Asset Management Plan

Town of Blind River

2021

This Asset Management Plan was prepared by:

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

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."

Key Statistics

Replacement cost of asset portfolio
$299.4 million

Replacement cost of infrastructure per capita
$85,551 (2016)

Percentage of assets in fair or better condition
31%

Age-based backlog
$61 million

Annual capital infrastructure deficit
$2.8 million

Recommended timeframe for eliminating annual infrastructure deficit
20 Years

Target reinvestment rate
2.8%

Actual reinvestment rate
1.2%

Table of Contents

This asset management plan (AMP) for the Town of Blind River is developed in accordance with Ontario Regulation 588/17 (“O. Reg”). It includes key elements of an industry-standard and regulation compliant AMP, including state of the infrastructure, lifecycle, risk, and levels of service. Although not required through O. Reg, a financial strategy has also been developed to provide a path for the Town to address infrastructure funding gaps over the long term.

Although the 2022 reporting deadline under O. Reg applies only to core infrastructure, this AMP exceeds these requirements by including additional, high-level analysis of all asset classes. 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.

The Town’s current infrastructure portfolio is valued at nearly **$300 million**. Core assets, which comprise a comprehensive road network, bridges and culverts, water distribution, waste, and stormwater treatment and conveyance infrastructure are valued at $253.3 million; non-core assets made up of buildings, land improvements, and various machinery and equipment assets have a current replacement cost of $46.1 million.

Asset Categories in this AMP

- Road Network
- Bridges & Culverts
- Stormwater Network
- Water Network
- Sanitary

Key Findings

Collectively, 68% of the Town's core and non-core assets are in poor or worse condition, based on a combination of age and field condition data. As assets age and their condition deteriorates, they will require replacement or significant rehabilitation. Generally, age misstates the true condition of assets, making condition assessments essential to accurate asset management planning and a core element of an asset management program.

The Town's transportation network of bridges, culverts, and roadways, is generally in fair to very good condition, supporting vital residential and commercial traffic flow, and local economic activity. Water services assets represent the largest share of the Town's asset portfolio, with a current replacement value of $117 million. Age-based data suggests that the vast majority, 72%, of watermains have reached or exceeded their estimated design life. This is consistent across other underground utilities, namely storm and sanitary linear assets.

Although asset performance typically deteriorates rapidly as they enter the latter stages of their lifecycle, the useful life of the Town's water, sanitary, and storm mains may be understated and should be reviewed for better alignment with in-field performance. Increases in useful life would reduce the annual funding requirements and lower the targe reinvestment rate for these assets.

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 $8.3 million. Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately $3.5 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $4.8 million.

To close this funding gap, the financial strategy recommends a 3.2% annual tax increase solely for the purpose of phasing in full funding to the asset categories in this AMP. At this rate, the Town is expected to meet the average annual capital requirements for its existing infrastructure over the next 20 years. This approach also stipulates that the Town capture any debt reduction and allocate these potential cost savings toward infrastructure.

We note that since the last iteration of its AMP, the Town has made substantial advancements in the quality and comprehensiveness of its data sets, adding further credibility in forecasting and planning.

Although data can always improve, the Town's current asset inventory allows staff to pivot toward more advanced asset management practices over the next few years. In addition to the recommended financial approach to closing infrastructure funding gaps, further advancements in risk modeling and levels of service analysis are warranted. Risk is an integral component of asset management.

Together with a robust levels of service framework that establishes current performance measurements for all asset categories, risk assessments should be used to prioritize optimal lifecycle strategies across the Town's infrastructure portfolio, from maintenance and renewal, to replacement projects.

1 Introduction & Context

Key Insights

1. 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

2. The Town's asset management policy provides clear direction to staff on their roles and responsibilities regarding asset management

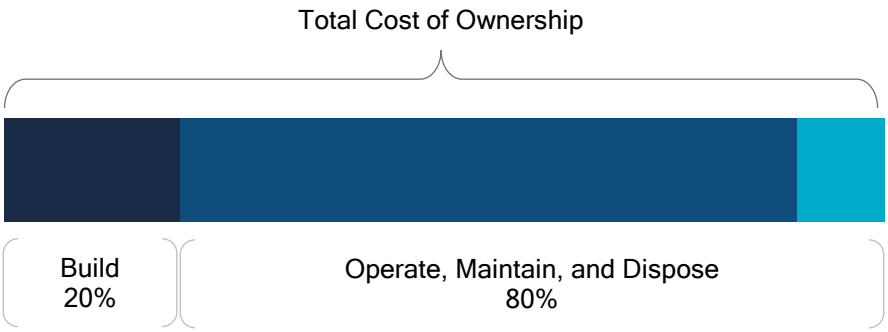
3. An asset management plan is a living document that should be updated regularly to inform long-term planning

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

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 a 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.

Asset Management Policy

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

All municipalities were required to develop and adopt an asset management policy in 2019 in compliance with Ontario Regulation 588/17.

Asset Management Strategy

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

The Town's Asset Management Strategy, developed in 2021, 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. By completing it, Blind River's approach to asset management is now fully consistent with industry standards.

Asset Management Plan

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

5. State of Infrastructure
6. Asset Management Strategies
7. Levels of Service
8. Financial Strategies

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

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.

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.

Risk and Criticality

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

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

In 2022, the Town will develop its first risk frameworks. These frameworks will allow staff to build quantitative models that are integrated with the Town's asset register and can assist in prioritizing projects and better allocating limited funds.

Probability of Failure

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

Consequence of Failure

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

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

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

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.

Levels of Service

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

The Town measures the level of service provided at two levels: Community Levels of Service, and Technical Levels of Service. At this stage, only those LOS that are required under O. Reg are included. In 2022, the Town will also complete a levels of service framework that will identify other essential KPIs that staff can use to track progress of infrastructure programs.

Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories (Roads, Bridges &

Culverts, Water, Wastewater, Stormwater) the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in this AMP.

Technical Levels of Service

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

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

Current and Proposed Levels of Service

This AMP focuses on measuring the current level of service provided to the community. Once current levels of service have been measured, the 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.

Ontario Regulation 588/17

As part of the *Infrastructure for Jobs and Prosperity Act, 2015*, the Ontario government introduced Regulation 588/17 - Asset Management Planning for Municipal Infrastructure (O. Reg 588/17). Along with creating better performing organizations, more liveable and sustainable communities, the regulation is a key, mandated driver of asset management planning and reporting. It places substantial emphasis on current and proposed levels of service and the lifecycle costs incurred in delivering them.

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

2019

Strategic Asset Management Policy

2022

Asset Management Plan for Core Assets with the following components:

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

2024

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

2025

Asset Management Policy Update and an
Asset Management Plan for All Assets with the following additional components:

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

O. Reg. 588/17 Compliance Review

The following table identifies the requirements outlined in Ontario Regulation 588/17 for municipalities to meet by July 1, 2022. Although the majority of analysis contained in this AMP applies to core assets only, for full context, the financial strategy contains key data for non-core assets.

Requirement	O. Reg. Section	Status
Summary of assets in each category	S.5(2), 3(i)	Complete for Core Assets Only
Replacement cost of assets in each category	S.5(2), 3(ii)	Complete for Core Assets Only
Average age of assets in each category	S.5(2), 3(iii)	Complete for Core Assets Only
Condition of core assets in each category	S.5(2), 3(iv)	Complete for Core Assets Only
Description of municipality's approach to assessing the condition of assets in each category	S.5(2), 3(v)	Complete for Core Assets Only
Current levels of service in each category	S.5(2), 1(i-ii)	Complete for Core Assets Only
Current performance measures in each category	S.5(2), 2	Complete for Core Assets Only
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	Complete for Core Assets Only
Costs of providing lifecycle activities for 10 years	S.5(2), 4	Complete for Core Assets Only
Growth assumptions	S.5(2), 5(i-ii) S.5(2), 6(i-vi)	Complete

Asset Management Roadmap

As part of PSD's Asset Management Roadmap, the Town of Blind River committed to taking the necessary steps towards developing a systemic, sustainable and intelligently-structured asset management program. This process involved the collaboration of PSD's industry-leading asset management team with municipal staff over a multi-year engagement. The following summarizes key milestones/deliverables achieved throughout this project.

Asset Management Strategy (Completed in 2021)
The strategy provided an audit of the existing asset management capacity and competency and outlined strategic recommendations to improve the Town's asset management program.

Condition Assessment Program Development (Expected in Q1 2022)
Town staff will receive training on the development of condition assessment strategies for municipal assets. This included condition assessment guidelines as well as data collection templates to ensure asset condition data is collected consistently and updated regularly.

Asset Data Review and Refinement (Completed in 2021)
The Town's asset inventory was developed in 2021 with current asset records. Additional asset data, including condition and physical attributes where available, were also appended to each asset record.

Risk and Criticality Model Development (Expected Q1 2022)
Risk models were developed to determine the relative criticality of assets based on their probability and consequence of failure. These models assist with the prioritization and ranking of infrastructure needs.

Lifecycle Model Development (Completed in 2021)
The Town's lifecycle management strategies were reviewed and documented to determine current practices and identify opportunities for improvement and potential cost avoidance.

Level of Service Framework Development (Expected Q1 2022)
A centralized framework will be developed to capture current performance of the Town's infrastructure program using recommended key performance indicators (KPI). The framework will include an Excel worksheet and companion documentation.

AMP & Financial Strategy

This document was developed in compliance with the regulatory requirements under O. Reg 588/17.

2 Scope and Methodology

Key Insights

9. This asset management plan includes detailed analysis on the Town's five core asset categories: roads, bridges and culverts, water, wastewater, and stormwater. High level data is also included for non-core assets.

10. The source and recency of replacement costs impacts the accuracy and reliability of asset portfolio valuation. Updated replacement costs were developed in collaboration with staff and appended to major asset records in the Town's asset inventory.

11. 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.

Asset categories included in this AMP

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

The AMP summarizes the state of the infrastructure for the 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 Capital Funding
Road Network	Tax Levy
Bridges & Culverts	
Stormwater Network	
Water Network	
Sanitary Sewer Network	

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:

12. **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
13. **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.

Estimated Useful Life and Service Life Remaining

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

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:

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

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

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.

3 Portfolio Overview

Key Insights

14. The total replacement cost of the Town's asset portfolio is $300 million, including core and non-core assets. Core assets are valued at $253.3 million. Brief, high-level analysis is offered for non-core assets to provide additional context.

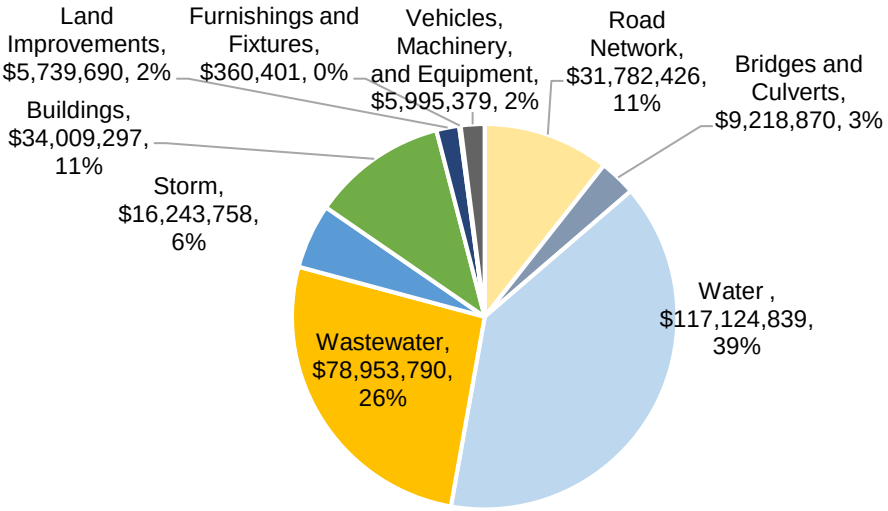
15. Average annual capital requirements total $8.3 million per year across all assets.

16. The Town's target re-investment rate is 2.8%; the actual re-investment rate is 1.2%, contributing to an expanding infrastructure deficit.

17. Only 32% of all assets are in fair or better condition, based on a combination of age, and actual field data.

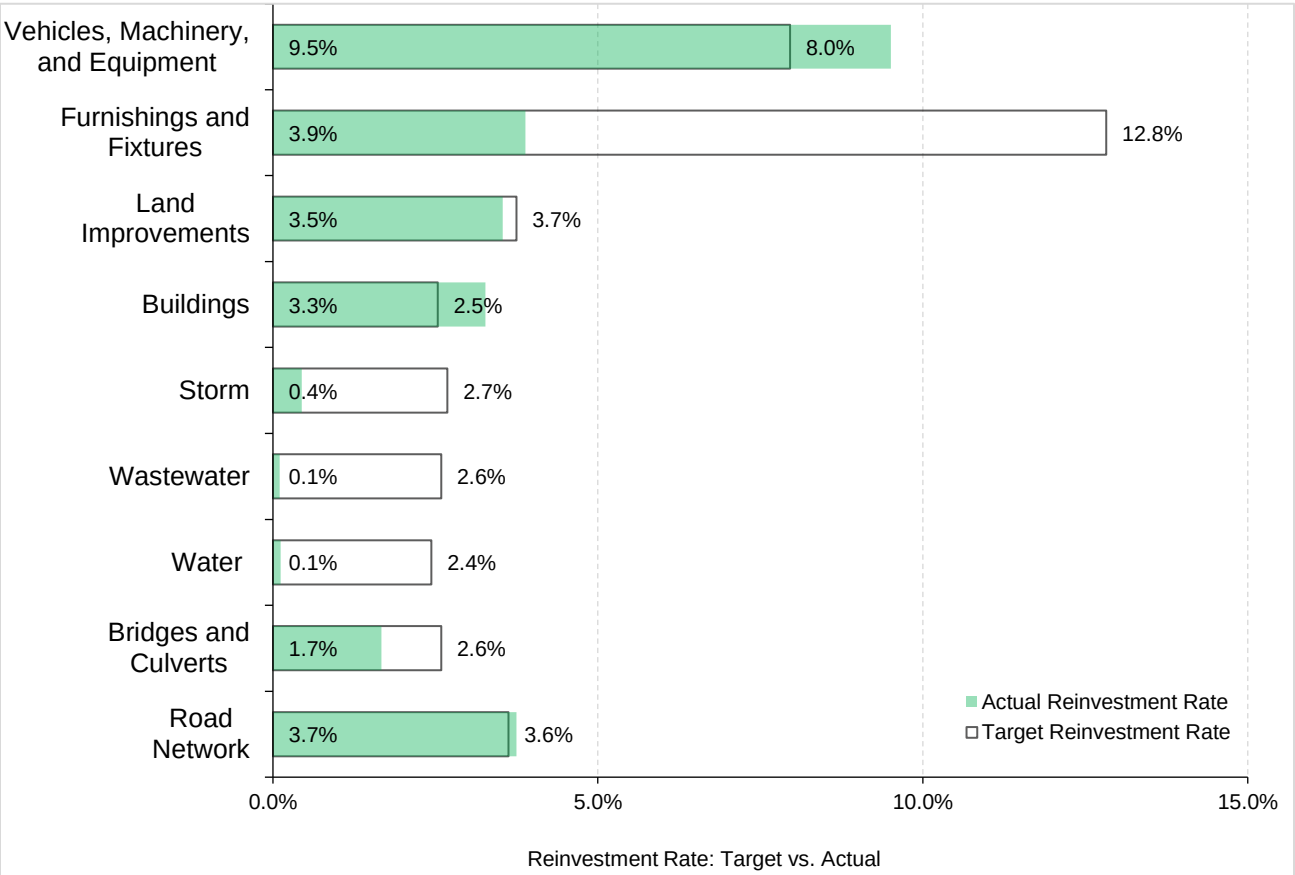
Total Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of $300 million based on inventory data developed in 2021. Of this, core assets are valued at $253.3 million, or 85%. This total was determined based on a combination of user-defined costs, cost per unit estimates, and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.



Target vs. Actual Reinvestment Rate

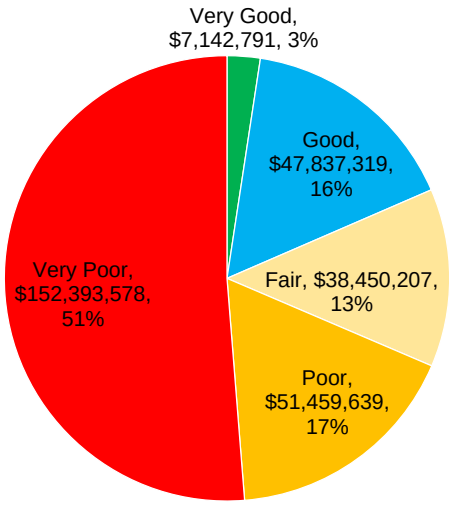
The graph below depicts funding gaps or surpluses by comparing target vs actual reinvestment rates for each asset category. To meet the long-term replacement needs, the Town should be allocating approximately $8.3 million annually, for a target reinvestment rate of 2.8%. Actual annual spending on infrastructure totals approximately $3.5 million, for an actual reinvestment rate of 1.2%. For some asset categories, namely vehicles, machinery, equipment, buildings, and roads, the actual reinvestment rate is higher than the calculated target.



We note that with the exception of the above analysis, high level condition data in the next section, and inclusion of financial data for non-core assets in the financial strategy, the document focuses exclusively on core assets.

Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 68% of assets in Blind River are in poor or worse condition. This estimate relies on both age-based and field condition data.

