

Asset Management Plan

Township of Opasatika

2022

This Asset Management Program was prepared by:



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

Key Statistics

Replacement cost of
asset portfolio

\$13.7 million

Replacement cost of
infrastructure per
household

\$124,000 (2021)

Percentage of assets in fair
or better condition

68%

Percentage of assets with
assessed condition data

6%

Annual capital
requirement

\$358,000

Target reinvestment
rate

2.6%

Table of Contents

Asset Management Plan	i
2021Asset Management Plan	i
Key Statistics	i
Executive Summary.....	1
1 Introduction & Context.....	4
2 Scope and Methodology	13
3 Portfolio Overview	17
4 Road Network.....	22
5 Bridges & Culverts.....	32
6 Stormwater Network	42
7 Buildings.....	51
8 Vehicles.....	58
9 Machinery & Equipment	65
10 Land Improvements.....	72
11 Water Network	79
12 Sanitary Network.....	89
13 Impacts of Growth	100
14 Appendices	105

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:

Asset Category

 Road Network	 Bridges & Culverts
 Stormwater Network	 Water Network
 Sanitary Network	 Buildings
 Vehicles	 Machinery & Equipment
 Land Improvements	

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, 2022. There are additional requirements concerning proposed levels of service and growth that must be met by July 1, 2024 and 2025.

Findings

The overall replacement cost of the asset categories included in this AMP totals \$13.7 million. 68% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 6% of assets. For the remaining 94% 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 \$358,000.

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.

Annual
Requirements
per Household



Recommendations

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

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

1 Introduction & Context

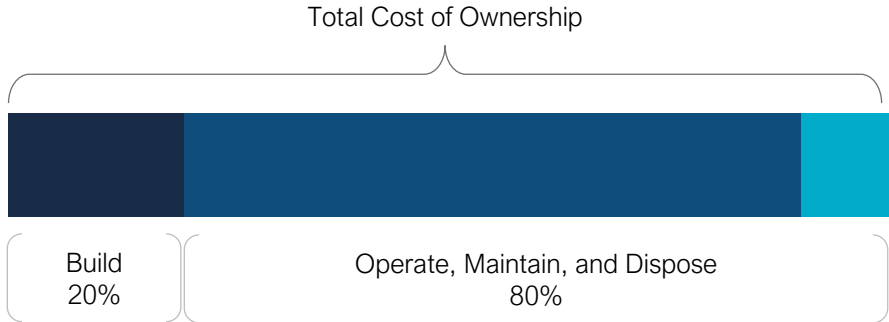
Key Insights

- The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio
- The 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 between July 1, 2022 and 2025

1.1 An Overview of Asset Management

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

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



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

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

1.1.1 Asset Management Policy

An asset management policy represents a statement of the principles guiding the 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.

1.1.2 Asset Management Strategy

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

1.1.3 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.

1.2 Key Concepts in Asset Management

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

1.2.1 Lifecycle Management Strategies

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

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

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

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

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

The 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.

1.2.2 Risk Management Strategies

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

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

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

1.2.3 Levels of Service

A level of service (LOS) is a measure of what the 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 and culverts, water, wastewater, stormwater) the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in

this AMP. For non-core asset categories, the 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 and culverts, water, wastewater, stormwater) the Province, through O. Reg. 588/17, has provided technical metrics that are required to be included in this AMP.

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.

1.3 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 time 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 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

2024

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

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

2025

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

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

1.4.1 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, 2022. 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 – 10.1	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	4.1 – 10.1	Complete
Average age of assets in each category	S.5(2), 3(iii)	4.2 – 10.2	Complete
Condition of core assets in each category	S.5(2), 3(iv)	4.2 – 10.2	Complete
Description of municipality’s approach to assessing the condition of assets in each category	S.5(2), 3(v)	4.2.1 – 10.2.1	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	4.5.1 - 10.5.1	Complete for Core Assets Only
Current performance measures in each category	S.5(2), 2	4.5.2 - 10.5.2	Complete for Core Assets Only
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	4.3 – 10.3	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	Complete

2 Scope and Methodology

Key Insights

- This asset management plan includes 9 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 Opasatika is produced in compliance with Ontario Regulation 588/17. The July 2022 deadline under the regulation—the first of three AMPs—requires analysis of only core assets (roads, bridges and culverts, water, wastewater, and stormwater).

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	
Bridges & Culverts	
Stormwater Network	
Buildings	Tax Levy
Vehicles	
Machinery & Equipment	
Land Improvements	
Water Network	
Sanitary 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

User-defined costs based on reliable sources are a reasonably accurate and reliable way to determine asset replacement costs. Cost inflation is typically used in the absence of reliable replacement cost data. It is a reliable method for recently purchased and/or constructed assets where the total cost is reflective of the actual costs that the 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:

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

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:

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

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

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 E includes additional information on the role of asset condition data and provides basic guidelines for the development of a condition assessment program.

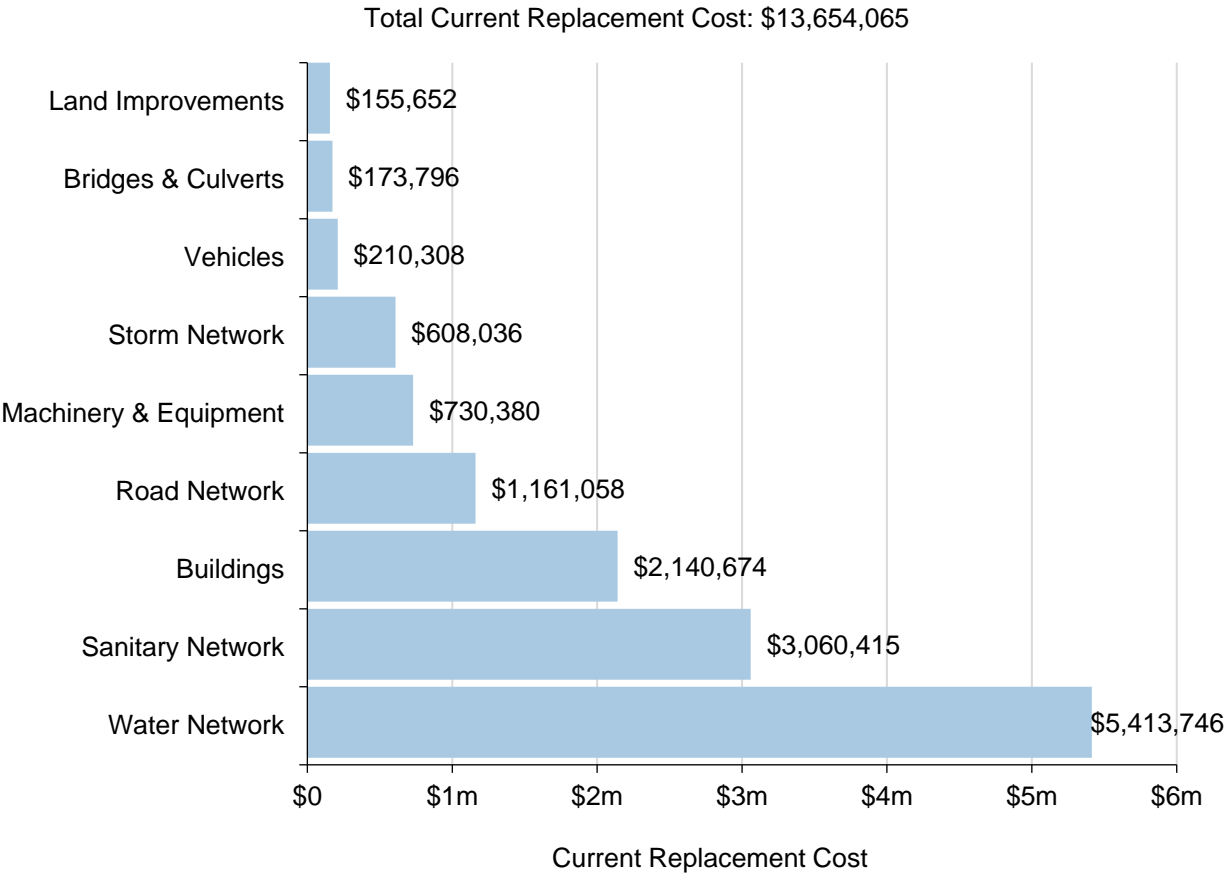
3 Portfolio Overview

Key Insights

- The total replacement cost of the Township's asset portfolio is \$13.7 million
- The Township's target re-investment rate is 2.6%
- 68% of all assets are in fair or better condition
- 17% of assets are projected to require replacement in the next 10 years
- Average annual capital requirements total \$358,000 per year across all assets

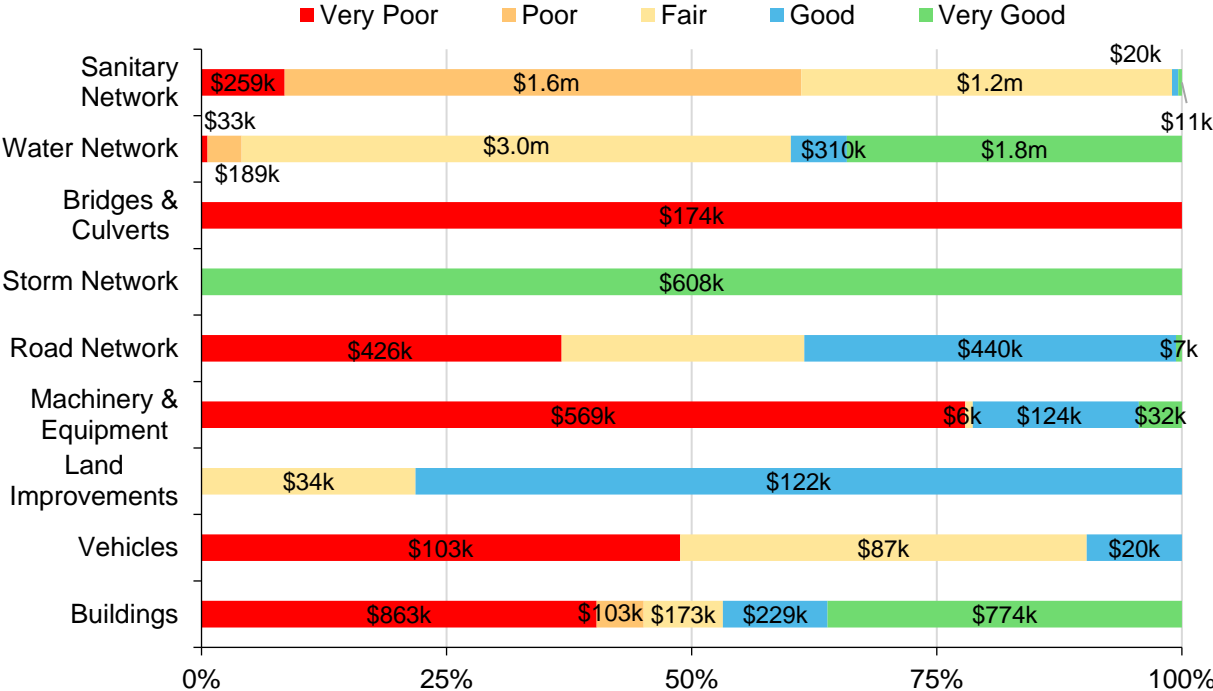
3.1 Total Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of \$13.7 million based on inventory data from 2022. This total was determined based on historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.



3.2 Condition of Asset Portfolio

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



Value and Percentage of Assets by Replacement Cost

This AMP relies on assessed condition data for 6% 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	63%	Staff Estimate
Bridges & Culverts	Bridges	0%	N/A
Stormwater Network	All	0%	N/A
Buildings	All	0%	N/A
Machinery & Equipment	All	0%	N/A
Vehicles	All	0%	N/A
Land Improvements	All	100%	Staff Estimate
Water Network	All	0%	N/A
Sanitary Network	All	0%	N/A

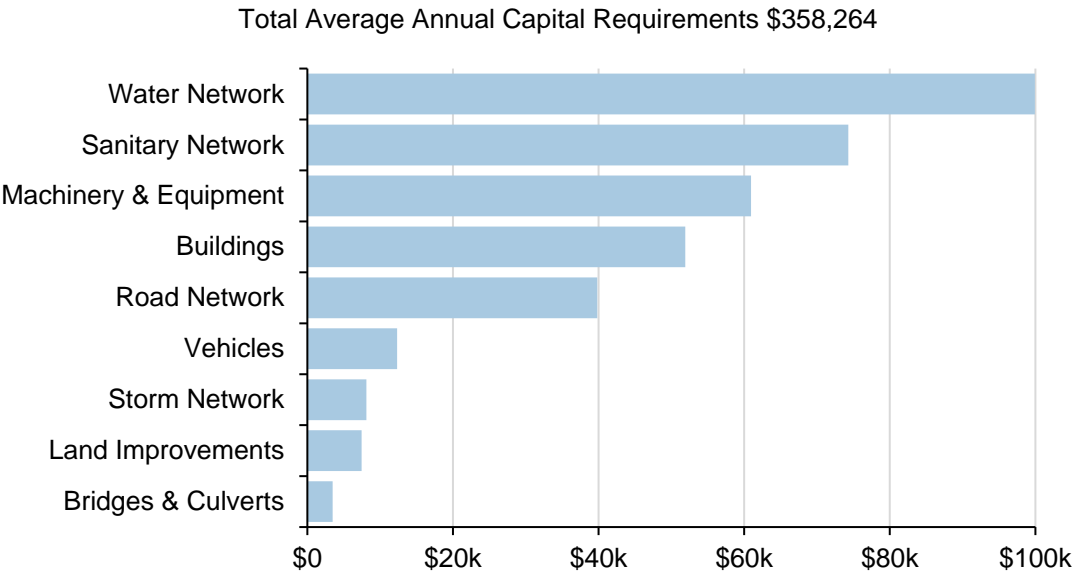
3.3 Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 17% of the Township’s assets will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix B.

