Asset Management Plan

Township of Matachewan

2024

This Asset Management Plan was prepared by:

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

Key Statistics

Replacement cost of asset portfolio
$25 million

Replacement cost of infrastructure per capita
$93,311 (2021)

Percentage of assets in fair or better condition
82%

Percentage of assets with assessed condition data
57%

Annual capital infrastructure deficit
$488,000

Recommended timeframe for eliminating annual infrastructure deficit
20 Years

Target reinvestment rate
2.44%

Actual reinvestment rate
0.48%

Table of Contents

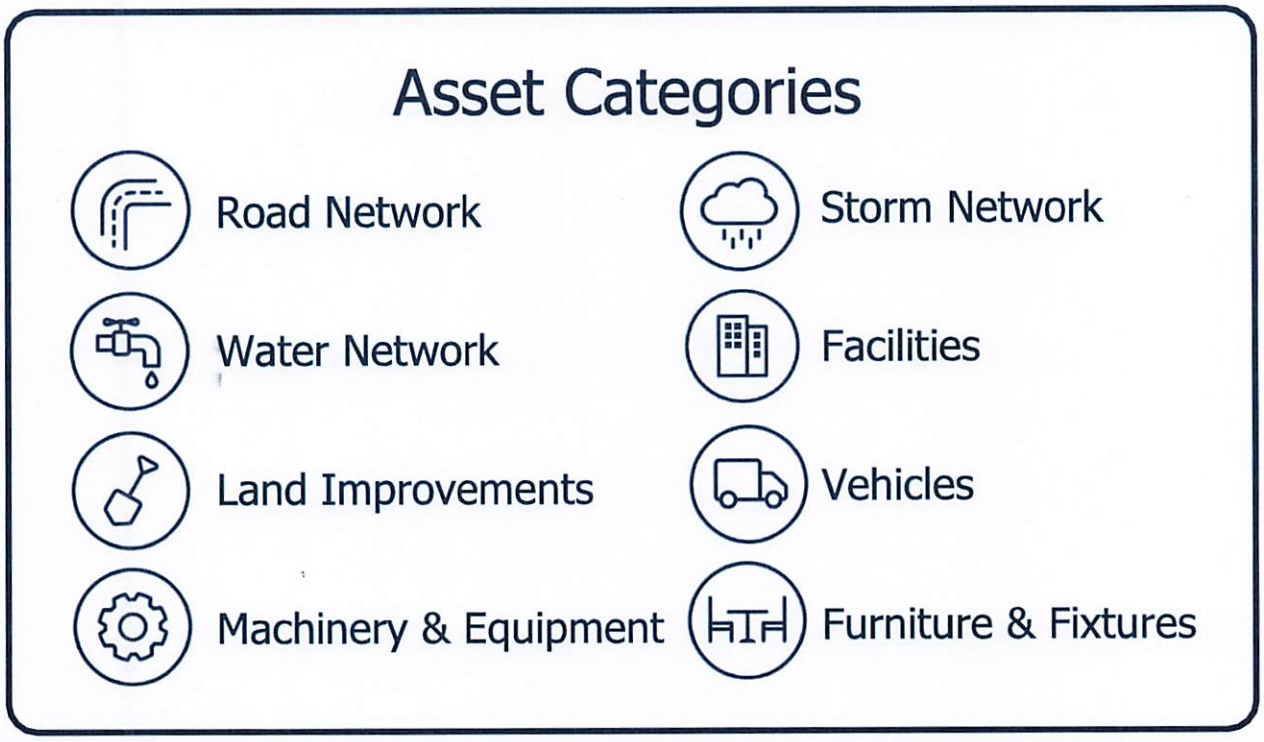
Executive Summary

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

Scope

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

This AMP include the following asset categories:



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

Findings

The overall replacement cost of the asset categories included in this AMP totals $25 million. 82% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 57% of assets. For the remaining 43% of assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.

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

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Township's average annual capital requirement totals $609,000. Based on a historical analysis of sustainable capital funding sources, the Township is committing approximately $121,000 towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $488,000.

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

Recommendations

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

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

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

1 Introduction & Context

Key Insights

- The Township of Matachewan within the Timiskaming District which is in northeastern Ontario
- The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio
- The Township's asset management policy provides clear direction to staff on their roles and responsibilities regarding asset management
- An asset management plan is a living document that should be updated regularly to inform long-term planning
- Ontario Regulation 588/17 outlines several key milestone and requirements for asset management plans in Ontario due in July 2022, 2024, and 2025. This plan meets the 2024 requirements.

1.1 Matachewan Community Profile

Census Characteristic	Township of Matachewan	Ontario
Population 2021	268	14,223,942
Population Change 2016-2021	19.1%	5.8%
Total Private Dwellings	202	5,929,250
Population Density	0.5/km^2	15.9/km^2
Land Area	539.56 km^2	892,411.76 km^2

The Township of Matachewan is a single tier municipality in the Timiskaming District located within Northeastern Ontario. The Township is located at the end of Ontario Highway 66 and along the Montreal River.

The Township was established in 1976 but was originally discovered in 1916. Matachewan began as a trading post which was part of the Hudson's Bay Company. The Township has a history rooted in fur trading and mining but has gradually shifted to forestry and tourism.

The region is characterized by scenic landscape, which includes many lakes, rocky terrain, and dense forests. The natural scenery attracts outdoor enthusiasts and nature lovers with outdoor recreational activities including hunting, hiking, camping, and canoeing.

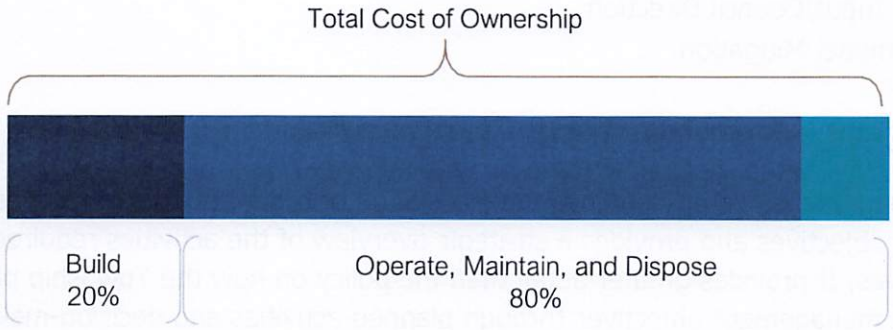
Demand in the region is notably driven by a variety of factors such as mining, forestry, and outdoor tourism. The Township has a rich mining heritage, and this history is often celebrated within the community. With the primary economic activities as mining and forestry, these industries can attract workforces within the region.

The Township has prioritized maintenance of its current infrastructure, allocating resources to ensure the ongoing functionality and resilience of its assets. This dedication highlights the Township's commitment to maintaining the effectiveness and integrity of its essential infrastructure, which supports the well-being of its residents and economic activities.

1.2 An Overview of Asset Management

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

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



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

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

1.2.1 Asset Management Policy

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

The Township adopted By-law 2008-15 Asset Management Policy in 2008 in accordance with Ontario Regulation 588/17. The objectives of the policy include:

- Fiscal Responsibilities
- Delivery of Services/Programs
- Public Input/Council Direction
- Risk/Impact Mitigation

1.2.2 Asset Management Strategy

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

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

1.2.3 Asset Management Plan

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

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

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

1.3 Key Concepts in Asset Management

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

1.3.1 Lifecycle Management Strategies

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

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

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

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

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

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

1.3.2 Risk Management Strategies

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

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

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

1.3.3 Levels of Service

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

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

Community Levels of Service

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

Technical Levels of Service

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

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

Current and Proposed Levels of Service

This AMP focuses on measuring the current level of service provided to the community. Once current levels of service have been measured, the Township 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 Township. They should also be determined with consideration of a variety of community expectations, fiscal capacity, regulatory requirements, corporate goals and long-term sustainability. Once proposed levels of service have been established, and prior to July 2025, the Township must identify a lifecycle management and financial strategy which allows these targets to be achieved.

1.4 Climate Change

Climate change can cause severe impacts on human and natural systems around the world. The effects of climate change include increasing temperatures, higher levels of precipitation, droughts, and extreme weather events. In 2019, Canada's Changing Climate Report (CCCR 2019) was released by Environment and Climate Change Canada (ECCC).

The report revealed that between 1948 and 2016, the average temperature increase across Canada was 1.7°C; moreover, during this period, Northern Canada experienced a 2.3°C increase. The temperature increase in Canada has doubled that of the global average. If emissions are not significantly reduced, the temperature could increase by 6.3°C in Canada by the year 2100 compared to 2005 levels. Observed precipitation changes in Canada include an increase of approximately 20% between 1948 and 2012. By the late 21st century, the projected increase could reach an additional 24%. During the summer months, some regions in Southern Canada are expected to experience periods of drought at a higher rate. Extreme weather events and climate conditions are more common across Canada. Recorded events include droughts, flooding, cold extremes, warm extremes, wildfires, and record minimum arctic sea ice extent.

The changing climate poses a significant risk to the Canadian economy, society, environment, and infrastructure. The impacts on infrastructure are often a result of climate-related extremes such as droughts, floods, higher frequency of freeze-thaw cycles, extended periods of high temperatures, high winds, and wildfires. Physical infrastructure is vulnerable to damage and increased wear when exposed to these extreme events and climate variabilities. Canadian Municipalities are faced with the responsibility to protect their local economy, citizens, environment, and physical assets.

1.4.1 Matachewan Climate Profile

The Township of Matachewan is situated in Northeastern Ontario within the Timiskaming district. The Township is expected to experience notable effects of climate change which include higher average annual temperatures, an increase in total annual precipitation, and an increase in the frequency and severity of extreme events. According to Climatedata.ca – a collaboration supported by Environment and Climate Change Canada (ECCC) – the Township of Matachewan may experience the following trends:

Higher Average Annual Temperature:

- Between the years 1971 and 2000 the annual average temperature was 2.1 °C
- Under a high emissions scenario, the annual average temperatures are projected to increase by 4.7 °C by the year 2050 and over 6.7 °C by the end of the century.

Increase in Total Annual Precipitation:

- Under a high emissions scenario, Matachewan is projected to experience an 14% increase in precipitation by the year 2051 and a 20% increase by the end of the century.

Increase in Frequency of Extreme Weather Events:

- It is expected that the frequency and severity of extreme weather events will change.

1.4.2 Integrating Climate change and Asset Management

Asset management practices aim to deliver sustainable service delivery - the delivery of services to residents today without compromising the services and well-being of future residents. Climate change threatens sustainable service delivery by reducing the useful life of an asset and increasing the risk of asset failure. Desired levels of service can be more difficult to achieve due to climate change impacts such as flooding, high heat, drought, and more frequent and intense storms.

To achieve the sustainable delivery of services, climate change considerations should be incorporated into asset management practices. The integration of asset management and climate change adaptation observes industry best practices and enables the development of a holistic approach to risk management.

1.5 Ontario Regulation 588/17

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

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

2019

Strategic Asset Management Policy

2022

Asset Management Plan for Core Assets with the following components:

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

2024

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

2025

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

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

1.5.1 O. Reg. 588/17 Compliance Review

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

Requirement	O. Reg. Section	AMP Section Reference	Status
Summary of assets in each category	S.5(2), 3(i)	4.1.1 - 5.1.1	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	4.1.1 - 5.1.1	Complete
Average age of assets in each category	S.5(2), 3(iii)	4.1.3 - 5.1.3	Complete
Condition of core assets in each category	S.5(2), 3(iv)	4.1.2 – 5.1.2	Complete
Description of municipality's approach to assessing the condition of assets in each category	S.5(2), 3(v)	4.1.2 – 5.1.2	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	4.1.6 - 5.1.6	Complete
Current performance measures in each category	S.5(2), 2	4.1.6 - 5.1.6	Complete
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	4.1.4 - 5.1.4	Complete
Costs of providing lifecycle activities for 10 years	S.5(2), 4	Appendix B	Complete
Growth assumptions	S.5(2), 5(i-ii) S.5(2), 6(i-vi)	6.1-6.2	Complete

2 Scope and Methodology

Key Insights

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

2.1 Asset categories included in this AMP

This asset management plan for the Township of Matachewan 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 assets (roads, water, and stormwater) and non-core assets (facilities, land improvements, vehicles, machinery and equipment, and furniture and fixtures).

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

Asset Category	Source of Funding
Road Network	Tax Levy
Storm Network	
Facilities	
Land Improvements	
Vehicles	
Machinery & Equipment	
Furniture & Fixtures	
Water Network	User Rates

2.2 Deriving Replacement Costs

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

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

User-defined costs based on reliable sources are a reasonably accurate and reliable way to determine asset replacement costs. Cost Inflated User Defined Costs tends to be fairly accurate as well, provided that the cost being inflated is relatively recent. 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 Township incurred. As assets age, and new products and technologies become available, cost inflation becomes a less reliable method.

2.3 Estimated Useful Life and Service Life Remaining

The estimated useful life (EUL) of an asset is the period over which the Township 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 Township can determine the service life remaining (SLR) for each asset. Using condition data and the asset's SLR, the Township can more accurately forecast when it will require replacement. The SLR is calculated as follows:

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

2.4 Reinvestment Rate

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

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

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

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

2.5 Deriving Asset Condition

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

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

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

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

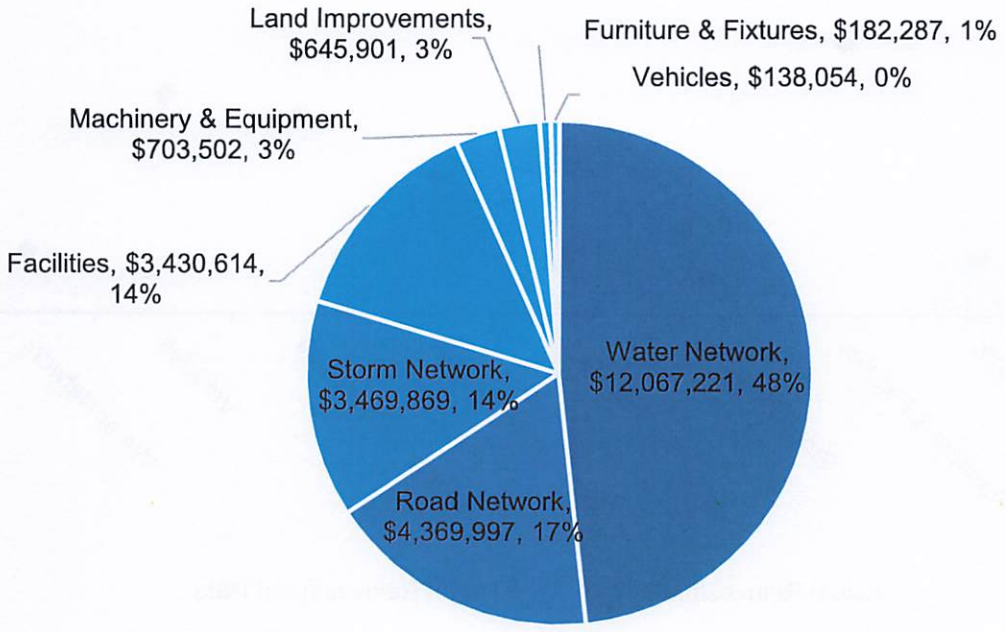
3 Portfolio Overview

Key Insights

- The total replacement cost of the Township's asset portfolio is $25 million
- The Township's target re-investment rate is 2.44%, and the actual re-investment rate is 0.48%, contributing to an expanding infrastructure deficit
- 82% of all assets are in fair or better condition
- Average annual capital requirements total $609,000 per year across all assets

3.1 Total Replacement Cost of Asset Portfolio

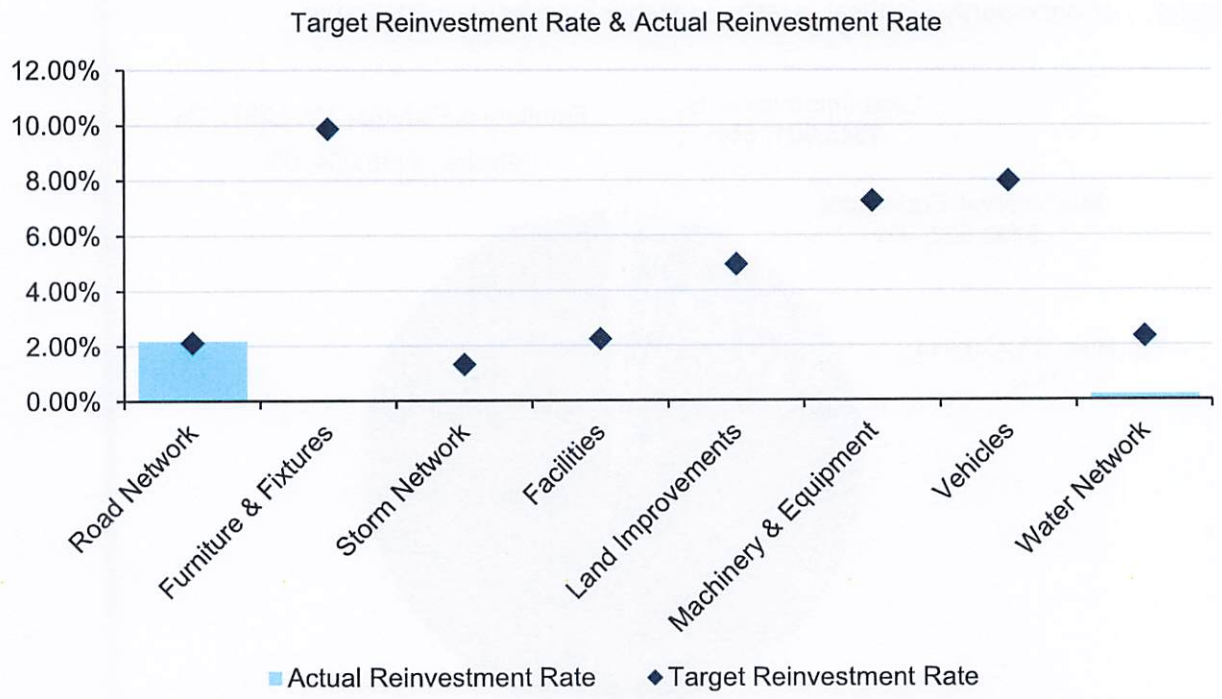
The asset categories analyzed in this AMP have a total replacement cost of $25 million based on inventory data from 2022. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.



