

# Asset Management Plan

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Township of The Archipelago

2024

This Asset Management Plan was prepared by:



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

# Key Statistics

Replacement cost of  
asset portfolio

**\$43.9 million**

Replacement cost of  
infrastructure per  
household

**\$15,000**

Percentage of assets in fair  
or better condition

**84%**

Percentage of assets with  
assessed condition data

**88%**

Annual capital  
infrastructure deficit

**\$316,000**

Recommended timeframe  
for eliminating annual  
infrastructure deficit

**10 Years**

Target reinvestment  
rate

**4.25%**

Actual reinvestment  
rate

**3.53%**

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# Executive Summary

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

## Scope

This Asset Management Plan (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	 Land Improvements
 Bridges & Culverts	 Vehicles
 Buildings	 Machinery & Equipment

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

# Findings

The overall replacement cost of the asset categories included in this AMP totals \$43.9 million. 84% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 88% of assets. For the remaining 12% 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 bridges) 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 \$1.9 million. Based on a historical analysis of sustainable capital funding sources, the Township is committing approximately \$1.5 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of \$316,000.

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 Deficit  
Per Household



# Recommendations

A financial strategy was developed to address the annual capital funding gap. The following graphics shows annual tax/rate change required to eliminate the Township’s infrastructure deficit based on a 10-year plan:



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

- 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 milestones and requirements for asset management plans in Ontario between July 1, 2022 and 2025

# 1.1 The Archipelago Community Profile

Census Characteristic	Township of The Archipelago	Parry Sound District	Ontario
Population 2021	979	46,909	14,223,942
Population Change 2016-2021	84.4	9.5	5.8
Total Private Dwellings	2,863	35,640	5,929,250
Population Density	1.7/km <sup>2</sup>	5.1/km <sup>2</sup>	15.9/km <sup>2</sup>
Land Area	592.14 km <sup>2</sup>	9,113.92 km <sup>2</sup>	892,411.76 km <sup>2</sup>

The Township of The Archipelago is a small Township of 979 permanent residents (2021 Census) located in Georgian Bay, Ontario. The Township consists of two non-contiguous parts along the coast and was created pursuant to the District of Parry Sound Local Government Act as a result of the Province’s policy to extend, consolidate, and strengthen local governments in the District of Parry Sound. The Township of The Archipelago was incorporated on April 1, 1980, via the amalgamation of the former townships of Georgian Bay South Archipelago and Georgian Bay North Archipelago.

Prior to the incorporation of the Township, the land on which The Archipelago now sits was composed entirely of geographic townships, with almost no prior local government activity. The Township of the Archipelago makes up a large part of the Thirty Thousand Islands, a UNESCO-designated site known for being the largest freshwater archipelago in the world. The Thirty Thousand Islands area has been long acclaimed for its natural beauty, providing inspiration to artists such as those in the Group of Seven.

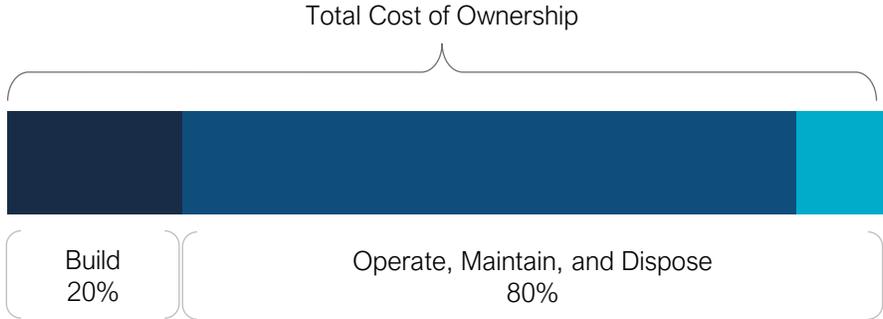
The Township is home to several thousand islands, bays, and lakes that attract a large seasonal population. The Township estimates that there is a seasonal population of approximately 12,800, which would increase the Township’s total population to 13,332. The local economy for the Township is based on the natural resources from the area, as well as recreational, and tourism-based businesses. The Township of The Archipelago is self-described as remote, although it is not unreasonably far from urban amenities, with Sudbury about 125km to the North and Toronto about 280km to the South.

The Township generates a total revenue of \$9.1 million from taxes and has an annual capital budget of \$1.5 million as of a 2022 year-end.

# 1.2 An Overview of Asset Management

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

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



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

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

## 1.2.1 Asset Management Policy

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

The policy provides a foundation for the development of an asset management program within the Township. It covers key components that define a comprehensive asset management policy:

- The policy's objectives dictate the use of asset management practices to ensure all assets meet the agreed levels of service in the most efficient and effective manner;
- The policy commits to, where appropriate, incorporating asset management in the Township's other plans;
- There are formally defined roles and responsibilities of internal staff and stakeholders;
- The policy statements are well defined.

The Township of The Archipelago adopted their Strategic Asset Management Policy in June of 2019. The purpose of the policy "is to establish consistent standards and guidelines for management of the Township's assets."

The general policy states that asset management planning will be aligned with the Township's Official plan, acknowledging projected changes and the resulting impacts within the community. The potential costs of climate change vulnerabilities will balance the impacts of such events and other risk management approaches will also be embedded in local asset management planning methods.

The statutory requirements and key principles the Township strives to incorporate are as follows:

- Environmentally conscious
- Forward looking
- Budgeting and planning
- Prioritizing
- Transparency

- Consistency
- Health and safety
- Community focused
- Innovation
- Standards

## 1.2.2 Asset Management Strategy

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

## 1.2.3 Asset Management Plan

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

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

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

# 1.3 Key Concepts in Asset Management

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

## 1.3.1 Lifecycle Management Strategies

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

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

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

<b>Lifecycle Activity</b>	<b>Description</b>	<b>Example (Roads)</b>	<b>Cost</b>
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	Re-surface	\$\$
Replacement/ Reconstruction	Asset end-of-life activities that often involve the complete replacement of assets	Full Reconstruction	\$\$\$

Depending on initial lifecycle management strategies, asset performance can be sustained through a combination of maintenance and rehabilitation, but at some point, replacement is required. Understanding what effect these activities will have

on the lifecycle of an asset, and their cost, will enable staff to make better recommendations.

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

### 1.3.2 Risk Management Strategies

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

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

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

### 1.3.3 Levels of Service

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

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

## Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories (roads, bridges 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) the Province, through O. Reg. 588/17, has provided technical metrics that are required to be included in this AMP. For non-core asset categories, the Township has determined the technical metrics that will be used to determine the technical level of service provided. These metrics can be found in the Levels of Service subsection within each asset category.

## Current and Proposed Levels of Service

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

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

# 1.4 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, 2024. Next to each requirement a page or section reference is included in addition to any necessary commentary.

<b>Requirement</b>	<b>O. Reg. Section</b>	<b>AMP Section Reference</b>	<b>Status</b>
Summary of assets in each category	S.5(2), 3(i)	4.1.1 - 4.6.1	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	4.1.1 - 4.6.1	Complete
Average age of assets in each category	S.5(2), 3(iii)	4.1.3 - 4.6.3	Complete
Condition of assets in each category	S.5(2), 3(iv)	4.1.2 - 4.6.2	Complete
Description of municipality's approach to assessing the condition of assets in each category	S.5(2), 3(v)	4.1.2 - 4.6.2	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	4.1.6 - 4.6.6	Complete
Current performance measures in each category	S.5(2), 2	4.1.6 - 4.6.6	Complete
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	4.1.4 - 4.6.4	Complete
Costs of providing lifecycle activities for 10 years	S.5(2), 4	Appendix A	Complete
Growth assumptions	S.5(2), 5(i-ii) S.5(2), 6(i-vi)	5.1 - 5.2	Complete

# 2 Scope and Methodology

- This asset management plan includes six asset 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 The Archipelago is produced in compliance with Ontario Regulation 588/17. The July 2024 deadline under the regulation requires analysis of both core and non-core assets.

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

Asset Category	Source of Funding
Road Network	Tax Levy
Bridges & Culverts	
Buildings	
Vehicles	
Machinery & Equipment	
Land Improvements	

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

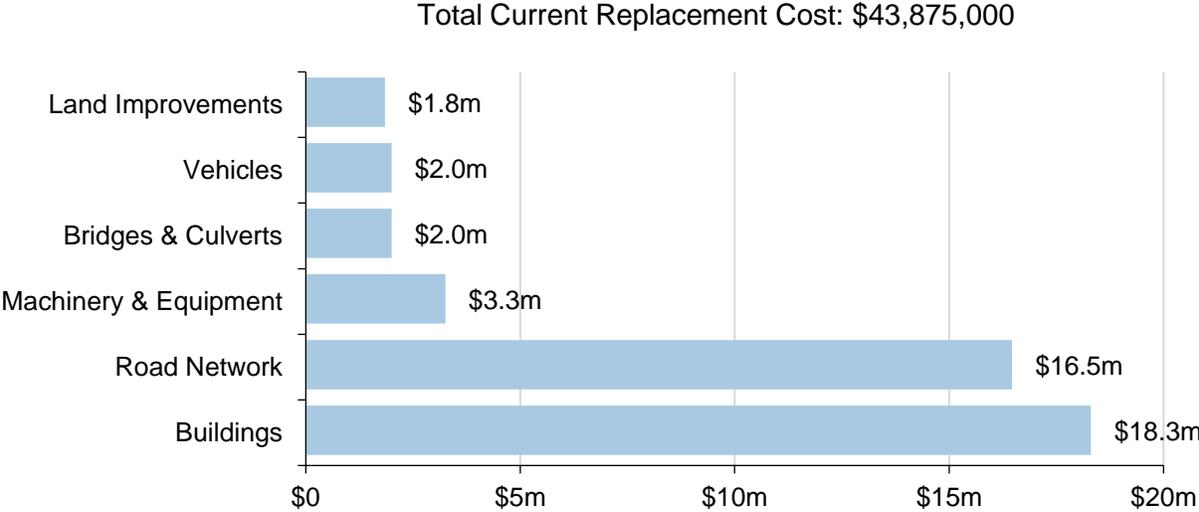
The analysis in this AMP is based on assessed condition data only as available. In the absence of assessed condition data, asset age is used as a proxy to determine asset condition. Appendix D includes additional information on the role of asset condition data and provides basic guidelines for the development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

# 3 Portfolio Overview

- The total replacement cost of the Township's asset portfolio is \$43.9 million
- The Township's target re-investment rate is 4.25%, and the actual re-investment rate is 3.53%, contributing to an expanding infrastructure deficit
- 84% of all assets are in fair or better condition
- Average annual capital requirements total \$1.9 million per year across all assets

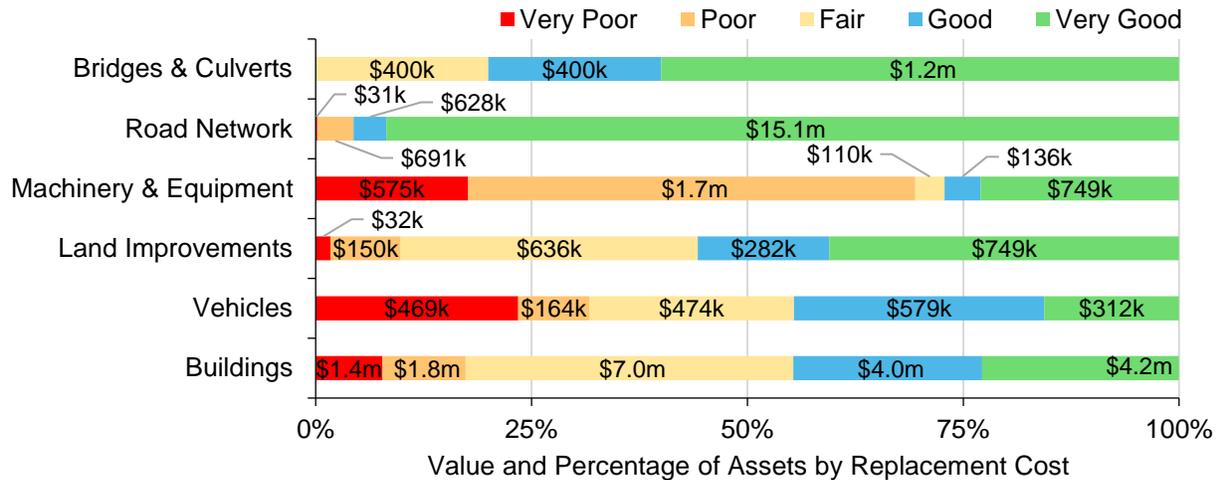
# 3.1 Total Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of \$43.9 million based on inventory data from 2022. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.



## 3.2 Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 84% of assets in The Archipelago are in fair or better condition. This estimate relies on both age-based and field condition data.

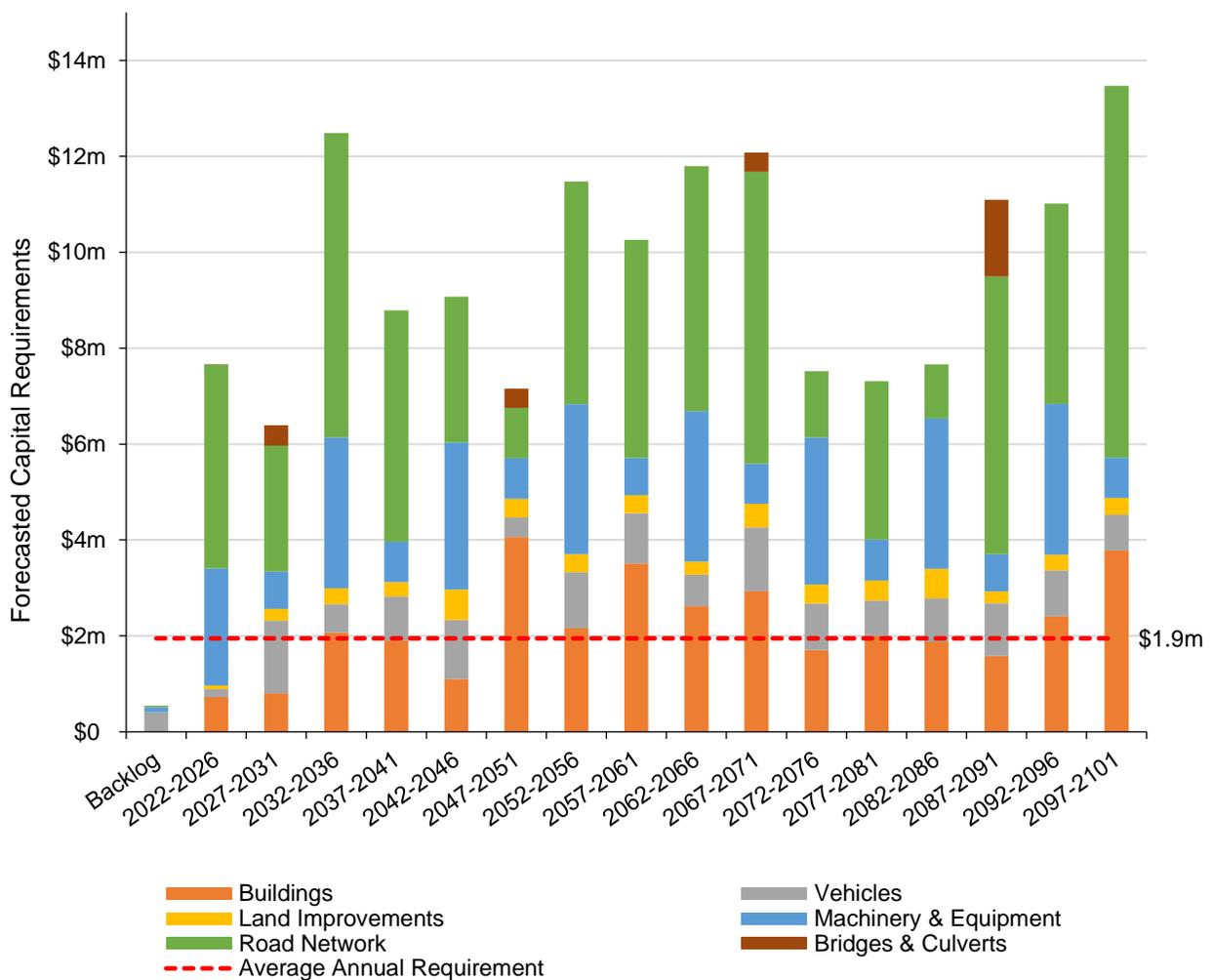


This AMP relies on assessed condition data for 88% of assets; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data used throughout this AMP.

Asset Category	Asset Segment	% with Assessed Condition	Source of Condition Data
Road Network	HCB/LCB	100%	Internal Road Needs Study (2023)
	Signs/Small Culverts	0%	Age-based
Bridges & Culverts	Bridges	100%	2023 OSIM Report
	Structural Culverts	100%	2023 OSIM Report
Buildings	All	96%	2023 Building Condition Assessment Reports by ABSI
Machinery & Equipment	All	79%	Staff assessments and age-based
Vehicles	All	64%	Staff assessments and age-based
Land Improvements	All	7%	Staff assessments and age-based

### 3.3 Forecasted Capital Requirements

The development of a long-term capital forecast should include both asset rehabilitation and replacement requirements. With the development of asset-specific lifecycle strategies that include the timing and cost of future capital events, the Township can produce an accurate long-term capital forecast. The following graph identifies capital requirements over the next 80 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.<sup>1</sup>



<sup>1</sup> Note that future costs are not indexed for inflation.

# 4 Analysis of Assets

- Assets are valued at \$43.9 million
- 84% of tax-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for all assets is approximately \$1.9 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

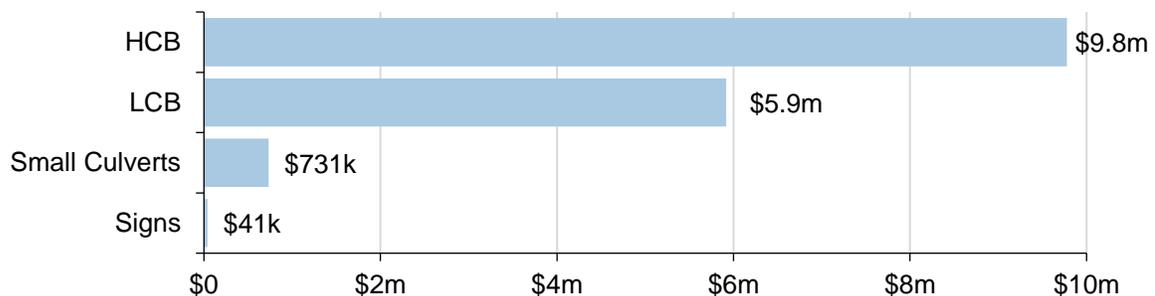
## 4.1 Road Network

The road network is a critical component of the provision of safe and efficient transportation services and represents the highest value asset category in the Township’s asset portfolio. It includes all municipally owned and maintained roadways. The Township’s roads are maintained by the Public Works department who is also responsible for winter snow clearing, ice control, and snow removal operations.