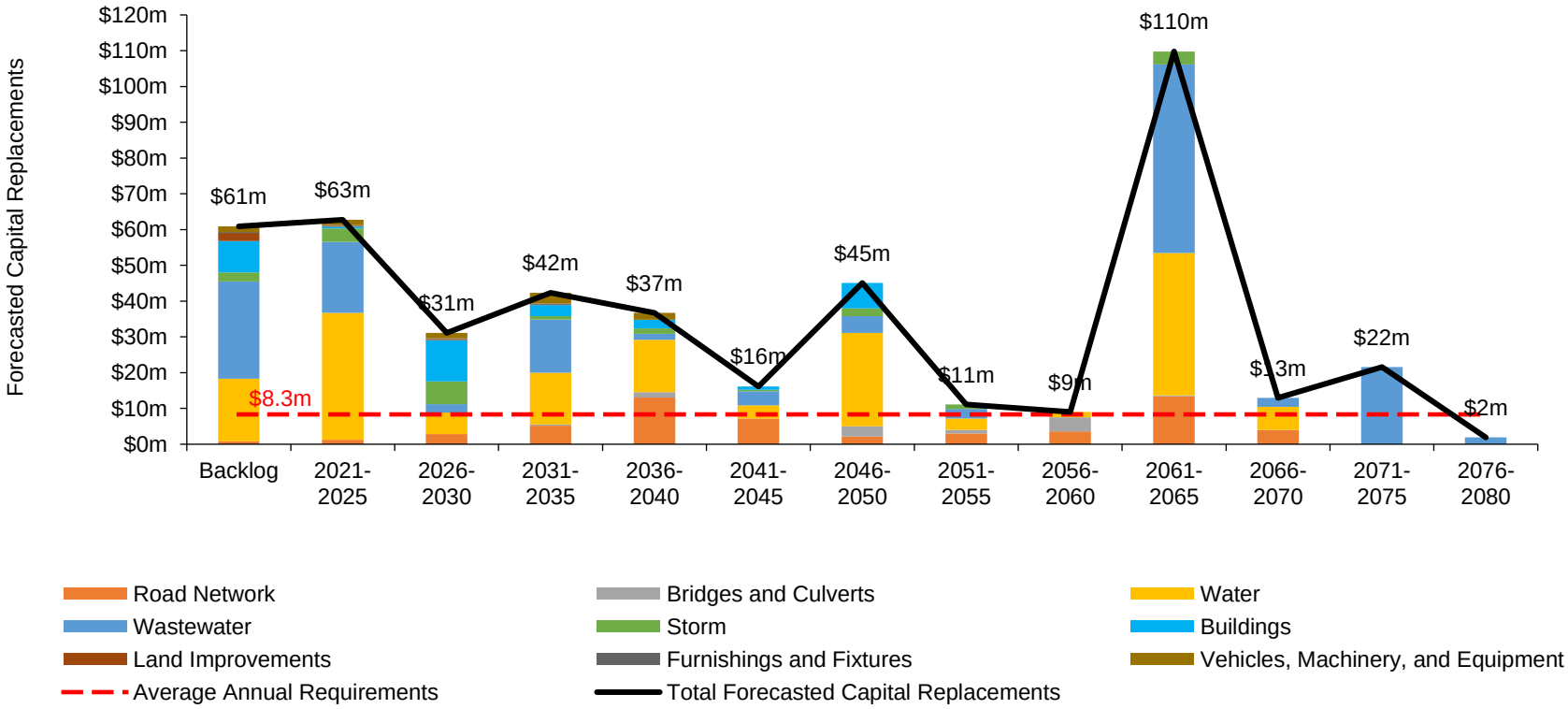


The table below identifies the source of condition data used throughout this AMP.

Asset Category	Asset Segment	Source of Condition Data
Road Network	Paved Roads	2020 condition assessment
Bridges & Culverts	Bridges	2020 OSIM Report
	Structural Culverts	2020 OSIM Report
Stormwater Network	All	Age
Water Network	All	Age
Sanitary Sewer Network	All	Age

Forecasted Capital Requirements

The figure below illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Town's broader asset portfolio. This graph includes at least one iteration of replacement for the longest-lived asset within each asset class. Assets with shorter lifespans may undergo multiple replacement cycles over the coming decades. On average, $8.3 million is required each year to remain current with capital replacement needs for the Town's asset portfolio. Although capital replacement needs are substantial across the forecasting horizon of 60 years, peaking at $110 million between 2061 and 2065, proactive lifecycle management and risk-based project prioritization will extend the serviceability of assets beyond their estimated useful life.



4 Analysis of Tax-funded Assets

Key Insights

18. All core assets, including water and wastewater, receive their capital funding from the Town's tax revenues. Non-core assets are also funded through tax.

19. 68% of all assets are in poor to very poor condition, based on age and condition data.

20. The average annual capital requirement to sustain the current level of service for all core and non-core assets is approximately $8.3 million.

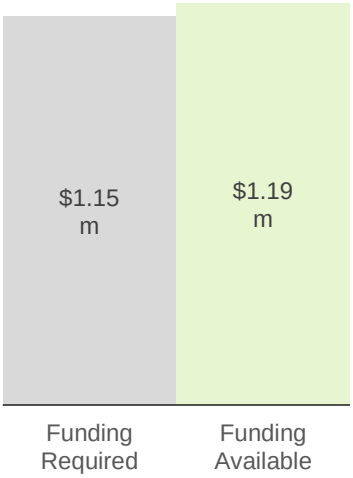
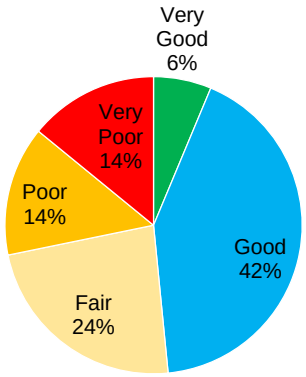
21. Asset risk and criticality analysis will be essential in identifying the right lifecycle strategy for the right assets at the right time.

Road Network

The Road Network is a critical component for the provision of safe and efficient transportation services. It includes all municipally owned and maintained roadways in addition to supporting roadside infrastructure including sidewalks, curbs, 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 table below outlines high-level service indicators for Roads.

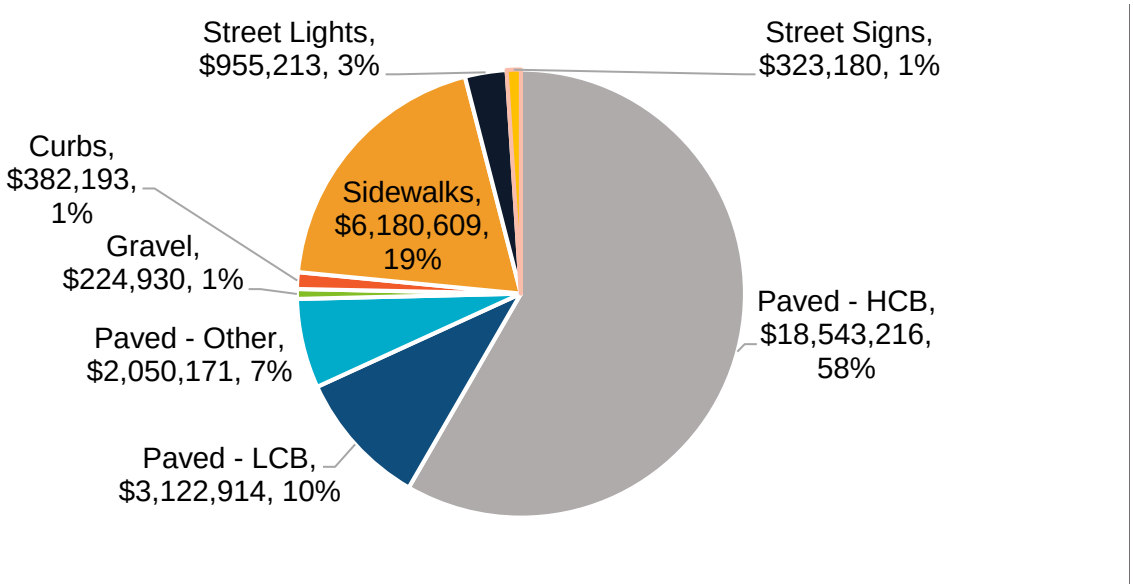
Cost	Performance (Average Condition)	Risk
		**$7.8 Million** Assets with a 'Very High' risk rating based on probability of failure and consequence of failure analysis

Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Town's Road Network inventory, which includes 104 kilometers of paved and unpaved roads, that support varying traffic volumes and loads. By road class, local roads comprise the largest share of the road network; however, the Town also owns and maintains collector, and major collector roads. Blind River's pedestrian network includes 18 kilometers of sidewalks.

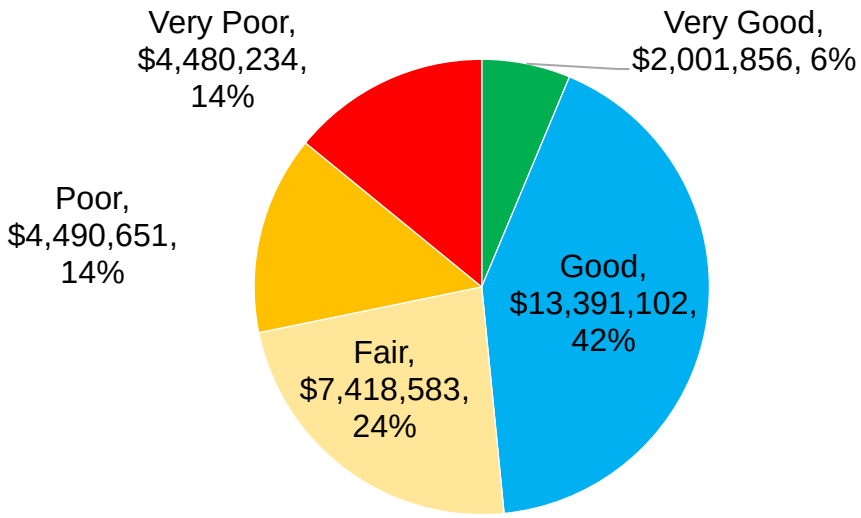
Asset Segment	Quantity	Primary Replacement Cost Method	Total Replacement Cost
Paved - HCB	31,329m	User-defined	$18,543,216
Paved - LCB	57,002m	User-defined	$3,122,914
Paved - Other	6,665m	User-defined	$2,050,171
Gravel	8,937m	User-defined	$224,930
Curbs	5,091m	User-defined	$382,193
Sidewalks	18,010m	User-defined	$6,180,609
Street Lights	Multiple (pooled assets)	CPI	$955,213
Street Signs	1,256	User-defined	$323,180
		Total	**$31,782,426**

Paved roads comprise the largest share of Blind River's road network, followed by sidewalks.

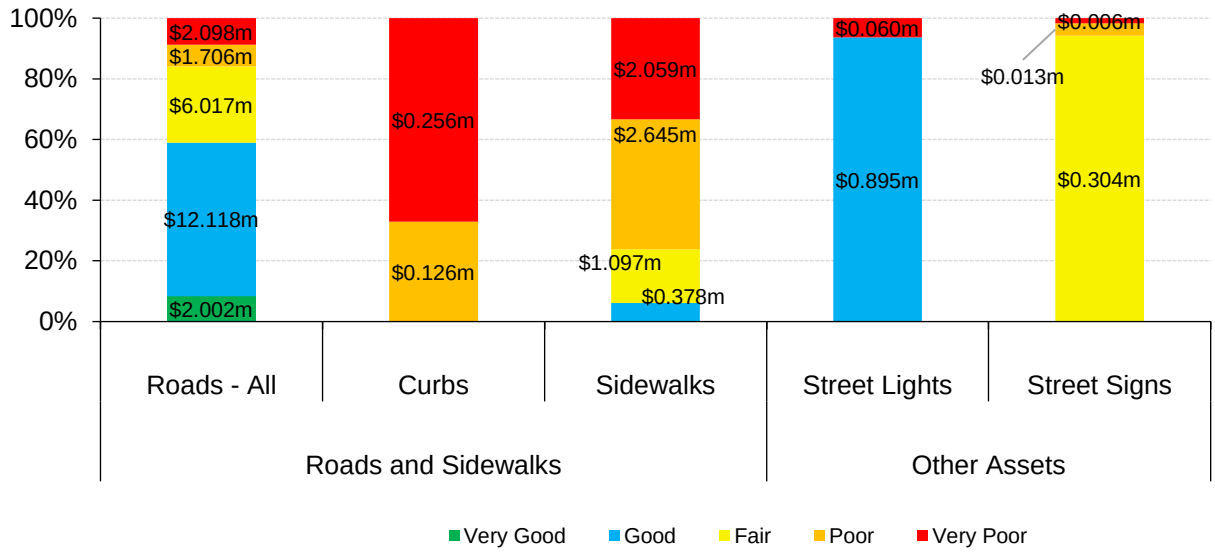


Asset Condition

The figure below summarizes the replacement cost-weighted condition of the Town's road network as of 2021. Based on a combination of field inspection data and age, approximately 72% of assets, worth $22.8 million, are in fair or better condition. The remaining, worth nearly $9 million are in poor or worse condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition.



The figure below provides further detail on the road network, by asset type. Based on recent condition assessments, the majority, 60% of roads are in good to very good condition.



Current Approach to Condition Assessment

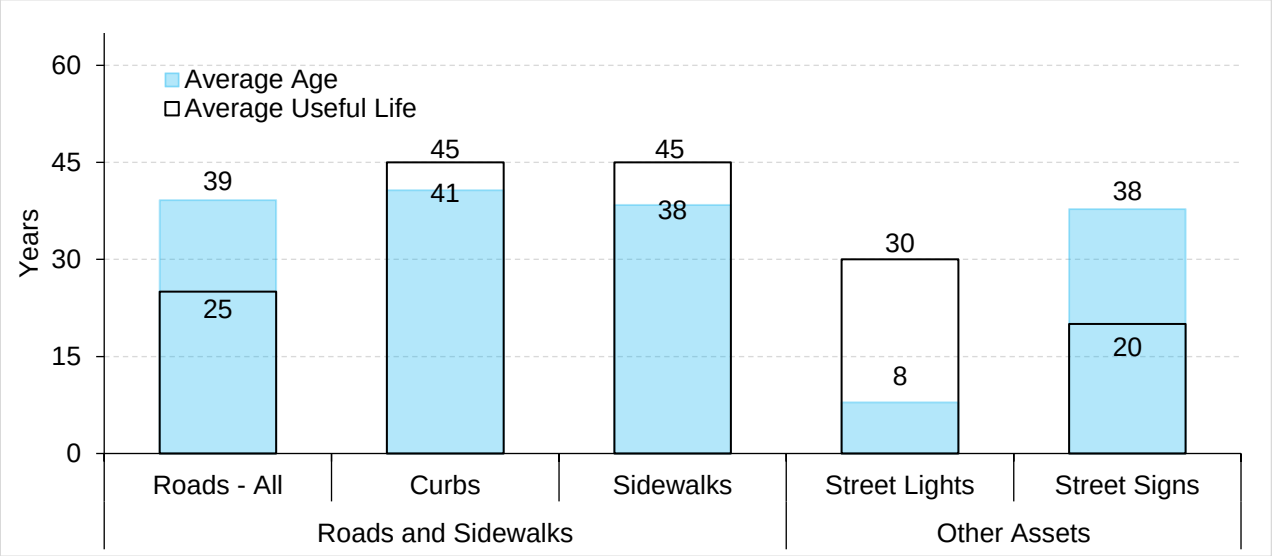
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing them. The following describes the municipality's current approach:

- External consultants are used to complete a detailed condition assessment of the Town's asphalt, surface treated, and gravel road network on a 5-year cycle.
- The study generates critical condition and attribute data, including pavement condition indices (PCI) for each road segment. The last condition assessment was conducted in 2020.
- In addition to external condition assessments, Town staff also conduct visual patrols to identify road sections that may be candidates for repairs, renewals, or reconstruction.

Age Profile

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

As assets age, their performance diminishes, often more rapidly as they approach the end of their design life. EULs can vary significantly within an asset category, from several years to many decades. The graph below illustrates the average useful life of each major asset segment, and the average current age of assets within the segment. Both values are weighted by replacement cost to ensure comparability.



The data reveals that on average, most roads remain in service beyond their established useful life. In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure than either metric alone. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and, improve planning for potential replacement spikes. Periodically, each asset's EUL should be reviewed to better align with actual, in-field performance.

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.

Staff rely on many factors to guide the selection of optimal lifecycle activities and treatment options, including asset condition, criticality, previous work completed, and opportunities to economize through project bundling or coordination. As such, the data contained in this section is illustrative and intended to provide a broad overview of roads lifecycle management.

Paved Roads (HCB)			
Event Name	**Event Class**	**Event Trigger**	**Event Cost**
Cold mix patching	Maintenance	As required	$2.50 per sq.m
Pavement application	Rehabilitation	PCI<60	$80 per sq.m (Mill and overlay 60mm asphalt)
Full Reconstruction	Replacement	Multiple, including project coordination, PCI, and AADT data	$630 per meter (average); $79 per sq.m

The illustration below shows the above lifecycle strategy for a typical HCB road. This strategy has been built into CityWide™. As the condition deteriorates to a PCI of 60, the rehabilitation event elevates the road segment's condition rating to 100, and extends its useful life by 25 years, effectively doubling the serviceable life of the asset, at a lower cost.

