road closures.

4.4.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Fire	24	$725,049	$55,928
Municipal	3	$88,330	$14,637
Public Works	16	$1,392,050	$92,876
Recreation	22	$666,252	$43,861
Total		**$2,871,681**	**$207,302**



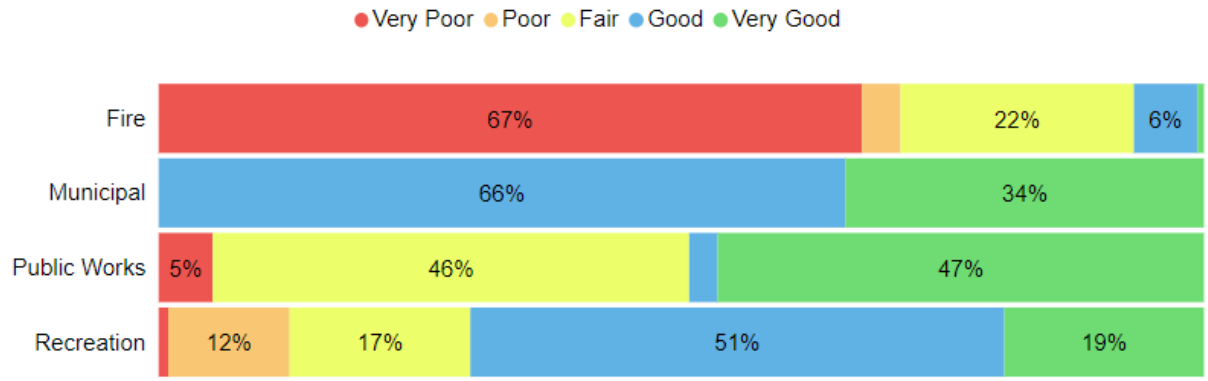
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.4.2 Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Fire	10-25 years	13 Years 2 Months	18% (Very Poor)
Municipal	5-10 years	1 Year 6 Months	72% (Good)
Public Works	10-20 years	7 Years 9 Months	62% (Good)
Recreation	15-60 years	15 Years 5 Months	62% (Good)
Average		11 Years 10 Months	51% (Fair)

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



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

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

Current Approach to Condition Assessment

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

- Staff complete regular visual inspections of machinery and equipment to ensure they are in state of adequate repair.
- There are no formal condition assessment programs in place, although some machinery and equipment were assigned cursory condition ratings for this AMP.

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

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

4.4.3 Lifecycle Management Strategy

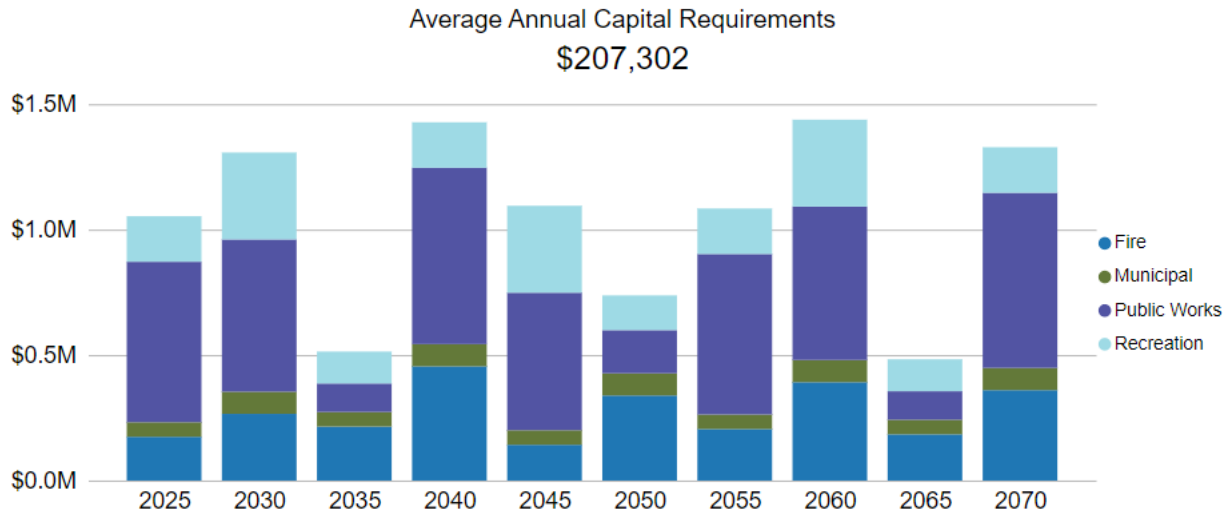
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance/ Rehabilitation	Maintenance program varies by department and asset type.
	Bunker gear and other machinery and equipment belonging to the fire department is inspected routinely by staff, and every 6 months by the manufacturer, as per NFPA standards. Monthly night maintenance is performed as issues are identified.
	Public works machinery and equipment is maintained according to manufacturer recommended actions and supplemented by the expertise of municipal staff.
Replacement	The replacement of machinery and equipment depends on deficiencies identified by operators that may impact their ability to complete required tasks.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 50 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.



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.

4.4.4 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 2021 inventory data.

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

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
Emergency Machinery & Equipment	Department (Operational)

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

4.4.5 Levels of Service

The following tables identify the Town's current level of service for machinery and equipment. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Town 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 machinery and equipment.

Service Attribute	Qualitative Description	Current LOS (2020)
Scope	Description, which may include maps, of the types of machinery and equipment that the town operates and maintains	See Appendix C

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2020)
Quality	Percentage of machinery and equipment assets that are in good and very good condition	45%
	Percentage of machinery and equipment assets that are in poor and very poor condition	24%
Accessible	Capital re-investment rate	7.22%

4.4.6 Recommendations

Asset Inventory

- Review the machinery and equipment in the inventory to determine whether all assets within these asset segments have been accounted for and accurately described.

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

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

5 Analysis of Rate-funded Assets

Key Insights

- Rate-funded assets are valued at $33.3 million
- 12% 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 $1.2 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

5.1 Water Network

The water services provided by the Town are managed and operated by Veolia and municipal staff. The Town is responsible for almost 12 km of water mains and Veolia manages the water treatment plant, water tower, and pump stations.

The state of the infrastructure for the water network is summarized in the following table:

Replacement Cost	Condition	Financial Capacity	
$19.7 million	Very Poor (11%)	Annual Requirement:	$852,000
		Funding Available:	$35,000
		Annual Deficit:	$817,000

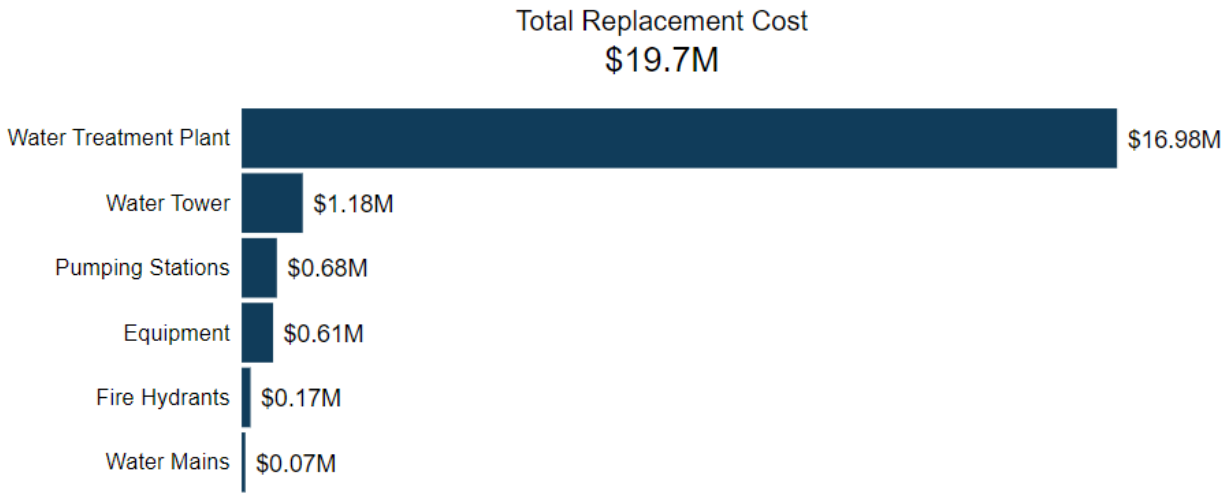
The following core values and level of service statements are a key driving force behind the Town's asset management planning:

Service Attribute	Level of Service Statement
Scope	Municipal water is conveniently accessible to X% of the community in sufficient capacity (does not exceed maximum use). The Town's fire flow system is accessible to X% of the community in sufficient capacity.
Quality/Reliability	The water network is in very poor condition based on age. However, minimal unplanned service interruptions occur due to main breaks and boil water advisories.