### 4.1.1 Asset Inventory & Replacement Cost

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Asphalt Roads (HCB)	26,337 m	Cost/Unit	\$9,776,000
Surface Treated Roads (LCB)	30,634 m	Cost/Unit	\$5,917,000
Signs	2 Assets	User-Defined	\$41,000
Small Culverts	4,605 feet	Cost/Unit	\$731,000
			<b>\$16,464,000</b>



Total Current Replacement Cost: \$16,464,000

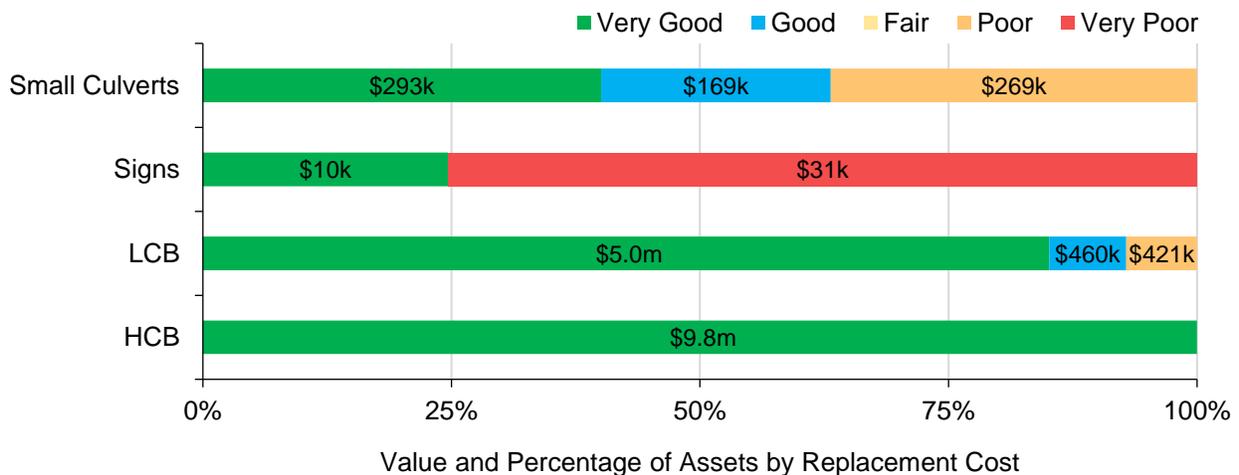
Each asset’s replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

## 4.1.2 Asset Condition

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.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Asphalt Roads (HCB)	85%	Very Good	100% Assessed
Surface Treated Roads (LCB)	85%	Very Good	100% Assessed
Signs	23%	Very Good	Age-Based
Small Culverts	67%	Good	Age-Based
	<b>84%</b>	<b>Very Good</b>	<b>95% Assessed</b>

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



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

## Current Approach to Condition Assessment

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

- A street scan was completed by external consultants in 2018-2019 that included a detailed assessment of the condition of each road segment
- Municipal staff conduct bi-weekly visual inspections to assess the overall condition and presence of defects for all road assets including asphalt, surface treated, and gravel roads
- In the winter months, municipal staff complete additional road patrols based on their Winter Maintenance Policy and legal requirements
- Mostly, road patrols are used to gauge the condition of the roads and determine whether mid-life activities or replacement are required. If there is nearby work taking place, then the Township may capitalize to complete road repairs while the area is closed

### 4.1.3 Estimated Useful Life & Average Age

The Estimated Useful Life for road network assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Lifecycle strategies to extend the lifespan of an asset, along with updated condition assessments, may augment the average service life remaining. This results in the discrepancy between the average age and the service life remaining not adding to the overall estimated useful life and indicates well-maintained assets.

<b>Asset Segment</b>	<b>Estimated Useful Life (Years)</b>	<b>Average Age (Years)</b>	<b>Average Service Life Remaining (Years)</b>
Asphalt Roads (HCB)	20	12.1	15.2
Surface Treated Roads (LCB)	15	5.5	13.4
Signs	10	7.3	8.8
Small Culverts	20	7.1	12.8
	<b>16.8</b>	<b>7.3</b>	<b>13.2</b>

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

## 4.1.4 Lifecycle Management Strategy

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

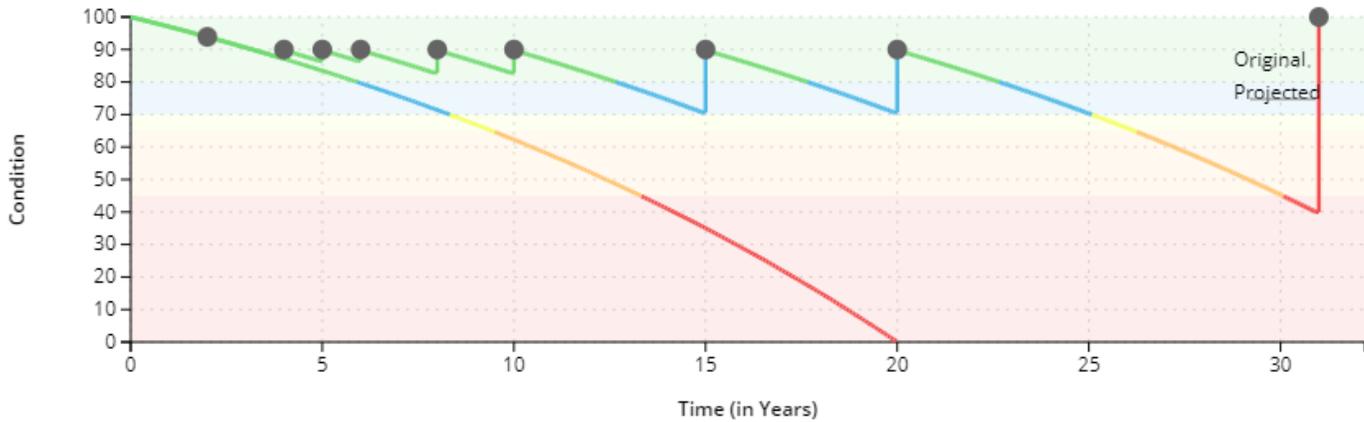
The following table outlines the Township’s current lifecycle management strategy.

Activity Type	Description of Current Strategy
	Maintenance activities for roads include winter maintenance such as snow removal and salt/sand for ice removal as needed. Frost heave excavations take place when needed on a planned basis.
Maintenance	Gravel roads are graded annually and dust suppressant is applied during the spring. Re-gravelling occurs as-needed, approximately every 3-5 years.
	Pothole patching, shoulder grading, shoulder breakage resurfacing, line painting, and crack sealing are all carried out according to the conditions determined by internal route patrols. For all road types, roadside cutting, as well as brushing is carried out, which incurs significant operating cost.
Rehabilitation	Rehabilitation activities are not carried out.
Replacement	Replacement activities are prioritized based on condition assessments. Currently, the Township’s approach is proactive.

The following lifecycle strategies have been developed as a proactive approach to managing the lifecycle of Asphalt (HCB) and Surface Treated Roads (LCB). 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. Without the following strategy, the average annual requirement for the Road Network would be \$924,000. These strategies lower the annual requirement to \$688,000, allowing for an estimated \$236,000 in capital cost savings every year.

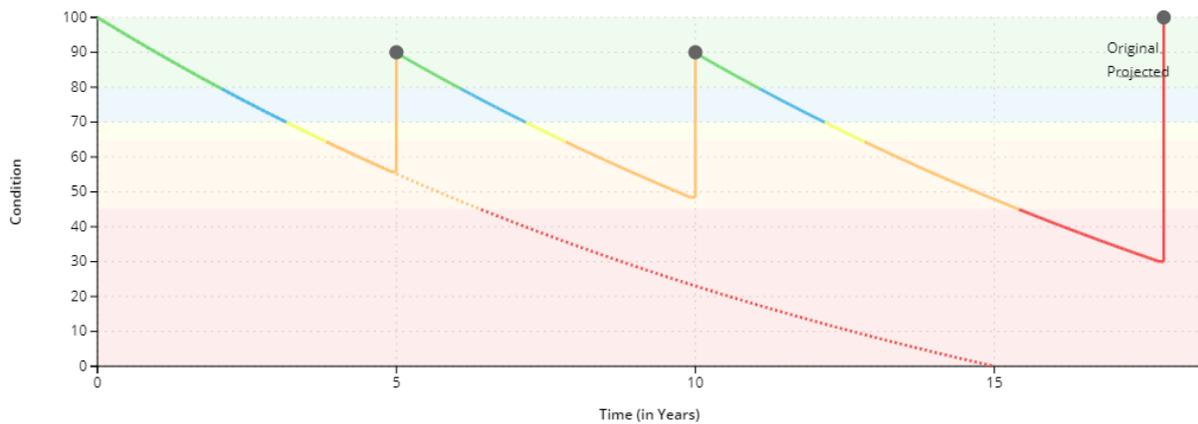
### Asphalt Roads (HCB)

Event Name	Event Class	Event Trigger
Crack Sealing	Preventative Maintenance	Every 2 Years, 4 times
Patching	Maintenance	Every 5 Years, 4 times
Full Reconstruction	Replacement	40 Condition



### Surface Treated Roads (LCB)

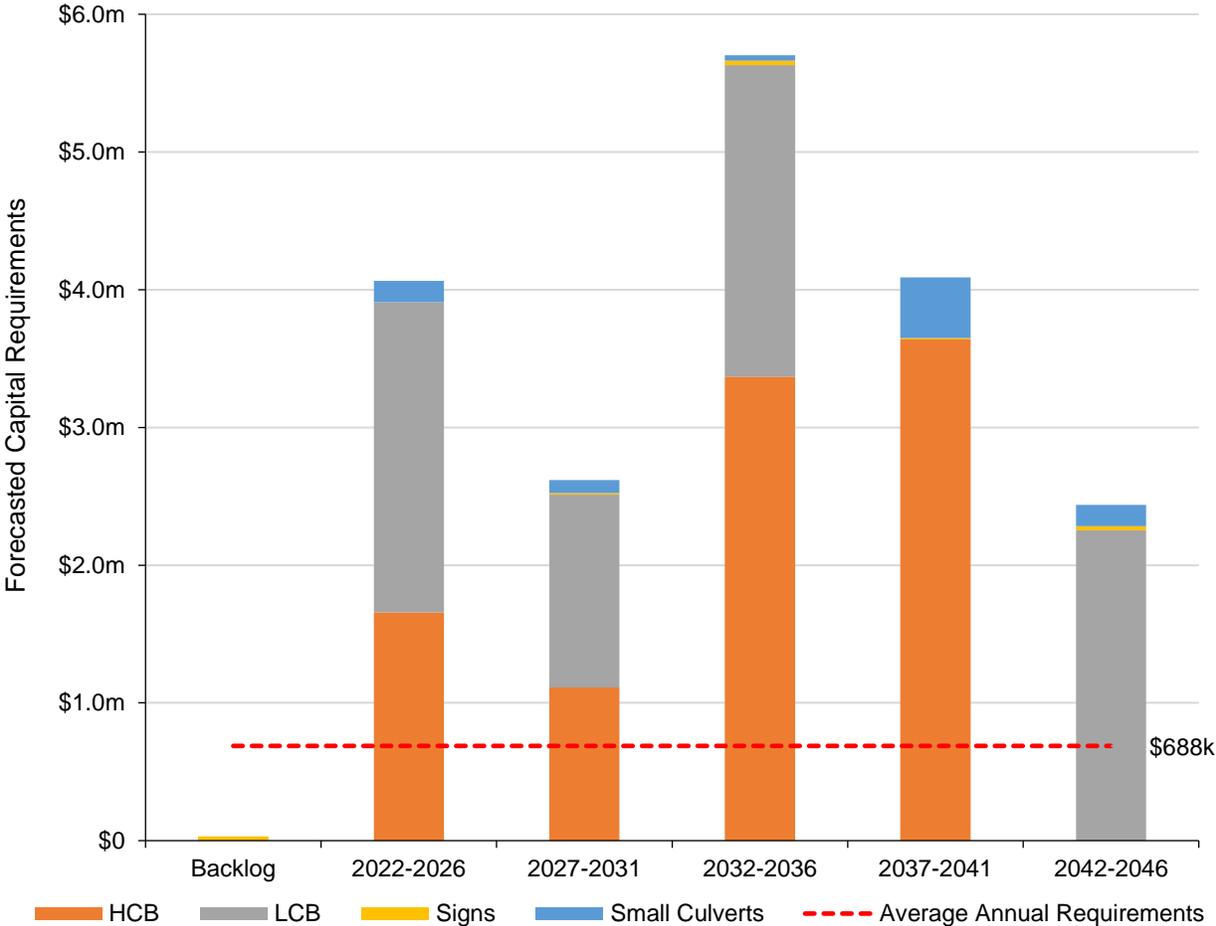
Event Name	Event Class	Event Trigger
Cold Patch & Slurry Seal	Preventative Maintenance	Every 5 Years, 2 times
Full Reconstruction	Replacement	30 to 40 Condition



Note that it is assumed approximately 15% of the road asset will be patched or sealed during maintenance activities.

# Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for HCB and LCB roads, the following graph forecasts capital requirements for the road network. 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 25 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.<sup>2</sup>



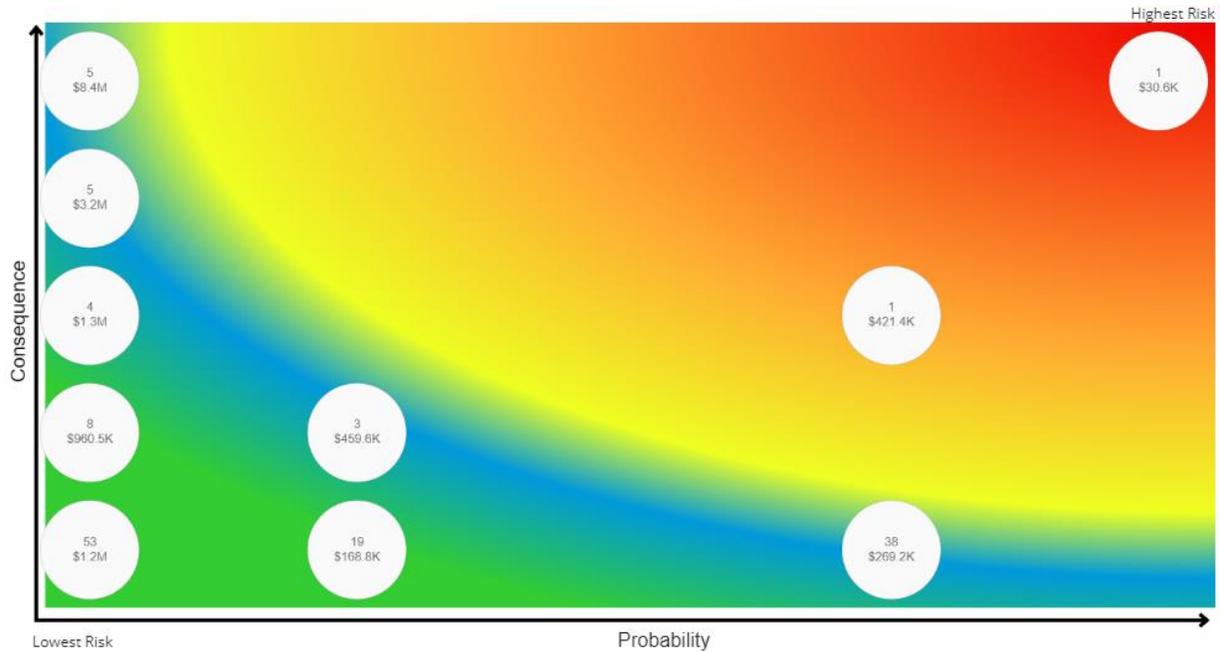
The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

<sup>2</sup> Note that future costs are not indexed for inflation.

## 4.1.5 Risk & Criticality

### Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data. See Appendix C 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 both the Asphalt Roads (HCB) and Surface Treated Roads (LCB) are documented below:

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

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

# Risks to Current Asset Management Strategies

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



### Climate Change

Staff has noted a significant increase in frost heaving affecting the Road Network in recent years. The intensified snow plowing requirements for winter weather have consequential effects on overall road condition. The Township has experienced challenges such as heightened precipitation leading to shoulder washouts and undermined roads. Additionally, during extreme weather events, water levels have exceeded road surfaces. Due to the Township's proximity to Georgian Bay, it is crucial to factor in climate change-related events in future asset management decisions.



### Past Design Concerns and Aging Infrastructure

There are some road network assets reaching the end of their useful lives which means increased costs in a concentrated timeframe. However the Township has a planned replacement and rehabilitation schedule. There is a moderate spacing of events going forward, and Township staff can handle the roads that are deteriorating.



### Growth

Growth is a concern for the Township. Staff has observed that this growth has resulted in elevated traffic counts, posing potential safety hazards, particularly on narrow roads. Furthermore, an increase in the presence of delivery trucks, concrete trucks, and other heavy-duty vehicles has been noted, surpassing the design capacity of certain roads and consequently causing deeper road rutting.



### Infrastructure Re-Investment

The current level of financial reinvestment is adequate to address lifecycle requirements and maintain a good state of repair, however; the Township of The Archipelago is dependant on some grants that will affect the likelihood of project completion.

### Other

Historically, there were cases where the Township, found partially liable for an insurance incident, was required to cover the entire extent of damages. Municipal staff is mindful of this, and it is always an ongoing consideration for road maintenance and rehabilitation.

## 4.1.6 Levels of Service

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

### Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include maps, of the road network in the Township and its level of connectivity	See Appendix B for maps.
Quality	Description or images that illustrate the different levels of road class pavement condition	<p>The Township completes a Road Needs Study annually with internal staff. Every road section received a pavement condition index, rating the condition of the surface of the road on a scale of 0-100.</p> <p>Different condition ranges can indicate the following:</p> <p>0 to &lt;45 = Very Poor            45 to &lt;65 = Poor            65 to &lt;70 = Fair            70 to &lt;80 = Good            80 to 100 = Excellent</p> <p>The above scale is based on the PCI Decision Matrix found in Appendix B.</p>

## Technical Levels of Service

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

<b>Service Attribute</b>	<b>Technical Metric</b>	<b>Current LOS (2022)</b>
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km <sup>2</sup> )	0
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km <sup>2</sup> )	0
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km <sup>2</sup> )	0.2756
Quality	Average pavement condition index for paved roads in the Township	HCB: 85% LCB: 85%
	Average surface condition for unpaved roads in the Township (e.g. excellent, good, fair, poor)	Very Good
Performance	% of paved surfaces in fair or better condition	97%
	% of paved surfaces in poor or worse condition	3%
	Actual annual capital budget : average required annual capital requirements	\$587k : \$688k

## 4.1.7 Recommendations

### Condition Assessment Strategies

- Continue with condition assessments to maintain an updated inventory. Consider collecting any additional attributes that you may find useful to track in the future.

