Asset Management Plan

Township of Gillies

2023

This Asset Management Program was prepared by:

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

Key Statistics

Replacement cost of asset portfolio

$5.8 million

Replacement cost of infrastructure per household

$28,000 (2021)

Percentage of assets in fair or better condition

33%

Percentage of assets with assessed condition data

32%

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Executive Summary

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

Scope

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

This AMP include the following asset categories:

Asset Category	
Road Network	Bridges & Structural Culverts
Vehicles	Buildings & Facilities
Land Improvements	Machinery & Equipment

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

Findings

The overall replacement cost of the asset categories included in this AMP totals $5.8 million. 33% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 32% of assets. For the remaining 68% 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 (gravel roads) and replacement only strategies (all other assets) to determine the lowest cost option to maintain the current level of service.

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Township's average annual capital requirement totals $302,000.

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

Recommendations

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

- Reviewing data to update and maintain a complete and accurate dataset.
- Developing a condition assessment strategy with a regular schedule where feasible.
- Reviewing and updating lifecycle management strategies.
- Development and regular review of short- and long-term plans to meet capital requirements.
- Measuring current levels of service and identifying sustainable proposed levels of service.

1 Introduction & Context

Key Insights

- The Township of Gillies is a small municipality in Northwestern Ontario and has identified sustainable infrastructure growth as a priority
- The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio
- The Township's asset management policy provides clear direction to staff on their roles and responsibilities regarding asset management
- An asset management plan is a living document that should be updated regularly to inform long-term planning
- Ontario Regulation 588/17 outlines several key milestone and requirements for asset management plans in Ontario between July 1, 2022 and 2025

1.1 Gillies Community Profile

Census Characteristic	Township of Gillies	Ontario
Population 2021	441	14,223,942
Population Change 2016-2021	-7.0%	5.8%
Total Private Dwellings	208	5,929,250
Population Density	4.8/km^2	15.9/km^2
Land Area	92.68 km^2	892,411.76 km^2

The Township of Gillies is a single-tier municipality and part of the Thunder Bay District which is located in northwestern Ontario. Gillies is positioned west of the city of Thunder Bay.

The Township is part of the Thunder Bay Census Metropolitan Area and includes the communities of Hymers and South Gillies. Rural Townships within northwestern Ontario like Gillies, have a tight-knit communities with a strong sense of local identity and tradition. These communities host local events, fairs, and gatherings that reflect their rural heritage and values.

The Township has strong agricultural roots, celebrating the Hymers Fair which was established in 1912. The Hymers Fair preserves its country spirit by focusing on agriculture, without modern distractions like beer gardens or midways. It celebrates local self-sufficiency in food and livestock, encouraging community competition in traditional skills such as baking and animal husbandry, maintaining its original values and communal pride.

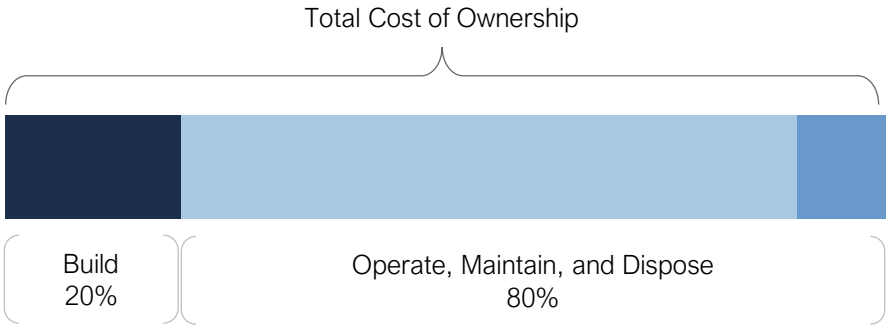
Demand in the Township of Gillies and its surrounding region is primarily driven by its agricultural heritage, scenic rural landscapes, and the lifestyle associated with proximity to Thunder Bay. There's a strong market for agricultural products and services, real estate catering to those seeking a tranquil rural lifestyle, and tourism leveraging the natural environment. Additionally, there's a demand for local goods, essential services to support community well-being, and initiatives focused on environmental conservation, all reflecting the area's blend of rural charm and regional connectivity.

The Township of Gillies prioritizes infrastructure development to preserve rural life, adapt to changes, and ensure resident safety and resource management. The Official Plan emphasizes sustainable growth, environmental protection, and economic diversification, aiming to meet current and future community needs within a framework that values the Township's unique rural identity.

1.2 An Overview of Asset Management

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

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



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

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

1.2.1 Asset Management Policy

An asset management policy represents a statement of the principles guiding the Township's approach to asset management activities. It aligns with the

organizational strategic plan and provides clear direction to municipal staff on their roles and responsibilities as part of the asset management program.

1.2.2 Asset Management Strategy

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

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

1.2.3 Asset Management Plan

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

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

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

1.3 Key Concepts in Asset Management

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

1.3.1 Lifecycle Management Strategies

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

utilization, maintenance history and environment. Asset deterioration has a negative effect on the ability of an asset to fulfill its intended function, and may be characterized by increased cost, risk and even service disruption.

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

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

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

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

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

1.3.2 Risk Management Strategies

Municipalities generally take a 'worst-first' approach to infrastructure spending. Rather than prioritizing assets based on their importance to service delivery, assets in the worst condition are fixed first, regardless of their criticality. However, not all

assets are created equal. Some are more important than others, and their failure or disrepair poses more risk to the community than that of others. For example, a road with a high volume of traffic that provides access to critical services poses a higher risk than a low volume rural road. These high-value assets should receive funding before others.

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

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

1.3.3 Levels of Service

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

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

Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories (roads, bridges and structural 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 structural 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.

1.4 Climate Change

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

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

across Canada. Recorded events include droughts, flooding, cold extremes, warm extremes, wildfires, and record minimum arctic sea ice extent.

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

1.4.1 Gillies Climate Profile

The Township of Gillies is located in Northwestern Ontario within the District of Thunder Bay. 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 Gillies may experience the following trends:

Higher Average Annual Temperature:

- Between the years of 1971 and 2000, the annual average temperature was 2.3°C
- Under a high emissions scenario, the annual average temperatures are projected to be 5.1°C for the 2021-2050 period, 7.4°C for the 2051-2080 period, and 9.3°C for the last 30 years of this century.

Increase in Total Annual Precipitation:

- Under a high emissions scenario, Gillies is projected to experience an 8% increase in precipitation for the 2051-2080 period and a 14% increase for the last 30 years of this century.

1.4.2 Integrating Climate Change and Asset Management

Asset management practices aim to deliver sustainable service delivery - the delivery of services to residents today without compromising the services and well-being of future residents. Climate change threatens sustainable service delivery by reducing the useful life of an asset and increasing the risk of asset failure. Desired levels of service can be more difficult to achieve 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.

1.5 Ontario Regulation 588/17

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

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

2019

Strategic Asset Management Policy

2022

Asset Management Plan for Core Assets with the following components:

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

2024

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

2025

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

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

1.5.1 O. Reg. 588/17 Compliance Review

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

Requirement	O. Reg. Section	AMP Section Reference	Status
Summary of assets in each category	S.5(2), 3(i)	4.1 – 9.1	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	4.1 – 9.1	Complete
Average age of assets in each category	S.5(2), 3(iii)	4.2 – 9.2	Complete
Condition of core assets in each category	S.5(2), 3(iv)	4.2 – 9.2	Complete
Description of Township's approach to assessing the condition of assets in each category	S.5(2), 3(v)	4.2.1 – 9.2.1	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	4.5 – 9.5	Complete
Current performance measures in each category	S.5(2), 2	4.4 – 9.4	Complete
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	4.3 – 9.3	Complete
Costs of providing lifecycle activities for 10 years	S.5(2), 4	Appendix B	Complete
Growth assumptions	S.5(2), 5(i-ii) S.5(2), 6(i-vi)	10.1 – 10.3	Complete

2 Scope and Methodology

Key Insights

- This asset management plan includes 6 asset categories and is fully 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

2.1 Asset Categories Included in this AMP

This asset management plan for the Township of Gillies is produced in compliance with Ontario Regulation 588/17. The July 2024 deadline under the regulation—the second of three AMPs—requires analysis of core assets (roads, bridges and structural culverts) and non-core assets (buildings & facilities, vehicles, machinery & equipment, land improvements and technology & communications).

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

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

2.2 Deriving Replacement Costs

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

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

User-defined costs based on reliable sources are a reasonably accurate and reliable way to determine asset replacement costs. Cost inflation is typically used in the

absence of reliable replacement cost data. It is a reliable method for recently purchased and/or constructed assets where the total cost is reflective of the actual costs that the Township incurred. As assets age, and new products and technologies become available, cost inflation becomes a less reliable method.

2.3 Estimated Useful Life and Service Life Remaining

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

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

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

2.4 Reinvestment Rate

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

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

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

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

2.5 Deriving Asset Condition

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

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

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

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

2.6 Deriving Asset Risk

Qualitative Risk

Risk is defined as the effect of uncertainty on objectives. Inherent in the management of infrastructure assets is the assumption of risks. Often, asset risks are specific and measurable. Sometimes, however, risks are impractical to quantify, but are recognized for the threats they pose to assets and their ability to provide their intended service. These are qualitative risks.

Qualitative risks can indicate key trends, challenges, and risks to service delivery that the Township faces. Qualitative risks were identified as applicable to the Township of Gillies's assets. The application of these risks to the Township's assets are further discussed in within each asset category section.

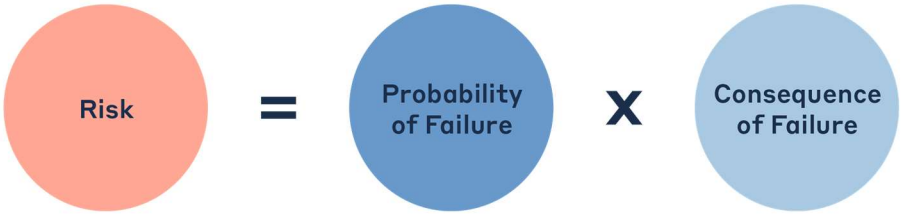
Identifying what qualitative risks are applicable to the Township and which asset categories may be most impacted is a critical first step in the management of risk.

Quantitative Risk

Asset risks may also be specific and measurable against an asset based on attribute features like condition, material, and the cost to replace. When risk can be quantified against an asset it is a quantitative risk.

Quantitative risk is a product of two variables: the **probability** that an asset will fail, and the resulting **consequences** of that failure event. To calculate risk, the probability and consequence of failure are each scored from 1 to 5, producing a minimum risk rating of one (1) for the lowest risk assets, and a maximum risk rating of 25 for the highest risk assets.

Formula to Assess Risk of Assets



Probability of Failure

Various parameters may be used to estimate the probability or likelihood of an asset's failure. Typically, a model is selected for a group of similar assets (e.g., all roads, water distribution system etc.). Often parameters for estimating probability of failure include asset condition, service life remaining, and/or asset material.

For each risk model, probability of failure (PoF) is determined through the following steps:

1 Identification of *available* attribute data *suitable* for determining the probability of failure for selected assets. In some instances, available asset data may be limited requiring a more simplified PoF model, at least initially.

- This process often identifies opportunities for asset data enhancements and/or data collection.

2 Determination of the type of consequence that applies to the selected attribute.

- Condition, Design Capacity, Economic, Environmental, Health and Safety, Operational, Social, Strategic

3 Where there are multiple parameters included in the PoF model, determine suitable weighting of each parameter.

- Weighting allows the model to recognize that each factor may impact the probability of failure to a different degree. Where the weight is higher, the impact that factor has on the model increases too.

Consequence of Failure

The consequence of failure describes the anticipated effect of an asset's failure to an organization and its stakeholders. There are different types of consequences of failure which can range from insignificant to severe. For example, failure of an infrequently used road may affect only a few residents and/or inconvenience them slightly (i.e., minimal detour distance). Conversely, failure of a more significant road could create significant issues to the transportation networks and affect many residents' ability to access critical community services (i.e., hospitals and schools).