5.1.1 Asset Inventory & Costs

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

Asset Segment	Quantity (Component)	Replacement Cost	Annual Capital Requirement
Equipment	4	$609,320	$48,950
Fire Hydrants	102	$171,580	$3,432
Pumping Stations	2(3)	$682,464	$29,858
Water Mains	12 km	$71,039	$1,421
Water Tower	1	$1,184,211	$19,737
Water Treatment Plant	1 (10)	$16,975,445	$748,351
Total		**$19,694,059**	**$851,749**



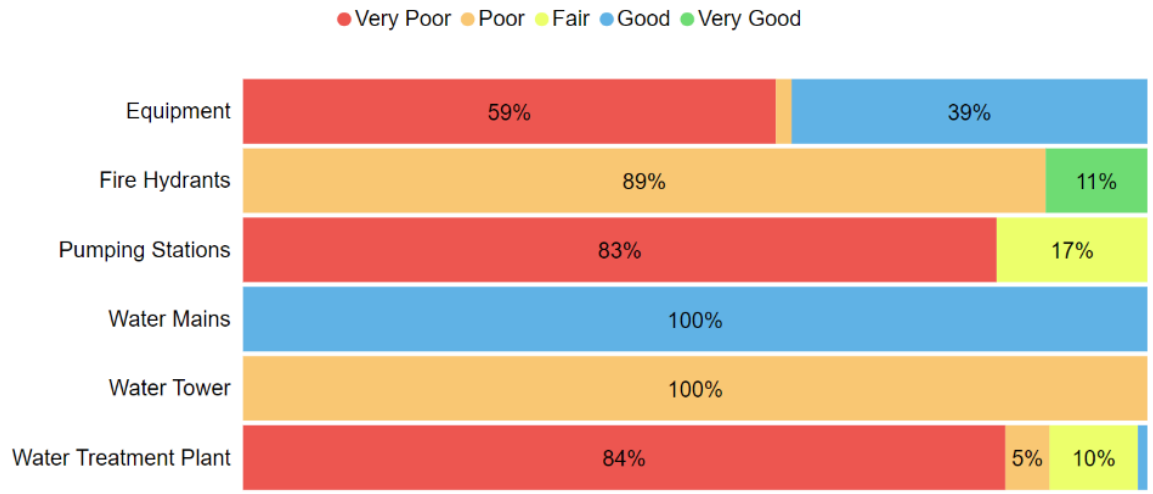
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

5.1.2 Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Equipment	10-20 years	7 Years 8 Months	26% (Poor)
Fire Hydrants	50 years	17 Years 4 Months	34% (Poor)
Pumping Stations	20-80 years	36 Years 6 Months	9% (Very Poor)
Water Mains	50 years	6 Years 3 Months	61% (Good)
Water Tower	60 years	37 Years 6 Months	38% (Poor)
Water Treatment Plant	20-80 years	39 Years 9 Months	9% (Very Poor)[2]
Average		**29 Years 10 Months**	**11% (Very Poor)**

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



To ensure that the Town's water network continues to provide an acceptable level of service, the Town should monitor the average condition of all assets. If the

[2] The condition of the water treatment plant is based on the asset's age and estimated useful life and therefore may not be accurate. Without a formal condition assessment, it is difficult to determine an accurate condition rating for the plant. According to municipal staff, the water treatment plant is likely in fair condition with a rating between 40% and 60%.

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.

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

Current Approach to Condition Assessment

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

- Staff primarily rely on the age, material, pipe size, and breaks per segment of water mains to determine the projected condition of water mains.
- Fire hydrants are assessed in accordance with NFPA guidelines.
- The water treatment plant, water tower, and pumping stations are inspected by Veolia staff on a regular basis and includes a comprehensive annual assessment.

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

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

5.1.3 Lifecycle Management Strategy

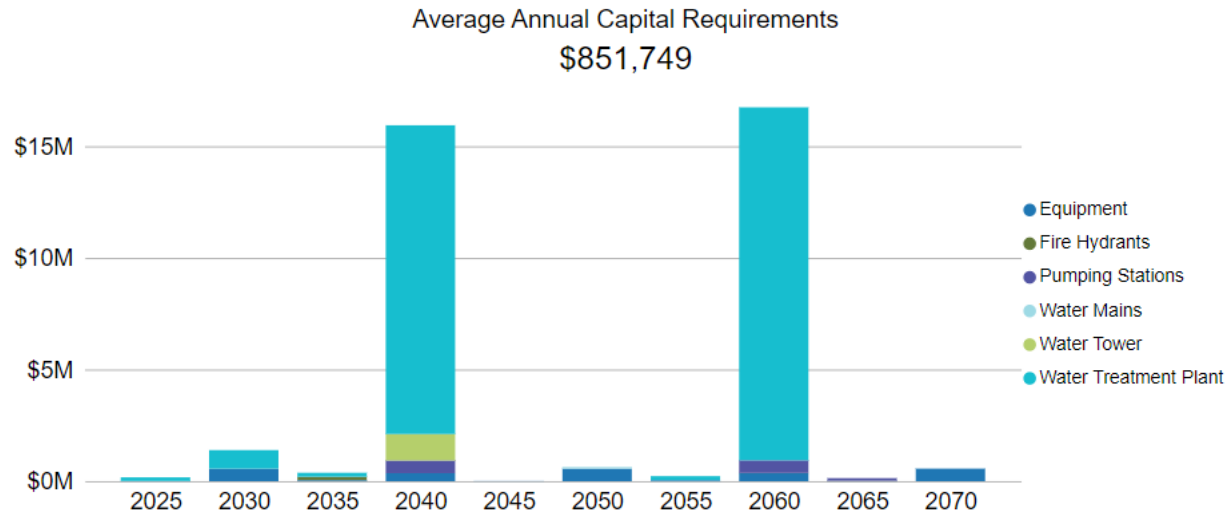
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Main flushing and valve turning exercises are completed on the network on an annual or biannual basis using in-house resources.
	Periodic pressure testing is conducted to identify deficiencies and potential leaks.
Rehabilitation	Trenchless re-lining of water mains presents significant challenges and is not always a viable option.
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 Town should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 50 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.



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.

5.1.4 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 2021 inventory data.

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

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
Service Life Remaining	

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

Risks to Current Asset Management Strategies

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

Capital Funding Strategies

The Town does not have sufficient capital funding available to meet the long-term capital requirements for the water network. The financial analysis found an annual capital deficit of over $800,000. Major capital projects may be deferred depending on the availability of grant funding opportunities. A long-term capital funding strategy can reduce dependency on grant funding and help prevent deferral of necessary capital works.