### Lifecycle Management Strategies

- Continue implementing the identified lifecycle management strategies for HCB and LCB roads to maintain cost avoidance and sustain 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. This could be done by updating the condition assessment data whenever new data becomes available and rerunning the capital projections and risk reports.

### Risk Management Strategies

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

### Levels of Service

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

## 4.2 Bridges & Structural Culverts

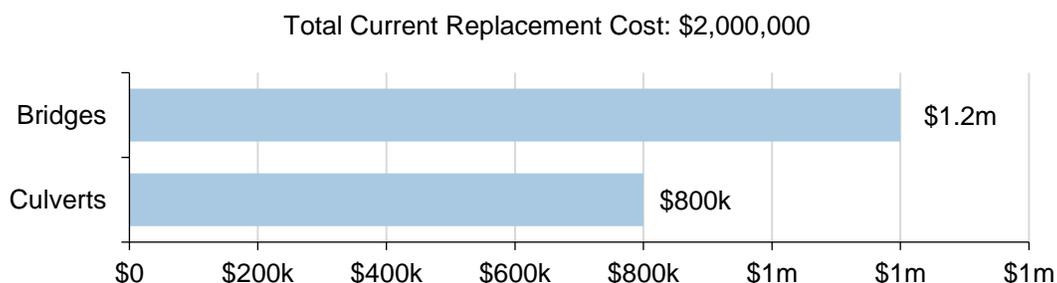
The Township’s Bridges and Structural Culverts category comprises of one bridge and two culverts with a span of three meters or more and are therefore categorized as structural culvert assets.

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

### 4.2.1 Asset Inventory & Replacement Cost

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

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Bridges	1 Asset	User-Defined	\$1,200,000
Structural Culverts	2 Assets (47.6 m)	User-Defined	\$800,000
			<b>\$2,000,000</b>



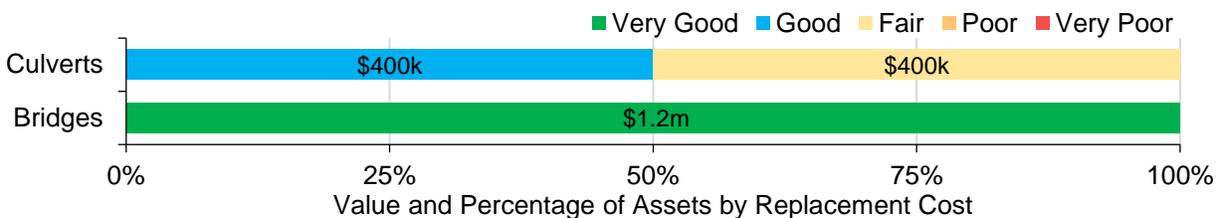
Each asset’s replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

## 4.2.2 Asset Condition

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.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Bridges	86%	Very Good	100% Assessed
Structural Culverts	60%	Good	100% Assessed
	<b>76%</b>	<b>Very Good</b>	<b>100% Assessed</b>

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



To ensure that the Township's 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 bridges and culverts.

### Current Approach to Condition Assessment

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

- Condition assessments of all culverts with a span greater than or equal to 3 meters are completed every 2 years in accordance with the Ontario Structure Inspection Manual (OSIM). OSIM reports are completed by external consultants
- Internal staff conduct monthly drive-by condition assessments to ensure there are no safety hazards

### 4.2.3 Estimated Useful Life & Average Age

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

<b>Asset Segment</b>	<b>Average Estimated Useful Life Years</b>	<b>Average Age (Years)</b>	<b>Average Service Life Remaining (Years)</b>
Bridges	75	58	64.4
Structural Culverts	40	25	23.8
	<b>51.7</b>	<b>36</b>	<b>37.3</b>

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

### 4.2.4 Lifecycle Management Strategy

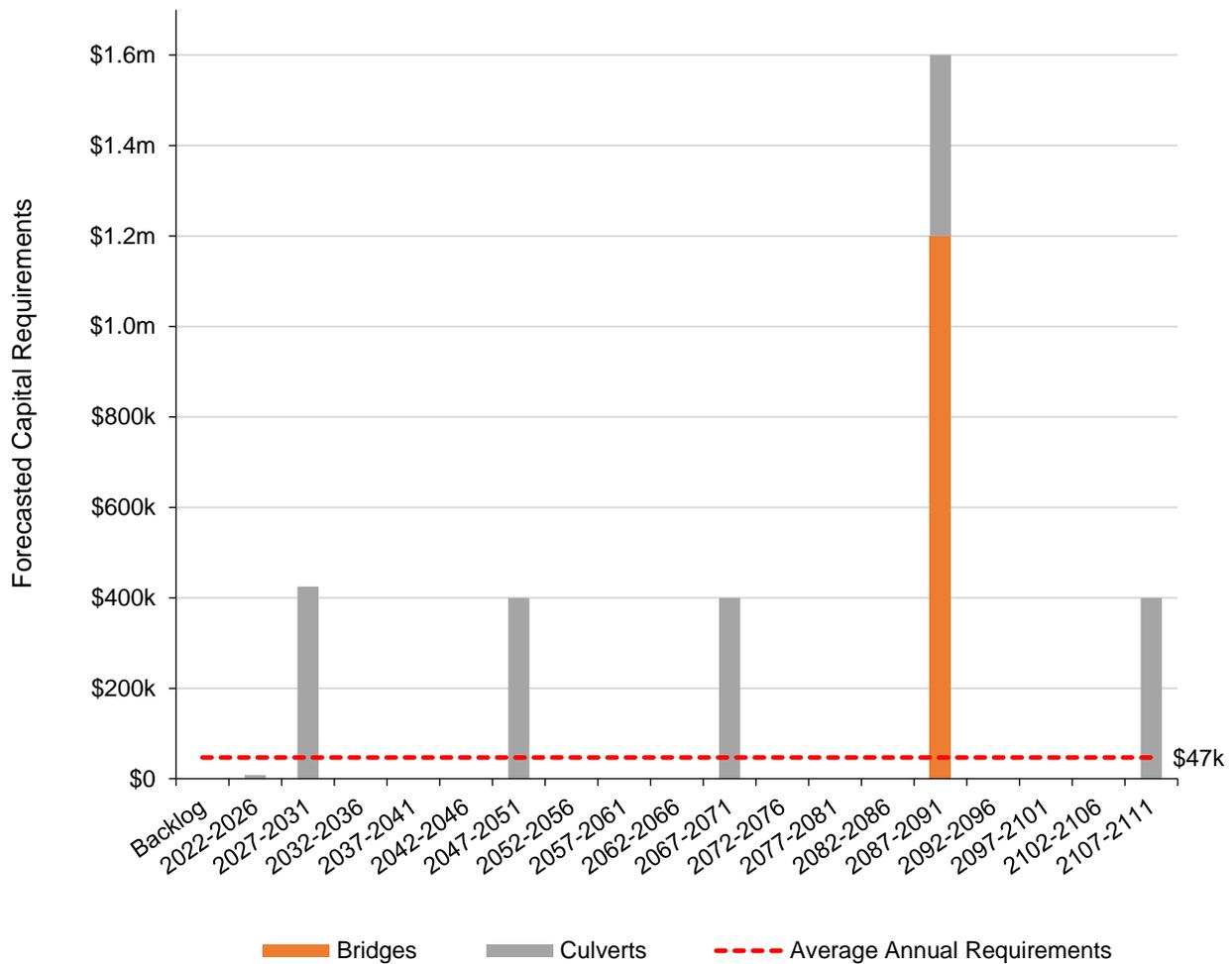
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

<b>Activity Type</b>	<b>Description of Current Strategy</b>
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).  Major repairs and replacements are subject to budget constraints, condition ratings, healthy and safety concerns, and other risks to prioritize work.

## 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 90 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual requirements.<sup>3</sup>



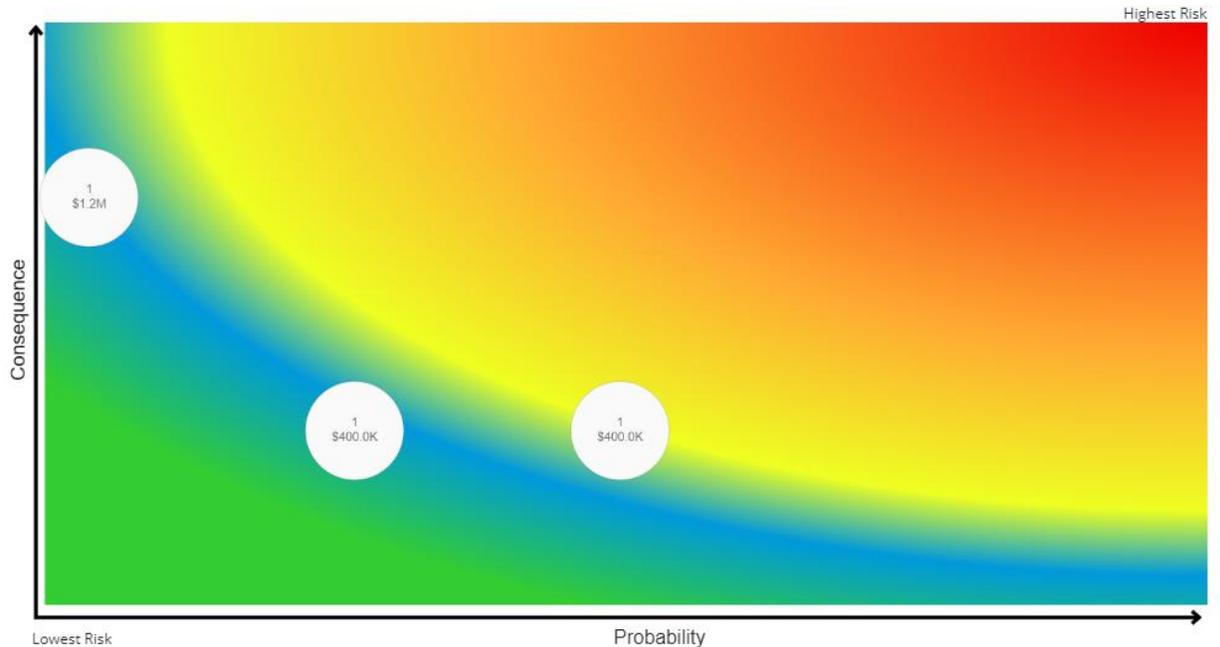
The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

<sup>3</sup> Note that future costs are not indexed for inflation.

## 4.2.5 Risk & Criticality

### Risk Matrix

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

<b>Probability of Failure (POF)</b>	<b>Consequence of Failure (COF)</b>
Condition (Structural)	Replacement Cost (Economic)

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

## Risks to Current Asset Management Strategies

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



### **Aging Infrastructure and Growth**

The Township has recently carried out the revitalization of their bridge which included a new bridge deck and concrete work. The Township demonstrates a proactive stance towards the rehabilitation of aging structures, especially those constructed prior to the Township's incorporation. The Township's staff has engaged consultants to conduct thorough reviews, assessing bridge capacity and identifying potential safety concerns. Ongoing monitoring tracks structure capacities as the Township experiences growth and encounters increased traffic, particularly from heavy-duty vehicles.



### **Climate Change & Extreme Weather Events**

The Township recognizes that flooding and extreme weather events pose a threat to various components of its culverts. The increased frequency and intensity of precipitation events further advances the deterioration of these crucial infrastructural elements. Nevertheless, the implementation of proactive asset management strategies can help ease the adverse impacts of climate change on the Township's infrastructure.

## 4.2.6 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.

### Community Levels of Service

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

<b>Service Attribute</b>	<b>Qualitative Description</b>	<b>Current LOS (2022)</b>
Scope	Description of the traffic that is supported by municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists, and farm equipment)	The traffic supported by municipal bridges is aligned with the dimensional load limits of Class 5/6 roadways. Municipal bridges have no sidewalks.
Quality	Description or images of the condition of bridges and culverts and how this would affect use of the bridges and culverts	See Appendix B. Bridges and culverts are in generally good to very good condition and full use is allowed.

## Technical Levels of Service

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

<b>Service Attribute</b>	<b>Technical Metric</b>	<b>Current LOS (2022)</b>
Scope	% of bridges in the Township with loading or dimensional restrictions	0%
Quality	Average bridge condition index value for bridges in the Township	86%
	Average bridge condition index value for structural culverts in the Township	60%
Performance	% of assets in fair or better condition	100%
	% of assets in poor or worse condition	0%
	Actual annual capital budget : average required annual capital requirements	\$30k : \$47k

## 4.2.7 Recommendations

### Data Review/Validation

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

### Risk Management Strategies

- 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 includes capital costs associated with the reconstruction of bridges and culverts as well as projected capital rehabilitation and renewal costs. Continue to execute OSIM inspections every 2 years and keep projected capital rehabilitation and renewal costs up to date.

### 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.

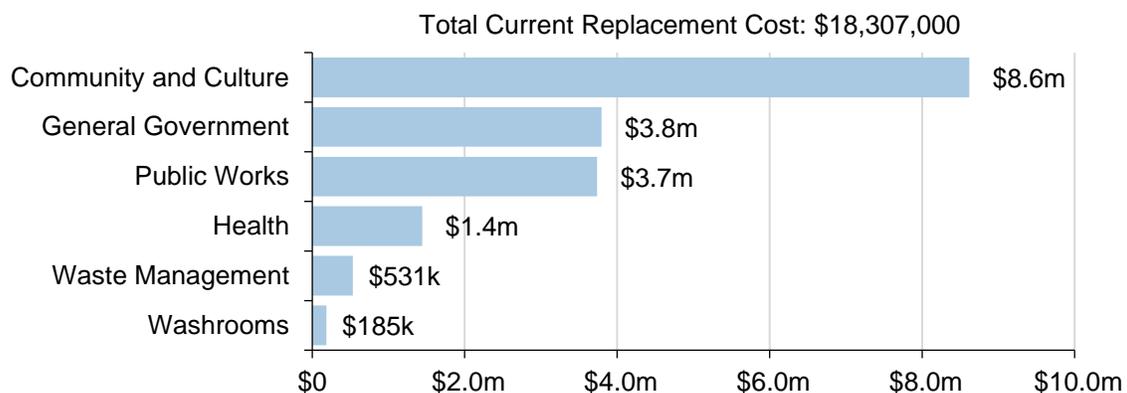
## 4.3 Buildings

Township of The Archipelago owns and maintains several buildings and recreation centres that provide key services to the community. These include administrative offices, healthcare facilities, a community centre, Public Works shop and sheds, as well as wharfs.

### 4.3.1 Asset Inventory & Replacement Cost

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

Asset Segment	Replacement Cost Method	Total Replacement Cost
Community and Culture	User-Defined Cost	\$8,617,000
General Government	User-Defined Cost	\$3,795,000
Health	User-Defined Cost	\$1,443,000
Public Works	User-Defined Cost	\$3,737,000
Washrooms	User-Defined Cost	\$185,000
Waste Management	User-Defined Cost	\$531,000
		<b>\$18,307,000</b>



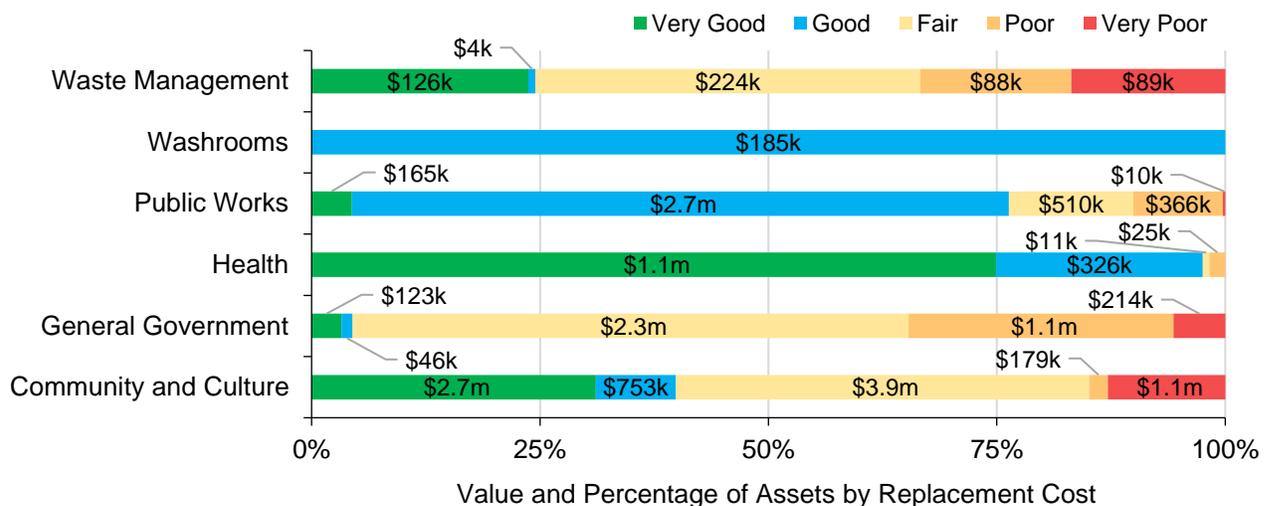
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

## 4.3.2 Asset Condition

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.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Community and Culture	58%	Fair	97% Assessed
General Government	47%	Fair	93% Assessed
Health	96%	Very Good	100% Assessed
Public Works	67%	Good	100% Assessed
Washrooms	74%	Good	Age-Based
Waste Management	74%	Good	100% Assessed
	<b>60%</b>	<b>Good</b>	<b>96% Assessed</b>

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



To ensure that the Township's buildings 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 buildings.

