2025

Howick
TOWNSHIP

ASSET MANAGEMENT PLAN

This Asset Management Program was prepared by:

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

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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 services. The goal of asset management is to balance delivering critical services in a cost-effective manner. This involves the development and implementation of asset management strategies and long-term financial planning.

The overall replacement cost of the asset categories owned by Howick total $216.5 million. 90% of all assets analysed are in fair or better condition and assessed condition data was available for all road, building and bridge assets. For the remaining assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation.

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

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Township's proposed level of service is to maintain an average condition of good. The needed average annual capital requirement totals $2.78 million. Based on a historical analysis of sustainable capital funding sources, the Township is committing approximately $1.26 million towards capital projects or reserves per year. As a result, the Township is funding 45% of its annual capital requirements to maintain an average condition of good. This creates a total annual funding deficit of $1.5 million.

Addressing annual infrastructure funding shortfalls is a difficult and long-term endeavour for municipalities. Considering the Township's current funding position, it will require many years to reach full funding for current assets. Short phase-in periods to meet these funding targets may place too high a burden on taxpayers too quickly, whereas a phase-in period beyond 20 years may see a continued deterioration of infrastructure, leading to larger backlogs.

To close annual deficits for capital contributions from tax revenues for asset needs, it is recommended the Township review the feasibility of implementing a 2.0% annual increase in revenues over a 15-year phase-in period. Funding scenarios over longer time frames are also presented which reduce the annual increases.

In addition to annual needs, there is also an infrastructure backlog of $1 million, comprising assets that remain in service beyond their estimated useful life. It is highly unlikely that all such assets are in a state of disrepair, requiring immediate replacements or full reconstruction. This makes targeted and consistent condition assessments integral to refining long-term replacement and backlog estimates.

Risk frameworks and levels of service targets can then be used to prioritize projects and help select the right lifecycle intervention for the right asset at the right time—including replacement or full reconstruction. The Township has developed preliminary risk models which are integrated with its asset register. These models can produce risk matrices that classify assets based on their risk profiles.

Most municipalities in Ontario, and across Canada, continue to struggle with meeting infrastructure demands. This challenge was created over many decades and will take many years to overcome. To this end, several recommendations should be considered, including:

- Continuous and dedicated improvement to the Township's infrastructure datasets, which form the foundation for all analysis, including financial projections and needs.
- Continuous refinements to the risk and lifecycle models as additional data becomes available. This will aid in prioritizing projects and creating more strategic long-term capital budgets.
- Continued monitoring of key performance indicators for all infrastructure programs to calibrate levels of service targets annually.

The Township has taken important steps in building its asset management program, including developing a more complete and accurate asset register—a substantial initiative. Continuous improvement to this inventory will be essential in maintaining momentum, supporting long-term financial planning, and delivering affordable service levels to the community.

About this Document

The Howick Asset Management Plan was developed in accordance with Ontario Regulation 588/17 ("O. Reg 588/17"). It contains a comprehensive analysis of Howick's infrastructure portfolio. This is a living document that should be updated regularly as additional asset and financial data becomes available.

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. Along with creating better performing organizations, more livable 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.

Table 1 Ontario Regulation 588/17 Requirements and Reporting Deadlines

Requirement	2019	2022	2024	2025
1. Strategic Asset Management Policy	✓		✓	
2. Asset Management Plans		✓	✓	✓
State of infrastructure for core assets		✓		
State of infrastructure for all assets			✓	✓
Current levels of service for core assets		✓		
Current levels of service for all assets			✓	
Proposed levels of service for all assets				✓
Lifecycle costs associated with current levels of service		✓	✓	
Lifecycle costs associated with proposed levels of service				✓
Growth impacts		✓	✓	✓
Financial strategy				✓

Scope

The scope of this document is to identify the current practices and strategies that are in place to manage the public infrastructure and to make recommendations where they can be further refined. Through the implementation of sound asset management strategies, the Township can ensure that public infrastructure is managed to support the sustainable delivery of services.

Limitations and Constraints

The asset management program development required substantial effort by staff, it was developed based on best-available data, and is subject to the following broad limitations, constrains, and assumptions:

- The analysis is highly sensitive to several critical data fields, including an asset's estimated useful life, replacement cost, quantity, and in-service date. Inaccuracies or imprecisions in any of these fields can have substantial and cascading impacts on all reporting and analytics.
- User-defined and unit cost estimates, based typically on staff judgment, recent projects, or established through completion of technical studies, offer the most precise approximations of current replacement costs. When this isn't possible, historical costs incurred at the time of asset acquisition or construction can be inflated to present day. This approach, while sometimes necessary, can produce inaccurate estimates.
- In the absence of condition assessment data, age was used to estimate asset condition ratings. This approach can result in an over- or understatement of asset needs. As a result, financial requirements generated through this approach can differ from those produced by in-field assessments.
- The risk models are designed to support objective project prioritization and selection. However, in addition to the inherent limitations that all models face, they also require availability of important asset attribute data to ensure that asset risk ratings are valid, and assets are properly stratified within the risk breakdown. Missing attribute data can misclassify assets.

These limitations have a direct impact on most of the analysis presented, including condition summaries, age profiles, long-term replacement and rehabilitation forecasts, and shorter term, 10-year forecasts that are generated from Citywide, the Township's primary asset management system.

These challenges are quite common and require long-term commitment and sustained effort by staff. As the Township's asset management program evolves and advances, the quality of future AMPs and other core documents that support asset management will continue to increase.

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 and levels of service the community receives from the asset portfolio.

Lifecycle costs can span decades, requiring planning and foresight to ensure financial responsibility is spread equitably across generations. An asset management plan is critical to this planning, and an essential element of the 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 (AMP).

This industry standard, defined by the Institute of Asset Management (IAM), emphasizes the alignment between the corporate strategic plan and various asset management documents.

Foundational Documents

In the municipal sector, 'asset management strategy' and 'asset management plan' are often used interchangeably. Other concepts such as 'asset management framework', 'asset management system', and 'strategic asset management plan' further add to the confusion; lack of consistency in the industry on the purpose and definition of these elements offers little clarity. To make a clear distinction between the policy, strategy, and the plan see the following sections for detailed descriptions of the document types.

Strategic Plan

The strategic plan has a direct, and cascading impact on asset management planning and reporting, making it a foundational element. Developing alignment with corporate goals and objectives through to service delivery and lifecycle management ensures the Township has line of sight to achieve their strategic objectives.

Asset Management Policy

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

Asset Management Strategy

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

Key Technical Concepts

Effective asset management integrates several key components, including data management, lifecycle management, risk management, and levels of service.

Asset Hierarchy and Data Classification

Asset hierarchy illustrates the relationship between individual assets and their components, and a wider, more expansive network and system. How assets are grouped in a hierarchy structure can impact how data is interpreted. Key category details are summarized at the asset segment level.

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. The two methodologies are:

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

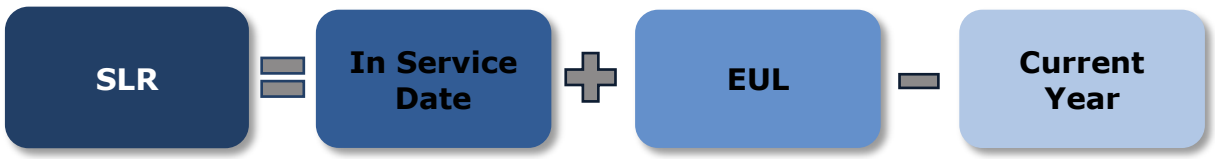
User-defined costs based on reliable sources are a reasonably accurate and reliable way to determine asset replacement costs. Cost inflation is typically used in the absence of reliable replacement cost data. It is a reliable method for recently purchased and/or constructed assets where the total cost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

Estimated Useful Life and Service Life Remaining

The estimated useful life (EUL) of an asset is the period over which the Township expects the asset to be available for use and remain in service before requiring replacement or disposal. The EUL for each asset 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 date and its EUL, the Township can determine the service life remaining (SLR) for each asset. Using condition data and the asset's SLR, the Township can more accurately forecast when it will require replacement. The SLR is calculated as follows:

Figure 1: Service Life Remaining Calculation

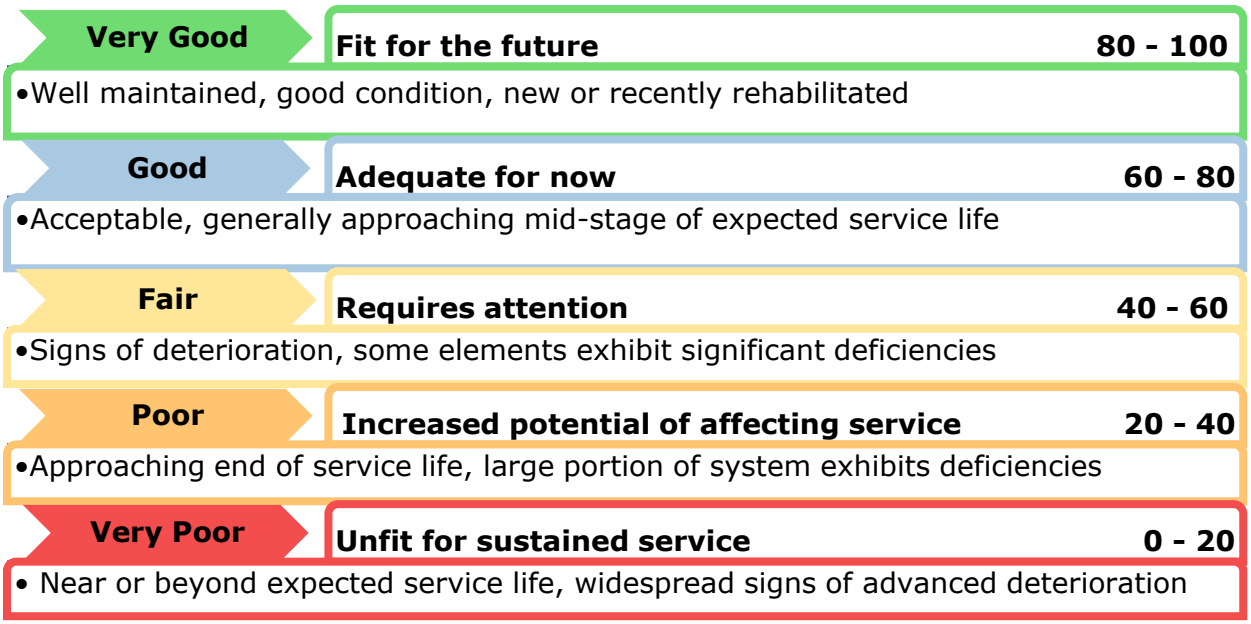


Asset Condition

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

A condition assessment rating system provides a standardized descriptive framework that allows comparative benchmarking across the Township's asset portfolio. The figure below outlines the condition rating system used to determine asset condition for all assets in Howick.

Figure 2 Standard Condition Rating Scale



The analysis 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 G: Condition Assessment Guidelines includes additional information on the role of asset condition data and provides basic guidelines for the development of a condition assessment program.

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 Figure 3 provides a description of each type of activity and the general difference in cost.

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

The Township's approach to lifecycle management is described within each asset category. 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.

Figure 3 Lifecyle Management Typical Interventions

Maintenance

- General level of cost is $
- All actions necessary for retaining an asset as near as practicable to its original condition,but excluding rehabilitation or renewal. Maintenance does not increase the service potential of the asset
- it slows down deterioration and delays when rehabilitation or replacement is necessary.

Rehabilitation / Renewal

- General level of cost is $$$
- Works to rebuild or replace parts or components of an asset, to restore it to a required functional condition and extend its life, which may incorporate some modification.
- Generally involves repairing the asset to deliver its original level of service (i.e. milling and paving of roads) without resorting to significant upgrading or replacement, using available techniques and standards.

Replacement

- General level of cost is $$$$$
- The complete replacement of an asset that has reached the end of its life, so as to provide a similar, or agreed alternative, level of service.
- Existing asset disposal is generally included

Risk Management Strategies

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

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

level evaluation of asset risk and criticality through qualitative and quantitative methodologies.

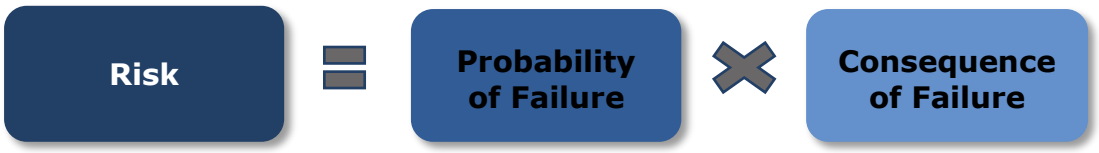
Qualitative Approach to Risk

The qualitative risk assessment involves the documentation of risks to the delivery of services that the municipality faces given the current state of the infrastructure and asset management strategies. These risks can be understood as corporate level risks.

Quantitative Approach to Risk

Asset risk is defined using the following formula:

Figure 4 Risk Equation



The probability of failure relates to the likelihood that an asset will fail at a given time. The probability of failure focuses on two highly imperative impacts for risk assessment – structural and functional impacts. Structural impacts are related to the structural aspects of an asset such as load carrying capacity, condition, or breaks; whereas the functional impacts can include parameters, slope, traffic count, and other impacts that can affect the performance of an asset.

The consequence of failure describes the overall effect that an asset's failure will have on an organization's asset management goals. Consequences of failure can range from non-eventful to impactful.

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.

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 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. 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. To achieve the sustainable delivery of services, climate change considerations should be incorporated into asset management practices.

Impacts of Growth

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

As growth-related assets are constructed or acquired, they should be integrated into Howick's asset management program. While the addition of residential units will add to the existing assessment base and offset some of the costs associated with growth, the Township will need to review the lifecycle costs of growth-related infrastructure and these costs should be considered in long-term funding strategies.

Levels of Service

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

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

Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories (roads, bridges and culverts, water, wastewater, stormwater) the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in this AMP. For non-core asset categories, the Township has determined the qualitative descriptions that will be used to determine the community level of service provided. These descriptions can be found in the Levels of Service subsection within each asset category.

Technical Levels of Service

Technical levels of service are a measure of key technical attributes of the service being provided to the community. These include mostly quantitative measures and

tend to reflect the impact of the Township's asset management strategies on the physical condition of assets or the quality/capacity of the services they provide.

For core asset categories (roads, bridges and culverts, water, wastewater, stormwater) the Province, through O. Reg. 588/17, has provided technical metrics.