The CoF parameters selected for each risk model aim to measure relevant consequences of an asset's failure. For each risk model, consequence of failure is determined through the following steps:

1 Identification of available attribute data suitable for determining the consequence of failure for selected assets.

    - Again, the data available to calculate consequence of failure may be limited, requiring a simplified model at least for a period.

2 Determination of the type of consequence that applies to the selected attribute.

    - Condition, Design Capacity, Economic, Environmental, Health and Safety, Operational, Social, Strategic

3 Where there are multiplied parameters included in the CoF model, determine suitable weighting of each parameter.

    - Weighting allows the model to recognize that each factor may impact the consequence of failure to a different degree. Where the weight is higher, the impact that factor has on the model increases too.

Risk Scores

Risk Scores are derived from the total PoF multiplied by the total CoF. In this model, risk scores may range from 0-25. The table below provides some examples of respective PoF and CoF scores and the resultant risk rating.

Probability of Failure	Consequence of Failure	Risk Rating
1 – Rare	1 – Insignificant	1 - 4 – Very Low
2 – Unlikely	2 – Minor	5 - 7 – Low
3 – Possible	3 – Moderate	8 - 9 – Moderate
4 – Likely	4 – Major	10 - 14 – High
5 – Almost Certain	5 – Severe	15 - 25 – Very High

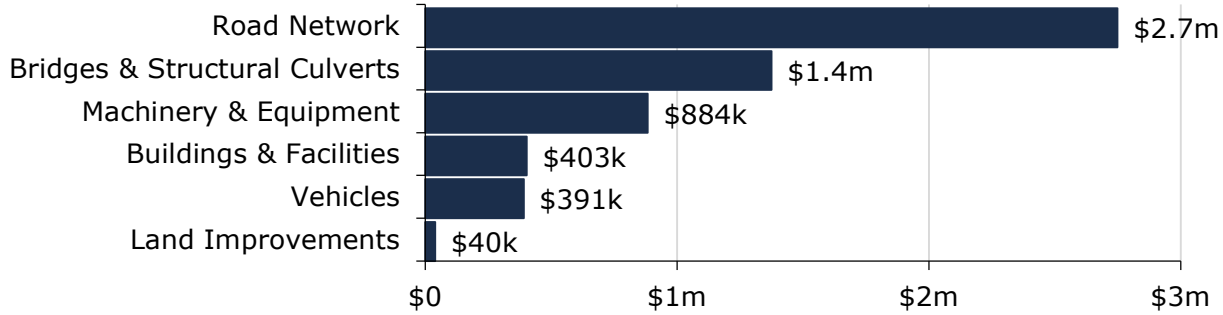
3 Portfolio Overview

Key Insights

- The total replacement cost of the Township's asset portfolio is $5.8 million
- 33% of all assets are in fair or better condition
- 61% of assets are projected to require replacement in the next 10 years
- Average annual capital requirements total $302,000 per year across all assets included in this AMP

3.1 Total Replacement Cost of Asset Portfolio

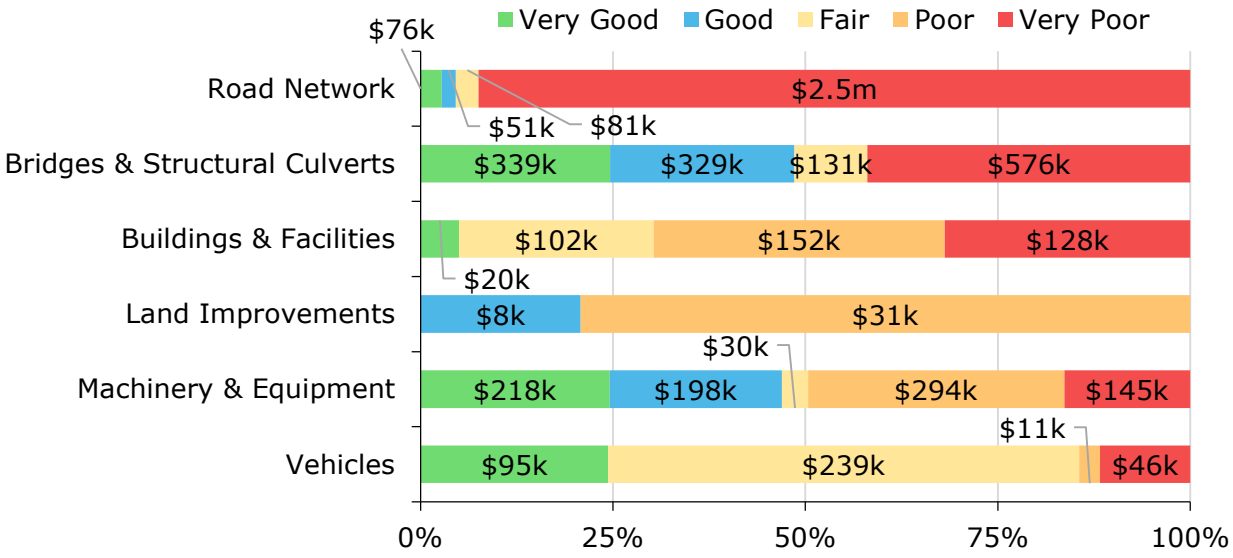
The asset categories analysed in this AMP have a total replacement cost of $5.8 million based on inventory data from 2022. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.



Inflation of previous replacement or historical costs was employed as the primary method to determine replacement costs across each asset category.

3.2 Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 33% of assets in Gillies 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 32% of assets included in this AMP; 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.

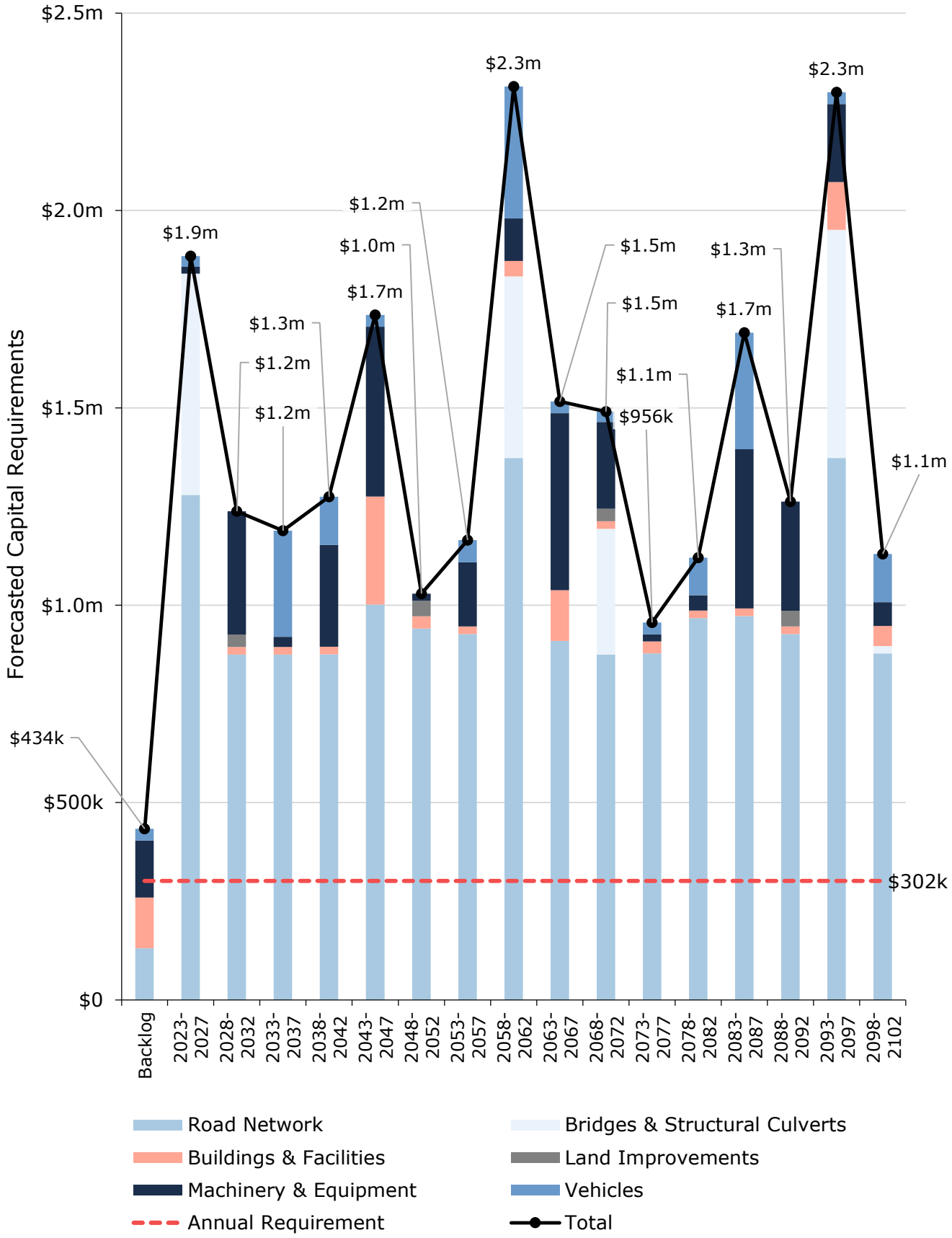
Asset Category	% of Assets with Assessed Condition	Source of Condition Data
Road Network	18%	Staff Assessments
Bridges & Structural Culverts	100%	2021 OSIMs Report
Vehicles	3%	Staff Assessments

3.3 Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 61% of the Township's assets will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix B.

3.4 Forecasted Capital Requirements

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


$2.5m
$2.0m
$1.5m
$1.0m
$500k
$0
Forecasted Capital Requirements
$434k
$1.9m
$1.3m
$1.2m
$1.2m
$1.7m
$1.2m
$1.0m
$2.3m
$1.5m
$1.5m
$1.1m
$956k
$1.3m
$1.7m
$2.3m
$1.1m
$302k
Backlog
2023-2027
2028-2032
2033-2037
2038-2042
2043-2047
2048-2052
2053-2057
2058-2062
2063-2067
2068-2072
2073-2077
2078-2082
2083-2087
2088-2092
2093-2097
2098-2102
Road Network
Bridges & Structural Culverts
Buildings & Facilities
Land Improvements
Machinery & Equipment
Vehicles
Annual Requirement
Total

4 Road Network

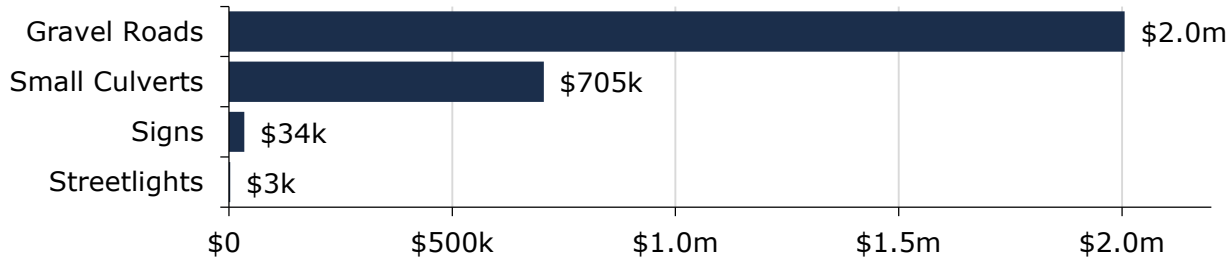
The road network is a critical component of the provision of safe and efficient transportation services and represents the highest value asset category in the Township's asset portfolio. It includes all municipally owned and maintained roadways in addition to supporting roadside infrastructure including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

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

4.1 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[1]	Annual Capital Requirement
Gravel Roads	61 km	$2,006,000[2]	$175,000[3]
Signs	TBD	$34,000	$2,000
Small Culverts	3.6 km	$705,000	$20,000
Streetlights	5	$3,000	$130
Total		**$2,749,000**	**$197,000**



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

[1] In 2022 dollars.
[2] Gravel roads undergo perpetual operating and maintenance activities. If maintained properly, they can theoretically have a limitless service life, therefore gravel roads are typically marked as Not Planned for Replacement if gravel roads do not make up the majority of a municipality's roads.
[3] Includes costing for re-gravelling and dust control.

