Asset Management Plan

Town of Deseronto

2023

This Asset Management Program was prepared by:

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

Key Statistics

Replacement cost of asset portfolio
$93.8 million

Replacement cost of infrastructure per household
$117,000 (2021)

Percentage of assets in fair or better condition
65%

Percentage of assets with assessed condition data
40%

Annual capital infrastructure deficit
$2.4 million

Recommended timeframe for eliminating annual infrastructure deficit
20 Years

Target reinvestment rate
3.49%

Actual reinvestment rate
1.01%

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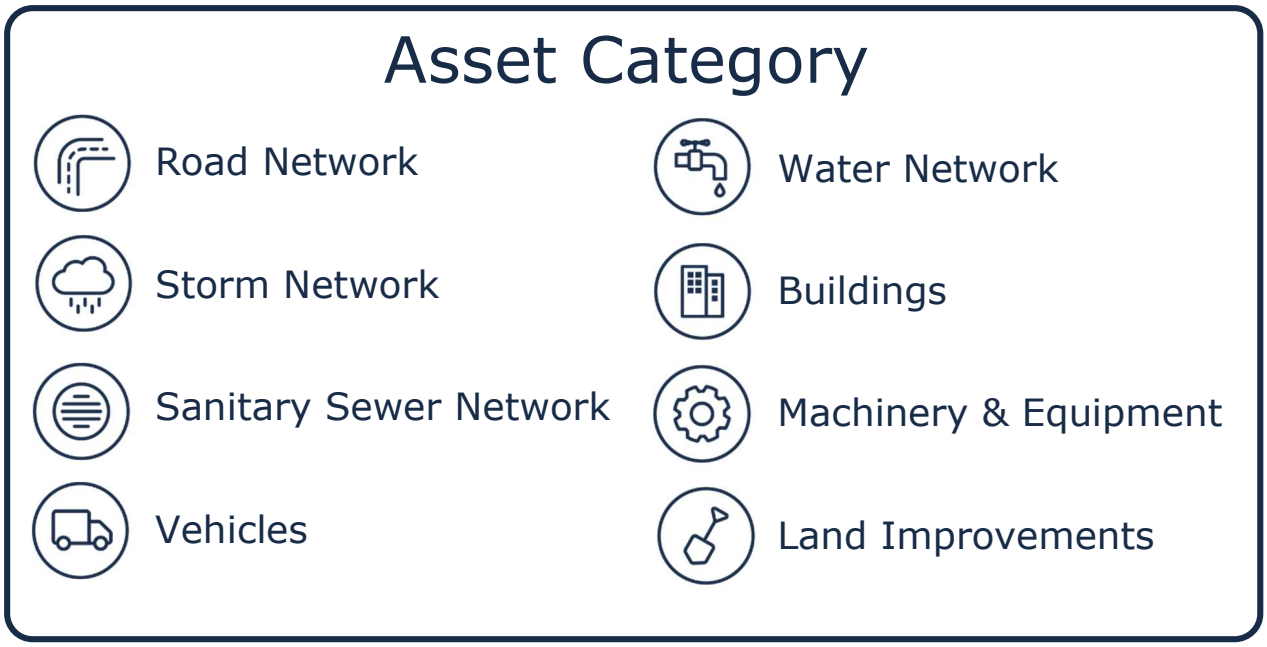
Executive Summary

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

Scope

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

This AMP include the following asset categories:



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

Findings

The overall replacement cost of the asset categories included in this AMP totals $95.4 million. 68% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 40% of assets. For the remaining 60% of assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.

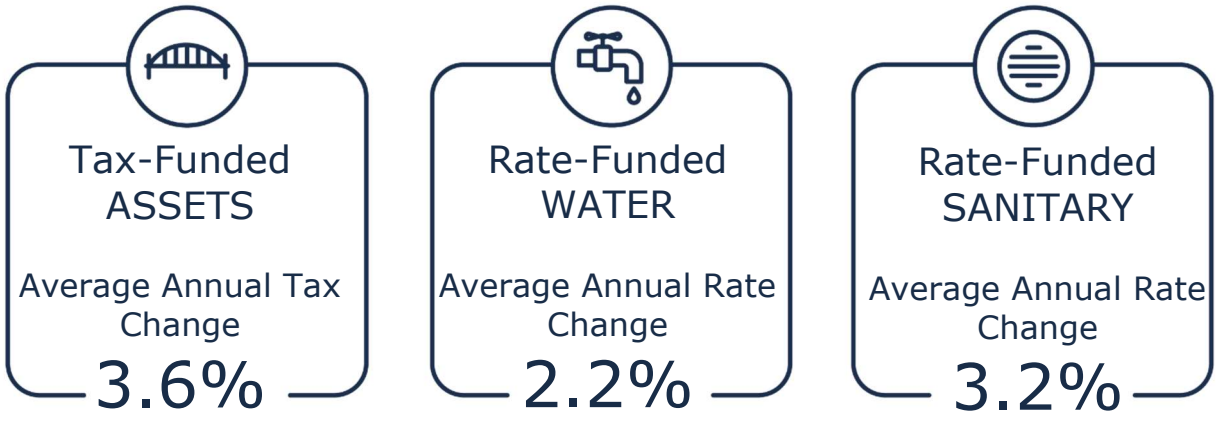
The development of a long-term, sustainable financial plan requires an analysis of whole lifecycle costs. This AMP uses a combination of proactive lifecycle strategies (paved roads) and replacement only strategies (all other assets) to determine the lowest cost option to maintain the current level of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

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Town's average annual capital requirement totals $3.3 million. Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately $959,000 towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $2.4 million.

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

Recommendations

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



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

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

1 Introduction & Context

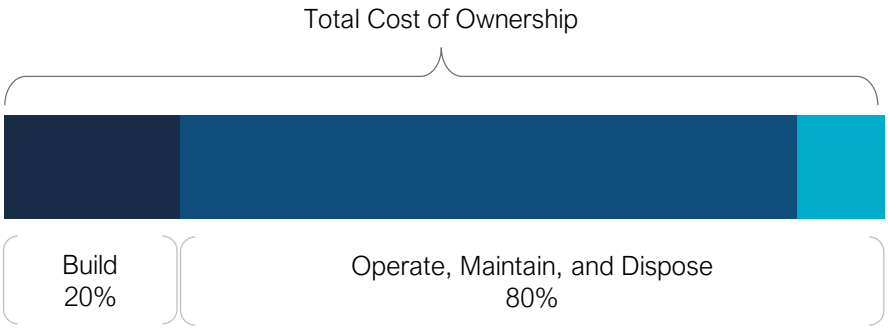
Key Insights

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

1.1 An Overview of Asset Management

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

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



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

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

1.1.1 Asset Management Policy

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

The Town adopted By-law No. 45-19 "Strategic Asset Management Policy" on June 26th, 2019 in accordance with Ontario Regulation 588/17.

The objectives of the policy are to promote the efficient and sustainable use of infrastructure and public service facilities which are planned or available, and avoid the need for premature, unjustified and/or uneconomical expansions of such.

1.1.2 Asset Management Strategy

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

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

1.1.3 Asset Management Plan

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

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

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

1.2 Key Concepts in Asset Management

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

1.2.1 Lifecycle Management Strategies

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

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

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

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

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

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

1.2.2 Risk Management Strategies

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

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

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

1.2.3 Levels of Service

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

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

Community Levels of Service

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

will be used to determine the community level of service provided. These descriptions can be found in the Levels of Service subsection within each asset category.

Technical Levels of Service

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

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

Current and Proposed Levels of Service

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

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

1.3 Ontario Regulation 588/17

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

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

2019

Strategic Asset Management Policy

2022

Asset Management Plan for Core Assets with the following components:

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

2024

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

2025

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

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

1.3.1 O. Reg. 588/17 Compliance Review

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

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

2 Scope and Methodology

Key Insights

- This asset management plan includes 8 asset categories and is divided between tax-funded and rate-funded categories
- The source and recency of replacement costs impacts the accuracy and reliability of asset portfolio valuation
- Accurate and reliable condition data helps to prevent premature and costly rehabilitation or replacement and ensures that lifecycle activities occur at the right time to maximize asset value and useful life

2.1 Asset Categories Included in this AMP

This asset management plan for the Town of Deseronto is produced in compliance with Ontario Regulation 588/17. The July 2024 deadline under the regulation—the second of three AMPs—requires analysis of both core and non-core assets.

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

Asset Category	Source of Funding
Road Network	Tax Levy
Storm Network	
Buildings	
Vehicles	
Machinery & Equipment	
Land Improvements	
Water Network	User Rates
Sanitary Network	

2.2 Deriving Replacement Costs

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

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

User-defined costs based on reliable sources are a reasonably accurate and reliable way to determine asset replacement costs. Cost inflation is typically used in the absence of reliable replacement cost data. It is a reliable method for recently

purchased and/or constructed assets where the total cost is reflective of the actual costs that the Town incurred. As assets age, and new products and technologies become available, cost inflation becomes a less reliable method.

2.3 Estimated Useful Life and Service Life Remaining

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

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

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

2.4 Reinvestment Rate

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

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

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

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

2.5 Deriving Asset Condition

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

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

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

The analysis in this AMP is based on assessed condition data only as available. In the absence of assessed condition data, asset age is used as a proxy to determine asset condition. Appendix D includes additional information on the role of asset condition data and provides basic guidelines for the development of a condition assessment program.

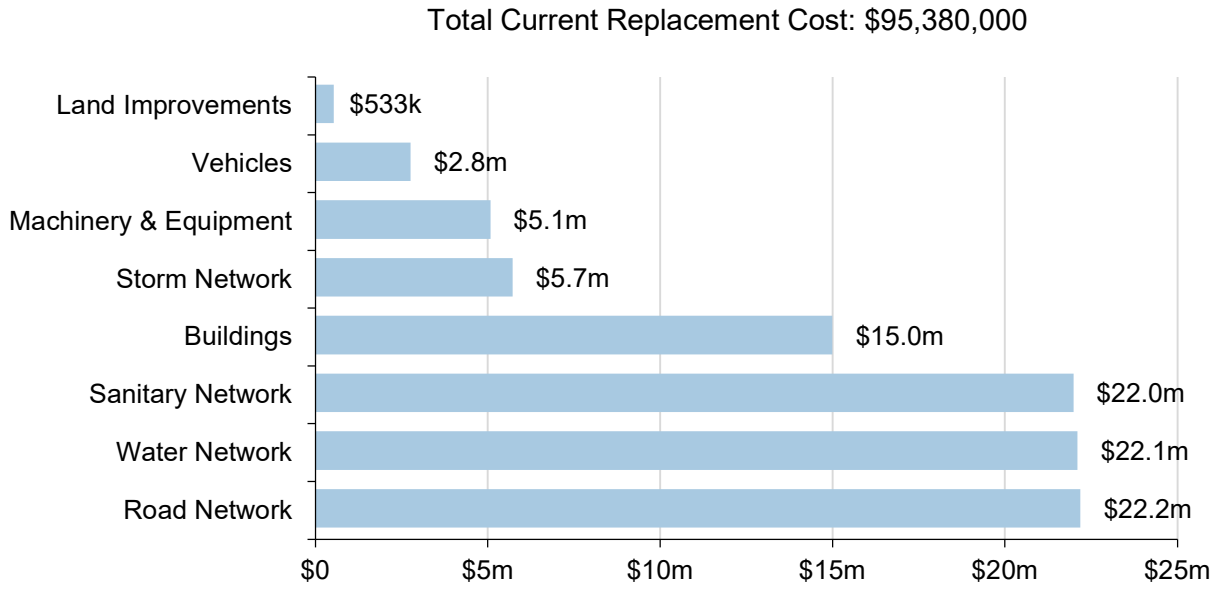
3 Portfolio Overview

Key Insights

- The total replacement cost of the Town's asset portfolio is $95.4 million
- The Town's target re-investment rate is 3.49%, and the actual re-investment rate is 1.01%, contributing to an expanding infrastructure deficit
- 68% of all assets are in fair or better condition
- Average annual capital requirements total $3.3 million per year across all assets

3.1 Total Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of $95.4 million based on inventory data from 2022. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.

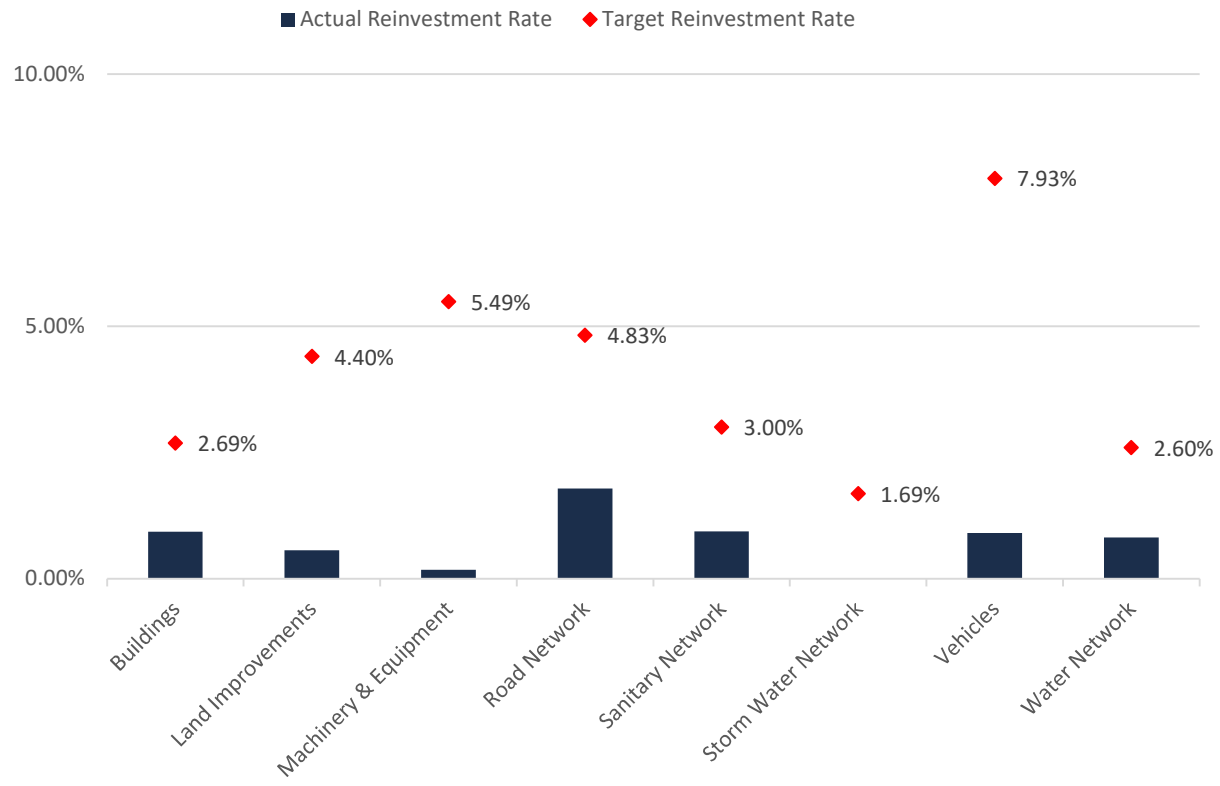


The following table identifies the methods employed to determine replacement costs across each asset category:

Asset Category	Replacement Cost Method	
	User-Defined	Notes
Road Network	100%	Road Needs Study & Staff Estimates
Storm Network	100%	Staff Estimates
Water Network	69.5%	Staff Estimates
Sanitary Network	100%	Staff Estimates
Buildings	100%	Staff Estimates
Machinery & Equipment	100%	Staff Estimates
Fleet	100%	Staff Estimates
Land Improvements	78.5%	Staff Estimates

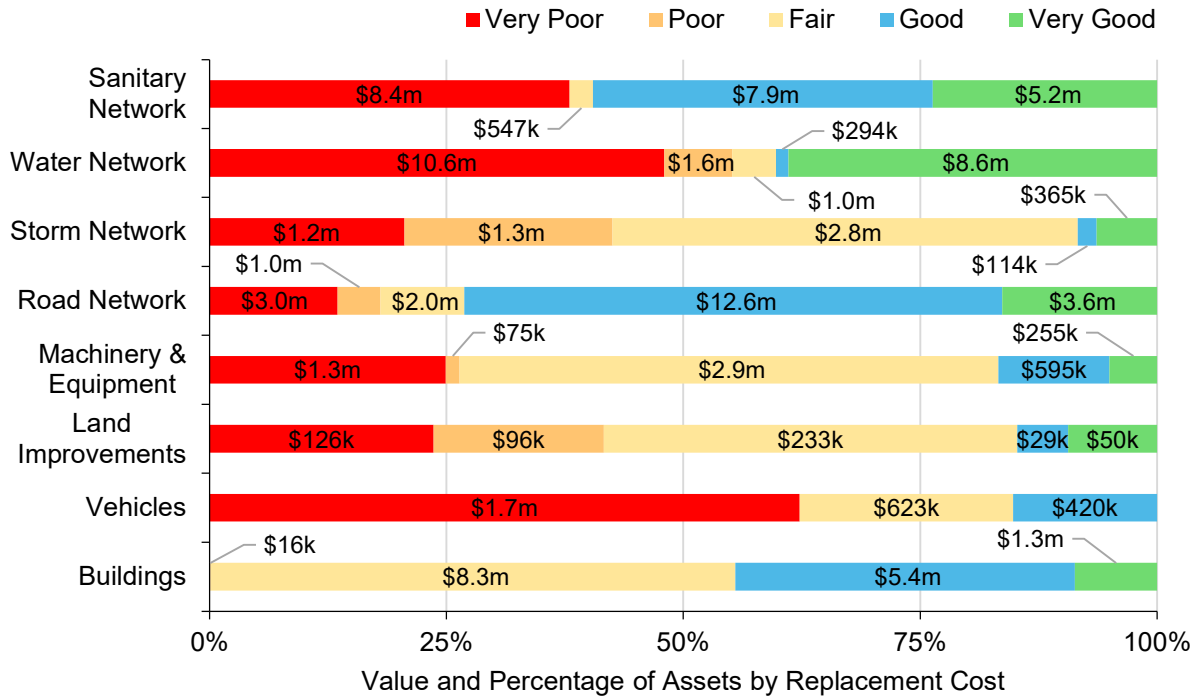
3.2 Target vs. Actual Reinvestment Rate

The graph below depicts funding gaps or surpluses by comparing target vs actual reinvestment rate. To meet the long-term replacement needs, the Town should be allocating approximately $3.3 million annually, for a target reinvestment rate of 3.49%. Actual annual spending on infrastructure totals approximately $959,000, for an actual reinvestment rate of 1.01%.



