



The Asset Management Plan for the Municipality of South Dundas

Prepared by the Municipality of South Dundas
www.southdundas.com
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Key Statistics

\$448 Million

Replacement value of core and non-core infrastructure as of 2024

63%

Portion of assets in fair or better condition as of 2024

\$8.2 Million

Annual requirement for tax funded assets with current levels of service

\$4.1 Million

Annual requirement for rate funded assets with current levels of service

26%

Portion of total 2024 revenues spent on infrastructure

11%

Portion of total infrastructure funding that comes from the Gas Tax

15 years

Recommended timeframe for eliminating annual infrastructure deficit for tax funded assets

15 years

Recommended timeframe for eliminating annual infrastructure deficit for rate funded assets



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Executive Summary

This asset management plan (AMP) provides data-driven guidance to the Municipality of South Dundas on managing its core and non-core municipal infrastructure capital asset portfolio with a total replacement value of \$448 million. It is developed in accordance with Ontario Regulation 588/17 and addresses key reporting requirements, including outlining the state of the infrastructure, defining current levels of service (LOS), risk, and the associated lifecycle strategies.

Based on 2024 data, 63% of all assets analyzed in this AMP are in fair or better condition. Field condition assessments were used to determine the actual condition for only 23% of assets. For 77% of assets, assessment data was unavailable, and age was used to approximate condition; this data gap persists in most municipalities. Age can understate the true condition of assets, making condition assessments essential for accurate financial asset management planning.

As required by O. Reg 588/17, South Dundas has established current levels of service for its core and non-core asset classes which include road network, bridges and culverts, water, wastewater, stormwater, buildings, machinery and equipment, land improvements, and vehicles. Based on 2024 data, the average surface condition for the Municipality's road network was rated as 'good'. For bridges, the average condition index is 68%, indicating that bridges are in 'good' condition. There were 5 water main breaks and no precautionary boil-water advisory issued in 2023. The stormwater network is designed to handle a 5-year storm event; however, it is unclear whether the stormwater network would be able to withstand a 100-year storm event. This leaves the community vulnerable to more extreme and unpredictable weather.

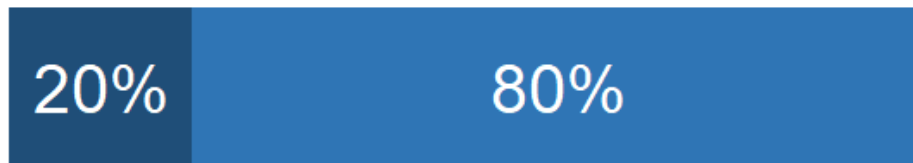
Currently, in addition to the \$11.6 million infrastructure backlog, South Dundas has a total annual infrastructure funding shortfall of approximately \$9.2 million. Assuming the Municipality of South Dundas experiences an average annual increase of 3% to its tax levy and rate revenue, to eliminate the \$6 million deficit for tax funded assets, staff recommend increasing tax revenue by 3.4% per year for 15 years. For rate funded assets, a 15-year phase-in period is recommended, based on a 4.2% revenue increase for water, and 5.5% for wastewater services.



An Overview of Asset Management

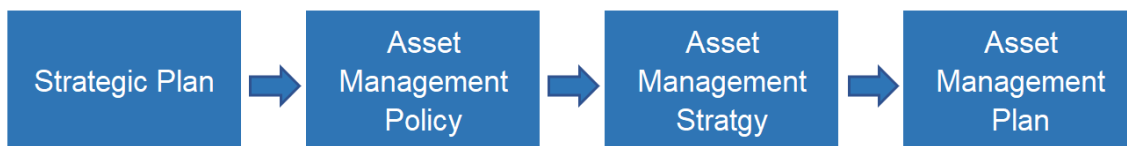
The initial acquisition of capital assets accounts for only 10-20% of the total cost of ownership. The remaining 80-90% comes from operations and maintenance. The intent of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio.

Total Cost of Ownership



Build Operate, Maintain, and Dispose

These costs can span decades, requiring planning and foresight to spread fiscal responsibility equitably across generations. An asset management plan is critical to this planning, and an essential element of a broader asset management program. The diagram below depicts an industry-standard approach and sequence to developing a practical asset management program.



The diagram, adopted from the Institute of Asset Management (IAM), illustrates the concept of 'line of sight,' or 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—making it integral.



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 the asset management plan.

Lifecycle Management Strategies

Developing a lifecycle strategy will help staff to determine which activities to perform on an asset and when these activities should be scheduled to maximize useful life at the lowest cost. There are several field intervention activities that are available to extend the life of an asset. These activities can be 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:

Event Type	Description	Example for Roads	Cost
Maintenance	Activities that prevent defects or deteriorations from occurring	Crack Seal	\$
Rehabilitation	Activities that rectify defects or deficiencies that are already present and may be affecting asset performance	Mill & Resurface	\$\$
Replacement	Asset end-of-life activities that often involve the complete replacement of assets	Full Reconstruction	\$\$\$

Risk Management Strategies

Municipalities often take a 'worst-first' approach to infrastructure spending. Rather than prioritizing assets based on the importance of service delivery, assets in the worst condition are fixed first, regardless of criticality. However, not all assets are created equal. Some are more important than others, and failure or disrepair poses more risk to the community than that of others. 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 can identify critical assets and determine where maintenance efforts, and spending, should be focused.



Levels of Service

Level of service (LOS) is a measure of what the Municipality is providing to the community and the nature and quality of that service. Within each asset category, technical metrics and qualitative descriptions that measure both technical and community levels of service have been established and measured as data is available. These measures include a combination of those that have been outlined in O. Reg. 588/17 in addition to performance measures identified by the Municipality as worth measuring and evaluating.

Community Levels of Service

Community levels of service provide a simple, plain language description or measure of how the community receives or experiences the services that the Municipality provides. For core and non-core asset categories, the province has provided qualitative descriptions that are required to be included in the AMP. These descriptions can be found in the Levels of Service subsection within each asset category.

Technical Levels of Service

Technical levels of service provide a quantitative measure of key technical attributes of the service being provided to the community. For core and non-core asset categories (Roads, Bridges & Culverts, Water, Wastewater, Stormwater) the province, through O. Reg. 588/17, has provided technical metrics that are required to be included in the AMP. These metrics can be found in the Levels of Service subsection within each asset category.

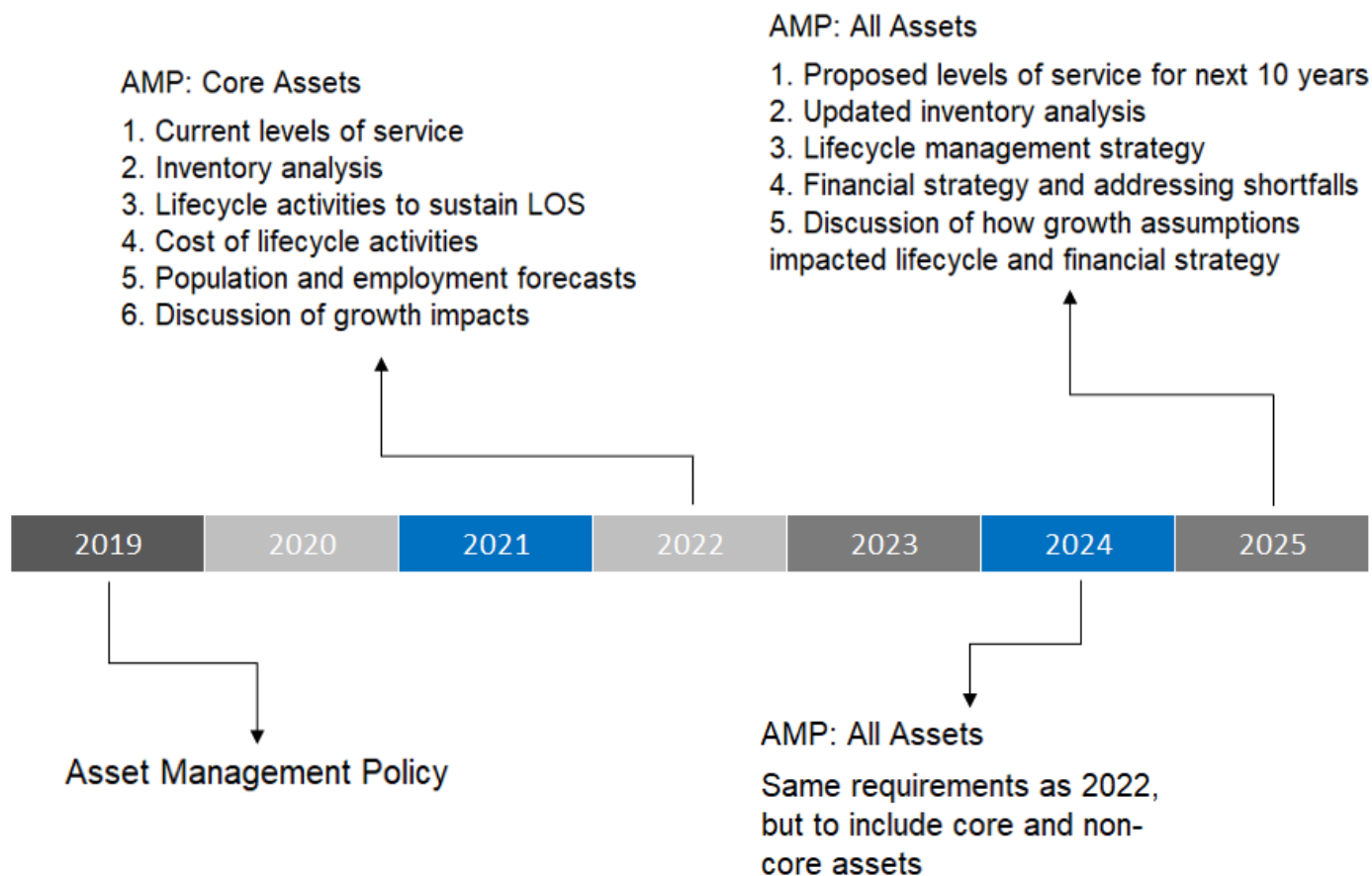
Current and Proposed Levels of Service

This AMP focuses on measuring the current level of service provided to the community. Once current levels of service have been measured, the Municipality plans to establish proposed levels of service over a 10-year period, in accordance with O. Reg. 588/17. Proposed levels of service should be realistic and achievable within the timeframe outlined by the Municipality. They should also be determined with consideration of a variety of community expectations, fiscal capacity, regulatory requirements, corporate goals, and long-term sustainability.



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 livable 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.





Scope and Methodology

Assets classes included in this AMP

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

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

Asset Category	Source of Funding
Bridges & Culverts	Tax Levy
Buildings & Facilities	
Land Improvements	
Machinery & Equipment	
Road Network	
Storm Sewer Network	
Vehicles	
Water Network	User Rates
Wastewater Network	



Deriving Replacement Costs

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

- **User-Defined Cost:** 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:** Historical cost of the asset is inflated based on Consumer Price Index or Non-Residential Building Construction Price Index.

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



Deriving Asset Condition

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

A condition assessment rating system provides a standardized descriptive framework that allows comparative benchmarking across the Municipality's asset portfolio. The table below outlines the condition rating system to determine asset condition. When field 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, 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, substantial 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. The value of assessed condition data cannot be overstated as it provides a more accurate representation of the state of infrastructure than does an age-based indicator. Age-based condition tends to understate asset condition, leading to premature treatments.



The Municipality employs a combination of both formal and informal condition assessment programs for municipal assets. The road network was assessed in 2019 by McIntosh Perry as part of a Road Needs Study. The bi-annual OSIM (Ontario Structure Inspection Manual) assessment of bridges and culverts was completed in 2023 by Jacobs (Bridge Engineers).

This AMP relies on assessed condition data for only 23% of assets; for the remaining portfolio, age is used as an approximation of condition. The tables on pg. 18, 19, and 20 outline how condition ratings were assigned to assets.

Estimated Useful Life and Service Life Remaining

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

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

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

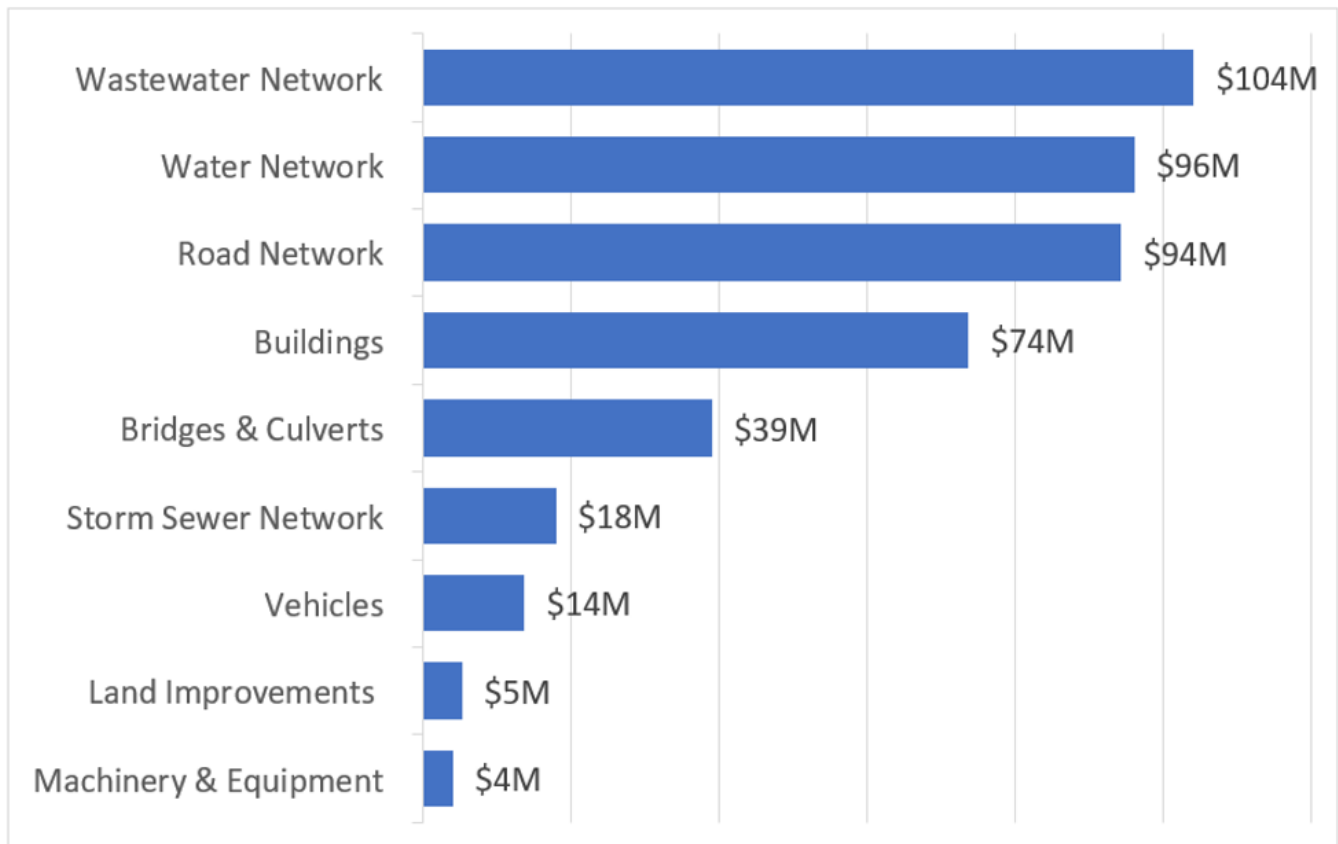


Portfolio Overview

In this section, we provide a high-level summary of all asset classes before analyzing each asset class individually.

Current Value of Asset Portfolio

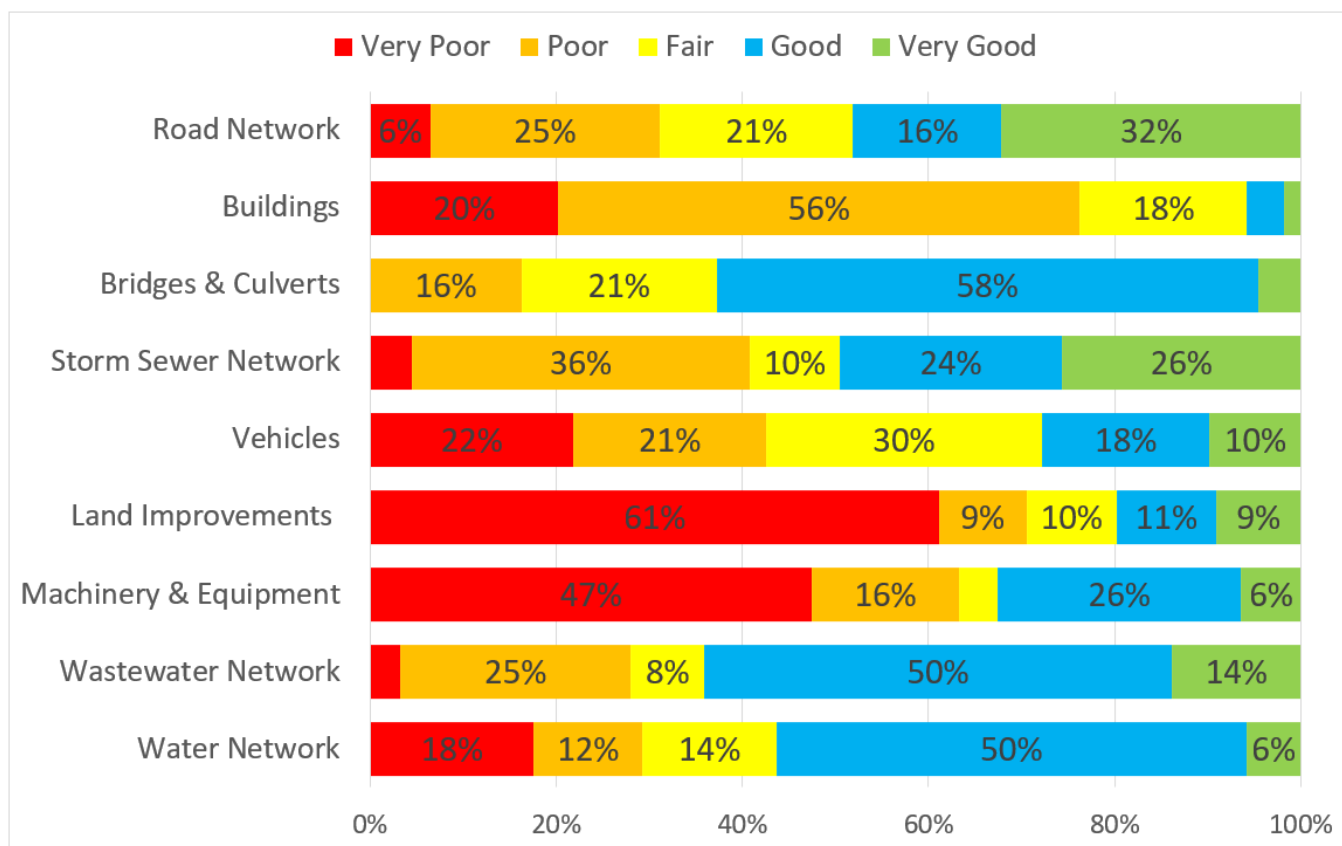
For this AMP, the 2024 replacement costs for the asset categories analyzed total \$448 million. This total was determined based on a combination of user-defined costs and cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.





Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 63% of assets in South Dundas are in fair or better condition. This estimate relies on both age-based and field condition data. At 32%, the municipality's road network had the highest portion of assets in 'very good' condition. At 61%, land improvements had the highest portion of assets in 'very poor' condition.





Field 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	Types of Condition Data	Source of Condition Data
Bridges & Culverts	Bridges	100% Assessed	2023 Ontario Structure Inspection Manual (OSIM) Report (Jacobs)
	Culverts	99% Assessed	2023 Ontario Structure Inspection Manual (OSIM) Report (Jacobs)
Road Network	HCB Surfaces	95% Assessed	2019 Road Needs Study (McIntosh Perry)
	LCB Surfaces	96% Assessed	2019 Road Needs Study (McIntosh Perry)
	Gravel	100% Assessed	2019 Road Needs Study (McIntosh Perry)
	Base	Age-Based Condition	In-Service Date and Estimated Useful Life
	Streetlights	Age-Based Condition	In-Service Date and Estimated Useful Life
	Sidewalks	Age-Based Condition	In-Service Date and Estimated Useful Life
	Guide Rail	Age-Based Condition	In-Service Date and Estimated Useful Life
Buildings	Administration	Age-Based Condition	In-Service Date and Estimated Useful Life
	Fire	Age-Based Condition	In-Service Date and Estimated Useful Life
	Public Works	Age-Based Condition	In-Service Date and Estimated Useful Life
	Recreation	Age-Based Condition	In-Service Date and Estimated Useful Life
Land Improvements	Beach & Waterfront	Age-Based Condition	In-Service Date and Estimated Useful Life
	Parking Lots	Age-Based Condition	In-Service Date and Estimated Useful Life
	Sports Fields	Age-Based Condition	In-Service Date and Estimated Useful Life



Asset Category	Asset Segment	Types of Condition Data	Source of Condition Data
Water Network	Buildings	Age-Based Condition	In-Service Date and Estimated Useful Life
	Equipment	Age-Based Condition	In-Service Date and Estimated Useful Life
	Vehicles	Age-Based Condition	In-Service Date and Estimated Useful Life
	Water Lines	Age-Based Condition	In-Service Date and Estimated Useful Life
	Service Lines	Age-Based Condition	In-Service Date and Estimated Useful Life
	Water Valves	Age-Based Condition	In-Service Date and Estimated Useful Life
	Water Meters	Age-Based Condition	In-Service Date and Estimated Useful Life
	Fire Hydrants	Age-Based Condition	In-Service Date and Estimated Useful Life
Wastewater Network	Buildings	Age-Based Condition	In-Service Date and Estimated Useful Life
	Equipment	Age-Based Condition	In-Service Date and Estimated Useful Life
	Vehicles	Age-Based Condition	In-Service Date and Estimated Useful Life
	Sewer Lines	Age-Based Condition	In-Service Date and Estimated Useful Life
	Force Main	Age-Based Condition	In-Service Date and Estimated Useful Life
	Laterals	Age-Based Condition	In-Service Date and Estimated Useful Life
	Manholes	Age-Based Condition	In-Service Date and Estimated Useful Life
Storm Sewer Network	Storm Lines	Age-Based Condition	In-Service Date and Estimated Useful Life
	Storm Manholes	80% Assessed	2017 Closed Circuit Television Video (CCTV) Inspection (Clean Water Works)

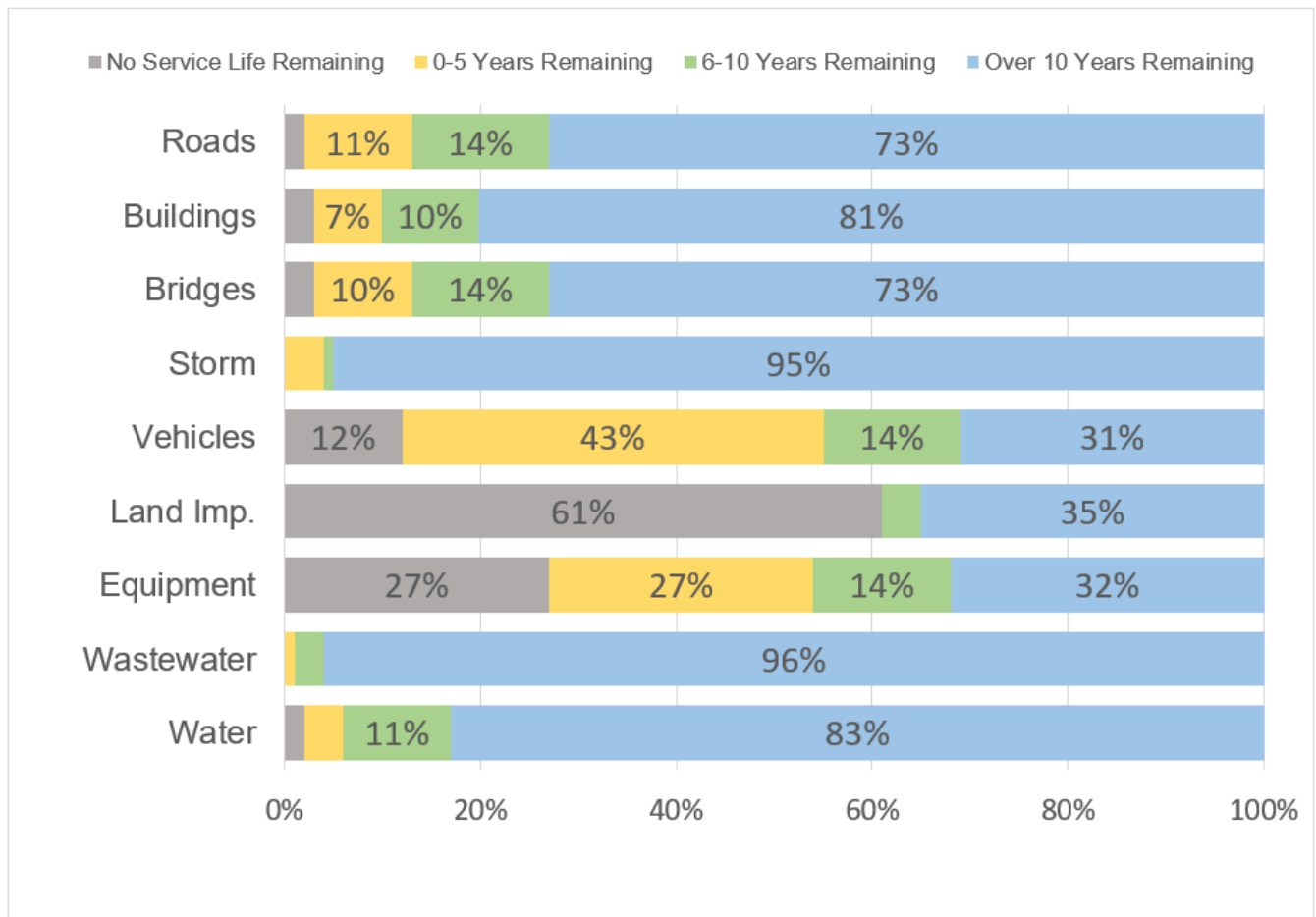


Asset Category	Asset Segment	Types of Condition Data	Source of Condition Data
Vehicles	Building/Bylaw	Age-Based Condition	In-Service Date and Estimated Useful Life
	Fire	Age-Based Condition	In-Service Date and Estimated Useful Life
	Public Works	Age-Based Condition	In-Service Date and Estimated Useful Life
	Recreation	Age-Based Condition	In-Service Date and Estimated Useful Life
	Drainage	Age-Based Condition	In-Service Date and Estimated Useful Life
Machinery & Equipment	Administration	Age-Based Condition	In-Service Date and Estimated Useful Life
	Fire	Age-Based Condition	In-Service Date and Estimated Useful Life
	Public Works	Age-Based Condition	In-Service Date and Estimated Useful Life
	Recreation	Age-Based Condition	In-Service Date and Estimated Useful Life



Service Life Remaining

The majority of the municipality's assets have at least 10 years of service life remaining. At 69%, vehicles had the highest portion of assets that will reach the end of their established useful life within the next decade. At 68%, machinery & equipment had the second highest portion of assets that will reach the end of their established useful life within the next decade. 73% of the road network will need to be replaced after 10 years assuming life cycle activities (micro surface, mill and pave, etc.) occur.





Comprehensive Analysis of Tax Funded Assets

Key Findings

- Tax funded assets are valued at \$248 million, making up 55% of the Municipality's total asset portfolio.
- 31% of tax funded assets are in fair or better condition.
- Tax funded assets are currently funded at only 27% of their long-term requirements.
- To reach sustainability, tax revenue needs to be increased by 3.4% annually for each of the next 15 years to potentially eliminate annual deficits assuming the Municipality of South Dundas experiences an average annual increase of 3% to its tax levy.
- Project prioritization is needed to gradually eliminate the infrastructure backlog of \$9.8 million.



Road Network

Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Road Network inventory. Gravel roads have been included as they comprise a sizable portion of the Municipality's Road Network. However, the lifecycle management strategies for these assets consist of perpetual maintenance activities and do not require capital costs for rehabilitation activities or end-of-life replacement. All replacement costs have been inflated to 2024 using monthly consumer price index (CPI) data from the Bank of Canada.

Category	Quantity	Replacement Cost Method	Total Replacement Cost
Road Surface - Asphalt	208 km	User-Defined Costs	\$ 33,263,511
Road Surface - Surface Treated	121 km	User-Defined Costs	\$ 25,722,182
Road Base	329 km	CPI Tables - NRBCPI Quarterly (Ottawa)	\$ 22,464,627
Gravel Roads - Non-Winter Maintained	18 km	CPI Tables - CPI Monthly (ON)	\$ 497,176
Gravel Roads - Winter Maintained	29 km	CPI Tables - CPI Monthly (ON)	\$ 646,310
Streetlights	857	User-Defined Costs	\$ 2,283,337
Sidewalks	29,800 m	User-Defined Costs	\$ 5,449,206
Guide Rail	29	CPI Tables - CPI Monthly (ON)	\$ 671,367
Total:			\$ 90,997,716

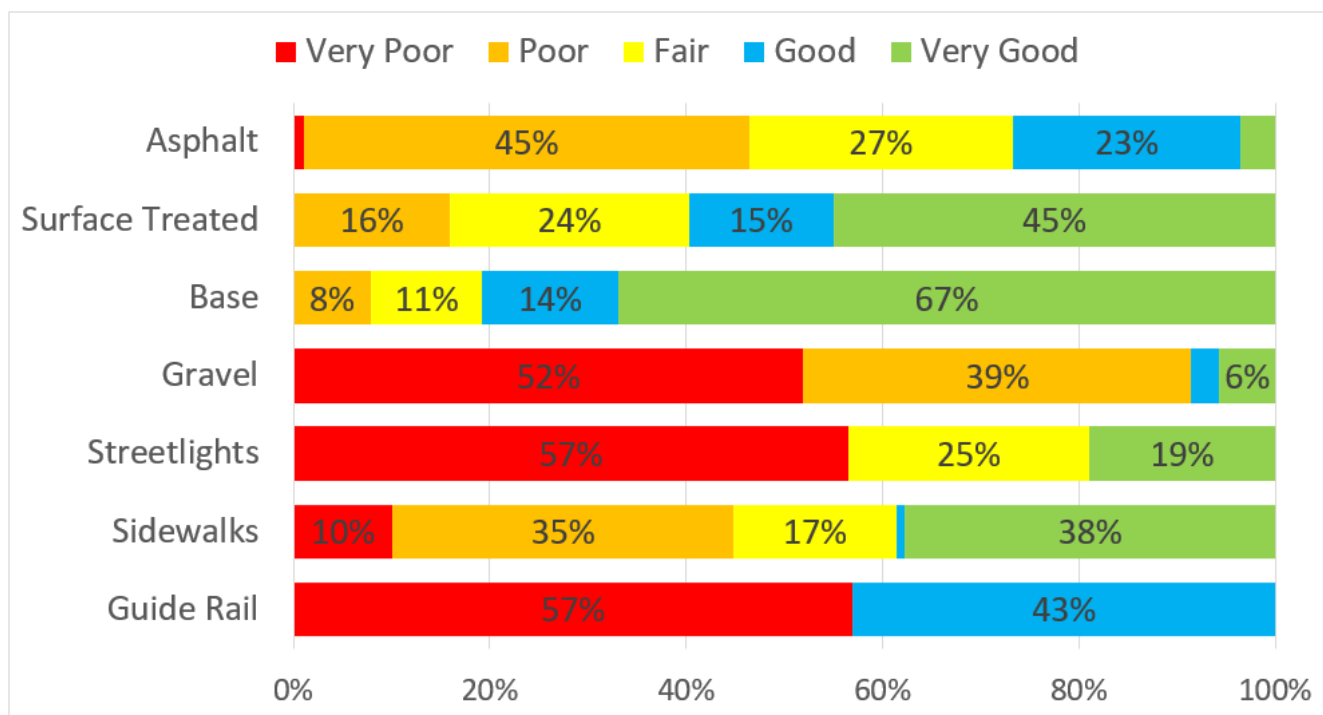
NRBCPI - Non-Residential Building Construction Price Index



Current Asset Condition

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

Asset Category	Average Condition (%)	Average Condition Rating	Condition Source
Road Surface - Asphalt	50%	Fair	2019 Road Needs Study - McIntosh Perry
Road Surface - Surface Treated	70%	Good	2019 Road Needs Study - McIntosh Perry
Road Base	76%	Good	Age-Based
Gravel Roads - Non-Winter Maintained	20%	Poor	2019 Road Needs Study - McIntosh Perry
Gravel Roads - Winter Maintained	26%	Poor	2019 Road Needs Study - McIntosh Perry
Streetlights	38%	Poor	Age-Based
Sidewalks	54%	Fair	Age-Based
Guide Rail	37%	Poor	Age-Based
Average:	62%	Good	Age-Based



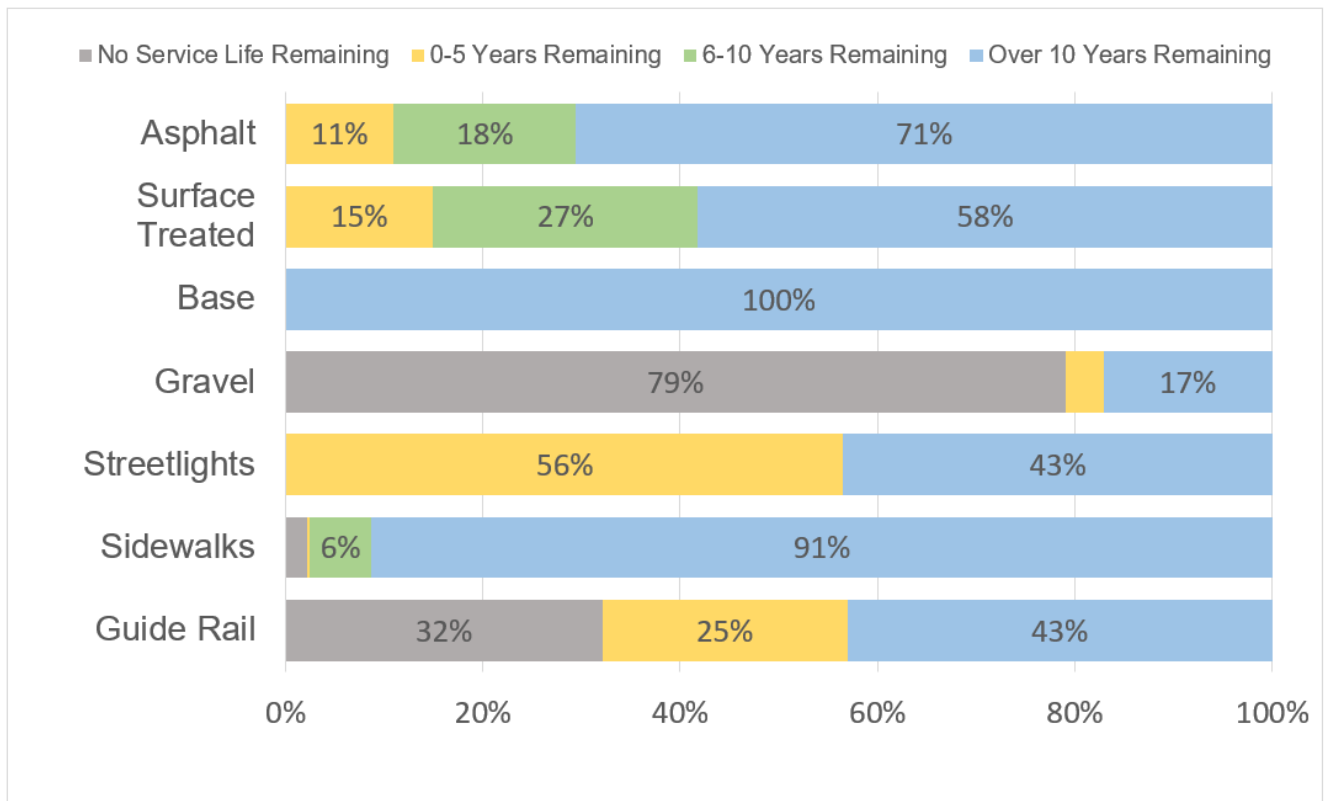
To ensure that the Municipality's Road Network continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets within the road network. If the average condition declines, staff should re-evaluate the lifecycle management strategy to determine what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



Estimated Useful Life & Average Age

The Estimated Useful Life for Road Network assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in service. The Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. The assessed condition may increase or decrease the average service life remaining. Assuming life cycle events occur, 71% and 58% of asphalt and surface treated roads, respectively, will need to be replaced after 10 years.