3.4 Forecasted Capital Requirements

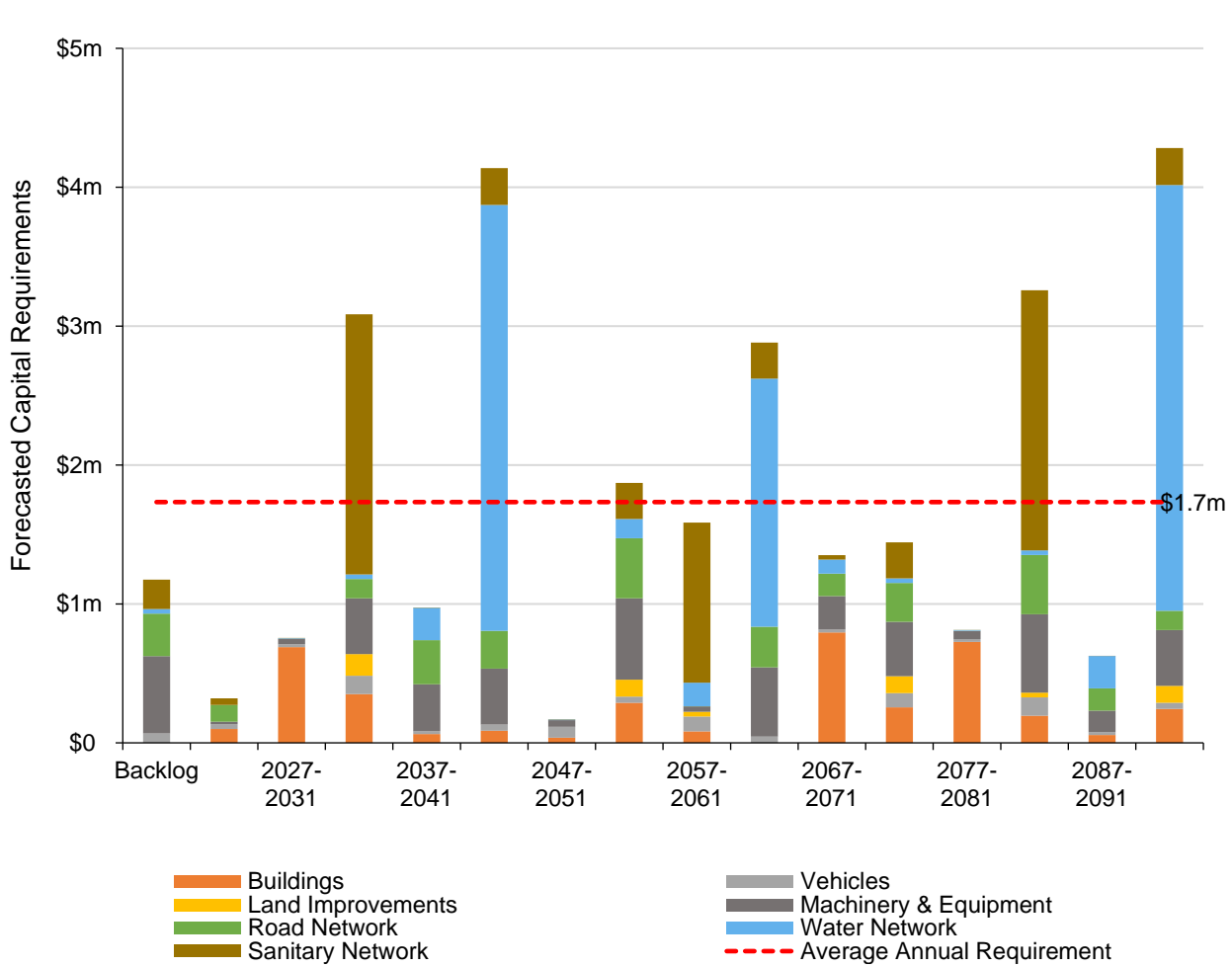
3.4.1 Annual Requirements

The average 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 \$358,000 annually to address capital requirements for the assets included in this AMP.



3.4.2 Long-Term Capital Forecast

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 75 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins. The trend line represents the average 5-year capital requirement of \$1.7 million; this amount does not account for inflation.



4 Road Network

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

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

Replacement Cost	Condition	Annual Capital Requirement
\$1.2 million	Fair (41%)	\$40,000

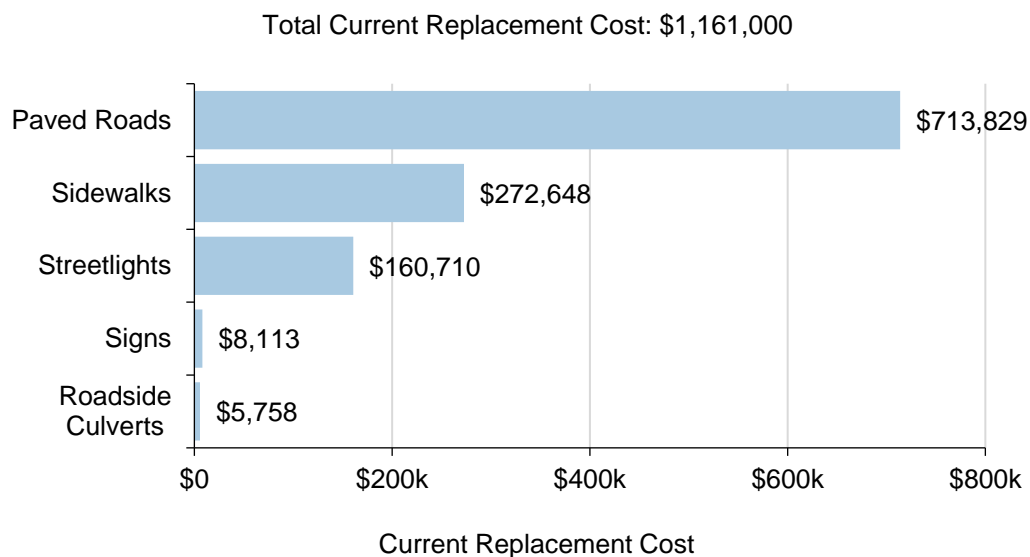
The following core values and level of service statements are a key driving force behind the Township’s asset management planning:

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

4.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Gravel Roads	23 km	Not Planned for Replacement ¹	
Paved Roads	2.3 km	\$714,000	\$24,000
Roadside Culverts	1 (pooled asset)	\$6,000	\$100
Sidewalks	1,301 m	\$273,000	\$9,000
Signs	67 assets	\$8,000	\$400
Streetlights	36 assets	\$161,000	\$6,000
Total		\$1,161,000	\$40,000



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

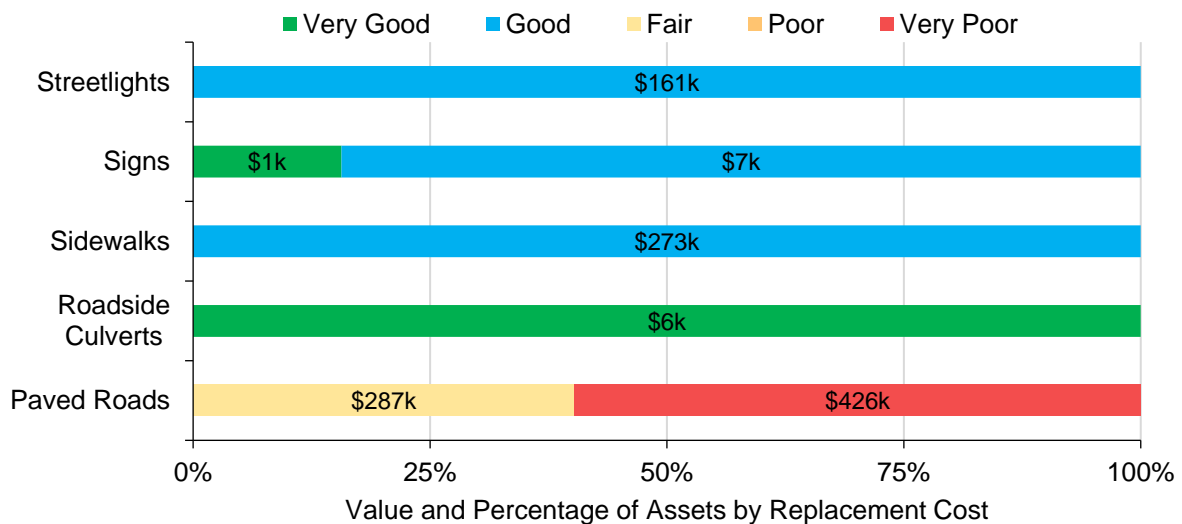
¹ Gravel roads undergo perpetual operating and maintenance activities. If maintained properly, they can theoretically have a limitless service life.

4.2 Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Paved Roads	30	31.0	22% (Poor)
Roadside Culverts	50	4.6	91% (Very Good)
Sidewalks	30	32.0	70% (Good)
Signs	20	31.5	77% (Good)
Streetlights	25	37.0	70% (Good)
Average			41% (Fair)

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



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

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

4.2.1 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:

- Staff conduct internal assessments on roads in accordance with Minimum Maintenance Standards (MMS)
- Roadside appurtenances are visually inspected, as required

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

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

4.3 Lifecycle Management Strategy

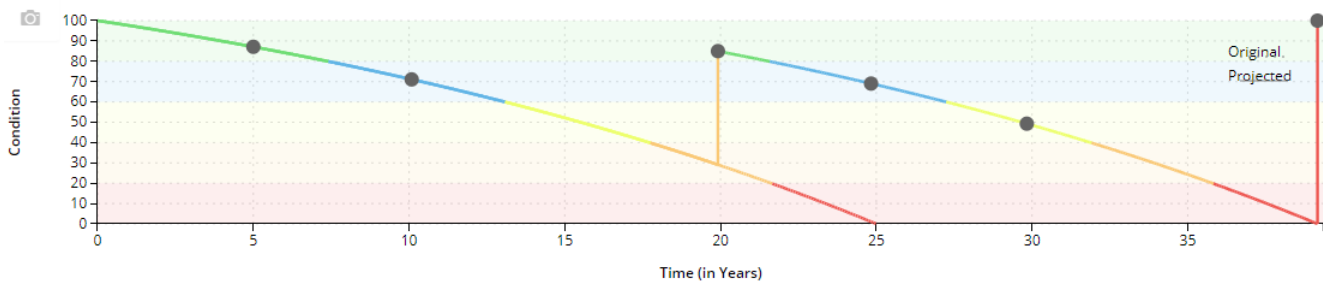
The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset’s characteristics, location, utilization, maintenance history and environment.

Currently, Opatatika’s lifecycle management strategy is reactive with the goal of replacing roads when they reach end-of-life. The following table summarizes the maintenance and replacement activities that the Township undertakes.

Activity Type	Description of Current Strategy
Maintenance	Maintenance activities for roads and sidewalks include winter maintenance such as snow removal and salt/sand for ice removal as needed.
	Additional gravel is applied as needed to gravel roads.
	Crack sealing is conducted on paved roads as needed as a preventative maintenance activity.
Replacement	Replacement activities are prioritized based on asset condition and health and safety risks.

The following proposed lifecycle strategies have been developed as a proactive approach to managing Opatatika’s paved 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.

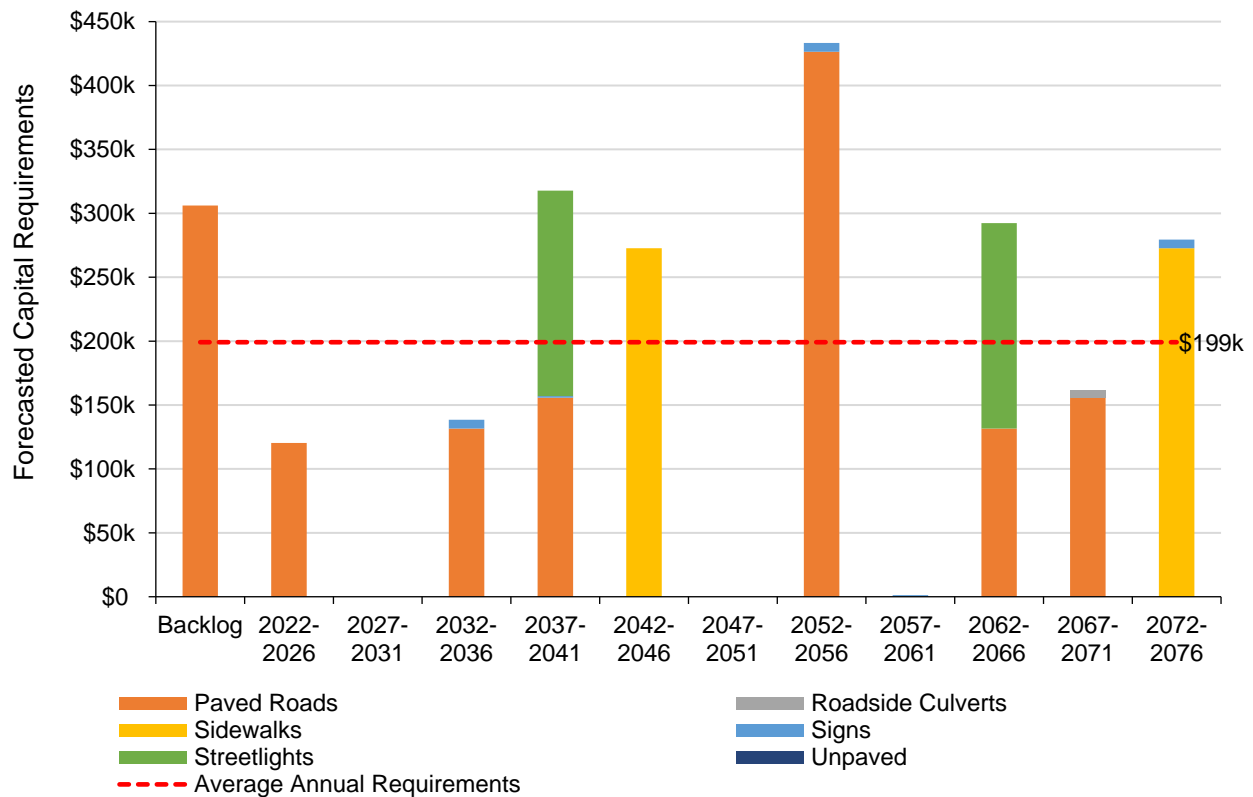
Paved Roads		
Event Name	Event Class	Event Trigger
Crack Sealing	Maintenance	5 Years (Repeated)
Single Lift Re-surfacing	Rehabilitation	20 Years
Full Reconstruction	Replacement	40 Years



4.3.1 Forecasted Capital Requirements

Based on the lifecycle strategies identified above and assuming the end-of-life replacement of all 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 55 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The average annual capital requirement is \$40,000. The forecasted requirements are aggregated into 5-year bins. The trend line represents the average 5-year capital requirement of \$199,000; this amount does not account for inflation.



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 Risk & Criticality

4.4.1 Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.



This is a high-level model developed for the purposes of this AMP and Township staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure. The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the road network are documented below:

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

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.

4.5 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.