3.3 Condition of Asset Portfolio

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

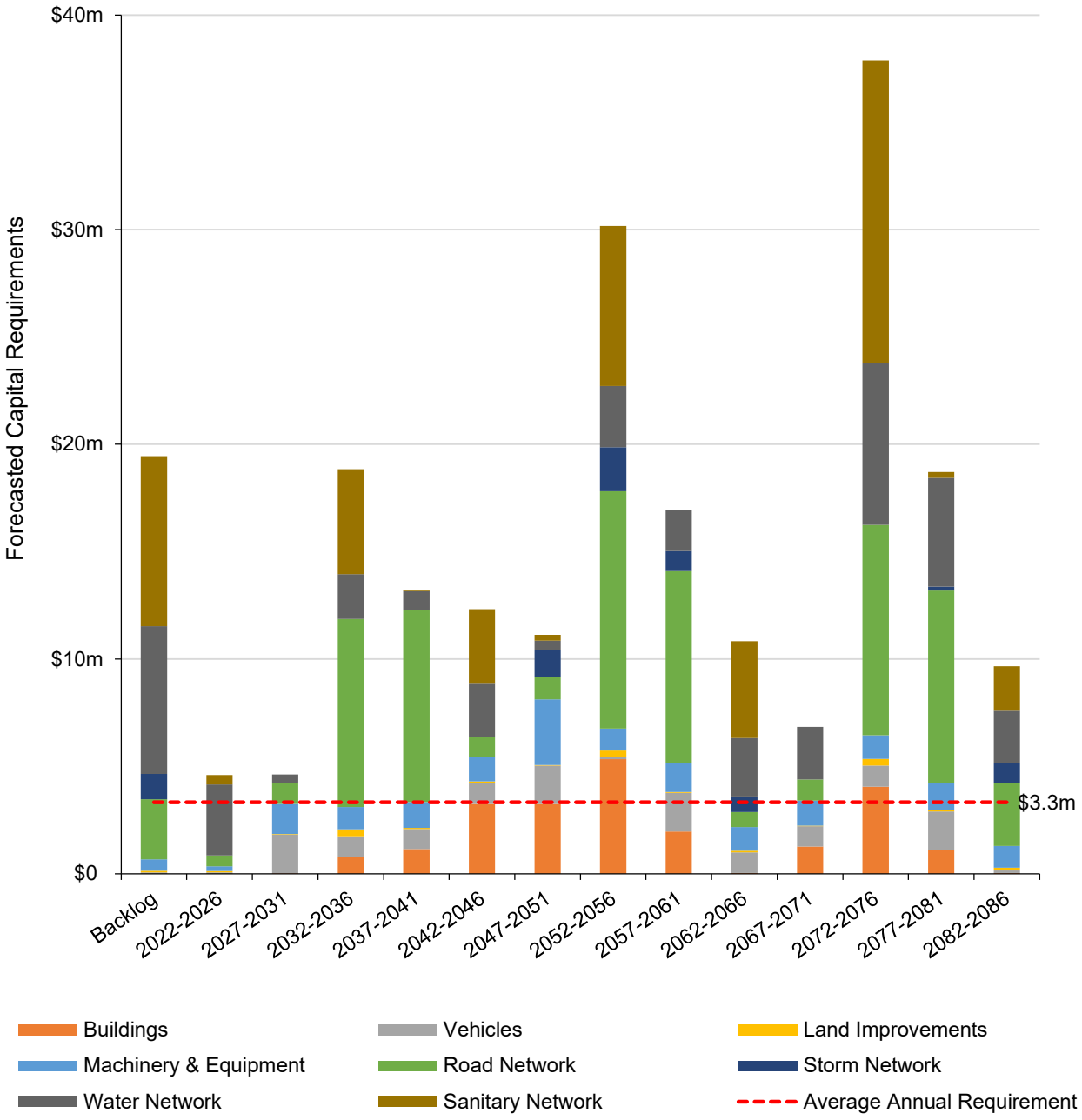


This AMP relies on assessed condition data for 40% of assets; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data used throughout this AMP.

Asset Category	Asset Segment	% of Assets with Assessed Condition	Source of Condition Data
Road Network	Paved Roads	97%	2020 Road Needs Study
Storm Network	All	0%	N/A
Buildings	All	99%	Staff Assessments
Machinery & Equipment	All	66%	Staff Assessments
Vehicles	All	94%	Staff Assessments
Land Improvements	All	43%	Staff Assessments
Water Network	All	0%	N/A
Sanitary Network	All	0%	N/A

3.4 Forecasted Capital Requirements

The development of a long-term capital forecast should include both asset rehabilitation and replacement requirements. With the development of asset-specific lifecycle strategies that include the timing and cost of future capital events, the Town can produce an accurate long-term capital forecast. The following graph identifies capital requirements over the next 65 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



4 Analysis of Tax-funded Assets

Key Insights

- Tax-funded assets are valued at $51.3 million
- 81% of tax-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for tax-funded assets is approximately $2.1 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

4.1 Road Network

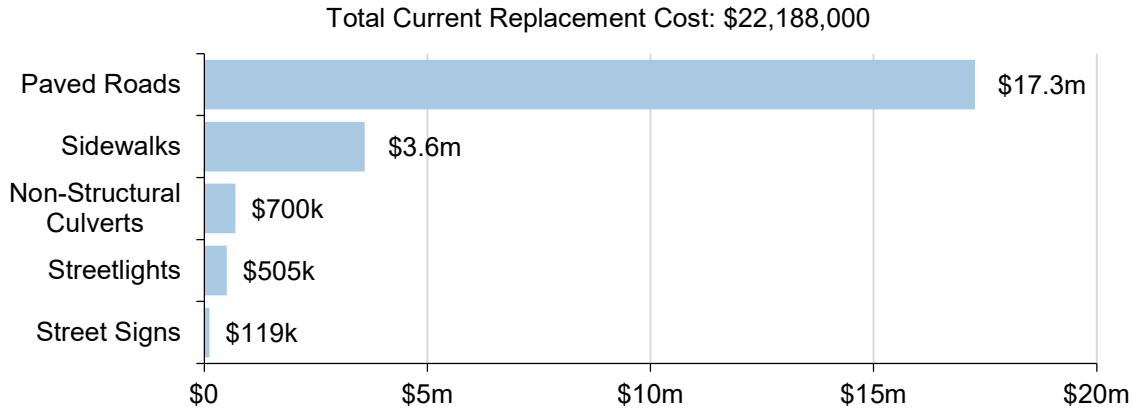
The road network is a critical component of the provision of safe and efficient transportation service. It includes all municipally owned and maintained roadways in addition to supporting roadside infrastructure including sidewalks, street signs, and streetlights.

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.

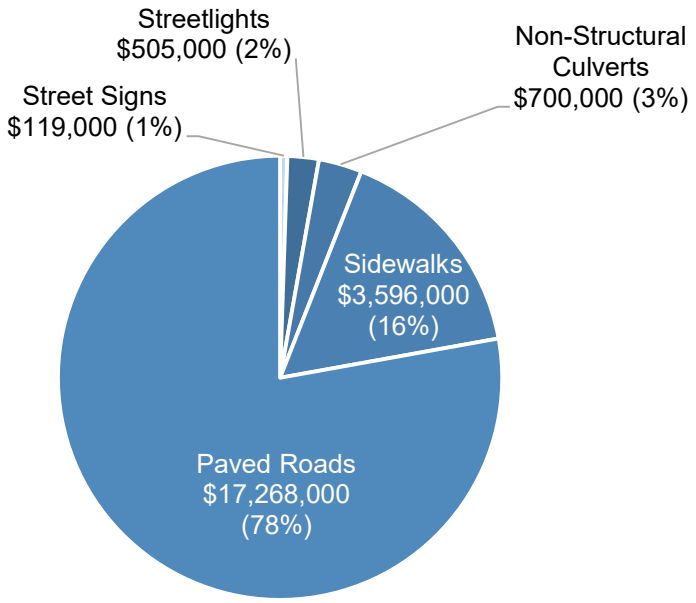
4.1.1 Asset Inventory & Replacement Costs

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost	Annual Capital Requirement
Gravel Roads	1.3 km	Not Planned for Replacement[1]		
Non-Structural Culvert	1	User-Defined	$700,000	$20,000
Paved Roads	15.1 km	User-Defined	$17,268,000	$898,000
Sidewalks	12.6 km	Cost Per Unit	$3,596,000	$136,000
Street Signs	177	User-Defined	$119,000	$6,000
Streetlights	253	User-Defined	$505,000	$18,000
			$22,188,000	**$1,078,000**



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



Total Current Replacement Cost: $22,188,000

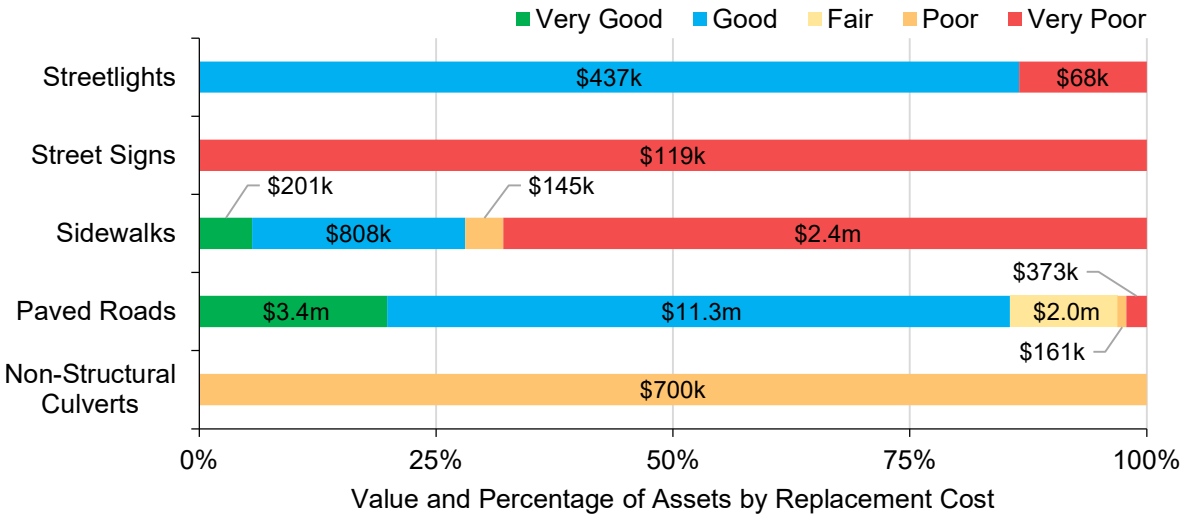
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.1.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (60%) is a weighted value based on replacement cost.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition	Condition Source
Non-Structural Culvert	50	30	30% (Poor)	100% Assessed
Paved Roads	10 - 20	41.1	68% (Good)	97% Assessed
Sidewalks	20 - 30	13.2	20% (Very Poor)	Age-Based
Street Signs	20	26.3	1% (Very Poor)	Age-Based
Streetlights	30	9	61% (Good)	Age-Based
Average		**38**	**58% (Fair)**	

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



The average ages for the Streetlights segment is based on the assets populated with data. In-service dates are unknown for the Decorative Streetlights, which show as very poor in the graph above.

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

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

Current Approach to Condition Assessment

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

- In 2020, a comprehensive Road Needs Study was conducted, providing a thorough assessment of the road infrastructure. As part of the ongoing maintenance strategy, roads are assessed on a ten-year cycle to ensure their optimal condition and functionality.
- Each morning, an internal road patrol is carried out to diligently inspect and evaluate the road conditions. Staff document their findings daily using standardized forms. Any minor to moderate deficiencies identified during the patrol are promptly noted and scheduled for repair within the same day. This

road patrol procedure also encompasses a visual inspection of signs and sidewalks to maintain their integrity and safety.

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

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

4.1.3 Lifecycle Management Strategy

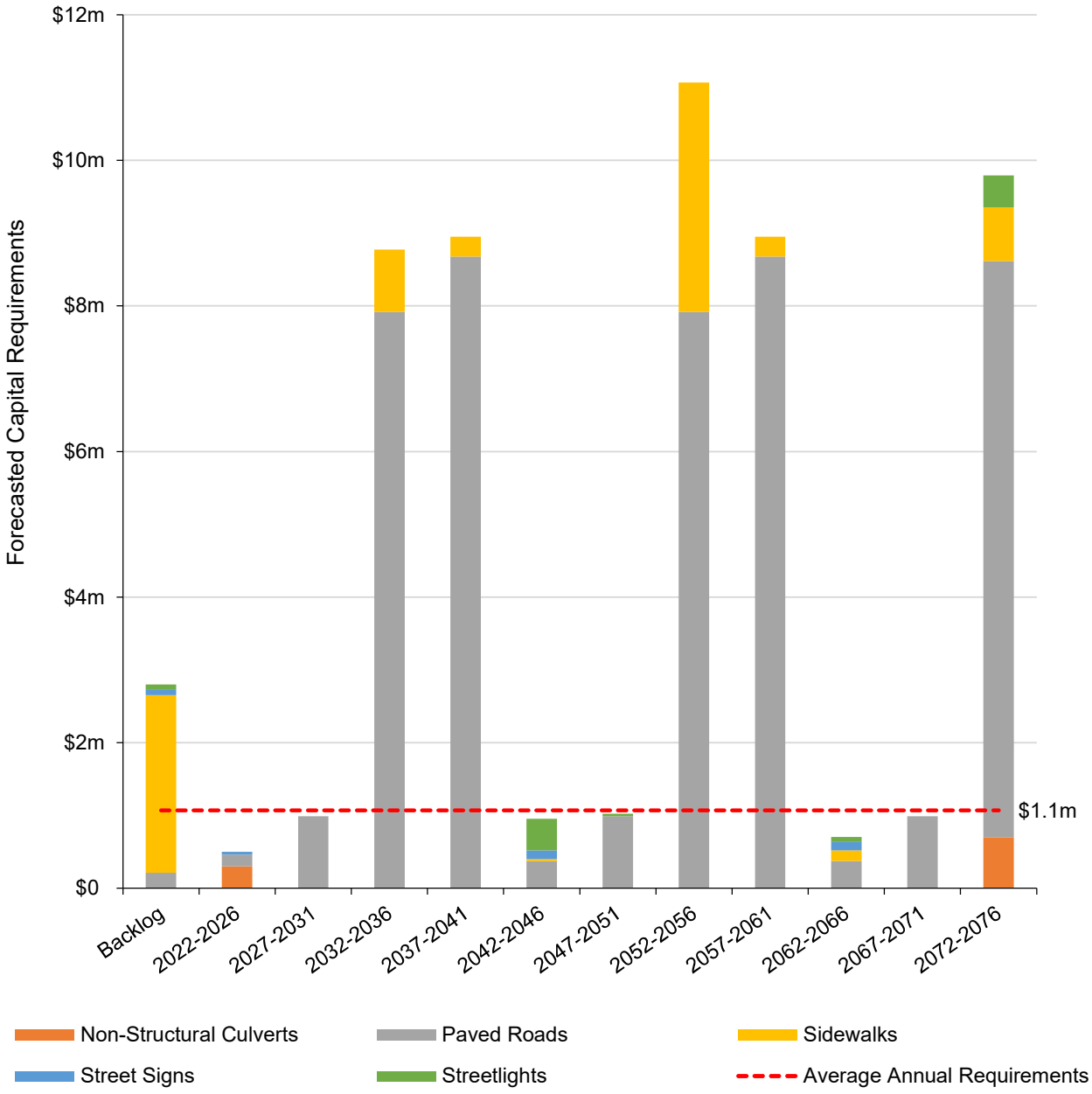
The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment.

While the Town implements patching as a necessary, its primary focus lies in fulfilling the lifecycle strategies and activities outlined in the Road Needs Study. It is important to note that due to resource constraints, strict adherence to all the recommended measures may not always be feasible for the Town.

Concrete work and re-lining is planned for the non-structural culvert located on Main Street. This project is funding-dependent and may be deferred if necessary.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 55 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



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

4.1.4 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data.

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

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost
Priority	

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

Risks to Current Asset Management Strategies

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

Organizational Cognizance and Capacity

Currently, the staff members are operating at a workload surpassing full capacity. The inclusion of additional personnel would alleviate the strain on the Public Works department, particularly considering the forthcoming planned retirements that will exacerbate the existing burden. Moreover, the staff currently lacks redundancy measures, as only a limited number possess extensive knowledge of Deseronto's infrastructure. Consequently, any unforeseen and prolonged absence of such personnel would significantly and detrimentally impact the Town.

Adhering to new and evolving legislative and regulatory requirements mandated by the government can impose additional strain on the existing staff of the Town.

Aging Infrastructure

Asset deterioration is a universal challenge for all municipalities. The street signs in Deseronto are exhibiting signs of fading due to their installation being approximately 15 years ago. The Town should develop a plan to replace them, which would continue to ensure effective, legible signage for improved public safety, navigation, and urban landscape enhancement.

Capital Funding Strategies

Past budgeting constraints have necessitated the deferral of capital projects until adequate funding becomes available. However, the escalating costs of materials further restrict the extent of infrastructure upgrades in a given year. The volatile economic climate poses challenges in material sourcing and accurate budgeting.

A significant portion of capital projects rely on grants, but their diminishing availability, combined with existing budgetary limitations, make it arduous to execute all proposed activities outlined in the Road Needs Study for road maintenance. Additionally, complying with evolving legislative and regulatory mandates imposed by the government places additional financial strain on the Town's budget.

4.1.5 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity	See Appendix C
Quality	Description or images that illustrate the different levels of road class pavement condition	The Town completed a Road Needs Study in July 2020. Every road section received a surface condition rating (0-100%). A road in "very good" condition (rating between 80-100) is considered well maintained, exhibits few pavement distresses with a low severity and provides a smooth and pleasant ride for drivers. A road in "very poor" condition (rating between 0-20) exhibits several pavement distresses of increasing severity and is very rough and bumpy for drivers.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	0 : 2.52
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	28.66 : 2.52
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	0.5 : 2.52
Quality	Average pavement condition index for paved roads in the municipality	68%
	Average surface condition for unpaved roads in the municipality (e.g. excellent, good, fair, poor)	Good
	Average sidewalk condition (e.g. excellent, good, fair, poor)	Very Poor
Performance	Average risk rating associated to the road network	12.59 / 25
	% of the road network in good or very good condition	73%
	% of the road network in poor or very poor condition	18%
	Average annual capital reinvestment rate vs. target reinvestment rate	1.78%:4.83%

4.1.6 Recommendations

Asset Inventory

- Maintain the asset inventory and ensure updates to additions/disposals, replacement costs, and assessed condition occur annually at a minimum.

Replacement Costs

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

Condition Assessment Strategies

- The last comprehensive assessment of the road network was completed in 2020. Consider completing an updated assessment of all roads within the next 2-3 years.

Lifecycle Management Strategies

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

Risk Management Strategies

- Address the knowledge transfer challenge due to upcoming retirements and implement a strategy for knowledge retention as soon as possible.
- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics identified in O. Reg. 588/17 and those metrics that the Town believes to provide meaningful and reliable inputs into asset management planning.