Asset Category	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Road Surface - Asphalt	30	19.3	14.6
Road Surface - Surface Treated	20	7.9	14.4
Road Base	100	76.1	23.9
Gravel Roads - Non-Winter Maintained	50	66.3	2.4
Gravel Roads - Winter Maintained	50	62.8	0
Streetlights	20/30	19.4	8.1
Sidewalks	40	20.8	19.4
Guide Rail	25	24.1	7.3
	Average:	30.8	16.7



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



Condition Assessment & Data Collection

- A Road Needs Study is contracted to an external consultant to have the roadways assessed. The Study identifies a Road Condition Rating (0-10) for every municipal road.
- The Road Needs Study provides condition information that staff can use to assist in capital planning for rehabilitation and/or replacement activities.

Lifecycle Management Strategy

Operations & Maintenance

- Summer Activities:
 - Sidewalk repairs, grading, re-gravelling, dust control, ditching, roadside mowing, tree trimming, brush cleanup, road sign installation/maintenance, construction projects, pavement patching, and line painting.
- Winter Activities:
 - Snow plowing, sanding/salting, ice blading of gravel roads, and snow removal.
- Significant operating costs include:
 - Asphalt patching/repairs, maintenance stone tender and tree cutting and removal.

Rehabilitation & Replacement

- Rehabilitation activities are determined based on a combination of both external expertise (Road Needs Study) and internal expertise. (knowledge of evolving road condition, organizational priorities, and available budget)
- Double surface treated roads are managed proactively and are subject to regular re-surfacing activities (single and double lift) to maintain a suitable driving surface.
- Paved road rehabilitation and replacement is currently more of a reactive process.
- A 10-year capital plan is developed that identifies both replacement and rehabilitation events.



Lifecycle Strategy - Roads

The following lifecycle strategies have been developed as a proactive approach to manage the lifecycle of asphalt and double surface treated roads. Instead of allowing the roads to deteriorate until replacement is required, strategic rehabilitation is expected to extend the service life of roads at a lower total cost. The standard lifecycle of surface treated roads includes a single surface treatment after approximately 7-8 years, a single micro surface treatment after another 7-8 years, and then the road is pulverized and a new surface is constructed. The target lifecycle of asphalt roads includes a partial mill and resurface or single micro that extends the useful life of the road by 10-15 years. After approximately 30-35 years, the road may need to be reconstructed.

Surface Treated Roads (Rural)		
Event Name	Event Class	Event Trigger
Single / Double Lift (First Treatment)	Rehabilitation	7 Years
Single / Double Micro (Second Treatment)	Rehabilitation	14 Years
Pulverize / Full Reconstruction	Replacement	20-25 Years

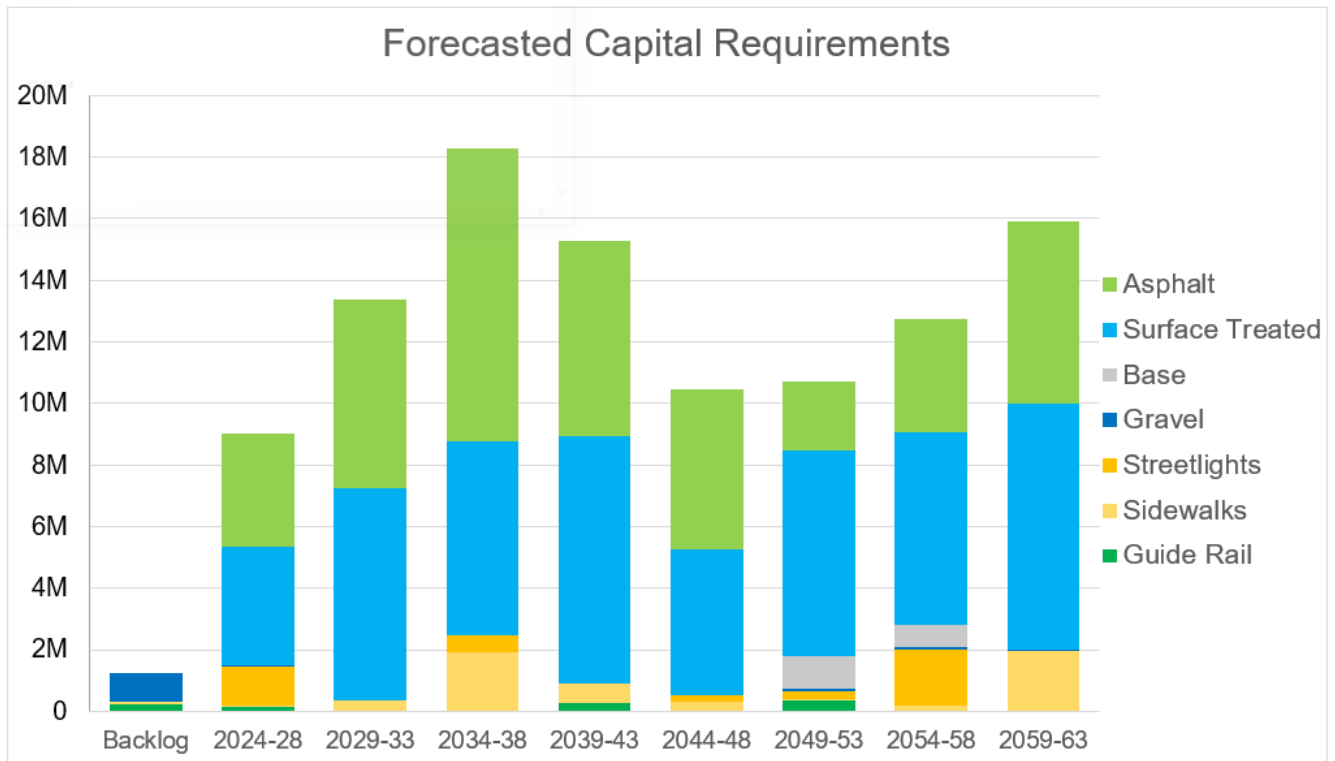
Asphalt Roads (Rural)		
Event Name	Event Class	Event Trigger
Single Micro (First Treatment)	Rehabilitation	20 Years
Pulverize / Full Reconstruction	Replacement	30-35 Years

Asphalt Roads (Semi-Urban)		
Event Name	Event Class	Event Trigger
Single Micro (First Treatment)	Rehabilitation	20 Years
Shave and Pave / Full Reconstruction	Replacement	30-35 Years



Forecasted Capital Requirements

Based on the lifecycle strategies identified for both asphalt and double surface treated roads, and assuming the end-of-life replacement of all other assets in this category, the following graph forecasts capital requirements for the Road Network. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs.



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 C.



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. See Appendix E for the criteria used to determine the risk rating of each asset.

Consequence	5	Low \$0	High \$0	Very High \$0	Very High \$0	Very High \$0
	4	Very Low \$2,393,255	Moderate \$1,376,651	High \$7,312,458	Very High \$11,279,786	Very High \$710,866
	3	Very Low \$3,639,419	Low \$4,504,540	Moderate \$7,224,597	High \$15,608,369	Very High \$4,935,752
	2	Very Low \$17,526,504	Very Low \$3,144,463	Low \$4,028,375	Moderate \$3,654,614	High \$1,843,214
	1	Very Low \$64,871	Very Low \$322,163	Very Low \$0	Very Low \$451,225	Low \$976,594
		1	2	3	4	5
		Probability				



Asset Prioritization List

The following table identifies the highest risk Road Network assets according to the risk criteria identified in Appendix E. This is not meant to be a definitive list of how the Municipality should prioritize assets for rehabilitation and replacement but is meant to be a decision-support tool that is supplemented by the knowledge and expertise of municipal staff when prioritizing capital needs. In some cases, assets may have a higher risk rating than expected due to a lack of available data (e.g., no assessed condition data).

Asset ID	Category	Name	Replacement Cost	Risk Rating
912	Asphalt	Marcellus Rd	\$ 476,545.78	20
801	Asphalt	Winchester Springs Rd	\$ 296,517.38	18.5
1040	Surface Treated	Brooks Rd	\$ 139,769.44	18.5
929	Asphalt	Lakeview Dr	\$ 119,470.31	17
836	Asphalt	St Lawrence St	\$ 95,576.25	17
1075	Asphalt	Allison Ave	\$ 83,629.22	17
955	Asphalt	High St	\$ 83,629.22	17
834	Asphalt	Steward Dr	\$ 95,576.25	17
1061	Asphalt	Beckstead Rd	\$ 836,602.59	17
997	Surface Treated	English Rd	\$ 570,259.31	17
1012	Asphalt	Coyle Dr	\$ 79,424.30	17
3763	Asphalt	Nudell Bush Rd (East Section)	\$ 137,668.78	17
1013	Surface Treated	Coughler Rd	\$ 122,997.11	17
3764	Surface Treated	Wallace Rd (South Section)	\$ 55,907.78	17
894	Asphalt	Muttonville Rd	\$ 68,834.39	17



Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS
Scope	Description, which may include maps, of the road network in the Municipality and its level of connectivity	See Appendix D for map
Quality	Description or images that illustrate the Different levels of road class pavement condition	See Appendix D for map

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS
Scope	Lane-km of arterial roads (MMS class 1 and 2) per land area (km/km ²)	0 km/km ²
	Lane-km of collector roads (MMS class 3 and 4) per land area (km/km ²)	0 km/km ²
	Lane-km of local roads (MMS class 5 and 6) per land area (km/km ²)	0.63 km/km ²
Reliability	Average pavement condition index for paved roads	58.7
	Average surface condition for unpaved roads(e.g., excellent, good, fair, poor)	Poor



Recommendations

Replacement Costs

- Review and update replacement costs on an annual basis to ensure that short, medium, and long-term planning is based on the best available estimate of future costs.

Condition Assessment Strategies

- Review and establish a formal condition assessment program for the Road Network.
 - Condition assessments for roads should continue to be completed on a regular cycle (every five to ten years) and may be expanded to include sidewalks.

Risk Management Strategies

- This AMP includes a cursory review of risk and criticality. The Municipality should work towards developing a formal risk management process to inform project prioritization and lifecycle management strategies with the goal of minimizing risk. In the short term, staff should review the highest risk assets and establish appropriate risk mitigation strategies.

Levels of Service

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



Bridges & Culverts

Asset Inventory & Replacement Cost

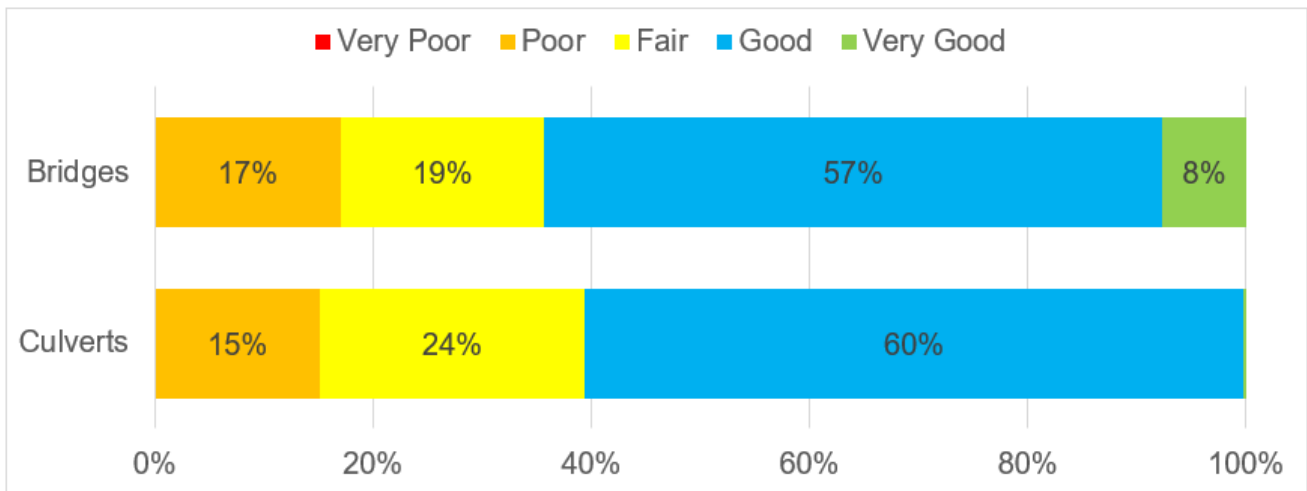
The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Bridges & Culverts inventory. All replacement costs have been inflated to 2024 using monthly consumer price index (CPI) data from the Bank of Canada.

Category	Quantity	Replacement Cost Method	Total Replacement Cost
Bridges	14	OSIM Reports - Jacobs (2023)	\$ 23,031,644
Culverts	24	OSIM Reports - Jacobs (2023)	\$ 15,969,000
		Total:	\$ 39,000,644

Current Asset Condition

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

Asset Category	Average Condition (%)	Average Condition Rating	Condition Source
Bridges	68%	Good	100% Assessed
Culverts	68%	Good	99% Assessed



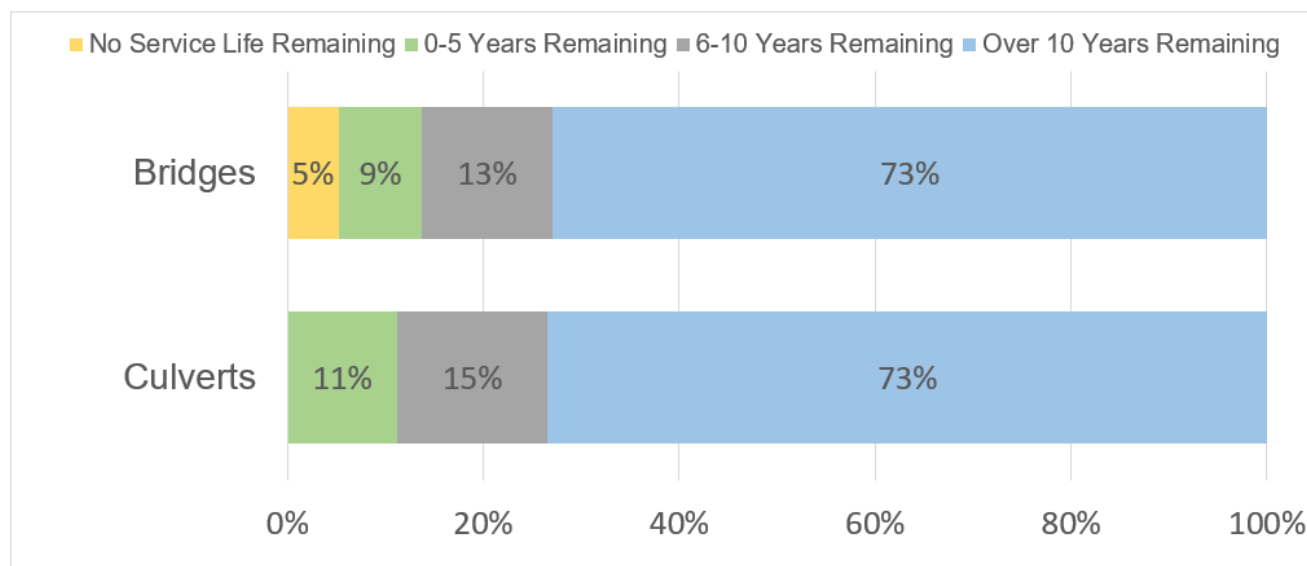
To ensure that the Municipality's Bridges & Culverts continue to provide an acceptable level of service, the Municipality should monitor the average condition of all bridges and culverts. If the average condition declines, staff should re-evaluate the lifecycle management strategy to determine what combination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



Estimated Useful Life & Average Age

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

Asset Category	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Bridges	75	54.8	25.9
Culverts	50	40.3	24.1
	Average:	48.4	25.1



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



Condition Assessment & Data Collection

- All bridges and culverts with a span greater than or equal to three metres are inspected every two years according to provincial regulations outlined in the Ontario Structure Inspection Manual. (OSIM)
- The Municipality contracts an engineering consultant to complete inspections. The Inspection Report identifies maintenance, rehabilitation and replacement needs as well as an overall Bridge Condition Index (0-100) for each structure.

Lifecycle Management Strategy

Operations & Maintenance

- Operating costs identified in the Inspection Reports are integrated into annual operating budgets to ensure these structures are kept in an adequate state of repair.

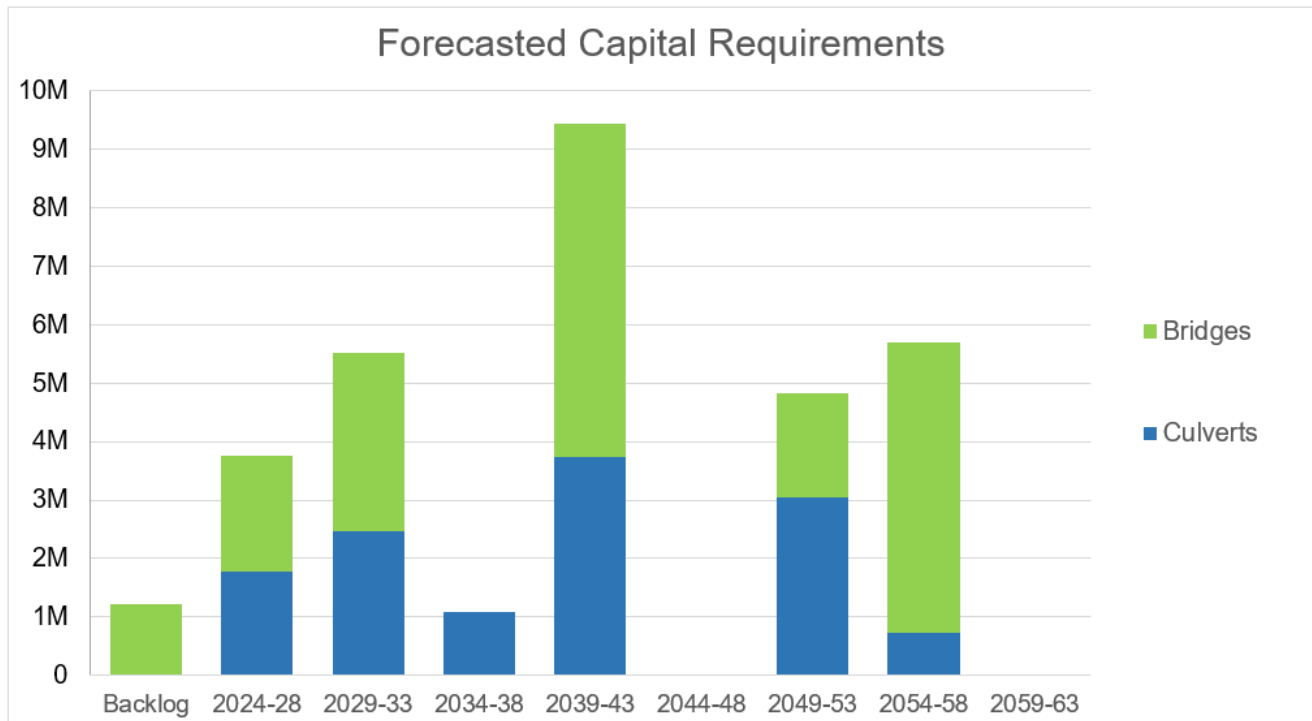
Rehabilitation & Replacement

- Capital costs identified in the Inspection Reports are integrated into annual capital budgets as well as the 10-year capital plan to ensure these structures are being rehabilitated and replaced when necessary.



Forecasted Capital Requirements

Based on the assumption that all assets in this class will require replacement at the end of their service life, the following graph forecasts capital requirements for Bridges & Culverts. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix C.

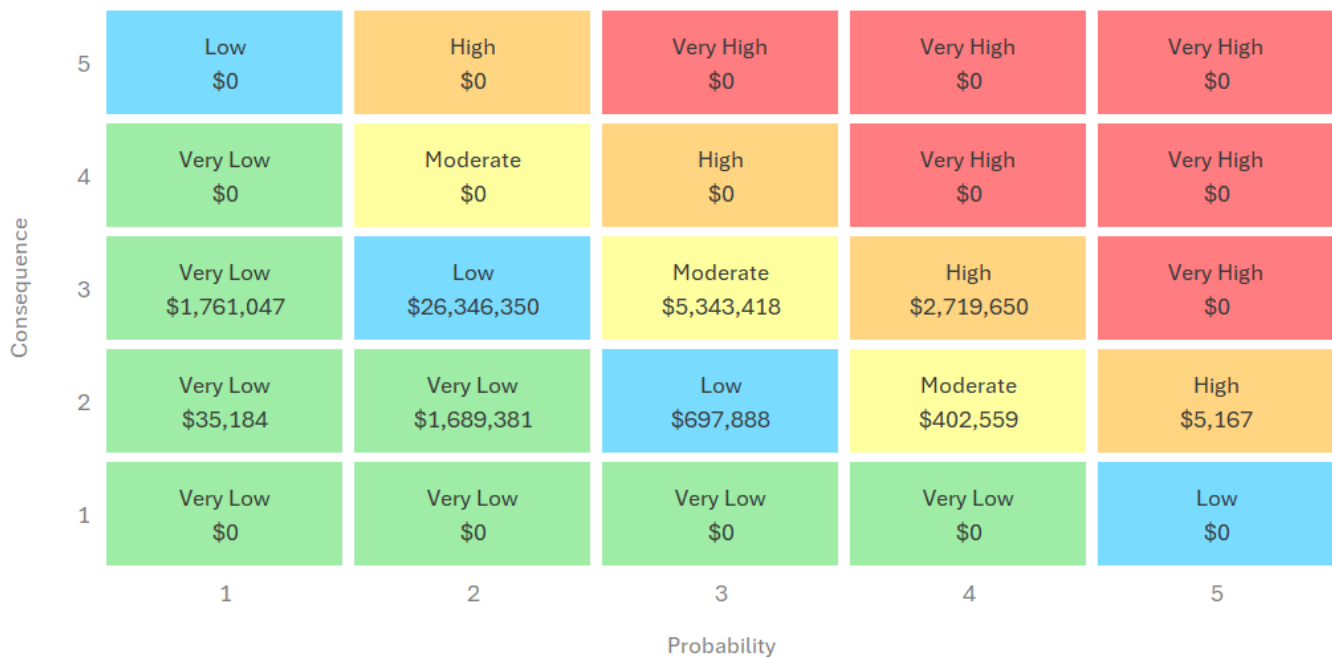




Risk & Criticality

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. See Appendix E for the criteria used to determine the risk rating of each asset.





Asset Prioritization List

The following table identifies the highest risk Bridges & Culverts according to the 2023 OSIM report. This list is meant to be a decision-support tool for how the Municipality will prioritize assets for rehabilitation and replacement. All replacement costs have been inflated to 2024 using monthly consumer price index (CPI) data from the Bank of Canada.

Asset ID	Name	Replacement Cost	Recommended Replacement
12363	Mariatown Culvert	\$ 1,012,336	2025 (1 Year)
24	Colquhoun Road Bridge	\$ 1,293,173	2026 (2 Years)
29	Taylor Road Bridge (North)	\$ 673,660	2027 (3 Years)
9371	Flagg Creek Culvert	\$ 771,575	2028 (4 Years)
9372	Casselman Creek Culvert	\$ 453,926	2030 (6 Years)
34	South Branch Bridge	\$ 1,937,756	2031 (7 Years)
16	Sandy Creek Road Culvert	\$ 599,106	2032 (8 Years)
15	New Ross Road Culvert	\$ 626,515	2032 (8 Years)
30	Forest Road Bridge	\$ 1,125,499	2033 (9 Years)
21	Coughler Road Culvert	\$ 781,894	2033 (9 Years)



Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS
Scope	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	A small percentage of the Municipality's structures have loading or dimensional restrictions meaning that most types of vehicles, including heavy transport, motor vehicles, emergency vehicles and cyclists can cross them with minimal restrictions.
Quality	Description or images of the condition of bridges & culverts and how this would affect use of the bridges & culverts	<p>The Municipality is required to complete biennial inspections of all bridges and structural culverts greater than or equal to 3 metres in span according to the Ontario Structure Inspection Manual. Each structure is inspected by a licensed engineer and any maintenance, rehabilitation or replacement requirements are provided to the Municipality.</p> <p>The most recent OSIM inspection report completed identified 4 replacement events and 9 rehabilitation events within the next 1-5 years.</p> <p>When bridges or structural culverts need to be closed or replaced it can have a significant impact on the efficiency of the transportation network and detours may be required. The OSIM inspection program helps the Municipality to implement lifecycle strategies that minimize the impacts of these potential service disruptions.</p>



Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS
Scope	Percentage of bridges in the Municipality with loading or dimensional restrictions	14%
Quality	Average bridge condition index value for bridges in the Municipality	OSIM: 68%
	Average bridge condition index value for structural culverts in the Municipality	OSIM: 68%



Recommendations

Data Review/Validation

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

Risk Management Strategies

- This AMP includes a cursory review of risk and criticality. The Municipality should work towards developing a formal risk management process to inform project prioritization and lifecycle management strategies with the goal of minimizing risk. In the short term, staff should review the highest risk assets and establish appropriate risk mitigation strategies.

Lifecycle Management Strategies

- This AMP includes capital costs, regulatory costs, and rehabilitation costs associated with the reconstruction of bridges and culverts. The Municipality should continue to work towards identifying projected capital rehabilitation and renewal costs for bridges and culverts and integrating these costs into long-term planning.

Levels of Service

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



Buildings & Facilities

Asset Inventory & Replacement Cost

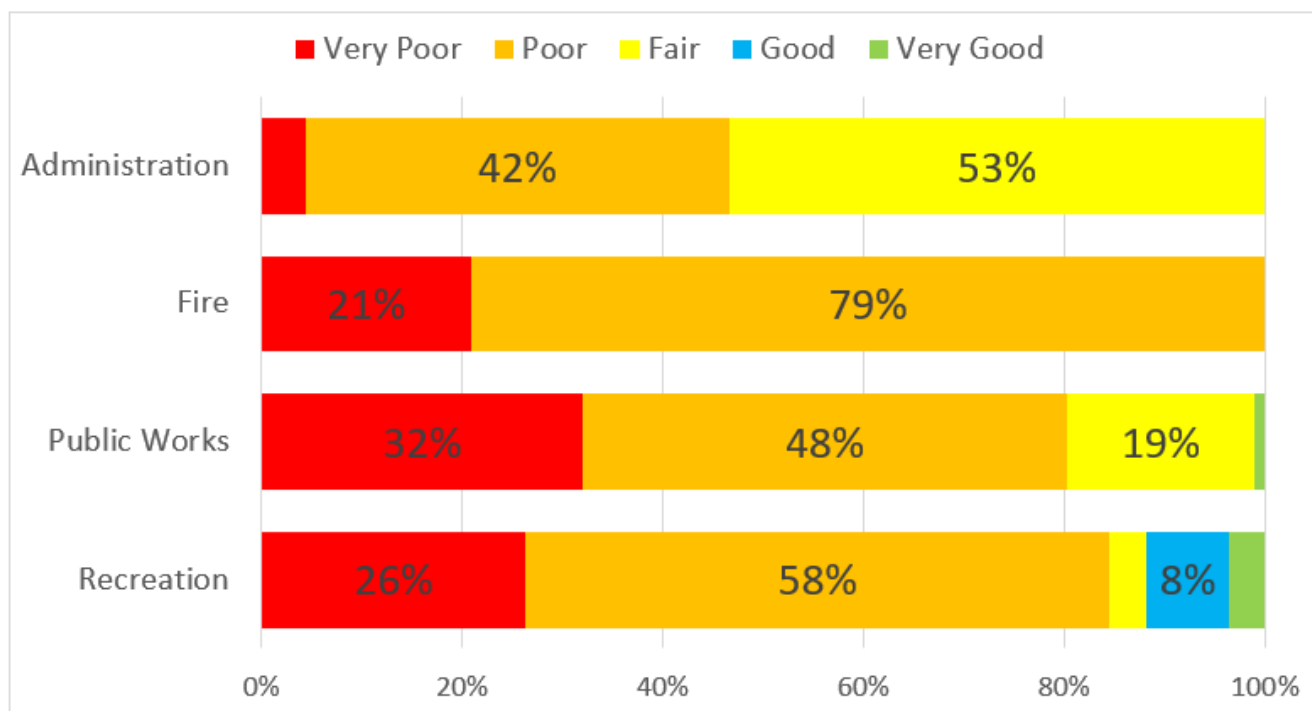
The following table includes the quantity, replacement cost method and total replacement cost of each asset segment in the municipality's Buildings & Facilities inventory. All replacement costs have been inflated to 2024 using monthly consumer price index (CPI) data from the Bank of Canada.