4.5.1 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 (2021)
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity	The Township’s transportation sytem provides sufficient connectivity to all residential areas and critical resources such as emergency rescue, the hospital, recreation sites, and shops.
Quality	Description or images that illustrate the different levels of road class pavement condition	<p>Very Poor: Widespread signs of deterioration. Requires remedial work to bring road up to standard. Service is affected.</p> <p>Poor: Large portions of road exhibiting deterioration with rutting, potholes, distortions, longitude and lateral cracking. Road is mostly below standard.</p> <p>Fair: Some sections of road starting to deteriorate. Requires some remedial work and surface upgrade in near future.</p> <p>Good: Road is in overall good condition. Few sections are starting to show signs of minimal deterioration.</p> <p>Very Good: Road is well maintained and in excellent condition. Surface was newly or recently upgraded. No signs of deterioration or remedial work required.</p>

4.5.2 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 (2021)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km ²)	0
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km ²)	0
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km ²)	0.15
Quality	Average pavement condition index for paved roads in the municipality	Poor
	Average surface condition for unpaved roads in the municipality (e.g. excellent, good, fair, poor)	Fair
Performance	Recommended capital reinvestment rate	3.4%

4.6 Recommendations

Asset Inventory & Replacement Costs

- Review road culverts, sidewalk, signs, and streetlight inventories to determine whether all municipal assets within these asset segments have been accounted for.
- The sign and streetlight inventory includes several pooled assets that should be broken into discrete segments to allow for detailed planning and analysis.
- Document and review lifecycle management strategies for the stormwater network on a regular basis to achieve the lowest total cost of ownership while maintaining adequate service levels.

Condition Assessment & Lifecycle Strategies

- Consider developing a condition assessment program to formalize the internal assessments conducted on roads and roadside appurtenances.
- Formalize proactive lifecycle management strategies for 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.

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.

5 Bridges & Culverts

Bridges and Culverts (over 3 meters) represent a critical portion of the transportation services provided to the community. Opasatika is responsible for the maintenance of all bridges and culvert, with the goal of keeping structures in an adequate state of repair and minimizing service disruptions.

The state of the infrastructure for bridges and culverts is summarized in the following table.

Replacement Cost	Condition	Annual Capital Requirement
\$174,000	Very Poor (19%)	\$3,000

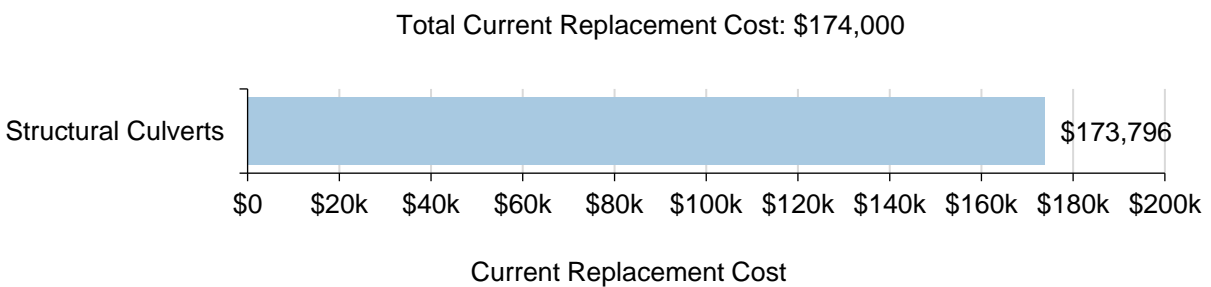
The following core values and level of service statements are a key driving force behind the Township's asset management planning:

Service Attribute	Level of Service Statement
Scope	Bridges and culverts are conveniently accessible to the community in sufficient capacity (meets traffic demands) and are available under all weather conditions.
Quality	The bridges and culverts are in very poor condition but with minimal unplanned service interruptions and closures.

5.1 Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Township’s bridges and culverts inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Structural Culverts	2	\$174,000	\$3,000
Total		\$174,000	\$3,000



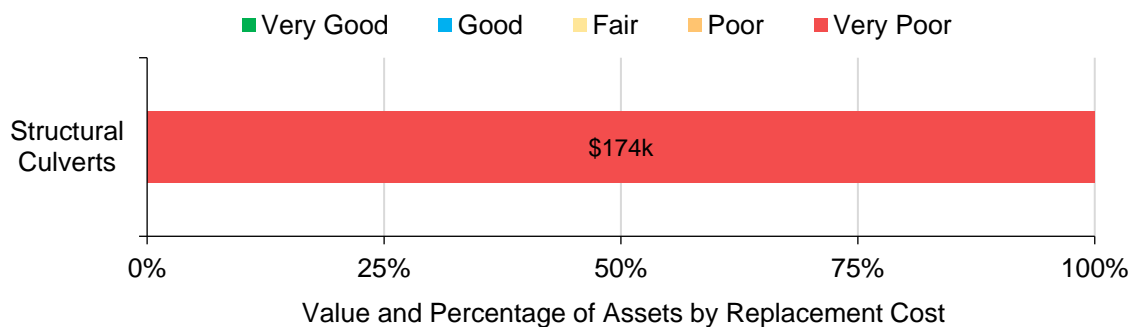
Each asset’s replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

5.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost. The condition rating below is not based on assessed condition data. The rating is an approximate condition based on age and the estimated useful life of the assets; it may not be an accurate reflection of the current working condition of the assets.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Bridges	50	40.3	19% (Very Poor)
Average			19% (Very Poor)

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



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

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

5.2.1 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:

- Regular visual inspections take place on an ad-hoc basis.
- A formal condition assessment of all culverts with a span greater than or equal to 3 meters are completed in accordance with the Ontario Structure Inspection Manual (OSIM)

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

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

5.3 Lifecycle Management Strategy

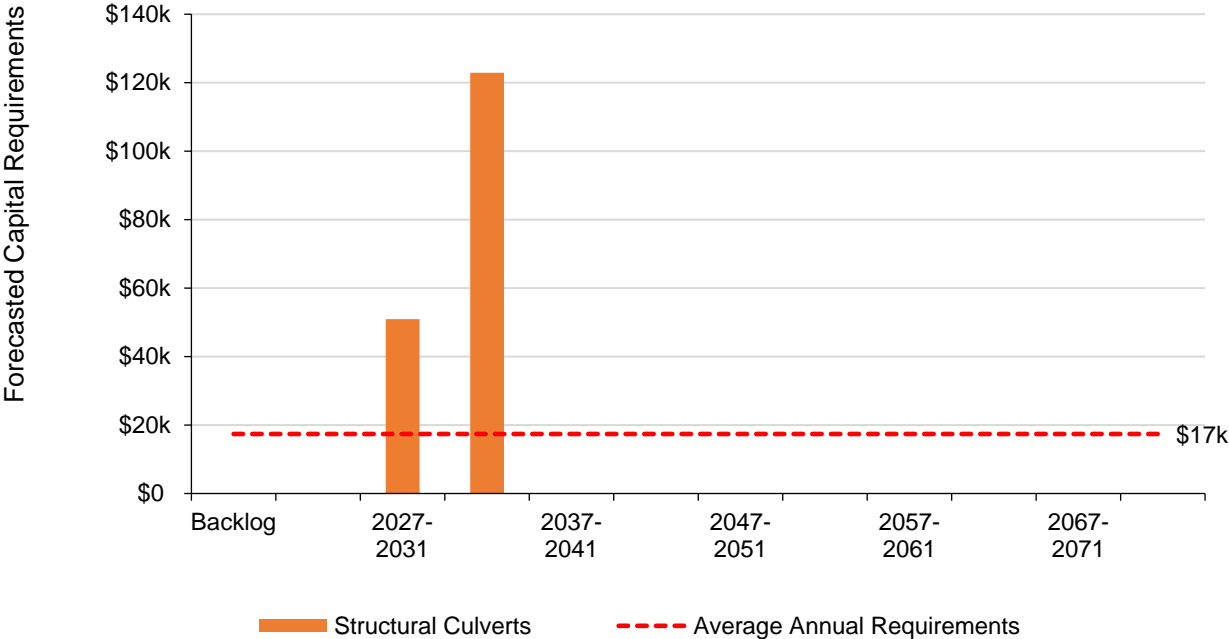
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance, Rehabilitation and Replacement	All lifecycle activities are driven by the results of mandated structural inspections completed according to the Ontario Structure Inspection Manual (OSIM).

5.3.1 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 55 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The average annual capital requirement is \$3,000. The forecasted requirements are aggregated into 5-year bins. The trend line represents the average 5-year capital requirement of \$17,000; this amount does not account for inflation.



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

5.4 Risk & Criticality

5.4.1 Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.



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

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

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

The identification of critical assets allows the 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.

5.5 Levels of Service

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

5.5.1 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description of the traffic that is supported by municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Structural culverts are a key component of the municipal transportation network. None of the Township's structures have loading or dimensional restrictions meaning that most types of vehicles, including heavy transport, emergency vehicles, and cyclists can cross them without restriction.
Quality	Description or images of the condition of bridges and culverts and how this would affect use of the bridges and culverts	<p>Very Poor: Widespread signs of deterioration. Requires remedial work to bring the bridge up to standard. Service is affected.</p> <p>Poor: Large portions of the bridge/culvert is exhibiting deterioration of the superstructure, abutments, sub-structure, and/or foundation. The bridge/culvert is mostly below service standards.</p> <p>Fair: Some sections of the bridge/culvert is starting to deteriorate. Requires some remedial work and upgrades in the near future to bring the asset up to service standard.</p> <p>Good: Bridge/culvert is in overall good condition. Few sections are starting to show signs of minimal deterioration, service is not affected.</p> <p>Very Good: Bridge/culvert is well maintained and in excellent condition. The asset was newly or recently upgraded. No signs of deterioration or remedial work required.</p>

5.5.2 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of bridges in the Township with loading or dimensional restrictions	TBD
Quality	Average bridge condition index value for bridges in the Township	N/A
	Average bridge condition index value for structural culverts in the Township	Very Poor
Performance	Recommended capital reinvestment rate	2%

5.6 Recommendations

Data Review & Condition

- Review and validate inventory data, assessed condition data for all bridges and structural culverts upon the completion of OSIM inspections every 2 years.

Replacement Costs

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

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

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

Levels of Service

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

6 Stormwater Network

The Township is responsible for owning and maintaining a storm network consisting of storm mains, catch basins, and manholes.

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

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

Replacement Cost	Condition	Annual Capital Requirement
\$608,000	Very Good (95%)	\$8,000

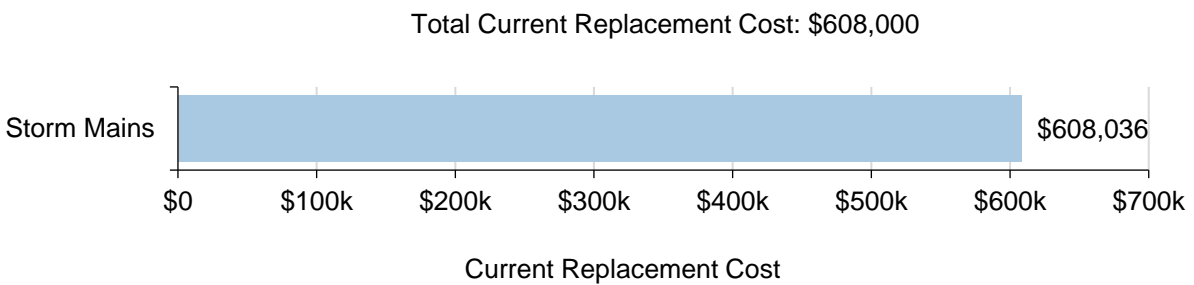
The following core values and level of service statements are a key driving force behind the Township's asset management planning:

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

6.1 Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements of each asset segment in the Township’s stormwater network inventory.

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Storm Mains	822 m	\$608,000	\$8,000
Total		\$608,000	\$8,000



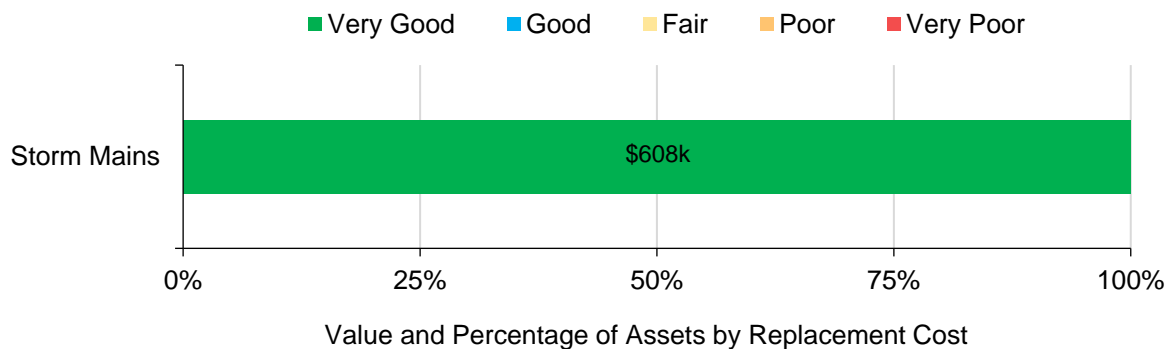
Each asset’s replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

6.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost. The condition rating below is not based on assessed condition data. The rating is an approximate condition based on age and the estimated useful life of the assets; it may not be an accurate reflection of the current working condition of the assets.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Storm Mains	75	3.7	95% (Very Good)
Average			95% (Very Good)

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



To ensure that the Township’s stormwater 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 stormwater network.

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

6.2.1 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:

- With the Township's recent replacement of its mains over the past few years, there, there are no formal condition assessment programs in place
- As the Township refines the available asset inventory for the storm network, a regular assessment cycle should be established

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

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

6.3 Lifecycle Management Strategy

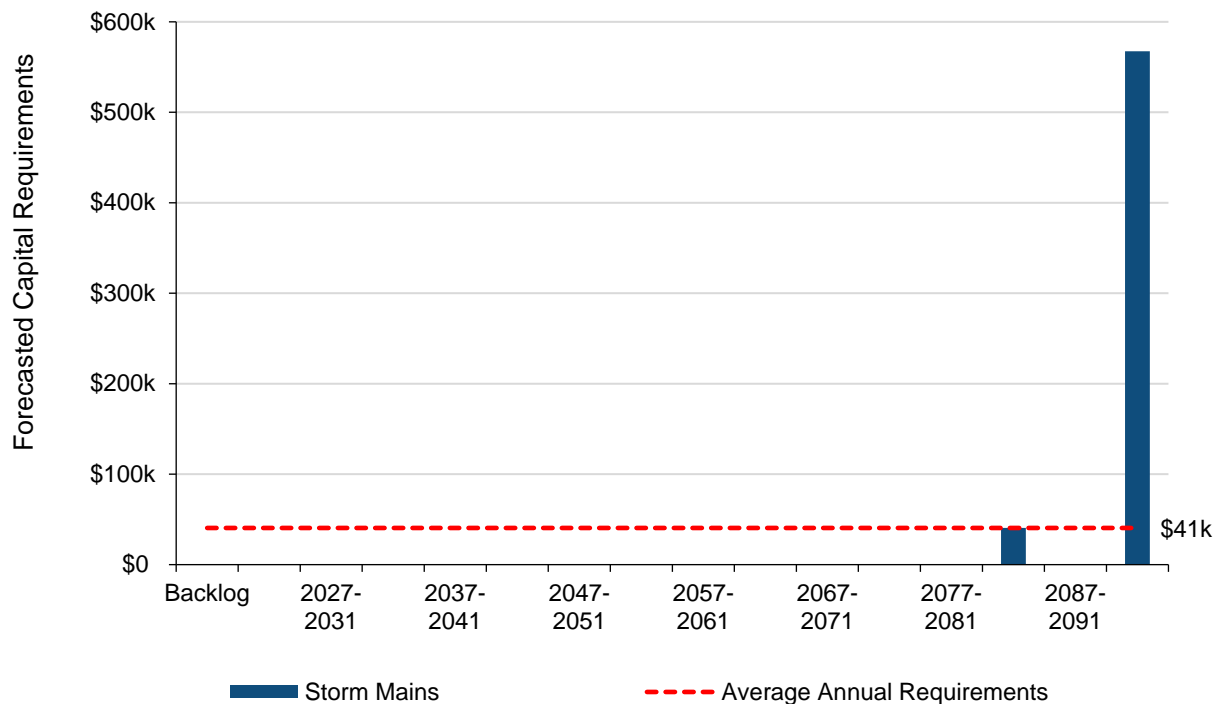
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Maintenance activities are completed to a lesser degree compared to other underground linear infrastructure Primary activities include catch basin cleaning and storm main flushing which are conducted on an ad-hoc basis.
Replacement	Without the availability of up-to-date condition assessment information replacement activities are purely reactive in nature.

