# Asset Management Plan

Tay Valley Township

2024

This Asset Management Plan was prepared by:


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

# Key Statistics

Replacement cost of asset portfolio
$48.6 million

Replacement cost of infrastructure per household
$13,000

Percentage of assets in fair or better condition
63%

Percentage of assets with assessed condition data
87%

Annual capital infrastructure deficit
$283,000

Recommended timeframe for eliminating annual infrastructure deficit
5 Years

Target reinvestment rate
3.15%

Actual reinvestment rate
2.57%

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# Executive Summary

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

## Scope

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

This AMP includes the following asset categories:

### Asset Category

- Road Network
- Land Improvements
- Bridges & Culverts
- Vehicles
- Buildings & Facilities
- 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 $48.6 million. 63% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 87% of assets. For the remaining 13% of assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP. The development of a long-term, sustainable financial plan requires an analysis of whole lifecycle costs. This AMP uses a combination of proactive lifecycle strategies (paved roads and bridges) and replacement only strategies (all other assets) to determine the lowest cost option to maintain the current level of service.

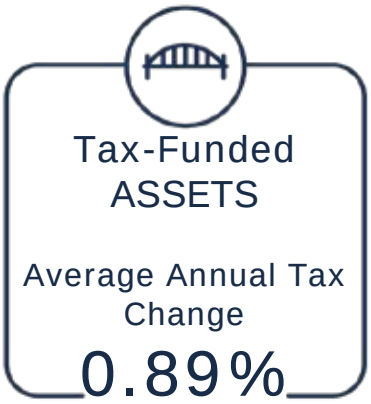
To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Township's average annual capital requirement totals $1.53 million. Based on a historical analysis of sustainable capital funding sources, the Township is committing approximately $1.25 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $283,000.

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

Annual Requirement Per Household

# Recommendations

A financial strategy was developed to address the annual capital funding gap. The following graphics shows annual tax/rate change required to eliminate the Township's infrastructure deficit based on a 5-year plan:




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

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

# 1 Introduction & Context

## Key Insights

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

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

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

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

# 1.1 Tay Valley Community Profile

| Census Characteristic | Tay Valley Township | Lanark County | Ontario |
|---|---|---|---|
| Population 2021 | 5,925 | 75,760 | 14,223,942 |
| Population Change 2016-2021 | 4.6 | 10.3 | 5.8 |
| Total Private Dwellings | 3,750 | 35,441 | 5,929,250 |
| Population Density | 11.2/km$^2$ | 25.4/km$^2$ | 15.9/km$^2$ |
| Land Area | 528.67 km$^2$ | 2,986.71 km$^2$ | 892,411.76 km$^2$ |

Tay Valley Township is a rural municipality located 80 kilometres southwest of Ottawa. The Township is situated along the Tay River and is in the southwest corner of Lanark County.

Tay Valley Township was incorporated on January 1, 1998 via the amalgamation of the former townships of North Burgess, South Sherbrooke, and Bathurst. The first Township to receive European settlers after the war of 1812 was North Burgess. Tay Valley Township was formerly three separate townships. The original peoples include the Omàmiwininì, members of the Algonquin Anishinaabe family. In the distant past, they settled in the valley of the Kiji Sibi, the Ottawa River, and its tributaries, including the unceded Algonquin territory of the Fall River. The settlers established homes and a farming community, however; the economy of the region was also driven by mining and logging. Tay Valley Township is named in recognition of the river that meanders across the landscape and has linked communities together for hundreds of years.

Farming and logging remain important economic activities for many residents along with home-based businesses and artisans. Tay Valley is known for its natural beauty and outdoor recreation with its 32 lakes and 8 rivers. The Township is home to many trails and two Provincial Parks, Silver Lake, and Murphys Point. Locals can access the services and amenities of nearby Perth, as well as urban centres such as Ottawa, Peterborough, and Kingston.

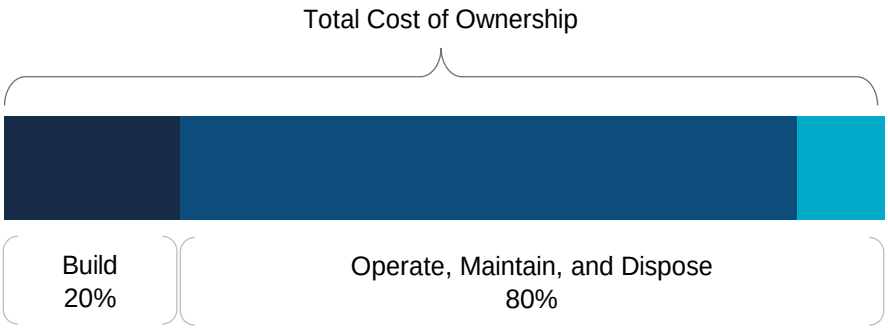
Demand in the region is notably driven by moderate population growth, a summer cottage community, and an aging population above the provincial average. Tay Valley's population increases by approximately one half during the summer months as cottagers return. Population growth is largely due to cottages being converted into permanent residences and the influx of residents from urban areas. In addition, more people who partake in remote work have been moving to the region.

The Township generates a total revenue of $6.2 million from taxes and has an annual capital budget of $1.43 million as of 2022.

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

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

### 1.2.1 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.

Tay Valley Township's "Strategic Asset Management Policy" was adopted by Council on the 25th of June, 2019 in accordance with Ontario Regulation 588/17.

The stated objectives of the policy are to:

- Provide a framework for implementing asset management to enable a consistent and strategic approach to all levels of the organization
- Demonstrate Council's commitment to support the implementation of asset management methods that are consistent with their priorities and objectives
- Provides direction to guide Council, Management, and staff responsible for asset management
- Provide transparency and accountability and demonstrate the validity of decision-making process which combine strategic plans, budgets, service levels and risks

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

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

### 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.

The Township's Strategic 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 (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 | Re-surface | $$ |
| Replacement/ Reconstruction | Asset end-of-life activities that often involve the complete replacement of assets | Full Reconstruction | $$$ |

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

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

### 1.3.2 Risk Management Strategies

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

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

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

### 1.3.3 Levels of Service

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

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

#### Community Levels of Service

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

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

## Technical Levels of Service

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

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

## Current and Proposed Levels of Service

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

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

# 1.4 Ontario Regulation 588/17

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

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

**2019**

Strategic Asset Management Policy

**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

### 1.4.1 O. Reg. 588/17 Compliance Review

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

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

# 2 Scope and Methodology

## Key Insights

- This asset management plan includes 6 asset categories

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

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

# 2.1 Asset Categories Included in this AMP

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

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

| Asset Category | Source of Funding |
|---|---|
| Road Network | Tax Levy |
| Bridges & Culverts | |
| Buildings & 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:

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

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

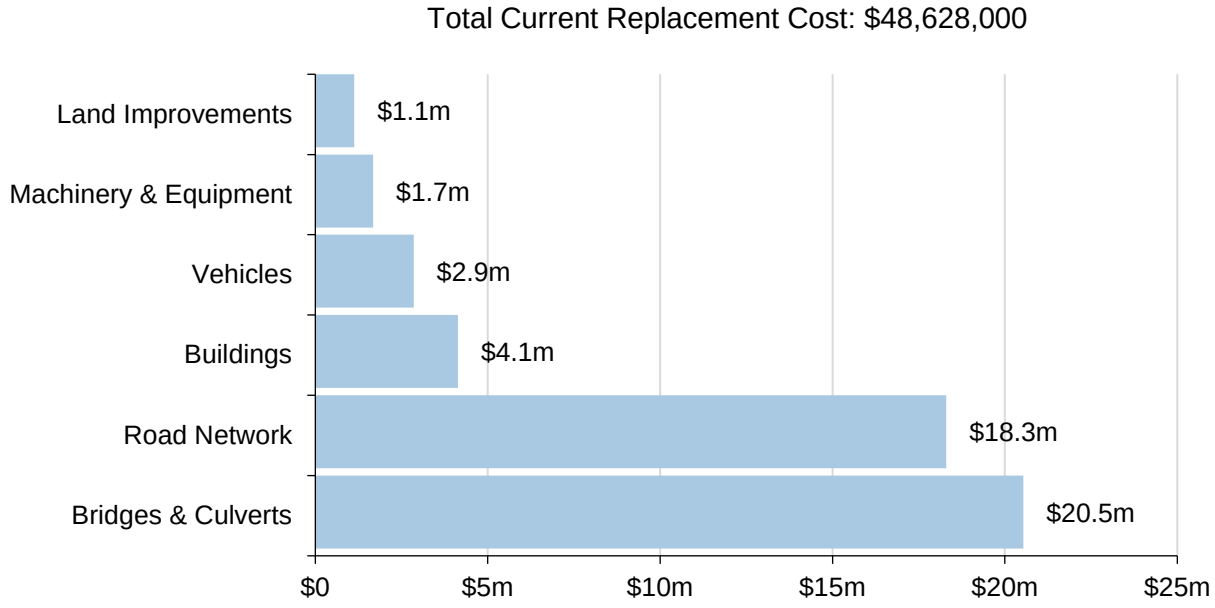
# 3 Portfolio Overview

## Key Insights

- The total replacement cost of the Township's asset portfolio is $48.6 million
- The Township's target re-investment rate is 3.15%, and the actual re-investment rate is 2.57%, contributing to an expanding infrastructure deficit
- 63% of all assets are in fair or better condition
- Average annual capital requirements total $1.53 million per year across all assets

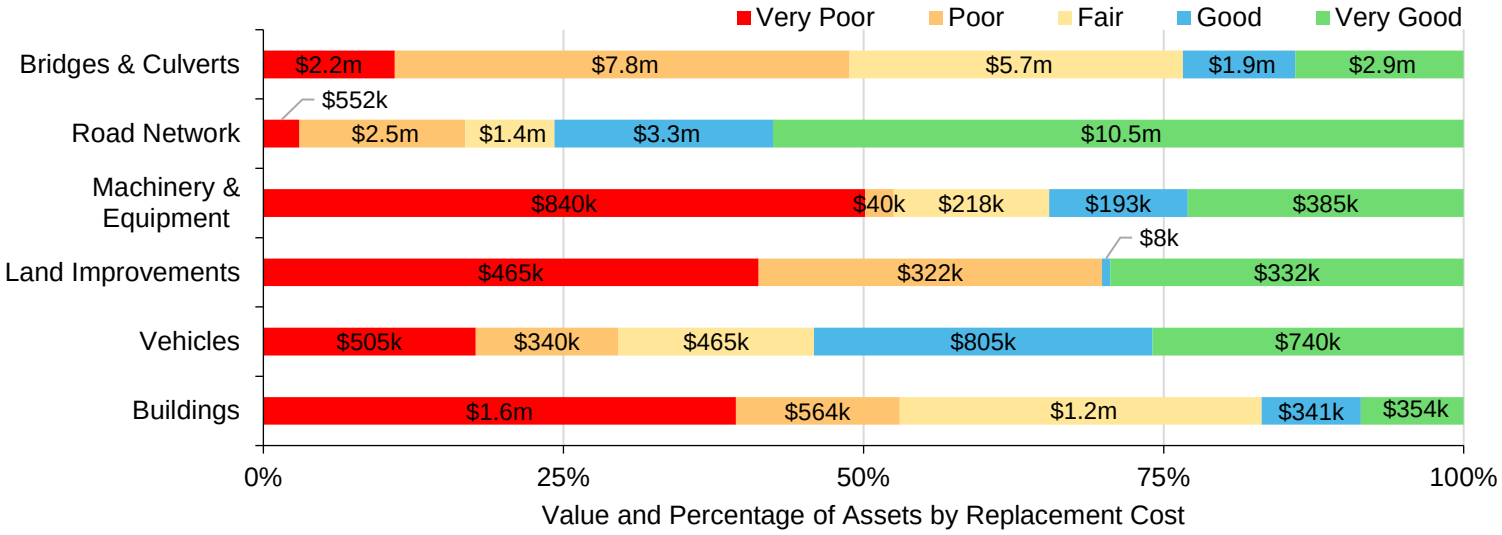
# 3.1 Total Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of $48.6 million based on inventory data from 2021. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.



# 3.2 Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 63% of assets in Tay Valley are in fair or better condition. This estimate relies on both age-based and field condition data.

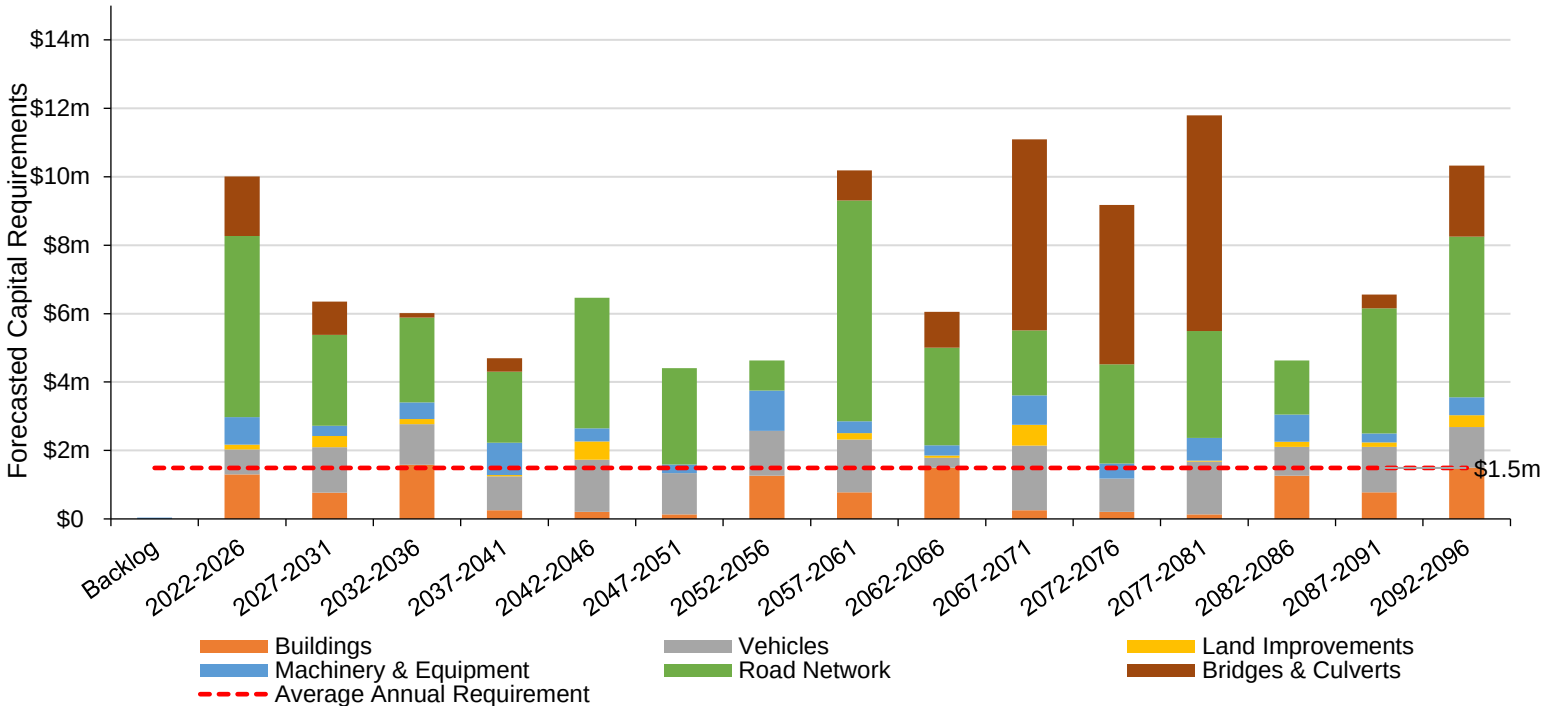



This AMP relies on assessed condition data for 87% of assets; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data used throughout this AMP.

| Asset Category | Asset Segment | % of Assets with Assessed Condition | Source of Condition Data |
|---|---|---|---|
| Road Network | Paved Roads | 97% | 2022 Road Needs Study |
| Bridges & Culverts | Bridges | 100% | 2022 OSIM Report |
| | Structural Culverts | 95% | 2022 OSIM Report |
| Buildings & Facilities | All | 100% | 2022 Building Condition Assessment Reports |
| Machinery & Equipment | All | 0% | Age-based |
| Vehicles | All | 0% | Age-based |
| Land Improvements | All | 0% | Age-based |

# 3.3 Forecasted Capital Requirements

The development of a long-term capital forecast should include both asset rehabilitation and replacement requirements. With the development of asset-specific lifecycle strategies that include the timing and cost of future capital events, the Township can produce an accurate long-term capital forecast. The following graph identifies capital requirements over the next 73 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.



