Asset Management Plan

Township of North Algona Wilberforce

2024

This Asset Management Plan was prepared by:

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

Key Statistics

Replacement cost of asset portfolio

$72.3 million

Replacement cost of infrastructure per household

$41,148 (2021)

Percentage of assets in fair or better condition

27%

Percentage of assets with assessed condition data

97%

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Executive Summary

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

Scope

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

This AMP include the following asset categories:

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

Findings

The overall replacement cost of the asset categories included in this AMP totals $72.8 million. 27% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 97% of assets. For the remaining 3% of assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.
The development of a long-term, sustainable financial plan requires an analysis of whole lifecycle costs. This AMP uses a combination of proactive lifecycle strategies and replacement only strategies to determine the lowest cost option to maintain the current level of service.

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Township's average annual capital requirement totals $2.3 million.

Recommendations

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

Review Data for Dataset Accuracy

- Regularly update and maintain a comprehensive and accurate dataset to support all planning and operational activities.

Develop a Condition Assessment Strategy

- Create and implement a condition assessment strategy with a regular schedule to monitor the health and functionality of infrastructure components.

Review and Update Lifecycle Management Strategies

- Continuously evaluate and refine lifecycle management strategies to optimize the longevity and performance of infrastructure assets.

Develop and Regularly Review Capital Plans

- Formulate both short-term and long-term plans to meet capital requirements, ensuring these plans are reviewed and adjusted on a regular basis.

Assess and Update Service Levels

- Continuously measure current levels of service and determine sustainable targets for proposed levels of service to meet user and regulatory demands.

Analyze Current Funds

- Analyze the current funding levels to estimate the infrastructure funding gap, enabling a clear view of financial needs.

Design a Financial Strategy to Close the Gap

- Develop a strategic financial plan aimed at bridging the infrastructure funding gap, incorporating potential funding sources, investment strategies, and cost-saving measures.

1 Introduction & Context

Key Insights

- The Township’s road network assets comprise of 86% of the municipality's infrastructure, making their maintenance and improvement a top priority to ensure the efficient movement of people, goods, and services within 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 Township’s asset management policy provides clear direction to staff on their roles and responsibilities regarding asset management
- An asset management plan is a living document that should be updated regularly to inform long-term planning
- Ontario Regulation 588/17 outlines several key milestone and requirements for asset management plans in Ontario between July 1, 2019 and 2025

North Algona Wilberforce Community Profile

Census Characteristic	Municipality of St. North Algona Wilberforce	Ontario
Population 2021	3,111	14,223,942
Population Change 2016-2021	6.7%	5.8%
Total Private Dwellings	1,757	5,929,250
Population Density	8.4/km^2	15.9/km^2
Land Area	369.23 km^2	892,411.76 km^2

The Township of North Algona Wilberforce is located 146 kilometres west of Ottawa. The Township is surrounded by several small lakes and rivers, with the Algonquin Provincial Park located nearby.

North Algona Wilberforce was formed in 1999 when North Algona and Wilberforce townships were amalgamated. North Algona Wilberforce is a township situated in Renfrew County and includes several smaller communities and settlements such as Golden Lake, Tramore, and Lake Dore.

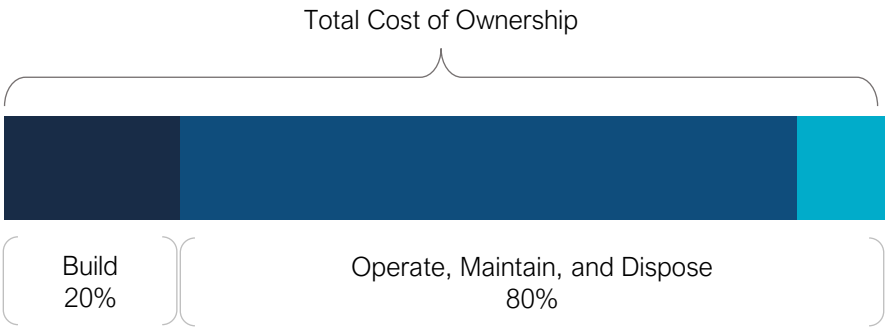
North Algona Wilberforce is known as a rural community known for its landscapes, forests and numerous lakes. Various recreational activities such as boating, fishing, hiking, and snowmobiling are offered which makes it an attractive location for both residents and tourists. The Township's proximity to larger urban centers and accessibility to transportation routes may influence the demand within the region as people seek a balance between the rural lifestyle and convenient access to urban amenities. The Township’s economy is primarily based on agriculture, forestry, and tourism.

The road network represents 86% of the Township's infrastructure, but most paved roads are in very poor to poor condition due to age, and frequent freeze-thaw cycles, with severe rutting, cracks, and potholes. Prioritizing road maintenance and improvements will be essential to ensure safe and efficient transportation and preserve the well-being of residents and the flow of goods and services.

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 a broader asset management program. The industry-standard approach and sequence to developing a practical asset management program begins with a Strategic Plan, followed by an Asset Management Policy and an Asset Management Strategy, concluding with an Asset Management Plan.

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

1.1.1 Asset Management Policy

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

The Township developed its Asset Management Policy in 2022, in accordance with Ontario Regulation 588/17.

The objectives of the policy include:

- Fiscal Responsibilities
- Delivery of Services/Programs
- Developing and Maintaining an Asset Inventory Database
- Risk/Impact Mitigation

1.1.2 Asset Management Strategy

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

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

1.1.3 Asset Management Plan

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

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

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

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.

1.1.4 Lifecycle Management Strategies

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

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

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

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

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

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

1.1.5 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.

1.1.6 Levels of Service

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

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

Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories (roads, bridges and culverts, water, wastewater, stormwater) the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in

this AMP. For non-core asset categories, the Township has determined the qualitative descriptions that will be used to determine the community level of service provided. These descriptions can be found in the Levels of Service subsection within each asset category.

Technical Levels of Service

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

For core asset categories (roads, bridges and culverts, water, wastewater, stormwater) the Province, through O. Reg. 588/17, has provided technical metrics that are required to be included in this AMP. For non-core asset categories, the Township has determined the technical metrics that will be used to determine the technical level of service provided. These metrics can be found in the Levels of Service subsection within each asset category.

Current and Proposed Levels of Service

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

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

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.

1.1.7 North Algona Wilberforce Climate Profile

The Township of North Algona Wilberforce is located in Southeastern Ontario along the shore of Bonnechere River and east of Golden Lake. The Township is expected to experience notable effects of climate change which include higher average annual temperatures, an increase in total annual precipitation, and an increase in the frequency and severity of extreme events. According to Climatedata.ca – a collaboration supported by Environment and Climate Change Canada (ECCC) – the Township of North Algona Wilberforce may experience the following trends:

Higher Average Annual Temperature:

1. Between the years 1971 and 2000 the annual average temperature was 4.9 ºC
2. Under a high emissions scenario, the annual average temperatures are projected to increase by 2.8 ºC by the year 2050 and over 6.7 ºC by the end of the century.

Increase in Total Annual Precipitation:

3. Under a high emissions scenario, North Algona Wilberforce is projected to experience a 13% increase in precipitation by the year 2050 and an 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.

1.1.8 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.

Ontario Regulation 588/17

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

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

2019

Strategic Asset Management Policy

2022

Asset Management Plan for Core Assets with the following components:

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

2024

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

2025

Asset Management 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

Asset Management Policy Update

1.1.9 O. Reg. 588/17 Compliance Review

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

Requirement	O. Reg. Section	AMP Section Reference	Status
Summary of assets in each category	S.5(2), 3(i)	Asset Inventory and Cost	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	Asset Inventory and Cost	Complete
Average age of assets in each category	S.5(2), 3(iii)	Asset Condition and Age	Complete
Condition of assets in each category	S.5(2), 3(iv)	Asset Condition and Age	Complete
Description of municipality's approach to assessing the condition of assets in each category	S.5(2), 3(v)	Current Approach to Condition Assessment	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	Levels of Service	Complete
Current performance measures in each category	S.5(2), 2	Levels of Service	Complete
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	Lifecycle Management Strategy	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)	Impacts of Growth	Complete

2 Scope and Methodology

Key Insights

- This asset management plan includes 5 asset categories which are tax-funded
- 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

Asset Categories Included in this AMP

This asset management plan for the Township of North Algona Wilberforce is produced in compliance with Ontario Regulation 588/17. The July 2024 deadline under the regulation—the second of three AMPs—requires analysis of core and non-core assets (road network, stormwater network, buildings, vehicles, and machinery & equipment).

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

Asset Category	Source of Funding
Road Network	Tax Levy
Stormwater Network	
Buildings	
Vehicles	
Machinery & Equipment	

Deriving Replacement Costs

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

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

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

Estimated Useful Life and Service Life Remaining

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

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

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

Reinvestment Rate

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

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

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

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

Deriving Asset Condition

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

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

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

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

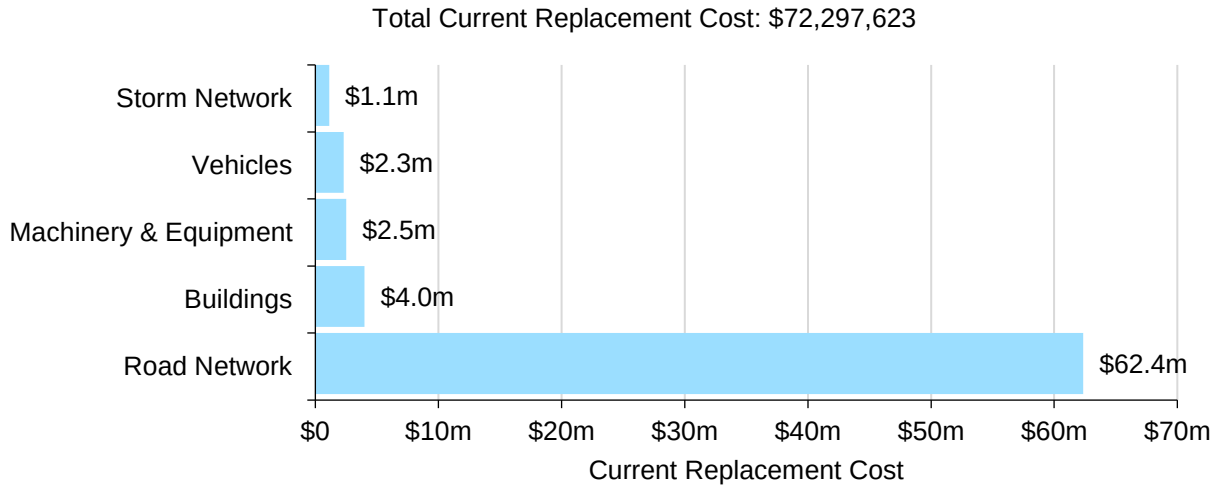
3 Portfolio Overview

Key Insights

- The total replacement cost of the Township’s asset portfolio is $72.3 million
- 27% of all assets are in fair or better condition
- Average annual capital requirements total $2.3 million per year across all assets

Total Replacement Cost of Asset Portfolio

The asset categories analysed in this AMP have a total replacement cost of $72.3 million based on inventory data from 2022. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.

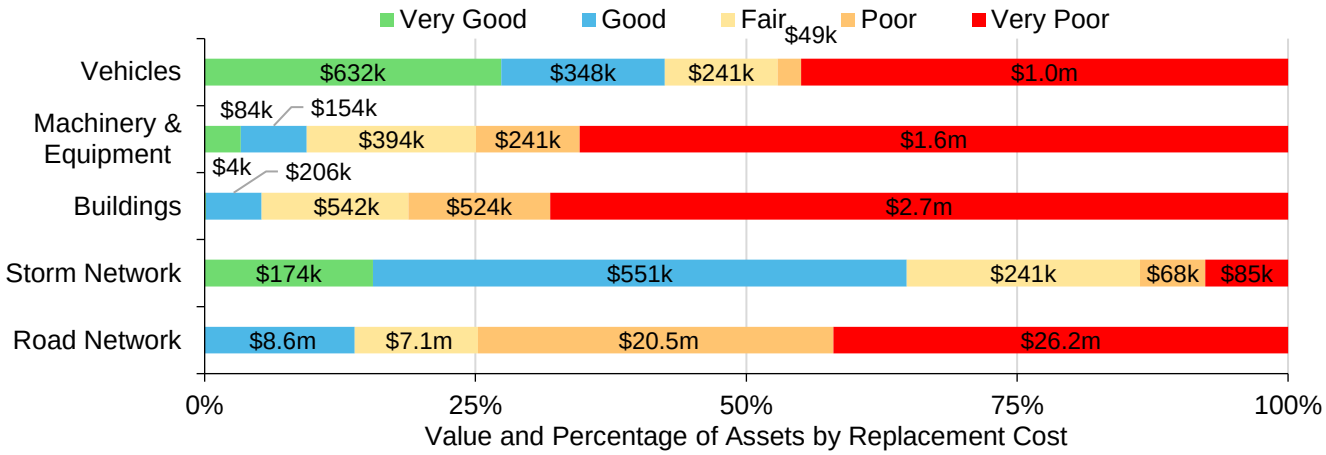


The following table identifies the methods employed to determine replacement costs across each asset category:

Asset Category	Replacement Cost Method	
	User-Defined	Notes
Road Network	100%	All Road Network assets are user-defined
Stormwater Network	100%	All Stormwater Network assets are user-defined
Buildings	0%	N/A
Machinery & Equipment	1.3%	Dry hydrants are partially user-defined
Vehicles	0%	N/A
Overall	**89.5%**	

Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 27% of assets in North Algona Wilberforce are in fair or better condition. This estimate relies on both age-based and field condition data.



This AMP relies on assessed condition data for 97% of assets; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data used throughout this AMP.