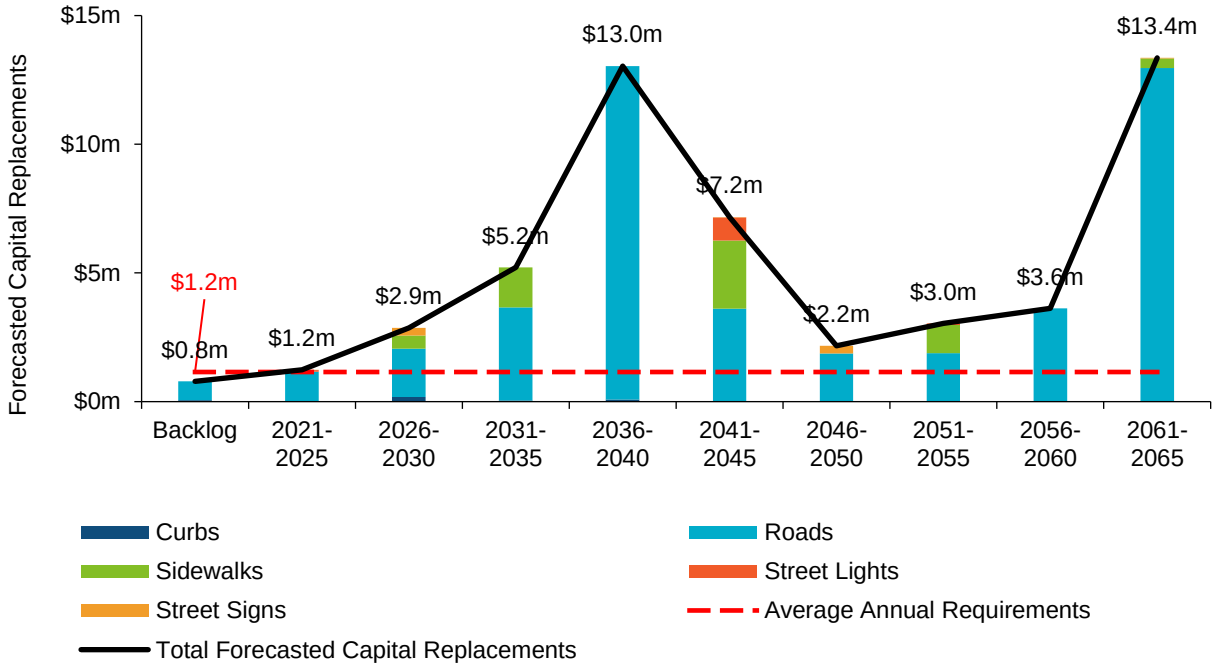
Surface Treated Roads			
Event Name	**Event Class**	**Event Trigger**	**Event Cost**
Cold mix patching	Maintenance	As required	$2.50 per sq.m
Single layer treatment	Maintenance, Rehabilitation	5-year cycle	$4.00 per sq.m
Mill and double layer treatment	Rehabilitation	PCI<65	$10.00 per sq.m
Gravel Roads			
Event Name	**Event Class**	**Event Trigger**	**Event Cost**
Grading	Maintenance	Visual inspection, and minimum four times annually	$3.00 per sq.m
Dust suppression	Maintenance	As needed, and weather condition dependent	$4.50 per sq.m
Ditching	Maintenance	10-year cycle	
Gravelling	Maintenance, Rehabiliation	Multiple	$5.00 per sq.m

The Town maintains a dedicated budget for road resurfacing/surface treatments. Currently, $260,000 is allocated, with approximately $460,000 remaining. The Canada Community Building fund (CBBF) is the primary source of revenue for this program.

Forecasted Capital Requirements

The figure below illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Town's road network assets. This graph includes at least one iteration of replacement for the longest-lived asset within this asset class. Assets with shorter lifespans may undergo multiple replacement cycles over the coming decades. On average, $1.2 million is required each year to remain current with capital replacement needs.

The Town is projected to experience two major replacement spikes, each totalling approximately $13 million. The first of these is forecasted to take place between 2036 and 2040, followed by the second in 2061 and 2065.



The chart also illustrates a replacement backlog of $0.8 million, comprising assets that have reached the end of their estimated useful life but remain in service. Condition data may indicate that these assets are still capable of delivering acceptable service standards, in a safe and efficient manner. However, both age and condition should be used to forecast replacement needs and refine capital expenditure estimates.

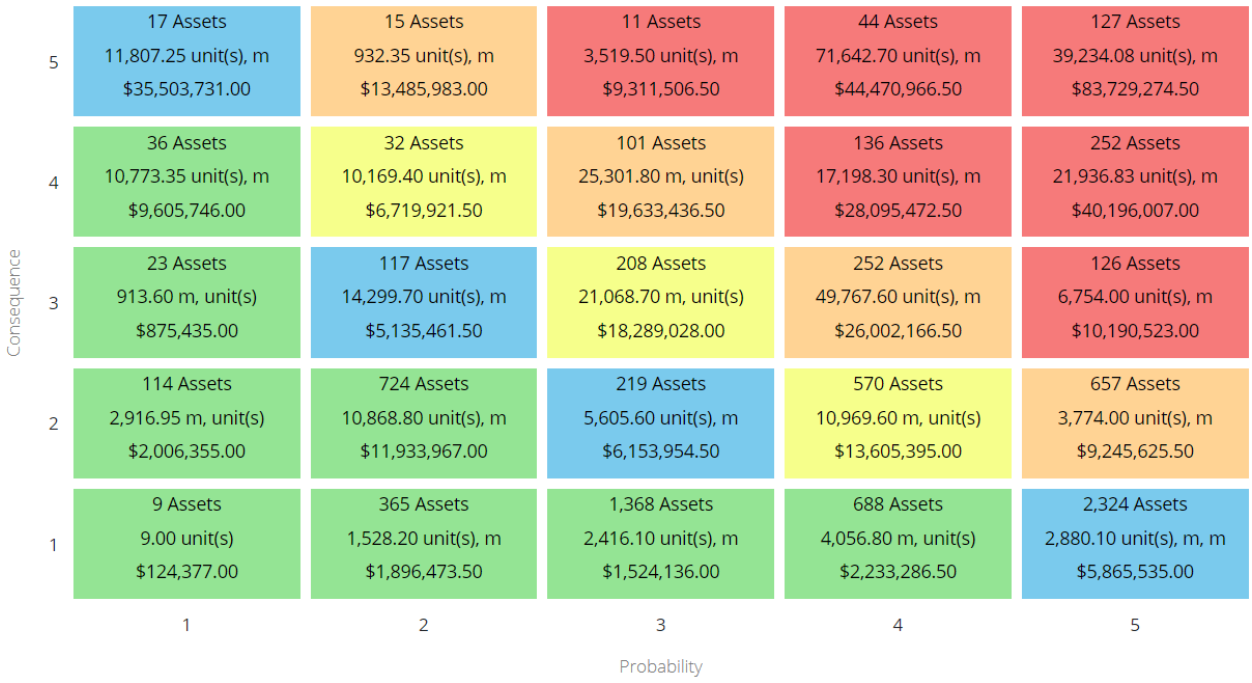
The table below summarizes the projected cost of lifecycle activities (capital replacement only) that will need to be undertaken over the next 10 years to maintain the current level of service. These values are derived from CityWide™, the Town's primary asset management application.

	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Curbs	$58,125	$0	$0	$0	$23,033	$0	$74,828	$33,390	$67,035	$0	$0	$45,578	$0
Roads	$729,730	$129,024	$37,040	$181,048	$305,240	$487,632	$228,784	$364,756	$98,504	$882,632	$303,216	$57,120	$471,660
Sidewalks	$0	$0	$0	$0	$0	$0	$510,960	$0	$0	$0	$0	$0	$0
Street Lights	$0	$0	$0	$60,317	$0	$0	$0	$0	$0	$0	$0	$0	$0
Street Signs	$0	$0	$5,560	$0	$0	$13,240	$0	$0	$0	$304,380	$0	$0	$0
Total Capital Expenditures	**$787,855**	**$129,024**	**$42,600**	**$241,365**	**$328,273**	**$500,872**	**$814,572**	**$398,146**	**$165,539**	**$1,187,012**	**$303,216**	**$102,698**	**$471,660**

In conjunction with sound lifecycle management, the life of some asset can be extended, thereby lowering the average annual requirements. Staff estimate that a mill and overlay of asphalt roads will typically increase the serviceable life of the asset by 25 years. Similarly, for surface treated roads, useful life can be extended by seven years through optimal life cycle strategies, including single or double layer surface treatment.

Risk Matrix: Road Network

The preliminary risk matrix below is generated using available asset data. It classifies assets based on their probability of failure and the consequence of failure. The Town is in the process of developing comprehensive risk frameworks for each of its asset classes and major segments. These frameworks will allow the Town to build more robust risk models to refine how risk ratings are established for different asset segments.



In addition to asset level risk, the municipality may also face risk associated with not executing key lifecycle activities, including repairs, rehabilitation, and replacement of critical assets. These include:

- Missed opportunities for cost savings and increases in lifecycle costs
- Deferral of vital projects, or further lending and borrowing

22. Accelerated asset deterioration and premature failure, which may lead to public health and safety hazards, and disruption of services to the Town's residential and commercial base
23. A decline in public satisfaction with the Town's service standards and the resulting reputational damage

An asset's criticality rating, determined by the nature and magnitude of the consequences of its potential failure should be used to prioritize projects, particularly

lifecycle management strategies. Using risk in conjunction with levels of service, and the recommended treatment options can assist in optimizing limited funds.

Levels of Service

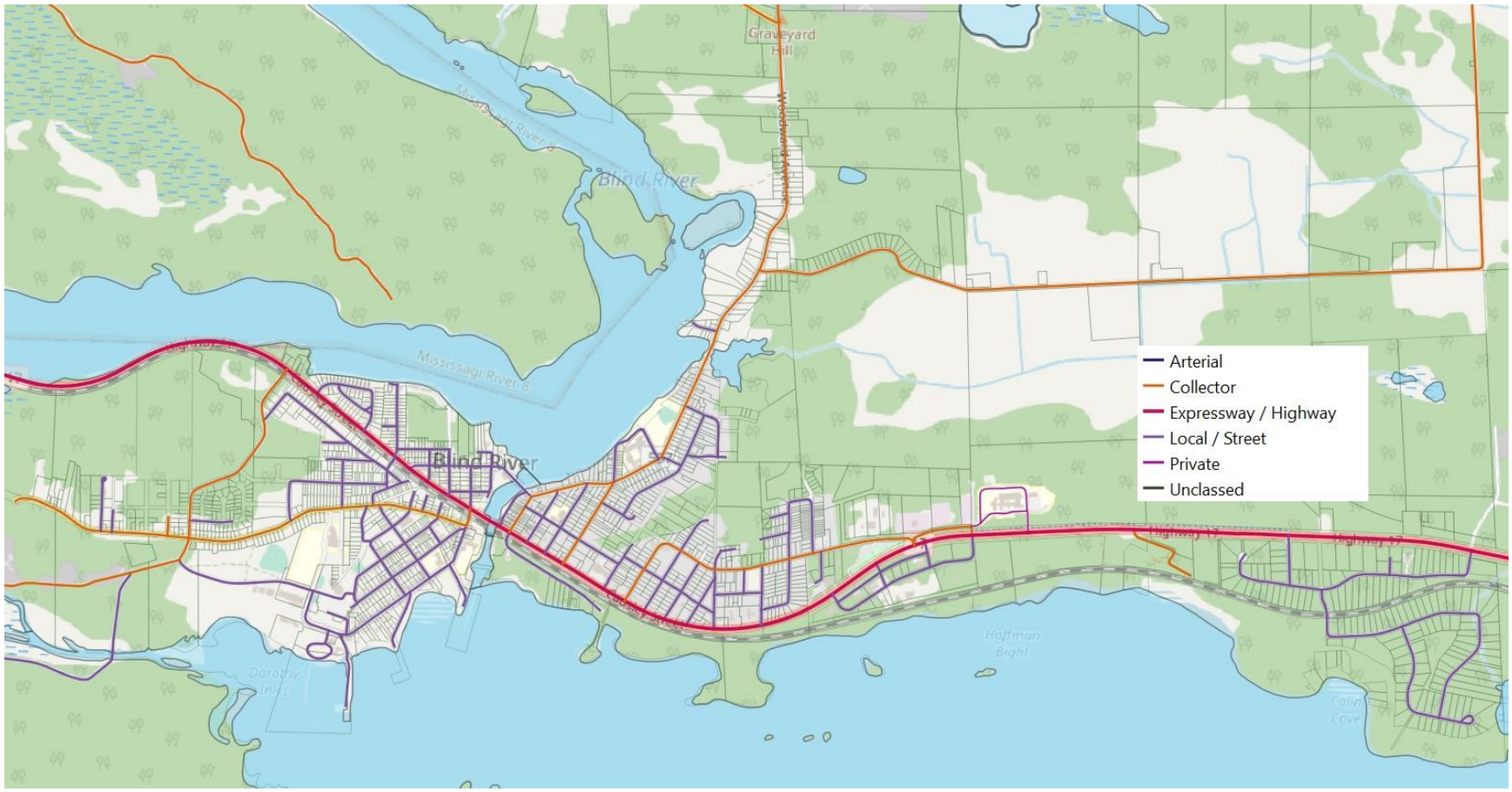
The following tables identify the Town's current level of service for the Road Network. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Town has selected for this AMP.

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	Map provided
Quality	Description or images that illustrate the different levels of road class pavement condition	A pavement condition index (PCI) was available for approximately 87% of the road network. The replacement-cost weighted average PCI for local roads is 69.5; for major collector roads, the PCI is 74.8. Roads are generally in satisfactory or good condition.

The map below illustrates the connectivity and coverage of the Town's road network by different road classes.



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 per land area (km/km^2)	0
	Lane-km of collector roads per land area (km/km^2)	Lane-km length not available Using centre-line length: Length: 43.442km Area: 525.65 **0.08km per sq.m**
	Lane-km of local roads per land area (km/km^2)	Lane-km length not available Using centre-line length: Length: 85.6km Area: 525.65 **0.16km per sq.m**
Quality	Average pavement condition index for paved roads in the municipality	Local: **69.5** Collector/Major Collector: **74.8** **(Based on partial data)**
	Average surface condition for unpaved roads in the municipality (e.g., excellent, good, fair, poor)	51, or Poor to Fair

Recommendations

Lifecycle Management Strategies

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

Risk Management Strategies

25. 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.
26. Develop and review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.
27. Develop comprehensive risk frameworks to best reflect asset criticality.
28. Collect essential asset attribute data to support development of risk models. This data should be integrated into CityWide™ for generating more reliable risk matrices and inform project prioritization.

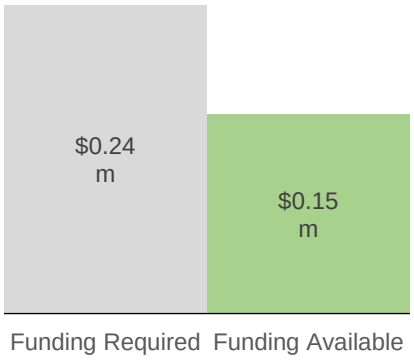
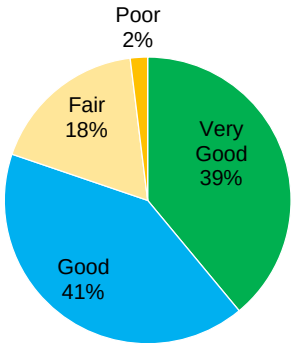
Levels of Service

- 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.
- Consider asset management focused town halls with residents to obtain feedback on infrastructure priorities. This feedback can be used to establish targets for proposed LOS.
- Develop a centralized LOS framework to track key performance indicators.

Bridges & Culverts

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

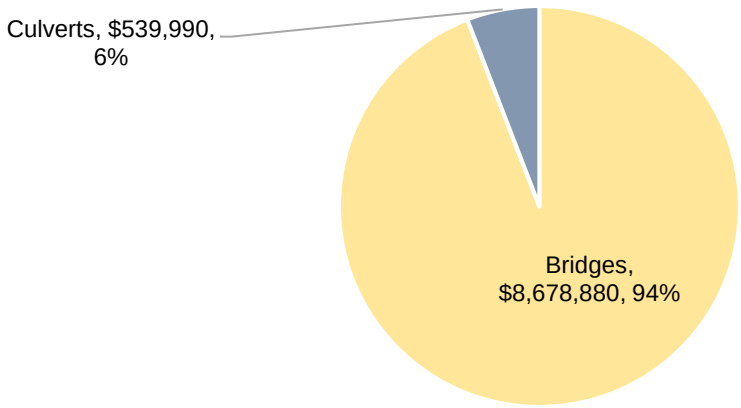
The table below outlines high-level service indicators for Bridges & Culverts.

Cost	Performance (Average Condition)	Risk
		**$0** Assets with a 'Very High' risk rating based on probability of failure and consequence of failure analysis

Asset Inventory & Replacement Cost

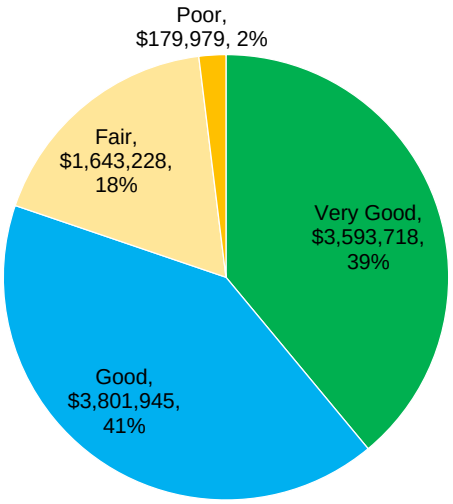
The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Town's Bridges & Culverts inventory.

Asset Segment	Quantity (asset records)	Primary Replacement Cost Method	Total Replacement Cost
Bridges	7	User-defined	$8,678,880
Structural Culverts (>3m)	3	User-defined	$539,990
		Total	**$9,218,870**

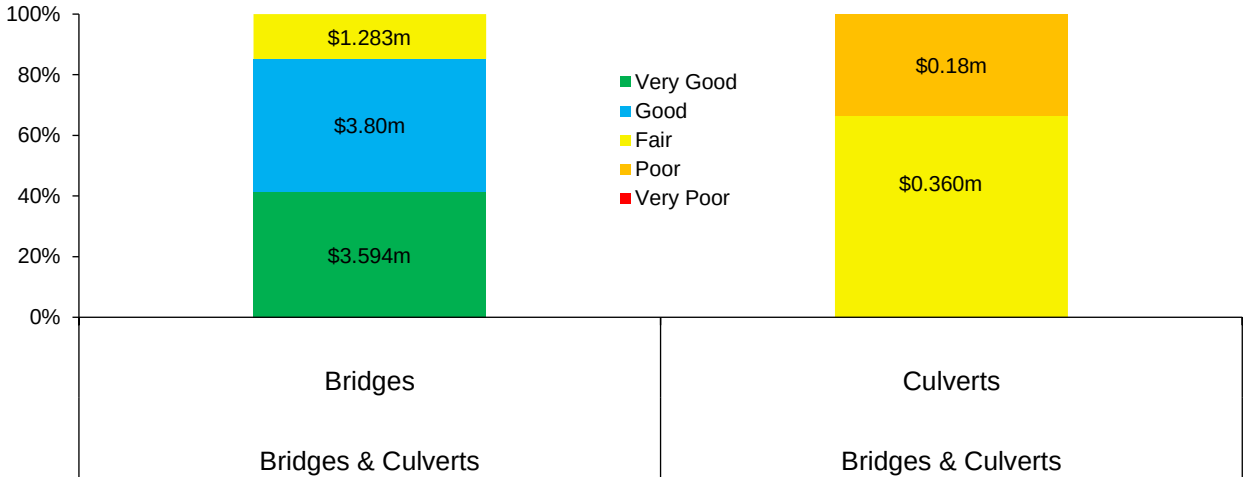


Asset Condition

The figure below summarizes the replacement cost-weighted condition of the Town's bridges and culverts as of 2021. Based on a combination of field inspection data retrieved from recent OSIM inspections, and age, approximately 98% of assets, worth $9 million, are in fair or better condition.