# 4 Analysis of Assets

## Key Insights

- Assets are valued at $48.6 million
- 63% of tax-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for all assets is approximately $1.53 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options

# 4.1 Road Network

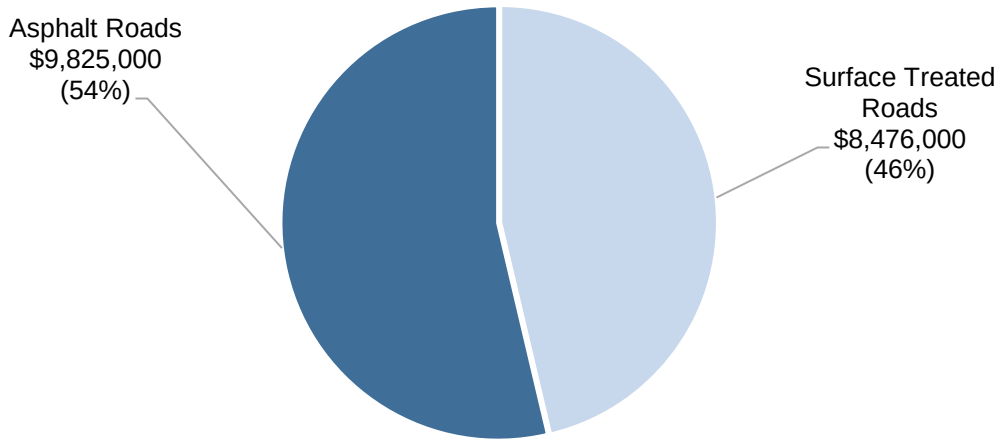
The road network is a critical component of the provision of safe and efficient transportation services and represents the highest value asset category in the Township's asset portfolio. It includes all municipally owned and maintained roadways.

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

## 4.1.1 Asset Inventory & Replacement Cost

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

| Asset Segment | Quantity | Replacement Cost Method | Total Replacement Cost |
|---|---|---|---|
| Asphalt Roads (HCB) | 37 km | Cost/Unit | $9,825,000 |
| Surface Treated Roads (LCB) | 46 km | Cost/Unit | $8,476,000 |
| | | | **$18,302,000** |




Total Current Replacement Cost: $18,302,000

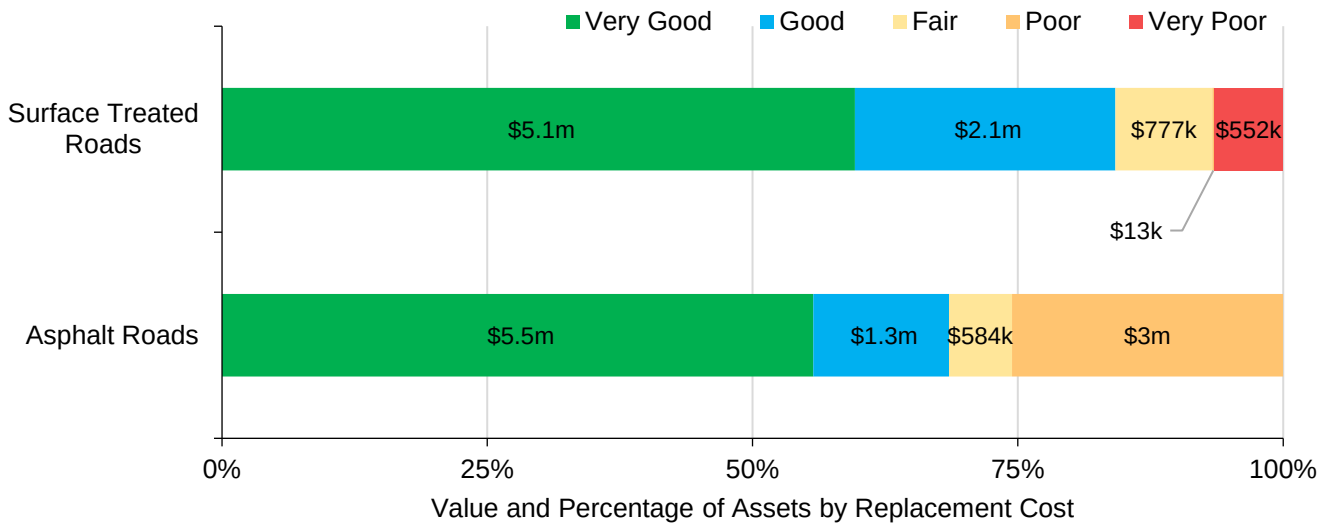
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

## 4.1.2 Asset Condition

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

| Asset Segment | Average Condition (%) | Average Condition Rating | Condition Source |
|---|---|---|---|
| Asphalt Roads (HCB) | 70% | Good | 100% Assessed |
| Surface Treated Roads (LCB) | 75% | Good | 93% Assessed |
| | **73%** | **Good** | **97% Assessed** |

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

## Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to 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:

- A Road Needs Study was completed in 2022 that included a detailed assessment of the condition of each road segment
- The Township is considering adopting a 5-year cycle for Roads Needs Studies completed by external contractors
- Municipal staff conduct informal visual inspections annually to assess the overall condition and presence of defects for all road assets including asphalt, surface treated, and gravel roads
- Condition rating, road class, maintenance frequency, and compliance to Minimum Maintenance Standards (MMS) are used to gauge the condition of the roads and determine whether mid-life activities or replacement are required

# 4.1.3 Estimated Useful Life & Average Age

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

| | | | |
|---|---|---|---|
| Asphalt Roads (HCB) | 19 Years 4 Months | 6 Years 10 Months | 12 Years 6 Months |
| Surface Treated Roads (LCB) | 12 Years 4 Months | 1 Year 11 Months | 10 Years 5 Months |
| | | **4 Years 7 Months** | **11 Years 6 Months** |

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

### 4.1.4 Lifecycle Management Strategy

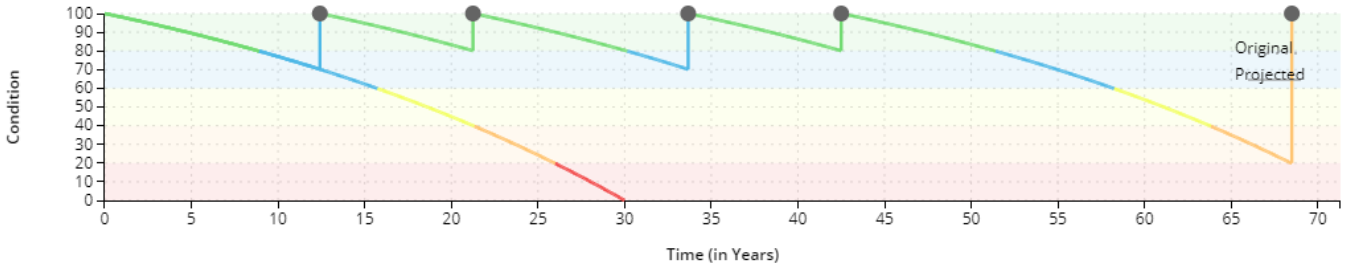
The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history, and environment.

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

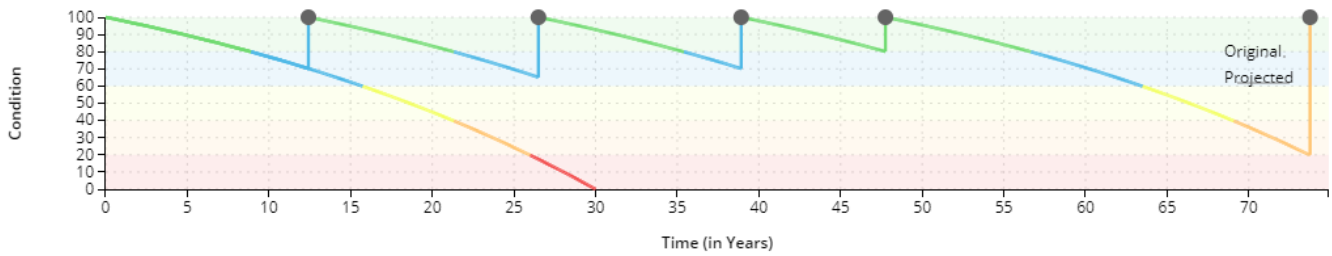
| Activity Type | Description of Current Strategy |
|---|---|
| Maintenance | Maintenance activities for roads include winter maintenance such as snow removal and salt/sand for ice removal as needed. |
| | Crack sealing is completed every five to eight years for HCB roads.<br>This will be triggered based on the road condition in the future. |
| Rehabilitation | Rehabilitation activities are conducted as needed based on a case-by-case basis. These activities are both proactive and reactive. Surface treated roads have a single, double, or micro surface treatment as needed. |
| Replacement | Replacement activities are prioritized based on asset condition, traffic count, and maintenance frequency. |

The following lifecycle strategies have been developed as a proactive approach to managing the lifecycle of Asphalt (HCB) and Surface Treated Roads (LCB). Instead of allowing the roads to deteriorate until replacement is required, strategic rehabilitation is expected to extend the service life of roads at a lower total cost.

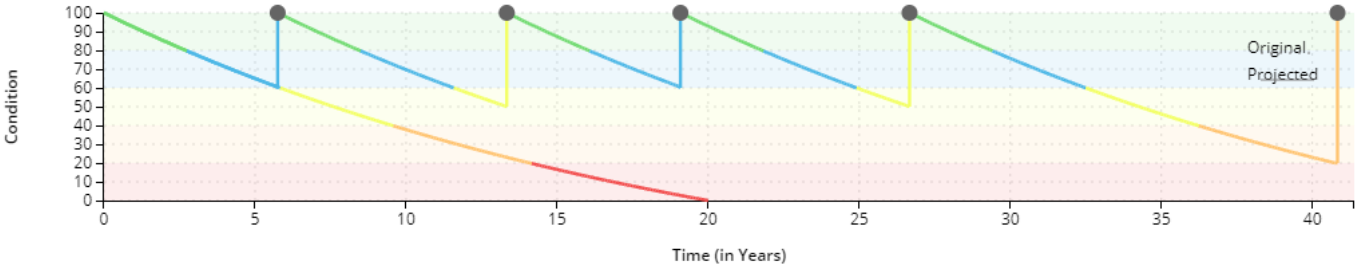
| Asphalt Roads (HCB) | | |
|---|---|---|
| **Event Name** | **Event Class** | **Event Trigger** |
| Enhanced Thin Surfacing (Microsurfacing, Thin HMA Overlay) | Rehabilitation | 80 to 85 Condition |
| Enhanced Double Thin Surfacing (Double Microsurfacing, Cape Seal) | Rehabilitation | 70 to 80 Condition |
| Full Reconstruction | Replacement | 20 Condition |




| Asphalt Roads (HCB) – High Traffic | | |
|---|---|---|
| **Event Name** | **Event Class** | **Event Trigger** |
| Enhanced Thin Surfacing (Microsurfacing, Thin HMA Overlay) | Rehabilitation | 80 to 85 Condition |
| Enhanced Double Thin Surfacing (Double Microsurfacing, Cape Seal) | Rehabilitation | 70 to 80 Condition |
| One Lift Overlay / Mill and One Lift Overlay | Rehabilitation | 65 to 70 Condition |
| Full Reconstruction | Replacement | 20 Condition |



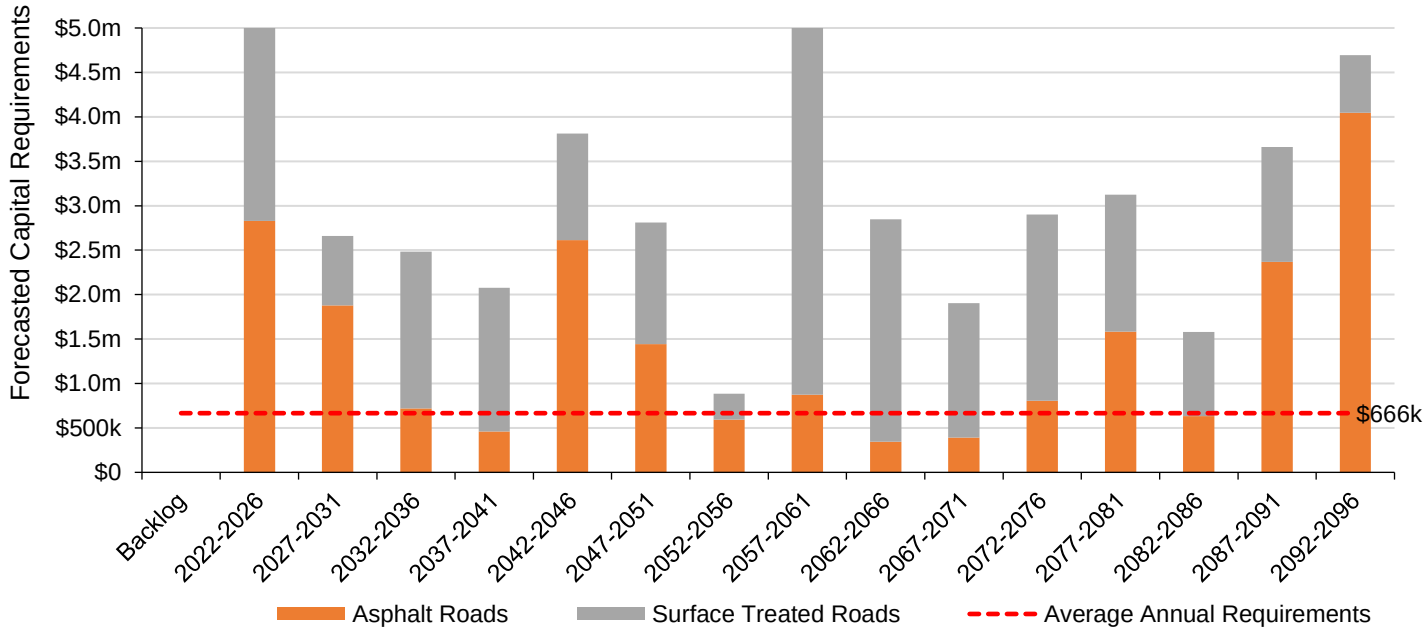
| Surface Treated Roads (LCB) | | |
|---|---|---|
| **Event Name** | **Event Class** | **Event Trigger** |
| Single Surface Treatment (Chip Seal) | Rehabilitation | 60 to 65 Condition |
| Enhanced Double Thin Surfacing (Double Microsurfacing, Cape Seal) | Rehabilitation | 50 to 60 Condition |
| Full Reconstruction | Replacement | 20 Condition |



## Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for HCB and LCB roads, the following graph forecasts capital requirements for the road network.