Category	Quantity	Replacement Cost Method	Total Replacement Cost
Administration	5	User-Defined Costs	\$ 18,432,125
Fire	3	User-Defined Costs	\$ 10,292,237
Public Works	11	User-Defined Costs	\$ 6,541,175
Recreation	28	User-Defined Costs	\$ 33,318,467
		Total:	\$ 68,584,005

Current Asset Condition

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

Asset Category	Average Condition (%)	Average Condition Rating	Condition Source
Administration	41%	Fair	Age-Based
Fire	23%	Poor	Age-Based
Public Works	21%	Poor	Age-Based
Recreation	28%	Poor	Age-Based
Average:	30%	Poor	Age-Based



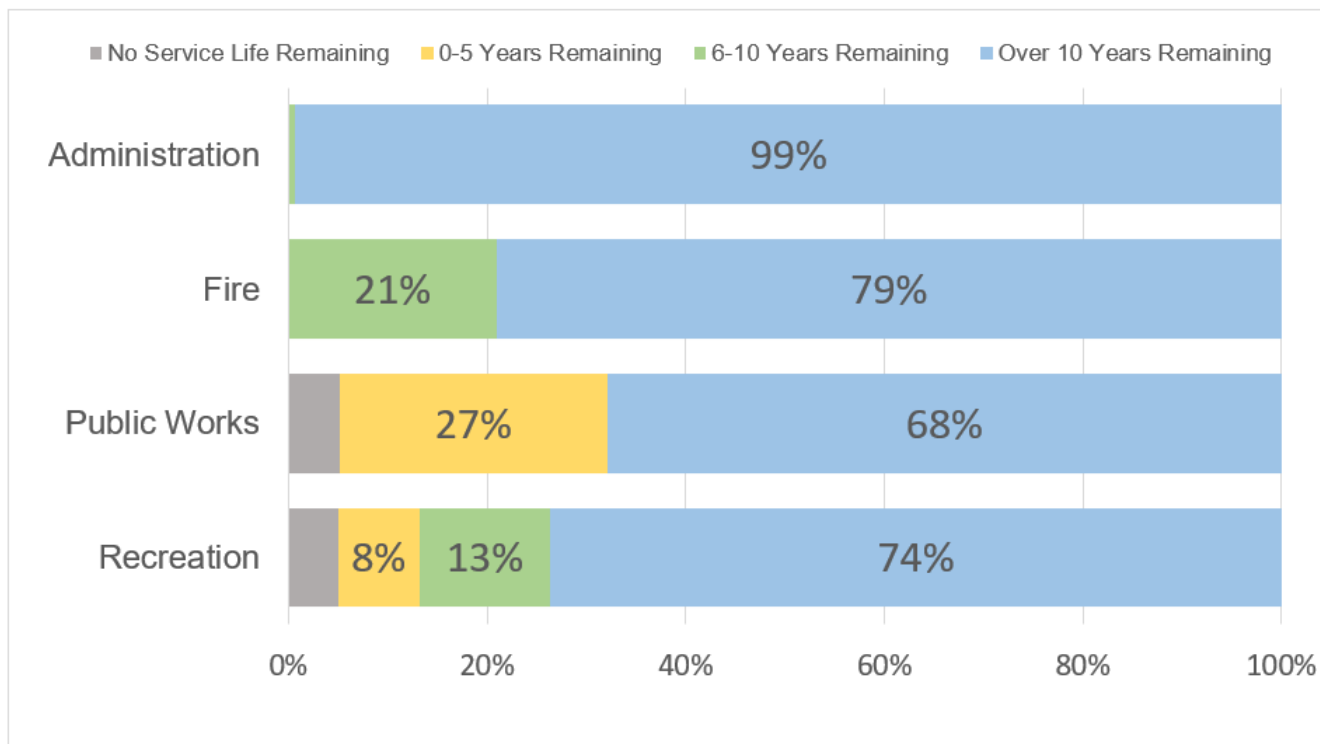
To ensure that the municipality's Buildings & Facilities continue to provide an acceptable level of service, the municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate the lifecycle management strategy to determine what combination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



Estimated Useful Life & Average Age

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

Asset Category	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Administration	20-60	35.3	24.7
Fire	20-60	46.2	13.8
Public Works	20-60	42.7	10.3
Recreation	10-100	43.7	16.1
	Average:	41.7	17.5





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

Asset Management Strategies

Condition Assessment & Data Collection

- An age-based condition rating was applied using estimated effective life remaining provided for each facility by municipal staff.
- The municipality plans to have detailed breakdowns created for each municipal facility component to help improve the accuracy of asset management planning in the future.
- Health & safety inspections are completed by internal staff regularly to identify any specific deficiencies that need to be addressed.

Lifecycle Management Strategy

Operations & Maintenance

- Maintenance schedules vary based on the facility's purpose and the type of building components present.
- Municipal staff are typically responsible for all operating and maintenance activities for facilities.

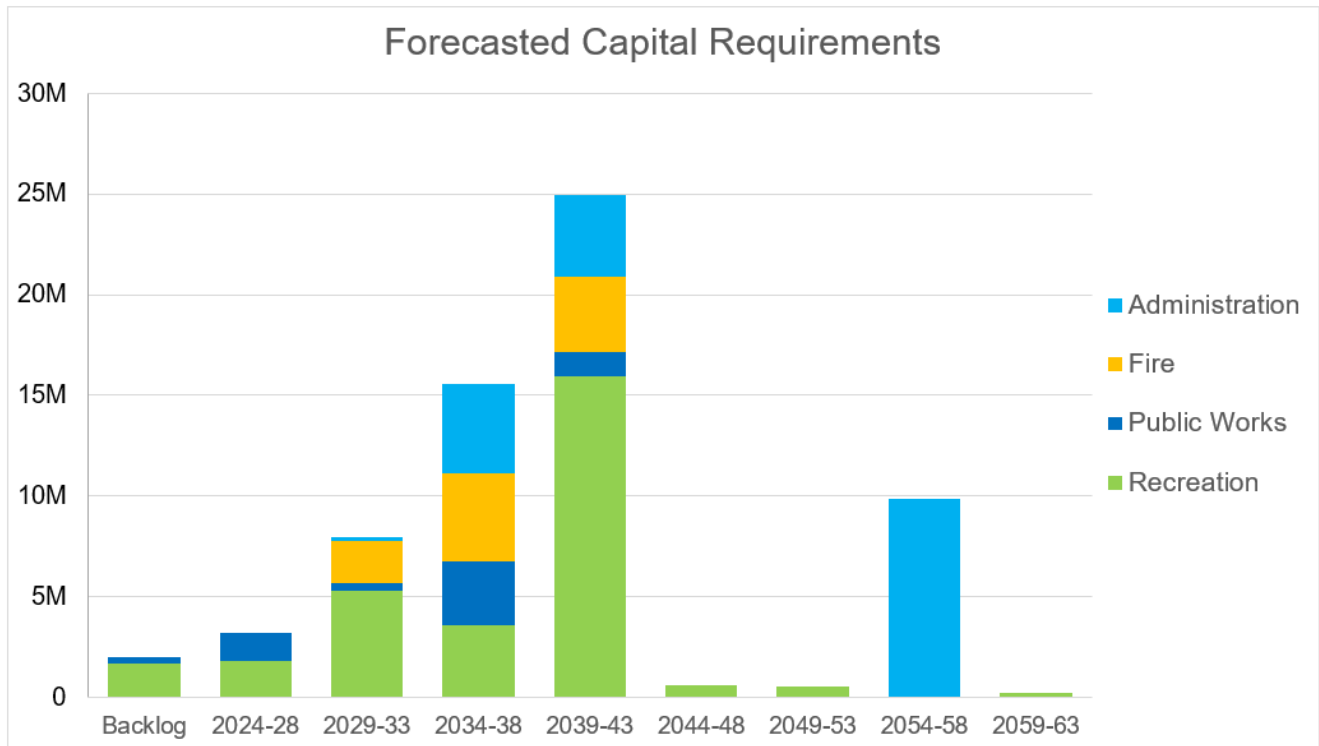
Rehabilitation & Replacement

- Like maintenance activities, the rehabilitation strategy varies based on the usage and design of each facility.
- Renewal activities are prioritized according to the risk asset failure would pose to the services each facility is expected to provide.
- All capital replacement requirements are included in the 10-year capital plan. The municipality should look to include rehabilitation costs for each individual component in the 10-year plan.



Forecasted Capital Requirements

Based on the assumption that all assets in this class will require replacement at the end of their service life, the following graph forecasts capital requirements for Buildings & Facilities.



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 C.



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. See Appendix E for the criteria used to determine the risk rating of each asset.

Consequence	5	Low \$0	High \$0	Very High \$0	Very High \$0	Very High \$0
	4	Very Low \$0	Moderate \$0	High \$0	Very High \$8,138,894	Very High \$2,153,343
	3	Very Low \$1,020,476	Low \$2,723,979	Moderate \$11,977,993	High \$29,911,204	Very High \$10,478,623
	2	Very Low \$234,740	Very Low \$0	Low \$326,500	Moderate \$409,090	High \$1,209,163
	1	Very Low \$0	Very Low \$0	Very Low \$0	Very Low \$0	Low \$0
		1	2	3	4	5
		Probability				



Asset Prioritization List

The following table identifies the highest risk Buildings & Facilities assets according to the risk criteria identified in Appendix E. The risk rating is calculated by multiplying the probability of failure and the consequence of failure for each asset. This is not meant to be a definitive list of how the Municipality should prioritize assets for rehabilitation and replacement but is meant to be a decision-support tool that is supplemented by the knowledge and expertise of municipal staff when prioritizing capital needs. In some cases, assets may have a higher risk rating than expected due to a lack of available data (e.g., no assessed condition data). All replacement costs have been inflated to 2024 using monthly consumer price index (CPI) data from the Bank of Canada.

Category	Building	Project	Replacement Cost	Priority
Administration	Morrisburg Justice Building	HVAC Replacement	\$ 50,000	1
Recreation	Morrisburg Arena	Front Steps/Accessibilty	\$ 1,000,000	2
Fire	Iroquois Fire Hall	Watertower Removal	\$ 35,000	3
Administration	Morrisburg Justice Building	Bathroom Upgrade	\$ 200,000	4
Recreation	Matilda Hall	Roof Replacement & Insulation	\$ 175,000	5
Public Works	Williamsburg Garage	Exhaust/Furnace	\$ 28,000	6
Public Works	Matilda Garage	Exhaust/Furnace	\$ 28,000	7
Public Works	Morrisburg Garage	Replacement	\$ 940,975	8
Administration	Municipal Office	Window Upgrade	\$ 250,000	9
Recreation	Carman House Museum	Roof & Eavestroughs	\$ 95,000	10
Recreation	Riverside Hall	Replacement	\$ 1,329,559	11
Public Works	Williamsburg Garage - Coverall Structure	OH Door	\$ 12,000	12
Recreation	Iroquois Beach House / Washroom	Accessibility	\$ 50,000	13
Administration	Iroquois Archives	Roof Replacement	\$ 170,000	14
Recreation	Brinston Washroom/Canteen	Accessibility	\$ 30,000	15
Fire	Williamsburg Fire Hall	Replacement	\$ 2,153,343	16
Fire	Morrisburg Fire Hall	Roof Replacement	\$ 110,000	17
Public Works	Williamsburg Garage	Roof Replacement	\$ 120,000	18
Recreation	Williamsburg Park Building	Accessibility	\$ 75,000	19
Fire	Morrisburg Fire Hall	OH Doors	\$ 40,000	20
Recreation	Iroquois Civic Centre	Major Renovation	\$ 2,200,000	21
Recreation	Matilda Hall	Kitchen Renovation	\$ 90,000	22
Recreation	Beach Washroom / Change House	Lighting	\$ 5,000	23
Public Works	Morrisburg Garage - Storage Shed	Replacement	\$ 136,500	24
Recreation	Waterfront Washroom	Lighting	\$ 8,000	25



Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS
Scope	Description or images of the types of municipal facilities and the services they provide to the community	The provision of services to the community requires the municipality to own a diverse inventory of facilities. This asset management plan identifies facilities that provide administration, fire protection, recreational and transportation services to the community.



Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS
Scope	Percentage of total facility replacement cost - administration facilities	26.9%
	Percentage of total facility replacement cost - fire facilities	15%
	Percentage of total facility replacement cost - public works facilities	9.5%
	Percentage of total facility replacement cost - recreation facilities	48.6%
Quality	The average assessed or age-based condition of all municipal facilities	30%
	The total replacement cost of municipal facilities currently in backlog	\$ 1,989,663



Recommendations

Replacement Costs

- Replacement costs used in this AMP were based on staff estimates. The municipality will continue to update replacement costs according to the best available information on the cost to replace the asset in today's value.

Risk Management Strategies

- This AMP includes a cursory review of risk and criticality. The municipality should work towards developing a formal risk management process to inform project prioritization and lifecycle management strategies with the goal of minimizing risk. In the short term, staff should review the highest risk assets and establish appropriate risk mitigation strategies.

Levels of Service

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



Storm Sewer Network

Asset Inventory & Replacement Cost

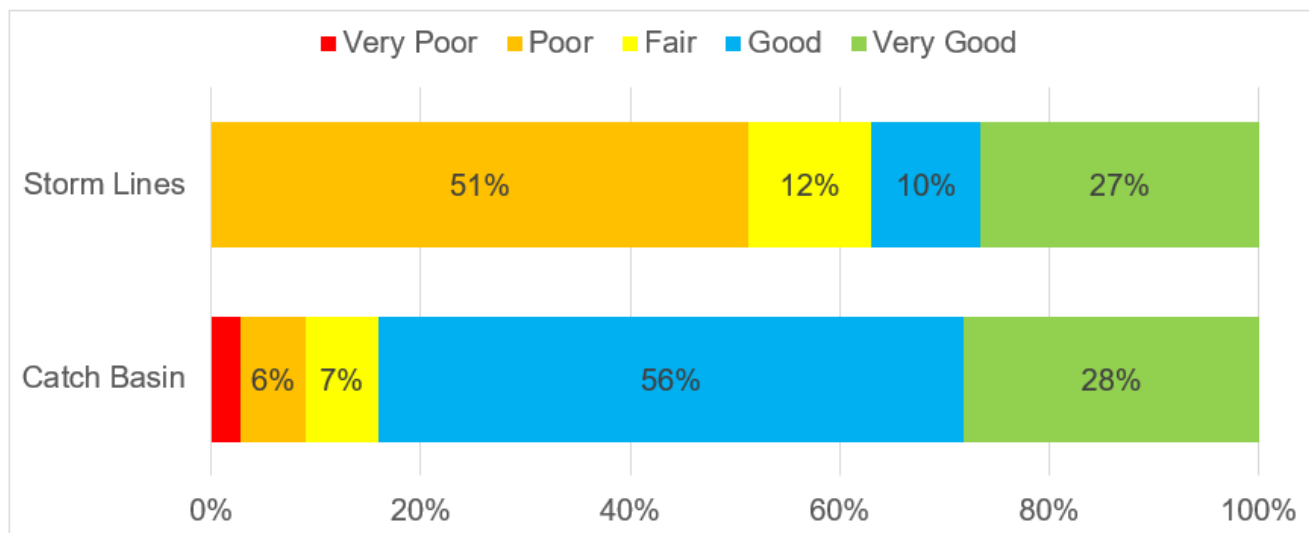
The following table includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Storm Sewer Network inventory. All replacement costs have been inflated to 2024 using monthly consumer price index (CPI) data from the Bank of Canada.

Category	Quantity	Replacement Cost Method	Total Replacement Cost
Storm Lines	15,700 (m)	User-Defined Costs	\$ 11,588,619
Catch Basin	436	User-Defined Costs	\$ 5,472,831
		Total:	\$ 17,061,450

Current Asset Condition

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

Asset Category	Average Condition (%)	Average Condition Rating	Condition Source
Storm Lines	54%	Fair	Age-Based
Catch Basin	66%	Good	80% Assessed
Average:	58%	Fair	26% Assessed



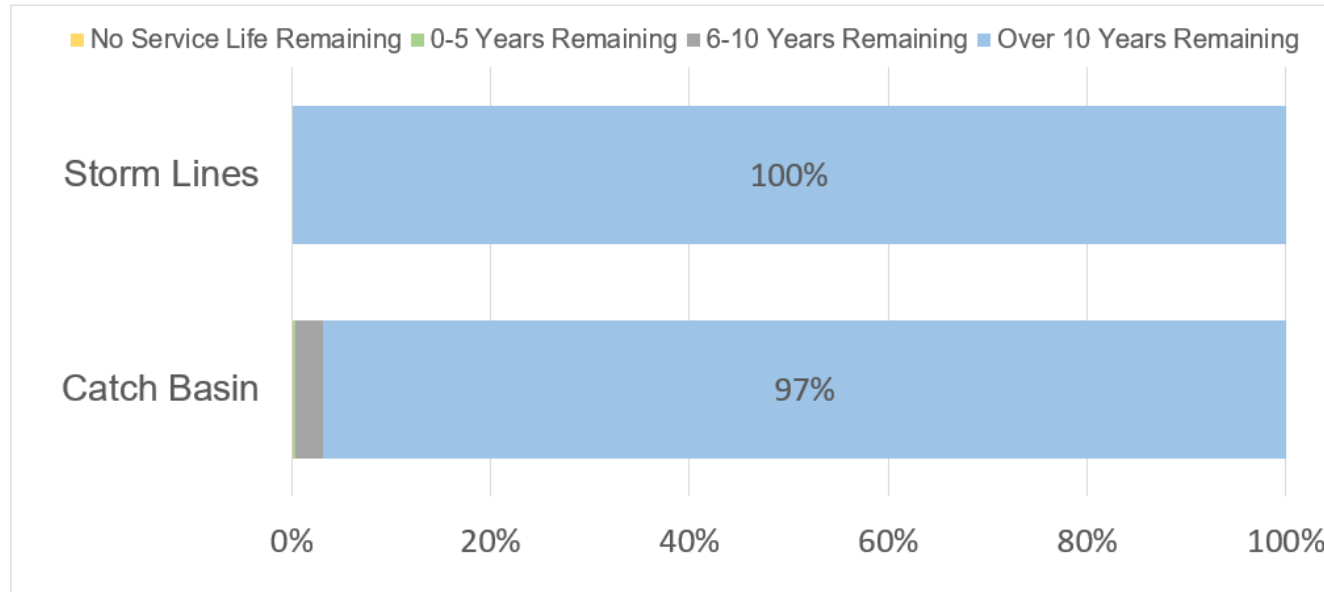
To ensure that the Municipality's Storm Sewer Network continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets within the storm sewer network. If the average condition declines, staff should re-evaluate the lifecycle management strategy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



Estimated Useful Life & Average Age

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

Asset Category	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Storm Lines	100	46	55
Catch Basin	75	31	45
	Average:	42.4	51.8



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



Asset Management Strategies

Condition Assessment & Data Collection

- There is no routine condition assessment process in place for stormwater infrastructure.
- CCTV inspection occurs only on a case-by-case basis when reconstruction of stormwater infrastructure can be combined with other capital projects (roads, water, wastewater etc.).

Lifecycle Management Strategy

Operations & Maintenance

- There are very few maintenance activities routinely completed to maintain the storm sewer network other than catch basin cleaning to ensure that stormwater can flow from the surface into stormwater mains without obstruction.

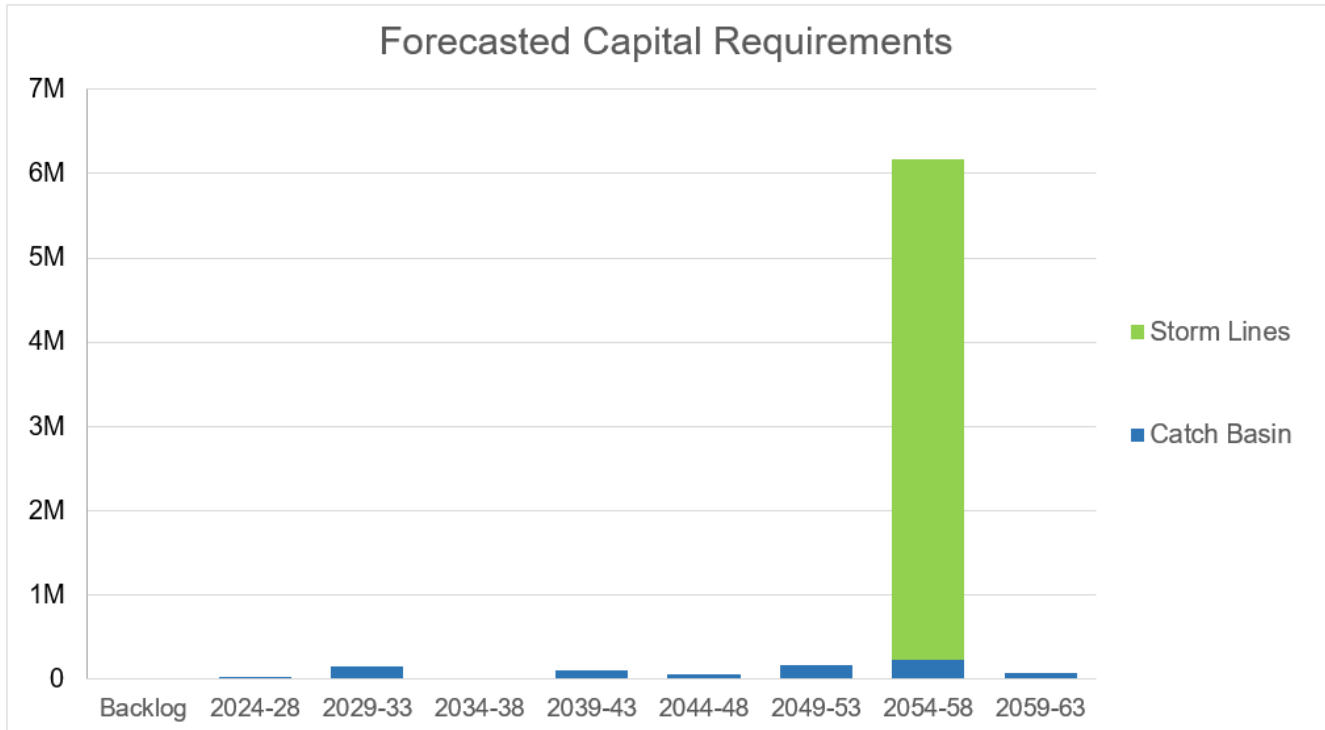
Rehabilitation & Replacement

- Most storm sewer infrastructure is replaced solely once it reaches the end of its estimated useful life without many major rehabilitative efforts during its lifecycle.
- Reconstruction projects are completed only when they can be combined with planned road rehabilitation or reconstruction projects.



Forecasted Capital Requirements

Based on the assumption that all assets in this class will require replacement at the end of their service life, the following graph forecasts capital requirements for the Storm Sewer Network.



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 C.



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. See Appendix E for the criteria used to determine the risk rating of each asset.

Consequence	5	Low \$0	High \$0	Very High \$0	Very High \$0	Very High \$0
	4	Very Low \$0	Moderate \$0	High \$0	Very High \$0	Very High \$0
	3	Very Low \$0	Low \$0	Moderate \$0	High \$0	Very High \$0
	2	Very Low \$2,861,215	Very Low \$1,425,832	Low \$1,357,867	Moderate \$5,943,705	High \$0
	1	Very Low \$1,490,319	Very Low \$3,028,458	Very Low \$443,106	Very Low \$334,968	Low \$175,980
		1	2	3	4	5
		Probability				



Asset Prioritization List

The following table identifies the highest risk Storm Sewer Network assets according to the risk criteria identified in Appendix E. The risk rating is calculated by multiplying the probability of failure and the consequence of failure for each asset. This is not meant to be a definitive list of how the Municipality should prioritize assets for rehabilitation and replacement but is meant to be a decision-support tool that is supplemented by the knowledge and expertise of municipal staff when prioritizing capital needs. In some cases, assets may have a higher risk rating than expected due to a lack of available data (e.g., no assessed condition data). All replacement costs have been inflated to 2024 using monthly consumer price index (CPI) data from the Bank of Canada.

Asset ID	Name	Replacement Cost	Risk Rating
3890	Istl38 - Elizabeth Dr	\$ 168,415.00	10.8
3948	Mstl16 - Laurier Dr	\$ 108,386.00	10.8
3952	Mstl20 - Laurier Dr	\$ 109,318.00	10.8
3957	Mstl26 - Cruickshank Way	\$ 108,591.00	10.8
3958	Mstl27 - Cruickshank Way	\$ 110,783.00	10.8
3960	Mstl29 - Cruickshank Way	\$ 200,042.00	10.8
3970	Mstl39 - Park Ave	\$ 120,239.00	10.8
3974	Mstl43 - Farlinger Ave	\$ 153,888.00	10.8
3978	Mstl47 - Farlinger Ave	\$ 143,159.00	10.8
3981	Mstl50 - Farlinger Ave	\$ 150,217.00	10.8
4014	Mstl83 - Sir James Morris Dr	\$ 130,817.00	10.8
4066	Mstl138 - Ottawa St	\$ 138,519.00	10.8
4099	Mstl172 - Ottawa St	\$ 161,312.00	10.8
4164	Mstl239 - High St	\$ 168,452.00	10.8



Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS
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	Most storm water systems are only designed to handle 1-to-5-year storm events. In other words, they are not designed to handle more extreme and unpredictable events and minor road flooding could occur in higher frequency events.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS
Scope	Percentage of properties in Municipality resilient to a 100-year storm	No reliable data available
	Percentage of the municipal stormwater management system resilient to a 5-year storm	100%



Recommendations

Condition Assessment Strategies

- Establish a routine condition assessment process for storm sewer mains. This may include the use of CCTV cameras to inspect a portion of the stormwater network on a regular cycle. Assets can be prioritized for assessment according to their age and/or risk of failure.

Risk Management Strategies

- This AMP includes a cursory review of risk and criticality. The Municipality should work towards developing a formal risk management process to inform project prioritization and lifecycle management strategies with the goal of minimizing risk. In the short term, staff should review the highest risk assets and establish appropriate risk mitigation strategies.

Lifecycle Management Strategies

- Identify the cost/benefit of optional lifecycle management strategies that may extend the life of storm sewer mains at a lower total cost of ownership. This may include the strategic use of structural pipe re-lining events.

Levels of Service

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



Machinery & Equipment

Asset Inventory & Replacement Cost

The following table includes the quantity, replacement cost method and total replacement cost of each asset segment in the municipality's Machinery & Equipment inventory. All replacement costs have been inflated to 2024 using monthly consumer price index (CPI) data from the Bank of Canada.

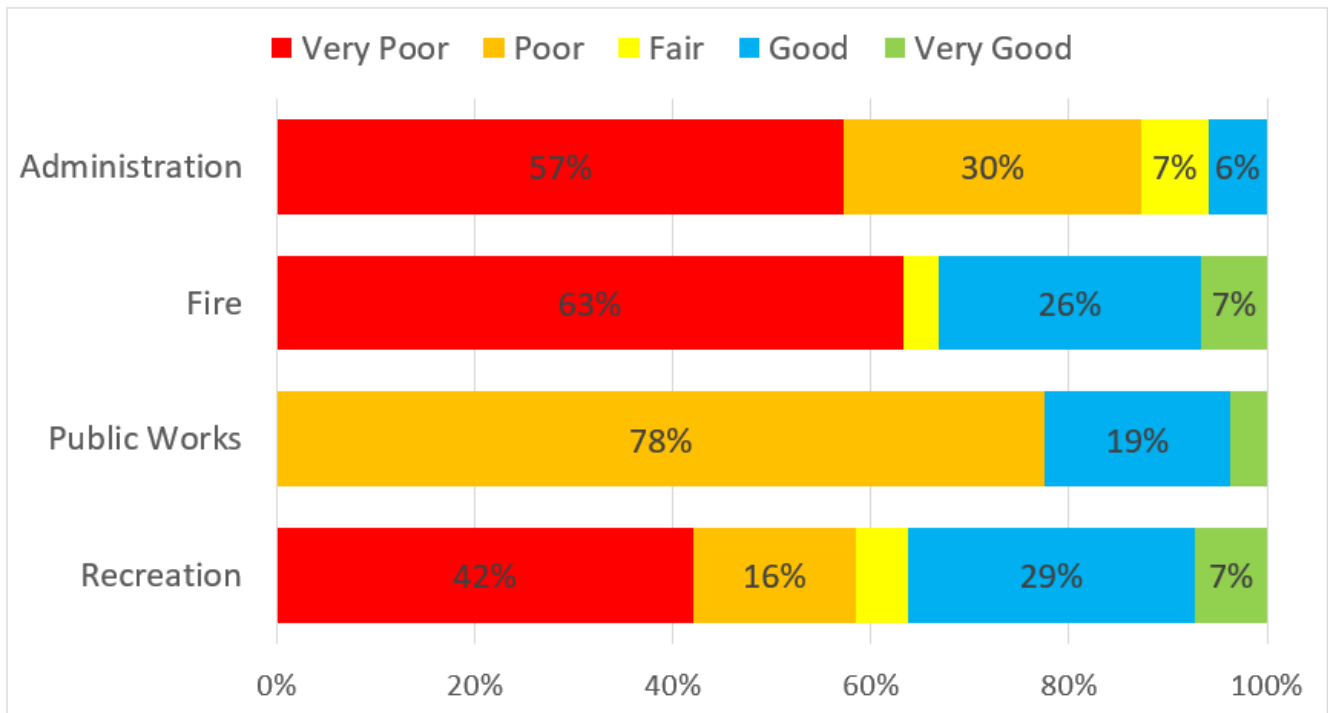
Category	Quantity	Replacement Cost Method	Total Replacement Cost
Administration	11	CPI Tables - CPI Monthly (ON)	\$ 145,306
Fire	87	CPI Tables - CPI Monthly (ON)	\$ 1,673,003
Public Works	4	CPI Tables - CPI Monthly (ON)	\$ 377,940
Recreation	67	CPI Tables - CPI Monthly (ON)	\$ 1,845,860
		Total:	\$ 4,042,109



Current Asset Condition

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

Asset Category	Average Condition (%)	Average Condition Rating	Condition Source
Administration	37%	Poor	Age-Based
Fire	33%	Poor	Age-Based
Public Works	61%	Good	Age-Based
Recreation	30%	Poor	Age-Based
Average:	35%	Poor	Age-Based



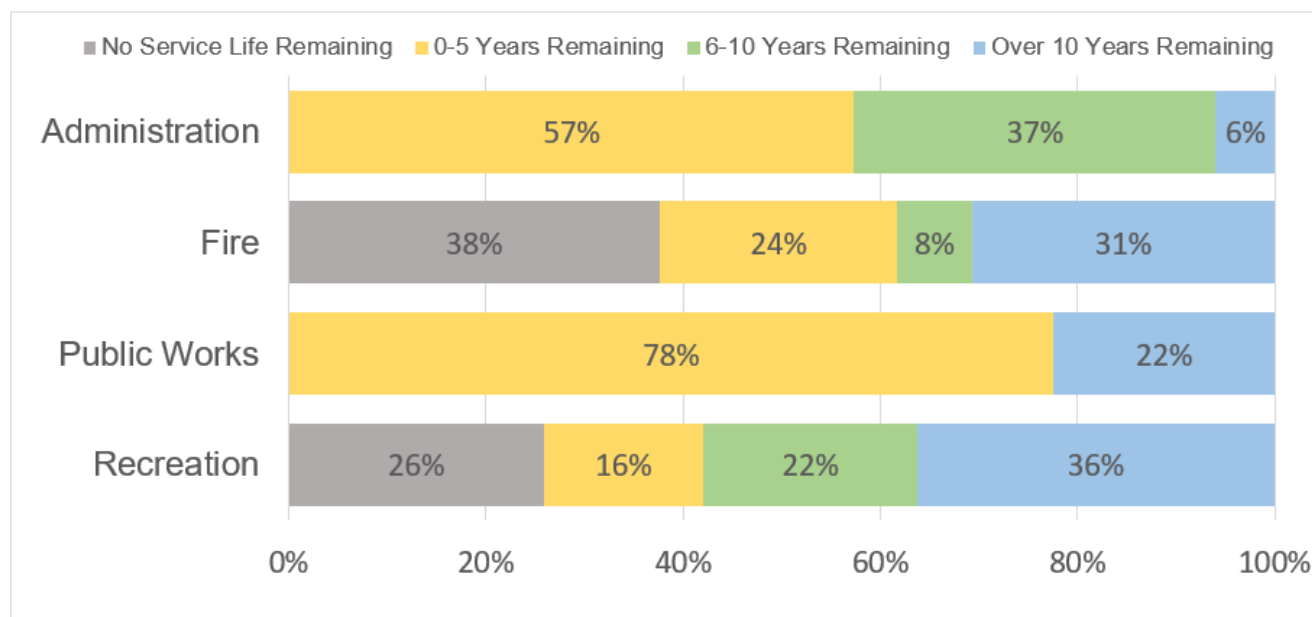
To ensure that the municipality's Machinery & Equipment continues to provide an acceptable level of service, the municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate the lifecycle management strategy to determine what combination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



Estimated Useful Life & Average Age

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

Asset Category	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Administration	5-15	10.2	3
Fire	10-20	14.9	0
Public Works	10-15	5.6	6.6
Recreation	15-25	14.3	1.2
	Average:	13.6	1.1



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



Asset Management Strategies

Condition Assessment & Data Collection

- Municipal staff that operate machinery & equipment are responsible for inspecting all equipment before it is used.
- There are no formal condition assessment strategies for machinery & equipment assets currently.

