Asset Management Plan

Municipality of Highlands East

July 2025

MUNICIPALITY OF HIGHLANDS EAST

psdcitywide

This Asset Management Program was prepared by:

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

Key Statistics

$118M	Replacement Cost of Asset Portfolio
$26.6k	Replacement Cost of Infrastructure Per Household
52%	Percentage of Assets in Fair or Better Condition
92%	Percentage of Assets with Assessed Condition Data
$1.8M	Annual Capital Infrastructure Deficit
15 Years	Recommended Timeframe to reach Proposed Levels of Service
2.5%	Target Investment Rate to meet Proposed Levels of Service
1.7%	Actual Investment Rate

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1. 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 included in this AMP totals $118 million. 52% of all assets analyzed in this AMP are in fair or better condition and assessed condition data was available for 92% of 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 in this AMP.

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

To meet the proposed levels of service, the Municipality's average annual capital requirement totals $2.9 million. Based on a historical analysis of sustainable capital funding sources, the Municipality is committing approximately $2.0 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $900 thousand.

For all assets, the Municipality has selected a strategy aimed at achieving 75% of full funding. This phased approach will gradually increase reinvestment levels over 15 years, allowing the Municipality to address priority infrastructure needs.

The Municipality 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 the highest affordable service levels to the Highlands East community.

About this Document

With the development of this AMP the Municipality of Highlands East has achieved compliance with July 1, 2025, requirements under O. Reg. 588/17. This includes requirements for proposed levels of service and inventory reporting for all asset categories.

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
Asset Management Policy	●		●	
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 public infrastructure and to make recommendations where they can be further refined. Through the implementation of sound asset management strategies, the Municipality can ensure that public infrastructure is managed to support the sustainable delivery of municipal services.

The following asset categories are addressed in further sections:

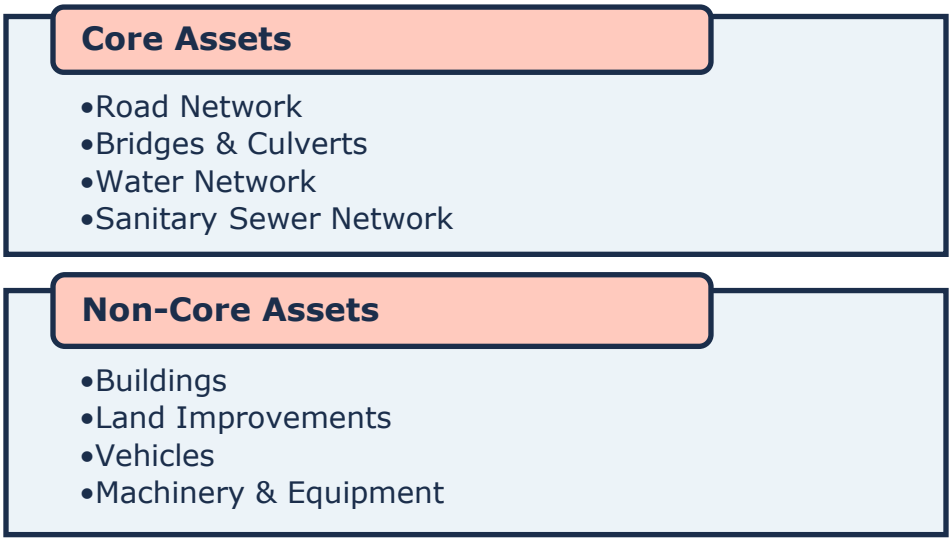


Figure 1: Core and Non-Core Assets

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 highly 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 staff.
- 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 matrix. 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 Municipality's primary asset management system.

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

2. An Overview of Asset Management

Municipalities are responsible for managing and maintaining a broad portfolio of infrastructure assets to deliver services to the community. The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value 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. The strategic plan has a direct, and cascading impact on asset management planning and reporting.

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. At the beginning of each term of Council, Council holds strategic planning exercises and discussions to identify major initiatives and administrative improvements it wishes to achieve during its tenure. Staff then identify the scope, resources, timing & other logistical matters associated with proposed initiatives.

Asset Management Policy

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

Highlands East adopted their asset management policy 2019-42 on April 9th, 2019, in accordance with Ontario Regulation 588/17. The policy identifies the asset management vision is to proactively manage its assets to best serve the Municipality's objectives, including:

- Effectively and efficiently delivering services through asset lifecycle management.
- Supporting sustainability, economic development and the existing and future needs by aligning and prioritizing service level expectations.
- Maintaining prudent financial planning and decision making.