The 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 72 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.




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

## 4.1.5 Risk & Criticality

### Risk Matrix

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


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 Asphalt Roads (HCB), both high-traffic and otherwise, are documented below:

| Probability of Failure (POF) | Consequence of Failure (COF) |
|---|---|
| Condition (Structural) | Replacement Cost (Economic) |
| | AADT Risk (Social) |

The asset-specific attributes that municipal staff utilize to define and prioritize the criticality of Surface Treated Roads (LCB) are documented below:

| Probability of Failure (POF) | Consequence of Failure (COF) |
|---|---|
| Condition (Structural) | Replacement Cost (Economic) |
| | AADT Risk (Social) |

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

## Risks to Current Asset Management Strategies

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

**Organizational Cognizance / Capacity**
Staff have the knowledge and capacity to engage in informed asset management practices, although staff capacity is an issue as sometimes, there are not enough staff to handle the workload.

**Climate Change & Extreme Weather Events**
The trend of climate change-induced extreme precipitation events is projected to continue. High frequency and intensity of precipitation can cause flooding in poor drainage areas. This also results in accelerating the deterioration of road surfaces and weakening the foundation. An increase in cracking, sinkholes and other damages in freeze/thaw cycles are anticipated because of heavy precipitation. As a result, higher maintenance and rehabilitation requirements are expected to maintain the same level of service. To improve asset resiliency, staff should identify the critical areas and improve drainage through enhanced lifecycle strategies.

**Growth**
As the population continues to grow, the Township must prioritize expanding its capacity to serve a larger population. Population and employment growth will increase the demand on transportation services and potentially decrease the lifecycle of certain assets. On top of that, certain roads may become amalgamated into the Township's Roads Portfolio in the future. In this situation, the demand of staff resources and financial requirement will increase and may impose a risk of not able to maintain current levels of service. An enhanced proactive strategy can help to extend the service life of structures with lower funding requirement and minimize the deferral of capital works.

**Infrastructure Re-Investment**
The current level of financial reinvestment is adequate to address lifecycle requirements and maintain a good state of repair, however; there is not an excess of grants available to contribute to the funding of roads infrastructure. Reserve levels remain adequate for the present.

### 4.1.6 Levels of Service

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

#### Community Levels of Service

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

| Service Attribute | Qualitative Description | Current LOS (2023) |
|---|---|---|
| Scope | Description, which may include maps, of the road network in the municipality and its level of connectivity | The current level of service for road network connectivity is acceptable. The transportation system has basic infrastructure in place such as well-maintained roads and some paved shoulders (where applicable). However, it may still lack adequate connections and may not fully support all modes of transportation. Some recommendations from transportation plans get implemented based on the availability of resources.<br><br>The Township has transportation plans based on their Road Needs Study. They are implementing more supporting infastructure, such as paved shoulders, as resources allow. It is recommended that the Township determines on which roads it is desirable to install paved shoulders as they are only necessary in the core municipality area.<br><br>See Appendix B for maps. |
| Quality | Description or images that illustrate the different levels of | The Township completed a Road Needs Study in 2022 in coordination with WSP Golder. Every road section received a pavement condition index, rating the |

| Service Attribute | Qualitative Description | Current LOS (2023) |
|---|---|---|
| | road class pavement condition | condition of the surface of the road on a scale of 0-100.<br><br>Different condition ranges can indicate the following:<br><br>0 to <20 = Very Poor<br>20 to <40 = Poor<br>40 to <60 = Fair<br>60 to <80 = Good<br>80 to 100 = Excellent<br><br>The current level of service is acceptable. Staff have a basic understanding of the different road classifications and their corresponding pavement conditions. They know the importance of proper maintenance and repair for different road classes but may not fully understand the nuances and complexities of road maintenance. Staff depend on external contractors for support in this area. |
| Performance | Description of the overall resident satisfaction with the available options within the transportation system | The current level of service is acceptable. In general, there are not many complaints about road network accessibility from residents, however; with the anticipated growth and increased rate of property purchase in the area, expansion of the road network is desirable. A small minority of residents in rural areas have complained that roads are too narrow. |
| | # of bike racks per 100 people | The current level of service is acceptable. Municipal staff believe the current number of bike racks available throughout the municipality is sufficient for residents. |
| | % of accessible parking from total parking spots | The current level of service is acceptable.[1] |

[1] Further investigation will occur in the future to calculate the actual percentage.

## 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 (2023) |
|---|---|---|
| Scope | Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km$^2$) | 0 |
| | Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km$^2$) | 0 |
| | Lane-km of local roads (MMS classes 5 and 6) per land area (km/km$^2$) | 525 km/528.67 km$^2$ |
| Quality | Average pavement condition index for paved roads in the municipality | HCB: 70%<br>LCB: 75% |
| | Average surface condition for unpaved roads in the municipality (e.g. excellent, good, fair, poor) | Good |
| | % of potholes exceeding 15cm that are repaired within 5 days | More data needed to report |
| | % of roads in poor or worse condition | 15% |
| | % of streetlights converted to LED | 100% |
| Performance | Capital reinvestment rate | 4.02% |

### 4.1.7 Recommendations

## Condition Assessment Strategies

- Maintain the current assessment frequency and attributes such as the Pavement Condition Index and consider collecting more attributes such as Riding Comfort, Utilization Rates, and Drainage Adequacy, etc.

## Lifecycle Management Strategies

- Implement the identified lifecycle management strategies for HCB and LCB roads to realize potential cost avoidance and maintain a high quality of road pavement condition.
- Evaluate the efficacy of the Township's lifecycle management strategies at regular intervals to determine the impact cost, condition and risk. This could be done by updating the condition assessment data whenever new data becomes available and rerunning the capital projections and risk reports.

## Risk Management Strategies

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

## Levels of Service

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

# 4.2 Bridges & Culverts

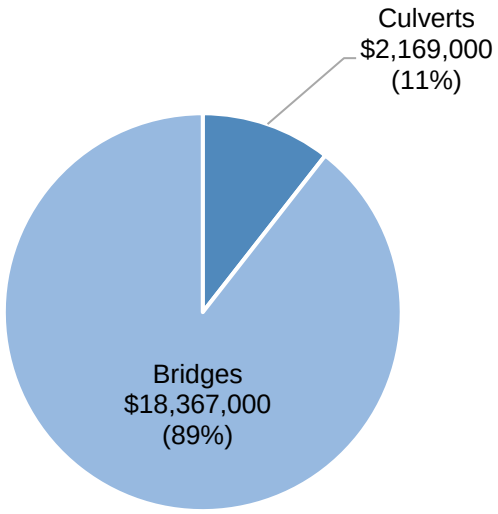
The Municipality's bridges and culverts comprises of 25 structures that have a span of 3 meters or more and are therefore categorized as a bridge or a structural culvert asset.

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

## 4.2.1 Asset Inventory & Replacement Cost

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

| Asset Segment | Quantity | Replacement Cost Method | Total Replacement Cost |
|---|---|---|---|
| Bridges | 19 | CPI Tables | $18,367,000 |
| Structural Culverts | 6 | CPI Tables | $2,169,000 |
| | | | **$20,536,000** |




Total Current Replacement Cost: $20,536,000

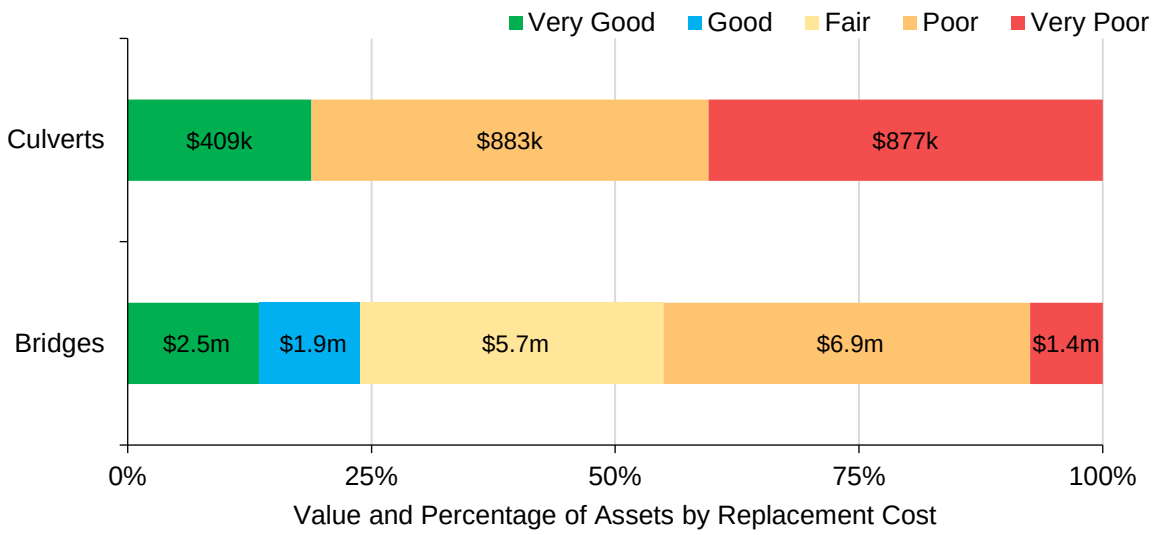
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

## 4.2.2 Asset Condition

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

| Asset Segment | Average Condition (%) | Average Condition Rating | Condition Source |
|---|---|---|---|
| Bridges | 72% | Good | 100% Assessed |
| Structural Culverts | | | 95% Assessed |
| | **72%** | **Good** | **99% Assessed** |

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

### Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to 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 of all bridges and culverts with a span greater than or equal to 3 meters are completed every 2 years in accordance with the Ontario Structure Inspection Manual (OSIM)

### 4.2.3 Estimated Useful Life & Average Age

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

| | | | |
|---|---|---|---|
| Bridges<br>Structural Culverts | 70 Years | 43 Years 10 Months | 26 Years 2 Months |

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

### 4.2.4 Lifecycle Management Strategy

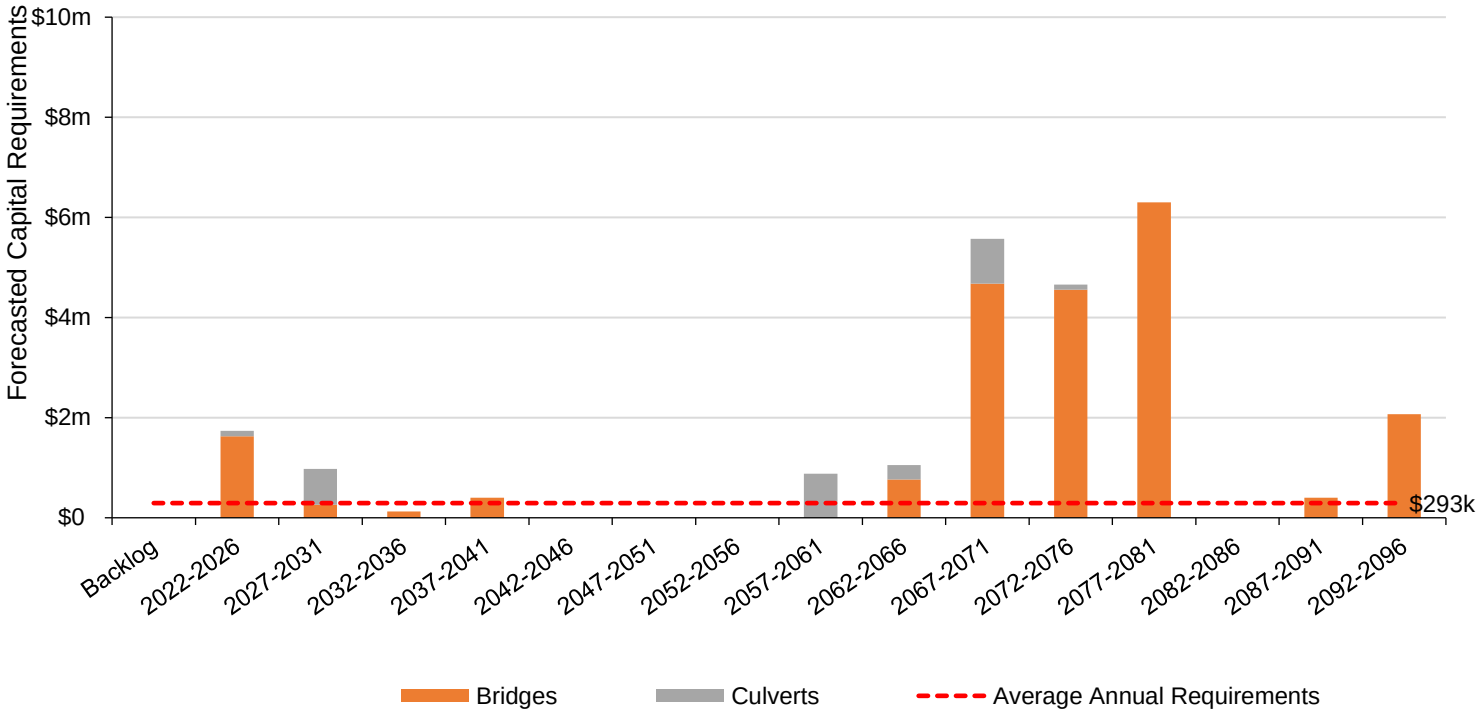
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

| Activity Type | Description of Current Strategy |
|---|---|
| Maintenance, Rehabilitation and Replacement | All lifecycle activities are driven by the results of mandated structural inspections competed according to the Ontario Structure Inspection Manual (OSIM). However, these activities may be subject to budget constraints. |
| | Major repairs and replacements are subject to budget constraints, condition ratings, health and safety concerns, and other risks to prioritize work. |

## Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 73 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.




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

## 4.2.5 Risk & Criticality

### Risk Matrix

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


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

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

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

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

## Risks to Current Asset Management Strategies

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

**Aging Infrastructure**

Some bridges in the Township are reaching the end of their useful lives, however; their replacement costs are relatively small.

**Climate Change & Extreme Weather Events**

Flooding and extreme weather causes damage to multiple components of the Township's bridges including the deck, superstructure, and substructure. The increased frequency and intensity of precipitation events can increase the deterioration of bridge components. The Township should prioritize infrastructure rehabilitation or replacement based on susceptibility to climate impacts.

**Infrastructure Re-Investment**

The current level of investment in infrastructure is not adequate to meet lifecycle requirements and maintain a good state of repair. The Township was required to enter debt finance to replace one bridge. A long-term capital funding strategy can reduce dependency on grant funding and help prevent deferral of necessary capital works.