The figure below provides further detail on the bridge network, by asset type. All bridges are in fair or better condition.



To ensure that the Town's bridges and structural culverts 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 the right combination of maintenance, rehabilitation, and replacement activities is required to increase the overall condition of the assets.

Current Approach to Condition Assessment

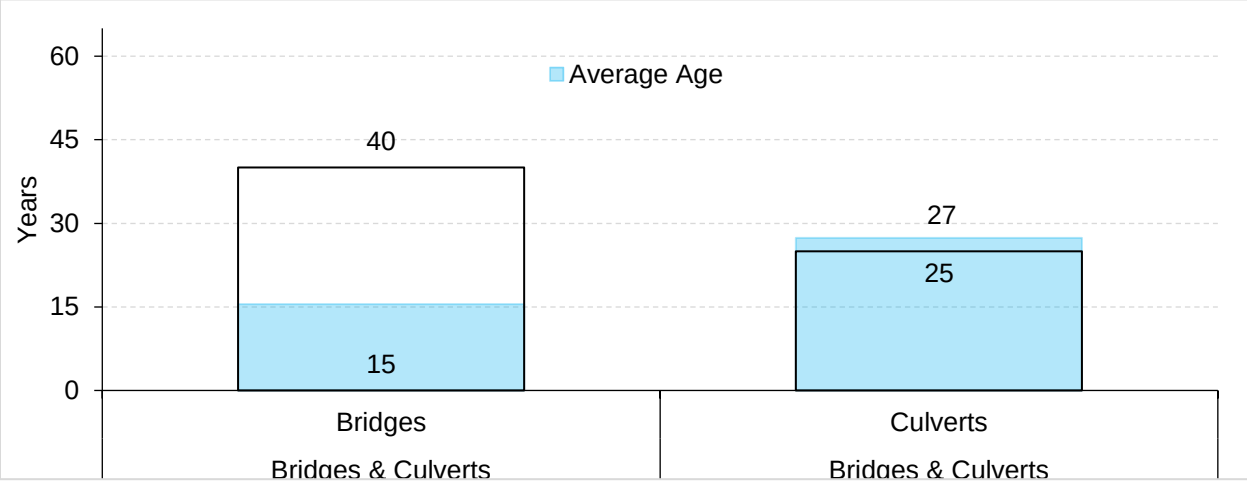
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

29. Condition assessments of all bridges and culverts with a span greater than or equal to 3 meters are completed every two years in accordance with the Ontario Structure Inspection Manual (OSIM)
30. The Town's most recent condition assessment took place in 2020; this data was uploaded into CityWide™ for applicable assets.

Age Profile

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

As assets age, their performance diminishes, often more rapidly as they approach the end of their design life. EULs can vary significantly within an asset category, from several years to many decades. The graph below illustrates the average useful life of each major asset segment, and the average current age of assets within the segment. Both values are weighted by replacement cost to ensure comparability.



The data reveals that, on average, bridges are in the earlier stages of their lifecycle. This is skewed by the recent rehabilitation to the Causley Street bridge. The average age of structural culverts has exceeded their useful life. In conjunction with condition data, an asset's age profile provides a more complete summary of the state of infrastructure than either metric alone. It can help identify assets that may be candidates for further review through condition assessment programs; inform the selection of optimal lifecycle strategies; and, improve planning for potential replacement spikes. Periodically, each asset's EUL should be reviewed to better align with actual, in-field performance.

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.

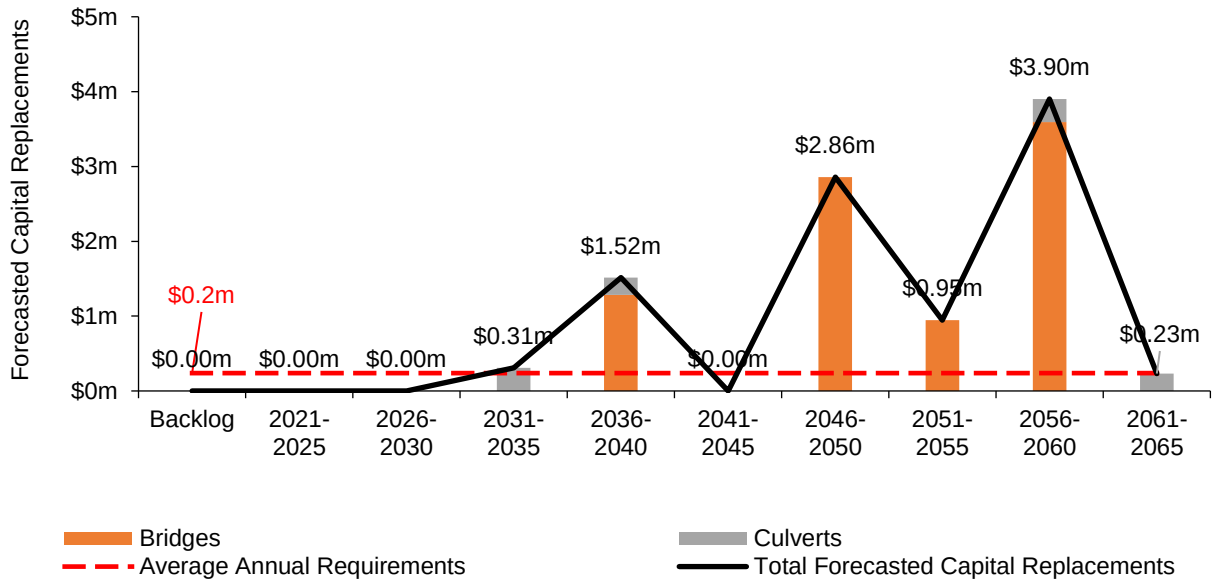
The following table outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
	All lifecycle activities are driven by the results of mandated structural inspections competed according to the Ontario Structure Inspection Manual (OSIM) on a biennial basis.
Maintenance, Rehabilitation and Replacement	The OSIM inspection identified two assets that are candidate for further review and oversight: Dawsey Creek Culvert which may warrant a potential replacement due to corrosion, and Boom Camp Culverts that should be reviewed to ensure full functionality. Staff also conduct ongoing mowing (annually), sign maintenance, and sweeping
Inspection	The most recent inspection report was completed in 2020 by Tulloch Engineering.

Forecasted Capital Requirements

The figure below illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Town's road network assets. This graph includes at least one iteration of replacement for the longest-lived asset within this asset class. Assets with shorter lifespans may undergo multiple replacement cycles over the coming decades. On average, $0.2 million is required each year to remain current with capital replacement needs.

The Town is projected to experience escalating replacement requirements for its bridges and culverts portfolio, peaking between 2056-2060 at nearly $4 million. Adhering to OSIM inspection recommendations and ensuring sufficient funding is in place to conduct ongoing maintenance, renewal, and rehabilitation is essential to prolonging the life of assets.



The OSIM inspection identified several repair and rehabilitation events, including $5,000 for the Hudson Street Bridge; $690,000 for Dawsey Street Culverts with $225,000 in associated work fees; $5,000 in repair and rehabilitation work for the Potomac River Bridge; $8,500 in repairs and rehabilitation for the Boom Camp Culverts, and $14,500 for Boom Camp Snowmobile culverts.

The majority of these interventions are forecasted to occur in the next 1-5 years to ensure service levels are maintained. In conjunction with these OSIM recommendations, the table below summarizes anticipated replacement needs for bridges and culverts based on available age and condition data as retrieved from CityWide™.

	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Bridges	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Culverts	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$ 179,979	$0
Total Capital Expenditures	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$179,979**	**$0**

Risk Matrix: Bridges and Culverts

The preliminary risk matrix below is generated using available asset data. It classifies assets based on their probability of failure and the consequence of failure. The Town is in the process of developing comprehensive risk frameworks for each of its asset classes and major segments. These frameworks will allow the Town to build more robust risk models to refine how risk ratings are established for different asset segments.

In addition to asset level risk, the municipality may also face risk associated with not executing key lifecycle activities, including repairs, rehabilitation, and replacement of critical assets. These include:

- Missed opportunities for cost savings and increases in lifecycle costs
- Deferral of vital projects, or further lending and borrowing

31. Accelerated asset deterioration and premature failure, which may lead to public health and safety hazards, and disruption of services to the Town's residential and commercial base.

32. Bridges are inherently vital to the Town's transportation infrastructure, and their failures can disconnect communities, lead to public health and safety incidents, and can impede the efficient flow of residential and commercial traffic.

33. A decline in public satisfaction with the Town's service standards and the resulting reputational damage

An asset's criticality rating, determined by the nature and magnitude of the consequences of its potential failure should be used to prioritize projects, particularly lifecycle management strategies. Using risk in conjunction with levels of service, and the recommended treatment options can assist in optimizing limited funds.

Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2020)
Scope	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Bridges and structural culverts are a key component of the municipal transportation network. Most types of vehicles, including heavy transport, motor vehicles, emergency vehicles and cyclists can cross them without restriction.
Quality	Description or images of the condition of bridges & culverts and how this would affect use of the bridges & culverts	Bridges and culverts are generally in good condition and are able to support acceptable levels of service.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2020)
Scope	% of bridges in the Town with loading or dimensional restrictions	0%
Quality	Average bridge condition index value for bridges in the Town	76
	Average bridge condition index value for structural culverts in the Town	51

Recommendations

Data Review/Validation

34. Continue to review and validate inventory data, assessed condition data and replacement costs for all bridges and structural culverts upon the completion of OSIM inspections every two years.
35. Consider componentizing bridges into deck and structure to further facilitate lifecycle planning and monitoring.

Risk Management Strategies

36. 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.
37. Develop and review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.
38. Develop risk and levels of service frameworks.

Lifecycle Management Strategies

39. Adhering to OSIM recommendations and integrating asset-level age and condition analysis is recommended. The latter will aid in forecasting replacements needs over multiple decades.

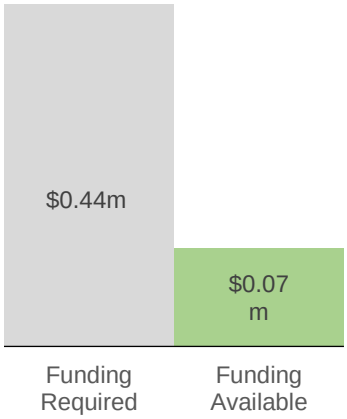
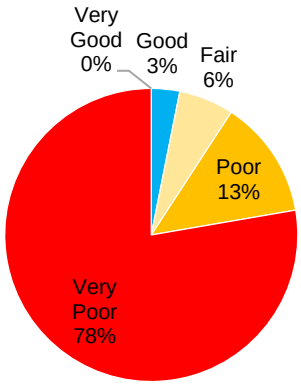
Levels of Service

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

Stormwater Network

The Town is responsible for owning and maintaining a stormwater network of 6km storm sewer mains, catch basins, and other supporting infrastructure.

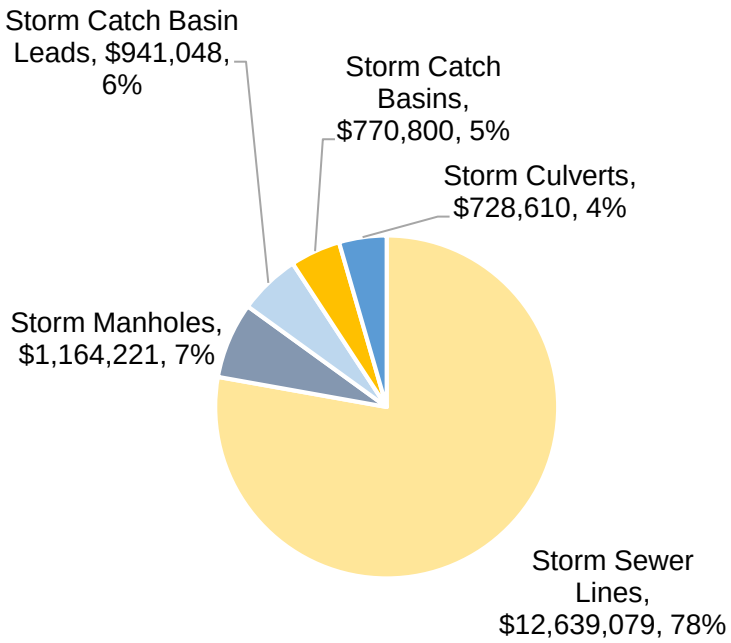
The table below outlines high-level service indicators for the Stormwater Network.

Cost	Performance (Average Condition)	Risk
		**$8.6 million** Assets with a 'Very High' risk rating based on probability of failure and consequence of failure analysis

Asset Inventory & Replacement Cost

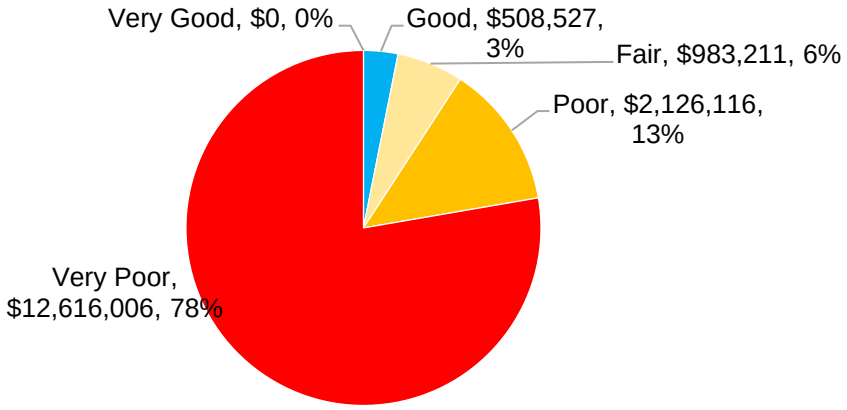
The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Town's Stormwater Network inventory, which includes 6km of sewer lines.

Asset Segment	Quantity	Primary Replacement Cost Method	Total Replacement Cost
Sewer Lines	6,081m	User-defined and cost per unit	$12,639,079
Manholes	82, including pooled assets	User-defined	$1,164,221
Catch Basin Leads	544m	Cost per unit	$941,048
Catch Basins	164	User-defined	$770,800
Culverts	274	User-defined	$728,610
		Total	**$16,243,758**

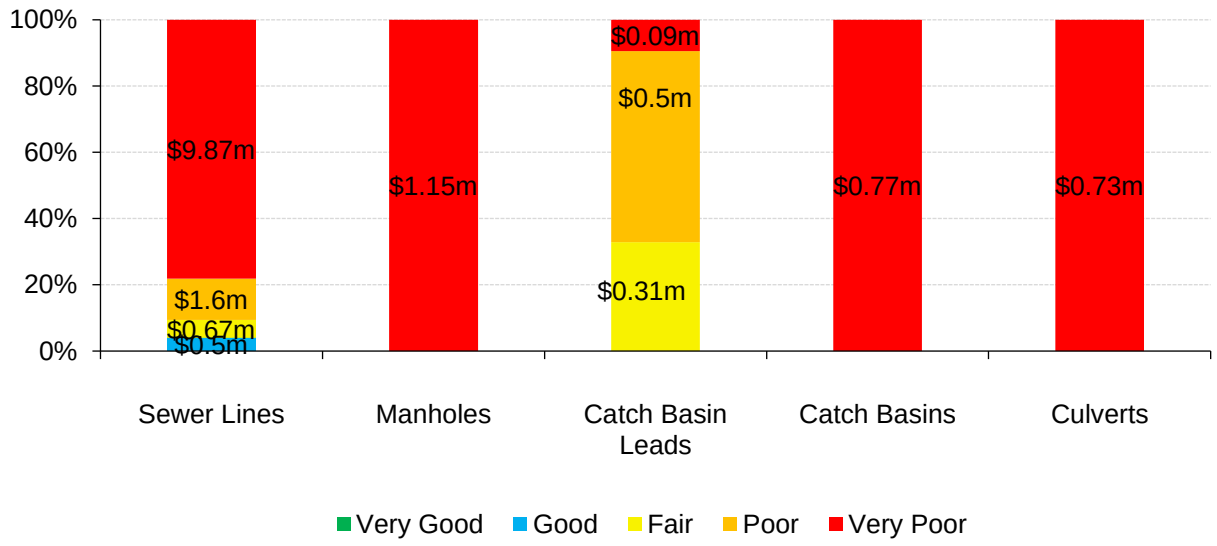


Asset Condition

The figure below summarizes the replacement cost-weighted condition of the Town's storm network and associated capital assets. Based primarily on age, the vast majority of the Town's storm infrastructure is aging and in poor or worse condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition.



The figure below provides further detail on the storm network, by asset type. Most assets are in poor or worse condition, based on age.



To ensure that the Town's Stormwater 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 Stormwater Network.

Current Approach to Condition Assessment

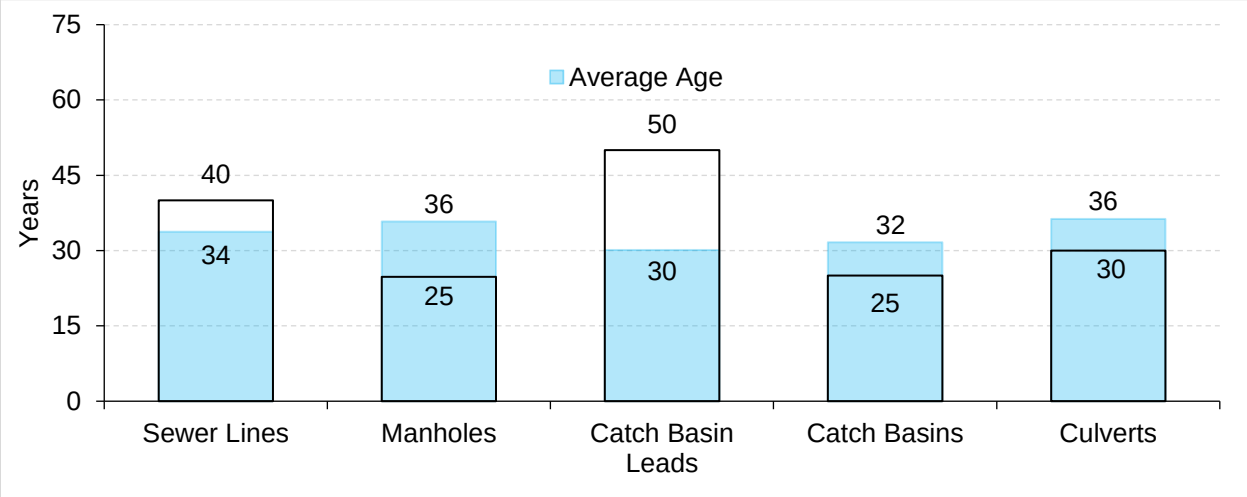
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

40. Staff are working on developing an annual inspection program for all catch basins.
41. Some condition assessments are conducted on an annual basis.