4.2 Asset Condition & Age

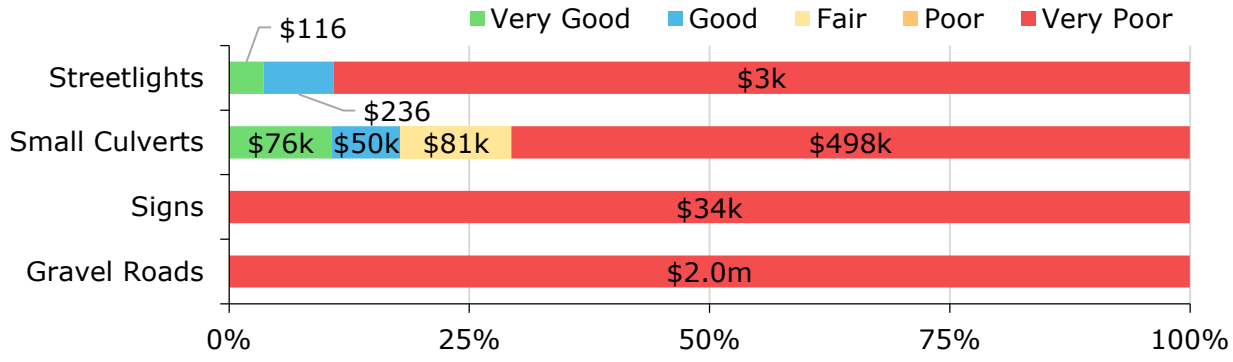
The table below identifies the current average condition, the average age, and the estimated useful life for each asset segment. The average condition (%) is a weighted value based on replacement cost. Assessed condition was available for the majority of the small culverts and streetlights. Gravel roads and signs are primarily age-based.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition [4]
Gravel Roads	10	23	0% (Very Poor)
Signs	20	23	0% (Very Poor)
Small Culverts	35	99	22% (Poor)
Streetlights	25	45	8% (Very Poor)
Average		**91**	**6% (Very Poor)**

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

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



[4] Weighted by replacement cost.

To ensure that the Township's road 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 roads.

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

4.2.1 Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. Currently, the Township identifies deficiencies through an informal visual inspection, with re-gravelling and grading being prioritized on a worst-first approach. A formal condition assessment rating scale has yet to be developed.

4.3 Lifecycle Management Strategy

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

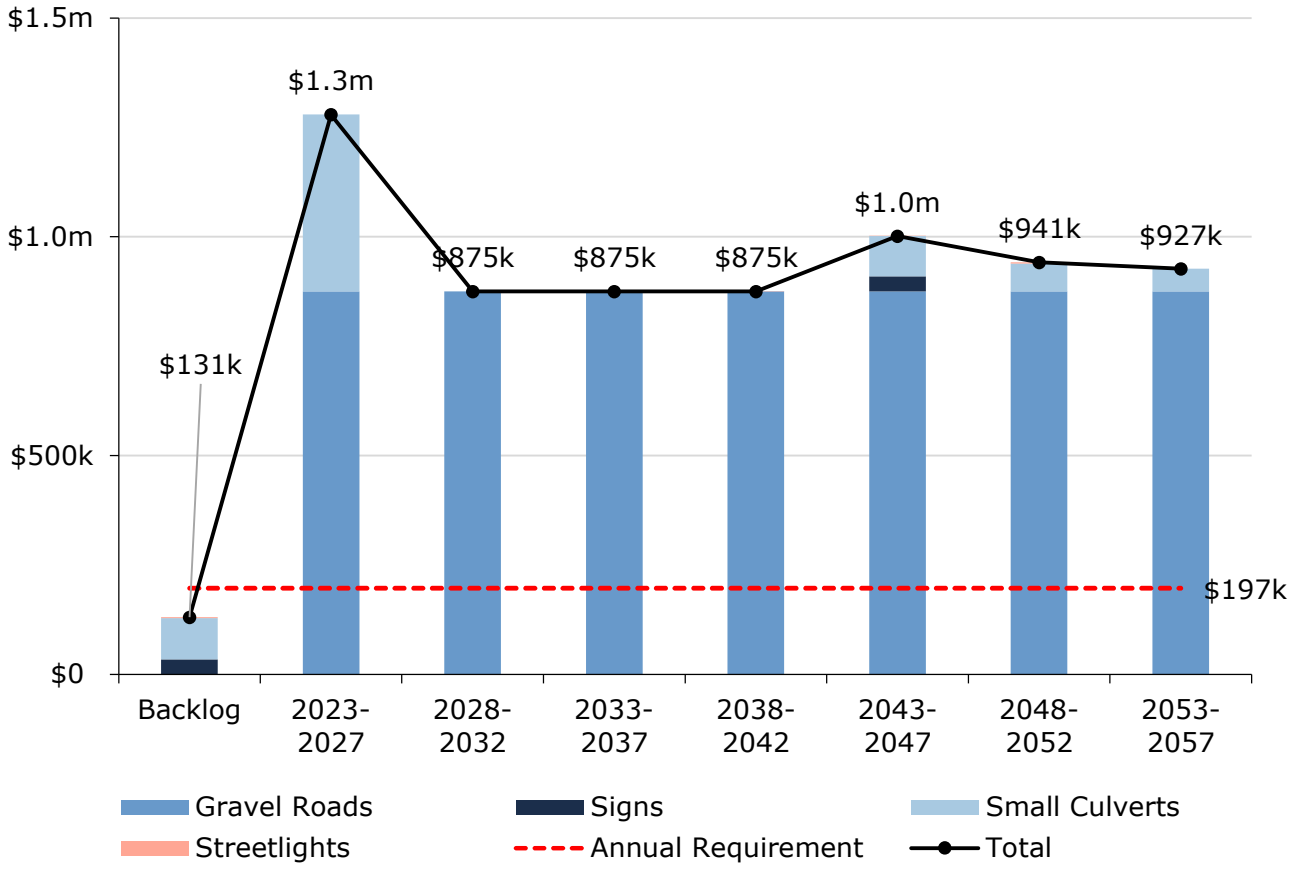
Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	The roads undergo perpetual maintenance but lack proper rehabilitation, such as achieving an adequate crown and maintaining the appropriate grade and thickness of gravel
	The re-graveling process is conducted on an as-needed basis without a consistent schedule or frequency. Concerns have been raised about the insufficiency of gravel for effective grading, as the gravel used is clay-based and not of Class A quality, resulting in insufficient road thickness
	Dust control measures are implemented once a year in the fall. However, budget constraints prevent comprehensive coverage of all roads, with the higher-traffic roads being prioritized

Activity Type	Description of Current Strategy
Replacement	The road network inventory consists only of gravel roads, which are perpetually maintained

4.3.1 Forecasted Capital Requirements

Based on end-of-life replacement of all assets in this category, the following graph forecasts capital requirements for the road network.

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 35 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



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

4.4 Risk & Criticality

4.4.1 Risk Ratings

The following risk ratings are first shown for the overall category and then by segment for the assets within this category based on 2022 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

1 – 4 Very Low $39,000 (1%)	5 – 7 Low $83,000 (3%)	8 – 9 Moderate $29,000 (1%)	10 – 14 High $536,000 (20%)	15 – 25 Very High $2,062,000 (75%)

Asset Segment	Probability of Failure	Consequence of Failure	Average Risk Rating
Gravel Roads	5 / 5	4.04 / 5	20.20 / 25
Signs	5 / 5	5 / 5	25 / 25
Small Culverts	4.13 / 5	3.08 / 5	11.32 / 25
Streetlights	4.64 / 5	1.89 / 5	9.1 / 25
Average	**4.78 / 5**	**3.8 / 5**	**17.97 / 25**

Overall, the average risk rating is 17.97, which is considered Very High.

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 (Economic)	Replacement Cost (Economic)
	Drainage (Environmental)
	Hauling Routes (Operational)
	Affected by Agricultural Society Events (Social)
	LRCA Regulated Area (Health and Safety)

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.

4.4.2 Risks to Current Asset Management Strategies

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

Organizational Capacity/Cognizance

The effectiveness and safety of road network management are influenced by organizational capacity and awareness. The Township faces challenges due to limited staffing across various departments, including landfill administration and road maintenance, resulting in operational gaps. These challenges are linked to historical factors such as high turnover rates and difficulties in filling vacancies. In smaller communities, competitive compensation further complicates hiring and retention efforts. Addressing these organizational gaps is crucial for both the immediate functionality and long-term sustainability of the road network.

Climate Change & Extreme Weather Events

Climate change significantly heightens the risk to the road network, particularly for roads situated in flood plains, which are now subject to more frequent and severe flooding than in the past. This escalation in flooding can erode gravel road surfaces and weaken their foundations, leading to increased maintenance challenges and travel disruptions. Building climate-resilient infrastructure is crucial, ensuring that gravel road networks are adapted to maintain safe and reliable transportation in response to changing climate conditions.

Capital Funding Strategies

The Township's road network faces challenges due to limited reinvestment and a dependence on grants. This approach can delay necessary maintenance and upgrades, as it relies on unpredictable external funding. Such delays contribute to declining road conditions and escalating repair costs over time. The uncertainty of grant funding complicates long-term planning, hindering efforts to proactively enhance road resilience. As a result, the road network encounters increasing maintenance challenges and potential issues, impacting the Township's long-term economic and social well-being.

4.5 Levels of Service

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

4.5.1 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include maps, of the road network in the Township and its level of connectivity	Local connectivity is sufficient for daily travel, access to local amenities, and supporting agricultural and resource-related activities. Links to secondary and provincial highways help residents and visitors reach larger urban centers, facilitating commerce and emergency services. Travelers are advised to check local updates during harsh weather periods to check for road closures and safe driving conditions.
Quality	Description or images that illustrate the different levels of road class pavement condition	The Township's road network consists of gravel roads only.

4.5.2 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	N/A
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	N/A
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	61 km : 93 km^2
Quality	Average pavement condition index for paved roads in the Township	N/A
	Average surface condition for unpaved roads in the Township (e.g. excellent, good, fair, poor)	Very Poor
	% road network assets in fair or better condition	8%
	% road network assets in poor or worse condition	92%
	Average road network asset condition	6%

4.6 Recommendations

Asset Inventory

- Review inventory to determine whether all municipal assets within these asset segments have been accounted for.
- The signs inventory includes either pooled assets that should be broken into discrete segments or requires updates to quantities to allow for detailed planning and analysis.

Condition Assessment Strategies

- Consider developing a condition assessment program where applicable that identifies assessment methodology, persons responsible, frequency of assessment, and updates of assessment information to the asset management database. Where resources are limited, consider prioritizing assessments to assets based on their criticality to the organization or another means of prioritization.
- 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.

Lifecycle Management Strategies

- Consider developing a lifecycle management strategy where applicable that identifies lifecycle activities, persons responsible, frequency of activity, costs, and impacts on the assets included in the strategy. The development of this strategy may also help mitigate the impacts of staff capacity constraints as an outlined plan will save time determining what activities to perform and prioritization.
- Evaluate the efficacy of the lifecycle management strategy at regular intervals to determine the impact cost, condition and risk.

Risk Management Strategies

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

Levels of Service

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

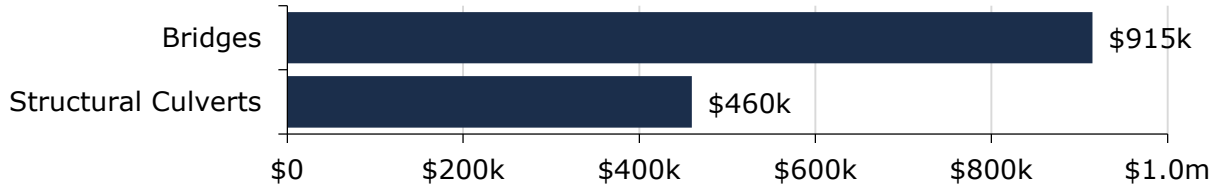
5 Bridges & Structural Culverts

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

5.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost[5]	Annual Capital Requirement[6]
Bridges	1	$915,000	$22,000
Culverts	3	$460,000	$11,000
Total		**$1,375,000**	**$33,000**



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

5.2 Asset Condition & Age

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

[5] In 2022 dollars.
[6] The annual capital requirement includes recommended activities from the 2021 OSIMs report.