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

4.2 Storm Network

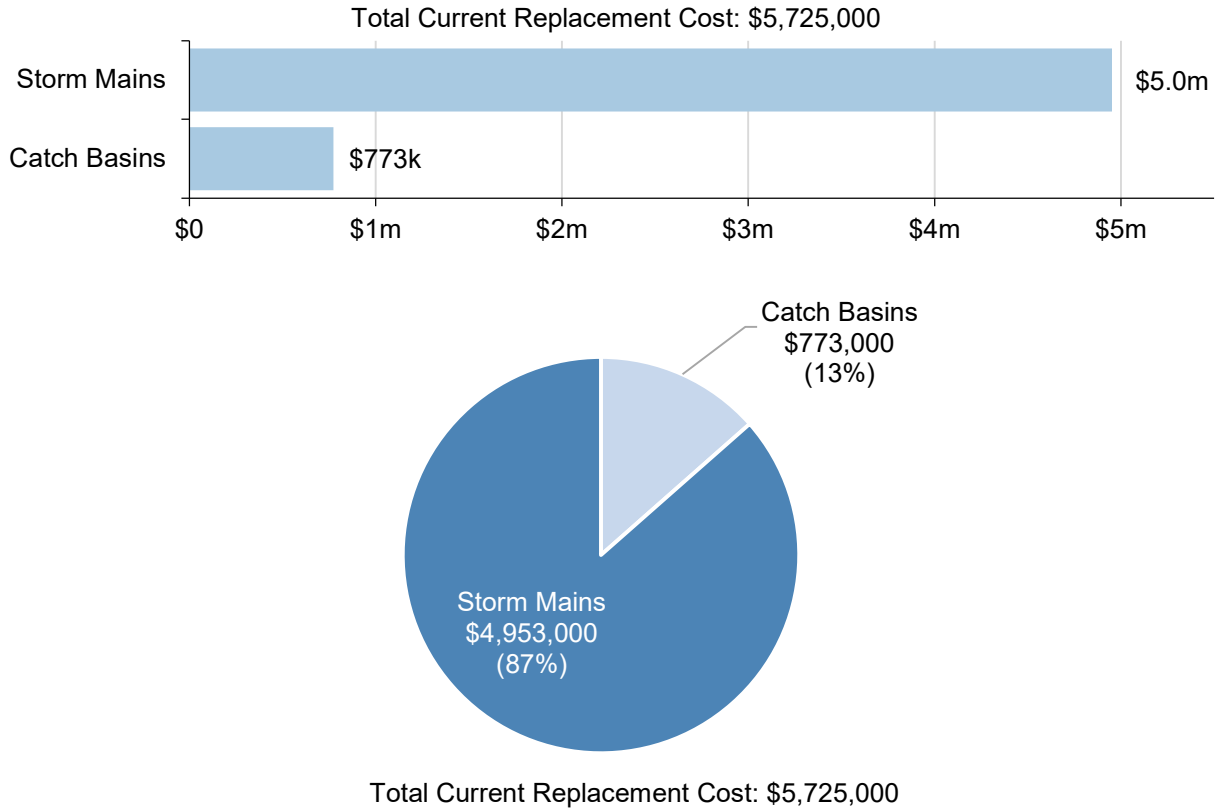
The Town is responsible for owning and maintaining a storm network of storm mains and catch basins.

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

4.2.1 Asset Inventory & Replacement Costs

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost	Annual Capital Requirement
Catch Basins	309	Cost Per Unit	$773,000	$26,000
Storm Mains	9.3 km	Cost Per Unit	$4,953,000	$71,000
			$5,725,000	**$97,000**



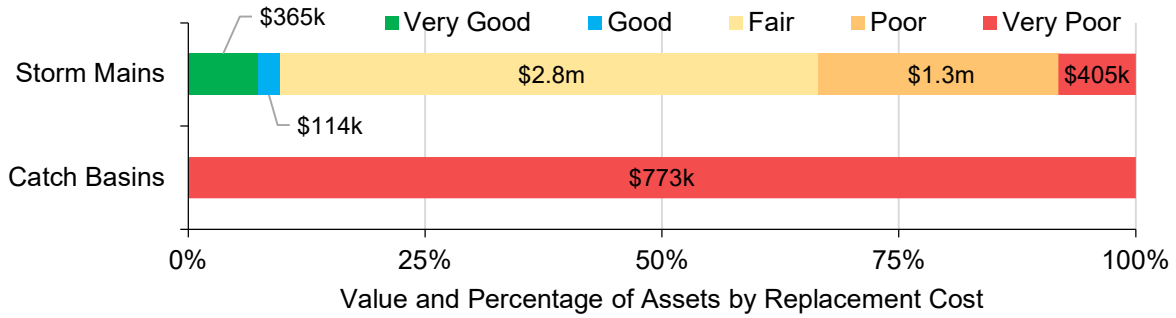
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.2.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (60%) is a weighted value based on replacement cost.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition	Condition Source
Catch Basins	30	Unknown	Unknown	Age-Based
Storm Mains	70	53.4	46% (Fair)	Age-Based

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



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

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

Current Approach to Condition Assessment

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

- The storm network is also assessed during the Road Needs Study, which is performed on a 10-year basis
- As the Town refines the available asset inventory for the storm network a regular assessment cycle should be established

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

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

4.2.3 Lifecycle Management Strategy

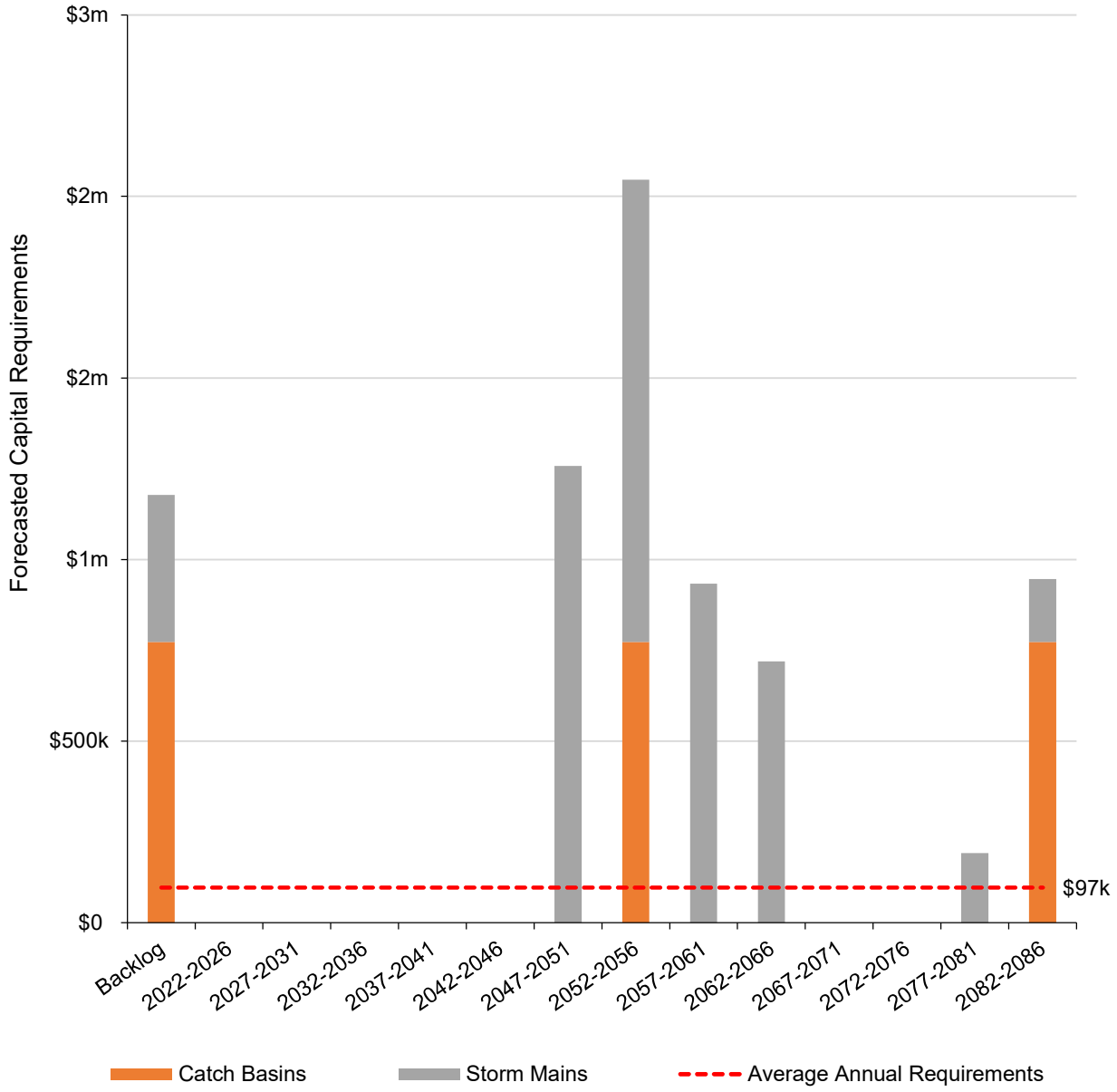
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Catch basin cleaning is performed regularly
	Maintenance activities are completed to a lesser degree compared to other underground linear infrastructures, but is performed promptly if a need is identified
Rehabilitation/ Replacement	Replacement of storm network assets are done in conjunction with road and other underground asset projects
	Without the availability of up-to-date condition assessment information replacement activities are purely reactive in nature

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 85 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



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

4.2.4 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data.

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

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost

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

Risks to Current Asset Management Strategies

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

Asset Data Confidence

In the absence of recent condition assessments, the evaluation of asset condition and thus risk prioritization within the storm network predominantly relies on age-based criteria. However, due to the unavailability of in-service dates for these assets, it leads to the understating of the condition and the resulting risk ratings. The thorough acquisition of historical data would greatly support the Town in preparing effective asset management strategies.

Lifecycle Management Strategies

The Town presently employs a replacement-only approach for lifecycle strategies. It is recommended to consider the inclusion of proactive lifecycle management strategies, which have the potential to generate cost savings and extend the lifespan of existing assets.

Climate Change & Extreme Events

The storm network may potentially face overloading challenges during extreme weather events due to the impacts of climate change and the heightened frequency of such events.

Therefore, when replacing assets, it becomes imperative to undertake a redesign process that incorporates current calculation criteria and updated intensity-duration-frequency (IDF) curves. This approach ensures effective mitigation of system overloading.

Capital Funding Strategies

Currently, fiscal constraints impose limitations on the number of capital projects that can be undertaken within a given year. Furthermore, employing a replacement-only strategy adopts a "worst-first" approach, depleting available funds for the essential maintenance required to keep the storm network in satisfactory condition and extend their lifespan.

In the broader perspective, integrating lifecycle strategies has the potential to reduce the average annual demand for the storm network, thus enabling the reallocation of savings to areas requiring reinvestment.

4.2.5 Levels of Service

The following tables identify the Town's current level of service for the storm 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 storm network.

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include map, of the user groups or areas of the municipality that are protected from flooding, including the extent of protection provided by the municipal stormwater system	Currently unavailable

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Scope	% of properties in municipality resilient to a 100-year storm	TBD[2]
	% of the municipal stormwater management system resilient to a 5-year storm	100%[3]
Performance	Average risk rating associated to the road network	11.12 / 25
	% of the storm network in good or very good condition	8%
	% of the storm network in poor or very poor condition	43%
	Average annual capital reinvestment rate vs. target reinvestment rate	0% : 1.69%

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

4.2.6 Recommendations

Asset Inventory

- The catch basin segment does not have defined in-service dates. Gathering as much historical data as possible on the assets will improve the outcome of asset management planning.
- Maintain the asset inventory and ensure updates to additions/disposals, replacement costs, and assessed condition occur annually at a minimum.

Replacement Costs

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

Condition Assessment Strategies

- The development of a comprehensive inventory should be accompanied by a system-wide assessment of the condition of all assets in the storm network through CCTV inspections.

Risk Management Strategies

- During replacement, calculations should be completed based on present-day design criteria for network sizing to mitigate system overloading.
- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Lifecycle Management Strategies

- Document and review lifecycle management strategies for the storm 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.

4.3 Buildings

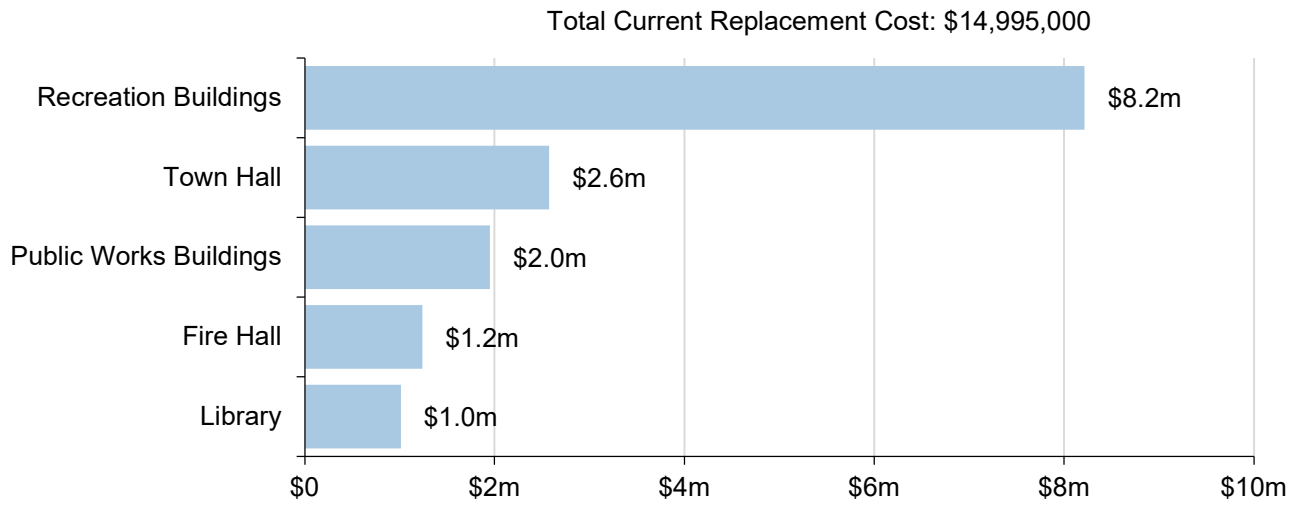
The Town of Deseronto owns and maintains several facilities and recreation centres that provide key services to the community. These include:

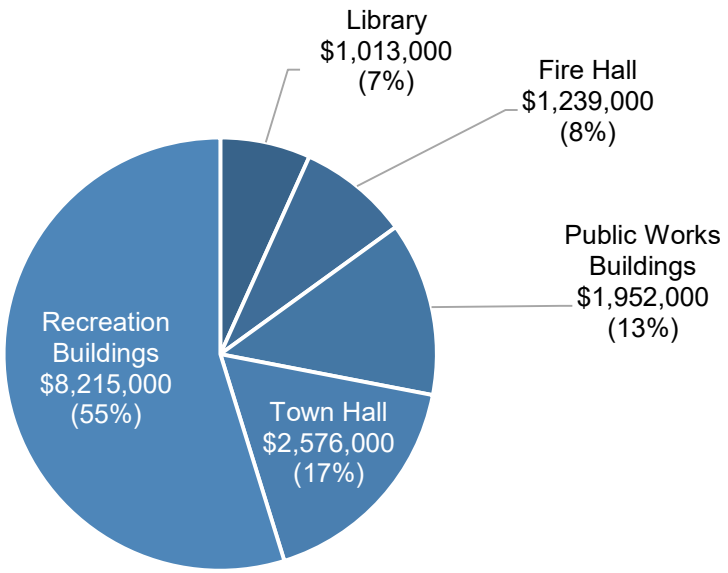
- Fire Hall
- Library
- Public Works Buildings
- Recreation Buildings
- Town Hall

4.3.1 Asset Inventory & Replacement Costs

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost	Annual Capital Requirement
Fire Hall	4	User-Defined	$1,239,000	$25,000
Library	5	User-Defined	$1,013,000	$25,000
Public Works Buildings	4	User-Defined	$1,952,000	$40,000
Recreation Buildings	13	User-Defined	$8,215,000	$221,000
Town Hall	15	User-Defined	$2,576,000	$92,000
	41		**$14,995,000**	**$403,000**





Total Current Replacement Cost: $14,995,000

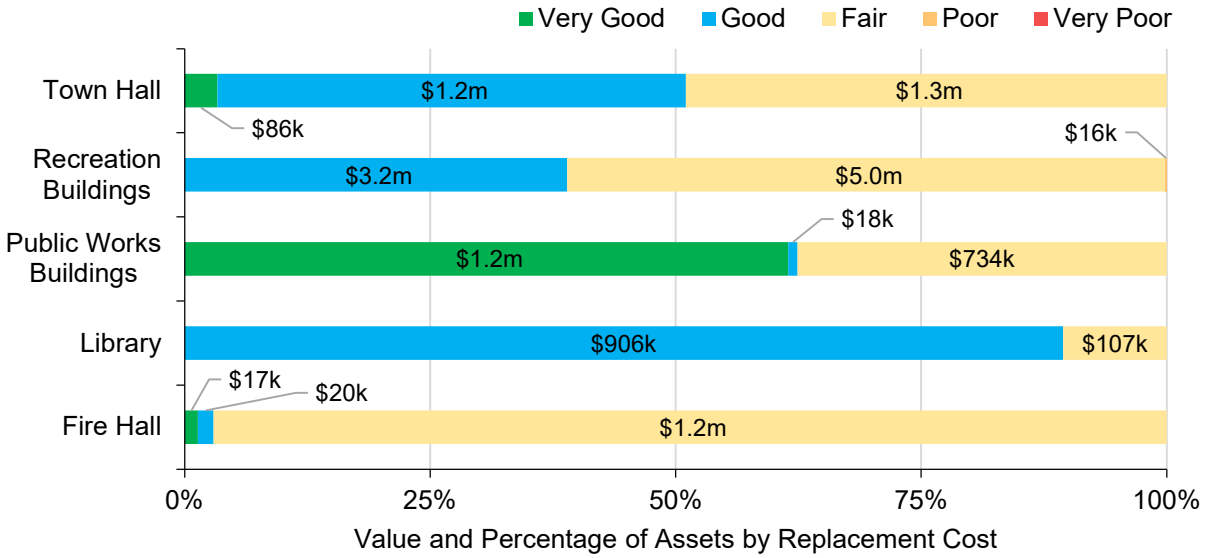
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.3.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (64%) is a weighted value based on replacement cost.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition	Condition Source
Fire Hall	20 - 50	16.9	51% (Fair)	100% Assessed
Library	20 - 50	15.6	69% (Good)	100% Assessed
Public Works Buildings	20 - 50	18.4	75% (Good)	100% Assessed
Recreation Buildings	20 - 50	19.4	66% (Good)	100% Assessed
Town Hall	10 - 50	18.8	63% (Good)	97% Assessed
Average		**18**	**66% (Good)**	

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



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

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

Current Approach to Condition Assessment

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

- Presently, the Town does not have a formalized condition assessment program, relying instead on internal staff to record asset condition for inclusion in their inventory.