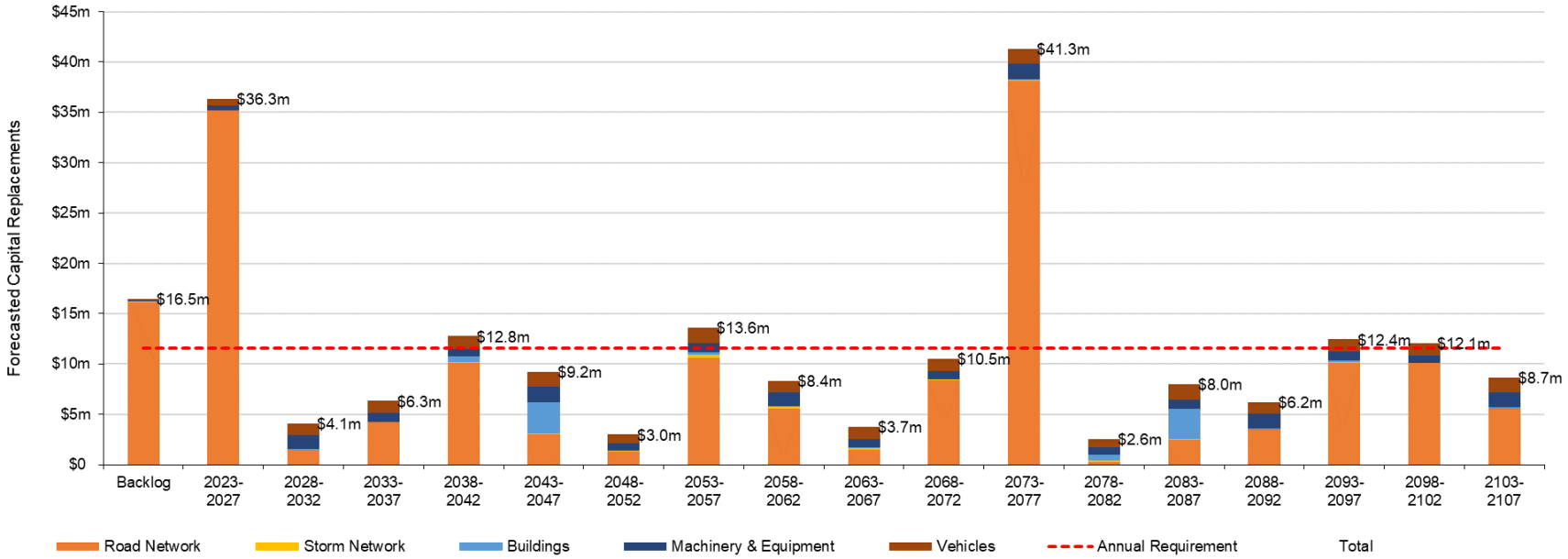
Asset Category	Asset Segment	% of Assets with Assessed Condition	Source of Condition Data
Road Network	All	100%	Staff Assessments
Stormwater Network	All	0%	N/A
Buildings & Facilities	All	100%	Staff Assessments
Machinery & Equipment	All	94%	Staff Assessments
Vehicles	All	71%	Staff Assessments

Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 76% of the Township's assets will require replacement or rehabilitation within the next 10 years. Capital requirements over the next 10 years are identified in Appendix A.

Forecasted Capital Requirements

The development of a long-term capital forecast should include both asset rehabilitation and replacement requirements. With the development of asset-specific lifecycle strategies that include the timing and cost of future capital events, the Township can produce an accurate long-term capital forecast. The following graph identifies capital requirements over the next 85 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.



4 Road Network

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

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

Replacement Cost	Condition	Financial Capacity	
$62.4 million	Poor (24%)	Annual Requirement:	$1.8 million

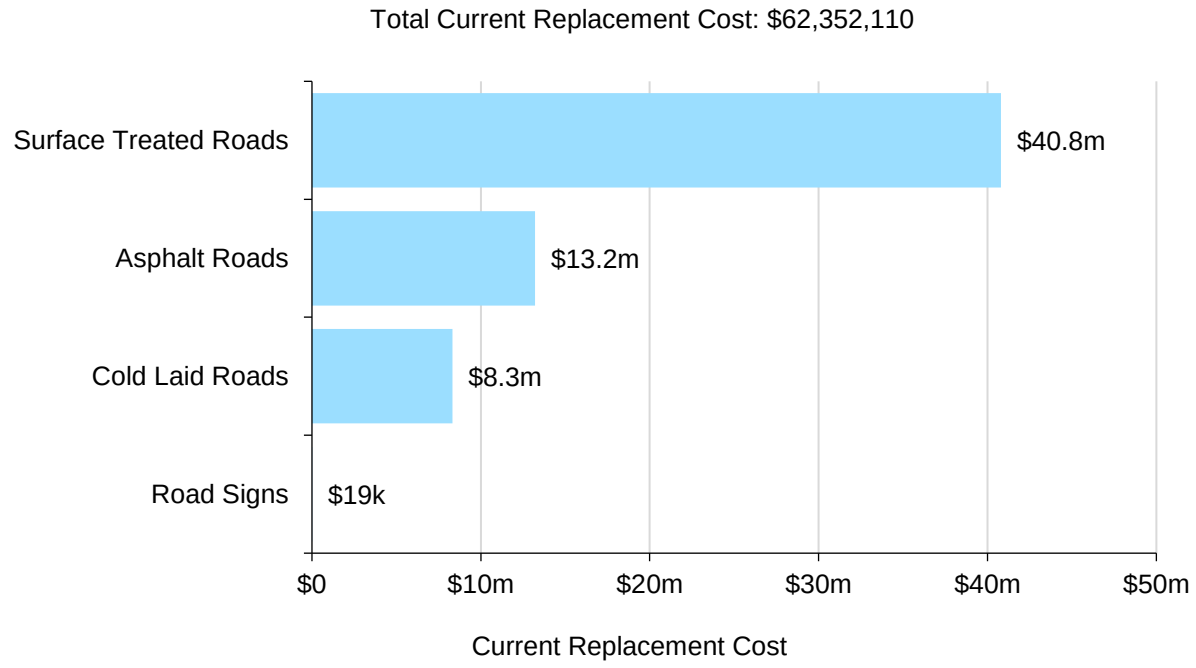
The following core values and level of service statements are a key driving force behind the Township's asset management planning:

Service Attribute	Level of Service Statement
Accessibility	The road network service is conveniently accessible to the whole community in sufficient capacity (meets traffic demands) and is available under all weather conditions.
Safety and Regulatory Compliance	All roads meet the minimum maintenance standards set by the province (MMS) with the exception of weather events and staffing capacity.
Sustainability	The road network is in good condition with minimal unplanned service interruptions and road closures.

Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Asphalt Roads	19,380 m	$13,217,000	$228,000
Cold Laid Roads	12,600 m	$8,316,000	$184,000
Road Signs	500	$19,000	$1,000
Surface Treated Roads	76,120 m	$40,800,000	$1,350,000
Total		**$62,352,000**	**$1,763,000**



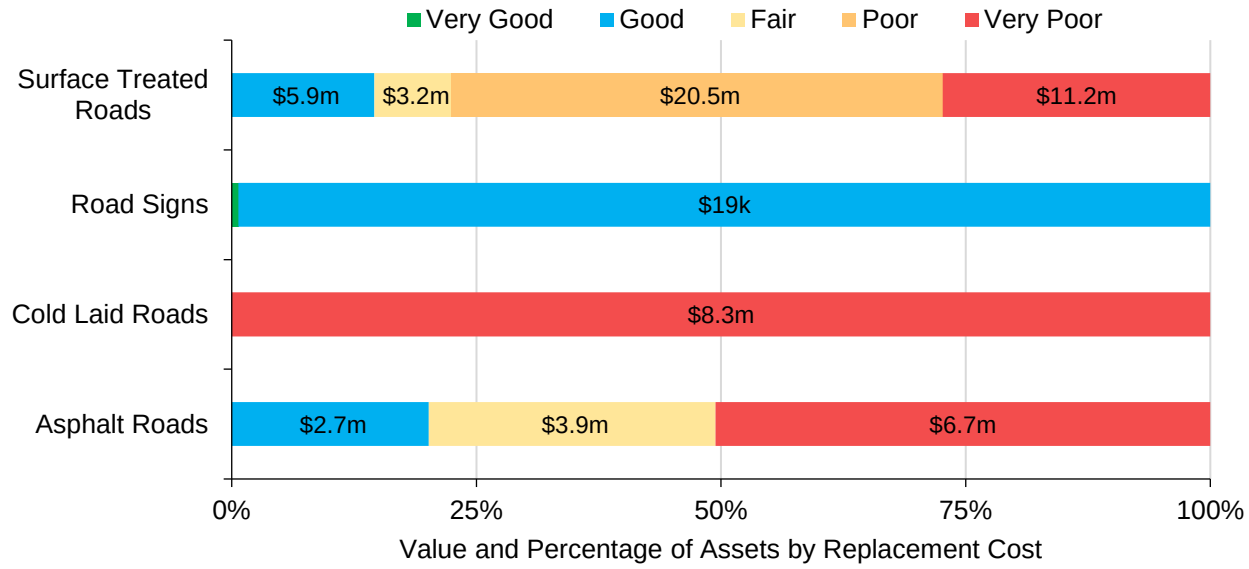
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Asphalt Roads	30	20	29% (Poor)
Cold Laid Roads	30	31.2	5% (Very Poor)
Road Signs	25	15.8	65% (Good)
Surface Treated Roads	20	15.8	26% (Poor)
Average			**24% (Poor)**

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



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

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

4.1.1 Current Approach to Condition Assessment

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

- Municipal staff perform formal visual inspections to evaluate the overall condition of road assets and identify any existing defects or issues on a weekly basis. Informal inspections are completed in the winter three times per week
- External staff assessments are completed on a 5-year cycle, providing a comprehensive condition assessment and a prioritization plan to identify which roads require rehabilitation or replacement. Within 15 years, there have been 3 external assessments.

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

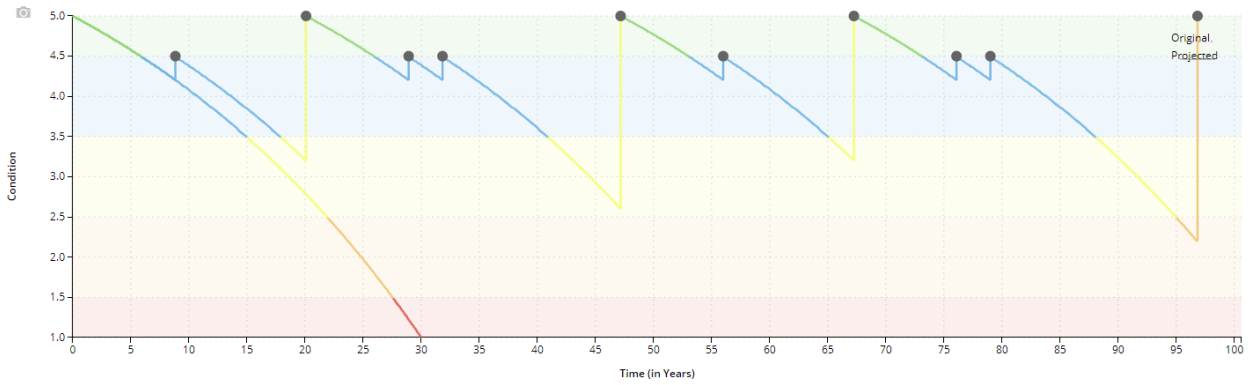
Condition	Rating
Very Good	5
Good	4
Fair	3
Poor	2
Very Poor	1

Lifecycle Management Strategy

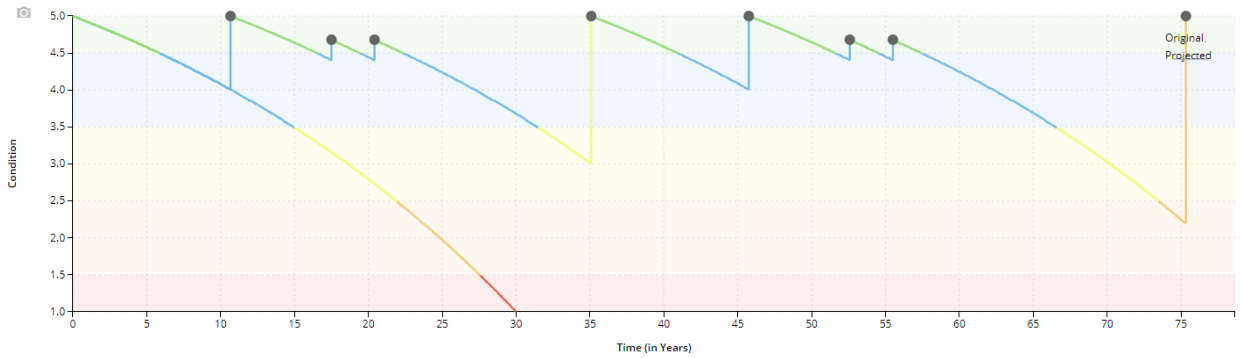
The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment.

The following lifecycle strategies have been developed as a proactive approach to managing the lifecycle of Asphalt Roads (HCB), Cold Laid Roads (CLB), and 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.

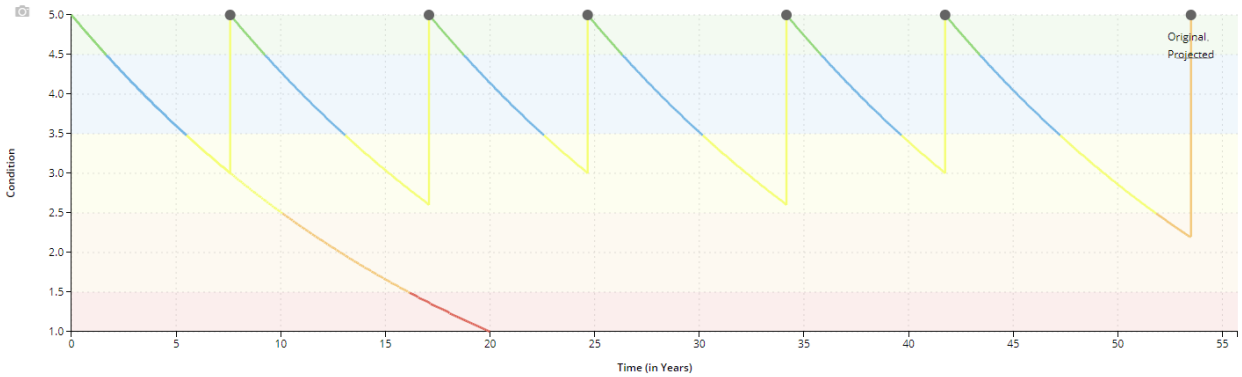
Asphalt Roads (HCB)		
Event Name	**Event Class**	**Event Trigger**
Rejuvenating Oil	Maintenance	At 4.2 – 5 condition rating
Route and Seal	Maintenance	At 4.2 – 5 condition rating
Resurfacing	Rehabilitation	At 3.2 – 5 condition rating
Partial Depth Reconstruction	Rehabilitation	At 2.6 – 5 condition rating
Asset Replacement	Replacement	At 2.2 – 5 condition rating



Cold Laid Roads (CLB)		
Event Name	**Event Class**	**Event Trigger**
Rejuvenating Oil	Maintenance	At 4.4 – 5 condition rating
Route and Seal	Maintenance	At 4.4 – 5 condition rating
Resurfacing	Rehabilitation	At 4 – 5 condition rating
Partial Depth Reconstruction	Rehabilitation	At 3 – 5 condition rating
Asset Replacement	Replacement	At 2.2 – 5 condition rating



Surface Treated Roads		
Event Name	**Event Class**	**Event Trigger**
Resurfacing	Rehabilitation	At 3 – 5 condition rating
Partial Depth Reconstruction	Rehabilitation	At 2.6 – 5 condition rating
Asset Replacement	Replacement	At 2.2 – 5 condition rating



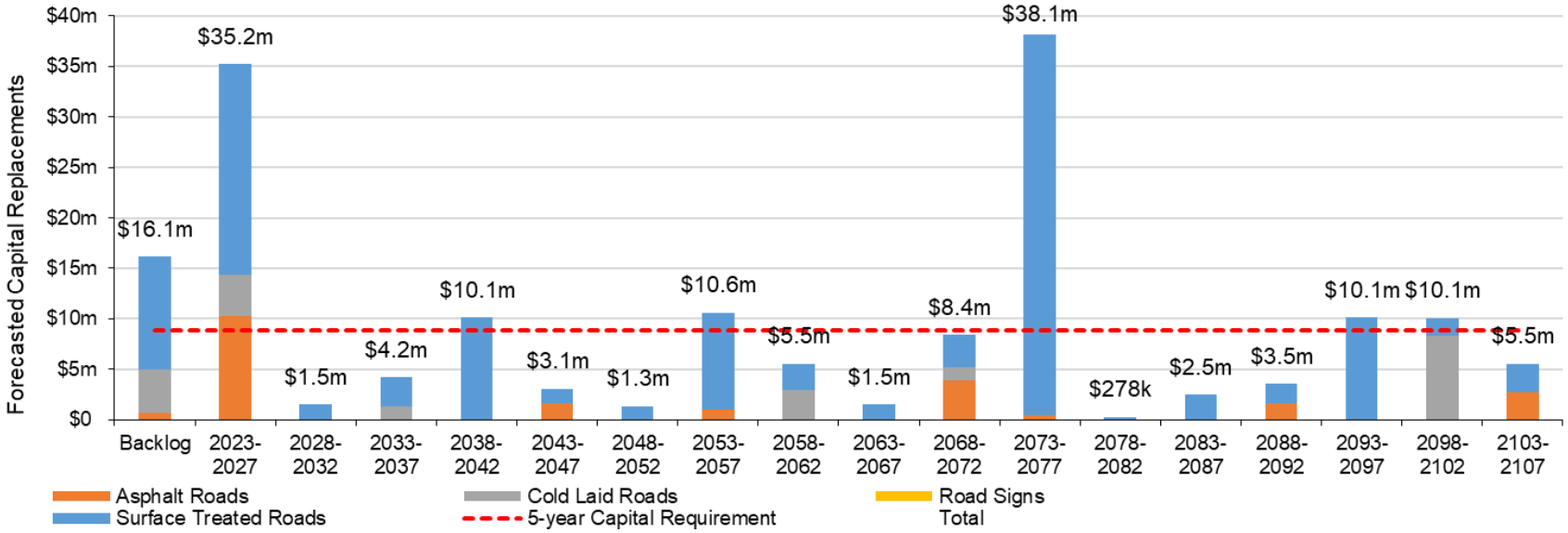
The following table outlines additional maintenance, rehabilitation, and replacement activities performed on the road network.