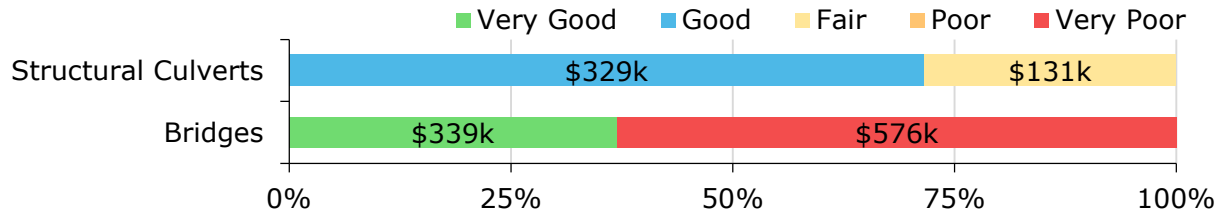
weighted value based on replacement cost. Condition is based solely on 2021 OSIMs report.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition[7]
Bridges	50 - 80	25	43% (Fair)
Culverts	50	43	50% (Good)
Average		**33**	**55% (Good)**

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

Condition	Rating	Conversion to Percentage (%)
Very Good	4.5 - 5	87.5 - 100
Good	2.8 - 4.5	45 - 87.5
Fair	2.5 - 2.8	37.5 - 45
Poor	2 - 2.5	25 - 37.5
Very Poor	1 - 2	0 - 25

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 Bridges & Culverts 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 bridges and structural culverts.

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

[7] Weighted by replacement cost.

5.2.1 Current Approach to Condition Assessment

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

- Condition assessments for all bridges and structural culverts within the Township are conducted biennially, following the guidelines of the Ontario Structure Inspection Manual (OSIM), carried out by an external consultant.

5.3 Lifecycle Management Strategy

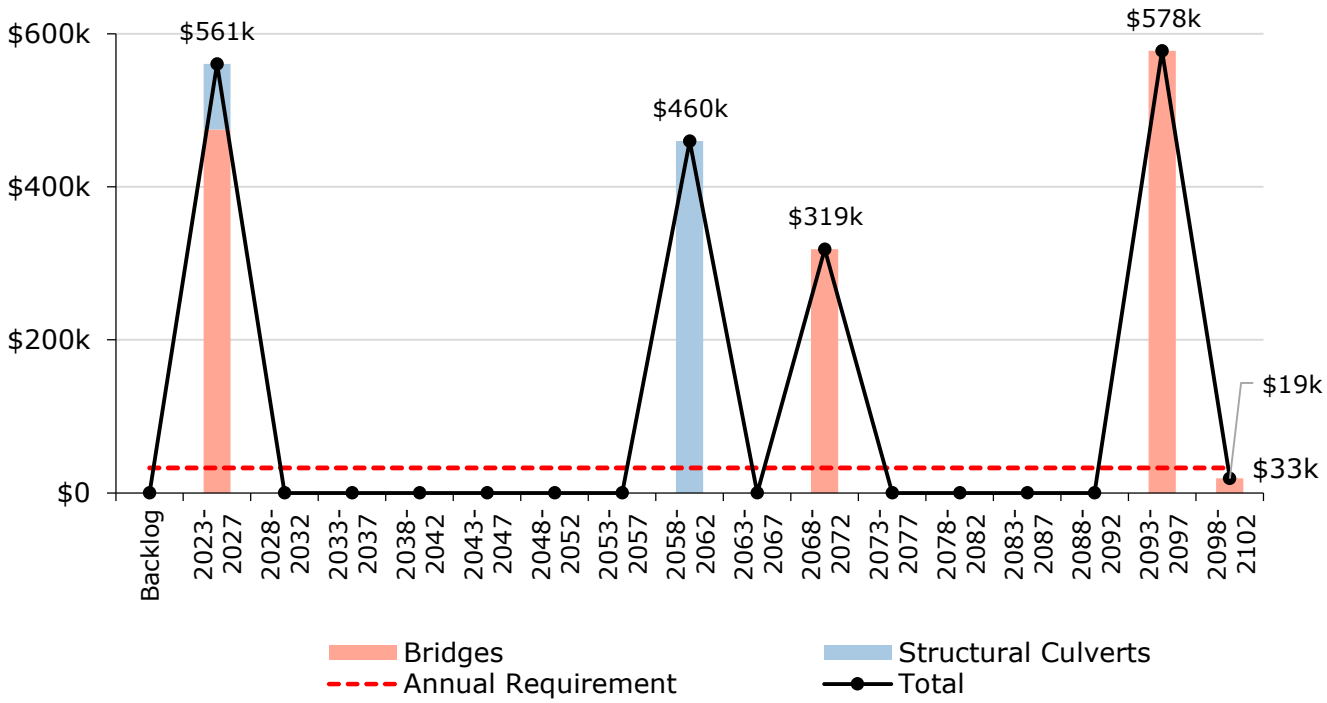
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance, Rehabilitation and Replacement	All lifecycle activities are driven by the results of mandated structural inspections completed according to the Ontario Structure Inspection Manual (OSIM), however, due to constraints in available funding, recommendations are almost always overlooked unless the suggested work is deemed critical
Inspection	The most recent inspection report was completed in 2021 by JML Engineering

5.3.1 Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 80 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



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

5.4 Risk & Criticality

5.4.1 Risk Ratings

The following risk ratings are first shown for the overall category and then by segment for the assets within this category based on 2022 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

1 – 4 Very Low -	5 – 7 Low $339,000 (25%)	8 – 9 Moderate -	10 – 14 High $329,000 (24%)	15 – 25 Very High $707,000 (51%)

Asset Segment	Probability of Failure	Consequence of Failure	Average Risk Rating
Bridges	3.52 / 5	5 / 5	17.60 / 25
Structural Culverts	2.28 / 5	5 / 5	11.42 / 25
Average	**3.11 / 5**	**5 / 5**	**15.53 / 25**

Overall, the average risk rating is 15.53, which is considered Very High.

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

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

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

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

5.4.2 Risks to Current Asset Management Strategies

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

Organizational Capacity/Cognizance

Organizational capacity and cognizance present significant challenges to the maintenance of the Township's bridges and structural culverts. Given the limitations in manpower and expertise, it's not possible for the Township to handle all necessary work internally. As a result, some tasks are outsourced and despite efforts to address all maintenance needs within a year, they are unable to address all the arising issues. This approach degrades the overall condition of bridges and structural culverts, potentially leading to unaddressed wear and damage that could escalate into more severe safety and infrastructure issues over time.

Capital Funding Strategies

The absence of dedicated capital funding and dependence on grants is another risk consideration for bridges and structural culverts. This reliance on uncertain grant funding delays necessary repairs and upgrades, risking the deterioration of critical infrastructure. Such delays can lead to compounding repair costs and an increased risk of potential safety hazards. Without stable funding, timely maintenance and

improvements are challenging, leaving the infrastructure vulnerable to further wear and potential service interruptions.

5.5 Levels of Service

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

5.5.1 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description of the traffic that is supported by municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Bridges and structural culverts are a key component of the municipal transportation network. None of the Township's structures have loading or dimensional restrictions meaning that most types of vehicles, including heavy transport, emergency vehicles, and cyclists can cross them without restriction.
Quality	Description or images of the condition of bridges and structural culverts and how this would affect use of the bridges and structural culverts	See Appendix C

5.5.2 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Scope	% of bridges in the Township with loading or dimensional restrictions	0%
Quality	Average condition for bridges in the Township	Fair[8]
	Average condition for structural culverts in the Township	Good

[8] Overall conditions provided in 2021 OSIMs report by JML Engineering

5.6 Recommendations

Data Review/Validation

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

Risk Management Strategies

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

Lifecycle Management Strategies

- The Township should work towards integrating projected capital rehabilitation and renewal costs outlined in OSIMs reports into long-term planning.

Levels of Service

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

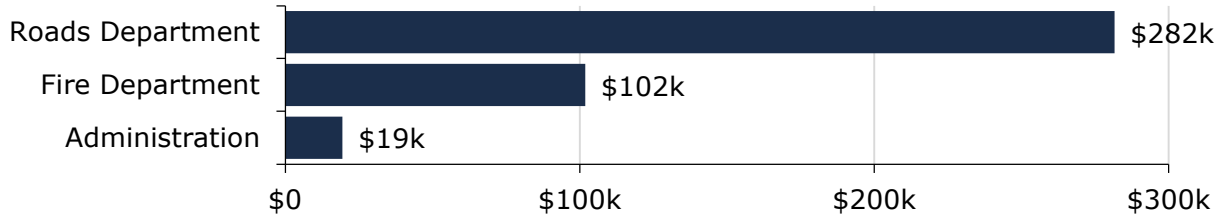
6 Buildings & Facilities

The Township of Gillies owns and maintains multiple facilities that provide key services to the community.

6.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost[9]	Annual Capital Requirement
Administration	1	$19,000	$4,000
Fire Department	1	$102,000	$2,000
Roads Department	3	$282,000	$5,000
Total	**5**	**$403,000**	**$11,000**



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

6.2 Asset Condition & Age

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

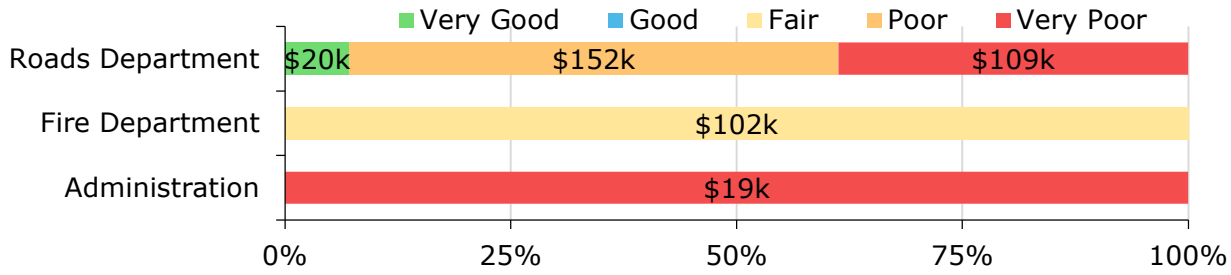
[9] In 2022 dollars.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition [10]
Administration	5	6	0% (Very Poor)
Fire Department	50	30	40% (Fair)
Roads Department	40 - 70	33	22% (Poor)
Average		**27**	**26% (Poor)**

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

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

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 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 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.

[10] Weighted by replacement cost.

6.2.1 Current Approach to Condition Assessment

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

- At present, there are no formal evaluations or inspections being carried out for the buildings and facilities.

