Asset Management Plan

Municipality of Calvin

2022

This Asset Management Program was prepared by:

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The preparation of this project was carried out with assistance from the Government of Canada and the Federation of Canadian Municipalities. Notwithstanding this support, the views expressed are the personal views of the authors, and the Federation of Canadian Municipalities and the Government of Canada accept no responsibility for them.

Key Statistics

Replacement cost of asset portfolio
$133.8 million

Replacement cost of infrastructure per household
$116,327 (2016)

Percentage of assets in fair or better condition
64%

Percentage of assets with assessed condition data
35%

Target reinvestment rate
2.9%

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Executive Summary

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

Scope

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

This AMP include the following asset categories:

With the development of this AMP the Municipality has achieved compliance with O. Reg. 588/17 to the extent of the requirements that must be completed by July 1, 2022. There are additional requirements concerning proposed levels of service and growth that must be met by July 1, 2024 and 2025.

Process and Limitations

This AMP was developed through a joint effort between PSD Citywide (consultant) and the Township of Calvin staff. PSD Citywide led the development from October 2021, until the first draft was received on September 26, 2023. The project timelines were influenced by communications challenges due to staff turnover. Ultimately, the results presented in the plan relied on judgements from staff consulted in 2022, which may not reflect judgements of current staff present at the Township.

A key limitation of this document is the inventory data used. Recommendations in subsequent sections outline these limitations in more detail, however, the overarching limitation lies in the accuracy and completeness of the asset inventory. All analysis and results utilize an asset inventory housed in the enterprise asset management system, Citywide™. This inventory acts as the Tangible Capital Asset (TCA) registry for the Township, and is used for reporting on the Financial Information Returns (FIR). Although the inventory is suitable for financial purposes, it does not contains the detail and description ideal for capital and operational decision-making that the AMP is intended for. Examples of specific limitations include estimated useful life values that may not match serviceable life observed in the field, inadequate naming conventions, and replacement costs based on inflated historical values or staff assumptions. Further, with the exception of Bridges and Culverts, condition scoring relied on judgement of staff rather than a verifiable third-party assessments. These limitations are common for most AMPs developed in Ontario.

Finally, it should be noted that the AMP is a snapshot in time. Information in this plan is reflective of year end 2021 information. Over time the asset inventory will evolved to include the additions, disposals, and other asset transactions, which will be accounted for through the regular update of the AMP, which is required at least every five years. By following recommendations outlined in this plan, the inventory will be improved, and the future iterations of the AMP will become more robust.

Findings

The overall replacement cost of the asset categories included in this AMP totals $24.3 million. 100% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for almost 100% of assets. For the remaining assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.

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

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Municipality's average annual capital requirement totals $1.3 million.

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

Recommendations

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

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

1 Introduction & Context

Key Insights

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

- The Municipality's asset management policy provides clear direction to staff on their roles and responsibilities regarding asset management

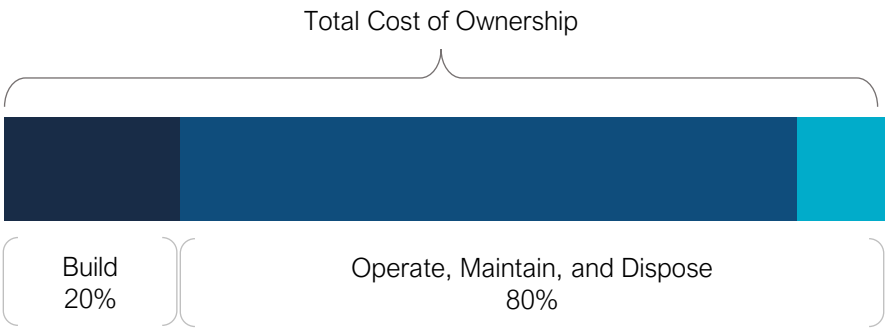
- An asset management plan is a living document that should be updated regularly to inform long-term planning

- Ontario Regulation 588/17 outlines several key milestone and requirements for asset management plans in Ontario between July 1, 2022 and 2025

1.1 An Overview of Asset Management

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

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



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

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

1.1.1 Asset Management Policy

An asset management policy represents a statement of the principles guiding the municipality'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 Municipality adopted By-law No. 2018-47 "A By-law to Adopt an Asset Management Strategy Policy" on July 9th, 2019 in accordance with Ontario Regulation 588/17.

The Municipality of Calvin's Strategic Asset Management Policy provides an organizational commitment to the good stewardship of municipal infrastructure assets, and to improved accountability and transparency to the community through the adoption of best practices regarding asset management planning.

Guiding by this policy, the Municipality will focus its infrastructure efforts on promoting lifecycle and risk management, enhancing decision-making process to achieve the lowest cost of ownership while meeting desired levels of service.

1.1.2 Asset Management Strategy

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

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

1.1.3 Asset Management Plan

The asset management plan (AMP) presents the outcomes of the municipality'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 municipality to re-evaluate the state of infrastructure and identify how the organization's asset management and financial strategies are progressing.

1.2 Key Concepts in Asset Management

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

1.2.1 Lifecycle Management Strategies

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

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

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

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

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

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

1.2.2 Risk Management Strategies

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

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

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

1.2.3 Levels of Service

A level of service (LOS) is a measure of what the Municipality 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 Municipality as worth measuring and evaluating. The Municipality measures the level of service provided at two levels: Community Levels of Service, and Technical Levels of Service.

Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories (Roads, Bridges & Culverts, Water, Wastewater, Stormwater) the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in this AMP. For non-core asset categories, the Municipality 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 municipality's asset management strategies on the physical condition of assets or the quality/capacity of the services they provide.

For core asset categories (Roads, Bridges & Culverts, Water, Wastewater, Stormwater) the Province, through O. Reg. 588/17, has provided technical metrics that are required to be included in this AMP. For non-core asset categories, the Municipality 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 Municipality plans to establish proposed levels of service over a 10-year period, in accordance with O. Reg. 588/17.

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

1.3 Ontario Regulation 588/17

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

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

2019

Strategic Asset Management Policy

2022

Asset Management Plan for Core Assets with the following components:

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

2024

Asset Management Plan for Core and Non-Core Assets

2025

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

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

1.3.1 O. Reg. 588/17 Compliance Review

The following table identifies the requirements outlined in Ontario Regulation 588/17 for municipalities to meet by July 1, 2022. Next to each requirement a page or section reference is included in addition to any necessary commentary.

Requirement	O. Reg. Section	AMP Section Reference	Status
Summary of assets in each category	S.5(2), 3(i)	4.1.1 - 4.7.1	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	4.1.1 - 4.7.1	Complete
Average age of assets in each category	S.5(2), 3(iii)	4.1.3 - 4.7.3	Complete
Condition of core assets in each category	S.5(2), 3(iv)	4.1.2 – 4.2.2	Complete
Description of municipality's approach to assessing the condition of assets in each category	S.5(2), 3(v)	4.1.2 – 4.7.2	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	4.1.6 - 4.7.6	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

1.4 Climate Change

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

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

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

1.4.1 Calvin Climate Profile

The Municipality of Calvin is located in northeastern Ontario along the Mattawa River in the Nipissing District. The Municipality is expected to experience notable effects of climate change which include higher average annual temperatures, an increase in total annual precipitation, and an increase in the frequency and severity of extreme events. According to Climatedata.ca – a collaboration supported by Environment and Climate Change Canada (ECCC) – the Municipality of Calvin may experience the following trends:

Higher Average Annual Temperature:

1. Between the years 1971 and 2000 the annual average temperature was 4.3 ºC.
2. Under a high emissions scenario, the annual average temperatures are projected to increase by 2.6 ºC by the year 2050 and over 6.6 ºC by the end of the century.

Increase in Total Annual Precipitation:

3. Under a high emissions scenario, Calvin is projected to experience a 13% increase in precipitation by the year 2080 and a 18% increase by the end of the century.

Increase in Frequency of Extreme Weather Events:

4. It is expected that the frequency and severity of extreme weather events will change.
5. In some areas, extreme weather events will occur with greater frequency and severity than others especially those impacted by Great Lake winds.

1.4.2 Integration Climate change and Asset Management

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

In order to achieve the sustainable delivery of services, climate change considerations should be incorporated into asset management practices. The integration of asset management and climate change adaptation observes industry best practices and enables the development of a holistic approach to risk management. The East Nipissing Official Plan has indicated the policy for climate change to mitigate the effects of climate change and facilitate the maintenance of ecosystem health resilience. This document along with others will further advance the Municipality's capacity to develop asset management strategies that incorporate climate change mitigation and adaptation considerations.

1.5 Asset Management Roadmap

As part of PSD's Asset Management Roadmap, the Municipality of Calvin committed to taking the necessary steps towards developing a systemic, sustainable and intelligently-structured asset management program. This process involved the collaboration of PSD's industry-leading asset management team with municipal staff over a multi-year engagement. The following summarizes key milestones/deliverables achieved throughout this project.

State of Maturity Report (Completion Date: July 15th, 2019)
The State of Maturity Report provided an audit of the existing asset management capacity and competency. It outlined strategic recommendations to improve the Municipality's asset management program.

Corporate Asset Management Policy (Completion Date: June 3rd, 2019)
An asset management policy provides a framework for the development and implementation of the Municipality's asset management program. 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.

Condition Assessment Protocols (Completion Date: November 18th, 2019)
Municipality staff received training on the development of condition assessment strategies for municipal assets. This included condition assessment guidelines as well as data collection templates to ensure asset condition data is collected consistently and updated regularly.

Level of Service Framework Development (Completion Date: September 2023)
A framework was developed to determine the current level of service provided to the community through municipal infrastructure.

AMP & Financial Strategy
This document represents the culminating deliverable of the Asset Management Roadmap.

2 Scope and Methodology

Key Insights

- This asset management plan includes 7 asset categories and are all tax-funded categories

- The source and recency of replacement costs impacts the accuracy and reliability of asset portfolio valuation

- Accurate and reliable condition data helps to prevent premature and costly rehabilitation or replacement and ensures that lifecycle activities occur at the right time to maximize asset value and useful life

2.1 Assets categories included in this AMP

This asset management plan for the Municipality of Calvin is produced in compliance with Ontario Regulation 588/17. The July 2022 deadline under the regulation—the first of three AMPs—requires analysis of only core assets (roads and bridges).

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

Asset Category	Source of Funding
Road Network	Tax Levy
Bridges	
Buildings	
Equipment	
Vehicles	
Land Improvements	
Landfill	

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 Municipality 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 Municipality expects the asset to be available for use and remain in service before requiring replacement or disposal. The EUL for each asset in this AMP was assigned according to the knowledge and expertise of municipal staff and supplemented by existing industry standards when necessary.