Activity Type	Description of Current Strategy
Maintenance	For paved and surface treated roads, municipal road crews apply cold patching as needed based on severity. The yearly budget for this type of maintenance activity is approximately $40,000.
	Gravel roads receive grading when required. Ditching and brushing activities are applied to roads consistently as needed.
	Hot mix asphalt treatment is occasionally applied to large roads.
Rehabilitation	Pulverizing and resurfacing activities are being applied to roads in very poor condition.
	Full reconstruction has not occurred within the past 15 years. Only partial reconstruction or consistent patching strategies are utilized.
Replacement	Road reconstruction projects are identified based on road conditions and traffic volumes.
	In recent years, there have been discussions regarding the conversion of gravel roads to paved roads. These potential conversion initiatives would warrant additional capital requirements.

4.1.3 Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for HCB, CLB, and 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 forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 85 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.

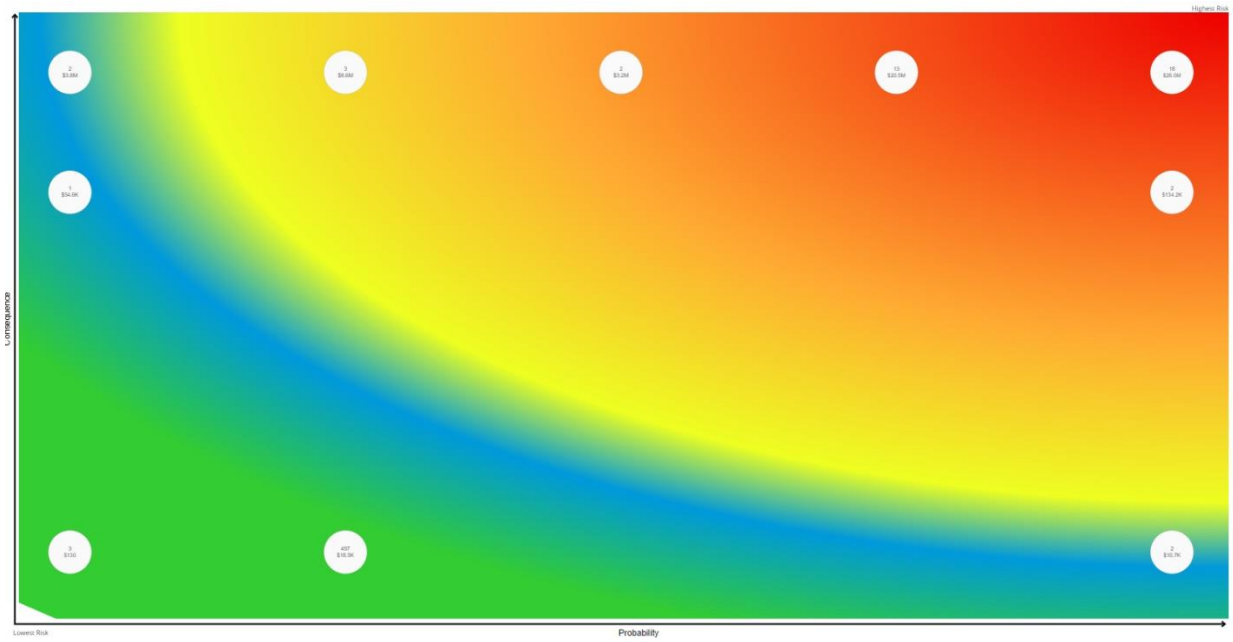


The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

Risk & Criticality

4.1.4 Risk Matrix

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



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

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

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

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

4.1.5 Risks to Current Asset Management Strategies

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

Lifecycle Management Strategies

The current process for lifecycle management is reactive in nature, having a primary goal of fixing the roads that are in very poor condition as opposed to being strategically proactive. As the sophistication of the Municipality's asset management systems, data and lifecycle frameworks evolve, proactive measures for managing rehabilitation or maintenance activities should be implemented.

Climate Change & Extreme Weather Events

The Municipality has experienced extreme weather events such as heavy rainfall and increased freeze and thaw cycles that cause damage to the road network. The increases in storm intensity have caused higher water levels and consequentially more flooding. These weather events cause roads to wash out and increase the risk of beaver dams releasing. Numerous properties and roads have been flooded in recent years. The minimum maintenance requirements are not always met due to response delays caused by extreme weather events.

Organizational Capacity and Growth

Internal staff capacity in the Public Works department is considered a risk. The current staff capacity is not sufficient for the completion of scheduled maintenance activities. The outskirts of the Municipality are experiencing noticeable growth. The increase in population is leading to more traffic on these roads. Meeting public expectations for a newer demographic also poses a challenge.

Capital Funding Strategies

The Municipality is always looking for acquiring grants or additional external funding for the Road Network capital projects. In the past, projects have been cancelled due to insufficient funding. Historically, insufficient quantities of funds have been placed into reserves. However, building adequate reserve levels is a priority for the years to come.

Levels of Service

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

4.1.6 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Accessibility	Description, which may include maps, of the road network in the municipality and its level of connectivity	See Appendix B
Safety and Regulatory Compliance	Description of minimum maintenance standards for road network (road surfaces)	All roads meet the minimum maintenance standards set by the province (MMS) except the weather and staffing levels play a role in postponing some of the activities.
Sustainability	Description or images that illustrate the different levels of road class pavement condition	The Municipality has a rating system in place to describe road conditions. The rating numbers are assigned on a scale of 1 to 5 with the lower numbers describing those roads with the most structural distress or poorest shaped road cross section. (1-3) Road surface exhibits moderate to significant deterioration and requires improvement. (3-5) Road surface is in generally good condition, with localized deficiencies.
		The Municipality's approach is considered reactive as the staff effort is mainly focused on fixing roads that are in poor condition rather than being proactive about rehabilitation and maintenance.

4.1.7 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Accessibility	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	0
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	0
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	0.928
Sustainability	Average pavement condition for paved roads in the municipality (e.g., excellent, good, fair, poor, very poor)	Poor

Recommendations

Asset Inventory

- Review roads inventory to determine whether all municipal assets within these asset segments have been accounted for.

Condition Assessment Strategies

- Continue to complete a detailed assessment of all roads every 5 years.
- Consider developing a condition score that utilizes the routine inspection records.

Lifecycle Management Strategies

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

Risk Management Strategies

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

Levels of Service

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

5 Stormwater Network

The Township is responsible for owning and maintaining a stormwater network which only consist of culverts.

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

Replacement Cost	Condition	Financial Capacity	
$1.1 million	Fair (61%)	Annual Requirement:	$21,000

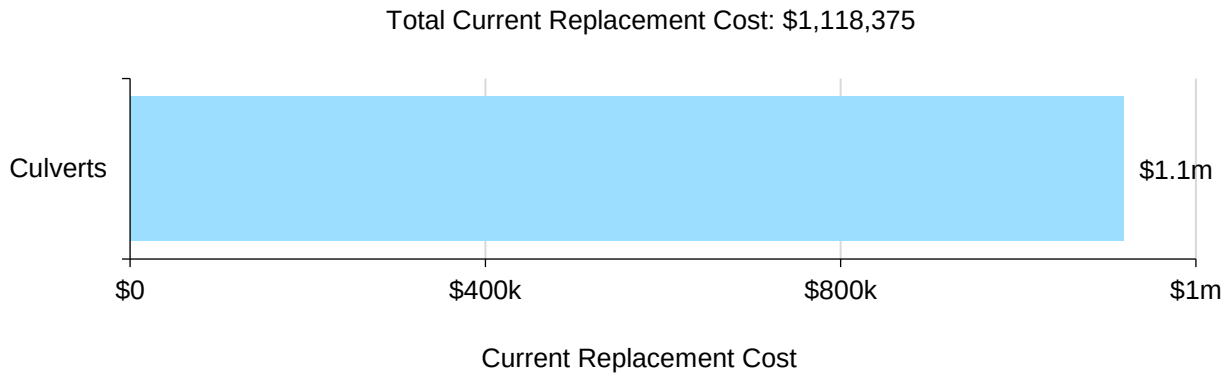
The following core values and level of service statements are a key driving force behind the Township's asset management planning:

Service Attribute	Level of Service Statement
Accessibility & Reliability	The stormwater network service is conveniently accessible to the whole community in sufficient capacity and is available under all weather conditions.
Safety and Regulatory Compliance	Most culverts within the municipality are designed for 1–100-year storm.
Sustainability	The storm network is in good condition with minimal unplanned service interruptions and closures.

Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Culverts	10,656	$1,118,000	$21,000
Total		**$1,118,000**	**$21,000**



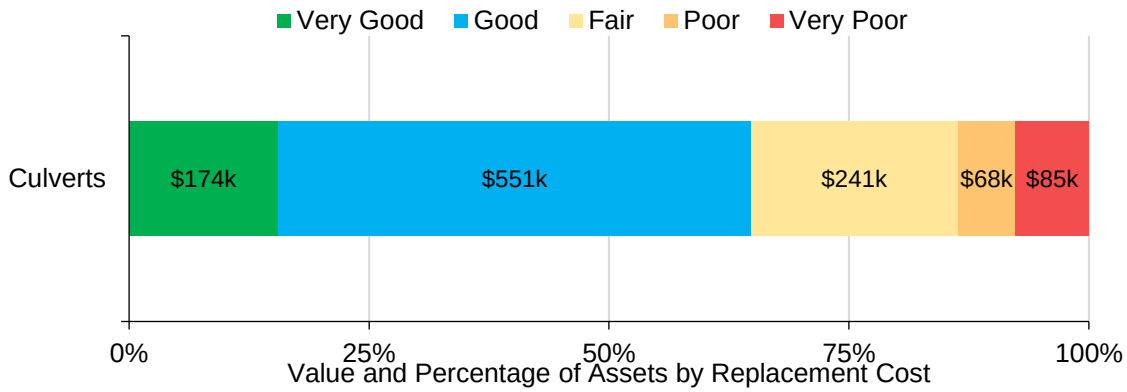
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Culverts	53.8	26.5	61% (Good)
Average			**61% (Good)**

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



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

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

5.1.1 Current Approach to Condition Assessment

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

- Stormwater network assets are assessed as part of the road patrolling assessments conducted weekly. Identified issues are monitored on a weekly basis
- A comprehensive assessment of the stormwater network is performed on a yearly basis

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

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

Lifecycle Management Strategy

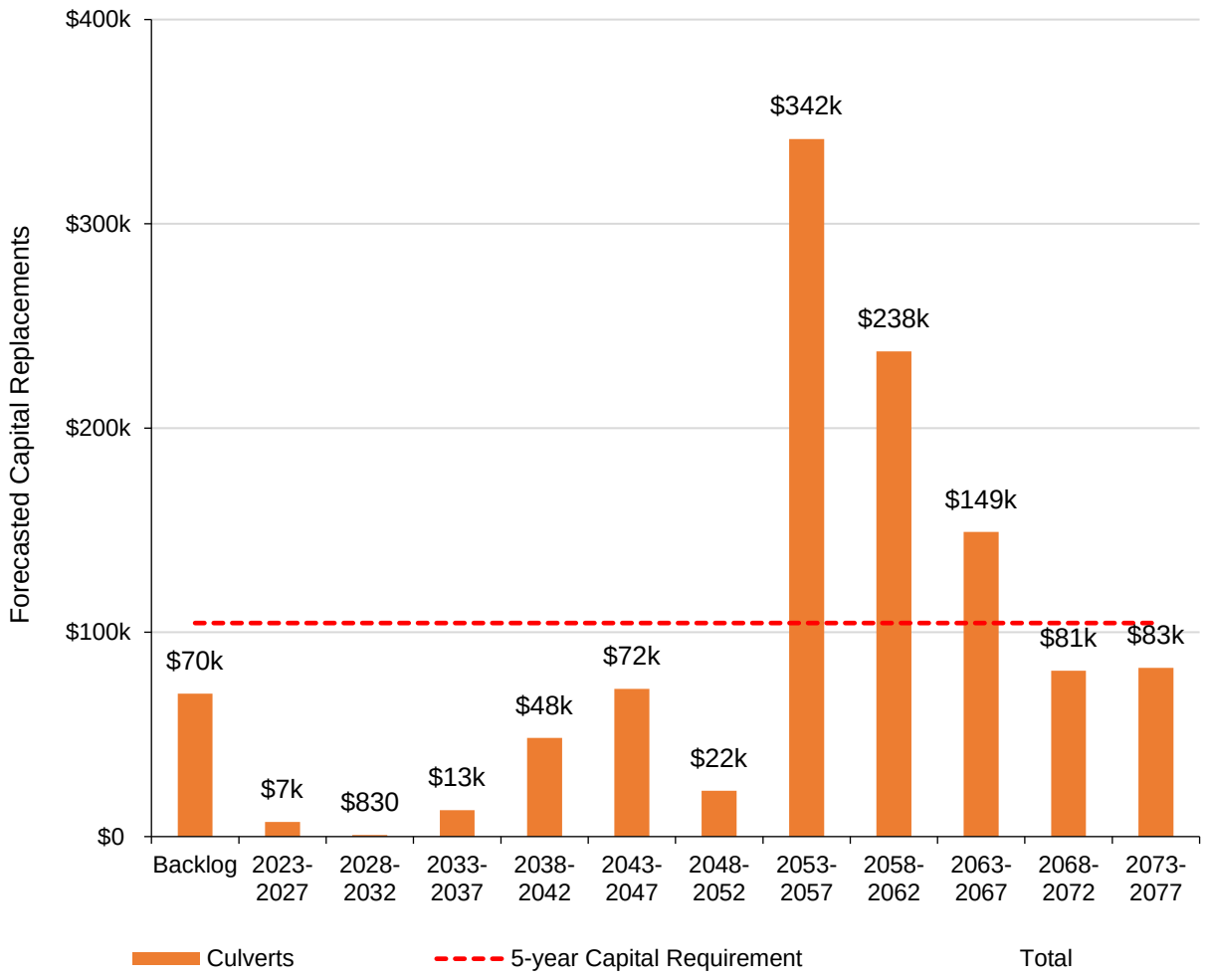
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance	Culverts are consistently inspected to ensure that water is flowing and that there are no blockage issues. These informal inspections are performed in tandem with ad hoc road monitoring activities. On average 10% of culverts suffer from blockage issues every year. There is no budget for cleaning as the cost falls under regular service hours.
Rehabilitation	Rehabilitation is performed as needed or identified within a capital project. Road and culvert condition are primary decision-making attributes.
Replacement	Steel culverts are considered for replacement every 10-15 years. For plastic culverts, the replacement is based on lifetime until damaged. The total budget to purchase new culverts is $20k/year.