Current Levels of Service

Howick set the current LOS that it is providing to the community. To effectively analyze and manage municipal assets, it's important to have a structured approach that addresses each asset category comprehensively. The Township has defined their current levels of service for each infrastructure category by breaking it down into 3 service attributes scope, reliable and affordable. Each of these attributes are defined as follows:

Scope – Is a description of the services being provided and the assets that are utilized to provide the services.

Reliable – Services are provided with minimal service disruption and are available to customers in line with needs and expectations.

Affordable – Services are delivered at an affordable cost for both the organization and the customer.

Based on an analysis of each asset category the current level of service is provided in each asset section.

Proposed Levels of Service

Proposed levels of service should be realistic and achievable within the timeframe outlined by the Township. They should also be determined with consideration of a variety of community expectations, fiscal capacity, regulatory requirements, corporate goals, and long-term sustainability.

The following three scenarios have been considered for establishing target levels of service for all asset categories included in this Asset Management Plan. This methodology provides a consistent, structured approach.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment was then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and condition were determined.

Scenario 3: Target Condition - this scenario utilizes a target condition of the infrastructure within each asset category. The condition value of good was held, and the annual investment was then determined.

Annual Review

The annual review must address the municipality's progress in implementing its asset management plan, any factors impeding the municipality's ability to implement its asset management plan as well as a strategy to address any of the identified factors.

Community Profile

The Township of Howick is a municipality in Huron County, Ontario, Canada. It is in the northeast corner of Huron County near the Bruce County border, east of Wingham. Its largest communities are Fordwich, Gorrie and Wroxeter. Smaller hamlets include Belmore and Lakelet. Rural areas comprise the remainder of the township.

Although Howick Township was one of the four Huron County Townships created out of the Queen's Bush by the Wilkinson survey of 1847, the first settler did not arrive until 1851, and the next in 1853. The township was named after George Grey who entered Parliament in 1829 as Lord Howick, taking the name from Howick Hall, his family's estate in England.

In 1854, the lots in the township were put up for sale, resulting in a wave of settlement. During a series of municipal amalgamations in Ontario through the 1990s and ending in 2001, the Township of Howick boundaries remained unchanged. The Township celebrated its 150th anniversary in 2006.

Howick Township is an agricultural community. Since settlement in the early nineteenth century, the land has been farmed and villages and hamlets have established to serve the farming community. The constant factor in the history and development of Howick has been the richness of the land for agriculture. More than 85% of the land area is rated Class 1, 2 & 3 for agricultural capability which combined with the skill and innovation of the community to work the land, has resulted in a strong agricultural economy. Howick Township has, thus, a valuable land resource for farming, and a social structure and economy to ensure its continuance.

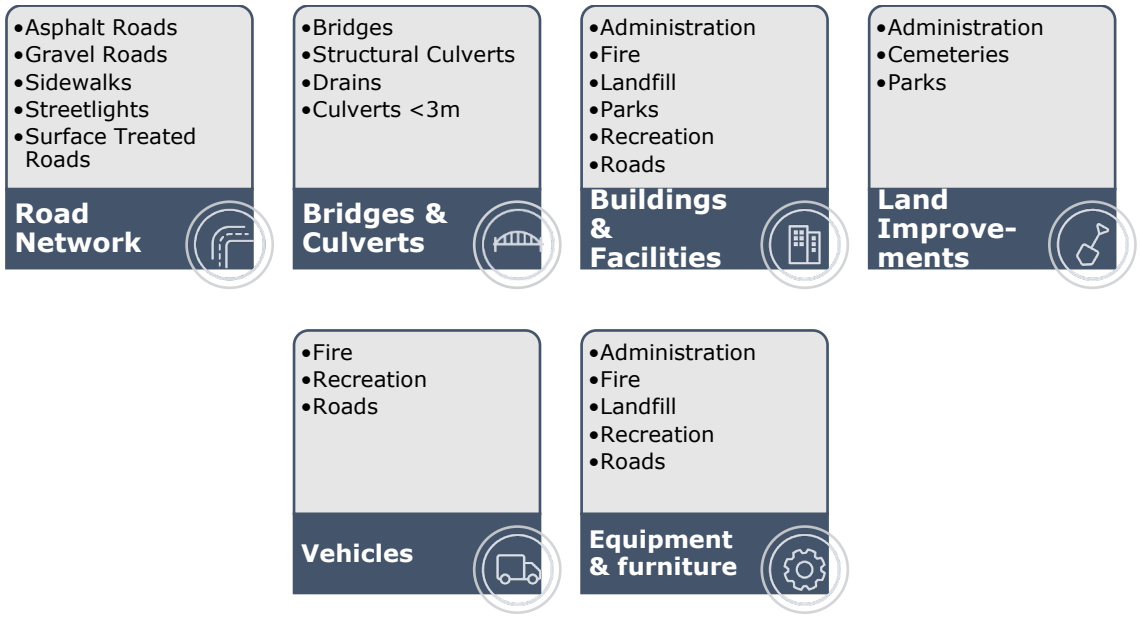
Table 2 Howick, Huron County & Ontario Census Information

Census Characteristic	Howick	Huron County	Ontario
Population 2021	4045	61,366	14,223,942
Population Change 2016-2021	4.4%	3.5%	5.8%
Total Private Dwellings	1,403	29,455	5,929,250
Population Density	14.1/km^2	18.1/km^2	15.9/km^2
Land Area	286.55 km^2	3,398.28 km^2	892,411.76 km^2

Inventory & Valuation

The Township's inventory has an asset hierarchy of categories and segments as outlined below where the dark blue headings are the categories and the listings in grey are the segments.

Figure 5 Asset Hierarchy



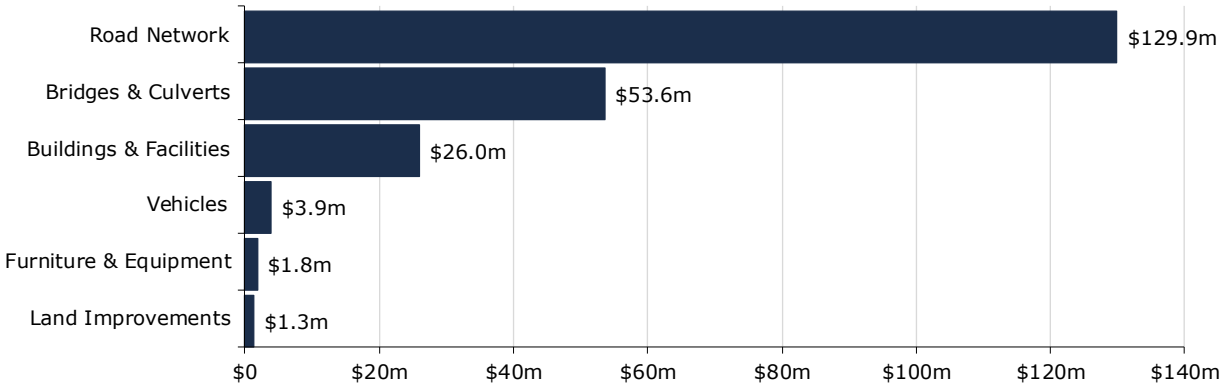
State of the Infrastructure

Asset Category	Replacement Cost	Asset Condition	Service Trend
Road Network	$129,919,542	Good (68%)	↘
Bridges & Culverts	$53,569,700	Good (61%)	↘
Buildings & Facilities	$25,951,769	Good (63%)	↘
Land Improvements	$1,333,918	Good (61%)	↘
Vehicles	$3,940,618	Very Good (82%)	↘
Furniture & Equipment	$1,810,362	Good (66%)	↘
Overall	**$216,530,835**	**Good (66%)**	↘

Replacement Cost

All of Howick's asset categories have a total replacement cost of $216.5 million based on available inventory data. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects the replacement of historical assets with similar, not necessarily identical, assets available for procurement today.

Figure 6 Portfolio Replacement Value



Condition & Age

Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 90% of assets in Howick are in fair or better condition. This estimate relies on both age-based and field condition data.

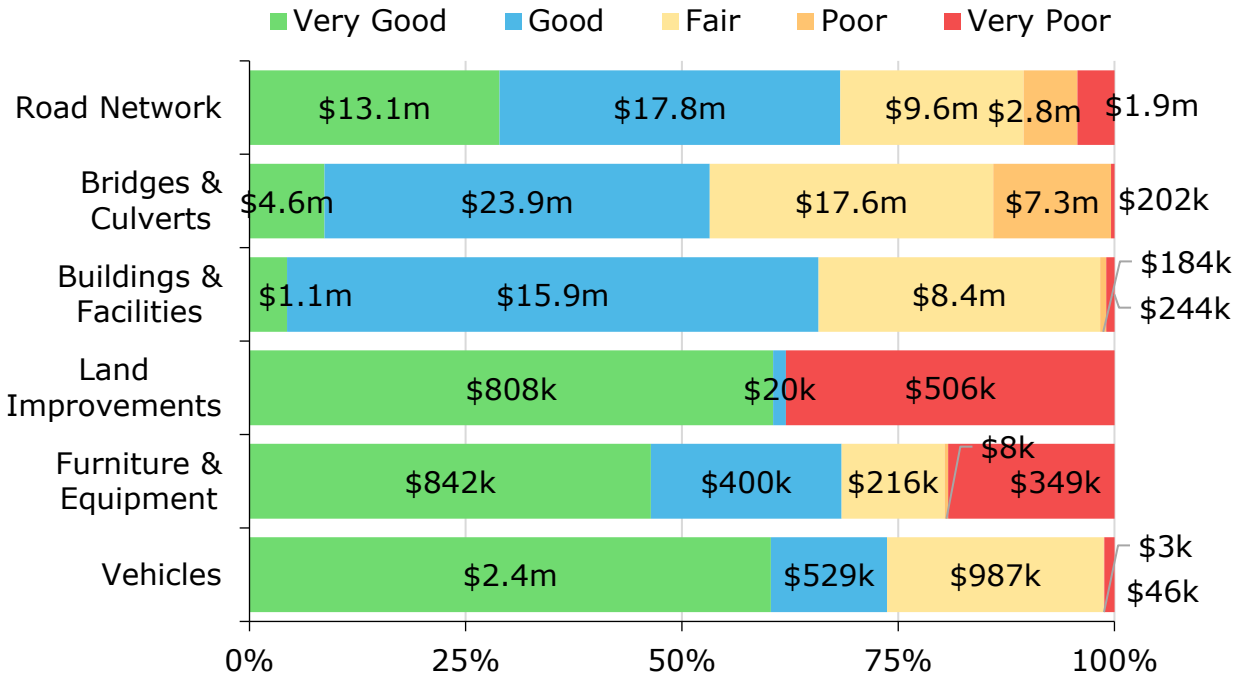
Assessed condition data is available for all roads, bridges and culverts as well as buildings and facilities; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data.

Table 3 Assessed Condition Data Sources

Asset Category	Source of Condition Data
Road Network	2019 Roads Needs Study by RJ Burnside
Bridges & Culverts	2024 OSIM Bridge Inspections by BM Ross
Buildings & Facilities	2022 Building Condition Assessment by BM Ross

The breakdown of the condition of each asset category is shown in the figure below.

Figure 7 Overall Condition Breakdown by Asset Category



Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 20% of the Township's assets will require rehabilitation / replacement within the next 10 years.

Risk & Criticality

Qualitative Risk

Howick has noted key trends, challenges, and risks to service delivery that they are currently facing:

Capital Funding Strategies

Major capital rehabilitation and replacement projects are often entirely dependant on the availability of grant funding opportunities. When grants are not available, rehabilitation and replacement projects are often deferred.

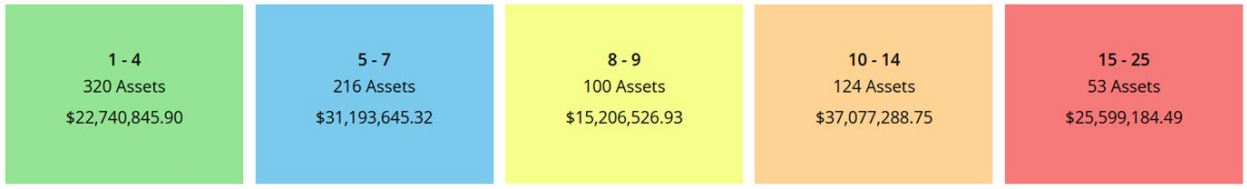
Asset Data & Information

There is a lack of confidence in the available inventory data and condition data. Staff have been prioritizing data refinement efforts to combine data sets into a single inventory. Staff find it a continuous challenge to organize and manage all the separate data sources for a single asset or category of assets

Quantitative Risk

The overall asset risk breakdown for Howick's asset inventory is portrayed in the figure below.

Figure 8 Overall Asset Risk Breakdown



Reviewing the list of very high-risk assets to evaluate how best to mitigate the level of risk the Township is experiencing will help advance Howick's asset management program.

Climate & Growth

Howick Climate Profile

The Township of Howick is in Huron County, in the vicinity of Lake Huron. The Township is expected to experience notable effects of climate change which include higher average annual temperatures, an increase in total annual precipitation, and an increase in the frequency and severity of extreme events. According to Climatedata.ca – a collaboration supported by Environment and Climate Change Canada (ECCC) – the Township of Howick may experience the following trends:

Higher Average Annual Temperature:

- For the 1971-2000 period, the annual average temperature was 6.4 ºC.
- Under a high emissions scenario, annual average temperatures are projected to be 8.9 ºC for the 2021-2050 period, 11.0 ºC for the 2051-2080 period and 12.8 ºC for the last 30 years of this century.

Increase in Total Annual Precipitation:

- Average annual precipitation for the 1971-2000 period was 985 mm.
- Under a high emissions scenario, this is projected to be 12% higher for the 2051-2080 period and 16% higher for the last 30 years of this century.

Increase in Frequency of Extreme Weather Events:

- It is expected that the frequency and severity of extreme weather events will change.
- In some areas, extreme weather events will occur with greater frequency and severity than others.

Impacts of Growth

Understanding the key drivers of growth and demand will allow the Township to plan for new infrastructure effectively, and the upgrade or disposal of existing infrastructure. Increases or decreases in demand can affect what assets are needed and what level of service meets the needs of the community.

Howick Official Plan (November 2022)

The Township of Howick updated their official plan in November 2022 which bases its projections and goals for growth based on Huron County's official plan. The Official Plan is the cornerstone document essential for the management of future growth, development, and change in Howick.

The Township emphasizes promoting the long-term future of agriculture and responsible agriculture practices by protecting the land base and promoting an environment conducive to an integrated agricultural community and economy. Moreover, an important principle of this plan is to ensure a harmony between the beautiful natural setting of the villages, which are all situated in river valleys, and urban development. Furthermore, the community wishes to ensure the future strength of the urban areas by ensuring the availability of high-quality necessary services (water, hydro, roads etc.) and an effort to attract compatible commercial and industrial development.