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

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

2.4 Reinvestment Rate

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

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

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

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

2.5 Deriving Asset Condition

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

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

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

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

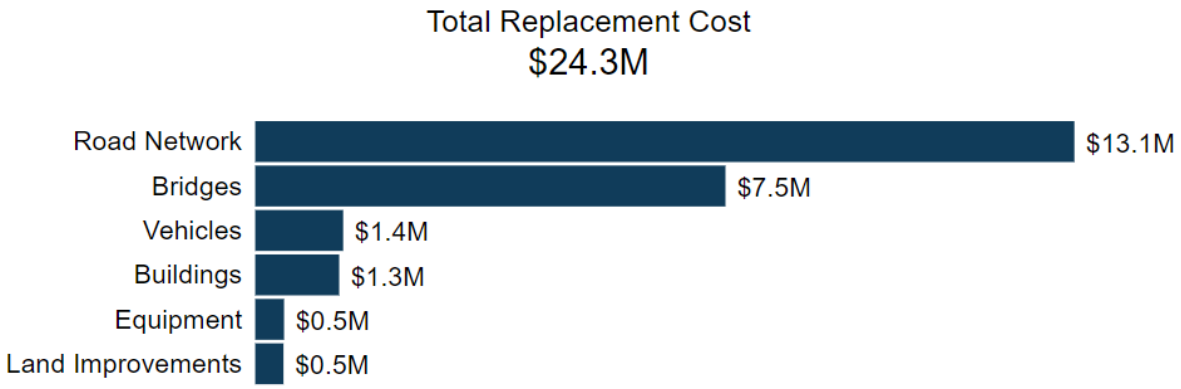
3 Portfolio Overview

Key Insights

- The total replacement cost of the Municipality's asset portfolio is $24.3 million
- The Municipality's target re-investment rate is 5.46%
- 55% of assets are projected to require replacement in the next 10 years
- Average annual capital requirements total $1.3 million per year across all assets

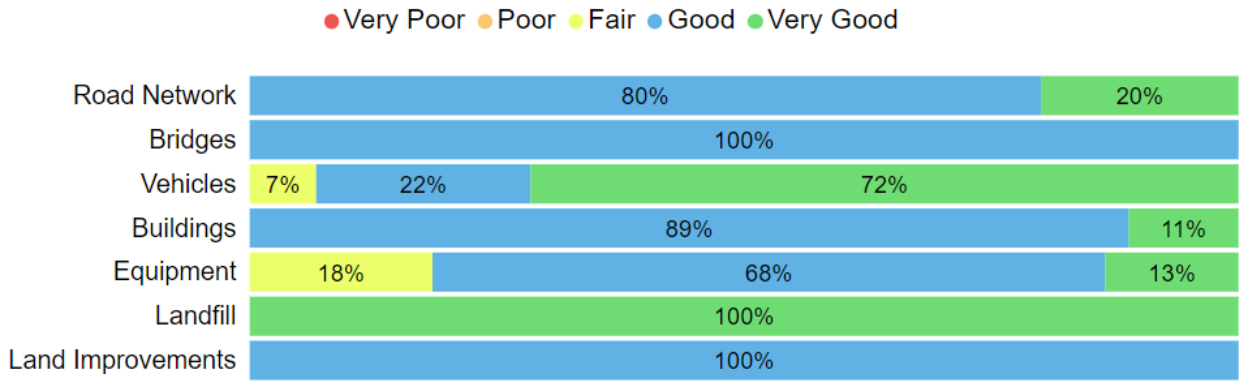
3.1 Total Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of $24.3 million based on inventory data from 2021. 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, 100% of assets in Calvin are in fair or better condition. This estimate relies on mostly field condition data.

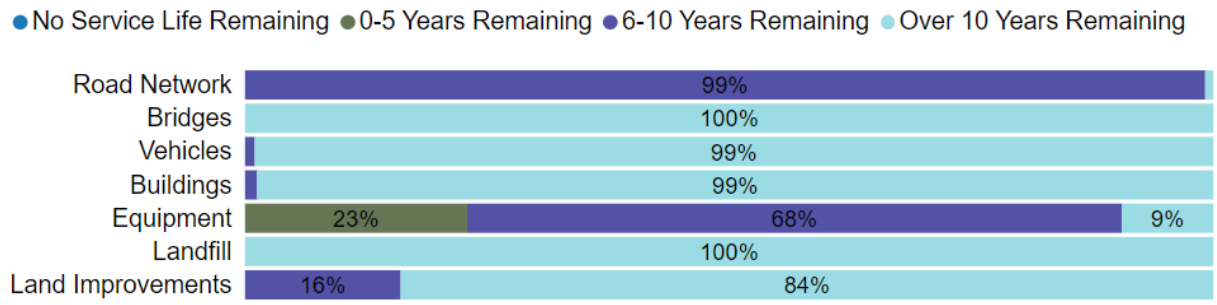


This AMP relies on assessed condition data for 100% of assets; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data used throughout this AMP.

Asset Category	Asset Segment	% of Assets with Assessed Condition	Source of Condition Data
Road Network	Surface Treated Road	100%	2010 Road Needs Study
Bridges	Bridges	100%	2020 OSIM Report
Buildings	All	100%	Building Needs Assessment Report / Staff Assessments
Equipment	All	99.7%	Staff Assessments
Vehicles	All	100%	Staff Assessments
Land Improvements	All	100%	Staff Assessments

3.3 Service Life Remaining

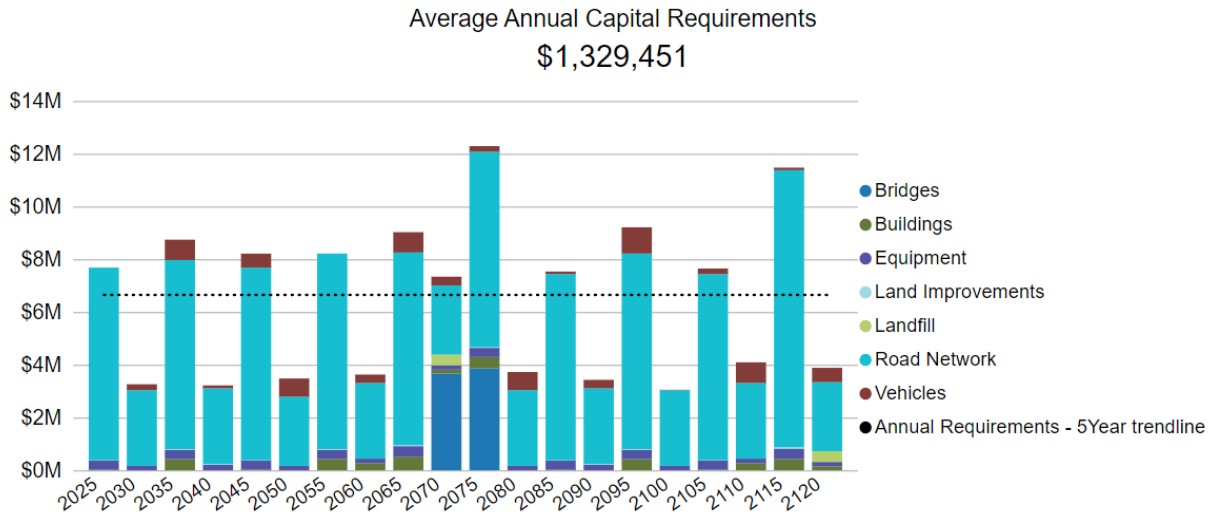
Based on asset age, available assessed condition data and estimated useful life, 42% of the Municipality's assets will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix A.



3.4 Forecasted Capital Requirements

The development of a long-term capital forecast should include both asset rehabilitation and replacement requirements. With the development of asset-specific lifecycle strategies that include the timing and cost of future capital events, the Municipality can produce an accurate long-term capital forecast.

The following graph identifies capital requirements from 2021 to 2120. 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 capital requirements. The average annual capital requirement for all assets is $1.3 million.



4 Analysis of Tax-funded Assets

Key Insights

- The total replacement cost of the Municipality's asset portfolio is $24.3 million and 100% of tax-funded assets are in fair or better condition

- The average annual capital requirement to sustain the current level of service for tax-funded assets is approximately $1.3 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 Municipality's asset portfolio. It includes all municipally owned and maintained roadways.

The Municipality's roads are maintained by the Public Works department who is also responsible for ice control, snow removal and dust removal operations.

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

Replacement Cost	Condition	Financial Capacity	
$13.1 million	Good (76%)	Annual Requirement:	$1,037,000

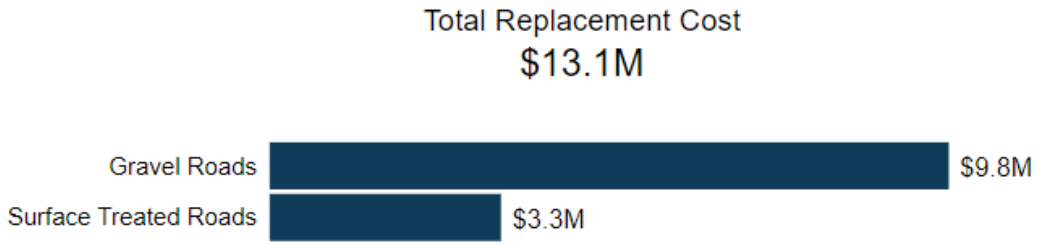
The following core values and level of service statements are a key driving force behind the Municipality's asset management planning:

Service Attribute	Level of Service Statement
Scope	The road network service is conveniently accessible to the whole community in sufficient capacity (meets traffic demands) and is available under all most conditions.
Reliability	The road network in good condition with regular inspection and maintenance to avoid unexpected failure that causes road closures.

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 Municipality's Road Network inventory.

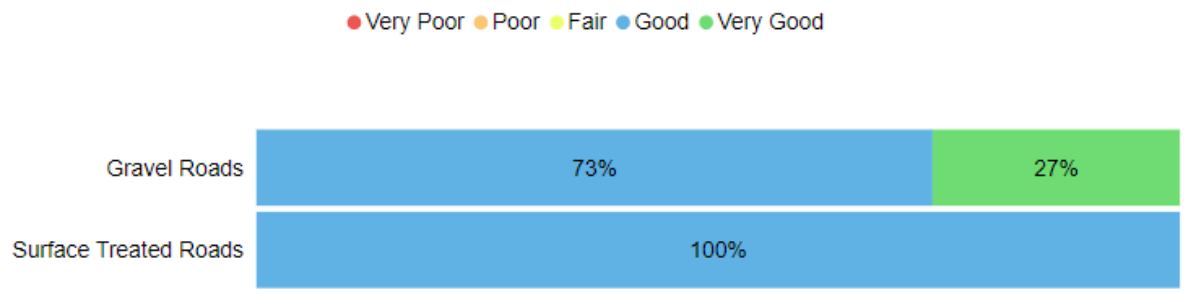
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Gravel Roads	51.89 km	Operating Budget	$9,789,959
Surface Treated Roads	13.70 km	100% User-Defined	$3,334,128
			$13,124,087



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
Gravel Roads	74%	Good	100% Assessed
Surface Treated Roads	80%	Good	100% Assessed
	76%	**Good**	**100% Assessed**



Current Approach to Condition Assessment

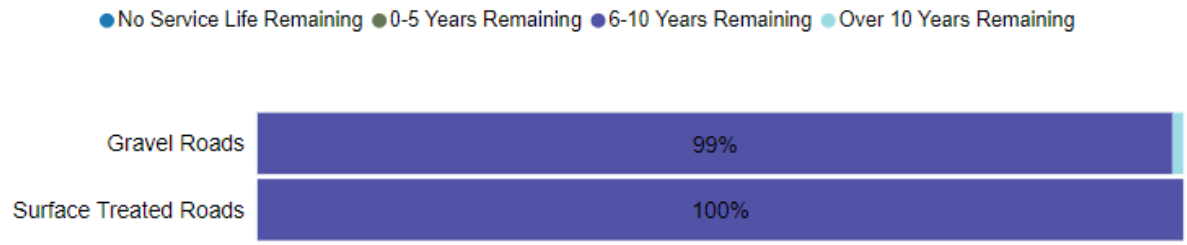
Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the municipality's current approach:

- Roads and roadside assets are inspected by in-house superintendent twice a month
- Minor defects such as potholes identified during the road inspection will be repaired immediately while major defects will be recorded in the logbook
- A Road Needs Study was completed in 2010 that included a detailed assessment of the condition of each road segment

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. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Gravel Roads	10 - 20 Years	88.6	7.5
Surface Treated Roads	8 Years	8.5	6.9
		76.0	**7.4**



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

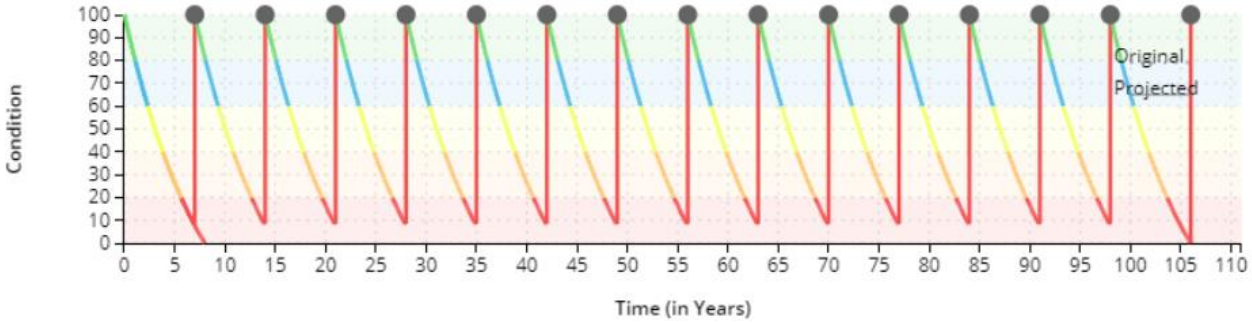
The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment.

