

Asset Management Plan

Municipality of Gordon/Barrie
Island

2021

This Asset Management Plan was prepared by:



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

Key Statistics

Replacement cost of
asset portfolio

\$23.2 million

Replacement cost of
infrastructure per
household

\$37,000 (2021)

Percentage of assets in fair
or better condition

71%

Percentage of assets with
assessed condition data

92%

Annual capital
infrastructure deficit

\$530,000

Recommended timeframe
for eliminating annual
infrastructure deficit

15 Years

Target reinvestment
rate

3.26%

Actual reinvestment
rate

0.98%

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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 Municipality can ensure that public infrastructure is managed to support the sustainable delivery of municipal services.

This AMP include the following asset categories:



With the development of this AMP the Municipality has achieved compliance with O. Reg. 588/17 to the extent of the requirements that must be completed by July 1, 2024.

Findings

The overall replacement cost of the asset categories included in this AMP totals \$23.2 million. Nearly threequarters (71%) of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 92% of assets. For the remaining 8% 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 replacement only strategies (all other assets) to determine the lowest cost option to maintain the current level of service.

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Municipality's average annual capital requirement totals \$757,000. Based on a historical analysis of sustainable capital funding sources, the Municipality is committing approximately \$227,000 towards capital projects or reserves per year. As a result, there is currently an annual funding gap of \$530,000. On a per household basis, the annual funding gap is approximately \$850 based on 2021 census data.

Annual Deficit
per Household



It is important to note that this AMP is based on assets under ownership as of *December 2021*. All data and replacement cost information are also as of December 2021 and based on the best available information. Strategic asset management planning is an ongoing and dynamic process that requires continuous data updates that reflect changes to assets, alongside data refinement and improvement and dedicated resources to support these processes.

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 Municipality's infrastructure deficit based on a 15-year plan:



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

- To maintain a complete and accurate data set regularly review and as necessary update asset data, especially in-service dates, condition, and rehabilitation information
- Develop a condition assessment program, with clear documentation on assessment methodology, available to all staff for reference. Ensure assessment approach is suitable to each asset and appropriately adhered to.
- Review and update lifecycle management strategies, especially for roads.
- Develop and regularly review short- and long-term asset requirements and strongly consider these asset needs when determining capital budgets
- Measure current levels of service and begin to identify sustainable proposed levels of service

1 Introduction & Context

Key Insights

- The Municipality of Gordon/Barrie Island is a small municipality in Northern Ontario; their 2021 census population was 613 persons.
- The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio
- The Municipality's asset management policy's purpose is to apply a consistent standard in the management of infrastructure assets and details the principles to be applied in assessment decisions.
- An Asset Management Plan (AMP) is a living document; regular data updates are required for the AMP to remain relevant. Data and information derived from the AMP should be considered in asset management decisions and inform long-term capital budgets and project planning activities.
- Ontario Regulation 588/17 outlines several key milestone and requirements for asset management plans in Ontario between July 1, 2022, and 2025

Gordon/Barrie Island Community Profile

Census Characteristic	Municipality of Gordon/Barrie Island	Ontario
Population 2021	613	14,223,942
Population Change 2016-2021	25.1%	5.8 %
Total Private Dwellings	621	5,929,250
Population Density	2.3/km ²	15.9/km ²
Land Area	263.44 km ²	892,411.76 km ²

The Municipality of Gordon/Barrie Island is in the Manitoulin District and is south-west of Sudbury and south-east of Sault Saint Marie. The Municipality is surrounded by the North Channel, along the north shores of Lake Huron. The Municipality of Gordon/Barrie Island was formed in 2009 upon the amalgamation of the Township of Gordon and the Township of Barrie Island.

The region was first settled in 1875, at that time including the Town of Gore Bay. In 1890 Gordon Township become a separate entity and quickly became an area for farming due to its large expanse of flat, fertile land. Following World War II, the Federal Department of Transportation deemed Manitoulin island an important location for an emergency landing centre and selected Gordon Township as the Airports location. Today, the airport remains an important resource for the Township and the broader Manitoulin District.

Barrie Island was first settled by Steven Morden in 1875. While it was accessible by boat or foot it was a treacherous journey and drownings did occur. In response, the government built a bridge between Gordon and Barrie Island. Barrie Island became more populated eventually having two schools and a church. However, by the early 1900's economic activity had declined, and Barrie Island became used most often for vacation and holidays. Since the start of the 2000s cattle farming operations have become more prevalent and larger scale in the area while the Township continues to be popular as a seasonal living destination.

Demand in the region is notably driven by moderate population growth, which has been significantly higher than projected and comprised mostly of middle-aged persons. Based on a review of recent capital funds typically about \$227,000 in capital funding is available from sustainable funding sources.

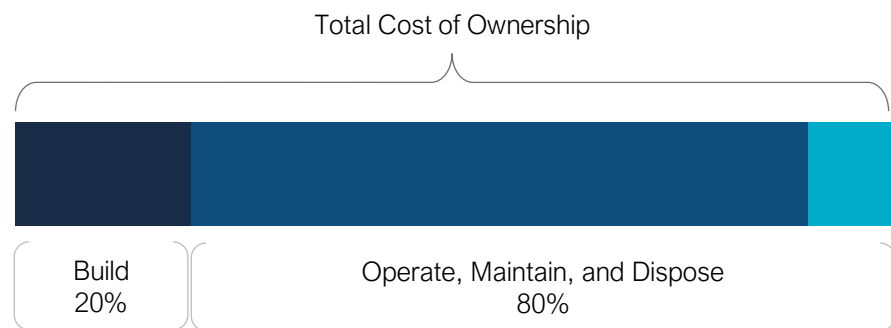
Municipal staff have identified the road network as their primary infrastructure priority. As of the time of this report most surface and gravel roads are in fair

condition. In nominal dollars roads receive the highest level of investment across the Municipality's asset categories.

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.

Typically, the acquisition of capital assets accounts for only about 10-20% of an assets total cost of ownership. The remaining costs of ownership are often associated with the asset's operations and maintenance. This AMP focuses its analysis on the *capital* costs to maintain, rehabilitate and replace existing municipal infrastructure assets.



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

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

In this AMP all analysis is based on the Municipality's asset portfolio as of 2021-year end; future growth is not considered in this AMP.

1.1.1 Asset Management Policy

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

In accordance with Ontario Regulation 588/17 the Municipality adopted its Strategic Asset Management Policy in 2019. The purpose is to ensure a consistent standard in the management of infrastructure assets including a consideration for current and future needs based on an understanding of the services expected by the assets, cost of ownership, and asset risks.

The policy advances several principles to guide asset management decisions. These principles include:

- Forward Looking: A Long-term view that considers regional demographic and economic trends
- Budgeting and Planning: Incorporate budgets and fiscal plans
- Transparency: Decisions that are evidence based and transparent, especially regarding the impact of decisions on infrastructure
- Community Focused: Promotion of community benefits that can be derived from infrastructure projects such as job creation and accessibility improvements
- Innovative: Use of technologies, services and practices that are innovative in nature

1.1.2 Asset Management Strategy

An asset management strategy outlines the translation of organizational objectives into asset management objectives and provides a strategic overview of the activities required to meet these objectives. Typical activities might include data governance development including steps for data review and refinement, and strategies for obtaining the required human resources to advance the asset management program. An Asset Management strategy provides greater detail than the policy on how the Municipality plans to achieve asset management objectives through planned activities and decision-making criteria.

Several of the recommendations throughout this report highlight specific actions and practices that are expected to improve the Municipality's Asset management practices, internal capacity and cognizance, and resultant decisions. Thus, these recommendations serve informally as an Asset Management Strategy and provide a

framework of planned activities to operationalize and support the delivery of the asset management objectives as defined in the policy.

1.1.3 Asset Management Plan

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

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

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

Key Concepts in Asset Management

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

1.1.4 Lifecycle Management Strategies

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

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

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

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

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

The Municipality's approach to lifecycle management is described within each asset category outlined in this AMP. Developing and implementing a proactive lifecycle

strategy will help staff to determine which activities to perform on an asset and when they should be performed to maximize useful life at the lowest total cost of ownership.

1.1.5 Risk Management Strategies

Municipalities generally take a 'worst-first' approach to infrastructure spending. Rather than prioritizing assets based on their importance to service delivery, assets in the worst condition are fixed first, regardless of their criticality. However, not all assets are created equal. Some are more important than others, and their failure or disrepair poses more risk to the community than that of others. For example, a road with a high volume of traffic that provides access to critical services poses a higher risk than a road with a low volume of traffic. Risk management strategies provide a framework to consider both the consequences of asset failure alongside the likelihood of asset failure when making asset investment decisions.

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 capital investments, should be focused.

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

1.1.6 Levels of Service

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

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

Community Levels of Service

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

qualitative descriptions that will be used to determine the community level of service provided. These descriptions can be found in the Levels of Service subsection within each asset category.

Technical Levels of Service

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

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

Current and Proposed Levels of Service

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

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

Climate Change

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

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

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

Ontario Regulation 588/17

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

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

2019

Strategic Asset Management Policy

2024

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

2022

Asset Management Plan for Core Assets with the following components:

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

2025

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

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

1.1.7 O. Reg. 588/17 Compliance Review

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

Requirement	O. Reg. Section	AMP Section Reference	Status
Summary of assets in each category	S.5(2), 3(i)	4.1.1 - 5.2.1	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	4.1.1 - 5.2.1	Complete
Average age of assets in each category	S.5(2), 3(iii)	4.1.3 - 5.2.3	Complete
Condition of core assets in each category	S.5(2), 3(iv)	4.1.2 - 5.2.2	Complete
Description of municipality's approach to assessing the condition of assets in each category	S.5(2), 3(v)	4.1.2 - 5.2.2	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	4.1.6 - 5.2.6	Complete
Current performance measures in each category	S.5(2), 2	4.1.6 - 5.2.6	Complete
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	4.1.4 - 5.2.4	Complete
Costs of providing lifecycle activities for 10 years	S.5(2), 4	Appendix B	Complete
Growth assumptions	S.5(2), 5(i-ii) S.5(2), 6(i-vi)	6.1-6.2	Complete

Asset Management Roadmap

As part of the development of this AMP, the Municipality of Gordon/Barrie Island committed to taking the necessary steps towards developing a systemic, sustainable, and well-structured AMP document. This process involved the collaboration of PSD's industry-leading asset management team with municipal staff. The following summarizes key milestones/deliverables achieved throughout this project.

Asset Data Review and Refinement (Completed: July 28th, 2022)

Extensive review of the road assets was completed over several weeks. Data was gathered and consolidated and then reviewed and confirmed with staff. Asset inventory data for other asset classes was refined continuously over the course of this project. Available studies were leveraged for their information which was updated in Citywide and used in this AMP's analysis.

Risk and Criticality Model Development (Completed: July 13th, 2022)

Risk models were developed to determine the relative criticality of assets based on their probability and consequence of failure. These models assist with the prioritization and ranking of infrastructure needs.

Lifecycle Model Development (Completed: June 24th, 2022)

The Municipality's lifecycle management strategies were reviewed and documented to determine current practices. A lifecycle strategy for roads assets was developed based on existing practices and modelled in Citywide. This allows for capital cost forecasting so that capital funding requirements can be more accurately understood both in their expected timing and cost. It also calculates the potential cost avoidance of deploying the lifecycle strategy.

Level of Service Framework Development (Completed: August 10th, 2022)

A framework was developed to determine the current level of service provided to the community through municipal infrastructure.

AMP & Financial Strategy

This document represents the culminating deliverable of the Asset Management Roadmap.

2 Scope and Methodology

Key Insights

- This AMP includes six (6) asset categories; all assets are tax funded.
- The source and recency of replacement costs impacts the accuracy and reliability of asset portfolio valuation
- Accurate and reliable condition data helps to prevent premature and costly rehabilitation or replacement and ensures that lifecycle activities occur at the right time to maximize asset value and useful life. Asset condition should be regularly reviewed to ensure that the recorded condition is reflective of the actual condition.

Asset Categories Included in this AMP

This asset management plan for the Municipality of Gordon/Barrie Island is produced in compliance with Ontario Regulation 588/17. The 2022 deadline under the regulation—the first of three AMPs—requires analysis of only core assets (roads, bridges and culverts, water, wastewater, and stormwater). The 2024 deadline extends to all other asset categories. The municipality of Gordon/Barrie Island has elected to complete a 2024 compliant asset management plan. While this AMP contains the information required for the 2024 deadline, future updates to asset inventory including replacement costs and capital projections will be required.

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

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

Deriving Replacement Costs

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

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

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

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

Estimated Useful Life and Service Life Remaining

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

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

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

Reinvestment Rate

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

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

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

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

Deriving Asset Condition

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

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

Condition	Description	Criteria	Service Life Remaining (%)
Very Good	Fit for the future	Well maintained, good condition, new or recently rehabilitated	80-100
Good	Adequate for now	Acceptable, generally approaching mid-stage of expected service life	60-79
Fair	Requires attention	Signs of deterioration, some elements exhibit significant deficiencies	40-59
Poor	Increasing potential of affecting service	Approaching end of service life, condition below standard, large portion of system exhibits significant deterioration	20-39
Very Poor	Unfit for sustained service	Near or beyond expected service life, widespread signs of advanced deterioration, some assets may be unusable	0-19

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

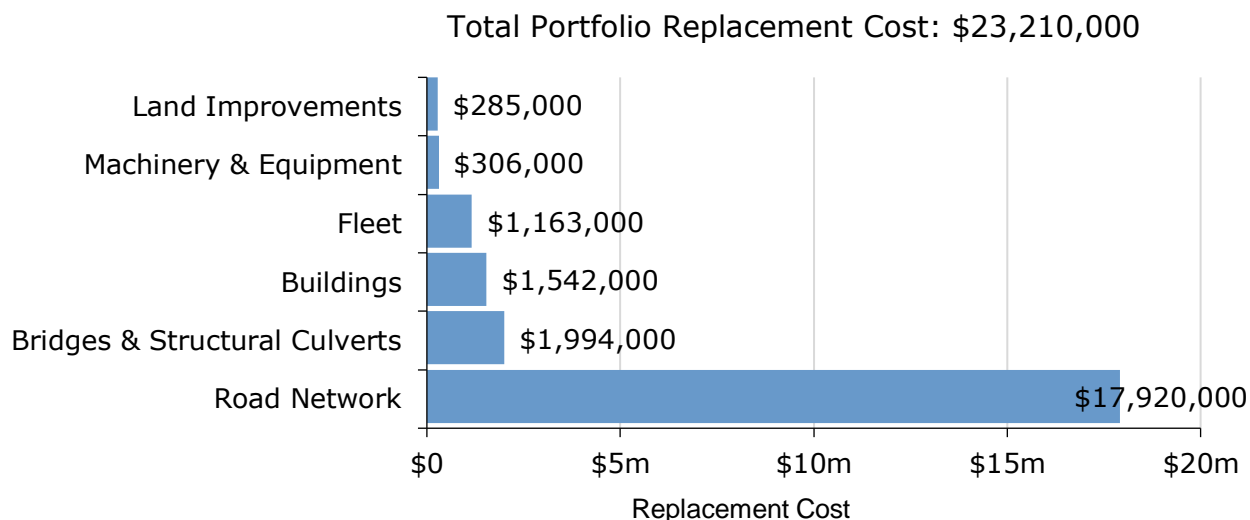
3 Portfolio Overview

Key Insights

- The total estimated replacement cost of the Municipality's asset portfolio as of December 2021 is \$23.2 million
- The Municipality's target re-investment rate is 3.26%, and the actual re-investment rate is 0.98%, contributing to an expanding infrastructure deficit
- 71% of all assets are in fair or better condition
- Projected capital requirements until 2035 (including backlog) is \$11.5 million
- Across all asset categories the average annual capital requirements total \$757,000 per year

Total Replacement Cost of Asset Portfolio

The asset categories analysed in this AMP have a total replacement cost of \$23.2 million based on inventory data from 2021. This total was determined based on a combination of user-defined costs and inflation of historical cost. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.