Howick's population growth from 2016-2021 was higher than Huron County's average. Moreover, Howick's growth in population and private dwellings has also exceeded Huron County's 25-year projections until 2041.

As per Huron County's 2021 official plan, municipalities are expected to have a moderate growth. However, continued growth at this rate for Howick may require additional measures to accommodate new urban developments.

Regional Growth

Huron County's official plan was first adopted in 1973 and consolidated on October 18,2021. It is a recognition of the rich natural resources, the rural and small-town communities and the dynamic individuals of Huron County. It applies to all lands within Huron County and provides guidance to local municipalities for the development of local official plans. Four industries represent the pillars of the Huron County economy: agriculture, manufacturing, tourism, and creative industries. Agriculture dominates Huron's landscape and is the most important economic base.

In 2016, the County's population had increased to nearly 60,000 from 1973, when the official plan was originally adopted. Due to smaller families and an aging population, the population is expected to grow slowly, approximately 60,800 by 2041. This growth is quite minimal in comparison to many other areas of the province and indicates that there is no need to designate major areas for new urban development.

The County's official plan has provided growth projections from 2016-2041 for all municipalities. Howick's growth projections are as follows:

Table 1: Howick's growth projections, referenced from Huron County's Official Plan (2021)

Growth Projections	2016	2021	2026	2031	2036	2041
Population	3873	3912	3958	3991	3991	3971
Employment	2781	2809	2842	2865	2865	2851
Household	1295	1327	1354	1370	1381	1391

Impact of Growth on Lifecycle Activities

As the Township's population is expected to remain the same with potential moderate increases in the coming years, demand will evolve, and it is likely that funding will need to be reprioritized. As growth-related assets are constructed, retired, or acquired, they should be integrated into the AMP. Furthermore, the 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 maintain the current level of service.

Levels of Service

The strategic plan has a direct, and cascading impact on asset management planning and reporting, making it a foundational element.

Goals of the Strategic Plan

Safe and reliable infrastructure - Maintain and continuously improve our infrastructure and buildings to support our community now and in the future.

Welcoming and vibrant community - Provide a friendly and safe rural small township that people love living in.

Inviting neighbourhoods and thriving businesses - Promote balanced growth with exciting opportunities to live and work in Howick.

People first - Foster a positive and respectful working environment delivering exceptional services to our residents.

Community Engagement

It is considered best practice for municipalities across Canada to conduct periodical resident satisfaction surveys. An invitation to the residents of Howick went out as part of the development of the Strategic Action Plan where they were asked why Howick is a great place and what can the municipality do to make it even better. 215 or 5% of residents provided feedback.

When asked what local government services were most important to their household, the top five services identified were:

- Emergency Services
- Roads
- Parks
- Communication
- Public Property

When asked what type of projects to invest tax dollars in, the top three projects were:

- Roads
- Bridges and culverts
- Emergency Services

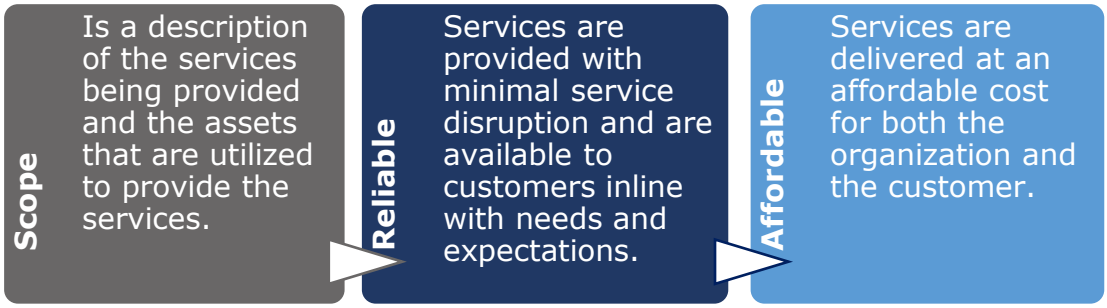
The resident satisfaction survey is a key piece of information, with valuable findings. The Township is committed to continuing to prioritize the satisfaction of its residents.

Current Levels of Service

Levels of service are a measure of the quality and scope of the services that municipal infrastructure provides to the community. Both quantitative and qualitative metrics are used to measure the current level of service.

As a guide to developing and measuring service delivery, service attributes were identified that align staff work practices and with community expectations.

Figure 9: Service Delivery Attributes



All the community and technical levels of service will be directly linked to the level of service statement through ensuring sustainability and meeting regulatory requirements for each asset category outlined in the appendix.

Proposed Levels of Service

Following an evaluation of current practices, community engagement efforts, and asset lifecycle activities, the Township has determined that the current levels of service (LOS) can be defined as an *average condition of good*. Maintaining this standard has been identified as the most appropriate LOS for the community.

A comprehensive assessment process was undertaken to establish proposed levels of service that ensure long-term sustainability and feasibility. The following key principles were integral to the development of the LOS methodology:

Stakeholder Engagement: Engage regularly with community stakeholders to gather feedback, communicate updates, and ensure transparency in decision-making.

Data-Driven Decision Making: Utilize analytics and performance data to guide strategic decisions and target areas for improvement.

Flexibility and Adaptability: Maintain a flexible approach to LOS, allowing for adjustments based on shifting community priorities and emerging needs.

Continuous Improvement: Implement an ongoing review process to refine and enhance the LOS methodology over time.

Scenarios

The scenarios that were used to analyse Howick's inventory were run for 100-years to ensure all the lifecycles were included at least once. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities

Purpose: This scenario examines the current state of the infrastructure based on existing lifecycle practices. It looks at how the infrastructure is currently being maintained, the condition it's in, and projects the amount of annual investment need to be made in each asset category.

Key Focus: The condition of the infrastructure and the annual investment levels based on currently identified lifecycles.

Outcome: This scenario provides a baseline for understanding how the infrastructure is currently being maintained. It helps identify whether there are any gaps between current practices and long-term sustainability goals.

Scenario 2: Current Capital Reinvestment Rate

Purpose: This scenario builds upon the current capital reinvestment rate, where the total amount of investment being made into capital improvements (like replacement or major repairs) remains the same. In this scenario, the focus is on the impact that current investment levels have on the condition of the infrastructure over time.

Key Focus: The annual investment stays constant, and the condition of the infrastructure is evaluated based on that level of reinvestment.

Outcome: This helps to see if the current capital reinvestment rate is enough to maintain the infrastructure in a sustainable way over the long term, or if it's falling short and leading to degradation in condition.

Scenario 3: Target Condition Good

Purpose: This scenario aims to achieve a specific, target condition level for the infrastructure, where the goal is to maintain an average condition of 60% of the infrastructure in each asset category. By fixing the condition, the model determines what the required annual investment would be to reach and maintain that target.

Key Focus: This scenario focuses on achieving a targeted condition level (good condition, 60%) and determining how much investment would be necessary to maintain that condition.

Outcome: This scenario gives insights into how much investment would be needed to keep the infrastructure at an acceptable condition level.

Results

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

The table below summarizes the results of each asset category and overall.

Table 4 Scenario 1 Current Lifecycle Activities Summary

Asset Category	Current Average Condition	Projected Average Condition	Funding Required
Road Network	Good (68%)	Good (74%)	$1,054,536
Bridges & Culverts	Good (61%)	Good (78%)	$1,352,192
Buildings	Good (63%)	Good (78%)	$621,474
Vehicles	Very Good (82%)	Good (78%)	$368,390
Furniture and Equipment	Good (66%)	Good (78%)	$181,813
Land Improvements	Good (61%)	Good (76%)	$45,509
Overall	Good (66%)	Good (77%)	$3,623,913

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

The table below summarizes the results of each asset category and overall.

Table 5 Scenario 2 Current Capital Reinvestment Summary

Asset Category	Current Average Condition	Projected Average Condition	Funding Required
Road Network	Good (68%)	Fair (35%)	$615,540
Bridges & Culverts	Good (61%)	Poor (24%)	$359,889
Buildings	Good (63%)	Poor (20%)	$165,407
Vehicles	Very Good (82%)	Poor (27%)	$61,605
Furniture and Equipment	Good (66%)	Very Poor (18%)	$48,390
Land Improvements	Good (61%)	Poor (35%)	$12,112
Overall	Good (66%)	Poor (29%)	$1,262,943

Scenario 3: Target Condition Good - this scenario utilizes a target average condition of 60% of the infrastructure within each asset category. The condition value was held, and the annual investment was then determined.

The table below summarizes the results of each asset category and overall.

Table 6 Scenario 3 Target Condition Good Summary

Asset Category	Current Average Condition	Projected Average Condition	Funding Required
Road Network	Good (68%)	Good (60%)	$768,662
Bridges & Culverts	Good (61%)	Good (60%)	$1,114,672
Buildings	Good (63%)	Good (60%)	$498,945
Vehicles	Very Good (82%)	Good (60%)	$190,688
Furniture and Equipment	Good (66%)	Good (60%)	$198,145
Land Improvements	Good (61%)	Good (60%)	$27,480
Overall	Good (66%)	Good (60%)	$2,798,592

Summary

Howick is taking a strategic approach to ensuring the long-term sustainability of its municipal services. By focusing on the condition of the assets used to provide these services, the Township is likely aiming to balance service quality with cost-efficiency. This practical approach will help prevent over-investment in infrastructure that may not be sustainable while also ensuring that the community's needs are met.

Howick is making significant strides in improving the accuracy of its asset management system, which is crucial for better decision-making regarding capital requirements and long-term sustainability.

By targeting a good condition for assets, the Township has managed to reduce the annual capital requirements by approximately 20%. This will allow the municipality to reach a sustainable level of funding much sooner.

Financial Management

Financial Strategy Overview

Each year, the Township makes important investments in its infrastructure’s maintenance, renewal, rehabilitation, and replacement to ensure assets remain in a state of good repair. However, spending needs typically exceed fiscal capacity. In fact, most municipalities continue to struggle with annual infrastructure deficits. Achieving full-funding for infrastructure programs will take many years and should be phased-in gradually to reduce burden on the community.

This financial strategy is designed for the Township’s existing asset portfolio and is premised on two key inputs: the average annual capital requirements and the average annual funding typically available for capital purposes. The annual requirements are based on the replacement cost of assets and their serviceable life, and where available, lifecycle modeling. This figure is calculated for each individual asset and aggregated to develop category-level values.

The annual funding typically available is determined by averaging historical capital expenditures on infrastructure, inclusive of any allocations to reserves for capital purposes. For Howick, the proposed spending of 2025 values were used to project available funding.

Only reliable and predictable sources of funding are used to benchmark funds that may be available on any given year. The funding sources include:

- Revenue from taxation allocated to reserves for capital purposes
- The Canada Community Benefits Fund (CCBF)
- The Ontario Community Infrastructure Fund (OCIF)

Although provincial and federal infrastructure programs can change with evolving policy, CCBF and OCIF are considered as permanent and predictable.

Annual Capital Requirements

The annual requirements represent the amount the Township should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs, and achieve long-term sustainability.

The table below outlines the total average annual capital requirements for existing assets in each asset category. Based on the proposed levels of service selected to maintain a minimum condition of good for all asset categories.

Table 7 Average Annual Capital Requirements

Asset Category	Replacement Cost	Funding Required
Road Network	$129,919,542	$768,662
Bridges & Culverts	$53,569,700	$1,114,672
Buildings & Facilities	$25,951,769	$498,945
Land Improvements	$1,333,918	$190,688
Furniture & Equipment	$1,810,362	$198,145
Vehicles	$3,940,618	$27,480
Total	**$213,947,912**	**$2,798,592**

Current Funding Levels

Table 8 summarizes how current capital funding levels compare with funding required for each asset category. At existing levels, the Township is funding 45% of its annual capital requirements for all infrastructure analyzed for scenario 3 maintaining a condition of good. This creates a total annual funding deficit of $1.5 million.

Table 8 Current Funding Position vs Required Funding

Asset Category	Annual Capital Requirements	Annual Funding Available	Annual Infrastructure Deficit
Road Network	$768,662	$615,540	$153,122
Bridges & Culverts	$1,114,672	$359,889	$754,783
Buildings	$498,945	$165,407	$333,538
Vehicles	$190,688	$61,605	$129,083
Furniture and Equipment	$181,813	$48,390	$133,423
Land Improvements	$27,480	$12,112	$15,368
Total	**$2,782,259**	**$1,262,943**	**$1,519,316**

Closing the Gap

Eliminating annual infrastructure funding shortfalls is a difficult and long-term endeavor for municipalities. Considering the Township's current funding position, it will require many years to reach full funding for current assets.

This section outlines how the Township of Howick can close the annual funding deficits using own-source revenue streams, i.e., property taxation and without the use of additional debt for existing assets.

Full Funding Requirements

In 2025, Howick will have an annual tax revenue of $4,697,133. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, full funding would require a 32.3% tax change over time.

To achieve this increase, several scenarios have been developed using phase-in periods ranging from five to twenty years. Shorter phase-in periods may place too high a burden on taxpayers, whereas a phase-in period beyond 20 years may see a continued deterioration of infrastructure, leading to larger backlogs.

Table 9 Phasing in Annual Tax Increases

Total % Increase Needed in Annual Property Taxation Revenues	Phase-in Period			
	5 Years	10 Years	15 Years	20 Years
32.3%	5.8%	2.8%	2.0%	1.4%

Funding 100% of annual capital requirements ensures that major capital events, including replacements, are completed as required. Under this scenario, projects are unlikely to be deferred to future years. This delivers the chosen proposed level of service for the community.

Ten-Year Financial Plan

The Township is working with a clear long-term financial strategy aimed at reaching sustainable funding levels for its infrastructure services in 15-years and with that sustainable level of funding in 2040 the Township is still operating with an infrastructure deficit. The table below show a 10-year capital projection for each asset category with proposed funding.

Table 10 Ten-Year Financial Plan

Asset Category	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Road Network	$87k	$223k	$704k	$636k	-	$383k	-	-	$452k	$567k
Bridges & Culverts	$0	$0	$202k	$1.7m	$195k	$1.8m	$3.7m	$4.7m	$3.4m	$919k
Buildings & Facilities	-	-	-	-	-	$15k	-	-	-	-
Land Improvements	$506k	-	$12k	-	-	-	-	-	-	$7k
Furniture & Equipment	$39k	-	$553k	$140k	$12k	$17k	-	-	-	-
Vehicles	-	-	$588k	$356k	$344k	-	-	-	$231k	-
Total	**$632k**	**$223k**	**$2.1m**	**$2.8m**	**$551k**	**$2.3m**	**$3.7m**	**$4.7m**	**$4.1m**	**$1.5m**
Proposed Funding	$937k	$1.0m	$1.1m	$1.2m	$1.3m	$1.4m	$1.5m	$1.7m	$1.8m	$1.9m

The current 10-year program has a funding requirement of $22.5 million over the ten years, while the proposed available funding level will be $14 million. The annual funding deficit of at the end of the 10-years will be 80% funded. There will still be a need to prioritize projects and defer until the long-term strategy and sustainable funding levels are met, unless the use of debt funding or one-time grants are not received.