Lifecycle Management Strategy

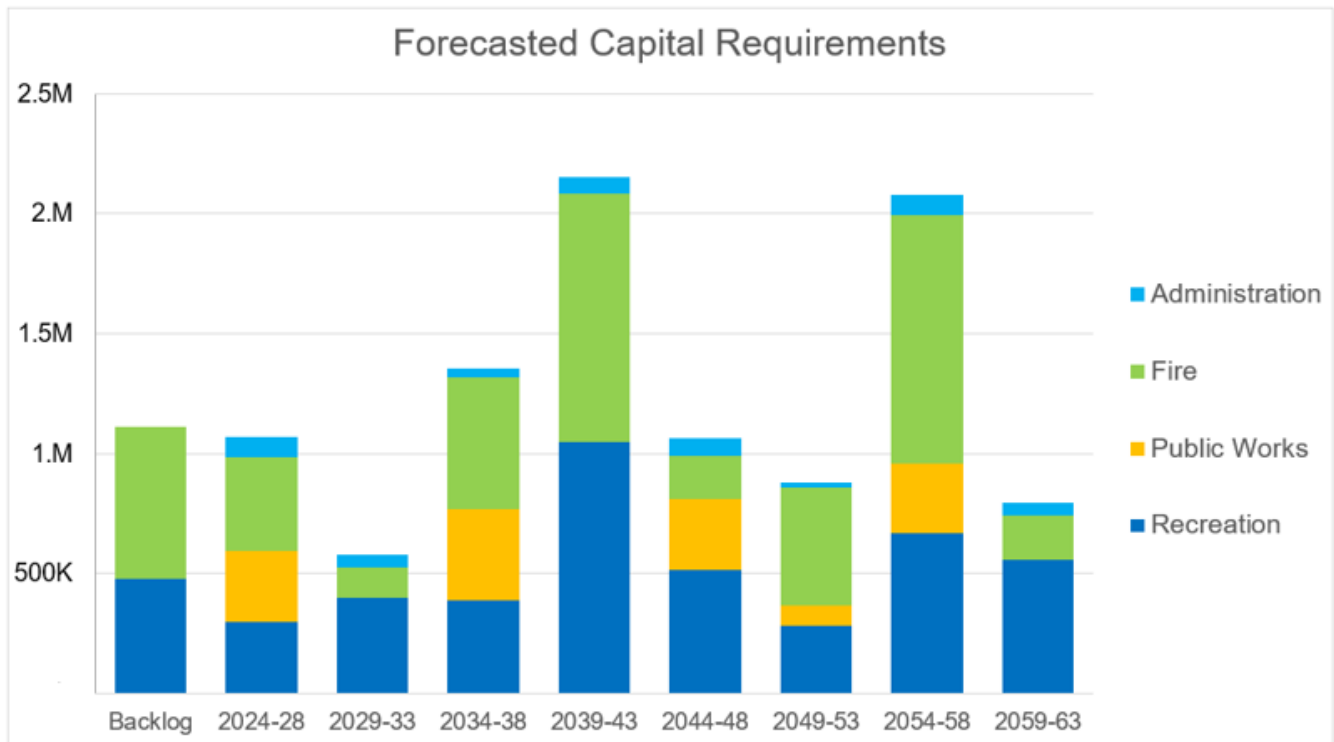
Rehabilitation & Replacement

- Equipment is replaced as needs are determined by both operators and users.
- Some equipment is on a regimented replacement schedule. (e.g., fire gear)
- All projected capital needs for machinery & equipment are included in the 10-year capital plan.



Forecasted Capital Requirements

Based on the assumption that all assets in this class will require replacement at the end of their service life, the following graph forecasts capital requirements for Machinery & Equipment.



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 C.



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. See Appendix E for the criteria used to determine the risk rating of each asset.

Consequence	5	Low \$0	High \$0	Very High \$0	Very High \$0	Very High \$0
	4	Very Low \$0	Moderate \$0	High \$0	Very High \$0	Very High \$0
	3	Very Low \$111,921	Low \$442,601	Moderate \$60,639	High \$0	Very High \$1,057,842
	2	Very Low \$14,230	Very Low \$356,367	Low \$0	Moderate \$495,397	High \$0
	1	Very Low \$134,094	Very Low \$258,538	Very Low \$107,173	Very Low \$143,613	Low \$859,694
		1	2	3	4	5
		Probability				



Asset Prioritization List

The following table identifies the highest risk Machinery & Equipment assets according to the risk criteria identified in Appendix E. The risk rating is calculated by multiplying the probability of failure and the consequence of failure for each asset. This is not meant to be a definitive list of how the Municipality should prioritize assets for rehabilitation and replacement but is meant to be a decision-support tool that is supplemented by the knowledge and expertise of municipal staff when prioritizing capital needs. In some cases, assets may have a higher risk rating than expected due to a lack of available data (e.g., no assessed condition data). All replacement costs have been inflated to 2024 using monthly consumer price index (CPI) data from the Bank of Canada.

Asset ID	Category	Name	Replacement Cost	Risk Rating
12176	Fire	30x Radios	\$ 75,000.00	15.5
338	Fire	Set of Heavy Hydraulic Extraction Equipment	\$ 35,467.00	15.5
12177	Fire	55x Pagers	\$ 35,000.00	15.5
341	Fire	Honda 11000w Generator	\$ 11,350.00	15.5
339	Fire	High Pressure Air Bag Kit	\$ 8,512.00	15.5
343	Fire	Gear Dryer	\$ 8,512.00	15.5
303	Fire	Ground Monitor	\$ 7,093.00	15.5
318	Fire	Ground Monitor	\$ 7,093.00	15.5
331	Fire	5000w Generator	\$ 5,533.00	15.5
323	Fire	Honda Portable Generator	\$ 5,533.00	15.5
333	Fire	4000w Generator	\$ 5,107.00	15.5
319	Fire	Positive Pressure Fan	\$ 3,547.00	15.5
12187	Fire	MSA (Gas) - Morrisburg	\$ 3,100.00	15.5
12188	Fire	MSA (Gas) - Iroquois	\$ 3,100.00	15.5
12189	Fire	MSA (Gas) - Williamsburg	\$ 3,100.00	15.5



Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS
Scope	Description or images of the types of equipment that the municipality operates and the services that they help to provide to the community	The provision of services to the community requires the municipality to own a diverse inventory of machinery & equipment. This asset management plan identifies individual pieces of machinery & equipment that provide corporate, protection, recreational and transportation services to the community.



Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS
Scope	Percentage of total replacement cost - administration equipment	4%
	Percentage of total replacement cost - fire equipment	41%
	Percentage of total replacement cost - public works equipment	9%
	Percentage of total replacement cost - recreation equipment	46%
Quality	The average assessed or age-based condition of all municipal machinery and equipment	35%
	The total replacement cost of municipal machinery and equipment currently in backlog	\$ 1,114,454



Recommendations

Replacement Costs

- A large portion of equipment replacement costs used in this AMP were based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.

Condition Assessment Strategies

- Identify condition assessment strategies for high value and high-risk 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

- This AMP includes a cursory review of risk and criticality. The municipality should work towards developing a formal risk management process to inform project prioritization and lifecycle management strategies with the goal of minimizing risk. In the short term, staff should review the highest risk assets and establish appropriate risk mitigation strategies.

Levels of Service

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



Land Improvements

Asset Inventory & Replacement Cost

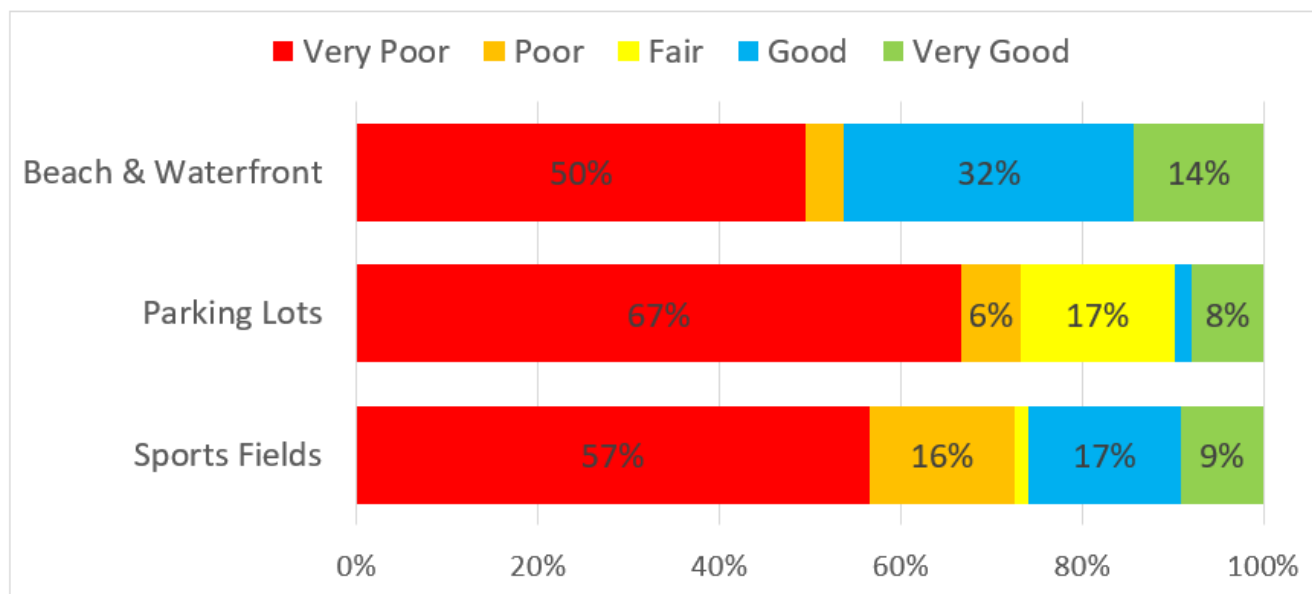
The following table includes the quantity, replacement cost method and total replacement cost of each asset segment in the municipality's Land Improvements inventory. All replacement costs have been inflated to 2024 using monthly consumer price index (CPI) data from the Bank of Canada.

Category	Quantity	Replacement Cost Method	Total Replacement Cost
Beach & Waterfront	11	CPI Tables - CPI Monthly (ON)	\$ 689,860
Parking Lots	40,700 (sq m)	User Defined Cost	\$ 2,857,192
Sports Fields	11	User Defined Cost	\$ 1,734,199
		Total:	\$ 5,281,251

Current Asset Condition

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

Asset Category	Average Condition (%)	Average Condition Rating	Condition Source
Beach & Waterfront	32%	Poor	Age-Based
Parking Lots	19%	Very Poor	Age-Based
Sports Fields	24%	Poor	Age-Based
Average:	22%	Poor	Age-Based



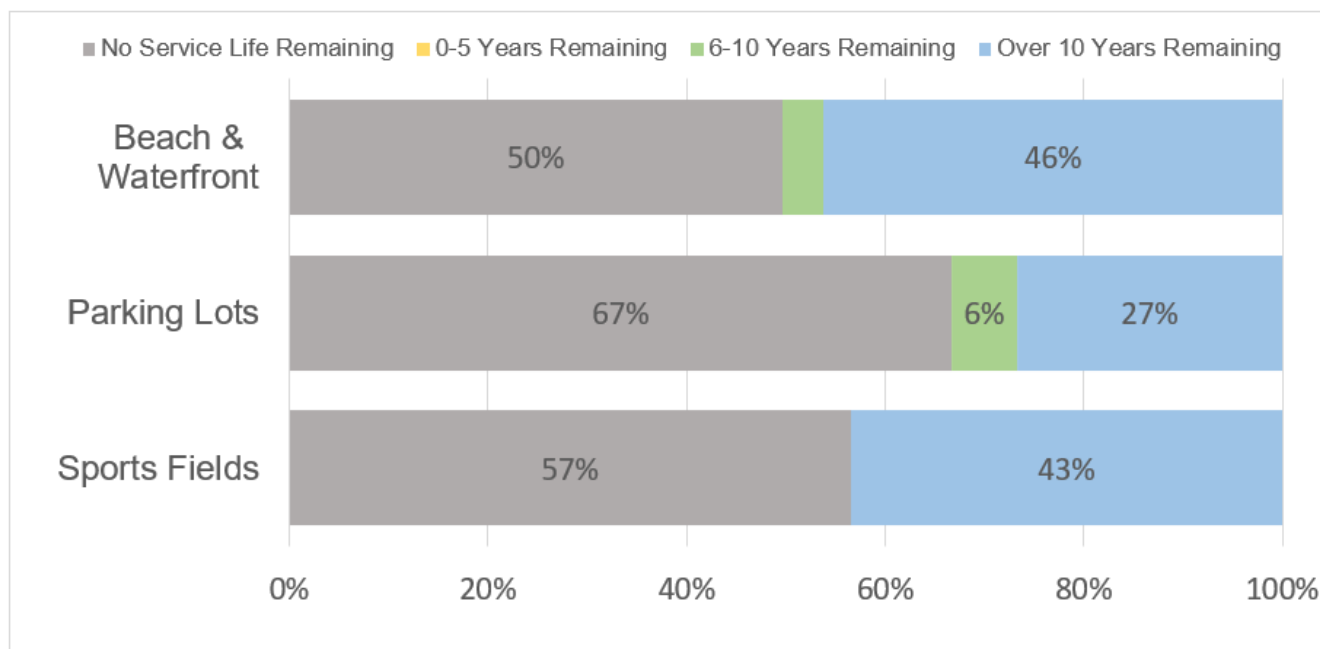
To ensure that the municipality's Land Improvements continue to provide an acceptable level of service, the municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate the lifecycle management strategy to determine what combination of maintenance,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



Estimated Useful Life & Average Age

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

Asset Category	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Beach & Waterfront	25-40	36.6	10
Parking Lots	25-40	39.3	6.1
Sports Fields	25-40	50.3	7.3
	Average:	42.6	7





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

Asset Management Strategies

Condition Assessment & Data Collection

- Land Improvements are inspected regularly and deficiencies that require treatment are identified.
- There are no formal condition assessment strategies for land improvement assets currently.

Lifecycle Management Strategy

Operations & Maintenance

- Significant operating events include beach maintenance, grass cutting and garbage collection.

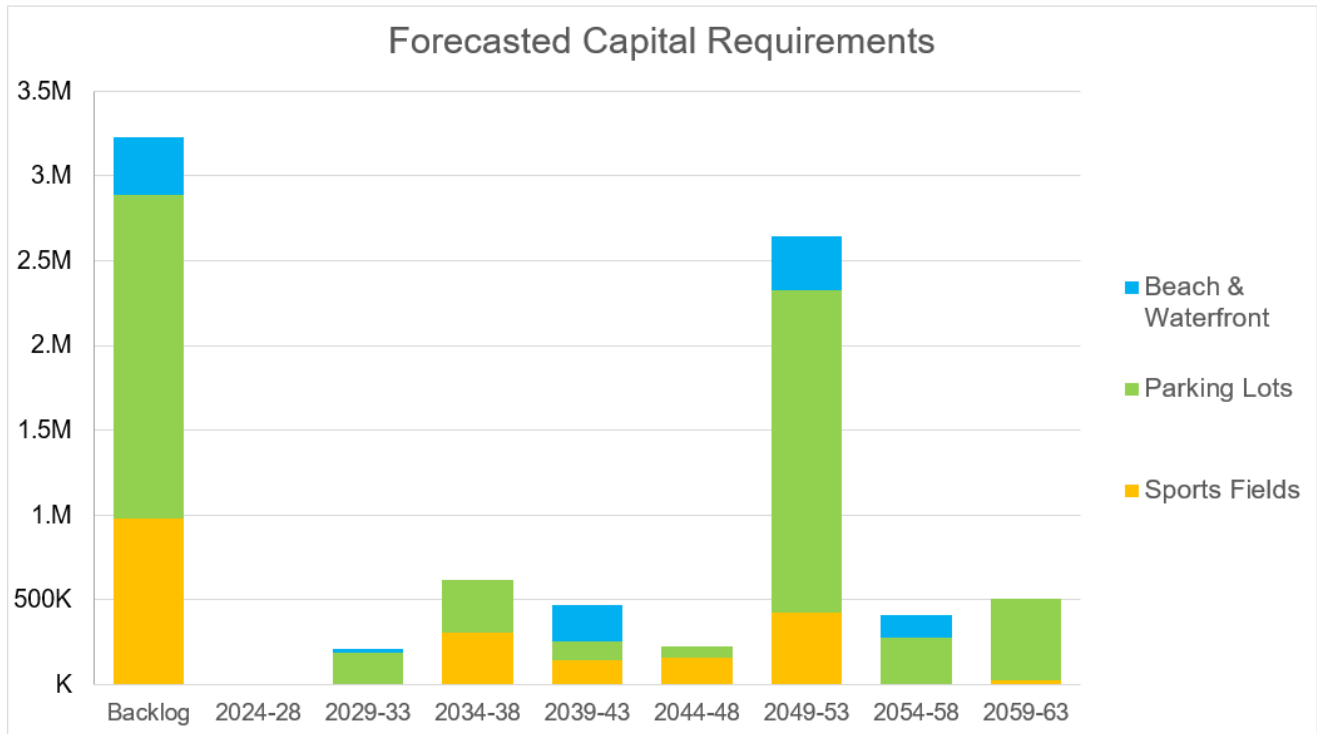
Rehabilitation & Replacement

- Inspection data informs replacement and rehabilitation plans, and all identified capital requirements are included in the 10-year capital plan.



Forecasted Capital Requirements

Based on the assumption that all assets in this class will require replacement at the end of their service life, the following graph forecasts capital requirements for Land Improvements.



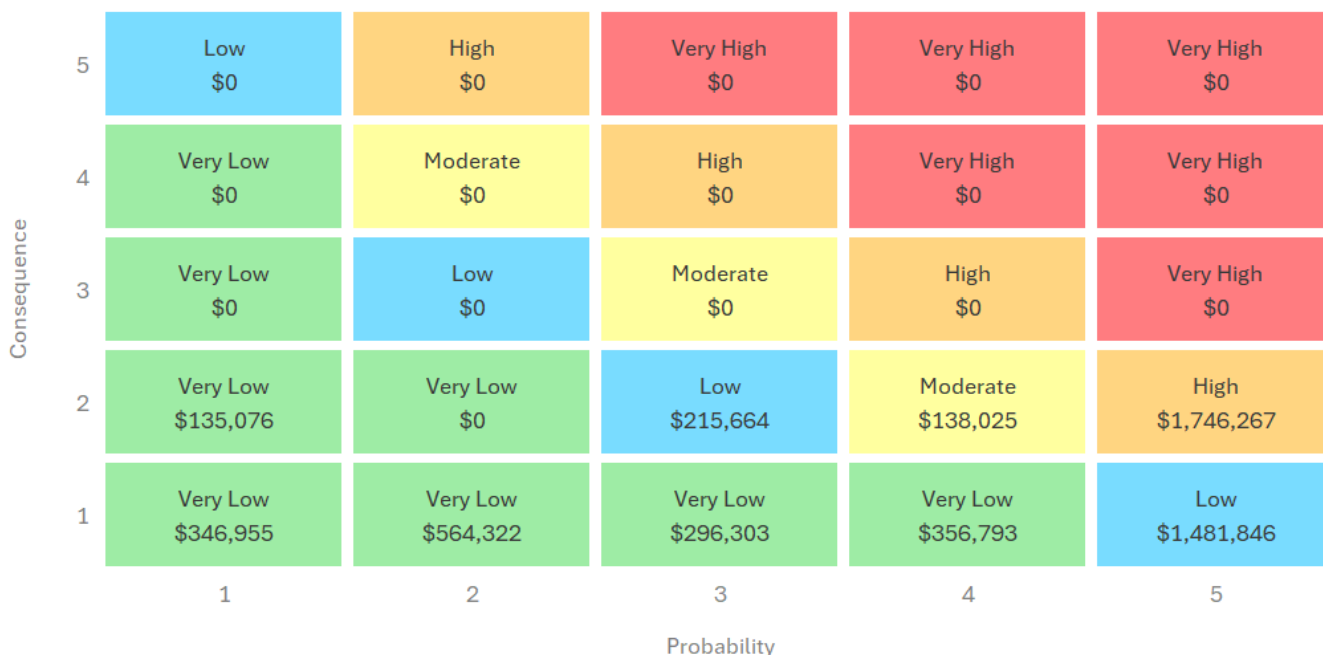
The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix C.



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. See Appendix E for the criteria used to determine the risk rating of each asset.





Asset Prioritization List

The following table identifies the highest risk Land Improvement assets according to the risk criteria identified in Appendix E. The risk rating is calculated by multiplying the probability of failure and the consequence of failure for each asset. This is not meant to be a definitive list of how the Municipality should prioritize assets for rehabilitation and replacement but is meant to be a decision-support tool that is supplemented by the knowledge and expertise of municipal staff when prioritizing capital needs. In some cases, assets may have a higher risk rating than expected due to a lack of available data (e.g., no assessed condition data). All replacement costs have been inflated to 2024 using monthly consumer price index (CPI) data from the Bank of Canada.

Asset ID	Category	Name	Replacement Cost	Risk Rating
12412	Parking Lots	Matilda Hall Parking Lot	\$ 447,761	11.5
12416	Parking Lots	Msbg Fire Hall Parking Lot	\$ 246,474	10
12406	Parking Lots	Morrisburg Waterfront Parking Lot	\$ 220,183	10
12410	Parking Lots	Arena Parking Lot	\$ 213,611	10
12405	Parking Lots	Legion/Cruickshank Parking Lot	\$ 164,316	10
12398	Parking Lots	Morrisburg Beach Parking Lot	\$ 123,237	10
12417	Parking Lots	Matilda Shop Parking Lot	\$ 115,021	10
12403	Parking Lots	Brinston Office Parking Lot	\$ 108,859	10
12409	Parking Lots	Riverside Hall Parking Lot	\$ 106,805	10
12402	Parking Lots	Civic Centre Parking Lot	\$ 138,025	8



Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS
Scope	Description, which may include maps, of the outdoor recreational facilities that the municipality operates and maintains	The municipality operates and maintains several outdoor recreational facilities, including beaches, waterfront, tennis courts, baseball diamonds, outdoor rinks, and more.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS
Scope	Percentage of total land improvement replacement costs - beach & waterfront	13%
	Percentage of total land improvement replacement costs - parking lots	54%
	Percentage of total land improvement replacement costs - sports fields	33%
Quality	The average assessed or age-based condition of all municipal land improvements	22%
	The total replacement cost of municipal land improvements currently in backlog	\$ 3,228,113



Recommendations

Replacement Costs

- Some land improvement replacement costs used in this AMP were based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.

Risk Management Strategies

- This AMP includes a cursory review of risk and criticality. The municipality should work towards developing a formal risk management process to inform project prioritization and lifecycle management strategies with the goal of minimizing risk. In the short term, staff should review the highest risk assets and establish appropriate risk mitigation strategies.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics that the municipality has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.



Vehicles

Asset Inventory & Replacement Cost

The following table includes the quantity, replacement cost method and total replacement cost of each asset segment in the municipality's Vehicle inventory. All replacement costs have been inflated to 2024 using monthly consumer price index (CPI) data from the Bank of Canada.

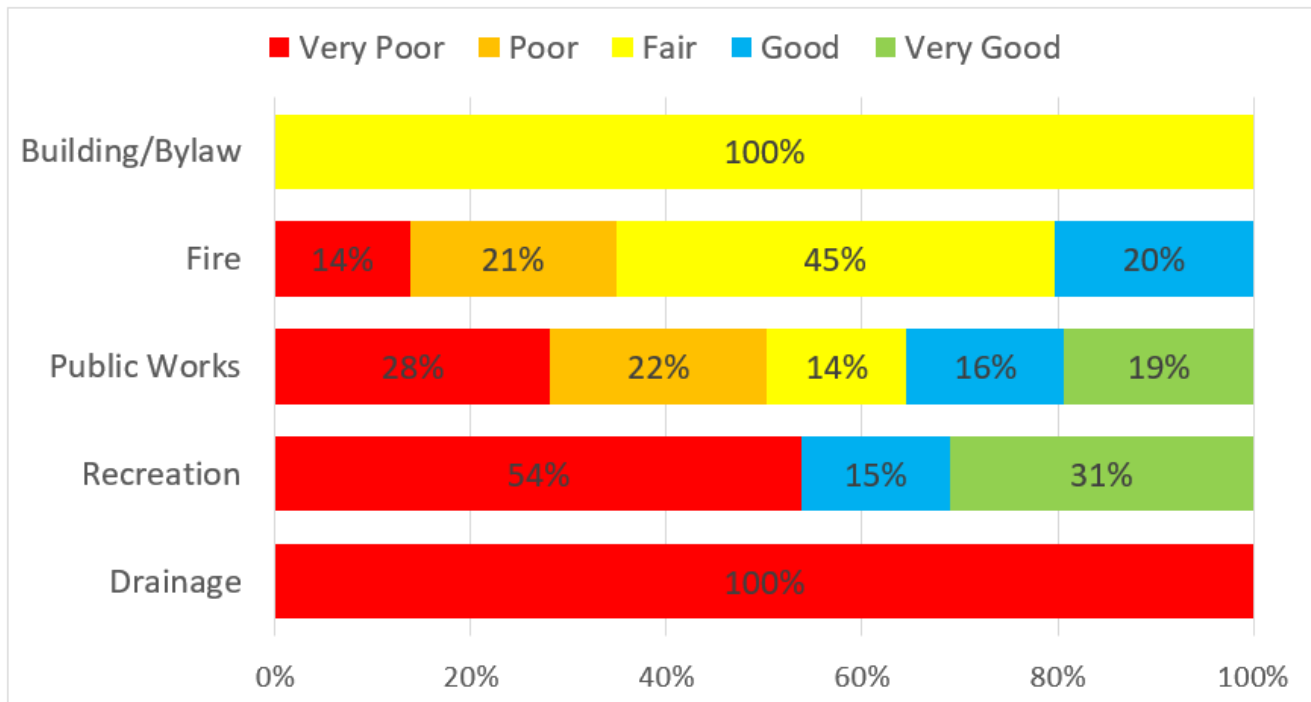
Category	Quantity	Replacement Cost Method	Total Replacement Cost
Building/Bylaw	2	User-Defined Costs	\$ 82,000
Fire	13	User-Defined Costs	\$ 6,880,000
Public Works	31	User-Defined Costs	\$ 6,265,760
Recreation	7	User-Defined Costs	\$ 435,683
Drainage	1	User-Defined Costs	\$ 55,000
		Total:	\$ 13,718,443



Current Asset Condition

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

Asset Category	Average Condition (%)	Average Condition Rating	Condition Source
Building/Bylaw	50%	Fair	Age-Based
Fire	39%	Poor	Age-Based
Public Works	41%	Fair	Age-Based
Recreation	41%	Fair	Age-Based
Drainage	0%	Very Poor	Age-Based
Average:	40%	Fair	Age-Based



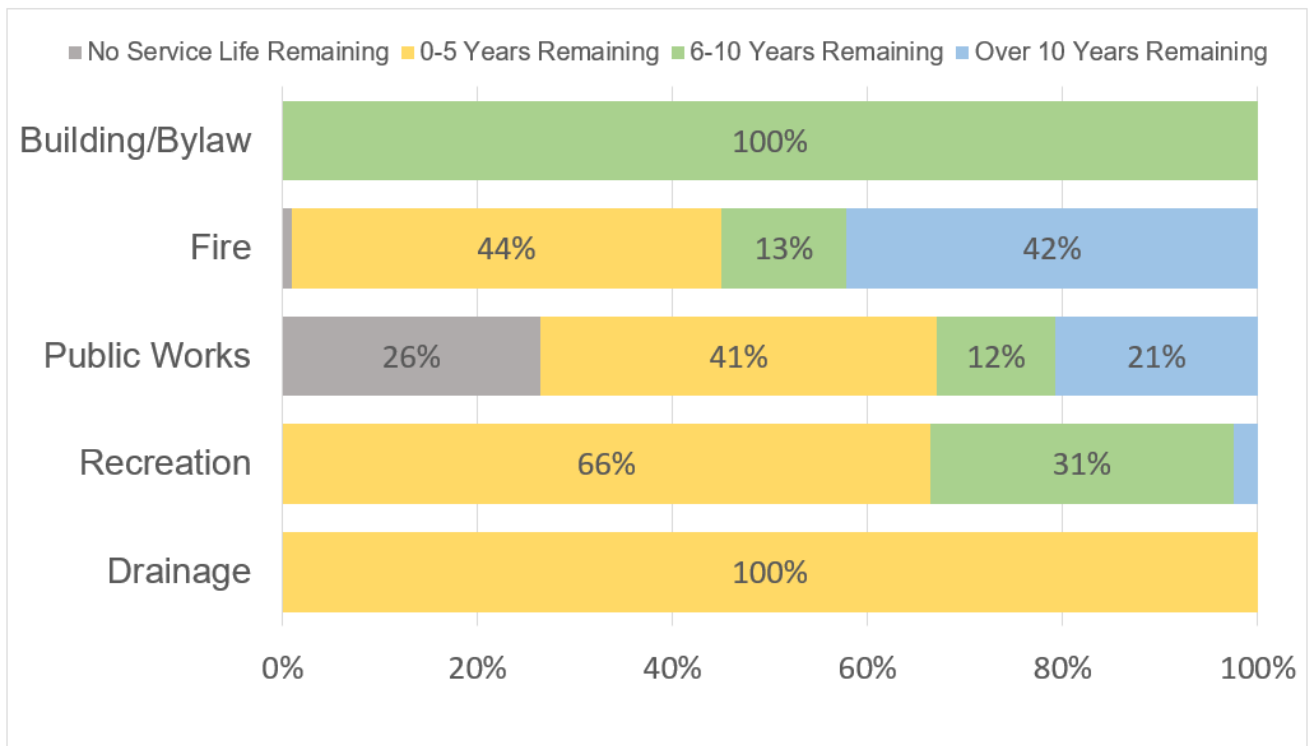
To ensure that the municipality's vehicles continue to provide an acceptable level of service, the municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate the lifecycle management strategy to determine what combination of maintenance,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



Estimated Useful Life & Average Age

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

Asset Category	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Building/Bylaw	6	3	3
Fire	15-30	13.6	7.9
Public Works	3-15	8.2	4.1
Recreation	6-15	7.5	4.2
Drainage	6	11	0
	Average:	10.9	6



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



Asset Management Strategies

Condition Assessment & Data Collection

- Vehicle operators are responsible for inspecting vehicles before use and identifying any issues or deficiencies.
- Currently there are no formal condition assessments completed for vehicles.
 - Due to the short lifecycle of vehicles and their regular inspection, a formal condition assessment program may not be necessary.

Lifecycle Management Strategy

Operations & Maintenance

- Commercial vehicles are inspected regularly, and maintenance events are identified accordingly.
- Specialized inspections are completed for heavy duty vehicles to determine an optimal maintenance strategy.