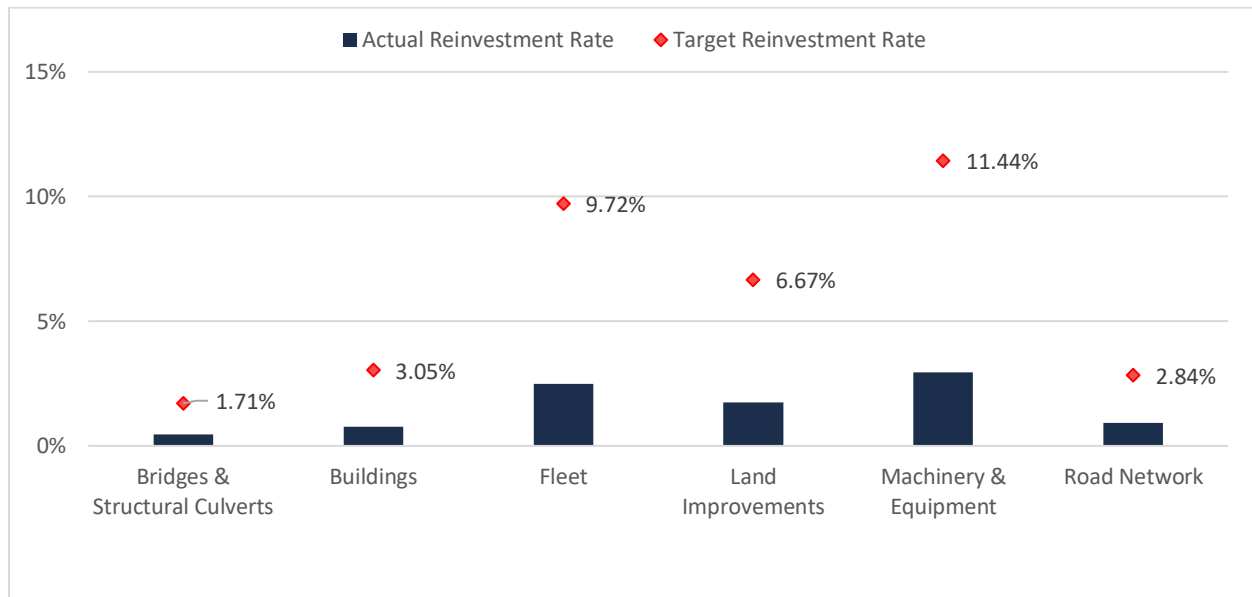
The following table identifies the source of user-defined replacement costs utilized in each asset category:

Asset Category	User-Defined	Replacement Cost Data Source
Road Network	100%	Unit rate replacement costs based on recent tenders
Bridges & Structural Culverts	80.0%	2020 Ontario Structure Inspection Manual (OSIM) report
Buildings	100 %	Insured Building Values
Fleet	96%	Staff Estimates
Machinery & Equipment	80%	Staff Estimates

Target vs. Actual Reinvestment Rate

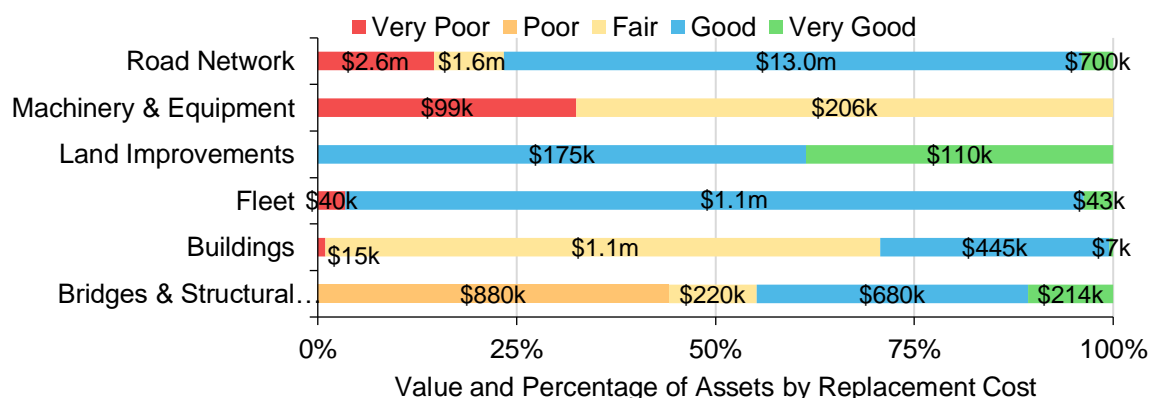
The graph below depicts funding gaps by comparing target vs actual reinvestment rate. As discussed in section 2.4 the reinvestment rate is a measurement of available or required funding relative to the total replacement cost. The

reinvestment rate is *not* related to taxation rates. To meet the long-term replacement needs, the Municipality should be allocating approximately \$757,000 annually, for a target reinvestment rate of 3.26%. Actual annual spending on infrastructure totals approximately \$227,000 for an actual reinvestment rate of 0.98%. By asset category, the reinvestment rate and the target reinvestment rate are as follows:



Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 71% of assets in Gordon/Barrie Island are in fair or better condition. This estimate relies on both age-based and field condition data.

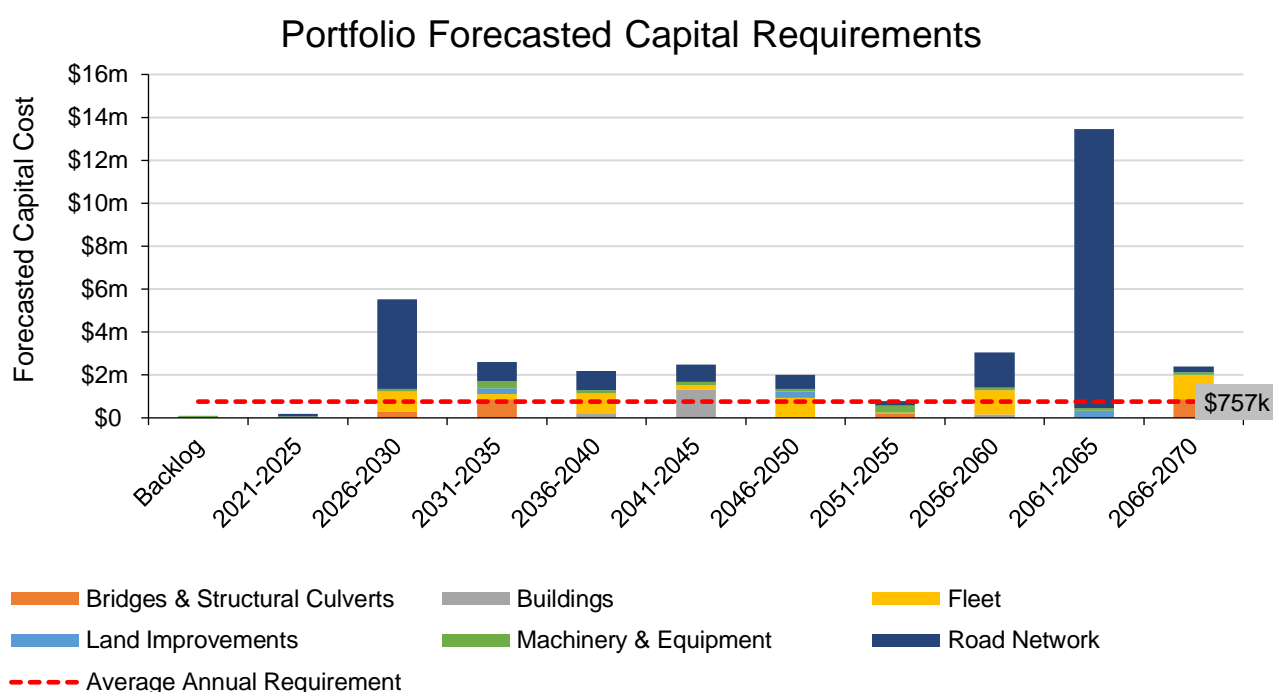


This AMP relies on assessed condition data for 92% of assets; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table 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	100%	Public Works Staff Assessments
Bridges & Structural Culverts	All	100%	2020 OSIM Report
Buidlings	All	0%	Age-based Condition
Fleet	All	100%	Gordon/Barrie Island Staff Assessments
Machinery & Equipment	All	0%	Age-based Condition
Land Improvements	All	100%	Gordon/Barrie Island Staff Assessments

Forecasted Capital Requirements

The development of a long-term capital forecast should include both asset rehabilitation and replacement requirements. With the development of asset-specific lifecycle strategies that include the timing and cost of future capital events, the Municipality can produce an accurate long-term capital forecast. The following graph identifies the average annual requirement which is \$757,000. The same graph also details projected capital requirements, aggregated into 5-year bins, over the next 50 years. This projection period ensures that every asset has gone through one full iteration of replacement. Capital requirements are based on 2021 inventory data; inflationary cost adjustments are not applied.



4 Road Network

The road network is critical to the provision of a safe and efficient transportation system and represents the highest value asset category in the asset portfolio.

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

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

Replacement Cost	Average Condition	Financial Capacity	
\$17.9 million	Good	Annual Requirement:	\$509,000
		Funding Available:	\$163,000
		Annual Deficit:	\$346,000

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

Service Attribute	Level of Service Statement
Scope	The road network service is reasonably accessible to the community in sufficient capacity (meets traffic demands); roads are maintained year-round and available for use under all typical weather conditions.
Quality	The road network is in good condition with minimal unplanned service interruptions and road closures.

Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements of gravel and surface treated roads.

Asset Segment	Quantity (KM)	Replacement Cost	Annual Capital Requirement
Gravel Roads	57	Not Planned for Replacement ¹	
Surface Treated Roads	51	17,920,000	\$509,000
Total	108	17,920,000	\$509,000

Since the replacement cost of assets will change over time, replacement values should be regularly reviewed to ensure they remain accurate and representative of the assets under ownership.

Asset Condition & Age

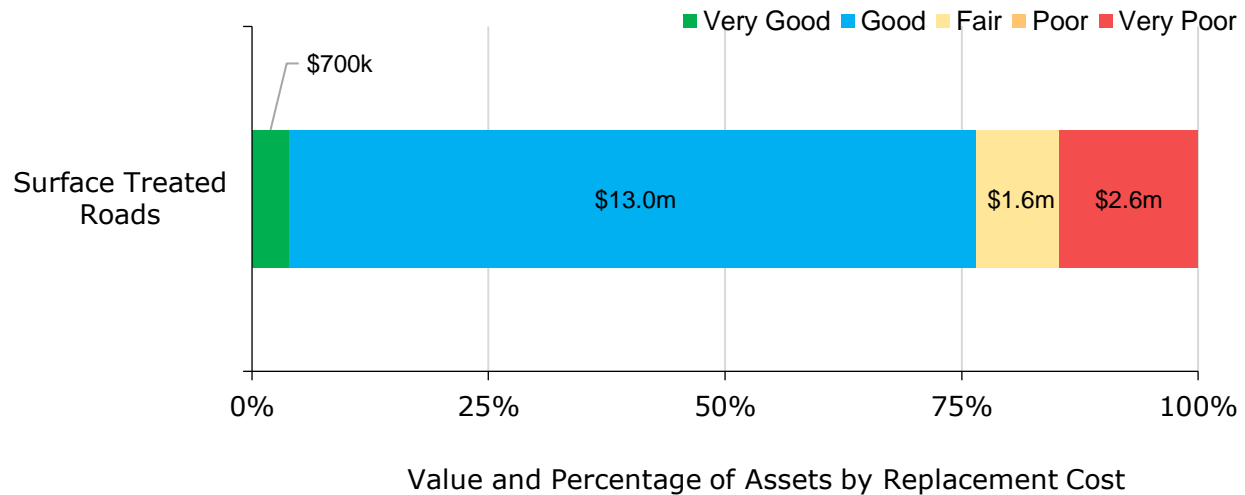
The table below identifies the estimated useful life of surface treated roads and the weighed average age and condition. The average condition (%) and age is a weighted value based on replacement cost.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Surface Treated Roads	45	146 ²	66%

The graph below visually illustrates the average condition for the surface treated roads on a scale of very good to very poor.

¹ Gravel roads undergo perpetual operating and maintenance activities. If maintained properly, they can theoretically have a limitless service life.

² Most roads in Gordon/Barrie Island are original to the Municipality's initial development in the late 1800's. In most cases, construction records to determine reconstruction dates are not available. It is assumed that at some point since original development the roads have been re-constructed. The Township is working towards stronger record management going forward. For this reason, assessed condition is significantly more accurate than age-based and therefore assessed condition should always been used in place of age-based condition.



To ensure that the Municipality's road network continues to provide an acceptable level of service, the condition of roads will require regular review. To obtain more detailed condition assessments including recommended interventions and the timing of those interventions the Municipality could procure a Roads Needs Study.

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

4.1.1 Current Approach to Condition Assessment

Accurate and reliable condition information is integral to estimating remaining service life and identifying cost-effective approaches to managing assets. The following describes the Municipality's current approach:

- The roads superintendent completes inspections at least on a weekly basis and provides weekly and monthly road reports.
- Inspections are visual and identify road deficiencies (i.e., potholes, water ponding etc.)
- Due to the size of the road network, it is the Municipality's intention to continue completing in-house condition assessments for their roads.

As noted in an earlier footnote, most roads in Gordon/Barrie are original to the Municipality's initial development in the late 1800's. It is assumed that at some point since original development the roads have been re-constructed, but there are no reconstruction records. For this reason, assessed condition is significantly more accurate than age-based condition and therefore assessed condition should always be used in place of age-based condition.