5.1.2 Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 55 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.

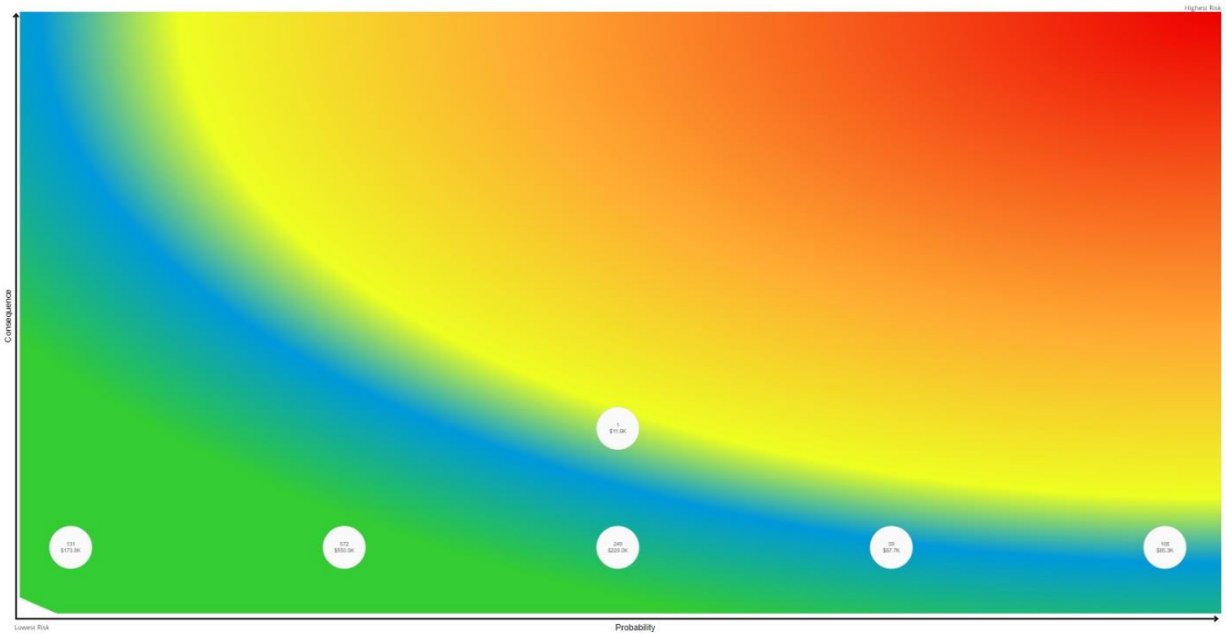


The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

Risk & Criticality

5.1.3 Risk Matrix

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



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

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

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

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

5.1.4 Risks to Current Asset Management Strategies

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

Climate Change & Extreme Events

The Municipality is exposed to potential risks with climate change and extreme weather events. Flooding can occur due to increased storm frequency and intensity which overload the storm network. In addition, the possibility of beaver dams releasing unexpectedly increases the risk of storm system overload.

Infrastructure Design/Installation

Infrastructure design is not considered a major risk to the Municipality. Most culverts are sized for a 100-year storm because of the high-water levels. Some minor degree of risk exists in the potential for beaver dams to release unexpectedly.

Levels of Service

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

5.1.5 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Accessibility & Reliability	Description, which may include map, of the user groups or areas of the municipality that are protected from flooding, including the extent of protection provided by the municipal stormwater system	See Appendix B
Safety and Regulatory Compliance	Description of the level of storm intensity that the municipal stormwater network is designed to handle (e.g. 1 in 5-year)	Most of the culverts are designed for 1–100-year storm because of the high-water level.
Sustainability	Description of the current condition of the stormwater network and the plans that are in place to maintain or improve the provided level of service	When doing the roads, steel culverts are considered for replacement every 10 -15 years whereas plastic culverts are considered for replacement based on the damage they have incurred over time. Most of the major culverts are owned by the county. About 10 % of the culverts may need replacement, the other ones are in fair shape.

5.1.6 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Accessibility & Reliability	% of culverts cleaned annually	0%
Safety and Regulatory Compliance	% of properties in municipality resilient to a 100-year storm	TBD[1]
	% of the municipal stormwater management system resilient to a 5-year storm	TBD[2]
Sustainability	% of the stormwater system that is in good or very good condition	65%
	% of the stormwater network that is in poor or very poor condition	14%

[1] % of properties in municipality resilient to a 100-year storm is not currently available by the Township
[2] % of the municipal stormwater management system resilient to a 5-year storm data is not currently available by the Township

Recommendations

Asset Inventory

- Continue to update the unit replacement costs which reflect current tender pricing.

Condition Assessment Strategies

- Begin performing comprehensive assessments of the storm network to ensure conditions are accurate and to inform capital planning strategies.

Risk Management Strategies

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

Lifecycle Management Strategies

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

Levels of Service

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

6 Buildings

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

- Administration buildings
- Buildings to support transportation services
- Fire hall and associated facilities
- Recreation and cultural service buildings

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

Replacement Cost	Condition	Financial Capacity	
$4.0 million	Very Poor (15%)	Annual Requirement:	$103,000

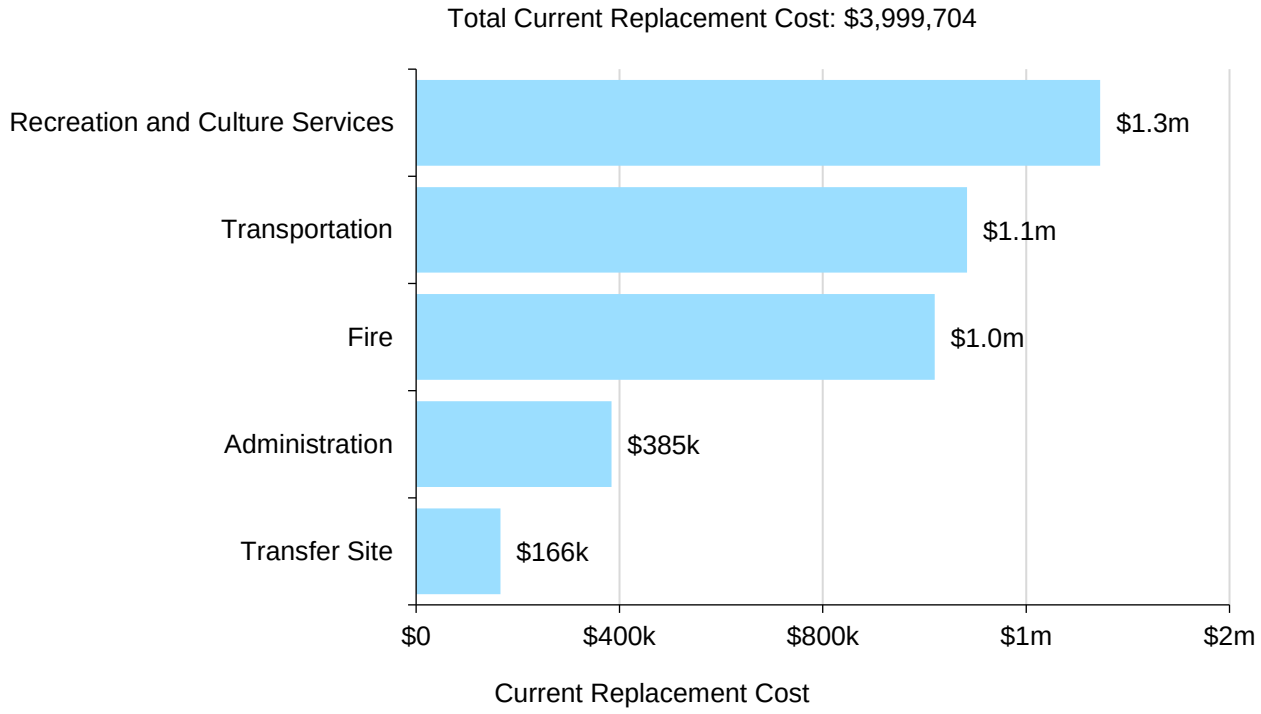
The following core values and level of service statements are a key driving force behind the Township's asset management planning:

Service Attribute	Level of Service Statement
Affordability	Buildings are affordable and provide services that meet the needs of the Township and its residents.
Sustainability	The buildings are in good condition with minimal unplanned service interruptions and closures.
Accessible	The building and facilities service is conveniently accessible to the whole community in sufficient capacity and meets public expectations.

Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Administration	6	$385,000	$10,000
Fire	13	$1,020,000	$26,000
Recreation and Culture Services	21	$1,346,000	$36,000
Transfer Site	3	$166,000	$4,000
Transportation	10	$1,083,000	$27,000
Total		**$4,000,000**	**$103,000**



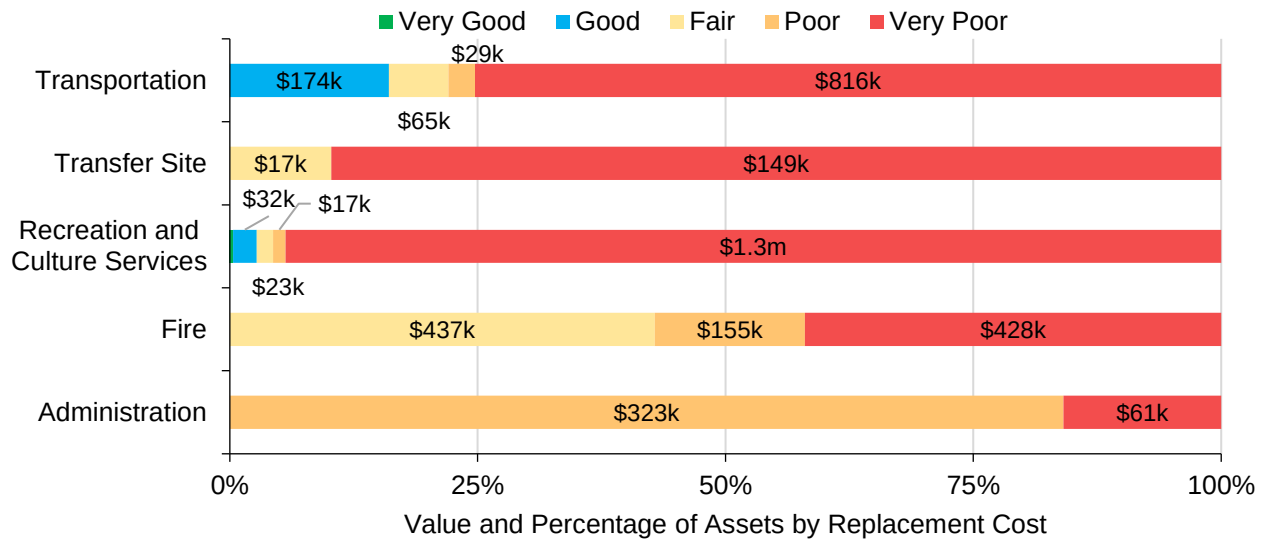
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Administration	40	35.2	21% (Poor)
Fire	38.1	29.3	23% (Poor)
Recreation and Culture Services	36.9	30.5	3% (Very Poor)
Transfer Site	40	32.3	6% (Very Poor)
Transportation	40	29.1	22% (Poor)
Average			**15% (Very Poor)**

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



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

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

6.1.1 Current Approach to Condition Assessment

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

- There is no centralized group that manages all buildings; rather, each department manages their own buildings
- A combination of practices involving internal staff and external contractors are implemented for inspections, audits, and condition assessments