Total Current Replacement Cost: $25,007,445

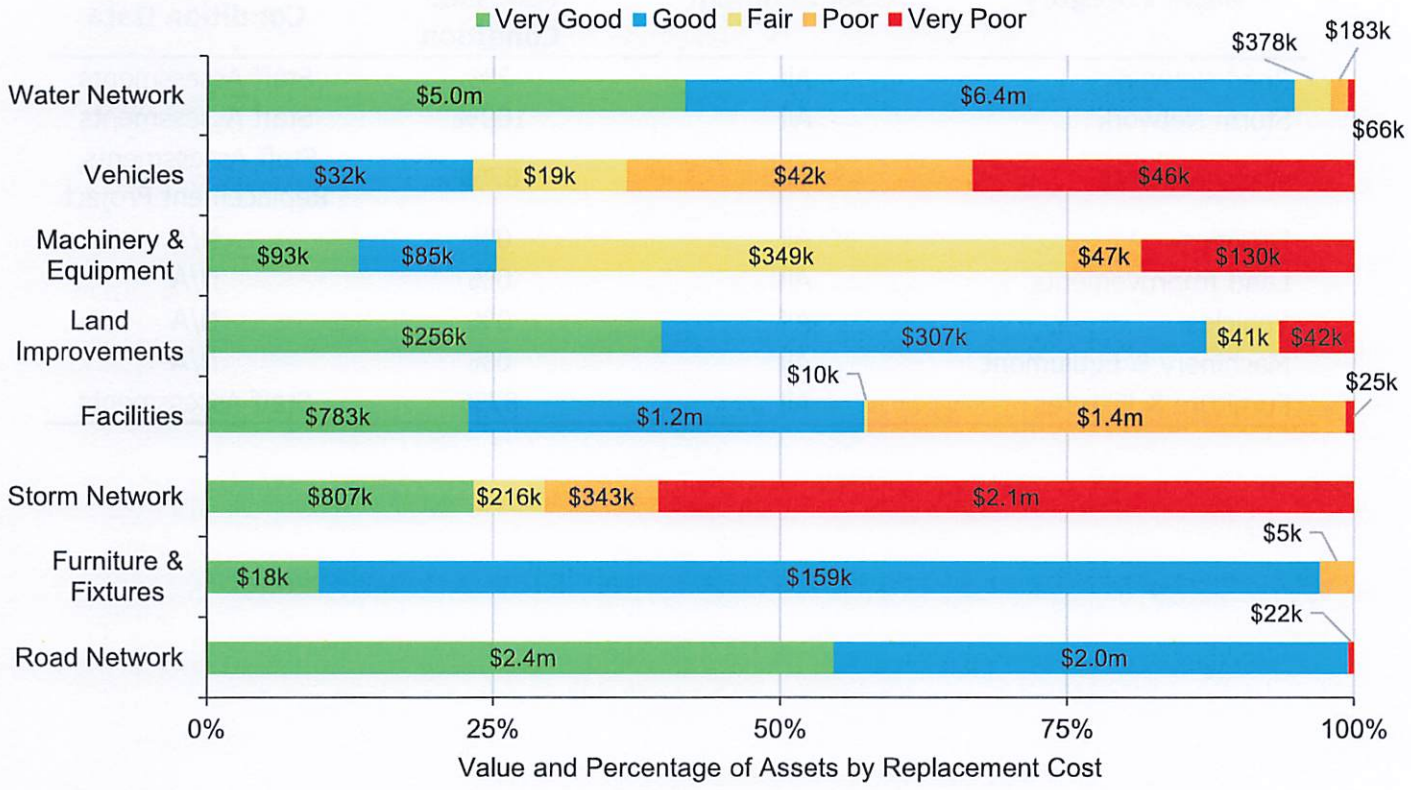
3.2 Target vs. Actual Reinvestment Rate

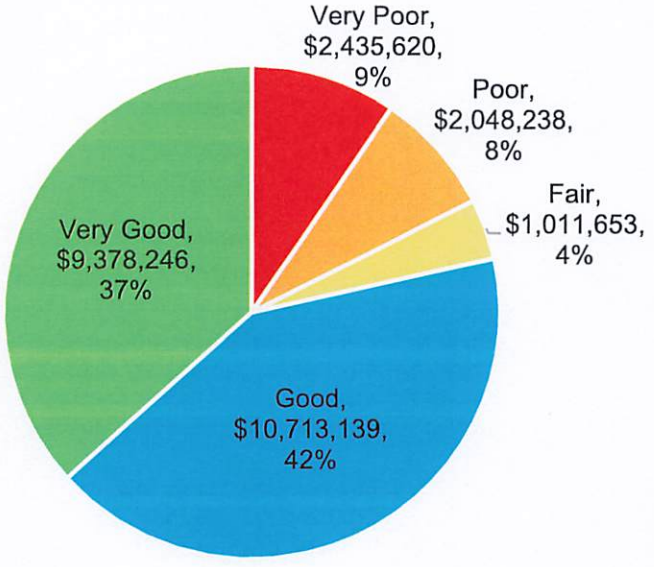
The graph below depicts funding gaps or surpluses by comparing target vs actual reinvestment rate. To meet the long-term replacement needs, the Township should be allocating approximately $609,000 annually, for a target reinvestment rate of 2.44%. Actual annual spending on infrastructure totals approximately $121,000, for an actual reinvestment rate of 0.48%



3.3 Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 82% of assets in Matachewan are in fair or better condition. This estimate relies on both age-based and field condition data.



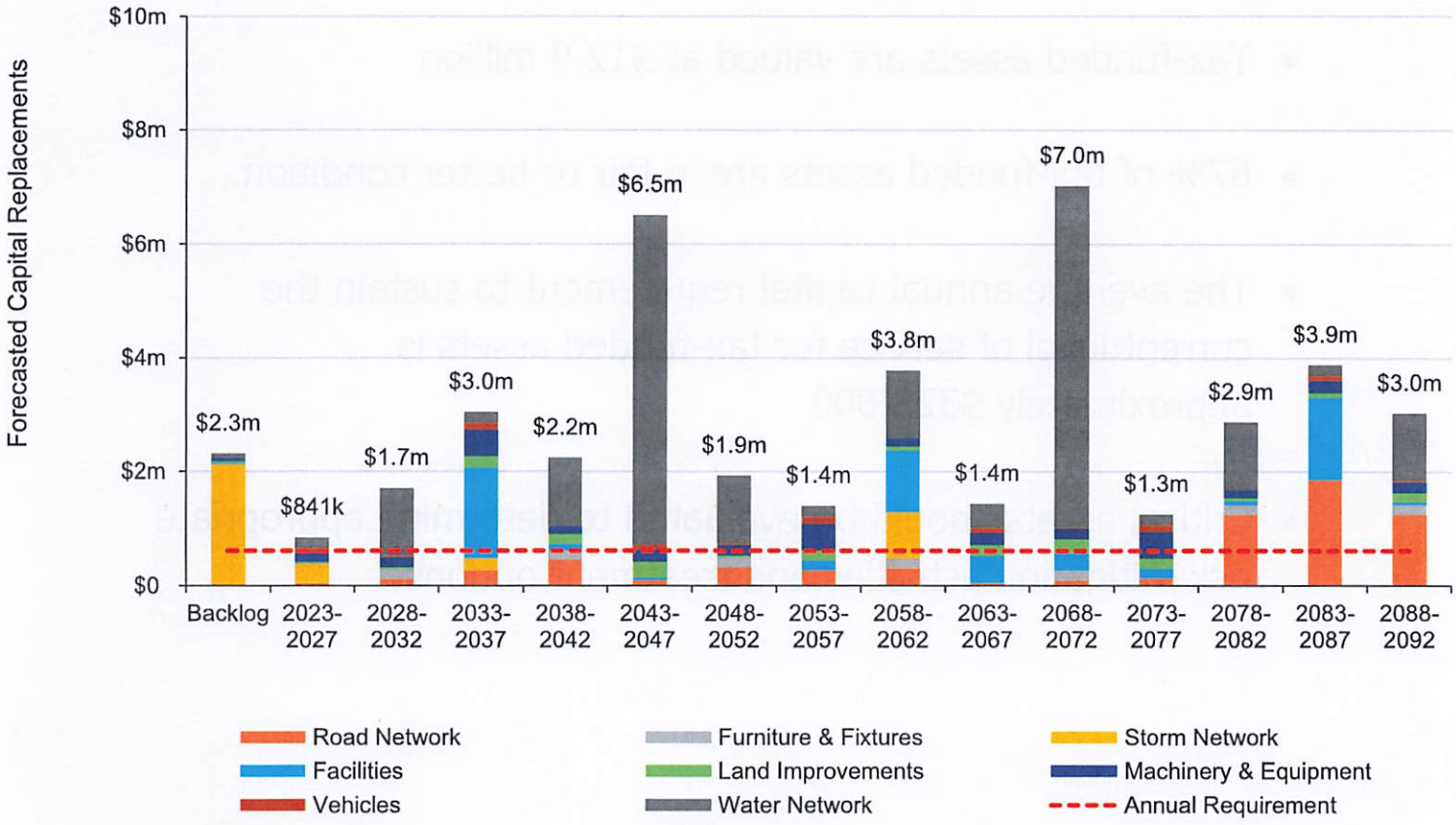


This AMP relies on assessed condition data for 57% of assets; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data used throughout this AMP.

Asset Category	Asset Segment	% of Assets with Assessed Condition	Source of Condition Data
Road Network	All	2%	Staff Assessments
Storm Network	All	100%	Staff Assessments
Water Network	All	87%	Staff Assessments, Replacement Project
Facilities	All	0%	N/A
Land Improvements	All	0%	N/A
Vehicles	All	0%	N/A
Machinery & Equipment	All	0%	N/A
Furniture & Fixtures	All	87%	Staff Assessments

3.4 Forecasted Capital Requirements

The development of a long-term capital forecast should include both asset rehabilitation and replacement requirements. With the development of asset-specific lifecycle strategies that include the timing and cost of future capital events, the Township can produce an accurate long-term capital forecast. The following graph identifies capital requirements over the next 70 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.



4 Analysis of Tax-funded Assets

Key Insights

- Tax-funded assets are valued at $12.9 million
- 67% of tax-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for tax-funded assets is approximately $328,000
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

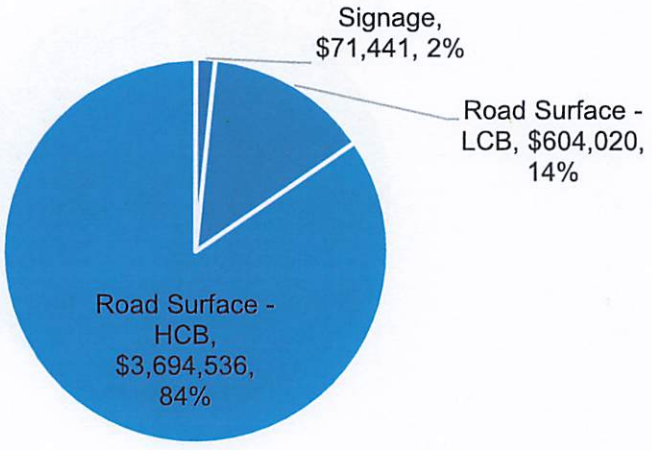
4.1 Road Network

The road network is a critical component of the provision of safe and efficient transportation services and represents the second highest value asset category in the Township's asset portfolio. It includes all municipally owned and maintained roadways in addition to supporting roadside infrastructure including signs.

4.1.1 Asset Inventory & Replacement Cost

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

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Road Surface - HCB	5,413	Meters	$3,695,000	CPI
Road Surface - LCB	1,555	Meters	$604,000	CPI
Signage	6	Assets	$71,000	CPI
Road Surface - G/S	2,164	Meters	Not Planned for Replacement[1]	



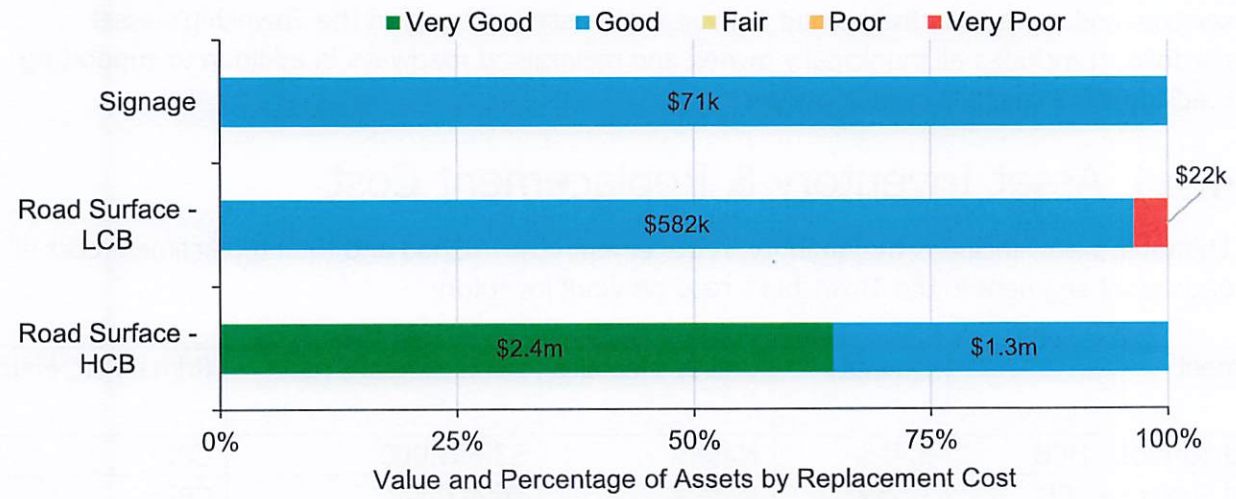
Total Current Replacement Cost: $4,369,997

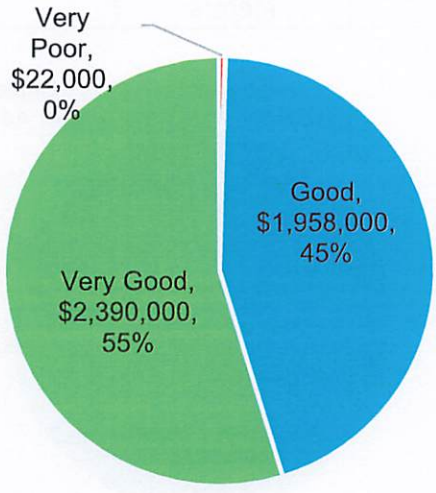
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

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

4.1.2 Asset Condition

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





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

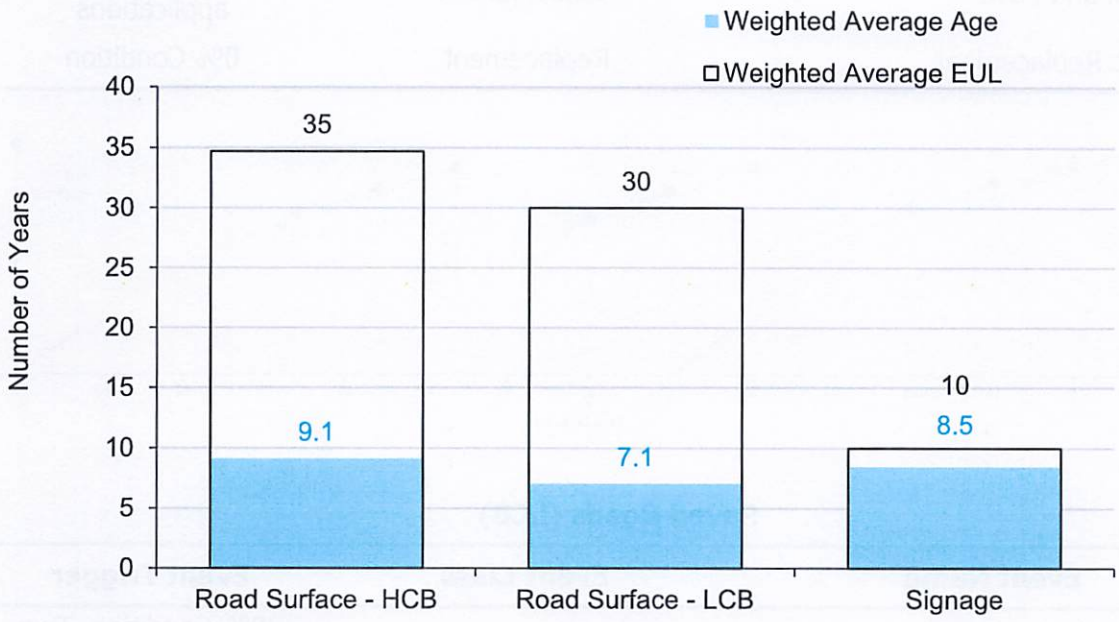
Current Approach to Condition Assessment

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

- Roads are visually inspected daily, by internal staff. There is no formal condition assessment program in place, however, the Township may consider contracting a third-party assessor to provide formal condition ratings for roads on a 5-year cycle.

4.1.3 Estimated Useful Life & Average Age

The Estimated Useful Life for road network assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Assessed condition may increase or decrease the average service life remaining.



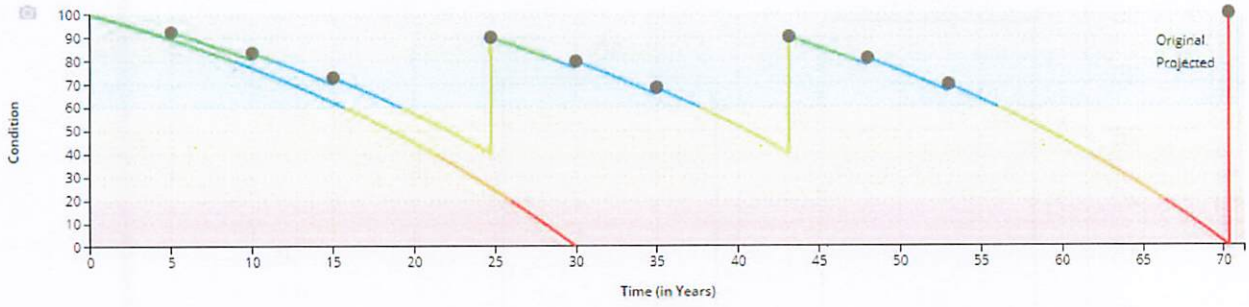
Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

4.1.4 Lifecycle Management Strategy

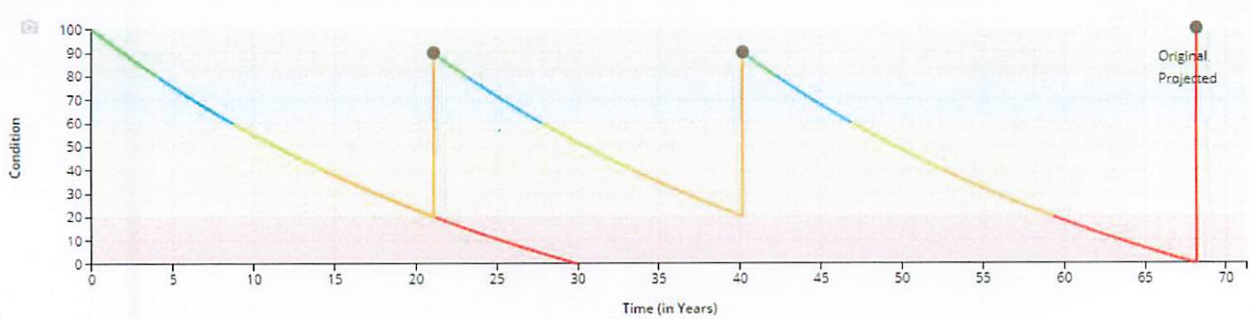
The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment.