6.3.1 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 75 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The average annual capital requirement is \$8,000. The forecasted requirements are aggregated into 5-year bins. The trend line represents the average 5-year capital requirement of \$41,000; this amount does not account for inflation.



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.

6.4 Risk & Criticality

6.4.1 Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset. This is a high-level model developed for the purposes of this AMP and Township staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure.



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

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

The identification of critical assets allows the 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.

6.5 Levels of Service

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

6.5.1 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
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	The storm management system is sufficiently available for stormwater management across the Township. The system is located near the road network and residential and commercial areas.

6.5.2 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of properties in municipality resilient to a 100-year storm	TBD ²
	% of the municipal stormwater management system resilient to a 5-year storm	100% ³
Performance	Recommended capital reinvestment rate	1.3%

² The Township does not currently have data available to determine this technical metric. The rate of properties that are resilient to a 100-year storm is expected to be low because only a small portion of the properties are connected to the storm network.

³ This is based on the observations of municipal staff and the consideration that the stormwater management system is newly installed.

6.6 Recommendations

Asset Inventory & Replacement Costs

- There is an unknown amount of catch basins and manholes owned by the Township. The asset inventory currently contains 0 records of catch basins and manholes. The Township's stormwater network inventory remains at a basic level of maturity and staff do not have a high level of confidence in its accuracy or reliability. The development of a comprehensive inventory of the stormwater network should be priority.
- All replacement costs used in this AMP are based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.

Condition Assessment & Lifecycle Strategies

- All condition ratings in this AMP are based on an estimate using the asset age and estimated useful life. The development of a comprehensive inventory should be accompanied by a system-wide assessment of the condition of all assets in the stormwater network through CCTV inspections as budget becomes available.
- Document and review lifecycle management strategies for the stormwater network on a regular basis to achieve the lowest total cost of ownership while maintaining adequate service levels.

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.

7 Buildings

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

- Municipal office
- Public works garage
- Fire hall
- Multi-functional apartment complex
- Community centre

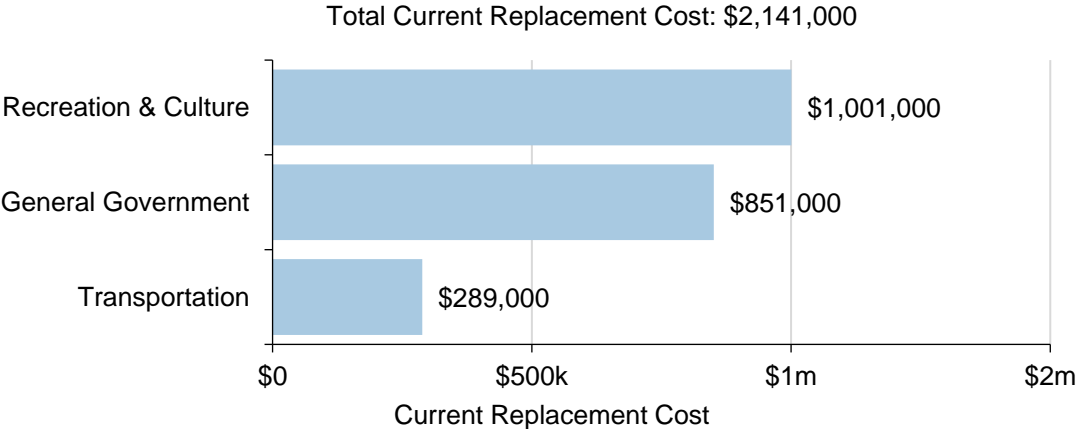
The state of the infrastructure for the buildings and facilities is summarized in the following table.

Replacement Cost	Condition	Annual Capital Requirement
\$2.1 million	Fair (51%)	\$52,000

7.1 Asset Inventory & Costs

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

Asset Segment	Components	Replacement Cost	Annual Capital Requirement
General Government	9	\$851,000	\$24,000
Recreation & Culture	16	\$1,001,000	\$23,000
Transportation	3	\$289,000	\$6,000
Total		\$2,141,000	\$52,000



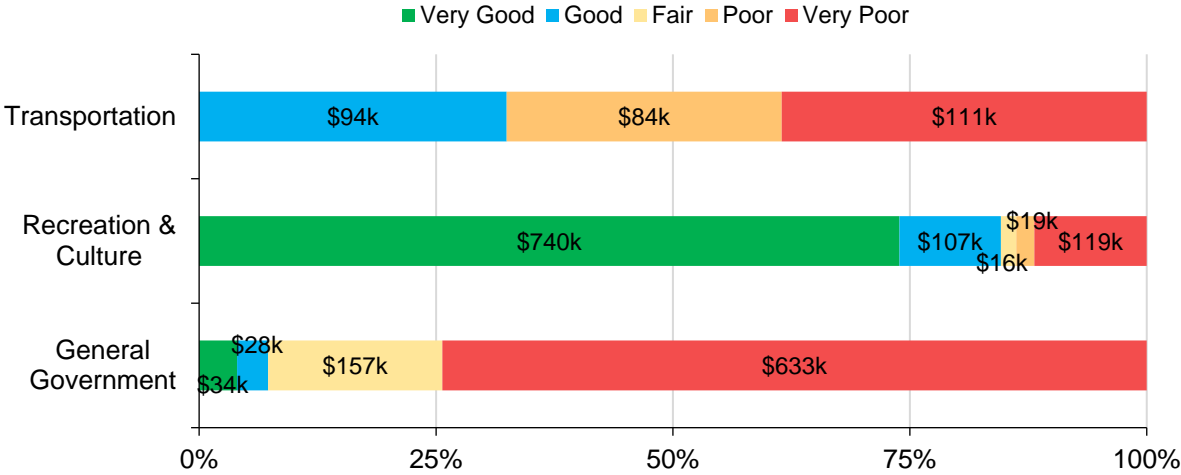
Each asset’s replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

7.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost. The condition rating below is not based on assessed condition data. The rating is an approximate condition based on age and the estimated useful life of the assets; it may not be an accurate reflection of the current working condition of the assets.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
General Government	43	35.5	23% (Poor)
Recreation & Culture	48	9.7	81% (Very Good)
Transportation	50	32.3	35% (Poor)
Average			51% (Fair)

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



Value and Percentage of Assets by Replacement Cost

To ensure that the Township’s buildings and facilities 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 buildings and facilities.

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

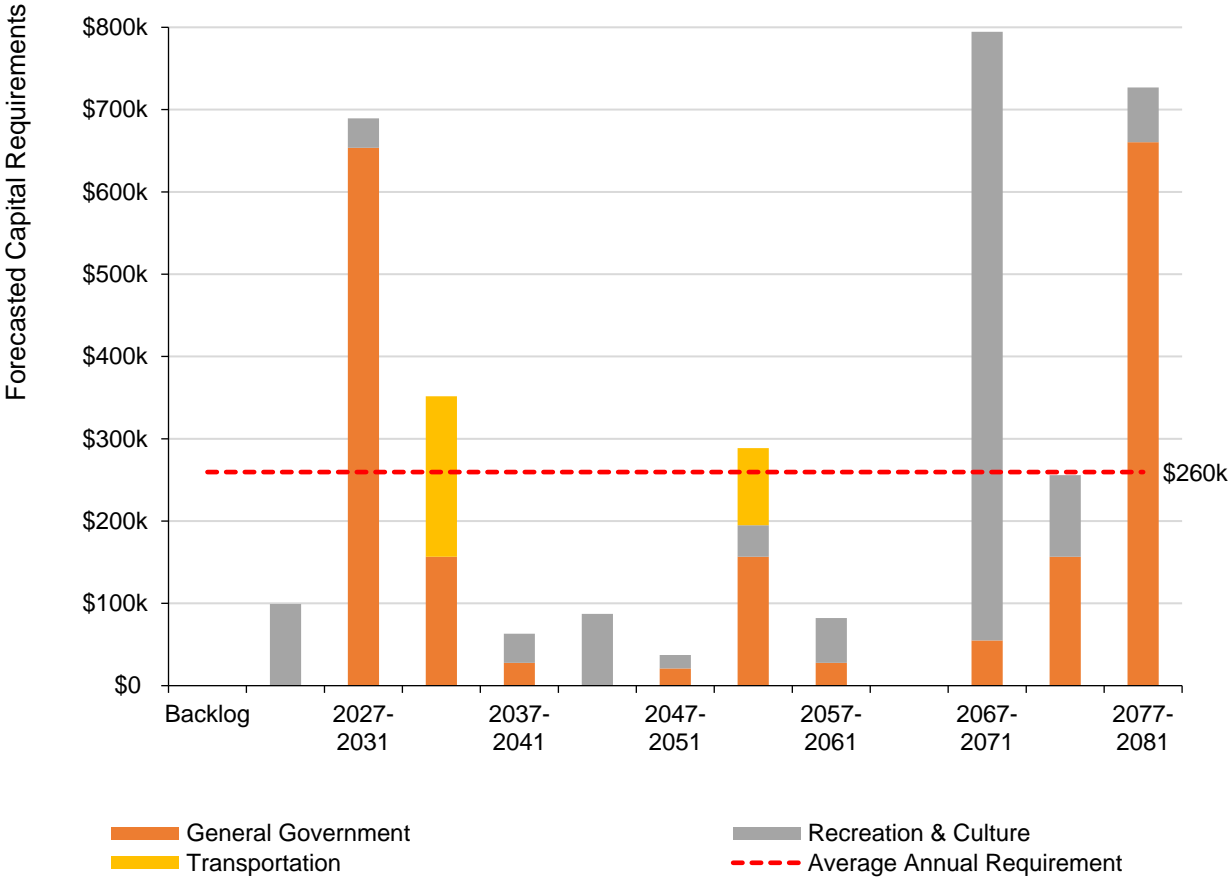
7.2.1 Current Approach to Condition Assessment

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

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

7.3 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 60 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The average annual capital requirement is \$52,000. The forecasted requirements are aggregated into 5-year bins. The trend line represents the average 5-year capital requirement of \$260,000; this amount does not account for inflation.



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.

7.4 Asset Management Strategies

The documentation of lifecycle management strategies, current levels of service, and risk are critical to the development of a comprehensive asset management program. These components of the asset management plan support effective short- and long-term capital planning and contribute to more proactive asset management practices, thus extending the estimated useful life of many assets and providing a higher level of service.

In accordance with O. Reg. 588/17, the Municipality will continue to gather data and information in order to detail and review the lifecycle management strategies, levels of service, and risk of all non-core asset categories by July 1, 2024.

7.5 Recommendations

Asset Inventory

- The Township’s asset inventory contains pooled asset records for facilities. Facilities consist of several separate capital components that have unique estimated useful lives and require asset-specific lifecycle strategies. Staff should work towards a component-based inventory of all facilities to allow for component-based lifecycle planning.

Replacement Costs

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

Condition Assessment Strategies

- All condition ratings in this AMP are based on an estimate using the asset age and estimated useful life. 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.

8 Vehicles

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

- Public works vehicles winter control activities
- fire rescue vehicle to provide emergency services
- vehicles to support the maintenance of the transportation network and address service requests for Environmental Services and Parks & Recreation

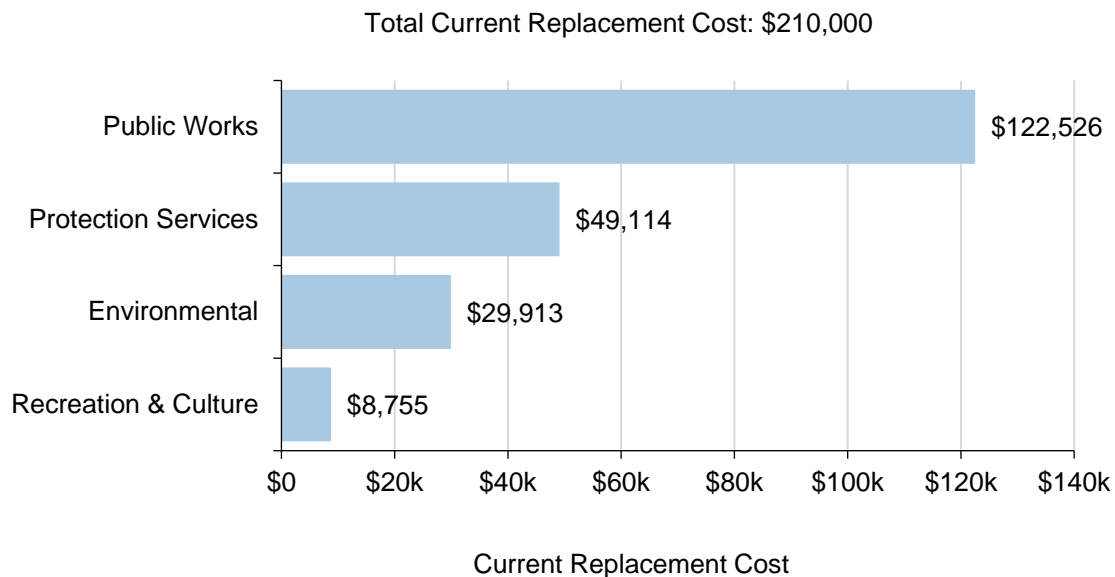
The state of the infrastructure for the vehicles is summarized in the following table.