5.1.5 Levels of Service

The following tables identify the Town'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 Town 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	All water users are located in the Village of Chalk River. However, not all properties located in Chalk River are connected to the network. See Appendix C for a map of Chalk River.
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	Access to fire flow is limited to the Village of Chalk River. However, not all properties located in Chalk River are connected to the network. See Appendix C for a map of Chalk River.
Reliability	Description of boil water advisories and service interruptions	The Town has not experienced any service interruptions in 2020. The Town follows Ontario's Drinking Water Quality Management Standard (DWQMS). The Town 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	24.1%
	% of properties where fire flow is available	24.1%
Reliability	# of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	0
	# of connection-days per year where water is not available due to water main breaks compared to the total number of properties connected to the municipal water system	0
Performance	Capital re-investment rate	0.18%

5.1.6 Recommendations

Asset Inventory

- Review the watermains and hydrants in the inventory to determine whether all assets within these asset segments have been accounted for.
- The water tower and water mains each include one pooled asset that should be broken into discrete segments to allow for detailed planning and analysis. The water hydrants and pumping stations also include several pooled assets that should be further segmented.
- Review the water treatment assets to ensure the full scope of treatment assets are included in the inventory.

Condition Assessment Strategies

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

5.2 Wastewater Network

The sanitary services provided by the Town are managed and operated by Veolia and municipal staff. Veolia manages the sewage treatment plant and pumping station, and municipal staff are responsible for 12 km of sewer mains.

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

Replacement Cost	Condition	Financial Capacity	
$13.6 million	Poor (28%)	Annual Requirement:	$389,000
		Funding Available:	$25,000
		Annual Deficit:	$364,000

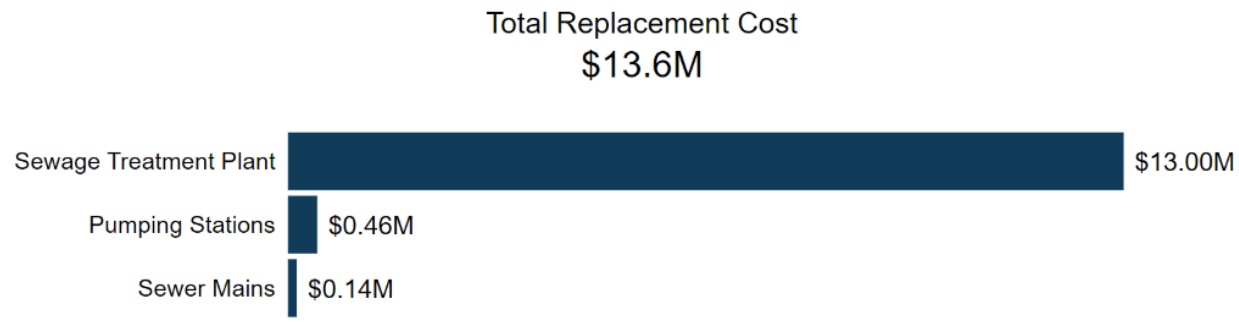
The following core values and level of service statements are a key driving force behind the Town's asset management planning.

Service Attribute	Level of Service Statement
Scope	The Municipal wastewater system is accessible to X% of the community in sufficient capacity (does not exceed maximum capacity).
Quality/Reliability	The sewer network is in good condition with minimal unplanned service interruptions due to backups and effluent violations.

5.2.1 Asset Inventory & Costs

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

Asset Segment	Quantity (Component)	Replacement Cost	Annual Capital Requirement
Pumping Station	1(3)	$455,345	$21,582
Sewage Treatment Plant	1(6)	$13,000,000	$364,282
Sewer Mains	12 km	$137,426	$2,749
Total		**$13,592,771**	**$388,613**



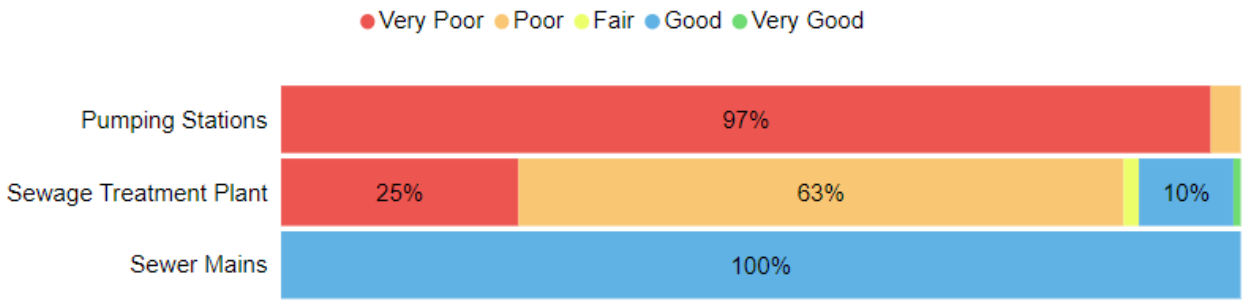
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

5.2.2 Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age	Average Condition (%)
Pumping Stations	20-60 years	36 Years 7 Months	2% (Very Poor)
Sewage Treatment Plant	10-80 years	18 Years 2 Months	29% (Poor)[3]
Sewer Mains	50 years	6 Years 3 Months	61% (Good)
Average		**24 Years 10 Months**	**28% (Poor)**

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



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

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

[3] The condition of the sewer plant is based on the asset's age and estimated useful life and therefore may not be accurate. Without a formal condition assessment, it is difficult to determine an accurate condition rating for the plant. According to municipal staff, the sewer plant is likely in fair condition with a rating between 40% and 60%.

Current Approach to Condition Assessment

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

- CCTV inspections are completed for wastewater mains on a regular cycle (100% of the network is inspected every 3 years). The Town receives video footage, but the consultant does not provide a detailed report with condition ratings.
- The wastewater treatment plant and pumping stations are inspected by Veolia staff on a regular basis which includes a comprehensive annual assessment.

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

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

5.2.3 Lifecycle Management Strategy

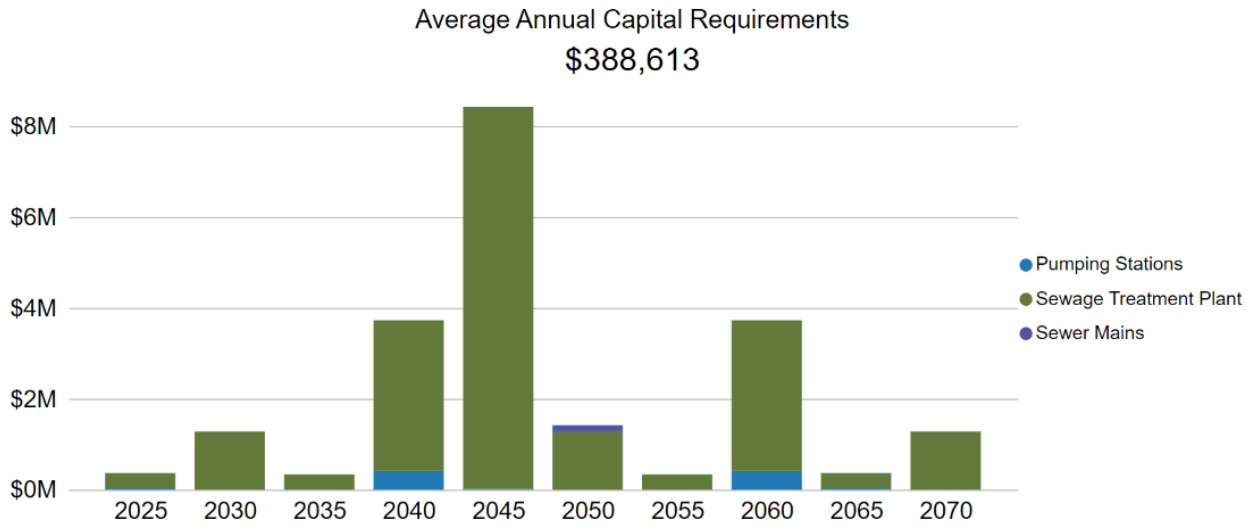
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Main flushing is completed on 100% of the wastewater network annually using in-house resources.
	Periodic pressure testing may be employed to identify deficiencies and potential leaks.
Rehabilitation	Trenchless re-lining of wastewater mains is considered for viable pipe candidates as budget and resources allow.
Replacement	In the absence of mid-lifecycle rehabilitative events, most assets are simply maintained with the goal of full replacement once they reach their end-of-life.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 50 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.