Gravel roads are maintained annually through the roads operating budget. This includes regular leveling and stoning, ditching, and apply dust suppressant. The replacement costs in the AMP are calculated as the anticipated stoning costs, assuming a 10 – 20 year re-gravelling cycle.

The following lifecycle strategies have been developed as a proactive approach to managing the lifecycle of surface treated roads. Instead of allowing the roads to deteriorate until replacement

is required, strategic rehabilitation is expected to extend the service life of roads at a lower total cost.

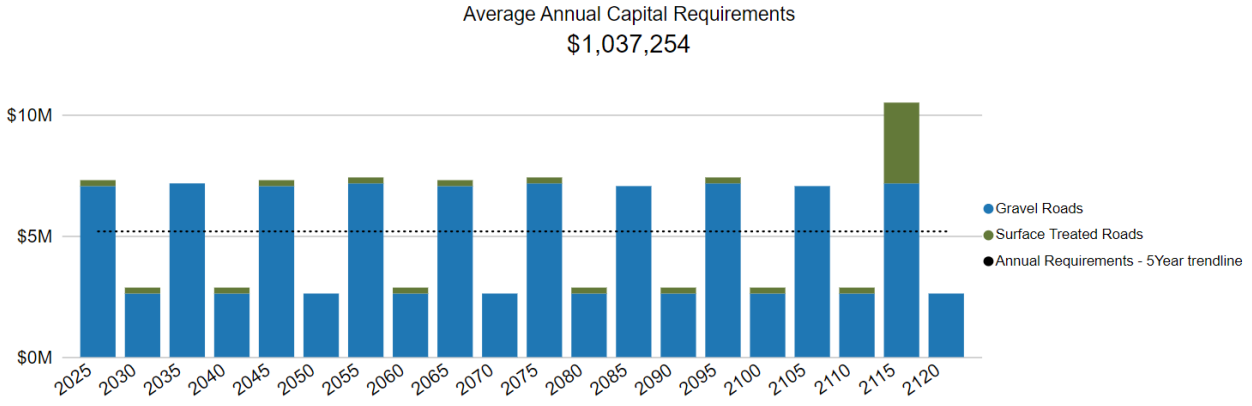
Surface Treated Roads		
Event Name	**Event Class**	**Event Trigger**
Chip Seal	Rehabilitation	7 Years (Repeated 14 times)
Full Reconstruction	Replacement	0 Condition



Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for surface treated roads, and assuming the end-of-life replacement of all other assets in this category, the following graph forecasts capital requirements for the Road Network.

The following graph identifies capital requirements from 2021 to 2120. 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 capital requirements. The average annual capital requirement for all assets is $1.0 million.



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.

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 2021 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

Risks to Current Asset Management Strategies

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

Aging Infrastructure

As roads continue to age, there are a handful of structures that are approaching the end of their useful life. High volume of traffic and heavy vehicles accelerate the deterioration of road surfaces. Roads with poor condition pose higher demand on maintenance and rehabilitation. Current lifecycle management strategies are reactive. An enhanced proactive strategy can help to extend the service life of structures with lower funding requirement.

Climate Change & Extreme Weather Events

The trend of climate change-induced extreme precipitation events is projected to continue. This results in accelerating the deterioration of road surfaces and weakening the foundation. Heavy vehicles cause extra damages to the road surfaces especially in in freeze/thaw cycles and heavy precipitation. To improve

asset resiliency, staff should identify the critical areas and improve drainage through enhanced lifecycle strategies.

4.1.6 Levels of Service

The following tables identify the Municipality'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 Municipality has selected for this AMP.

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Accessible & Reliable	Description, which may include maps, of the road network in the municipality and its level of connectivity	See Appendix B
Affordable	Description of the lifecycle activities (maintenance, rehabilitation and replacement) performed on the road network	See Lifecycle Section 4.1.4
Sustainable	Description or images that illustrate the different levels of road class pavement and sidewalk condition	The Municipality completed a Road Management Study in October 2016 in coordination with BRG Project Management & Municipal Specialists. Every road section received a surface condition rating (1-10). (1-5) Road surface exhibits moderate to significant deterioration and requires renewal or full replacement within 1-5 years (6-10) Road surface is in good condition or has been recently re-surfaced. Renewal or reconstruction is not required for 6-10+ years

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Accessible & Reliable	Lane-km of arterial roads (MMS classes 1 and 2) per land area in the municipality (km/km2)	0
	Lane-km of collector roads (MMS classes 3 and 4) per land area in the municipality (km/km2)	0.84
	Lane-km of local roads (MMS classes 5 and 6) per land area in the municipality (km/km2)	0.09
Safe & Regulatory	% of signs inspected for reflectivity	0%
Affordable	O&M costs for paved roads / lane-km (excluding winter control)	$99/ lane-km
	O&M costs for unpaved roads / lane-km (excluding winter control)	$849/ lane-km
	Winter control costs / lane-km	$274/ lane-km
Sustainable	Average pavement condition index for paved roads in the municipality	80%
	Average surface condition for unpaved roads in the municipality	74%

4.1.7 Recommendations

Asset Inventory

- Review road inventory to determine whether all municipal assets within these asset segments have been accounted for.
- Continue to update the unit replacement costs which reflect current tender pricing and review the estimated useful life values of the roadside infrastructure to ensure they match the true service life.

Condition Assessment Strategies

- The last comprehensive assessment of the road network was completed in 2010. Consider completing an updated assessment of all roads within the next 1-2 years.

Lifecycle Management Strategies

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

Risk Management Strategies

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

Levels of Service

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

4.2 Bridges

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

The state of the bridges is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$7.5 million	Good (71%)	Annual Requirement:	$ 108,000

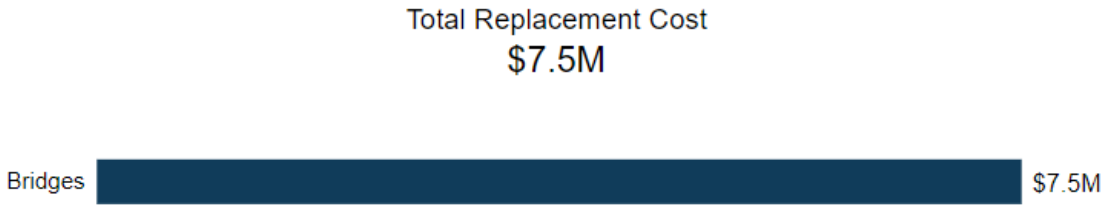
The following core values and level of service statements are a key driving force behind the Municipality's asset management planning:

Service Attribute	Level of Service Statement
Scope	Bridges and culverts are conveniently accessible to the whole community in sufficient capacity (meets traffic demands) and are available under most weather conditions. None of the bridges have dimensional or loading restrictions.
Reliability	The bridges are in good condition with minimal unplanned service interruptions and bridge closures.

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 Municipality's Bridges inventory.

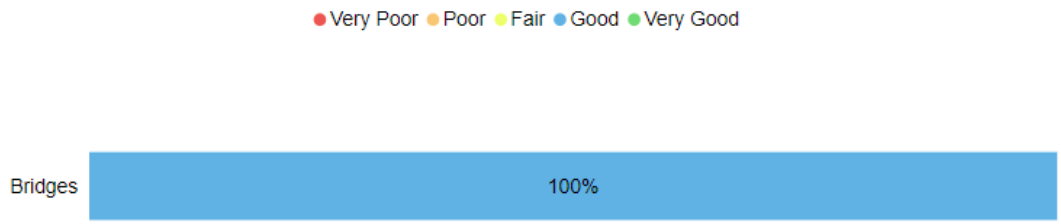
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Bridges	6	100% User-Defined Cost	$7,534,000
			$7,534,000



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	71%	Good	100% Assessed
	71%	**Good**	**100% Assessed**



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

Current Approach to Condition Assessment

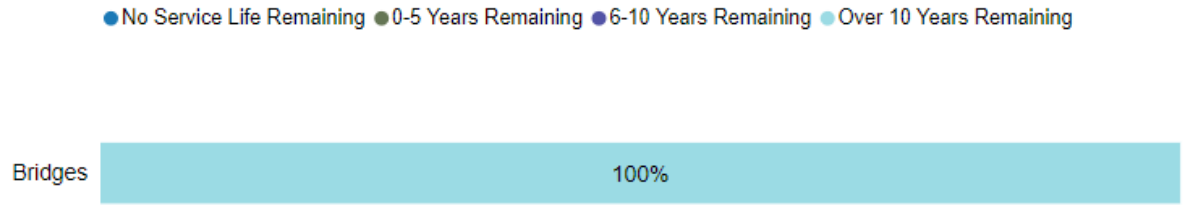
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- Condition assessments of all bridges with a span greater than or equal to 3 meters are completed every 2 years in accordance with the Ontario Structure Inspection Manual (OSIM)

4.2.3 Estimated Useful Life & Average Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Bridges	75 Years	53.8	53.0
		53.8	**53.0**



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

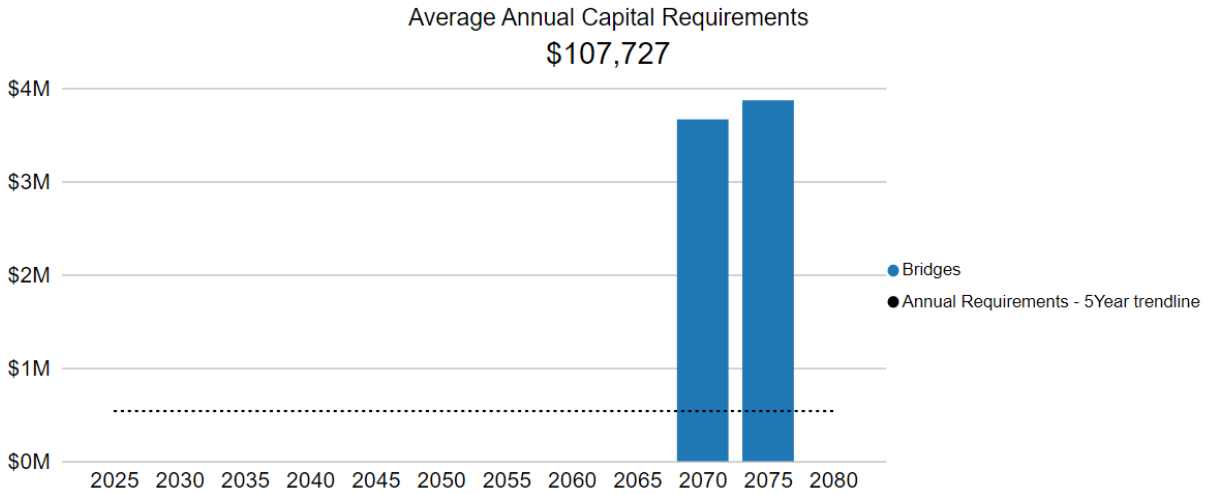
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance, Rehabilitation and Replacement	Lifecycle activities are driven by the results of mandated structural inspections competed according to the Ontario Structure Inspection Manual (OSIM)
	General maintenance are performed regually by staff
Inspection	The most recent inspection report was completed in 2020 by HP Engineering Inc.