This proposed level of service is a more achievable level of funding for the community while still ensuring an adequate condition of the infrastructure.

Recommendations

Financial Strategies

Review feasibility of adopting a full-funding scenario that achieves 100% of average annual requirements for the asset categories analyzed. This involves:

- implementing a 2.0% annual tax increase over a 15-year phase-in period and allocating the full increase in revenue towards capital funding
- continued allocation of OCIF and CCBF funding as previously outlined
- using risk frameworks and staff judgement to prioritize projects, particularly to aid in elimination of existing infrastructure backlogs

NOTE: Although it is difficult to capture inflation costs, supply chain issues, and fluctuations in commodity prices will also influence capital expenditures.

Asset Data

1. Continuously review, refine, and calibrate lifecycle and risk profiles to better reflect actual practices and improve capital projections. In particular:

- the timing of various lifecycle events, the triggers for treatment, anticipated impacts of each treatment, and costs
- the various attributes used to estimate the likelihood and consequence of asset failures, and their respective weightings

2. Asset management planning is highly sensitive to replacement costs. Periodically update replacement costs based on recent projects, invoices, or estimates, as well as condition assessments, or any other technical reports and studies. Accurately estimating the replacement cost of like-for-like assets can be challenging. Staff judgement and historical data can help attenuate extreme and temporary fluctuations in cost estimates and keep them realistic.
3. Like replacement costs, an asset's established serviceable life can have dramatic impacts on all projections and analyses, including long-range forecasting and financial recommendations. Periodically reviewing and updating these values to better reflect in-field performance and staff judgement is recommended.

Risk and Levels of Service

1. Risk models and matrices can play an important role in identifying high-value assets, and developing an action plan which may include repair, rehabilitation, replacement, or further evaluation through updated condition assessments. As a result, project selection and the development of multi-year capital plans can become more strategic and objective.
2. The annual review requirement in O.reg. 588/17 the Township must address their progress in implementing its asset management plan, any factors impeding the ability to implement its asset management plan as well as a strategy to address any of the identified factors.

Appendix A: Road Network

State of the Infrastructure

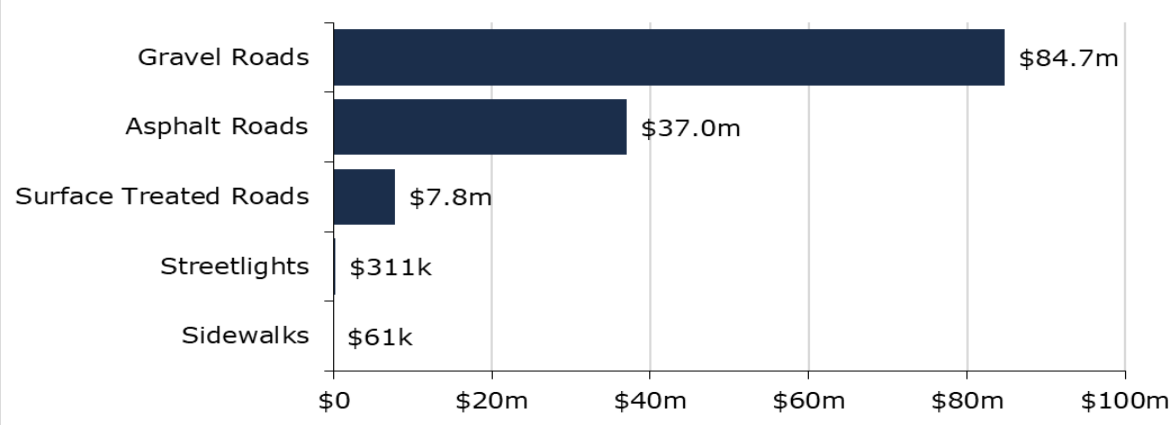
Howick's road network comprises the largest share of its infrastructure portfolio, with a current replacement cost of $129.9 million, distributed primarily between asphalt, gravel, and surface treated roads.

The Township also owns and manages other supporting infrastructure and capital assets, including streetlights and sidewalks.

Inventory & Valuation

The figure below displays the replacement cost of each asset segment in the Township's road inventory.

Figure 10 Road Network Replacement Value

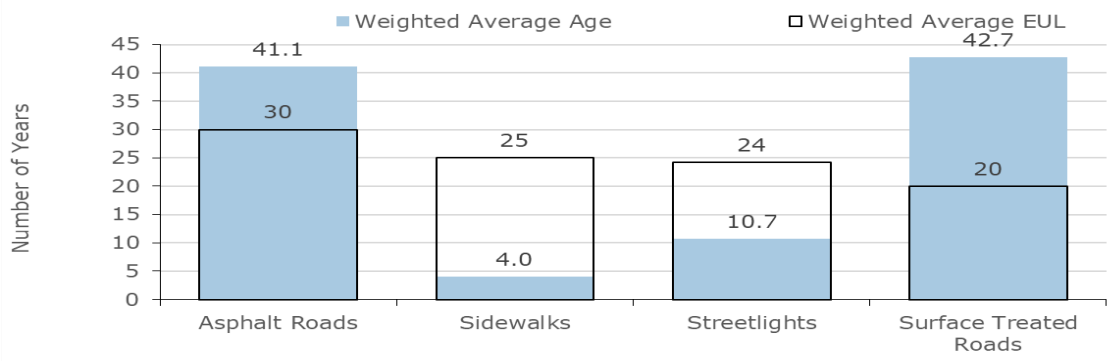


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

Asset Condition & Age

The graph below identifies the average age, and the estimated useful life for each asset segment. It is all weighted by replacement cost.

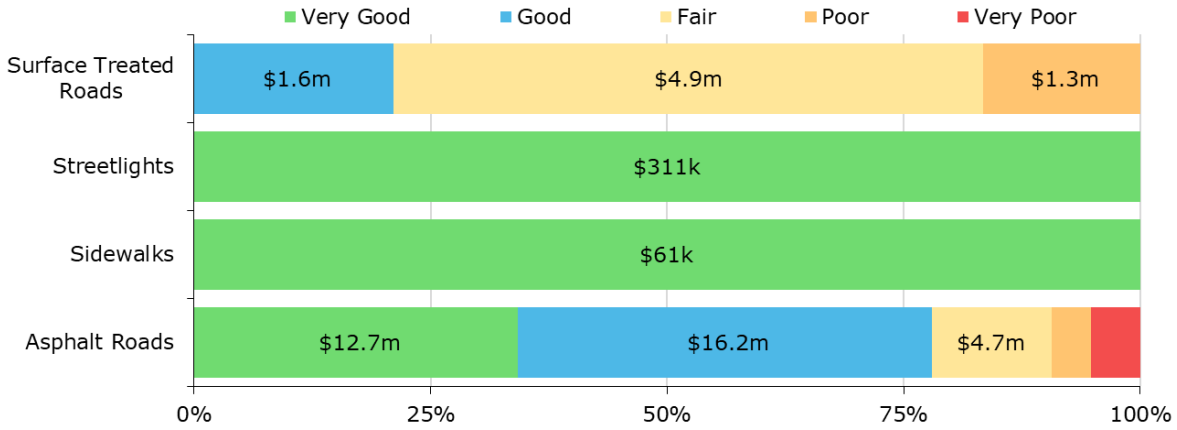
Figure 11 Road Network Average Age vs Average EUL



The analysis shows that, based on in-service dates, roads continue to remain in operation beyond their expected useful life. This is due to the life cycle management strategies currently being utilized which will be outlined in greater detail in a later section.

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

Figure 12 Road Network Condition Breakdown



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

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

Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The Township's current approach is described below.

All roads inspected/patrolled in accordance with O. Reg. 239/02 Minimum Maintenance Standards

Roads Needs Study completed in 2019

The condition scale for roads utilized is from 0 to 100 from Very Poor to Very Good.

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 shown in Figure 13 have been developed as a proactive approach to managing the lifecycle of municipally owned roads. Instead of allowing the roads to deteriorate until replacement is required, strategic rehabilitation is expected to extend the service life of roads at a lower total cost.

Figure 13 Road Network Current Lifecycle Strategy

Maintenance

- deficiency repairs as required from patrols for minimum maintenance standards such as patching, shoulder grading, etc.
- winter control activities
- gravel roads are graded, dust control applied annually or as required and additional gravel application is done every 2 years

Rehabilitation / Renewal / Replacement

- prioritization is based on road usage
- activities are more reactive

PCI scores, staff judgment, traffic loads, and opportunity to bundle projects help inform the optimal lifecycle intervention, ranging from pothole repairs to potential replacements. Lifecycle models used to estimate the savings to annual capital requirement are shown below in Figure 14 for asphalt roads, Figure 15 for surface treated roads.

Figure 14 Asphalt Roads (HCB) Road Lifecycle Model

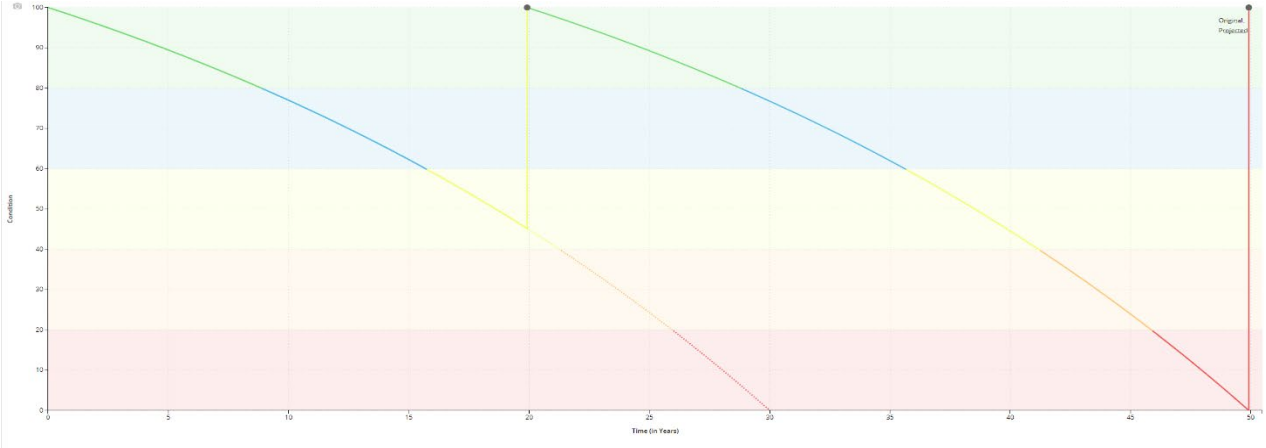
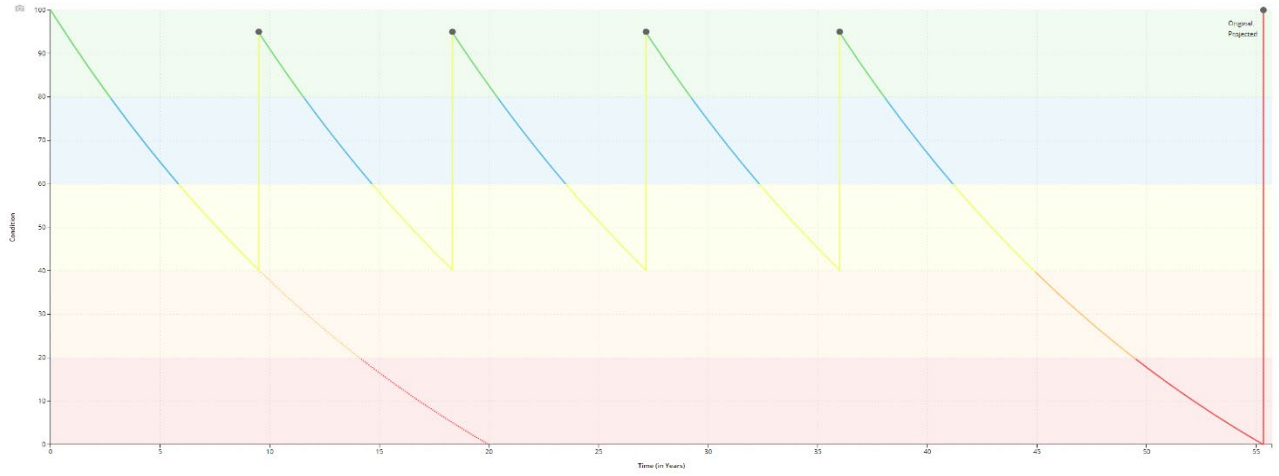


Figure 15 Surface Treatment (LCB) Road Lifecycle Model



for the road network lifecycle management strategies have been developed to identify costs that are realized through strategic rehabilitation and renewal. The development of these strategies allows for a comparison of potential cost avoidance.

The following table compares two scenarios:

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.

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.

Table 11 Road Network Annual Capital Requirement Comparison

Asset Segment	Annual Requirements (Replacement Only)	Annual Requirements (Lifecycle Strategy)	Difference
Asphalt Roads	$1,234,296	$850,613	$383,683
Sidewalks	$2,443	$2,443	$0
Streetlights	$13,406	$13,406	$0
Surface Treated Roads	$390,253	$188,074	$202,179
Total	**$1,640,398**	**$1,054,536**	**$585,862**

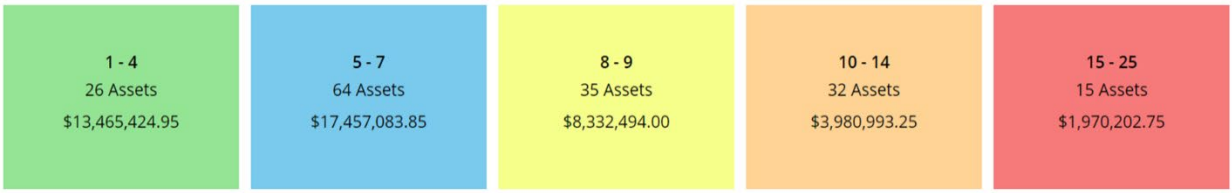
The implementation of a proactive lifecycle strategy for paved roads (Surface Treatment and asphalt), leads to a potential annual cost avoidance of approximately $586 thousand. This represents a reduction of the annual capital requirement for paved roads of 36%.