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.

5.2.4 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 2021 inventory data.

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

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
Service Life Remaining	

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

Risks to Current Asset Management Strategies

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

Growth and Network Capacity

The Town is expected to experience moderate growth. Population and employment growth will increase the demand on municipal services and potentially decrease the useful life of certain assets. The wastewater treatment plant is already exceeding capacity and will require updates in the near future. As the population continues to grow, the Town must prioritize expanding its capacity to serve a larger population. Staff are working towards developing a comprehensive long-term capital plan with considerations for growth.

5.2.5 Levels of Service

The following tables identify the Town'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 Town 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	All wastewater users are located in the Village of Chalk River. However, not all properties located in Chalk River are connected to the network. See Appendix C for a map of Chalk River.
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 Town 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 Town 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 wastewater sewers due to cracks in wastewater mains or through indirect connections (e.g. weeping tiles). In the case of heavy rainfall events, wastewater sewers may experience a volume of water and sewage that exceeds its designed capacity. In some cases, this can cause water

Service Attribute	Qualitative Description	Current LOS (2020)
		and/or sewage to overflow backup into homes. the disconnection of weeping tiles from wastewater mains and the use of sump pumps and pits directing storm water to the storm drain system can help to reduce the chance of this occurring.
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	The Town follows a series of design standards that integrate servicing requirements and land use considerations when constructing or replacing wastewater 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	22.4%
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	Capital re-investment rate	0.18%

5.2.6 Recommendations

Asset Inventory

- Review the sanitary sewer mains in the inventory to determine whether all municipal assets within these asset segments have been accounted for. The sewer mains inventory includes one pooled asset that should be broken into discrete segments to allow for improved location markers and lifecycle strategies.
- Review the wastewater treatment assets to ensure the full scope of inventory is included. Upgrades and repairs to assets should be incorporated as improvements, rather than stand-alone assets.

Condition Strategies

- Consider determining asset condition from CCTV inspections to improve lifecycle strategies and the accuracy of capital planning.

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

- A trenchless re-lining strategy is expected to extend the service life of sanitary mains at a lower total cost of ownership and should be implemented to extend the life of infrastructure at the lowest total cost of ownership.
- Evaluate the efficacy of the Town’s lifecycle management strategies at regular intervals to determine the impact cost, condition, and risk.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics that the Town has established in this AMP.
- 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 Town to more effectively plan for new infrastructure, and the upgrade or disposal of existing infrastructure
- Moderate population 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 Town to 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 County of Renfrew Official Plan (March 2020)

The County of Renfrew adopted an Official Plan in 2002 to provide a policy framework for growth and development. Updates to the Official Plan were adopted in 2020. Several municipalities in the county, including Laurentian Hills, have decided to utilize the County Official Plan as their detailed Official Plan.

A key objective defined in the plan includes the promotion of efficient and cost-effective development to sustain long-term financial well-being and ensure the financial viability of infrastructure and public services. The Plan also states that infrastructure and public services shall be provided in a coordinated, efficient, and cost-effective manner through asset management planning.

Efficient and cost-effective development are important in the management of residential, commercial, and industrial growth. The County plans to foster efficient growth through a number of initiatives, including improved telecommunication infrastructure, the development of brownfields, the development of the tourism sector, and the development of new transportation infrastructure to enhance highway access to the county and local municipalities.

Significant population growth is projected in the County of Renfrew. The County is projected to grow by 24% between 2011 and 2036, increasing the population from 86,534 to 107,245, under a high growth scenario. The Town of Laurentian Hills only accounts for 0.6% of the growth in the County. The following table shows the population growth projections for the Town of Laurentian Hills based on the 2011 population of 2,811.

Scenario	2016	2021	2026	2031	2036
Low Growth	2825	2839	2853	2868	2882
High Growth	2853	2896	2940	2985	3030

According to the most recent census data from 2016 and 2021, the growth assumptions in the Official Plan are relatively accurate. The actual population in the Town of Laurentian Hills was recorded as 2,961 in 2016 and 2,885 in 2021.

Between 2011 and 2016, there was a population increase of 5.3% followed by a decline of 2.6% between 2016 and 2021. As the population continues to fluctuate in the Town, it is important to monitor the impact of growth and demographic changes on the asset management program.

6.2 Impact of Growth on Lifecycle Activities

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

As the Town's population is expected to trend upwards with potential increase and decreases in the coming years, demand will evolve, and it is likely that funding will need to be reprioritized. As growth-related assets are constructed, retired, or acquired, they should be integrated into the AMP. Furthermore, the Town will need to review the lifecycle costs of growth-related infrastructure. These costs should be considered in long-term funding strategies that are designed to, at a minimum, maintain the current level of service.

7 Financial Strategy

Key Insights

- The Town is committing approximately $492,000 towards capital projects per year from sustainable revenue sources
- Given the annual capital requirement of $2.1 million there is currently a funding gap of $1.6 million annually
- For tax-funded assets, we recommend increasing tax revenues by 1.1% each year for the next 10 years to achieve a sustainable level of funding
- For the water network, we recommend increasing rate revenues by 7.2% annually for the next 20 years to achieve a sustainable level of funding
- For the wastewater network, we recommend increasing rate revenues by 4.3% 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 Town of Laurentian Hills to identify the financial resources required for sustainable asset management based on existing asset inventories, desired levels of service, and projected growth requirements.

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

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

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

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

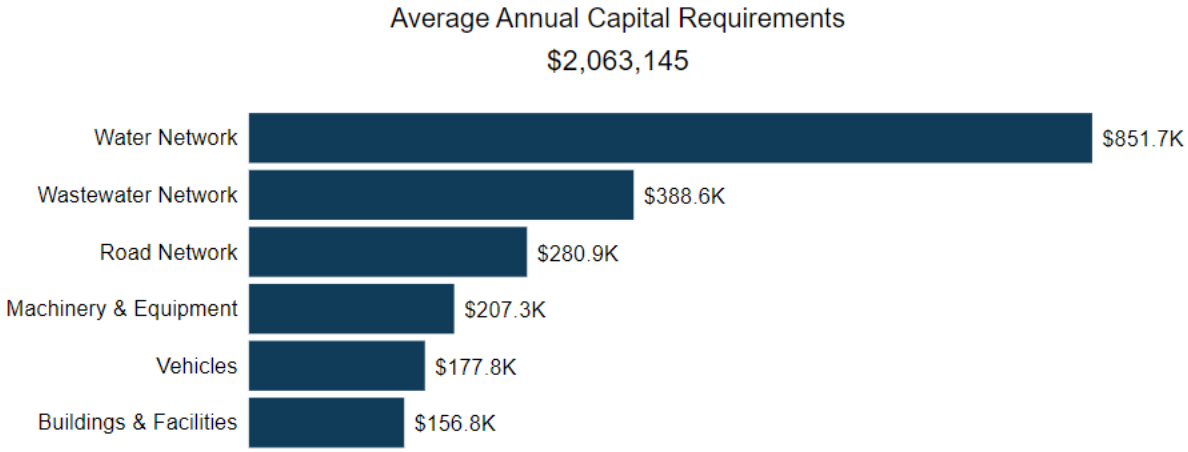
1. In order to reduce financial requirements, consideration has been given to revising service levels downward.