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. 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 capital requirements.



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

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 2021 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

Risks to Current Asset Management Strategies

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

Capital Funding Strategies

Major capital rehabilitation projects for bridges are entirely dependant on the availability of grant funding opportunities. Current level of financial investment does not sufficiently address maintenance and capital rehabilitation requirements proactively. When grants are not available, bridge rehabilitation projects may be deferred. An annual capital funding strategy could reduce dependency on grant funding and help prevent deferral of capital works.

4.2.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Accessible & Reliable	Description of the traffic that is supported by municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Bridges and structural culverts are a key component of the municipal transportation network. None of the municipality's structures have loading or dimensional restrictions meaning that most types of vehicles, including heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians and cyclists.
Affordable	Description of the lifecycle activities (maintenance, rehabilitation and replacement) performed on bridges & culverts	See Lifecycle Section 4.2.4
Sustainable	Description or images of the condition of bridges and how this would affect use of the bridges	See Appendix B
	Description or images of the condition of culverts and how this would affect use of the culverts	See Appendix B

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Accessible & Reliable	% of bridges in the municipality with loading or dimensional restrictions	0%
	Average detour distance (minutes) of all Bridges and Culverts	15min – 30min
	# of unplanned Structure closures	0
Safe & Regulatory	% of bridges and structural culverts (3m) inspected every two years	100%
	# of Minimum Maintenance Standards non-compliance events	0
	% of bridges with load limits posted	0%
Affordable	O&M costs for bridges & culverts	$8,355
Sustainable	Average bridge condition index value for bridges in the municipality	71%
	Average bridge condition index value for structural culverts in the municipality	N/A

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

Levels of Service

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

4.3 Buildings

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

- Municipal offices
- Fire halls and associated facilities
- Public works garages and storage sheds
- Community centres and bandshell

The state of the Buildings is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$1.3 million	Good (79%)	Annual Requirement:	$ 39,000

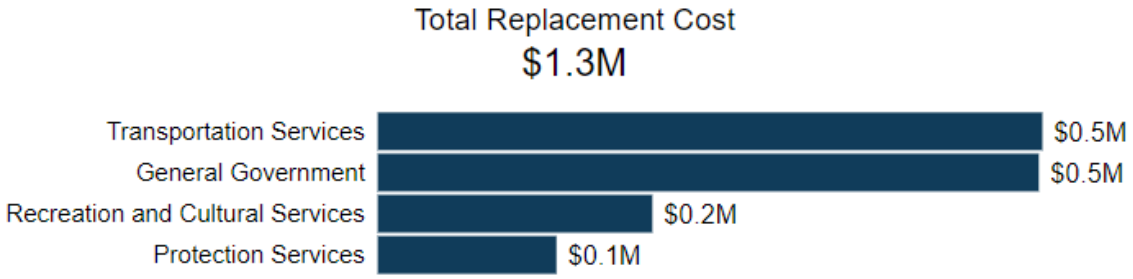
The following core values and level of service statements are a key driving force behind the Municipality's asset management planning:

Service Attribute	Level of Service Statement
Performance	Buildings and facilities are safe for occupants and do not cause a hazard to the public. The services provided by buildings and facilities are managed in a sustainably affordable manner, taking into account long-term requirements.

4.3.1 Asset Inventory & Replacement Cost

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

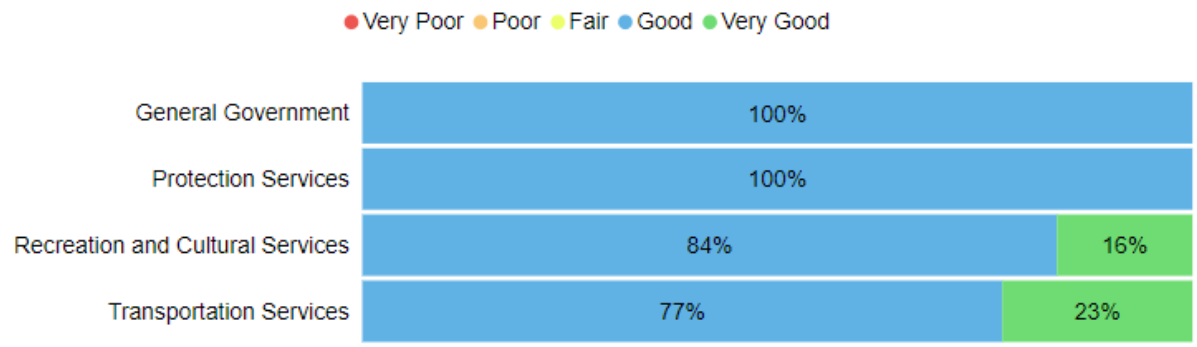
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
General Government	1	User-Defined Cost	$500,000
Protection Services	1(2)	User-Defined Cost	$135,174
Recreation & Cultural Services	3(4)	16% CPI Tables 84% User-Defined Cost	$207,718
Transportation Services	2(4)	User-Defined Cost	$502,715
			$1,345,607



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
General Government	77%	Good	100% Assessed
Protection Services	76%	Good	100% Assessed
Recreation & Cultural Services	80%	Good	100% Assessed
Transportation Services	79%	Good	100% Assessed
	79%	**Good**	**100% Assessed**



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

Current Approach to Condition Assessment

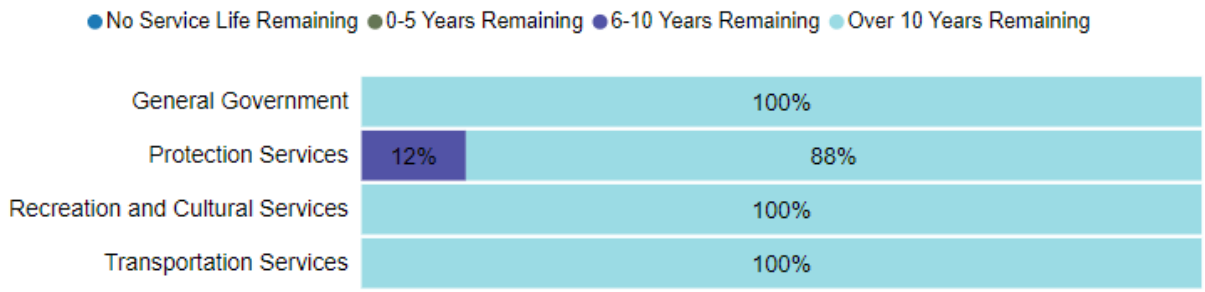
Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the municipality's current approach:

- There are no formal condition assessment programs in place for buildings
- Visual inspections on buildings are performed by in-house staff on the need basis. However, structural defects are not included in the inspections

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.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
General Government	60 Years	45.8	46.3
Protection Services	10-50 Years	26.5	22.7
Recreation & Cultural Services	20-50 Years	26.0	35.1
Transportation Services	20-50 Years	20.0	31.6
		25.8	**32.6**



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

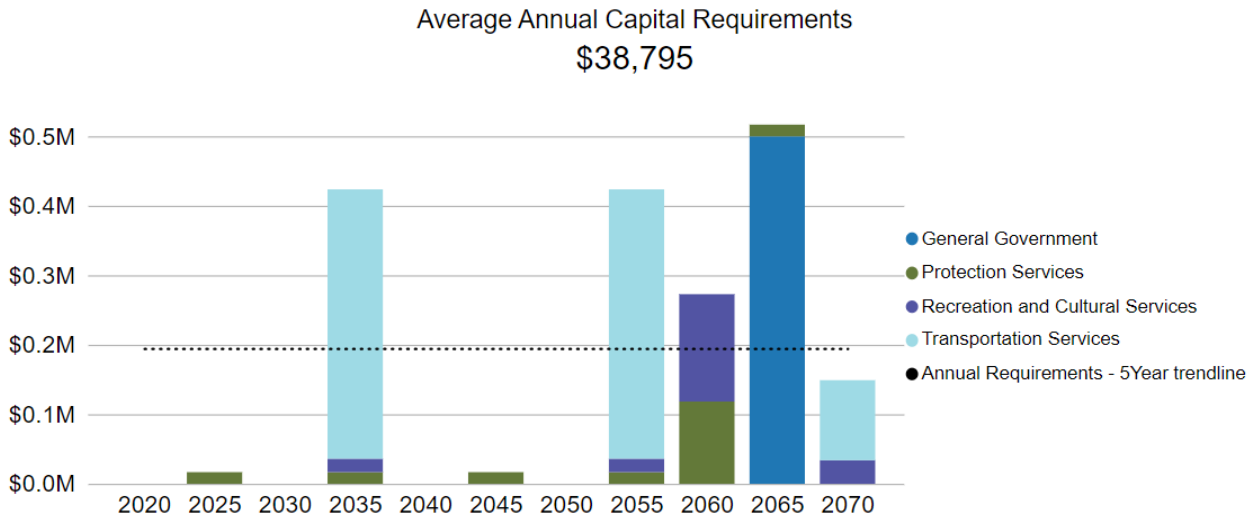
4.3.4 Lifecycle Management Strategy

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 Municipality's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	Municipal buildings are subject to regular inspections to identify health & safety requirements as well as structural deficiencies that require additional attention
	Critical buildings (Fire Stations etc.) have a detailed maintenance and rehabilitation schedule, while the maintenance of other buildings are dealt with on a case-by-case basis
	As a supplement to the knowledge and expertise of municipal staff, the Municipality regularly works with contractors to complete Facility Needs Assessment Studies
Replacement	Assessments are completed strategically as buildings approach their end-of-life to determine whether replacement or rehabilitation is appropriate

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. 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 capital requirements.



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

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 2021 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

Risks to Current Asset Management Strategies

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

Aging Infrastructure

As municipal buildings continue to age, municipal buildings require higher frequency of inspection and maintenance to meet safety compliance. Detailed assessment and regular maintenance for structural defects are currently no in place. Current lifecycle management strategies are reactive. There is currently no decision-making process in place to determine how to plan for structures that will require renovation or replacement.

Capital Funding Strategies

Major capital rehabilitation projects for municipal buildings are mainly dependant on the availability of funding opportunities. When grants are not available, large building rehabilitation projects may be deferred. An annual capital funding strategy can reduce dependency on grant funding and help prevent deferral of capital works.

4.3.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	List of facilities that meet accessibility standards and any work that has been undertaken to achieve alignment	TBD
Sustainable	Description of the lifecycle activities (maintenance, rehabilitation and replacement) performed on municipal facilities	See Lifecycle Section 4.3.4
	Description of monthly and annual facilities inspection process	See Lifecycle Section 4.3.4
Performance	Description of the current condition of municipal facilities and the plans that are in place to maintain or improve the provided level of service	TBD

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	Gross square footage of all facilities owned and leased	9,457.1 ft^2
Affordable	O&M cost / # of municipal facilities	$6,142
	Total equivalent kWh energy consumption / ft^2 of all buildings and facilities	4.4 kWh/ft^2
Sustainable	% of facilities that are in good or very good condition	100%
	% of facilities that are in poor or very poor condition	0%

4.3.7 Recommendations

Asset Inventory

- The Municipality's asset inventory contains a single record for several buildings. Buildings consist of several separate capital components that have unique estimated useful lives and require asset-specific lifecycle strategies. Staff should work towards a component-based inventory of all facilities to allow for component-based lifecycle planning.