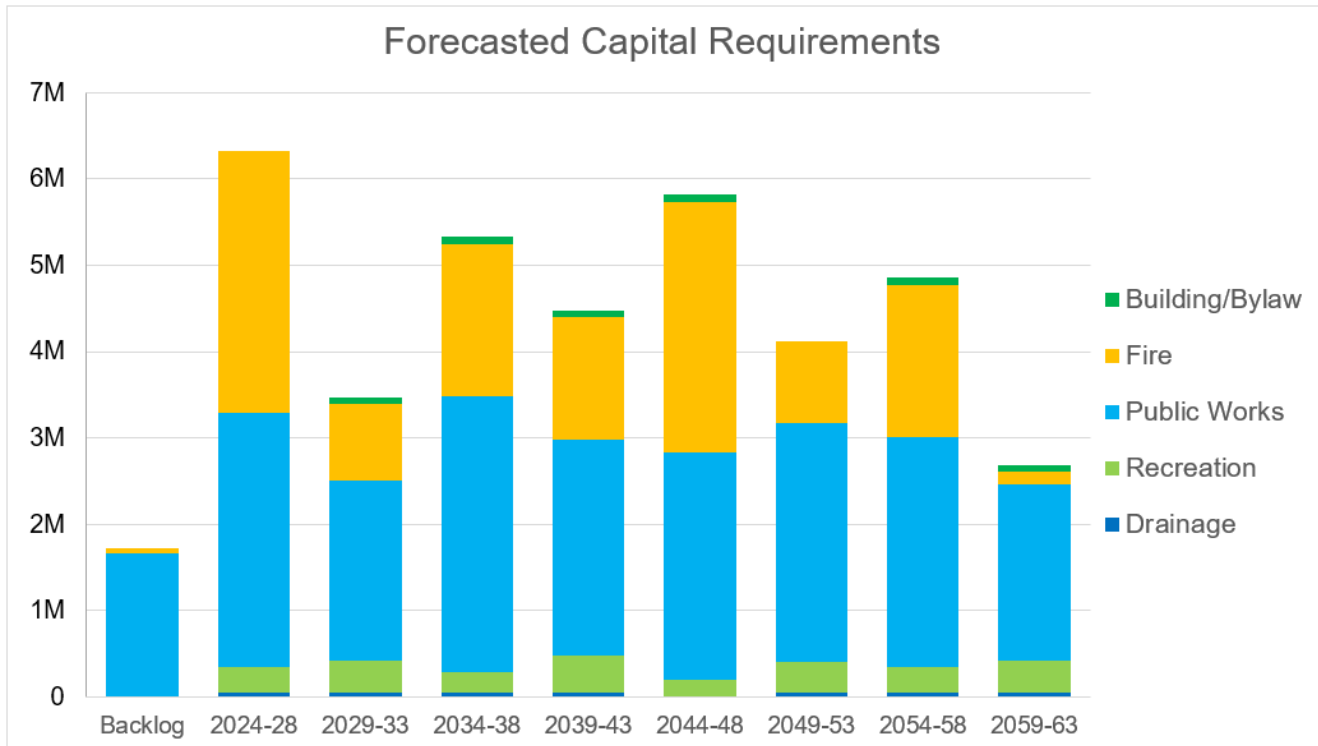
Rehabilitation & Replacement

- Every vehicle is replaced on a different cycle as defined by their estimated useful life.
- Heavy duty vehicles are replaced on a strict cycle, while light duty vehicles can have their projected replacement date adjusted based on actual condition.
- All capital requirements are included in the 10-year capital plan.



Forecasted Capital Requirements

Based on the assumption that all assets in this class will require replacement at the end of their service life, the following graph forecasts capital requirements for vehicles.



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 C.



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. See Appendix E for the criteria used to determine the risk rating of each asset.

Consequence	5	Low \$0	High \$0	Very High \$0	Very High \$0	Very High \$0
	4	Very Low \$0	Moderate \$1,400,000	High \$3,000,000	Very High \$1,450,000	Very High \$750,000
	3	Very Low \$1,191,374	Low \$900,000	Moderate \$935,000	High \$1,300,000	Very High \$1,598,253
	2	Very Low \$153,968	Very Low \$175,848	Low \$127,000	Moderate \$90,000	High \$647,000
	1	Very Low \$0	Very Low \$0	Very Low \$0	Very Low \$0	Low \$0
		1	2	3	4	5
		Probability				



Asset Prioritization List

The following table identifies the highest risk Vehicles according to the risk criteria identified in Appendix E. The risk rating is calculated by multiplying the probability of failure and the consequence of failure for each asset. This is not meant to be a definitive list of how the Municipality should prioritize assets for rehabilitation and replacement but is meant to be a decision-support tool that is supplemented by the knowledge and expertise of municipal staff when prioritizing capital needs. In some cases, assets may have a higher risk rating than expected due to a lack of available data (e.g., no assessed condition data). All replacement costs have been inflated to 2024 using monthly consumer price index (CPI) data from the Bank of Canada.

Asset ID	Category	Name	Replacement Cost	Risk Rating
467	Fire	Western Star Tanker (W #7) - 183	\$ 750,000	20
469	Fire	Spartan Pumper (W#2) - 181	\$ 800,000	16
466	Fire	International 7300 Tanker (W#8) - 184	\$ 650,000	16
465	Fire	Ford F150 XLT 4x4 - Red - 145 (Old CH 1-1)	\$ 65,000	15.5
477	Fire	Dodge Ram Laramie P/U (I #9) - 144	\$ 65,000	15.5
471	Fire	Dodge Ram P/U (M #3) - 164	\$ 65,000	15.5
449	Public Works	International 647 #57 (Spare)	\$ 382,603	15
439	Public Works	Int'l 7600 Salter/Plow #68	\$ 382,603	15
441	Public Works	Case 580-SMT Backhoe #66	\$ 204,000	13.5
434	Public Works	John Deere 31SK Backhoe Loader #78	\$ 200,000	13.5
424	Public Works	Case Tractor #89	\$ 234,048	13.5
436	Public Works	Int'l 7600 Tandem Salt/Sand Plow #75	\$ 400,000	12
435	Public Works	Int'l 7400 Single Axle Plow #76	\$ 300,000	12
433	Public Works	Int'l 7400 Single Axle Plow #79	\$ 300,000	12
429	Public Works	International 7400 Single Axle Plow 70S # 84	\$ 300,000	12



Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS
Scope	Description or images of the types of vehicles that the municipality operates and the services that they help to provide to the community	The provision of services to the community requires the municipality to own a diverse inventory of vehicles. This asset management plan identifies individual vehicles that provide drainage, building, bylaw, fire protection, recreational and transportation services to the community.



Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS
Scope	Percentage of total vehicle replacement cost - building/bylaw vehicles	0.6%
	Percentage of total vehicle replacement cost - fire vehicles	50.1%
	Percentage of total vehicle replacement cost - public works vehicles	45.7%
	Percentage of total vehicle replacement cost - recreation vehicles	3.2%
	Percentage of total vehicle replacement cost - drainage vehicles	0.4%
Quality	The average assessed or age-based condition of all municipal vehicles	40%
	The total replacement cost of municipal vehicles currently in backlog	\$ 1,277,500



Recommendations

Replacement Costs

- All replacement costs used in this AMP were based on estimates from department directors. The municipality should continue to update replacement costs according to the best available information on the cost to replace the asset in today's value.

Condition Assessment Strategies

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

Risk Management Strategies

- This AMP includes a cursory review of risk and criticality. The municipality should work towards developing a formal risk management process to inform project prioritization and lifecycle management strategies with the goal of minimizing risk. In the short term, staff should review the highest risk assets and establish appropriate risk mitigation strategies.

Levels of Service

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



Morrisburg Plaza

Asset Inventory & Replacement Cost

The following table includes the replacement cost method and total replacement cost of each asset segment that is part of the Morrisburg Plaza. All replacement costs have been inflated to 2024 using monthly consumer price index (CPI) data from the Bank of Canada.

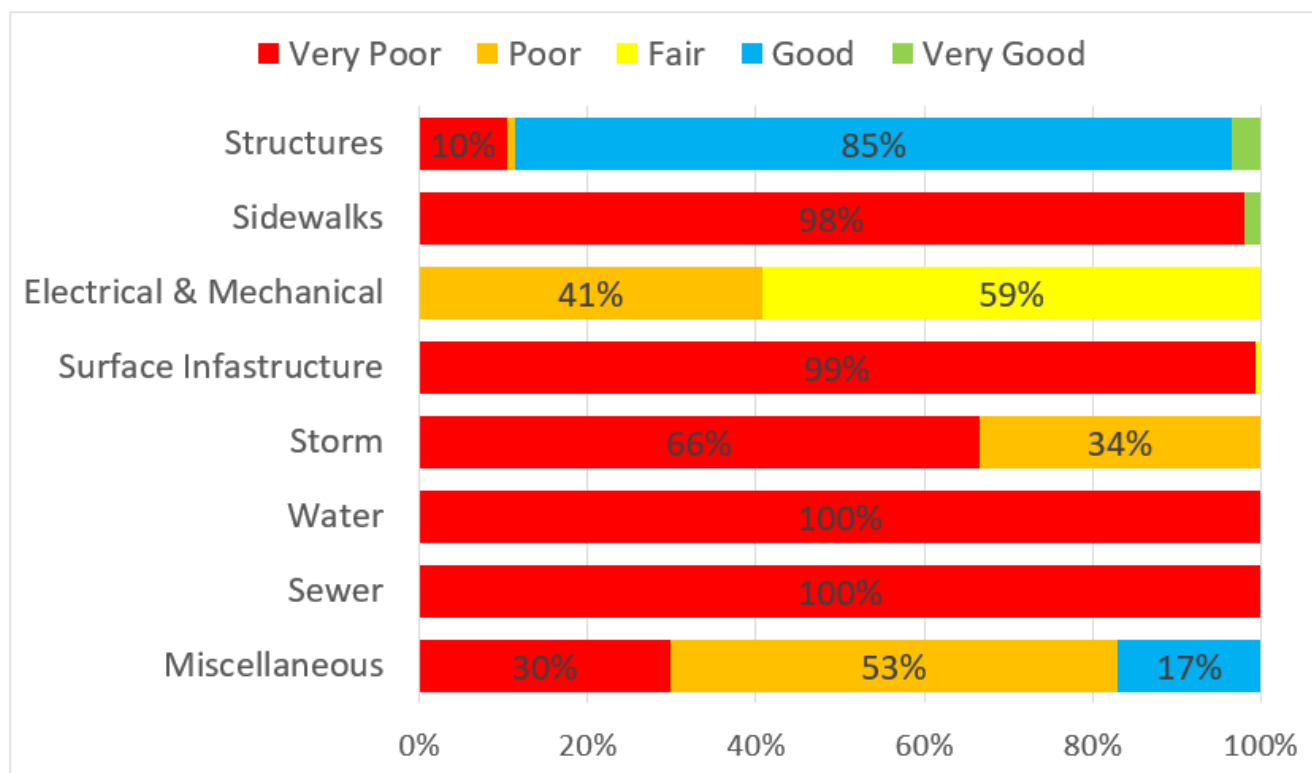
Category	Source of Funding	Replacement Cost Method	Total Replacement Cost
Structures	Tax-Funded	User-Defined Costs	\$ 2,461,317
Sidewalks	Tax-Funded	User-Defined Costs	\$ 627,433
Electrical & Mechanical	Tax-Funded	User-Defined Costs	\$ 94,462
Surface Infrastructure	Tax-Funded	User-Defined Costs	\$ 1,117,993
Storm	Tax-Funded	User-Defined Costs	\$ 391,535
Water	Rate-Funded	User-Defined Costs	\$ 454,561
Sewer	Rate-Funded	User-Defined Costs	\$ 378,801
Operations & Miscellaneous	Tax-Funded	User-Defined Costs	\$ 145,089
Total:			\$ 5,671,189



Current Asset Condition

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

Asset Category	Average Condition (%)	Average Condition Rating	Condition Source
Structures	65%	Good	Age-Based
Sidewalks	10%	Very Poor	Age-Based
Electrical & Mechanical	37%	Poor	Age-Based
Surface Infrastructure	2%	Very Poor	Age-Based
Storm	6%	Very Poor	Age-Based
Water	4%	Very Poor	Age-Based
Sewer	4%	Very Poor	Age-Based
Operations & Miscellaneous	32%	Poor	Age-Based
Average:	32%	Poor	Age-Based



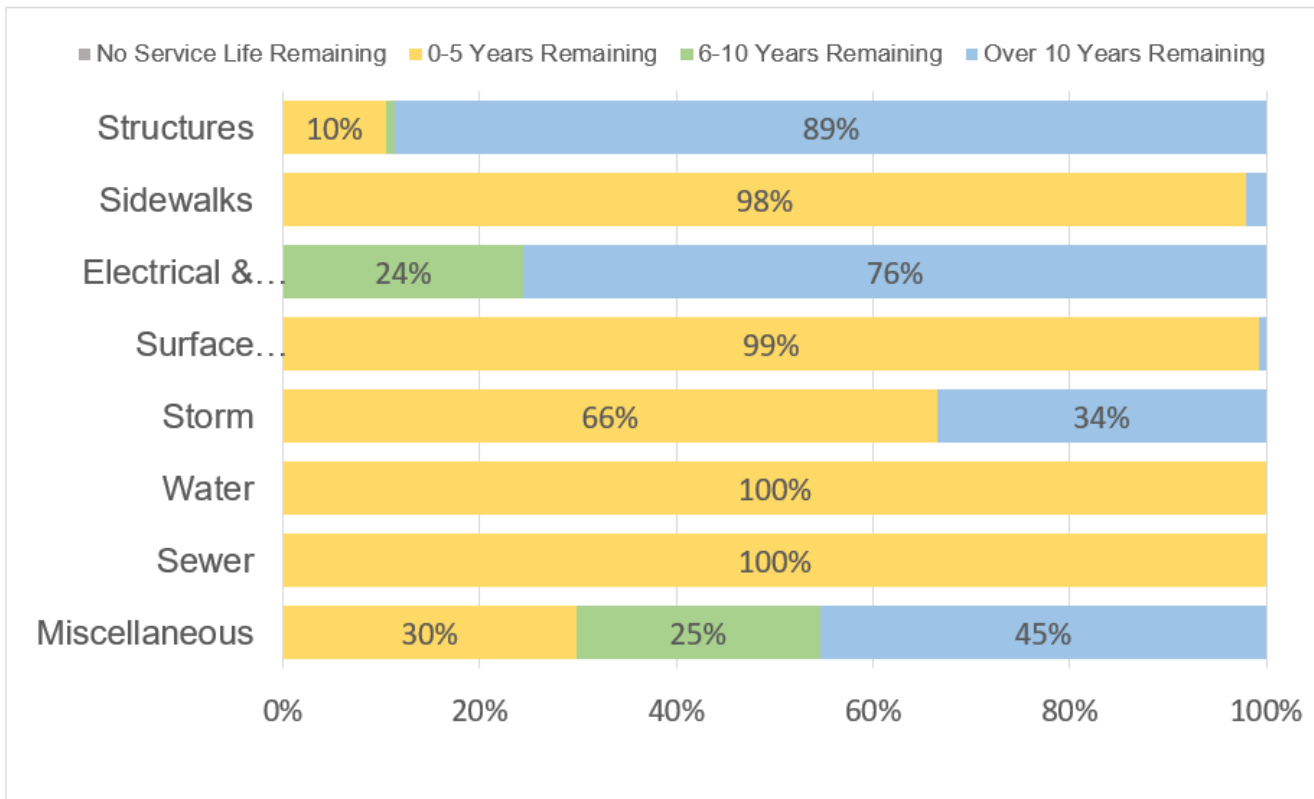
To ensure that the Morrisburg Plaza continues to provide an acceptable level of service, the municipality should monitor the average condition of all plaza assets. If the average condition declines, staff should re-evaluate the lifecycle management strategy to determine what combination of maintenance,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



Estimated Useful Life & Average Age

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

Asset Category	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Structures	30-75	23.7	43.6
Sidewalks	25-30	25.7	2.6
Electrical & Mechanical	25-50	18.4	10.7
Surface Infrastructure	25-50	29.9	0.7
Storm	70	68.8	4.2
Water	70	67	3
Sewer	70	67	3
Operations & Miscellaneous	15-40	21.4	9.2
	Average:	34.5	21

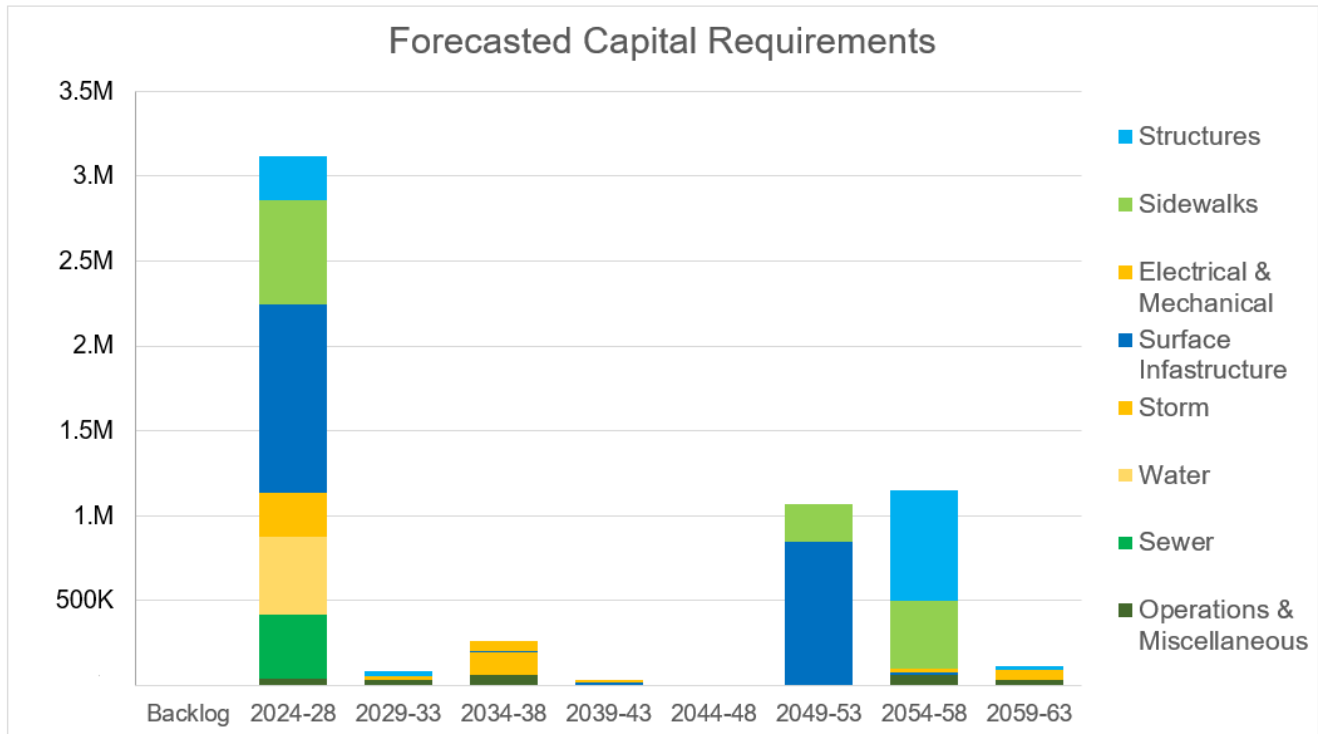


Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.



Forecasted Capital Requirements

Based on the assumption that all assets in this class will require replacement at the end of their service life, the following graph forecasts capital requirements for Morrisburg Plaza assets.





The Municipality of SOUTH DUNDAS

Asset Category		Morrisburg Plaza: 10-Year Capital Requirements										
Structures		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Canopy Superstructure	Replacement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Repair Allowance (Every 10 Years)	\$ -	\$ -	\$ -	\$ -	\$ 10,290	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Canopy Finishes	Eavestrough	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 24,747	\$ -
	Soffit	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 7,718
Canopy Foundation & Supports	Foundations	\$ 230,496	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Periodic Maintenance (Every 5 Years)	\$ -	\$ -	\$ 5,145	\$ -	\$ -	\$ -	\$ -	\$ 5,145	\$ -	\$ -	\$ -
Clocktower	Demolition & Infill	\$ -	\$ 25,725	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Structures		\$ 230,496	\$ 25,725	\$ 5,145	\$ -	\$ 10,290	\$ -	\$ -	\$ 5,145	\$ -	\$ 24,747	\$ 7,718
Sidewalks		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Concrete Sidewalks	Canopy Sidewalks	\$ -	\$ 368,382	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Concrete Steps	\$ -	\$ 30,870	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Interlock/Courtyard Sidewalks	Interlock	\$ -	\$ -	\$ -	\$ -	\$ 215,215	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Sidewalks		\$ -	\$ 399,252	\$ -	\$ -	\$ 215,215	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Electrical and Mechanical Systems		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Electrical Panels & Accessories	Parking Lot	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 15,435	\$ -	\$ -	\$ -
Lighting	Canopy Lighting	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 23,050	\$ -	\$ -
	Parking Lot Lighting	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 55,978
Total Electrical and Mechanical Systems		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 15,435	\$ 23,050	\$ -	\$ 55,978
Surface Infrastructure		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Paved Parking	Parking Lot Area	\$ 680,076	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Main Street and Cassell Road	\$ -	\$ 159,495	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Parking Lines & Parking Curbs	Parking Lines	\$ 14,355	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Curbs & Islands	Islands	\$ -	\$ 166,184	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Perimeter Curbs	\$ -	\$ -	\$ -	\$ -	\$ 89,600	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Surface Infrastructure		\$ 694,431	\$ 325,679	\$ -	\$ -	\$ 89,600	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Underground Infrastructure		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Storm Water	Pipe Relining	\$ -	\$ -	\$ -	\$ 260,337	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Water Supply	Pipe Relining	\$ -	\$ -	\$ -	\$ 454,561	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Sewer Lines	Pipe Relining	\$ -	\$ -	\$ -	\$ 378,801	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Underground Infrastructure		\$ -	\$ -	\$ -	\$ 1,093,698	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Operations & Miscellaneous		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Accessories	Tables	\$ -	\$ -	\$ 3,087	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Bike Racks	\$ -	\$ -	\$ -	\$ -	\$ 4,116	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Landscaping and Trees	Retaining Walls and Gardens	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 36,015	\$ -	\$ -	\$ -
	Retaining Wall and Steps	\$ -	\$ -	\$ -	\$ -	\$ 36,015	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Operations & Miscellaneous		\$ -	\$ -	\$ 3,087	\$ -	\$ 40,131	\$ -	\$ -	\$ 36,015	\$ -	\$ -	\$ -
Total Morrisburg Plaza		\$ 924,927	\$ 750,656	\$ 8,232	\$ 1,093,698	\$ 355,237	\$ -	\$ -	\$ 56,595	\$ 23,050	\$ 24,747	\$ 63,695



Iroquois Plaza

Asset Inventory & Replacement Cost

The following table includes the replacement cost method and total replacement cost of each asset segment that is part of the Iroquois Plaza. All replacement costs have been inflated to 2024 using monthly consumer price index (CPI) data from the Bank of Canada.

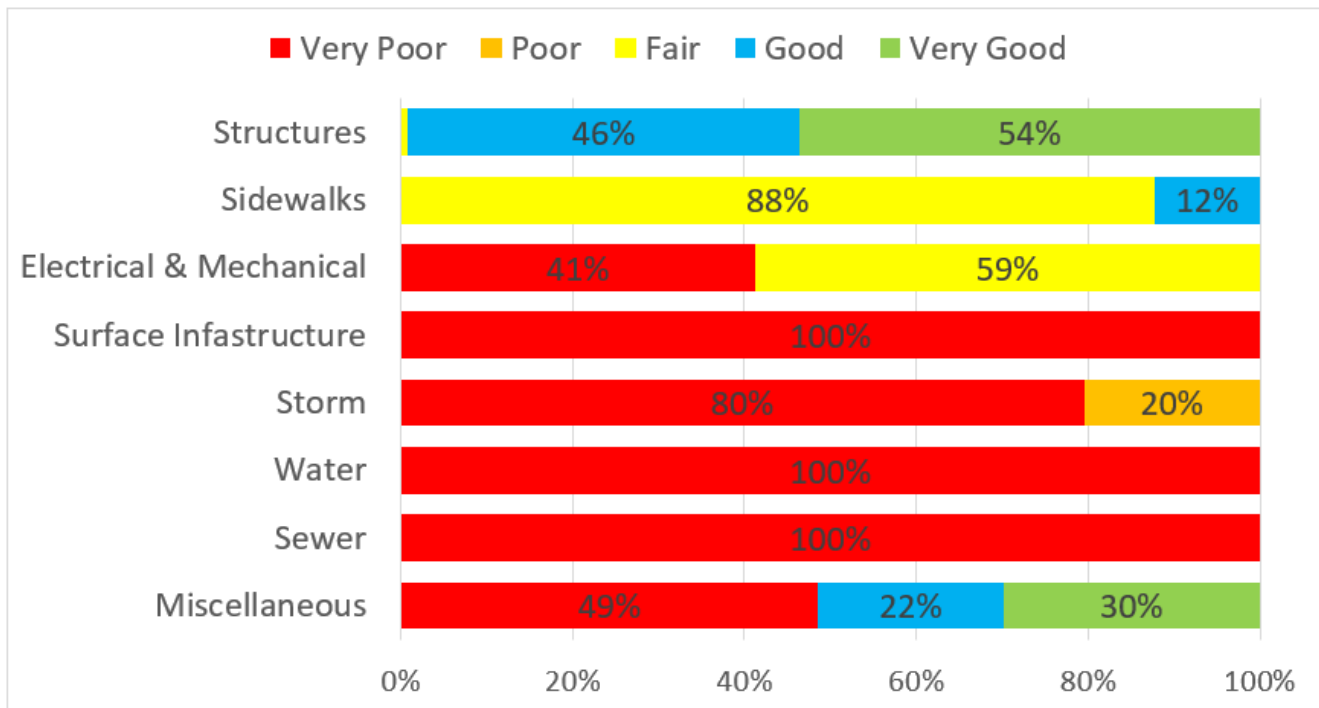
Category	Source of Funding	Replacement Cost Method	Total Replacement Cost
Structures	Tax-Funded	User-Defined Costs	\$ 2,279,518
Sidewalks	Tax-Funded	User-Defined Costs	\$ 418,957
Electrical & Mechanical	Tax-Funded	User-Defined Costs	\$ 99,762
Surface Infrastructure	Tax-Funded	User-Defined Costs	\$ 1,160,969
Storm	Tax-Funded	User-Defined Costs	\$ 489,650
Water	Rate-Funded	User-Defined Costs	\$ 378,801
Sewer	Rate-Funded	User-Defined Costs	\$ 350,889
Operations & Miscellaneous	Tax-Funded	User-Defined Costs	\$ 68,840
Total:			\$ 5,247,386



Current Asset Condition

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

Asset Category	Average Condition (%)	Average Condition Rating	Condition Source
Structures	75%	Good	Age-Based
Sidewalks	44%	Fair	Age-Based
Electrical & Mechanical	31%	Poor	Age-Based
Surface Infrastructure	2%	Very Poor	Age-Based
Storm	8%	Very Poor	Age-Based
Water	7%	Very Poor	Age-Based
Sewer	6%	Very Poor	Age-Based
Operations & Miscellaneous	51%	Fair	Age-Based
Average:	39%	Poor	Age-Based



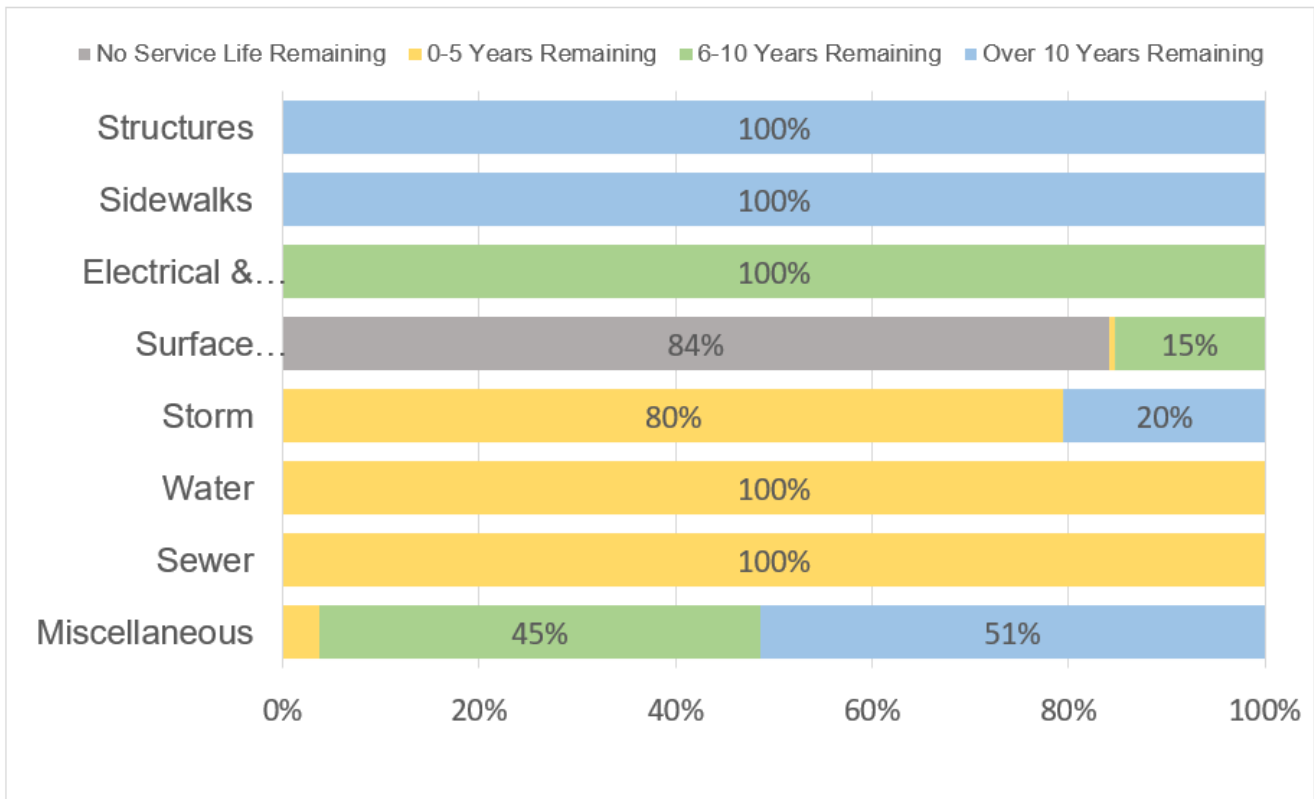
To ensure that the Iroquois Plaza continues to provide an acceptable level of service, the municipality should monitor the average condition of all plaza assets. If the average condition declines, staff should re-evaluate the lifecycle management strategy to determine what combination of maintenance,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



Estimated Useful Life & Average Age

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

Asset Category	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Structures	30-75	15.4	48.8
Sidewalks	25-50	14.8	13.3
Electrical & Mechanical	25-40	22.4	8.8
Surface Infrastructure	15-50	27.6	1.1
Storm	70	64.8	5.3
Water	70	65	5
Sewer	70	66	4
Operations & Miscellaneous	15-50	17.6	20.1
	Average:	29.8	24.1

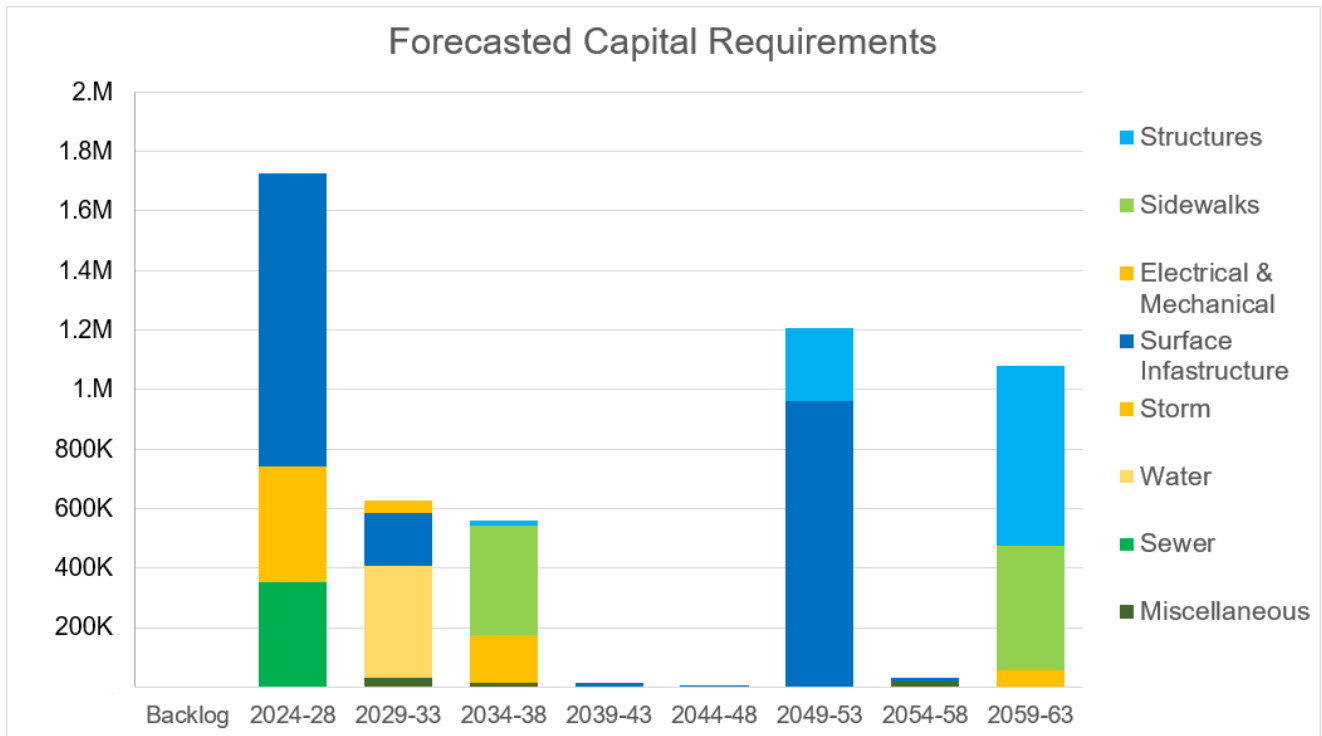


Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.