Age Profile

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

As assets age, their performance diminishes, often more rapidly as they approach the end of their design life. EULs can vary significantly within an asset category, from several years to many decades. The graph below illustrates the average useful life of each major asset segment, and the average current age of assets within the segment. Both values are weighted by replacement cost to ensure comparability.



The age profile shows that most storm asset have either exceeded their service life, or are in the latter stages of their lifecycle and may begin to show further signs of disrepair and degradation. However, the service life for sewer lines may be understated. Currently, no material data is available for storm lines with a replacement cost of nearly

$9 million, making it difficult to assign estimated useful lives. Periodically, each asset's EUL should be reviewed to better align with actual, in-field performance.

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.

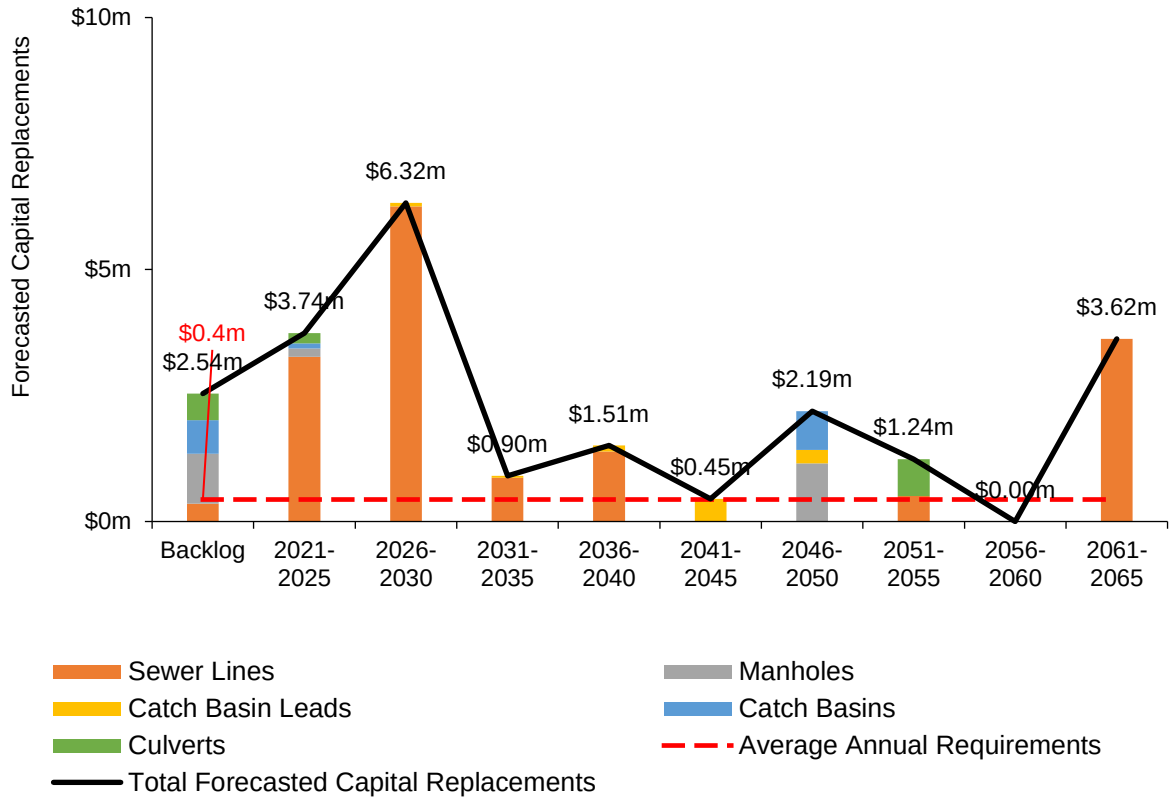
The following table outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Maintenance activities, including flushing, catch basin cleaning, and cover adjustments are completed. These are implemented as required; however staff are working on developing an annual inspection program for catch basins that may extend their useful life by five years. The cost for flushing is estimated at $500 per metre.
Rehabilitation	Trenchless re-lining has the potential to reduce total lifecycle costs but would require a formal condition assessment program to determine viability. Currently, renewal and rehabilitation treatments are triggered by site-specific events, and can cost $1,000 per metre.
Replacement	Without the availability of up-to-date condition assessment information replacement activities are purely reactive in nature and driven by site-specific events.

Forecasted Capital Requirements

The figure below illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Town's storm network assets. This graph includes at least one iteration of replacement for the longest-lived asset within this asset class. Assets with shorter lifespans may undergo multiple replacement cycles over the coming decades. On average, $0.4 million is required each year to remain current with capital replacement needs.

Age-based replacement needs will peak in the next decade, totalling more than $6 million. Given the long lifespan of sewer lines, capital replacements are expected to remain steady through 2060.



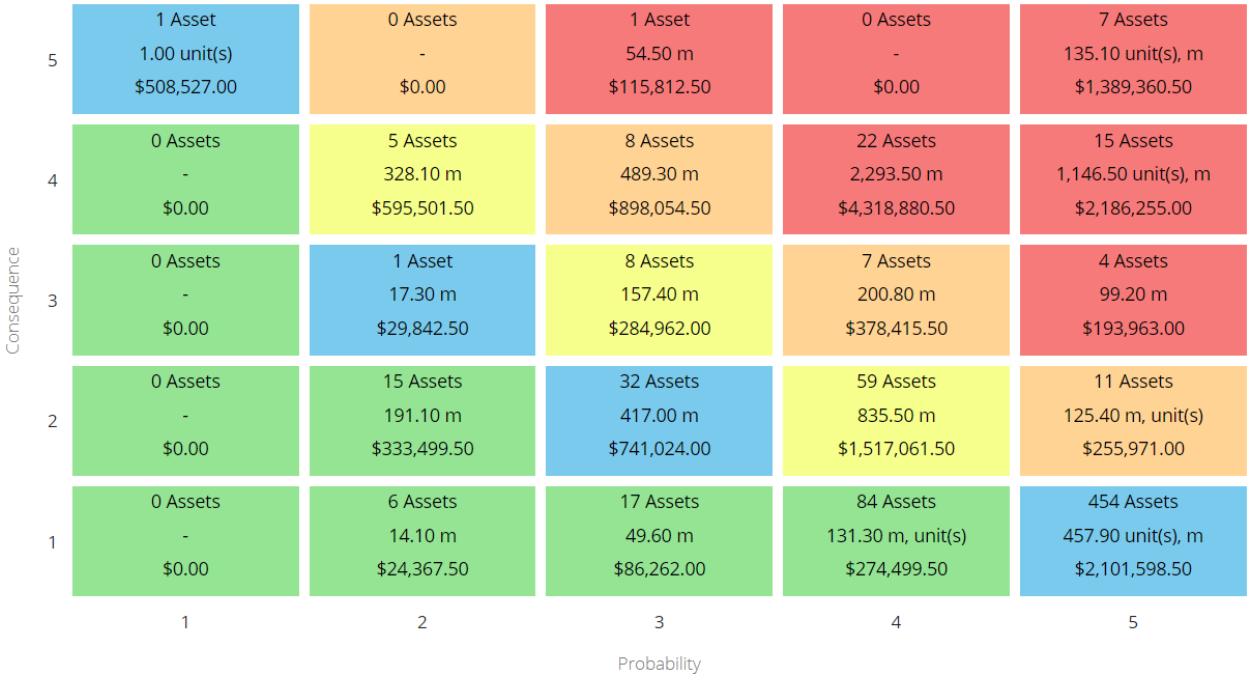
The chart also illustrates a replacement backlog of $2.54 million, comprising assets that have reached the end of their estimated useful life but remain in service. Condition data may indicate that these assets are still capable of delivering acceptable service standards, in a safe and efficient manner. However, both age and condition should be used to forecast replacement needs and refine capital expenditure estimates.

The table below summarizes the projected cost of lifecycle activities (age-based capital replacement only) that will need to be undertaken over the next 10 years to maintain the current level of service. These values are derived from CityWide™, the Town's primary asset management application.

	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Sewer Lines	$355,343	$448,246	$0	$2,818,548	$0	$0	$4,070,665	$0	$0	$2,180,747	$0	$871,077	$0
Manholes	$986,021	$0	$59,400	$108,900	$0	$0	$0	$0	$0	$0	$0	$0	$0
Catch Basin Leads	$0	$0	$0	$0	$0	$0	$0	$0	$0	$70,208	$0	$18,518	$0
Catch Basins	$672,100	$0	$51,700	$47,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
Culverts	$522,470	$11,400	$37,000	$9,020	$0	$148,720	$0	$0	$0	$0	$0	$0	$0
Total Capital Expenditures	**$2,535,934**	**$459,646**	**$148,100**	**$2,983,468**	**$0**	**$148,720**	**$4,070,665**	**$0**	**$0**	**$2,250,954**	**$0**	**$889,595**	**$0**

Risk Matrix: Storm Network

The preliminary risk matrix below is generated using available asset data. It classifies assets based on their probability of failure and the consequence of failure. The Town is in the process of developing comprehensive risk frameworks for each of its asset classes and major segments. These frameworks will allow the Town to build more robust risk models to refine how risk ratings are established for different asset segments.



In addition to asset level risk, the municipality may also face risk associated with not executing key lifecycle activities, including repairs, rehabilitation, and replacement of critical assets. These include:

42. Missed opportunities for cost savings and increases in lifecycle costs
43. Deferral of vital projects, or further lending and borrowing
44. Accelerated asset deterioration and premature failure, which may lead to public health and safety hazards, and disruption of services to the Town's residential and commercial base.
45. Failure of stormwater assets can be particularly detrimental, causing excessive flooding, erosion, backups, road and bridge closures, environmental damage, and substantial property damage. Water quality may also be jeopardized, further exacerbating public health and safety challenges. Increased frequency of extreme weather events has made some communities even more vulnerable to flooding. These events can also create legal liabilities for the municipality.

46. A decline in public satisfaction with the Town's service standards and the resulting reputational damage

An asset's criticality rating, determined by the nature and magnitude of the consequences of its potential failure should be used to prioritize projects, particularly lifecycle management strategies. Using risk in conjunction with levels of service, and the recommended treatment options can assist in optimizing limited funds.

Levels of Service

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

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

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2020)
Scope	% of properties in municipality resilient to a 100-year storm	75%
	% of the municipal stormwater management system resilient to a 5-year storm	95%

Recommendations

Condition Assessment Strategies

47. Although condition assessments are conducted, this data should be integrated with the Town's asset management register to ensure alignment between systems and capital budget development.
48. Identify material for storm mains to improve age profile analysis and capital replacement forecasts.

Risk Management Strategies

49. 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.
50. 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

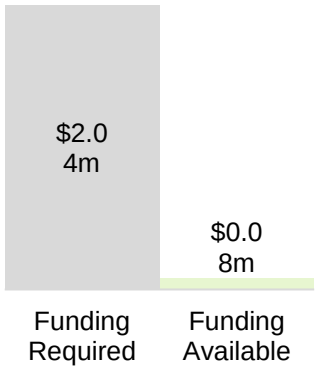
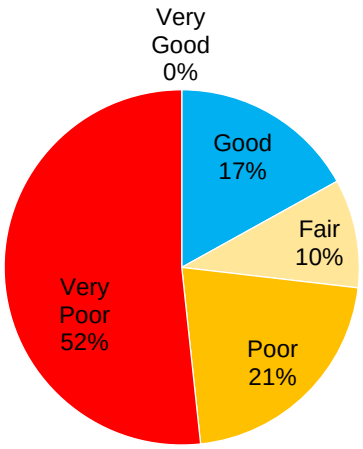
51. Document and review lifecycle management strategies for the stormwater network on a regular basis to achieve the lowest total cost of ownership while maintaining adequate service levels.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics 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.

Water Network

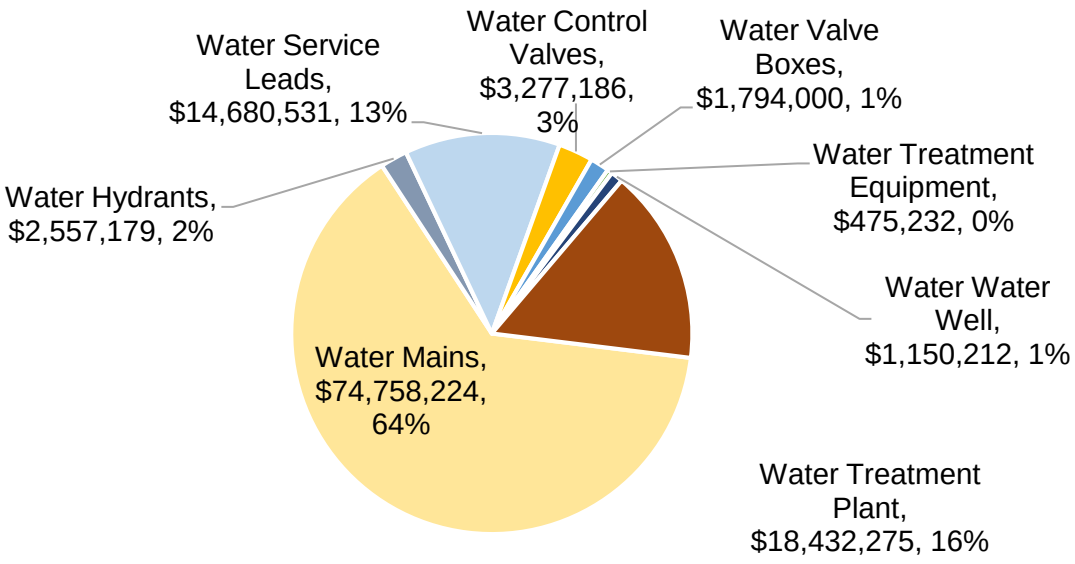
The Town of Blind River's water distribution system serves a population of approximately 2,500. The table below outlines high-level service indicators for the Water Network.

Cost	Performance (Average Condition)	Risk
		**$45.8 million** Assets with a 'Very High' risk rating based on probability of failure and consequence of failure analysis

Asset Inventory & Replacement Cost

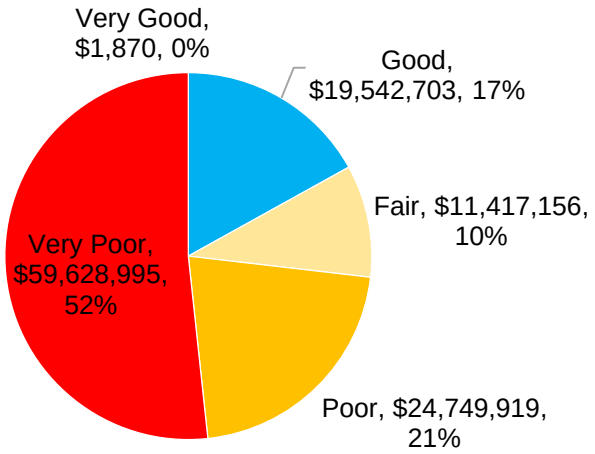
The table below includes the quantity, replacement cost method, and total replacement cost of each asset segment in the Town's Water Network inventory, which includes approximately 34km of water mains, one treatment plant, and the associated supportive infrastructure.

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Mains	34,132m	Cost per unit	$74,758,224
Hydrants	197	User-defined	$2,557,179
Service Leads	8,536m	Cost per unit	$14,680,531
Control Valves	1,212	User-defined	$3,277,186
Valve Boxes	1,196	Cost per unit	$1,794,000
Treatment Equipment	17	User-defined	$475,232
Water Well	12	Cost per unit	$1,150,212
Treatment Plant	1	User-defined	$18,432,275
		Total	**$117,124,839**

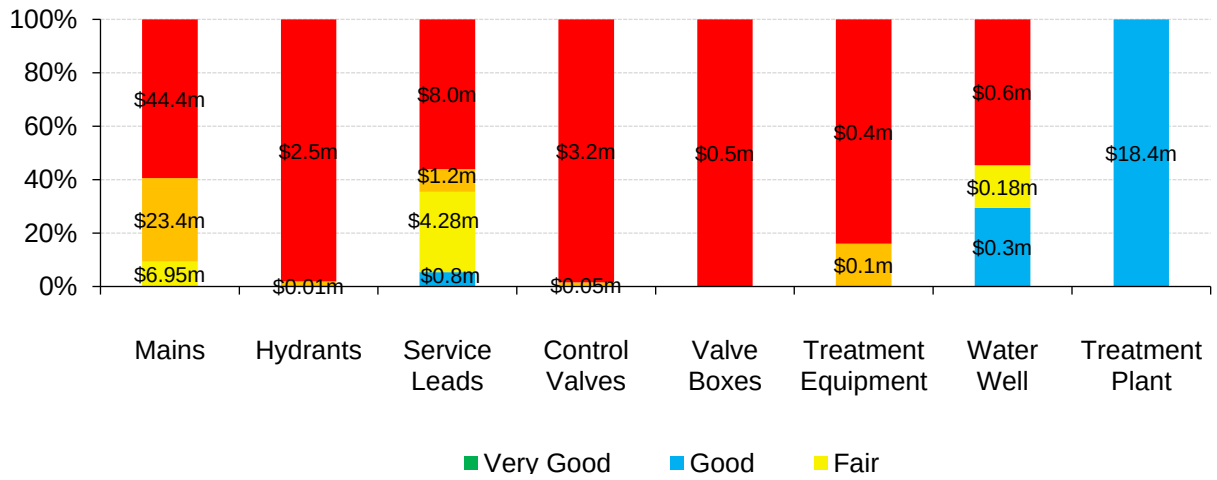


Asset Condition

The figure below summarizes the replacement cost-weighted condition of the Town's water distribution network and treatment infrastructure, of 2021. Based on age, more than 70% of assets, worth $84 million, are in poor or worse condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition.