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

Condition	Rating
Very Good	80-100
Good	60-79
Fair	40-59
Poor	20-39
Very Poor	0-19

Lifecycle Management Strategy

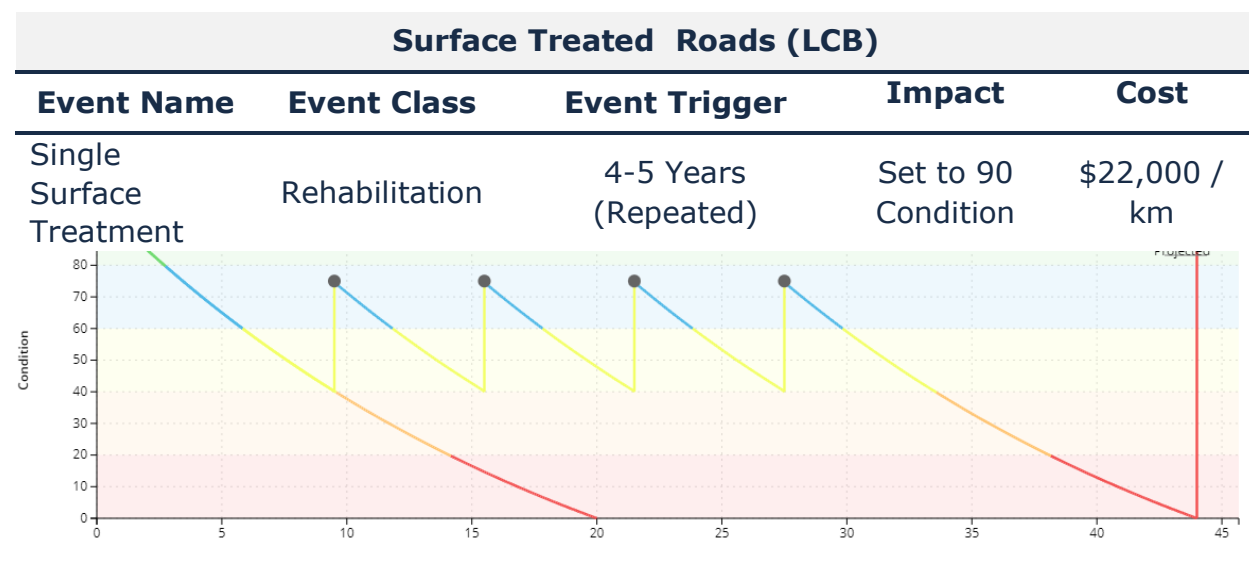
The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment.

The following lifecycle strategies have been developed as a proactive approach to managing the lifecycle of surface treated (LCB) and gravel roads.

The following maintenance, inspection, rehabilitation, and replacement activities are conducted on the surface treated road network.

Activity Type	Description of Current Strategy for Surface Treated (LCB) Roads
Maintenance & Inspection	Weekly and monthly road reports are generated based on visual inspections by the Public Works department. Patching and pothole maintenance are completed as needed. Snow removal and other typical maintenance are based on the minimum maintenance standards.
Rehabilitation & Replacement	Single surface treatment is performed every four years for high traffic roads and every five years for low traffic roads. Road reconstruction is rare but where it is conducted the Township considers the level of traffic, presence of school bus routes and/or emergency service routes, and the road's condition.

The impact of these activities on road condition over time are also modelled below in the subsequent tables.



The lifecycle activities for gravel roads are as follows:

Activity Type	Description of Current Strategy for Gravel Roads
Maintenance and Inspection	Roads staff provide recommendations on which roads are priority based on visual inspection
	Grading is performed three times per year by the Municipality. Dust control is carried out every spring.
Rehabilitation and Replacement	Gravelling is ideally completed every five years but may be pushed out due to condition or budget.

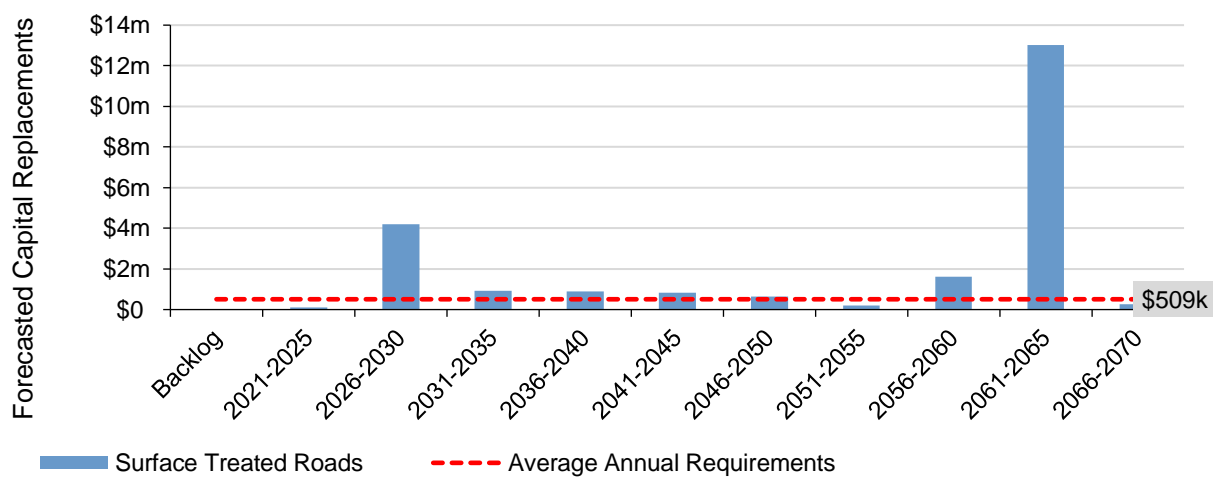
Gravel roads are perpetually maintained and funded with operational dollars. In most years the annual budget is \$40,000 for dust control and \$50,000 for re-gravelling. These funds typically are sufficient to complete the following activities as per the noted intervals:

Gravel Roads		
Event Name	Event Class	Event Trigger
Grading	Maintenance	3 per Year (Repeated)
Dust Control	Maintenance	1 per Year (Repeated)
Re-Gravelling	Rehabilitation	5 Years (Repeated)

4.1.2 Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for surface treated roads, the following graph forecasts capital requirements for the road network.

The average annual capital requirements for surface treated roads is \$509,000. This represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements, reported in 5-year cumulative bins, anticipated over the next 50 years. This projection is used as it ensures that every surface treated road asset has gone through one full iteration of replacement.



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

Risk & Criticality

4.1.3 Risk Matrix

The asset-specific attributes and their weighting that municipal staff use to define and prioritize the probability and consequence of failure of road assets are as follows:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition: 100%	Replacement Cost: 70%
	Critical Route: 18%
	Road Classification: 12%

Based on the above factor risk scores are calculated. The following risk matrix provides a visual representation of the relationship between the probability and the consequence of failure for road assets based on 2021 inventory data. See Appendix D for a more detailed listing of the criteria used to calculate risk.

Consequence	5 Severe	- \$0	- \$0	- \$0	- \$0	- \$0
	4 Major	- \$0	300 m \$184,500	- \$0	1,500 m \$922,500	- \$0
	3 Moderate	29,308 m \$18,024,420	54,030 m \$33,228,450	11,980 m \$7,367,700	17,960 m \$11,045,400	- \$0
	2 Minor	2,750 m \$1,691,250	22,660 m \$1,699,500	650 m \$48,750	- \$0	- \$0
	1 Insignificant	80 m \$49,200	- \$0	200 m \$15,000	- \$0	- \$0
		1 Rare	2 Unlikely	3 Possible	4 Likely	5 Almost Certain
		Probability				

This is a high-level model developed for the purposes of this AMP. As the Municipality's understanding of what factors contributes to road assets probability and consequence of failure evolves the model may be adjusted accordingly.

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

4.1.4 Risks to Current Asset Management Strategies

In addition to quantified risk as discussed above, road assets may also be exposed to qualitative risks. These are risks which pose a threat to a group of assets more generally. Discussion with staff indicated that the following qualitative risks are applicable to road assets:

Climate Change & Extreme Events



An increase in freeze/thaw cycles has been impacting the Municipality's roads. This causes the accelerated deterioration of road surfaces leading to a heightened need for maintenance and rehabilitation. Heavy rains causing road washouts increases the amount of gravel required for maintenance.

Fiscal Capacity



The Municipality utilizes funding and grant opportunities for road projects when available. The budget has generally been sufficient to satisfy the Municipality's current levels of service without requiring the use of their reserve funding. However, in the future, achieving higher levels of service may potentially be constrained by current fiscal capacity. Additionally, the current budget is increasingly constrained by price changes of road construction material inputs.

Aging Infrastructure



Many of the Municipality's roads are older and may not have been fully reconstructed since their original construction. Rehabilitation is a habitual lifecycle strategy, but some roads do not perform as well as others due to their design (i.e., originally constructed as seasonal road) and/or construction.

Demographic Changes



Since 2016 the municipalities population increased by 25.1%; over the same period the Ontario Population increased by 5.8%. Staff have noticed that with this significant influx of residents', their expectations on the level of service provided by the Municipality have generally increased. Particularly, staff have noticed an increase in bicycle traffic since COVID-19 Staff are concerned about their ability to satisfy

increased expectations on service level with the existing tax base and staffing resources.

Levels of Service

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

4.1.5 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity	<p>The Municipal road network contains about 102 kilometers of local and collector surface treated and gravel roads. The road network services Barrie Island to the west and the rural areas of Gordon, which surround the Town of Gore Bay.</p> <p>Gordon/Barrie Island Public Works staff completed an in-house assessment of their road surfaces and scored each road asset for condition on a 0-100 scale. Condition ratings are categorized into 5 groups and can be defined as follows:</p>
Quality	Description or images that illustrate the different levels of road class pavement condition	<p>Very Good (80-100): Road is in excellent condition with few visible defects. Rideability is excellent with few areas of very slight distortion</p> <p>Good (60-79): Road is in good condition with accumulating slight defects. Rideability is good with intermittent slightly rough and uneven sections.</p> <p>Fair (40-59): Road is in fair condition with intermittent patterns of slight to moderate defects. Rideability is fair and the surface is slightly rough and uneven.</p>

Poor (20-39): Road is in poor condition with frequent patterns of moderate defects. Rideability is poor and the surface is rough and uneven.

Very Poor (0-19): Road is in very poor condition with extensive severe defects. Rideability is very poor, and surface is very rough and uneven

4.1.6 Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km ²)	0.13
Quality	Average pavement condition index for surface treated roads in the municipality	66%
	Average surface condition for unpaved roads in the municipality (e.g., excellent, good, fair, poor)	52%
Performance	Capital reinvestment rate vs target reinvestmnt	0.91% vs 2.84%

Recommendations

Asset Inventory

- As a best data practice review and update road asset information). As a more immediate focus, work towards more accurate in-service dates and make data updates accordingly.

Condition Assessment Strategies

- Complete condition assessments at regular frequencies so that condition information can be used to inform replacement and rehabilitation decisions
- If assessments are completed in house, work to further refine and document internal standards and classifications for condition so that assessments are completed in a standardized and well documented manner.
- Consider procurement of a professional road needs study to further understand existing conditions and recommended interventions including their estimate cost and timing.

Lifecycle Management Strategies

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

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes.
- Work to identify the Municipality's risk tolerance and how this may vary by asset category. As well identify various risk responses and mitigation strategies.
- Review risk models on a regular basis and adjust as needed.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics identified in O. Reg. 588/17.

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

5

Bridges & Structural Culverts

The Municipality of Gordon/Barrie Island owns several structural culverts which provide critical transportation services. These assets are managed by the Public Works department who work to ensure they remain in an adequate state of repair with minimal service disruptions.

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

Replacement Cost	Average Condition	Financial Capacity	
\$1.9 million	Fair	Annual Requirement:	\$34,000
		Funding Available:	\$9,000
		Annual Deficit:	\$25,000

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

Service Attribute	Level of Service Statement
Scope	Bridges and culverts are reasonably accessible to the community in sufficient capacity (meets traffic demands) and are available under all weather conditions.
Quality	The bridges and culverts are maintained with minimal unplanned service interruptions and closures. The Municipality has a clear understanding of future capital requirements and plans to meet them.

Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost
Structural Culverts	3	\$408,000
Bridges	8	\$1,586,000
Total	11	\$1,994,000

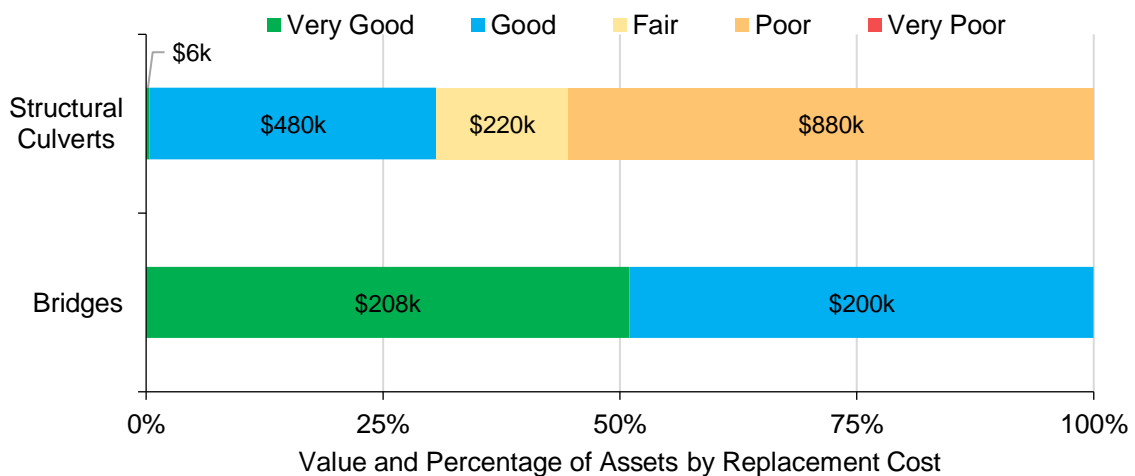
Each asset’s replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Bridges	55	11.1	89%
Culverts	78	44.8	59%

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



To ensure that the Municipality's Bridges & Culverts continue to provide an acceptable level of service their average condition, determined through bi-annual bridge inspections, should be regularly monitored. If the average condition declines to a level deemed unacceptable by the Municipality the lifecycle management strategy may need to be revised with a more optimal combination of maintenance, rehabilitation, and replacement activities.

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

5.1.1 Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to is critical to the accuracy of remaining service life estimates and the identification of the most cost-effective approach to managing assets. The following describes the Municipality's current approach:

- Condition assessments of all bridges and culverts with a span greater than or equal to 3 meters are completed every two (2) years in accordance with the Ontario Structure Inspection Manual (OSIM). This AMP utilizes the 2020 OSIM report.