Gravel roads lifecycle costs are not considered capital and with the maintenance performed on the roads are considered to never require replacement and as such they are not included in the calculations for the annual requirements.

Risk & Criticality

The following risk breakdown provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on available inventory data. See Appendix H: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

Figure 16 Road Network Risk Breakdown



This is a high-level model developed by municipal staff and it should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure.

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

Levels of Service

The framework created by the Township for levels of service is a valuable tool for assessing and managing the performance of their assets and/or services provided by their assets. Proposed levels of service for the Township have been developed through engagement with Township staff.

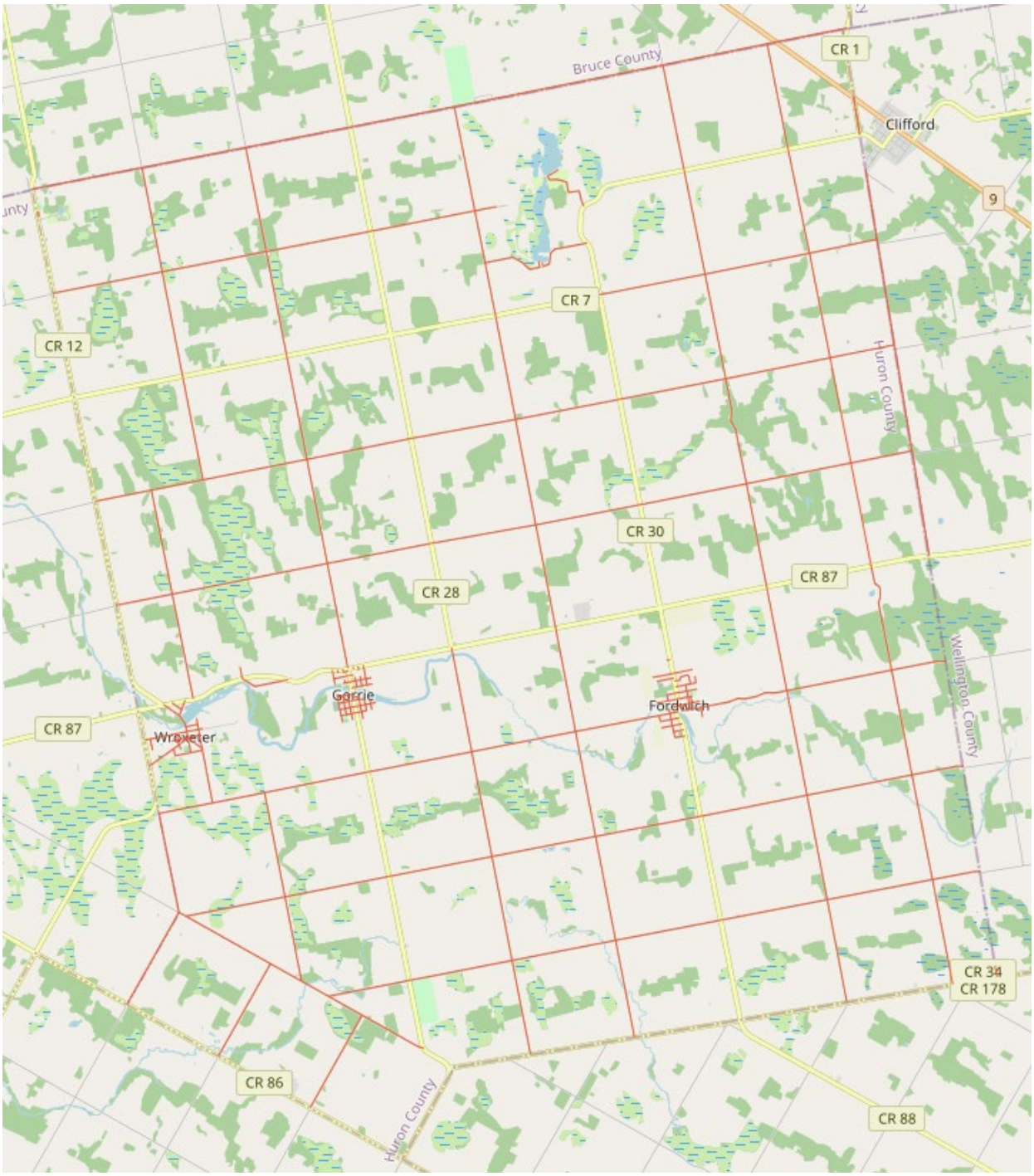
Current Levels of Service

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

Table 12 Road Network Current Level of Service

Community LOS		Service Attribute	Technical LOS	
Description, which may include maps, of the road network in the municipality and its level of connectivity	See Figure 17 Map of Roads	Scope	Replacement Cost	$129,919,542
			Quantity (km of roads)	242
			Quantity (number of streetlights)	279
			Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km2)	0
			Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km2)	0
			Lane-km of local roads (MMS classes 5 and 6) per land area (km/km2)	0.83
Description or images that illustrate the different levels of road class pavement condition	See Figure 2 Standard Condition Rating Scale for the description of road condition	Reliability	Average pavement condition index for paved roads in the municipality	Fair (51%)
			Average surface condition for unpaved roads in the municipality (e.g., excellent, good, fair, poor)	Fair
			Average Condition	Good (68%)
General	Services will be provided with an emphasis on affordability	Affordable	% Risk that is High and Very High	13%
			Average Asset Risk	Very Low
			Annual Investment	$613,204
			Capital re-investment rate	0.5%

Figure 17 Map of Roads



Proposed Levels of Service

The scenarios that were used to analyse Howick's inventory were run for 100-years to ensure all the lifecycles were included at least once. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Target Condition Fair - this scenario utilizes a target average condition of 60% of the infrastructure within each asset category. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for the Road Network.

Table 13 Road Network Scenario Results Summary

Scenarios	Replacement Cost	Average Condition	Annual Capital Reinvestment
Scenario 1 – Lifecycle	$45,206,199	Good (74%)	$1,054,536
Scenario 2 - Current Capital Investment Rate	$45,206,199	Fair (35%)	$615,540
Scenario 3 - Good Condition	$45,206,199	Good (60%)	$768,662

10-Year Capital Forecast

Below is the projected ten-year capital forecast needed to maintain the road network at a condition greater than fair.

Table 14 Road Network 10-year Capital Forecast

Segments	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Streetlights	-	-	-	-	-	-	-	-	-	-
Asphalt Roads	$87k	$223k	$471k	$498k	-	$274k	-	-	$280k	$567k
Surface Treated Roads	-	-	$233k	$137k	-	$108k	-	-	$172k	-
Sidewalks	-	-	-	-	-	-	-	-	-	-
Total	**$87k**	**$223k**	**$704k**	**$636k**	**-**	**$383k**	**-**	**-**	**$452k**	**$567k**

Gravel roads are not included in this forecast as they are managed through the operations and considered to never need replacement due to the preventative maintenance activities performed.

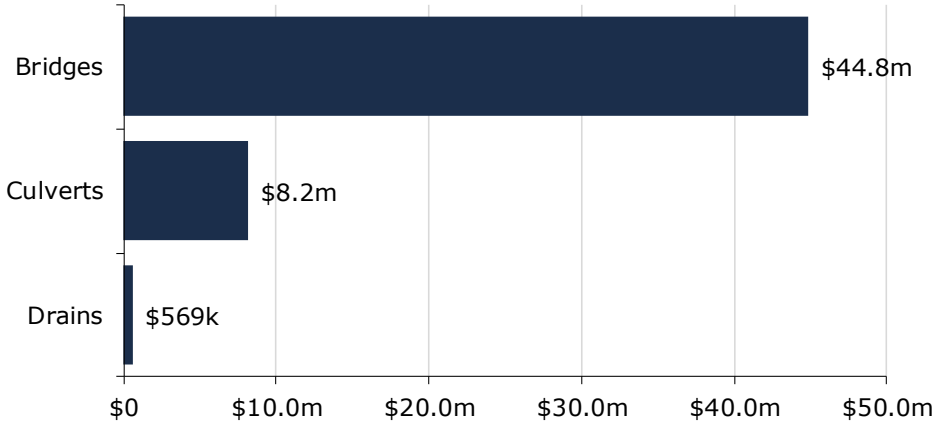
Appendix B: Bridges & Culverts

Bridges and culverts represent the largest and critical portion of the transportation services provided to the community.

Inventory & Valuation

The figure below displays the replacement cost of each asset segment in the Township's bridges and culverts inventory.

Figure 18 Bridges & Culverts Replacement Cost

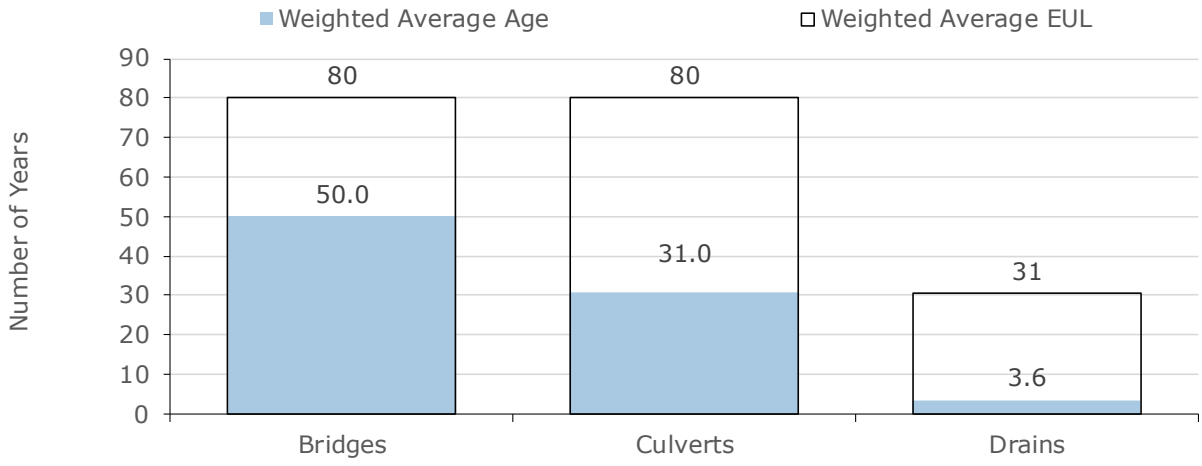


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed. This can be included in the Ontario Structures Inspection Manual (OSIM) inspections as the replacement cost is part of the calculation for the bridge condition index (BCI).

Asset Condition & Age

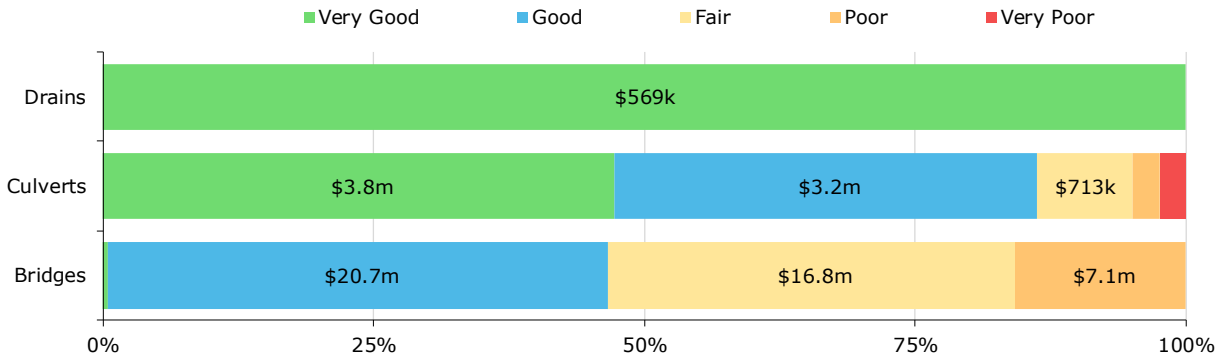
The graph below identifies the average age and the estimated useful life for each asset segment. The values are weighted based on replacement cost.

Figure 19 Bridges & Culverts Average Age vs Average EUL



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

Figure 20 Bridges & Culverts Condition Breakdown



To ensure that the Township's bridges and culverts continue to provide an acceptable level of service, the staff should monitor the average condition of all assets. 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.

Current Approach to Condition Assessment

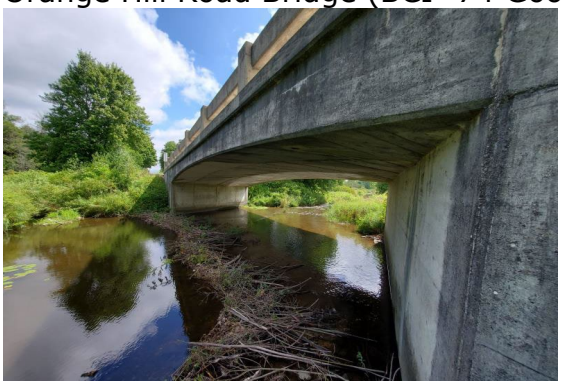
Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets. Howick's current approach is to assess all bridges and structural culverts every 2 years in accordance with the Ontario Structure Inspection Manual (OSIM). The most recent assessment was completed in 2022 by BM Ross.

The condition scale for bridges and culverts utilized is from 0 to 100 from Very Poor to Very Good. See the following images as examples of a very good bridge and structural culvert as well as a bridge and structural culvert in Fair condition.

Figure 21 Bridge & Culvert Condition Images

Malcom Line Bridge (BCI=52 Fair)

Orange Hill Road Bridge (BCI=74 Good)



Lakelet Culvert (BCI=57 Fair)

Gorrie Line Rectangular Culvert (BCI=21 Poor)

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. Figure 22 outlines Howick's current lifecycle management strategy.

Figure 22 Bridges & Culverts Current Lifecycle Strategy

Maintenance

- All maintenance and repair activities are driven by the results of inspections competed according to the Ontario Structure Inspection Manual (OSIM) as well as internal staff monitoring

Rehabilitation / Renewal / Replacement

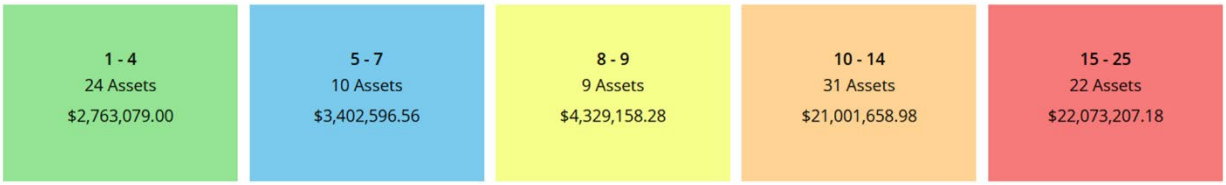
- Replacement occurs when the OSIM inspection recommends it and funding is available

Risk & Criticality

The risk breakdown provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on available inventory data. See Appendix H: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

This is a high-level model developed by municipal staff and should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure.