## 4.2.6 Levels of Service

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

### Community Levels of Service

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

| Service Attribute | Qualitative Description | Current LOS (2023) |
|---|---|---|
| Scope | Description of the traffic that is supported by municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists, and farm equipment) | The current level of service is acceptable. Bridges in this category are able to support motor vehicles, including heavy transport vehicles and farm equipment. While emergency vehicles may be able to access the bridge, they may still face some challenges due to narrow lanes, sharp turns, or other factors in more rural areas of the municipality. The bridges are equipped with supporting infasturtcure such as signage and guiderails.<br><br>Some of the Township's structures have loading or dimensional restrictions meaning that most types of vehicles, including heavy transport, motor vehicles, emergency vehicles and cyclists can cross them without restriction. |
| Quality | Description or images of the condition of bridges and culverts and how this would affect use of the bridges and culverts | The current level of service is acceptable. The Township has a basic understanding of the current condition of their bridges and culverts and have a system in place for regular monitoring and maintenance. Most of this knowledge comes from the regular OSIM inspections that the Township undertakes. |

## Technical Levels of Service

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

| Service Attribute | Technical Metric | Current LOS (2023) |
|---|---|---|
| Scope | % of bridges in the Township with loading or dimensional restrictions | 12.5% |
| Quality | Average bridge condition index value for bridges in the Township | 74 |
| | Average bridge condition index value for structural culverts in the Township | 74 |
| Performance | Capital re-investment rate | 0.94% |

# 4.2.7 Recommendations

## Data Review/Validation

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

## Risk Management Strategies

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

## Lifecycle Management Strategies

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

## Levels of Service

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

# 4.3 Buildings & Facilities

Tay Valley Township owns and maintains several facilities and recreation centres that provide key services to the community. These include:

- administrative offices
- public works garages and storage sheds
- fire halls[2]
- recreation halls and buildings
- re-use centre buildings
- waste site sheds

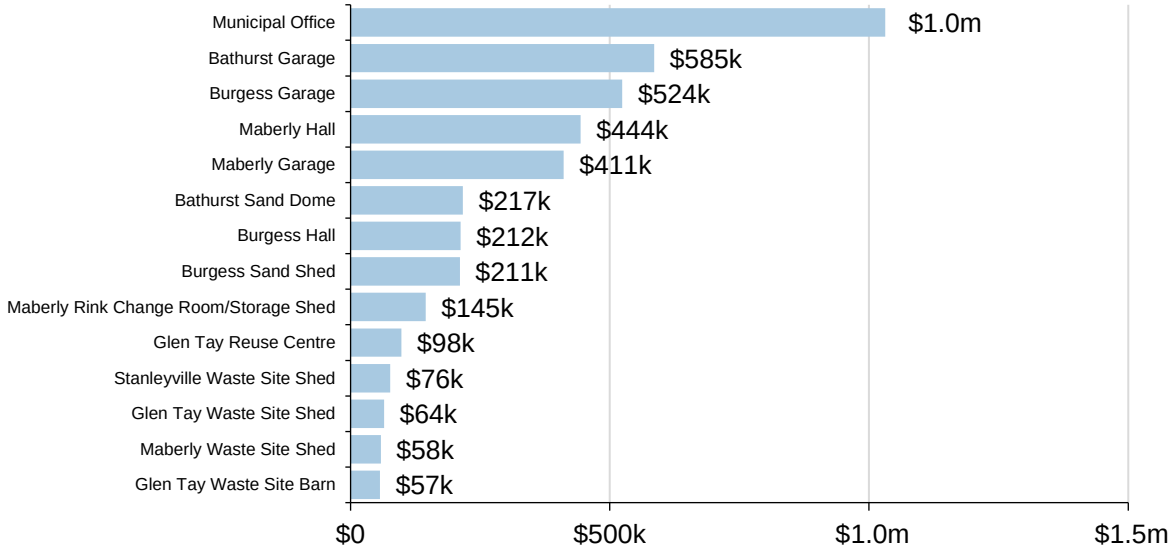
## 4.3.1 Asset Inventory & Replacement Cost

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

| Asset Segment | Replacement Cost Method | Total Replacement Cost |
|---|---|---|
| Bathurst Garage | User-Defined Cost | $585,000 |
| Bathurst Sand Dome | User-Defined Cost | $217,000 |
| Burgess Garage | User-Defined Cost | $524,000 |
| Burgess Hall | User-Defined Cost | $212,000 |
| Burgess Sand Shed | User-Defined Cost | $211,000 |
| Glen Tay Reuse Centre | User-Defined Cost | $98,000 |
| Glen Tay Waste Site Barn | User-Defined Cost | $57,000 |
| Glen Tay Waste Site Shed | User-Defined Cost | $64,000 |
| Maberly Garage | User-Defined Cost | $411,000 |
| Maberly Hall | User-Defined Cost | $444,000 |
| Maberly Rink Change Room/Storage Shed | User-Defined Cost | $145,000 |
| Maberly Waste Site Shed | User-Defined Cost | $58,000 |
| Municipal Office | User-Defined Cost | $1,031,000 |
| Stanleyville Waste Site Shed | User-Defined Cost | $76,000 |
| | | **$4,133,000** |

[2] Fire Assets that are currently in Tay Valley's inventory will not be replaced through Tay Valley but rather will be replaced within the joint fire service.

Total Current Replacement Cost: $4,133,000




Current Replacement Cost

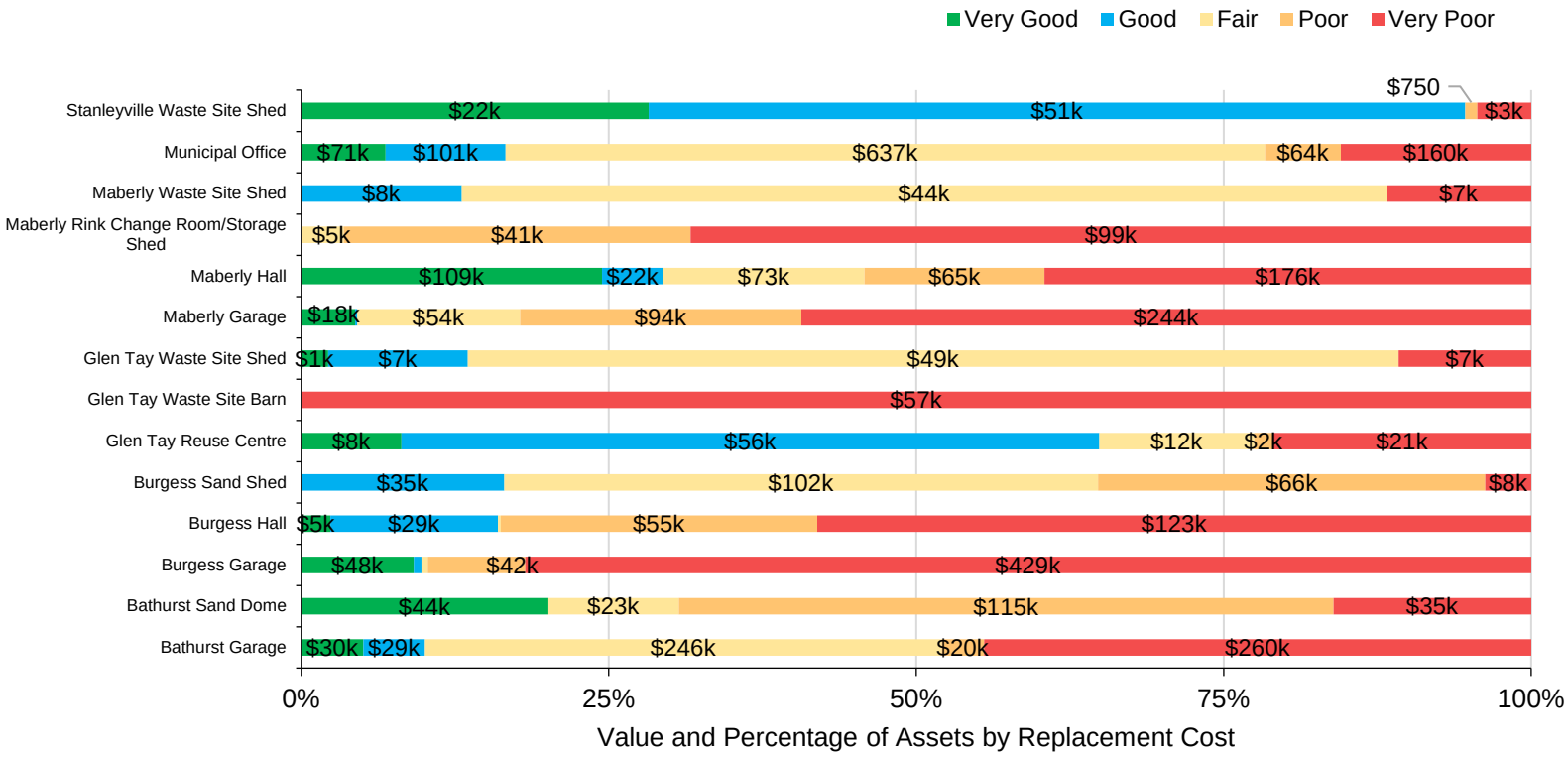
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

### 4.3.2 Asset Condition

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

| Asset Segment | Average Condition (%) | Average Condition Rating | Condition Source |
|---|---|---|---|
| Bathurst Garage | 37% | Poor | 100% Assessed |
| Bathurst Sand Dome | 33% | Poor | 100% Assessed |
| Burgess Garage | 20% | Poor | 100% Assessed |
| Burgess Hall | 26% | Poor | 100% Assessed |
| Burgess Sand Shed | 40% | Poor | 100% Assessed |
| Glen Tay Reuse Centre | 49% | Fair | 100% Assessed |
| Glen Tay Waste Site Barn | 4% | Very Poor | 100% Assessed |
| Glen Tay Waste Site Shed | 44% | Fair | 100% Assessed |
| Maberly Garage | 17% | Very Poor | 100% Assessed |
| Maberly Hall | 42% | Fair | 100% Assessed |
| Maberly Rink Change Room/Storage Shed | 22% | Poor | 100% Assessed |
| Maberly Waste Site Shed | 41% | Fair | 100% Assessed |
| Municipal Office | 44% | Fair | 100% Assessed |
| Stanleyville Waste Site Shed | 69% | Good | 100% Assessed |
| | **35%** | **Poor** | **100% Assessed** |

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




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

### 4.3.3 Estimated Useful Life & Average Age

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

| Asset Segment | Average Estimated Useful Life | Average Age | Average Service Life Remaining |
|---|---|---|---|
| Bathurst Garage | 25 Years 10 Months | 17 Years 2 Months | 8 Years 8 Months |
| Bathurst Sand Dome | 32 Years 2 Months | 21 Years 2 Months | 11 Years |
| Burgess Garage | 25 Years 7 Months | 20 Years 8 Months | 5 Years |
| Burgess Hall | 25 Years 7 Months | 18 Years 7 Months | 6 Years 11 Months |
| Burgess Sand Shed | 26 Years 11 Months | 13 Years 1 Month | 13 Years 10 Months |
| Glen Tay Reuse Centre | 28 Years 4 Months | 13 Years 11 Months | 14 Years 5 Months |
| Glen Tay Waste Site Barn | 41 Years 8 Months | 39 Years 7 Months | 2 Years 2 Months |
| Glen Tay Waste Site Shed | 23 Years 3 Months | 11 Years 10 Months | 11 Years 5 Months |
| Maberly Garage | 25 Years 11 Months | 21 Years 7 Months | 4 Years 4 Months |
| Maberly Hall | 27 Years 2 Months | 15 Years 9 Months | 11 Years 5 Months |
| Maberly Rink Change Room/Storage Shed | 26 Years 10 Months | 19 Years 11 Months | 6 Years 11 Months |
| Maberly Waste Site Shed | 24 Years 1 Month | 12 Years 7 Months | 11 Years 7 Months |
| Municipal Office | 24 Years 10 Months | 13 Years 6 Months | 11 Years 4 Months |
| Stanleyville Waste Site Shed | 22 Years 11 Months | 6 Years | 17 Years |
| | | **16 Years 11 Months** | **9 Years 3 Months** |

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

## Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to 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:

- A Building Condition Assessment study was completed on all Township facilities for the first time in 2022. This included an assessment of each facility's general condition, required repairs and recommended upgrades
- The Township plans to continue to carry out Building Condition Assessment studies every 5 years
- Township staff conduct visual inspections of all buildings and facilities on an annual basis
- Health and safety walkthroughs are completed by Township staff on a monthly basis

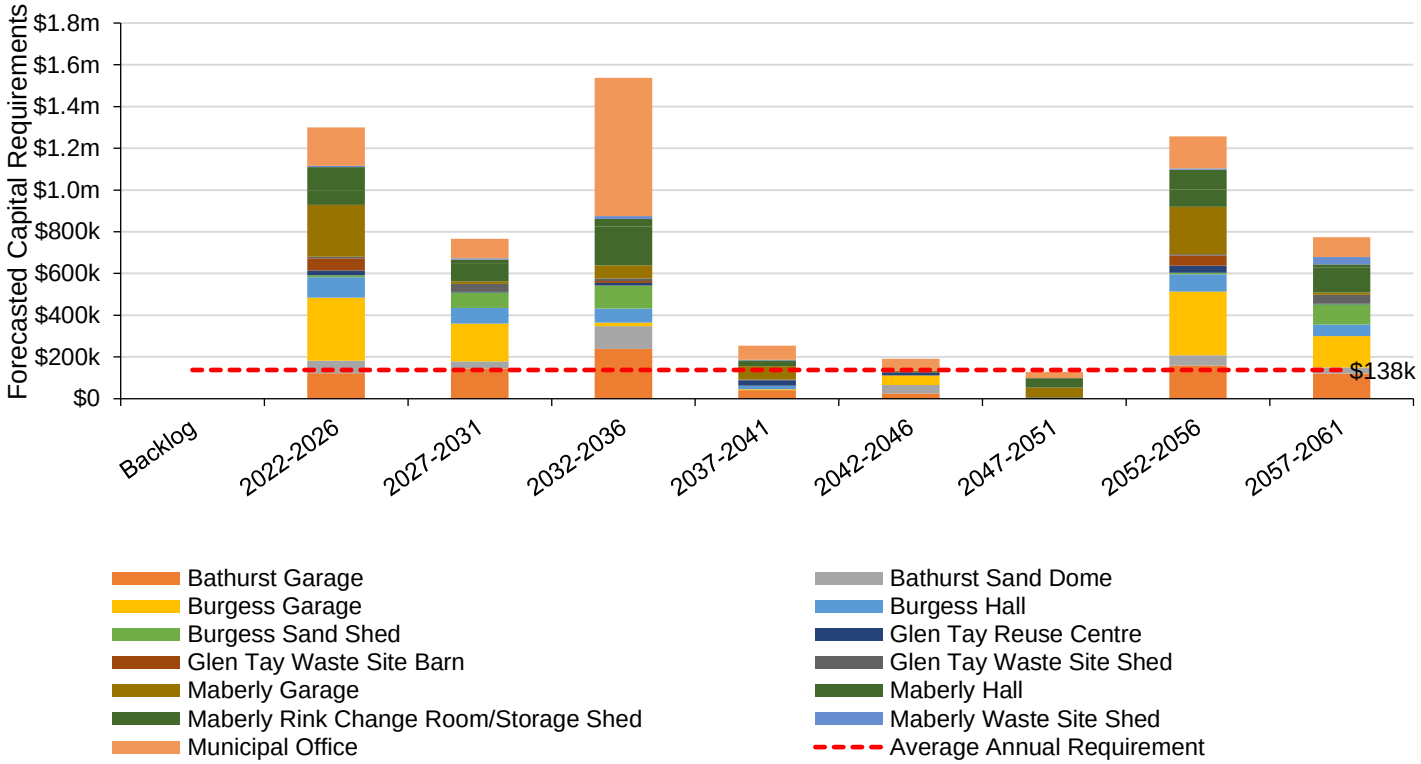
### 4.3.4 Lifecycle Management Strategy

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

| Activity Type | Description of Current Strategy |
|---|---|
| | Municipal buildings are subject to regular inspections to identify health & safety requirements as well as structural deficiencies that require additional attention |
| Maintenance / Rehabilitation | HVAC units in the buildings require regular servicing, which consumes most of the budget for buildings. Some preventative maintenance activities are performed such as septic filters changes done annually, and water quality testing and furnace filter changes are carried out every quarter |
| Replacement | Assessments for replacement are completed reactively as buildings approach their end-of-life, and in the past a "run until failure" policy was applied. Going forward, the approach will be more proactive. In addition, buildings will start to be included in the 10-year capital plan |

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




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

## 4.3.5 Risk & Criticality

### Risk Matrix

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


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

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

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

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

## Risks to Current Asset Management Strategies

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

**Organizational Cognizance / Capacity**

In the past, the transfer of knowledge regarding buildings and facilities has been an issue, however; with the recent Building Condition Assessment study, this issue is being eliminated. Staff have the knowledge and capacity to engage in informed asset management practices, although staff capacity continues to be an issue.