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

Condition	Rating
Very Good	80-100
Good	60-79
Fair	40-59
Poor	20-39
Very Poor	0-19

Lifecycle Management Strategy

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

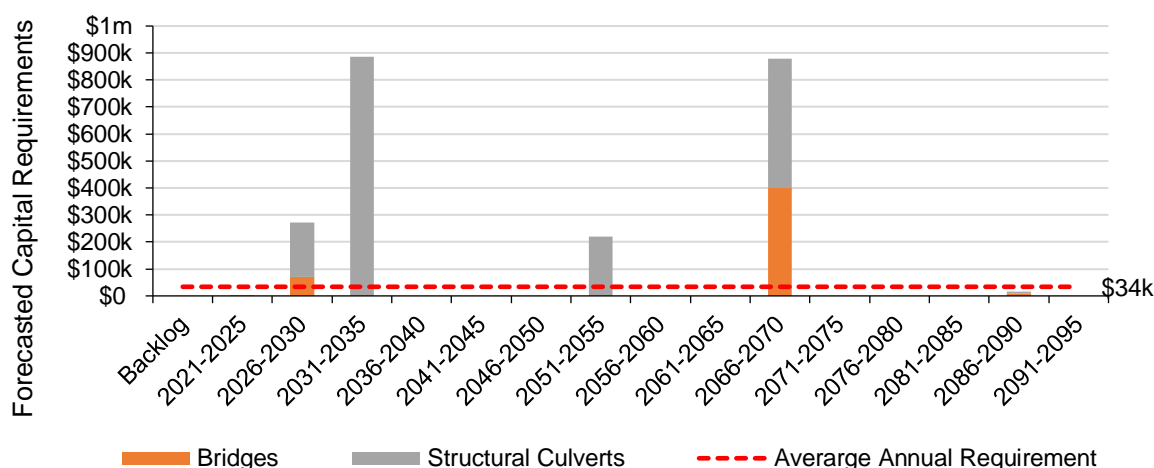
The following table outlines the Municipality's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance, Inspection, Rehabilitation, and Replacement	All lifecycle activities are driven by the results of mandated structural inspections completed according to the Ontario Structure Inspection Manual (OSIM), which is conducted every two years. The most recent inspection was completed in 2020.

A bridge structure 10-year capital investment plan was implemented several years ago. To date most identified work has been completed with only one bridge project remaining.

5.1.2 Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement is \$34,000 and represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements, reported in 5-year cumulative bins, until 2095. This projection is used as it ensures that every asset has gone through one full iteration of replacement. Annual capital requirements until 2030 are provided in Appendix B.



Risk & Criticality

5.1.3 Risk Matrix

The asset-specific attributes and their weighting that municipal staff utilize to define and prioritize the probability and consequence of failure of bridges and culverts are as follows:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition- 100%	Replacement Cost (Financial) 70%
	Special Routes (Social) 15%
	Detour Length (Social) 15%

Please refer to Appendix D for a detailed listing of the criteria used to determine the risk rating of each asset.

Based on the above parameters the following risk matrix provides a visual representation of the relationship between the probability and the consequence of failure for the bridge and structural culvert assets based on 2021 inventory data. As indicated below there are no high-risk assets (red) with most assets considered low risk (green and blue) and a few with moderate risk (yellow and orange).

Consequence	5 Severe	0 Assets \$0	2 Assets \$4,794,000	0 Assets \$0	0 Assets \$0	0 Assets \$0
	4 Major	0 Assets \$0	1 Asset \$1,766,000	1 Asset \$1,422,000	0 Assets \$0	0 Assets \$0
	3 Moderate	2 Assets \$1,082,760	5 Assets \$2,507,000	1 Asset \$381,000	0 Assets \$0	0 Assets \$0
	2 Minor	0 Assets \$0	1 Asset \$176,000	1 Asset \$310,000	0 Assets \$0	1 Asset \$77,610
	1 Insignificant	0 Assets \$0	0 Assets \$0	0 Assets \$0	0 Assets \$0	0 Assets \$0
		1 Rare	2 Unlikely	3 Possible	4 Likely	5 Almost Certain
		Probability				

Should the Municipality's understanding of risk change, the model should be adjusted to better reflect the factors that contribute to the probability and/or the consequence of asset failure. The identification of critical assets allows the Municipality to determine appropriate risk mitigation strategies including which structures may be a priority for larger capital investments.

5.1.4 Risks to Current Asset Management Strategies

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

Climate Change & Extreme Events



The gradual escalation in extreme weather events can make changing conditions difficult to plan for. Bridge and structural culvert design considerations have included the upsizing of culverts in anticipation of handling bigger storm events. Existing infrastructure, however, may not be sufficiently sized to manage more severe weather events. Over time, this risk is expected to become more impactful, particularly given Gordon/Barrie Island's lakeside location.

Capacity & Cognizance



The Municipality faces human resources deficiencies due to a high staff turnover rate. This will be exacerbated by upcoming retirements in the Public Works department. Currently, there are no formal transition plans in place; this poses risk to the retention of information particularly as it relates to asset history and planned investment, internal procedures, and maintenance programs.

Levels of Service

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

5.1.5 Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description of the traffic that is supported by municipal bridges	Culverts and bridges are predominately used to support vehicular traffic primarily comprised of private road vehicles and farm utility vehicles. Due to the remote location of most culverts pedestrian use is uncommon.
Quality	Description or images of the condition of bridges and culverts and how this would affect use of the bridges and culverts	Based on the last assessment completed in 2020 culvert conditions range from Fair (40/100) to Very Good (100). Using a weighted average replacement cost the average condition of all culverts is Fair (50/100). Please refer to Appendix C for images of the Townships bridges and culverts and their respective condition ratings.

5.1.6 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 (2021)
Scope	% of bridges in the Municipality with loading or dimensional restrictions	0%
Quality	Average bridge condition index value for bridges in the Municipality	89 %
	Average bridge condition index value for structural culverts in the Municipality	59 %

Performance	Capital re-investment rate vs. target re-investment rate	0.45% vs 1.71%
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Recommendations

Data Review/Validation

- Continue to review and validate inventory data, assessed condition data and replacement costs for all structural culverts upon the completion of OSIM inspections every 2 years.
- As part of OSIM reports obtain asset replacement values as well as rehabilitation recommendations including dates and estimated costs. Comprehensive replacement and intervention replacement information will better equip the municipality to appropriately plan for future capital investments.

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.
- Work to establish an understanding of the Municipalities risk tolerance and available risk mitigation measures by asset category, including bridges. Understanding risk tolerance may assist in identifying appropriate risk responses (i.e., accept risk, intervene to reduce risk).

Lifecycle Management Strategies

- Act upon the recommendations for rehabilitation activities as identified in the OSIMs report. Review recommendations thoroughly to better understand additional costs that may be required (i.e., engineering and design, contingency) and ensure that capital budgets account for such costs.

Levels of Service

- Continue to measure current levels of service in accordance with the metrics identified in O. Reg. 588/17
- In anticipation of the 2025 O. Reg. 588/17 deadline begin to identify proposed levels of service and strategies that may be required to close any gaps between the current and proposed levels of service.

6 Buildings

The Municipality of Gordon/Barrie Island owns and maintains several buildings that provide key services to the community. These include:

- Town Hall
- Garage
- Firehall
- Community Centre

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

Replacement Cost	Condition	Financial Capacity	
\$1.5 million	Fair	Annual Requirement:	\$47,000
		Funding Available:	\$12,000
		Annual Deficit:	\$35,000

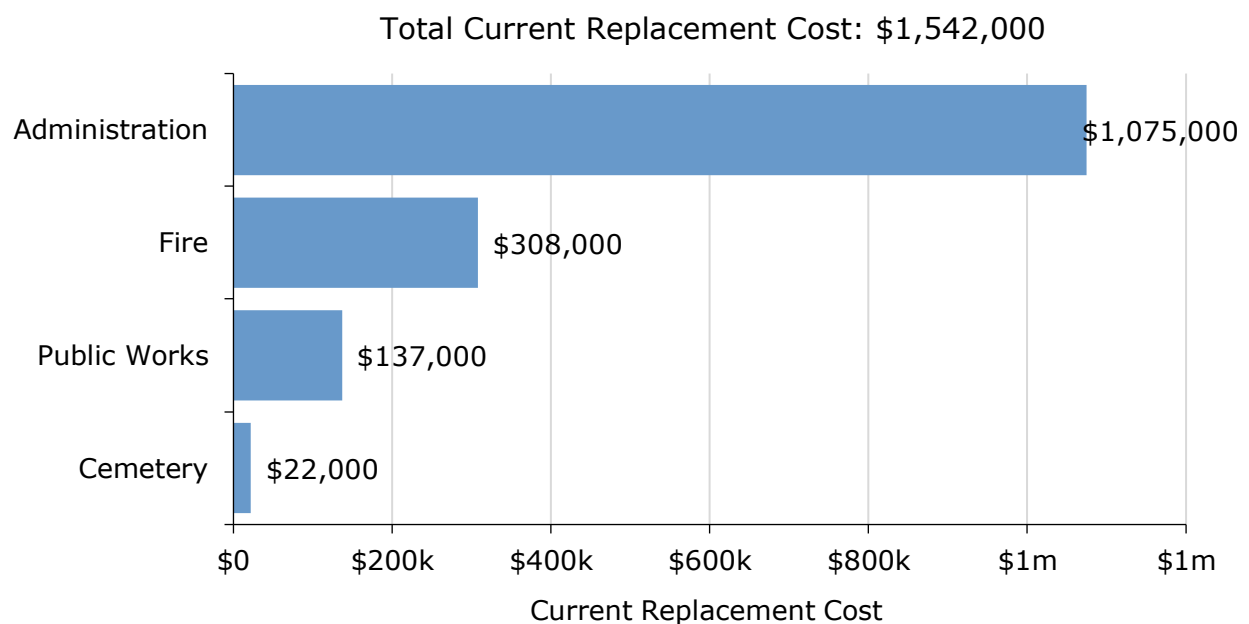
The following core values and level of service statements are a key driving force behind the Municipality's asset management planning:

Service Attribute	Level of Service Statement
Scope	Public facing buildings are conveniently accessible to the whole community and generally provide the services needed.
Quality	Buildings are appropriately maintained minimal unplanned service interruptions.

Asset Inventory & Costs

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

Asset Segment	Quantity (assets)	Replacement Cost
Administration	4	\$1,075,000
Cemetery	2	\$22,000
Fire	1	\$308,000
Public Works	1	\$137,000
Total	8	\$1,542,000



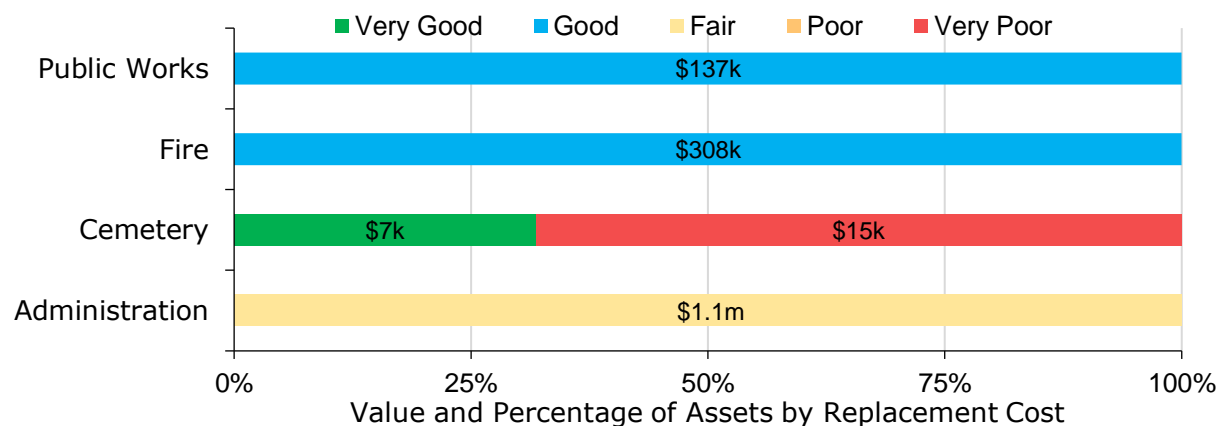
The replacement value of all assets will require regular review and updates to ensure they remain accurate and reflective of the assets under ownership.

Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition (%)
Administration	35	16.5	51
Cemetery	35	101	0
Fire	35	11	69
Public Works	20	4	80
Average		26	50

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



To ensure that the Municipality's buildings continue to provide an acceptable level of service, their average condition should be regularly monitored. If the average condition declines, lifecycle management strategies may require re-evaluation to determine what combination of maintenance, rehabilitation and replacement activities is required to increase the overall condition of the buildings and facilities.

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

6.1.1 Current Approach to Condition Assessment

Accurate and reliable condition data is important to the ability to reasonably estimate the remaining service life of assets and based on this plan for their replacement. Currently, the municipality relies on age-based condition for their building assets.

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

Condition	Rating
Very Good	80-100
Good	60-79
Fair	40-59
Poor	20-39
Very Poor	0-19

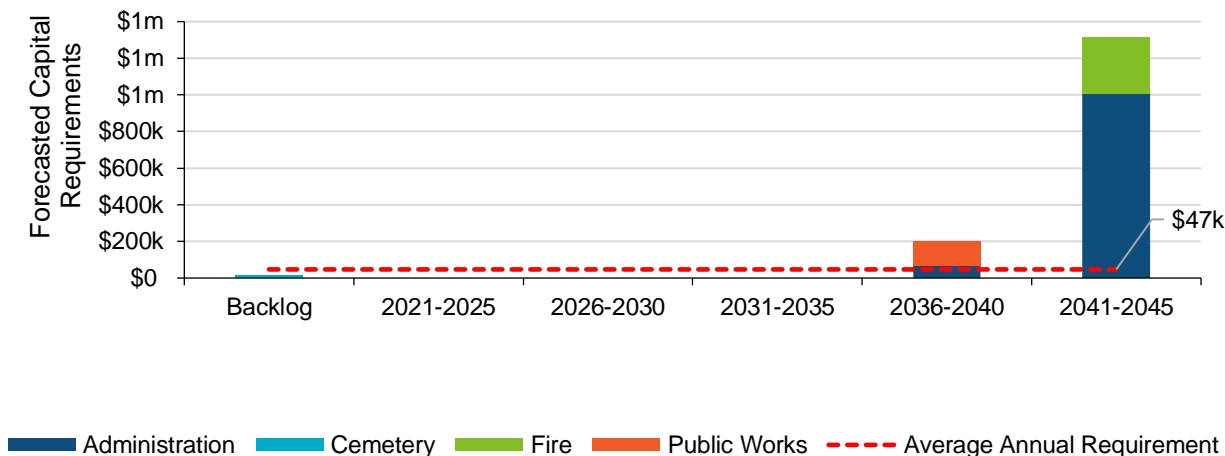
Lifecycle Management Strategy

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

Activity Type	Description of Current Strategy
Maintenance / Rehabilitation	Municipal buildings are subject to regular inspections to identify health & safety requirements as per the Health & Safety Act
Replacement	Replacement is driven by available funding, such as projects that improve energy efficiency (i.e., a new heat exchanger at the community centre). Otherwise, replacement is based on community and asset needs (i.e., expanding the municipal office and garage).

6.1.2 Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement is \$47,000 and represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 24 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 B.

Risk & Criticality

6.1.3 Risk Matrix

The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for building assets based on 2021 inventory data. As illustrated below most building assets have a moderate degree of risk (yellow and orange) because their probability of failure and/or their consequence of failure is high.



The quantification of risk by building assets can help the Municipality prioritize investment and identify 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.