6.3 Lifecycle Management Strategy

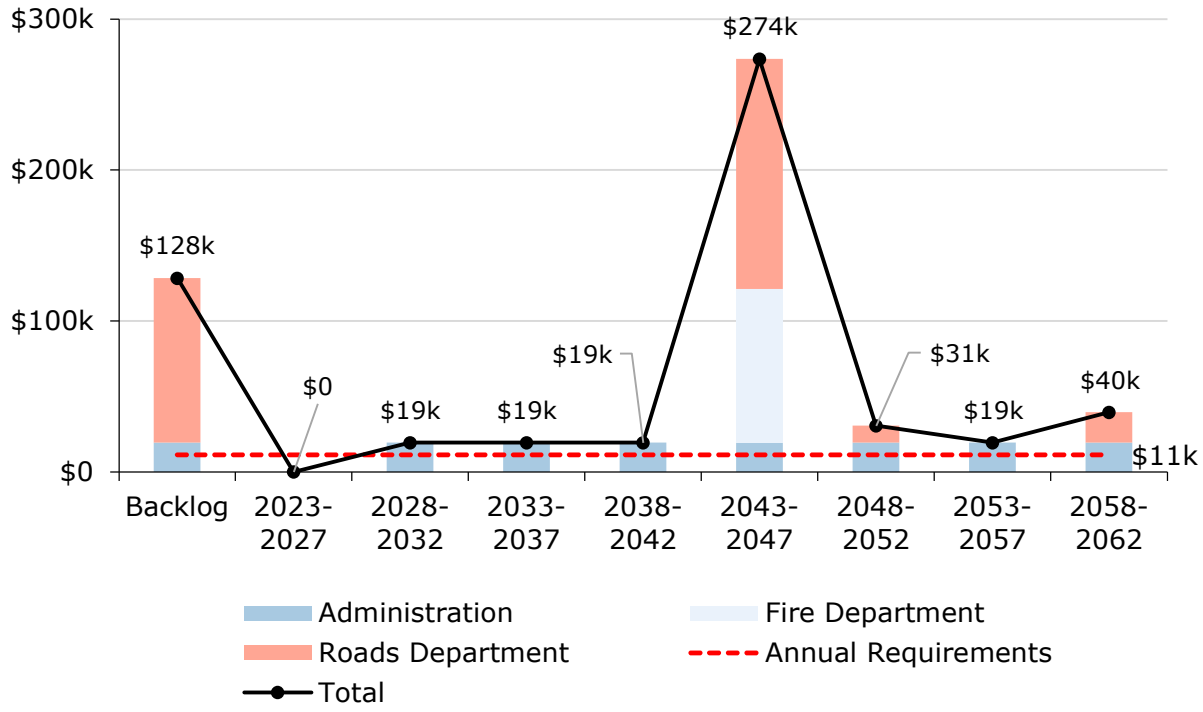
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration. The following table outlines the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

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	There is currently no maintenance or rehabilitation being performed on the facilities
	The approach to facility upkeep has been reactive rather than proactive, focusing on repairs instead of replacements
	Department managers are responsible for presenting essential information to the council to secure budget allocations for maintenance and upgrades. However, proposals are sometimes postponed and may be removed from the budget. This can result in certain maintenance tasks remaining unaddressed.
Replacement	Due to budget constraints, necessary replacements are sometimes deferred. This can result in vulnerabilities within the Township, as outdated or insufficiently maintained infrastructure may compromise safety and operational efficiency.

6.3.1 Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 40 years. This projection is used as it

ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



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

6.4 Risk & Criticality

6.4.1 Risk Ratings

The following risk ratings are first shown for the overall category and then by segment for the assets within this category based on 2022 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

1 – 4 Very Low -	5 – 7 Low $20,000 (5%)	8 – 9 Moderate -	10 – 14 High -	15 – 25 Very High $383,000 (95%)

Asset Segment	Probability of Failure	Consequence of Failure	Average Risk Rating
Administration	5 / 5	5 / 5	25 / 25
Fire Department	3 / 5	5 / 5	15 / 25
Roads Department	4.17 / 5	5 / 5	20.86 / 25
Average	**3.92 / 5**	**5 / 5**	**19.58 / 25**

Overall, the average risk rating is 19.58, which is considered Very High.

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 facilities are documented below:

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

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

6.4.2 Risks to Current Asset Management Strategies

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

Organizational Capacity/Cognizance

Organizational limitations significantly impact the functionality and safety of Township facilities and buildings. Resource constraints preventing necessary building assessments are a critical concern, exposing maintenance and safety deficiencies. Additionally, housing the administration office within a leased classroom in a local school introduces a dependency that could disrupt Township operations if the school closes. This reliance on external properties underscores broader challenges within the Township, such as insufficient planning and resource allocation, potentially jeopardizing service delivery and community satisfaction.

Capital Funding Strategies

The Township's current reliance on grants and capital funding strategies presents challenges for the upkeep and enhancement of its buildings and facilities. For instance, the garage requires either the replacement or repair of its doors. Additionally, while specific needs for the fire hall have not been fully detailed, certain actions are necessary.

While minor repairs are typically managed within operational budgets, obtaining grants for more significant projects proves difficult. The Township often depends on specific funding sources, such as gas tax or OCIF, and may lack the resources to explore additional grants. Additionally, the Township's capacity to secure loans is limited by its repayment capabilities. Although department managers proactively include necessary projects in their budgets, many of these proposals are often reduced, leading to deferred maintenance and improvements. This financial limitation may contribute to the gradual decline of facilities and services, potentially impacting community well-being.

6.5 Levels of Service

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

6.5.1 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include maps, of the types of facilities that the municipality operates and maintains	Using age-based condition, facility assets are on average in Poor (26%) condition. Municipal operations facilities include the fire hall, public works garage, and the Township Office.

6.5.2 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Quality	Average overall condition for the category	26% (Poor)
Performance	% building assets in fair or better condition	30%
	% building assets assets in poor or worse condition	70%

6.6 Recommendations

Asset Inventory

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

Replacement Costs

- Regularly gather and update replacement costs to ensure the accuracy of capital projections. Replacement costs should be updated according to the best available information on the cost to replace the asset in today's value. Consider developing a framework for the frequency of replacement cost updates.

Condition Assessment Strategies

- Consider developing a condition assessment program that identifies assessment methodology, persons responsible, frequency of assessment, and updates of assessment information to the asset management database. Where resources are limited, consider prioritizing assessments to assets based on their criticality to the organization or another means of prioritization.
- If a formal building condition assessment is not performed, request condition information from contractors who service critical building systems like HVAC and fire protection systems. Record this information in Township asset management software and use it to inform asset management decisions including capital planning.
- Review assets that have surpassed their estimated useful life to determine if immediate replacement is required or whether these assets are expected to remain in-service. Adjust the service life and/or condition ratings for these assets accordingly

Risk Management Strategies

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

Levels of Service

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

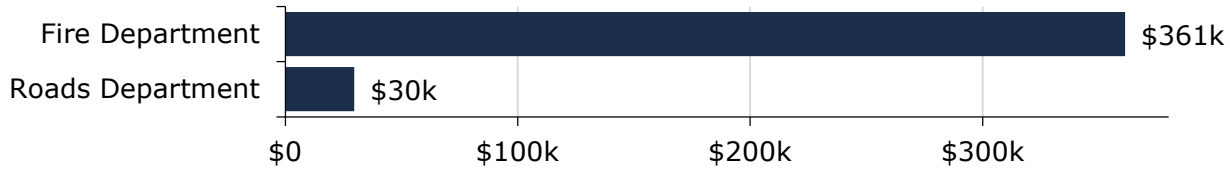
7 Vehicles

Vehicles allow staff to efficiently deliver municipal services and personnel. Municipal vehicles include work trucks and fire vehicles.

7.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost[11]	Annual Capital Requirement
Fire Department	4	$361,000	$16,000
Roads Department	2	$30,000	$3,000
Total	**6**	**$391,000**	**$19,000**



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

7.2 Asset Condition & Age

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

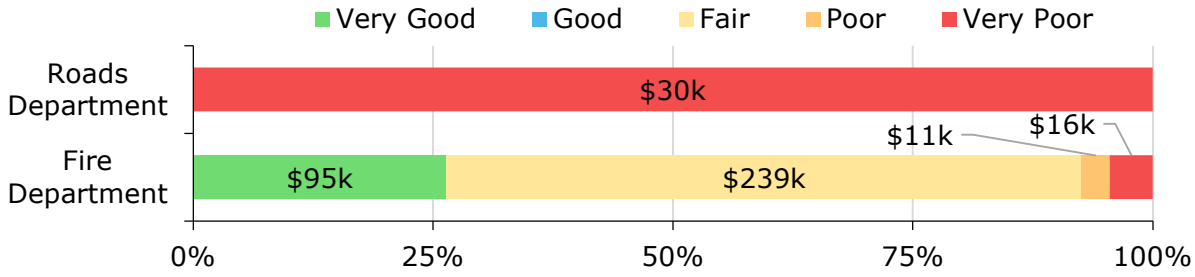
Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition [12]
Fire Department	15 - 20	14	57% (Fair)
Roads Department	10 - 15	16	0% (Very Poor)
Average		**27**	**52% (Fair)**

[11] In 2022 dollars.
[12] Weighted by replacement cost.

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

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

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.

7.2.1 Current Approach to Condition Assessment

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

- An external mechanic conducts annual inspections of vehicles to verify their proper functionality

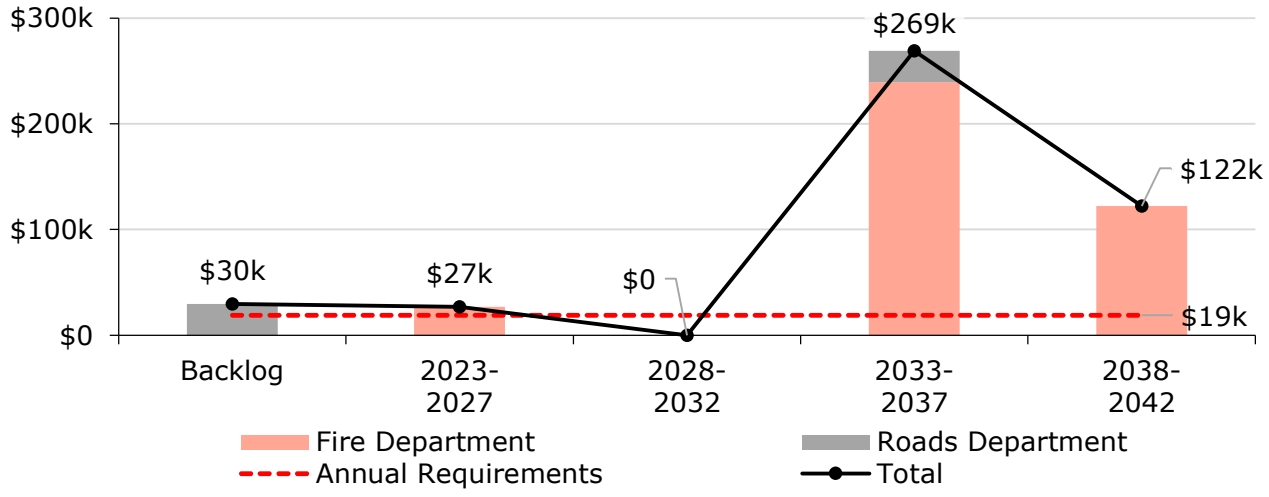
7.3 Lifecycle Management Strategy

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

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	Basic maintenance is routinely performed on vehicle assets, ensuring their operational readiness
	Rebuilds are evaluated by comparing rehabilitation costs with replacement expenses and considering the potential for extended use
Replacement	Assets are maintained regularly until they reach end of life, at which point they are replaced

7.3.1 Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 20 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



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

7.4 Risk & Criticality

7.4.1 Risk Ratings

The following risk ratings are first shown for the overall category and then by segment for the assets within this category based on 2022 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

1 – 4 Very Low -	5 – 7 Low $95,000 (24%)	8 – 9 Moderate -	10 – 14 High -	15 – 25 Very High $296,000 (76%)

Asset Segment	Probability of Failure	Consequence of Failure	Average Risk Rating
Fire Department	2.56 / 5	5 / 5	12.81 / 25
Roads Department	5 / 5	5 / 5	25 / 25
Average	**2.75 / 5**	**5 / 5**	**13.73 / 25**

Overall, the average risk rating is 13.73, which is considered High.

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 (Economic)	Replacement Cost (Economic)

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

7.4.2 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 and Extreme Weather Events

The Township faces risks due to climate change and extreme weather, including freezing rain, which increase vehicle maintenance and repair needs. Harsh conditions accelerate tire wear and strain engines during cold starts, highlighting the necessity for a durable patrol truck. Securing such vehicles is crucial to maintaining reliable services amid growing climate unpredictability. Insufficient investment in appropriate vehicles could compromise the Township's operational capacity, impacting public safety and service delivery. Therefore, ensuring vehicles can withstand adverse weather is essential for the Township's resilience.