Replacement Cost	Condition	Annual Capital Requirement
\$210,000	Poor (29%)	\$12,000

8.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Environmental	3	\$30,000	\$114,280
Protection Services	1	\$49,000	\$2,394,336
Public Works	2	\$123,000	\$1,526,109
Recreation & Culture	1	\$9,000	\$146,445
Total		\$210,000	\$12,000



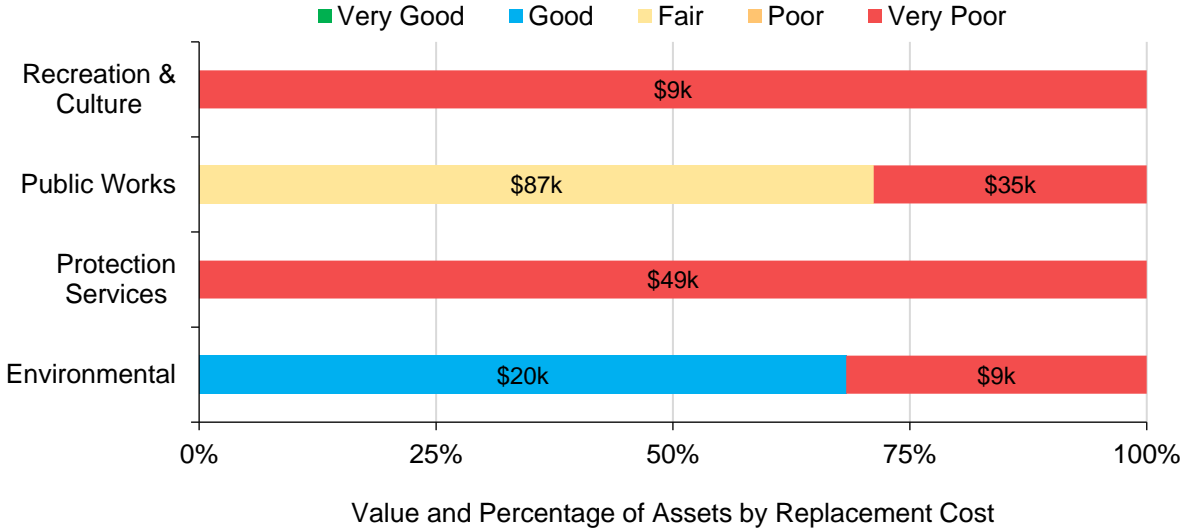
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

8.2 Asset Condition & Age

The table below identifies the current average condition and source of available condition data for each asset segment. The average condition (%) is a weighted value based on replacement cost. The condition rating below is not based on assessed condition data. The rating is an approximate condition based on age and the estimated useful life of the assets; it may not be an accurate reflection of the current working condition of the assets.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Environmental	10	6.2	41% (Fair)
Protection Services ⁴	25	31.0	0% (Very Poor)
Public Works	21	10.7	40% (Fair)
Recreation & Culture	25	38.0	0% (Very Poor)
Average			29% (Poor)

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



⁴ In 2022, the Township purchased a new fire truck with a higher replacement value and an estimated condition of very good. The condition of the asset is expected to remain very good for a longer period of time because the Township is small, and the asset is very rarely in use. With regular maintenance and limited use, the asset may be expected to have a longer estimated useful life.

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.

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

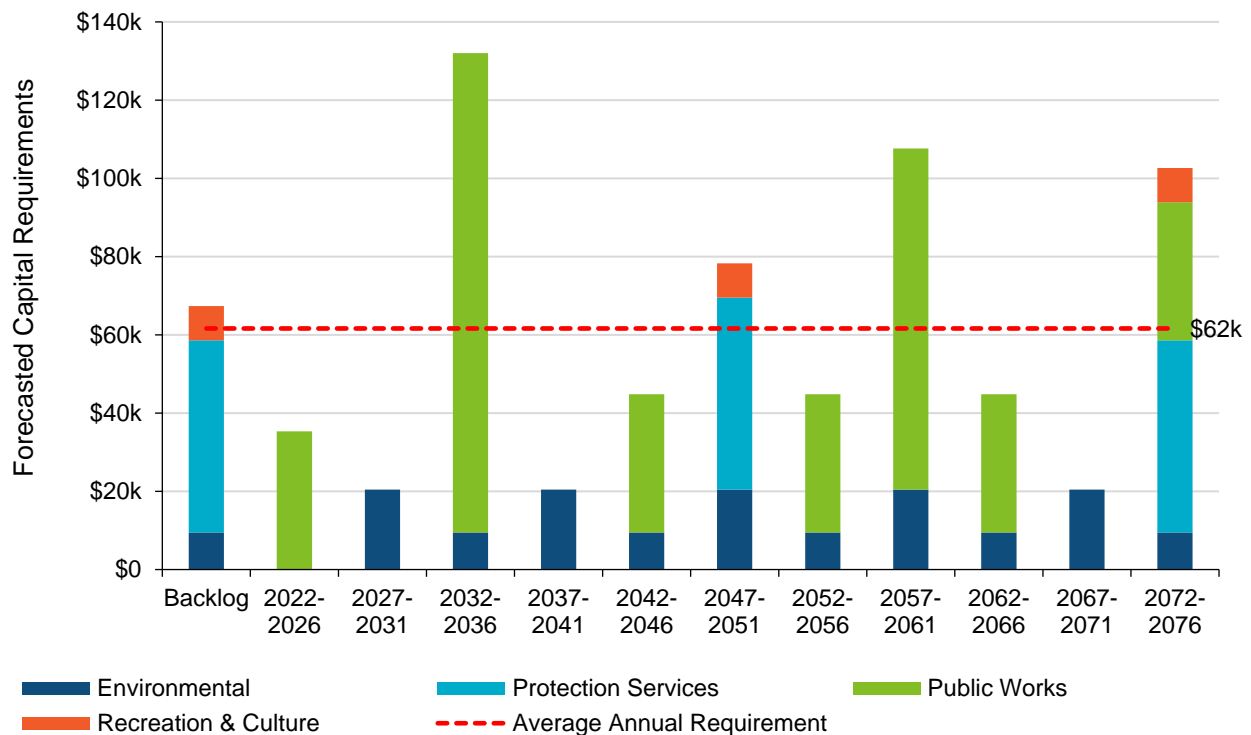
8.2.1 Current Approach to Condition Assessment

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

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

8.3 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 55 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The average annual capital requirement is \$12,000. The forecasted requirements are aggregated into 5-year bins. The trend line represents the average 5-year capital requirement of \$62,000; this amount does not account for inflation.



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.

8.4 Asset Management Strategies

The documentation of lifecycle management strategies, current levels of service, and risk are critical to the development of a comprehensive asset management program. These components of the asset management plan support effective short- and long-term capital planning and contribute to more proactive asset management practices, thus extending the estimated useful life of many assets and providing a higher level of service.

In accordance with O. Reg. 588/17, the Municipality will continue to gather data and information in order to detail and review the lifecycle management strategies, levels of service, and risk of all non-core asset categories by July 1, 2024.

8.5 Recommendations

Replacement Costs

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

Condition Assessment Strategies

- All condition ratings in this AMP are based on an estimate using the asset age and estimated useful life. 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.

9 Machinery & Equipment

In order 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:

- Landscaping equipment to maintain public parks
- Fire equipment to support the delivery of emergency services
- Various IT assets
- Miscellaneous equipment

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

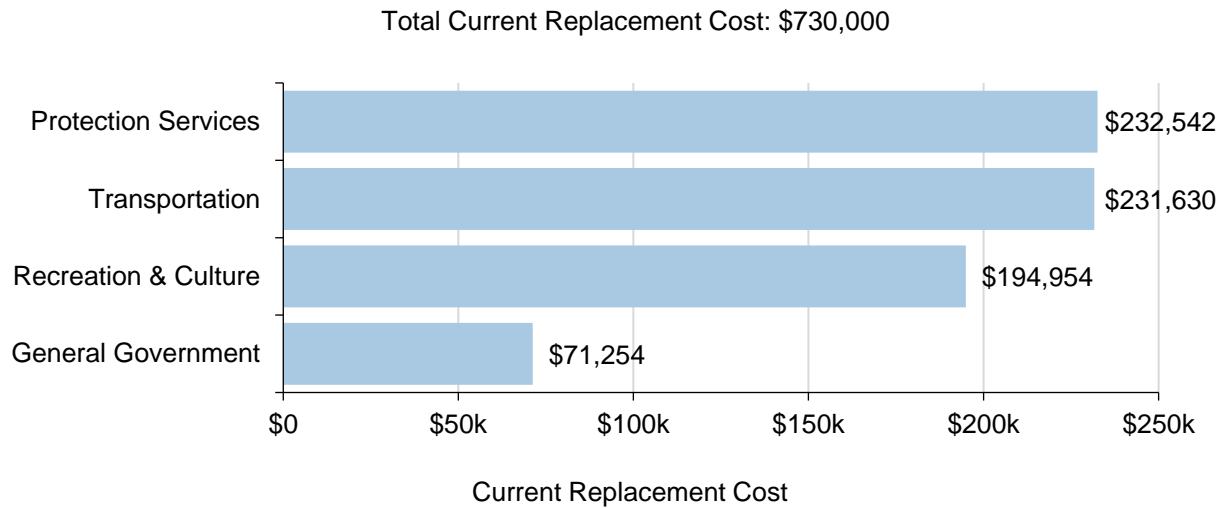
The state of the infrastructure for the machinery and equipment is summarized in the following table.

Replacement Cost	Condition	Annual Capital Requirement
\$730,000	Poor (17%)	\$61,000

9.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
General Government	72	\$71,000	\$9,000
Protection Services	225	\$233,000	\$23,000
Recreation & Culture	11	\$195,000	\$13,000
Transportation	17	\$232,000	\$15,000
Total		\$730,000	\$61,000



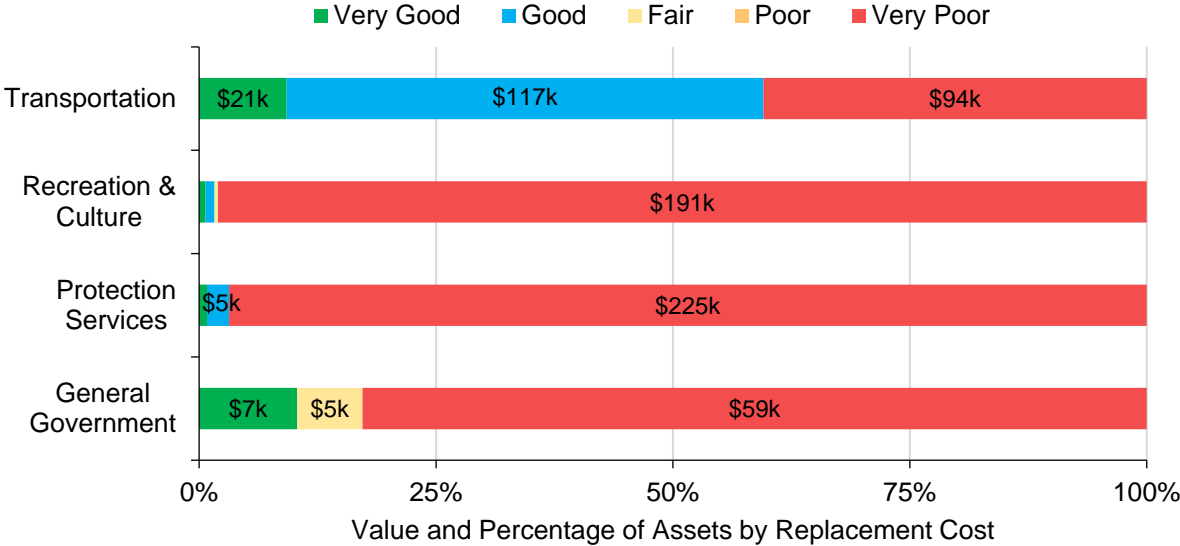
Each asset’s replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

9.2 Asset Condition & Age

The table below identifies the current average condition and source of available condition data for each asset segment. The average condition (%) is a weighted value based on replacement cost. The condition rating below is not based on assessed condition data. The rating is an approximate condition based on age and the estimated useful life of the assets; it may not be an accurate reflection of the current working condition of the assets.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
General Government	9	12.2	12% (Very Poor)
Protection Services	10	24.5	2% (Very Poor)
Recreation & Culture	15	19.8	3% (Very Poor)
Transportation	18	15.1	46% (Fair)
Average			17% (Poor)

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



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.

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

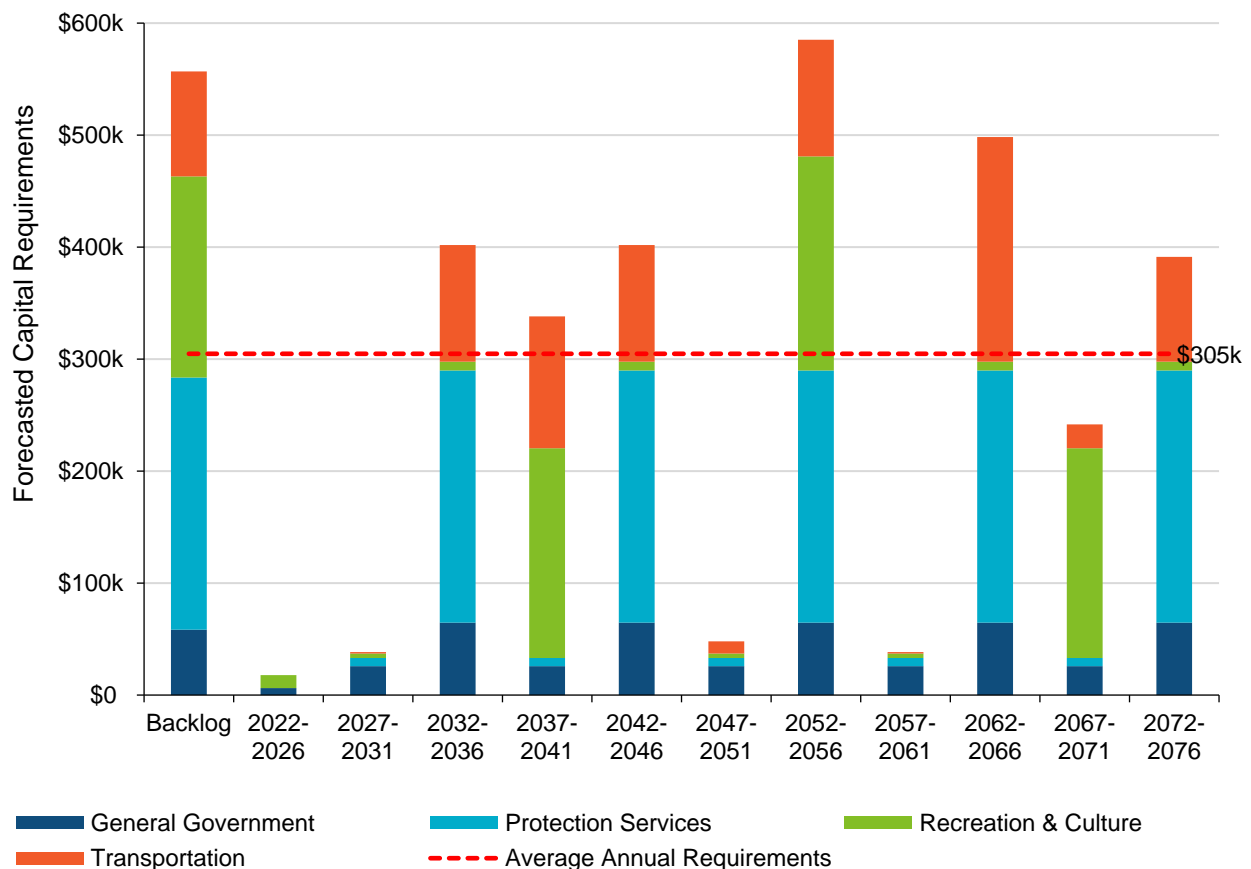
9.2.1 Current Approach to Condition Assessment

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

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

9.3 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 55 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The average annual capital requirement is \$61,000. The forecasted requirements are aggregated into 5-year bins. The trend line represents the average 5-year capital requirement of \$305,000; this amount does not account for inflation.