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

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

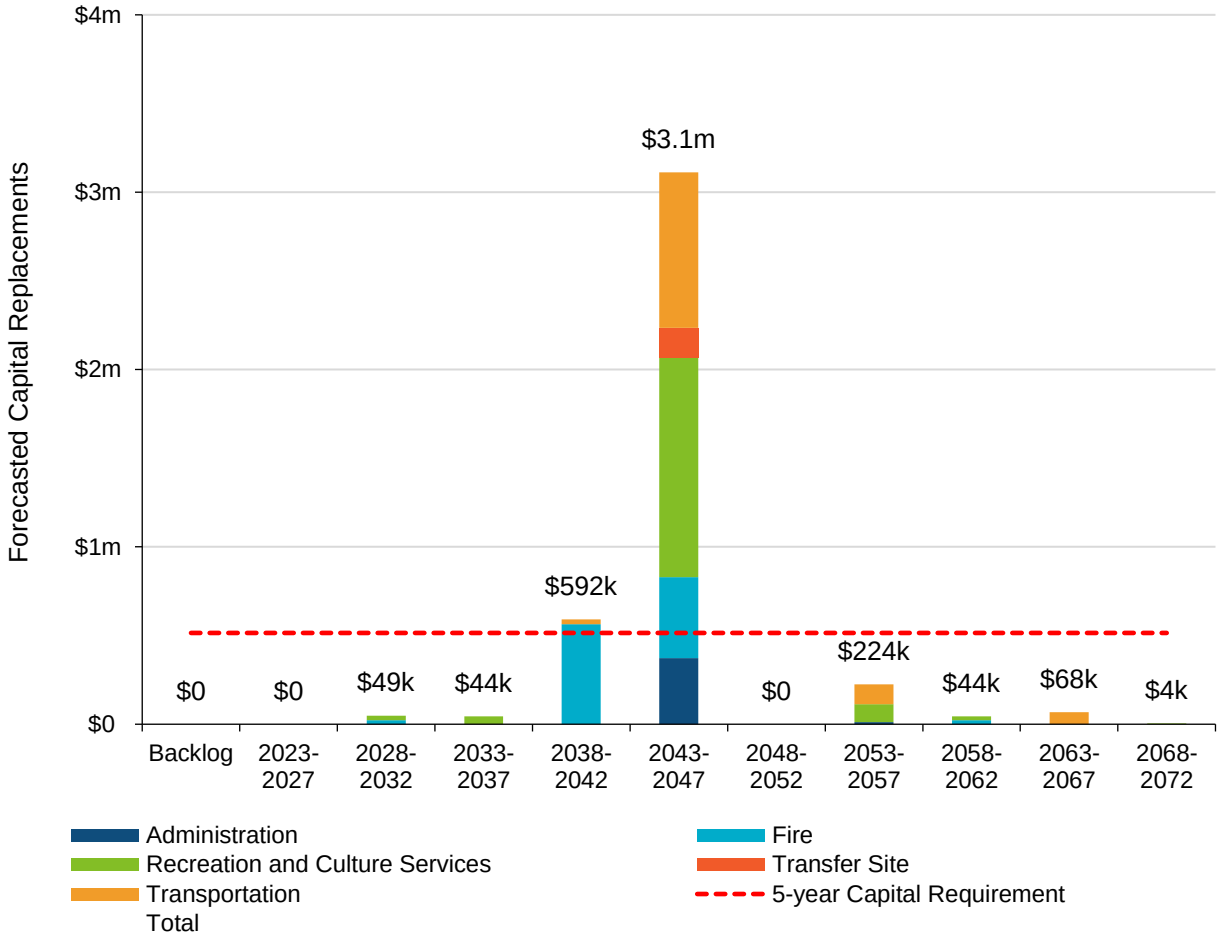
Lifecycle Management Strategy

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

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	Health and Safety inspections are performed monthly by internal staff.
	Municipal buildings are subject to quarterly visual inspections to verify deterioration of concrete and brick and mortar. These activities are performed by internal staff.
	Energy audits completed annually by internal staff.
	Buildings classed as Small Water Systems and have testing directives have water testing completed quarterly (i.e. Firehalls, Public Works Buildings, Municipal Garage).
	Water testing is completed annually for the buildings without testing directives that are not classed as Small Water Systems.
	Electrical systems are inspected annually by external contractors.
	HVAC systems are inspected bi-annually by external contractors.
Rehabilitation	A Building Condition Assessment was performed in 2017/2018 and provided some of the capital recommendations have been resolved however it does not include quantitative condition rating but rather relies on qualitative descriptions of major building components.
Replacement	Assessments are completed strategically based on a combination of study recommendations, staff recommendations, age, condition, and budget availability when buildings approach end-of-life. All these factors are leveraged to determine whether replacement or rehabilitation is a more appropriate treatment option.

6.1.2 Forecasted Capital Requirements

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

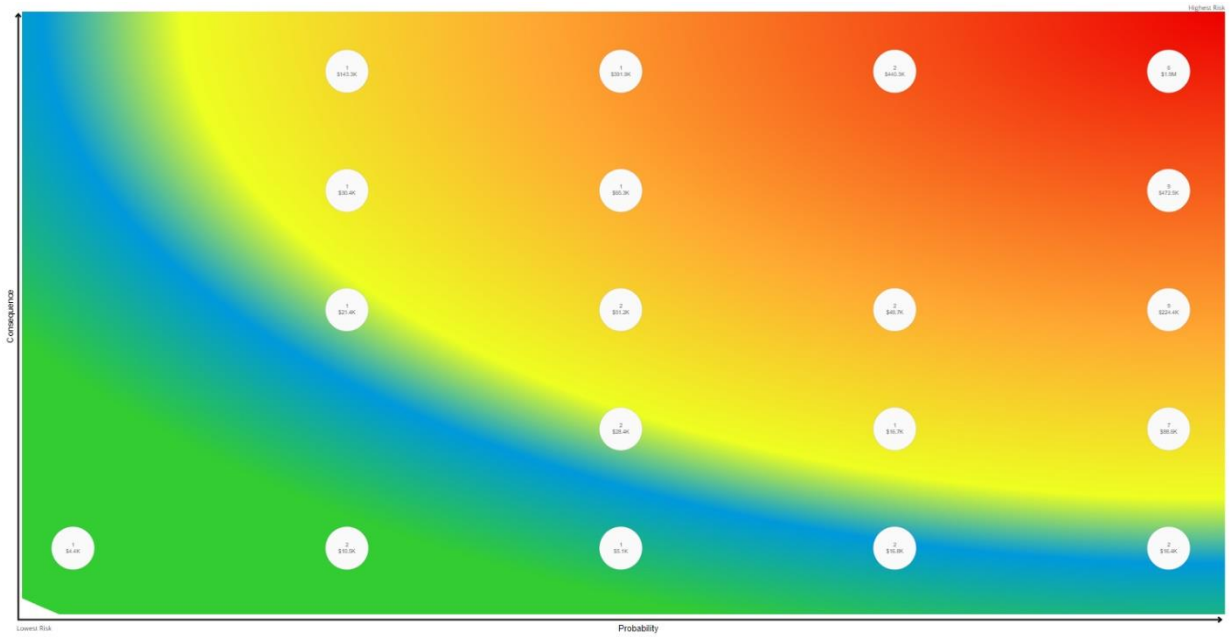


The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

Risk & Criticality

6.1.3 Risk Matrix

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



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

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

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

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

6.1.4 Risks to Current Asset Management Strategies

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

Lifecycle Management Strategies

The current lifecycle management strategies are a combination of proactive and reactive. The Municipality has adopted a multi-faceted approach which combines study recommendations from external contractors, internal staff recommendations, age, condition and budget availability. Results of a 2018 building condition assessment are used to produce a 10-year forecast of lifecycle activities for the buildings and associated components. However, the municipality has not implemented a formal strategic approach involving lifecycle management strategies with a well-defined planning horizon.

Capital Funding Strategies

There are significant risks due to the levels of re-investment in infrastructure not meeting the lifecycle requirements. Major infrastructure re-investment projects are often largely dependent on the availability of grant funding opportunities (e.g. Golden Lake Hall). High dependency on grant funds and an insufficient capital budget poses risk to long-term viability of buildings. An annual capital funding strategy could reduce dependency on grant funding and help prevent deferral of capital works.

Climate Change & Extreme Weather Events

In recent years, high winds have been impacting the condition of sand sheds. This is not considered a major risk.

Levels of Service

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

6.1.5 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 (2022)
Affordability	Description of the lifecycle activities (maintenance, rehabilitation, and replacement) performed on municipal buildings	Lifecycle activities are primarily directed from health & safety, and regulatory requirements. Activities that are not mandated are derived from an operational budget and undertaken as issues arise.
Sustainability	Description of the current condition of municipal buildings and the plans that are in place to maintain or improve the provided level of service	A Building Condition Assessment was performed in 2017/2018 and provided some of the capital recommendations have been resolved however it does not include quantitative condition rating but rather relies on qualitative descriptions of major building components. Assessments for rehabilitation/replacement are completed strategically based on a combination of study recommendations, staff recommendations, age, condition, and budget availability when buildings approach end-of-life. All these factors are leveraged to determine whether replacement or rehabilitation is a more appropriate treatment option.

Accessibility	Description of initiatives that aim to make facilities more accessible	Multi-year accessibility plan is being updated in 2023.

6.1.6 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 (2022)
Sustainability	% of buildings that are in good or very good condition	5%
	% of buildings that are in poor or very poor condition	81%
	Average Risk Rating associated to buildings	20.15 / 25 (Very High)
Accessibility	% of buildings that are considered accessible	Information will be available once updated plan is completed.

Recommendations

Asset Inventory

- The Township's asset inventory contains a single record for all 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.
- Several buildings have exceeded their estimated useful life. Review the estimated useful life values and ensure they reflect the true service life as utilized by staff.
- All replacement costs used for buildings are based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.

Replacement Costs

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

Condition Assessment Strategies

- The Township should implement regular condition assessments for all facilities to better inform short- and long-term capital requirements.
- The most recent Building Condition Assessment (BCA) was performed in 2017/2018 which did not include quantitative condition ratings. Consider implementing scheduled BCA which captures both quantitative and qualitative details for all buildings.

Risk Management Strategies

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

Levels of Service

- Continue to measure current levels of service in accordance with the metrics that the Township has established in this AMP. Additional metrics can be

established as they are determined to provide meaningful and reliable inputs into asset management planning.

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

7 Vehicles

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

- Fire rescue vehicles to provide emergency services
- Pick-up trucks to support the maintenance of the transportation network and other address service requests
- Plow trucks for winter control activities

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

Replacement Cost	Condition	Financial Capacity	
$2.3 million	Fair (42%)	Annual Requirement:	$227,000

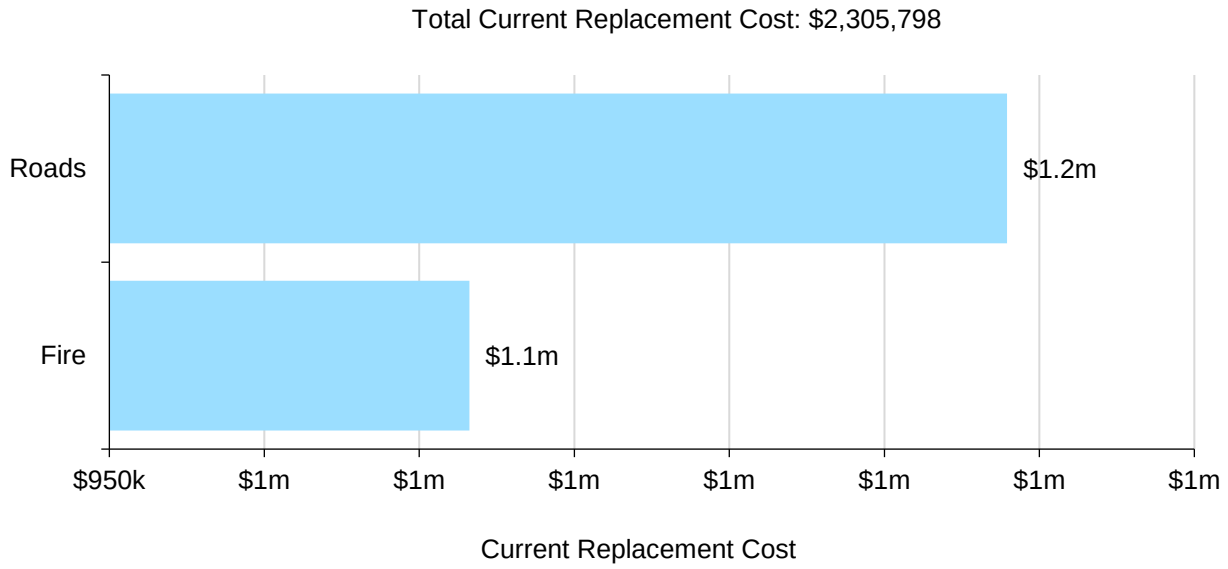
The following core values and level of service statements are a key driving force behind the Township's asset management planning:

Service Attribute	Level of Service Statement
Affordability	Vehicles provide efficient services to the Township and its residents while maintaining financial management and fiscal responsibility.
Sustainability	The vehicles are in good condition with minimal unplanned service interruptions.

Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Fire	8	$1,066,000	$71,000
Roads	9	$1,240,000	$156,000
Total		**$2,306,000**	**$227,000**



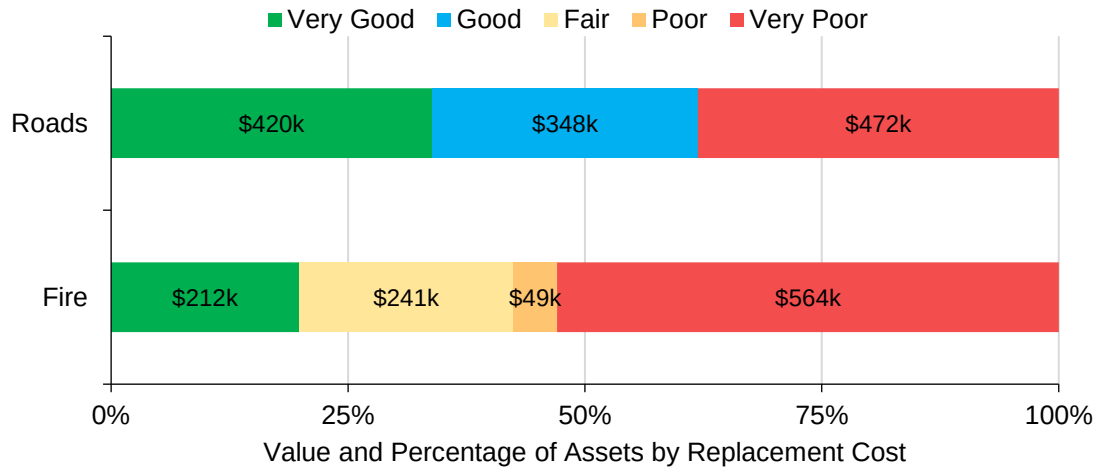
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Fire	14.4	12.1	30% (Poor)
Roads	8.3	4.1	52% (Fair)
Average			**42% (Fair)**

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



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

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

7.1.1 Current Approach to Condition Assessment

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

- Vehicles undergo an annual safety inspection to ensure compliance with safety standards and regulations which is completed by a mechanic
- Staff complete daily inspections of vehicles to ensure they are in state of adequate repair prior to operation

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

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

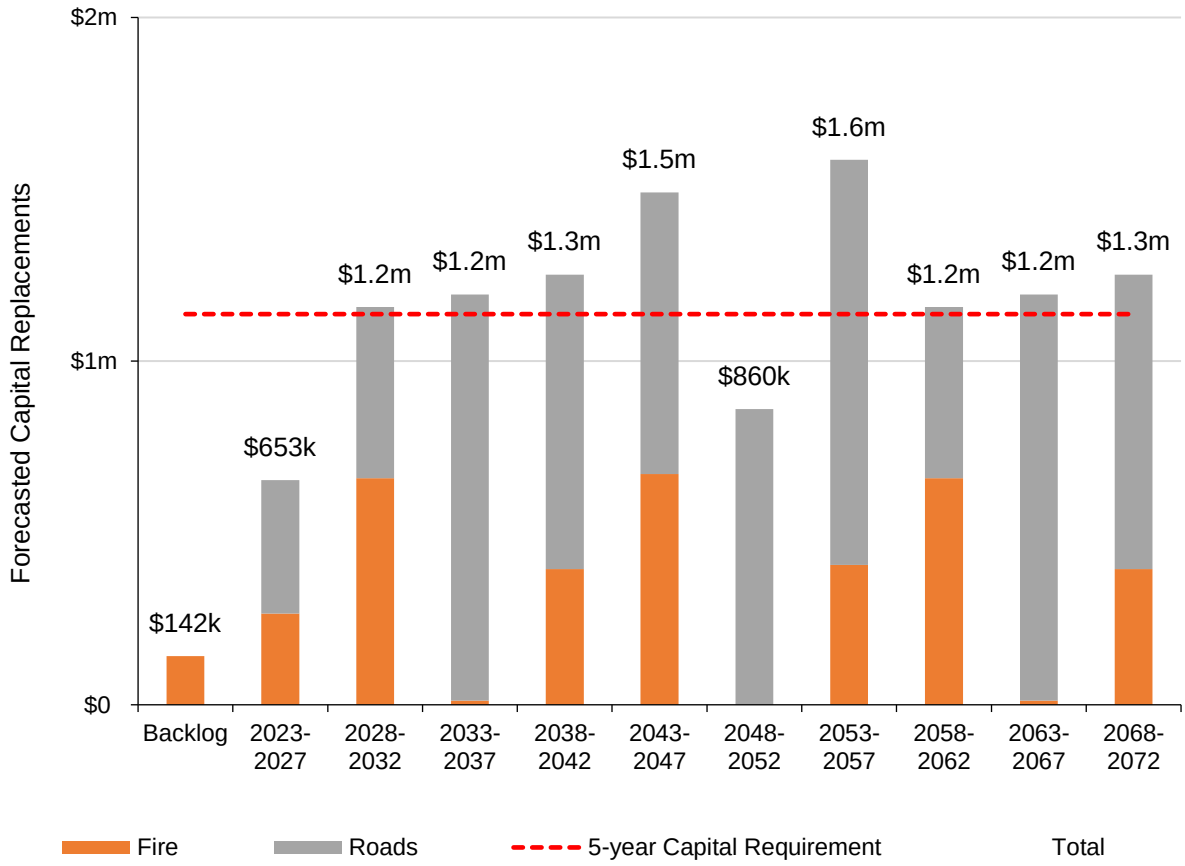
Lifecycle Management Strategy

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

Activity Type	Description of Current Strategy
Maintenance	Visual inspections are completed and documented daily by internal staff using the vehicles as part of an existing inspection process.
	Annual maintenance inspections are performed by external mechanics.
Rehabilitation	Lifecycle activities are generally performed after the yearly inspections based on recommendations provided by the mechanics. More budget is allocated for older and more expensive vehicles by utilizing previous year costing and inflating expected annual maintenance costs based on age factors.
Replacement	End of Life replacement generally occurs as mandated by Ministry of Transportation MTO and National Fire Protection Association (NFPA) requirements
	The current Tangible Capital Asset (TCA) policy outlines that light duty trucks are replaced every 5 years, medium duty trucks every 7 years and heavy duty trucks every 10 years.
	The Municipality will leverage this TCA policy in conjunction with age and recommendations provided by mechanics to inform final decisions regarding replacement.