Figure 23 Bridges & Culverts Risk Breakdown



Levels of Service

The framework created by the Township for levels of service is a valuable tool for assessing and managing the performance of their assets and/or services provided by their assets. Proposed levels of service for the Township have been developed through engagement with Township staff.

Current Levels of Service

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

Table 15 Bridges & Culverts Current Levels of Service

Community LOS		Service Attribute	Current Technical LOS	
Description of the traffic that is supported by municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	The traffic supported by the municipal bridges is varied. Large agricultural equipment, heavy transport vehicles, motor vehicles, emergency vehicles, cyclists and pedestrians all utilize bridges to travel throughout the Township.	Scope	Replacement Cost	$53,569,700
			Quantity	39
Description or images of the condition of bridges and culverts and how this would affect the use of the bridges and culverts	See Figure 21 Bridge & Culvert Condition Images	Reliability	% of bridges in the municipality with loading or dimensional restrictions	10% (2/19 have load restrictions)
			Average bridge condition index value for bridges	52.7
			Average bridge condition index value for structural culverts	88.2
			Average Condition Rating	Good (61)
			% Risk that is High and Very High	89%
			Average Asset Risk	High
General	Services are delivered at an affordable cost for both the organization and the customer.	Affordable	Annual Investment	$359,889
			Capital re-investment rate	0.71%

Proposed Levels of Service

The scenarios that were used to analyse Howick's inventory were run for 100-years to ensure all the lifecycles were included at least once. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Target Condition Fair - this scenario utilizes a target average condition of 60% of the infrastructure within each asset category. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for the municipal bridges and culverts.

Table 16 Bridges & Culverts Scenario Results

Scenarios	Replacement Cost	Average Condition	Annual Capital Reinvestment
Scenario 1 – Lifecycle	$53,569,700	Good (78%)	$1,352,192
Scenario 2 - Current Capital Investment Rate	$53,569,700	Poor (25%)	$359,889
Scenario 3 - Good Condition	$53,569,700	Good (60%)	$1,114,672

10-Year Capital Forecast

Below is the projected ten-year capital forecast needed to maintain the bridges and culverts at a condition of good.

Table 17 Bridges & Culverts 10-year Capital Forecast

Segments	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Bridges	$2.2m	$3.1m	$2.9m	$3.6m	$4.9m	$9.8m	-	-	-	$856k
Culverts	$51k	-	$50k	-	-	-	-	-	-	-
Drains	-	-	-	-	-	-	-	-	-	-
Total	**$2.2m**	**$3.1m**	**$3.0m**	**$3.6m**	**$4.9m**	**$9.8m**	**-**	**-**	**-**	**$856k**

Appendix C: Buildings & Facilities

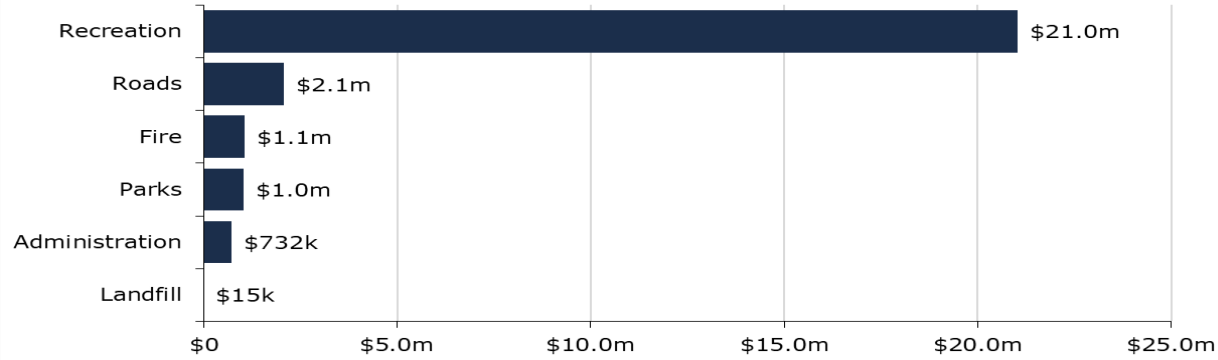
Howick owns and maintains several facilities that provide key services to the community. These include:

- Administrative office
- Landfill
- Recreation facilities
- Road facilities
- Parks facilities
- Fire facilities

Inventory & Valuation

The graph below displays the total replacement cost of each asset segment in Howick's buildings inventory. As the Township has not had a complete componentization of their buildings their inventory tracks buildings as a main asset with some small as replaced componentization.

Figure 24 Buildings Replacement Cost

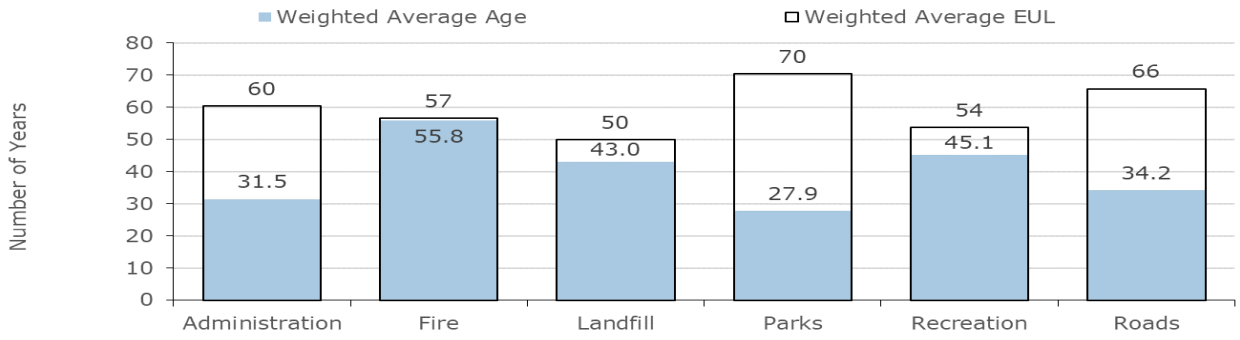


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to represent capital requirements more accurately.

Asset Condition & Age

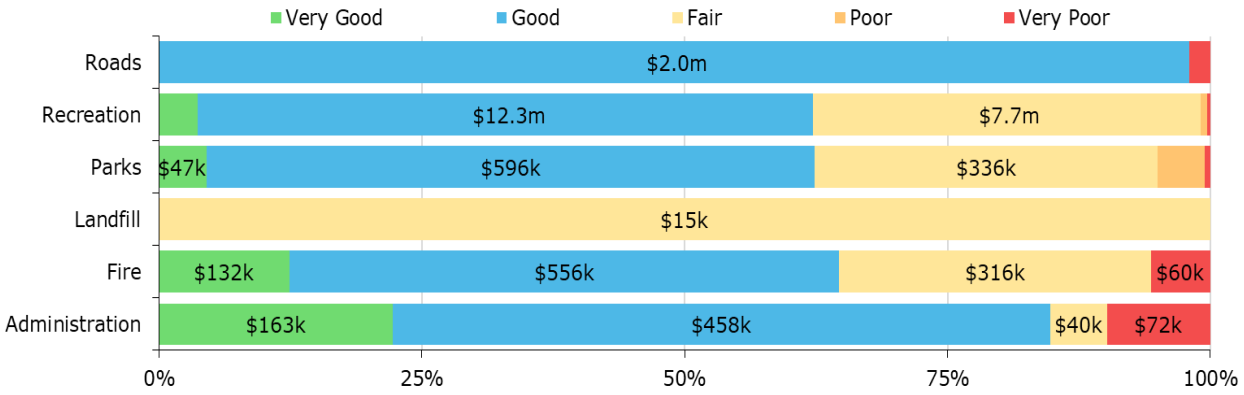
The graph below identifies the average age, and the estimated useful life for each asset segment. The values are weighted based on replacement cost.

Figure 25 Buildings & Facilities Average Age vs Average EUL



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

Figure 26 Buildings & Facilities Condition Breakdown



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

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

Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets. Buildings are repaired as required based on deficiencies identified by outside experts, staff, or residents.

Lifecycle Management Strategy

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

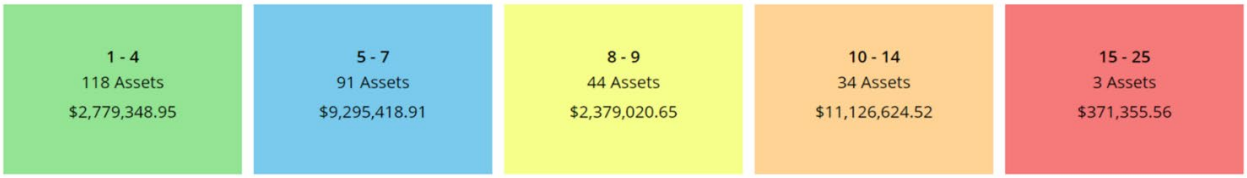
Figure 27 Buildings & Facilities Current Lifecycle Strategy

Maintenance / Rehabilitation / Replacement
•Maintenance of buildings is identified by staff in a reactive breakdown response as well as building condition assessments have identified component replacement needs

Risk & Criticality

The risk breakdown provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on available inventory data. See Appendix H: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

Figure 28 Buildings & Facilities Risk Breakdown



This is a high-level model that has been developed based on information currently available and should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure.

The identification of critical assets allows the Township to determine 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.

Levels of Service

The framework created by the Township for levels of service is a valuable tool for assessing and managing the performance of their assets and/or services provided by their assets. Proposed levels of service for the Township have been developed through engagement with Township staff.

Current Levels of Service

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

Table 18 Buildings & Facilities Current Levels of Service

Community LOS		**Service Attribute**	**Current Technical LOS**	
Description of the services provided by municipal buildings.	Services provided by the municipal buildings are based on the types of facilities outlined below: • administrative offices – general government services • landfill operations – solid waste disposal services • roads garages and storage sheds – roadway and winter control services • recreation facilities and parks– recreation and cultural services • fire facilities	Scope	Replacement Cost	$25,951,769
			Quantity	15
Description of the condition of municipal buildings and reliable service	Condition Description • Very Good - Fit for the future • Good - Adequate for now • Fair - Requires attention • Poor - Increased potential of affecting service • Very Poor - Unfit for sustained service	Reliable	Average Condition	Good (63%)
	Services are provided with minimal service disruption and are available to customers in line with needs and expectations.		% Risk that is High and Very High	44%
			Average Asset Risk	Moderate
General	Services are delivered at an affordable cost for both the organization and the customer.	Affordable	Annual Investment	$165,407
			Capital re-investment rate	0.64%

Proposed Levels of Service

The scenarios that were used to analyse Howick's inventory were run for 100-years to ensure all the lifecycles were included at least once. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Target Condition Fair - this scenario utilizes a target average condition of 60% of the infrastructure within each asset category. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for the municipal buildings & facilities.

Table 19 Buildings & Facilities Scenario Results

Scenarios	Replacement Cost	Average Condition	Annual Capital Reinvestment
Scenario 1 – Lifecycle	$25,951,769	Good (78%)	$621,474
Scenario 2 - Current Capital Investment Rate	$25,951,769	Poor (20%)	$165,407
Scenario 3 - Good Condition	$25,951,769	Good (60%)	$498,945

10-Year Capital Forecast

Th projected ten-year capital forecast needed to maintain the municipal buildings at a condition of good has a $15 thousand capital activity in 2030 at the landfill it is only after the 110-year forecast that there are very significant investments needed.

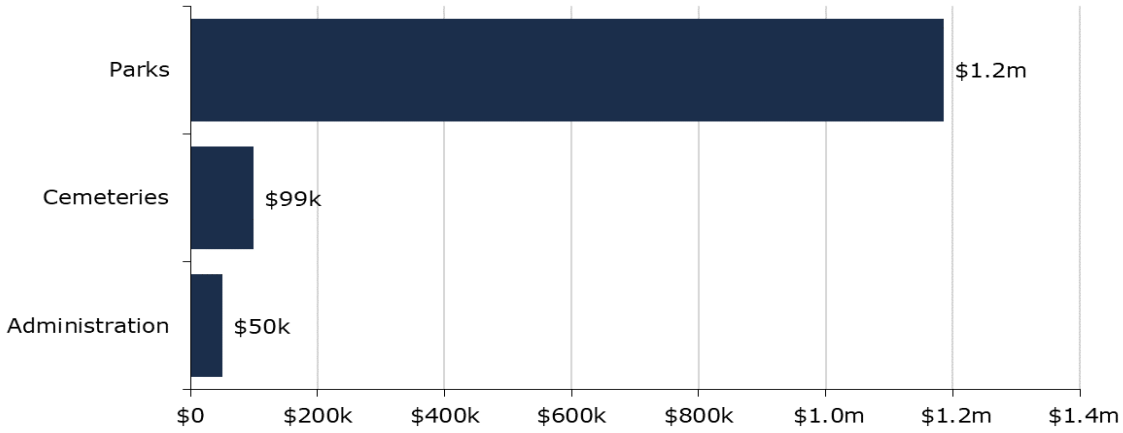
Appendix D: Land Improvements

Howick's land improvement infrastructure is comprised of cemeteries and parks, as well as associated administrative considerations.

Asset Inventory & Valuation

The graph below displays the replacement cost of each asset segment in the Township's land improvement inventory.

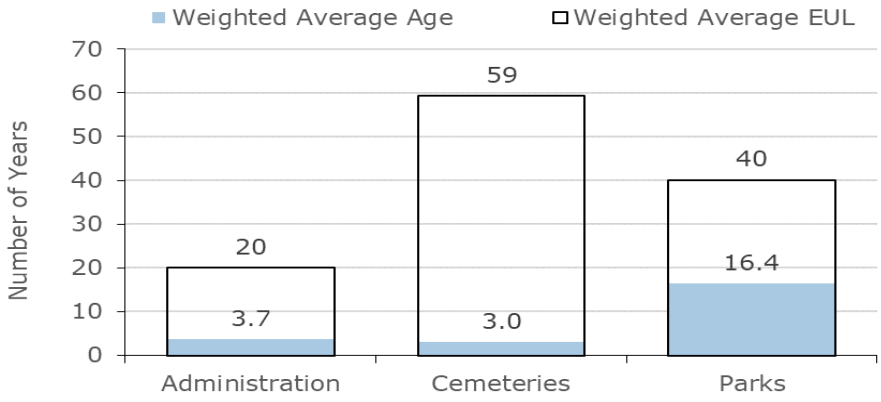
Figure 29 Land Improvements Replacement Cost



Asset Condition & Age

The graph below identifies the average age, and the estimated useful life for each asset segment. The values are weighted based on replacement cost.