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.

9.4 Asset Management Strategies

The documentation of lifecycle management strategies, current levels of service, and risk are critical to the development of a comprehensive asset management program. These components of the asset management plan support effective short- and long-term capital planning and contribute to more proactive asset management practices, thus extending the estimated useful life of many assets and providing a higher level of service.

In accordance with O. Reg. 588/17, the Municipality will continue to gather data and information in order to detail and review the lifecycle management strategies, levels of service, and risk of all non-core asset categories by July 1, 2024.

9.5 Recommendations

Replacement Costs

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

Condition Assessment Strategies

- All condition ratings in this AMP are based on an estimate using the asset age and estimated useful life. 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.

10 Land Improvements

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

- Ball field
- Outdoor rink

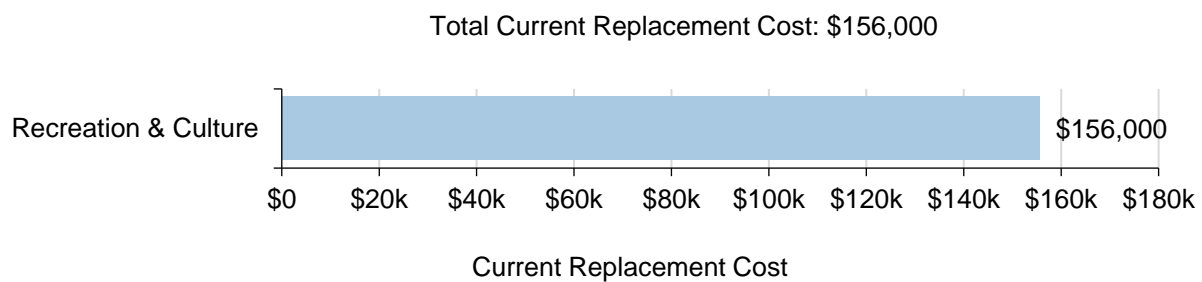
The state of the infrastructure for the land improvements is summarized in the following table.

Replacement Cost	Condition	Annual Capital Requirement
\$156,000	Good (65%)	\$7,000

10.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Recreation & Culture ⁵	2	\$156,000	\$7,000
Total		\$156,000	\$7,000



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

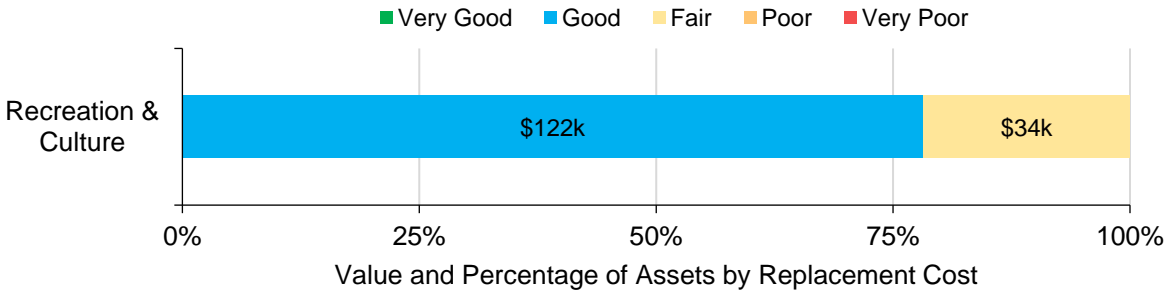
⁵ In 2022 the Township acquired a playground which is not included in this AMP.

10.2 Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Recreation & Culture	21	29.7	65% (Good)
Average			65% (Good)

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



To ensure that the Township’s land improvements 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 land improvements.

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

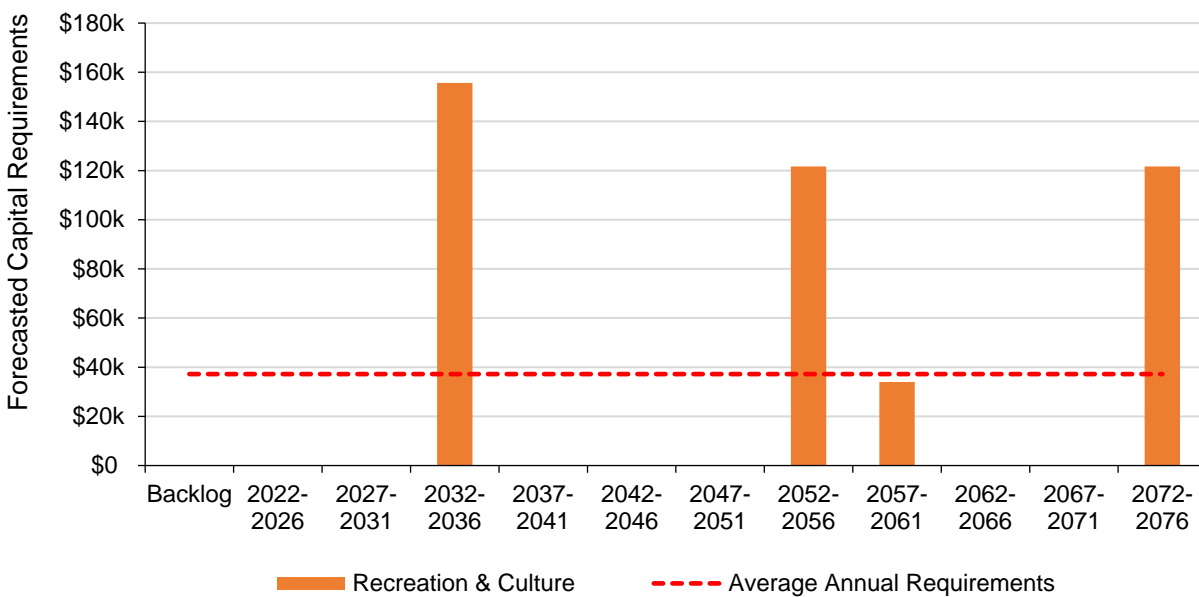
10.2.1 Current Approach to Condition Assessment

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

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

10.3 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 55 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The average annual capital requirement is \$7,000. The forecasted requirements are aggregated into 5-year bins. The trend line represents the average 5-year capital requirement of \$37,000; this amount does not account for inflation.



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.

10.4 Asset Management Strategies

The documentation of lifecycle management strategies, current levels of service, and risk are critical to the development of a comprehensive asset management program. These components of the asset management plan support effective short- and long-term capital planning and contribute to more proactive asset management practices, thus extending the estimated useful life of many assets and providing a higher level of service.

In accordance with O. Reg. 588/17, the Municipality will continue to gather data and information in order to detail and review the lifecycle management strategies, levels of service, and risk of all non-core asset categories by July 1, 2024.

10.5 Recommendations

Replacement Costs

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

Condition Assessment Strategies

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

11 Water Network

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

- Hydrants
- Valves
- Water Equipment
- Watermains
- Water Treatment Plant

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

Replacement Cost	Condition	Annual Capital Requirement
\$5.4 million	Good (60%)	\$100,000

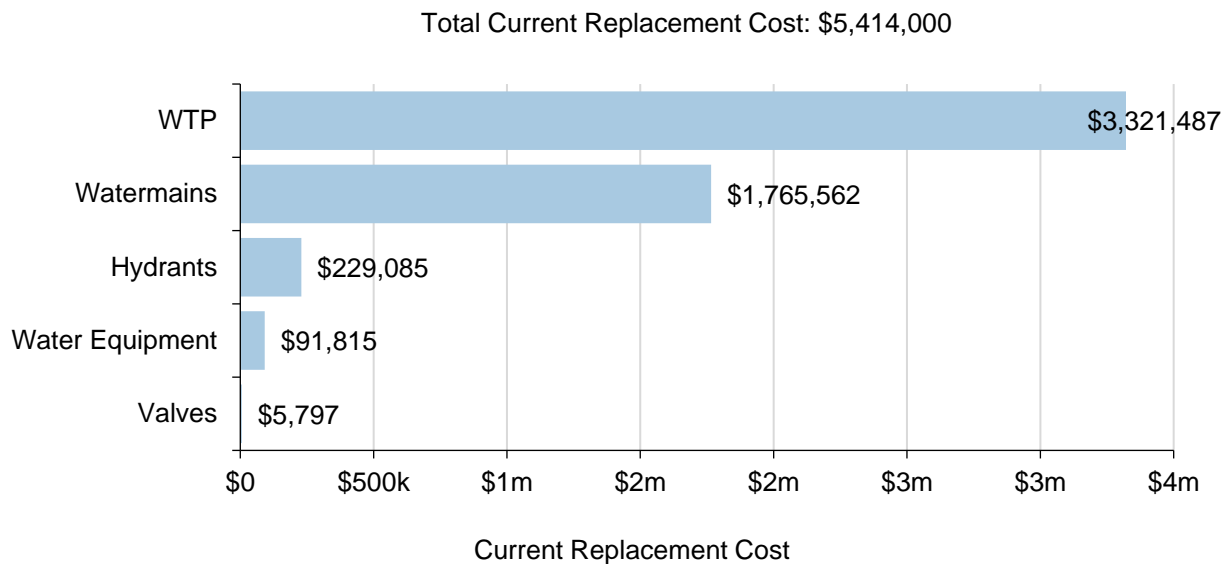
The following core values and level of service statements are a key driving force behind the Township's asset management planning:

Service Attribute	Level of Service Statement
Scope	The Municipal water is conveniently accessible to a portion of the community in sufficient capacity (does not exceed maximum use).
Quality/Reliability	The water network is in good condition with minimal unplanned service interruptions due to main breaks and boil water advisories.

11.1 Asset Inventory & Costs

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

Asset Segment	Quantity (Component)	Replacement Cost	Annual Capital Requirement
Hydrants	34	\$229,000	\$5,000
Valves	1	\$6,000	0
Water Equipment	8	\$92,000	\$5,000
Watermains	4,184 m	\$1,766,000	\$24,000
Water Treatment Plant	1(4)	\$3,321,000	\$66,000
Total		\$5,414,000	\$100,000



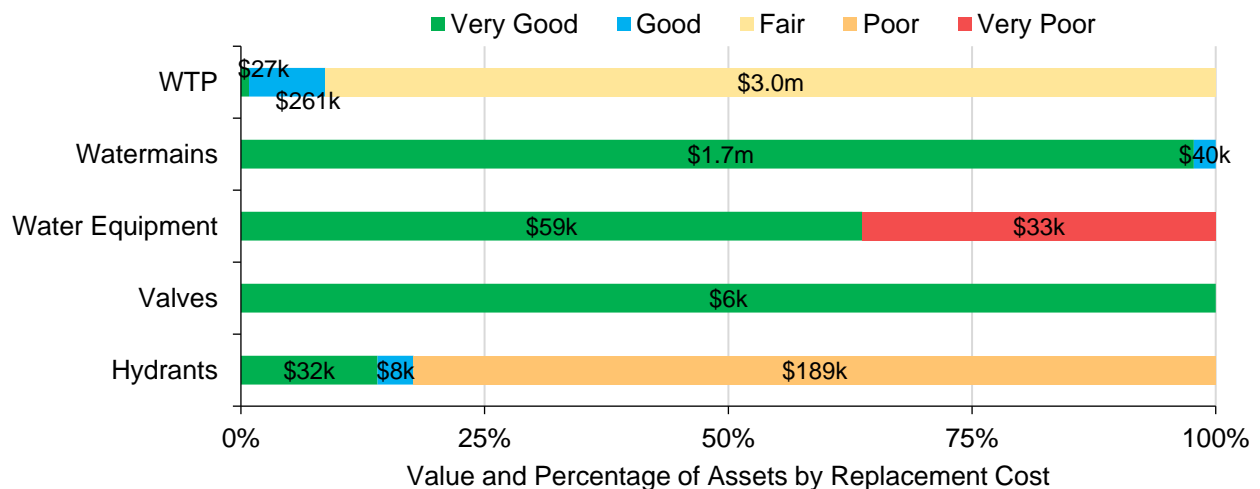
Each asset’s replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

11.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost. The condition rating below is not based on assessed condition data. The rating is an approximate condition based on age and the estimated useful life of the assets; it may not be an accurate reflection of the current working condition of the assets.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Hydrants ⁶	50	27.3	45% (Fair)
Valves ⁷	50	4.0	92% (Very Good)
Water Equipment	35	6.0	59% (Fair)
Watermains	75	32.0	90% (Very Good)
Water Treatment Plant ⁸	50	27.7	45% (Fair)
Average			60% (Good)

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



⁶ The in-service-date may not be accurate. The water network was initially installed in 1993.

⁷ This is a pooled asset. The water valves are not individually itemized, therefore, we do not have accurate in-service-dates and conditions for each valve. The age and condition provided is not likely to be an accurate reflection of the average age and condition for all valves.

⁸ The age-based condition is not likely an accurate representation of the asset's condition. Staff estimate the condition is poor.

To ensure that the Township’s water 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 water network.