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

Paved Roads (HCB)		
Event Name	**Event Class**	**Event Trigger**
Crack Sealing	Maintenance	5 Years (Repeated)
Double Mill and Pave	Rehabilitation	40% Condition, Two applications
End of Life Replacement	Replacement	0% Condition



Paved Roads (LCB)		
Event Name	**Event Class**	**Event Trigger**
Double Surface Treatment	Rehabilitation	20% Condition, Two applications
End of Life Replacement	Replacement	0% Condition



Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for the Township's various road profiles, and assuming the end-of-life replacement of all other assets in this category, the following graph forecasts capital requirements for the road network.

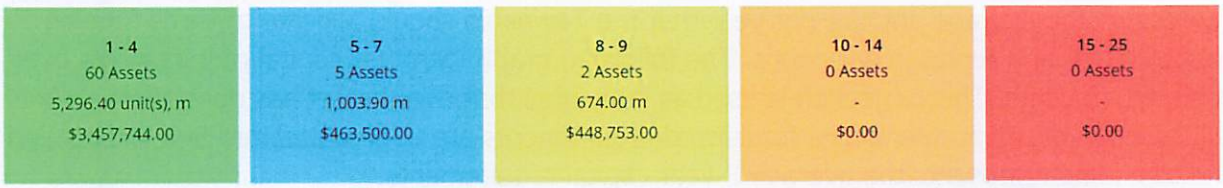
The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 70 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.

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

4.1.5 Risk & Criticality

Risk Matrix

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



Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Economic)
	Asset Material
	Road Classification

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

Risks to Current Asset Management Strategies

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

Extreme Weather

The roads experience accelerated deterioration due to heavy snowfall and the ensuing snow and salt removal processes. Many of the roads also have poor drainage resulting in accelerated deterioration caused by freeze/thaw cycles. To improve asset resiliency, staff should identify problem areas and improve drainage through enhanced lifecycle strategies.

Capital Funding Strategies

Major capital rehabilitation projects for roads are sometimes dependant on the availability of grant funding opportunities. When grants are not available, road rehabilitation and replacement projects may be deferred. An annual capital funding strategy can reduce dependency on grant funding and help prevent deferral of capital works.

4.1.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity	See Appendix C
Quality	Description or images that illustrate the different levels of road class pavement condition	Very Poor: Widespread signs of deterioration. Requires remedial work to bring road up to standard. Service is affected.
		Poor: Large portions of road exhibiting deterioration with rutting, potholes, distortions, longitude and lateral cracking. Road is mostly below standard.
		Fair: Some sections of road starting to deteriorate. Requires some remedial work and surface upgrade in near future.
		Good: Road is in overall good condition. Few sections are starting to show signs of minimal deterioration.
		Very Good: Road is well maintained and in excellent condition. Surface was newly or recently upgraded. No signs of deterioration or remedial work required.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	N/A
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	N/A
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	0.034[2]
Quality	Average pavement condition index for paved roads in the municipality	HCB: 79% LCB: 66%
	Average surface condition for unpaved roads in the municipality (e.g. excellent, good, fair, poor)	Poor
Performance	Annual capital reinvestment rate	1.94%

[2] The number of lanes is not known. This calculation assumes 2 lanes with a land area of 543.58 km^2.

4.1.7 Recommendations

Asset Inventory

- Regularly review and update the asset register for accuracy and completeness.
- The township should take steps to updating replacement costing details. By utilizing $/unit pricing, it ensures that the road network's valuation, is accurate.

Condition Assessment Strategies

- Condition in this AMP is based almost entirely on an age-based approach. The Township should consider developing a condition assessment strategy to determine accurate condition ratings for road surfaces and appurtenances. The routine road patrol process should have documented findings that can be translated into cursory condition scores.

Lifecycle Management Strategies

- Implement the identified lifecycle management strategies for HCB and LCB roads to realize potential cost avoidance and maintain a high quality of road pavement condition.
- Evaluate the efficacy of the Township's lifecycle management strategies at regular intervals to determine the impact cost, condition and risk. Specifically, the Township should review its identified strategies in the CityWide software, to ensure that pertinent details, such as unit costing, engineering EULs, and so on, are accurate.

Risk Management Strategies

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

Levels of Service

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

4.2 Storm Network

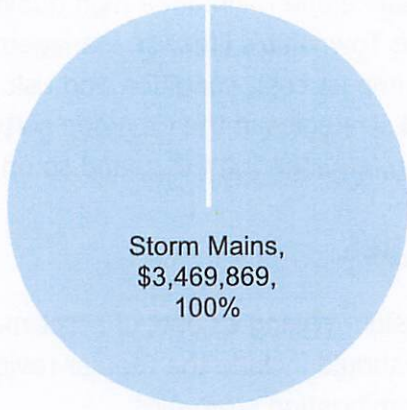
The Township owns and maintains a storm network which consists of storm mains.

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

4.2.1 Asset Inventory & Replacement Cost

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

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Storm Mains	10,060	Meters	$3,470,000	CPI

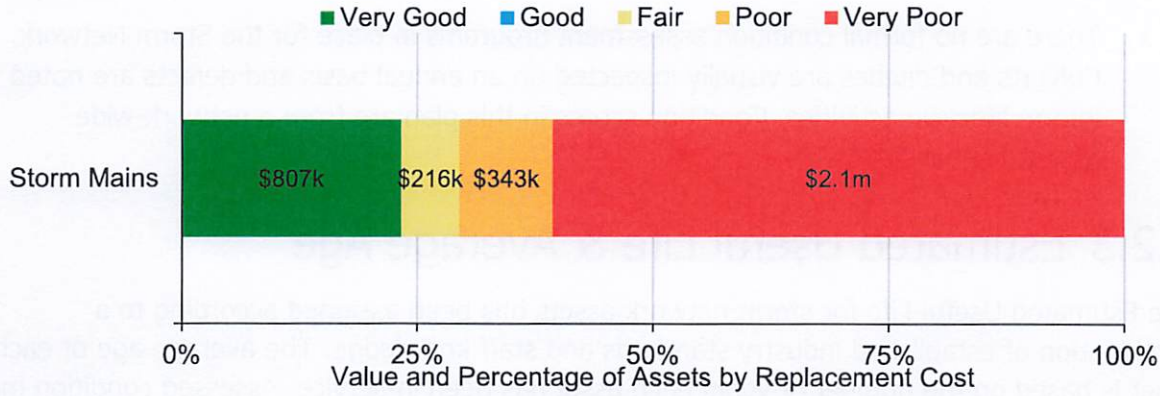


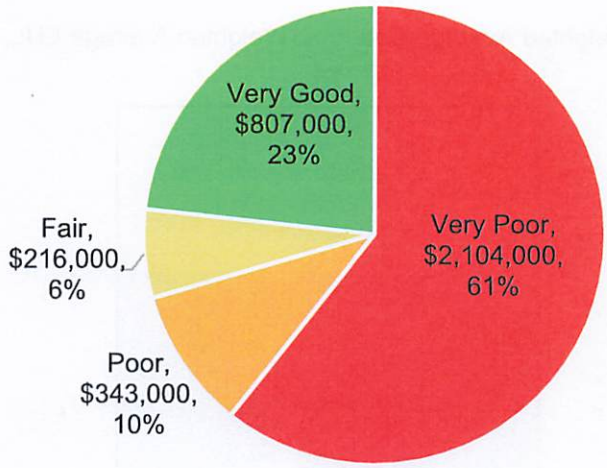
Total Current Replacement Cost: $3,469,869

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

4.2.2 Asset Condition

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





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

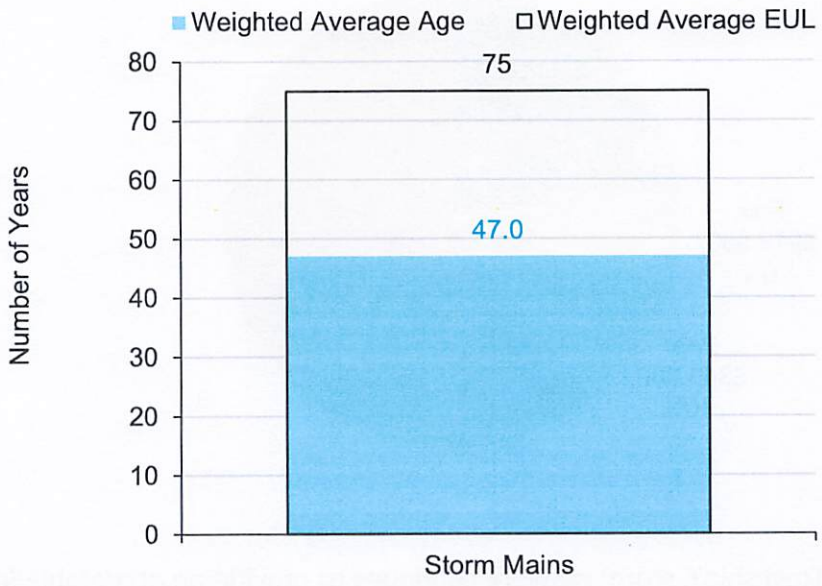
Current Approach to Condition Assessment

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

- There are no formal condition assessment programs in place for the Storm Network. Culverts and ditches are visually inspected on an annual basis and defects are noted to inform lifecycle activities. Condition scores in this plan are from a network-wide assessment in 2016.

4.2.3 Estimated Useful Life & Average Age

The Estimated Useful Life for storm 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. Assessed condition may increase or decrease the average service life remaining.



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

4.2.4 Lifecycle Management Strategy

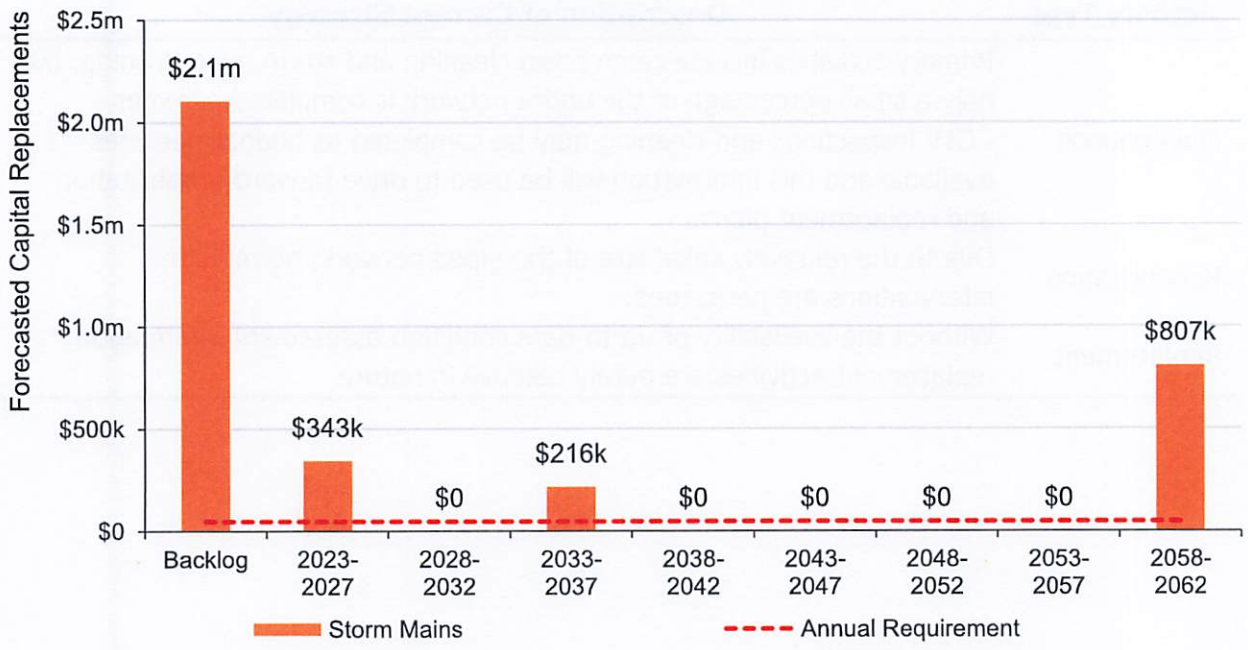
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Primary activities include catch basin cleaning and storm main flushing, but only a small percentage of the entire network is completed per year. CCTV inspections and cleaning may be completed as budget becomes available and this information will be used to drive forward rehabilitation and replacement plans.
Rehabilitation	Due to the relatively small size of the piped network, no mid-life interventions are performed.
Replacement	Without the availability of up-to-date condition assessment information replacement activities are purely reactive in nature

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 40 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.

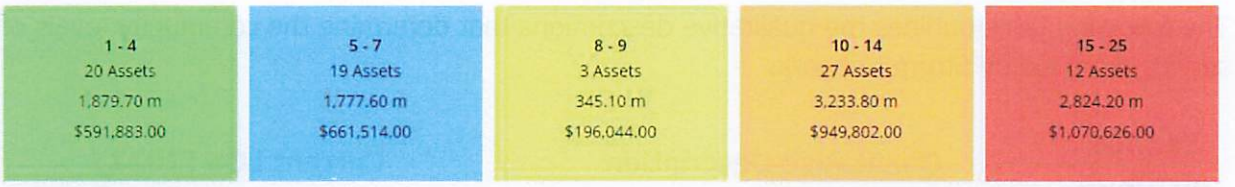


The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix B.

4.2.5 Risk & Criticality

Risk Matrix

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



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

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

Risks to Current Asset Management Strategies

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

Aging Infrastructure

As the municipal storm system continues to age, there are a handful of assets that are approaching their original useful life. There is currently no decision-making process in place to determine how to plan for structures that will require replacement or disposal.

Extreme Weather

Staff need a better sense of the impacts of extreme weather on the stormwater network to inform retrofitting and replacement planning. Additional data will help address concerns with system capacity and the ability of the stormwater network to handle any potential increase in the intensity, frequency, and duration of rainfall and snow events. Incorporating a monitoring and maintenance program for all stormwater infrastructure into the asset management plan can further support infrastructure resiliency and reduce risk.

4.2.6 Levels of Service

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

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

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2020)
Scope	% of properties in municipality resilient to a 100-year storm	TBD[3]
	% of the municipal stormwater management system resilient to a 5-year storm	100%[4]
Performance	Annual capital reinvestment rate	0.00%

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

4.2.7 Recommendations

Asset Inventory

- The Township's Storm Sewer Network inventory remains at a basic level of maturity. The development of a comprehensive inventory of the Storm Sewer Network should be priority.
- Staff should identify specific quantities, size, and material of individual stormwater components – such as the pipes, culverts, ditches and drains. Further componentization will allow for better costing, and more accurate capital projections.
- The asset register should be thoroughly reviewed to ensure that assets which have been identified as backlog, are in fact, correct.

Condition Assessment Strategies

- The development of a comprehensive inventory should be accompanied by a system-wide assessment of the condition of all assets in the Storm Sewer Network through a combination of CCTV inspections and visual inspections.

Risk Management Strategies

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

Lifecycle Management Strategies

- Document and review lifecycle management strategies for the Storm Sewer Network on a regular basis to achieve the lowest total cost of ownership while maintaining adequate service levels.

Levels of Service

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

4.3 Facilities

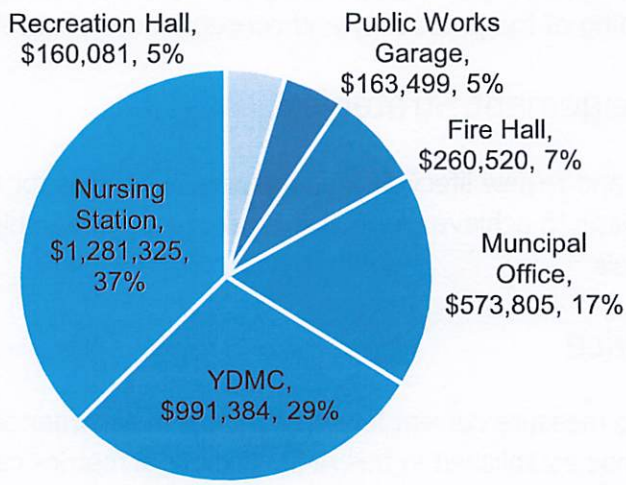
The Township of Matachewan owns and maintains several facilities and recreation centres that provide key services to the community. These include:

- Administrative offices
- Fire halls
- Nursing stations
- Public works garages
- Recreational and cultural facilities

4.3.1 Asset Inventory & Replacement Cost

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

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Fire Hall	5	Assets	$261,000	CPI
Municipal Office	8	Assets	$574,000	CPI
Nursing Station	8	Assets	$1,281,000	CPI
Public Works Garage	7	Assets	$163,000	CPI
Recreation Hall	5	Assets	$160,000	CPI
YDMC	3	Assets	$991,000	CPI

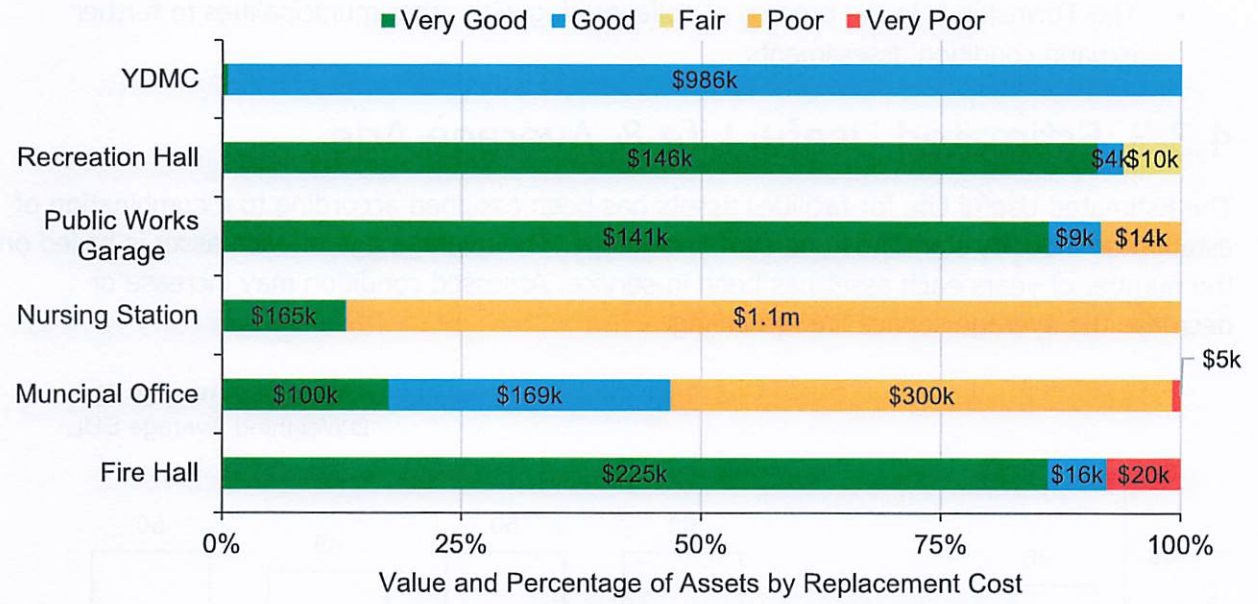


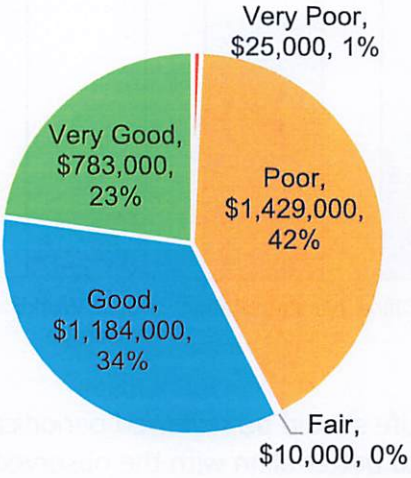
Total Current Replacement Cost: $3,430,614