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

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

4.4 Equipment

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

- Environmental service equipment to maintain public parks
- Fire equipment to support the delivery of emergency services
- Public work equipment to support transportation services
- Other equipment to provide recreation and cultural services

The state of the Equipment is summarized in the following table.

Replacement Cost	Condition	Financial Capacity	
$462,000	Good (71%)	Annual Requirement:	$ 54,000

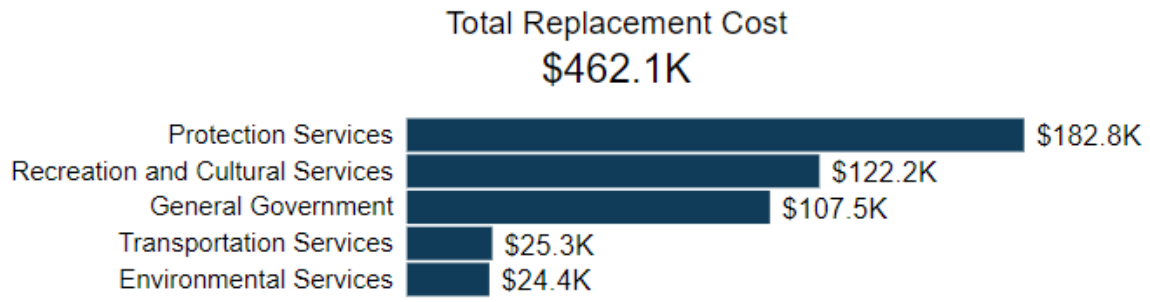
The following core values and level of service statements are a key driving force behind the Municipality's asset management planning:

Service Attribute	Level of Service Statement
Performance	Equipment is safe for use by staff and adheres to regulatory requirements. Equipment operations and services are managed cost-effectively with long-term plans in place for the renewal and replacement.

4.4.1 Asset Inventory & Replacement Cost

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

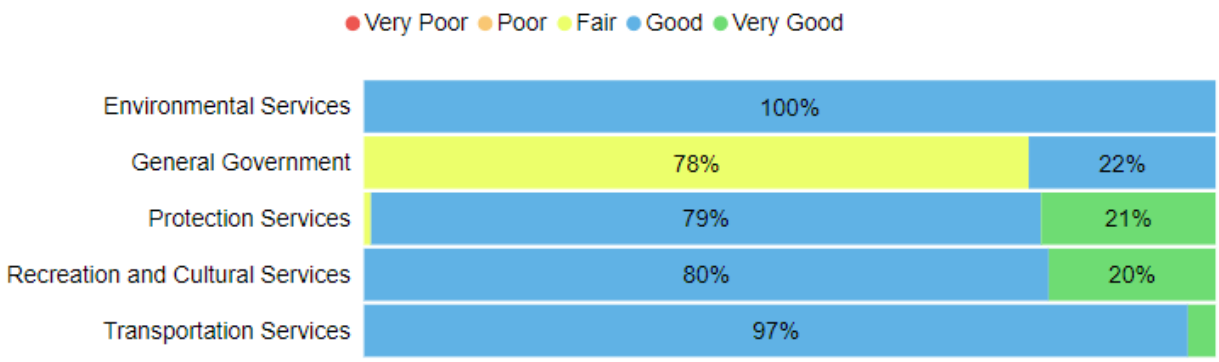
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Environmental Services	1	User-Defined Cost	$24,408
General Government	12	15% User-Defined Cost 75% CPI Tables	$107,492
Protection Services	87	57% User-Defined Cost 43% CPI Tables	$182,759
Recreation & Cultural Services	11	65% User-Defined Cost 35% CPI Tables	$122,168
Transportation Services	13	70% User-Defined Cost 30% CPI Tables	$25,281
			$462,108



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
Environmental Services	69%	Good	100% Assessed
General Government	62%	Good	100% Assessed
Protection Services	73%	Good	99% Assessed
Recreation & Cultural Services	75%	Good	100% Assessed
Transportation Services	70%	Good	100% Assessed
	71%	**Good**	**100% Assessed**



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

Current Approach to Condition Assessment

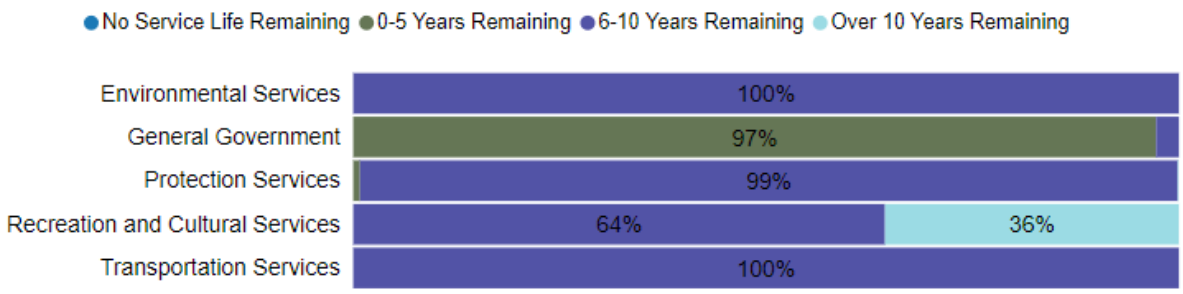
Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the municipality's current approach:

- Staff complete regular visual inspections of equipment to ensure they are in state of adequate repair
- There are no formal condition assessment programs in place, although some equipment was assigned cursory condition ratings for this AMP

4.4.3 Estimated Useful Life & Average Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Environmental Services	10 Years	29.5	6.8
General Government	5-10 Years	6.8	3.3
Protection Services	5-20 Years	14.0	7.1
Recreation & Cultural Services	10-25 Years	12.1	8.5
Transportation Services	10 Years	10.1	7.2
		12.4	**6.8**



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

4.4.4 Lifecycle Management Strategy

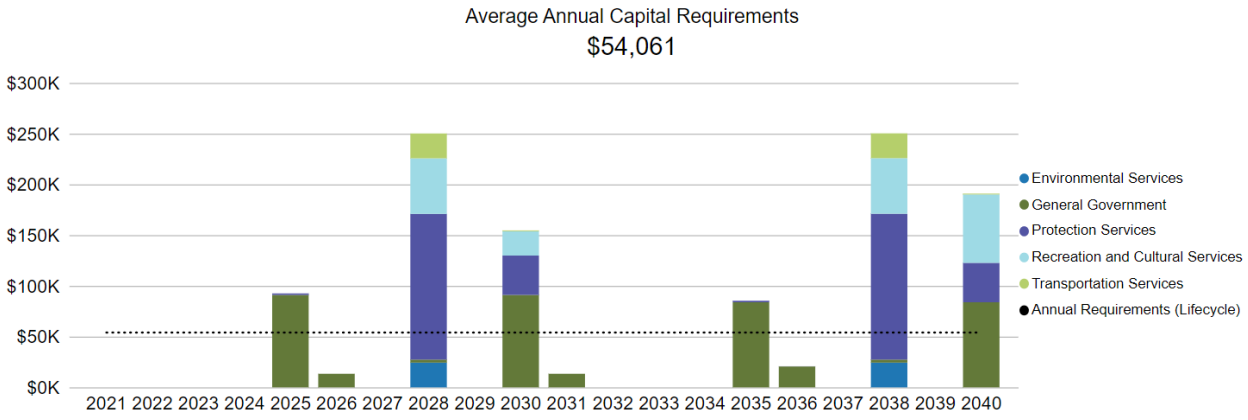
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance/ Rehabilitation	Regular inspections are completed by in-house staff while maintenance program varies by department
	Fire Protection Services equipment is inspected to meet Fire Code performance requirements
	Equipment is maintained according to manufacturer recommended actions and supplemented by the expertise of municipal staff
	Annual inspections of playground equipment are completed by third party consultants
Replacement	The replacement of 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 Municipality should allocate towards funding rehabilitation and replacement needs. 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 capital requirements.



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

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 2021 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

Risks to Current Asset Management Strategies

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

Aging Infrastructure

A significant portion of machinery and equipment assets are approaching the end of their useful life. As equipment age, they will not perform as efficiently and may lead to increased operating costs. Equipment with high usage, such as snowplows or lawn mow, exposes to the risk of deterioration acceleration. As the Municipality replaces the machinery and equipment with larger assets, there may be a risk of not meeting capacity or servicing requirements. There is currently no decision-making process in place to determine how to plan for structures that will require replacement or disposal.

Capital Funding Strategies

The replacement of equipment is mainly dependant on the availability of funding opportunities. When fundings are not available, equipment replacement may be deferred. This may lead to the risk of not meeting capacity or servicing requirements. An annual funding strategy and the dedicated reserve fund can reduce dependency on grant funding and help prevent deferral of capital works.

4.4.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Accessible & Reliable	Description of redundancies available to ensure equipment is available for operations	Three lawn mowers and two plows are available for the municipality to use. These redundant assets ensure service is reliable in the case of an asset failure.
Affordable	Description of the lifecycle activities (maintenance, rehabilitation and replacement) performed on equipment assets	See Lifecycle Section 4.4.4
Sustainable	Description of the current condition of equipment and the plans that are in place to maintain or improve the provided level of service	See Lifecycle Section 4.4.4

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Accessible & Reliable	% of Assets where Age > Useful Life (IT)	92%
Safe & Regulatory	# of equipment safety inspections per year completed for safety and protective equipment	100%
Affordable	O&M cost to maintain equipment	$31,641
	Annual Maintenance and Warranty Fees (IT)	$848
Sustainable	% of assets in poor or very poor condition	0%
	% of assets in good or very good condition	82%

4.4.7 Recommendations

Replacement Costs

- A number of replacement costs used for equipment were based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.
- The equipment inventory includes several pooled assets that should be broken into discrete segments to allow for detailed planning and analysis.

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

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

4.5 Vehicles

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

- Fire vehicles to provide emergency services
- pick-up trucks to support the maintenance of the transportation network and address service requests for Environmental Services and Parks & Recreation

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

Replacement Cost	Condition	Financial Capacity	
$1.4 million	Very Good (87%)	Annual Requirement:	$ 35,000

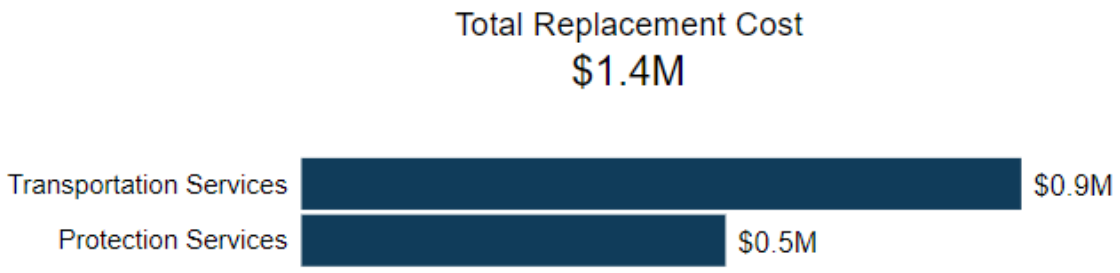
The following core values and level of service statements are a key driving force behind the Municipality's asset management planning:

Service Attribute	Level of Service Statement
Performance	The vehicles owned by the Township in good repair and are available for use during service hours. Fleet operations and services are managed cost-effectively with long-term plans in place for the renewal and replacement.