The figure below provides further detail on the water network, by asset type. Based on age, the vast majority of water distribution assets, including mains and service leads, are in poor or worse condition. Although the treatment plant is, based only on age, in good condition, the facility is not componentized; as such, the age of individual facility elements is not known. As such, their condition cannot be approximated.



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, including building elements. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities are required to increase the overall condition of the Water Network.

Current Approach to Condition Assessment

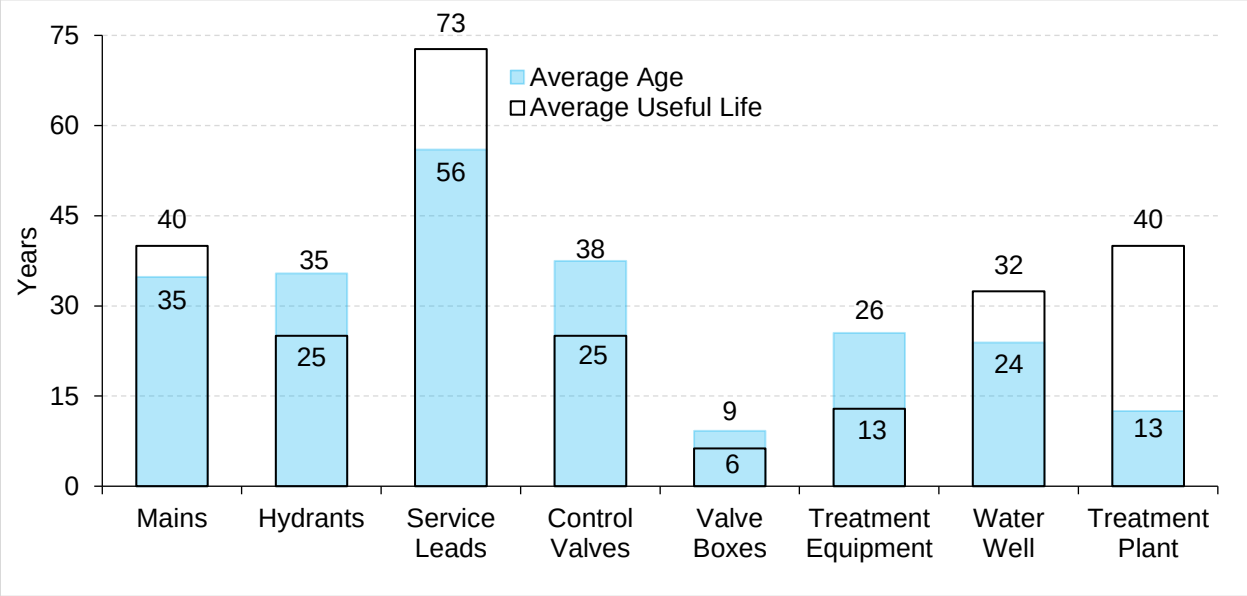
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

52. There are no formal condition assessment programs in place for the Water Network. However, staff rely on break history and coordination with road resurfacing events to identify assets that may be candidate for further review, including rehabilitation, renewal, or replacement.

Age Profile

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

As assets age, their performance diminishes, often more rapidly as they approach the end of their design life. EULs can vary significantly within an asset category, from several years to many decades. The graph below illustrates the average useful life of each major asset segment, and the average current age of assets within the segment. Both values are weighted by replacement cost to ensure comparability.



The data reveals that on average, most water mains are in the latter stages of their useful life. In addition, with further componentization, a more accurate age profile of treatment plant assets can be generated. Currently, only a singular asset is used to capture treatment plant components.

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

The service life for watermains may be understated. In addition, no material data is available for water mains totaling nearly $7.7 million, making it difficult to assign reliable

useful life estimates to these assets. Periodically, each asset's EUL should be reviewed to better align with actual, in-field performance.

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.

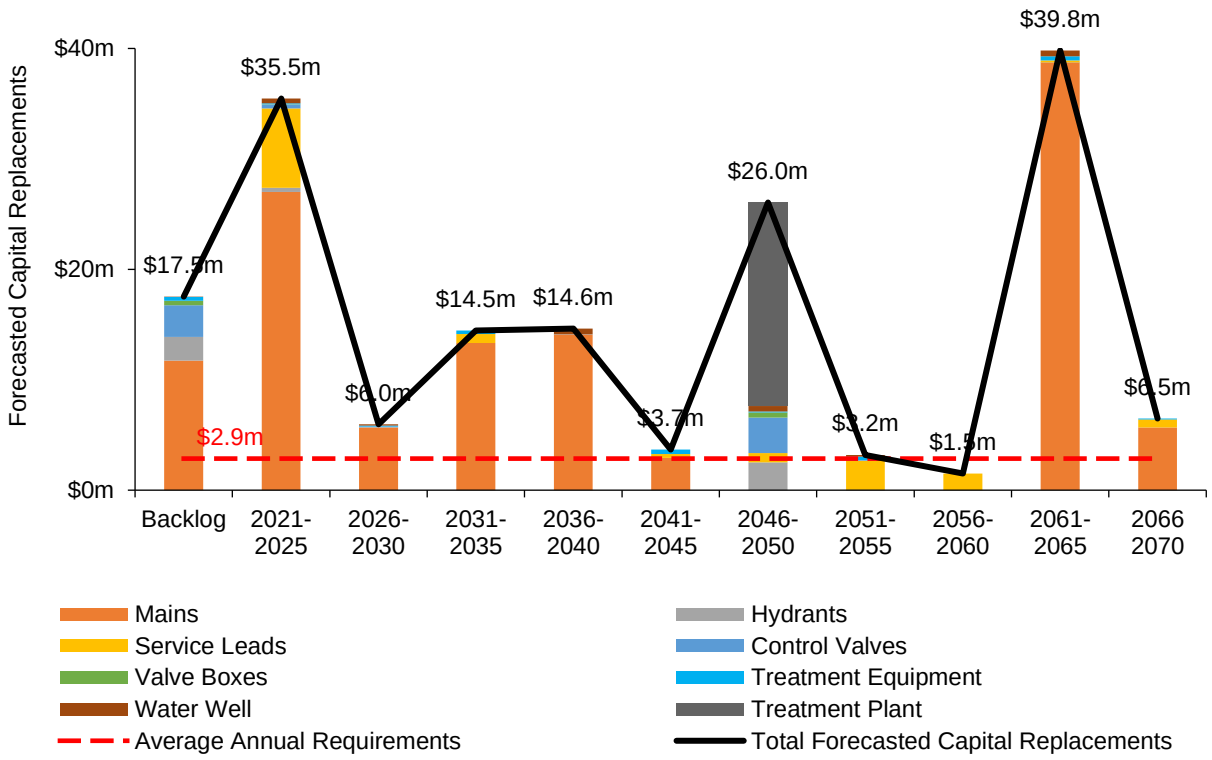
The following table outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Main flushing and valve turning is implemented twice per year. Fire flow tests are completed on a 5-year cycle. The cost of flushing is estimated to be $150 per metre, and represents a significant operating cost to the municipality.
Rehabilitation	No rehabilitation program is in place. Rehabilitations and renewals are guided by site-specific events, break history, and opportunities to coordinate with roadway projects. Rehabilitation activities can cost $500 per metre.
Replacement	Replacement activities are identified based on an analysis of the main break rate as well as opportunities for project coordination.

Forecasted Capital Requirements

The figure below illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Town's water network assets. This graph includes at least one iteration of replacement for the longest-lived asset within this asset class. Assets with shorter lifespans may undergo multiple replacement cycles over the coming decades. On average, $2.9 million is required each year to remain current with capital replacement needs.

The Town is forecasted to experience multiple replacement spikes, as watermains reach the end of their useful life. Most mains have exceeded, or will exceed their useful life in the next three years. As the water treatment plant is currently listed only as a singular asset, it is projected to be replaced entirely in 2046-2050. A second cycle of watermain replacement is forecasted in 2061-2065, although a review of useful life data may alter these projections.



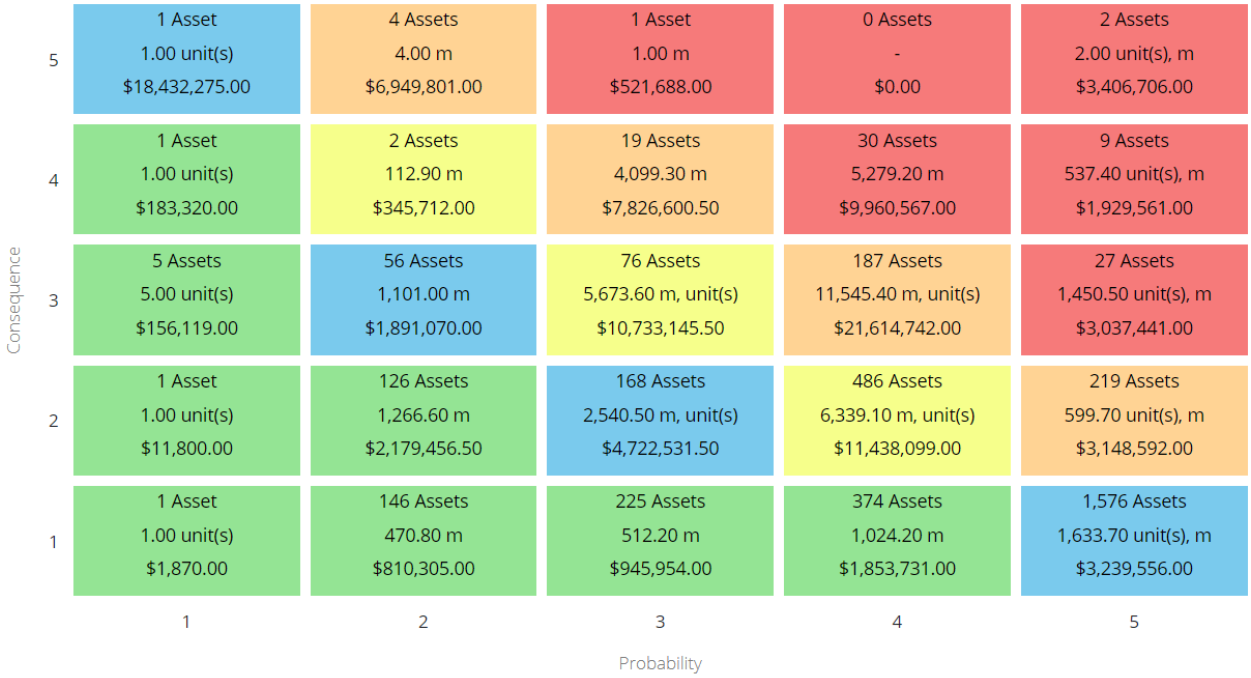
The chart also illustrates a replacement backlog of $17.5 million, comprising assets that have reached the end of their estimated useful life but remain in service. As this is dominated by watermains, performance history and other characteristics (e.g., material) and data may indicate that these assets are still capable of delivering acceptable service standards, in a safe and efficient manner.

The table below summarizes the projected cost of lifecycle activities (age-based capital replacement only) that will need to be undertaken over the next 10 years to maintain the current level of service. These values are derived from CityWide™, the Town's primary asset management application.

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Mains	$7,176,788	$11,963,007	$7,861,792	$0	$9,938	$4,902,310	$0	$779,695	$0	$0	$3,370,025	$6,655,190
Hydrants	$0	$118,000	$192,770	$0	$63,409	$0	$0	$35,400	$0	$0	$0	$0
Service Leads	$0	$0	$0	$0	$7,190,288	$0	$0	$0	$0	$0	$0	$0
Control Valves	$0	$79,500	$216,337	$0	$57,536	$0	$0	$48,975	$0	$0	$0	$0
Valve Boxes	$0	$30,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Treatment Equipment	$0	$0	$44,711	$19,276	$0	$0	$0	$0	$76,091	$0	$335,154	$0
Water Well	$0	$329,832	$0	$0	$129,140	$128,165	$0	$0	$0	$0	$0	$0
Treatment Plant	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Capital Expenditures	**$7,176,788**	**$12,520,339**	**$8,315,610**	**$19,276**	**$7,450,311**	**$5,030,475**	**$0**	**$864,070**	**$76,091**	**$0**	**$3,705,179**	**$6,655,190**

Risk Matrix: Water Network

The preliminary risk matrix below is generated using available asset data. It classifies assets based on their probability of failure and the consequence of failure. The Town is in the process of developing comprehensive risk frameworks for each of its asset classes and major segments. These frameworks will allow the Town to build more robust risk models to refine how risk ratings are established for different asset segments.



In addition to asset level risk profiles based on an asset's age, condition, and criticality, the municipality may also face risk associated with not executing key lifecycle activities, including repairs, rehabilitation, and replacement of critical assets. These include:

53. Missed opportunities for cost savings and increases in lifecycle costs
54. Deferral of vital projects, or further lending and borrowing
55. Accelerated asset deterioration and premature failure, which may lead to public health and safety hazards, and disruption of services to the Town's residential and commercial base.
56. Failure of water distribution assets can lead to severe consequences, including boil water advisories, service shutoffs, and disruption and damage to other infrastructure services and assets, such as roadways.

57. A decline in public satisfaction with the Town’s service standards and the resulting reputational damage

Levels of Service

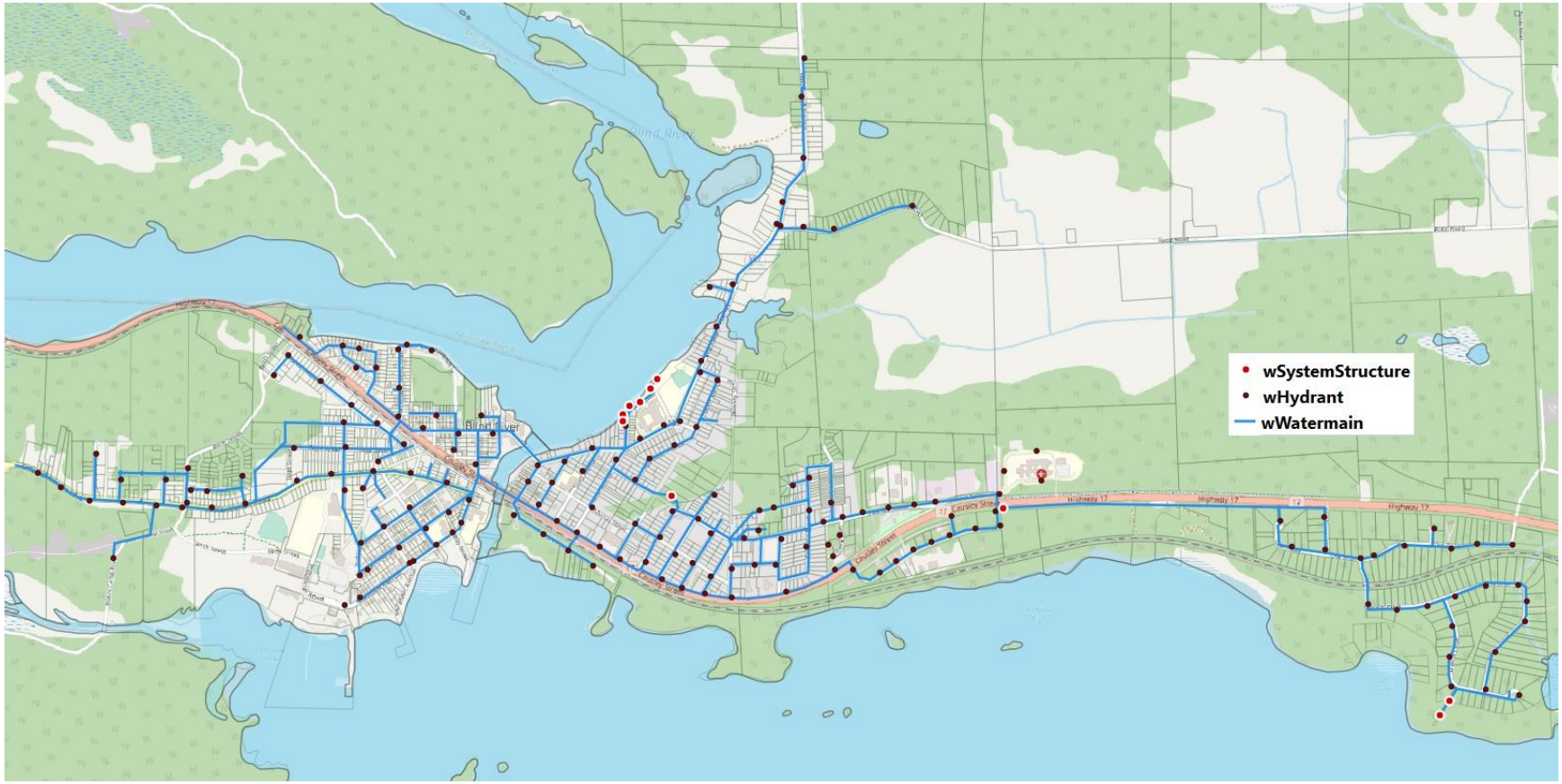
The following tables identify the Town's current level of service for Water Network. These metrics include the technical and community level of service metrics that are required as part of O. Reg. 588/17 as well as any additional performance measures that the Town has selected for this AMP.

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	Map provided
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	All properties have fire flow available.
Reliability	Description of boil water advisories and service interruptions	NA

The map below illustrates the Town's current water distribution network and treatment facility.



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	66%
	% of properties where fire flow is available	100%
Reliability	# of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	0
	# of connection-days per year where water is not available due to water main breaks compared to the total number of properties connected to the municipal water system	3

Recommendations

Asset Inventory

- The water treatment plant should be further componentized using the Uniformat II code system. This will allow for analysis at the individual building element or component level, making capital forecasting more accurate.
- Identify material for watermains to improve age profile analysis and capital replacement forecasting.

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk water network assets, particularly the treatment plant.