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

4.3.2 Asset Condition

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





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

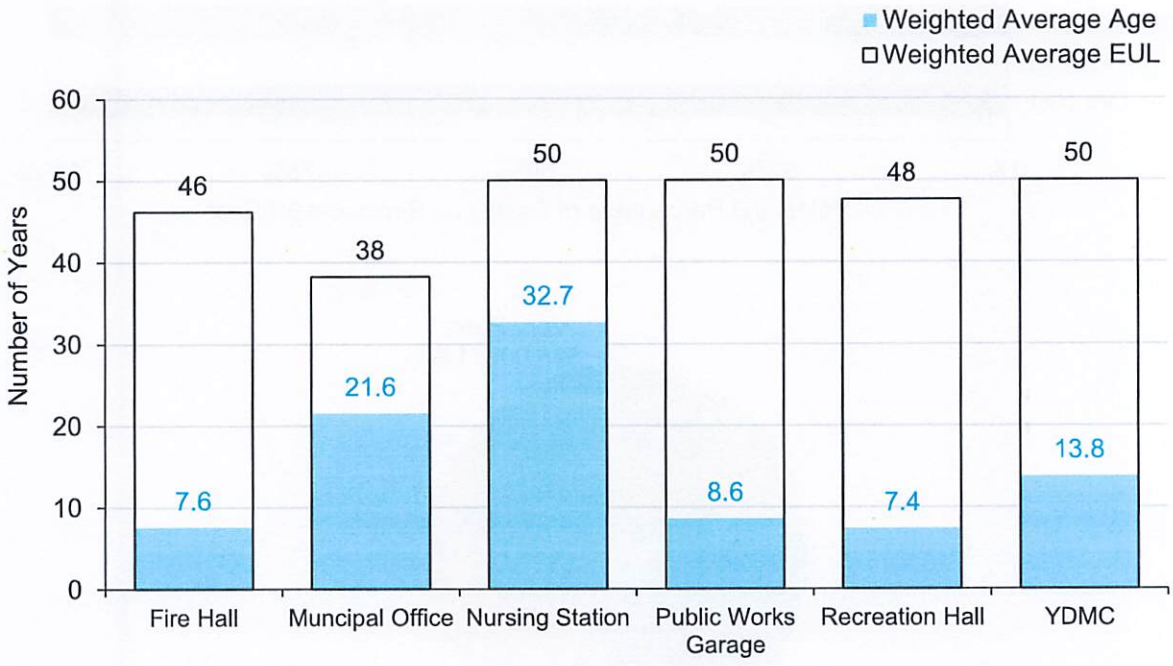
Current Approach to Condition Assessment

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

- Comprehensive evaluations (when necessary) are primarily carried out by external consultants, while safety inspections are executed by internal staff.
- The Township is in the process of collaborating with other municipalities to further expand condition assessments

4.3.3 Estimated Useful Life & Average Age

The Estimated Useful Life for 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. Assessed condition may increase or decrease the average service life remaining.



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

4.3.4 Lifecycle Management Strategy

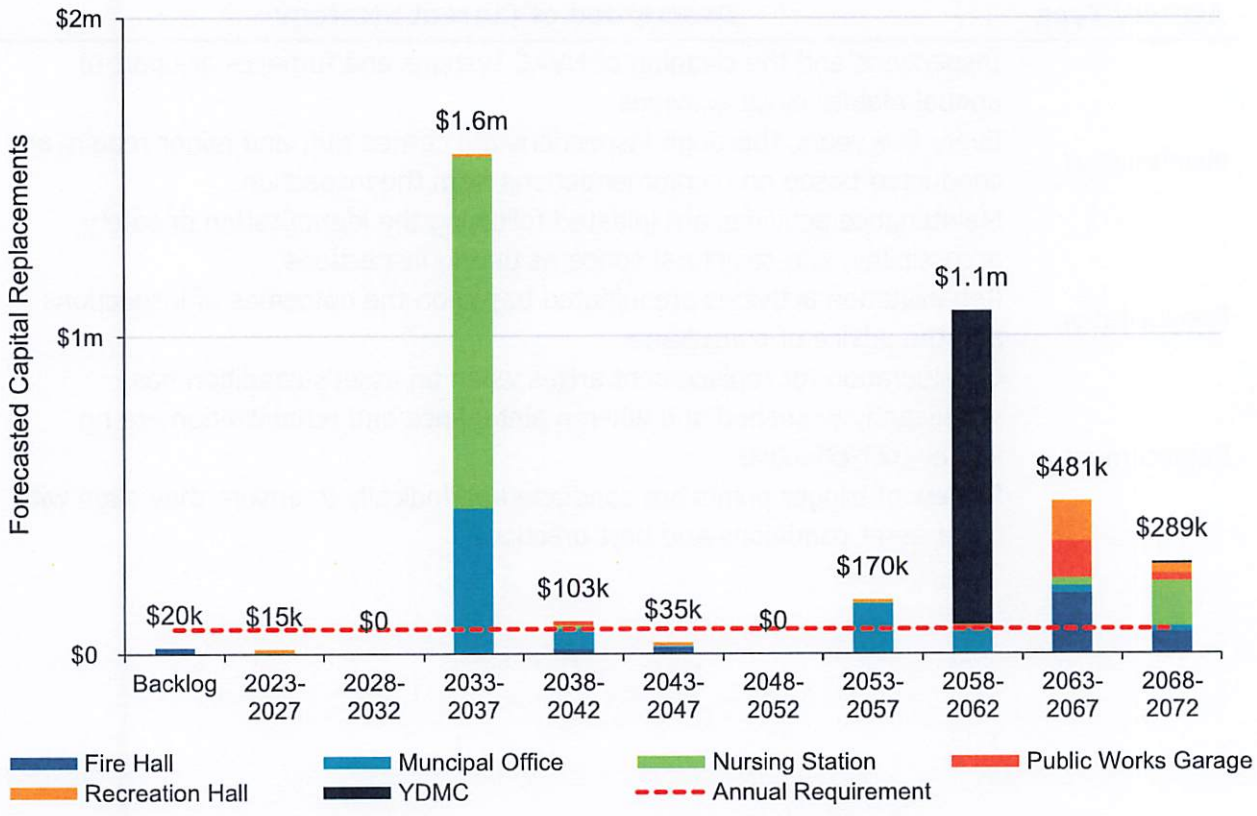
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Inspections and the cleaning of HVAC systems and furnaces are part of annual maintenance activities
	Every five years, thorough inspections are carried out, and minor repairs are conducted based on recommendations from the inspection
	Maintenance activities are initiated following the identification of safety, accessibility, and structural concerns during inspections
Rehabilitation	Rehabilitation activities are initiated based on the outcomes of inspections and the advice of consultants
Replacement	Consideration for replacement arises when an asset's condition has significantly worsened and when maintenance and rehabilitation are no longer cost-effective
	Review of trigger points are conducted periodically to ensure they align with other asset conditions and best practices

Forecasted Capital Requirements

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

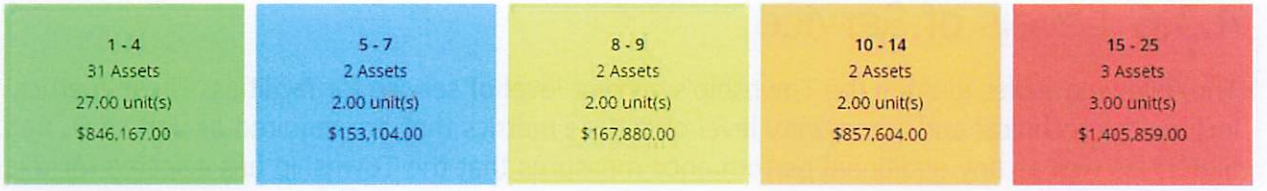


The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix B.

4.3.5 Risk & Criticality

Risk Matrix

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



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

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

Risks to Current Asset Management Strategies

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

Climate Change & Extreme Weather Events

Climate change and extreme weather, including heavy rainfall, floods, storms, and wildfires, are escalating risks to Matachewan's facilities. These conditions can compromise building integrity, necessitate expensive repairs, or even total rebuilds. Additionally, they can worsen building weaknesses like poor insulation, leading to degradation. Extreme temperatures may also overburden HVAC systems, increasing maintenance needs and reducing their lifespan. Therefore, climate change impacts both the immediate safety and long-term durability of Matachewan's infrastructure.

Asset Data

The lack of reliable asset data in Matachewan poses significant risks to its facilities, impacting maintenance and strategic planning. Without accurate data on building conditions and histories, decision-making becomes speculative, possibly leading to overlooked maintenance needs, resource misallocation, and increased emergency repair costs. This uncertainty undermines the safety, efficiency, and longevity of the Township's infrastructure. Enhancing data collection and

management is critical to ensuring the Township's infrastructure resilience and safety.

When funding permits, the Township should consider conducting an external building condition assessment (BCA), which would componentize its facilities (UNIFORMAT II). Doing so will allow for the Township to more accurately plan capital expenditure, have better condition data, and so on.

4.3.6 Levels of Service

The following tables identify the Township's current level of service for 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 Township 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 facilities.

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include maps, of the types of facilities that the Township operates and maintains	Refer to section 4.3.1
Quality	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Refer to sections 4.3.4 & 4.3.5

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Quality	Average condition score for facilities	54%
Performance	Annual capital reinvestment rate	0.00%

4.3.7 Recommendations

Asset Inventory

- Facilities consist of several separate capital components that have unique estimated useful lives and require asset-specific lifecycle strategies. When funding is available, a building condition assessment (BCA) will create a component-based inventory of all facilities, which will allow for component-based lifecycle planning.

Replacement Costs

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

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

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

4.4 Land Improvements

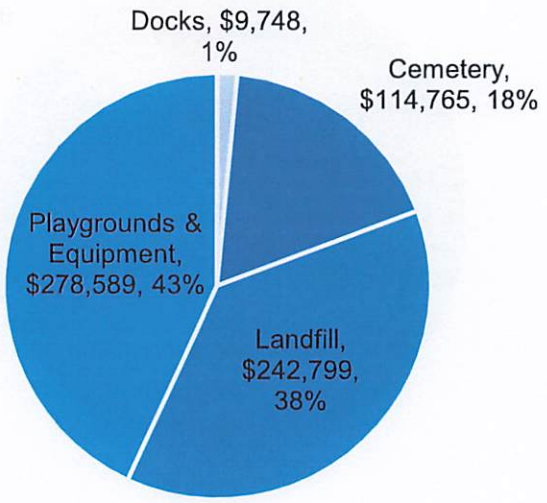
The Township of Matachewan owns various land improvement assets including:

- Cemetery
- Docks
- Landfill
- Playgrounds and equipment

4.4.1 Asset Inventory & Replacement Cost

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

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Cemetery	7	Assets	$115,000	CPI
Docks	1	Assets	$10,000	CPI
Landfill	3	Assets	$243,000	CPI
Playgrounds & Equipment	12	Assets	$279,000	CPI

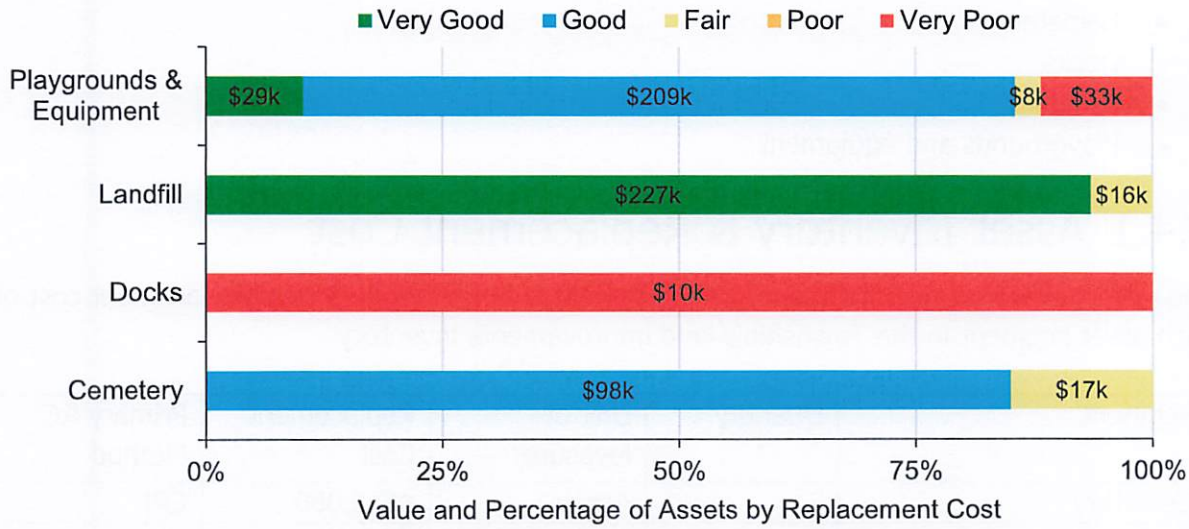


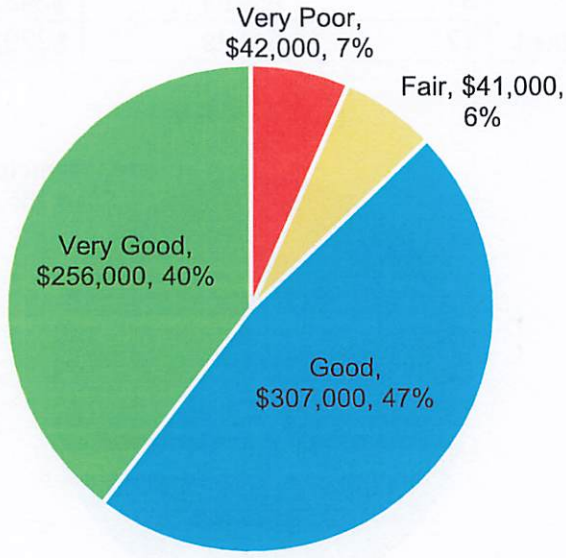
Total Current Replacement Cost: $645,901

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

4.4.2 Asset Condition

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





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

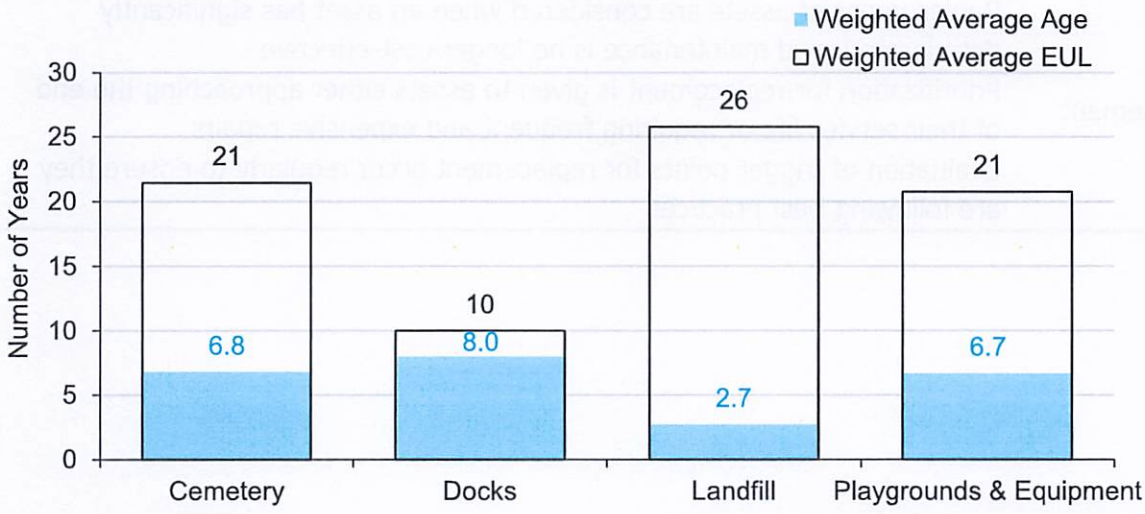
Current Approach to Condition Assessment

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

- The Township's campground, Pioneer Park, is evaluated annually by the Public Works department. These assessments are primarily conducted by internal staff
- Currently, these inspections are primarily conducted by internal staff and use a condition rating criteria of good, fair, and poor

4.4.3 Estimated Useful Life & Average Age

The Estimated Useful Life for land improvements assets has been assigned according to a combination of established industry standards and staff knowledge. The average age of each asset is based on the number of years each asset has been in-service. Assessed condition may increase or decrease the average service life remaining.



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

4.4.4 Lifecycle Management Strategy

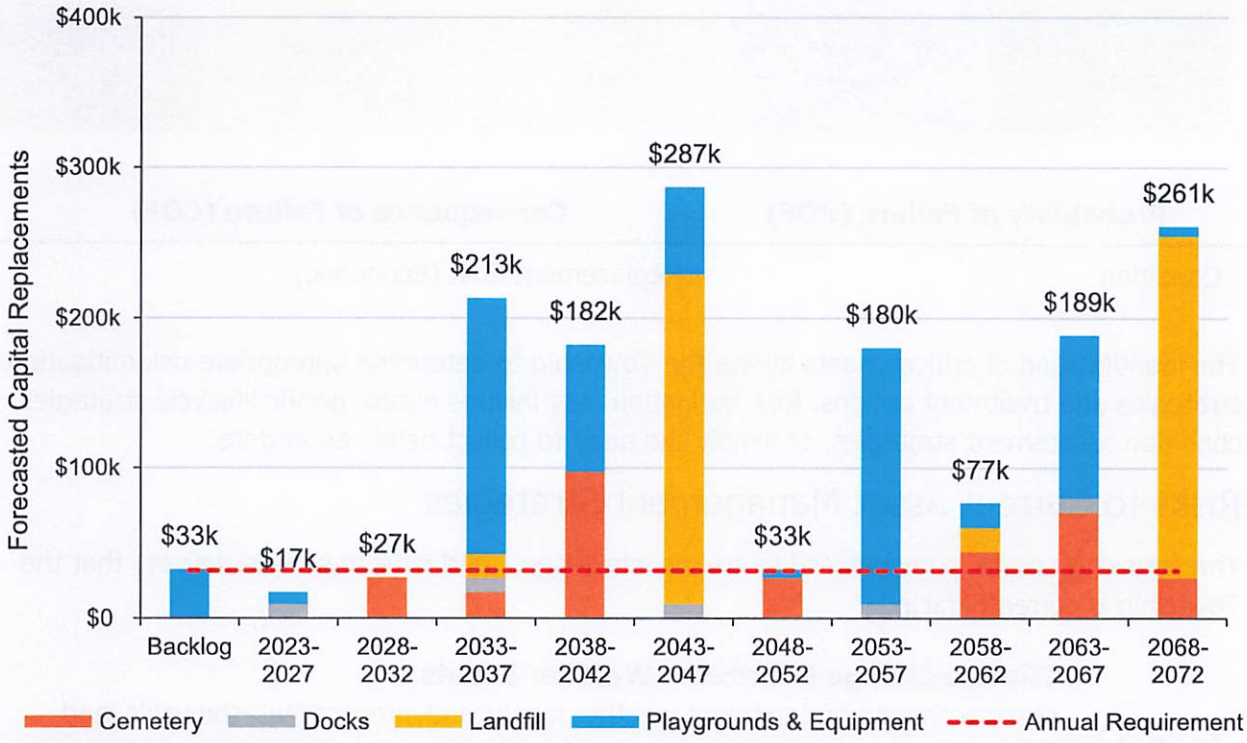
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Maintenance activities are comprised of inspections, cleaning, minor repairs, and managing vegetation
	Maintenance actions are initiated following the detection of safety and structural concerns during inspections
Rehabilitation	There are currently no rehabilitation measures implemented for parks and land improvements assets
Replacement	Replacement of assets are considered when an asset has significantly deteriorated, and maintenance is no longer cost-effective
	Prioritization for replacement is given to assets either approaching the end of their service life or requiring frequent and expensive repairs
	Evaluation of trigger points for replacement occur regularly to ensure they are following best practices

Forecasted Capital Requirements

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

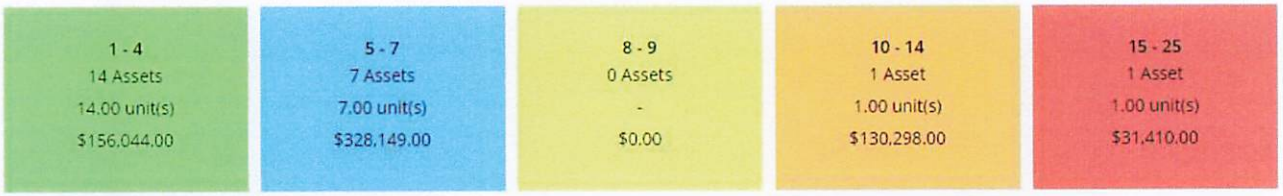


The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix B.