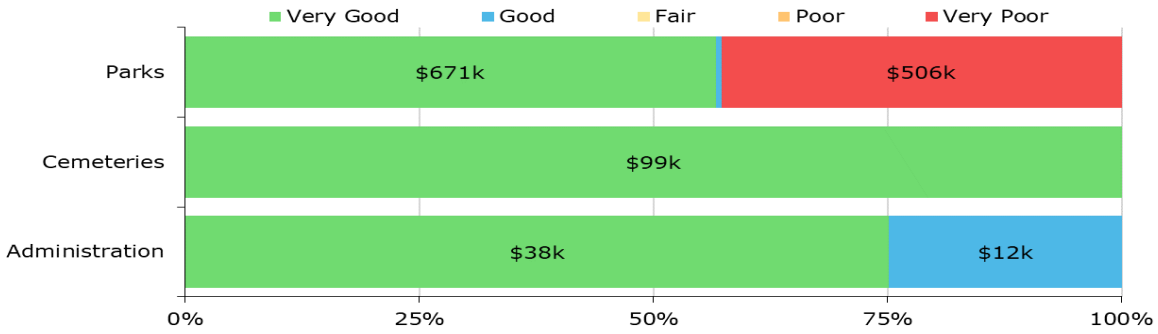
Figure 30 Land Improvements Average Age vs Average EUL



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.

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

Figure 31 Land Improvement Condition Breakdown



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

Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets. Due to the varied nature of the asset category the assets are managed individually by each department responsible.

Lifecycle Management Strategy

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 figures outline Howick's current lifecycle management strategy.

Figure 32 Land Improvements Current Lifecycle Strategy

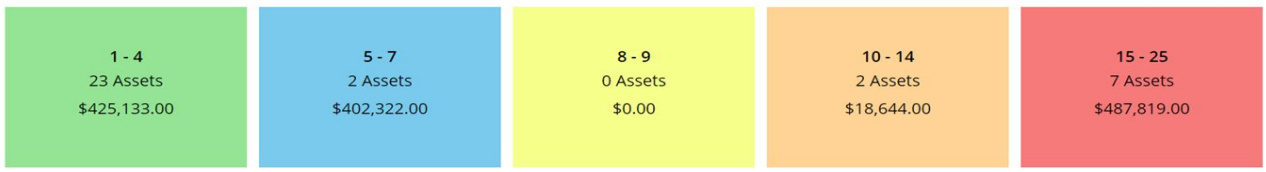
Maintenance / Rehabilitation / Replacement

- Similar to condition it is asset type and department dependant

Risk & Criticality

The following risk breakdown provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on available inventory data. See Appendix H: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

Figure 33 Land Improvement Risk Breakdown



This is a high-level model developed by municipal staff and should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure. The identification of critical assets allows the Township to determine appropriate risk mitigation strategies and treatment options.

Levels of Service

The framework created by the Township for levels of service is a valuable tool for assessing and managing the performance of their assets and/or services provided by their assets. Proposed levels of service for the Township have been developed through engagement with Township staff.

Current Levels of Service

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

Table 20 Land Improvements Current Levels of Service

Community LOS		Service Attribute	Current Technical LOS	
Description of the types of services provided.	Land improvements is made up of parks, cemeteries and administrative assets.	Scope	Replacement Cost	$1,333,918
			Quantity	15
Description of the condition of land improvements and reliable service	Condition Description • Very Good - Fit for the future • Good - Adequate for now • Fair - Requires attention • Poor - Increased potential of affecting service • Very Poor - Unfit for sustained service	Reliable	Average Condition	Good (61%)
	Services are provided with minimal service disruption and are available to customers in line with needs and expectations.		% Risk that is High and Very High	38%
			Average Asset Risk	High
General	Services are delivered at an affordable cost for both the organization and the customer.	Affordable	Annual Investment	$12,112
			Capital re-investment rate	0.9%

Proposed Levels of Service

The scenarios that were used to analyse Howick's inventory were run for 100-years to ensure all the lifecycles were included at least once. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Target Condition Fair - this scenario utilizes a target average condition of 60% of the infrastructure within each asset category. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for the land improvement assets.

Table 21 Land Improvement Scenario Results

Scenarios	Replacement Cost	Average Condition	Annual Capital Reinvestment
Scenario 1 – Lifecycle	$1,333,918	Good (76%)	$45,509
Scenario 2 - Current Capital Investment Rate	$1,333,918	Poor (35%)	$12,112
Scenario 3 - Good Condition	$1,333,918	Good (60%)	$27,480

10-Year Capital Forecast

Below is the projected ten-year capital forecast needed to maintain the bridges and culverts at a condition of good.

Table 22 Land Improvement 10-year Capital Forecast

Segments	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Parks	$506k	-	-	-	-	-	-	-	-	$7k
Administration	-	-	$12k	-	-	-	-	-	-	-
Cemeteries	-	-	-	-	-	-	-	-	-	-
Total	**$506k**	**-**	**$12k**	**-**	**-**	**-**	**-**	**-**	**-**	**$7k**

Appendix E: Furniture & Equipment

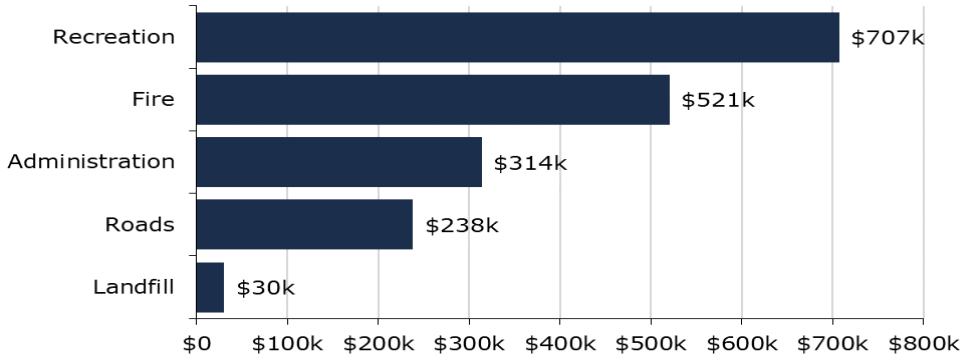
To maintain the quality stewardship of Howick's infrastructure and support the delivery of services, municipal staff own and employ various types of equipment. This includes:

- Administration equipment such as computers, furniture and phone systems to support all municipal services
- Roads equipment to support roadway maintenance
- Landfill equipment to support solid waste disposal management
- Fire equipment to support emergency services
- Recreation equipment

Inventory & Valuation

The graph below displays the total replacement cost of each asset segment in the Howick's equipment inventory.

Figure 34 Equipment Replacement Costs

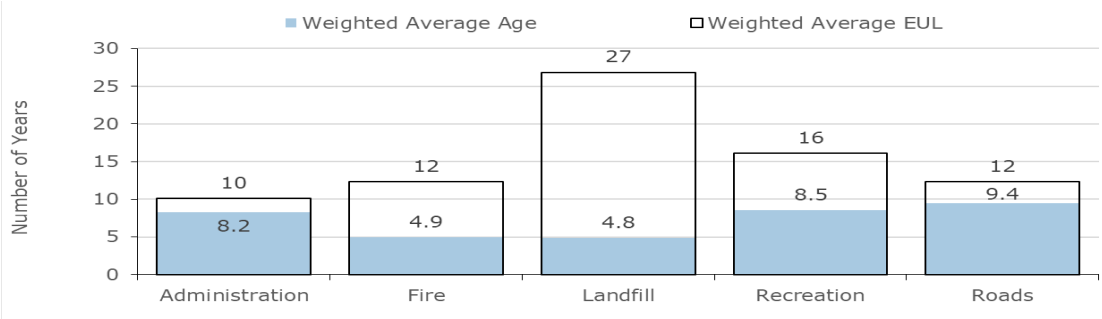


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent capital requirements.

Asset Condition & Age

The graph below identifies the average age and the estimated useful life for each asset segment. The values are weighted based on replacement cost.

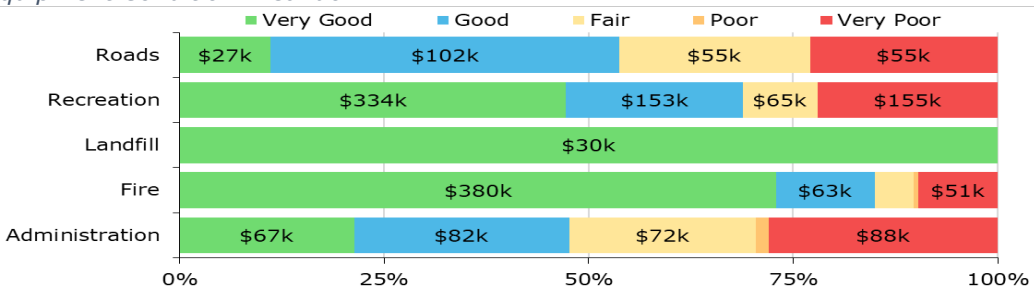
Figure 35 Equipment Average Age vs Average EUL



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.

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

Figure 36 Equipment Condition Breakdown



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

Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The current approach is varied because of the broad range of types of equipment included in this category.

Lifecycle Management Strategy

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

Figure 37 Equipment Current Lifecycle Strategy

Maintenance / Rehabilitation / Replacement

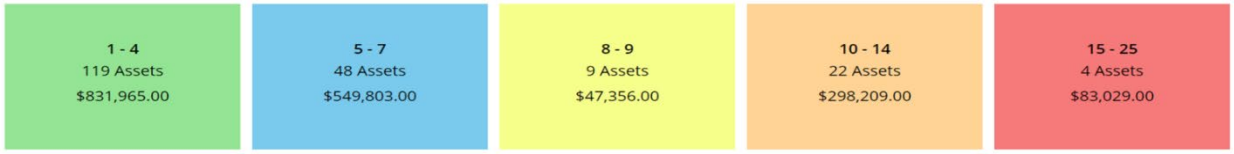
- Similar to condition it is equipment type and department dependant

Risk & Criticality

The risk breakdown provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on available inventory data. See Appendix H: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

This is a high-level model that has been developed based on information currently available and should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure.

Figure 38 Equipment & Furniture Risk Breakdown



Levels of Service

The framework created by the Township for levels of service is a valuable tool for assessing and managing the performance of their assets and/or services provided by their assets. Proposed levels of service for the Township have been developed through engagement with Township staff.

Current Levels of Service

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

Table 23 Equipment & Furniture Current Levels of Service

Community LOS		**Service Attribute**	**Current Technical LOS**	
Description of the types of services provided.	Computers, furniture, and phone systems, road, landfill, fire, recreation and administration equipment to support Township services	Scope	Replacement Cost	$1,810,362
			Quantity (assets)	202
Description of the condition of land improvements and reliable service	Condition Description • Very Good - Fit for the future • Good - Adequate for now • Fair - Requires attention • Poor - Increased potential of affecting service • Very Poor - Unfit for sustained service	Reliable	Average Condition	Good (66%)
	Services are provided with minimal service disruption and are available to customers in line with needs and expectations.		% Risk that is High and Very High	38%
			Average Asset Risk	Low
General	Services are delivered at an affordable cost for both the organization and the customer.	Affordable	Annual Investment	$48,390
			Capital re-investment rate	2.67%

Proposed Levels of Service

The scenarios that were used to analyse Howick's inventory were run for 100-years to ensure all the lifecycles were included at least once. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Target Condition Fair - this scenario utilizes a target average condition of 60% of the infrastructure within each asset category. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for the equipment and furniture assets.

Table 24 Equipment & Furniture Scenario Results

Scenarios	Replacement Cost	Average Condition	Annual Capital Reinvestment
Scenario 1 – Lifecycle	$1,810,362	Good (78%)	$181,813
Scenario 2 - Current Capital Investment Rate	$1,810,362	Very Poor (18%)	$48,390
Scenario 3 - Good Condition	$1,810,362	Good (60%)	$198,145

10-Year Capital Forecast

Below is the projected ten-year capital forecast needed to maintain the bridges and culverts at a condition of good.

Table 25 Equipment & Furniture 10-year Capital Forecast

Segments	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Fire	-	-	$91k	$19k	$7k	-	-	-	-	-
Roads	$30k	-	$30k	$110k	$5k	-	-	-	-	-
Recreation	$9k	-	$220k	$10k	-	$17k	-	-	-	-
Administration	-	-	$211k	-	-	-	-	-	-	-
Landfill	-	-	-	-	-	-	-	-	-	-
Total	**$39k**	**-**	**$553k**	**$140k**	**$12k**	**$17k**	**-**	**-**	**-**	**-**

Appendix F: Vehicles

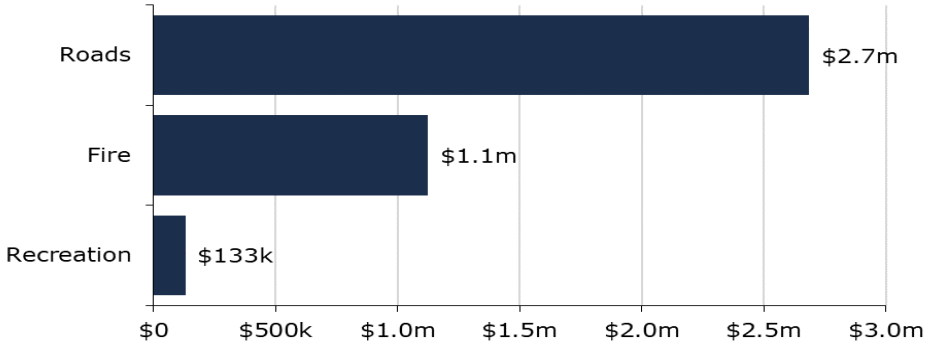
Vehicles allow staff to efficiently deliver municipal services and personnel. Municipal vehicles are used to support several service areas, including:

- Roads vehicles for winter control activities
- Fire vehicles for emergency services
- Recreation vehicles

Inventory & Valuation

The graph below displays the total replacement cost of each asset segment in the vehicle inventory.