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 Municipality's Vehicles.

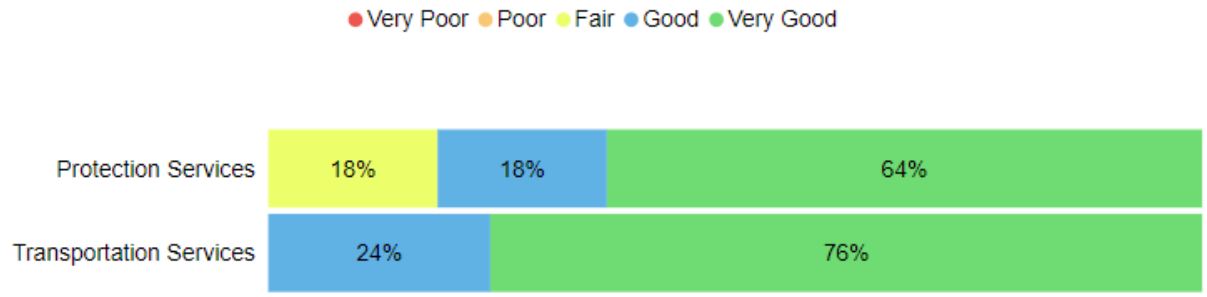
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Protection Services	4	User-Defined Cost	$522,544
Transportation Services	4	User-Defined Cost	$886,884
			$1,409,428



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
Protection Services	85%	Very Good	100% Assessed
Transportation Services	88%	Very Good	100% Assessed
	87%	**Very Good**	**100% Assessed**



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

Current Approach to Condition Assessment

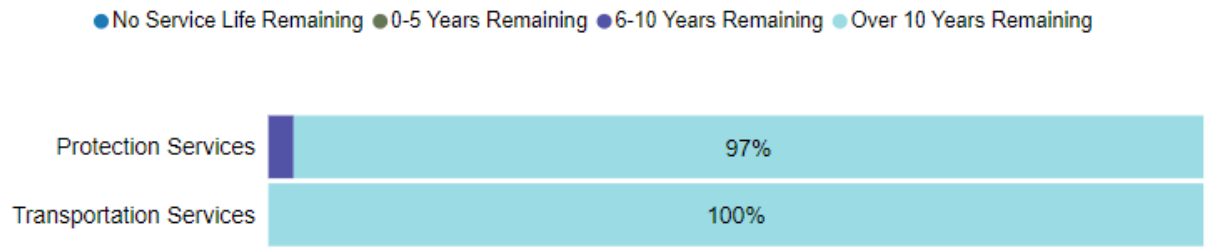
Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the municipality's current approach:

- Staff complete regular inspections of vehicles to ensure they are in state of adequate repair prior to operation
- Detailed inspections of vehicles are completed by dealers when they reach certain mileage
- The mileage of vehicles is used as a proxy to determine remaining useful life and relative vehicle condition except for the Fire Department
- Annual inspections for vehicles in Fire Department are completed by external certified mechanicians

4.5.3 Estimated Useful Life & Average Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Protection Services	10-25 Years	8.4	18.8
Transportation Services	15 Years	14.8	13.1
		11.3	**15.9**



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

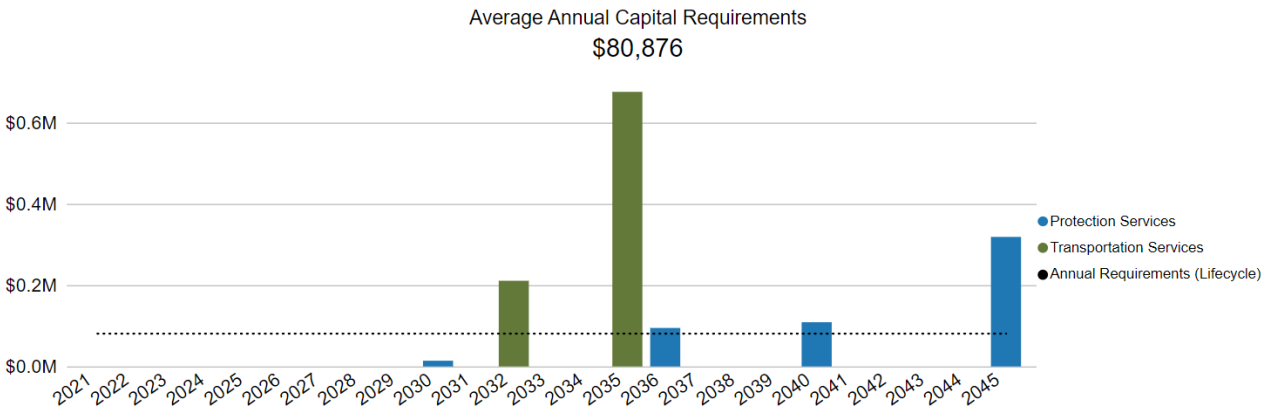
4.5.4 Lifecycle Management Strategy

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

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	Visual inspections completed and documented daily, and additional detailed inspections completed by by dealer when reach certain mileage
	Preventative maintenance activities include system components check or oil change are completed by in-house staff and additional detailed inspections are performed annually
	Fire Protection Services vehicles are subject to a much more rigorous inspections by external certified mechanians, however the maintenance are completed in-house
Replacement	The replacement of equipment depends on deficiencies identified by operators that may impact their ability to complete required tasks
	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 Municipality should allocate towards funding rehabilitation and replacement needs. 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 capital requirements.



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

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 2021 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

Risks to Current Asset Management Strategies

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

Aging Infrastructure & Funding Strategies

As vehicles age, they will require exponentially increasing O&M costs to ensure compliance with MTO standards and to function adequately. When one vehicle fails, there may be a risk of not meeting MMS requirements. As capital budgets become more constrained, more maintenance will be postponed, which will further amplify this risk. With current reactive replacement plan, the Municipality may need to spend extra funding for unexpected vehicle failures in terms of causing the deferral of projects for other assets. A proactive replacement plan and the annual capital funding strategy can reduce the deferral of replacement and improves long-term financial planning.

4.5.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Accessible & Reliable	List of vehicles that have an out of service due to repairs	0 vehicles
Safe & Regulatory	Description of the regulatory vehicle inspection process undertaken each year	MTO Annual vehicle Safety inspections
Affordable	Description of the lifecycle activities (maintenance, rehabilitation and replacement) performed on vehicles	See Lifecycle section 4.5.4
Sustainable	Description of the current condition of vehicles and the plans that are in place to maintain or improve the provided level of service	A long term plan is in place to replace equipment when funding is available. Usually each piece of equipment is scheduled to be replaced between 15-20 years

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Accessible & Reliable	Number of public works and fire vehicles	4 fire; 2 plow; 1 grader; 1 backhoe
Safe & Regulatory	% of regulated MTO maintenance inspections complete	0
	# of fleet vehicles involved in a collision per year	0
	# of vehicles safety inspections per year per vehicle	2
Affordable	O&M cost per vehicle	$9,893
Sustainable	% of fleet assets with less than 5 years remaining	0%
	% of fleet assets with 10 or more years remaining	13%

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.

Levels of Service

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

4.6 Land Improvements

The Municipality of Calvin owns a small number of assets that are considered Land Improvements. This category includes:

- Ball fields and playgrounds
- Fencing
- Miscellaneous landscaping and other assets

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

Replacement Cost	Condition	Financial Capacity	
$52,000	Good (74%)	Annual Requirement:	$ 3,000

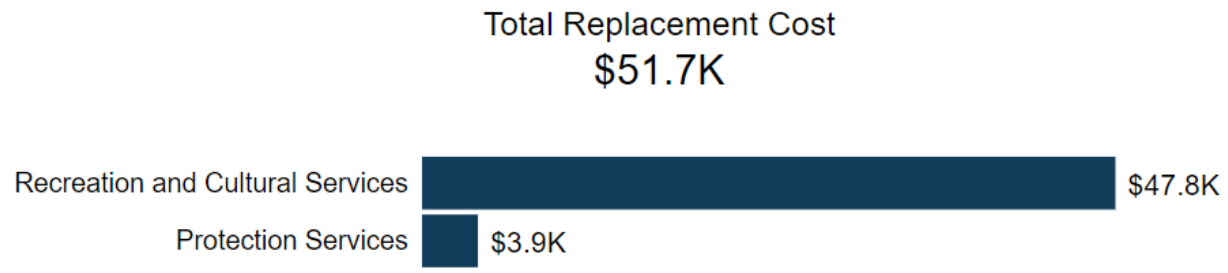
The following core values and level of service statements are a key driving force behind the Municipality's asset management planning:

Service Attribute	Level of Service Statement
Performance	Land improvements provide adequate physical access and are available for their defined use. Land improvements are managed cost-effectively with long-term plans in place for the renewal and replacement.

4.6.1 Asset Inventory & Replacement Cost

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

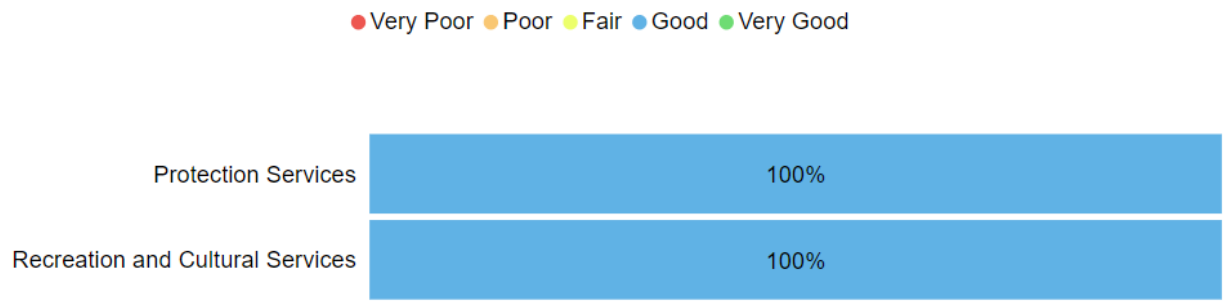
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Protection Services	1	CPI Tables	$3,857
Recreation & Cultural Services	6	User-Defined Cost	$47,835
Cemetery	1876 plots		
			$51,692



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
Protection Services	75%	Good	100% Assessed
Recreation & Cultural Services	74%	Good	100% Assessed
	74%	**Very Good**	**100% Assessed**



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

Current Approach to Condition Assessment

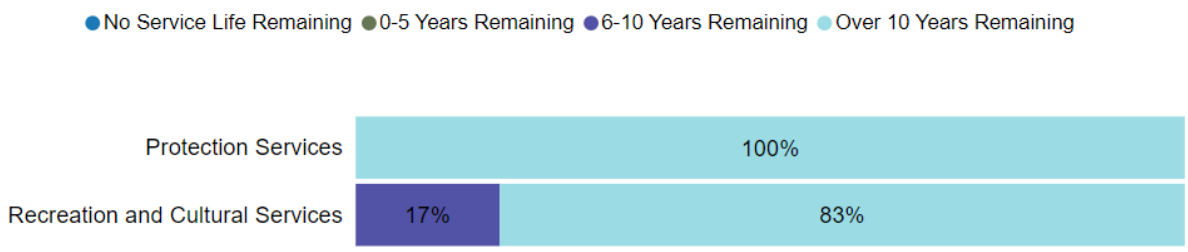
Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the municipality's current approach:

- There are no formal condition assessment programs in place for land improvements
- Staff complete regular visual inspections of land improvements assets to ensure they are in state of adequate repair. These inspections are on a weekly basis during summer seasons while the inspections during winter seasons maybe less than once per month.