While the goals and purpose of the policy are also outlined as:

- Provide a level of commitment & develop a framework for implementing asset management to enable a consistent and strategic approach at all levels of the organization. This allows the organization to facilitate logical and evidence-based decision-making for the management of municipal assets and to support the delivery of sustainable community services now and in the future.
- Provide transparency and accountability by demonstrating to community stakeholders the legitimacy of decision-making processes which combine strategic plans, budgets, service levels and risk.
- Provide guidance to staff responsible for asset management and support the implementation of the plan consistent with the priority objectives of Council.

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 Highlands East plans to achieve its asset management objectives through planned activities and decision-making criteria.

Asset Management Plan

The asset management plan is often identified as a key output within the strategy. The AMP has a sharp focus on the current state of the Municipality's asset portfolio, and its approach to managing and funding individual service areas or asset groups. It is tactical in nature and provides a snapshot in time.

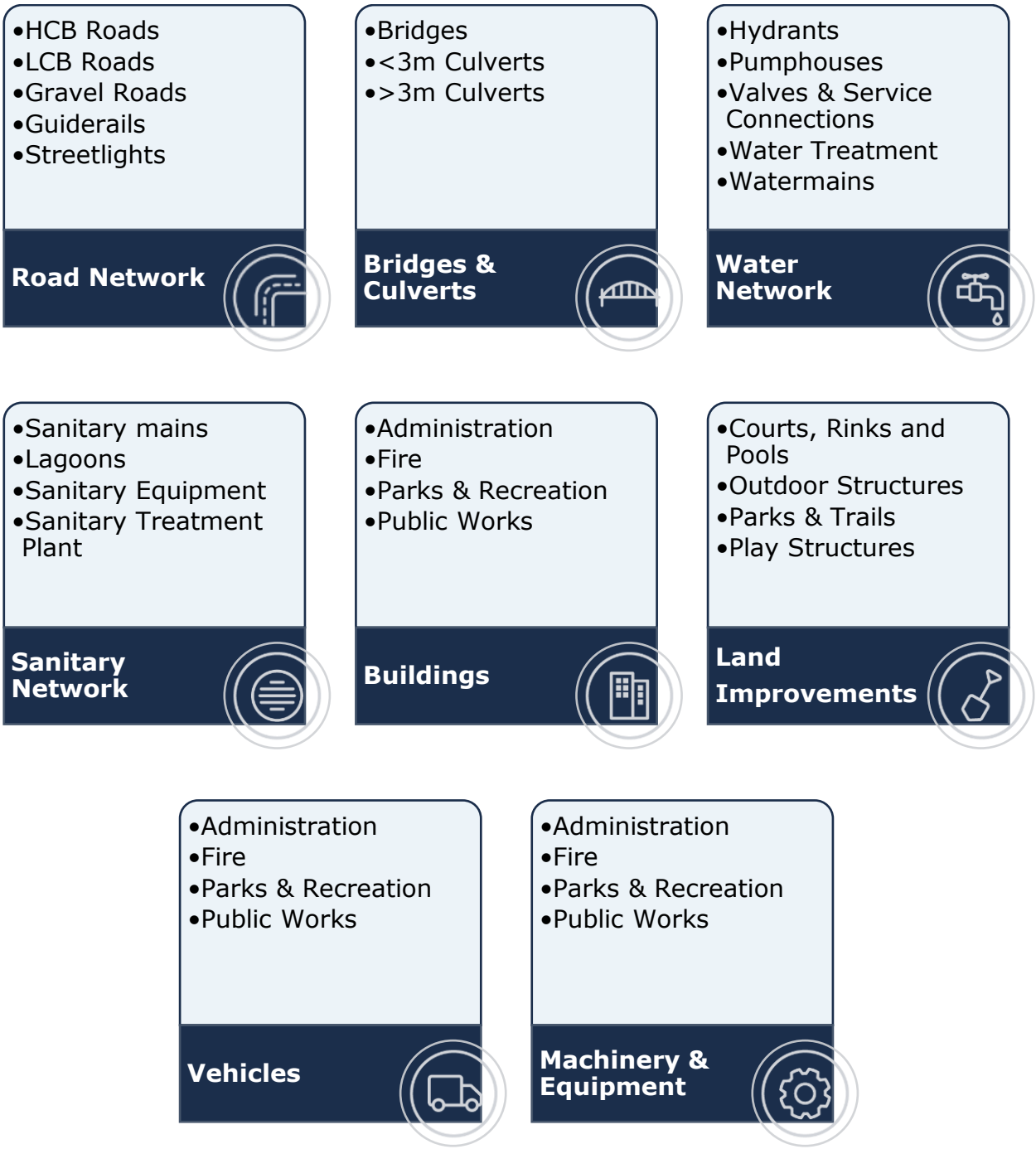
Key Technical Concepts

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

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. Assets were structured to support meaningful, efficient reporting and analysis. Key category details are summarized at the asset segment level.