Forecasted Capital Requirements

Based on the assumption that all assets in this class will require replacement at the end of their service life, the following graph forecasts capital requirements for Iroquois Plaza assets.





Asset Category		Iroquois Plaza: 10-Year Capital Requirements										
Structures		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Canopy Superstructure	Replacement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Repair Allowance (Every 10 Years)	\$ -	\$ -	\$ -	\$ -	\$ 10,290	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Canopy Foundation & Supports	Foundations	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Periodic Maintenance (Every 5 Years)	\$ -	\$ -	\$ 5,145	\$ -	\$ -	\$ -	\$ -	\$ 5,145	\$ -	\$ -	\$ -
Total Structures		\$ -	\$ -	\$ 5,145	\$ -	\$ 10,290	\$ -	\$ -	\$ 5,145	\$ -	\$ -	\$ -
Sidewalks		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Interlock/Courtyard Sidewalks	Interlock	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 367,559
	Repair Allowance (Every 5 Years)	\$ -	\$ -	\$ -	\$ 10,290	\$ -	\$ -	\$ -	\$ -	\$ 10,290	\$ -	\$ -
Total Sidewalks		\$ -	\$ -	\$ -	\$ 10,290	\$ -	\$ -	\$ -	\$ -	\$ 10,290	\$ -	\$ 367,559
Electrical and Mechanical Systems		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Electrical Systems		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 41,160	\$ -	\$ -	\$ -
Lighting	Canopy Lighting	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 19,088
	Parking Lot Lighting	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 39,514
Total Electrical and Mechanical Systems		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 41,160	\$ -	\$ -	\$ 58,602
Surface Infrastructure		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Paved Parking	Parking Lot & Roadways	\$ 962,424	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Parking Lines & Parking Curbs	Parking Lines	\$ 13,660	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Parking Curbs	\$ -	\$ -	\$ -	\$ 6,843	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Curbs & Islands	Islands	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 148,176	\$ -	\$ -	\$ -
	Perimeter Curbs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 29,867	\$ -	\$ -	\$ -
Total Surface Infrastructure		\$ 976,084	\$ -	\$ -	\$ 6,843	\$ -	\$ -	\$ -	\$ 178,043	\$ -	\$ -	\$ -
Underground Infrastructure		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Storm Water	Pipe Relining	\$ -	\$ -	\$ -	\$ 389,322	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Water Supply	Pipe Relining	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 378,801	\$ -	\$ -	\$ -	\$ -	\$ -
Sewer Lines	Pipe Relining	\$ -	\$ -	\$ -	\$ -	\$ 350,889	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Underground Infrastructure		\$ -	\$ -	\$ -	\$ 389,322	\$ 350,889	\$ 378,801	\$ -	\$ -	\$ -	\$ -	\$ -
Operations & Miscellaneous		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Pylon Signage	Signage Replacement	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 30,870	\$ -	\$ -	\$ -	\$ -
Accessories	Tables	\$ -	\$ -	\$ 2,573	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Operations & Miscellaneous		\$ -	\$ -	\$ 2,573	\$ -	\$ -	\$ -	\$ 30,870	\$ -	\$ -	\$ -	\$ -
Total Iroquois Plaza		\$ 976,084	\$ -	\$ 7,718	\$ 406,455	\$ 361,179	\$ 378,801	\$ 30,870	\$ 224,348	\$ 10,290	\$ -	\$ 426,160



Comprehensive Analysis of Rate Funded Assets

Key Findings

- Rate funded asset replacement costs are valued at \$200 million, making up 45% of the Municipality's total asset portfolio.
- 71% of rate funded assets are in fair or better condition.
- Rate funded assets are currently funded at only 21% of their long-term requirements.
- To eliminate annual infrastructure deficits for water and wastewater services, rate revenue needs to increase by 4.2% and 5.5% each year, respectively, assuming the Municipality of South Dundas experiences an average annual increase of 3% to its tax levy. A 15-year phase-in period is recommended.
- Project prioritization is needed to gradually eliminate the infrastructure backlog of \$1.7 million.



Water Network

Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Water Network inventory. This table does not include plaza water lines or valves. All replacement costs have been inflated to 2024 using monthly consumer price index (CPI) data from the Bank of Canada.

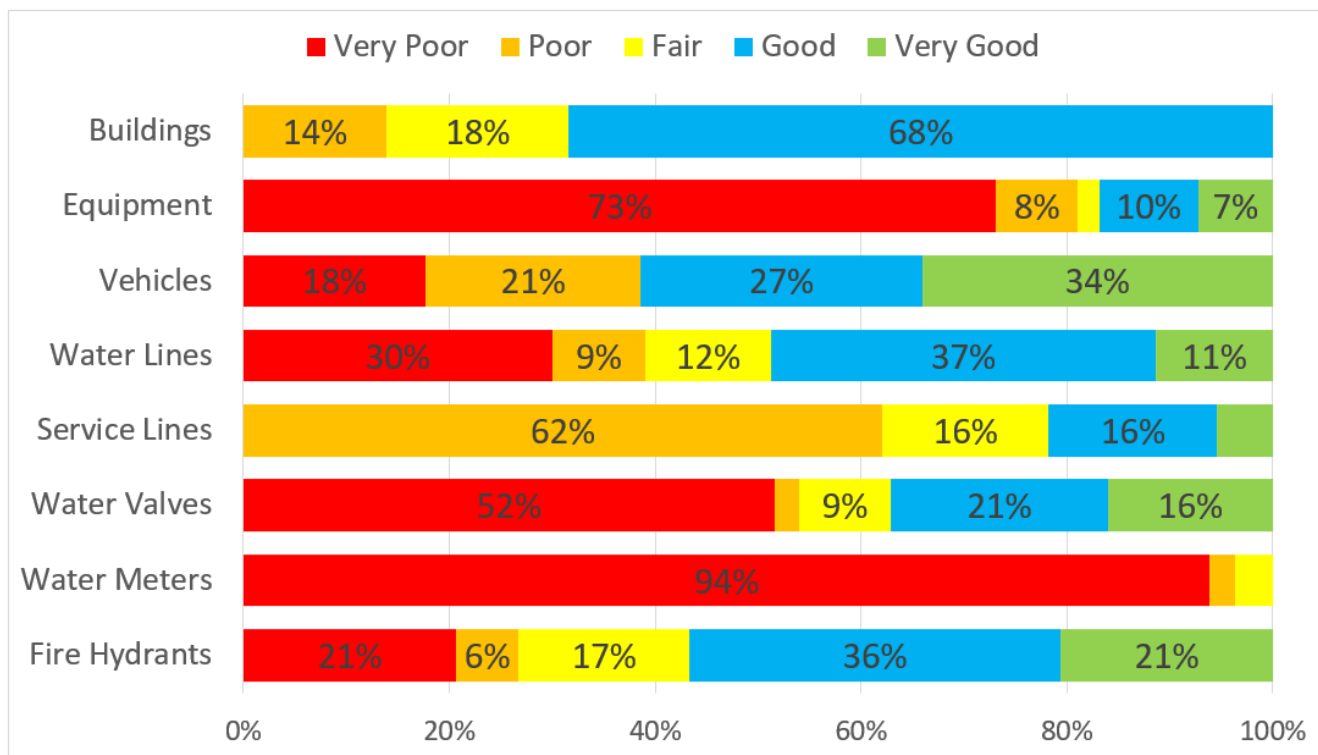
Category	Quantity	Replacement Cost Method	Total Replacement Cost
Buildings	5	User-Defined Costs	\$ 46,788,234
Equipment	48	User-Defined Costs	\$ 2,743,872
Vehicles	3	User-Defined Costs	\$ 155,499
Water Lines	63,400 (m)	User-Defined Costs	\$ 38,894,715
Service Lines	18,900 (m)	CPI Tables - CPI Monthly (ON)	\$ 1,112,656
Water Valves	554	User-Defined Costs	\$ 3,183,775
Water Meters	8	CPI Tables - CPI Monthly (ON)	\$ 327,701
Fire Hydrants	247	User-Defined Costs	\$ 2,043,678
		Total:	\$ 95,250,130



Current Asset Condition

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

Asset Category	Average Condition (%)	Average Condition Rating	Condition Source
Buildings	59%	Fair	Age-Based
Equipment	29%	Poor	Age-Based
Vehicles	56%	Fair	Age-Based
Water Lines	51%	Fair	Age-Based
Service Lines	46%	Fair	Age-Based
Water Valves	34%	Poor	Age-Based
Water Meters	5%	Very Poor	Age-Based
Fire Hydrants	57%	Fair	Age-Based
Average:	54%	Fair	Age-Based



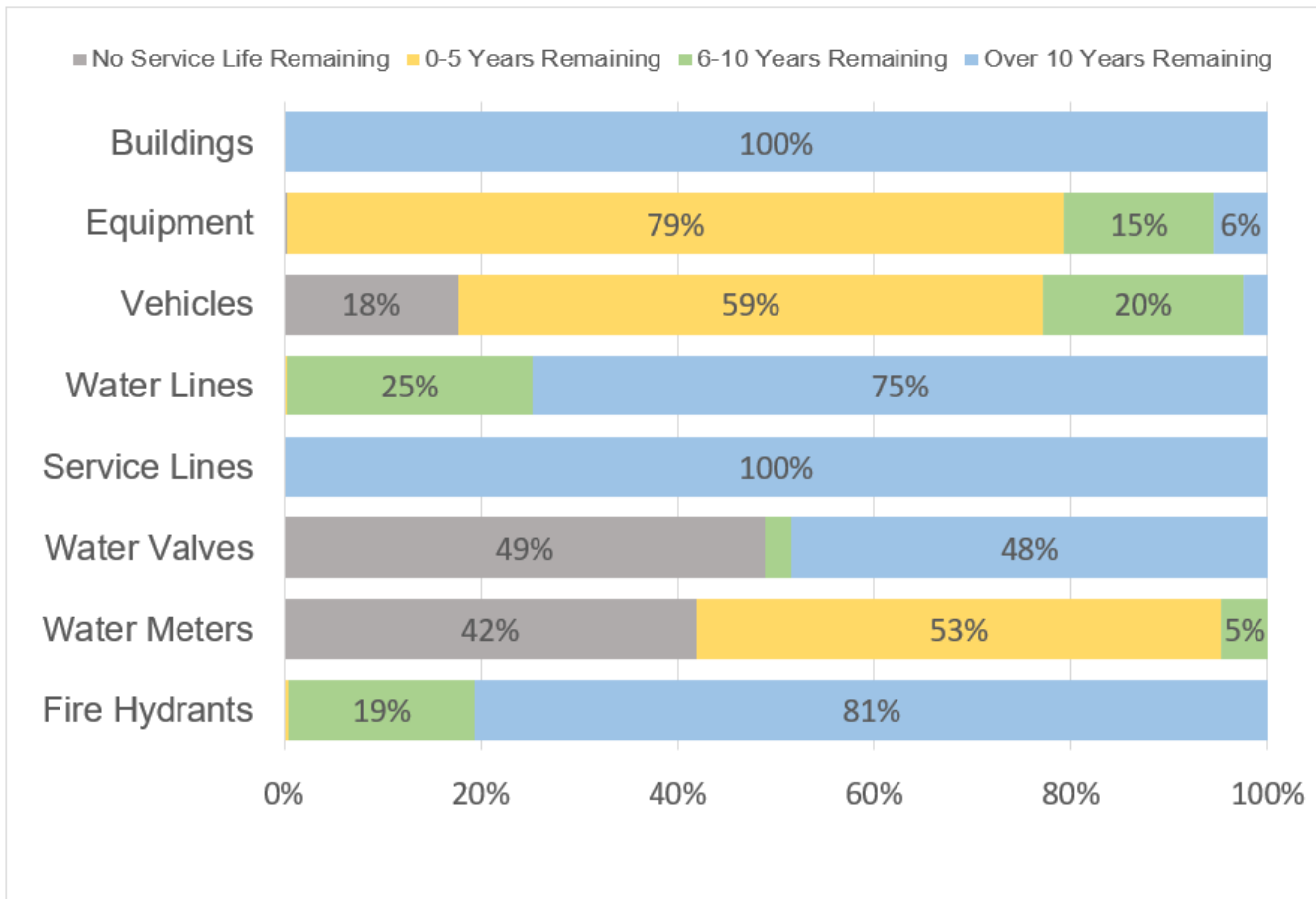
To ensure that the Municipality's Water Network continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets within the water network. If the average condition declines, staff should re-evaluate the lifecycle management strategy to determine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



Estimated Useful Life & Average Age

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

Asset Category	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Buildings	60/75	35.3	34.3
Equipment	10-25	10.5	1.8
Vehicles	6/10	5.3	1.9
Water Lines	100	44.1	47.9
Service Lines	100	56	44
Water Valves	50	18.5	39.2
Water Meters	20	21	0
Fire Hydrants	75	34.5	40.5
	Average:	37.8	39.2



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



Asset Management Strategies

Condition Assessment & Data Collection

- There is no formally documented condition assessment program for water infrastructure.
- Without physical condition assessment data, staff use break history, pipe material, age, and consequence of failure to determine the appropriate lifecycle strategy.

Lifecycle Management Strategy

Operations & Maintenance

- As required by provincial regulations, the Municipality maintains a detailed operational plan that defines and documents the Drinking Water Quality Management System (DWQMS) for the water distribution systems. These systems are operated internally by the Municipality's Manager of Water & Wastewater, Denis Villeneuve.
- The Municipality of South Dundas' water and wastewater department is responsible for regular flushing of dead-end system main lines, system pressure regulator valve testing, valve exercising, and the maintenance of all equipment within the distribution system.
- All maintenance is completed within government regulations and American Water Works Association (AWWA) standards.

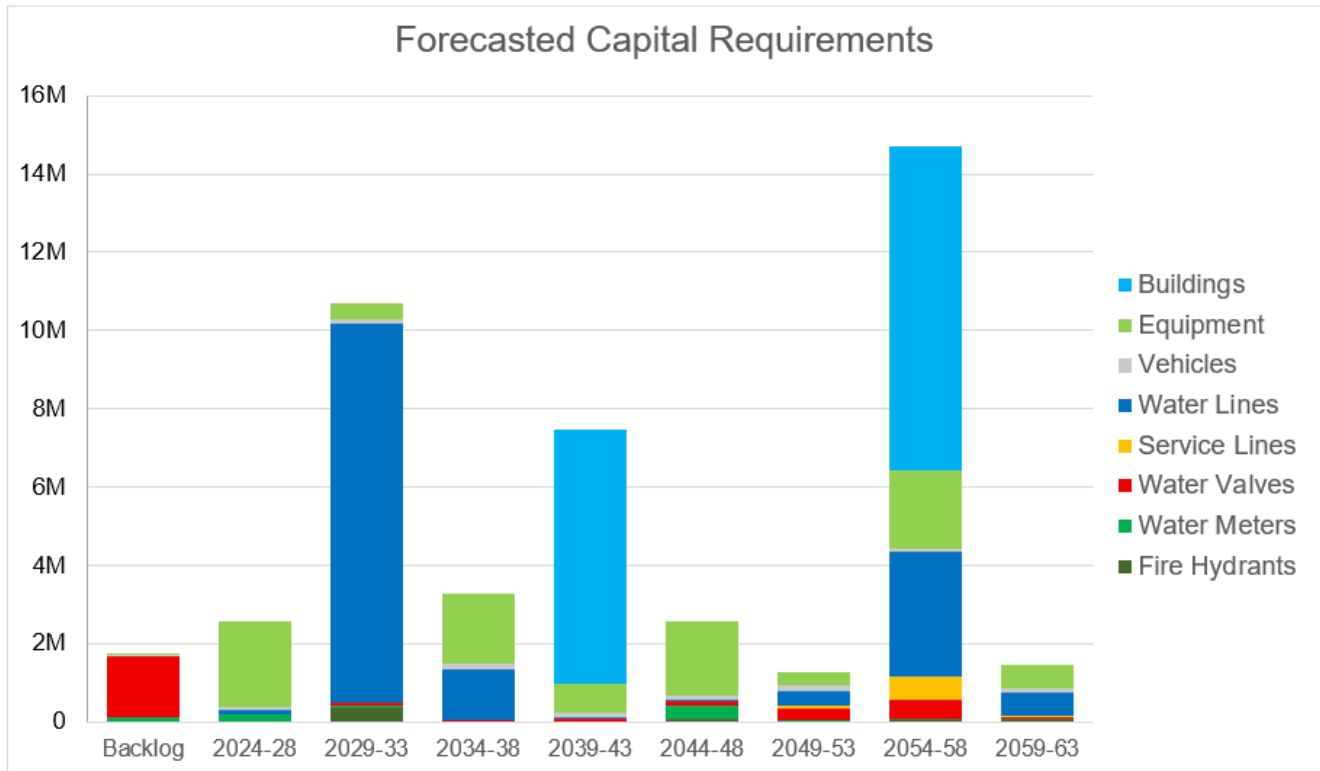
Rehabilitation & Replacement

- The Manager of Water and Wastewater is responsible for determining the need of replacement parts within the infrastructure and add them to a capital replacement plan to be provided to the Municipality.
- There is an emphasis on replacing older water mains that are not polyvinyl chloride (PVC) to install PVC pipes that are expected to last longer and have a lower failure rate.



Forecasted Capital Requirements

Based on the assumption that all assets in this class will require replacement at the end of their service life, the following graph forecasts capital requirements for Water infrastructure.



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 C.



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. See Appendix E for the criteria used to determine the risk rating of each asset.

Consequence	5	Low \$0	High \$34,373,878	Very High \$8,271,279	Very High \$6,507,197	Very High \$0
	4	Very Low \$0	Moderate \$10,222,708	High \$253,197	Very High \$100,102	Very High \$1,968,345
	3	Very Low \$3,458,072	Low \$3,805,797	Moderate \$5,516,293	High \$3,709,230	Very High \$13,579,998
	2	Very Low \$410,256	Very Low \$896,226	Low \$613,300	Moderate \$814,578	High \$580,419
	1	Very Low \$0	Very Low \$0	Very Low \$0	Very Low \$15,455	Low \$153,801
		1	2	3	4	5
		Probability				



Asset Prioritization List

The following table identifies the highest risk Water assets according to the risk criteria identified in Appendix E. The risk rating is calculated by multiplying the probability of failure and the consequence of failure for each asset. This is not meant to be a definitive list of how the Municipality should prioritize assets for rehabilitation and replacement. It is meant to be a decision-support tool that is supplemented by the knowledge and expertise of municipal staff when prioritizing capital needs. In some cases, assets may have a higher risk rating than expected due to a lack of available data (e.g., no assessed condition data).

Asset ID	Category	Name	Replacement Cost	Risk Rating
12156	Equipment	Zenon Filter #2	\$ 573,865.00	23.5
12157	Equipment	Zenon Filter #3	\$ 573,865.00	23.5
12195	Equipment	Zenon Filter #1	\$ 573,865.00	23.5
47	Building	Augusta Pumping Station	\$ 2,339,388.34	20
5322	Water Line	mwl487 - Cty Rd 2 (1337m)	\$ 859,307.00	20
49	Building	Iroquois Booster Station	\$ 4,167,808.40	20
12152	Equipment	Granular Activated Carbon (GAC) - #1	\$ 77,000.00	19
12153	Equipment	Granular Activated Carbon (GAC) - #2	\$ 77,000.00	19
12154	Equipment	Granular Activated Carbon (GAC) - #3	\$ 77,000.00	19
406	Equipment	Leak Detection Survey Instrument	\$ 15,586.00	19
401	Equipment	7 Z1000 Modules	\$ 12,545.00	19
400	Equipment	ABB Drive	\$ 11,468.00	19
405	Equipment	Chlorine Analyzer	\$ 5,666.00	19
399	Equipment	6" E&H electromagnetic flowmeter	\$ 5,511.00	19
403	Equipment	Fire Hydrant Indicators	\$ 5,262.00	19



Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS
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 D for map
	Description, which may include maps, of the user groups or areas of the Municipality that have fire flow	See Appendix D for map
Reliability	Description of boil water advisories and service interruptions	There were no boil water advisories issued in 2023. There were five water main breaks in 2023.

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
Scope	Percentage of properties connected to the municipal water system	37%
	Percentage of properties where fire flow is available	37%
Reliability	Number 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
	Number 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	0.00254



Recommendations

Risk Management Strategies

- This AMP includes a cursory review of risk and criticality. The Municipality should work towards developing a formal risk management process to inform project prioritization and lifecycle management strategies with the goal of minimizing risk. In the short term, staff should review the highest risk assets and establish appropriate risk mitigation strategies.

Lifecycle Management Strategies

- Identify the cost/benefit of optional lifecycle management strategies that may extend the life of water mains at a lower total cost of ownership. This may include the strategic use of structural pipe re-lining events and cathodic protection.

Levels of Service

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



Wastewater Network

Asset Inventory & Replacement Cost

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Municipality's Wastewater Network inventory. All replacement costs have been inflated to 2024 using monthly consumer price index (CPI) data from the Bank of Canada.

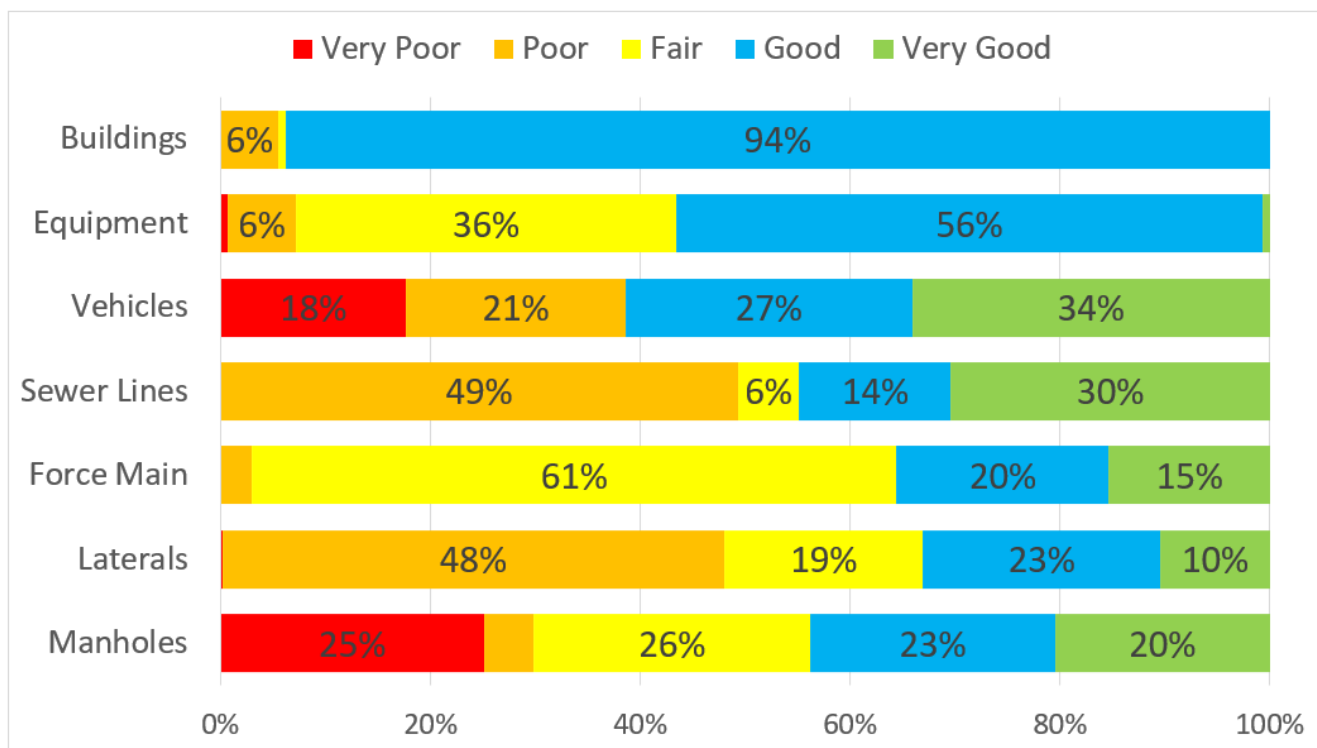
Category	Quantity	Replacement Cost Method	Total Replacement Cost
Buildings	6	User-Defined Costs	\$ 43,948,073
Equipment	21	User-Defined Costs	\$ 1,720,027
Vehicles	3	User-Defined Costs	\$ 155,499
Sewer Lines	44,600 (m)	User-Defined Costs	\$ 36,727,625
Force Main	2,500 (m)	User-Defined Costs	\$ 993,027
Laterals	21,000 (m)	CPI Tables - CPI Monthly (ON)	\$ 9,661,340
Manholes	539	User-Defined Costs	\$ 10,225,889
		Total:	\$ 103,431,480



Current Asset Condition

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

Asset Category	Average Condition (%)	Average Condition Rating	Condition Source
Buildings	76%	Good	Age-Based
Equipment	59%	Fair	Age-Based
Vehicles	57%	Fair	Age-Based
Sewer Lines	57%	Fair	Age-Based
Force Main	64%	Good	Age-Based
Laterals	50%	Fair	Age-Based
Manholes	52%	Fair	Age-Based
Average:	64%	Good	Age-Based



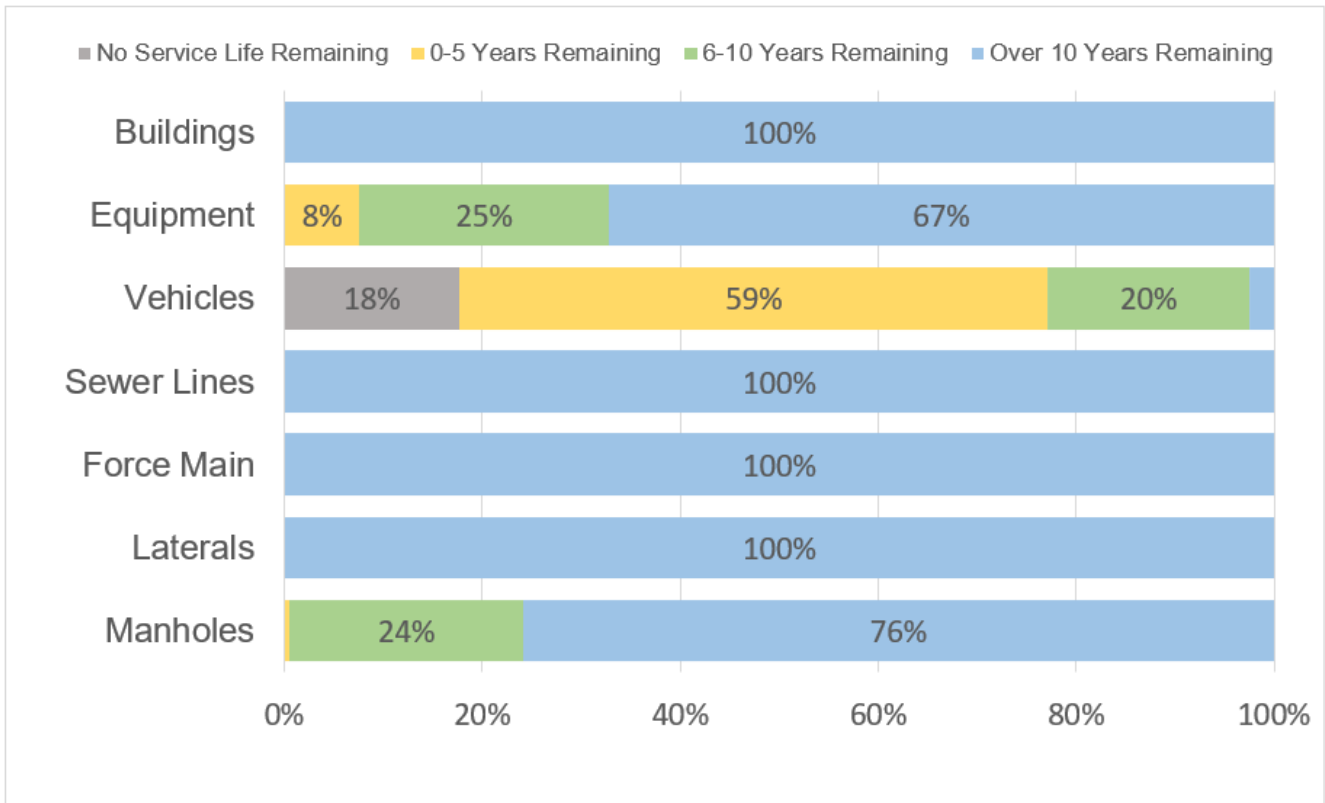
To ensure that the Municipality's Wastewater Network continues to provide an acceptable level of service, the Municipality should monitor the average condition of all assets within the wastewater network. If the average condition declines, staff should re-evaluate the lifecycle management strategy to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



Estimated Useful Life & Average Age

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

Asset Category	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Buildings	60/75	17.6	43.5
Equipment	10-25	11.8	12.5
Vehicles	6/10	5.3	1.9
Sewer Lines	100	45.1	54.2
Force Main	100	38.4	61.6
Laterals	100	52.6	49.9
Manholes	75	39.1	38.1
	Average:	32.9	45



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



Asset Management Strategies

Condition Assessment & Data Collection

- The Municipality of South Dundas completes closed-circuit television video (CCTV) & acoustic testing on a portion of sewer mains and laterals within the collection system regularly.
- Acoustic testing provides a rating that identifies the degree to which blockages are expected to be present. This data helps to inform further inspection (CCTV) and maintenance requirements.

Lifecycle Management Strategy

Operations & Maintenance

- The Manager of Water and Wastewater is responsible for operating and maintaining the wastewater collection and treatment system.
- Manholes with a high likelihood of failure or past blockages are inspected quarterly to ensure compliance with regulations mandated by the Ministry of the Environment.

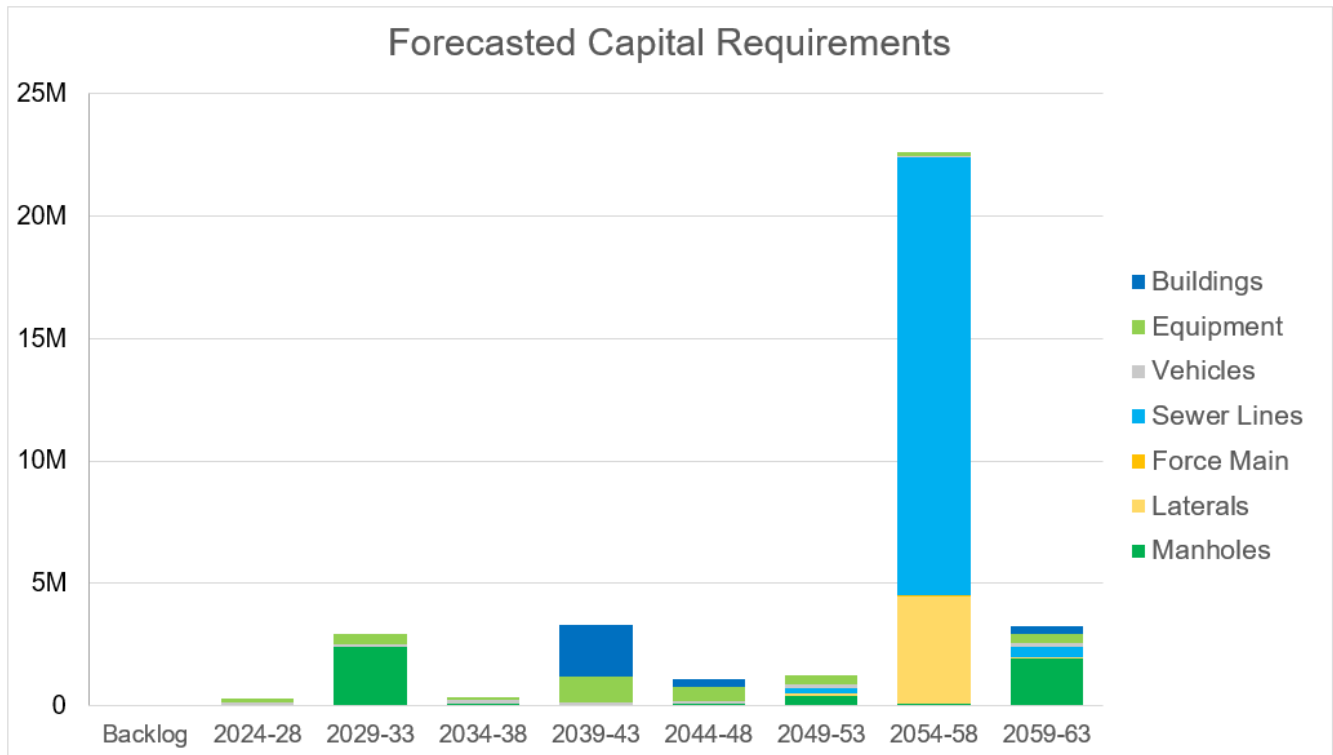
Rehabilitation & Replacement

- The rehabilitation and replacement of sewer mains depends on several variables including pipe age, material and any concerns relating to capacity.
- Rehabilitation and reconstruction projects are completed when they can be combined with other capital projects (e.g., water mains, roads) to minimize service disruptions.
- Capital projects are included in the 10-year capital plan.