7.1.2 Forecasted Capital Requirements

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

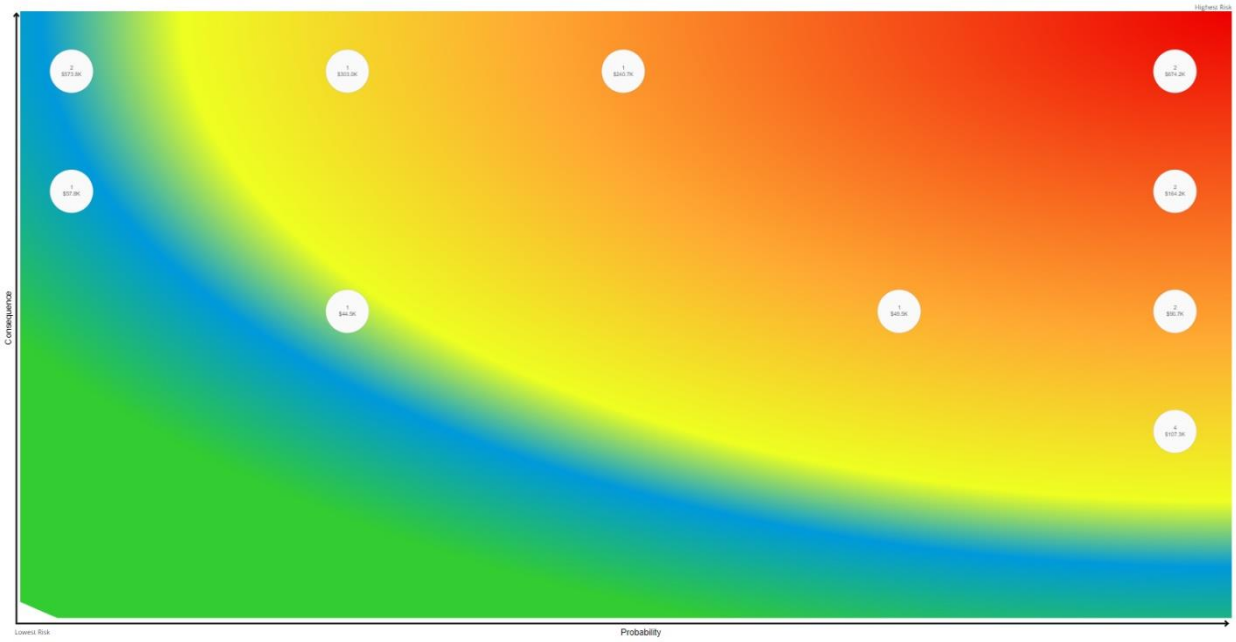


The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

Risk & Criticality

7.1.3 Risk Matrix

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



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

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

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

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

7.1.4 Risks to Current Asset Management Strategies

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

Capital Funding Strategies

The only concern for capital funding strategies risk relates to a singular high-ticket excavator. Beyond this exception, pickup trucks and plow trucks have adequate re-investment rates for their respective maintenance programs and replacement cycles. There is a significant skew in terms of the percentage of the budget which is consumed by large trucks. Monitoring any increases in demand for large trucks within each department will require careful consideration based on existing budgetary impacts that have been identified.

Climate Change & Extreme Weather Events

The Municipal fleet is presently well equipped to handle the weather experienced. There is a program in place for ensuring vehicles receive adequate protection. Observations of increased rusting have been associated with the use of calcium on highways. This rusting trend has been documented and will be continuously monitored.

Levels of Service

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

7.1.5 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Affordability	Description of the lifecycle activities (maintenance, rehabilitation and replacement) performed on municipal vehicles	Lifecycle activities are generally performed after the yearly inspections based on recommendations provided by the mechanics. More budget is allocated for older and more expensive vehicles by utilizing previous year costing and inflating expected annual maintenance costs based on age factors. End of Life replacement generally occurs as mandated by internal policies as well as Ministry of Transportation (MTO) and National Fire Protection Association (NFPA) requirements
Sustainability	Description of the current condition of municipal vehicles and the plans that are in place to maintain or improve the provided level of service	No formal condition rating criteria is adopted to date. Vehicles are subject to annual inspections as well as inspections before every usage.

7.1.6 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Sustainability	% of vehicles that are in good or very good condition	42%
	% of vehicles that are in poor or very poor condition	47%
	Average Risk Rating associated to vehicles	14.39 / 25 (High)

Recommendations

Replacement Costs

- All replacement costs used for vehicles are based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.
- Several vehicles have exceeded their estimated useful life. Review the estimated useful life values and ensure they reflect the true service life as utilized by staff.

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

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

8 Machinery & Equipment

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

- Administration equipment for administrative services
- Fire equipment to support the delivery of emergency services
- Road equipment to support maintenance activities for roads, parks and recreation areas

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

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

Replacement Cost	Condition	Financial Capacity	
$2.5 million	Very Poor (17%)	Annual Requirement:	$205,000

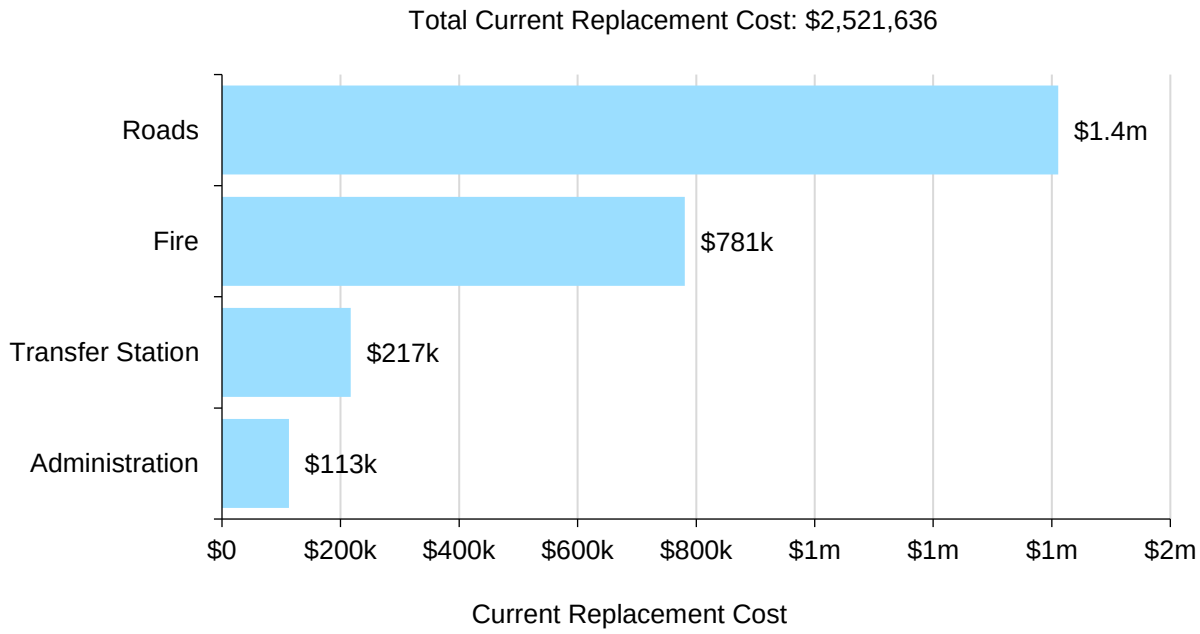
The following core values and level of service statements are a key driving force behind the Township's asset management planning:

Service Attribute	Level of Service Statement
Affordability	Machinery and equipment meet service delivery and operations expectations while maintaining financial stability.
Sustainability	The vehicles are in good condition with minimal unplanned service interruptions.

Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Administration	9	$113,000	$19,000
Fire	32	$781,000	$76,000
Roads	26	$1,411,000	$95,000
Transfer Station	13	$217,000	$15,000
Total		**$2,522,000**	**$205,000**



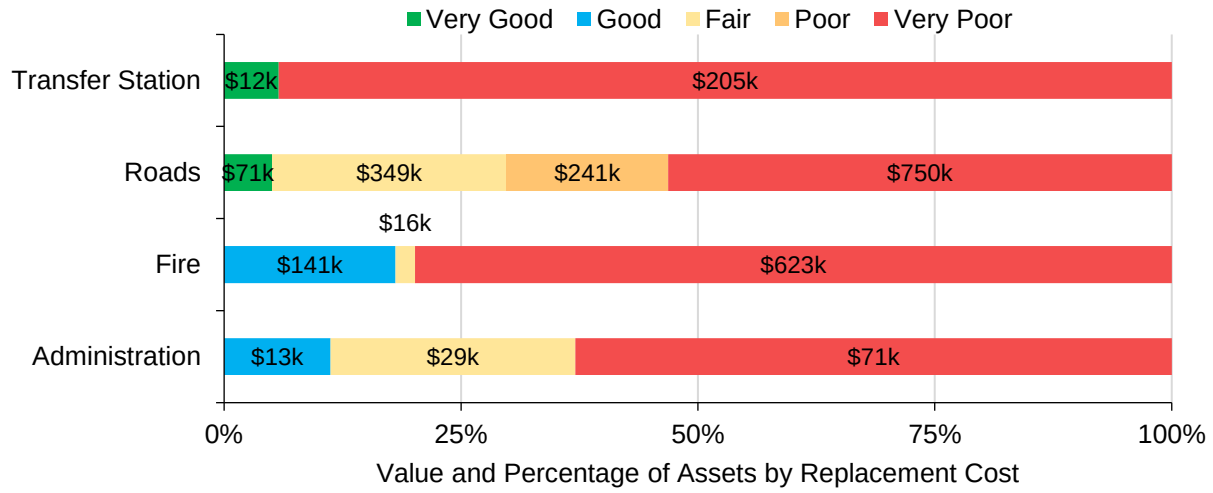
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Administration	6.6	12.6	23% (Poor)
Fire	11.6	11.2	15% (Very Poor)
Roads	14.6	11.5	20% (Poor)
Transfer Station	14.6	13.6	5% (Very Poor)
Average			**17% (Very Poor)**

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



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

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

8.1.1 Current Approach to Condition Assessment

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

- Staff complete daily inspections of machinery and equipment to ensure they are in state of adequate repair prior to operation
- There are no formal condition assessment programs in place for machinery and equipment assets

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

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

Lifecycle Management Strategy

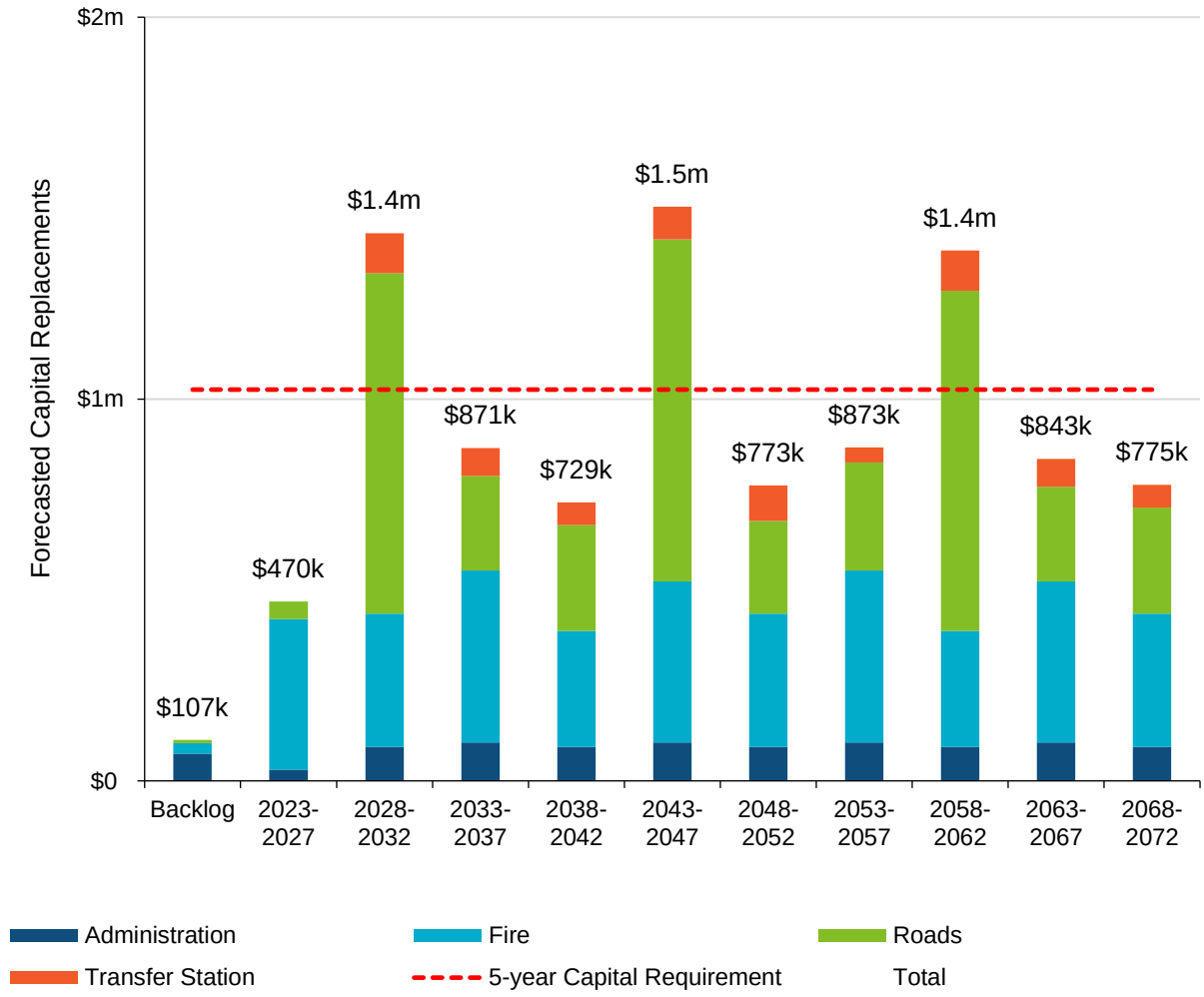
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
	The current maintenance program is not formalized. When issues are reported by operators of the machinery and equipment, assessments are performed by external contractors.
Maintenance/ Rehabilitation	Similar to Vehicle assets, a larger portion of the budget is allocated towards heavier equipment and machinery that is more expensive and has higher associated mechanic rates. Internal staff follow a well-defined process for documenting usage and milage. The maintenance and rehabilitation activities are performed by external mechanics based on the documented information and issues reported.
Replacement	The replacement of machinery & equipment depends on deficiencies identified by operators that may impact their ability to complete required tasks.