4.4.5 Risk & Criticality

Risk Matrix

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



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

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

Risks to Current Asset Management Strategies

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

Climate Change & Extreme Weather Events

Climate change and extreme weather significantly impact Matachewan's land improvements and parks, with potential for soil erosion, loss of vegetation, and damage to playground equipment due to storms, floods, and droughts. These events can compromise the ecological health, biodiversity, and recreational quality of these areas. The changing climate underscores the necessity for adaptive management and resilience strategies to protect and preserve the Township's land improvement and parks assets against these growing challenges.

4.4.6 Levels of Service

The following tables identify the Township's current level of service for land improvement assets. 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 Township 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 improvement assets.

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include maps, of the types of land improvements that the Township operates and maintains	Refer to section 4.4.1
Quality	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Refer to sections 4.4.4 & 4.4.5

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Quality	Average condition of land improvement assets	69%
Performance	Annual capital reinvestment rate	0.00%

4.4.7 Recommendations

Asset Inventory

- Township staff should continue refining its asset register by updating replacement costs. Replacement costs should be updated according to the best available information on the cost to replace the asset, using today's value.
- The Township owns an unknown number of trails. It is recommended that for the following iterations of the AMP, the Township allocate appropriate resources in determining pertinent attribute details including quantities, engineering EULs, and replacement costs.

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

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

4.5 Vehicles

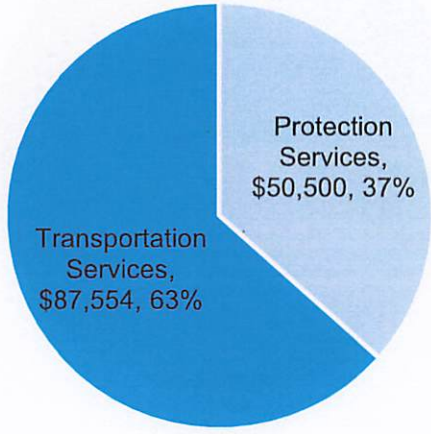
Vehicles allow staff to efficiently deliver municipal services and personnel. Municipal vehicles are used to support several service areas, including:

- Protection service vehicles to provide emergency services
- Dump trucks and pickup trucks to provide transportation services

4.5.1 Asset Inventory & Replacement Cost

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

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Protection Services	2	Assets	$51,000	User-defined
Transportation Services	2	Assets	$88,000	CPI

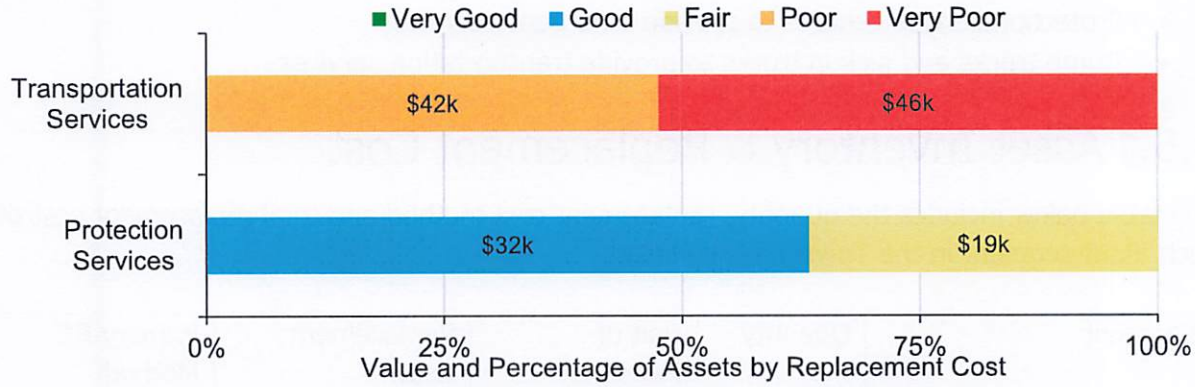


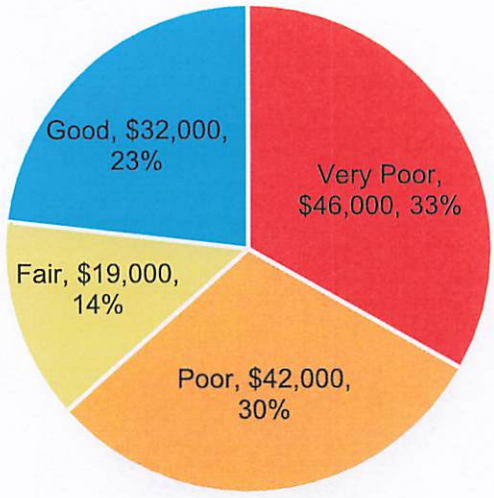
Total Current Replacement Cost: $138,054

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

4.5.2 Asset Condition

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





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

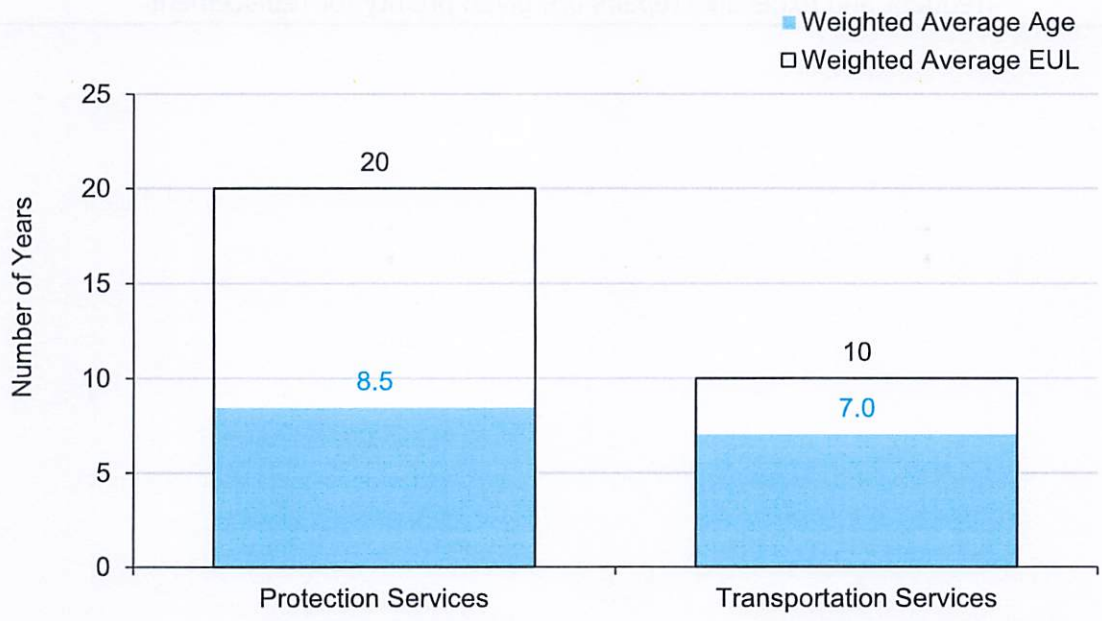
Current Approach to Condition Assessment

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

- A visual inspection is performed prior to use of any vehicle. Daily inspections are also performed and carried out by internal staff
- Annual inspections are performed by external contractors on an annual basis and additionally, on an as-needed basis. The most recent annual inspection was completed in October 2023
- Inspections are primarily conducted by internal staff and use a condition rating criteria of good, fair, and poor
- The Township's protection assets receive mandated scheduled inspections, as required

4.5.3 Estimated Useful Life & Average Age

The Estimated Useful Life for vehicle 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. Assessed condition may increase or decrease the average service life remaining.



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

4.5.4 Lifecycle Management Strategy

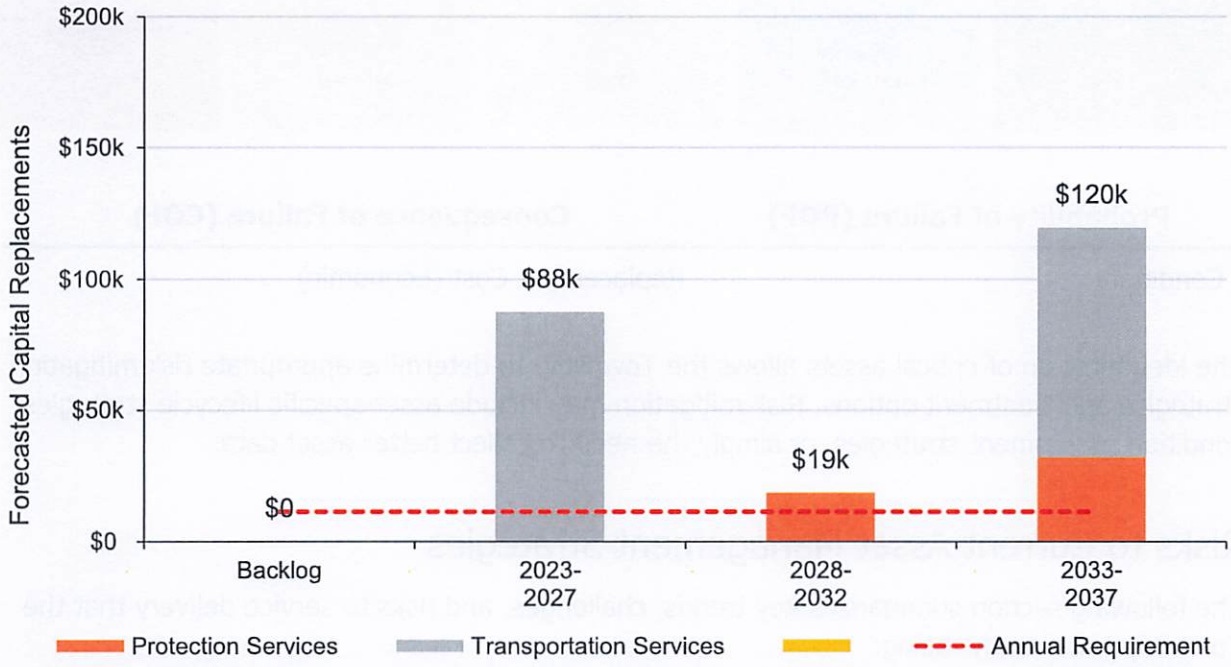
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Regular maintenance tasks include inspections, tire rotations, minor repairs, and oil changes
	Vehicles are inspected daily, with repairs carried out on an as-needed basis
	Maintenance actions are initiated upon the detection of safety and mechanical problems during inspections
Rehabilitation	There are currently no rehabilitation measures implemented for vehicle assets
Replacement	Consideration for replacement arises when a vehicle's condition significantly worsens, and when maintenance is no longer cost-effective
	Vehicles nearing the end of their expected service life or those requiring frequent and expensive repairs are given priority for replacement

Forecasted Capital Requirements

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

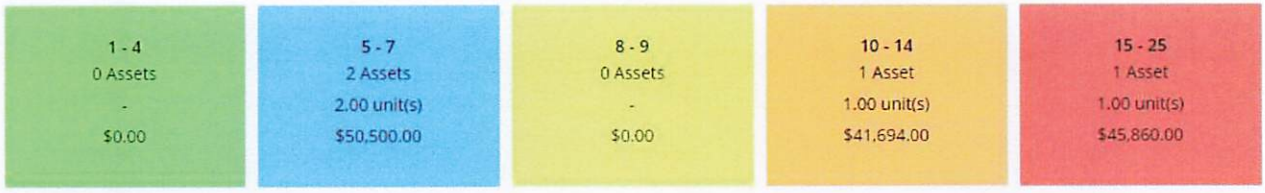


The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix B.

4.5.5 Risk & Criticality

Risk Matrix

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



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

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

Risks to Current Asset Management Strategies

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

Capital Funding Strategies

The Township of Matachewan faces significant risks due to the lack of capital funding allocated for its vehicles. Without dedicated funds for maintenance and upgrades, safety hazards, operational inefficiencies, and rising maintenance costs are heightened. The current poor condition of the vehicle fleet underscores the urgency of addressing this issue to maintain essential municipal services such as emergency response and public works. Failure to invest in upgrades or replacements may impede the Township's ability to ensure the reliability of Matachewan's vehicle assets and meet community needs effectively.

4.5.6 Levels of Service

The following tables identify the Township'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 Township 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 (2022)
Scope	Description or images of the types of vehicles that the Township operates and the services that they help to provide to the community	Refer to section 4.5.1
Quality	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Refer to sections 4.5.4 & 4.5.5

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 (2022)
Quality	Average condition of vehicles	32%
Performance	Annual capital reinvestment rate	0.00%

4.5.7 Recommendations

Asset Inventory

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

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

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

4.6 Machinery and Equipment

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

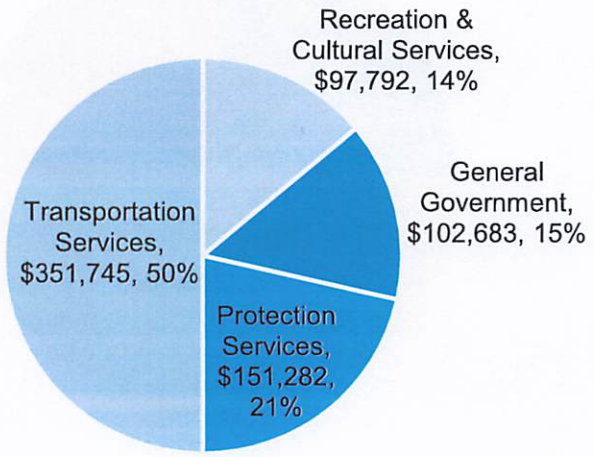
- Office equipment to support administrative services
- Fire equipment to support the delivery of emergency services
- Maintenance machinery and equipment to support transportation, recreational and cultural services

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

4.6.1 Asset Inventory & Replacement Cost

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

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
General Government	13	Assets	$103,000	CPI
Protection Services	11	Assets	$151,000	CPI
Recreation & Cultural Services	10	Assets	$98,000	CPI
Transportation Services	9	Assets	$352,000	CPI

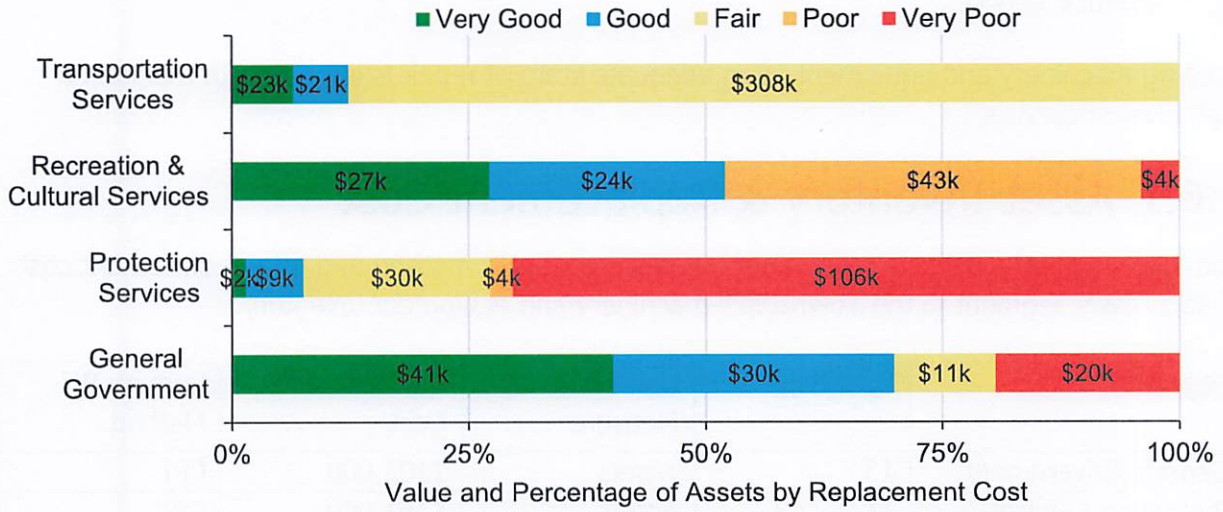


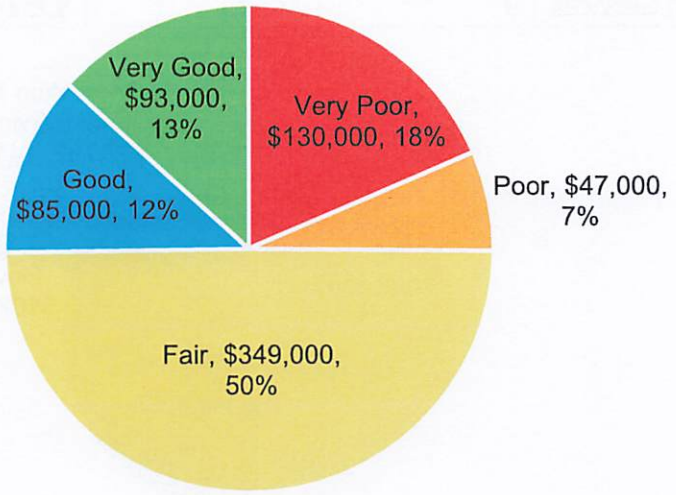
Total Current Replacement Cost: $703,502

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

4.6.2 Asset Condition

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





To ensure that the Township's machinery and equipment continues to provide an acceptable level of service, the Township should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management strategy to determine

what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the machinery and equipment.