Aging Vehicles and Capital Funding Strategies

Townships face significant challenges due to post-pandemic inflation and a lack of capital funding strategies, impacting their vehicle fleets. Rising fuel and vehicle costs, along with prolonged supply chain disruptions, highlight the urgent need for adaptable financial planning. Vehicle shortages and increased expenses for essential service vehicles emphasize the importance of ensuring their availability and efficiency.

Proactively addressing these financial and logistical challenges is crucial for maintaining operational capabilities and service delivery standards. Strategic financial planning and investment in essential assets is vital for the Township to adapt to changing economic conditions and ensure sustained community well-being and operational efficiency.

7.5 Levels of Service

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

7.5.1 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description or images of the types of vehicles (e.g. light, medium and heavy-duty) that the municipality operates and the services that they help to provide to the community.	Using primarily age-based condition data, vehicle assets are on average in Fair condition (52%). The Fleet includes assets for the Township's fire and public works departments.

7.5.2 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Quality	Average overall condition for the category	52% (Fair)
Performance	% vehicles assets in fair or better condition	86%
	% vehicles assets assets in poor or worse condition	14%

7.6 Recommendations

Replacement Costs

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

Condition Assessment Strategies

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

Risk Management Strategies

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

Lifecycle Management Strategies

- Incorporate investment recommendations from the mechanic into the asset management system as a lifecycle event against the corresponding asset.
- As best as possible, consider the rapidity of technological advancements during capital planning.

Levels of Service

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

8 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:

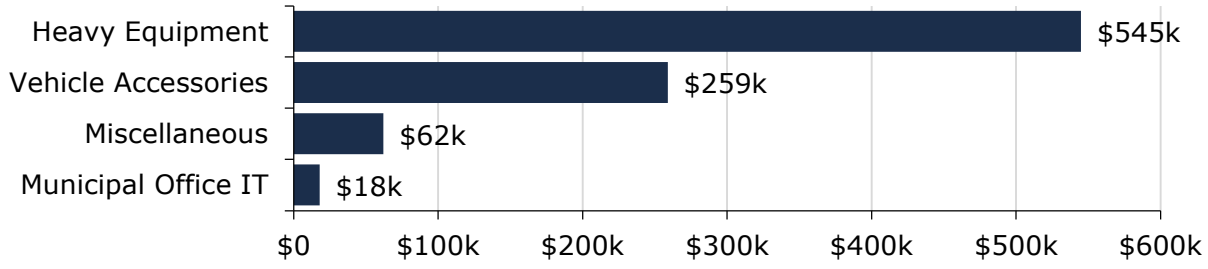
- Vehicle accessories
- Heavy equipment
- Small equipment
- Municipal office IT

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

8.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost[13]	Annual Capital Requirement
Heavy Equipment	3	$545,000	$24,000
Miscellaneous	6	$62,000	$3,000
Vehicle Accessories	2	$259,000	$10,000
Municipal Office IT	1	$18,000	$4,000
Total		**$884,000**	**$40,000**



[13] In 2022 dollars.

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

8.2 Asset Condition & Age

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

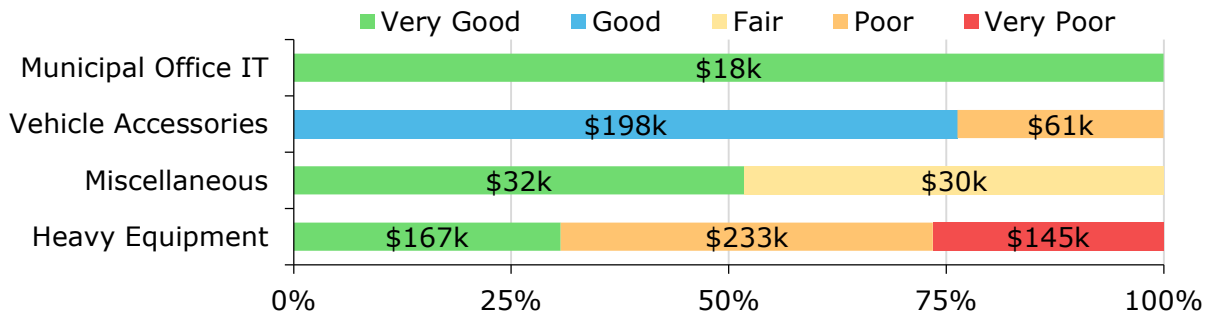
Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition [14]
Heavy Equipment	19 - 30	17	37% (Poor)
Miscellaneous	20 - 30	8	68% (Good)
Vehicle Accessories	25 - 30	16	53% (Fair)
Municipal Office IT	5	<1	98% (Very Good)
Average		**11**	**45% (Fair)**

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

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

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

[14] Weighted by replacement cost.



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.

8.2.1 Current Approach to Condition Assessment

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

- Heavy equipment is subject to annual inspections to evaluate its condition and ensure it is ready for operation

8.3 Lifecycle Management Strategy

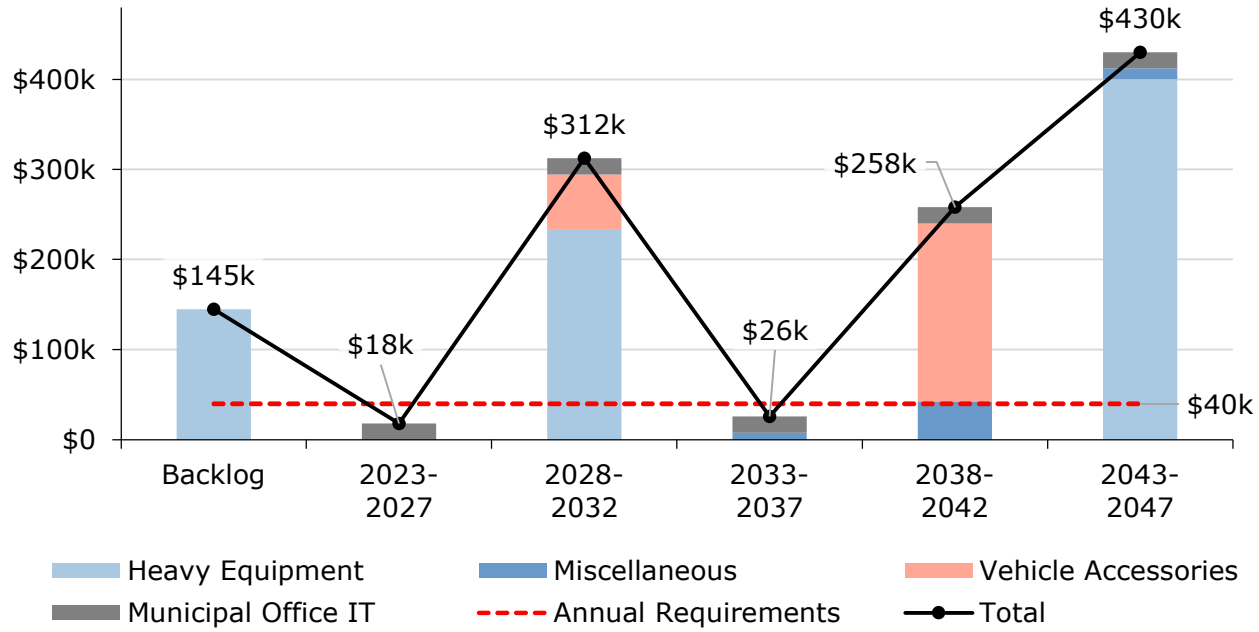
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance/ Rehabilitation	Maintenance for machinery and equipment follows the manufacturer's guidelines to ensure equipment efficiency
	Equipment is used until end of life, with regular maintenance throughout
	Rebuilds are considered when cost-effective, comparing rehab to replacement and potential lifespan extension
Replacement	Replacement recommendations come from annual inspections, focusing on equipment condition. Machinery and equipment assets are generally used until they reach the end of their lifecycle, after which they are replaced

8.3.1 Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 25 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements.



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

8.4 Risk & Criticality

8.4.1 Risk Ratings

The following risk ratings are first shown for the overall category and then by segment for the assets within this category based on 2022 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

1 – 4 Very Low $1,000 (<1%)	5 – 7 Low $217,000 (25%)	8 – 9 Moderate -	10 – 14 High $205,000 (23%)	15 – 25 Very High $461,000 (52%)

Asset Segment	Probability of Failure	Consequence of Failure	Average Risk Rating
Heavy Equipment	3.34 / 5	5 / 5	16.72 / 25
Miscellaneous	1.96 / 5	4.82 / 5	9.39 / 25
Vehicle Accessories	2.47 / 5	5 / 5	12.37 / 25
Municipal Office IT	1 / 5	5 / 5	5 / 25
Average	**2.94 / 5**	**4.99 / 5**	**14.69 / 25**

Overall, the average risk rating is 14.69, which is considered High.

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 (Economic)	Replacement Cost (Economic)

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

8.4.2 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 and Extreme Weather Events

Climate change and unpredictable weather are increasingly straining Township equipment, especially during winter. Harsh conditions, such as unexpected rain followed by freezing temperatures, lead to accelerated wear and necessitate frequent repairs for machinery like graders and plows. For instance, the Township's reliance on a single operational snow plow highlights the critical need for robust and adaptable machinery.

Investing in durable equipment is essential to maintaining effective services despite changing weather patterns. Failure to do so could result in operational disruptions, higher maintenance costs, and compromised service delivery. Prioritizing the acquisition and maintenance of reliable machinery is vital for ensuring public safety and the continued functionality of Township services.

Aging Equipment and Capital Funding Strategies

The Township is struggling with post-pandemic inflation and insufficient capital funding, severely impacting its ability to maintain and upgrade machinery and equipment. Rising costs and supply chain delays, exemplified by the fire department's unused grant due to equipment shortages, highlight the need for more flexible financial planning. Adapting financial strategies is crucial to navigating the evolving economic landscape and ensuring operational capabilities. Without this adaptation, the Township risks diminished service delivery, higher operational costs, and reduced readiness in critical areas.

8.5 Levels of Service

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

8.5.1 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description or images of the types of equipment that the municipality operates and the services that they help to provide to the community.	Using age-based condition data, machinery and equipment assets are on average in Fair condition (45%). Machinery and equipment assets are diverse and service the needs of the fire and public works departments.

8.5.2 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Quality	Average overall condition for the category	45% (Fair)
Performance	% building assets in fair or better condition	50%
	% building assets in poor or worse condition	50%

8.6 Recommendations

Replacement Costs

- All 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.

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 and/or as data available for risk calculations advances.