Risk Management Strategies

58. 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.
59. Develop and review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

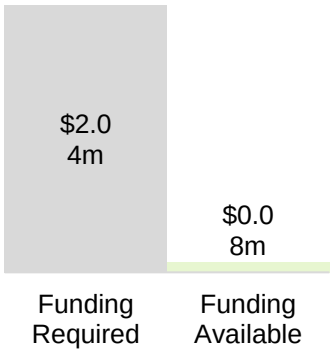
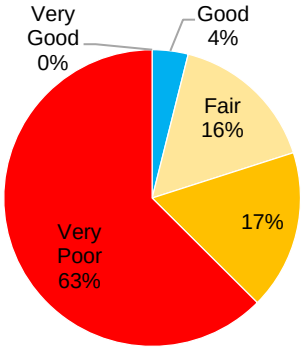
Levels of Service

- 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.

Sanitary Sewer Network

The Town's sanitary sewer system provides wastewater treatment services to a population of approximately 2,350. The network includes a treatment plant, 27km of sewer lines, four pump stations, and other supportive assets.

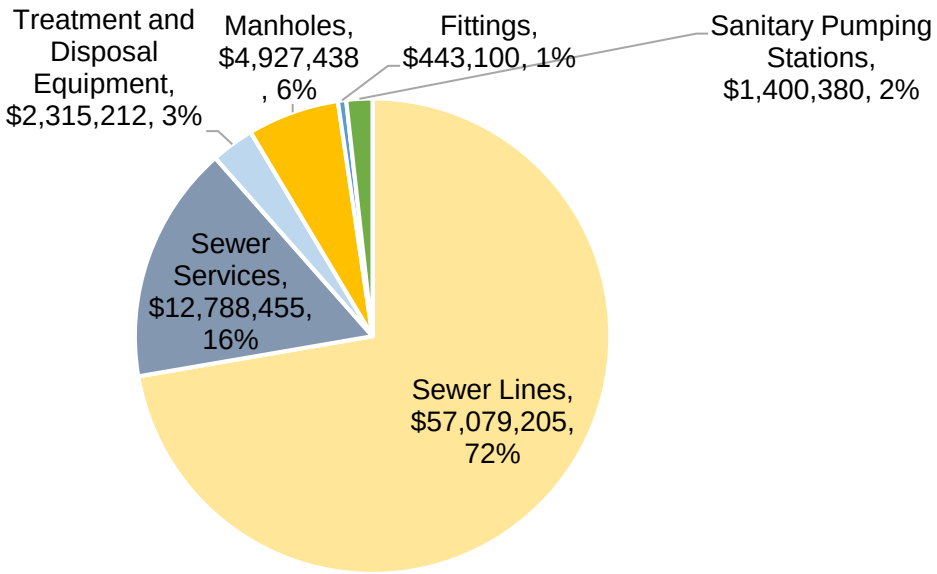
The table below outlines high-level service indicators for the Sanitary Sewer Network.

Cost	Performance (Average Condition)	Risk
		**$57.9 million** Assets with a 'Very High' risk rating based on probability of failure and consequence of failure analysis

Asset Inventory & Replacement Cost

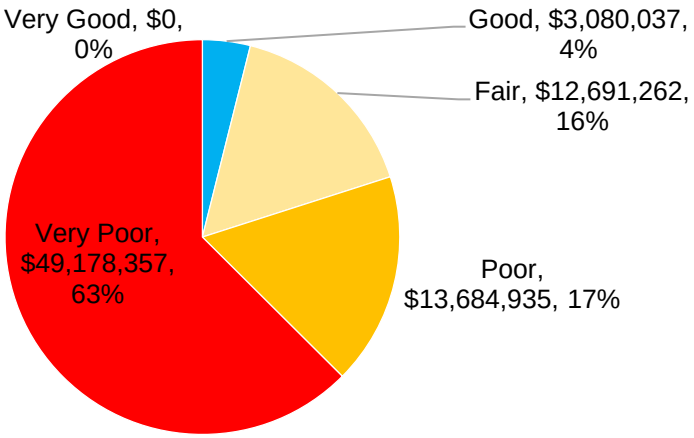
The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Town's Sanitary Sewer Network inventory.

Asset Segment	Quantity	Primary Replacement Cost Method	Total Replacement Cost
Sewer Lines	27,064m	Cost per unit	$57,079,205
Sewer Services	6,835m	Cost per unit and user-defined	$12,788,455
Treatment and Disposal Equipment	3 (including pooled assets)	User-defined	$2,315,212
Manholes	349	User-defined	$4,927,438
Fittings	1,477	User-defined	$443,100
Sanitary Pumping Stations	4	User-defined	$1,400,380
		Total	**$78,953,790**

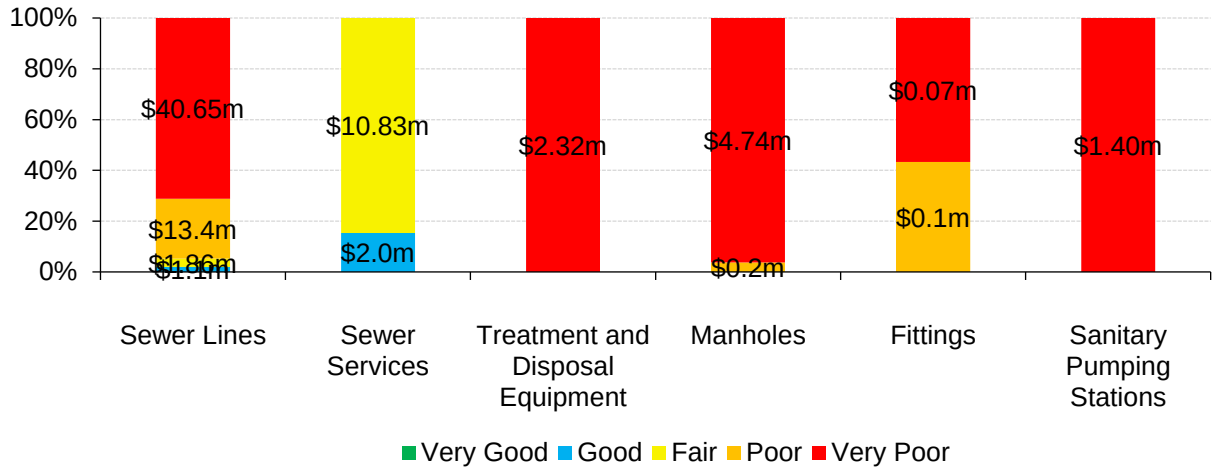


Asset Condition

The figure below summarizes the replacement cost-weighted condition of the Town's sanitary network and associated capital assets. Based primarily on age, the vast majority of the Town's wastewater infrastructure is aging and in poor or worse condition. These assets may be candidates for replacement in the short term; similarly, assets in fair condition may require rehabilitation or replacement in the medium term and should be monitored for further degradation in condition.



The figure below provides further detail on the sanitary network, by asset type. Most assets are in poor or worse condition, based on age.



To ensure that the Town's Sanitary Sewer Network continues to provide an acceptable level of service, the Town should monitor the average condition of all assets, including performance histories such as incidents of blockages or line breaks. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the Sanitary Sewer Network.

Current Approach to Condition Assessment

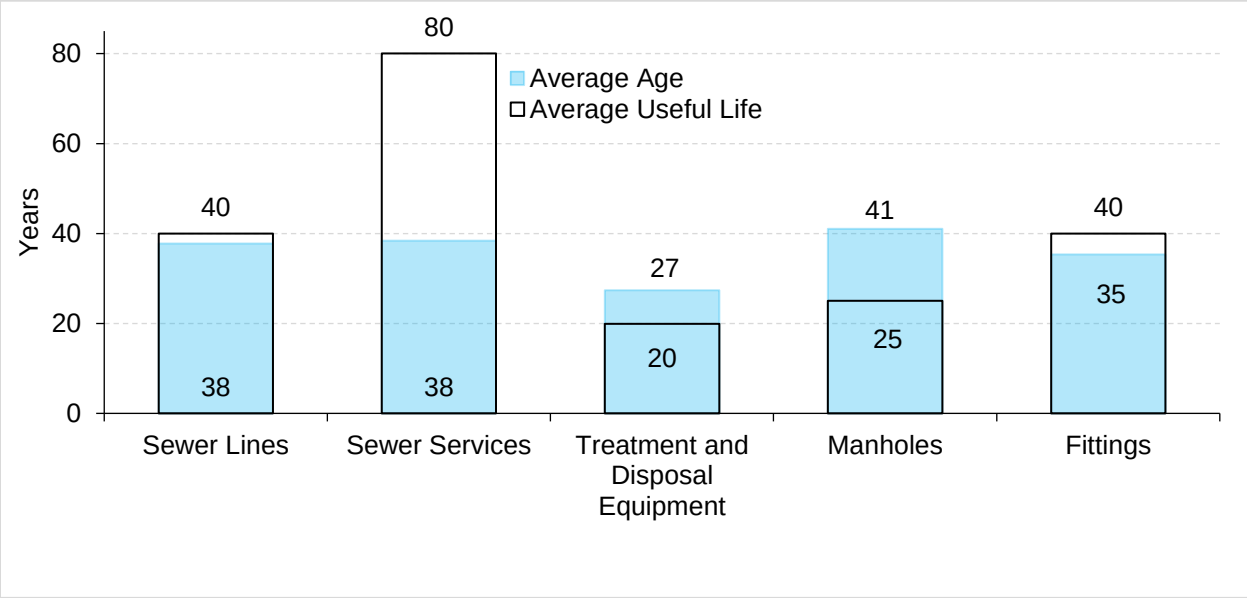
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

60. The Town performs CCTV inspections based on weekly flow inspections.

Age Profile

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

As assets age, their performance diminishes, often more rapidly as they approach the end of their design life. EULs can vary significantly within an asset category, from several years to many decades. The graph below illustrates the average useful life of each major asset segment, and the average current age of assets within the segment. Both values are weighted by replacement cost to ensure comparability.



The age profile shows that most sanitary assets have either exceeded their service life or are in the latter stages of their lifecycle and may begin to show further signs of disrepair and degradation. However, the service life for sewer lines may be understated. In addition, material data is unknown for a substantial portion of the sewer lines inventory, totalling approximately $22 million, making it difficult to assign reliable useful life estimates to those assets.

Periodically, each asset's EUL should be reviewed to better align with actual, in-field performance.

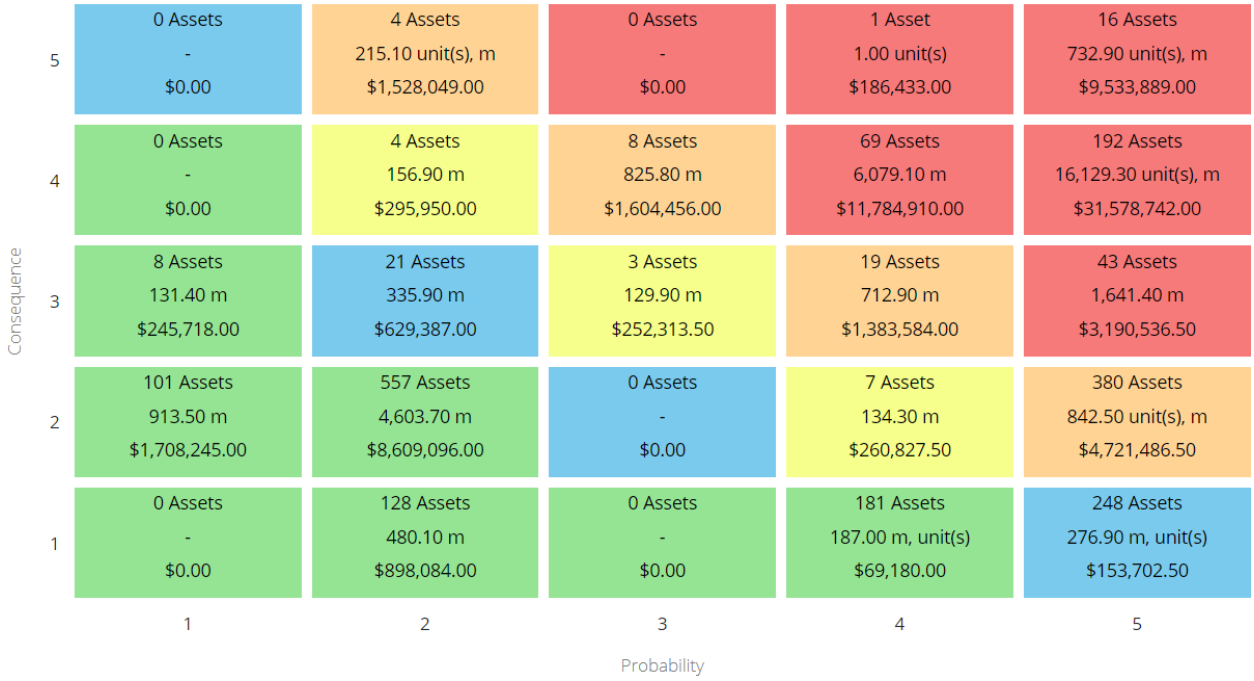
Lifecycle Management Strategy

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.

Activity Type	Description of Current Strategy
Maintenance	Main flushing is completed on an annual basis, with rodding as required. The cost of flushing is estimated to be $200 per metre, and represents a significant operating cost to the municipality.
Rehabilitation and Replacement	No rehabilitation or replacement program is in place. Rehabilitations and replacements are guided by CCTV inspections, site-specific e.g., blockage events, and opportunities to coordinate with roadway projects. The service life of mains and type of material also provide guidance on the timing of any replacement activities. Rehabilitation activities can cost $500 per metre.

Risk Matrix: Sanitary Network

The preliminary risk matrix below is generated using available asset data. It classifies assets based on their probability of failure and the consequence of failure. The Town is in the process of developing comprehensive risk frameworks for each of its asset classes and major segments. These frameworks will allow the Town to build more robust risk models to refine how risk ratings are established for different asset segments.



In addition to asset level risk profiles based on an asset's age, condition, and criticality, the municipality may also face risk associated with not executing key lifecycle activities, including repairs, rehabilitation, and replacement of critical assets. These include:

61. Missed opportunities for cost savings and increases in lifecycle costs
62. Deferral of vital projects, or further lending and borrowing
63. Accelerated asset deterioration and premature failure, which may lead to public health and safety hazards, and disruption of services to the Town's residential and commercial base.
64. Failure of wastewater treatment and distribution assets can lead to severe consequences, including sewage backups, service shutoffs, environmental contamination, and disruption and damage to other infrastructure services and assets, such as roadways.
65. A decline in public satisfaction with the Town's service standards and the resulting reputational damage

Levels of Service

The following tables identify the Town's current level of service for Sanitary Sewer 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.

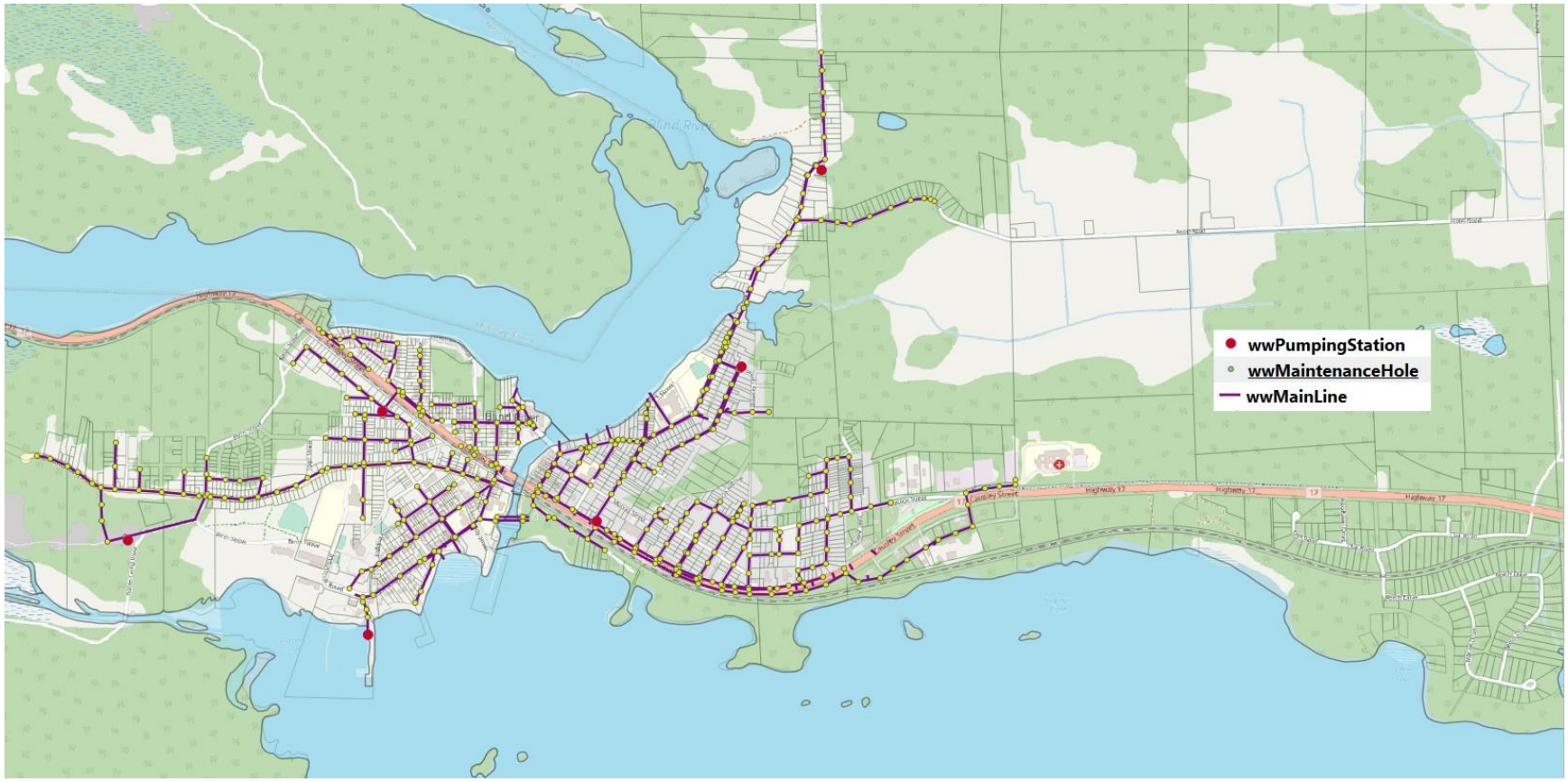
Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by Sanitary Sewer 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	Map provided
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	TBD
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	TBD
	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	Stormwater can enter into sanitary sewers due to cracks in sanitary mains or through indirect connections (e.g., weeping tiles). In the case of heavy rainfall events, sanitary sewers may experience a volume of water and sewage that exceeds its designed capacity. In some cases, this can cause water and/or sewage to overflow or backup into homes. The disconnection of weeping tiles from sanitary mains and the use of sump pumps and pits directing storm water to the storm drain

Service Attribute	Qualitative Description	Current LOS (2020)
		system can help to reduce the chance of this occurring.
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	The municipality follows a series of design standards that integrate servicing requirements and land use considerations when constructing or replacing sanitary sewers. These standards have been determined with consideration of the minimization of sewage overflows and backups.
	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	Effluent refers to water pollution that is discharged from a wastewater treatment plant, and may include suspended solids, total phosphorous and biological oxygen demand. The Environmental Compliance Approval (ECA) identifies the effluent criteria for municipal wastewater treatment plants.