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

Condition	Rating
Very Good	8 – 10
Good	6 – 8
Fair	4 – 6
Poor	2 – 4
Very Poor	0 – 2

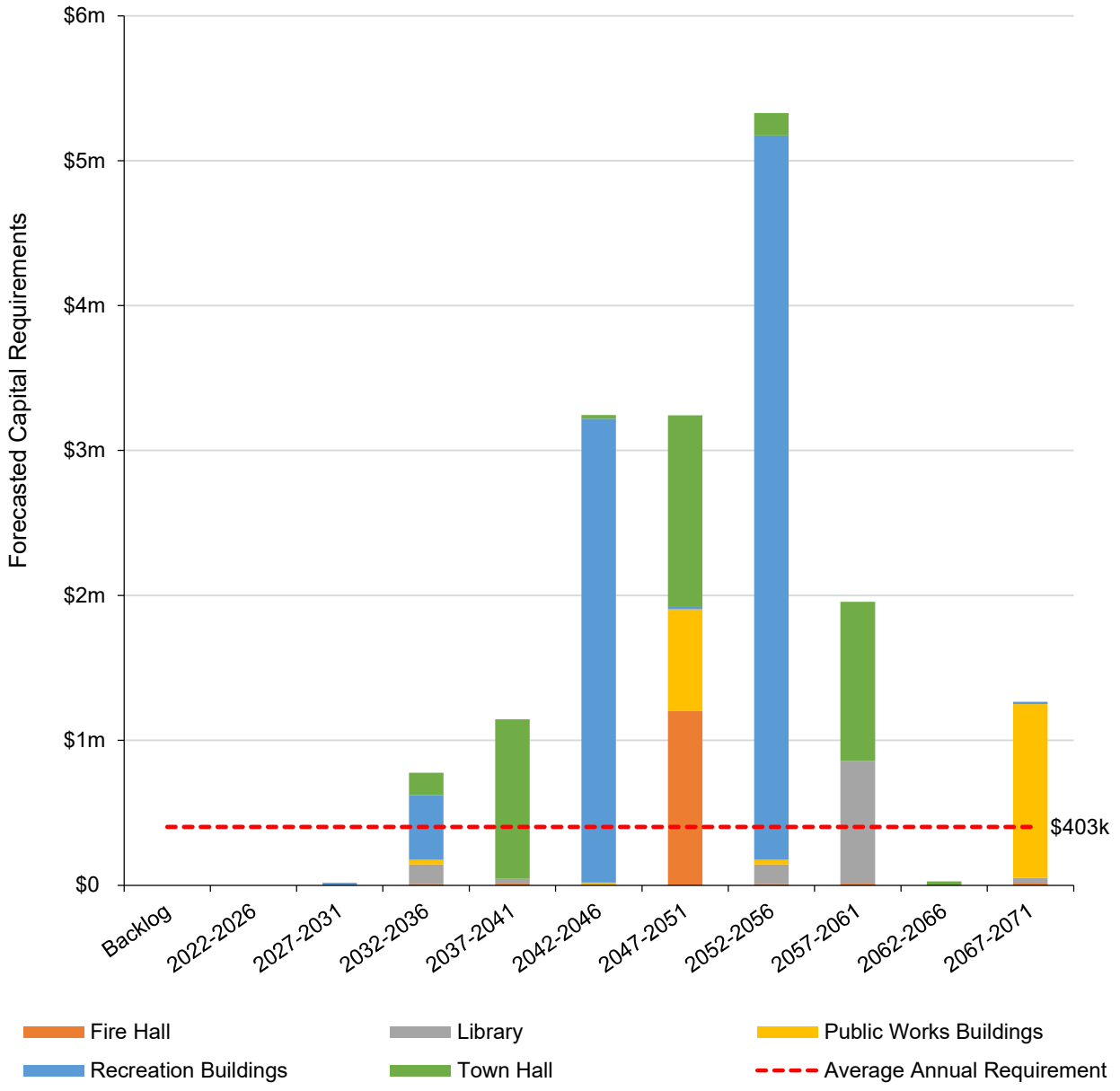
4.3.3 Lifecycle Management Strategy

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

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	Municipal buildings are subject to regular inspections to identify health & safety requirements as well as structural deficiencies that require additional attention
	Critical buildings (Water Treatment Plant, Wastewater Treatment Plant, Fire Stations etc.) have a detailed maintenance and rehabilitation schedule, while the maintenance of other facilities are dealt with on a case-by-case basis
Replacement	Although a formal assessment process is not currently implemented, internal staff visually identify deficiencies and, as buildings approach their end-of-life, assess whether replacement or rehabilitation measures are warranted.

Forecasted Capital Requirements

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



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

4.3.4 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data.

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

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost

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

Risks to Current Asset Management Strategies

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

Organizational Capacity

The Town is currently facing staffing limitations, which hinder its ability to effectively carry out the necessary level of building maintenance.

Furthermore, it is important to note that the Town is currently experiencing understaffing department-wide. Notably, manager positions remain unfilled for both the Transit building and the Arena. While an interim manager is presently overseeing the Arena, this arrangement is temporary due to the individual's existing full-time commitments, making it unsustainable for an extended duration.

Infrastructure Design/Aging Infrastructure

A significant consideration pertains to the age and spatial limitations of several Town-owned buildings. One notable asset is the Fire Hall, which, despite its current functional state, faces constraints due to limited space. Strategic planning for its eventual replacement is crucial, given its historical age surpassing a century.

The municipal office building, originally repurposed from a former bank, presents notable challenges. Lack of an elevator creates accessibility issues, while the open layout hinders the establishment of quiet work areas and confidentiality in interactions where necessary. Future planning for a new municipal office should address these deficiencies and seek solutions for enhanced functionality and a suitable work environment.

Capital Funding Strategies

Insufficient budget allocation for building reinvestment is a pressing concern within the Town, particularly regarding necessary upgrades and maintenance for various buildings, including the municipal office and arena. To address this challenge, the Town heavily relies on securing external grants and funding opportunities.

Active pursuit of additional grant opportunities may enable the Town to close the gap on budgetary constraints and continue to meet evolving community needs.

4.3.5 Levels of Service

The following tables identify the Town's current level of service for buildings. These metrics include technical and community level of service measures that the Town has selected for this AMP.

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Quality	Appropriate actions and interventions are taken to ensure the regular safe use of Buildings assets.	Using internal staff condition assessments, building assets range in condition from 51% to 75% and are in an average condition of 66%.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Performance	Average risk rating associated to the buildings	12.19 / 25
	% of the buildings in good or very good condition	45%
	% of the buildings in poor or very poor condition	0%
	Average annual capital reinvestment rate vs. target reinvestment rate	0.93% : 2.69%

4.3.6 Recommendations

Asset Inventory

- The Town's asset inventory contains a single record for all facilities. Facilities consist of several separate capital components that have unique estimated useful lives and require asset-specific lifecycle strategies. Staff should work towards a component-based inventory of all facilities to allow for component-based lifecycle planning.
- Maintain the asset inventory and ensure updates to additions/disposals, replacement costs, and assessed condition occur annually at a minimum

Replacement Costs

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

Condition Assessment Strategies

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

Risk Management Strategies

- Planning should start for future upgrades to municipality-owned buildings to address space constraints.
- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Levels of Service

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

4.4 Vehicles

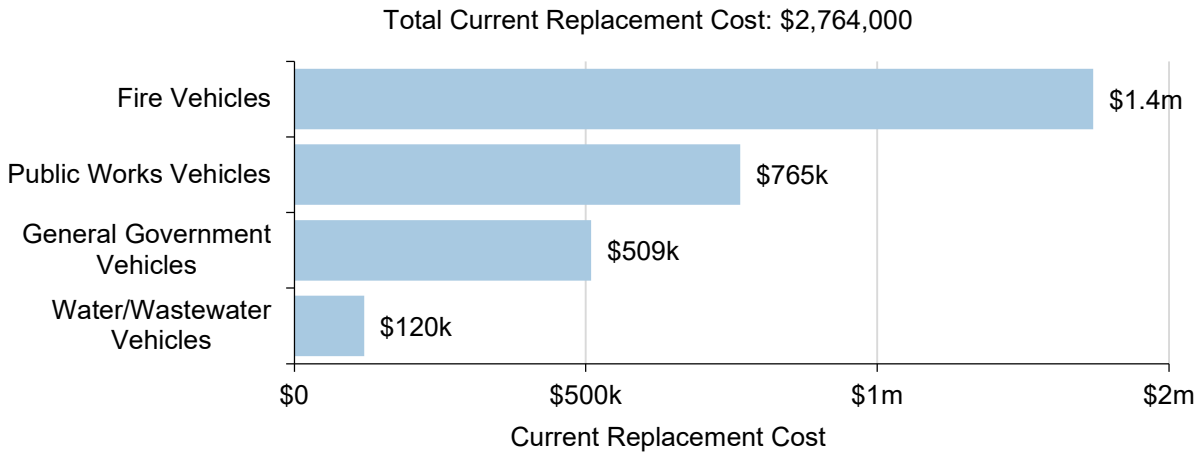
Vehicles allow staff to efficiently deliver municipal services and personnel. Municipal vehicles are used to support several service areas, including:

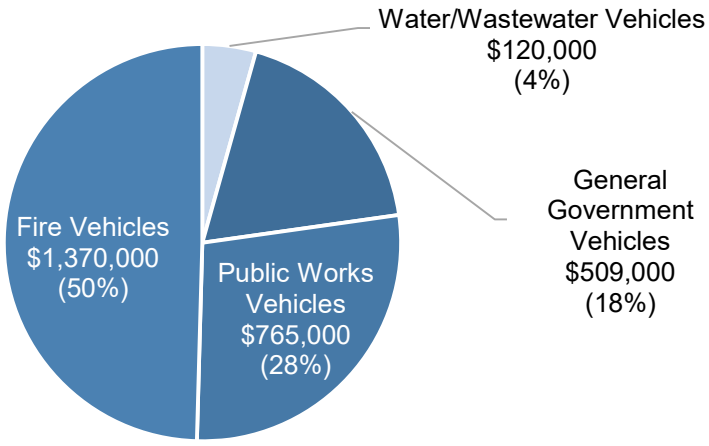
- Fire Vehicles
- General Government Vehicles
- Public Works Vehicles

4.4.1 Asset Inventory & Replacement Costs

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost	Annual Capital Requirement
Fire Vehicles	3	User-Defined	$1,370,000	$91,000
General Government Vehicles	6	User-Defined	$509,000	$51,000
Public Works Vehicles	5	User-Defined	$765,000	$65,000
Water/Wastewater Vehicles	2	User-Defined	$120,000	$12,000
	16		**$2,764,000**	**$219,000**





Total Current Replacement Cost: $2,764,000

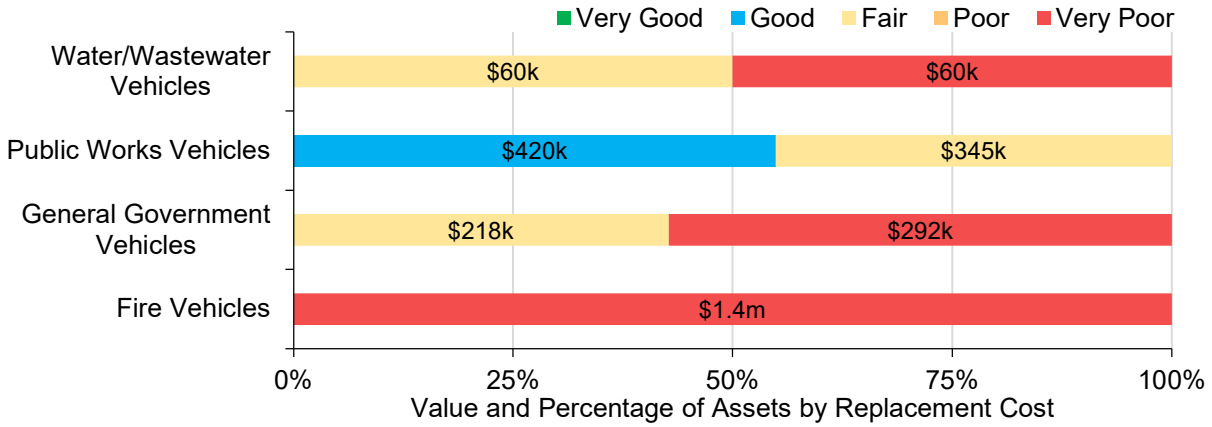
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.4.2 Asset Condition & Age

The table below identifies the current average condition and source of available condition data for each asset segment. The average condition (29%) is a weighted value based on replacement cost.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition	Condition Source
Fire Vehicles	15	22	6% (Very Poor)	100% Assessed
General Government Vehicles	10	9.2	27% (Poor)	89% Assessed
Public Works Vehicles	10 - 15	4.8	70% (Good)	100% Assessed
Water/Wastewater Vehicles	10	8	25% (Poor)	Age-Based
Average		**10**	**28% (Poor)**	

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



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

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

Current Approach to Condition Assessment

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

- Staff complete regular visual inspections of vehicles to ensure they are in state of adequate repair prior to operation
- Annual safety inspections are performed annually by an external mechanic

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

Condition	Rating
Very Good	8 – 10
Good	6 – 8
Fair	4 – 6
Poor	2 – 4
Very Poor	0 – 2

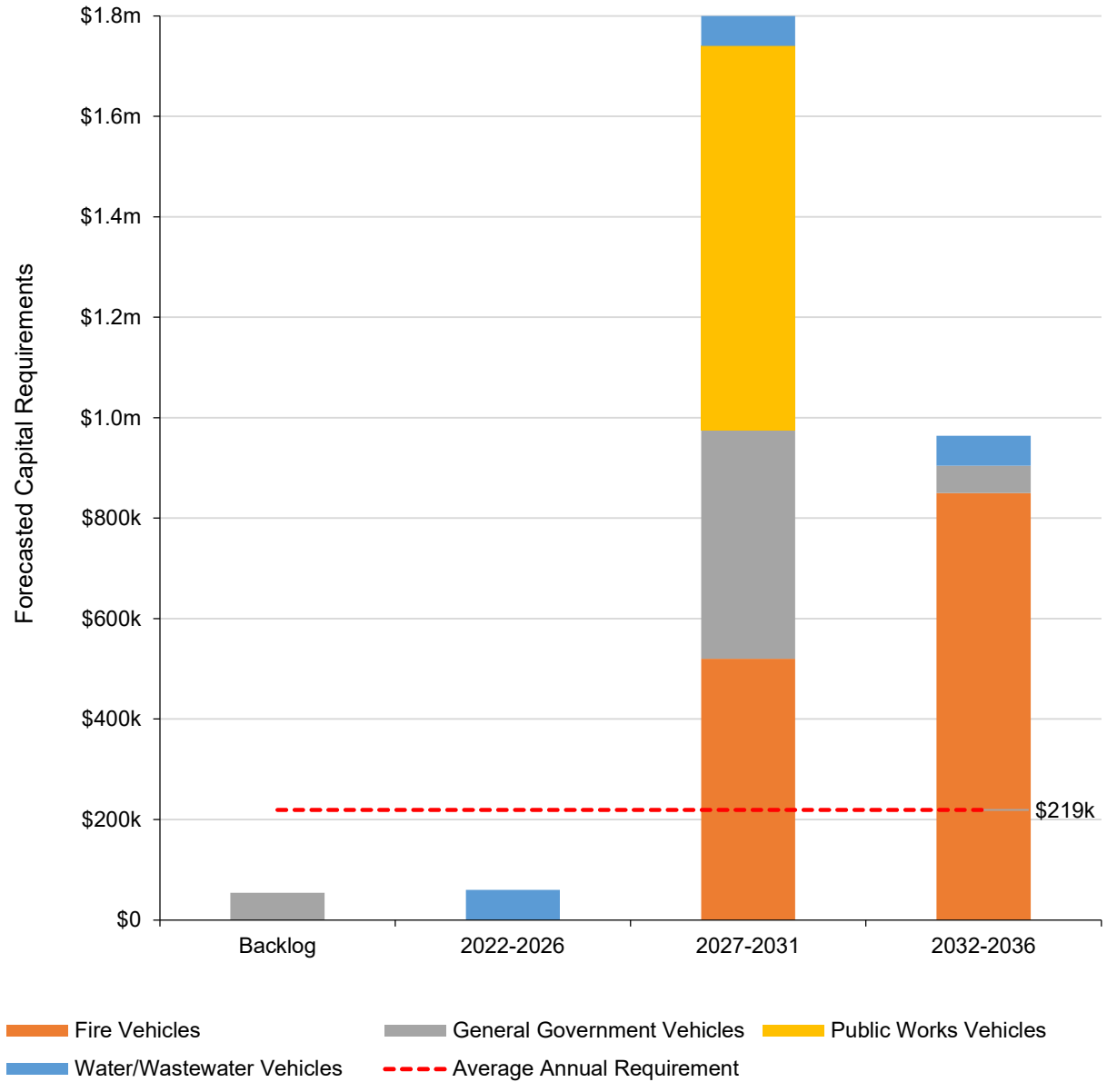
4.4.3 Lifecycle Management Strategy

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

Activity Type	Description of Current Strategy
Maintenance	Visual inspections completed and documented daily prior to operation
	Oil changes are completed by either internal staff or an external mechanic. Greasing is done each day of use. Much of the maintenance is completed around the same time as the annual safety inspection
Rehabilitation/ Replacement	While the vehicle age and condition are the predominant deciding factors, repair and rehabilitation costs are taken into consideration when determining appropriate treatment options

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 15 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



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

4.4.4 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data.

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

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost
Asset Age	

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

Risks to Current Asset Management Strategies

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

Infrastructure Design

In recent years, a discernible decline has become increasingly evident in both the quality and longevity of vehicles, specifically when considering the average estimated useful life. This trend has resulted in a higher annual demand to sustain existing levels of service.

Change & Extreme Events

The more frequent freezing and thawing cycles, coupled with increased snowfall, have accelerated the rate of wear and tear on vehicles. Consequently, these climate change dynamics have led to reduced longevity of such assets, impacting their overall lifespan.

Redundancy & Public Expectation

Currently, the absence of a backup for the plow poses a substantial risk in the event of any operational issues. Notably, if the plow itself becomes non-operational, the consequences are significant, as major repairs such as engine repair or rebuild can take up to 1-2 months to resolve.

Balancing feasible budgeting with public expectations is a complex challenge. Despite a commitment to enhancing service levels, inherent limitations impose constraints on achievable outcomes. Therefore, a continuous and meticulous effort is dedicated to striking a balance between resource allocation and meeting the diverse demands of the public.

4.4.5 Levels of Service

The following tables identify the Town's current level of service for vehicles. These metrics include technical and community level of service measures that the Town has selected for this AMP.

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Quality	Appropriate actions and interventions are taken to ensure the regular safe use of Vehicles assets.	Using internal staff condition assessments, vehicles assets range in condition from 6% to 90% and are in an average condition of 28%.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Performance	Average risk rating associated to the vehicles	20.38 / 25
	% of the vehicles in good or very good condition	15%
	% of the vehicles in poor or very poor condition	62%
	Average annual capital reinvestment rate vs. target reinvestment rate	0.90%:7.93%

4.4.6 Recommendations

Asset Inventory

- Maintain the asset inventory and ensure updates to additions/disposals, replacement costs, and assessed condition occur annually at a minimum.