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

7.1.1 Annual Requirements & Capital Funding

Annual Requirements

The annual requirements represent the amount the Town should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs and achieve long-term sustainability. In total, the Town must allocate approximately $2.1 million annually to address capital requirements for the assets included in this AMP.



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

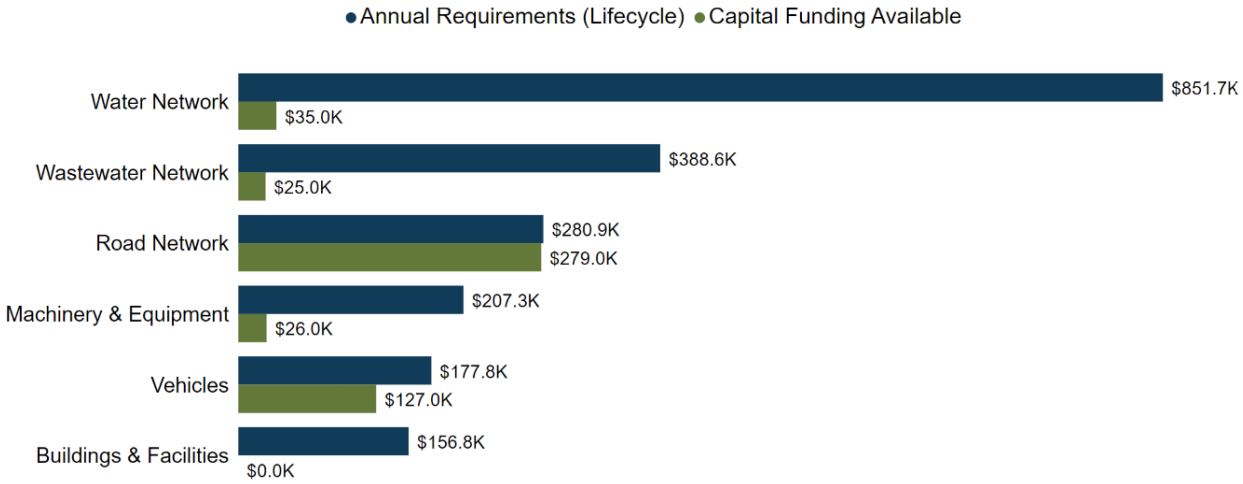
However, for the road network, lifecycle management strategies have been developed to identify capital costs that are realized through strategic rehabilitation and renewal of the Town's paved roads. The development of these strategies allows for a comparison of potential cost avoidance if the strategies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

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

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

Asset Category	Annual Requirements (Replacement Only)	Annual Requirements (Lifecycle Strategy)	Difference
Road Network	$308,184	$280,894	$27,290

The implementation of a proactive lifecycle strategy for roads leads to a potential annual cost avoidance of $27,290 for the road network. This represents an overall reduction of the annual requirements by 10%. As the lifecycle strategy scenario represents the lowest cost option available to the Town, we have used this annual requirement in the development of the financial strategy.



Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately $492,000 towards capital projects per year from sustainable revenue sources. Given the annual capital requirement of $2,063,000, there is currently a funding gap of $1,572,000 annually.

7.2 Funding Objective

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

1. **Tax Funded Assets:** Road Network, Buildings & Facilities, Machinery & Equipment, 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, Laurentian Hills' 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	157,000	0	0	0	0	157,000
Buildings & Facilities	207,000	26,000	0	0	26,000	181,000
Machinery & Equipment	206,000	124,000	90,000	15,000	124,000	82,000
Vehicles	178,000	127,000	0	0	127,000	51,000
Total	**823,000**	**327,000**	**90,000**	**15,000**	**432,000**	**391,000**

The average annual investment requirement for the above categories is $823,000. Annual revenue currently allocated to these assets for capital purposes is $432,000 leaving an annual deficit of $391,000. Put differently, these infrastructure categories are currently funded at 53% of their long-term requirements.

7.3.2 Full Funding Requirements

In 2021, Town of Laurentian Hills has annual tax revenues of $3,527,000. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

Asset Category	Tax Change Required for Full Funding
Road Network	4.5%
Buildings & Facilities	5.1%
Machinery & Equipment	0.1%
Vehicles	1.4%
Total	**11.1%**

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	391,000	391,000	391,000	391,000	391,000	391,000	391,000	391,000
Change in Debt Costs	N/A	N/A	N/A	N/A	0	0	0	0
Change in OCIF Grants	N/A	N/A	N/A	N/A	0	0	0	0
Resulting Infrastructure Deficit	391,000	391,000	391,000	391,000	391,000	391,000	391,000	391,000
Tax Increase Required	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%	11.1%
Annually	2.2%	1.1%	0.8%	0.6%	2.2%	1.1%	0.8%	0.6%

7.3.3 Financial Strategy Recommendations

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

a) increasing tax revenue by 1.1% each year for the next 10 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
b) adjusting tax revenue increases in future year(s) when allocations to capital expenditure exceed or fail to meet budgeted amounts.
c) allocating the current gas tax and OCIF revenue as outlined previously.
d) allocating the scheduled OCIF grant increases to the infrastructure deficit as they occur.
e) reallocating appropriate revenue from categories in a surplus position to those in a deficit position.
f) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included OCIF formula-based funding, if applicable, since this funding is a multi-year commitment[4].
2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.

Although this option achieves full capital expenditure funding on an annual basis in 10 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of $86,000 for the Buildings & Facilities, $395,000 for Machinery & Equipment, $624,000 for the Road Network, and $391,000 for the Vehicles.
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.

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

7.4 Financial Profile: Rate Funded Assets

7.4.1 Current Funding Position

The following tables show, by asset category, Laurentian Hills' 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	852,000	272,000	-272,000	35,000	35,000	817,000
Wastewater Network	389,000	276,000	-251,000	0	25,000	364,000
	1,241,000	**548,000**	**-523,000**	**35,000**	**60,000**	**1,181,000**

The average annual investment requirement for the above categories is $1,241,000. Annual revenue currently allocated to these assets for capital purposes is $60,000 leaving an annual deficit of $1,181,000. Put differently, these infrastructure categories are currently funded at 5% of their long-term requirements.

7.4.2 Full Funding Requirements

In 2021, Laurentian Hills had annual wastewater revenues of $276,000 and annual water revenues of $272,000. As illustrated in the table below, without consideration of any other sources of revenue, full funding would require the following changes over time:

Asset Category	Rate Change Required for Full Funding
Water Network	300.4%
Wastewater Network	131.9%

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

	Water Network				Wastewater Network			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	817,000	817,000	817,000	817,000	364,000	364,000	364,000	364,000
Rate Increase Required	300.4%	300.4%	300.4%	300.4%	131.9%	131.9%	131.9%	131.9%
Annually:	32.0%	14.9%	9.7%	7.2%	18.4%	8.8%	5.8%	4.3%

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) Increasing rate revenues by 7.2% for the Water Network and by 4.3% for the Wastewater Network each year for the next 20 years.
b) these rate revenue increases are solely for the purpose of phasing in full funding to the respective asset categories covered in this AMP.
c) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

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

Although this strategy achieves full capital expenditure funding for rate-funded assets over 10 years, the recommendation does require prioritizing capital projects to fit the annual funding available. Current data shows a pent-up investment demand of $11,349,000 for the Water Network and $3,628,000 for the Wastewater Network.