4.6.3 Estimated Useful Life & Average Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Protection Services	25 Years	9.5	18.8
Recreation & Cultural Services	10-25 Years	18.7	15.4
		17.3	**15.9**



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

4.6.4 Lifecycle Management Strategy

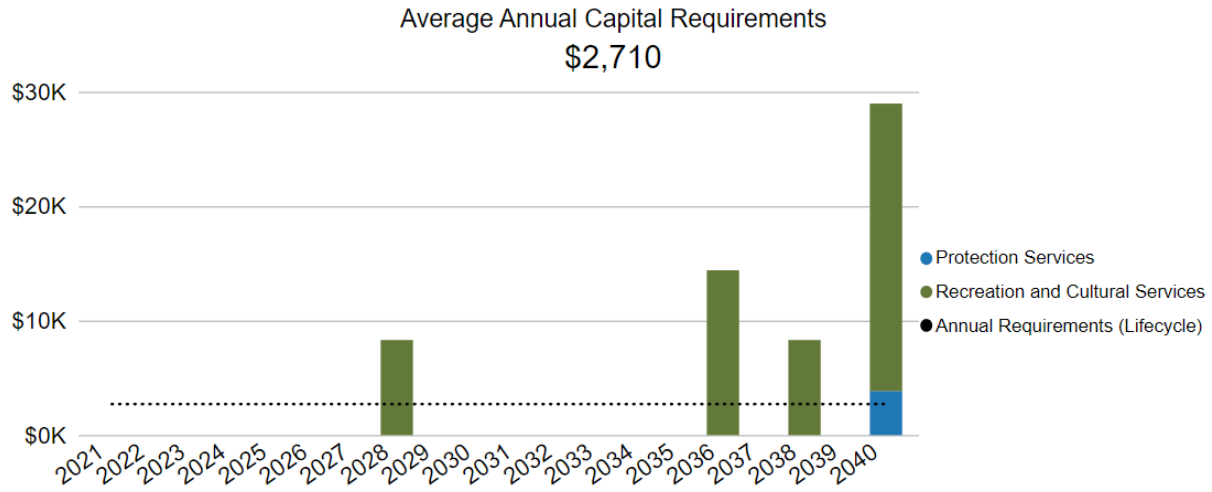
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

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

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. 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 capital requirements.



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

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 2021 inventory data. See Appendix C for the criteria used to determine the risk rating of each asset.

Risks to Current Asset Management Strategies

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

Changing Demographic & Capital Funding Strategies

As the Municipality continues to grow, new residents have higher expectations and different demands than original residents. Major capital rehabilitation projects for recreation services and park assets are entirely dependant on the availability of grant funding opportunities. When grants are not available, there may be a risk of not meeting community expectation or safety requirements. This may become critical over time if these assets are not managed proactively.

4.6.6 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 Municipality has selected for this AMP.

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Accessible & Reliable	Description of the lifecycle activities (maintenance, rehabilitation and replacement) performed on parks and cemeteries	See Lifecycle Section 4.6.4

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	# of parks and recreation features available	2
	Distance of furthest customer from the landfill	32 km
Affordable	O&M cost for the cemetery	$26,261
	O&M cost for the landfill	$108,837
Accessible & Reliable	% of land improvements in good or very good condition	100%
	% of land improvements in poor or very poor condition	0%

4.6.7 Recommendations

Asset Inventory

- Some replacement costs used for land improvements were based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.
- The land improvements inventory includes several pooled assets that should be broken into discrete segments to allow for detailed planning and analysis.

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

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

4.7 Landfill

The Landfill in Municipality of Calvin plays a critical role in maintaining the high quality of life and protecting the public health.

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

Replacement Cost	Condition	Financial Capacity	
$401,000	Poor (23%)	Annual Requirement:	$ 389

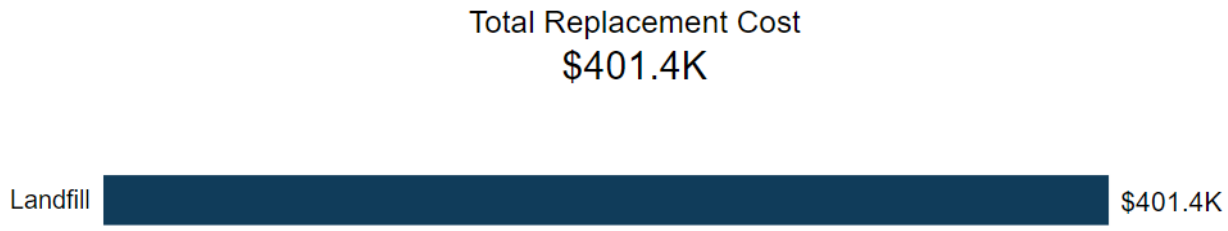
The following core values and level of service statements are a key driving force behind the Municipality's asset management planning:

Service Attribute	Level of Service Statement
Performance	Landfill provides adequate physical access and are available for their defined use. Landfill is managed cost-effectively with long-term plans in place for the renewal and replacement.

4.7.1 Asset Inventory & Replacement Cost

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

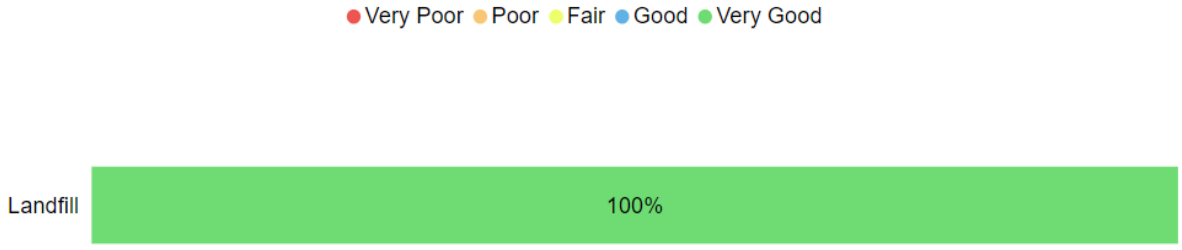
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Landfill	1	User-Defined Cost	$401,383
			$401,383



4.7.2 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
Landfill	97%	Very Good	100% Assessed
	97%	**Very Good**	**100% Assessed**



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

Current Approach to Condition Assessment

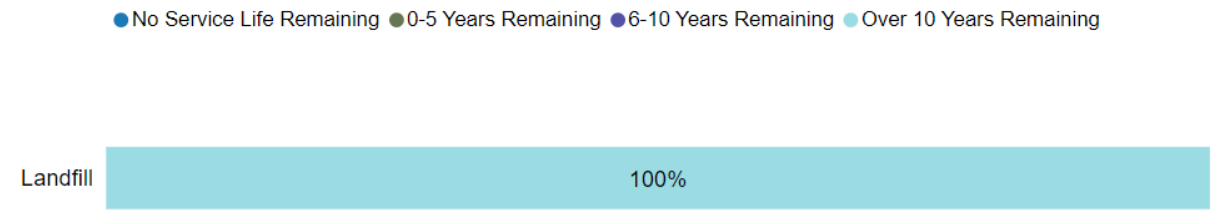
Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets more confidently. The following describes the municipality's current approach:

- There are no formal condition assessment programs in place for landfill
- Staff complete regular visual inspections of landfill assets to ensure they are in state of adequate repair.

4.7.3 Estimated Useful Life & Average Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Landfill	50 Years	11.5	48.4
		11.5	**48.4**



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

4.7.4 Lifecycle Management Strategy

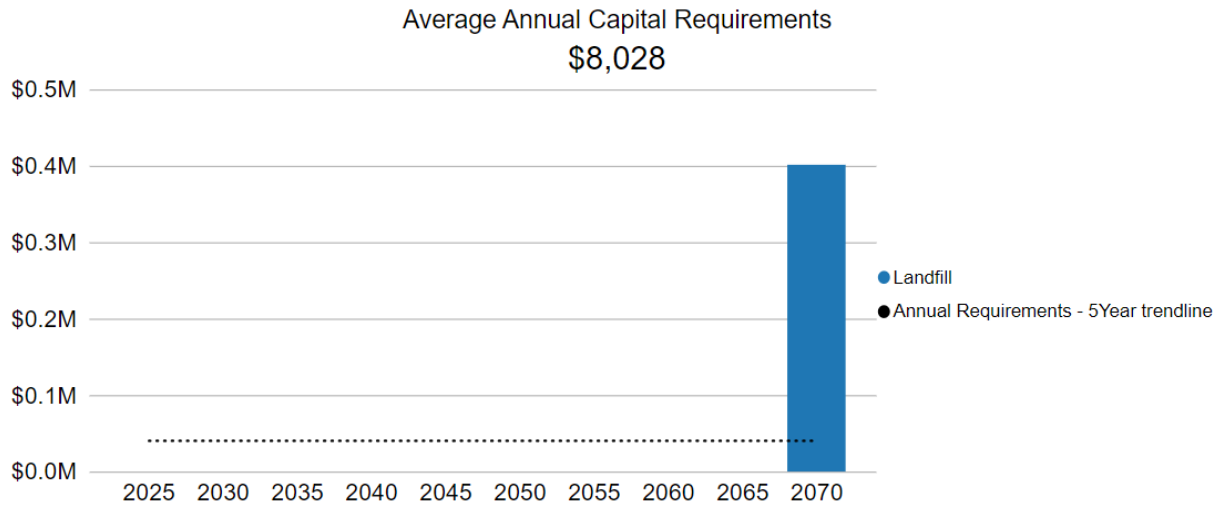
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenanace, Rehabilitation & Replacement	The Landfill contains facility, equipment, machinery and land assets. These are inspected and maintained annually by internal staff

Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. 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 capital requirements.



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

4.7.5 Risk & Criticality

Risk Matrix

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

Risks to Current Asset Management Strategies

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

Changing Demographic & Capital Funding Strategies

As the Municipality continues to grow, new residents have higher expectations and different demands than original residents. Major capital rehabilitation projects for landfill are entirely dependant on the availability of grant funding opportunities. When grants are not available, there may be a risk of not meeting community expectation or safety requirements. This may become critical over time if these assets are not managed proactively.

4.7.6 Levels of Service

Land Improvements are considered a non-core asset category. The following table outlines the qualitative descriptions that determine the community levels of service provided by Landfill.

Service Attribute	Qualitative Description	Current LOS (2021)
Safe & Regulatory	Description of the lifecycle activities (maintenance, rehabilitation and replacement) performed on landfill	See Lifecycle Section 4.7.4
Sustainable	Landfill is managed cost-effectively with long-term plans in place to meet the established level of service	See Lifecycle Section 4.7.4

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Accessible & Reliable	% of assets in poor or very poor condition	0%
	% of assets in good or very good condition	100%

4.7.7 Recommendations

Asset Inventory

- The landfill inventory is a pooled asset that should be broken into discrete segments to allow for detailed planning and analysis.

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

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

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

5 Impacts of Growth

Key Insights

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

- The population and employment are expected to remain relatively constant

- 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 Municipality to more effectively plan for new infrastructure, and the upgrade or disposal of existing infrastructure. Increases or decreases in demand can affect what assets are needed and what level of service meets the needs of the community.

5.1.1 Calvin Official Plan (February 2021)

The East Nipissing Official Plan by By-lay No.2021-005 has been adopted by the Council of The Corporation of the Municipality of Calvin as of February 10th, 2021. The East Nipissing Official Plan is prepared by East Nipissing Planning Board to be recommended for adoption by the member municipalities of the East Nipissing Planning Area including the Municipality of Calvin.