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

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)- 80%
	Segment (Operational)- 20%

This is a high-level risk model developed for the purposes of this AMP. The model may be reviewed and adjusted as the Township's understanding of risk and data available to calculate risk evolves.

6.1.4 Risks to Current Asset Management Strategies

In addition to the quantified risks discussed above, building assets are exposed to qualitative risks. Qualitative risks tend to be difficult to measure against a specific asset but are recognized as affecting or having the potential to affect a group of assets. The following qualitative risks were identified.

Capacity & Cognizance



The Municipality faces human resources deficiencies due to a high staff turnover rate. This will be exacerbated by upcoming retirements with no transition plans currently in place. With a small staffing complement there is a risk of lost knowledge transfer, particularly in cases where information is not documented. This risk is being mitigated through the implementation of Citywide and this Asset Management plan, however there is still a significant amount of information and knowledge that may not be transferred to the new incumbents.

Other



Building Services are shared between five municipalities and administered by Gordon/Barrie Island. While shared services with other municipalities does generally improve the affordability and quality of services available to residents it does carry risks related to gaining consensus amongst the municipalities involved on the acceptable level of service as it relates to asset quality, affordability, and reliability. While this risk has not yet materialized it remains a vulnerability.

Levels of Service

6.1.5 Community Level of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Sustainability	Description of replacement and rehabilitation considerations and approach	Using age-based condition building assets range in condition from Very Poor (0) to Very Good (100) and are in average in Fair (50) condition .
Quality	Description or images of the condition of the asset and how this could affect use	Municipal building assets are regularly inspected for health and safety compliance. Replacement and rehabilitation decisions are most often based on community and asset needs (i.e., condition necessitates replacement) or in some cases by special funding opportunities (i.e., Upper-level government funding for energy efficiency improvements).

6.1.6 Technical Level 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 (2021)
Quality	Weighted Average Condition of Facility Assets	57%
Sustainability	Capital re-investment rate vs. Target Reinvestment rate	0.78% vs. 3.05 %

Recommendations

Asset Inventory

- The building asset inventory contains a single record for each building. All buildings consist of several separate capital components (e.g., roof, floors, foundation) that have unique estimated useful lives and require asset-specific lifecycle strategies. Staff should work towards a component-based inventory of all facilities to allow for component-based lifecycle planning. External professional resources are recommended.
- As an interim solution, staff should review the Estimated Useful Life (EUL) of building assets to ensure they are reflective of the actual expected lifespan. Currently, the EUL of most buildings is 35 years.

Condition Assessment Strategies

- The Municipality should implement regular condition assessments for all facilities to better inform short- and long-term capital requirements. It is recommended that at least the initial condition assessment be completed by a qualified third-party using a standardize componentization system like Uniformat II. This will ensure that asset information is reflective of each building component's expected useful life, installation date, and replacement cost.

Risk Management Strategies

- Implement risk-based decision-making as part of asset management planning and budgeting processes. This should include the identification of risk tolerance by asset class and risk responses alongside the regular review of high-risk assets.
- For facilities that are jointly owned and operated by multiple municipalities such as Fire Halls work to gain consensus on risk tolerance, and appropriate risk mitigation strategies. As well, ensure there is clarity surrounding responsibilities for capital expenditures and operational requirements.

Levels of Service

- Like all asset categories the Municipality must continue to measure their current level of service and work towards identifying proposed levels of service.
- To prepare for determining proposed levels of service it is recommended that some level of public engagement be conducted to ensure that residents

understand the relationship between the cost of service and the performance and risk that the users and asset owners are subject to.

7 Machinery & Equipment

To maintain the high quality of public infrastructure and support the delivery of core services, the Municipality owns various types of machinery and equipment. This includes:

- Office Equipment (i.e., computers, phones etc.)
- Garage Equipment
- Emergency Generators

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

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

Replacement Cost	Average Condition	Financial Capacity	
\$306,000	Very Poor	Annual Requirement:	\$35,000
		Funding Available:	\$9,000
		Annual Deficit:	\$26,000

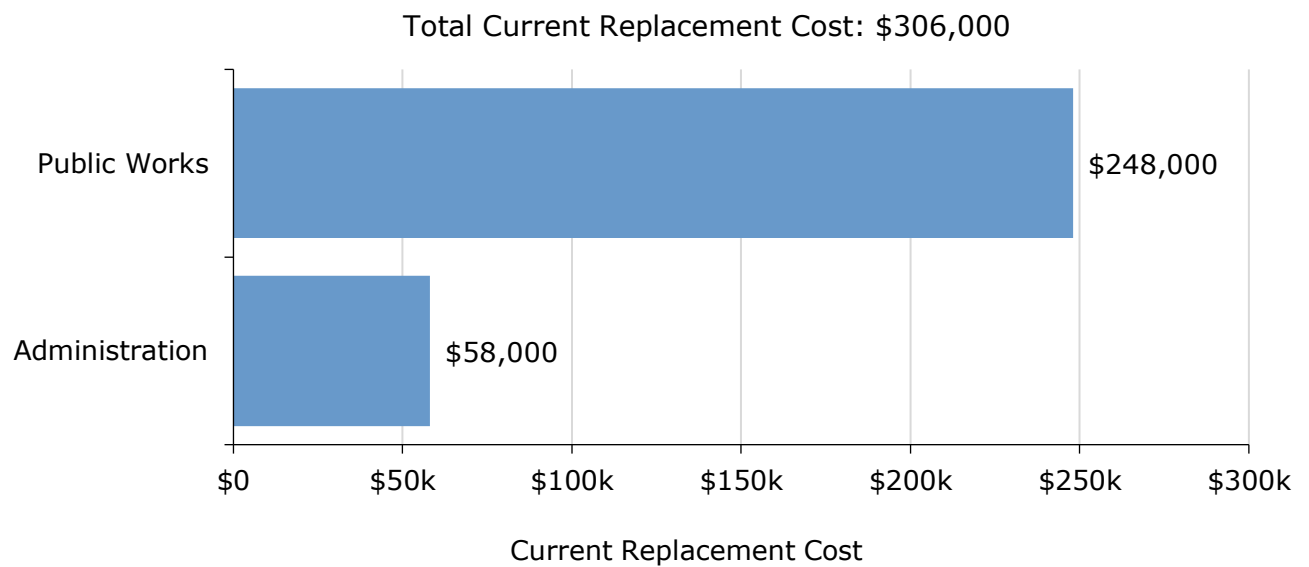
The following core values and level of service statements are a key driving force behind the Municipality's asset management planning:

Service Attribute	Level of Service Statement
Scope	The machinery and equipment assets meet the operational needs of the Township and are reliably available to staff.
Quality	The machinery and equipment assets are appropriately maintained; asset replacement needs are identified at budgeting time.

Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost
Administration	5	\$58,000
Public Works	3	\$248,000
Total	8	\$306,000



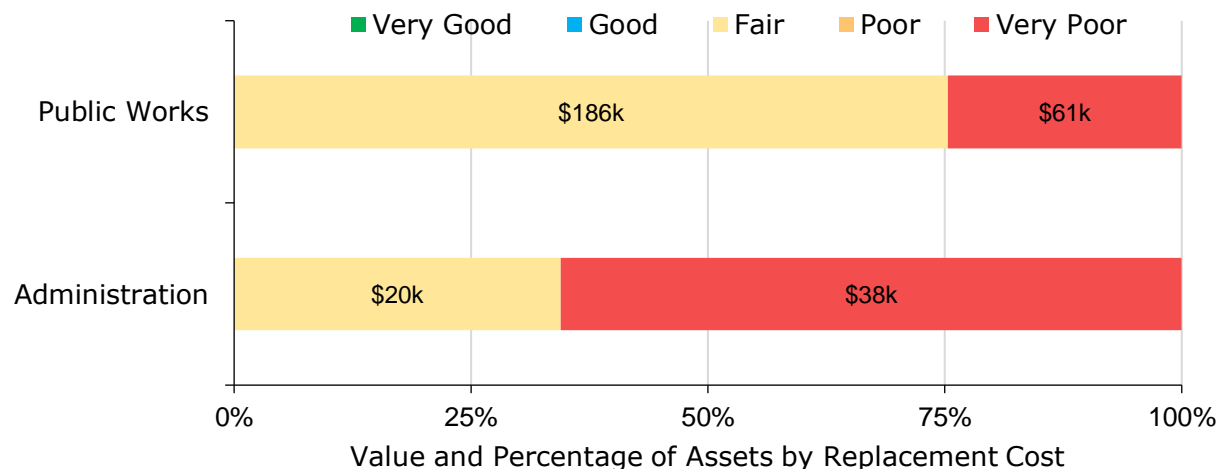
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Administration	7	10.5	12 %
Public Works	16	10.1	19 %
Average		20.3	15% (Very Poor)

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



Like all assets, the condition of machinery and equipment assets should be regularly monitored. In the event of overall condition decline, lifecycle management strategies may require re-evaluation. As well each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

7.1.1 Current Approach to Condition Assessment

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

- Staff complete regular visual inspections of machinery and equipment to ensure they are in state of adequate repair. Repairs are completed as required.
- There are no formal condition assessment programs in place currently

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

Condition	Rating
Very Good	80-100
Good	60-79
Fair	40-59
Poor	20-39
Very Poor	0-19

Lifecycle Management Strategy

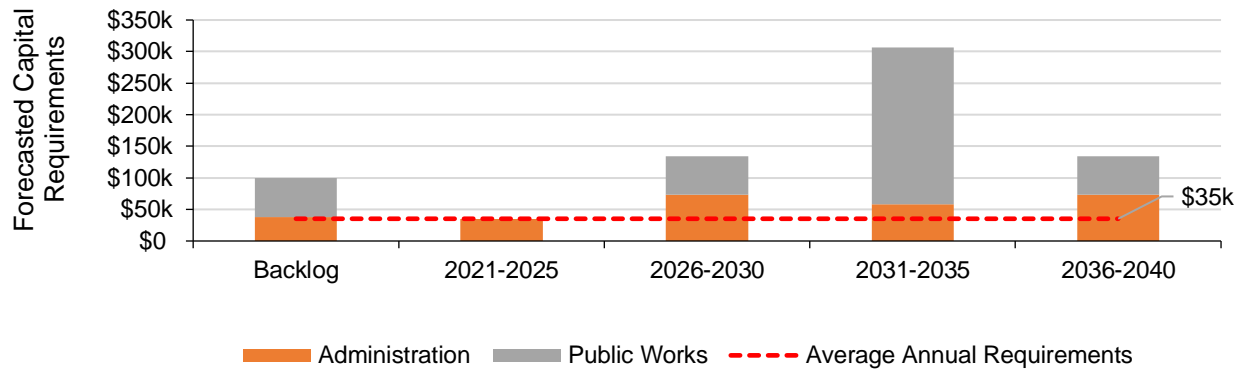
The condition or performance of most assets will deteriorate over time. To ensure that municipal assets are performing as expected and meeting the needs of customers, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

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

Activity Type	Description of Current Strategy
Maintenance/ Rehabilitation	Machinery and equipment is generally maintained according to manufacturer recommended actions. Larger machinery and equipment assets are sent to a licensed mechanic for annual inspections and emissions testing. Maintenance and repair work is completed as per mechanic recommendations.
Replacement	The replacement of machinery and equipment is primarily complete based on the asset age with consideration given to condition and performance as per mechanics findings.

7.1.2 Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement is \$35,000 and represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 35 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins.



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

Risk & Criticality

7.1.3 Risk Matrix

The asset-specific attributes and their weighting that municipal staff utilize to define and prioritize the probability and consequence of failure of machinery and equipment assets are as follows:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition-100%	Replacement Cost (Financial)- 80%
Segment- 20%	

For a more comprehensive breakdown of the risk model please refer to Appendix D.

The following risk matrix, calculated based on the above parameters, provides a visual representation of the relationship between the probability and the consequence of failure for machinery and equipment assets based on 2021 inventory data. Most machinery and equipment assets hold a moderate to high level of risk.

Consequence	5	0 Assets - \$0	0 Assets - \$0	1 Asset 1 unit(s) \$186,450	0 Assets - \$0	0 Assets - \$0
	4	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0
	3	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	1 Asset 1 unit(s) \$45,000
	2	0 Assets - \$0	0 Assets - \$0	1 Asset 1 unit(s) \$20,327	0 Assets - \$0	3 Assets 3 unit(s) \$47,996
	1	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	2 Assets 2 unit(s) \$6,231
		1	2	3	4	5
		Probability				

Understanding risks held by each asset is a critical first step to responding to that risk. Risk responses may vary based on asset, degree of risk, and available risk responses.

As the asset information available to the Township to calculate asset risks changes or the factors affecting the probability or consequence of failure evolves, the risk model may benefit from adjustments too.

7.1.4 Risks to Current Asset Management Strategies

In addition to quantified risks discussed above, machinery and equipment assets hold qualitative risks. These are as follows:

Climate Change & Extreme Events



An increase in freeze/thaw cycles has been impacting the Municipality's roads. These conditions and the additional road maintenance required has been negatively impacting the lifespan of many of the machinery and equipment assets.

Fiscal Capacity



The current budget has been impacted by price changes in recent years. Inflation has been significantly greater than expected, making it difficult to reliably prepare sufficient future budgets. This may result in less asset replacements occurring than initially planned.

Levels of Service

7.1.5 Community Level of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Sustainability	Description of replacement and rehabilitation considerations and approach	Machinery and equipment assets replacement is primarily driven by assets age with further consideration given to mechanicals recommendations and general asset performance.
Quality	Description or images of the condition of the asset and how this could affect use	Using age-based condition machinery and equipment assets range in condition from Very Poor to Good and are in average in poor condition.

7.1.6 Technical Level 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 (2021)
Quality	Weighted average condition of assets	39%
Sustainability	Capital re-investment rate vs. Target Reinvestment Rate	2.94 % vs. 11.44%

Recommendations

Replacement Costs

- The replacement costs of some machinery and equipment assets are based on the inflation of historical costs. These costs should be evaluated to determine their accuracy and reliability. Replacement costs should be updated according to the best available information on the cost to replace asset in the near term.
- Some machinery and equipment assets are likely a grouping of several assets (i.e., Garage Equipment). Review the assets that are included and consider recognizing them as separate assets so that more specific asset information can be applied.

Condition Assessment Strategies

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

Risk Management Strategies

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

Levels of Service

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

8 Fleet

To maintain the high quality of public infrastructure and support the delivery of core services, the Municipality owns various fleet assets. This includes:

- Utility Pick Up Trucks
- Snowplow
- Fire Trucks
- Tractor

Maintaining fleet assets in an adequate state of repair is important to for delivering a high level of service.