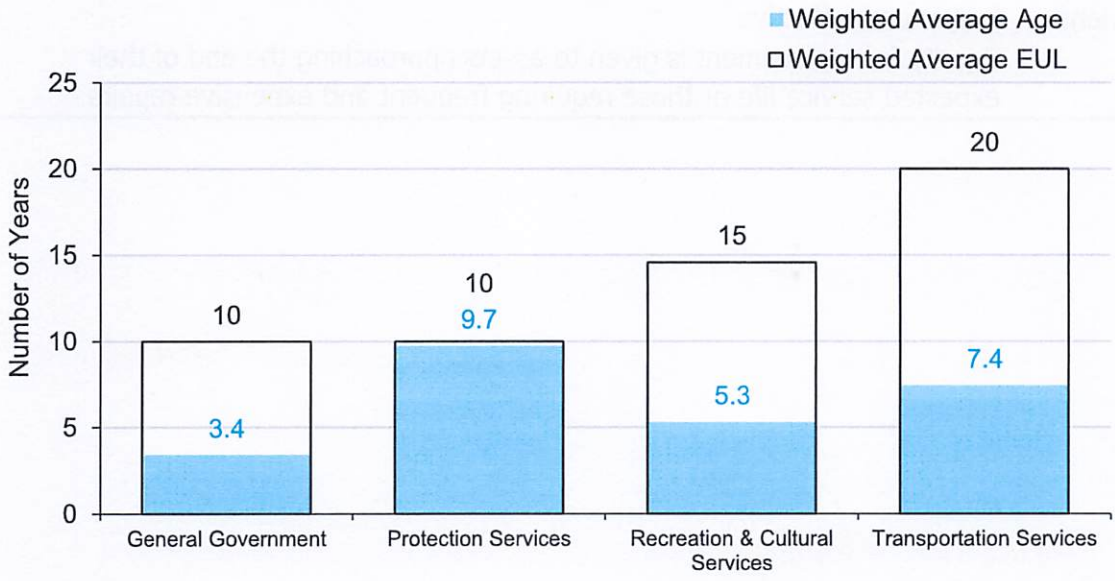
Current Approach to Condition Assessment

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

- Machinery and equipment valued over $5,000 are subject to annual assessments in accordance with the established internal policies, with the most recent inspection carried out in 2022
- Inspections are primarily conducted by internal staff and use a condition rating criteria of good, fair, and poor

4.6.3 Estimated Useful Life & Average Age

The Estimated Useful Life for machinery and 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. Assessed condition may increase or decrease the average service life remaining.



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

4.6.4 Lifecycle Management Strategy

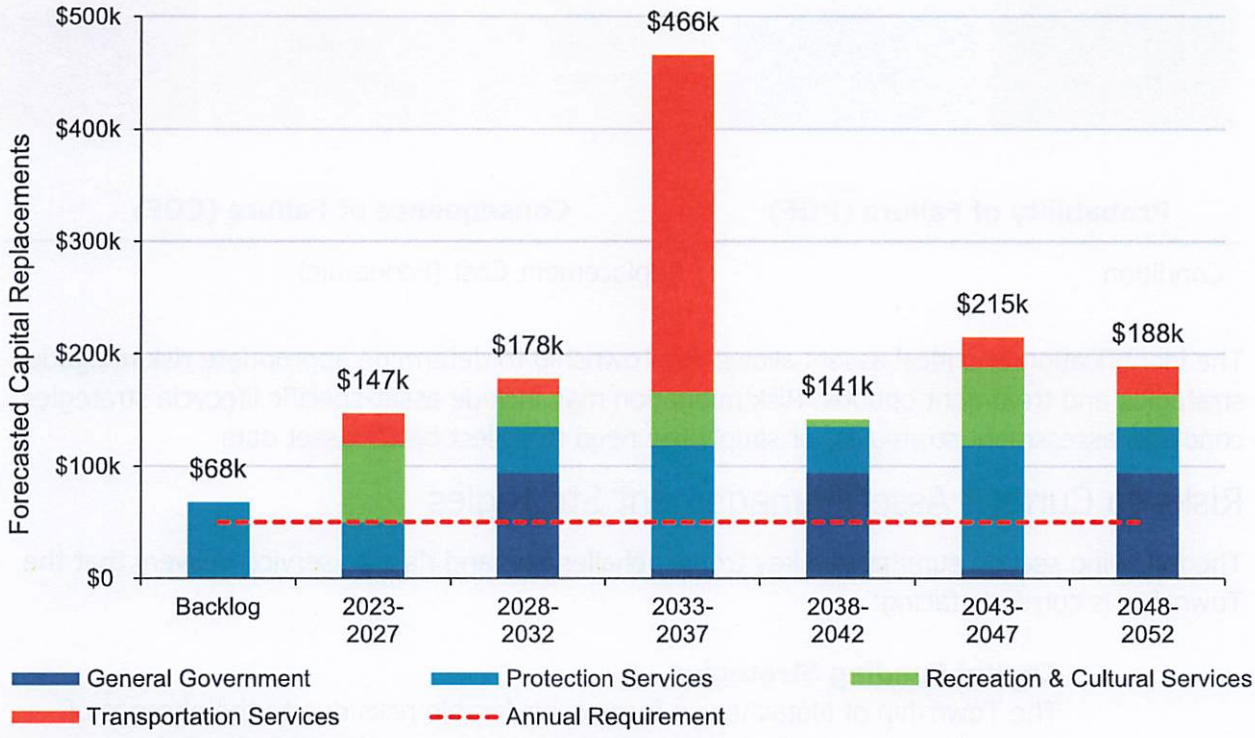
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Township's current lifecycle management strategy for machinery and equipment.

Activity Type	Description of Current Strategy
Maintenance	Standard maintenance procedures for machinery and equipment include inspections, minor repairs, and oil changes
	Inspections take place annually, with minor repairs carried out as necessary
	Maintenance activities are triggered based on inspection findings that highlight safety and structural concerns
Rehabilitation	There are currently no rehabilitation measures implemented for machinery and equipment assets
Replacement	The decision to replace machinery and equipment is made when their condition significantly declines to a point where maintaining them is no longer cost-effective
	Priority for replacement is given to assets approaching the end of their expected service life or those requiring frequent and expensive repairs

Forecasted Capital Requirements

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

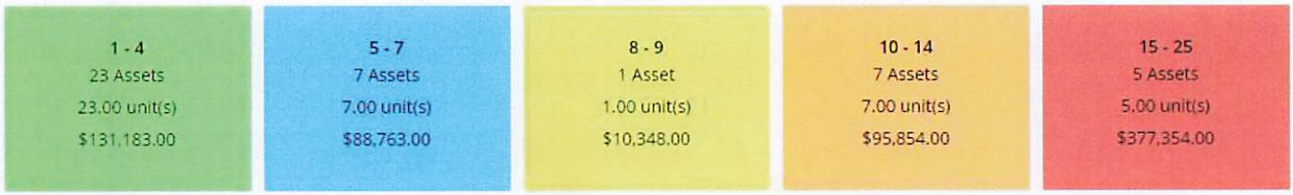


The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix B.

4.6.5 Risk & Criticality

Risk Matrix

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



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

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

Risks to Current Asset Management Strategies

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

Capital Funding Strategies

The Township of Matachewan faces considerable risks due to the absence of capital allocation for its machinery and equipment within their funding strategy. With the average condition of their assets assessed as poor, the lack of dedicated funds for maintenance and upgrades heightens concerns regarding safety, operational efficiency, and increasing maintenance costs. This undermines essential functions across emergency services, recreation, transportation, and general equipment. Without adequate investment, there is an elevated risk of equipment failure, potentially leading to service disruptions and safety hazards for both employees and the community. It's imperative to address this risk by implementing a comprehensive capital funding strategy to ensure the reliability and functionality of Matachewan's machinery and equipment while meeting the needs of the community.

4.6.6 Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description or images of the types of machinery and equipment that the Township operates and the services that they help to provide to the community	Refer to section 4.6.1
Quality	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Refer to sections 4.6.4 & 4.6.5

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Quality	Average condition of machinery and equipment	48%
Performance	Annual capital reinvestment rate	0.00%

4.6.7 Recommendations

Asset Inventory

- Township staff should continue refining its asset register by updating replacement costs. Replacement costs should be updated according to the best available information on the cost to replace the asset, using 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

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

Levels of Service

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

4.7 Furniture and Fixtures

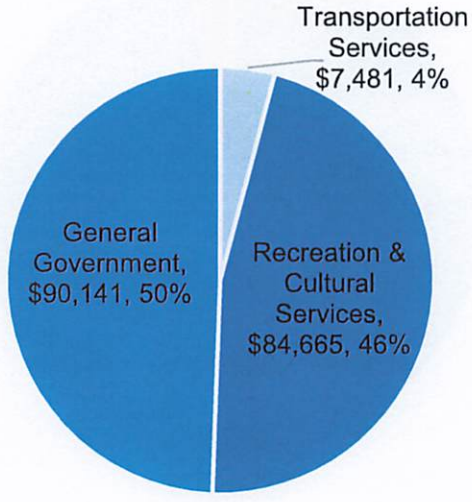
The Township of Matachewan owns several assets pertaining to furniture and fixtures. Assets include:

- Office furniture
- Benches, garbage cans, and message boards
- Bus shelters

4.7.1 Asset Inventory & Replacement Cost

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

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
General Government	15	Assets	$90,000	CPI
Recreation & Cultural Services	6	Assets	$85,000	CPI
Transportation Services	2	Assets	$7,000	CPI

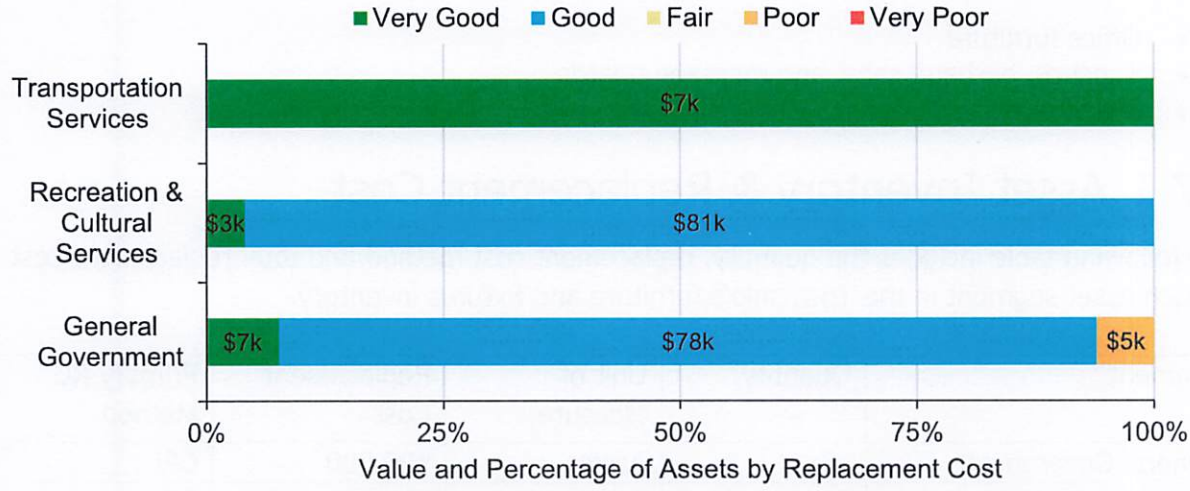


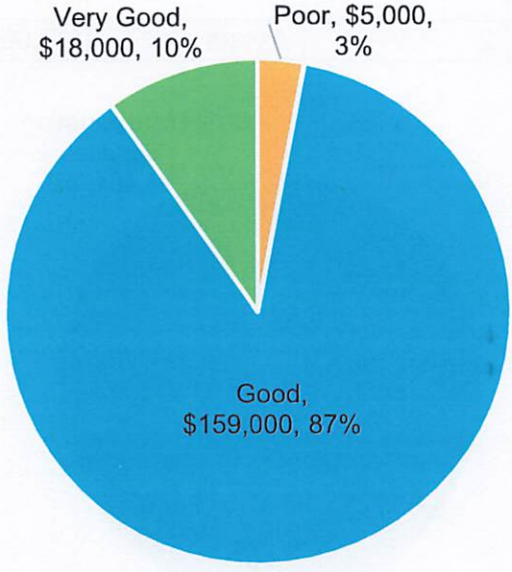
Total Current Replacement Cost: $182,287

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

4.7.2 Asset Condition

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





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

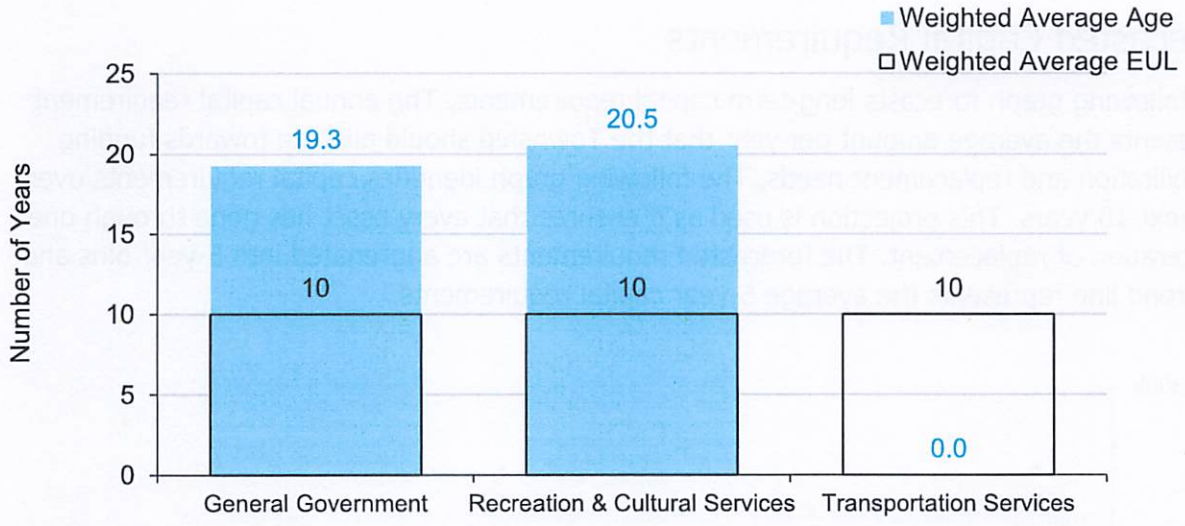
Current Approach to Condition Assessment

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

- There are no formal condition assessment programs in place for furniture and fixture assets.

4.7.3 Estimated Useful Life & Average Age

The Estimated Useful Life for furniture and fixtures 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. Assessed condition may increase or decrease the average service life remaining.



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

4.7.4 Lifecycle Management Strategy

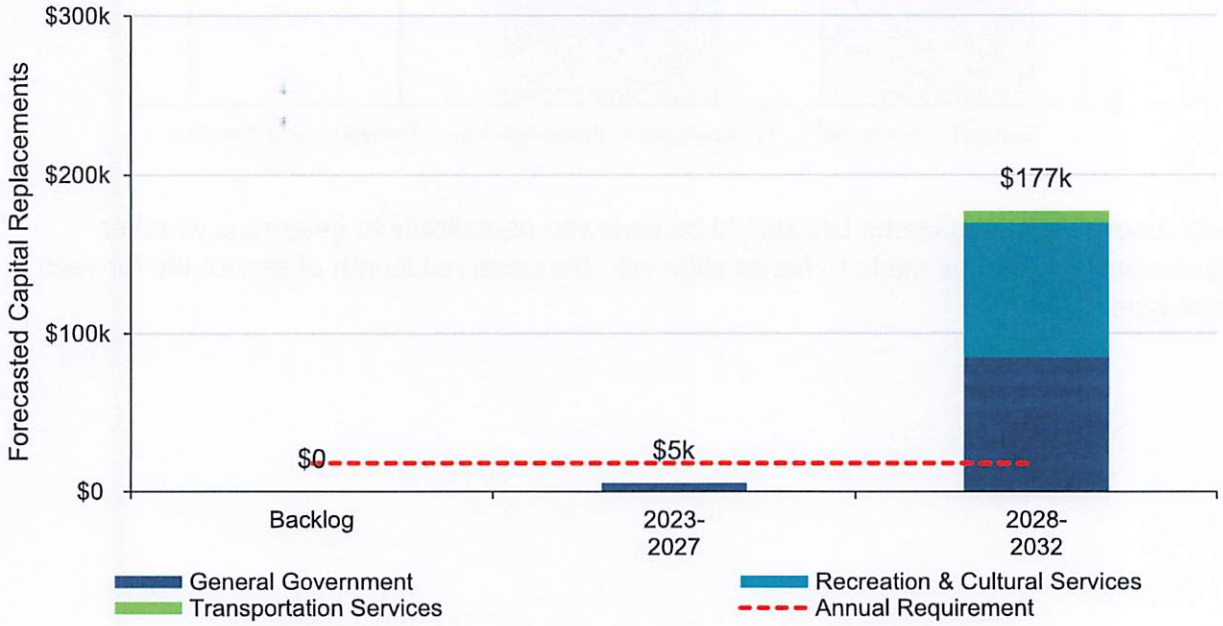
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

The following table outlines the Township's current lifecycle management strategy for machinery and equipment.

Activity Type	Description of Current Strategy
Maintenance/ Rehabilitation/ Replacement	Lifecycle activities are primarily reactive, focusing on replacing assets at the end of life. Replacement priority is given to assets nearing the end of their service life or those with higher replacement costs.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 10 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.

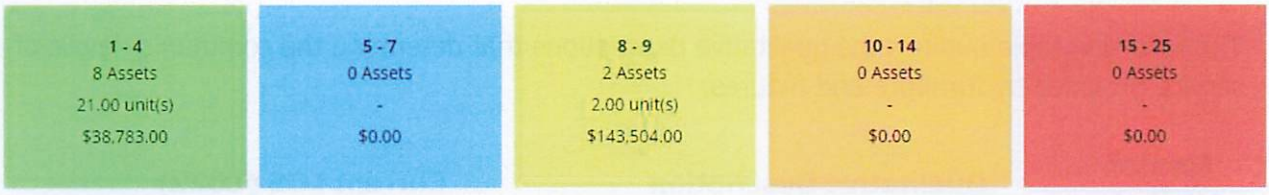


The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix B.

4.7.5 Risk & Criticality

Risk Matrix

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



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

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

Risks to Current Asset Management Strategies

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

Capital Funding Strategies

The absence of capital funding strategies poses a risk to the Township's furniture and fixtures. Without allocated funds for maintenance, rehabilitation or replacement, these assets are likely to deteriorate, leading to unexpected and higher long-term costs. Additionally, declining quality and functionality can negatively impact the usability and appeal of public spaces (ex. bus shelters).

4.7.6 Levels of Service

The following tables identify the Township's current level of service for furniture and fixtures. 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 Township 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 furniture and fixtures.