Forecasted Capital Requirements

Based on the assumption that all assets in this class will require replacement at the end of their service life, the following graph forecasts capital requirements for Wastewater infrastructure.



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 C.



Risk & Criticality

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. See Appendix E for the criteria used to determine the risk rating of each asset.

Consequence	5	Low \$19,245,035	High \$21,966,083	Very High \$0	Very High \$2,083,903	Very High \$0
	4	Very Low \$7,274,651	Moderate \$529,806	High \$1,240,143	Very High \$2,774,469	Very High \$0
	3	Very Low \$3,528,528	Low \$4,462,655	Moderate \$4,476,090	High \$15,773,776	Very High \$189,112
	2	Very Low \$760,371	Very Low \$1,732,841	Low \$2,529,852	Moderate \$4,622,175	High \$16,101
	1	Very Low \$1,459,622	Very Low \$2,665,065	Very Low \$3,048,920	Very Low \$482,785	Low \$2,569,497
		1	2	3	4	5
		Probability				



Asset Prioritization List

The following table identifies the highest risk Wastewater assets according to the risk criteria identified in Appendix E. The risk rating is calculated by multiplying the probability of failure and the consequence of failure for each asset. This is not meant to be a definitive list of how the Municipality should prioritize assets for rehabilitation and replacement. It is meant to be a decision-support tool that is supplemented by the knowledge and expertise of municipal staff when prioritizing capital needs. In some cases, assets may have a higher risk rating than expected due to a lack of available data (e.g., no assessed condition data).

Asset ID	Category	Name	Replacement Cost	Risk Rating
49	Building	Iroquois Pumping Station	\$ 2,083,902.51	20
393	Equipment	Williamsburg PS SCADA	\$ 38,396.00	19
394	Equipment	Generator for Wmbg Sewer	\$ 25,173.00	19
395	Equipment	Generator for Wmbg Sewer	\$ 54,869.00	19
410	Equipment	Simplex Pump Panel	\$ 11,539.00	19
411	Equipment	Generator	\$ 709.00	19
12151	Equipment	Lagoon Discharge Valves	\$ 30,926.00	19
1437	Sewer Line	Isl126 (218m)	\$ 161,587.00	16.4
1438	Sewer Line	Isl127 (159m)	\$ 117,075.00	16.4
1510	Sewer Line	Msl201 (72m)	\$ 136,502.00	16.4
1511	Sewer Line	Msl202 (79m)	\$ 149,547.00	16.4
1512	Sewer Line	Msl203 (72m)	\$ 137,447.00	16.4
1513	Sewer Line	Msl204 (89m)	\$ 168,075.00	16.4
1514	Sewer Line	Msl205 (98m)	\$ 184,901.00	16.4
1515	Sewer Line	Msl206 (95m)	\$ 180,363.00	16.4

Levels of Service

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



Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS
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 D for map
Reliability	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes	The Municipality does not own any combined sewers.
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	The Municipality does not own any combined sewers.
	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	Stormwater can enter sanitary sewers due to cracks in sanitary mains or through indirect connections (e.g., weeping tiles). In the case of heavy rainfall events, sanitary sewers may experience a volume of water and sewage that exceeds its designed capacity. In some cases, this can cause water and/or sewage to overflow into streets or backup into homes. The disconnection of eavestroughs and weeping tiles through downspouts as an alternative can help to reduce the chance of this occurring.
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	The Municipality follows a series of design standards that integrate servicing requirements and land use considerations when constructing or replacing sanitary sewers. These standards have been determined with consideration of the minimization of sewage overflows and backups. Newer sanitary mains are made of gasketed PVC piping to reduce potential leaks occurring between fitted pipe segments.
	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 that meet or are below ministry standard. The Environmental Compliance Approval (ECA) identifies the effluent criteria for municipal wastewater treatment plants.



Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS
Scope	Percentage of properties connected to the municipal wastewater system	35%
Reliability	Number 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
	Number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system	0
	Number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0



Recommendations

Risk Management Strategies

- This AMP includes a cursory review of risk and criticality. The Municipality should work towards developing a formal risk management process to inform project prioritization and lifecycle management strategies with the goal of minimizing risk. In the short term, staff should review the highest risk assets and establish appropriate risk mitigation strategies.

Lifecycle Management Strategies

- Identify the cost/benefit of optional lifecycle management strategies that may extend the life of sanitary mains at a lower total cost of ownership. This may include the strategic use of structural pipe re-lining events.

Levels of Service

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



Impacts of Growth

Planning for forecasted population growth will require the expansion of existing infrastructure and services. As growth-related assets are constructed or acquired, they should be integrated into the Municipality's AMP. The following information is from the 2016 and 2021 census completed by Statistics Canada.

Year	Single and Semi Detached	Other	Total Units	Total Population
2016	3,930	625	4,555	10,833
2021	4,050	600	4,650	11,044
2024	4,125	600	4,725	11,174
2029	4,253	600	4,852	11,393
2034	4,384	600	4,984	11,617
2039	4,520	600	5,120	11,845
5-year change	128	-	128	219
10-year change	259	-	259	443
20-year change	535	-	535	904



Financial Strategy

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

This financial strategy includes recommendations that may avoid long-term funding deficits.



Financial Strategy Overview

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

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

Note: Periodic grants are normally not included due to Provincial requirements for firm commitments. However, if moving a specific project forward is 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 results in a funding shortfall, the province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the province may evaluate a Municipality's approach to the following:

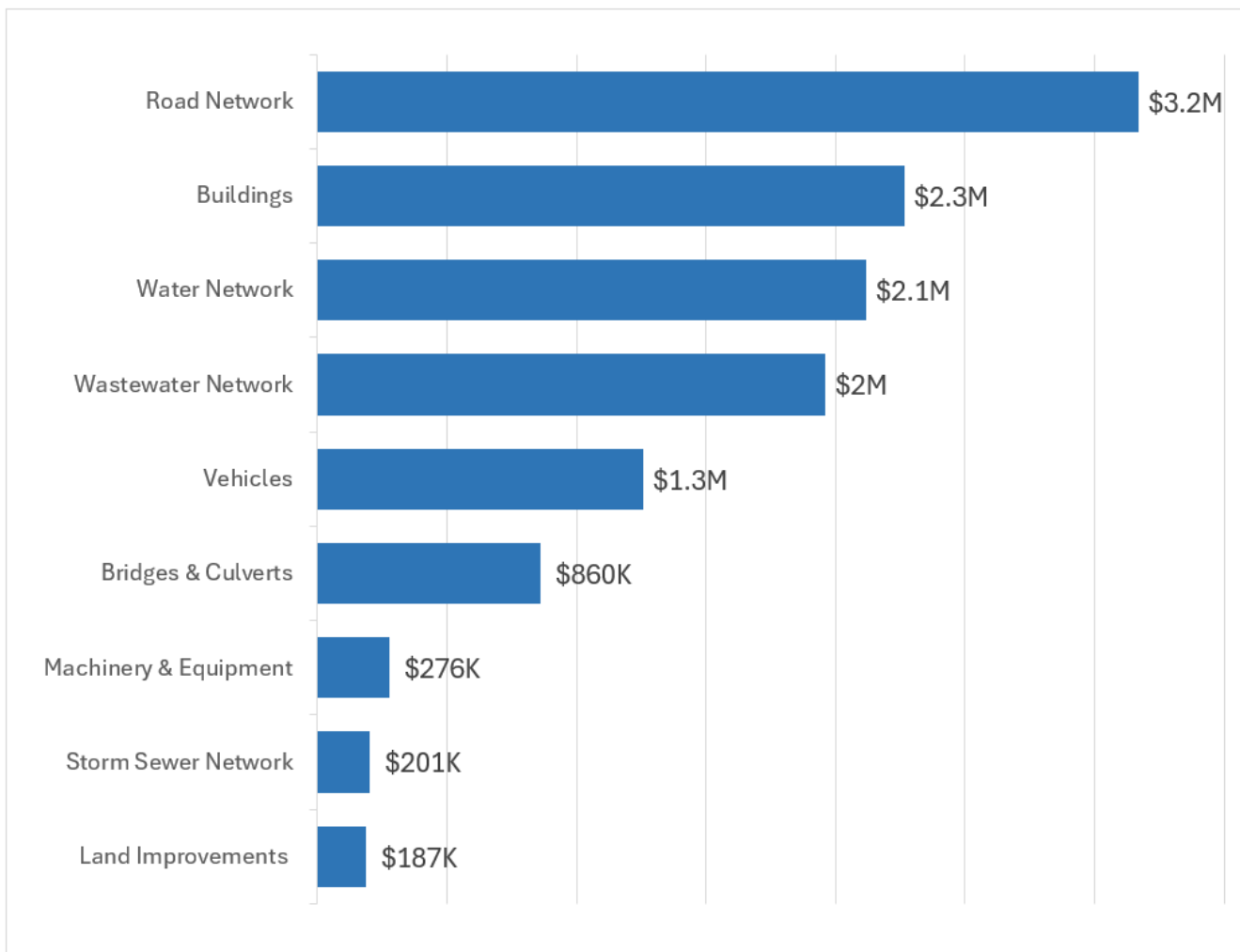
1. To reduce financial requirements, consideration has been given to revising service levels downward.
2. All asset management and financial strategies have been considered. For example:
 - a. If a zero-debt policy is in place, is it warranted? If not, the use of debt should be considered.
 - b. Do user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



Annual Requirements & Capital Funding

Annual Requirements

The annual requirements represent the amount the Municipality should allocate annually to each asset category to meet replacement needs, prevent infrastructure backlogs, and achieve long-term sustainability. In total, the Municipality would need to allocate approximately \$12.3 million annually to address capital requirements for the assets included in this AMP. The following graph shows each asset category's annual requirement based on current levels of service.

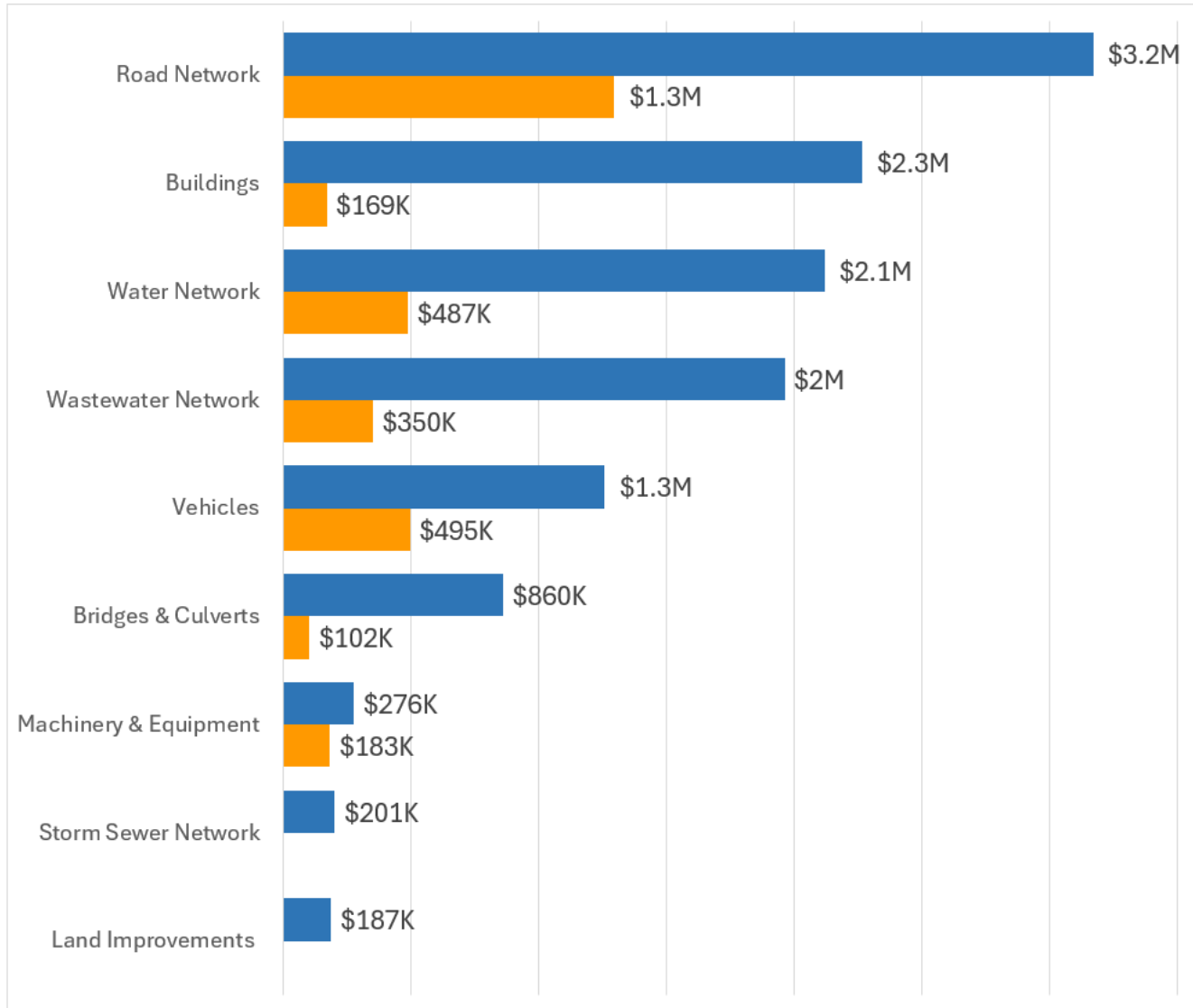


For some asset categories the annual requirement has been calculated based on a “replacement only” scenario, in which capital costs are only incurred at the construction and replacement of each asset.



Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Municipality is committing approximately \$3,081,264 towards capital projects per year. Given the annual capital requirement of \$12,298,798, there is currently a funding gap of \$9,217,534 annually. The following graph illustrates the difference between the Municipality's target annual requirement and the annual funding allocated to capital projects for all core and non-core asset categories.





Funding Objective

We have developed two scenarios that would enable South Dundas to achieve full funding within 10 to 20 years for the following assets:

1. Tax Funded Assets: Bridges & Culverts, Road Network, Storm Sewer Network, Buildings, Vehicles, Machinery & Equipment and Land Improvements
2. Rate Funded Assets: Water and Wastewater Networks

Note: The Matilda Landfill has been excluded from this AMP because of the uncertainty of the landfill's effective life remaining. The municipality expects to receive more information regarding the landfill's current condition in the next few years. The municipality does not plan to replace this asset, but closing costs and annual monitoring should be included in South Dundas' 10-year capital plan for proposed levels of service in 2025.

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



Financial Profile: Tax Funded Assets

Current Funding Position

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

Asset Category	Average Annual Investment Required	Annual Funding Available					Annual (Deficit) / Surplus
		Tax Levy for Capital Projects	Gas Tax (CCBF)	OCIF	To Reserves	Total Funding Available for Capital Projects	
Road Network	\$3,169,863	\$203,138	\$347,225	\$588,108	\$157,394	\$1,295,865	(\$1,873,998)
Bridges & Culverts	\$860,069	\$0	\$0	\$0	\$102,000	\$102,000	(\$758,069)
Storm Sewer Network	\$201,446	\$0	\$0	\$0	\$0	\$0	(\$201,446)
Machinery & Equipment	\$275,946	\$92,676	\$0	\$0	\$90,000	\$182,676	(\$93,270)
Vehicles	\$1,258,187	\$0	\$0	\$0	\$495,000	\$495,000	(\$763,187)
Buildings	\$2,265,630	\$169,054	\$0	\$0	\$0	\$169,054	(\$2,096,576)
Land Improvements	\$186,833	\$0	\$0	\$0	\$0	\$0	(\$186,833)
Total	\$8,217,974	\$464,868	\$347,225	\$588,108	\$844,394	\$2,244,595	(\$5,973,379)

The average annual investment requirement for the above categories is \$8,217,974. Annual revenue currently allocated to these assets for capital purposes is \$2,244,595, or 27% of the requirement, which leaves an annual funding deficit of \$5,973,379.

Full Funding Requirements

In 2024, the Municipality of South Dundas has \$8,811,024 in budgeted annual tax revenue. To cover the annual deficit, the road network requires an increase of \$1,873,998, and bridges & culverts require an increase of \$758,069 in the total funding available for capital projects.



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

- a) South Dundas' formula based OCIF grant is expected to remain at \$588,108 in 2025.
- b) South Dundas' debt payments for tax funded asset categories will decrease by \$124,287 over the next 5 years and by \$1,173,015 over the next 10 years. Over the next 15 years, debt payments are expected to decrease by \$3,354,951.

The changes noted above should be considered in reference to the infrastructure deficit. The charts below project the impacts of those changes over the short and medium term:

Tax Funded Assets	Current	2029	2034	2039	2044
Infrastructure Deficit	\$5,973,379	\$6,924,783	\$8,027,722	\$9,306,330	\$10,788,587
Change in Debt in Year	\$0	-\$170,075	-\$549,319	-\$701,408	-\$701,408
Resulting Deficit	\$5,973,379	\$6,754,708	\$7,478,402	\$8,604,922	\$10,087,179
Expected Tax Levy (Average 3% increase per year)	\$8,811,024	\$10,214,392	\$11,841,279	\$13,727,288	\$15,913,689
Target Tax Levy with Current LOS	\$14,784,403	\$16,969,100	\$19,319,682	\$22,332,210	\$26,000,868
Recommended Additional Annual Rate Increase for Asset Management	67.8%	10.9%	5.2%	3.4%	2.6%

	Considering the Changes				Without Considering Changes			
	Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 1-5	Years 6-10	Years 11-15	Years 16-20
Infrastructure Deficit	\$31,713,479	\$36,764,614	\$42,620,264	\$49,408,567	\$31,713,479	\$36,764,614	\$42,620,264	\$49,408,567
Change in Debt Costs	-\$124,287	-\$1,173,015	-\$3,354,951	-\$3,507,040	\$0	\$0	\$0	\$0
Resulting Infrastructure Deficit	\$31,589,192	\$35,591,599	\$39,265,313	\$45,901,527	\$31,713,479	\$36,764,614	\$42,620,264	\$49,408,567
Resulting Tax Increase Required	67.53%	65.63%	62.46%	62.98%	67.79%	67.79%	67.79%	67.79%
Annually:	10.9%	5.2%	3.4%	2.6%	11.2%	5.5%	3.6%	2.7%



Financial Strategy Recommendations

Assuming the Municipality of South Dundas experiences an average annual increase of 3% to its tax levy, there are three options available for phase in periods and resulting additional tax levy increases required per year to achieve full funding for tax funded assets.

Option 1: Increase tax levy by 5.2% per year for 10 years to reach 2034's expected levy requirement of \$19,319,682.

Option 2: Increase tax levy by 3.4% per year for 15 years to reach 2039's expected levy requirement of \$22,332,210.

Option 3: Increase tax levy by 2.6% per year for 20 years to reach 2044's expected levy requirement of \$26,000,868.

Considering the above information, the 15-year option could achieve full funding by:

- a) reallocating the debt cost reductions to the infrastructure deficit,
- b) increasing tax revenue by 3.4% in each of the next 15 years for the sole 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) reallocating funding revenue from other asset categories to fund those in a deficit position, and
- f) increasing future infrastructure budgets to account for the annual inflation index in addition to the phase-in model.

Notes:

1. As in the past, periodic senior government infrastructure funding may 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.
2. While increasing tax revenue to fund infrastructure by the amounts presented may prove difficult, an extended phase-in period could result in consequences in terms of infrastructure failure.



Although this option could achieve full funding in 15 years and provide financial stability periods identified, the recommendations will need capital projects to be prioritized to fit the annual funding envelope.

Current data shows backlog of \$9,861,240 for all tax funded assets.

Prioritizing future projects will require the current data to be replaced by condition-based data.



Financial Profile: Rate Funded Assets

Current Funding Position

The following table shows, by asset category, the municipality of South Dundas' average annual capital requirements, current funding positions and funding increases required to achieve full funding on the assets funded by user rates.

Asset Category	Average Annual Investment Required	Annual Funding Available				Annual (Deficit) / Surplus
		Rate Revenues	Reserve & External Funding	Less: Allocated to Operations	Total Funding Available for Capital Projects	
Water Network	\$2,118,720	\$1,631,316	\$577,036	\$1,721,506	\$486,846	(\$1,631,874)
Wastewater Network	\$1,962,104	\$1,348,748	\$240,385	\$1,239,310	\$349,823	(\$1,612,281)
Total	\$4,080,824	\$2,980,064	\$817,421	\$2,960,816	\$836,669	(\$3,244,155)

The average annual investment requirement for the Water and Wastewater Networks is \$4,080,824. Annual rate revenue currently allocated to these assets for capital purposes is \$836,669 or 21% of the requirement. This results in an annual deficit of \$3,244,155.

Full Funding Requirements

In 2024, South Dundas has budgeted for total water revenue of \$1,631,316 and wastewater revenue of \$1,348,748. The rate increase required to cover the annual deficit for the water network would be 100% and the wastewater network would require an increase of 120%.



The following changes in debt charges over the next 20 years should also be considered in the financial strategy:

- a) South Dundas' debt payments for the Water Network will decrease by \$204,210 over the next 5 years, by \$1,850,795 over the next 10 years, by \$2,055,395 over the next 15 years and by \$2,259,995 over the next 20 years.
- b) South Dundas' debt payments for the Wastewater Network will decrease by \$165,075 over the next 10 years and decrease by \$242,814 over the next 20 years.

In the following tables, we have expanded the above scenario to present multiple options.

Water Network	Current	2029	2034	2039	2044
Infrastructure Deficit	\$1,631,874	\$1,891,789	\$2,193,102	\$2,542,406	\$2,947,345
Change in Debt in Year	\$0	-\$370,159	-\$370,159	-\$451,999	-\$451,999
Resulting Deficit	\$1,631,874	\$1,521,630	\$1,822,943	\$2,090,407	\$2,495,346
Expected Rate Revenues (Average 3% increase per year)	\$1,631,316	\$1,891,142	\$2,192,352	\$2,541,537	\$2,946,338
Target Rate Revenue with Current LOS	\$3,263,190	\$3,412,772	\$4,015,295	\$4,631,944	\$5,441,684
Recommended Additional Annual Rate Increase for Asset Management	100%	12.8%	6.4%	4.2%	3.2%

Wastewater Network	Current	2029	2034	2039	2044
Infrastructure Deficit	\$1,612,281	\$1,869,076	\$2,166,771	\$2,511,882	\$2,911,959
Change in Debt in Year	\$0	-\$33,015	-\$33,015	-\$33,015	-\$71,885
Resulting Deficit	\$1,612,281	\$1,836,061	\$2,133,757	\$2,478,867	\$2,840,074
Expected Rate Revenues (Average 3% increase per year)	\$1,348,748	\$1,563,569	\$1,812,605	\$2,101,305	\$2,435,989
Target Rate Revenue with Current LOS	\$2,961,029	\$3,399,629	\$3,946,361	\$4,580,172	\$5,276,063
Recommended Additional Annual Rate Increase for Asset Management	119.5%	17.2%	8.3%	5.5%	4.1%



	Water Network				Wastewater Network			
	Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 1-5	Years 6-10	Years 11-15	Years 16-20
Infrastructure Deficit	\$8,663,839	\$10,043,764	\$11,643,475	\$13,497,979	\$8,559,820	\$9,923,177	\$11,503,682	\$13,335,921
Change in Debt Costs	-\$204,210	-\$1,850,795	-\$2,055,395	-\$2,259,995	\$0	-\$165,075	-\$165,073	-\$242,814
Resulting Infrastructure Decifit	\$8,459,629	\$8,192,969	\$9,588,080	\$11,237,984	\$8,559,820	\$9,758,102	\$11,338,609	\$13,093,107
Resulting Rate Increase Required	97.7%	81.6%	82.4%	83.3%	119.5%	117.6%	117.8%	117.4%
Annually:	12.8%	6.4%	4.2%	3.2%	17.2%	8.3%	5.5%	4.1%

	Water Network				Wastewater Network			
	Years 1-5	Years 6-10	Years 11-15	Years 16-20	Years 1-5	Years 6-10	Years 11-15	Years 16-20
Infrastructure Deficit	\$8,663,839	\$10,043,764	\$11,643,475	\$13,497,979	\$8,559,820	\$9,923,177	\$11,503,682	\$13,335,921
Resulting Rate Increase Required	100.03%	100.03%	100.03%	100.03%	119.54%	119.54%	119.54%	119.54%
Annually:	15.2%	7.4%	4.9%	3.6%	17.4%	8.4%	5.5%	4.1%



Financial Strategy Recommendations

Assuming the Municipality of South Dundas experiences an average annual increase of 3% to its rate revenue, there are three options available for phase in periods and resulting additional rate revenue increases required per year to achieve full funding for rate funded assets.

Option 1: Increase rate revenue by 7.3% per year for 10 years. This includes a 6.4% increase for water service revenue and a 8.3% increase for wastewater service revenue. This option would allow the Municipality to reach 2034's expected rate revenue requirement of \$4,015,295 for water services and \$3,946,361 for wastewater services.

Option 2: Increase rate revenue by 4.8% per year for 15 years. This includes a 4.2% increase for water service revenue and a 5.5% increase for wastewater service revenue. This option would allow the Municipality to reach 2039's expected rate revenue requirement of \$4,631,944 for water services and \$4,580,172 for wastewater services.

Option 3: Increase rate revenue by 3.6% per year for 20 years. This includes a 3.2% increase for water service revenue and a 4.1% increase for wastewater service revenue. This option would allow the Municipality to reach 2044's expected rate revenue requirement of \$5,441,684 for water services and \$5,276,063 for wastewater services.

Considering all the above information, the 15-year option is recommended. This involves full funding being achieved over 15 years by:

- a) when realized, reallocating the debt cost reductions for water services to the infrastructure deficit.
- b) increasing rate revenue by 4.2% for water services and 5.5% for wastewater services in each of the next 15 years for the sole purpose of phasing in full funding for these asset categories.
- c) increasing future infrastructure budgets to account for the annual inflation index in addition to the phase-in model.



Notes:

1. As in the past, periodic senior government infrastructure funding may 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. While increasing user rates to fund infrastructure by the amounts presented may prove difficult, an extended phase-in period could result in 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 could achieve full funding in 15 years and provide financial stability over the periods identified, the recommendations will need capital projects to be prioritized to fit the annual funding envelopes.

Current data shows an infrastructure backlog of \$1,700,223 for the Water Network.

Prioritizing future projects will require the current data to be replaced by condition-based data.



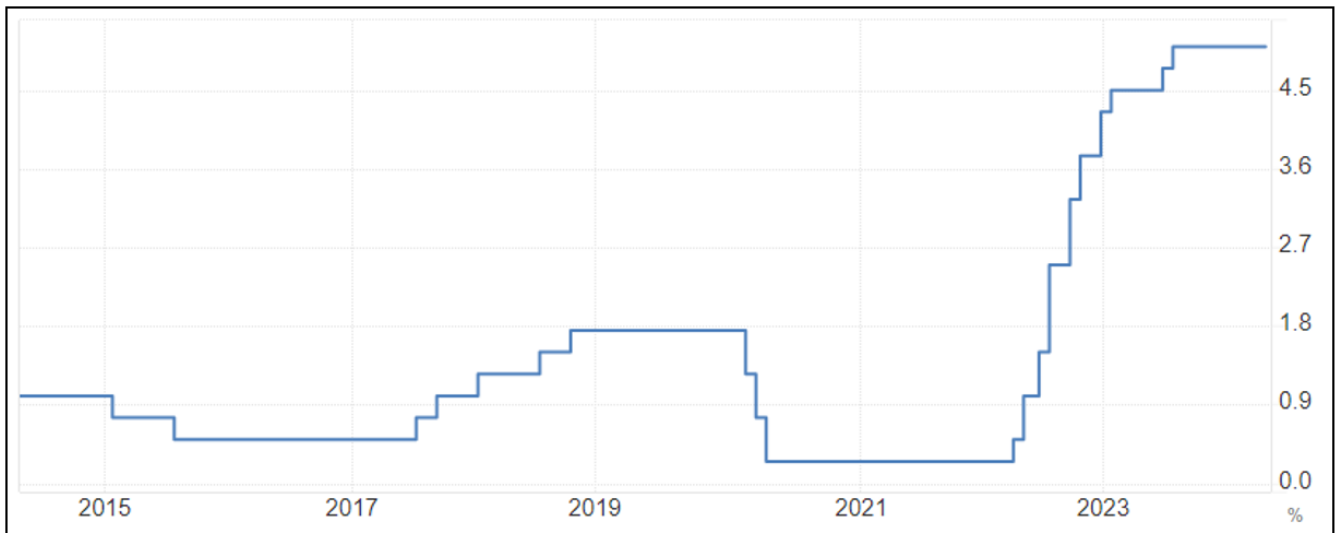
Use of Debt

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% over 10 years would result in a 15.87% premium or \$158,700 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.

Premium Paid to Borrow (Interest Cost)						
Interest Rate	Number of Years Financed					
	5	10	15	20	25	30
8.0%	21.66%	45.59%	72.02%	100.75%	131.54%	164.16%
7.5%	20.23%	42.44%	66.86%	93.34%	121.70%	151.72%
7.0%	18.81%	39.33%	61.79%	86.07%	112.03%	139.51%
6.5%	17.40%	36.26%	56.80%	78.94%	102.56%	127.54%
6.0%	16.00%	33.22%	51.89%	71.94%	93.29%	115.84%
5.5%	14.61%	30.23%	47.08%	65.09%	84.23%	104.40%
5.0%	13.23%	27.28%	42.34%	58.39%	75.38%	93.26%
4.5%	11.86%	24.37%	37.70%	51.84%	66.75%	82.41%
4.0%	10.50%	21.49%	33.14%	45.44%	58.35%	71.87%
3.5%	9.15%	18.66%	28.68%	39.19%	50.19%	61.66%
3.0%	7.81%	15.87%	24.30%	33.10%	42.26%	51.78%
2.5%	6.48%	13.12%	20.02%	27.18%	34.59%	42.24%
2.0%	5.17%	10.42%	15.83%	21.41%	27.16%	33.06%
1.5%	3.86%	7.75%	11.73%	15.81%	19.98%	24.24%
1.0%	2.56%	5.12%	7.73%	10.37%	13.06%	15.79%
0.5%	1.28%	2.54%	3.82%	5.10%	6.40%	7.71%
0.0%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%



It should be noted that interest rates have trended upwards from near all-time lows, but now seem to have stabilized. 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:





Historical Debt Usage

The following tables outline how South Dundas has historically used debt for investing in the asset categories as listed. There is currently outstanding core and non-core infrastructure debt of \$7,739,898 (\$5,347,412 in tax funded assets and \$2,392,486 in rate funded assets) with principal and interest payments of \$8,735,538 over the next 10 years.