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

Replacement Cost	Average Condition	Financial Capacity	
\$1,163,000	Good	Annual Requirement:	\$113,000
		Funding Available:	\$29,000
		Annual Deficit:	\$84,000

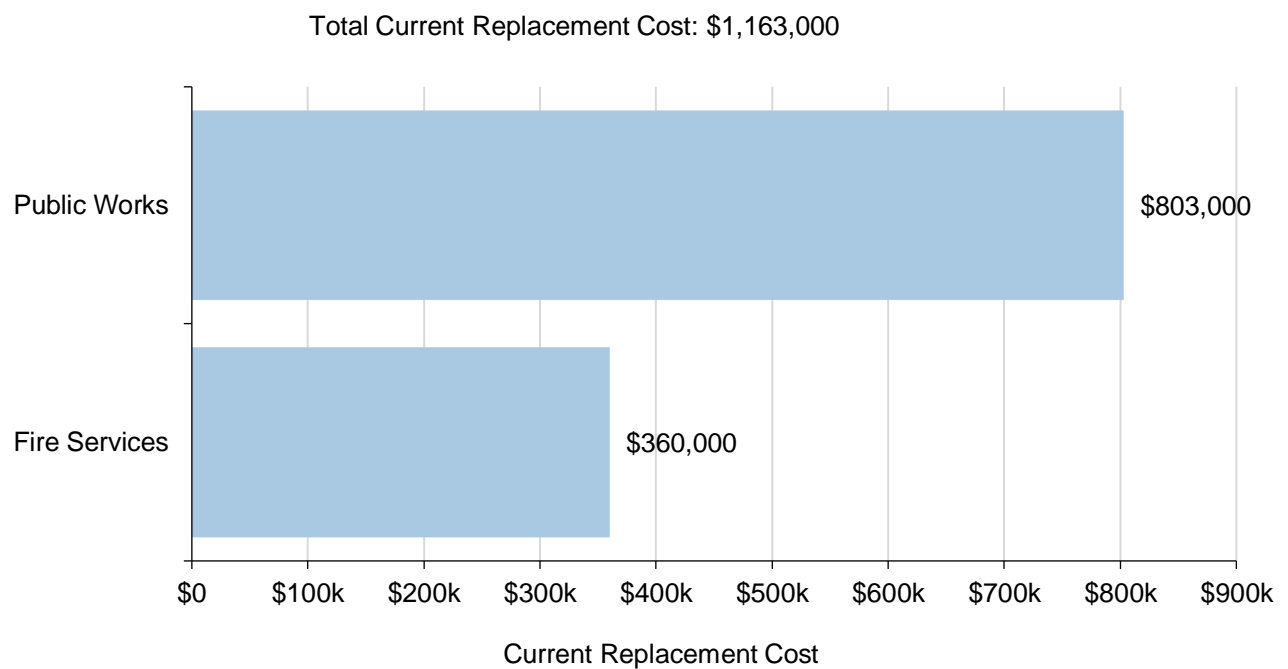
The following core values and level of service statements are a key driving force behind the Municipality's asset management planning:

Service Attribute	Level of Service Statement
Quality	Fleet assets meet the Township's operational needs and are in acceptable condition.
Sustainability	Fleet assets are appropriately maintained; asset replacement needs are identified at budgeting time, and to the extent possible funds are allocated.

Asset Inventory & Costs

The table below includes the quantity, total replacement cost and annual capital requirements for each segment within the fleet asset category.

Asset Segment	Quantity	Replacement Cost
Fire Services	2	\$360,000
Public Works	7	\$803,000
Total	9	\$1,163,000



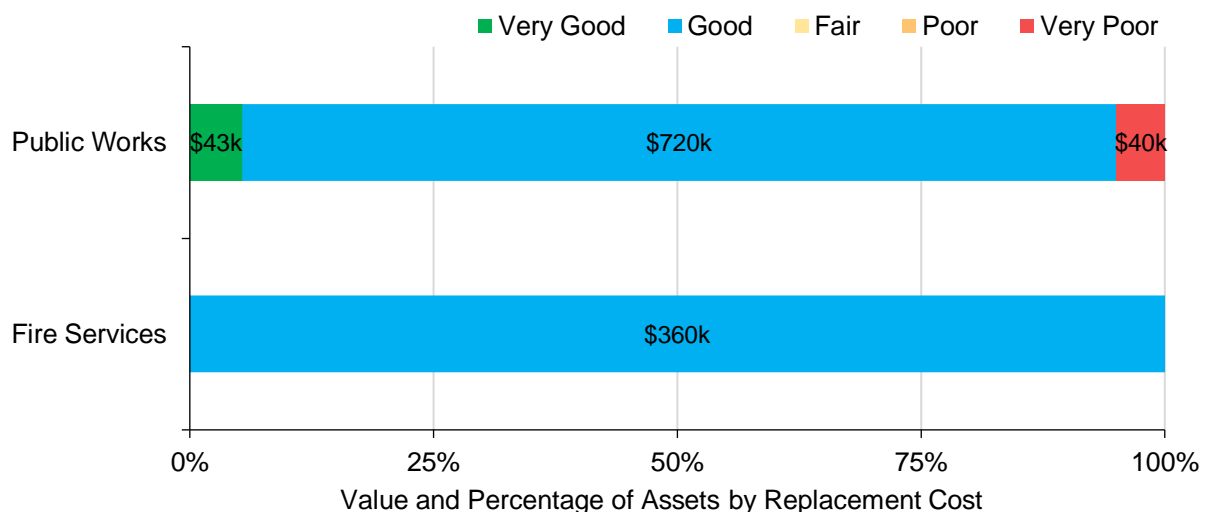
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to represent capital requirements most accurately.

Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Fire Services	16	10.5	74 %
Public Works	10	13	68 %
Average		12	70% (Good)

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



Like all assets, the condition of fleet assets should be regularly monitored. In the event of overall condition decline, lifecycle management strategies may require re-evaluation. As well each asset's estimated useful life (EUL) should also be reviewed periodically to determine whether EUL adjustments are appropriate.

8.1.1 Current Approach to Condition Assessment

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

- Staff complete regular visual inspections of fleet assets to ensure they are in state of adequate repair. As required repairs are completed by an external mechanic.
- Condition assessments based on a review of the assets existing functionality and repair history were initiated as part of the AMP project.

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

Condition	Rating
Very Good	80-100
Good	60-79
Fair	40-59
Poor	20-39
Very Poor	0-19

Lifecycle Management Strategy

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

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

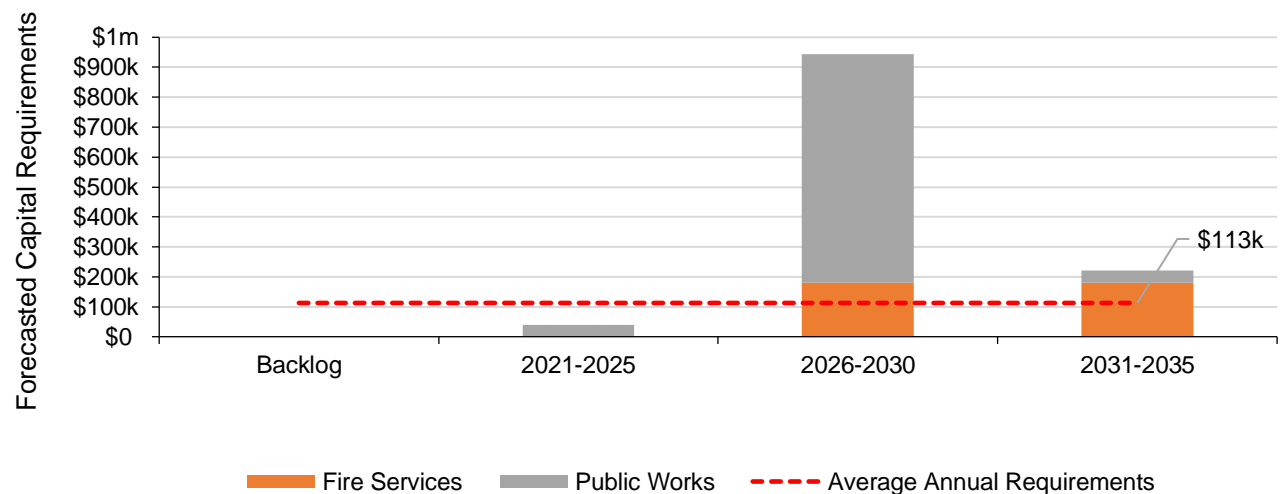
Activity Type	Description of Current Strategy
Maintenance/ Rehabilitation	Fleet assets are generally maintained according to manufacturer recommended actions. All fleet assets are sent to a licensed mechanic for annual inspections and emissions testing. Maintenance and repair work is completed as per mechanic recommendations.

Replacement

The replacement of fleet assets is primarily complete based on the asset age with consideration given to asset condition and performance. As well consideration is given to the Township's needs and the adequacy of the existing inventory to meet identified needs.

8.1.2 Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement is \$113,000 and represents the average amount per year that the Municipality should allocate towards funding fleet replacements. The following graph identifies capital requirements over the next 13 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.



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

Risk & Criticality

8.1.3 Risk Matrix

The asset-specific attributes and their weighting that municipal staff utilize to define and prioritize the probability and consequence of failure of machinery and equipment assets are as follows:

Probability of Failure (POF)	Consequence of Failure (COF)
Condition-100%	Replacement Cost (Financial)- 80%
	Segment- 20%

For a more comprehensive breakdown of the risk model please refer to Appendix D.

The following risk matrix, calculated based on the above parameters, provides a visual representation of the relationship between the probability and the consequence of failure for fleet assets based on 2021 inventory data. Most fleet assets hold a moderate to low level of risk.

Consequence	5	0 Assets \$0	2 Assets \$360,000	0 Assets \$0	0 Assets \$0	0 Assets \$0
	4	0 Assets \$0	2 Assets \$680,000	0 Assets \$0	0 Assets \$0	0 Assets \$0
	3	1 Asset \$40,710	1 Asset \$40,000	0 Assets \$0	0 Assets \$0	1 Asset \$40,000
	2	0 Assets \$0	0 Assets \$0	0 Assets \$0	0 Assets \$0	0 Assets \$0
	1	1 Asset \$2,014	0 Assets \$0	0 Assets \$0	0 Assets \$0	0 Assets \$0
		1	2	3	4	5
		Probability				

Understanding risks held by each asset is a critical first step to responding to that risk. Risk responses may vary based on asset, degree of risk, and/or available risk responses.

If the asset information available to the Township to calculate asset risks changes or the factors affecting the probability or consequence of failure evolves, the risk model may benefit from adjustments.

8.1.4 Risks to Current Asset Management Strategies

In addition to quantified risks discussed above, fleet assets hold qualitative risks. These are as follows:

Climate Change & Extreme Events



An increase in freeze/thaw cycles has been impacting the Municipality's roads. Since most fleet assets are driven on municipal roads the decline in road condition has a negative impact on the condition of the fleet assets.

Demographic Change



The Township experienced significant population growth since 2016, especially amongst people 65 and older (over 50% growth by age group). Over this time staff noticed an increase in resident issued service requests and complaints, especially related to roads. The Township's fleet inventory and staff compliment is small therefore responding to the increased requests has been, and is expected to continue to be, a challenge. This risk is expected to remain unless revenues are increased beyond population growth-based adjustments.

Levels of Service

8.1.5 Community Level of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Sustainability	Description of replacement and rehabilitation considerations and approach	Fleet asset replacement decisions are predominantly based on asset age with some consideration also given to asset condition. Fleet replacements are generally planned 1-3 years out.

Quality	Description or images of the condition of the asset and how this could affect use	The condition of fleet assets range from Very good (85/100) to poor (20/100) and are in average in condition good condition.
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8.1.6 Technical Level 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 (2021)
Quality	Weighted average condition of assets	39%
Sustainability	Capital re-investment rate vs. Target Reinvestment Rate	2.49 % vs. 9.72%

Recommendations

Replacement Costs

- The replacement costs of some fleet assets is based on the inflation of historical costs. At this time, these costs are relatively accurate due to their recent acquisition however over time inflation of historical costs is likely to become less accurate. Review all replacement costs regularly and make updates according to the best available information on the cost to replace asset in the near term.

Condition Assessment Strategies

- Regularly complete condition assessments for fleet assets so that asset management decisions can be premised on better data.
- Review the considerations and criteria applied when completing condition assessments and ensure inspection considerations, assessment frequency, and review processes are clearly documented for future reference, especially in the case of a staffing change.

Risk Management Strategies

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

Levels of Service

- Begin measuring current levels of service for the selected metrics.
- Begin to identify proposed levels of service as per O. Reg. 588/17. Review and consider the results of the current level of service collected over the next few years, to help inform realistic proposed levels of service. Identify strategies to reduce any gaps between current and proposed levels of service.

9 Land Improvements

The Municipality of Gordon/Barrie Island owns a small number of land improvement assets. Examples of common land improvement assets are:

- Boat Launches
- Playground structures and equipment
- Parking lots

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

Replacement Cost	Condition	Financial Capacity	
\$285,000	Good	Average Annual Requirement:	\$19,000
		Funding Available:	\$5,000
		Annual Deficit:	\$14,000

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

Service Attribute	Level of Service Statement
Scope	The land improvement assets are conveniently accessible to the residents and generally meet their needs and preferences.
Quality	Land improvements are maintained appropriately and safe for residents to use.

Asset Inventory & Costs

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

Asset Segment	Quantity	Replacement Cost	Annual Capital Requirement
Parks & Boat Launches	7	\$285,000	\$19,000

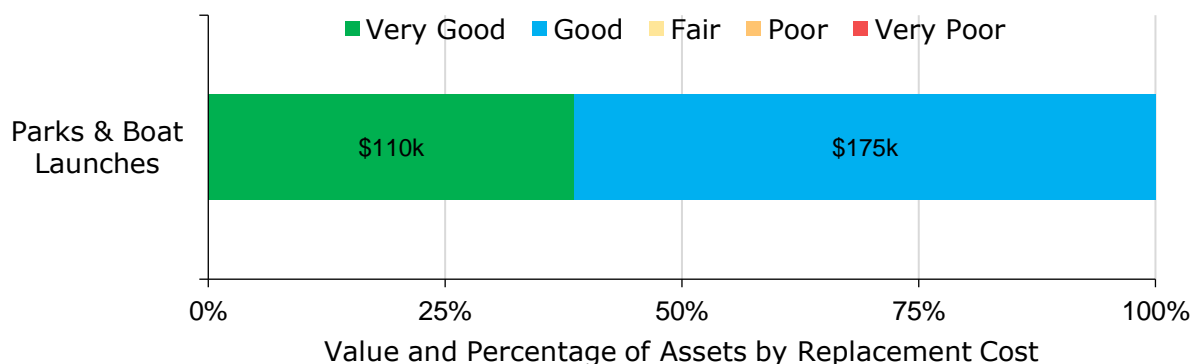
Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurately represent realistic capital requirements.

Asset Condition & Age

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

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)	Average Condition
Parks & Boat Launches	15	12.6	86%

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



Over time land improvement assets will naturally decline in condition. To ensure that assets remain safe and suitable for the public their condition should be regularly monitored. Persistent and widespread condition decline may indicate that a modification of the lifecycle strategies is needed, and/or asset replacement is

required in the near term. In addition to asset condition, the estimated useful life of assets should also be reviewed for alignment with actual observed length of service. Where there are significant differences, adjustments to the estimated useful life of assets may be needed.