The official plan is a planning document that guides the future development by establishing policies and principles as well as applying land use designations. It is developed based on four key components: environmental stewardship, community development, resource management and community heath and safety. The planning horizon for the plan spans 25 years, covering it from 2021 to 2046.

The Municipality focuses on developing a healthy and resilient community by leveraging its unique historical, cultural, economic, rural amenities and natural resources. According to the Plan, the Municipality will maintain the rural character of the planning area where low density residential development will prevail intermixed with resource-based activities, resource-based recreational uses and other rural land uses.

The population of the Municipality is projected to remain relatively constant over the life of this Official Plan. However, the number of dwellings of the East Nipissing Planning Area is projected to increase with respect to the growth in 2006 to 2016.

The following table outlines population, private dwellings and employment changes to the Municipality between 2011-2021 from Statistics Canada, for which the Municipality will be required to provide services.

Year	Population	Private Dwellings	Employment
2011	568	251	N/A
2016	516	251	115
2021	557	263	235

5.2 Impact of Growth on Lifecycle Activities

By July 1, 2025, the Municipality'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.

Even though the population is projected to be stable, the Municipality will ensure the housing, waste management, roadways and utilities are planned and developed to provide for the growth targets outlined in the Official Plan. According to the Plan, new housing starts have ranged from 7-11 per year (2011-2015) for the East Nipissing area based on Municipal building permit records. The land supply for housing in the East Nipissing area remains constant at about 150 rural residential building lots ranging from 0.4 ha – 2 ha. The Municipality encourages development with individual on-site water or sewage services. Stormwater management facilities will be planned and constructed to minimize and prevent contamination, minimize damages to natural resources and reduce erosion. Current waste management facility for Calvin is adequate for the life-span of the Plan and the Municipality will continue to maintain it. As growth-related assets are constructed or acquired, they should be integrated into the Municipality'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 Municipality 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 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.

Road Network

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Gravel Roads	$0	$0	$0	$0	$0	$0	$0	$0	$7,056,413	$0	$2,621,795
Surface Treated Roads	$0	$0	$0	$0	$0	$0	$0	$245,248	$0	$0	$0
	$0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$245,248**	**$7,056,413**	**$0**	**$2,621,795**

Bridges

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Bridges	$0	$63,000	$366,000	$86,500	$39,000	$0	$0	$0	$0	$0	$0
	$0	**$63,000**	**$366,000**	**$86,500**	**$39,000**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Buildings

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
General Government	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Protection Services	$0	$0	$0	$0	$0	$0	$0	$0	$16,793	$0	$0
Recreation & Cultural Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Transportation Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$16,793**	**$0**	**$0**

Equipment											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Environmental Services	$0	$0	$0	$0	$0	$0	$0	$0	$24,408	$0	$0
General Government	$0	$0	$0	$0	$0	$91,109	$13,415	$0	$2,968	$0	$91,109
Protection Services	$0	$0	$0	$0	$0	$1,500	$0	$0	$143,662	$0	$38,841
Recreation & Cultural Services	$0	$0	$0	$0	$0	$0	$0	$0	$54,756	$0	$23,931
Transportation Services	$0	$0	$0	$0	$0	$0	$0	$0	$24,461	$0	$820
	$0	**$0**	**$0**	**$0**	**$0**	**$92,609**	**$13,415**	**$0**	**$250,255**	**$0**	**$154,701**

Vehicles											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Protection Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$14,152
Transportation Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$14,152**

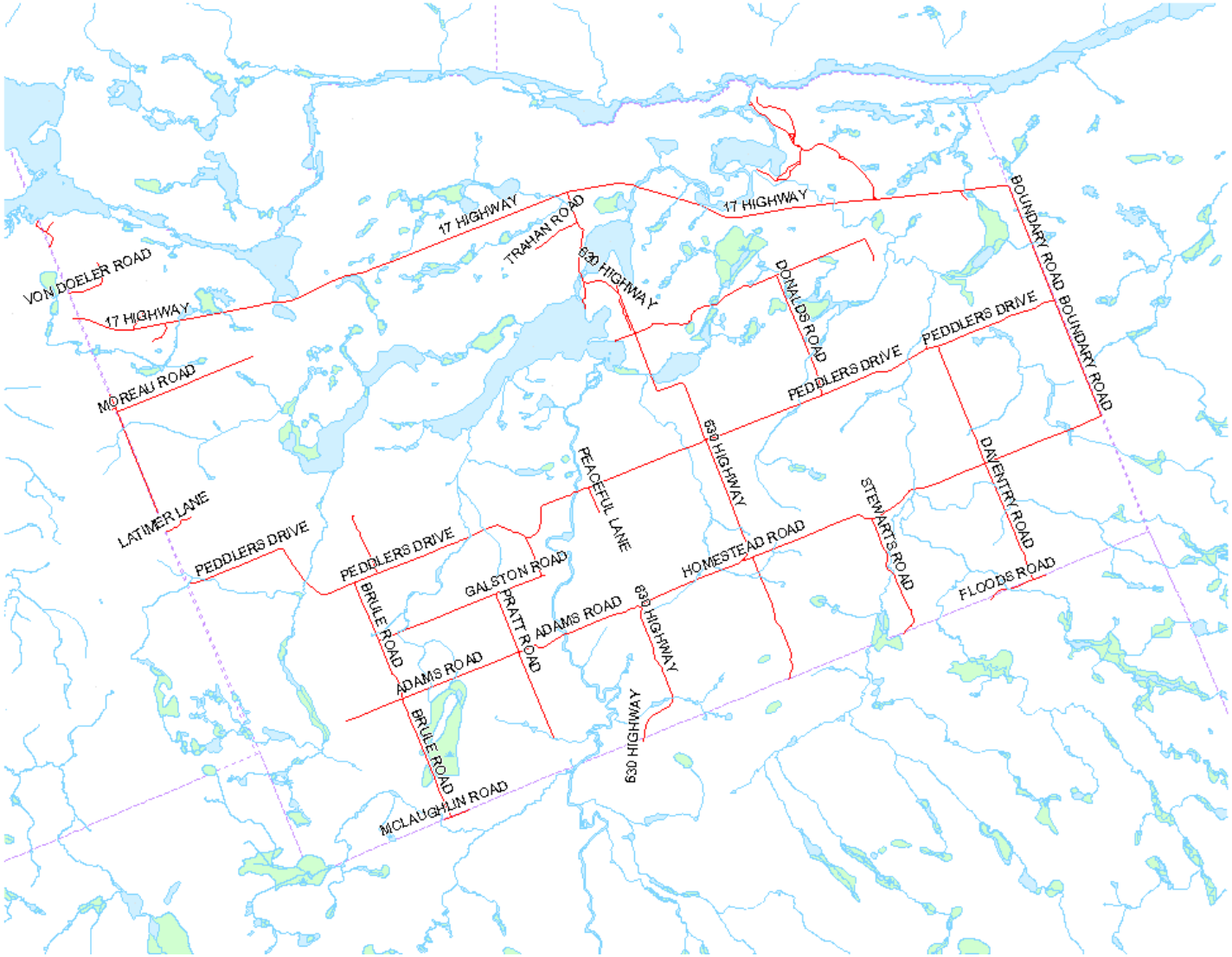
Land Improvements											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Protection Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Recreation and Cultural Services	$0	$0	$0	$0	$0	$0	$0	$0	$8,311	$0	$0
	$0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$8,311**	**$0**	**$0**

Landfill											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Landfill	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

All Asset Categories											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Road Network	$0	$0	$0	$0	$0	$0	$0	$245,248	$7,056,413	$0	$2,621,795
Bridges	$0	$63,000	$366,000	$86,500	$39,000	$0	$0	$0	$0	$0	$0
Buildings	$0	$0	$0	$0	$0	$0	$0	$0	$16,793	$0	$0
Equipment	$0	$0	$0	$0	$0	$92,609	$13,415	$0	$250,255	$0	$154,701
Vehicles	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$14,152
Land Improvements	$0	$0	$0	$0	$0	$0	$0	$0	$8,311	$0	$0
Landfill	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$0	**$63,000**	**$366,000**	**$86,500**	**$39,000**	**$92,609**	**$13,415**	**$245,248**	**$7,331,772**	**$0**	**$2,790,648**

Appendix B: Level of Service Maps

Road Map



Road Network by Class

Images of Bridge in Good Condition

Hackenbroke Bridge

Inspected: August 6th, 2020

Photo 1: West approach from centre of structure

Photo 2: North Elevation

Photo 3: Culvert barrel soffit

Photo 4: SW retaining wall is leaning towards stream

Photo 5: Tire rutting noted on east approach wearing surface

Photo 6: West abutment wall

Images of Bridge in Fair Condition

Stewarts Bridge

Inspected: August 6th, 2020

Photo 1: Structure from south approach

Photo 2: East Elevation

Photo 3: Deck wearing surface

Photo 4: Splits, checks and rot on NW timber curb

Photo 5: Weathering on timber girders

Photo 6: Moderate scaling noted on NW wingwall

Appendix C: Risk Rating Criteria

Probability of Failure

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Road Network (Roads) Buildings Equipment Vehicles Land Improvements	Condition	100%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
Bridges & Culverts	Condition	70%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
	Material	30%	Steel	1
			Concrete	2
			Wood	4

Consequence of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Road Network (Roads)	Economic (40%)	Surface Material (100%)	Gravel	1
			Hard Surface	4
	Operational (30%)	Road Class (100%)	Class 6	1
			Class 5	2
			Class 4	3
	Social (30%)	Truck Route (70%)	No	1
			Yes	5
		Average Annual Daily Traffic (AADT) (30%)	0-49	1
			50-199	5
Bridges	Economic (70%)	Replacement Cost (100%)	$0-$200,000	1
			$200,000-$500,000	2
			$500,000-$1,000,000	3
			$1,000,000-$2,000,000	4
			$2,000,000+	5
	Social (30%)	No. of Lanes (40%)	2	2
			4	4
		Road Class (60%)	Local	2
			Aterial	5
Buildings Land Improvements	Economic (100%)	Replacement Cost (100%)	$0-$10,000	1
			$10,000-$50,000	2
			$50,000-$200,000	3
			$200,000-$1,000,000	4
			$1,000,000+	5

Equipment	Economic	80%	$0-$10,000	1
			$10,000-$50,000	2
			$50,000-$200,000	3
			$200,000-$1,000,000	4
			$1,000,000+	5
	Health and Safety	20%	Environmental Services General Government	2
			Recreation and Cultural Services	3
			Transportation Services	4
			Protection Services	5
Vehicles	Economic	80%	$0-$10,000	1
			$10,000-$50,000	2
			$50,000-$200,000	3
			$200,000-$1,000,000	4
			$1,000,000+	5
	Health and Safety	20%	General Government	2
			Protection Services	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 Municipality'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 Municipality's risk management and financial strategies. Assessed condition is a key variable in the determination of an asset's probability of failure. With a strong understanding of the probability of failure across the entire asset portfolio, the Municipality can develop strategies to mitigate both the probability and consequences of asset failure and service disruption. Furthermore, with condition-based determinations of future capital expenditures, the Municipality can develop long-term financial strategies with higher accuracy and reliability.

Guidelines for Condition Assessment

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

Condition assessments must include a quantitative or qualitative assessment of the current condition of the asset, collected according to specified condition rating criteria, in a format that can be used for asset management decision-making. As a result, it is important that staff 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 Municipality to complete condition assessments. In some cases, external consultants may need to be engaged to complete detailed technical assessments of infrastructure. In other cases, internal staff may have sufficient expertise or training to complete condition assessments.

Developing a Condition Assessment Schedule

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

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