Table 2 Asset Classifications



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

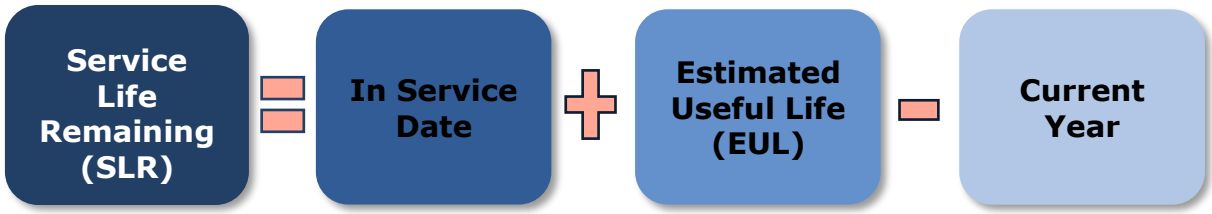
User-defined costs based on reliable sources are a reasonably accurate and reliable way to determine asset replacement costs. Cost inflation is typically used in the absence of reliable replacement cost data. It is a reliable method for recently purchased and/or constructed assets where the total cost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

Estimated Useful Life and Service Life Remaining

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

Figure 2: Service Life Remaining Calculation

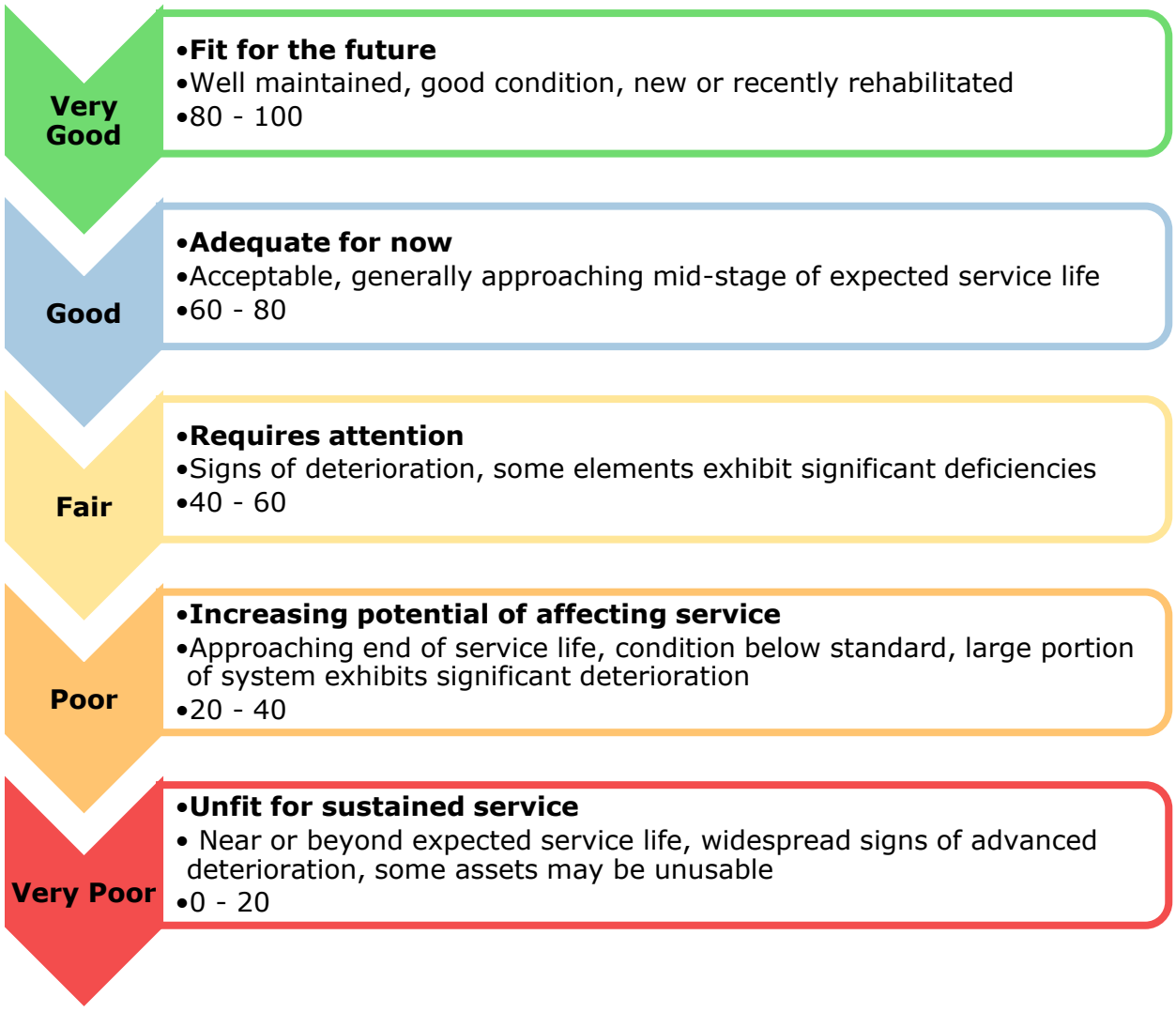


Asset Condition

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 Municipality's asset portfolio. The table below outlines the condition rating system used to determine asset condition. This rating system is aligned with the Canadian Core Public Infrastructure Survey which is used to develop the Canadian Infrastructure Report Card.

Figure 3 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 B: 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 following table 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. Figure 4 provides a description of each type of activity, the general difference in cost, and typical risks associated with each.

The Municipality'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 4 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 or keep it in its original condition;
- 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

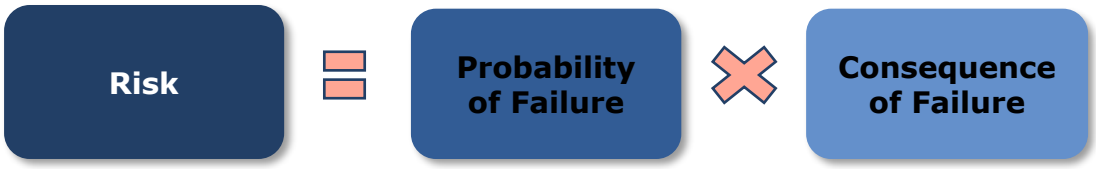
Municipalities generally take a 'worst-first' approach to infrastructure spending. Rather than prioritizing assets based on their importance to service delivery, assets in the worst condition are fixed first, regardless of their criticality. However, not all assets are created equal. Some are more important than others, and their failure or disrepair poses more risk to the community. 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.

A high-level evaluation of asset risk and criticality was performed. 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.

Risk is a product of two variables: the probability that an asset will fail, and the resulting consequences of that failure event. It can be a qualitative measurement, (low, medium, high) or quantitative measurement (1-5), that can be used to rank assets and projects, identify appropriate lifecycle strategies, optimize short- and long-term budgets, minimize service disruptions, and maintain public health and safety.

Figure 5 Risk Equation



Probability of Failure