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description or images of the types of furniture and fixtures that the Township operates and the services that they help to provide to the community	Refer to section 4.7.1
Quality	Describe criteria for rehabilitation and replacement decisions and any related long-term forecasts	Refer to sections 4.7.4 & 4.7.5

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Quality	Average condition of furniture and fixtures	70%
Performance	Annual capital reinvestment rate	0.00%

4.7.7 Recommendations

Asset Inventory

- Township staff should continue refining its asset register by updating replacement costs. Replacement costs should be updated according to the best available information on the cost to replace the asset, using 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

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

Levels of Service

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

5 Analysis of Rate-funded Assets

Key Insights

- Rate-funded assets are valued at $12.1 million
- 98% of rate-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for rate-funded assets is approximately $281,000
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

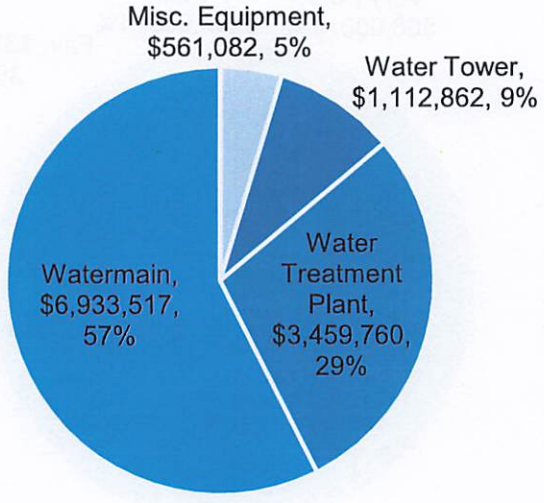
5.1 Water Network

Water services provided by the Township are managed and operated by OCWA and municipal staff. The network represents the highest asset category in the Township's portfolio and includes assets such as water equipment, water towers, water treatment plants, and watermains.

5.1.1 Asset Inventory & Replacement Cost

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

Segment	Quantity	Unit of Measure	Replacement Cost	Primary RC Method
Misc. Equipment	6	Assets	$561,000	CPI
Water Tower	6	Assets	$1,113,000	CPI
Water Treatment Plant	1	Assets	$3,460,000	User-defined
Watermain	9,205	Meters	$6,934,000	CPI

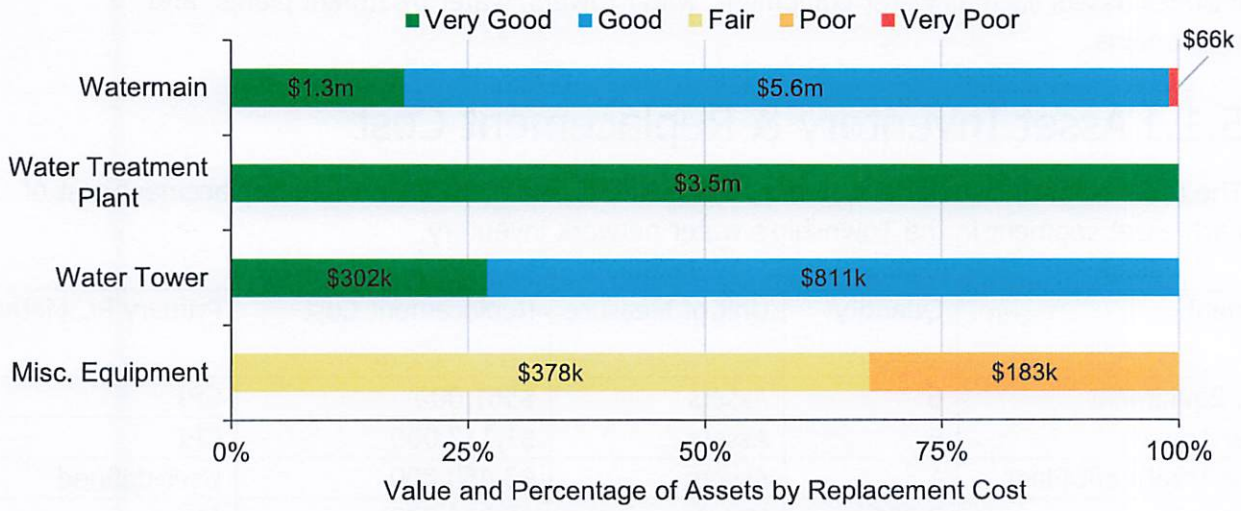


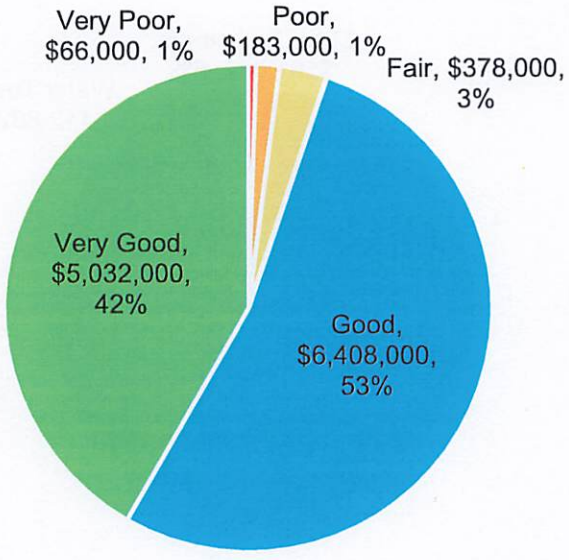
Total Current Replacement Cost: $12,067,221

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

5.1.2 Asset Condition

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





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

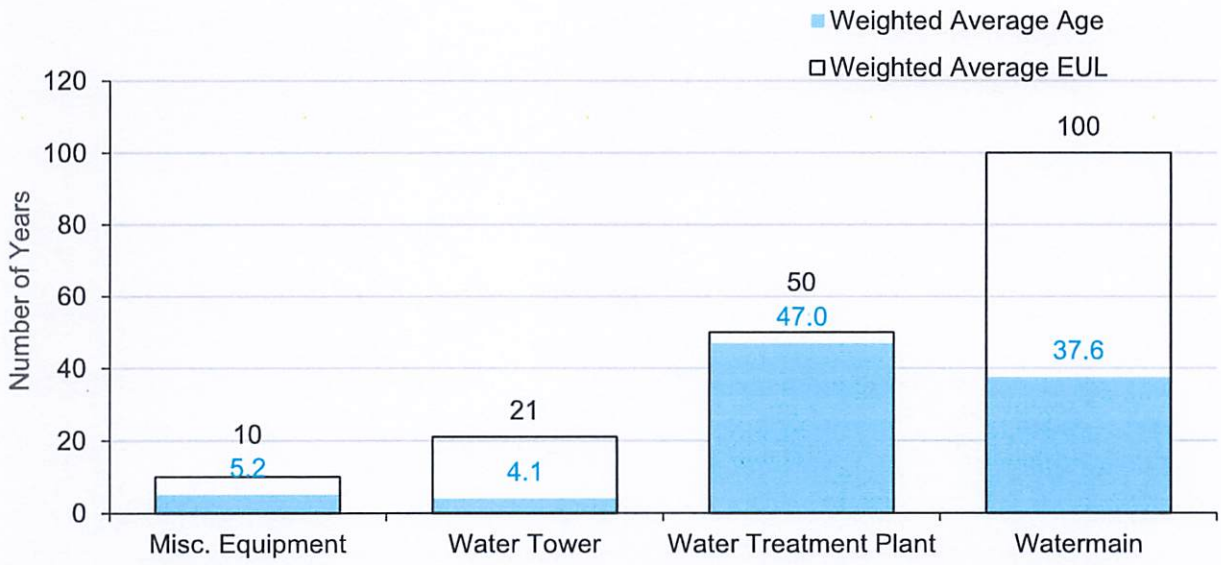
Current Approach to Condition Assessment

Accurate and reliable condition data is important to estimating the remaining service life of assets and identifying the most cost-effective approach to managing assets. The following describes the Township's current approach:

- Staff primarily rely on the age and material of water mains to determine the projected condition of watermains. However, the Township recently conducted a leak detection analysis, via OCWA, as average water usage had increased from 26.8% in 2018, to 44.7% in 2022.
- The most recent condition assessment for the water treatment plant was completed in 2020. OCWA also conducts visual assessments on a regular basis to note defects and guide lifecycle activities.

5.1.3 Estimated Useful Life & Average Age

The Estimated Useful Life for water network assets has been assigned according to a combination of established industry standards and staff knowledge. The average age of each asset is based on the number of years each asset has been in-service. Assessed condition may increase or decrease the average service life remaining.



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

5.1.4 Lifecycle Management Strategy

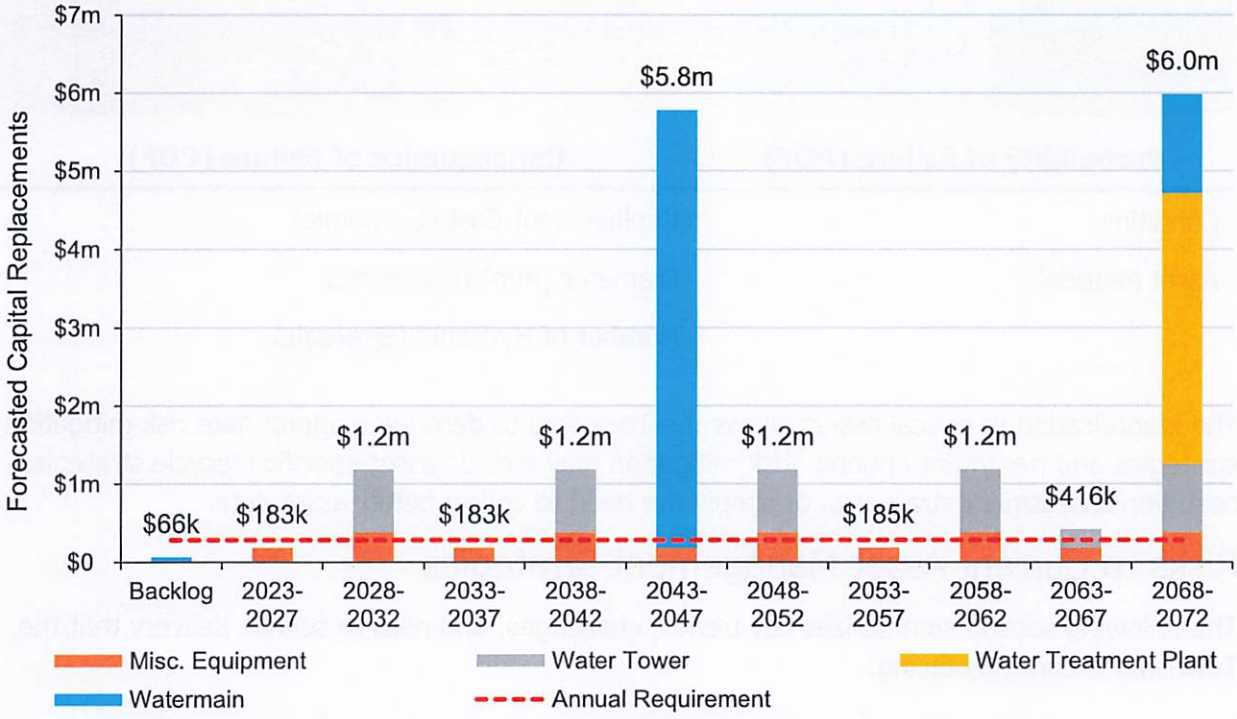
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Main flushing is completed on 100% of the network every 2 years
Rehabilitation	Trenchless re-lining of water mains presents significant challenges and is not always a viable option
Replacement	In the absence of mid-lifecycle rehabilitative events, most mains are simply maintained with the goal of full replacement once it reaches its end-of-life
	Replacement activities are identified based on an analysis of the main break rate as well as any issues identified during regular maintenance activities
	OCWA is responsible for the maintenance, rehabilitation, and replacement of the water treatment plant

Forecasted Capital Requirements

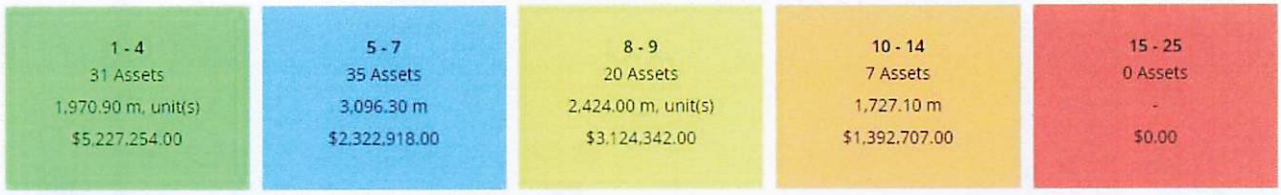
The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 50 years. This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



5.1.5 Risk & Criticality

Risk Matrix

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



Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Economic)
Asset Material	Diameter (mm) (Economic)
	Number of Hydrants (Strategic)

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

Risks to Current Asset Management Strategies

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

Aging Infrastructure & Capital Funding

As watermains continue to age, there are a handful of assets that are approaching their original useful life. There is currently no decision-making process in place to determine how to plan for structures that will require replacement or disposal. Replacement is often deferred due to limited funding. A long-term capital funding strategy for the aging inventory can help prevent deferral of necessary capital projects.

5.1.6 Levels of Service

The following tables identify the Township's current level 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 Township 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 (2022)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	Water connectivity in the Township mirrors road & fire flow connectivity. See Appendix C.
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	See Appendix C
Reliability	Description of boil water advisories and service interruptions	The Municipality has not experienced any service interruptions in 2022. The Township follows Ontario's Drinking Water Quality Management Standard (DWQMS). The Municipality delivers boil water advisories to affected households.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Scope	% of properties connected to the municipal water system	74%
	% of properties where fire flow is available	74%
Reliability	# of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	0
	# of connection-days per year where water is not available due to water main breaks compared to the total number of properties connected to the municipal water system	0
Performance	Annual capital re-investment rate	0.21%

5.1.7 Recommendations

Asset Inventory

- The water tower and water treatment plant are each pooled under a single asset. These pooled assets require further segmentation to allow for asset-specific lifecycle planning and costing.

Risk Management Strategies

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

Levels of Service

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

6 Impacts of Growth

Key Insights

- Understanding the key drivers of growth and demand will allow the Township to more effectively plan for new infrastructure, and the upgrade or disposal of existing infrastructure

- The costs of growth should be considered in long-term funding strategies that are designed to maintain the current level of service

6.1 Description of Growth Assumptions

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

6.1.1 Matachewan Community & Economic Development Strategic Plan (April 2013)

The Township of Matachewan adopted a Strategic Plan in 2013. The Township is a small rural Township in Northeastern Ontario, located on the shores of the Montreal River. The Township encompasses an active gold mine which is a critical component of the local economy.

Key actions items in the strategy include beautification, development of residential units, improve fiscal sustainability, and sustain the current level of service and municipal infrastructure. This AMP aligns with the objectives defined in the Township's Strategic Plan by supporting efficient management of capital assets and a sustainable level of service.

6.1.2 Matachewan Official Plan (May 2015)

The Township adopted the Official Plan in May of 2015. The purpose of the Plan is to set out goals and objectives to manage growth and development and the effects on the social, economic, and natural environment of the Township. The Plan is intended to guide development and manage evolving demand in the Township in a sustainable way that reflects community values.

The Official Plan is aligned with the 2011 Growth Plan for Northern Ontario and has been prepared through a lens of sustainability. Though the projected population growth is minimal, the Township is focused on efficient development.

The Township's economy and population are strongly tied to local mining activity. Matachewan supports mineral mining exploration within the Township and will pursue opportunities to utilize the community as a service centre for workers, manufacturing, research, and servicing hub for any existing and potential mine established in the area. Growth may also be promoted through tourism, forestry, park development, and green energy industries.

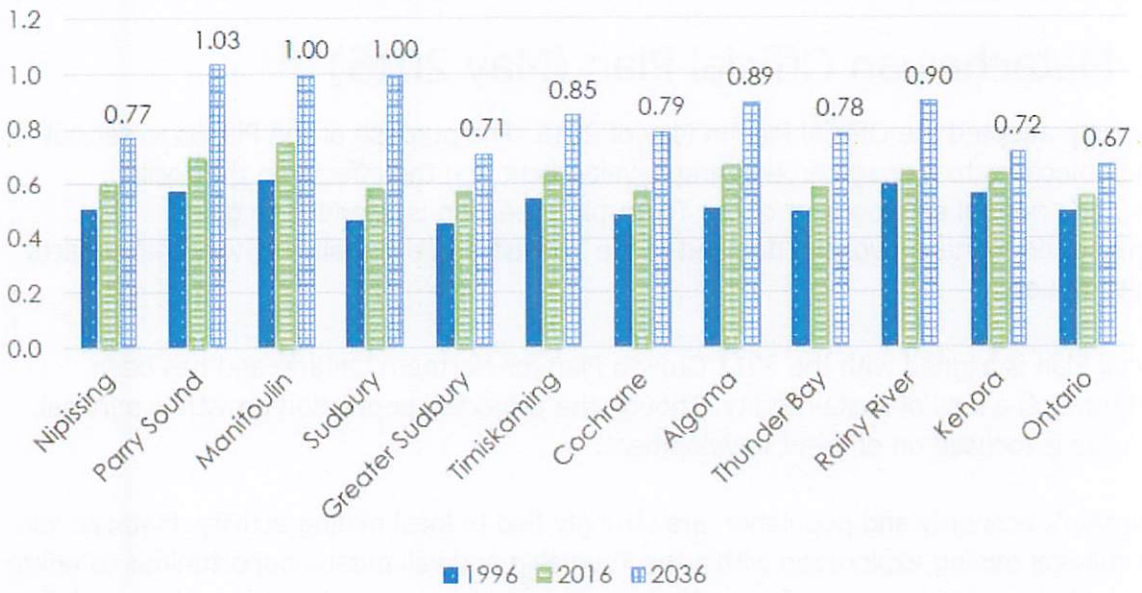
The 2016 Census reported Matachewan's population at 225, down from 409 in 2011. There are currently 166 private dwellings in the Township. The Township is not expected to experience population growth; however, demand will likely evolve, thus requiring a change in asset management practices.

6.1.3 Regional growth

In 2021 the Come North Conference Report was produced by FedNor and Government of Canada. The document describes short, medium, and long-term objectives for all communities in Northern Ontario as it relates to population growth.