8.1.2 Forecasted Capital Requirements

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

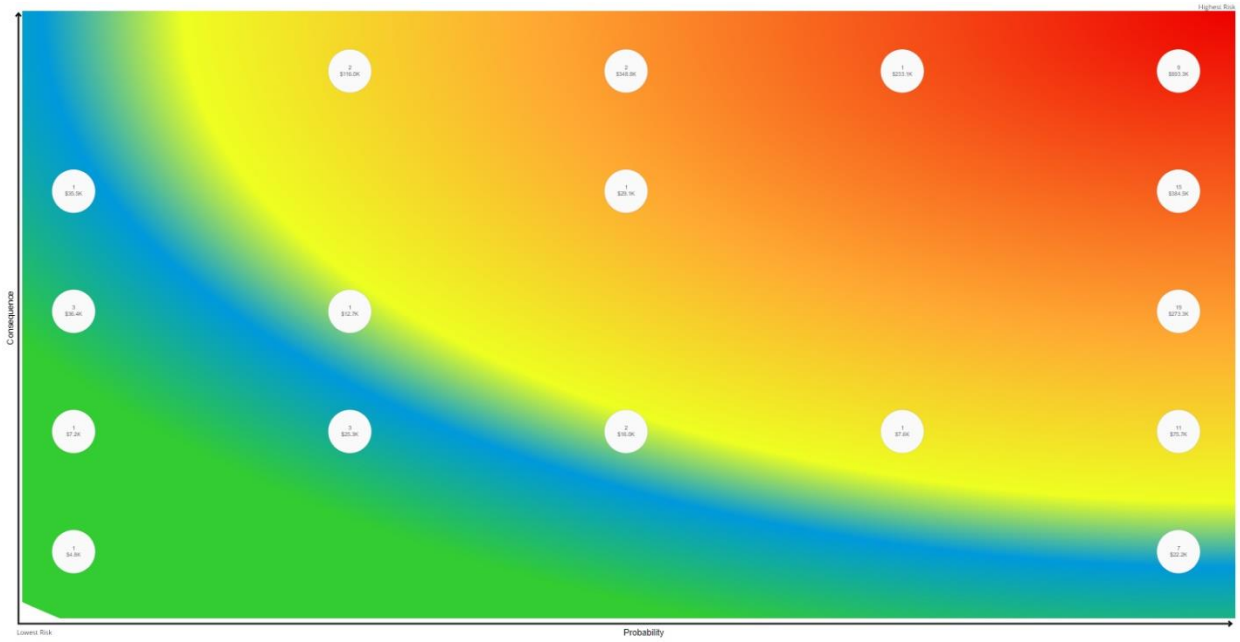


The projected cost of lifecycle activities that will need to be undertaken over the next 10 years to maintain the current level of service can be found in Appendix A.

Risk & Criticality

8.1.3 Risk Matrix

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



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

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

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

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

8.1.4 Risks to Current Asset Management Strategies

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

Lifecycle Management Strategies

Lifecycle management strategies are considered a potential risk until a formal program is adopted. Currently, the municipality has established a reactive approach. Issues with machinery or equipment are reported by operators and consequentially inspections are then performed by external mechanics. Maintenance activities are based on usage and mileage which is actively tracked internally by operators. Budgets are strategically skewed to accommodate higher mechanic rates for heavy machinery.

Aging Infrastructure

Aging infrastructure is currently a risk for one high-ticket grader which is approaching the end of it's estimated useful life. Overall, the broader spectrum of machinery and equipment assets are in a state of good repair and aren't considered at risk based on age.

Climate Change & Extreme Weather Events

The Municipality has identified a minor risk based on climate change and weather events. There is a noticeable increase of rusting ever since calcium has started being applied on highways. This minor risk will be monitored for trend.

Levels of Service

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

8.1.5 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Affordability	Description of the lifecycle activities (maintenance, rehabilitation and replacement) performed on municipal machinery and equipment assets	The current maintenance program is not formalized. When issues are reported by operators of the machinery and equipment, assessments are performed by external contractors End of Life replacement generally occurs as mandated by internal policies as well as National Fire Protection Association (NFPA) requirements
Sustainability	Description of the current condition of municipal machinery and equipment assets and the plans that are in place to maintain or improve the provided level of service	No formal condition rating criteria is adopted to date. Internal staff follow a well-defined process for documenting usage and milage. A Maintenance Program exists for regular maintenance activities (ex. changing oil and fluids on regular scheduled intervals). The large yearly maintenance and rehabilitation activities are performed by external mechanics based on the documented information and issues reported

8.1.6 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Sustainability	% of machinery and equipment assets that are in good or very good condition	9%
	% of machinery and equipment assets that are in poor or very poor condition	75%
	Average Risk Rating associated to machinery and equipment assets	18.64 / 25 (Very High)

Recommendations

Replacement Costs

- Majority of replacement costs used in this AMP were based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value.
- Several vehicles have exceeded their estimated useful life. Review the estimated useful life values and ensure they reflect the true service life as utilized by staff.

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

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

9 Impacts of Growth

Key Insights

- Understanding the key drivers of growth and demand will allow the Township to more effectively plan for new infrastructure, and the upgrade or disposal of existing infrastructure
- Moderate population and employment growth is expected
- The costs of growth should be considered in long-term funding strategies that are designed to maintain the current level of service

Description of Growth Assumptions

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

9.1.1 County of Renfrew Official Plan (March 2020)

As a result of amalgamations many municipalities within the County do not have Local Official Plans that encompass their entire municipality. The County's Official Plan has been designed to provide a consistent and detailed set of policies across Renfrew County that respond to local conditions. North Algona Wilberforce is amongst the municipalities that have indicated that they will utilize the County Official Plan as their detailed Official Plan.

The Township of North Algona Wilberforce intends to promote and accommodate recreation community development (recreational and residential) areas within the municipality while at the same time having regard for the natural environment and the financial and servicing needs of the municipality.

The following table outlines the population and employment forecasts allocated to North Algona Wilberforce.

	2011	2016	2021	2026	2031	2036
Actual Population	2,873	2915[3]	3111[4]	-	-	-
Project Population – Low	-	2916	2960	3005	3050	3096
Projected Population - High	-	2946	3020	3096	3174	3255

According to the 2021 Census, the population in North Algona Wilberforce is aligned with the initial population projections. A factor that may have contributed to the population growth is the recent migration trends from urban centres to rural communities due to remote working options and cheaper cost of living.

[3] 2016 Census
[4] 2021 Census

Impact of Growth on Lifecycle Activities

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

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

10 Appendices

Key Insights

- 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	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Asphalt Roads	$682k	$6.0m	$0	$3.9m	$410k	$0	$0	$0	$0	$0	$0
Cold Laid Roads	$4.3m	$4.0m	$0	$0	$0	$0	$0	$0	$0	$0	$0
Road Signs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Surface Treated Roads	$11.2m	$13.5m	$7.2m	$0	$0	$278k	$0	$0	$1.1m	$328k	$0
	$16.1m	**$23.5m**	**$7.2m**	**$3.9m**	**$410k**	**$278k**	**$0**	**$0**	**$1.1m**	**$328k**	**$0**

Stormwater Network

Asset Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Culverts	$70k	$0	$7k	$0	$0	$0	$0	$0	$830	$0	$0
	$70k	**$0**	**$7k**	**$0**	**$0**	**$0**	**$0**	**$0**	**$830**	**$0**	**$0**

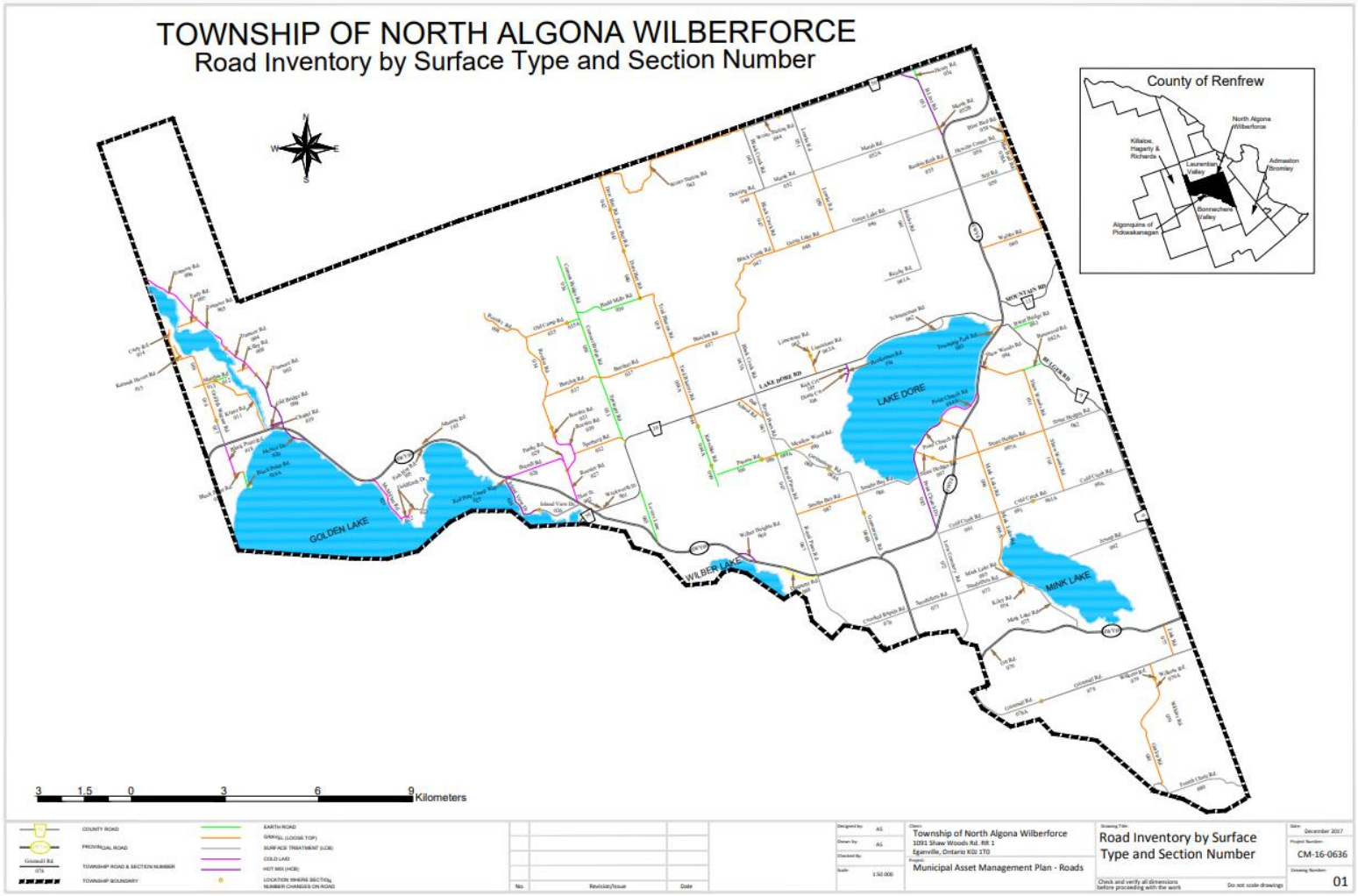
Buildings & Facilities											
Asset Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Administration	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Fire	$0	$0	$0	$0	$0	$0	$0	$22k	$0	$0	$0
Recreation and Culture Services	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4k	$22k
Transfer Site	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Transportation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$22k**	**$0**	**$4k**	**$22k**

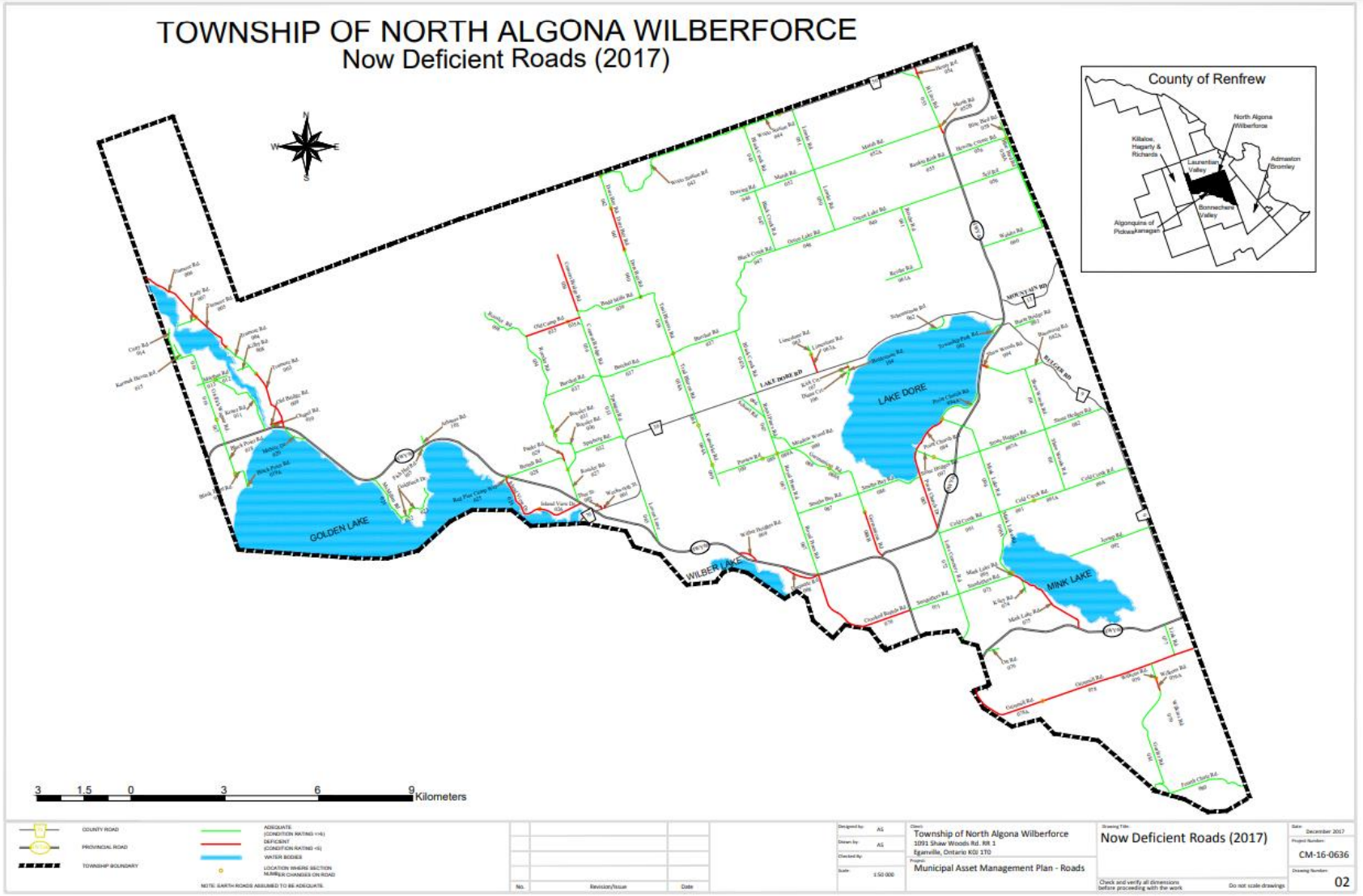
Vehicles											
Asset Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Fire	$142k	$53k	$0	$0	$212k	$0	$49k	$610k	$0	$0	$0
Roads	$0	$0	$34k	$49k	$0	$305k	$52k	$34k	$49k	$0	$363k
	$142k	**$53k**	**$34k**	**$49k**	**$212k**	**$305k**	**$101k**	**$644k**	**$49k**	**$0**	**$363k**