**Infrastructure Design / Installation**

There are some minor concerns with the past design of infrastructure components such as the windows of the municipal office.

**Aging Infrastructure**

Burgess Hall and Maberly Hall are nearing the end of their functional lifespans. Implementing a proactive enhancement strategy could extend the service life of these assets and reduce the need for substantial funding. Establishing an annual capital funding plan decreases reliance on grant funding and helps prevent the postponement of essential capital projects.

**Growth**

As the population continues to grow, the Township must prioritize expanding its capacity to serve a larger population. Population and employment growth increases the demand, and the community expectation becomes higher on buildings and facilities. Currently, facilities staff are not able to complete all required activities and inspections due to limited staff capacity. Developing a comprehensive long-term capital plan with considerations for growth and proactive lifecycle strategy can be helpful to minimize dependency on grant funding and increase the capacity.

**Infrastructure Re-Investment**

Major work is only carried out based on the availability of grants and external funding. The operating budget for Buildings and Facilities is usually utilized to its fullest, and the level of reserves available is not considered adequate. An enhanced proactive strategy can help to extend the service life of assets with lower funding requirement. An annual capital funding strategy reduces dependency on grant funding and helps prevent deferral or capital works.

**Other**

Some accessibility projects are underway, however; they are not considered a major risk to the current buildings and facilities.

## 4.3.6 Levels of Service

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

### Community Levels of Service

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

| Service Attribute | Qualitative Description | Current LOS (2023) |
|---|---|---|
| Scope | Description of the availability of the recreational and cultural services supported by municipal facilities to residents | The current level of service is acceptable. In a community where both availability and accessibility of services are acceptable, there are a reasonable number of facilities available, with a good range of services and resources, and they are located reasonably close to residential areas.<br><br>Two community halls are available to residents for rental. The rental costs for residents are very minimal to cater to financial accessibility. Both community halls in Tay Valley Township are in community hubs, and meet the capacity needs of residents most of the time.<br><br>There is a cost-sharing agreement in place with a nearby municipality with recreational facilities such as a sports arena, pool, etc. so that Tay Valley Township residents can access those facilities. |
| Quality | Description of any initiatives and plans to make buildings more accessible | The current level of service is acceptable. Tay Valley has a formal plan in place that addresses accessibility in municipal buildings. Building codes and standards are followed, and accessibility features, such as ramps, elevators, and accessible washrooms, are incorporated into building design and construction as funding allows. |

| Service Attribute | Qualitative Description | Current LOS (2023) |
|---|---|---|
| Performance | Description of lifecycle management strategies and assessment programs applied to municipal buildings | The current level of service is acceptable. With the completion of the 2022 Building Condition Assessment study, Tay Valley Township has a formal plan in place that outlines the maintenance and management of municipal buildings throughout their lifecycle. Building systems are regularly assessed for performance and condition, and maintenance is carried out on a regular schedule. |
| Performance | Description of any initiatives and plans to make municipal buildings more energy efficient | The current level of service is acceptable. Tay Valley has a Green Energy and Climate Change Working Group that monitors energy use. Future plans can be developed to consider energy efficient retrofits. |

## Technical Levels of Service

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

| Service Attribute | Technical Metric | Current LOS (2023) |
|---|---|---|
| Scope | Average condition of municipal buildings | 35% |
| | % of facilities that are in good or very good condition | 23% |
| | % of facilities that are in poor or very poor condition | 49% |
| | Average Risk Rating associated to buildings | Low |
| Performance | Capital re-investment rate | 0.80% |

### 4.3.7 Recommendations

#### Replacement Costs

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

#### Condition Assessment Strategies

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

#### Risk Management Strategies

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

#### Levels of Service

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

# 4.4 Land Improvements

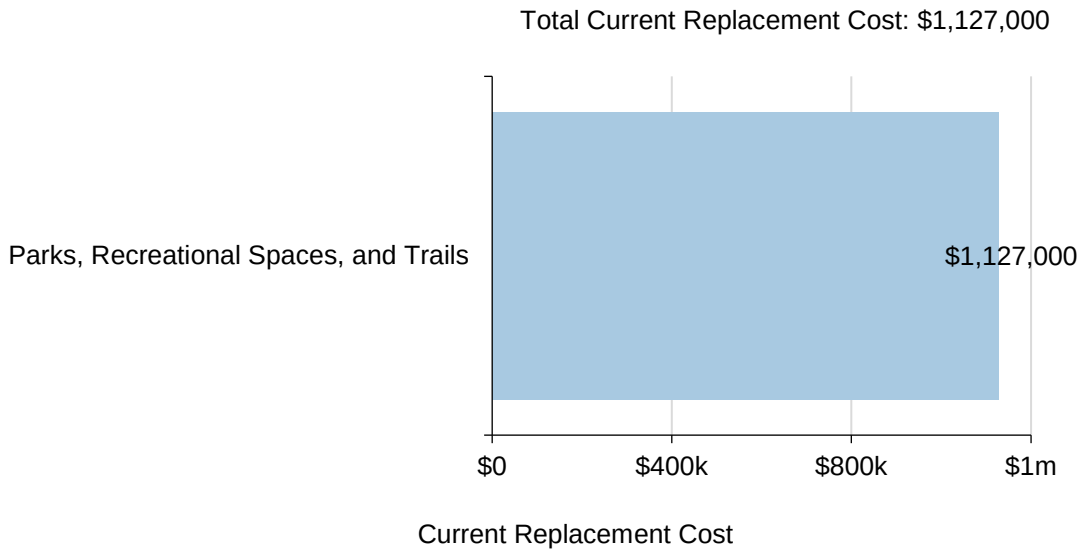
Tay Valley Township owns several assets that are considered land improvements. This category includes:

- Parks, recreational spaces, and trails

## 4.4.1 Asset Inventory & Replacement Cost

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

| Asset Segment | Quantity | Replacement Cost Method | Total Replacement Cost |
|---|---|---|---|
| Parks, Recreational Spaces, and Trails | 14 | User-Defined | $1,127,000 |
| | | | **$1,127,000** |



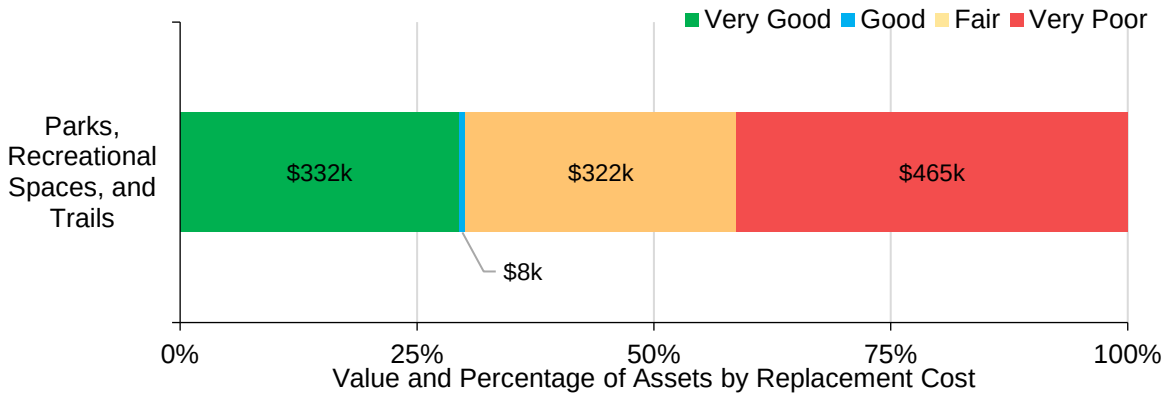

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

## 4.4.2 Asset Condition

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

| Asset Segment | Average Condition (%) | Average Condition Rating | Condition Source |
|---|---|---|---|
| Parks, Recreational Spaces, and Trails | 35% | Poor | Age-Based |

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




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

## 4.4.3 Estimated Useful Life & Average Age

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

| | | | |
|---|---|---|---|
| Parks, Recreational Spaces, and Trails | 35 Years 11 Months | 24 Years 8 Months | 11 Years 4 Months |
| | | **24 Years 8 Months** | **11 Years 4 Months** |

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

## Current Approach to Condition Assessment

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

- Staff complete regular visual inspections of land improvements assets to ensure they are in state of adequate repair
- Regular inspection and maintenance for playground equipment are performed to abide by the regulations
- Inspections for land improvements are done according to Canadian Standard Association (CSA) guidelines

## 4.4.4 Lifecycle Management Strategy

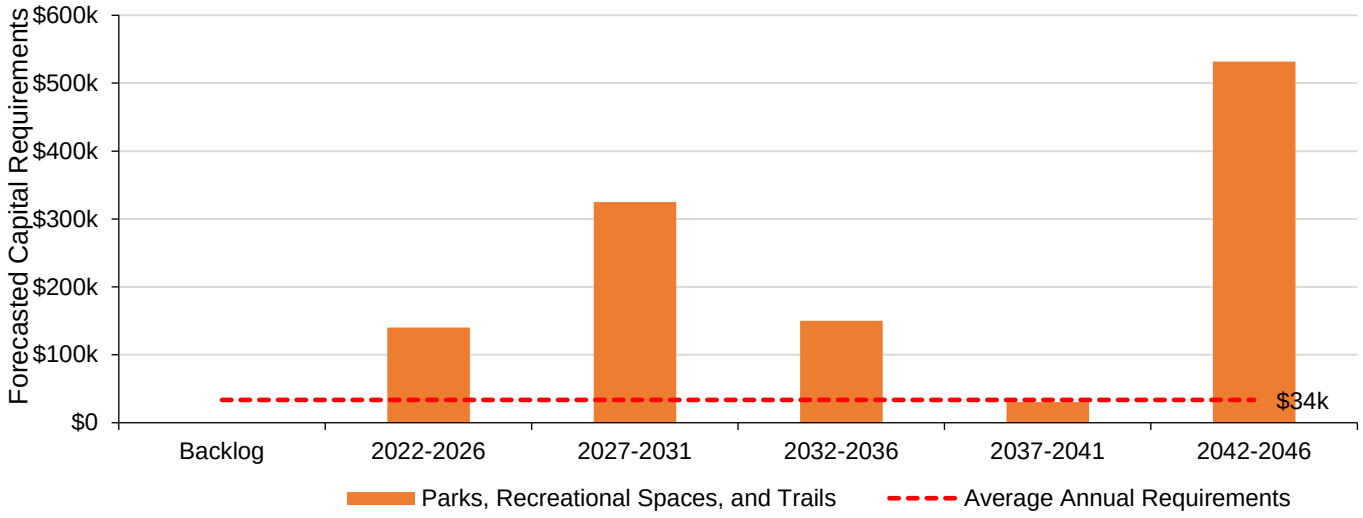
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

| Activity Type | Description of Current Strategy |
|---|---|
| Maintenanace, Rehabilitation & Replacement | The land improvements asset category includes several unique asset types and lifecycle requirements are dealt with on a case-by-case basis<br><br>Regular inspections are carried out according to Canadian Standards Association (CSA) guidelines |

### Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 23 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.




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

## 4.4.5 Risk & Criticality

### Risk Matrix

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


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 (Structural) | Replacement Cost (Economic) |

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

## Risks to Current Asset Management Strategies

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

**Asset Data Confidence**

There is a lack of confidence in the available inventory data for Land Improvements. Data refinement should be prioritized to increase confidence in the accuracy and reliability of asset data and information. Once completed there will be greater confidence in the development of data-driven strategies to address infrastructure needs, prioritize the inspections/maintenance activities and reduce the impacts on staff shortage.

### 4.4.6 Levels of Service

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

#### Community Levels of Service

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

| Service Attribute | Qualitative Description | Current LOS (2023) |
|---|---|---|
| Scope | Description of the availability of the recreational spaces supported by municipal parks and trails to residents | The current level of service is acceptable. The services are accessible to most residents and there is a decent variety of recreational spaces offered, such as parks and trails. |
| Quality | Description of the inspection process applied to park equipment and playgrounds | The current service level is satisfactory. Playgrounds and park equipment are inspected at least once a year by an external contractor. This contractor is skilled in identifying and evaluating potential safety hazards. The inspection is comprehensive, covering all equipment and structures. It includes checks for signs of wear and tear, rust, corrosion, and the presence of loose or missing bolts, among other potential hazards. The inspectors also ensure that all surfaces are safe, level, and devoid of sharp edges or other hazardous features. After the inspection, the contractor provides a detailed written report highlighting any safety concerns and recommendations for addressing them. |

## Technical Levels of Service

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

| Service Attribute | Technical Metric | Current LOS (2023) |
|---|---|---|
| Scope | Average condition of municipal land improvements | 35% |
| | % of land improvement assets in poor or very poor condition | 70% |
| Performance | Capital re-investment rate | 3.55% |

### 4.4.7 Recommendations

#### Data Review/Validation

- Conduct a comprehensive asset inventory scan to identify and categorize all park, recreational space, and trail assets.
- Componentize assets to assess their condition, maintenance needs, and replacement costs accurately.
- Ensure all assets are included in the inventory for better tracking and resource allocation.
- Establish estimated useful lives for assets and their components to plan for proactive maintenance and budget forecasting.