### 4.3.3 Estimated Useful Life & Average Age

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

<b>Asset Segment</b>	<b>Average Estimated Useful Life (Years)</b>	<b>Average Age (Years)</b>	<b>Average Service Life Remaining (Years)</b>
Community and Culture	31.5	17	15.1
General Government	31.5	19.8	11.9
Health	32.6	5.3	27.3
Public Works	29.4	12.5	16.9
Washrooms	40	10.3	29.8
Waste Management	33.7	18.2	15.7
<b>Total</b>	<b>31.5</b>	<b>15.3</b>	<b>16.3</b>

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

### Current Approach to Condition Assessment

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

- A Building Condition Assessment study was completed on Township buildings by ABSI in 2023. This included an assessment of each facility's general condition, required repairs and recommended upgrades
- Township staff conduct visual inspections of all buildings on an annual basis
- Health and safety walkthroughs are completed by Township staff on a monthly basis

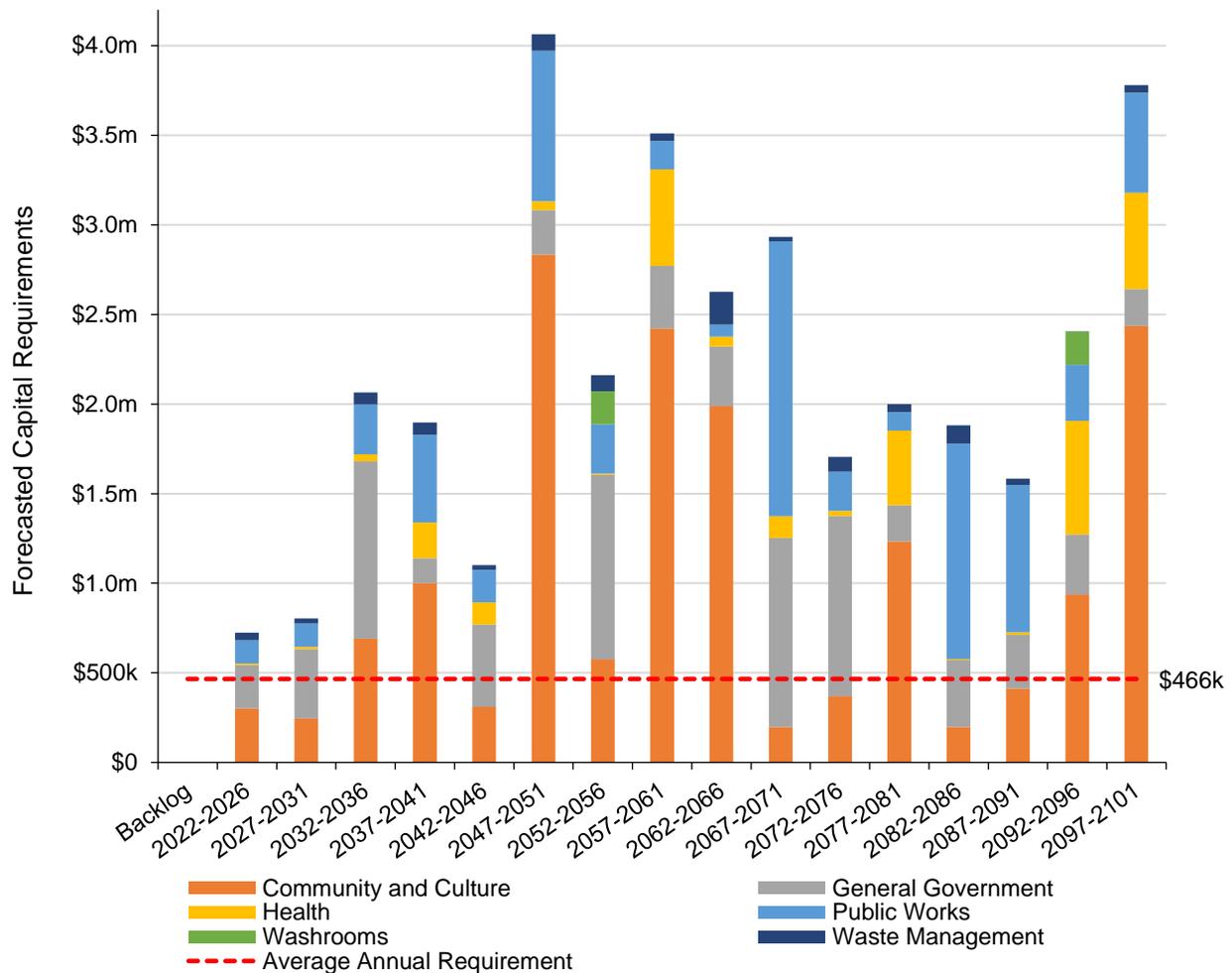
### 4.3.4 Lifecycle Management Strategy

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

<b>Activity Type</b>	<b>Description of Current Strategy</b>
Maintenance / Rehabilitation	Municipal buildings are subject to regular inspections to identify health & safety requirements as well as structural deficiencies that require additional attention  Preventative maintenance activities are carried out, such as changing pipe material to PEX from copper or cast iron so that pipes are easier to maintain, longer lasting, and better functioning. HVAC systems have been updated to be more efficient and reliable in recent years.
Replacement	Assessments for replacement are completed proactively according to the BCA. Replacement activities are planned for in the year prior to the activity occurring.

## 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 80 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual requirements.<sup>4</sup>



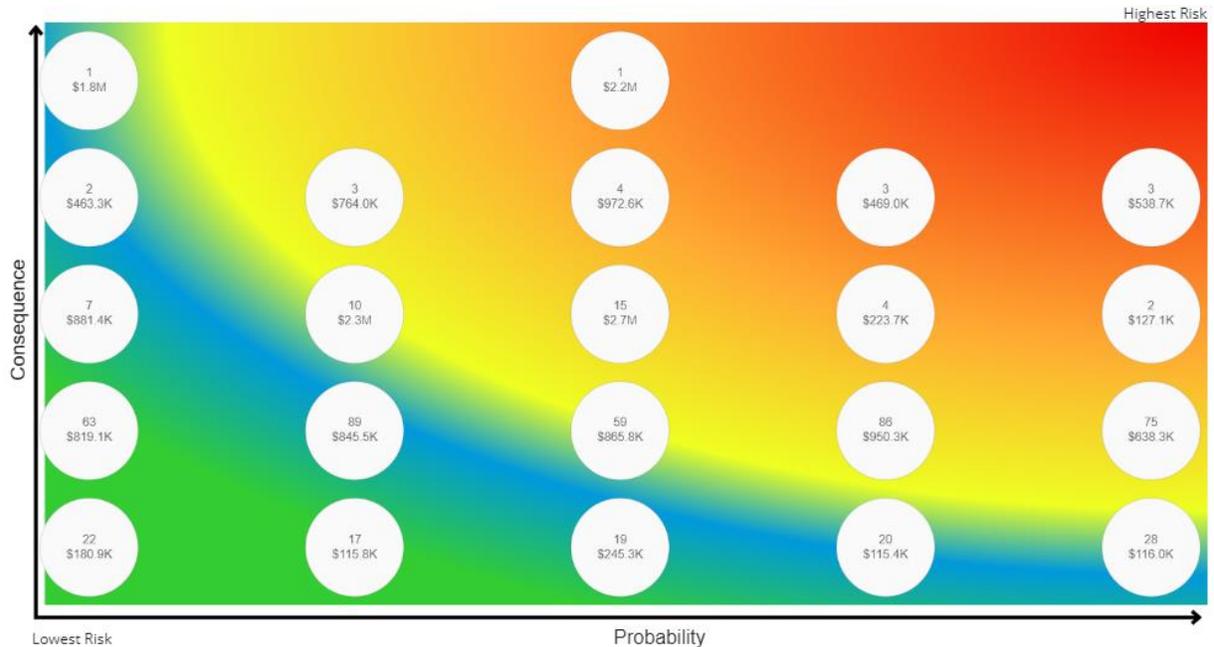
The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

<sup>4</sup> Note that future costs are not indexed for inflation.

## 4.3.5 Risk & Criticality

### Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data. See Appendix C 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 buildings are documented below:

<b>Probability of Failure (POF)</b>	<b>Consequence of Failure (COF)</b>
Condition (Structural)	Replacement Cost (Economic)

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

## Risks to Current Asset Management Strategies

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



### **Organizational Cognizance/Capacity**

Historically, knowledge transfer pertaining to buildings has presented challenges, primarily stemming from staff possessing more comprehensive knowledge of structures frequently utilized in their day-to-day operations. The recent implementation of a Building Condition Assessment study marks a significant stride in mitigating this issue. With a broader view of the entire facility inventory, staff can now more easily actively participate in well-informed asset management practices.



### **Climate Change**

Climate change is a factor exacerbating the heightened occurrence and prolonged duration of extreme weather events, notably heat waves. The impact of extreme heat on buildings is a significant concern, particularly in terms of exerting strain on HVAC systems. Additionally, increased freeze/thaw cycles pose potential risks to building foundations.



### **Other**

Achieving AODA (Accessibility for Ontarians with Disabilities Act) compliance is anticipated to require modifications to buildings, incurring associated costs. Presently, not all buildings within the jurisdiction possess wheelchair accessibility, and ongoing accessibility initiatives are in progress. However, certain structural designs pose challenges to these endeavors. Furthermore, specific buildings, such as the Community Centre, feature wheelchair-accessible entrances but fall short of AODA compliance due to the steepness of the ramps.

## 4.3.6 Levels of Service

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

### Community Levels of Service

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

<b>Service Attribute</b>	<b>Qualitative Description</b>	<b>Current LOS (2022)</b>
Scope	Description of the availability of the recreational and cultural services supported by municipal buildings to residents	See Appendix B.

### Technical Levels of Service

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

<b>Service Attribute</b>	<b>Technical Metric</b>	<b>Current LOS (2022)</b>
Scope	Square metres of indoor recreation facilities	300
	Average condition of outdoor recreational facilities in the Township	Good
Quality & Performance	% of buildings that are in fair or better condition	83%
	% of buildings that are in poor or worse condition	17%
	Actual annual capital budget : average required annual capital requirements	\$385k : \$466k

## 4.3.7 Recommendations

### Replacement Costs

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

### Condition Assessment Strategies

- The Township should implement regular condition assessments for all buildings to better inform short- and long-term capital requirements, such as the recently completed BCA.

### 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.
- Conducting regular Building Condition Assessments (BCAs) on the Township's buildings stands as a proactive measure, ensuring the Township is actively addressing and mitigating the adverse effects of climate change on its infrastructure.

### Levels of Service

- Continue 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.
- Consider developing a plan to address accessibility deficits. Future considerations may involve retrofitting projects to address these issues comprehensively.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

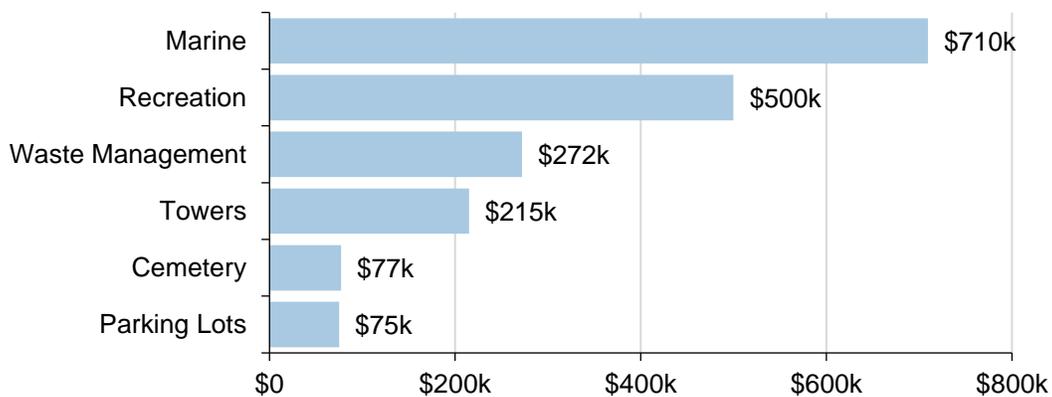
## 4.4 Land Improvements

Township of The Archipelago owns several land improvement assets, including parking lots, retaining walls, and fencing.

### 4.4.1 Asset Inventory & Replacement Cost

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

Asset Segment	Quantity (# Assets)	Replacement Cost Method	Total Replacement Cost
Cemetery	2	User-Defined	\$77,000
Marine	19	User-Defined	\$710,000
Parking Lots	2	User-Defined	\$75,000
Recreation	4	User-Defined	\$500,000
Towers	2	User-Defined	\$215,000
Waste Management	7	User-Defined	\$272,000
			<b>\$1,849,000</b>



Total Current Replacement Cost: \$1,849,000

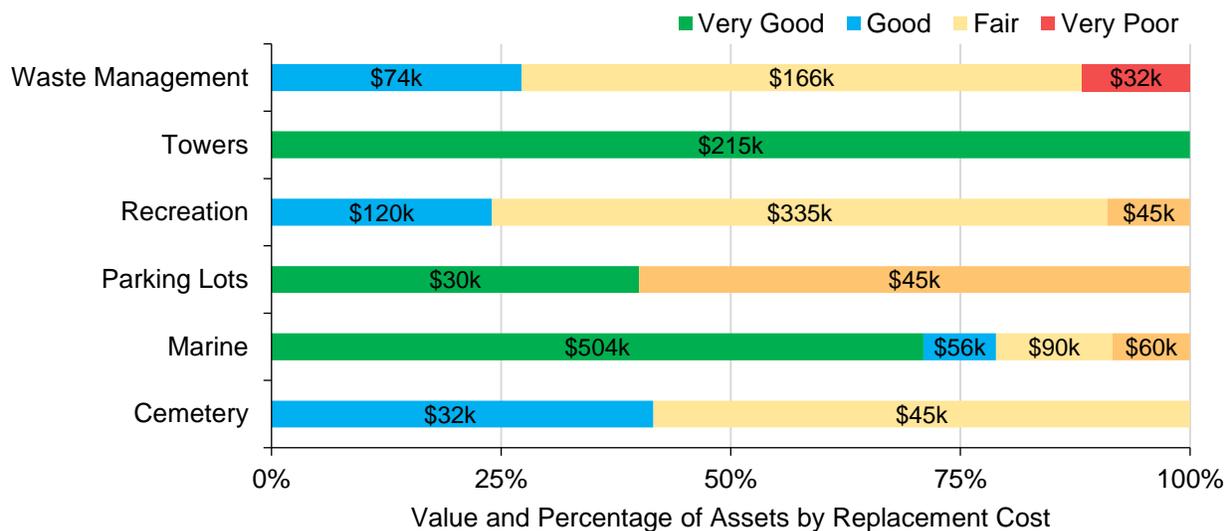
Each asset’s replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

## 4.4.2 Asset Condition

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.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Cemetery	63%	Fair	Age-Based
Marine	75%	Good	Age-Based
Parking Lots	51%	Fair	60% Assessed
Recreation	52%	Fair	9% Assessed
Towers	90%	Very Good	Age-Based
Waste Management	56%	Fair	12% Assessed
<b>Total</b>	<b>65%</b>	<b>Good</b>	<b>7% Assessed</b>

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



To ensure that the Township's land improvements continue to provide an acceptable level of service, the Township should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management

strategy to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the land improvements.

### 4.4.3 Estimated Useful Life & Average Age

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

<b>Asset Segment</b>	<b>Average Estimated Useful Life (Years)</b>	<b>Average Age (Years)</b>	<b>Average Service Life Remaining (Years)</b>
Cemetery	50	17.6	32.4
Marine	27.6	4.3	23.3
Parking Lots	17.5	7.6	10.8
Recreation	26.3	14.6	13.7
Towers	25	2.3	22.6
Waste Management	21.4	9.2	13.1
<b>Total</b>	<b>23.2</b>	<b>7.2</b>	<b>20</b>

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

### Current Approach to Condition Assessment

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

- Staff complete regular visual inspections of land improvements assets to ensure they are in state of adequate repair

- Cemetery assets are inspected monthly to monitor the area and determine cleaning priorities
- Regular inspection and maintenance for playground equipment are performed on an annual basis by external contractors to abide by the regulations. The rubber mat surfaces of playground assets are drop tested to ensure they are in compliance with safety regulations
- Inspections for land improvements are done according to Canadian Standard Association (CSA) guidelines

## 4.4.4 Lifecycle Management Strategy

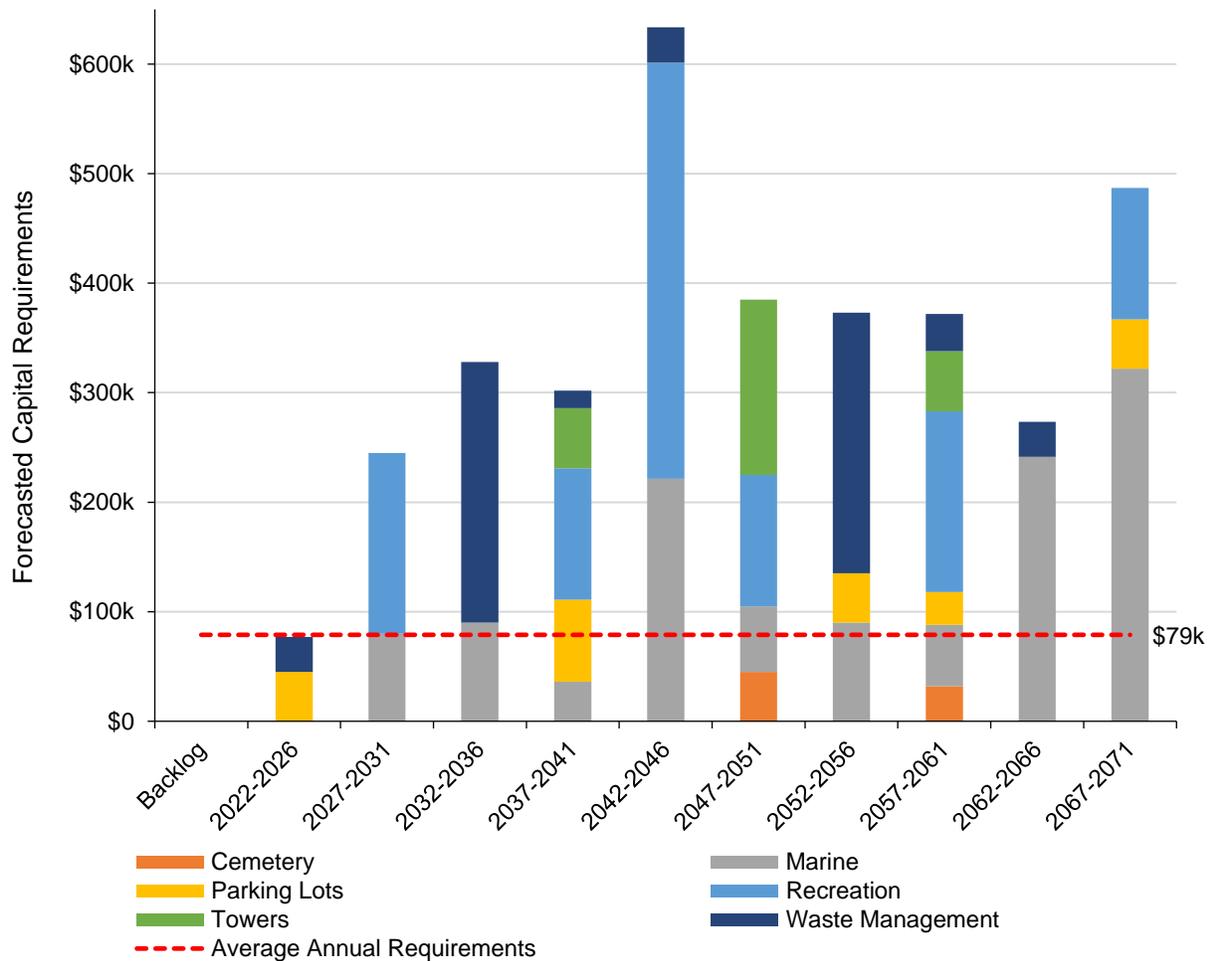
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

<b>Activity Type</b>	<b>Description of Current Strategy</b>
Maintenance, Rehabilitation & Replacement	The land improvements asset category includes several unique asset types and lifecycle requirements are dealt with on a case-by-case basis. Dock assets are repaired and replaced on an as-needed basis. Regular inspections are carried out according to Canadian Standards Association (CSA) guidelines.