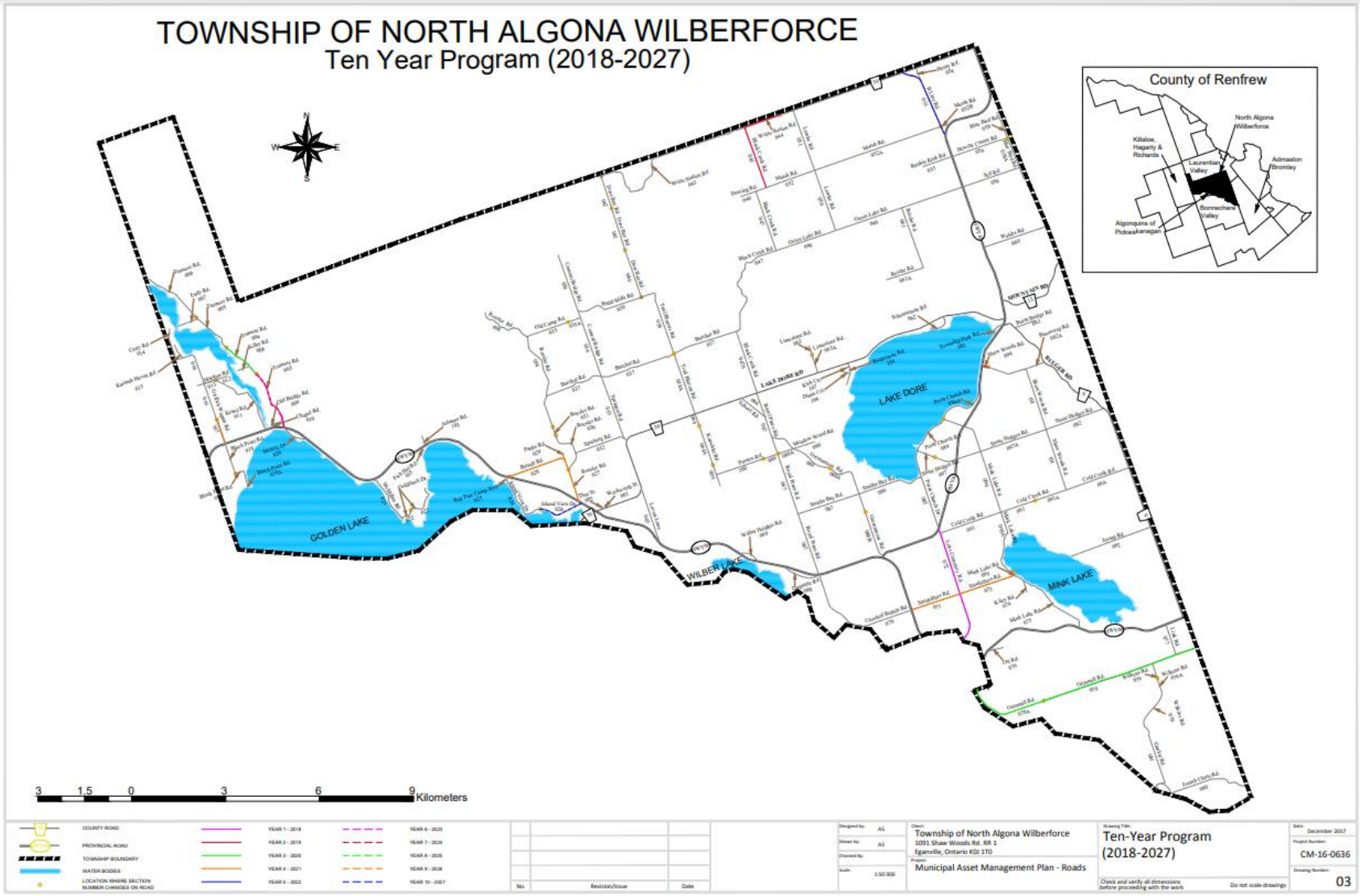
Machinery & Equipment											
Asset Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Administration	$71k	$0	$0	$29k	$0	$0	$47k	$0	$42k	$0	$0
Fire	$28k	$0	$0	$81k	$0	$314k	$7k	$173k	$6k	$157k	$7k
Roads	$8k	$0	$0	$0	$36k	$11k	$0	$229k	$0	$5k	$657k
Transfer Station	$0	$0	$0	$0	$0	$0	$0	$20k	$0	$0	$85k
	$107k	**$0**	**$0**	**$110k**	**$36k**	**$324k**	**$53k**	**$422k**	**$48k**	**$163k**	**$749k**

Appendix B: Level of Service Maps

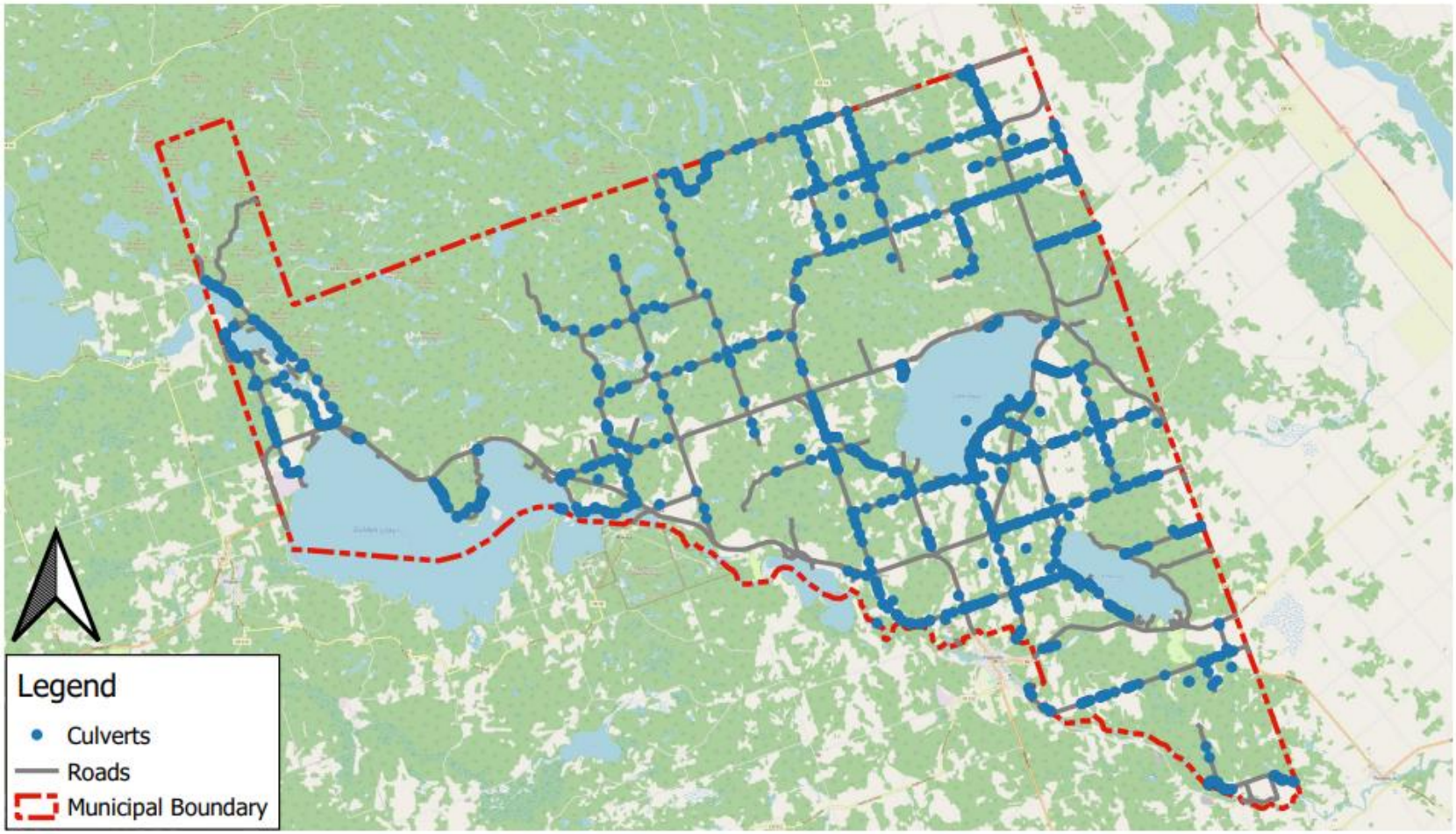
Road Network Maps




TOWNSHIP OF NORTH ALGONA WILBERFORCE
Now Deficient Roads (2017)
County of Renfrew
North Algona Wilberforce
Killaloe, Hagarty & Richards
Laurentian Valley
Admaston /Bromley
Bonnechere Valley
Algonquins of Pikwakanagan
LAKE DORE
GOLDEN LAKE
WILBER LAKE
MINK LAKE
3 1.5 0 3 6 9 Kilometers
COUNTY ROAD
PROVINCIAL ROAD
TOWNSHIP BOUNDARY
ADEQUATE (CONDITION RATING >=6)
DEFICIENT (CONDITION RATING <6)
WATER BODIES
LOCATION WHERE SECTION NUMBER CHANGES ON ROAD
NOTE: EARTH ROADS ASSUMED TO BE ADEQUATE.
No.
Revision/Issue
Date
Designed by: AS
Drawn by: AS
Checked by:
Scale: 1:50 000
Client
Township of North Algona Wilberforce
1091 Shaw Woods Rd. RR 1
Egansville, Ontario K0J 1T0
Project
Municipal Asset Management Plan - Roads
Drawing Title
Now Deficient Roads (2017)
Check and verify all dimensions before proceeding with the work
Do not scale drawings
Date
December 2017
Project Number
CM-16-0636
Drawing Number
02


TOWNSHIP OF NORTH ALGONA WILBERFORCE
Ten Year Program (2018-2027)
County of Renfrew
North Algona Wilberforce
Killaloe, Hagarty & Richards
Laurentian Valley
Admaston Bromley
Bonnechere Valley
Algonquins of Pikwakanagan
LAKE DORE
GOLDEN LAKE
WILBER LAKE
MINK LAKE
3 1.5 0 3 6 9 Kilometers
COUNTY ROAD
PROVINCIAL ROAD
TOWNSHIP BOUNDARY
WATER BODIES
LOCATION WHERE SECTION NUMBER CHANGES ON ROAD
YEAR 1 - 2018
YEAR 2 - 2019
YEAR 3 - 2020
YEAR 4 - 2021
YEAR 5 - 2022
YEAR 6 - 2023
YEAR 7 - 2024
YEAR 8 - 2025
YEAR 9 - 2026
YEAR 10 - 2027
No.
Revision/Issue
Date
Township of North Algona Wilberforce
1091 Shaw Woods Rd. RR 1
Egansville, Ontario K0J 1T0
Municipal Asset Management Plan - Roads
Ten-Year Program
(2018-2027)
December 2017
CM-16-0636
03
Check and verify all dimensions before proceeding with the work
Do not scale drawings

Stormwater Network Map



Appendix C: Risk Rating Criteria

Probability of Failure

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Roads	Condition	100%	4.5+	1
			3.5-4.5	2
			2.5-3.5	3
			1.5-2.5	4
			1-1.5	5
Stormwater Network	Condition	100%	80-100	1
			60-80	2
			40-60	3
			20-40	4
			0-20	5
Buildings Vehicles Machinery & Equipment	Condition	100%	4+	1
			3-4	2
			2-3	3
			1-2	4
			0-1	5

Consequence of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Roads	Economic (100%)	Replacement Cost (100%)	0-$10,000	1
			$10,000-$30,000	2
			$30,000-$50,000	3
			$50,000-$100,000	4
			$100,000+	5
Stormwater Network	Economic (100%)	Replacement Cost (100%)	0-$10,000	1
			$10,000-$30,000	2
			$30,000-$50,000	3
			$50,000-$100,000	4
			$100,000+	5
Buildings	Economic (100%)	Replacement Cost (100%)	$0-$10,000	1
			$10,000-$20,000	2
			$20,000-$30,000	3
			$30,000-$75,000	4
			$75,000+	5
Vehicles	Economic (100%)	Replacement Cost (100%)	$0-$10,000	1
			$10,000-$35,000	2
			$35,000-$50,000	3
			$50,000-$150,000	4
			$150,000+	5
Machinery & Equipment	Economic (100%)	Replacement Cost (100%)	$0-$5,000	1
			$5,000-$10,000	2
			$10,000-$20,000	3
			$20,000-$40,000	4
			$40,000+	5

Appendix D: Condition Assessment Guidelines

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

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

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

Role of Asset Condition Data

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

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

Guidelines for Condition Assessment

Whether completed by external consultants or internal staff, condition assessments should be completed in a structured and repeatable fashion, according to consistent

and objective assessment criteria. Without proper guidelines for the completion of condition assessments there can be little confidence in the validity of condition data and asset management strategies based on this data.

Condition assessments must include a quantitative or qualitative assessment of the current condition of the asset, collected according to specified condition rating criteria, in a format that can be used for asset management decision-making. As a result, it is important that staff adequately define the condition rating criteria that should be used and the assets that require a discrete condition rating. When engaging with external consultants to complete condition assessments, it is critical that these details are communicated as part of the contractual terms of the project. There are many options available to the Township to complete condition assessments. In some cases, external consultants may need to be engaged to complete detailed technical assessments of infrastructure. In other cases, internal staff may have sufficient expertise or training to complete condition assessments.

Developing a Condition Assessment Schedule

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

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