#### Replacement Costs

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

#### Condition Assessment Strategies

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

#### Risk Management Strategies

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

#### Levels of Service

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

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

# 4.5 Vehicles

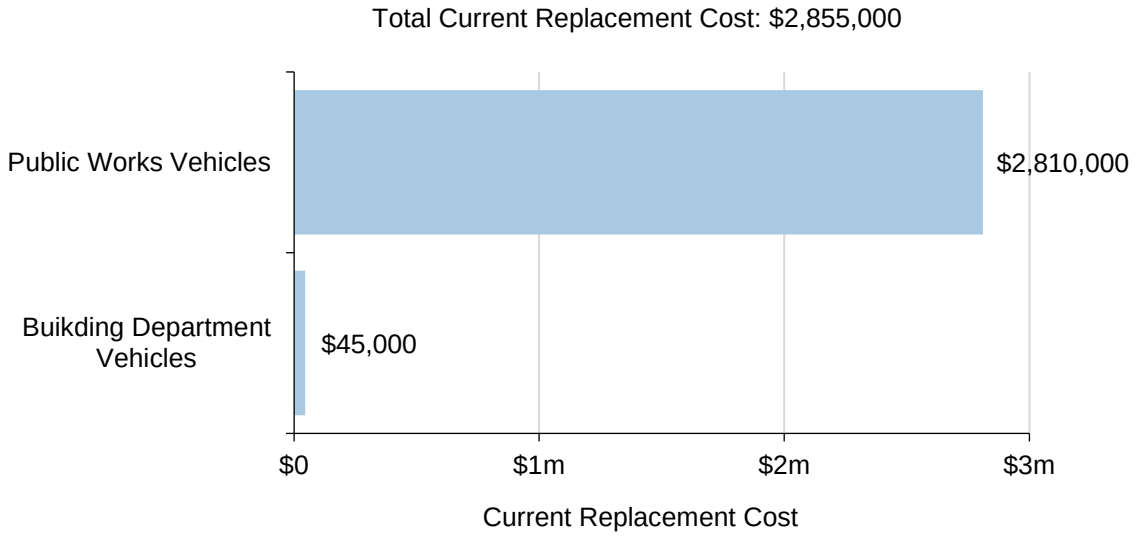
Vehicles allow staff to efficiently deliver municipal services and personnel. Municipal vehicles are used to support several service areas, including:

- fire rescue vehicles to provide emergency services[3]
- pick-up trucks, dump trucks, and assorted vehicles to support the maintenance of the transportation network and address service requests for Public Works, including winter control activities

## 4.5.1 Asset Inventory & Replacement Cost

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

| Asset Segment | Quantity | Replacement Cost Method | Total Replacement Cost |
|---|---|---|---|
| Building Department Vehicles | 1 | User-Defined Cost | $45,000 |
| Public Works Vehicles | 11 | User-Defined Cost | $2,810,000 |
| | | | **$2,855,000** |




[3] Fire Assets that are currently in Tay Valley's inventory will not be replaced through Tay Valley but rather will be replaced within the joint fire service.

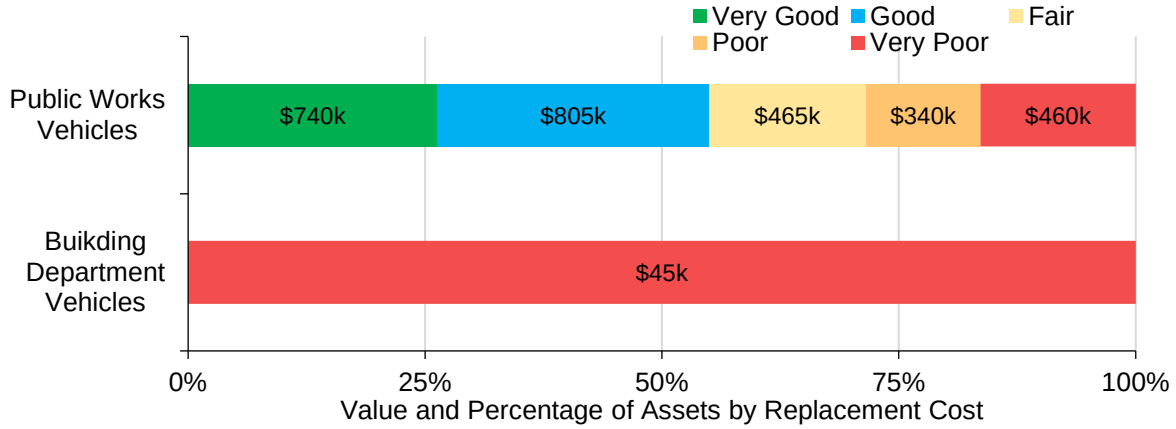
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

## 4.5.2 Asset Condition

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

| Asset Segment | Average Condition (%) | Average Condition Rating | Condition Source |
|---|---|---|---|
| Buikding Department Vehicles | 10% | Very Poor | Age-Based |
| Public Works Vehicles | 49% | Fair | Age-Based |
| | **45%** | **Fair** | **0% Assessed** |

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




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

## 4.5.3 Estimated Useful Life & Average Age

The Estimated Useful Life for fleet assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been

assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

| | | | |
|---|---|---|---|
| Buikding Department Vehicles | 10 Years | 9 Years | 1 Year |
| Public Works Vehicles | 11 Years 7 Months | 6 Years | 5 Years 6 Months |
| | | **6 Years 3 Months** | **5 Years 2 Months** |

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

## Current Approach to Condition Assessment

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

- Staff complete regular visual inspections of vehicles to ensure they are in state of adequate repair prior to operation
- Detailed vehicle inspections are carried out annually

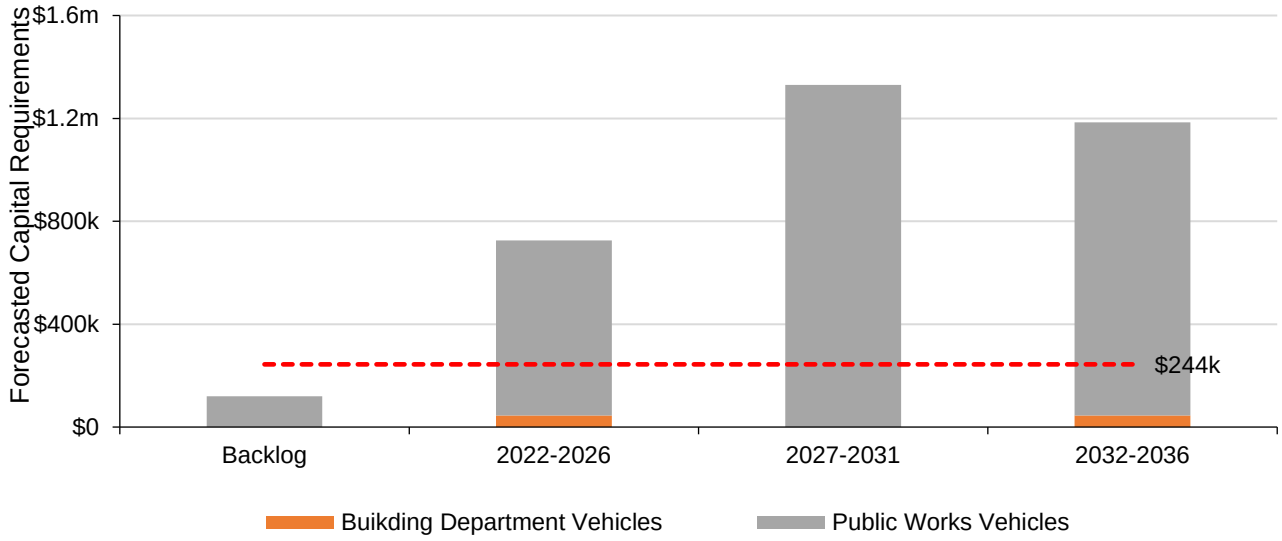
### 4.5.4 Lifecycle Management Strategy

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

| Activity Type | Description of Current Strategy |
|---|---|
| Maintenance / Rehabilitation | Visual inspections completed and documented daily by staff; fluids inspected at every fuel stop; tires inspected monthly |
| | Every 4-7000km includes a detailed inspection; tires are rotated and oil changed |
| | Annual preventative maintenance activities include system components check and additional detailed inspections |
| | Inspections are compliant with the Ontario Commercial Vehicle Safety Requirements |
| Replacement | Vehicle replacements are based on the budget available for that asset. Staff are considering moving forward with electric vehicle replacements due to their environmental and economic benefits |
| | Vehicle age, kilometres and annual repair costs are taken into consideration when determining appropriate treatment options |

## Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 12 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.




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

## 4.5.5 Risk & Criticality

### Risk Matrix

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


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

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

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

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

## Risks to Current Asset Management Strategies

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

**Growth**

As the population continues to grow, the Township must prioritize expanding its capacity to serve a larger population. Population and employment growth increases the demand on transportation services. Therefore, it requires more fleet to provide the desired levels of service. Developing a comprehensive long-term capital plan with considerations for growth and proactive lifecycle strategy can be helpful to minimize dependency on grant funding and increase the capacity.

# 4.5.6 Levels of Service

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

## Community Levels of Service

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

| Service Attribute | Qualitative Description | Current LOS (2023) |
|---|---|---|
| Scope | Description of lifecycle management strategies and assessment programs applied to municipal vehicles | The current level of service is acceptable. Tay Valley Township has formal policies in place for vehicle lifecycle management, and resources are allocated for this purpose. Vehicles are regularly inspected and maintained to ensure their safe and efficient operation. |
| Quality | Description of the municipal vehicle management and safety program | The current level of service is acceptable. Tay Valley Township addresses vehicle safety and maintenance as needed, and the Township is compliant with Provincial Safety Requirements. Drivers are trained and provided with resources to operate vehicles safely, and vehicles are regularly inspected and maintained to ensure their safe and efficient operation. Additionally, there may be a system in place for |

| Service Attribute | Qualitative Description | Current LOS (2023) |
|---|---|---|
| | | reporting and investigating vehicle-related incidents, with appropriate corrective actions taken as needed. |

## Technical Levels of Service

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

| Service Attribute | Technical Metric | Current LOS (2023) |
|---|---|---|
| Scope | Average condition of municipal vehicles | 45% |
| | % of vehicles that are in poor or very poor condition | 30% |
| Performance | Capital re-investment rate | 5.88% |

### 4.5.7 Recommendations

#### Replacement Costs

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

#### Condition Assessment Strategies

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

#### Risk Management Strategies

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

#### Levels of Service

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

# 4.6 Machinery & Equipment

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

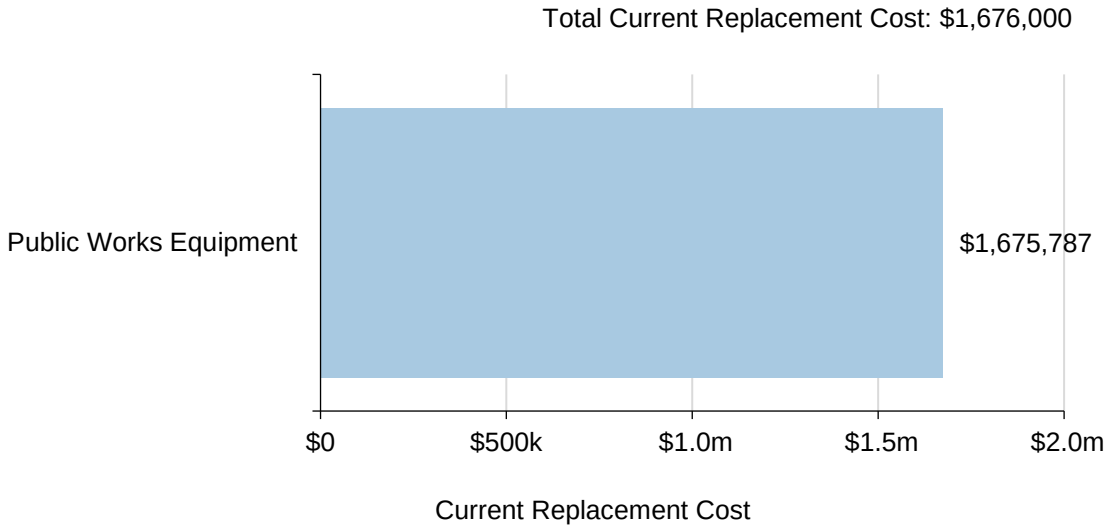
- Landscaping equipment to maintain public parks, recreational spaces, and trails
- Miscellaneous equipment such as generators and compactors

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

## 4.6.1 Asset Inventory & Replacement Cost

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

| Asset Segment | Quantity | Replacement Cost Method | Total Replacement Cost |
|---|---|---|---|
| Public Works Equipment | 19 | User-Defined Cost | $1,676,000 |
| | | | **$1,676,000** |



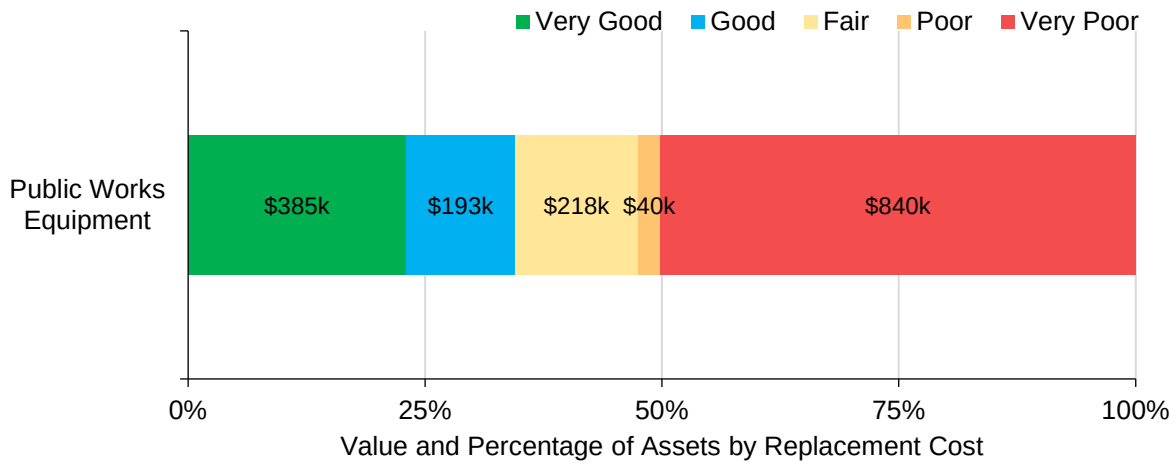

Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

## 4.6.2 Asset Condition

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

| Asset Segment | Average Condition (%) | Average Condition Rating | Condition Source |
|---|---|---|---|
| Public Works Equipment | 42% | Fair | Age-Based |

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




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

## 4.6.3 Estimated Useful Life & Average Age

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

asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

| | | | |
|---|---|---|---|
| Public Works Equipment | 15 Years 4 Months | 8 Years 5 Months | 6 Years 11 Months |

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

## Current Approach to Condition Assessment

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

- Staff complete regular visual inspections of machinery & equipment to ensure they are in state of adequate repair
- There are no formal condition assessment programs in place
- The Township is planning to have a more formalized inspection of machinery & equipment in the future

### 4.6.4 Lifecycle Management Strategy

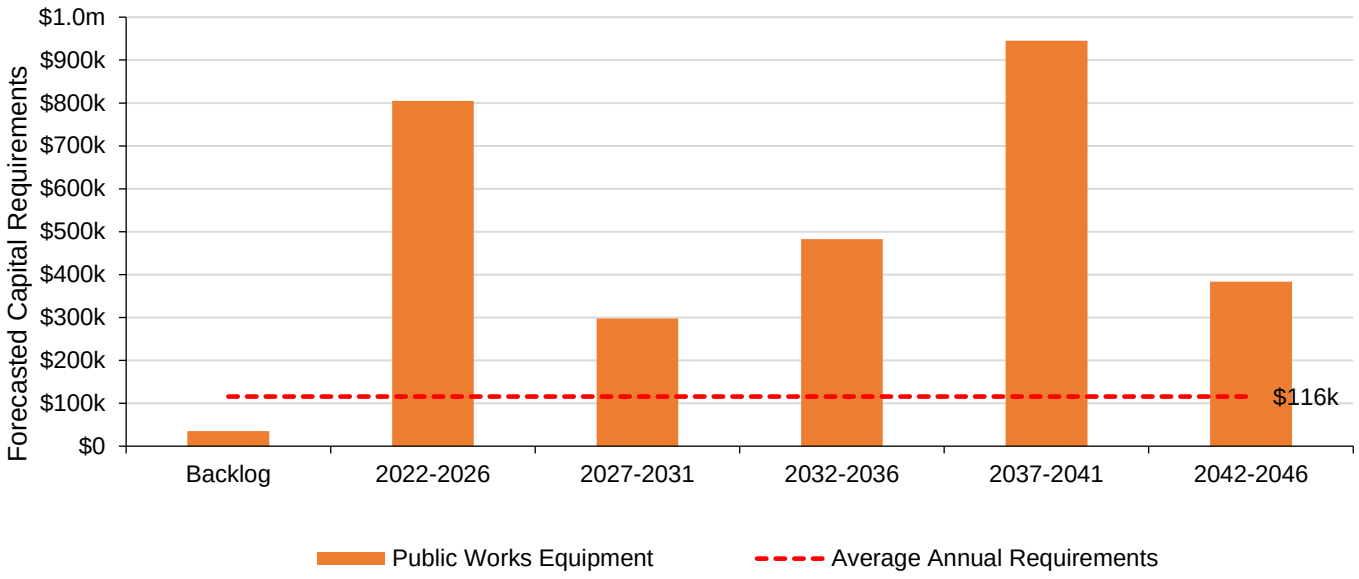
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

| Activity Type | Description of Current Strategy |
|---|---|
| Maintenance/ Rehabilitation | Maintenance program varies by department |
| | Machinery and equipment is maintained according to manufacturer recommended actions and supplemented by the expertise of municipal staff |
| Replacement | The replacement of machinery and equipment depends on deficiencies identified by operators that may impact their ability to complete required tasks |

## Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 22 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average 5-year capital requirements.