The map below outlines the Town's sanitary system network, including linear and vertical assets.



Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2020)
Scope	% of properties connected to the municipal wastewater system	66%
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	0.0027 (3 events over 1,120 properties)
	# 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	0.0009 (1 effluent violation over 1,120 properties)

Recommendations

Asset Inventory

66. Identify material for sewer mains to improve age profile analysis and capital replacement forecasts. Current estimated useful life may be too conservative.

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk wastewater network assets. Consider implementing an annual condition assessment program to assess a portion of sewer network each year. Integrate this data with CityWide to ensure forecasting remains current.

Risk Management Strategies

67. 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.
68. Develop and 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

69. 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 reviewed for feasibility to extend the life of infrastructure at the lowest total cost of ownership.
70. Evaluate the efficacy of the Town’s lifecycle management strategies at regular intervals to determine the impact cost, condition and risk.

Levels of Service

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

5 Impacts of Growth

Key Insights

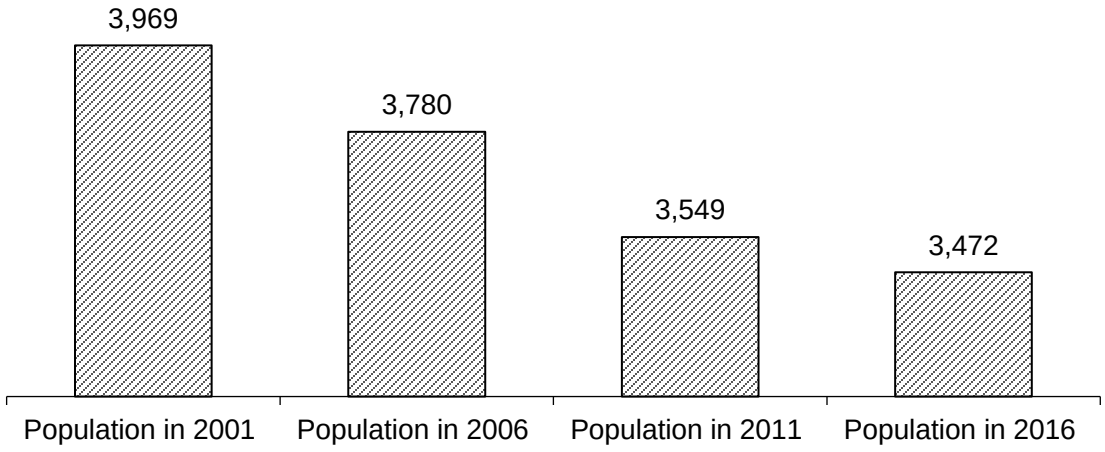
71. Changes in population levels has a direct impact on the type of infrastructure services desired.
72. Although Blind River has seen a decline in population in the last several census periods, the COVID-19 pandemic has shifted workforce dynamics. The ability to work remotely in many fields has made rural communities a more attractive place to live.
73. It is unclear whether the impacts of Covid are permanent or temporary.

Description of Growth Assumptions

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

Population Trends

The Town has seen a decline in population over the last four census periods. According to projections by the provincial government, Algoma is forecasted to experience a natural decrease in population.



However, the COVID-19 pandemic has upended traditional workforce dynamics, allowing remote work in many fields. This has made some communities more attractive for residents, particularly those in close proximity to economic hubs. According to the 2016 Census, Blind River's current labour force totals approximately 1,545. The Town's location along a central corridor and its relative proximity to Sudbury and Sault Ste. Marie may have similar implications on its growth.

There is substantial uncertainty regarding the permanence of the effects of COVID. If trends unfold in Blind River similar to other communities, the Town may see changes in population that were not previously anticipated. The magnitude and type of population change will have direct implications on the type of infrastructure services.

A decrease in population may place less distress on essential infrastructure services, including transportation networks, and water and wastewater services. This can reduce

the cost of the associated lifecycle management programs. However, decreasing population would also reduce the municipality's tax and user base. This reinforces the need to have effective levels of service targets and risk management strategies to ensure that assets that have the highest criticality for the Town today and tomorrow are prioritized over the short and long terms.

Impact of Growth on Lifecycle Activities

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

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

6 Financial Strategy

Key Insights

74. All assets receive the vast majority of their capital funding through the Town's tax revenues and senior government programs, including grants and the CBBF.
75. To remain current with long-term capital replacement needs, the Town must allocate approximately $8.3 million annually. Currently, $3.5 million available in capital funding, leaving an annual funding gap of $4.7 million.
76. To close this gap, an annual tax increase of 3.2% is recommended for the next 20 years.
77. A review of estimated useful life data for underground infrastructure would lower these annual requirements, and the subsequent tax rate impact.
78. Development of risk frameworks will be essential in prioritizing capital projects and making the best use of limited funds.

Financial Strategy Overview

For an asset management plan to be effective and meaningful, it must be integrated with a long-term financial plan (LTFP). The development of a comprehensive financial plan will allow the Town of Blind River 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
    e. Development charges
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.

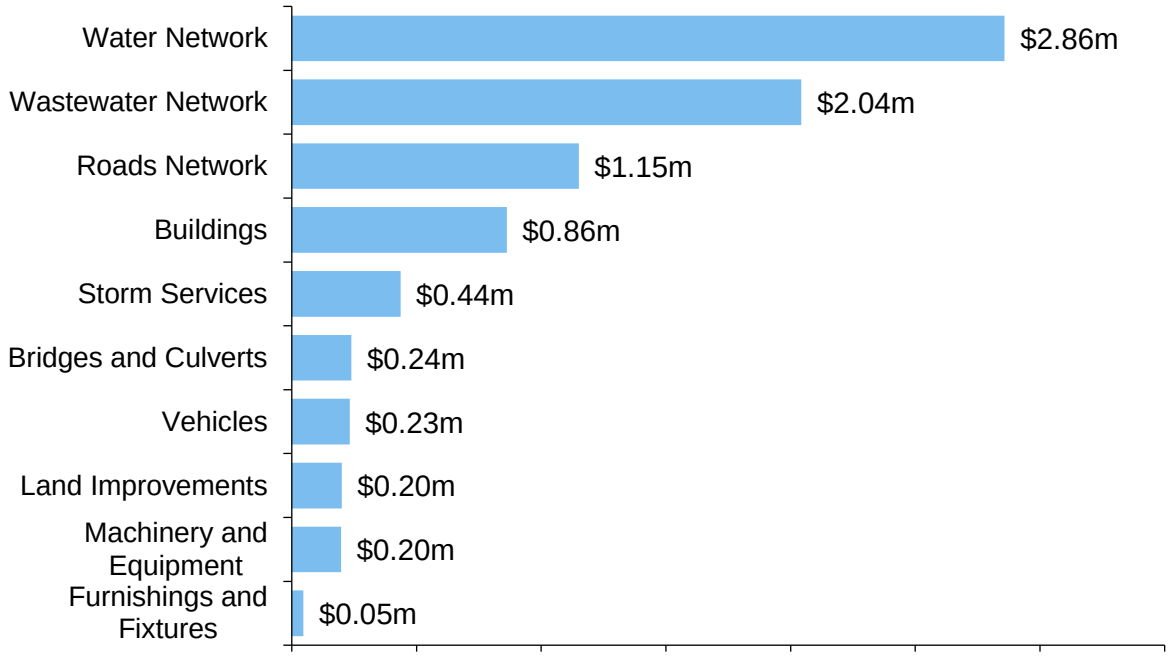
If the financial plan component results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Town's approach to the following:

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.

Annual Requirements & Capital Funding

Annual Requirements

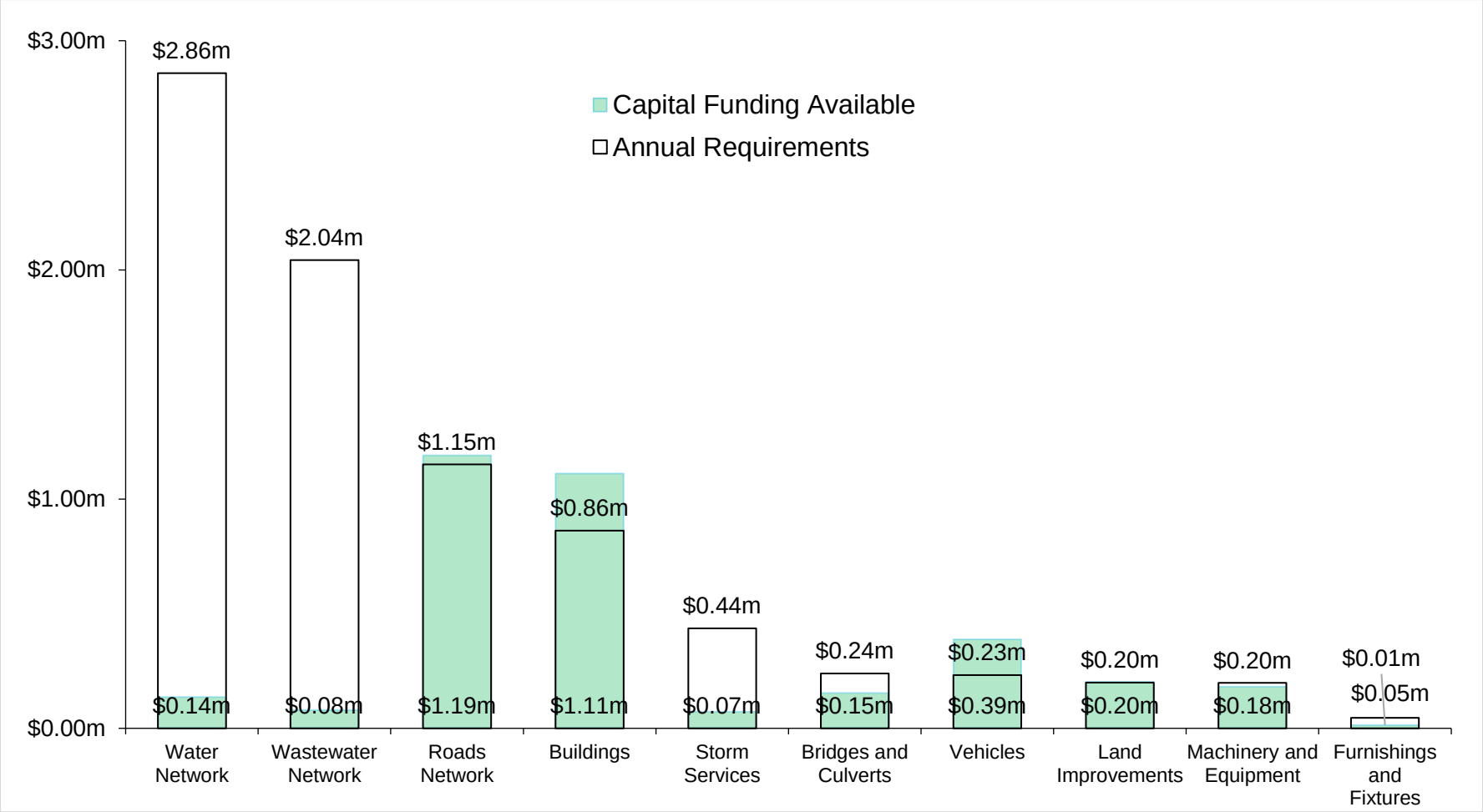
The average annual requirements (AAR) represent the amount the Town should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs, and achieve long-term sustainability. In total, the Town must allocate approximately $8.265 million annually to address capital requirements for the assets included in this AMP. We note that although this asset management plan focuses only on core assets, non-core asset categories have been included to provide a more complete financial context.



All 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.

Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately $3.533 million towards capital projects per year. Given the annual capital requirement of $8.265 million, there is currently a funding gap of $4.732 million annually. Several asset categories, namely roads, buildings, and vehicles are in an annual surplus position.



Funding Objective

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

1. **Tax Funded Assets:** Roads Network, Buildings, Storm Services, Bridges and Culverts, Vehicles, Land Improvements, Machinery and Equipment, Furnishings and Fixtures, 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.

Financial Profile: Tax Funded Assets

Current Funding Position

The following tables show, by asset category, Blind River's average annual asset capital expenditure requirements, current funding positions, and funding increases required to achieve full funding on assets funded by taxes. A nominal transfer to reserves (capital) for the water network is funded by user fees.

Asset Category	AAR	Annual Funding Available					Annual Deficit
		Taxes	CBBF	OCIF	Transfers to Reserves (Capital)	Total Funding Available	
Roads Network	1,151,000	550,000	432,000	189,000	20,000	1,191,000	(40,000)
Buildings	862,000	185,000	-	142,000	785,000	1,112,000	(250,000)
Storm Services	436,000	-	-	72,000	-	72,000	364,000
Bridges and Culverts	239,000	-	-	39,000	115,000	154,000	85,000
Vehicles	232,000	330,000	-	38,000	20,000	388,000	(156,000)
Land Improvements	200,000	70,000	-	33,000	100,000	203,000	(3,000)
Machinery and Equip.	198,000	54,000	-	33,000	95,000	182,000	16,000
Furnishings and Fixtures	46,000	8,000	-	6,000	-	14,000	30,000
Water Network	2,858,000	105,000	-	-	32,000	105,000	2,721,000
Wastewater Network	2,043,000	80,000	-	-	-	112,000	1,963,000
	8,265,000	**1,382,000**	**432,000**	**552,000**	**1,167,000**	**3,533,000**	**4,732,000**

Based on current funding allocations and an annual funding deficit of $4.732 million, these infrastructure categories are currently funded at 42.7% of their long-term requirements.

Full Funding Requirements

In 2021, Town of Blind River has budgeted annual tax revenues of $6.4 million. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

Asset Category	Tax Change Required for Full Funding
Roads Network	(0.6%)
Buildings	(3.9%)
Storm Services	5.7%
Bridges and Culverts	1.3%
Vehicles	(2.4%)
Land Improvements	0.0%
Machinery and Equip.	0.2%
Furnishings and Fixtures	0.5%
Water Network	42.5%
Wastewater Network	30.6%
	73.9%

The following changes in costs and/or revenues should also be considered in the financial strategy:

a) Blind River's debt payments for these asset categories will be decreasing by $327,000 over the next five years, $635,000 over the next 10 years, and by $691,000 over the next 20 years.

The table below outlines this concept and presents several options:

	Without Capturing Changes				With Capturing Changes			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	4,732,000	4,732,000	4,732,000	4,732,000	4,732,000	4,732,000	4,732,000	4,732,000
Change in Debt Costs	-	-	-	-	(327,491)	(634,823)	(634,823)	(691,479)
Resulting Infrastructure Deficit:	**4,732,000**	**4,732,000**	**4,732,000**	**4,732,000**	**4,404,509**	**4,097,177**	**4,097,177**	**4,040,521**
Tax Increase Required	73.9%	73.9%	73.9%	73.9%	68.8%	64.0%	64.0%	63.1%
Annually:	**14.8%**	**7.4%**	**4.9%**	**3.7%**	**13.8%**	**6.4%**	**4.3%**	**3.2%**

Financial Strategy Recommendations

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

79. when realized, reallocating the debt cost reductions to the infrastructure deficit as outlined above.
80. increasing tax revenue by 3.2% each year for the next 20 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
81. allocating the current CBBF and OCIF revenue as outlined previously.
82. allocating the scheduled OCIF grant increases to the infrastructure deficit as they occur.
83. reallocating appropriate revenue from categories in a surplus position to those in a deficit position.
84. increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

85. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included any applicable OCIF formula-based funding since this funding is a multi-year commitment[1].
86. 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 20 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows an age-based infrastructure backlog of nearly $61 million, concentrated primarily in underground infrastructure.

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. At this time, the Town is unable to

borrow additional funds. Risk frameworks and models should be developed to prioritize future projects and ensure judicious use of funds.

Use of Debt

The following tables outline how Blind River has historically used debt for investing in the asset categories as listed. There is currently $3.532 million of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of $691,000.

Asset Category	Current Debt Outstanding	Debt Issued in the Last Five Years				
		2016	2017	2018	2019	2020
Roads Network	492,257	-	-	-	-	-
Buildings	1,098,282	-	-	-	-	-
Land Improvements	217,755	-	-	-	-	-
Water Network	1,723,811	-	-	-	-	-
Total:	**3,532,105**	**-**	**-**	**-**	**-**	**-**

Asset Category	Principal & Interest Payments in the Next Ten Years						
	2021	2022	2023	2024	2025	2026	2031
Roads Network	105,220	108,055	110,970	113,965	117,044	-	-
Buildings	176,016	176,016	176,016	176,016	176,016	176,016	-
Land Improvements	71,844	152,619	-	-	-	-	-
Water Network	338,400	324,800	220,975	187,973	187,973	187,973	56,656
Total:	**691,479**	**761,490**	**507,960**	**477,954**	**481,033**	**363,989**	**56,656**

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

Use of Reserves

Available Reserves

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

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 Blind River.

Asset Category	Balance at December 31, 2020
Roads Network	165,743
Buildings	833,414
Bridges and Culverts	195,000
Vehicles	260,000
Land Improvements	640,000
Machinery and Equip.	222,504
Water Network	180,797
Wastewater Network	185,283
Total:	**2,682,741**

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 consider 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.

Recommendation

In 2025, Ontario Regulation 588/17 will require Blind River 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.

We also recommend reviewing the performance of underground linear assets to adjust useful life estimates. These adjustments may lower annual capital requirements, reducing the impact on tax rates.

Risk frameworks will be essential in identifying high-criticality assets and optimizing limited funds. The Town will develop these frameworks in 2022 to aid in project prioritization.