Replacement Costs

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

Condition Assessment Strategies

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

Risk Management Strategies

- Adjust capital forecasting to accommodate reduced lifecycle caused by climate change and increased extreme weather events.
- Address the knowledge transfer challenge due to upcoming retirements and implement a strategy for knowledge retention as soon as possible.
- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Levels of Service

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

4.5 Machinery & Equipment

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

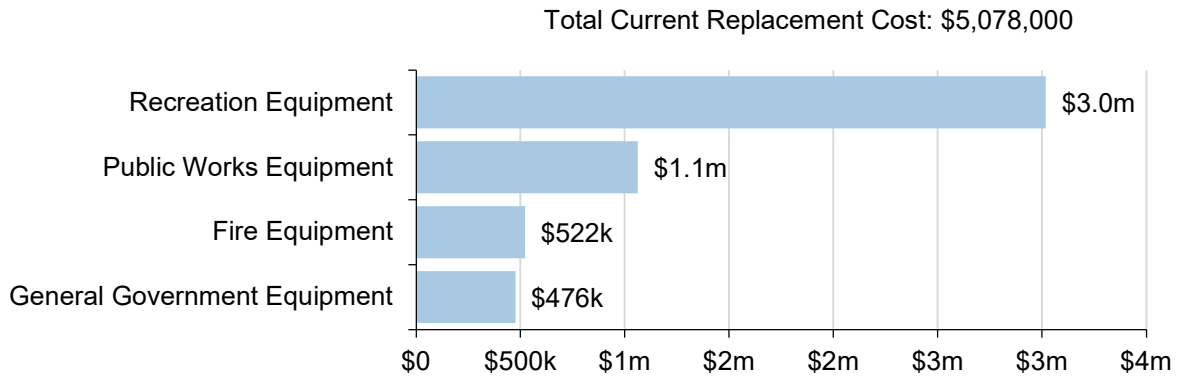
- Fire Equipment
- General Government Equipment
- Public Works Equipment
- Recreation Equipment

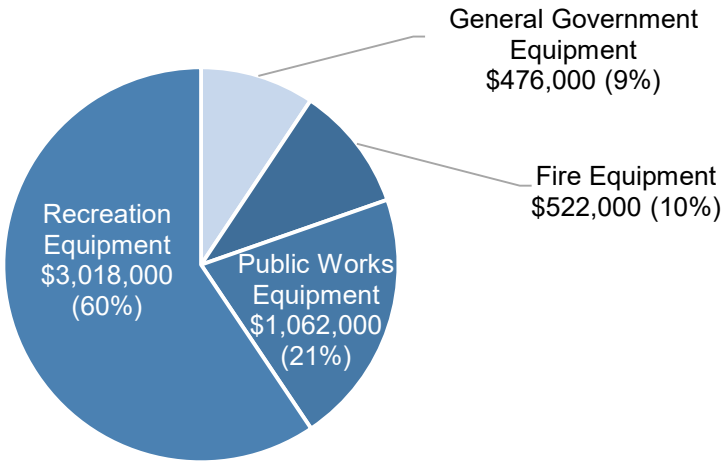
Keeping machinery and equipment in an adequate state of repair is important to maintain a high level of service.

4.5.1 Asset Inventory & Replacement Costs

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost	Annual Capital Requirement
Fire Equipment	22	User-Defined	$522,000	$34,000
General Government Equipment	25	User-Defined	$476,000	$44,000
Public Works Equipment	11	User-Defined	$1,062,000	$84,000
Recreation Equipment	22	User-Defined	$3,018,000	$117,000
	80		**$5,078,000**	**$279,000**





Total Current Replacement Cost: $5,078,000

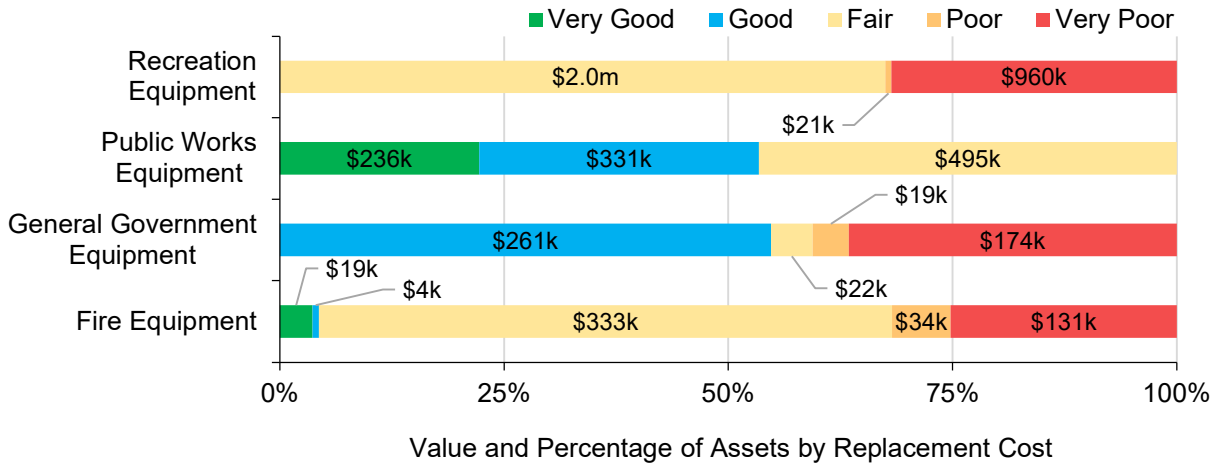
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.5.2 Asset Condition & Age

The table below identifies the current average condition and source of available condition data for each asset segment. The average condition (40%) is a weighted value based on replacement cost.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition	Condition Source
Fire Equipment	7 - 20	9.4	39% (Poor)	Age-Based
General Government Equipment	5 - 20	9.3	44% (Fair)	27% Assessed
Public Works Equipment	10 - 15	8.5	66% (Good)	75% Assessed
Recreation Equipment	10 - 40	22.3	31% (Poor)	80% Assessed
Average		**13**	**41% (Fair)**	

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



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

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

Current Approach to Condition Assessment

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

- Staff complete regular visual inspections of machinery and equipment to ensure they are in state of adequate repair
- There are no formal condition assessment programs in place, but the Public Works manager conducts informal assessments and applies proactive strategies to ensure all equipment is ready when its needed

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

Condition	Rating
Very Good	8 – 10
Good	6 – 8
Fair	4 – 6
Poor	2 – 4
Very Poor	0 – 2

4.5.3 Lifecycle Management Strategy

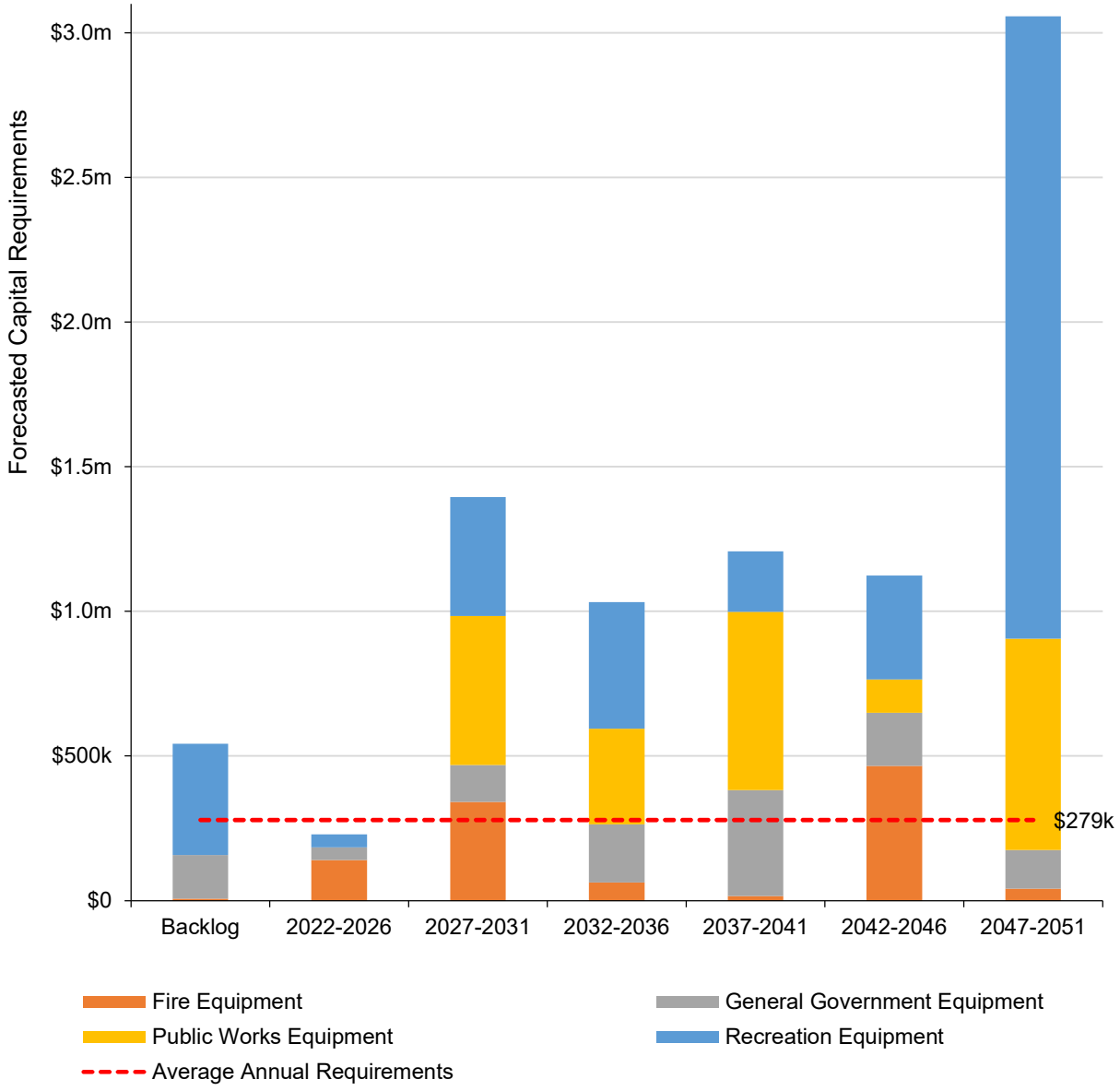
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance/ Rehabilitation	Maintenance program varies by department
	Fire Protection Services equipment is subject to a much more rigorous inspection and maintenance program compared to most other departments
	Machinery and equipment is maintained according to manufacturer recommended actions and supplemented by the expertise of municipal staff
Replacement	The replacement of machinery and equipment depends on deficiencies identified by operators that may impact their ability to complete required tasks

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 30 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



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

4.5.4 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data.

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

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost

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

Risks to Current Asset Management Strategies

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

Infrastructure Design

In recent years, a discernible decline has become increasingly evident in both the quality and longevity of machinery and equipment, specifically when considering the average estimated useful life. This trend has resulted in a higher annual demand to sustain existing levels of service.

Change & Extreme Events

The more frequent freezing and thawing cycles, coupled with increased snowfall, have accelerated the rate of wear and tear on machinery and equipment. Consequently, these climate change dynamics have led to reduced longevity of such assets, impacting their overall lifespan.

Organizational Cognizance & Capacity

The current Public Works manager's expertise in machinery and equipment management has been invaluable for strategic planning and risk assessment. However, the lack of documentation and knowledge transfer poses a challenge.

With the manager's retirement approaching, urgent measures are needed to capture and preserve their knowledge through documentation, mentoring, and training. Identifying capable individuals within the department for leadership roles will ensure continuity and mitigate risks.

Addressing this knowledge transfer challenge will maintain machinery and equipment management capabilities for a smooth transition.

Public Expectation

Balancing feasible budgeting with public expectations is a complex challenge. Despite a commitment to enhancing service levels, inherent limitations impose constraints on achievable outcomes. Therefore, a continuous and meticulous effort is dedicated to striking a balance between resource allocation and meeting the diverse demands of the public.

4.5.5 Levels of Service

The following tables identify the Town's current level of service for vehicles. These metrics include technical and community level of service measures that the Town has selected for this AMP.

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Quality	Appropriate actions and interventions are taken to ensure the regular safe use of Machinery & Equipment assets.	Using internal staff condition assessments, machinery and equipment assets range in condition from 0% (based on age) to 96% and are in an average condition of 41%.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Performance	Average risk rating associated to the machinery and equipment	15.95 / 25
	% of the machinery and equipment in good or very good condition	17%
	% of the machinery and equipment in poor or very poor condition	26%
	Average annual capital reinvestment rate vs. target reinvestment rate	0.18%:5.49%

4.5.6 Recommendations

Asset Inventory

- Maintain the asset inventory and ensure updates to additions/disposals, replacement costs, and assessed condition occur annually at a minimum.

Replacement Costs

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

Condition Assessment Strategies

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

Risk Management Strategies

- Adjust capital forecasting to accommodate reduced lifecycle caused by climate change and increased extreme weather events.
- Address the knowledge transfer challenge due to upcoming retirements and implement a strategy for knowledge retention as soon as possible.
- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the regular review of high-risk assets to determine appropriate risk mitigation strategies.
- Review risk models on a regular basis and adjust according to an evolving understanding of the probability and consequences of asset failure.

Levels of Service

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

4.6 Land Improvements

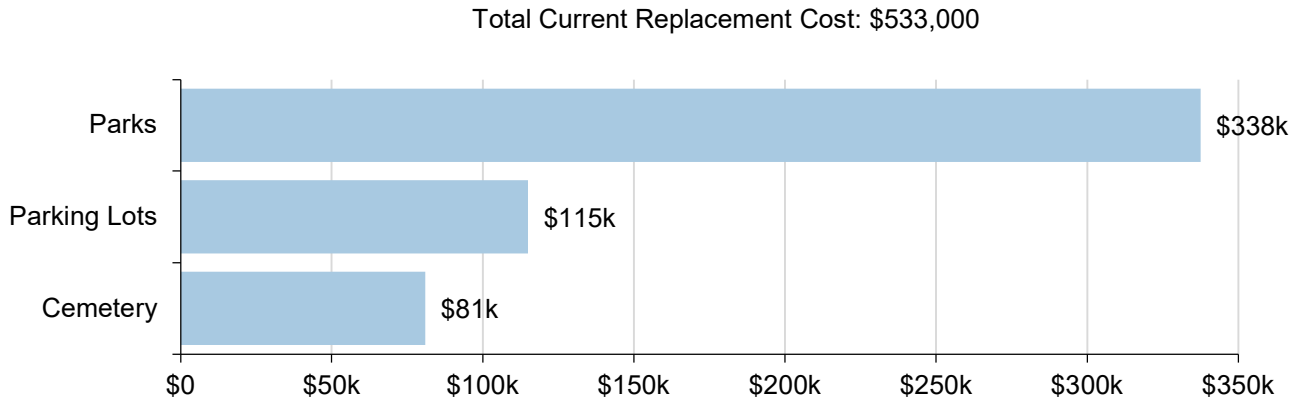
The Town of Deseronto owns a small number of assets that are considered land improvements. This category includes:

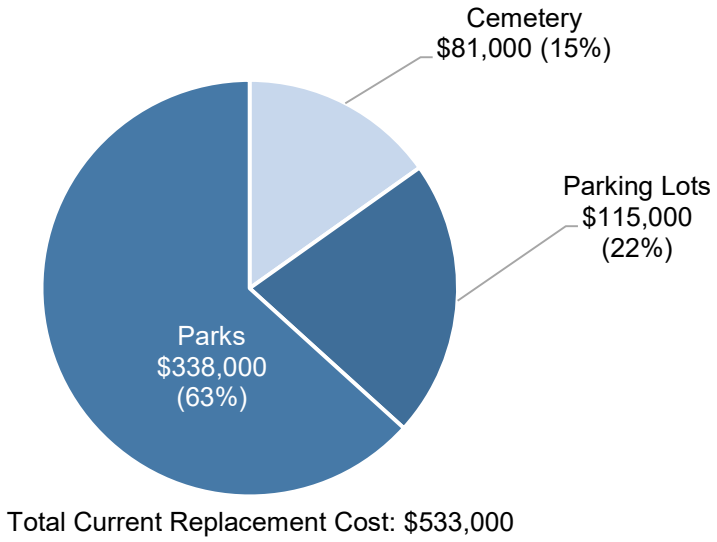
- Cemetery
- Parking Lots
- Parks

4.6.1 Asset Inventory & Replacement Costs

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost	Annual Capital Requirement
Cemetery	11	User-Defined	$81,000	$3,000
Parking Lots	3	CPI Tables	$115,000	$4,000
Parks	61	User-Defined	$338,000	$16,000
	75		**$533,000**	**$23,000**





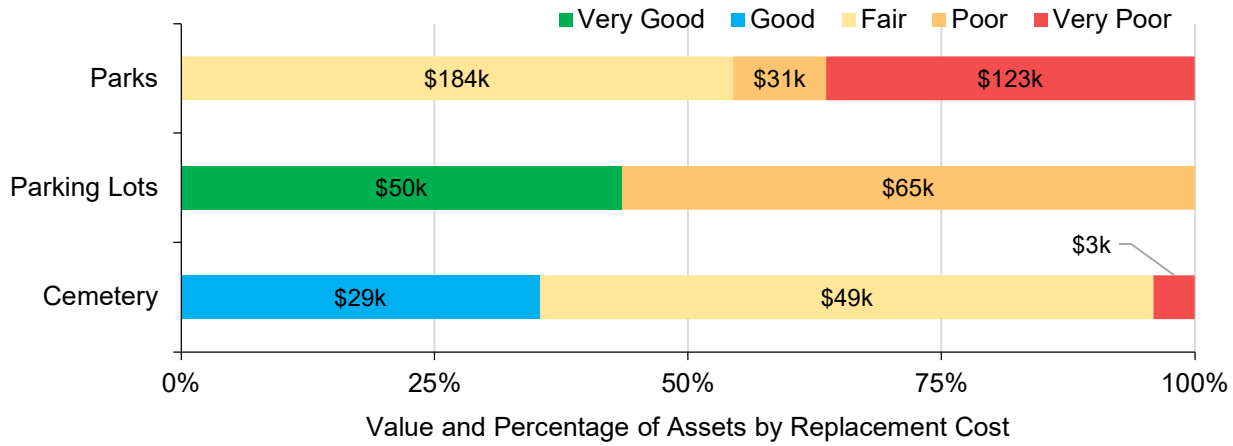
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

4.6.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (43%) is a weighted value based on replacement cost.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition	Condition Source
Cemetery	10 - 50	12	57% (Fair)	61% Assessed
Parking Lots	20 - 50	14.1	52% (Fair)	Age-Based
Parks	10 - 50	19.8	36% (Poor)	53% Assessed
Average		**16.7**	**43% (Fair)**	

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



To ensure that the Town's land improvements 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 land improvements.