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

11.2.1 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:

- Staff primarily rely on the age and material of water mains to determine the projected condition of water mains
- There are no internal formal condition assessment programs in place for the water network
- Opasatika utilizes the services of OCWA to help guide its maintenance and capital requirements

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

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

11.3 Lifecycle Management Strategy

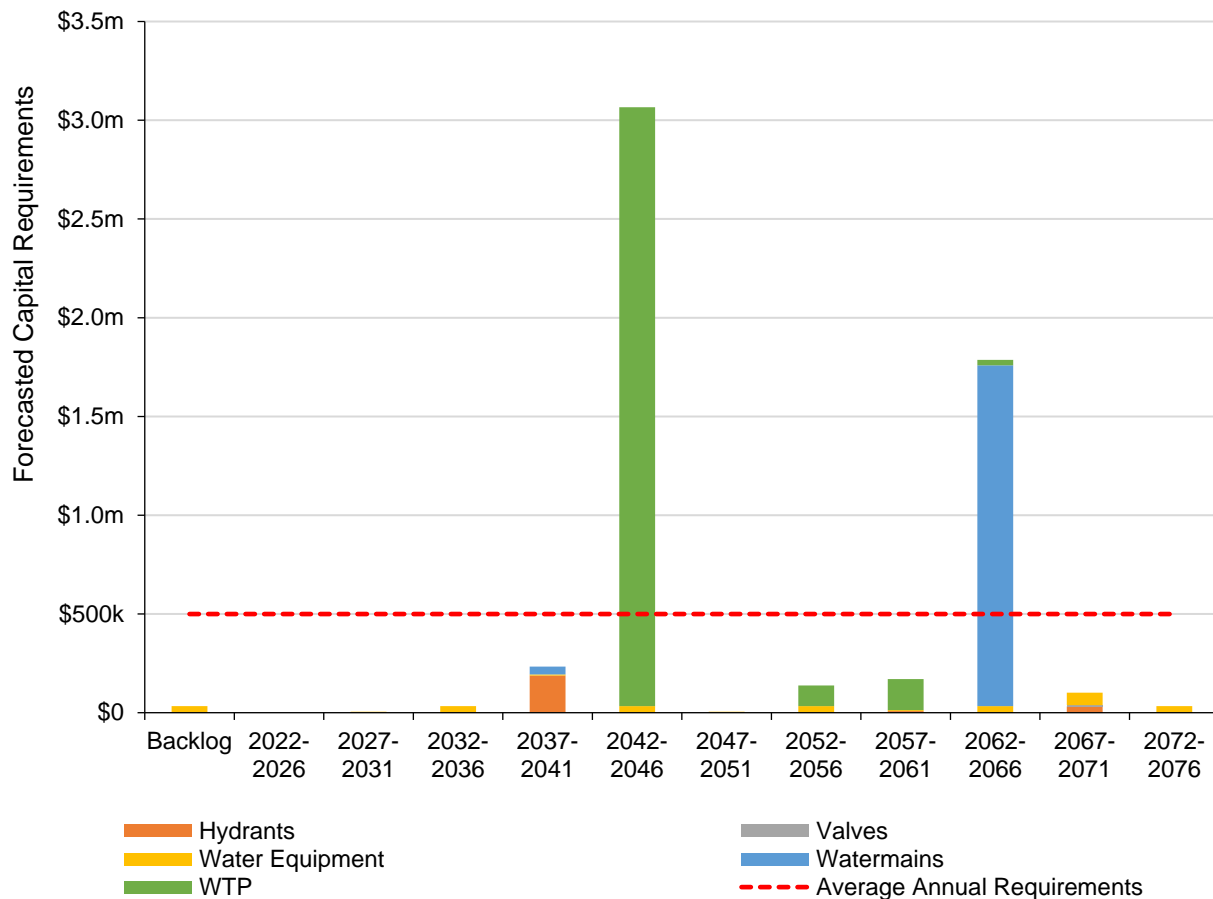
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Main flushing is completed on a portion of the network annually.
	Chemical pumps and analyzers are examined and replaced on an annual basis.
	Generators receive annual maintenance, along with the Township’s backflow preventer (inspection and recertification), via OCWA.
Rehabilitation /Replacement	Confined space equipment, lift stations, and the WTPs HVAC system, receive inspection and certification on an annual basis.
	As per OCWA’s recommendation, defective hydrants are rehabilitated, when possible. Replacement activities are identified based on an analysis of the main break rate as well as any issues identified during regular maintenance activities.

11.3.1 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 55 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The average annual capital requirement is \$100,000. The forecasted requirements are aggregated into 5-year bins. The trend line represents the average 5-year capital requirement of \$500,000; this amount does not account for inflation.



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.

11.4 Risk & Criticality

11.4.1 Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.



This is a high-level model developed for the purposes of this AMP and Township staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure. The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the water network are documented below:

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

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.

11.5 Levels of Service

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

11.5.1 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	The water network is accessible to a portion of the residential and commercial areas of Township.
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	Fire flow is accessible to a portion of the residential and commercial areas of the Township in alignment with the water network.
Reliability	Description of boil water advisories and service interruptions	The Township follows Ontario's Drinking Water Quality Management Standard (DWQMS). When a boil water advisories or service interruption occurs, the Township delivers a notice to affected households.

11.5.2 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 (2021)
Scope	% of properties connected to the municipal water system	88%
	% of properties where fire flow is available	88%
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	Recommended capital reinvestment rate	4.7%

11.6 Recommendations

Asset Inventory

- There are a number of pooled water treatment plant assets that require further segmentation to allow for asset-specific lifecycle planning and costing.

Replacement Costs

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

Condition Assessment Strategies

- All condition ratings in this AMP are based on an estimate using the asset age and estimated useful life. 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.
- To approximate condition of water mains, optimize other attributes such as age, material, soil type, and history of main breaks.

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.

12 Sanitary Network

The sanitary network is comprised of various facilities and infrastructure, including:

- Lagoons
- Lift Stations
- Manholes
- Pumping Stations
- Sanitary Equipment
- Sanitary Mains

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

Replacement Cost	Condition	Annual Capital Requirement
\$3 million	Poor (30%)	\$74,000

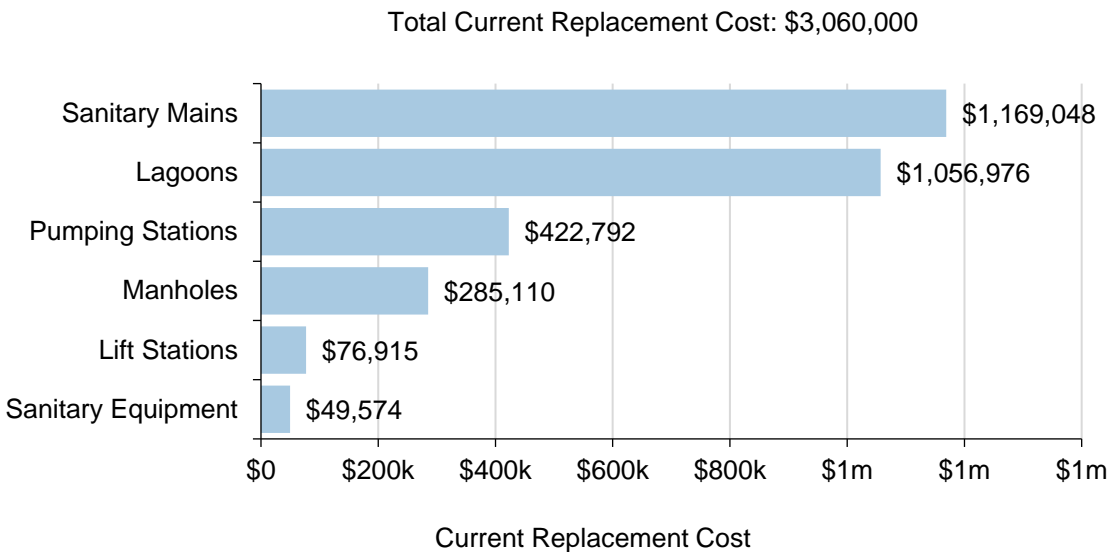
The following core values and level of service statements are a key driving force behind the Township's asset management planning.

Service Attribute	Level of Service Statement
Scope	The Municipal sanitary system is accessible to a portion of the community in sufficient capacity (does not exceed maximum capacity).
Quality/Reliability	The sewer network is in poor condition but has minimal unplanned service interruptions due to backups and effluent violations.

12.1 Asset Inventory & Costs

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

Asset Segment	Quantity (Components)	Replacement Cost	Annual Capital Requirement
Lagoons	1	\$1,057,000	\$21,000
Lift Stations	1(3)	\$77,000	\$2,000
Manholes	45	\$285,000	\$6,000
Pumping Stations	1(4)	\$423,000	\$25,000
Sanitary Equipment	3	\$50,000	\$5,000
Sanitary Mains	4,466 m	\$1,169,000	\$16,000
Total		\$3,060,000	\$74,000



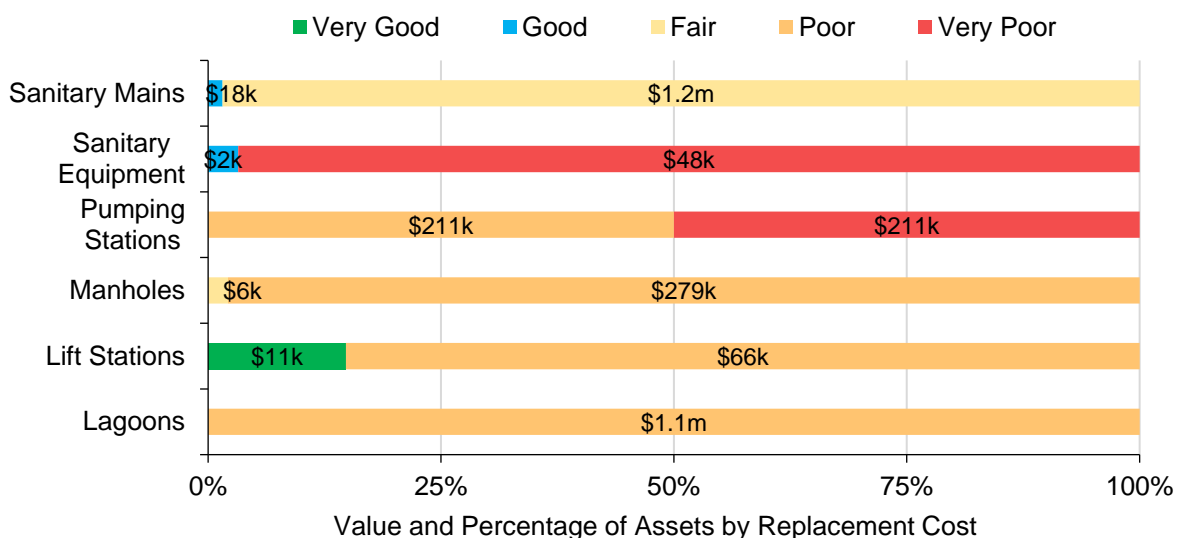
Each asset’s replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

12.2 Asset Condition & Age

The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost. The condition rating below is not based on assessed condition data. The rating is an approximate condition based on age and the estimated useful life of the assets; it may not be an accurate reflection of the current working condition of the assets.

Asset Segment	Estimated Useful Life (Years)	Average Age	Average Condition (%)
Lagoons ⁹	50	39.0	22% (Poor)
Lift Stations	50	33.7	33% (Poor)
Manholes	50	38.8	22% (Poor)
Pumping Stations	30	39.0	11% (Very Poor)
Sanitary Equipment	10	9.8	2% (Very Poor)
Sanitary Mains	75	38.8	48% (Fair)
Average			30% (Poor)

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



⁹ The working condition of the asset is estimated to be good because the lagoon is not near maximum capacity.

To ensure that the Township’s sanitary 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 sanitary network.

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

12.2.1 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:

- Sanitary equipment, such as generators, receive regular scheduled maintenance to ensure that the Township’s assets are in good working order
- Pumping and Lifting stations receive visual inspection on a regular basis

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

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

12.3 Lifecycle Management Strategy

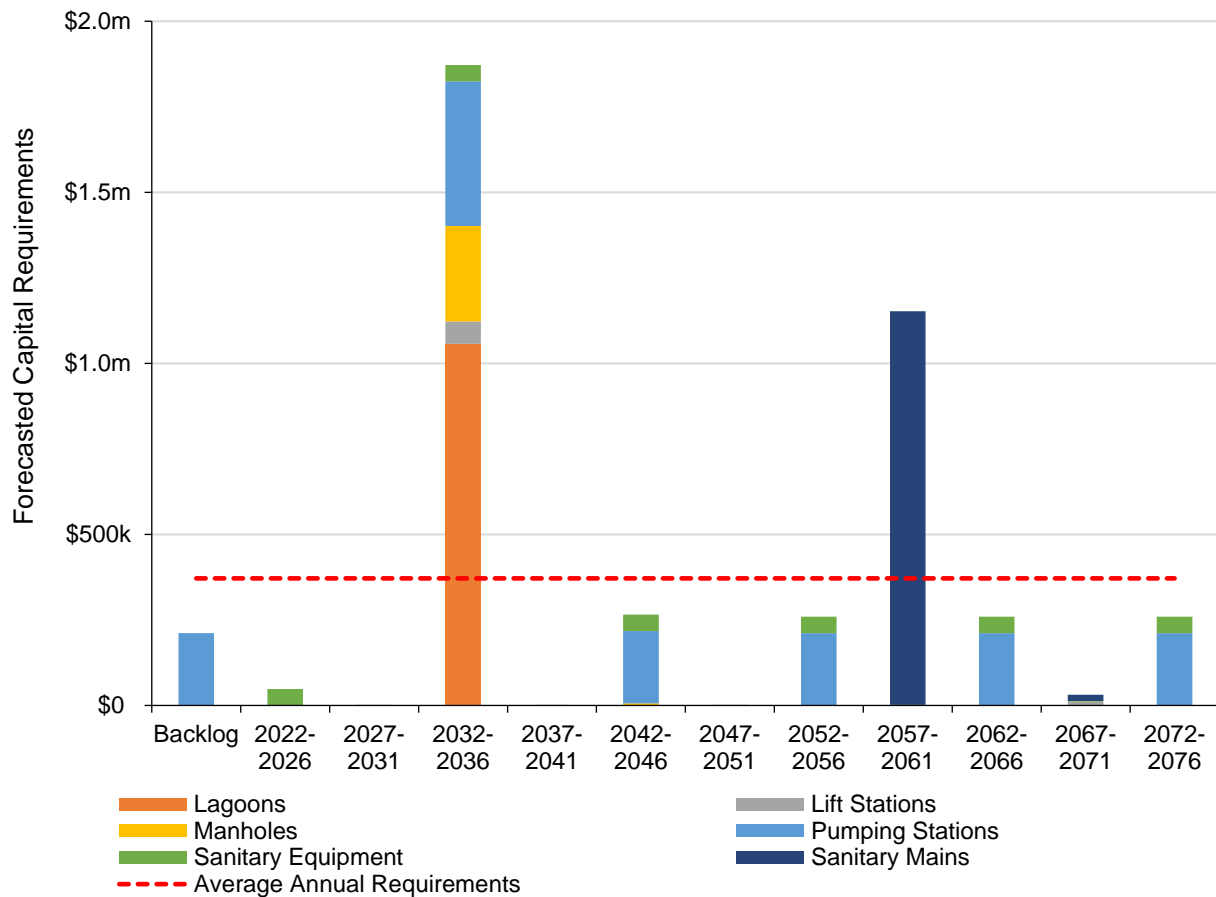
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Main flushing is completed on a portion of the network annually
	The Township’s wastewater lagoon receives an annual alum treatment (if required)
	Equipment, including the WWTPs generator receives regular, scheduled annual maintenance
Rehabilitation/ 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.