## Forecasted Capital Requirements

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



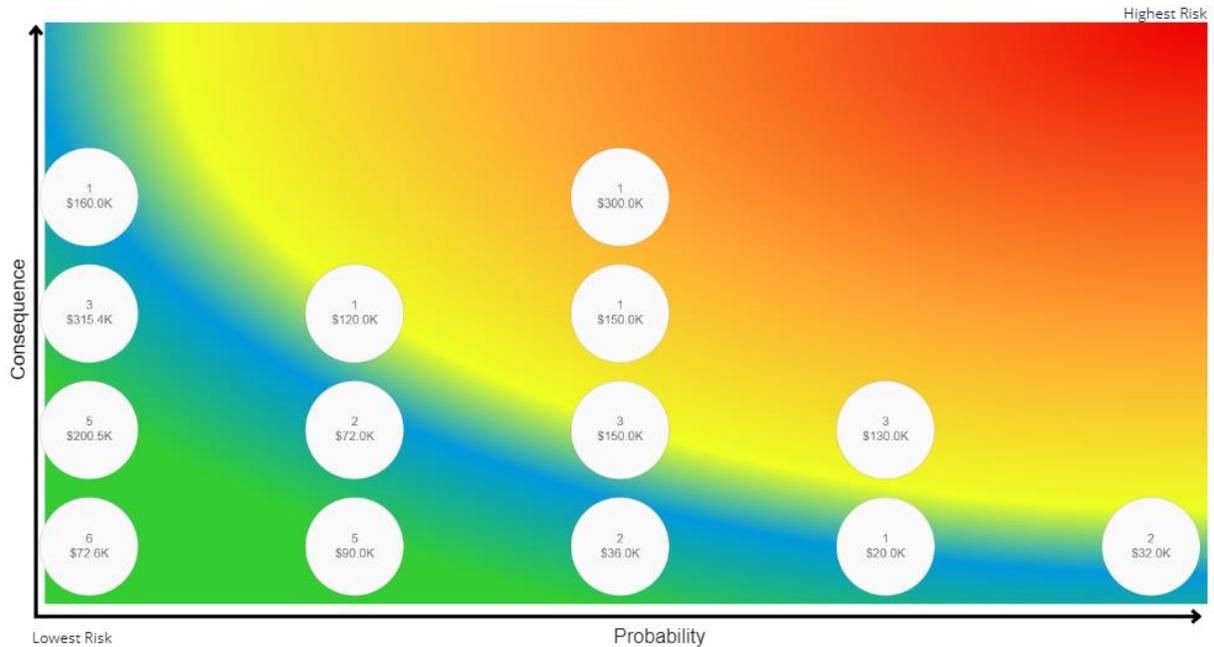
The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

<sup>5</sup> Note that future costs are not indexed for inflation.

## 4.4.5 Risk & Criticality

### Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data. See Appendix C 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 land improvements are documented below:

<b>Probability of Failure (POF)</b>	<b>Consequence of Failure (COF)</b>
Condition (Structural)	Replacement Cost (Economic)

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

# Risks to Current Asset Management Strategies

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



## **Aging Infrastructure**

Certain assets, notably the hockey boards on the outdoor rink, have reached the end of their useful lives. Given the substantial expense associated with their replacement, the Archipelago is presently soliciting community feedback to determine priorities before deciding on the viability of future projects. Moving forward, the Township will be focusing on Community Development, actively involving residents in discerning and establishing priority initiatives.

## 4.4.6 Levels of Service

The following tables identify the Township’s current level of service for Land Improvements. These metrics include the technical and community level of service metrics that the Township has selected for this AMP.

### Community Levels of Service

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

<b>Service Attribute</b>	<b>Qualitative Description</b>	<b>Current LOS (2022)</b>
Scope	Description, which may include maps, of the outdoor recreational buildings that the Township operates and maintains	The Township owns and operates the Wharf Seawall in The Archipelago, as well as the outdoor rink connected to the Pointe Au Baril Community Centre. See Appendix B.

### Technical Levels of Service

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

<b>Service Attribute</b>	<b>Technical Metric</b>	<b>Current LOS (2022)</b>
Scope	Square metres of outdoor recreation facility space per 1,000 households	0.5
Quality	Average condition of municipal land improvements	Fair
Performance	% of assets that are in fair or better condition	90%
	% of assets that are in poor or worse condition	10%
	Actual annual capital budget : average required annual capital requirements	\$65k : \$79k

## 4.4.7 Recommendations

### Data Review/Validation

- Conduct a comprehensive asset inventory scan to identify and categorize all land improvement assets.
- Componentize assets where possible to assess their condition, maintenance needs, and replacement costs accurately.

### Replacement Costs

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

### Condition Assessment Strategies

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

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

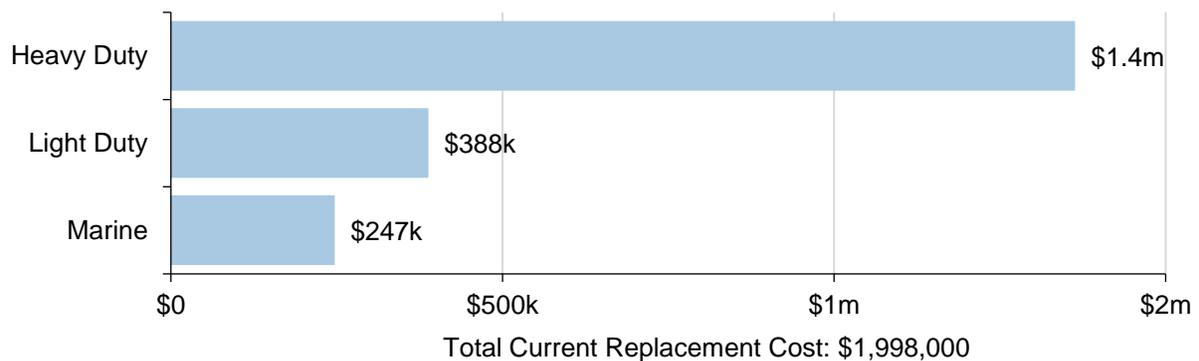
## 4.5 Vehicles

Vehicles allow staff to efficiently deliver municipal services and personnel. Township vehicles play a crucial role in supporting various service areas. These vehicles include boats, pick-up trucks, dump trucks, and assorted vehicles to support the maintenance of the transportation network and address service requests for Public Works, including winter control activities.

### 4.5.1 Asset Inventory & Replacement Cost

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

Asset Segment	Quantity (# Assets)	Replacement Cost Method	Total Replacement Cost
Heavy Duty	4	User-Defined Cost	\$1,363,000
Lighty Duty	8	User-Defined Cost	\$388,000
Marine	9	User-Defined Cost	\$247,000
			<b>\$1,998,000</b>



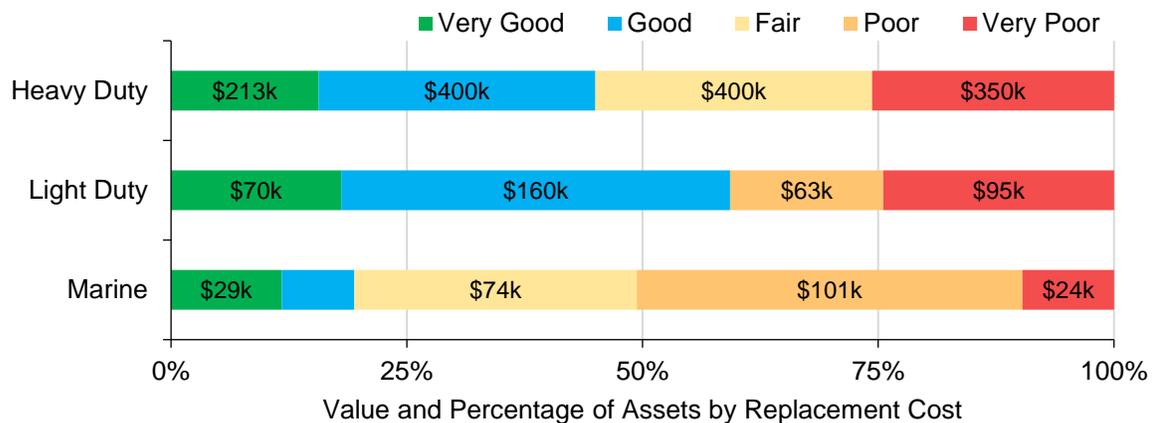
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

## 4.5.2 Asset Condition

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.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Heavy Duty	49%	Fair	70% Assessed
Light Duty	50%	Fair	48% Assessed
Marine	47%	Fair	71% Assessed
	<b>49%</b>	<b>Fair</b>	<b>65% Assessed</b>

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



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

### 4.5.3 Estimated Useful Life & Average Age

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

<b>Asset Segment</b>	<b>Average Estimated Useful Life (Years)</b>	<b>Average Age (Years)</b>	<b>Average Service Life Remaining (Years)</b>
Heavy Duty	11.3	5.7	5.1
Light Duty	8	4.2	3.9
Marine	11.8	10.4	5.8
<b>Total</b>	<b>10.3</b>	<b>7.2</b>	<b>4.9</b>

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

### Current Approach to Condition Assessment

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

- Staff complete regular visual inspections of vehicles to ensure they are in state of adequate repair prior to operation
- Detailed vehicle inspections are carried out annually by internal staff. Factors like number of kilometres, number of hours used, and age are recorded during inspections

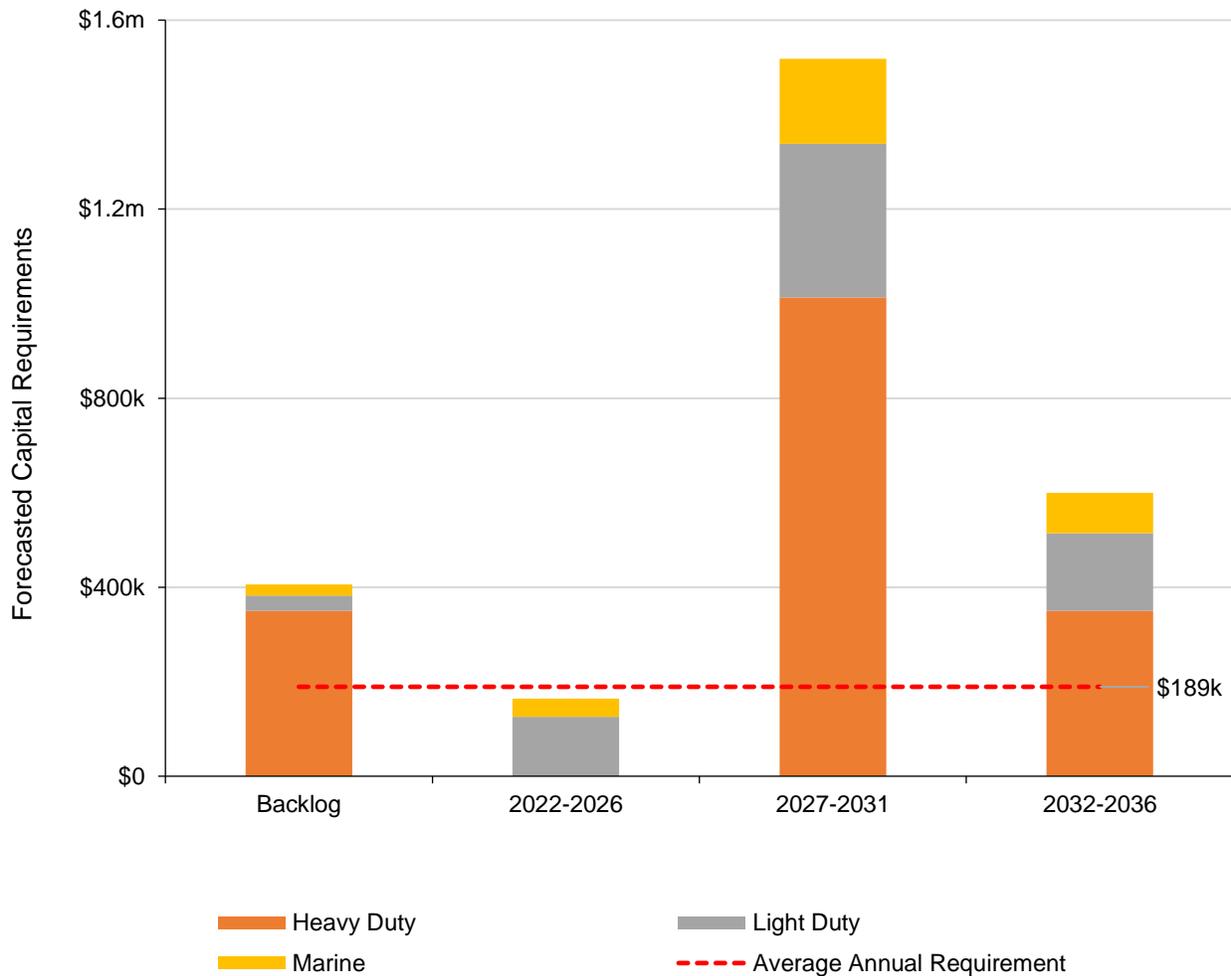
## 4.5.4 Lifecycle Management Strategy

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

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	Visual inspections completed and documented daily by staff
	Every 4-7000km includes a detailed inspection; tires are rotated and oil changed
	Annual preventative maintenance activities include system components check and additional detailed inspections
Replacement	Inspections are compliant with the Ontario Commercial Vehicle Safety Requirements
	Vehicle replacements are based on the budget available for that asset. The Township is moving towards strategic selling practices based on value, as well as engine hours as opposed to age.
	Vehicle age, kilometres and annual repair costs are taken into consideration when determining appropriate treatment options

## Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 15 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.<sup>6</sup>



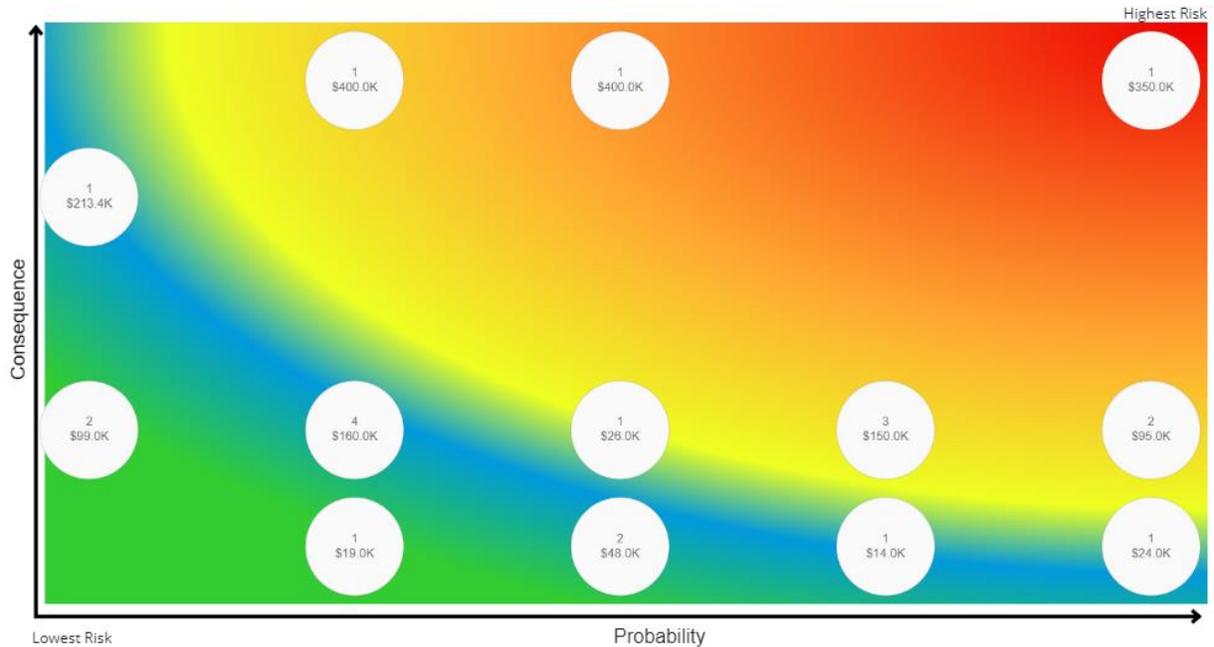
The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

<sup>6</sup> Note that future costs are not indexed for inflation.

## 4.5.5 Risk & Criticality

### Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data. See Appendix C 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 vehicles are documented below:

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

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

## Risks to Current Asset Management Strategies

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



### **Climate Change**

As climate change advances, resulting in heightened frequency and severity of extreme weather events, Township vehicles will be subjected to increased strain. Increased freeze/thaw cycles necessitate heightened exposure to salt, expanded sanding operations, more frequent maintenance, and repairs. Such exposure to the elements accelerates the risk of premature end-of-life due to corrosion. The Township has proactively addressed this challenge by implementing a strategy for timely replacement of vehicles upon reaching the end of their operational lives. However, the Township has encountered challenges stemming from supply chain issues, contributing to extended waiting periods for the acquisition of new vehicles.

## 4.5.6 Levels of Service

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

### Community Levels of Service

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

<b>Service Attribute</b>	<b>Qualitative Description</b>	<b>Current LOS (2022)</b>
Scope	Description or images of the types of vehicles (e.g. light, medium, and heavy-duty) that the Township operates and the services that they help to provide to the community	The Township operates light duty, heavy duty, and marine vehicles to provide public works services to the residents of The Archipleago. These services include general maintenance of Municipal assets as well as winter maintenance such as snow removal. See Appendix B.

### Technical Levels of Service

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

<b>Service Attribute</b>	<b>Technical Metric</b>	<b>Current LOS (2022)</b>
Quality	Average condition of municipal vehicles	49%
Performance	% of vehicles that are in fair or better condition	68%
	% of vehicles that are in poor or worse condition	32%
	Actual annual capital budget: average required annual capital requirements	\$189k : \$166k

## 4.5.7 Recommendations

### Replacement Costs

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

### Condition Assessment Strategies

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

### Risk Management Strategies

- 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.
- Continue implementing the replacement strategy addressing reduced estimated useful lives of vehicle assets due to climate change.
- Consider escalated lead times when acquiring new vehicle assets during capital planning.