Asset Condition & Lifecycle Management Strategy

Land Improvement assets were reviewed and scored for their condition by staff. Condition was scored based on a 0-100 scale as indicated below:

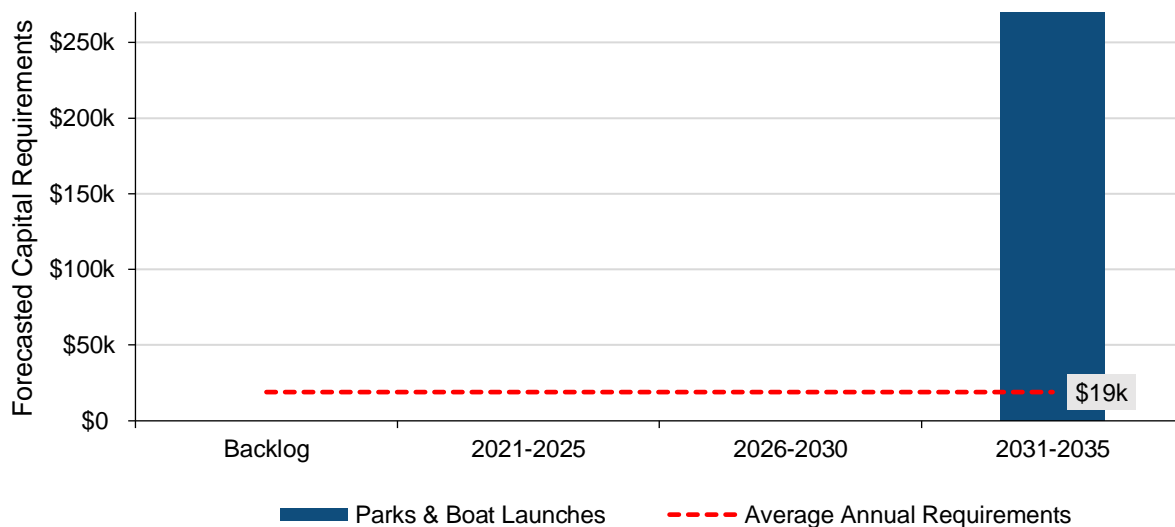
Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

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

Activity Type	Description of Current Strategy
Maintenance, Rehabilitation & Replacement	The Land improvements asset category includes several unique asset types and lifecycle requirements are dealt with on a case-by-case basis. Primarily, replacement considerations are based on the age of the asset and its condition.

9.1.1 Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement is \$19,000 and represents the average amount per year that the Municipality should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 24 years; all requirements occur between 2031 and 2035. This projection is used as it ensures that every asset has gone through one full iteration of replacement. Annual Capital requirements until 2031 are provided in Appendix B.



Risk & Criticality

9.1.2 Risk Matrix

To quantify the risks held by land improvement assets the probability and the consequence of asset failure were calculated. This was determined based on the following metrics and their weightings.

Probability of Failure (POF)	Consequence of Failure (COF)
Condition-100%	Replacement Cost (Financial)- 80%
	Segment (Operational)- 20%

See Appendix D for a more detailed overview of the criteria used to determine the risk rating of each asset.

The following risk matrix provides a visual representation of the relationship between the probability and the consequence of failure based on 2021 inventory data.

Consequence	5	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0
	4	0 Assets - \$0	1 Asset 1 unit(s) \$92,697	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0
	3	2 Assets 2 unit(s) \$88,188	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0
	2	1 Asset 1 unit(s) \$12,371	3 Assets 3 unit(s) \$82,427	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0
	1	2 Assets 2 unit(s) \$9,291	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0	0 Assets - \$0
		1	2	3	4	5
		Probability				

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

The identification of critical assets allows the Municipality to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-

specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

9.1.3 Risks to Current Asset Management Strategies

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

Demographic Changes



Land improvement assets are a valued community resource and will likely continue to be. However, land improvement assets may not have the same priority as other core infrastructure such as roads. The relatively low criticality of land improvement assets to the Township's operation, alongside common pressures to not raise taxes could negatively impact the level of investment land improvement assets receive and consequently their performance.

Levels of Service

9.1.4 Community Level of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Sustainability	Description of replacement and rehabilitation considerations and approach	Land improvement assets are quite diverse in the asset type and function; replacement and rehabilitation decisions are based on a range of factors but generally always consider at least the assets age, condition, and performance.
Quality	Description or images of the condition of the asset and how this could affect use	Using age-based condition land improvement assets range in condition from good to very good and are in average in good condition.

9.1.5 Technical Level 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 (2021)
Sustainability	Weighted average Condition of Assets	78%
Performance	Current vs Target Reinvestment Rate	1.75% vs. 6.67%

Recommendations

Replacement Costs

- All replacement costs used for land improvement assets are based on the inflation of historical costs. Replacement costs of land improvement assets may have grown at a faster rate than the CPI rate. To ensure replacement costs best reflect acquisition costs, replacement values should be evaluated to determine their accuracy. If more accurate costing is available, it should be used in place of inflation of historical costs.

Condition Assessment Strategies

- Ensure that condition assessments are completely regularly especially for high value and/or high-risk assets.
- Ensure that the condition assessment process is applied in a uniform manner to all assets regardless of which staff member may complete the assessments. Work to develop an assessment reference guide that identifies what elements to evaluate and how to grade.

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

- Regularly measure and report on current levels of service for the selected metrics. Consider LOS information when making budgets and evaluating investment decisions.
- Begin identifying feasible proposed levels of service as per O. Reg. 588/17 and identify the strategies that are required to close any gaps between current and proposed levels of service.

10 Impacts of Growth

Key Insights

- Understanding the key drivers of growth and demand will allow the Township to plan for new infrastructure and the upgrade or disposal of existing infrastructure more effectively
- In the District of Manitoulin (of which Gordon/Barrie Island is within) there are projections for modest population growth until 2036.
- The costs of growth should be considered in long-term funding strategies that are designed to maintain the current level of service

Description of Growth Assumptions

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

10.1.1 District of Manitoulin Official Plan (2016)

Growth management planning for the Municipality of Gordon/Barrie Island is conducted on a District-wide basis following the District of Manitoulin Official Plan. Future growth is controlled and managed in accordance with the objectives outlined in the Official Plan and the Growth Plan for Northern Ontario.

The District of Manitoulin adopted its latest Official Plan which works to guide development for all lands in the district between 2016 and 2036. The policies included in the Manitoulin's Official Plan are consistent with the 2014 Provincial Policy Statement and the 2011 Growth Plan for Northern Ontario. These policies seek to ensure that the District has the required tools and planning framework in place for it to have a sustainable economy and provide quality services and amenities.

The Official Plan was approved by the Ministry of Municipal Affairs and Housing on October 29th, 2018.

The District of Manitoulin is comprised of a variety of communities with varying challenges which are taken into consideration in the Official Plan. The Official Plan also considers the District's need for sustainable growth. Sustainable development is promoted by recognizing the importance of healthy communities, protecting the natural environment, and economic vitality.

A population increase of approximately 530 residents is expected in the District by the year 2036. An increase of approximately 220 required dwellings is needed to support the projected population growth. An employment decrease of approximately 420 is expected because the district's working population (ages 15-69) is expected to decrease.

The following table outlines actual and projected population, dwellings, and employment projections for the District of Manitoulin:

Year	Population	Dwellings	Employment
------	------------	-----------	------------

2011	8,350	3,710	3,370
2016	8,470	3,760	3,350
2021	8,610	3,820	3,290
2026	8,730	3,870	3,220
2031	8,810	3,910	3,050
2036	8,880	3,940	2,950

The above figures are based on 2011 Census data and 2010 Ministry of Finance population projections for the District of Manitoulin. More recent population statistics from the 2016 and 2021 Census show that the actual population and number of dwellings are much higher than anticipated in both 2016 and 2021. In 2016, the actual population was 13,255 while the expected population was 8,470. The actual total number of dwellings in 2016 was 9,537, and the expected number of dwellings was only 3,760. The actual population in 2021 was 13,935, much higher than the expected population of 8,610. The actual total number of dwellings in 2021, 9,302, was also much higher than the expected total number of dwellings for 2021, 3,820.

Wherever possible all future development in the district is to be directed to Urban Areas to optimize the use of existing infrastructure and protect the natural environment. The Urban Areas will accommodate the fullest range and mix of residential, commercial, community-related employment, institutional, entertainment, cultural, recreational, and open space uses available in the District.

The Municipality of Gordon/Barrie Island is identified as a village area in the District of Manitoulin Official Plan. Village Areas are expected to experience limited growth, through the development of vacant lands and infilling. Limited growth should support the rural character and evolving role of the Village Areas as a service and residential centre in recognition of changing social and economic conditions.

Based on 2021 Census data, the Municipality of Gordon/Barrie Island has experienced a population increase of roughly 123 residents between the years 2016 and 2021. This has resulted in a total population of 613. The Municipality of Gordon/Barrie Island should continue to follow the policies outlined in the District of Manitoulin Official Plan to accommodate all future growth.

In September 2021, Gordon/Barrie Island council gave its approval for an amendment to the Official Plan and zoning bylaw for a proposed 35-waterfront lot estate subdivision for seasonal residential use, on the northwestern part of Barrie Island to accommodate the recent increase in visitor traffic in Gordon/Barrie Island

Impact of Growth on Lifecycle Activities

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

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 Municipality's AMP. While the addition of residential units will add to the existing assessment base and offset some of the costs associated with growth, the Municipality will need to review the lifecycle costs of growth-related infrastructure. These costs should be considered in long-term funding strategies that are designed to, at a minimum, maintain the current level of service.

11 Financial Strategy

Key Insights

- The Municipality is committing approximately \$227,000 annually towards capital projects per year from sustainable revenue sources
- Given the average annual capital requirement of \$757,000 there is currently a funding gap of \$530,000 annually
- We recommend increasing tax revenues by 2.5% each year for the next 15 years to achieve a sustainable level of funding

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 the Municipality of Gordon/Barrie Island 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
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.

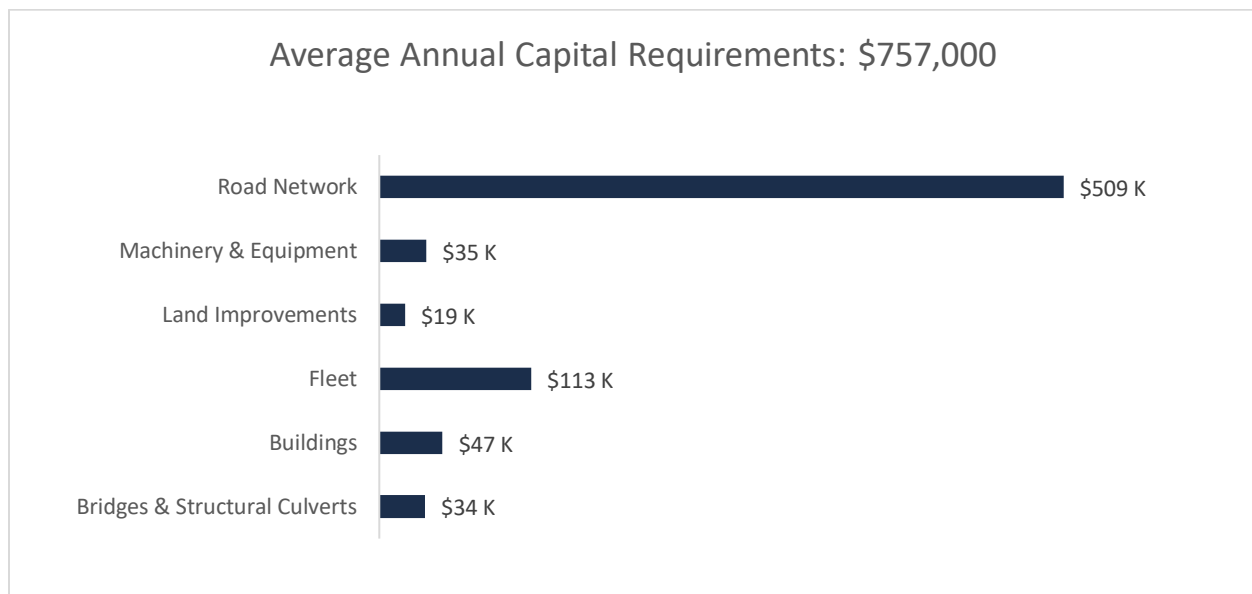
If the financial plan component results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a Municipality's approach to the following:

1. 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.

11.1.1 Annual Requirements & Capital Funding

Annual Requirements

The average annual requirements represent the amount the Municipality 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 Municipality must allocate approximately \$757,000 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, lifecycle management strategies have been developed to identify capital costs that are realized through strategic rehabilitation and renewal of the Municipality’s roads. The development of these strategies allows for a comparison of potential cost avoidance if the strategies were to be implemented. The following table compares two scenarios for the road network:

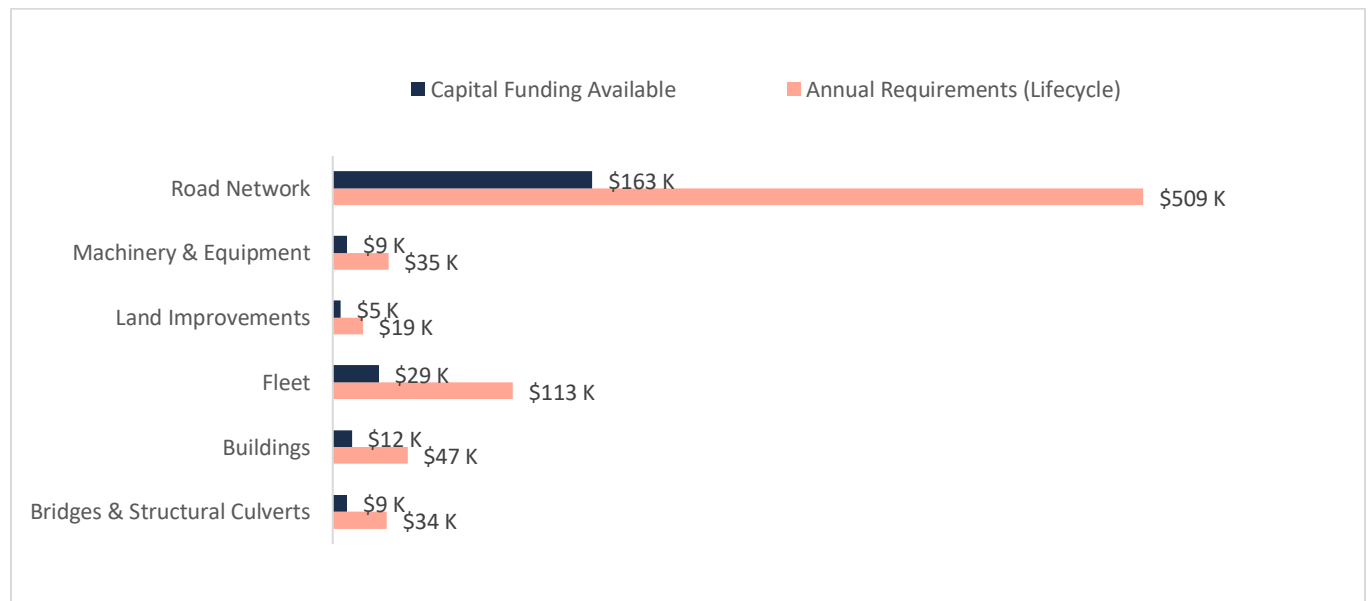
1. **Replacement Only Scenario:** Based on the assumption that assets deteriorate and – without regularly scheduled maintenance and rehabilitation – are replaced at the end of their service life.
2. **Lifecycle Strategy Scenario:** Based on the assumption that lifecycle activities are performed at strategic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

Asset Category	Annual Requirements (Replacement Only)	Annual Requirements (Lifecycle Strategy)	Difference
Road Network	\$896,000	\$509,000	\$387,000

The implementation of a proactive lifecycle strategy for roads leads to a potential annual cost avoidance of \$387,000 for the road network. This represents an overall reduction of the annual requirements by 43%. As the lifecycle strategy scenario represents the lowest cost option available to the Municipality, we have used this annual requirement in the development of the financial strategy.

Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Municipality is committing approximately \$227,000 towards capital projects per year from sustainable revenue sources. Given the annual capital requirement of \$757,000 there is currently an annual funding gap of \$530,000 annually.



Funding Objective

We have developed a scenario that would enable Gordon/Barrie Island to achieve full funding within 15 years for the following asset categories:

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

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

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

Financial Profile: Tax Funded Assets

11.1.2 Current Funding Position

The following tables show, by asset category, Gordon/Barrie Island's average annual asset investment requirements, current funding positions, and funding increases required to achieve full funding on assets funded by taxes.

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Taxes	Gas Tax	OCIF	Total Available	
Bridges & Structural Culverts	34,000	9,000	0	0	9,000	25,000
Buildings	47,000	12,000	0	0	12,000	35,000
Fleet	113,000	29,000	0	0	29,000	84,000
Land Improvements	19,000	5,000	0	0	5,000	14,000
Machinery & Equipment	35,000	9,000	0	0	9,000	26,000
Road Network	509,000	52,000	61,000	50,000	163,000	346,000
	757,000	116,000	61,000	50,000	227,000	530,000

The average annual investment requirement for the above categories is \$757,000. Annual revenue currently allocated to these assets for capital purposes is \$227,000 leaving an annual deficit of \$530,000. Put differently, these infrastructure categories are currently funded at 30% of their long-term requirements.

11.1.3 Full Funding Requirements

In 2021, Municipality of Gordon/Barrie Island has budgeted annual tax revenues of \$1.227 million. Of total tax revenues, a portion (\$116,000) is used for capital. 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 Funding³
Bridges & Structural Culverts	2.0%
Buildings	2.9%
Fleet	6.8%
Land Improvements	1.1%
Machinery & Equipment	2.1%
Road Network	28.2%
	43.1%

There are no expected changes in sustainable revenue sources or debt cost. Based on this assumption and using the asset inventory as of 2021 the following table describes the tax rate adjustment required annually to meet the annual capital requirement over 5, 10, 15, and 20 years.

	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	530,000	530,000	530,000	530,000
Change in Debt Costs	N/A	N/A	N/A	N/A
Change in OCIF Grants	N/A	N/A	N/A	N/A
Resulting Infrastructure Deficit:	530,000	530,000	530,000	530,000
Tax Increase Required	43.2%	43.2%	43.2%	43.2%
Annually:	7.5%	3.7%	2.5%	1.9%

³ Tax rate adjustment assumes that increase in revenue would be entirely allocated to capital.

11.1.4 Financial Strategy Recommendations

Considering all the above information, we recommend the 15-year option. This involves full funding being achieved over 15 years by:

- a) Increasing tax revenues by 2.5% each year for the next 15 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
- b) Allocating the current gas tax and OCIF revenue as outlined previously.
- c) Should the scheduled OCIF grant increase, the Township should reduce the annual tax increase by an amount equal to the grant increase as it occurs.
- d) Reallocating appropriate revenue from categories in a surplus position to those in a deficit position.
- e) 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 OCIF formula-based funding, if applicable, since this funding is a multi-year commitment⁴.
- 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 funding on an annual basis in 15 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 \$19,000 for Land Improvements and \$35,000 for Machinery & Equipment.

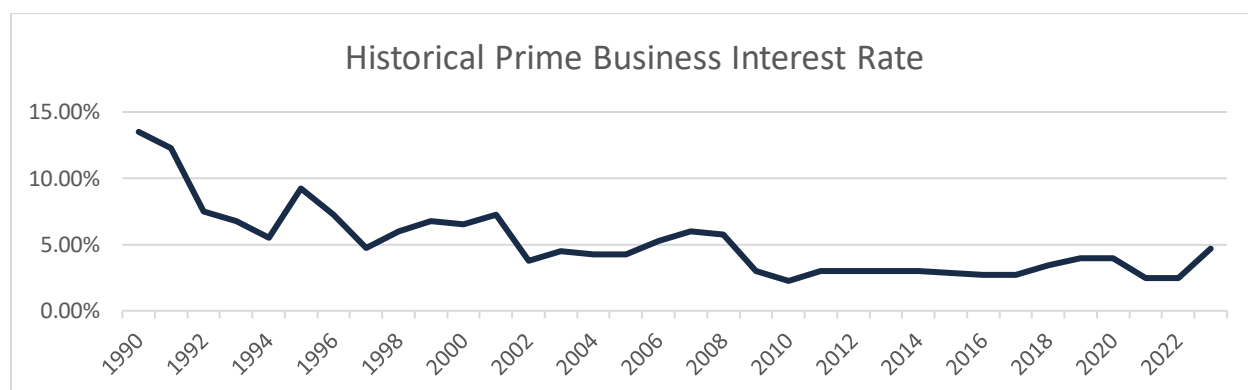
⁴ The Municipality should take advantage of all available grant funding programs and transfers from other levels of government. While OCIF has historically been considered a sustainable source of funding, the program is currently undergoing review by the provincial government. Depending on the outcome of this review, there may be changes that impact its availability.

Use of Debt

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

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

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



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

For reference purposes, the following table outlines the premium paid on a project if financed by debt. For example, a \$1 million project financed at 3.0%⁵ over 15 years would result in a 26% premium or \$260 thousand of increased costs due to interest payments. For simplicity, the table does not consider the time value of money or the effect of inflation on delayed projects.

⁵ Current municipal Infrastructure Ontario rates for 15-year money is 3.2%.

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%

Use of Reserves

11.1.5 Available Reserves

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

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

By asset category, the table below outlines the details of the reserves currently available to Gordon/Barrie Island.

Asset Category	Balance at December 31, 2021
Bridges & Structural Culverts	38,000
Buildings	38,000
Fleet	38,000
Land Improvements	38,000
Machinery & Equipment	38,000
Road Network	122,000
Total Tax Funded:	312,000

There is considerable debate in the municipal sector as to the appropriate level of reserves that a Municipality should have on hand. There is no clear guideline that has gained wide acceptance. Factors that municipalities should consider 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 Gordon/Barrie Island'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.

11.1.6 Recommendation

In 2025, Ontario Regulation 588/17 will require Gordon/Barrie Island 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.

12 Appendices

Key Insights

- Appendix A includes a one-page report card with an overview of key data from each asset category
- Appendix B identifies projected 10-year capital requirements for each asset category
- Appendix C provides photos of the Municipality's bridges
- Appendix D identifies the criteria used to calculate risk for each asset category

Appendix A: Infrastructure Report Card

Asset Category	Replacement Cost	Asset Condition	Financial Capacity	
Road Network	\$17,920,000	Fair (66%)	Annual Requirement:	\$509,000
			Funding Available:	\$163,000
			Annual Deficit:	\$346,000
Bridges & Structural Culverts	\$1,994,000	Fair (67%)	Annual Requirement:	\$34,000
			Funding Available:	\$9,000
			Annual Deficit:	\$25,000
Buildings	\$1,542,000	Fair (50%)	Annual Requirement:	\$47,000
			Funding Available:	\$12,000
			Annual Deficit:	\$35,000
Machinery & Equipment	\$306,000	Very Poor (15%)	Annual Requirement:	\$35,000
			Funding Available:	\$9,000
			Annual Deficit:	\$26,000
Fleet	\$1,163,000	Good (79%)	Annual Requirement:	\$113,000
			Funding Available:	\$29,000
			Annual Deficit:	\$84,000
Land Improvements	\$285,000	Very Good (86%)	Annual Requirement:	\$19,000
			Funding Available:	\$5,000
			Annual Deficit:	\$14,000
Overall	\$23,210,000	Fair (62%)	Annual Requirement:	\$757,000
			Funding Available:	\$227,000
			Annual Deficit:	\$530,000

Appendix B: 10-Year Capital Requirements

The following tables identify the capital cost requirements for each asset category over the next 10 years.

Requirements represent the investment (quoted in 2021 dollars) required to replace assets when they have reached their estimated useful life and, in the case of roads, to complete rehabilitation events.

Road Network											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Surface Treated Roads ⁶	\$0	\$0	\$0	\$44,000	\$0	\$55,000	\$161,000	\$213,000	\$2,900,000	\$227,000	\$700,000

Bridges & Structural Culverts											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Bridges	\$73,000	\$0	\$2,000	\$0	\$0	\$0	\$0	\$71,000	\$0	\$0	\$0
Structural Culverts	\$202,000	\$0	\$0	\$0	\$0	\$0	\$0	\$202,000	\$0	\$0	\$0
Total	\$275,000	\$0	\$2,000	\$	\$0	\$0	\$0	\$273,000	\$0	\$0	\$0

Buildings ⁷											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Administration	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Cemetery	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Fire	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Public Works	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

⁶ Gravel roads are not included as they are funded from operational dollars.

⁷ Projected capital requirements are based on existing asset data. A Building Condition Assessment is recommended and is likely to identify more detailed analysis and investment recommendations.

Machinery & Equipment											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Administration	\$109,0000	\$0	\$0	\$0	\$35,000	\$0	\$23,000	\$15,000	\$0	\$20,000	\$15,000
Public Works	\$61,000	\$0	\$0	\$0	\$0	\$0	\$61,000	\$0	\$0	\$0	\$0
Total	\$170,000	\$0	\$0	\$0	\$35,000	\$0	\$84,000	\$15,000	\$0	\$20,000	\$15,000

Land Improvements ⁸											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Parks & Boat Launches	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Fleet											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Fire Services	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$180,000	\$0
Public Works	\$0	\$0	\$0	\$40,000	\$0	\$0	\$0	\$0	\$0	\$720,000	\$43,000
Total	\$0	\$0	\$0	\$40,000	\$0	\$0	\$0	\$0	\$0	\$900,000	\$43,000

⁸ Projected capital requirements are based on existing asset data. A more detail asset assessment is recommended and is likely to identify more detailed analysis and capital investment recommendations.

Appendix C: Level of Service Maps

Images of Culverts in Excellent Condition

Inspected: November 2nd, 2020

Cam Clark



North Elevation



East Approach



Barrier at North Brick Post



Connection of Guide Rail to
End Brick Post



Footing at West



Barrel (looking North)

Don Burt



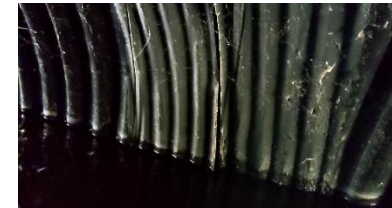
East Approach



South Elevation



East Pipe Barrel



East Pipe- Joint
Displacement at mid-length



West Pipe, South end-
Voids in Top Fill

Runnalls Bridge



Barrier at North



Retaining Wall at Northeast Corner



Deck



Top of Barrel Slab at North



North Elevation



Barrel- soffit

Structural Culverts: Good Condition
Inspection: November 2nd, 2020

Bridge #2 (Gabraith's)



East Approach



East Pipe- north Elevation



East Pipe- South Elevation



West Pipe- Barrel



West Pipe- Retaining
Stones at Southeast Corner



East Pipe- Dislocated Joint

Bridge #3 (Merrylee's)



North Approach



East Elevation



Barrel



Retaining Stones at West
End



End of Barrel at East-
Undermining



End of Barrel at West

Robertson



East Elevation



Panel laps in Wrong Direction



Offset Block- Deteriorated at East Barrier



South Approach



Panels missing bolts at post



Barrel

Nelson Road



East Approach



West Barrel- Sediment Build up Overtop Barrel



North Elevation



East Pipe Barrel

Structural Culverts: Fair Condition
Inspection: November 2nd, 2020

Bridge #5 (Lance's Bridge)



East Approach



South Elevation



North Elevation



Barrel



Retaining Stones



Undermining

Structural Culverts: Poor Condition
Inspection: November 2nd, 2020

Bridge #4 (Greenman's)



East Approach



South Elevation



Barrel



Barrel- Corrosion Line



Erosion Overtop Concrete
Retaining Wall

Poplar Road



North Approach



Depression at East Edge of Road



Transverse Crack at Wearing Surface



North Pipe- Barrel

Golf Course Road



South Approach



East Elevation



Rock Fill at East



North Pipe-Retaining Wall at West



North Pipe Barrel



South Pipe-West Post
Crushing

Appendix D: Risk Rating Criteria

Probability of Failure

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
All:			80-100	1
• Structural Culverts	Condition	100%	60-79	2
• Surface Treated Roads			40-59	3
• Buildings			20-39	4
• Machinery & Equipment			0-19	5
• Fleet				
• Land Improvements				

Consequence of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Bridges & Structural Culverts	Economic (85%)	Replacement Cost (100%)	\$2,000,000 and below	5: Severe
			\$1,500,000 and below	4: Major
			\$700,000 and below	3: Moderate
			\$100,000 and below	2: Minor
			\$40,000 and below	1: Insignificant
	Social (15%)	Detour Length (100%)	10 KM	5: Severe
			8 KM	4: Major
			6 KM	3: Moderate
			4 KM	2: Minor
			2 KM	1: Insignificant
Surface Treated Roads	Economic (70%)	Replacement Cost (100%)	\$100,000 and below	5: Severe
			\$80,000 and below	4: Major
			\$60,000 and below	3: Moderate
			\$40,000 and below	2: Minor
			\$20,000 and below	1: Insignificant
	Social (30%)	Critical Route (60%)	Fire & School Bus Route	4: Major
			School Bus Route	3: Moderate
			None	1: Insignificant
		Road Class (MMS) (40%)	Class 6	2: Minor
			Class 5	3: Moderate

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Buildings Machinery & Equipment Fleet Land Improvements	Economic (80%)	Replacement Cost (100%)	\$200,000	5: Severe
			\$140,000	4: Major
			\$80,000	3: Moderate
			\$30,000	2: Minor
			\$10,000	1: Insignificant
	Operational (20%)	Segment (100%)	Fire, Generators	5: Severe
			Phone System, Plows, Trucks	4: Major
			Garage Equipment, IT Infrastructure, Machinery, Office Equipment, Town Hall, Community Centre, Machinery	3: Moderate
			Park, Playground, Swim Program	2: Minor