12.3.1 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 55 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The average annual capital requirement is \$74,000. The forecasted requirements are aggregated into 5-year bins. The trend line represents the average 5-year capital requirement of \$371,000; this amount does not account for inflation.



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.

12.4 Risk & Criticality

12.4.1 Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2021 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.



This is a high-level model developed for the purposes of this AMP and Township staff should review and adjust the risk model to reflect an evolving understanding of both the probability and consequences of asset failure. The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of the sanitary network are documented below:

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

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.

12.5 Levels of Service

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

12.5.1 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	The sanitary network is accessible to a portion of the residential and commercial areas of Township.
	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes	The Township does not own any combined sewers
Reliability	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	The Township does not own any combined sewers
	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to	Stormwater can enter into sanitary sewers due to cracks in sanitary mains or through indirect connections (e.g. weeping tiles). In the case of heavy rainfall events, sanitary sewers may experience a volume of water and

Service Attribute	Qualitative Description	Current LOS (2021)
overflow into streets or backup into homes	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	sewage that exceeds its designed capacity. In some cases, this can cause water and/or sewage to overflow backup into homes. the disconnection of weeping tiles from sanitary mains and the use of sump pumps and pits directing storm water to the storm drain system can help to reduce the chance of this occurring. The Township follows a series of design standards that integrate servicing requirements and land use considerations when constructing or replacing sanitary sewers. These standards have been determined with consideration of the minimization of sewage overflows and backups.
Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system		Effluent refers to water pollution that is discharged from a wastewater treatment plant, and may include suspended solids, total phosphorous and biological oxygen demand. The Environmental Compliance Approval (ECA) identifies the effluent criteria for municipal wastewater treatment plants.

12.5.2 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of properties connected to the municipal wastewater system	85%
	# of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system	N/A
Reliability	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	0
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0
Performance	Recommended capital reinvestment rate	3.5%

12.6 Recommendations

Asset Inventory & Replacement Costs

- Review the sanitary network asset inventory to ensure all in-service assets are listed accurately.
- All replacement costs used in this AMP are based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.

Condition Assessment Strategies

- All condition ratings in this AMP are based on an estimate using the asset age and estimated useful life. Identify condition assessment strategies for high value and high-risk assets.

Risk Management Strategies

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

Lifecycle Management Strategies

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

Levels of Service

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

13

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
- Moderate population and employment decreases are expected
- The costs of changes in demand should be considered in long-term funding strategies that are designed to maintain the current level of service

13.1 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.

13.1.1 Historical Growth in the Township

The Township of Opasatika experienced a large population decline of 11.5% between 2016 and 2021. The number of private dwellings has decreased by 24% between 2016 and 2021. This population change is trending in the opposite direction of both the provincial and national average rates of positive 5.8% and 5.2% growth respectively.

The following table was developed using Statistics Canada’s Census Population data from 1996 to 2021.

Historical Figures	1996	2001	2006	2011	2016	2021
Population	349	325	280	214	226	200
Population Change	N/A	-6.9%	-13.8%	-23.6%	5.6%	-11.5%
Private Dwellings	N/A	132	128	94	132	110

Historical data finds a notable decline in population in the last 25 years. The rate of decline has varied throughout the years and there was a brief increase in population between 2011 and 2016. If the population trends were to continue, the Township could expect a continuous decline in the coming years. Such changes will likely impact demand as it relates to municipal services and infrastructure.

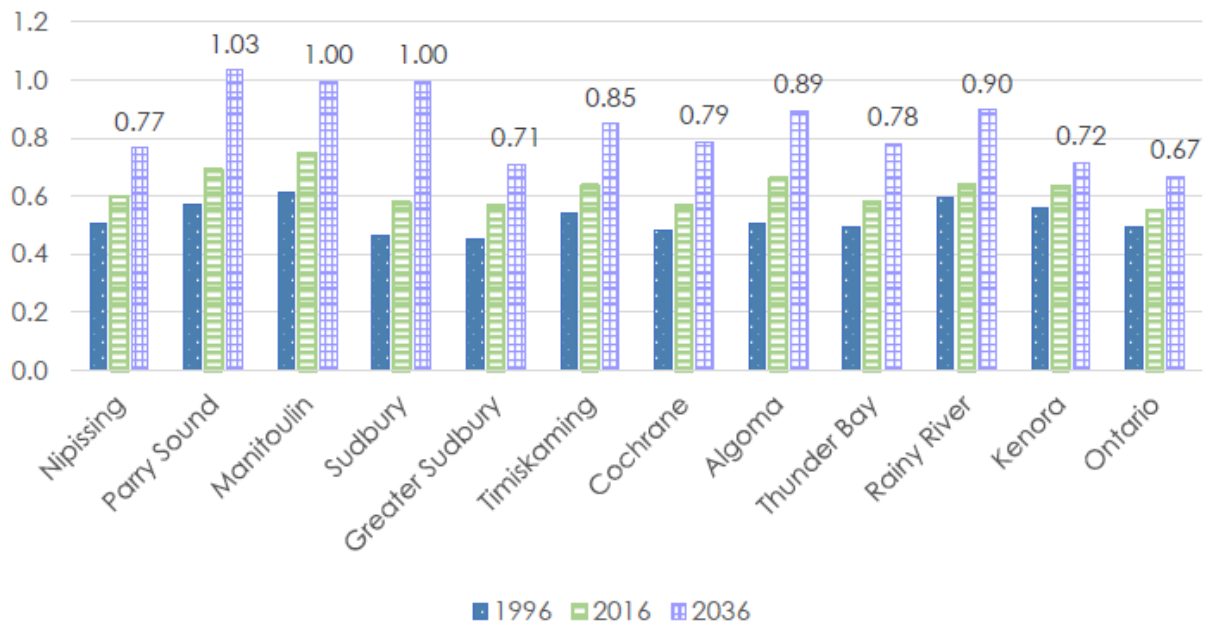
13.1.2 Regional Growth

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

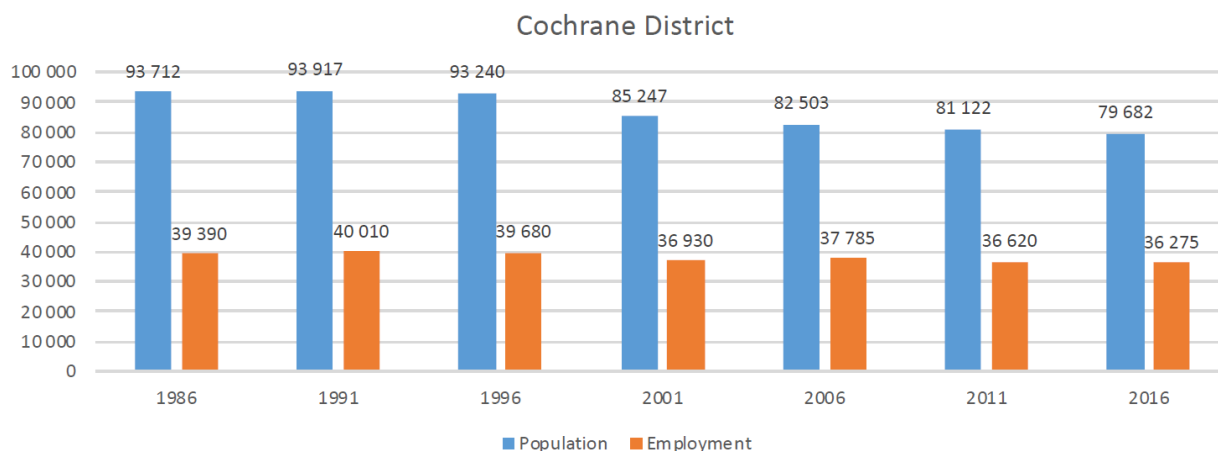
retention and attraction numbers improve. The risk is the result of the dependency ratio increasing. The dependency ratio is the ratio of people unable to support themselves without assistance; people between the ages of 0 and 14 and 64 and older.

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 in excess of 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 Opasatika is found in the Cochrane District, which is expected to reach a dependency ratio of 0.79.

The population trends overall in the Cochrane District are in decline. The following graph from the 2019 Cochrane District report by the Northern Policy Institute, displays the population and employment trends from 1986 to 2016. The data is derived from Statistics Canada’s Census of Population.



The population and employment trends are highly correlated; lower employment opportunity has contributed to a decline in population. Other factors that have likely contributed to a decline in population in the area include a low rate of immigration, interprovincial and intraprovincial out-migration, and a declining fertility rate.

The majority of migration out of Cochrane district of those between the ages of 20 and 34. This out-migration will further increase the dependency ratio of the communities within the District.

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

Year	Ages 0-19	Ages 20-64	Ages 65+	Total
2021	17,163	45,475	15,951	78,589
2026	16,627	41,520	18,681	76,828
2031	15,892	38,676	20,566	75,134
2036	15,260	37,319	20,962	73,541
2041	14,894	36,535	20,669	72,098

Forecasted figures find a steady decline in population over the next 20 years. The most recent census data from Statistics Canada confirms the downward trend, as the population in Cochrane District was 77,963 in 2021. The majority of the population decline was found amongst those aged 15 to 64, whereas the population increased for those aged 65 and up; thus, further increasing the dependency ratio.

13.2 Impact of Growth on Lifecycle Activities

The Township's water, wastewater and storm sewer networks are relatively new and can support the existing population and any significant reversal in growth trends in the future. In the near term, there are no real priority investment requirements for these 3 core asset categories, however there is a potential financial risk if levels of investment into operations and maintenance programs continues to diminish with sustained population decline.

The Township's roads, buildings and vehicles have higher priority for near-term investment requirements. Considering the population decline in recent years, it is likely that the Township will not require expansion of existing infrastructure and services.

To address capital funding needs the past, the Township has opted to increase the total levy over a 5-year period by 2%. This financial strategy may not be viable in the current context with a high percentage of residents that are reliant on fixed income and are consequentially limited in their ability to afford ongoing taxation increases. Sustained increases in total levy may not be viable in future years and could potentially contribute to the problem of population decline.

By July 1, 2025, the Township's asset management plan must include a discussion of how the assumptions regarding future changes in population and economic activity informed the preparation of the lifecycle management and financial strategy. The Township is advised to take inspiration from neighboring municipalities Official Plans and create and their own updated version which will serves as a policy framework to guides the Township's growth strategies. These plans are founded on the goal of attaining a healthy economic base that supports sustainable and orderly community development while conserving the natural resources of the rural area. This primary goal is based on a series of specific intentions related to community development, environmental stewardship, community health and safety and resource.

14 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 provides additional guidance on the development of a condition assessment program

Appendix A: Infrastructure Report Card

Asset Category	Replacement Cost	Asset Condition	Annual Capital Requirement
Road Network	\$1.2 million	Fair	\$40,000
Bridges & Culverts	\$174,000	Very Poor	\$3,000
Stormwater Network	\$608,000	Very Good	\$8,000
Buildings	\$2.1 million	Fair	\$52,000
Machinery & Equipment	\$730,000	Very Poor	\$61,000
Vehicles	\$210,000	Poor	\$12,000
Land Improvement	\$156,000	Good	\$7,000
Water Network	\$5.4 million	Good	\$100,000
Sanitary Network	\$3.1 million	Poor	\$74,000
Overall	\$13.7 million	Fair	\$357,000

Appendix B: 10-Year Capital Requirements

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

Road Network											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Paved Roads	\$306k	\$0	\$0	\$0	\$0	\$120k	\$0	\$0	\$0	\$0	\$0
Roadside Culverts	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sidewalks	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Signs	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Streetlights	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$306k	\$0	\$0	\$0	\$0	\$120k	\$0	\$0	\$0	\$0	\$0

Bridges & Culverts											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Structural Culverts	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$51k
Total	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$51k

Storm Network											
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	20030	2031
Storm mains	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Buildings

Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
General Government	\$0	\$0	\$0	\$0	\$0	\$0	\$633k	\$19k	\$2k	\$0	\$0
Recreation & Culture	\$0	\$99k	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$19k	\$16k
Transportation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$0	\$99k	\$0	\$0	\$0	\$0	\$633k	\$19k	\$2k	\$19k	\$16k

Vehicles

Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Environmental	\$9k	\$0	\$0	\$0	\$0	\$0	\$0	\$20k	\$0	\$0	\$0
Protection Services	\$49k	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Public Works	\$0	\$35k	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Recreation & Culture	\$9k	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Recreation	\$9k	\$0	\$0	\$0	\$0	\$0	\$0	\$20k	\$0	\$0	\$0
Total	\$67k	\$35k	\$0	\$0	\$0	\$0	\$0	\$20k	\$0	\$0	\$0

Machinery & Equipment

Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
General Government	\$58k	\$0	\$569	\$0	\$0	\$6k	\$18k	\$569	\$0	\$0	\$7k
Protection Services	\$225k	\$0	\$0	\$0	\$0	\$0	\$0	\$976	\$4k	\$2k	\$0
Recreation & Culture	\$180k	\$0	\$0	\$0	\$12k	\$0	\$717	\$0	\$2k	\$655	\$664
Transportation	\$94k	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1k
Total	\$557k	\$0	\$569	\$0	\$12k	\$6k	\$19k	\$2k	\$6k	\$3k	\$9k

Land Improvements

Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Recreation & Culture	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Water Network

Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Hydrants	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Valves	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Water Equipment	\$33k	\$0	\$0	\$0	\$0	\$0	\$5k	\$0	\$0	\$0	\$0
Watermains	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
WTP	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$33k	\$0	\$0	\$0	\$0	\$0	\$5k	\$0	\$0	\$0	\$0

Sanitary Network

Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Lagoons	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Lift Stations	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Manholes	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pumping Stations	\$211k	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sanitary Equipment	\$0	\$48k	\$0	\$0	\$0	\$0	\$0	\$0	\$2k	\$0	\$0
Sanitary Mains	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$211k	\$48k	\$0	\$0	\$0	\$0	\$0	\$0	\$2k	\$0	\$0

Appendix C: 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