Figure 39 Vehicle Replacement Costs

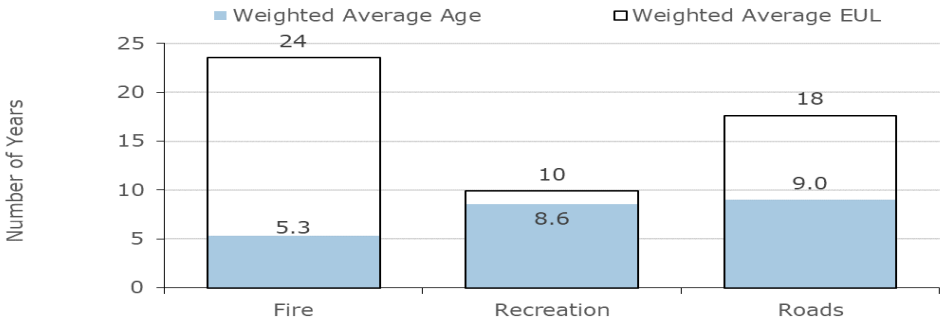


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to represent capital requirements more accurately.

Asset Condition & Age

The graph below identifies the average age and the estimated useful life for each asset segment. The values are weighted based on replacement cost.

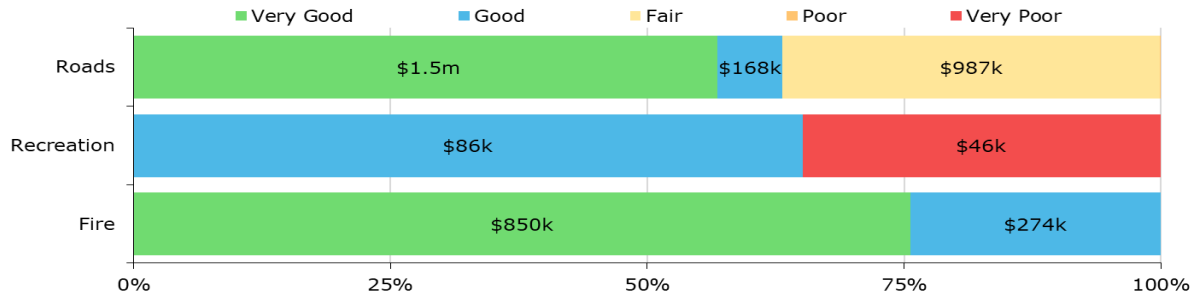
Figure 40 Vehicles Average Age vs Average EUL



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.

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

Figure 41 Vehicles Condition Breakdown



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

Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets. An example of the Township's current approach is staff complete regular visual inspections of vehicles to ensure they are in state of adequate repair prior to operation.

Lifecycle Management Strategy

The condition or performance of assets will deteriorate over time. To ensure vehicles are performing as expected, it is important to establish a lifecycle management strategy to proactively manage asset deterioration.

Figure 42 Vehicles Current Lifecycle Strategy

Maintenance / Rehabilitation / Replacement

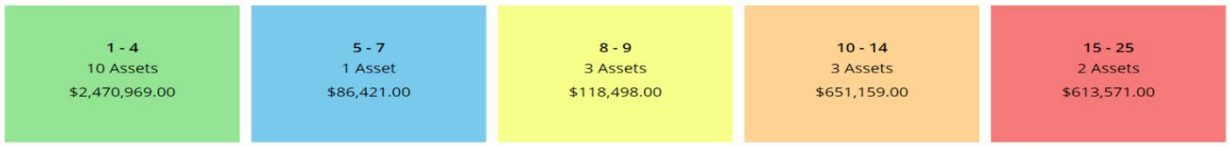
- operations and maintenance is completed by internal staff
- replacements are completed based on useful life estimates and staff recommendations

Risk & Criticality

The risk breakdown provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on available inventory data. See Appendix H: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

This is a high-level model that has been developed based on information currently available and should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure.

Figure 43 Vehicles Risk Breakdown



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

Levels of Service

The framework created by the Township for levels of service is a valuable tool for assessing and managing the performance of their assets and/or services provided by their assets. Proposed levels of service for the Township have been developed through engagement with Township staff.

Current Levels of Service

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

Community LOS		**Service Attribute**	**Current Technical LOS**	
Description of the types of services provided.	Computers, furniture, and phone systems, road, landfill, fire, recreation and administration equipment to support Township services	Scope	Replacement Cost	$1,810,362
			Quantity (assets)	202
Description of the condition of land improvements and reliable service	Condition Description • Very Good - Fit for the future • Good - Adequate for now • Fair - Requires attention • Poor - Increased potential of affecting service • Very Poor - Unfit for sustained service	Reliable	Average Condition	Good (66%)
	Services are provided with minimal service disruption and are available to customers in line with needs and expectations.		% Risk that is High and Very High	38%
			Average Asset Risk	Low
General		Affordable	Annual Investment	$48,390

	Services are delivered at an affordable cost for both the organization and the customer.	Capital re-investment rate	2.67%

Table 26 Vehicles Current Levels of Service

Proposed Levels of Service

The scenarios that were used to analyse Howick's inventory were run for 100-years to ensure all the lifecycles were included at least once. They are also all based on the data available in the asset management system which outlines estimated useful life and condition as well as replacement costs which all the results are based on.

Scenario 1: Current Lifecycle Activities - this scenario utilizes the current lifecycle activities outlined as current practice within each asset category. The condition and annual investment were then determined.

Scenario 2: Current Capital Reinvestment Rate - this scenario utilizes the current capital reinvestment within each asset category. The current annual investment was held, and the condition was determined.

Scenario 3: Target Condition Fair - this scenario utilizes a target average condition of 60% of the infrastructure within each asset category. The condition value was held, and the annual investment was then determined.

The table below outlines the results for each scenario for the equipment and furniture assets.

Table 27 Vehicles Scenario Results

Scenarios	Replacement Cost	Average Condition	Annual Capital Reinvestment
Scenario 1 – Lifecycle	$1,810,362	Good (78%)	$181,813
Scenario 2 - Current Capital Investment Rate	$1,810,362	Very Poor (18%)	$48,390
Scenario 3 - Good Condition	$1,810,362	Good (60%)	$198,145

10-Year Capital Forecast

Below is the projected ten-year capital forecast needed to maintain the bridges and culverts at a condition of good.

Table 28 Vehicles 10-year Capital Forecast

Segments	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Recreation	-	-	$46k	$86k	-	-	-	-	-	-
Fire	-	-	-	-	-	-	-	-	$231k	-
Roads	-	-	$542k	$269k	$344k	-	-	-	-	-
Total	-	-	$588k	$356k	$344k	-	-	-	$231k	-

Appendix G: Condition Assessment Guidelines

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

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

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

Role of Asset Condition Data

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

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

Guidelines for Condition Assessment

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

Condition assessments must include a quantitative or qualitative assessment of the current condition of the asset, collected according to specified condition rating criteria, in a format that can be used for asset management decision-making. As a result, it is important that staff adequately define the condition rating criteria that

should be used and the assets that require a discrete condition rating. When engaging with external consultants to complete condition assessments, it is critical that these details are communicated as part of the contractual terms of the project.

There are many options available to the Township to complete condition assessments. In some cases, external consultants may need to be engaged to complete detailed technical assessments of infrastructure. In other cases, internal staff may have sufficient expertise or training to complete condition assessments.

Developing a Condition Assessment Schedule

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

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

Appendix H: Risk Rating Criteria

Risk Definitions

Risk	Integrating a risk management framework into your asset management program requires the translation of risk potential into a quantifiable format. This will allow you to compare and analyze individual assets across your entire asset portfolio. Asset risk is typically defined using the following formula: **Risk = Probability of Failure (POF) x Consequence of Failure (COF)**
Probability of Failure (POF)	The probability of failure relates to the likelihood that an asset will fail at a given time. The current physical condition and service life remaining are two commonly used risk parameters in determining this likelihood.
POF - Structural	The likelihood of asset failure due to aspects of an asset such as load carrying capacity, condition or breaks
POF - Functional	The likelihood of asset failure due to its performance
POF - Range	**1 - Rare 2 - Unlikely 3 - Possible 4 - Likely 5 - Almost Certain**
Consequences of Failure (COF)	The consequence of failure describes the overall effect that an asset's failure will have on an organization's asset management goals. Consequences of failure can range from non-eventful to impactful: a small diameter water main break in a subdivision may cause several rate payers to be without water service for a short time. However, a larger trunk water main may break outside a hospital, leading to significantly higher consequences.
COF - Financial	The monetary consequences of asset failure for the organization and its customers
COF - Social	The consequences of asset failure on the social dimensions of the community
COF - Environmental	The consequence of asset failure on an asset's surrounding environment
COF - Operational	The consequence of asset failure on the Township's day-to-day operations
COF - Health & safety	The consequence of asset failure on the health and well-being of the community
COF - Economic	The consequence of asset failure on strategic planning
COF - Range	**1 - Insignificant 2 - Minor 3 - Moderate 4 - Major 5 - Severe**

Risk Frameworks - General

Probability of Failure			
Criteria	**Sub-Criteria**	**Value/ Range**	**Score**
Performance (60%)	Condition	0-39	5 - Almost Certain
		40-49	4 - Likely
		50-69	3 - Possible
		70-89	2 - Unlikely
		90-100	1 - Rare
Operational (40%)	Service Life Remaining	<10%	5 - Almost Certain
		10 - <20%	4 - Likely
		20 - <30%	3 - Possible
		30 - <40%	2 - Unlikely
		=>40%	1 - Rare

Consequence of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Financial 100%	Replacement Cost ($)	>$100,000	5 - Severe
		$50,000 - $100,000	4 - Major
		$20,000 - $50,000	3 - Moderate
		$5,000 - $20,000	2 - Minor
		< $5,000	1 - Insignificant

Risk Frameworks – Road Network

Probability of Failure			
Criteria	**Sub-Criteria**	**Value/ Range**	**Score**
Performance (60%)	Condition	0-39	5 - Almost Certain
		40-49	4 - Likely
		50-69	3 - Possible
		70-89	2 - Unlikely
		90-100	1 - Rare
Operational (40%)	Service Life Remaining	<10%	5 - Almost Certain
		10 - <20%	4 - Likely
		20 - <30%	3 - Possible
		30 - <40%	2 - Unlikely
		=>40%	1 - Rare

Consequence of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Financial (50%)	Surface Type	Asphalt	5 - Severe
		Surface Treatment	3 - Moderate
		Gravel	1 - Insignificant
Operational (50%)	Speed Limit (km/h)	80	5 - Severe
		70	4 - Major
		60	3 - Moderate
		50	3 - Moderate
	Roadside Environment	Urban	4 - Major
		Rural	2 - Minor
	AADT	>300	5 - Severe
		150-300	4 - Major
		50-150	3 - Moderate
		5-50	2 - Minor
		0-5	1 - Insignificant

Risk Frameworks – Bridges and Culverts

Probability of Failure			
Criteria	**Sub-Criteria**	**Value/ Range**	**Score**
Performance (60%)	Condition	0-39	5 - Almost Certain
		40-49	4 - Likely
		50-69	3 - Possible
		70-89	2 - Unlikely
		90-100	1 - Rare
Operational (40%)	Service Life Remaining	<10%	5 - Almost Certain
		10 - <20%	4 - Likely
		20 - <30%	3 - Possible
		30 - <40%	2 - Unlikely
		=>40%	1 - Rare

Consequence of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Financial (50%)	Replacement Cost ($)	>$100,000	5 - Severe
		$50,000 - $100,000	4 - Major
		$20,000 - $50,000	3 - Moderate
		$5,000 - $20,000	2 - Minor
		< $5,000	1 - Insignificant
Operational (50%)	Asset Segment	Sub-structure	4 - Major
		Super-structure	4 - Major
		Culverts	2 - Minor
		Deck Surface	1 - Insignificant
	Span	>5	4 - Major
		3-5m	3 - Moderate
		<3m	2 - Minor

Risk Frameworks – Buildings and Facilities

Probability of Failure			
Criteria	**Sub-Criteria**	**Value/ Range**	**Score**
Performance (60%)	Condition	0-39	5 - Almost Certain
		40-49	4 - Likely
		50-69	3 - Possible
		70-89	2 - Unlikely
		90-100	1 - Rare
Operational (40%)	Service Life Remaining	<10%	5 - Almost Certain
		10 - <20%	4 - Likely
		20 - <30%	3 - Possible
		30 - <40%	2 - Unlikely
		=>40%	1 - Rare

Consequence of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Financial (50%)	Replacement Cost ($)	>$100,000	5 - Severe
		$50,000 - $100,000	4 - Major
		$20,000 - $50,000	3 - Moderate
		$5,000 - $20,000	2 - Minor
		< $5,000	1 - Insignificant
Operational (50%)	Asset Segment	Firehall	4 - Major
		Administration	3 - Moderate
		Recreation	2 - Minor
		Roads	2 - Minor
		Landfill	1 - Insignificant

Risk Frameworks – Furniture and Equipment

Probability of Failure			
Criteria	**Sub-Criteria**	**Value/ Range**	**Score**
Performance (60%)	Condition	0-39	5 - Almost Certain
		40-49	4 - Likely
		50-69	3 - Possible
		70-89	2 - Unlikely
		90-100	1 - Rare
Operational (40%)	Service Life Remaining	<10%	5 - Almost Certain
		10 - <20%	4 - Likely
		20 - <30%	3 - Possible
		30 - <40%	2 - Unlikely
		=>40%	1 - Rare

Consequence of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Financial (50%)	Replacement Cost ($)	>$100,000	5 - Severe
		$50,000 - $100,000	4 - Major
		$20,000 - $50,000	3 - Moderate
		$5,000 - $20,000	2 - Minor
		< $5,000	1 - Insignificant
Operational (50%)	Asset Segment	Fire	4 - Major
		Office	3 - Moderate
		Recreation	2 - Minor
		Roads	2 - Minor
		Landfill	1 - Insignificant

Risk Frameworks – Vehicles

Probability of Failure			
Criteria	**Sub-Criteria**	**Value/ Range**	**Score**
Performance (60%)	Condition	0-39	5 - Almost Certain
		40-49	4 - Likely
		50-69	3 - Possible
		70-89	2 - Unlikely
		90-100	1 - Rare
Operational (40%)	Service Life Remaining	<10%	5 - Almost Certain
		10 - <20%	4 - Likely
		20 - <30%	3 - Possible
		30 - <40%	2 - Unlikely
		=>40%	1 - Rare

Consequence of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Financial (50%)	Replacement Cost ($)	>$100,000	5 - Severe
		$50,000 - $100,000	4 - Major
		$20,000 - $50,000	3 - Moderate
		$5,000 - $20,000	2 - Minor
		< $5,000	1 - Insignificant
Operational (50%)	Asset Segment	Fire	4 - Major
		Administration	1 - Insignificant
		Recreation	2 - Minor
		Roads	3 - Moderate
		Landfill	1 - Insignificant