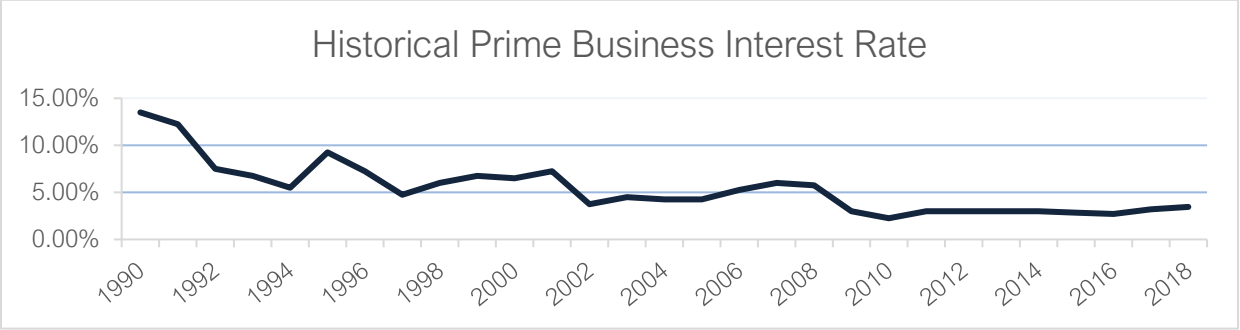
Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

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 $1 million project financed at 3.0%[5] 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:



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.

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

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 Laurentian Hills.

Asset Category	Balance on December 31, 2021
Road Network	1,100,000
Buildings & Facilities	1,554,000
Machinery & Equipment	764,000
Vehicles	450,000
Total Tax Funded	**3,868,000**
Water Network	524,000
Wastewater Network	716,000
Total Rate Funded	**1,240,000**

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

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

These reserves are available for use by applicable asset categories during the phase-in period to full funding. This coupled with Laurentian Hills' 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 Laurentian Hills 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 provides additional guidance on the development of a condition assessment program

Appendix A: Infrastructure Report Card

Asset Category	Replacement Cost (millions)	Asset Condition	Financial Capacity	
Road Network	$5.5	Fair	Annual Requirement:	$281,000
			Funding Available:	$279,000
			Annual Deficit:	**$2,000**
Buildings & Facilities	$6.8	Very Good	Annual Requirement:	$157,000
			Funding Available:	$0
			Annual Deficit:	**$157,000**
Machinery & Equipment	$2.9	Good	Annual Requirement:	$207,000
			Funding Available:	$26,000
			Annual Deficit:	**$181,000**
Vehicles	$2.8	Fair	Annual Requirement:	$178,000
			Funding Available:	$127,000
			Annual Deficit:	**$51,000**
Water Network	$19.7	Good	Annual Requirement:	$852,000
			Funding Available:	$35,000
			Annual Deficit:	**$817,000**
Wastewater Network	$13.6	Fair	Annual Requirement:	$389,000
			Funding Available:	$25,000
			Annual Deficit:	**$364,000**
Overall	$51.2	Fair	Annual Requirement:	$2,064,000
			Funding Available:	$492,000
			Annual Deficit:	**$1,572,000**

Appendix B: 10-Year Capital Requirements

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

Road Network											
Asset Segment	Backlog	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Culverts	$164,038	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Paved Surface (HCB)	$0	$2,525	$108,922	$1,270	$24,766	$239,362	$27,725	$354,764	$1,270	$309,404	$19,762
Paved Surface (LCB)	$0	$0	$22,082	$46,408	$439,758	$72,871	$4,416	$0	$0	$0	$144,655
Pedestrian Bridges	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Streetlighting	$460,297	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	$624,335	$2,525	$131,004	$47,678	$464,524	$312,233	$32,141	$354,764	$1,270	$309,404	$164,417

Buildings & Facilities											
Asset Segment	Backlog	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Fire	$17,521	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Land Improvements	$68,112	$0	$0	$0	$0	$0	$0	$0	$0	$256,018	$0
Landfill	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Libraries	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Municipal	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Public Works	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Recreation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$131,642	$0
Total:	$85,633	$0	$0	$0	$0	$0	$0	$0	$0	$387,660	$0

Vehicles											
Asset Segment	Backlog	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Fire Vehicles	$350,000	$0	$0	$0	$0	$0	$0	$0	$0	$43,355	$0
Public Works Vehicles	$41,203	$0	$31,466	$270,090	$471,616	$58,074	$0	$0	$302,754	$0	$0
Total:	$391,203	$0	$31,466	$270,090	$471,616	$58,074	$0	$0	$302,754	$43,355	$0

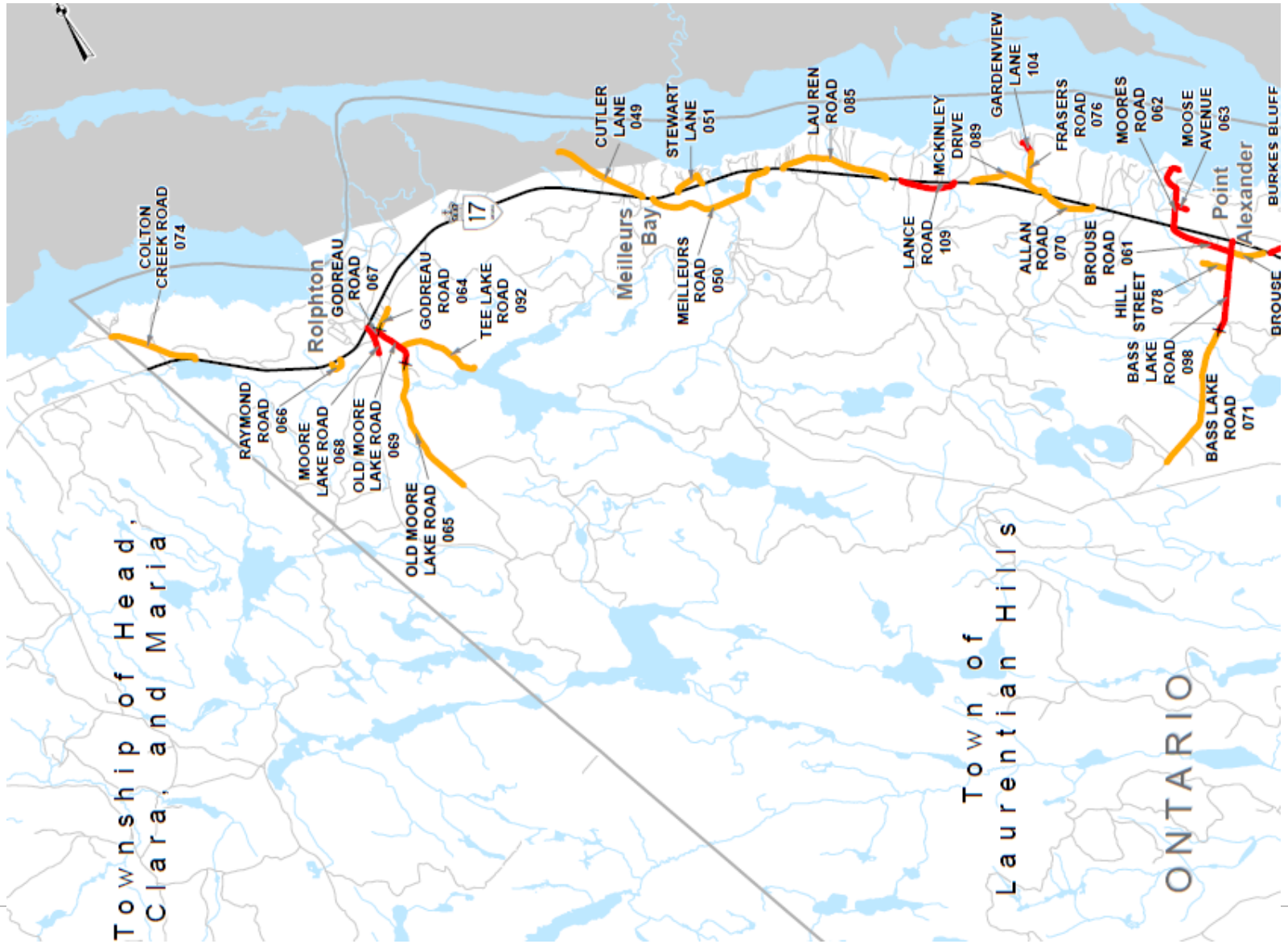
Machinery & Equipment											
Asset Segment	Backlog	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Fire	$325,937	$88,523	$0	$73,300	$4,453	$15,261	$56,410	$26,382	$76,462	$0	$0
Municipal	$0	$0	$0	$0	$0	$58,043	$0	$0	$0	$0	$58,043
Public Works	$63,278	$0	$8,937	$0	$0	$0	$0	$0	$634,377	$5,374	$0
Recreation	$6,147	$0	$0	$0	$0	$21,156	$41,780	$14,417	$104,060	$0	$0
Total:	$395,362	$88,523	$8,937	$73,300	$4,453	$94,460	$98,190	$40,799	$814,899	$5,374	$58,043