Levels of Service

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

9 Land Improvements

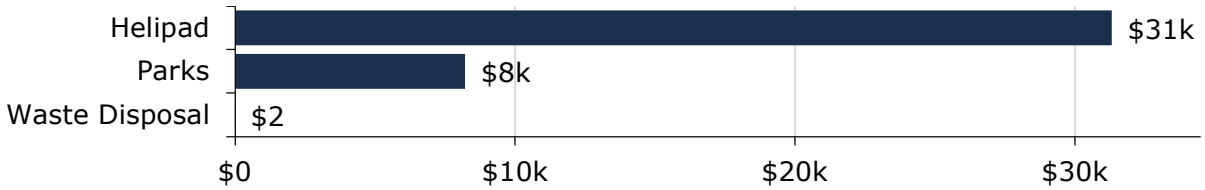
The Township of Gillies owns a small number of assets that are considered land improvements. This category includes:

- Helipad
- Parks
- Waste Disposal

9.1 Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost[15]	Annual Capital Requirement
Helipad	1	$31,000	$2,000
Parks	1	$8,000	$206
Waste Disposal	1	$0	$0
Total		**$40,000**	**$2,000**



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

9.2 Asset Condition & Age

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

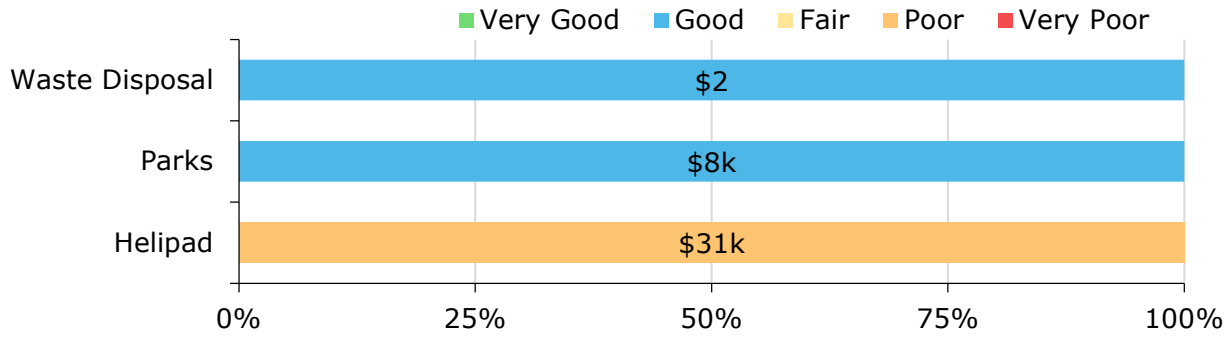
[15] In 2022 dollars.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition [16]
Helipad	20	14	30% (Poor)
Parks	40	13	68% (Good)
Waste Disposal	90	35	61% (Good)
Average		**21**	**38% (Poor)**

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

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

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



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

[16] Weighted by replacement cost.

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

9.2.1 Current Approach to Condition Assessment

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:

- At present, there are no formal condition assessment processes established nor any evaluations routinely conducted.

9.3 Lifecycle Management Strategy

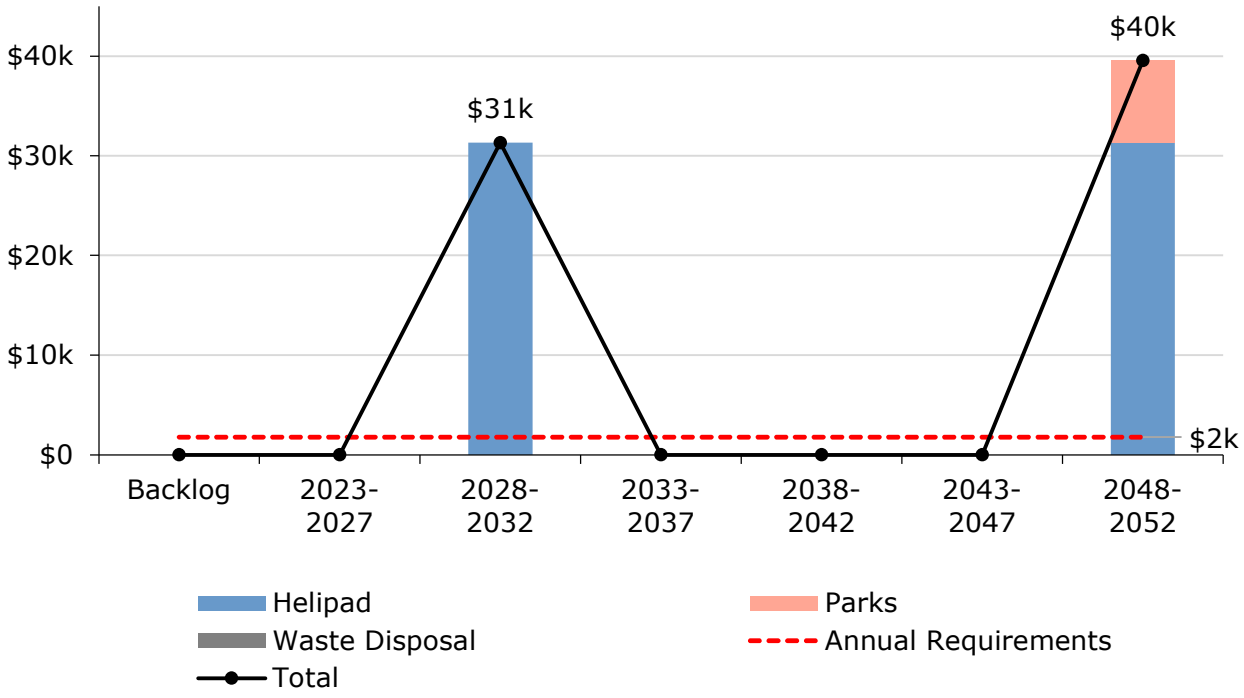
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance & Rehabilitation	Activities are limited to basic upkeep such as mowing and maintenance, especially in marshland areas where the natural terrain makes it challenging to establish any outdoor facilities
Replacement	Assets are prioritized for replacement based on the asset's age, current condition, and available financial resources

9.3.1 Forecasted Capital Requirements

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



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

9.4 Risk & Criticality

9.4.1 Risk Ratings

The following risk ratings are first shown for the overall category and then by segment for the assets within this category based on 2022 inventory data. See Appendix D for the criteria used to determine the risk rating of each asset.

1 – 4 Very Low -	5 – 7 Low -	8 – 9 Moderate $8,000 (21%)	10 – 14 High -	15 – 25 Very High $31,000 (79%)

Asset Segment	Probability of Failure	Consequence of Failure	Average Risk Rating
Helipad	4 / 5	5 / 5	20 / 25
Parks	2 / 5	4 / 5	8 / 25
Waste Disposal	2 / 5	1 / 5	2 / 25
Average	**3.58 / 5**	**4.79 / 5**	**17.5 / 25**

Overall, the average risk rating is 17.5, which is considered Very High.

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

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

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

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

9.4.2 Risks to Current Asset Management Strategies

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

Capital Funding Strategies

The Township's reliance on grants and limited capital funding strategies pose challenges to maintaining and improving its land improvements assets, including cemeteries and landfills. This dependency can constrain the Township's ability to plan and carry out necessary upgrades or expansions. Traditionally, landfill projects have been supported by gas tax revenues, reflecting current financial practices.

Additionally, time constraints often limit the Township's capacity to apply for available grants, which further complicates financial management. These factors may hinder the Township's efforts to keep land improvement assets in optimal condition, potentially affecting

service quality and infrastructure health. Developing a more flexible and sustainable capital funding approach would enhance the Township's ability to effectively manage and enhance these vital assets.

Community Expectations

Community expectations present a significant risk to the Township's land improvements, especially concerning landfill and infrastructure development. As standards for landfills rise, even well-maintained facilities face increased scrutiny, which can intensify pressure on the Township to meet elevated requirements. Similarly, the issue of the cemetery nearing full capacity has sparked discussions about the need for expansion, further complicating the Township's land improvement efforts.

These challenges underscore the delicate balance the Township must strike between addressing community demands and implementing practical land improvement plans. Meeting heightened expectations requires careful resource allocation and strategic planning to ensure both project sustainability and community satisfaction. The Township must navigate these expectations while managing limited resources and aligning improvements with realistic goals. Effective planning and resource management are essential to fulfilling community needs while maintaining the integrity and feasibility of land improvement projects.

9.5 Levels of Service

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

9.5.1 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2022)
Scope	Description, which may include maps, of the land improvements assets that the municipality operates and maintains	Using age-based condition, land improvement assets are on average in Poor (38%) condition. Land improvement assets include the helipad, parks, the landfill, and the cemetery. Wherever possible, assets are designed to serve a wide range of users.

9.5.2 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2022)
Quality	Average overall condition for the category	38% (Poor)
Performance	% land improvements assets in fair or better condition	21%
	% land improvements assets assets in poor or worse condition	79%

9.6 Recommendations

Replacement Costs

- These costs should continually 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. Consider developing a framework for the frequency of replacement cost updates.

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

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

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

10.1 Description of Growth Assumptions

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

10.1.1 Gillies Official Plan (November 2009)

The Township of Gillies adopted an Official Plan in 2009 to provide direction and serve as the cornerstone of planning strategies, offering guidance for the development of detailed policies and programs. These goals are shaped by both the current and anticipated needs and values of the Township's Council and its residents.

The objectives for the Township of Gillies over the next 20 years include preserving its rural quality of life while managing physical, social, economic, and environmental changes. These goals aim to ensure residents' health, safety, and welfare, rational use of resources, and protection of natural features. By permitting local control over land use planning and qualifying for government programs, the Township seeks to expand and diversify its economy. The policies also emphasize environmentally compatible development, sustainable growth, and inform residents about land development policies.

In the Township, land division is strictly regulated, allowing only consents that adhere to specific policies, without permitting new subdivisions, to maintain its rural essence and avoid unwanted development levels. Particularly in Hymers, growth is limited due to flood risks along the Whitefish River. Consents for land division are contingent on meeting several criteria, including adequate private water and sewage systems, water flow and potability tests, suitable soil and drainage for building and sewage disposal, access to year-round maintained public roads, no traffic hazards or land use conflicts, adherence to livestock proximity guidelines, and specific lot size and frontage requirements.

The following tables outlines the recorded population and private dwellings for Gillies, based on 2021 Census data.

Historical Figures	1996	2001	2006	2011	2016	2021
Population	497	522	544	473	474	441
Population Change	N/A	5.0%	4.2%	-13.1	0.2%	-7.0%
Private Dwellings	N/A	212	219	209	201	208

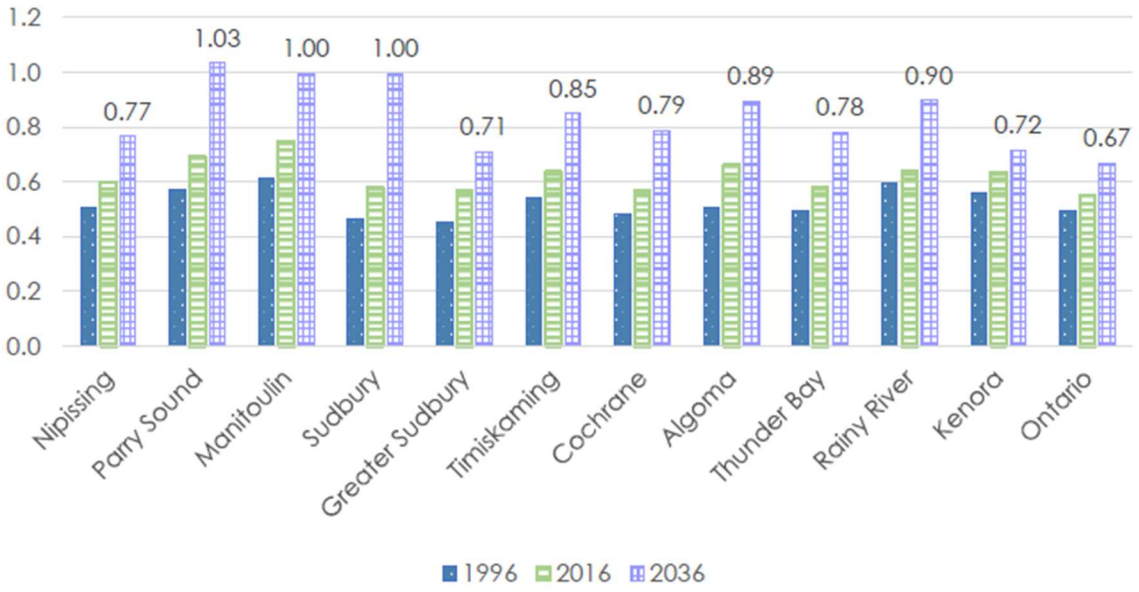
According to the Official Plan, over the past decade until 2001, the Township of Gillies has seen a population growth of 5%, aligning closely with the 4.5% growth rate projected in the previous Official Plan. The plan suggests that if this growth rate continues, it's estimated that by 2026, the population will reach about 590. Census data from 2021 indicates a decline in the population, suggesting that the projections made in the Official Plan may not be met.