### Levels of Service

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

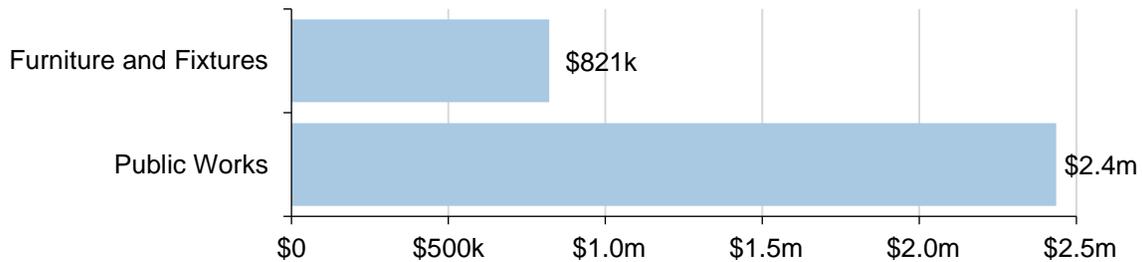
## 4.6 Machinery & Equipment

To maintain the high quality of public infrastructure and support the delivery of core services, Township staff own and employ various types of machinery and equipment. This includes landscaping equipment to maintain public parks as well as miscellaneous equipment such as generators and compactors to facilitate activities by the Public Works department. Keeping machinery and equipment in an adequate state of repair is important to maintain a high level of service.

### 4.6.1 Asset Inventory & Replacement Cost

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

Asset Segment	Quantity (# Assets)	Replacement Cost Method	Total Replacement Cost
Furniture and Fixtures	42	User-Defined Cost	\$821,000
Public Works	36	User-Defined Cost	\$2,435,000
			<b>\$3,256,000</b>



Total Current Replacement Cost: \$3,256,000

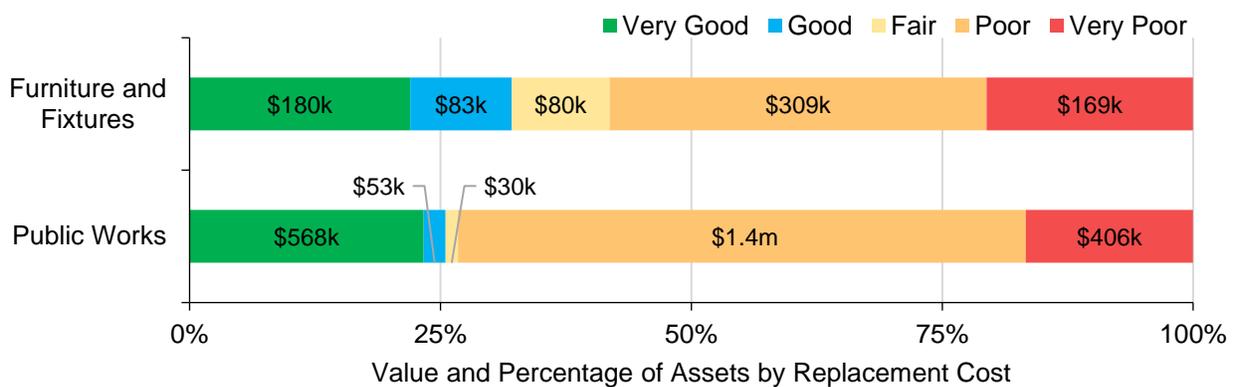
Each asset’s replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

## 4.6.2 Asset Condition

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.

Asset Segment	Average Condition (%)	Average Condition Rating	Condition Source
Furniture and Fixtures	46%	Fair	53% Assessed
Public Works	46%	Fair	87% Assessed
<b>Total</b>	<b>46%</b>	<b>Fair</b>	<b>79% Assessed</b>

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



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

### 4.6.3 Estimated Useful Life & Average Age

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

<b>Asset Segment</b>	<b>Average Estimated Useful Life (Years)</b>	<b>Average Age (Years)</b>	<b>Average Service Life Remaining (Years)</b>
Furniture and Fixtures	6.9	6.0	3
Public Works	9.5	8.9	4.3
<b>Total</b>	<b>8.1</b>	<b>7.3</b>	<b>3.6</b>

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

### Current Approach to Condition Assessment

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

- Staff complete regular visual inspections of machinery & equipment to ensure they are in state of adequate repair
- Operators complete daily circle checks for safety before use of equipment and machinery
- There are no formal condition assessment programs in place

## 4.6.4 Lifecycle Management Strategy

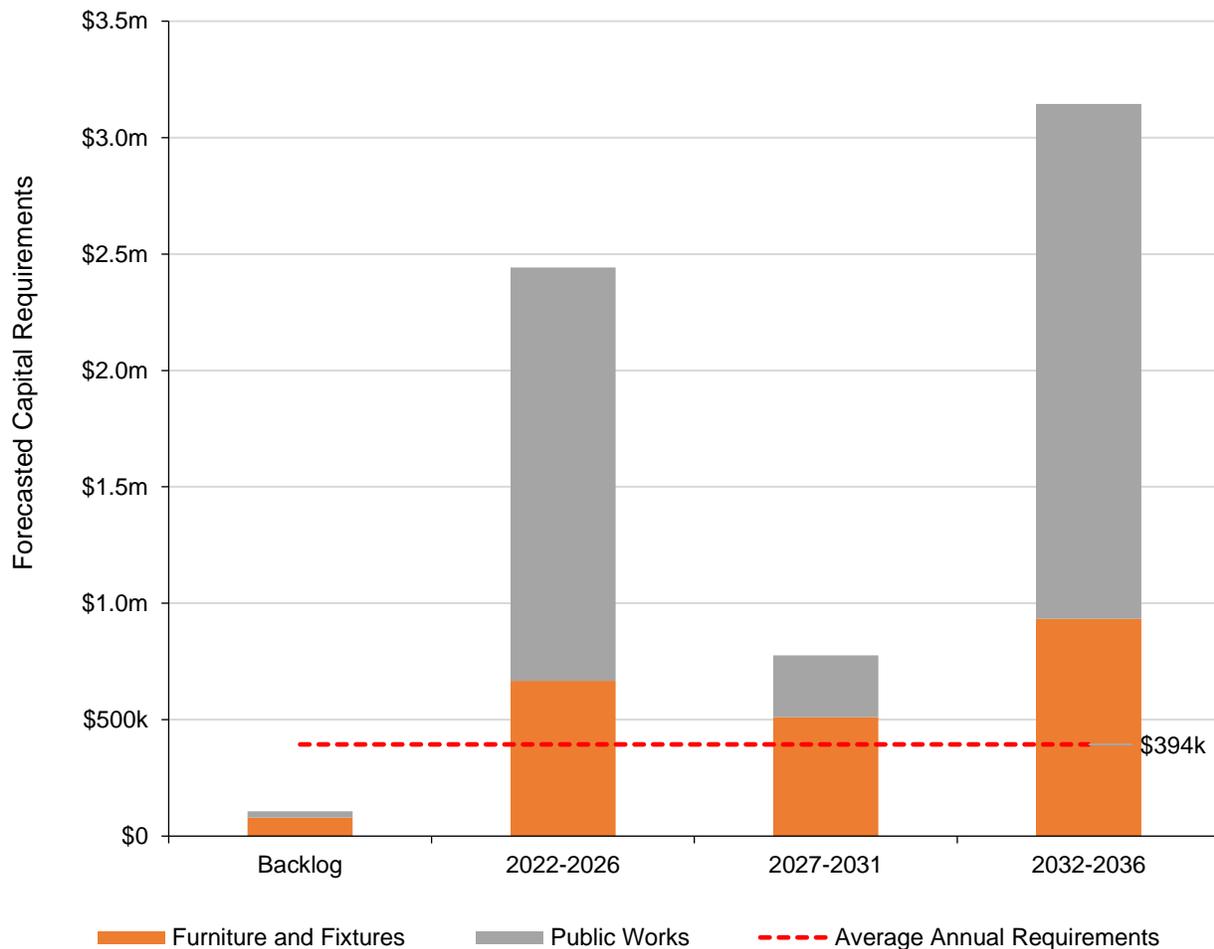
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

<b>Activity Type</b>	<b>Description of Current Strategy</b>
Maintenance/ Rehabilitation	Machinery and equipment is inspected before use to identify any maintenance or rehabilitation needs
	Machinery and equipment is maintained according to manufacturer recommended actions and supplemented by the expertise of municipal staff
Replacement	The replacement of machinery and equipment depends on deficiencies identified by operators that may impact their ability to complete required tasks

## Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 15 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.<sup>7</sup>



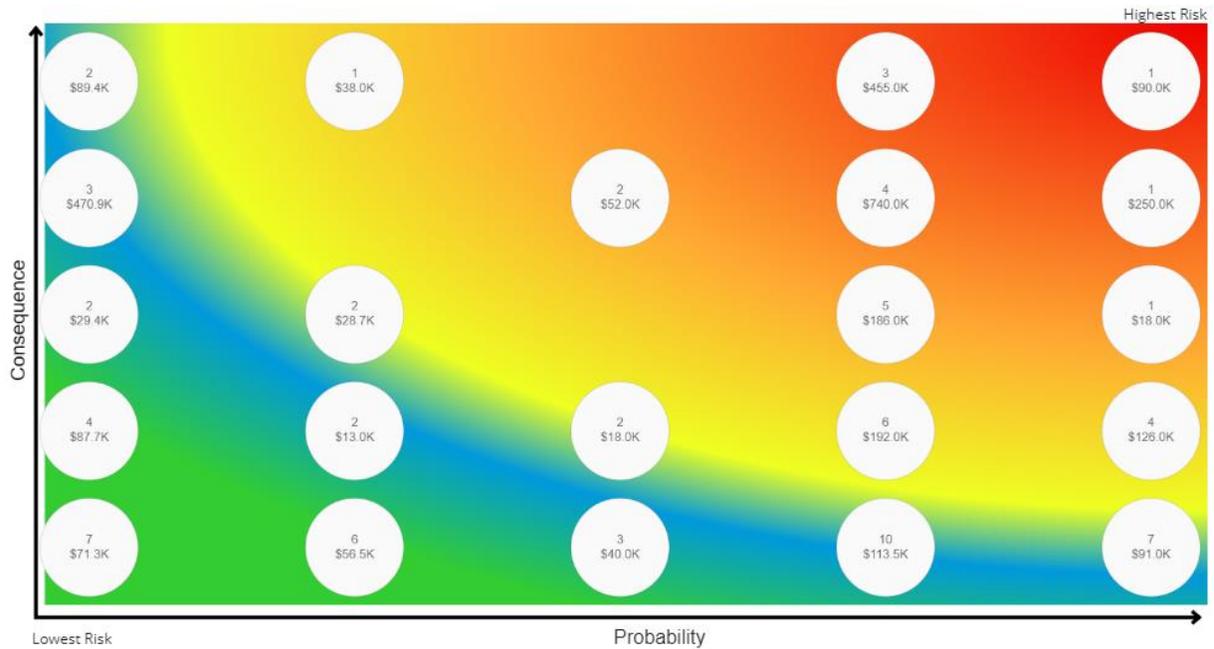
The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

<sup>7</sup> Note that future costs are not indexed for inflation.

## 4.6.5 Risk & Criticality

### Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2022 inventory data. See Appendix C 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 machinery and equipment are documented below:

<b>Probability of Failure (POF)</b>	<b>Consequence of Failure (COF)</b>
Condition (Structural)	Replacement Cost (Economic)

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

## 4.6.6 Levels of Service

The following tables identify the Township’s current level of service for the machinery and equipment. These metrics include the technical and community level of service metrics that the Township has selected for this AMP.

### Community Levels of Service

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

<b>Service Attribute</b>	<b>Qualitative Description</b>	<b>Current LOS (2022)</b>
Scope	Description or images of the types of equipment that the Township operates and the services that they help to provide to the community	See Appendix B. These machinery and equipment allow the public works department and municipal staff to deliver safe and efficient services to the residents, such as road maintenance and winter maintenance activities like snow removal.

### Technical Levels of Service

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

<b>Service Attribute</b>	<b>Technical Metric</b>	<b>Current LOS (2022)</b>
Quality	Average condition of municipal machinery and equipment	46%
Performance	% of municipal machinery and equipment that are fair or better condition	31%
	% of municipal machinery and equipment that are poor or worse condition	69%
	Actual annual capital budget: average required annual capital requirements	\$320k : \$394k

## 4.6.7 Recommendations

### Replacement Costs

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

### Condition Assessment Strategies

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

### Risk Management Strategies

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

### Levels of Service

- Continue 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.

# 5

## Impacts of Growth

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

## 5.1 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 plan for new infrastructure more effectively, 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.

### 5.1.1 Township of The Archipelago Official Plan (Consolidated 2019)

The Township of The Archipelago Official Plan was approved by the Minister of Municipal Affairs and Housing on June 1, 1983. There have been continuous amendments adopted by Council since, with the latest version being consolidated as of January 1, 2019. The purpose of the Official Plan is to establish land use policies which will guide development for the whole of The Archipelago Township, and which will provide for the long-term use of land and water for public and private recreation in accordance with the goals and objective set out for the Township. The Official Plan conforms to the 2011 Growth Plan for Northern Ontario (GPNO).

The Official Plan places an importance on preserving The Archipelago's high quality recreational character and natural environment. The Archipelago is a highly seasonal Township. Year-round residents comprise a small proportion of the total population of the Township and generally fulfil a service function to the recreational users of The Archipelago or are retired. The year-round residents are concentrated in the communities of Pointe au Baril Station, the Woods Bay Neighbourhood, and the inland Lake Neighbourhoods.

The year-round population is expected to remain stable or increase marginally in the foreseeable future. However, improvements in communication technology are providing more people with the ability to live in remote areas. Several year-round residents are operating professional business from dwellings originally used as cottages. It is expected that some growth in the year-round component of the population may be attributed to this phenomenon.

Relative to other small Townships in the province, The Archipelago is not expected to experience a lot of growth. The Archipelago aims to preserve the integrity of the natural features of its landscape, first and foremost.

## 5.1.2 Growth Plan for Northern Ontario (2011)

The Growth Plan for Northern Ontario was released on March 3, 2011 and is a 25-year plan that provides guidance for municipalities in Northern Ontario to align provincial decision-making and investment for economic and population growth.

The growth management goals for the Growth Plan for Northern Ontario are as follows:

- Diversifying of traditional resource-based industries
- Workforce education and training
- Integration of infrastructure investments and planning
- Tools for Indigenous peoples' participation in the economy

The Official Plan of the Township of The Archipelago incorporates the above growth management goals of the Growth Plan for Northern Ontario, focusing particularly on sustainability (economic, social, and environmental), accommodating the diverse needs of all residents, optimizing existing infrastructure, quality of place, and a welcoming and inclusive community that emphasizes unique local features.

## 5.2 Impact of Growth on Lifecycle Activities

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.

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

# 6

## Financial Strategy

- The Township is committing approximately \$1.5 million towards capital projects per year from sustainable revenue sources
- Given the annual capital requirement of \$1.9 million, there is currently a funding gap of \$316,000 annually
- For tax-funded assets, we recommend increasing tax revenues by 0.4% each year for the next 10 years to achieve a sustainable level of funding

## 6.1 Financial Strategy Overview

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

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

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

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

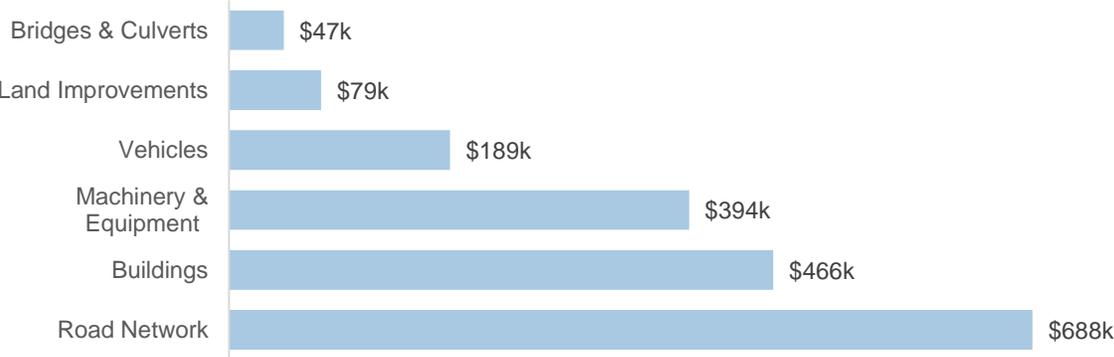
If the financial plan component results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Township’s approach to the following:

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

## 6.1.1 Annual Requirements & Capital Funding

### Annual Requirements

The annual requirements represent the amount the Township should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs and achieve long-term sustainability. In total, the Township must allocate approximately \$1.9 million annually to address capital requirements for the assets included in this AMP.