Water Network											
Asset Segment	Backlog	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Equipment	$0	$358,995	$0	$0	$0	$10,692	$0	$0	$0	$0	$0
Fire Hydrants	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Pumping Stations	$568,720	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Mains	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Tower	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Treatment Plant	$10,780,630	$0	$0	$3,368,421	$0	$0	$0	$0	$160,579	$0	$0
Total:	$11,349,350	$358,995	$0	$3,368,421	$0	$10,692	$0	$0	$160,579	$0	$0

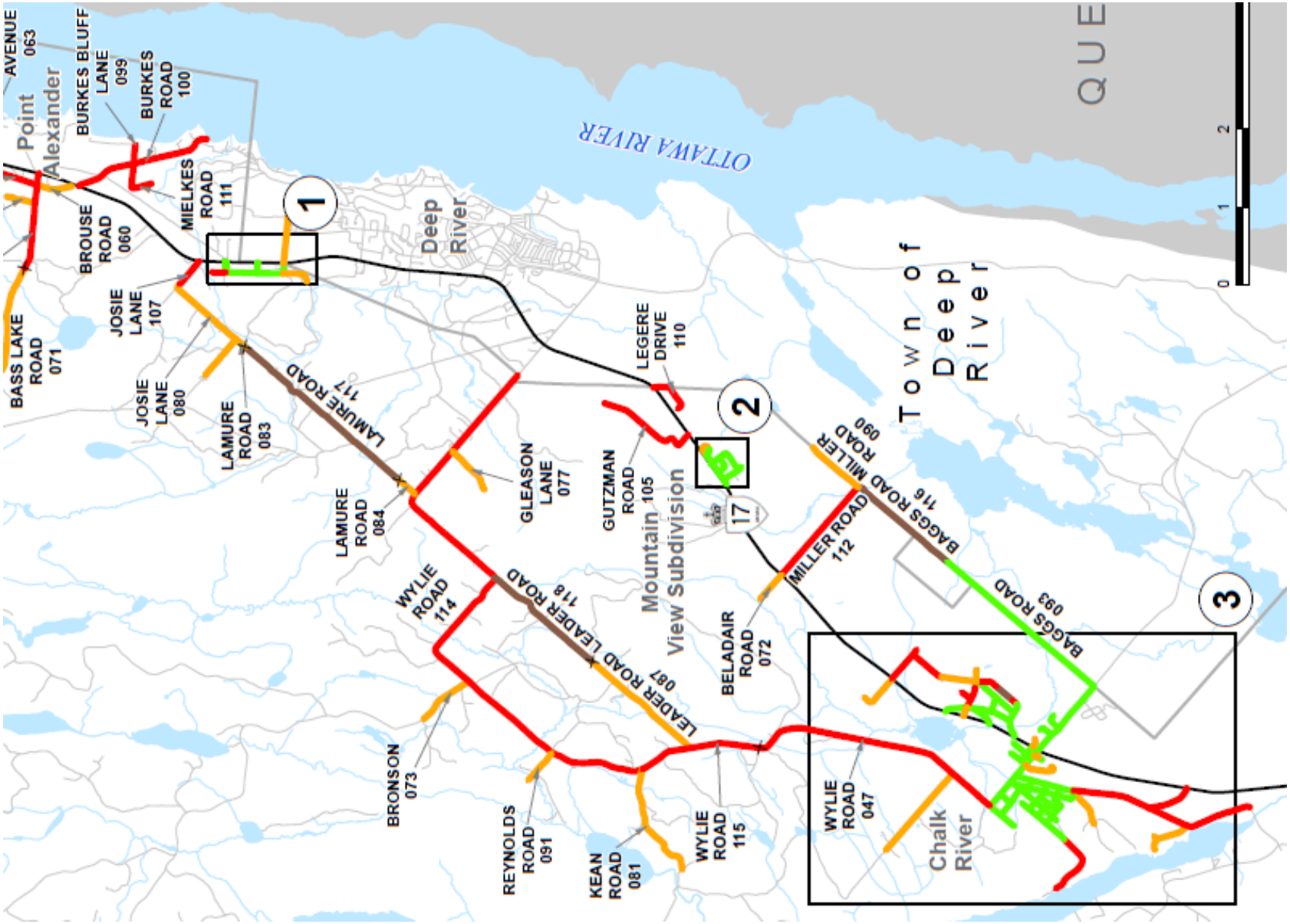
Wastewater Network											
Asset Segment	Backlog	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Pumping Stations	$412,691	$0	$0	$0	$0	$28,436	$0	$0	$0	$0	$0
Sewage Treatment Plant	$3,214,877	$0	$0	$0	$0	$129,123	$208,099	$0	$0	$0	$0
Sewer Mains	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total:	$3,627,568	$0	$0	$0	$0	$157,559	$208,099	$0	$0	$0	$0