10.2 Regional growth

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

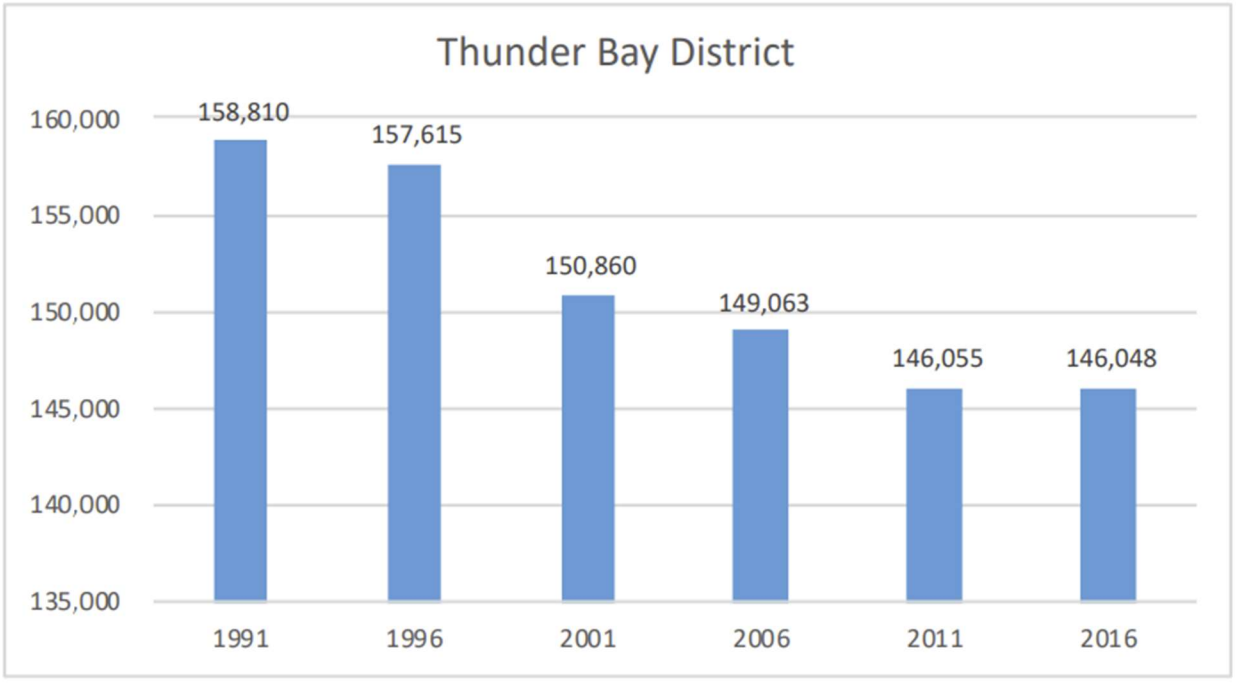
According to the report all 11 Census Districts in Northern Ontario (Nipissing, Parry Sound, Manitoulin, Sudbury, Greater Sudbury, Timiskaming, Cochrane, Algoma, Thunder Bay, Rainy River, Kenora) are currently experiencing the following trends: population decline, population aging, or labour shortages.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

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



The Township of Gillies is found in the Thunder Bay District, which is expected to reach a dependency ratio of 0.78.

The population trends overall in the Northwestern Ontario are in decline. The following graph from the 2019 Thunder Bay District report by the Northern Policy Institute, displays the population trends from 1991 to 2016.



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

Year	Ages 0-19	Ages 20-64	Ages 65+	Total
2021	28,841	86,082	33,362	148,285
2026	28,616	80,390	38,811	147,817
2031	28,045	76,449	42,562	147,056
2036	27,298	74,639	43,958	145,895
2041	26,535	74,021	43,888	144,444

The most recent census data from 2021, shows a slight increase in the population, reaching a total of 146,862, but is below the projected population from the study. A significant portion of population decrease is within the 20-to-64-year age group, while there is an increase in population for the age of 65 years and over; thus further increasing the dependency ratio.

10.3 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.

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

11 Appendices

Key Insights

- Appendix A includes a one-page report card with an overview of key data from each asset category
- Appendix B identifies projected 10-year capital requirements for each asset category
- Appendix C includes a location map for bridges and structural culverts
- Appendix D identifies the criteria used to calculate risk for each asset category
- Appendix E provides additional guidance on the development of a condition assessment program

Appendix A: Infrastructure Report Card

All values are in 2022 dollars. Condition is weighted by replacement cost.

Asset Category	Replacement Cost (millions)	Asset Condition	Financial Capacity	
Road Network	$2.75	6% (Very Poor)	Annual Requirement:	$197,000
Bridges & Structural Culverts	$1.38	55% (Good)	Annual Requirement:	$33,000
Buildings & Facilities	$0.40	26% (Poor)	Annual Requirement:	$11,000
Vehicles	$0.39	52% (Fair)	Annual Requirement:	$19,000
Machinery & Equipment	$0.88	45% (Fair)	Annual Requirement:	$40,000
Land Improvements	$0.04	38% (Poor)	Annual Requirement:	$2,000
Overall	**$5.84**	**26% (Poor)**	**Annual Requirement:**	**$302,000**

Appendix B: 10-Year Capital Requirements

The following tables identify the capital cost requirements for each of the next 10 years in order to meet projected capital requirements and maintain the current level of service. All values are in 2022 dollars.

Road Network											
Asset Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Gravel Roads	$0	$175k	$175k	$175k	$175k	$175k	$175k	$175k	$175k	$175k	$175k
Signs	$34k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Small Culverts	$94k	$404k	$0	$0	$0	$0	$0	$0	$0	$0	$0
Streetlights	$3k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$131k	**$579k**	**$175k**	**$175k**	**$175k**	**$175k**	**$175k**	**$175k**	**$175k**	**$175k**	**$175k**

Bridges & Structural Culverts											
Asset Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Bridges	$0	$0	$0	$263k	$213k	$0	$0	$0	$0	$0	$0
Structural Culverts	$0	$0	$47k	$39k	$0	$0	$0	$0	$0	$0	$0
	$0	**$0**	**$47k**	**$302k**	**$213k**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Buildings & Facilities											
Asset Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Administration	$19k	$0	$0	$0	$0	$0	$19k	$0	$0	$0	$0
Fire Department	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Roads Department	$109k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$128k	**$0**	**$0**	**$0**	**$0**	**$0**	**$19k**	**$0**	**$0**	**$0**	**$0**

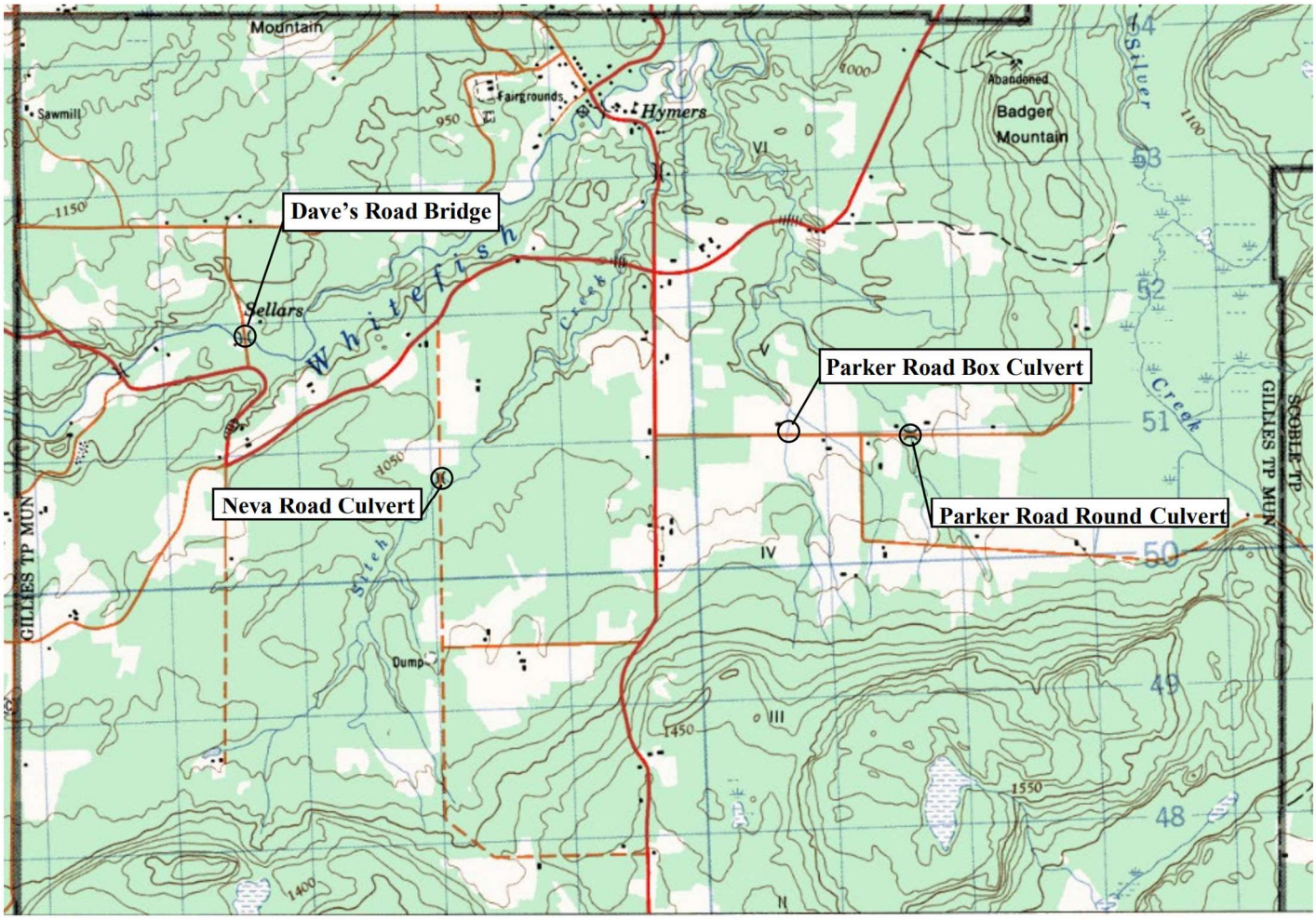
Vehicles											
Asset Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Fire Department	$0	$16k	$0	$0	$0	$11k	$0	$0	$0	$0	$0
Roads Department	$30k	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$30k	**$16k**	**$0**	**$0**	**$0**	**$11k**	**$0**	**$0**	**$0**	**$0**	**$0**

Machinery & Equipment											
Asset Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Heavy Equipment	$145k	$0	$0	$0	$0	$0	$233k	$0	$0	$0	$0
Miscellaneous	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Vehicle Accessories	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$61k
Municipal Office IT	$0	$0	$0	$0	$0	$18k	$0	$0	$0	$0	$18k
	$145k	**$0**	**$0**	**$0**	**$0**	**$18k**	**$233k**	**$0**	**$0**	**$0**	**$79k**

Land Improvements											
Asset Segment	Backlog	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Helipad	$0	$0	$0	$0	$0	$0	$0	$31k	$0	$0	$0
Parks	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Waste Disposal	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$31k**	**$0**	**$0**	**$0**

Appendix C: Level of Service Maps

Bridge & Structural Culverts Map



Location Map: Township of Gillies Structures

Appendix D: Risk Rating Criteria

Probability of Failure

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
All Asset Categories	Condition	100%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5

Consequence of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Gravel Roads	Economic (20%)	Replacement Cost (100%)	≤$1,000	1
			≤$2,500	2
			≤$5,000	3
			≤$10,000	4
			$10,000	5
	Environmental (20%)	Flood Plain (100%)	No	1
			Yes	5
	Operational (10%)	Hauling Routes (100%)	No	2
			Yes	4
	Social (20%)	Affected by Large-Scale Events (100%)	No	1
			Yes	5
	Health and Safety (30%)	Emergency Services Route (100%)	No	2
			Yes	5
All Other Assets	Economic (100%)	Replacement Cost (100%)	≤$1,000	1
			≤$2,500	2
			≤$5,000	3
			≤$10,000	4
			$10,000	5

Appendix E: 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