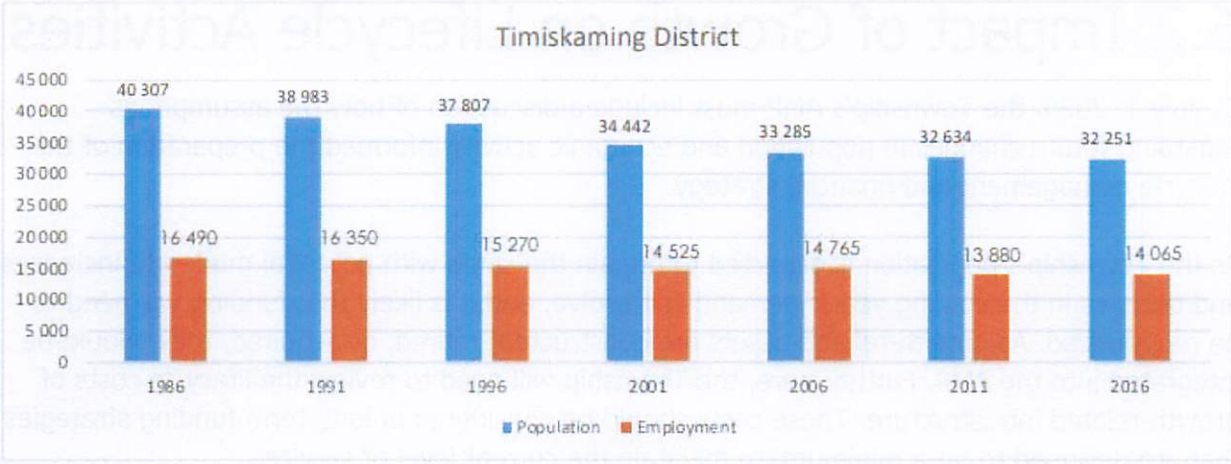
According to the report all 11 Census Districts in Northern Ontario (Nipissing, Parry Sound, Manitoulin, Sudbury, Greater Sudbury, Timiskaming, Cochrane, Algoma, Thunder Bay, Rainy River, Kenora) are currently experiencing the following trends: population decline, population aging, or labour shortages. The report highlights a risk of these communities becoming economically unsustainable unless population retention and attraction numbers improve. The risk is the result of the dependency ratio increasing. The dependency ratio is the ratio of people unable to support themselves without assistance; people between the ages of 0 and 14 and 64 and older.

The goal is to achieve a dependency ratio of 0.5. In 1996, every Census District was at or near the goal but by 2016, none were below and more than half had a ratio more than 0.6. The following graph displays the dependency ratio for each Census District in 1996 and 2016 along with a projected ratio for the year 2036.



The Township of Matachewan is found in the Timiskaming district, which is expected to reach a dependency ratio of 0.85.

The population trends overall in the Northeastern Ontario are in decline. The following graph from the 2019 Timiskaming district report by the Northern Policy Institute, displays the population trends from 1986 to 2016.



The following table, found in the same report, shows population projections in the Northeastern Ontario for the years 2021 to 2041.

Year	Ages 0-19	Ages 20-64	Ages 65+	Total
2021	6,347	17,362	8,029	31,738
2026	6,293	15,709	8,900	30,902
2031	6,092	14,628	9,436	30,156
2036	5,887	14,180	9,412	29,479
2041	5,751	14,014	9,137	28,902

The most recent census data from 2021, shows a slight decrease in the population, reaching a total of 31,424. According to census data, a significant portion of population decrease is within the 15-to-64-year age group, while there is an increase in population for the age of 65 years and over; thus, further increasing the dependency ratio.

6.2 Impact of Growth on Lifecycle Activities

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

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

7 Financial Strategy

Key Insights

- The Township is committing approximately $121,000 towards capital projects per year from sustainable revenue sources
- Given the annual capital requirement of $621,000 there is currently a funding gap of $500,000 annually
- Recommendation: increase tax revenues by 0.9% each year for the next 20 years to achieve a sustainable level of funding
- Recommendation: increase water network rates by 10.4% each year for the next 20 years to achieve a sustainable level of funding

7.1 Financial Strategy Overview

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

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

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

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

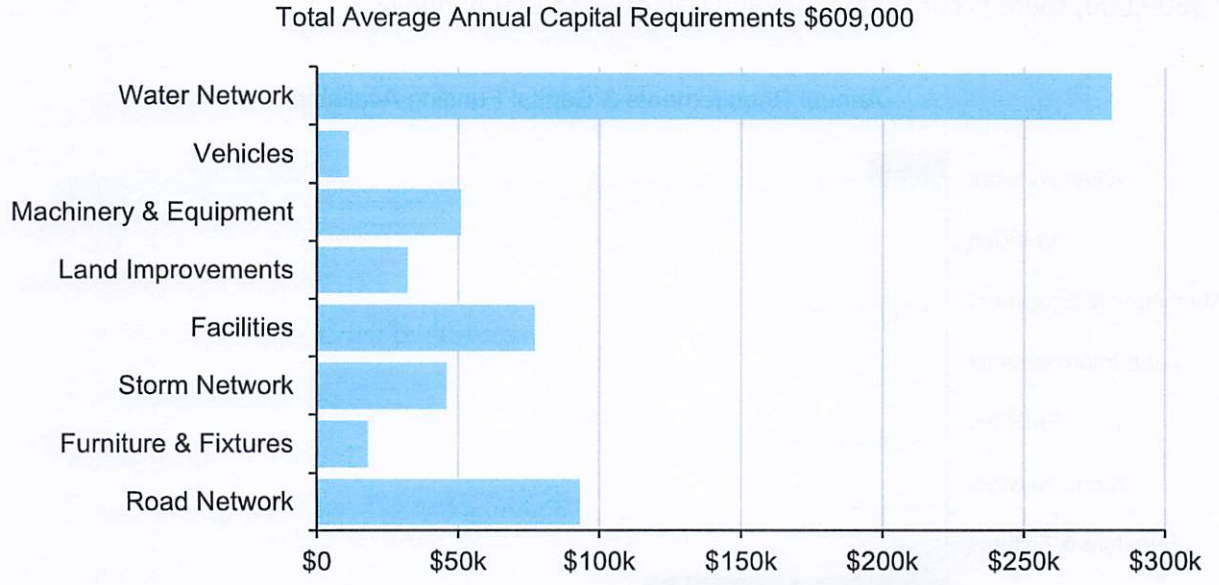
If the financial plan component results in a funding shortfall, the province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the province may evaluate a Township's approach to the following:

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

7.1.1 Annual Requirements & Capital Funding

Annual Requirements

The annual requirements represent the amount the Township should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs, and achieve long-term sustainability. In total, the Township must allocate approximately $609,000 annually to address capital requirements for the assets included in this AMP.



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

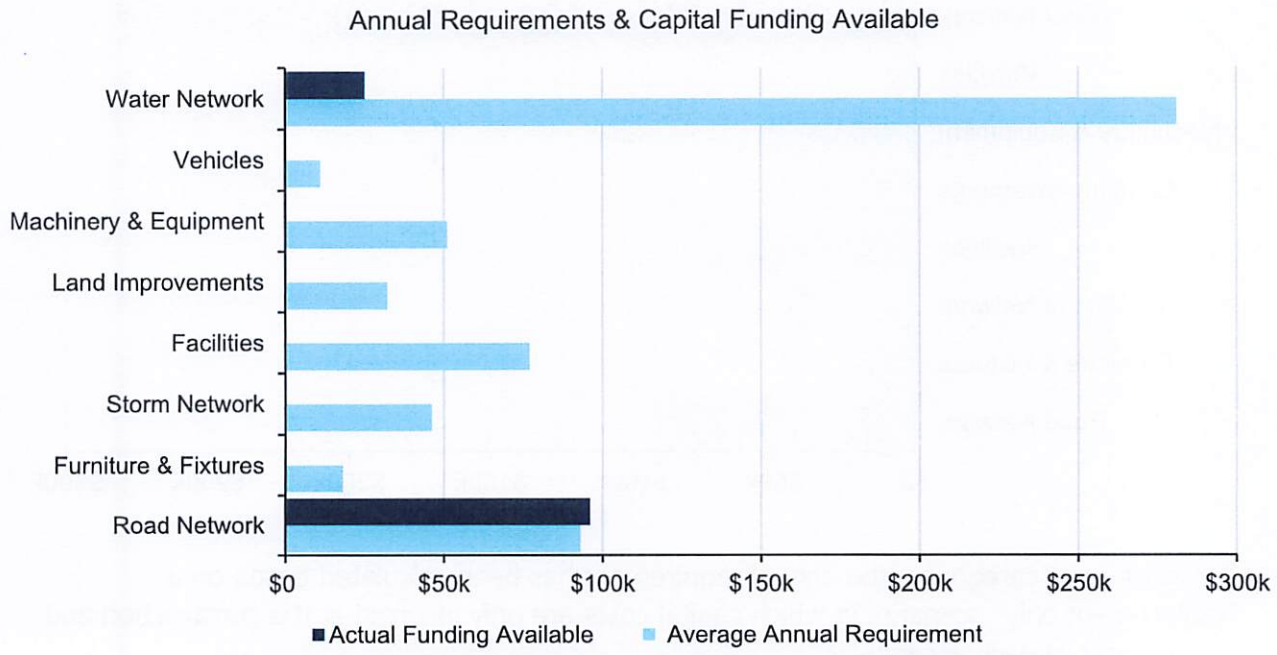
However, for the road network, lifecycle management strategies have been developed to identify capital costs that are realized through strategic rehabilitation and renewal of the Township's roads. The development of these strategies allows for a comparison of potential cost avoidance if the strategies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

1. **Replacement Only Scenario**: Based on the assumption that assets deteriorate and – without regularly scheduled maintenance and rehabilitation – are replaced at the end of their service life.
2. **Lifecycle Strategy Scenario**: Based on the assumption that lifecycle activities are performed at strategic intervals to extend the service life of assets until replacement is required.

The implementation of a proactive lifecycle strategies for various asset categories leads to a potential annual cost avoidance of $65,000. As the lifecycle strategy scenario represents the lowest cost option available to the Township, we have used these annual requirements in the development of the financial strategy.

Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Township is committing approximately $121,000 towards capital projects per year. Given the annual capital requirement of $609,000, there is currently a funding gap of $488,000 annually.



7.2 Funding Objective

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

1. **Tax Funded Assets:** Facilities, Furniture & Fixtures, Land improvements, Machinery & Equipment, Road Network, Storm Network, and Vehicles
2. **Rate-Funded Assets:** Water Network

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

7.3 Financial Profile: Tax Funded Assets

7.3.1 Current Funding Position

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

Asset Category	Avg. Annual Requirement	Annual Funding Available					Annual Deficit
		Taxes	CCBF	OCIF	Taxes to Reserves	Total Available	
Facilities	$77,000						$77,000
Furniture & Fixtures	$18,000						$18,000
Land Improvements	$32,000						$32,000
Machinery & Equipment	$51,000						$51,000
Road Network	$93,000		$14,000	$25,000	$57,000	$96,000	$-3,000
Storm Network	$46,000						$46,000
Vehicles	$11,000						$11,000
	$328,000		**$14,000**	**$25,000**	**$57,000**	**$96,000**	**$232,000**

The average annual investment requirement for the above categories is $328,000. Annual revenue currently allocated to these assets for capital purposes is $96,000, leaving an annual deficit of $232,000. Put differently, these infrastructure categories are currently funded at 29% of their long-term requirements.

7.3.2 Full Funding Requirements

In 2022, the Township of Matachewan has annual tax revenues of $1,380,731. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

Asset Category	Tax Change Required for Full Funding
Facilities	5.6%
Furniture & Fixtures	1.3%
Land Improvements	2.3%
Machinery & Equipment	3.7%
Road Network	-0.2%
Storm Network	3.3%
Vehicles	0.8%
	16.8%

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

	Tax-Funded Asset Categories			
	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	$244,000	$244,000	$244,000	$244,000
Tax Increase Required	16.8%	16.8%	16.8%	16.8%
Annually:	**3.4%**	**1.7%**	**1.1%**	**0.8%**

7.3.3 Financial Strategy Recommendations

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

a) increasing tax revenues by 0.8% each year for the next 20 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
b) allocating the current CCBF and OCIF revenue as outlined previously.
c) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included OCIF formula-based funding, if applicable since this funding is a multi-year commitment[5].
2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.

Although this option achieves full funding on an annual basis in 20 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows the pent-up investment demand of $467,000 in backlog.

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

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

7.4 Financial Profile: Rate Funded Assets

7.4.1 Current Funding Position

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

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Rates	To Operations	OCIF	Total Available	
Water Network	$281,000	$123,000	$-123,000	$25,000	$25,000	$256,000
	$281,000	**$123,000**	**$-123,000**	**$25,000**	**$25,000**	**$256,000**

The average annual investment requirement for the above categories is $281,000. Annual revenue currently allocated to these assets for capital purposes is $25,000, leaving an annual deficit of $256,000. Put differently, these infrastructure categories are currently funded at 9% of their long-term requirements.

7.4.2 Full Funding Requirements

In 2022, the Township of Matachewan has annual water revenues of $123,000. As illustrated in the table below, without consideration of any other sources of revenue, full funding would require the following changes over time:

Asset Category	Tax Change Required for Full Funding
Water Network	208.1%
	208.1%

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

	Water Network			
	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	$256,000	$256,000	$256,000	$256,000
Tax Increase Required	208.1%	208.1%	208.1%	208.1%
Annually:	**41.6%**	**20.8%**	**13.9%**	**10.4%**

7.4.3 Financial Strategy Recommendations

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

a) increasing rate revenues by 10.4% for water services each year for the next 20 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
b) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

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

Although this option achieves full funding on an annual basis in 20 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows the pent-up investment demand of $66,000 in backlog.

7.5 Use of Debt

The Township has no debt on the assets included in this Asset Management Plan. The revenue options outlined in this plan allow Matachewan to fully fund its long-term infrastructure requirements without the use of debt.

7.6 Use of Reserves

7.6.1 Available Reserves

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

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

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

Asset Category	Balance at December 31, 2022
Facilities	$200,000
Furniture & Fixtures	$176,000
Land Improvements	$565,000
Machinery & Equipment	$233,000
Road Network	$1,161,000
Storm Network	$176,000
Vehicles	$233,000
Total Tax Funded:	**$2,744,000**
Water Network	$141,000
Total Rate Funded:	**$141,000**

There is considerable debate in the municipal sector as to the appropriate level of reserves that a Township 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 Matachewan's judicious use of debt in the past, allows the scenarios to assume that, if required, available reserves and debt capacity can be used for high priority and emergency infrastructure investments in the short- to medium-term.

7.6.2 Recommendation

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

8 Appendices

Key Insights

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

Appendix A: Infrastructure Report Card

Asset Category	Replacement Cost (millions)	Asset Condition	Financial Capacity	
Road Network	$4.4	Good	Annual Requirement:	$93,000
			Funding Available:	$96,000
			Annual Deficit:	**$-3,000**
Storm Network	$3.5	Poor	Annual Requirement:	$46,000
			Funding Available:	$0
			Annual Deficit:	**$46,000**
Facilities	$3.4	Fair	Annual Requirement:	$77,000
			Funding Available:	$0
			Annual Deficit:	**$77,000**
Land Improvements	$0.6	Good	Annual Requirement:	$32,000
			Funding Available:	$0
			Annual Deficit:	**$32,000**
Vehicles	$0.1	Poor	Annual Requirement:	$11,000
			Funding Available:	$0
			Annual Deficit:	**$11,000**
Machinery & Equipment	$0.7	Fair	Annual Requirement:	$51,000
			Funding Available:	$0
			Annual Deficit:	**$51,000**
Furniture & Fixtures	$0.2	Good	Annual Requirement:	$18,000
			Funding Available:	$0
			Annual Deficit:	**$18,000**
Water Network	$12.1	Good	Annual Requirement:	$281,000
			Funding Available:	$25,000
			Annual Deficit:	**$256,000**
Overall	**$25.0**	**Fair**	Annual Requirement:	$609,000
			Funding Available:	$121,000
			Annual Deficit:	**$488,000**

Appendix B: 10-Year Capital Requirements

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

Road Network

Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Road Surface - HCB	$0	$8k	$6K	$4k	$24k	$1k	$8k	$5k	$4k	$32k	$1k
Road Surface - LCB	$22k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Signage	$0	$0	$0	$0	$0	$0	$0	$71k	$0	$0	$0
Road Surface - G/S	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$22k**	**$8k**	**$6k**	**$4k**	**$24k**	**$1k**	**$8k**	**$76k**	**$4k**	**$32k**	**$1k**

Storm Network

Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Storm Mains	$2.1m	$0	$0	$0	$343k	$0	$0	$0	$0	$0	$0
Total	**$2.1m**	**$0**	**$0**	**$0**	**$343k**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Water Network

Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Misc. Equipment	$0	$0	$0	$0	$183k	$0	$378k	$0	$0	$0	$0
Water Tower	$0	$0	$0	$0	$0	$0	$0	$805k	$0	$0	$0
Water Treatment Plant	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Watermain	$66k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$66k**	**$0**	**$0**	**$0**	**$183k**	**$0**	**$378k**	**$805k**	**$0**	**$0**	**$0**

Facilities

Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Fire Hall	$20k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Muncipal Office	$0	$0	$0	$5k	$0	$0	$0	$0	$0	$0	$0
Nursing Station	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Public Works Garage	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Recreation Hall	$0	$0	$0	$0	$0	$10k	$0	$0	$0	$0	$0
YDMC	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$20k**	**$0**	**$0**	**$5k**	**$0**	**$10k**	**$0**	**$0**	**$0**	**$0**	**$0**

Land Improvements

Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Cemetery	$0	$0	$0	$0	$0	$0	$0	$17k	$10k	$0	$0
Docks	$0	$0	$10k	$0	$0	$0	$0	$0	$0	$0	$0
Landfill	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Playgrounds & Equipment	$33k	$0	$0	$0	$0	$8k	$0	$0	$0	$0	$0
Total	**$33k**	**$0**	**$10k**	**$0**	**$0**	**$8k**	**$0**	**$17k**	**$10k**	**$0**	**$0**

Vehicles

Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Protection Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$19k	$0
Transportation Services	$0	$0	$46k	$0	$42k	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$46k**	**$0**	**$42k**	**$0**	**$0**	**$0**	**$0**	**$19k**	**$0**

Machinery & Equipment

Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
General Government	$0	$0	$0	$9k	$0	$0	$11k	$24k	$6k	$49k	$4k
Protection Services	$68k	$7k	$31k	$0	$4k	$0	$30k	$0	$9k	$2k	$0
Recreation & Cultural Services	$0	$0	$4k	$43k	$22k	$0	$2k	$0	$21k	$2k	$4k
Transportation Services	$0	$0	$8k	$0	$19k	$0	$2k	$0	$0	$0	$12k
Total	**$68k**	**$7k**	**$43k**	**$52k**	**$45k**	**$0**	**$45k**	**$24k**	**$36k**	**$53k**	**$20k**

Furniture & Fixtures											
Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
General Government	$0	$0	$0	$0	$5k	$0	$0	$78k	$0	$0	$7k
Recreation & Cultural Services	$0	$0	$0	$0	$0	$0	$0	$81k	$0	$3k	$0
Transportation Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$7k
Total	**$0**	**$0**	**$0**	**$0**	**$5k**	**$0**	**$0**	**$159k**	**$0**	**$3k**	**$14k**

Appendix C: Level of Service Maps

Road & Fire Flow Connectivity Map – Part 1

Road & Fire Flow Connectivity Map – Part 2

Road & Fire Flow Connectivity Map – Part 3

Appendix D: Condition Assessment Guidelines

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

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

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

Role of Asset Condition Data

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

In addition to the optimization of lifecycle management strategies, asset condition data also impacts the Township'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 Township 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 Township can develop long-term financial strategies with higher accuracy and reliability.

Guidelines for Condition Assessment

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

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

There are many options available to the Township 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 Township 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