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

Current Approach to Condition Assessment

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

- There are no formal condition assessment programs in place for land improvements
- Playgrounds are professionally inspected annually. The findings are used for repairs to maintain compliance with all necessary legislation and regulations
- Staff complete regular visual inspections of land improvements assets on both a weekly and monthly basis to ensure they are in state of adequate repair
- Lights are checked each day during route patrol. Any deficiencies are noted and a work order is issued

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

Condition	Rating
Very Good	8 – 10
Good	6 – 8
Fair	4 – 6
Poor	2 – 4
Very Poor	0 – 2

4.6.3 Lifecycle Management Strategy

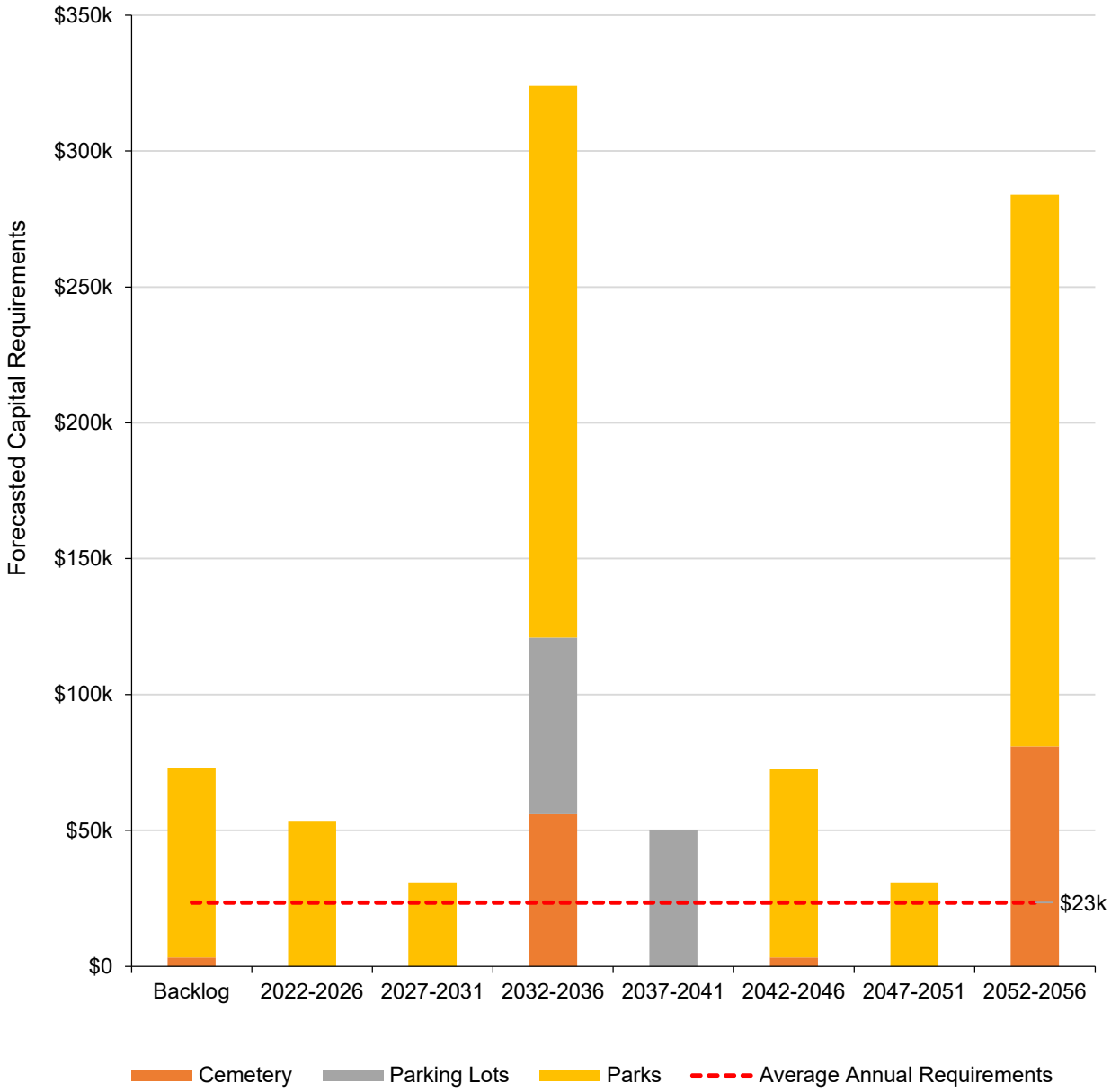
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenanace, Rehabilitation & Replacement	The land improvements asset category includes several unique asset types and lifecycle requirements are dealt with on a case-by-case basis

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 35 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



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

4.6.4 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data.

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

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost

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

Risks to Current Asset Management Strategies

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

Demographics & Public Expectation

The shifting demographics have increased the vulnerability of playgrounds to vandalism, posing a threat to children's safety and enjoyment. Understanding the underlying factors behind this trend is essential to develop effective strategies that preserve safe and welcoming playground environments for all residents.

Balancing feasible budgeting with public expectations is a complex challenge. Despite a commitment to enhancing service levels, inherent limitations impose constraints on achievable outcomes. Therefore, a continuous and meticulous effort is dedicated to striking a balance between resource allocation and meeting the diverse demands of the public.

4.6.5 Levels of Service

The following tables identify the Town's current level of service for vehicles. These metrics include technical and community level of service measures that the Town has selected for this AMP.

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Quality	Appropriate actions and interventions are taken to ensure the regular safe use of Land Improvement assets.	Using internal staff condition assessments, land improvement assets range in condition from 0% (based on age) to 85% and are in an average condition of 41%.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Performance	Average risk rating associated to the land improvements	14.72 / 25
	% of the land improvements in good or very good condition	15%
	% of the land improvements in poor or very poor condition	42%
	Average annual capital reinvestment rate vs. target reinvestment rate	0.56%:4.40%

4.6.6 Recommendations

Asset Inventory

- Maintain the asset inventory and ensure updates to additions/disposals, replacement costs, and assessed condition occur annually at a minimum.

Replacement Costs

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

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

- 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 Analysis of Rate-funded Assets

Key Insights

- Rate-funded assets are valued at $44.1 million
- 53% of rate-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for rate-funded assets is approximately $1.2 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

5.1 Water Network

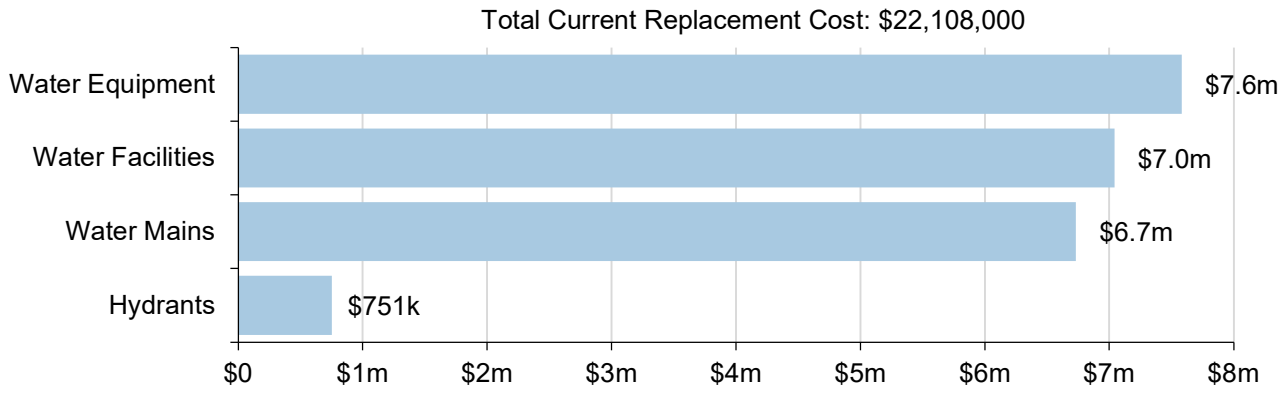
The water services provided by the Town are overseen by the Environmental Services department. The department is responsible for the following:

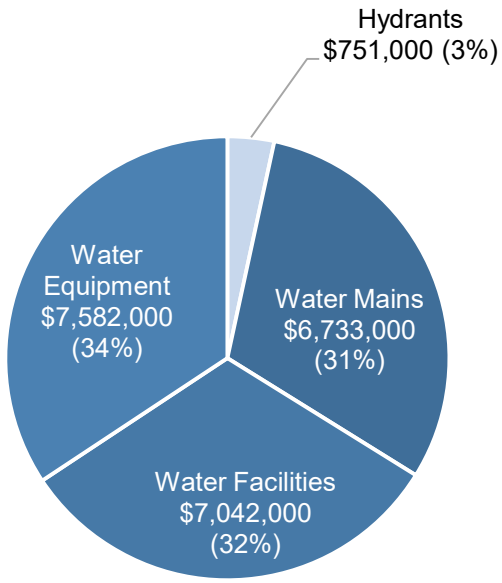
- Hydrants
- Water Equipment
- Water Facilities
- Water Mains

5.1.1 Asset Inventory & Replacement Costs

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost	Annual Capital Requirement
Hydrants	59	CPI Tables	$751,000	$25,000
Water Equipment	793	CPI Tables	$7,582,000	$220,000
Water Facilities	11	CPI Tables	$7,042,000	$189,000
Water Mains	8.1 km	Cost Per Unit	$6,733,000	$141,000
			$22,108,000	**$574,000**





Total Current Replacement Cost: $22,108,000

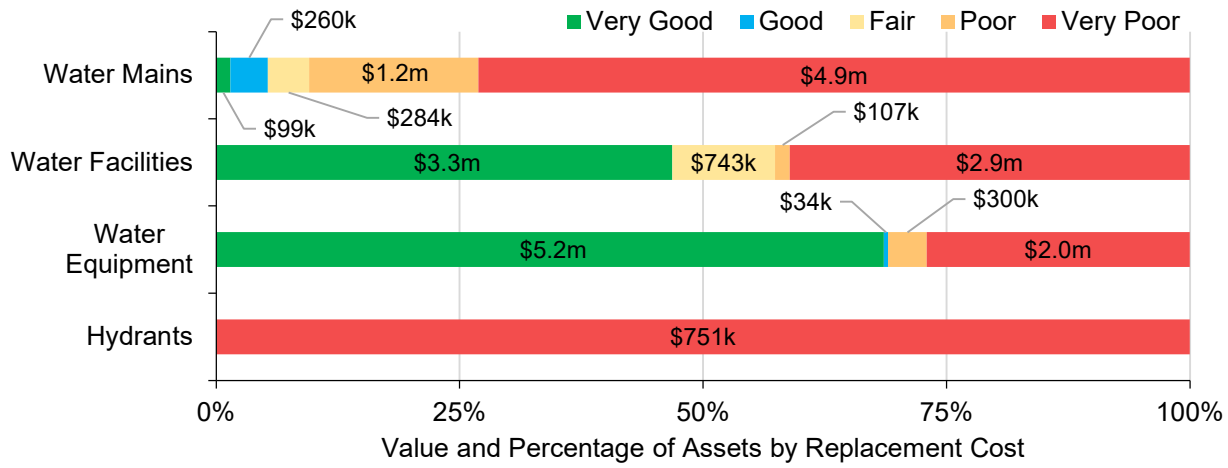
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

5.1.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (42%) is a weighted value based on replacement cost.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition	Condition Source
Hydrants	30	48	0% (Very Poor)	Age-Based
Water Equipment	10 - 60	19.8	63% (Good)	Age-Based
Water Facilities	15 - 60	29.4	49% (Fair)	Age-Based
Water Mains	30 - 50	51.1	15% (Very Poor)	Age-Based
Average		**42.3**	**42% (Fair)**	

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



To ensure that the Town's water 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 water network.

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

Current Approach to Condition Assessment

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

- Annual assessments are performed for the water system and watermain breaks are monitored
- The distribution system is primarily assessed by internal staff while external staff perform assessments for the collection system.
- Staff primarily rely on the age and material of water mains to determine the projected condition of water mains
- There are no formal condition assessment programs in place for the water network

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

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

5.1.3 Lifecycle Management Strategy

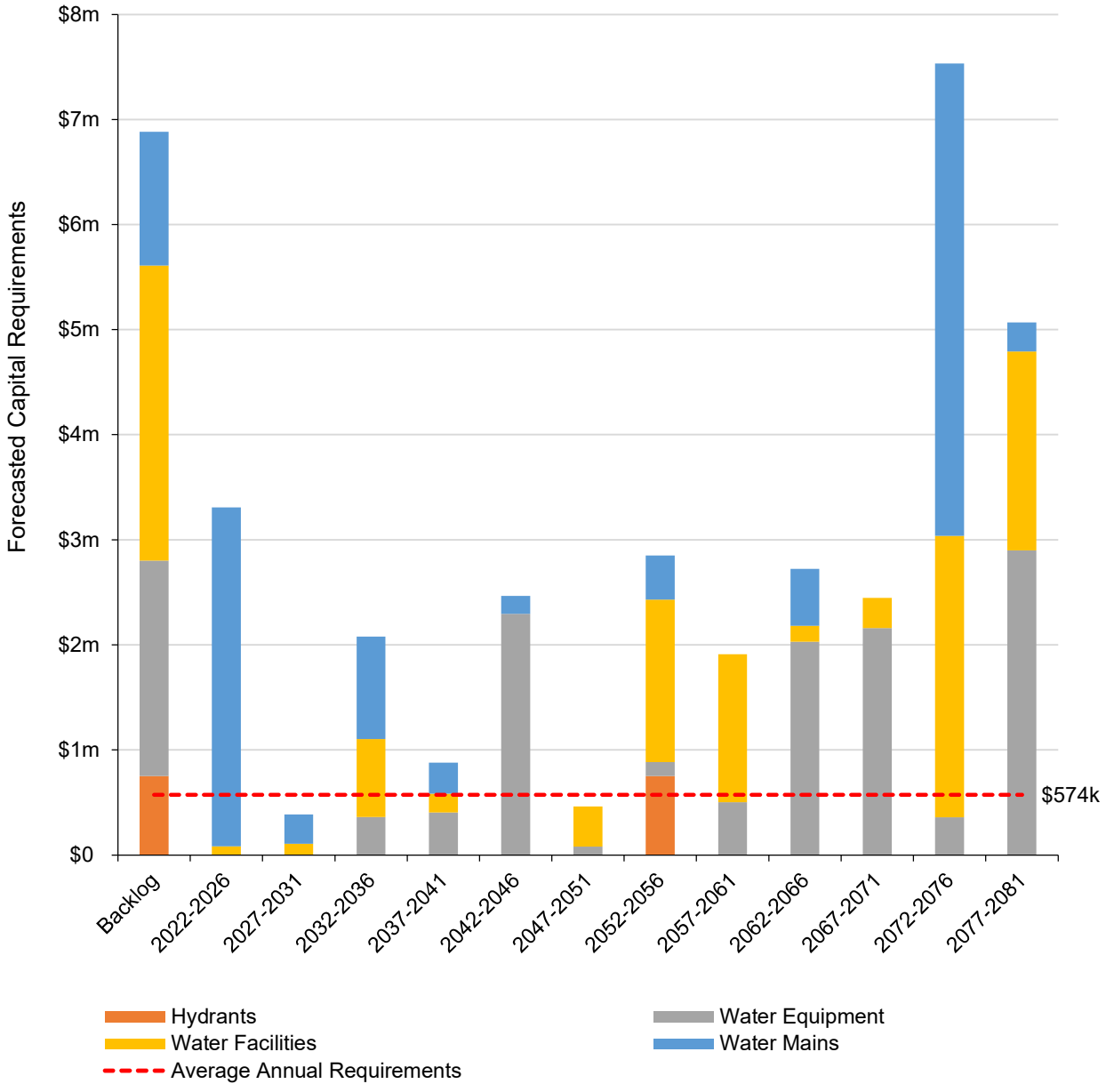
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Main flushing is completed on 100% of the network annually using in-house resources. Pressure testing is performed at the same time to identify deficiencies and potential leaks
Rehabilitation	Trenchless re-lining of water mains presents significant challenges and is not always a viable option
Replacement	In the absence of mid-lifecycle rehabilitative events, most mains are simply maintained with the goal of full replacement once it reaches its end-of-life
	Replacement activities are identified based on an analysis of the main break rate as well as any issues identified during regular maintenance activities

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 60 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



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

5.1.4 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data.

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

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost
Pipe Material	

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

Risks to Current Asset Management Strategies

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

Infrastructure Design/Aging Infrastructure

Existing underground infrastructure is aging, necessitating the Town's attention to replacement efforts. It is imperative that during the replacement process, careful consideration is given to selecting materials with extended lifecycles, ensuring the longevity and durability of the newly installed assets.

Organizational Cognizance & Capacity

Turnover of staff members poses a considerable challenge as critical knowledge and expertise related to asset management are not adequately captured and transferred. This lack of continuity hinders the organization's ability to maintain a sustained focus on effective asset management practices, highlighting the urgent need for robust documentation and knowledge transfer mechanisms to ensure the seamless flow of information and expertise.

Capital Funding Strategies

Past budgeting constraints have necessitated the deferral of capital projects until adequate funding becomes available. However, the escalating costs of materials further restrict the extent of infrastructure upgrades in a given year. The volatile economic climate poses challenges in material sourcing and accurate budgeting.

A significant portion of capital projects rely on grants, but their diminishing availability, combined with existing budgetary limitations, make it arduous to properly schedule these projects.

5.1.5 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	See Appendix C
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	See Appendix C
Reliability	Description of boil water advisories and service interruptions	The Town did not experience any service interruptions in 2022. When such events do occur, the Town delivers boil water advisories promptly to affected households. The Town follows Ontario's Drinking Water Quality Management Standard (DWQMS).

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 (2022)
Scope	% of properties connected to the municipal water system	96%
	% of properties where fire flow is available	100%
Reliability	# of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	0
	# of connection-days per year where water is not available due to water main breaks compared to the total number of properties connected to the municipal water system	0
Performance	Average risk rating associated to the water network	10.22 / 25
	% of the water network in good or very good condition	40%
	% of the water network in poor or very poor condition	55%
	Average annual capital reinvestment rate vs. target reinvestment rate	0.81%:2.60%

5.1.6 Recommendations

Asset Inventory

- Maintain the asset inventory and ensure updates to additions/disposals, replacement costs, and assessed condition occur annually at a minimum.
- Some water mains have an unknown length in the asset inventory. Staff should work to close this data gap.