Asset Category	Current Debt Outstanding	Debt Payments in the Last Five Years				
		2019	2020	2021	2022	2023
Road Network	\$883,498	\$199,247	\$195,726	\$192,027	\$188,417	\$184,807
Bridges & Culverts	\$304,931	\$0	\$0	\$0	\$0	\$41,146
Storm Sewer Network	\$0	\$0	\$0	\$0	\$0	\$0
Machinery & Equipment	\$0	\$0	\$0	\$0	\$0	\$0
Vehicles	\$0	\$0	\$0	\$0	\$0	\$0
Buildings	\$2,666,827	\$383,859	\$375,489	\$366,428	\$357,712	\$348,997
Land Improvements	\$1,492,156	\$0	\$0	\$138,484	\$138,484	\$138,484
Total Tax Funded:	\$5,347,412	\$583,106	\$571,215	\$696,939	\$684,613	\$713,434
Water Network	\$1,841,687	\$419,688	\$409,978	\$440,753	\$471,745	\$461,818
Wastewater Network	\$550,799	\$0	\$0	\$0	\$71,885	\$71,885
Total Rate Funded:	\$2,392,486	\$419,688	\$409,978	\$440,753	\$543,630	\$533,703
Total Tax and Rate Funded:	\$7,739,898	\$1,002,793	\$981,193	\$1,137,692	\$1,228,244	\$1,247,137



Current Principal & Interest Payments

Asset Category	Principal & Interest Payments (2024-2033)									
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Road Network	\$181,247	\$177,588	\$173,978	\$170,368	\$166,768	\$55,000	\$55,000	\$0	\$0	\$0
Bridges & Culverts	\$41,146	\$41,146	\$41,146	\$41,146	\$41,146	\$41,146	\$41,146	\$41,146	\$41,146	\$0
Storm Sewer Network	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Machinery & Equipment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Vehicles	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Buildings	\$340,531	\$331,566	\$322,850	\$314,134	\$305,573	\$296,703	\$258,590	\$279,272	\$270,615	\$261,841
Land Improvements	\$138,484	\$138,484	\$138,484	\$138,484	\$138,484	\$138,484	\$138,484	\$138,484	\$138,484	\$138,484
Total Tax Funded:	\$701,408	\$688,784	\$676,458	\$664,132	\$651,971	\$531,333	\$493,220	\$458,902	\$450,245	\$400,325
Water Network	\$451,999	\$441,963	\$432,035	\$422,108	\$307,680	\$81,840	\$81,840	\$81,840	\$81,840	\$81,840
Wastewater Network	\$71,885	\$71,885	\$71,885	\$71,885	\$71,885	\$38,870	\$38,870	\$38,870	\$38,870	\$38,870
Total Rate Funded:	\$523,884	\$513,848	\$503,920	\$493,993	\$379,565	\$120,710	\$120,710	\$120,710	\$120,710	\$120,710
Total Tax and Rate Funded:	\$1,225,292	\$1,202,632	\$1,180,378	\$1,158,125	\$1,031,536	\$652,043	\$613,930	\$579,612	\$570,955	\$521,035



Use of Reserves

Available Reserves

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

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

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

Asset Category	Balance at December 31, 2023
Road Network, Bridges & Culverts, Storm Sewer Network	\$807,975
Machinery & Equipment	\$0
Vehicles	\$1,089,730
Buildings	\$468,342
Land Improvements	\$661,132
Total Tax Funded:	\$3,027,179
Water Network	\$1,191,164
Wastewater Network	\$2,492,518
Total Rate Funded:	\$3,683,682



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

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

These reserves are available for use by applicable asset categories during the phase-in period to full funding. This coupled with South Dundas' 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.

Recommendation

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



Appendices



Overall Grade D	Appendix A: Infrastructure Report Card						
Asset Category	Asset Health (Condition)			Financial Capacity			Overall Grade
Road Network	Grade	Condition Ratings		Grade	Current Financial Capacity		C
	B	Very Good	32%	C	Annual Requirement:	\$3,169,863	
		Good	16%		Funding Available:	\$1,295,865	
		Fair	21%		Deficit:	\$1,873,998	
		Poor	25%				
		Very Poor	6%				
Asset Category	Asset Health (Condition)			Financial Capacity			Overall Grade
Bridges & Culverts	Grade	Condition Ratings		Grade	Current Financial Capacity		D
	B	Very Good	5%	F	Annual Requirement:	\$860,069	
		Good	58%		Funding Available:	\$102,000	
		Fair	21%		Deficit:	\$758,069	
		Poor	16%				
		Very Poor	0%				
Asset Category	Asset Health (Condition)			Financial Capacity			Overall Grade
Storm Sewer Network	Grade	Condition Ratings		Grade	Current Financial Capacity		D
	B	Very Good	26%	F	Annual Requirement:	\$201,446	
		Good	24%		Funding Available:	\$0	
		Fair	10%		Deficit:	\$201,446	
		Poor	36%				
		Very Poor	4%				
Asset Category	Asset Health (Condition)			Financial Capacity			Overall Grade
Water Network	Grade	Condition Ratings		Grade	Current Financial Capacity		C
	B	Very Good	6%	D	Annual Requirement:	\$2,118,720	
		Good	50%		Funding Available:	\$486,846	
		Fair	14%		Deficit:	\$1,631,874	
		Poor	12%				
		Very Poor	18%				
Asset Category	Asset Health (Condition)			Financial Capacity			Overall Grade
Wastewater Network	Grade	Condition Ratings		Grade	Current Financial Capacity		D
	B	Very Good	14%	F	Annual Requirement:	\$1,962,104	
		Good	50%		Funding Available:	\$349,823	
		Fair	8%		Deficit:	\$1,612,281	
		Poor	25%				
		Very Poor	3%				



Overall Grade D	Appendix A: Infrastructure Report Card						
Asset Category	Asset Health (Condition)			Financial Capacity			Overall Grade
Buildings	Grade	Condition Ratings		Grade	Current Financial Capacity		D
	C	Very Good	26%	F	Annual Requirement:	\$2,265,631	
		Good	10%		Funding Available:	\$169,054	
		Fair	2%		Deficit:	\$2,096,577	
		Poor	11%				
		Very Poor	51%				
Asset Category	Asset Health (Condition)			Financial Capacity			Overall Grade
Vehicles	Grade	Condition Ratings		Grade	Current Financial Capacity		C
	C	Very Good	10%	C	Annual Requirement:	\$1,258,187	
		Good	18%		Funding Available:	\$495,000	
		Fair	30%		Deficit:	\$763,187	
		Poor	21%				
		Very Poor	22%				
Asset Category	Asset Health (Condition)			Financial Capacity			Overall Grade
Machinery & Equipment	Grade	Condition Ratings		Grade	Current Financial Capacity		C
	C	Very Good	6%	B	Annual Requirement:	\$275,946	
		Good	26%		Funding Available:	\$182,676	
		Fair	4%		Deficit:	\$93,270	
		Poor	16%				
		Very Poor	47%				
Asset Category	Asset Health (Condition)			Financial Capacity			Overall Grade
Land Improvements	Grade	Condition Ratings		Grade	Current Financial Capacity		F
	D	Very Good	9%	F	Annual Requirement:	\$186,833	
		Good	11%		Funding Available:	\$0	
		Fair	10%		Deficit:	\$186,833	
		Poor	9%				
		Very Poor	61%				



Appendix B: Infrastructure Report Card Description

Current Financial Capacity		A Municipality's financial capacity grade is determined by the level of funding available (0-100%) for each asset category for the purpose of meeting the average annual investment requirements.
Asset Health		Using either field inspection data as available or age-based data, the asset health component of the report card uses condition (0-100%) to estimate how capable assets are in performing their required functions. We use replacement cost to determine the weight of each condition group within the asset category.
Letter Grade	Rating	Description
A	Very Good	The asset is functioning and performing well; only normal preventive maintenance is required. The Municipality is fully prepared for its long-term replacement needs based on its existing infrastructure portfolio.
B	Good	The Municipality is well prepared to fund its long-term replacement needs but requires additional funding strategies in the short-term to begin to increase its reserves.
C	Fair	The asset's performance or function has started to degrade, and repair/rehabilitation is required to minimize lifecycle cost. The Municipality is underpreparing to fund its long-term infrastructure needs. The replacement of assets in the short- and medium-term will be deferred to future years.
D	Poor	The asset's performance and function metrics are below the desired level and immediate repair/rehabilitation is required. The Municipality is not well prepared to fund its replacement needs in the short-, medium- or long- term. Asset replacements will be deferred, and levels of service may be reduced.
F	Very Poor	The Municipality is significantly underfunding its short-term, medium-term, and long-term infrastructure requirements based on existing funds allocation. Asset replacements will be deferred indefinitely. The Municipality may have to divest some of its assets (e.g., bridge closures, arena closures) and levels of service will be reduced significantly.



Letter Grade	Rating	Description
A	Excellent	Asset is new or recently rehabilitated
B	Good	Asset is no longer new but is fulfilling its function. Preventive maintenance is beneficial at this stage.
C	Fair	Deterioration is evident but asset continues to full its function. Preventive maintenance is beneficial at this stage.
D	Poor	Significant deterioration is evident, and service is at risk.
F	Very Poor	Asset is beyond expected life and has deteriorated to the point that it may no longer be fit to fulfill its function.



Letter Grade	Rating	Funding percent	Timing Requirements	Description
A	Excellent	90-100 percent	<input checked="" type="checkbox"/> Short Term <input checked="" type="checkbox"/> Medium Term <input checked="" type="checkbox"/> Long Term	The Municipality is fully prepared for its short-, medium- and long-term replacement needs based on existing infrastructure portfolio.
B	Good	75-89 percent	<input checked="" type="checkbox"/> Short Term <input checked="" type="checkbox"/> Medium Term <input type="checkbox"/> Long Term	The Municipality is well-prepared to fund its short-term and medium-term replacement needs but requires additional funding strategies in the long-term to begin to increase its reserves.
C	Fair	60-74 percent	<input checked="" type="checkbox"/> Short Term <input type="checkbox"/> Medium Term <input type="checkbox"/> Long Term	The Municipality is underprepared to fund its medium- to long- term infrastructure needs. The replacement of assets in the medium-term will be deferred to future years.
D	Poor	40-59 percent	<input type="checkbox"/> Short Term <input type="checkbox"/> Medium Term <input type="checkbox"/> Long Term	The Municipality is not well prepared to fund its replacement needs in the short-, medium- or long-term. Asset replacements will be deferred, and levels of service may be reduced.
F	Very Poor	0-39 percent	<input type="checkbox"/> Short Term <input type="checkbox"/> Medium Term <input type="checkbox"/> Long Term	The Municipality is significantly underfunding its short-term, medium-term, and long-term infrastructure requirements based on existing funds allocation. Asset replacements will be deferred indefinitely. The Municipality may have to divest some of its assets (e.g., bridge closures, arena closures) and levels of service will be reduced significantly.



Asset Category	Appendix C: 10-Year Capital Requirements (Tax-Funded Assets)											
Road Network	Backlog	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Asphalt Surface Roads	\$ -	\$ 212,568	\$ 237,328	\$ 3,303,283	\$ 34,250	\$ 34,250	\$ 2,294,115	\$ 34,250	\$ 57,682	\$ 3,680,345	\$ 34,250	\$ 256,638
Surface Treated Roads	\$ -	\$ 599,119	\$ 849,061	\$ 109,233	\$ 1,069,010	\$ 1,393,934	\$ 1,101,502	\$ 380,878	\$ 2,421,712	\$ 34,250	\$ 2,678,755	\$ 492,694
Road Base	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Gravel Roads (Winter Maintained)	\$ 229,752	\$ 198,387	\$ 4,166	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 428,139
Gravel Roads (Non-Winter Maintained)	\$ 471,758	\$ 84,825	\$ 84,825	\$ 128,866	\$ 84,825	\$ 84,825	\$ 84,825	\$ 84,825	\$ 84,825	\$ 84,825	\$ 84,825	\$ 84,825
Streetlights	\$ 2,454	\$ -	\$ -	\$ -	\$ 1,288,381	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 547,400
Sidewalks	\$ 120,758	\$ -	\$ -	\$ -	\$ 12,138	\$ -	\$ 319,441	\$ 12,138	\$ -	\$ -	\$ 12,138	\$ 1,887,075
Guide Rail	\$ 215,659	\$ -	\$ -	\$ 47,355	\$ -	\$ 119,302	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Road Network	\$ 1,040,381	\$ 1,094,898	\$ 1,175,380	\$ 3,588,737	\$ 2,488,604	\$ 1,632,311	\$ 3,799,883	\$ 512,091	\$ 2,564,219	\$ 3,799,420	\$ 2,809,968	\$ 3,696,771
Buildings	Backlog	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Administration	\$ -	\$ 24,000	\$ 24,000	\$ 24,000	\$ 24,000	\$ 24,000	\$ 24,000	\$ 24,000	\$ 24,000	\$ 24,000	\$ 156,500	\$ 24,000
Fire	\$ -	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 2,183,343	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
Public Works	\$ 336,500	\$ 15,000	\$ 955,975	\$ 495,000	\$ 15,000	\$ 15,000	\$ 355,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000
Recreation	\$ 1,653,163	\$ 75,500	\$ 157,500	\$ 1,405,059	\$ 480,500	\$ 75,500	\$ 997,375	\$ 75,500	\$ 75,500	\$ 75,500	\$ 4,461,714	\$ 75,500
Total Buildings	\$ 1,989,663	\$ 144,500	\$ 1,167,475	\$ 1,954,059	\$ 549,500	\$ 144,500	\$ 1,406,375	\$ 2,297,843	\$ 144,500	\$ 144,500	\$ 4,663,214	\$ 144,500
Bridges & Culverts	Backlog	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Bridges	\$ 1,205,962	\$ 89,054	\$ 89,054	\$ 1,382,227	\$ 762,714	\$ 89,054	\$ 89,054	\$ 89,054	\$ 2,026,810	\$ 89,054	\$ 1,214,553	\$ 89,054
Culverts	\$ 5,167	\$ 61,746	\$ 1,074,083	\$ 61,746	\$ 61,746	\$ 833,322	\$ 61,746	\$ 515,673	\$ 61,746	\$ 1,287,368	\$ 843,641	\$ 61,746
Total Bridges & Culverts	\$ 1,211,129	\$ 150,800	\$ 1,163,137	\$ 1,443,973	\$ 824,460	\$ 922,376	\$ 150,800	\$ 604,727	\$ 2,088,556	\$ 1,376,422	\$ 2,058,194	\$ 150,800
Storm Sewer Network	Backlog	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Storm Lines	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Catch Basin	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 20,462	\$ -	\$ 8,857	\$ -	\$ 146,661	\$ -	\$ -
Total Storm Sewer Network	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 20,462	\$ -	\$ 8,857	\$ -	\$ 146,661	\$ -	\$ -
Vehicles	Backlog	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Building/Bylaw	\$ -	\$ 10,358	\$ 10,358	\$ 10,358	\$ 10,358	\$ 10,358	\$ 10,358	\$ 51,358	\$ 10,358	\$ 10,358	\$ 10,358	\$ 10,358
Fire	\$ -	\$ 800,000	\$ 115,000	\$ 115,000	\$ 50,000	\$ 1,500,000	\$ 115,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 850,000	\$ 1,000,000
Public Works	\$ 1,083,500	\$ 896,603	\$ 950,603	\$ 664,048	\$ 1,169,580	\$ 685,000	\$ 597,346	\$ 285,000	\$ 710,000	\$ 430,000	\$ 735,000	\$ 685,000
Recreation	\$ 149,500	\$ 97,000	\$ 96,500	\$ 12,000	\$ 77,000	\$ 67,000	\$ 12,000	\$ 56,500	\$ 137,000	\$ 12,000	\$ 177,000	\$ 12,000
Drainage	\$ 44,500	\$ -	\$ 55,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Vehicles	\$ 1,277,500	\$ 1,803,961	\$ 1,227,461	\$ 801,406	\$ 1,306,938	\$ 2,262,358	\$ 734,704	\$ 442,858	\$ 907,358	\$ 502,358	\$ 1,772,358	\$ 1,707,358



Asset Category	Appendix C: 10-Year Capital Requirements (Tax-Funded Assets)											
Machinery & Equipment	Backlog	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Administration	\$ -	\$ 6,534	\$ -	\$ -	\$ 27,060	\$ 49,711	\$ 53,336	\$ -	\$ -	\$ -	\$ -	\$ 8,665
Fire	\$ 638,113	\$ 52,413	\$ 15,039	\$ 55,687	\$ 149,494	\$ 122,096	\$ 25,000	\$ -	\$ 25,563	\$ -	\$ 75,179	\$ 120,863
Public Works	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 293,179	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Recreation	\$ 476,341	\$ 36,363	\$ -	\$ 130,221	\$ 133,464	\$ -	\$ 61,599	\$ 240,748	\$ 85,475	\$ -	\$ 11,846	\$ 203,342
Total Machinery & Equipment	\$ 1,114,454	\$ 95,310	\$ 15,039	\$ 185,908	\$ 310,018	\$ 464,986	\$ 139,935	\$ 240,748	\$ 111,038	\$ -	\$ 87,025	\$ 332,870
Land Improvements	Backlog	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Beach & Waterfront	\$ 342,049	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 29,141	\$ -	\$ -
Parking Lots	\$ 1,906,064								\$ 47,652	\$ -	\$ 138,025	\$ -
Sports Fields	\$ 980,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Land Improvements	\$ 3,228,113	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 47,652	\$ 29,141	\$ 138,025	\$ -
Morrisburg Plaza	Backlog	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Structures	\$ -	\$ 230,496	\$ 25,725	\$ 5,145	\$ -	\$ 10,290	\$ -	\$ -	\$ 5,145	\$ -	\$ 24,747	\$ 7,718
Sidewalks	\$ -	\$ -	\$ 399,252	\$ -	\$ -	\$ 215,215	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Electrical & Mechanical	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 15,435	\$ 23,050	\$ -	\$ 55,978
Surface Infrastructure	\$ -	\$ 694,431	\$ 325,679	\$ -	\$ -	\$ 89,600	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Storm	\$ -	\$ -	\$ -	\$ -	\$ 260,337	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Operations & Miscellaneous	\$ -	\$ -	\$ -	\$ 3,087	\$ -	\$ 40,131	\$ -	\$ -	\$ 36,015	\$ -	\$ -	\$ -
Total Morrisburg Plaza	\$ -	\$ 924,927	\$ 750,656	\$ 8,232	\$ 260,337	\$ 355,237	\$ -	\$ -	\$ 56,595	\$ 23,050	\$ 24,747	\$ 63,695
Iroquois Plaza	Backlog	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Structures	\$ -	\$ -	\$ -	\$ 5,145	\$ -	\$ 10,290	\$ -	\$ -	\$ 5,145	\$ -	\$ -	\$ -
Sidewalks	\$ -	\$ -	\$ -	\$ -	\$ 10,290	\$ -	\$ -	\$ -	\$ -	\$ 10,290	\$ -	\$ 367,559
Electrical & Mechanical	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 41,160	\$ -	\$ -	\$ 58,602
Surface Infrastructure	\$ -	\$ 976,084	\$ -	\$ -	\$ 6,843	\$ -	\$ -	\$ -	\$ 178,043	\$ -	\$ -	\$ -
Storm	\$ -	\$ -	\$ -	\$ -	\$ 389,322	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Operations & Miscellaneous	\$ -	\$ -	\$ -	\$ 2,573	\$ -	\$ -	\$ -	\$ 30,870	\$ -	\$ -	\$ -	\$ -
Total Iroquois Plaza	\$ -	\$ 976,084	\$ -	\$ 7,718	\$ 406,455	\$ 10,290	\$ -	\$ 30,870	\$ 224,348	\$ 10,290	\$ -	\$ 426,160
Total Tax Funded:	\$ 9,861,240	\$ 5,190,480	\$ 5,499,147	\$ 7,990,032	\$ 6,146,312	\$ 5,812,520	\$ 6,231,698	\$ 4,137,994	\$ 6,144,266	\$ 6,031,842	\$ 11,553,532	\$ 6,522,154

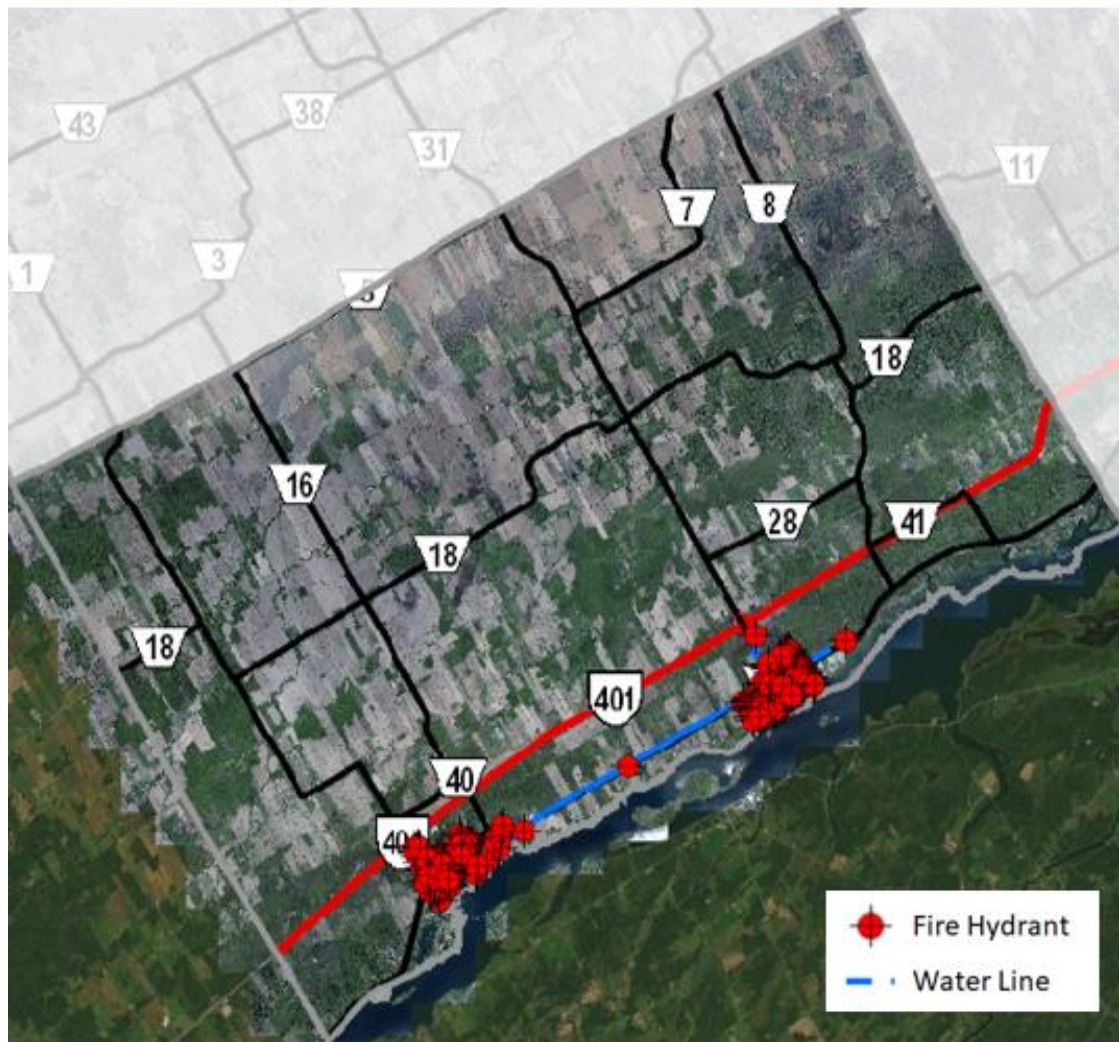


Asset Category	Appendix C: 10-Year Capital Requirements (Rate-Funded Assets)											
Water Network	Backlog	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Buildings	\$ -	\$ 70,000	\$ 70,000	\$ 70,000	\$ 70,000	\$ 75,000	\$ 70,000	\$ 70,000	\$ 100,000	\$ 85,000	\$ 85,000	\$ 85,000
Equipment	\$ 7,242	\$ 231,000	\$ 1,729,418	\$ 38,051	\$ 169,794	\$ -	\$ 264,101	\$ 30,000	\$ 50,000	\$ -	\$ 72,609	\$ -
Vehicles	\$ -	\$ -	\$ 60,000	\$ -	\$ -	\$ 60,000	\$ 30,672	\$ 4,000	\$ 60,000	\$ -	\$ -	\$ 17,500
Water Lines	\$ -	\$ 77,000	\$ 173,054	\$ 77,000	\$ 77,000	\$ 92,077	\$ 77,000	\$ 77,000	\$ 92,077	\$ 77,000	\$ 10,380,734	\$ 92,077
Service Lines	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Water Valves	\$ 1,555,690	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 86,489	\$ -	\$ -	\$ -	\$ -
Water Meters	\$ 137,291	\$ 178,445	\$ 22,427	\$ 25,225	\$ 24,322	\$ 24,536	\$ 20,000	\$ 23,584	\$ 31,871	\$ 20,000	\$ 20,000	\$ 20,000
Fire Hydrants	\$ -	\$ 15,000	\$ 23,274	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 23,274	\$ 15,000	\$ 395,604	\$ 15,000
Total Water Network	\$ 1,700,223	\$ 571,445	\$ 2,078,173	\$ 225,276	\$ 356,116	\$ 266,613	\$ 476,773	\$ 306,073	\$ 357,222	\$ 197,000	\$ 10,953,947	\$ 229,577
Wastewater Network	Backlog	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Buildings	\$ -	\$ 145,000	\$ 132,000	\$ 132,000	\$ 132,000	\$ 132,000	\$ 132,000	\$ 132,000	\$ 132,000	\$ 132,000	\$ 132,000	\$ 132,000
Equipment	\$ -	\$ -	\$ 709	\$ 11,539	\$ 93,265	\$ 25,173	\$ 379,796	\$ -	\$ -	\$ -	\$ 52,576	\$ 30,926
Vehicles	\$ -	\$ -	\$ 60,000	\$ -	\$ -	\$ 60,000	\$ 30,672	\$ 4,000	\$ 60,000	\$ -	\$ -	\$ 17,500
Sewer Lines	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Force Main	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Laterals	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Manholes	\$ -	\$ -	\$ 42,688	\$ -	\$ 13,382	\$ -	\$ -	\$ 98,417	\$ -	\$ -	\$ 2,307,589	\$ 11,848
Total Wastewater Network	\$ -	\$ 145,000	\$ 235,397	\$ 143,539	\$ 238,647	\$ 217,173	\$ 542,468	\$ 234,417	\$ 192,000	\$ 132,000	\$ 2,492,165	\$ 192,274
Morrisburg Plaza	Backlog	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Water	\$ -	\$ -	\$ -	\$ -	\$ 454,561	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Wastewater	\$ -	\$ -	\$ -	\$ -	\$ 378,801	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Morrisburg Plaza	\$ -	\$ -	\$ -	\$ -	\$ 833,361	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Iroquois Plaza	Backlog	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Water	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 378,801	\$ -	\$ -	\$ -	\$ -	\$ -
Wastewater	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 350,889	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Iroquois Plaza	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 350,889	\$ 378,801	\$ -	\$ -	\$ -	\$ -	\$ -
Total Rate Funded:	\$ 1,700,223	\$ 716,445	\$ 2,313,570	\$ 368,815	\$ 1,428,124	\$ 834,675	\$ 1,398,041	\$ 540,490	\$ 549,222	\$ 329,000	\$ 13,446,112	\$ 421,851



Appendix D: Level of Service Maps

Water Services



Morrisburg

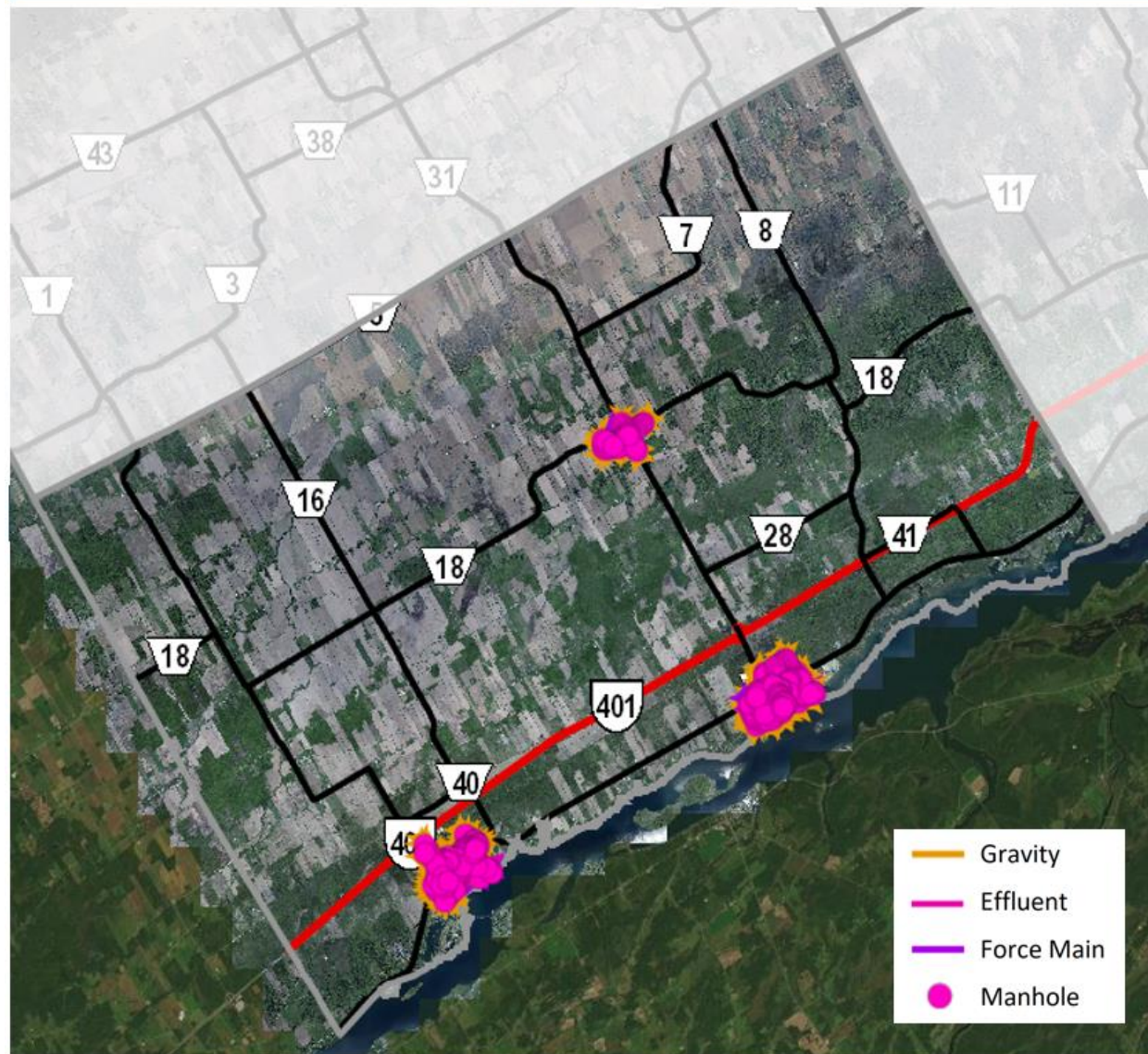


Iroquois

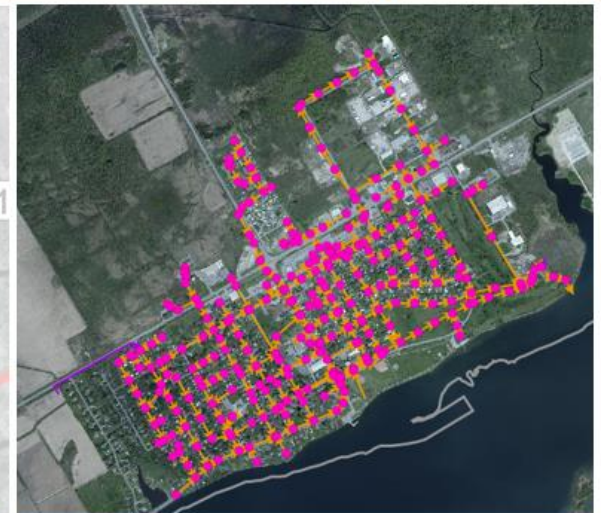




Wastewater Services



Morrisburg



Iroquois







Appendix E: Risk Rating Criteria

Asset Category	Risk Criteria	Criteria Weighting	Range	Score
All	Condition	100%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5

Asset Category	Risk Criteria	Criteria Weighting	Range	Score
All	Replacement Cost	30%	0-99K	1
			100K - 249K	2
			250K - 499K	3
			500K - 999K	4
			1M +	5
All	Category Value	70%	1	1
			2	2
			3	3
			4	4
			5	5

Category Value (Core & Non-Core Assets)	
Score	Asset Groups
5	Water & Sewer Buildings, Water & Sewer Equipment, Transmission Water Lines, Raw Water Lines, Major Water Lines, Trunk Sewer Lines
4	Asphalt Road Surfaces, Surface Treated Road Surfaces, Minor Water Lines, Branch Sewer Lines, Water Valves, Water & Sewer Vehicles, Force Main, Fire Buildings, Fire Vehicles, Fire Equipment
3	Bridges & Culverts, Fire Hydrants, Public Works Vehicles, Streetlights, Sidewalks, Water Service Lines, Sewer Laterals, Storm Sewer Lines, Administration Buildings, Public Works Buildings, Recreation Buildings, Public Works Equipment, Recreation Vehicles, Drainage Vehicles, Building/Bylaw Vehicles
2	Road Base, Winter Maintained Gravel Roads, Catch Basin/Storm Manholes, Administration Equipment, Recreation Equipment, Parking Lots, Sanitary Manholes, Guide Rail
1	Non-Winter Maintained Gravel Roads, Water Meters, Beach & Waterfront Improvements, Sports Fields



Appendix F: 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 conditions.

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

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

Role of Asset Condition Data

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

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



Guidelines for Condition Assessment

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

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

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



Developing a Condition Assessment Schedule

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

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

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AMP Revision Record

Rev. No.	Date	Prepared by:	Reviewed by:	Description
1	June 3, 2024	Tyler Nelson, Asset Management Coordinator	Julie Stewart, Treasurer	Draft
2	June 12, 2024	Tyler Nelson, Asset Management Coordinator	South Dundas Council	Final