Appendix C: Level of Service Maps

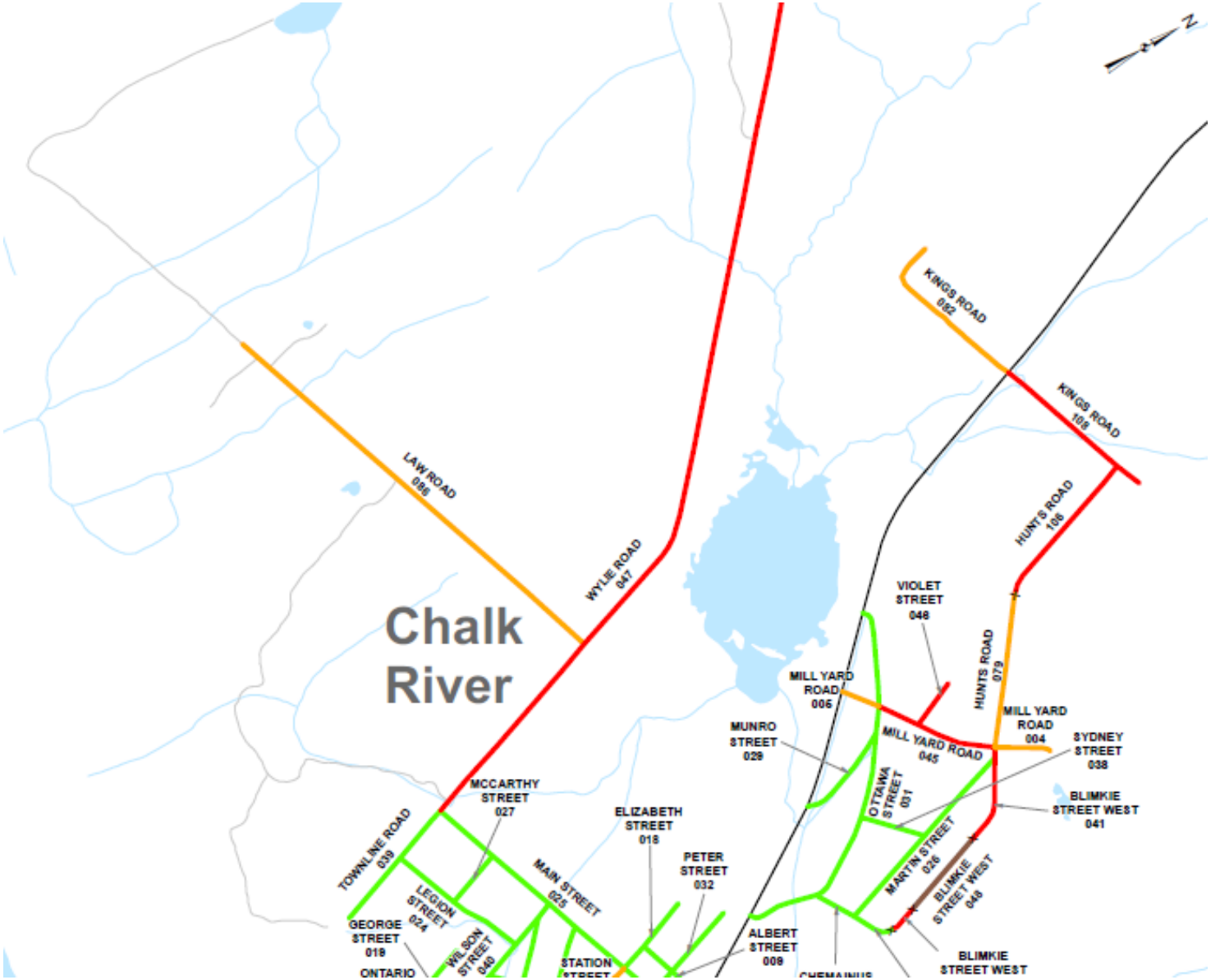
Road Network Map: Town of Laurentian Hills (Part 1)



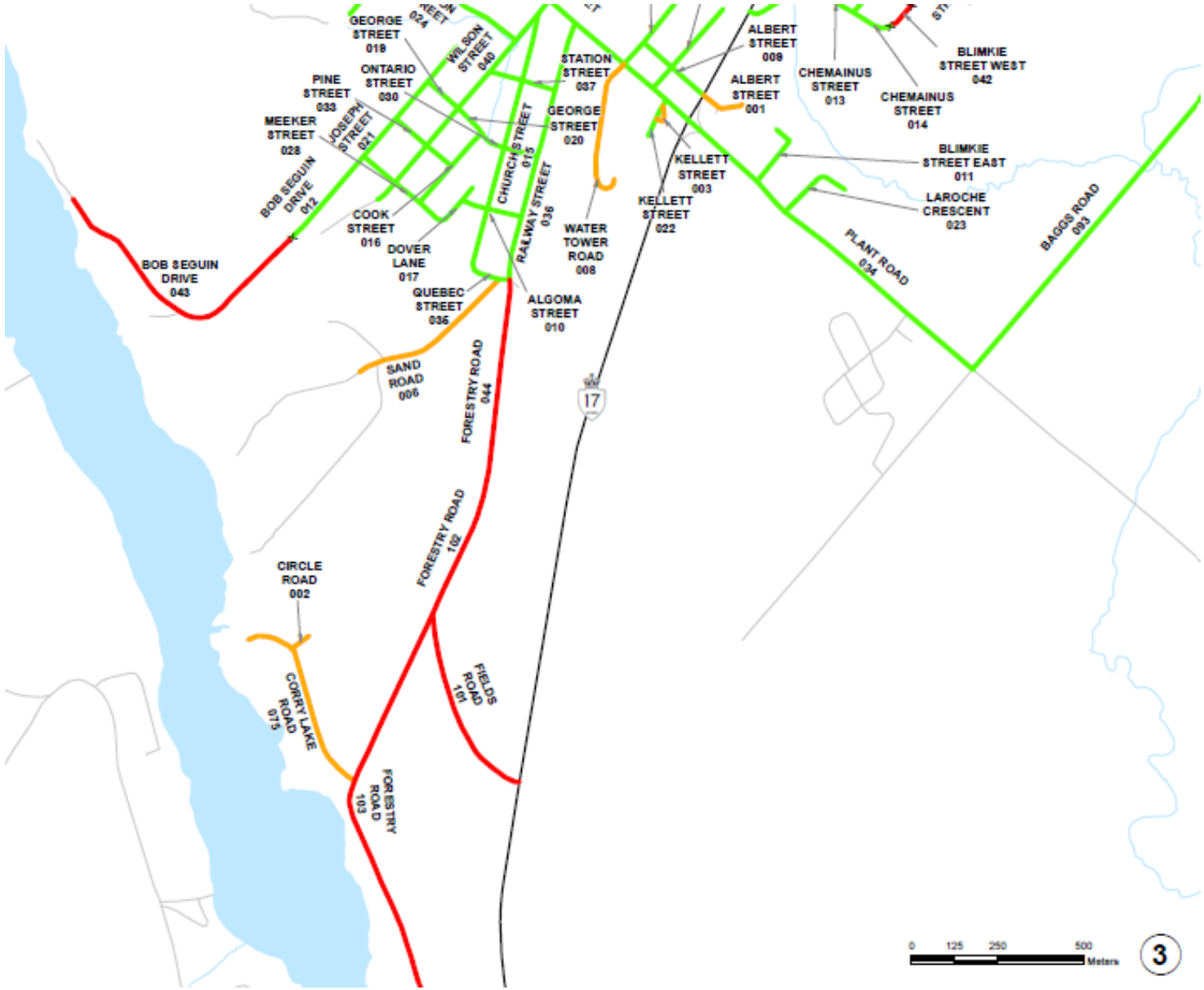
Road Network Map: Town of Laurentian Hills (Part 2)



Road Network Map: Village of Chalk River (Part 1)



Road Network Map: Village of Chalk River (Part 2)



Appendix D: Condition Assessment Guidelines

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

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

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

Role of Asset Condition Data

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

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

Guidelines for Condition Assessment

Whether completed by external consultants or internal staff, condition assessments should be completed in a structured and repeatable fashion, according to consistent and objective assessment criteria. Without proper guidelines for the completion of

condition assessments there can be little confidence in the validity of condition data and asset management strategies based on this data.

Condition assessments must include a quantitative or qualitative assessment of the current condition of the asset, collected according to specified condition rating criteria, in a format that can be used for asset management decision-making. As a result, it is important that staff adequately define the condition rating criteria that should be used and the assets that require a discrete condition rating. When engaging with external consultants to complete condition assessments, it is critical that these details are communicated as part of the contractual terms of the project. There are many options available to the Town to complete condition assessments. In some cases, external consultants may need to be engaged to complete detailed technical assessments of infrastructure. In other cases, internal staff may have sufficient expertise or training to complete condition assessments.

Developing a Condition Assessment Schedule

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

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

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