Replacement Costs

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

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

- During the onboarding process, integrate the necessary knowledge and training on asset management principles into the orientation and ongoing development of new employees.
- Continue to measure current levels of service in accordance with the metrics that the Town has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

5.2 Sanitary Network

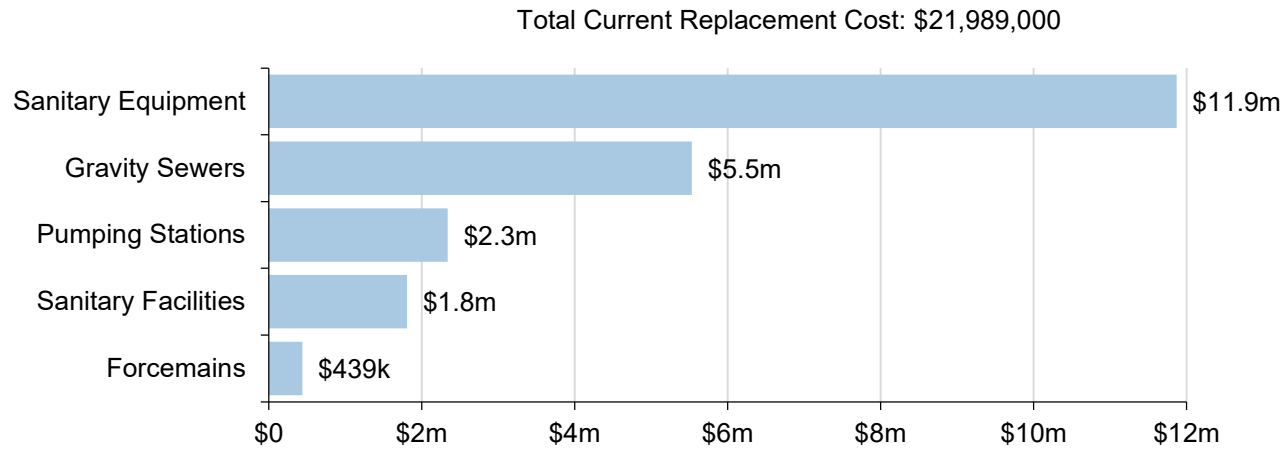
The sewer services provided by the Town are overseen by the Environmental Services department. The department is responsible for the following:

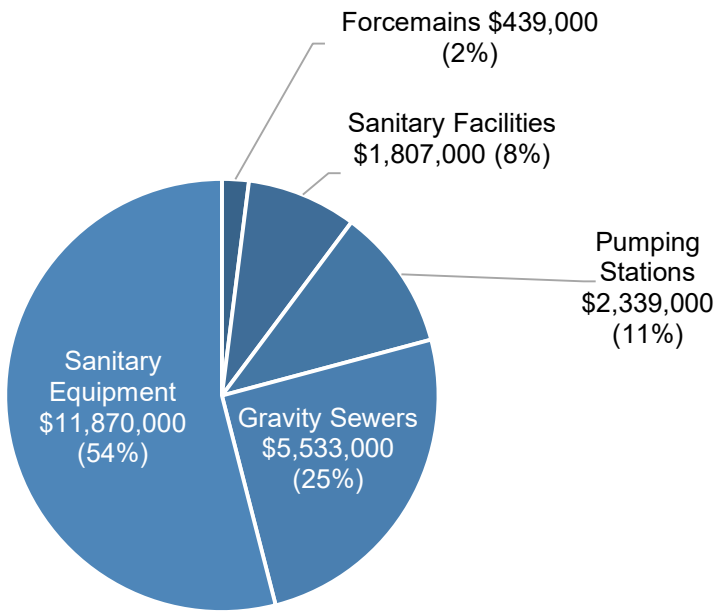
- Forcemains
- Gravity Sewers
- Pumping Stations
- Sanitary Equipment
- Sanitary Facilities

5.2.1 Asset Inventory & Replacement Costs

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost	Annual Capital Requirement
Forcemains	1.1 km	Cost per unit	$439,000	$9,000
Gravity Sewers	11.3 km	Cost per unit	$5,533,000	$111,000
Pumping Stations	3	User-defined	$2,339,000	$78,000
Sanitary Equipment	16	User-defined	$11,870,000	$424,000
Sanitary Facilities	4	User-defined	$1,807,000	$39,000
			$21,989,000	**$660,000**





Total Current Replacement Cost: $21,989,000

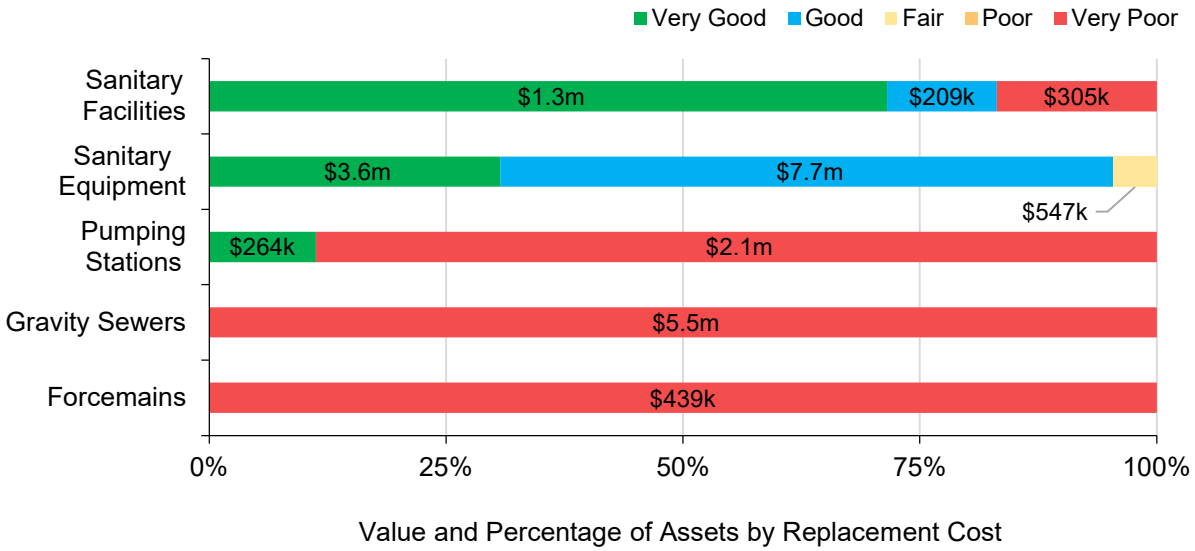
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

5.2.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (46%) is a weighted value based on replacement cost.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition	Condition Source
Forcemains	50	48	4% (Very Poor)	Age-Based
Gravity Sewers	50	53	0% (Very Poor)	Age-Based
Pumping Stations	30	33.3	10% (Very Poor)	Age-Based
Sanitary Equipment	10 - 50	8.4	73% (Good)	Age-Based
Sanitary Facilities	25 - 50	18.8	70% (Good)	Age-Based
Average		**34**	**46% (Fair)**	

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



Value and Percentage of Assets by Replacement Cost

To ensure that the Town's sanitary 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 sanitary network.

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

Current Approach to Condition Assessment

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

- While the network is assessed on an annual basis, by looking into areas that have historical deficiencies, CCTV inspections have not been performed within the last five years
- There is no formal condition assessment program in place

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

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

5.2.3 Lifecycle Management Strategy

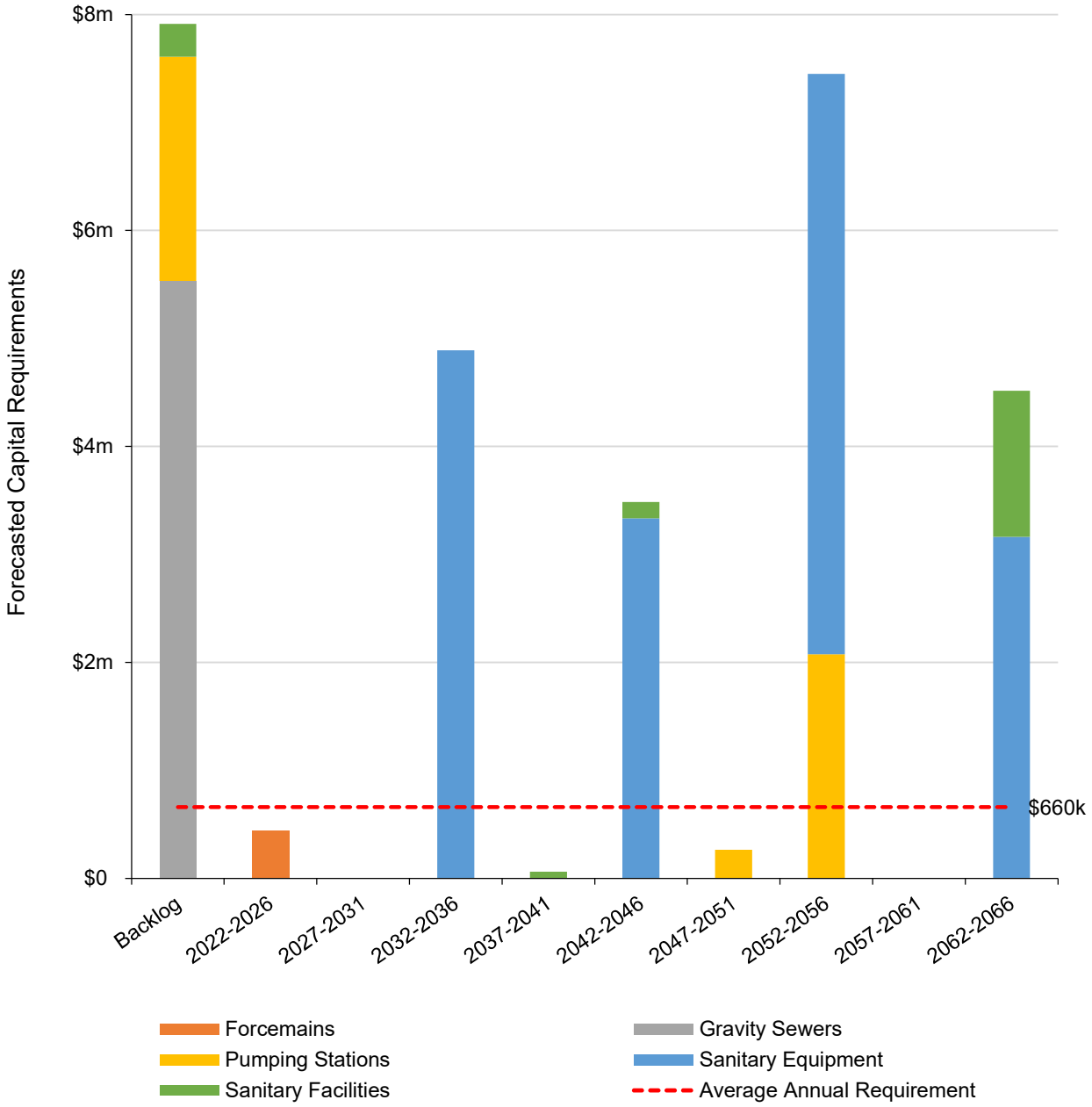
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Main flushing is planned to be completed on a 3-year cycle, but maintaining this frequency has been challenging
Replacement	Replacement activities are identified based on an analysis of the main break rate as well as any issues identified during regular maintenance activities.

Forecasted Capital Requirements

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



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

5.2.4 Risk & Criticality

Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data.

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

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost

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

Risks to Current Asset Management Strategies

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

Organizational Cognizance & Capacity

Turnover of staff members poses a considerable challenge as critical knowledge and expertise related to asset management are not adequately captured and transferred. This lack of continuity hinders the organization's ability to maintain a sustained focus on effective asset management practices, highlighting the urgent need for robust documentation and knowledge transfer mechanisms to ensure the seamless flow of information and expertise.

Moreover, the orientation and training of new employees primarily prioritize their immediate job responsibilities, often resulting in insufficient attention being given to asset management practices. This neglect of asset management during the onboarding process calls for a comprehensive approach that integrates the necessary knowledge and training on asset management principles into the orientation and ongoing development of new employees.

5.2.5 Levels of Service

The following tables identify the Town's current level of service for sanitary 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 network.

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	See Appendix C
Reliability	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes	The Town does not own any combined sewers
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	The Town does not own any combined sewers
	Description of how storm can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	Storm 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

Service Attribute	Qualitative Description	Current LOS (2022)
		capacity. In some cases, this can cause water and/or sewage to overflow backup into homes. the disconnection of weeping tiles from sanitary mains and the use of sump pumps and pits directing storm water to the storm drain system can help to reduce the chance of this occurring.
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to storm infiltration	The Town follows a series of design standards that integrate servicing requirements and land use considerations when constructing or replacing sanitary sewers. These standards have been determined with consideration of the minimization of sewage overflows and backups.
	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	Effluent refers to water pollution that is discharged from a wastewater treatment plant, and may include suspended solids, total phosphorous and biological oxygen demand. The Environmental Compliance Approval (ECA) identifies the effluent criteria for municipal wastewater treatment plants.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Scope	% of properties connected to the municipal wastewater system	94%
Reliability	# of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system	0
	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	0
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0
Performance	Average risk rating associated to the sanitary network	6.22 / 25
	% of the sanitary network in good or very good condition	60%
	% of the sanitary network in poor or very poor condition	38%
	Average annual capital reinvestment rate vs. target reinvestment rate	0.94%:3.00%

5.2.6 Recommendations

Asset Inventory

- Maintain the asset inventory and ensure updates to additions/disposals, replacement costs, and assessed condition occur annually at a minimum.

Condition Assessment Strategies

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

Risk Management Strategies

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

Lifecycle Management Strategies

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

Levels of Service

- During the onboarding process, integrate the necessary knowledge and training on asset management principles into the orientation and ongoing development of new employees.
- 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.

6 Impacts of Growth

Key Insights

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

6.1 Description of Growth Assumptions

The demand for infrastructure and services will change over time based on a combination of internal and external factors. Understanding the key drivers of growth and demand will allow the Town to 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.

For Deseronto, information from Statistics Canada shows a population of 1,774 in 2016 and a drop to 1,747 in 2021. With the boundaries of the Town locked in place by neighboring municipalities as well as the decrease in population, the Town is not expecting significant growth over the next decade.

6.2 Impact of Growth on Lifecycle Activities

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

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.

7 Financial Strategy

Key Insights

- The Town is committing approximately $959,000 towards capital projects per year from sustainable revenue sources
- Given the annual capital requirement of $3,327,000, there is currently a funding gap of $2,367,000 annually
- For tax-funded assets, we recommend increasing tax revenues by 3.6% each year for the next 20 years to achieve a sustainable level of funding
- For the sanitary network, we recommend increasing rate revenues by 3.2% annually for the next 20 years to achieve a sustainable level of funding
- For the water network, we recommend increasing rate revenues by 2.2% annually for the next 20 years to achieve a sustainable level of funding

7.1 Financial Strategy Overview

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

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

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

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

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

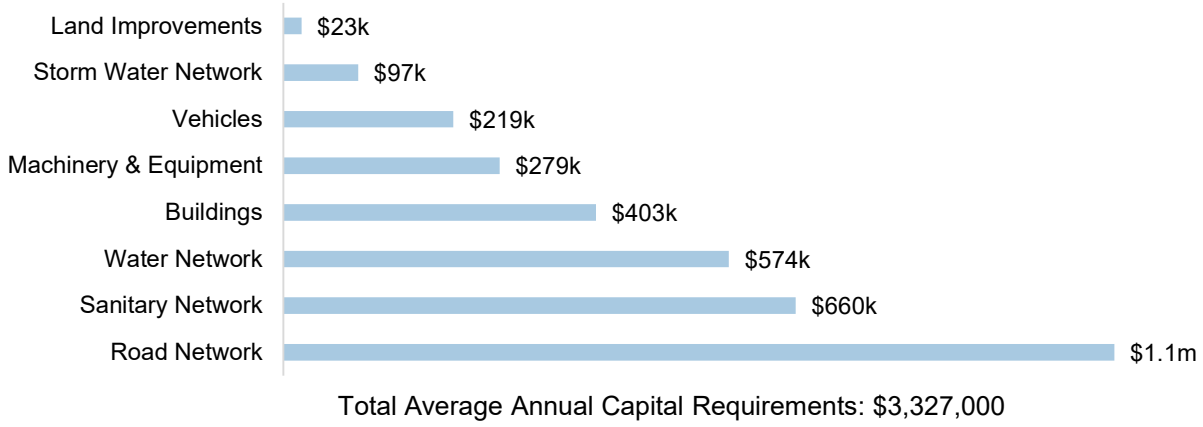
1. In order to reduce financial requirements, consideration has been given to revising service levels downward.

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

7.1.1 Annual Requirements & Capital Funding

Annual Requirements

The annual requirements represent the amount the Town should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs and achieve long-term sustainability. In total, the Town must allocate approximately $3.3 million annually to address capital requirements for the assets included in this AMP.



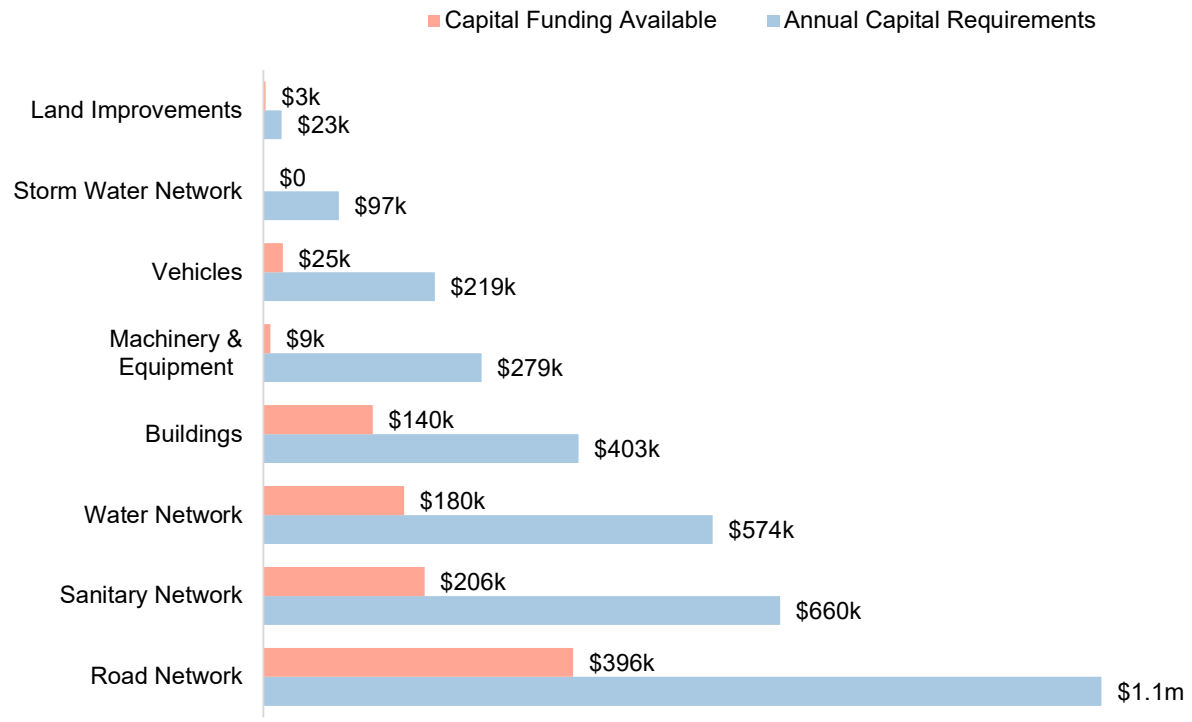
Asset categories the annual requirement has been calculated based on a "replacement only" scenario, in which capital costs are only incurred at the construction and replacement of each asset.