Total Average Annual Capital Requirements (Lifecycle): \$1,863,000

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

However, for the Road Network, lifecycle management strategies have been developed and applied for the strategic rehabilitation and renewal of the Township’s roads. The development of these strategies allows for a comparison of the cost avoidance due to the strategies compared to a Replacement Only/End-of-Life (EoL) approach. The following table compares the scenarios for the Road Network:

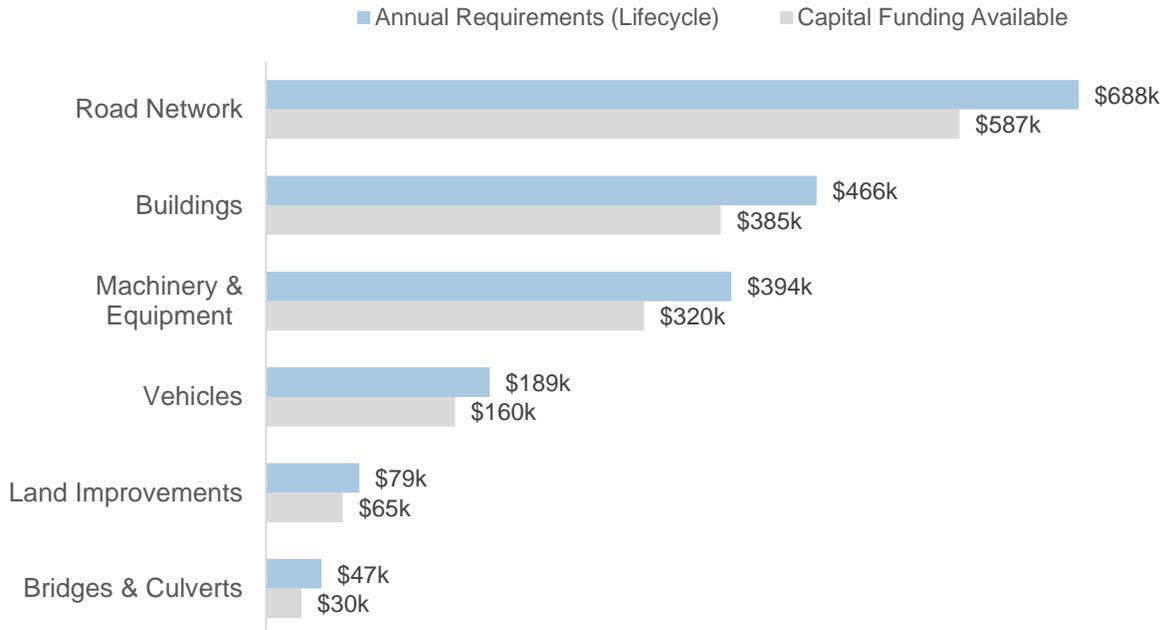
1. **Replacement Only Scenario:** Based on the assumption that assets deteriorate and – without regularly scheduled maintenance and rehabilitation – are replaced at the end of their service life.
2. **Lifecycle Strategy Scenario:** Based on the assumption that lifecycle activities are performed at strategic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

<b>Asset Category</b>	<b>Annual Requirements (Replacement Only)</b>	<b>Annual Requirements (Lifecycle Strategy)</b>	<b>Difference</b>
Road Network	\$924,000	\$688,000	\$236,000

The implementation of a proactive lifecycle strategy for roads leads to an estimated annual cost avoidance of \$236,000 for the Road Network. This represents an overall reduction of the annual requirements for the Roads of 25.5%. As the lifecycle strategy scenario represents the lowest cost option available to the Township, we have used these annual requirements in the development of the financial strategy.

## Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Township is committing approximately \$1,547,000 towards capital projects per year. Given the annual capital requirement of \$1,646,000, there is currently a funding gap of \$402,000 annually.



## 6.2 Funding Objective

We have developed a scenario that would enable The Archipelago to achieve full funding within 1 to 20 years for the following assets:

1. **Tax Funded Assets:** Road Network, Bridges & Culverts, Buildings, Machinery & Equipment, Land Improvements, Vehicles

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

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

## 6.3 Financial Profile: Tax Funded Assets

### 6.3.1 Current Funding Position

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

Asset Category	Avg. Annual Requirement	Annual Funding Available			Total Available	Annual Deficit
		Taxes	Gas Tax	OCIF		
Road Network	\$688,000	\$340,000	\$34,000	\$213,000	\$587,000	\$101,000
Bridges & Culverts	\$47,000	\$30,000			\$30,000	\$17,000
Buildings	\$466,000	\$385,000			\$385,000	\$81,000
Machinery & Equipment	\$394,000	\$320,000			\$320,000	\$74,000
Land Improvements	\$79,000	\$65,000			\$65,000	\$14,000
Vehicles	\$189,000	\$160,000			\$160,000	\$29,000
	<b>\$1,863,000</b>	<b>\$1,300,000</b>	<b>\$34,000</b>	<b>\$213,000</b>	<b>\$1,547,000</b>	<b>\$316,000</b>

The average annual investment requirement for the above categories is \$1,863,000. Annual revenue currently allocated to these assets for capital purposes is \$1,547,000 leaving an annual deficit of \$316,000. Put differently, these infrastructure categories are currently funded at 83.0% of their long-term requirements.

## 6.3.2 Full Funding Requirements

In 2022, Township of The Archipelago has annual tax revenues of \$8,093,000. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

<b>Asset Category</b>	<b>Tax Change Required for Full Funding</b>
Road Network	1.2%
Bridges & Culverts	0.2%
Buildings	1.0%
Machinery & Equipment	0.9%
Land Improvements	0.2%
Vehicles	0.4%
	<b>3.9%</b>

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

	<b>Without Debt Reallocation</b>				<b>With Debt Reallocation</b>			
	<b>5 Years</b>	<b>10 Years</b>	<b>15 Years</b>	<b>20 Years</b>	<b>5 Years</b>	<b>10 Years</b>	<b>15 Years</b>	<b>20 Years</b>
Infrastructure Deficit	\$316,000	\$316,000	\$316,000	\$316,000	\$316,000	\$316,000	\$316,000	\$316,000
Change in Debt Costs	N/A	N/A	N/A	N/A	\$0	\$0	\$0	\$138,000
Change in OCIF Grants	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Resulting Infrastructure Deficit:</b>	<b>\$316,000</b>	<b>\$316,000</b>	<b>\$316,000</b>	<b>\$316,000</b>	<b>\$316,000</b>	<b>\$316,000</b>	<b>\$316,000</b>	<b>\$178,000</b>
Tax Increase Required	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	2.2%
<b>Annually:</b>	<b>0.8%</b>	<b>0.4%</b>	<b>0.3%</b>	<b>0.2%</b>	<b>0.8%</b>	<b>0.4%</b>	<b>0.3%</b>	<b>0.2%</b>

### 6.3.3 Financial Strategy Recommendations

Considering all the above information, we recommend the 10-year option. This involves full funding being achieved over 10 years by:

- a) Increasing tax revenues by 0.4% each year for the next 10 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
- b) Allocating the current gas tax and OCIF revenue as outlined previously.
- c) Reallocating appropriate revenue from categories in a surplus position to those in a deficit position.
- d) Increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included OCIF formula-based funding, if applicable, since this funding is a multi-year commitment.<sup>8</sup>
2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.

Although this option achieves full funding on an annual basis in 10 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of \$31,000 for the Road Network, \$107,000 for Machinery & Equipment, and \$406,000 for Vehicles.

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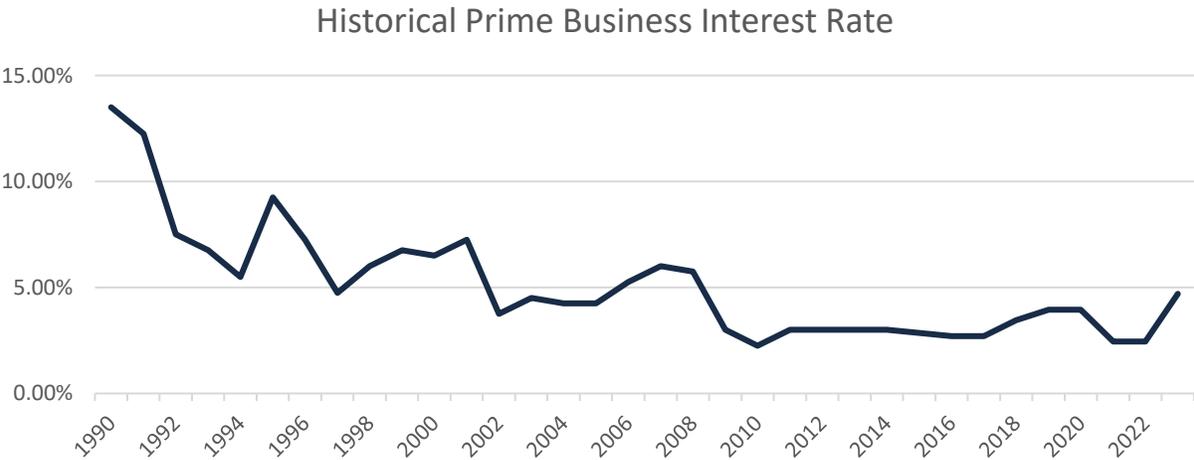
<sup>8</sup> The Township should take advantage of all available grant funding programs and transfers from other levels of government. While OCIF has historically been considered a sustainable source of funding, the program is currently undergoing review by the provincial government. Depending on the outcome of this review, there may be changes that impact its availability.

# 6.4 Use of Debt

Debt can be strategically utilized as a funding source with in the long-term financial plan. The benefits of leveraging debt for infrastructure planning include:

- a) The ability to stabilize tax & user rates when dealing with variable and sometimes uncontrollable factors
- b) Equitable distribution of the cost/benefits of infrastructure over its useful life
- c) A secure source of funding
- d) Flexibility in cash flow management

Debt management policies and procedures with limitations and monitoring practices should be considered when reviewing debt as a funding option. In efforts to mitigate increasing commodity prices and inflation, interest rates have been rising. Sustainable funding models that include debt need to incorporate the now current realized risk of rising interest rates. The following graph shows the historical changes to the lending rates:



A change in 15-year rates from 5% to 7% would change the premium from 45% to 65%. Such a change would have a significant impact on a financial plan.

For reference purposes, the following table outlines the premium paid on a project if financed by debt. For example, a \$1 million project financed at 3.0%<sup>9</sup> over 15 years would result in a 26% premium or \$260 thousand of increased costs due to interest payments. For simplicity, the table does not consider the time value of money or the effect of inflation on delayed projects.

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

The following tables outline how the Township has historically used debt for investing in the asset categories as listed. There is currently \$1,714,000 of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of \$138,000, within its provincially prescribed maximum of \$2,707,000.

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<sup>9</sup> Current municipal Infrastructure Ontario rates for 15-year money is 3.2%.

# 6.5 Use of Reserves

## 6.5.1 Use of Reserves

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

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

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

<b>Asset Category</b>	<b>Balance on December 31, 2022</b>
Road Network	\$6,258,000
Bridges & Culverts	\$364,000
Buildings & Facilities	\$4,985,000
Machinery & Equipment	\$3,487,000
Land Improvements	\$738,000
Vehicles	\$1,776,000
<b>Total Tax Funded</b>	<b>\$17,608,000</b>

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

- a) Breadth of services provided
- b) Age and condition of infrastructure
- c) Use and level of debt
- d) Economic conditions and outlook
- e) Internal reserve and debt policies

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

## 6.5.2 Recommendation

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

# 7 Appendices

- Appendix A identifies projected 10-year capital requirements for each asset category
- Appendix B includes several maps that have been used to visualize the current level of service
- Appendix C identifies the criteria used to calculate risk for each asset category
- Appendix D provides additional guidance on the development of a condition assessment program

## Appendix A: 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.<sup>10</sup>

<b>Road Network</b>											
<b>Asset Segment</b>	<b>Backlog</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>
HCB	\$0	\$0	\$0	\$0	\$1.7m	\$0	\$0	\$1.1m	\$0	\$0	\$0
LCB	\$0	\$0	\$0	\$0	\$0	\$2.3m	\$0	\$0	\$0	\$809k	\$592k
Signs	\$31k	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10k
Small Culverts	\$0	\$0	\$0	\$0	\$153k	\$0	\$0	\$97k	\$0	\$0	\$0
	<b>\$31k</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1.8m</b>	<b>\$2.3m</b>	<b>\$0</b>	<b>\$1.2m</b>	<b>\$0</b>	<b>\$809k</b>	<b>\$602k</b>

<b>Bridges &amp; Culverts</b>											
<b>Asset Segment</b>	<b>Backlog</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>
Bridges	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Structural Culverts	\$0	\$0	\$0	\$0	\$8k	\$0	\$0	\$0	\$0	\$0	\$425k
	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$8k</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$425k</b>

<sup>10</sup> Note that future costs are not indexed for inflation.

### Buildings

<b>Asset Segment</b>	<b>Backlog</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>
Community and Culture	\$0	\$0	\$102k	\$167k	\$13k	\$21k	\$22k	\$57k	\$153k	\$10k	\$5k
General Government	\$0	\$3k	\$81k	\$54k	\$74k	\$30k	\$163k	\$3k	\$95k	\$123k	\$4k
Health	\$0	\$0	\$9k	\$0	\$0	\$0	\$0	\$11k	\$0	\$3k	\$0
Public Works	\$0	\$0	\$54k	\$39k	\$24k	\$15k	\$0	\$16k	\$0	\$112k	\$3k
Washrooms	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Waste Management	\$0	\$0	\$0	\$32k	\$2k	\$7k	\$0	\$20k	\$2k	\$5k	\$3k
	<b>\$0</b>	<b>\$3k</b>	<b>\$245k</b>	<b>\$292k</b>	<b>\$112k</b>	<b>\$72k</b>	<b>\$185k</b>	<b>\$105k</b>	<b>\$249k</b>	<b>\$251k</b>	<b>\$14k</b>

### Machinery & Equipment

<b>Asset Segment</b>	<b>Backlog</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>
Furniture and Fixtures	\$79k	\$0	\$106k	\$95k	\$233k	\$233k	\$95k	\$45k	\$158k	\$95k	\$118k
Public Works	\$28k	\$0	\$64k	\$337k	\$747k	\$627k	\$0	\$43k	\$10k	\$47k	\$166k
	<b>\$107k</b>	<b>\$0</b>	<b>\$170k</b>	<b>\$432k</b>	<b>\$980k</b>	<b>\$860k</b>	<b>\$95k</b>	<b>\$88k</b>	<b>\$168k</b>	<b>\$142k</b>	<b>\$284k</b>

### Vehicles

Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Heavy Duty	\$350k	\$0	\$0	\$0	\$0	\$0	\$0	\$400k	\$0	\$0	\$613k
Light Duty	\$32k	\$0	\$63k	\$0	\$63k	\$0	\$0	\$101k	\$129k	\$32k	\$63k
Marine	\$24k	\$0	\$0	\$0	\$0	\$38k	\$32k	\$74k	\$0	\$24k	\$50k
	<b>\$406k</b>	<b>\$0</b>	<b>\$63k</b>	<b>\$0</b>	<b>\$63k</b>	<b>\$38k</b>	<b>\$32k</b>	<b>\$575k</b>	<b>\$129k</b>	<b>\$56k</b>	<b>\$726k</b>

### Land Improvements

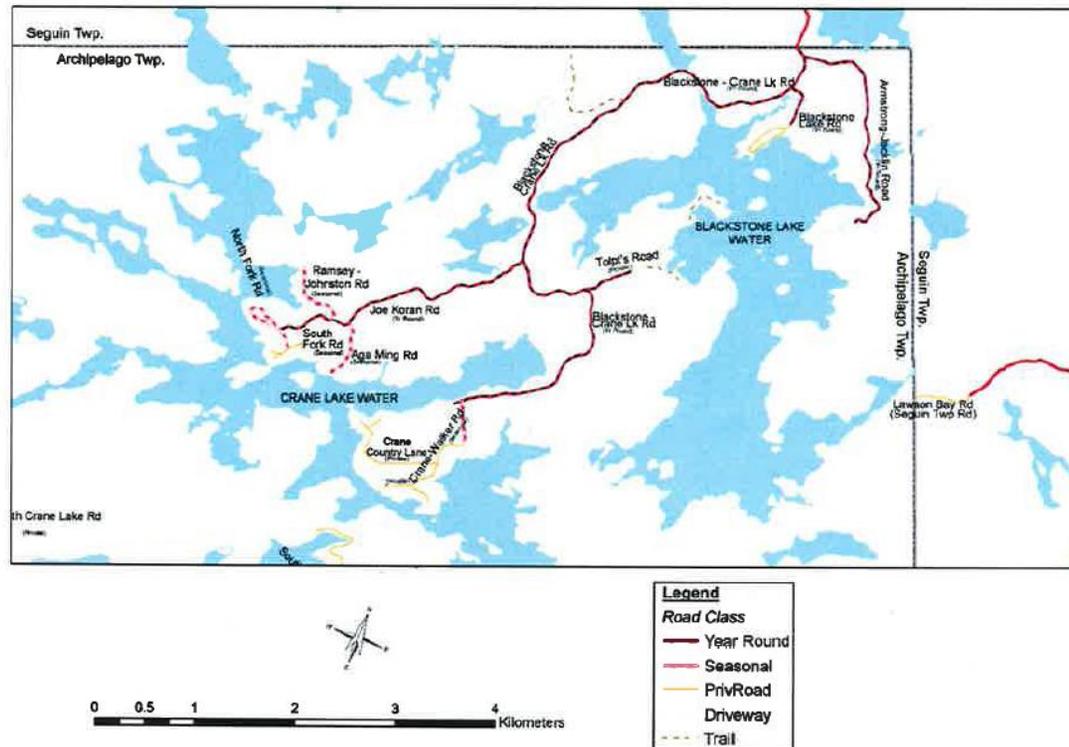
Asset Segment	Backlog	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Cemetery	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Marine	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$20k	\$0	\$40k	\$20k
Parking Lots	\$0	\$0	\$0	\$0	\$0	\$45k	\$0	\$0	\$0	\$0	\$0
Recreation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$45k	\$120k	\$0	\$0
Towers	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Waste Management	\$0	\$0	\$32k	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	<b>\$322k</b>	<b>\$0</b>	<b>\$0</b>	<b>\$32k</b>	<b>\$0</b>	<b>\$0</b>	<b>\$45k</b>	<b>\$0</b>	<b>\$65k</b>	<b>\$120k</b>	<b>\$40k</b>

# Appendix B: Levels of Service

## Road Network Maps

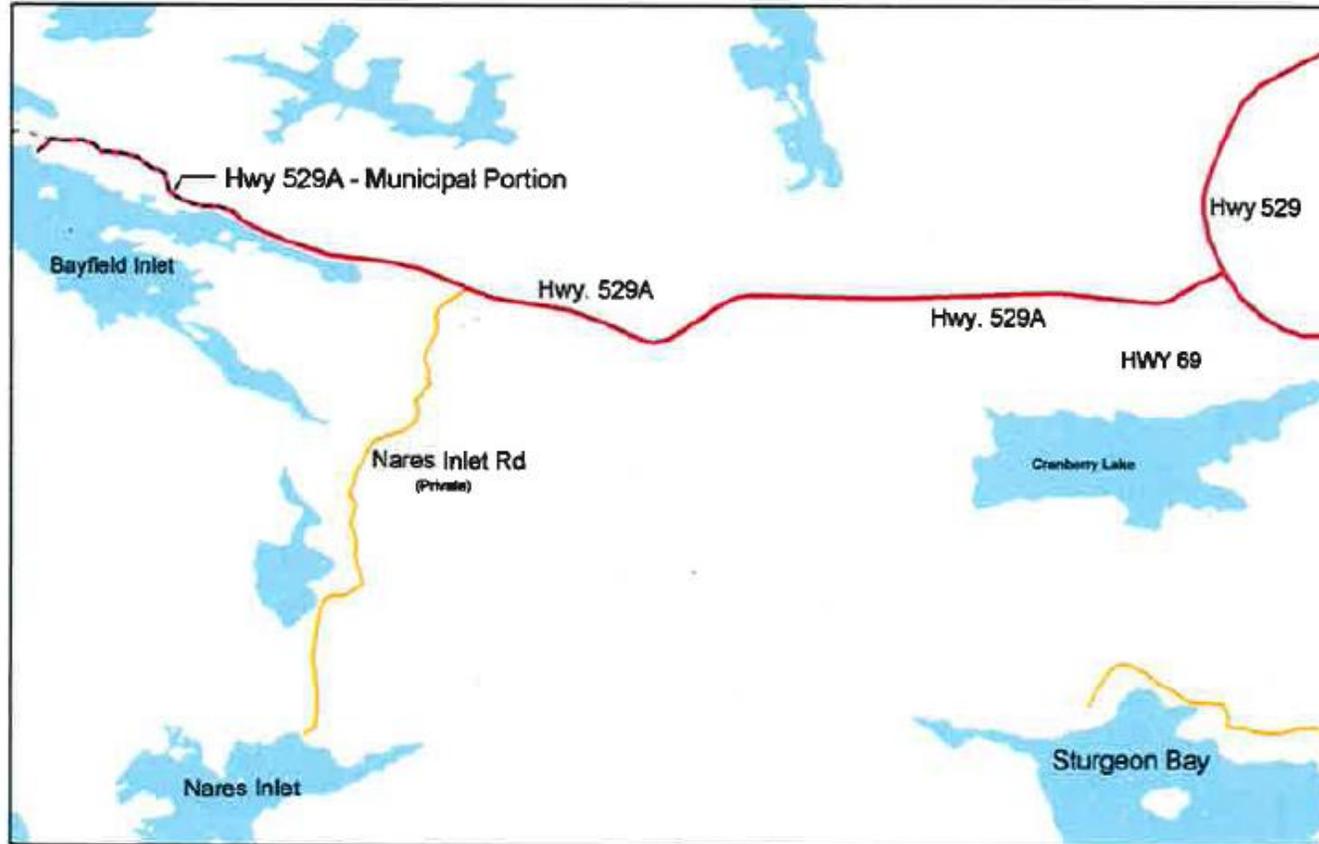
### MAP SHOWING TOWNSHIP'S YEAR ROUND AND SEASONAL ROADS in the South Archipelago