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

## 4.6.5 Risk & Criticality

### Risk Matrix

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


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 (Structural) | Replacement Cost (Economic) |

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

## 4.6.6 Levels of Service

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

### Community Levels of Service

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

| Service Attribute | Qualitative Description | Current LOS (2023) |
|---|---|---|
| Scope | Description of lifecycle management strategies and assessment programs applied to municipal machinery and equipment assets | The current level of service is acceptable. The Township has formal policies in place for machinery and equipment asset lifecycle management, and resources are allocated for this purpose. Machinery and equipment are regularly inspected and maintained to ensure their safe and efficient operation. |

### Technical Levels of Service

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

| Service Attribute | Technical Metric | Current LOS (2023) |
|---|---|---|
| Scope | Average condition of municipal machinery and equipment | 42% |
| | % of municipal machinery and equipment that are in poor or very poor condition | 45% |
| Performance | Capital reinvestment rate | 4.77% |

### 4.6.7 Recommendations

#### Replacement Costs

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

#### Condition Assessment Strategies

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

#### Risk Management Strategies

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

#### Levels of Service

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

# 5 Impacts of Growth

## Key Insights

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

- Moderate population and employment growth is expected over the next 10 years

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

# 5.1 Description of Growth Assumptions

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

## 5.1.1 Tay Valley Official Plan (October 2022)

Tay Valley Township adopted its Official Plan in 2016 and updated it in October 2022 to conform to the Lanark County Sustainable Communities Official Plan (SCOP).

The purpose of the Official Plan is to guide development and change in the Township. The citizens and leaders of Tay Valley Township strive to improve the quality of life for all residents and visitors in a sustainable, adaptable, and secure environment.

The Tay Valley Official Plan recognizes the types of new growth and development that are taking place in the Township. The Official Plan anticipates that roughly one-half (½) of the future population growth will be the result of conversion of seasonal residences into year-round permanent dwellings. There are a large number of seasonal/cottage properties which are increasingly being converted to permanent dwellings, often as a by-product of residents from urban areas moving to the region. In addition, there is a trend of people within the creative economy who are moving due to enhanced telecommunication infrastructure. Changes in demographics within the Township will need to be considered when optimizing and adapting existing infrastructure.

The Plan also expresses the importance of increasing commercial, industrial, and institutional assessment to the Township's economic health, and that residential development may be delayed to achieve a positive assessment ratio. It is acknowledged that the development context of the Township has changed during the Covid-19 pandemic period.

### 5.1.2 Tay Valley Growth Management Options (January 2022)

As part of the 2021 Official Plan Review and Update, Council commissioned the preparation of a Growth Management Plan to identify appropriate locations for growth and establish affordable housing targets. This plan is still to be completed.

Population growth in Tay Valley Township is currently taking place through four forms of development:

1. Conversion of Cottages to Permanent Homes
2. Rural Residential Development via Consents
3. Limited Rural Residential development on lots created by plan of subdivision
4. Very limited Infill Residential development in Hamlets

The Township's population allocation is 7,097 people to the year 2038. This is an increase of 1,432 people (25.3%) over the Township's 2016 Census population count. This represents an increase of approximately 65 people per year (roughly 1.1% increase per year) or 25 households per year. As Illustrated by the Total Population Forecasts vs Actuals table below, the Township maintained steady growth which aligns with the Low population forecasts.

| | 2011 | 2016 | 2021 | 2026 | 2031 |
|---|---|---|---|---|---|
| Total Population Forecast (High) | 6,229 | 6,589 | 7,419 | 8,014 | 8,609 |
| Total Population Forecast (Medium) | 6,111 | 7,130 | 7,066 | 7,543 | 8,020 |
| Total Population Forecast (Low) | 5,775 | 5,906 | 6,088 | 6,290 | 6,461 |
| Total Population Actuals | 5,571 | 5,665 | 5,925 | X | X |

*Table 1 - Total Population Forecasts[4] vs Actuals[5]*

[4] Total Population forecast data sourced from the Lanark County SCOP Appendix 2 "Historical and Project Population by Municipality"
[5] Total Population Actuals data sourced from the 2021 Census.

## 5.2 Impact of Growth on Lifecycle Activities

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

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

# 6 Financial Strategy

## Key Insights

- The Township is committing approximately $1.25 million towards capital projects per year from sustainable revenue sources

- Given the annual capital requirement of $1.53 million, there is currently a funding gap of $283,000 annually

- For tax-funded assets, we recommend increasing tax revenues by 0.89% each year for the next 5 years to achieve a sustainable level of funding

# 6.1 Financial Strategy Overview

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

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

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

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

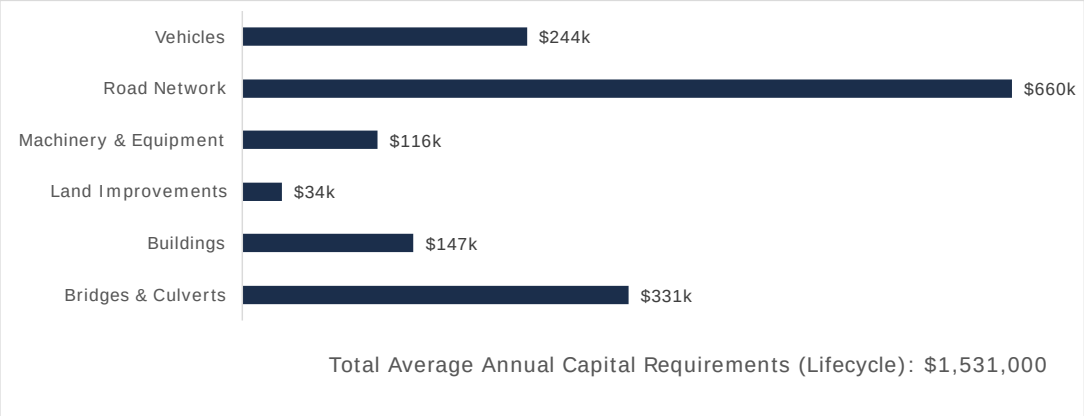
If the financial plan component results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Township's approach to the following:

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

### 6.1.1 Annual Requirements & Capital Funding

## Annual Requirements

The annual requirements represent the amount the Township should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs and achieve long-term sustainability. In total, the Township must allocate approximately $1.53 million annually to address capital requirements for the assets included in this AMP.




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

However, for the Road Network, Bridges & Culverts, and Buildings, lifecycle management strategies have been developed to identify capital costs that are realized through strategic rehabilitation and renewal of some of the main assets in these categories. The development of these strategies allows for a comparison of potential cost avoidance if the strategies were to be implemented.

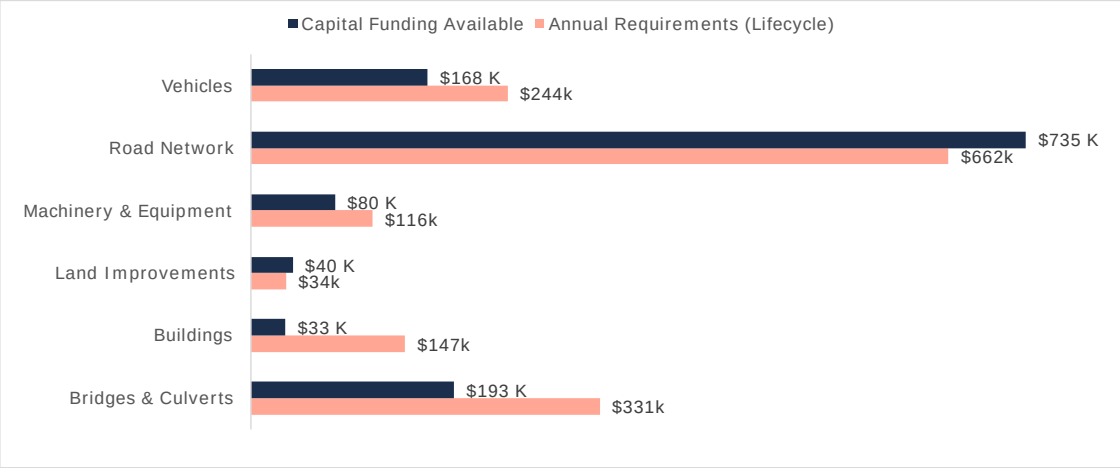
1. **Replacement Only Scenario**: Based on the assumption that assets deteriorate and – without regularly scheduled maintenance and rehabilitation – are replaced at the end of their service life.

2. **Lifecycle Strategy Scenario**: Based on the assumption that lifecycle activities are performed at strategic intervals to extend the service life of assets until replacement is required.

The implementation of a proactive lifecycle strategy leads to a potential annual cost avoidance and better overall performance. As the lifecycle strategy scenario represents the lowest cost option available to the Township, we have used these annual requirements in the development of the financial strategy.

### Annual Funding Available

Based on a historical analysis of sustainable capital funding sources from 2022, the Township is committing approximately $1.43 million towards capital projects per year. Given the annual capital requirement of $1.53 million, there is currently a funding gap of $103,000 annually.




## 6.2 Funding Objective

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

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

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

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

# 6.3 Financial Profile: Tax Funded Assets

## 6.3.1 Current Funding Position

The following tables show, by asset category, Tay Valley's average annual asset investment requirements (CapEx), current funding positions, and funding increases required to achieve full funding on assets funded by taxes.

| Asset Category | Avg. Annual Requirement | Annual Funding Available | | | | Annual Deficit |
|---|---|---|---|---|---|---|
| | | Reserve Allocation[6] | Gas Tax | OCIF | Total Available | |
| Bridges & Culverts | $331,000 | $193,000 | $- | $- | $193,000 | $138,000 |
| Buildings | $147,000 | $33,000 | $- | $- | $33,000 | $114,000 |
| Land Improvements | $34,000 | $40,000 | $- | $- | $40,000 | $(6,000) |
| Machinery & Equipment | $116,000 | $80,000 | $- | $- | $80,000 | $36,000 |
| Road Network | $660,000 | $455,000 | $180,000 | $100,000 | $735,000 | $(75,000) |
| Vehicles | $244,000 | $168,000 | $- | $- | $168,000 | $76,000 |
| | **$1,532,000** | **$969,000** | **$180,000** | **$100,000** | **$1,249,000** | **$283,000** |

The average annual investment requirement for the above categories is approximately $1.53 million. Annual revenue currently allocated to these assets for capital purposes is approximately $1.25 million leaving an annual deficit of about $283,000. Put differently, these infrastructure categories are currently funded at 81.5% of their long-term requirements. Again, this is based on 2022 figures, which represents a greater value in terms of reserve allocation to capital. The following table represents a 5-year average of the above figures:

[6] 2022 figures.

| Asset Category | Avg. Annual Requirement | Annual Funding Available | | | | Annual Deficit |
|---|---|---|---|---|---|---|
| | | Reserve Allocation[7] | Gas Tax | OCIF | Total Available | |
| Bridges & Culverts | $331,000 | $159,000 | $- | $- | $159,000 | $172,000 |
| Buildings | $147,000 | $32,000 | $- | $- | $32,000 | $115,000 |
| Land Improvements | $34,000 | $31,000 | $- | $- | $31,000 | $3,000 |
| Machinery & Equipment | $116,000 | $84,000 | $- | $- | $84,000 | $32,000 |
| Road Network | $660,000 | $356,000 | $180,000 | $100,000 | $636,000 | $24,000 |
| Vehicles | $244,000 | $176,000 | $- | $- | $176,000 | $68,000 |
| | **$1,532,000** | **$838,000** | **$180,000** | **$100,000** | **$1,118,000** | **$414,000** |

This is a positive indication that shows that the increase in reserve allocation over the past five years is helping the Township in getting closer to the desired long term funding levels.

### 6.3.2 Full Funding Requirements

In 2022, Tay Valley Township has annual tax revenues of $6.2 million. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

| Asset Category | Tax Change Required for Full Funding |
|---|---|
| Bridges & Culverts | 2.2% |
| Buildings | 1.8% |
| Land Improvements | -0.1% |
| Machinery & Equipment | 0.6% |
| Road Network | -1.2% |
| Vehicles | 1.2% |
| | **4.5%** |

The following changes in costs and/or revenues over the next number of years should also be considered in the financial strategy:

a) Tay Valley's debt payments for these asset categories will be decreasing by $63,000 after 15 years.

[7] 5-year average.