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

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

Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately $959,000 towards capital projects per year from sustainable revenue sources. Given the annual capital requirement of $3,326,000, there is currently a funding gap of $2,367,000 annually.



7.2 Funding Objective

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

1. **Tax Funded Assets:** Road Network, Storm Water Network, Buildings, Machinery & Equipment, Land Improvements Vehicles
2. **Rate-Funded Assets:** Water Network, Sanitary Network

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

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

7.3 Financial Profile: Tax Funded Assets

7.3.1 Current Funding Position

The following tables show, by asset category, Deseronto's average annual asset investment requirements, current funding positions, and funding increases required to achieve full funding on assets funded by taxes as of 2022.

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Taxes	Gas Tax & OCIF	Capital Reserve Allocation	Total Available	
Road Network	1,071,000	73,000	273,000	50,000	396,000	675,000
Stormwater Network	97,000	0	0	0	0	97,000
Buildings	403,000	22,000	0	118,000	140,000	263,000
Machinery & Equipment	279,000	0	0	9,000	9,000	270,000
Land Improvements	23,000	3,000	0	0	3,000	20,000
Vehicles	219,000	0	0	25,000	25,000	194,000
	2,092,000	**98,000**	**273,000**	**202,000**	**573,000**	**1,519,000**

The average annual investment requirement for the above categories is $2,092,000. Annual revenue currently allocated to these assets for capital purposes is $573,000 leaving an annual deficit of $1,519,000. Put differently, these infrastructure categories are currently funded at 27.4% of their long-term requirements.

7.3.2 Full Funding Requirements

In 2021, Town of Deseronto has annual tax revenues of $1,488,620. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

Asset Category	Tax Change Required for Full Funding
Road Network	45.3%
Storm Network	6.5%
Buildings	17.7%
Machinery & Equipment	18.1%
Land Improvements	1.3%
Vehicles	13.0%
	101.9%

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

a) Deseronto's formula based OCIF grant is scheduled to grow from $51,000 in 2021 to $179,000 in 2022.
b) Deseronto's debt payments for these asset categories will increase by $12,000 over the next 5 years and by $3,000 over the next 10 years. However, debt payments will decrease over the next 15 and 20 years by $3,000 respectively.

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

	Without Capturing Changes				With Capturing Changes			
	5 Years	**10 Years**	**15 Years**	**20 Years**	**5 Years**	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	1,519,000	1,519,000	1,519,000	1,519,000	1,519,000	1,519,000	1,519,000	1,519,000
Change in Debt Costs	N/A	N/A	N/A	N/A	12,000	3,000	-3,000	-3,000
Resulting Infrastructure Deficit	1,519,000	1,519,000	1,519,000	1,519,000	1,531,000	1,522,000	1,516,000	1,516,000
Tax Increase Required	102.0%	102.0%	102.0%	102.0%	102.8%	102.2%	101.8%	101.8%
Annually	**15.2%**	**7.3%**	**4.9%**	**3.6%**	**15.2%**	**7.3%**	**4.8%**	**3.6%**

7.3.3 Financial Strategy Recommendations

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

a) when realized, reallocating the debt cost reductions of $3,000 to the infrastructure deficit as outlined above.
b) increasing tax revenues by 3.6% each year for the next 20 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
c) allocating the current gas tax and OCIF revenue as outlined previously.
d) allocating the scheduled OCIF grant increases to the infrastructure deficit as they occur.
e) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

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

Although this option achieves full 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.

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

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

7.4 Financial Profile: Rate Funded Assets

7.4.1 Current Funding Position

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

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Rates	To Operations	OCIF	Total Available	
Water Network	574,000	180,000	0	0	180,000	394,000
Sanitary Network	660,000	206,000	0	0	206,000	454,000
	1,234,000	**386,000**	**0**	**0**	**386,000**	**848,000**

The average annual investment requirement for the above categories is $1,234,000. Annual revenue currently allocated to these assets for capital purposes is $386,000 leaving an annual deficit of $848,000. Put differently, these infrastructure categories are currently funded at 31.3% of their long-term requirements.

7.4.2 Full Funding Requirements

In 2021, Deseronto had annual sanitary revenues of $528,421 and annual water revenues of $717,469. As illustrated in the table below, without consideration of any other sources of revenue, full funding would require the following changes over time:

Asset Category	Tax Change Required for Full Funding
Water Network	54.9%
Sanitary Network	85.9%

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

Water Network								
	No reallocationof decrease in debt payment				Reallocation of decrease in debt payments			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	394,000	394,000	394,000	394,000	394,000	394,000	394,000	394,000
Change in Debt Costs	N/A	N/A	N/A	N/A	11,000	11,000	11,000	-4,000
Resulting Infrastructure Deficit	394,000	394,000	394,000	394,000	405,000	405,000	405,000	390,000
Rate Increase Required	54.9%	54.9%	54.9%	54.9%	56.4%	56.4%	56.4%	54.4%
Annually	**9.2%**	**4.5%**	**3.0%**	**2.3%**	**9.4%**	**4.6%**	**3.1%**	**2.2%**

Sanitary Network								
	No reallocationof decrease in debt payment				Reallocation of decrease in debt payments			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	454,000	454,000	454,000	454,000	454,000	454,000	454,000	454,000
Change in Debt Costs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Resulting Infrastructure Deficit	454,000	454,000	454,000	454,000	454,000	454,000	454,000	454,000
Rate Increase Required	85.9%	85.9%	85.9%	85.9%	85.9%	85.9%	85.9%	85.9%
Annually	**13.3%**	**6.4%**	**4.3%**	**3.2%**	**13.3%**	**6.4%**	**4.3%**	**3.2%**

7.4.3 Financial Strategy Recommendations

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

a) when realized, reallocating the debt cost reductions of $4,000 for water services to the applicable infrastructure deficit.
b) increasing rate revenues by 3.2% for sanitary services and 2.2% for water services each year for the next 20 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
c) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

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

Although this option achieves full funding on an annual basis in 20 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available.

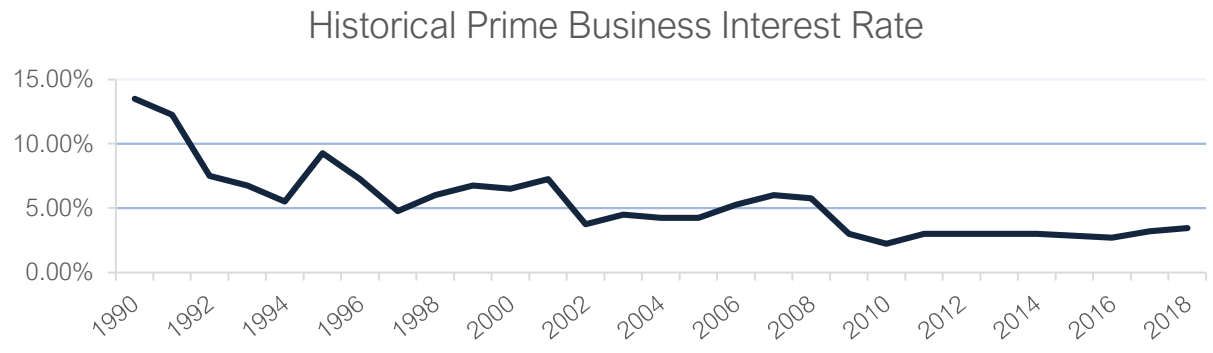
Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

7.5 Use of Debt

For reference purposes, the following table outlines the premium paid on a project if financed by debt. For example, a $1M project financed at 3.0%[5] over 15 years would result in a 26% premium or $260,000 of increased costs due to interest payments. For simplicity, the table does not consider the time value of money or the effect of inflation on delayed projects.

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

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



[5] As of February 2023, the municipal Infrastructure Ontario rates for 15-year money is 4.3%.

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

The following tables outline how Deseronto has historically used debt for investing in the asset categories as listed. There is currently $2,789,000 of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of $150,000, well within its provincially prescribed maximum of $632,406 as of 2021. The 2022 FIR has not yet been released.

Asset Category	Current Debt Outstanding	Use of Debt in the Last Five Years				
		2018	2019	2020	2021	2022
Buildings	238,000	0	0	0	0	242,000
Land Improvements	0	0	0	0	0	0
Machinery & Equipment	123,000	0	0	0	0	130,000
Road Network	0	0	0	0	0	0
Storm Water Network	0	0	0	0	0	0
Vehicles	0	0	0	0	0	0
Total Tax Funded:	**361,000**	**0**	**0**	**0**	**0**	**372,000**
Water Network	1,280,000	0	0	1,013,000	0	345,000
Sanitary Network	1,148,000	0	0	0	0	0
Total Rate Funded:	**2,428,000**	**0**	**0**	**1,013,000**	**0**	**345,000**
Total:	**2,789,000**	**0**	**0**	**1,013,000**	**0**	**717,000**

Asset Category	Principal & Interest Payments in the Next Ten Years						
	2022	2023	2024	2025	2026	2027	2028
Buildings	9,000	15,000	15,000	15,000	15,000	15,000	15,000
Land Improvements	0	0	0	0	0	0	0
Machinery & Equipment	9,000	15,000	15,000	15,000	15,000	15,000	6,000
Road Network	0	0	0	0	0	0	0
Storm Water Network	0	0	0	0	0	0	0
Vehicles	0	0	0	0	0	0	0
Total Tax Funded:	**18,000**	**30,000**	**30,000**	**30,000**	**30,000**	**30,000**	**21,000**
Water Network	62,000	73,000	73,000	73,000	73,000	73,000	73,000
Sanitary Network	70,000	70,000	70,000	70,000	70,000	70,000	70,000
Total Rate Funded:	132,000	143,000	143,000	143,000	143,000	143,000	143,000
Total	**150,000**	**173,000**	**173,000**	**173,000**	**173,000**	**173,000**	**164,000**

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

7.6 Use of Reserves

7.6.1 Available Reserves

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

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

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

Asset Category	Balance on December 31, 2021
Buildings	248,000
Land Improvements	280,000
Machinery & Equipment	592,000
Road Network	248,000
Storm Water Network	0
Vehicles	410,000
Total Tax Funded:	**1,778,000**
Water Network	542,000
Sanitary Network	548,000
Total Rate Funded:	**1,090,000**
Total:	**2,868,000**

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

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

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

7.6.2 Recommendation

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

8 Appendices

Key Insights

- Appendix A includes a one-page report card with an overview of key data from each asset category
- Appendix B identifies projected 10-year capital requirements for each asset category
- Appendix C includes several maps that have been used to visualize the current level of service
- Appendix D provides additional guidance on the development of a condition assessment program

Appendix A: Infrastructure Report Card

Asset Category	Replacement Cost (millions)	Asset Condition	Financial Capacity	
Road Network	$22.2	Good	Annual Requirement:	$1,071,000
			Funding Available:	$396,000
			Annual Deficit:	**$675,000**
Storm Network	$5.7	Poor	Annual Requirement:	$97,000
			Funding Available:	$0
			Annual Deficit:	**$97,000**
Buildings	$15.0	Good	Annual Requirement:	$403,000
			Funding Available:	$140,000
			Annual Deficit:	**$263,000**
Machinery & Equipment	$5.1	Fair	Annual Requirement:	$279,000
			Funding Available:	$9,000
			Annual Deficit:	**$270,000**
Vehicles	$2.8	Poor	Annual Requirement:	$219,000
			Funding Available:	$25,000
			Annual Deficit:	**$194,000**
Water Network	$22.1	Fair	Annual Requirement:	$574,000
			Funding Available:	$180,000
			Annual Deficit:	**$394,000**
Sanitary Network	$22.0	Fair	Annual Requirement:	$660,000
			Funding Available:	$206,000
			Annual Deficit:	**$454,000**
Overall	$95.4	Fair	Annual Requirement:	$3,327,000
			Funding Available:	$959,000
			Annual Deficit:	**$2,368,000**

Appendix B: 10-Year Capital Requirements

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

Road Network											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Non-Structural Culverts	$0	$0	$0	$0	$0	$300k	$0	$0	$0	$0	$0
Paved Roads	$210k	$0	$0	$0	$0	$163k	$0	$161k	$407k	$284k	$139k
Sidewalks	$2.4m	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Street Signs	$81k	$0	$38k	$0	$0	$0	$0	$0	$0	$0	$0
Streetlights	$68k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$2.8m	**$0**	**$38k**	**$0**	**$0**	**$463k**	**$0**	**$161k**	**$407k**	**$284k**	**$139k**

Storm Network											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Catch Basins	$773k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Storm Mains	$405k										
	$1.2m	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Buildings											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Fire Hall	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Library	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Public Works Buildings	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Recreation Buildings	$0	$0	$0	$0	$0	$0	$0	$16k	$0	$0	$0
Town Hall	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$16k**	**$0**	**$0**	**$0**

Machinery & Equipment											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Fire Equipment	$6k	$0	$0	$0	$75k	$65k	$30k	$0	$10k	$300k	$0
General Government Equipment	$151k	$5k	$7k	$12k	$9k	$11k	$79k	$2k	$38k	$5k	$5k
Public Works Equipment	$0	$0	$0	$0	$0	$0	$380k	$0	$0	$75k	$60k
Recreation Equipment	$385k	$0	$0	$0	$0	$45k	$0	$21k	$339k	$50k	$0
	$542k	**$5k**	**$7k**	**$12k**	**$84k**	**$121k**	**$489k**	**$23k**	**$387k**	**$430k**	**$65k**

Vehicles											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Fire Vehicles	$0	$0	$0	$0	$0	$0	$0	$0	$0	$520k	$0
General Government Vehicles	$54k	$0	$0	$0	$0	$0	$455k	$0	$0	$0	$0
Public Works Vehicles	$0	$0	$0	$0	$0	$0	$0	$0	$0	$440k	$325k
Water/Wastewater Vehicles	$0	$60k	$0	$0	$0	$0	$0	$60k	$0	$0	$0
	$54k	**$60k**	**$0**	**$0**	**$0**	**$0**	**$455k**	**$60k**	**$0**	**$960k**	**$325k**

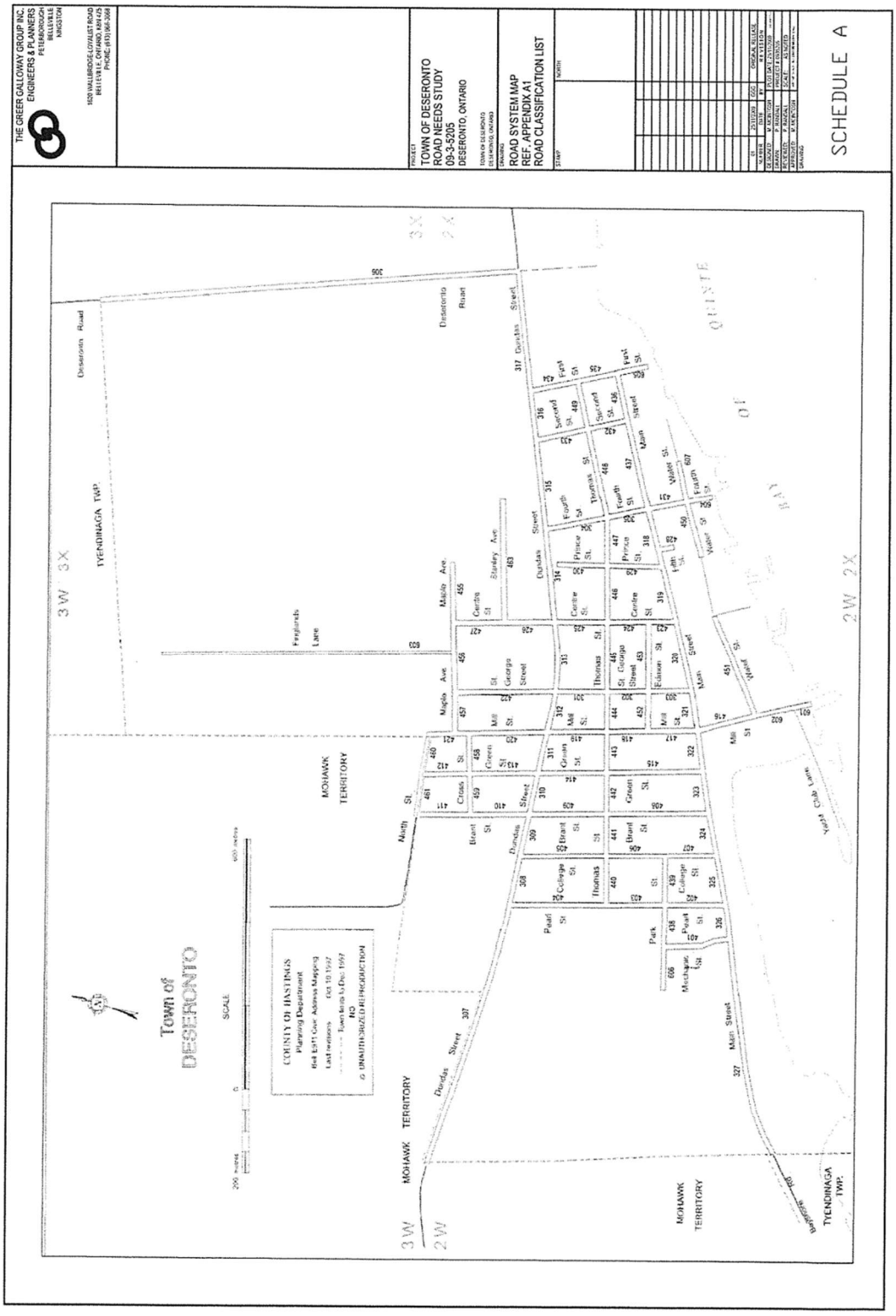
Land Improvements											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Cemetery	$3k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Parking Lots	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Parks	$70k	$50k	$0	$3k	$0	$0	$0	$0	$7k	$23k	$0
	$73k	**$50k**	**$0**	**$3k**	**$0**	**$0**	**$0**	**$0**	**$7k**	**$23k**	**$0**

Water Network											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Hydrants	$751k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Equipment	$2.0m	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Facilities	$2.8m	$0	$0	$0	$0	$83k	$0	$0	$0	$107k	$0
Water Mains	$1.3m	$0	$0	$0	$1.8m	$1.4m	$0	$0	$0	$278k	$0
	$6.9m	**$0**	**$0**	**$0**	**$1.8m**	**$1.5m**	**$0**	**$0**	**$0**	**$384k**	**$0**

Sanitary Network											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Forcemains	$0	$0	$0	$0	$439k	$0	$0	$0	$0	$0	$0
Gravity Sewers	$5.5m	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Pumping Stations	$2.1m	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sanitary Equipment	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sanitary Facilities	$305k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$7.9m	**$0**	**$0**	**$0**	**$439k**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Appendix C: Level of Service Maps

Road Network Map



Water & Sanitary Network Map

Appendix D: Condition Assessment Guidelines

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

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

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

Role of Asset Condition Data

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

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

Guidelines for Condition Assessment

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

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

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

Developing a Condition Assessment Schedule

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

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

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