Crane Lake and Blackstone Lake Area



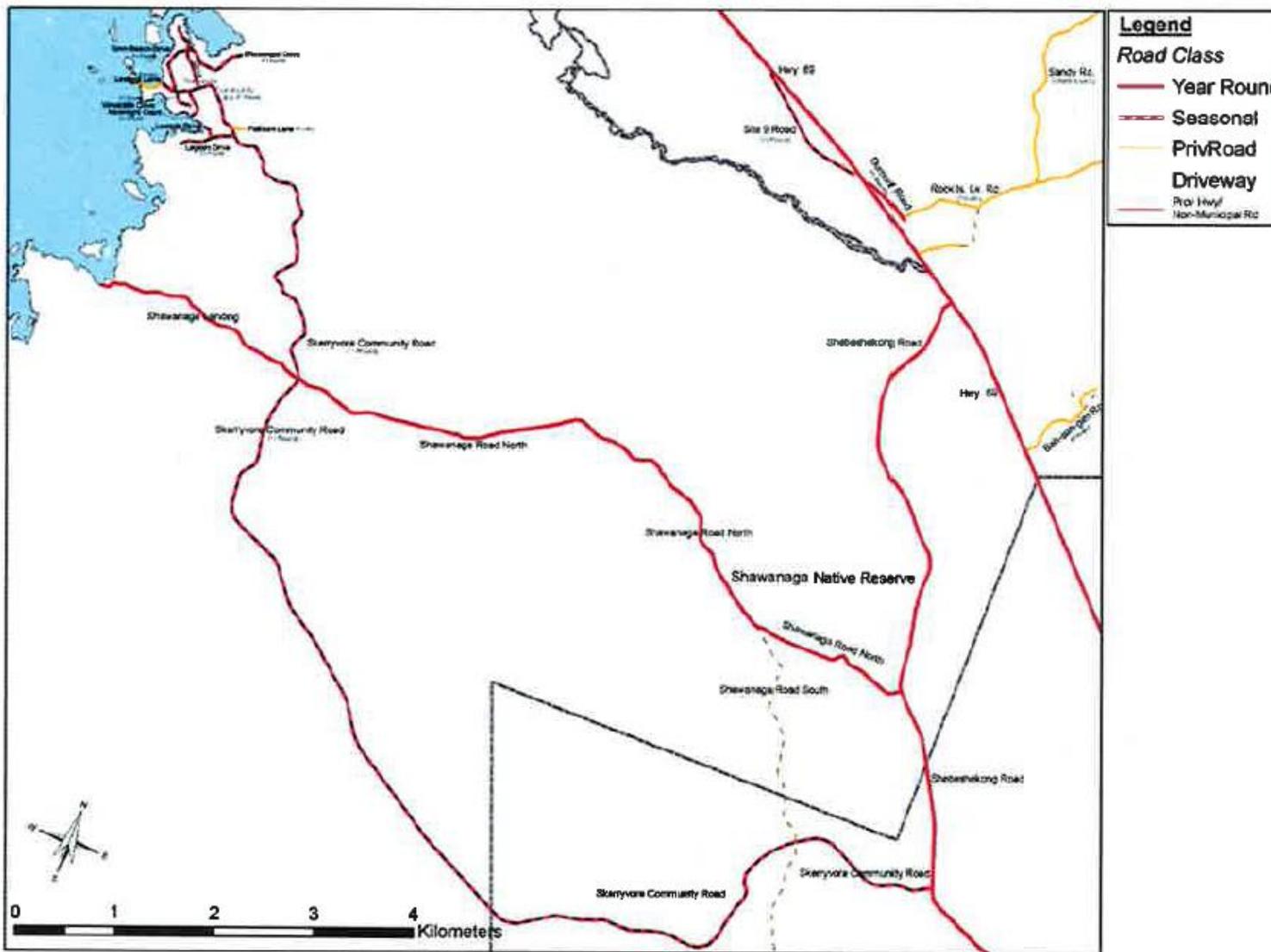


### Hwy. 529A Road - Municipal Portion

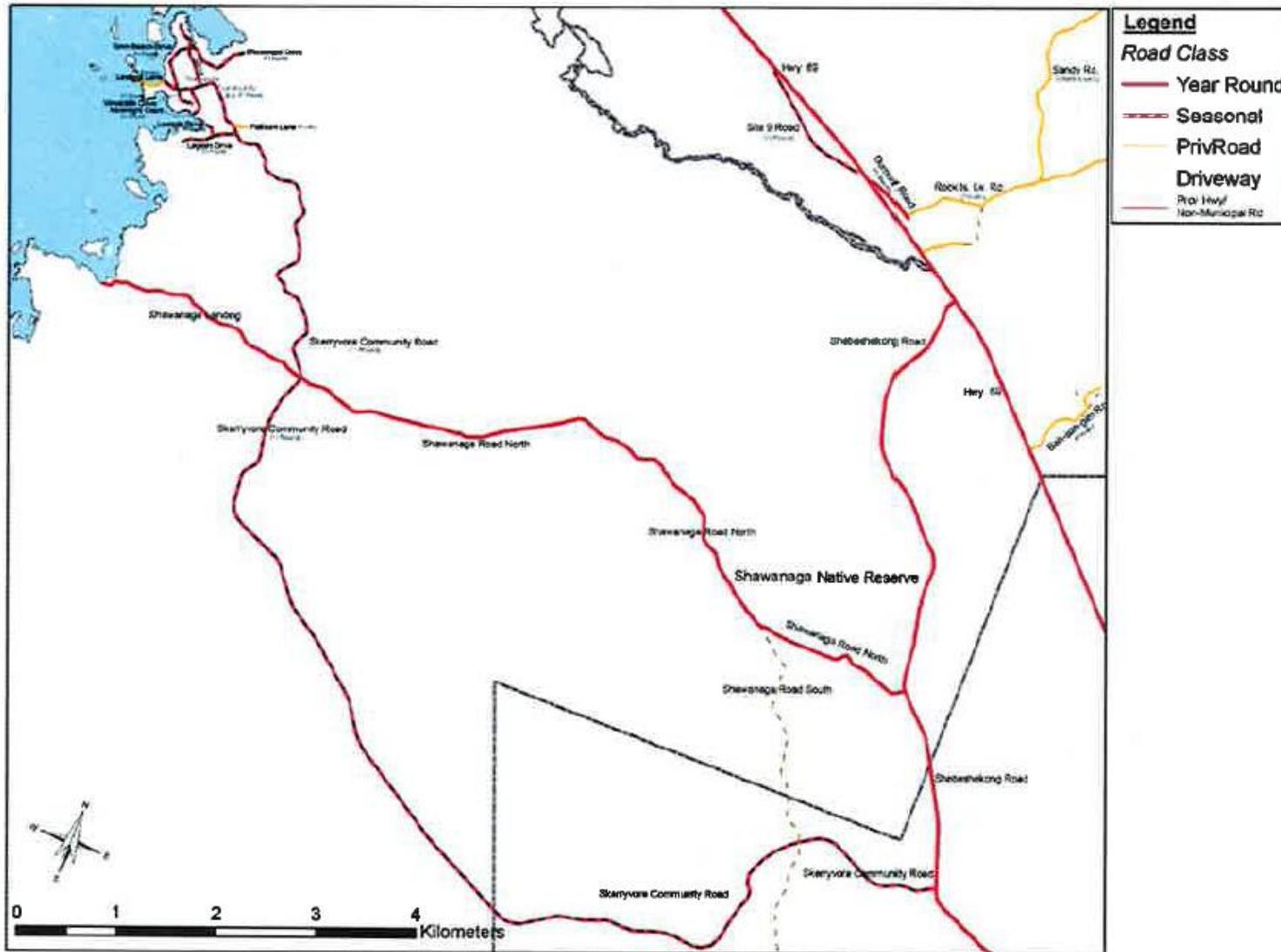


<b>Legend</b>	
<i>Road Class</i>	
	Year Round
	Seasonal
	PrivRoad
	Driveway
	Prov Hwy
	Non-Municipal Rd

## Skerryvore Community Road and Site 9 Road



## Skerryvore Community Road and Site 9 Road

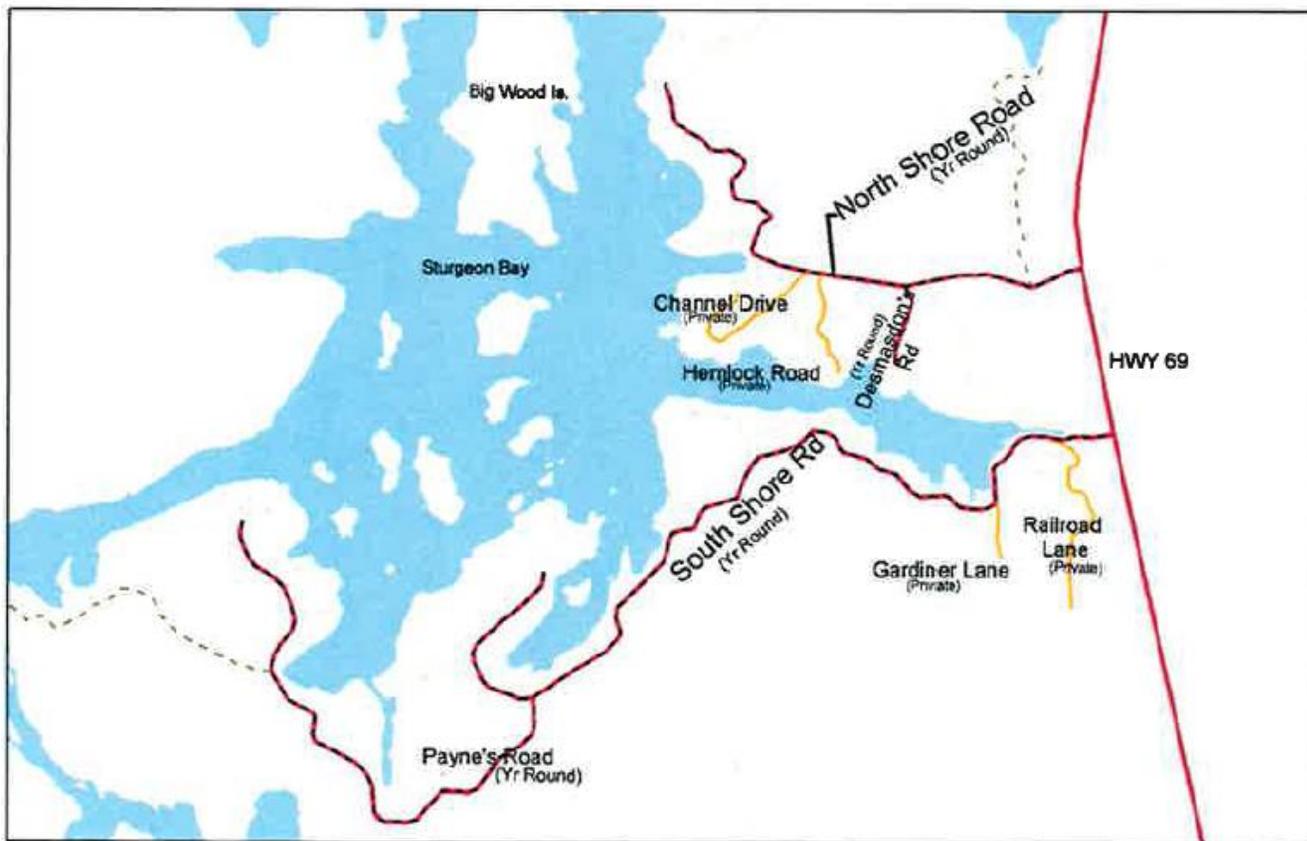


### Skerryvore Community



<b>Legend</b>	
<b>Road Class</b>	
	Year Round
	Seasonal
	PrivRoad
<b>Driveway</b>	
	Priv Hwy
	Non-Municipal Rd

### Pointe au Baril Station Area Roads



Legend	
<b>Road Class</b>	
	Year Round
	Seasonal
	PrivRoad
	Driveway
	Prov Hwy/ Non-Municipal Rd

## PCI Decision Matrix

<b>PCI Decision Matrix</b>				
<b>TIME OF IMPROVEMENT</b>	<b>FREEWAY</b>	<b>ARTERIAL</b>	<b>COLLECTOR</b>	<b>LOCAL</b>
Adequate	>85	>85	>80	>80
6 to 10 years	76 to 85	76 to 85	71 to 80	66 to 80
1 to 5 years	66 to 75	56 to 75	51 to 70	46 to 65
NOW Rehabilitate	60 to 65	50 to 55	45 to 50	40 to 45
NOW Reconstruct	<60	<50	<45	<40

## Images of Bridges and Culverts

### Blackstone Lake Road Bridge





**Kapikog Lake Culvert**



**Skerryvore Road Culvert**



## Buildings

Name	Type	Address	Location
Holiday Cove Marina	Marina		Rose Point Road
Township Boat Launch	Boat Ramp		Woods Bay
Fox Back Road Boat Launch	Boat Ramp		Fox Back Road
Healey Lake Boat Launch	Boat Ramp		Healey Lake Road
Pine Bay Landing	Boat Ramp		Healey Lake Road
Crane Lake Boat Launch	Boat Ramp		Crane Lake Road
Kapikog Lake Boat Launch	Boat Ramp		Kapikog Lk
Bayfield Landing	Boat Ramp		Bayfield Harbour
Naiscoot Public Launch	Boat Ramp		Naiscoot Lk
Pointe au Baril Community Centre	Community Centre	70 South Shore Road	
Georgian Cliffs Memorial Park Cemetery	Cemetery		South Shore Road
Archipelago Township Office	Office	9 James St	
Pointe Au Baril Boat Ramp	Boat Ramp	38 South Shore Road	
Pointe au Baril Nursing Station	Nursing Station	70 South Shore Road	
Archipelago Public Works	Public Works	45 James Bay Junction Road	
Healey Lake Transfer Station	Waste Transfer Station	169 Healey Lake Rd	
Bayfield Transfer Station	Waste Transfer Station	100 Highway 529A	
Woods Bay Transfer Station	Waste Transfer Station	718 Healey Lake Rd	
Skerryvore Transfer Station	Waste Transfer Station	449 Skerryvore Road	
Pointe au Baril Lighthouse	POI	1734 Georgian Bay Water	
Crane Lake Transfer Station	Waste Transfer Station	346 Blackstone-Crane Lake Rd	
Pointe au Baril Transfer Station	Waste Transfer Station	27 South Shore Road	
Site 9 Landfill Site	Waste Transfer Station	10 Site 9 Road	
Sheep Head Transfer Station	Waste Transfer Station	378 Georgian Bay Water	
Devils Elbow Transfer Station	Waste Transfer Station	137 B704 Island	
Pointe Au Baril Public Library	Library	70 South Shore Road	

**Land Improvements: Pointe au Baril Wharf and Seawall**







## Vehicles











## Machinery and Equipment























CONTAINERS  
WHAT DOES IN HERE?  
GLASS BOTTLES & JARS  
PLASTIC CONTAINERS & LIDS  
METAL CANS & FOIL  
POLYETHYLENE HYDROCARBON



1

CONTAINERS  
LID MUST BE IN CLOSED  
POSITION BEFORE OPERATION





# Appendix C: Risk Rating Criteria

## Probability of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Probability of Failure Score
HCB/LCB Roads	Economic (100%)	Condition	80-100	1
			70-79	2
			65-69	3
			45-64	4
			0-44	5
All (Excluding HCB/LCB Roads)	Economic (100%)	Condition	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5

## Consequence of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Bridges & Culverts	Economic (100%)	Replacement Cost	\$0-\$250,000	1
			\$250,001-\$500,000	2
			\$500,001-\$1,000,000	3
			\$1,000,001-\$2,000,000	4
			\$2,000,000+	5
Buildings	Economic (100%)	Replacement Cost	\$0-\$20,000	1
			\$20,001-\$50,000	2
			\$350,001-\$100,000	3
			\$100,001-\$250,000	4
			\$250,000+	5
HCB/LCB Roads	Economic (100%)	Replacement Cost	\$0-\$100,000	1
			\$100,001-\$250,000	2
			\$250,001-\$500,000	3
			\$500,001-\$1,000,000	4
			\$1,000,000+	5
Machinery & Equipment, Vehicles	Economic (100%)	Replacement Cost	\$0-\$25,000	1
			\$25,001-\$75,000	2
			\$75,001-\$150,000	3
			\$150,001-\$300,000	4
			\$300,000+	5

<b>Asset Category</b>	<b>Risk Classification</b>	<b>Risk Criteria</b>	<b>Value/Range</b>	<b>Consequence of Failure Score</b>
Small Equipment	Economic (100%)	Replacement Cost	\$0-\$5,000	1
			\$5,001-\$10,000	2
			\$10,001-\$20,000	3
			\$20,001-\$30,000	4
			\$30,000+	5

# Appendix D: Condition Assessment Guidelines

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

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

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

## Role of Asset Condition Data

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

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

## Guidelines for Condition Assessment

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

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

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

## Developing a Condition Assessment Schedule

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

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