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

| | Without Capturing Changes | | | | With Capturing Changes | | | |
|---|---|---|---|---|---|---|---|---|
| | **5 Years** | **10 Years** | **15 Years** | **20 Years** | **5 Years** | **10 Years** | **15 Years** | **20 Years** |
| Infrastructure Deficit | $283,000 | $283,000 | $283,000 | $283,000 | $283,000 | $283,000 | $283,000 | $283,000 |
| Change in Debt Costs | n/a | n/a | n/a | n/a | n/a | n/a | $(63,000) | $(63,000) |
| Change in OCIF Grants | $- | $- | $- | $- | $- | $- | $- | $- |
| **Resulting Infrastructure Deficit Closure Time:** | **5** | **10** | **15** | **20** | **5** | **10** | **15** | **20** |
| | | | | | | | | |
| Tax Increase Required | 4.5% | 4.5% | 4.5% | 4.5% | 4.5% | 4.5% | 3.5% | 3.5% |
| **Annually:** | **0.89%** | **0.45%** | **0.30%** | **0.22%** | **0.89%** | **0.45%** | **0.23%** | **0.17%** |

### 6.3.3 Financial Strategy Recommendations

Considering all the above information, we recommend the 5-year option. This involves full CapEx funding being achieved over 5 years by:

a) when realized, reallocating the debt cost reductions to the infrastructure deficit as outlined above.
b) increasing tax revenue by 0.89% each year for the next 5 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
c) adjusting tax revenue increases in future year(s) when allocations to CapEx exceed or fail to meet budgeted amounts.
d) allocating the current gas tax and OCIF revenue as outlined previously.
e) allocating the scheduled OCIF grant increases to the infrastructure deficit as they occur.
f) reallocating appropriate revenue from categories in a surplus position to those in a deficit position, when applicable.
g) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

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

Although this option achieves full CapEx funding within 5 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of $125,000 for Vehicles, and $35,000 for Machinery & Equipment.

Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

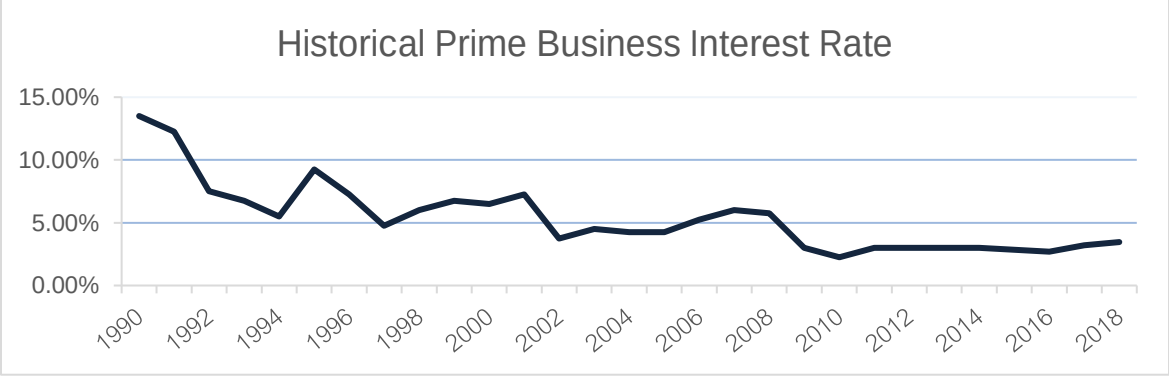
8 The Township should continue to take advantage of all available grant funding programs and transfers from other levels of government. While OCIF has historically been considered a sustainable source of funding, the program is currently undergoing review by the provincial government. This review may impact its availability.

# 6.4 Use of Debt

For reference purposes, the following table outlines the premium paid on a project if financed by debt. For example, a $1M project financed at 3.0%[9] over 15 years would result in a 26% premium or $260,000 of increased costs due to interest payments. For simplicity, the table does not consider the time value of money or the effect of inflation on delayed projects.

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

It should be noted that current interest rates are near all-time lows. Sustainable funding models that include debt need to incorporate the risk of rising interest rates. The following graph shows where historical lending rates have been:




[9] Current municipal Infrastructure Ontario rates for 15-year money is 3.2%.

A change in 15-year rates from 3% to 6% would change the premium from 26% to 54%. Such a change would have a significant impact on a financial plan.

The following tables outline how Tay Valley has historically used debt for investing in the asset categories as listed. There is currently $2,061,000 of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of $144,000, well within its provincially prescribed maximum of $2,454,000. The principal and interest payments are expected to drop to $81,000 in 2037.

| Asset Category | Current Debt Outstanding [10] | Use of Debt in the Last Five Years | | | | |
|---|---|---|---|---|---|---|
| | | 2017 | 2018 | 2019 | 2020 | 2021 |
| Bridges & Culverts | $1,433,000 | $- | $- | $- | $- | $1,478,000- |
| Buildings | $628,000 | $- | $- | $- | $- | $- |
| Land Improvements | $- | $- | $- | $- | $- | $- |
| Machinery & Equipment | $- | $- | $- | $- | $- | $- |
| Road Network | $- | $- | $- | $- | $- | $- |
| Vehicles | $- | $- | $- | $- | $- | $- |
| Total Tax Funded: | **$2,061,000** | **$0** | **$0** | **$0** | **$0** | **$0** |

[10] Debt as of December 31st, 2022.

| Asset Category | Principal & Interest Payments in the Next Twenty Years | | | | | | |
|---|---|---|---|---|---|---|---|
| | 2022 | 2023 | 2024 | 2025 | 2032 | 2037 | 2042 |
| Bridges & Culverts | $81,000 | $81,000 | $81,000 | $81,000 | $81,000 | $81,000 | $81,000 |
| Buildings | $63,000 | $63,000 | $63,000 | $63,000 | $63,000 | $- | $- |
| Land Improvements | $- | $- | $- | $- | $- | $- | $- |
| Machinery & Equipment | $- | $- | $- | $- | $- | $- | $- |
| Road Network | $- | $- | $- | $- | $- | $- | $- |
| Vehicles | $- | $- | $- | $- | $- | $- | $- |
| **Total Tax Funded** | **$144,000** | **$144,000** | **$144,000** | **$144,000** | **$144,000** | **$81,000** | **$81,000** |

The revenue options outlined in this plan allow Tay Valley to fully fund its long-term infrastructure requirements without further use of debt.

# 6.5 Use of Reserves

## 6.5.1 Available Reserves

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

a) the ability to stabilize tax rates when dealing with variable and sometimes uncontrollable factors
b) financing one-time or short-term investments
c) accumulating the funding for significant future infrastructure investments
d) managing the use of debt
e) normalizing infrastructure funding requirements

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

| Asset Category | Balance on December 31, 2022 |
|---|---|
| Bridges & Culverts | $180,000 |
| Buildings | $380,000 |
| Land Improvements | $193,000 |
| Machinery & Equipment | $354,000 |
| Road Network | $1,292,000 |
| Vehicles | $296,000 |
| **Total Tax Funded** | **$2,695,000** |

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

a) breadth of services provided
b) age and condition of infrastructure
c) use and level of debt
d) economic conditions and outlook
e) internal reserve and debt policies.

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

### 6.5.2 Recommendation

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

# 7 Appendices

## Key Insights

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

# Appendix A: 10-Year Capital Requirements

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

| Asset Segment | Backlog | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Asphalt (HCB) | $0 | $655,115 | $1,654,158 | $42,295 | $156,197 | $320,551 | $38,374 | $722,667 | $508,638 | $104,314 | $504,015 |
| Surface Treated (LCB) | $0 | $551,563 | $206,419 | $299,299 | $318,360 | $1,088,450 | $302,147 | $0 | $77,165 | $22,247 | $381,146 |

| Asset Segment | Backlog | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bridges & Culverts | $0 | $336,482 | $108,000 | $258,000 | $704,000 | $331,000 | $0 | $137,000 | $125,000 | $713,000 | $0 |

| Asset Segment | Backlog | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bathurst Garage | $0 | $0 | $1,800 | $35,000 | $79,800 | $5,720 | $12,000 | $33,654 | $86,025 | $12,500 | $1,400 |
| Bathurst Sand Dome | $0 | $0 | $1,200 | $47,160 | $7,320 | $4,000 | $3,000 | $23,900 | $0 | $0 | $6,020 |
| Burgess Garage | $0 | $0 | $7,800 | $110,454 | $183,400 | $0 | $0 | $101,700 | $38,442 | $0 | $41,775 |
| Burgess Hall | $0 | $0 | $0 | $8,640 | $87,012 | $3,000 | $16,080 | $31,242 | $4,800 | $7,800 | $15,100 |
| Burgess Sand Shed | $0 | $0 | $0 | $3,000 | $6,000 | $0 | $0 | $0 | $0 | $0 | $73,020 |
| Glen Tay Reuse Centre | $0 | $0 | $5,400 | $12,480 | $0 | $5,000 | $0 | $0 | $0 | $3,600 | $0 |
| Glen Tay Waste Site Barn | $0 | $0 | $0 | $58,620 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Glen Tay Waste Site Shed | $0 | $3,000 | $0 | $2,514 | $1,800 | $0 | $0 | $38,500 | $0 | $0 | $0 |

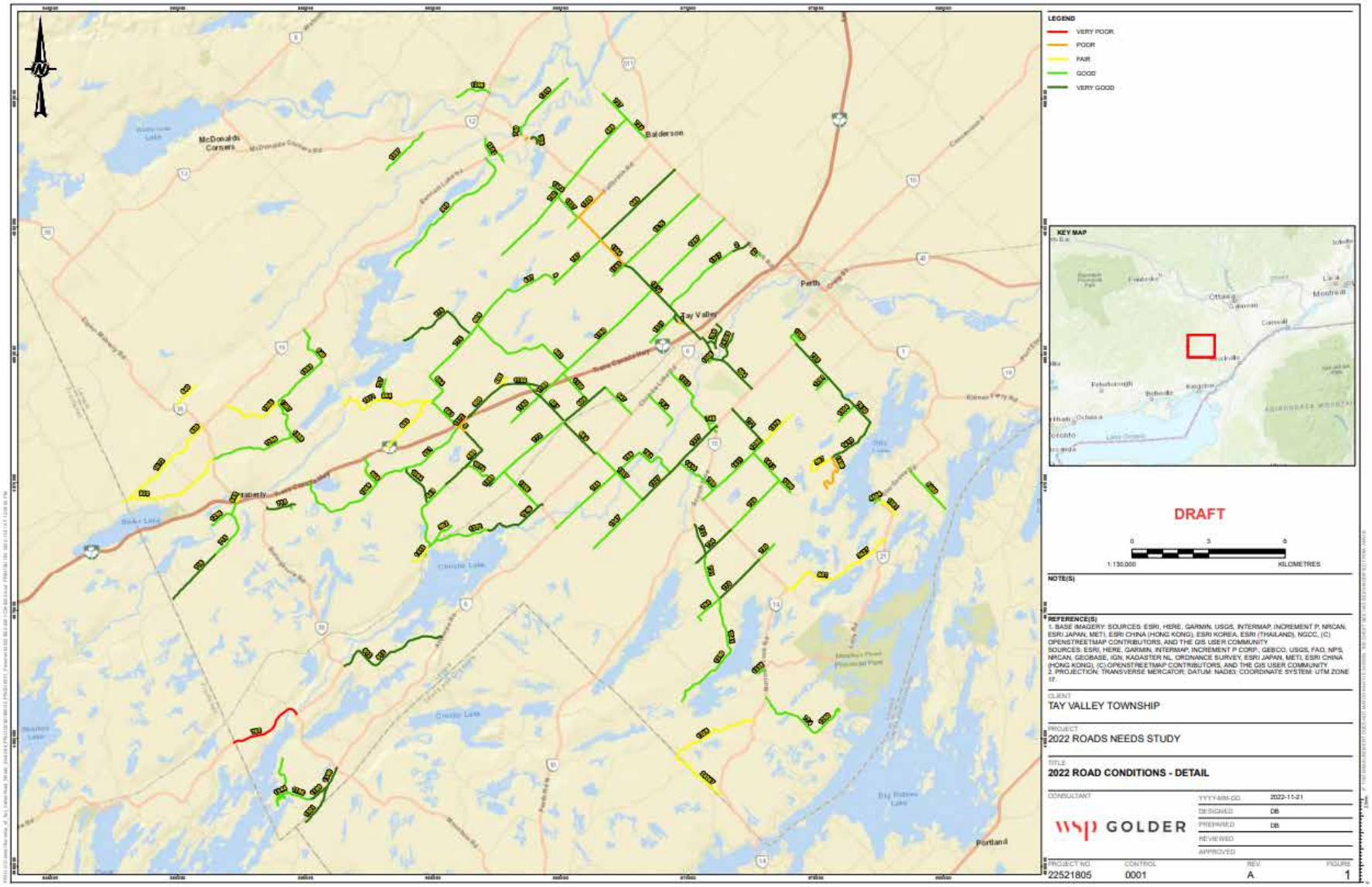
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maberly Garage | $0 | $36,750 | $98,750 | $22,920 | $42,600 | $48,300 | $0 | $3,000 | $0 | $2,100 | $6,700 |
| Maberly Hall | $0 | $0 | $6,000 | $49,200 | $9,984 | $5,000 | $30,120 | $2,892 | $23,040 | $24,000 | $6,870 |
| Maberly Rink Change Room/Storage Shed | $0 | $96,960 | $7,200 | $0 | $2,400 | $3,900 | $0 | $5,454 | $0 | $2,160 | $9,000 |
| Maberly Waste Site Shed | $0 | $4,000 | $0 | $0 | $0 | $2,500 | $0 | $0 | $0 | $7,416 | $0 |
| Municipal Office | $0 | $5,000 | $121,320 | $7,400 | $11,400 | $37,800 | $81,120 | $2,400 | $0 | $4,000 | $4,800 |
| Stanleyville Waste Site Shed | $0 | $3,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |

| Asset Segment | Backlog | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Public Works | $35,000 | $500,260 | $255,000 | $0 | $50,000 | $0 | $35,000 | $0 | $39,500 | $40,000 | $183,000 |

| Asset Segment | Backlog | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Facilities | $0 | $0 | $45,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| Public Works | $120,000 | $0 | $340,000 | $0 | $340,000 | $0 | $0 | $590,000 | $0 | $400,000 | $340,000 |

| Asset Segment | Backlog | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Parks, Recreational Spaces, and Trails | $0 | $0 | $0 | $50,000 | $0 | $90,000 | $100,000 | $75,000 | $150,000 | $0 | $0 |

# Appendix B: Level of Service Map



# Appendix C: Risk Rating Criteria

## Probability of Failure

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

## Consequence of Failure

| Asset Category | Risk Classification | Risk Criteria | Value / Range | Consequence of Failure Score |
|---|---|---|---|---|
| Bridges & Culverts, Buildings & Facilities, Land Improvements, Vehicles, Machinery & Equipment | Economic (100%) | Replacement Cost | $0-$15,000 | 1 |
| | | | $15,001-$30,000 | 2 |
| | | | $30,001-$60,000 | 3 |
| | | | $60,001-$100,000 | 4 |
| | | | $100,000+ | 5 |

## Consequence of Failure – Asphalt Roads (HCB) – High Traffic and Otherwise

| Asset Category | Risk Classification | Risk Criteria | Value/Range | Consequence of Failure Score |
|---|---|---|---|---|
| Asphalt Roads (HCB) – High Traffic<br>Asphalt Roads (HCB)<br>Surface Treated Roads | Economic (60%) | Replacement Cost | $0-$15,000 | 1 |
| | | | $15,001-$30,000 | 2 |
| | | | $30,001-$60,000 | 3 |
| | | | $60,001-$100,000 | 4 |
| | | | $100,000+ | 5 |
| | Social (40%) | AADT Risk | 0-49 | 1 |
| | | | 50-199 | 2 |
| | | | 200-499 | 3 |
| | | | 500-999 | 4 |
| | | | 1000+ | 5 |

# Appendix D: Condition Assessment Guidelines

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

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

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

## Role of Asset Condition Data

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

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

## Guidelines for Condition Assessment

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

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

## Developing a Condition Assessment Schedule

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

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