Several factors can help decision-makers estimate the probability or likelihood of an asset's failure, including its condition, age, previous performance history, and exposure to extreme weather events, such as flooding and ice jams—both a growing concern for municipalities in Canada.

Consequence of Failure

Estimating criticality also requires identifying the types of consequences that the organization and community may face from an asset's failure, and the magnitude of those consequences. Consequences of asset failure will vary across the infrastructure portfolio; the failure of some assets may result primarily in high direct financial cost but may pose limited risk to the community. Other assets may have a relatively minor financial value, but any downtime may pose significant health and safety hazards to residents. See Appendix C: Risk Rating Criteria for definitions and the developed risk models.

Levels of Service

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

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, the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required. For non-core asset categories, the Municipality has determined the qualitative descriptions that will be used. The metrics can be found in the levels of service subsection within each asset category.

Technical Levels of Service

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

For core asset categories, the Province, through O. Reg. 588/17, has provided technical metrics that are required. For non-core asset categories, the Municipality determined the technical metrics that will be used. The metrics can be found in the levels of service subsection within each asset category.

Current and Proposed Levels of Service

Current LOS are the past performance metrics of an asset category up until present day. In contrast, Proposed LOS looks toward the municipality's goal for asset performance by a defined future date.

It is important to note that O. Reg 588/17 does not dictate which proposed LOS metrics municipality's need to strive for. A proposed LOS will be very specific to each community's resident desires, political goals, and financial capacity. This can range from increasing service levels and costs, to maintaining or even reducing current performance in order to mitigate future cost increases. Regardless of the proposed LOS chosen, O. Reg 588/17 requires municipalities to demonstrate the achievability of their selected metrics.

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

Highlands East Climate Profile

Highlands East is situated on the Eastern side of Haliburton County. The Municipality 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) – Highlands East may experience the following trends:

1. Higher Average Annual Temperature

- Between the years 1981 and 2010 the annual average temperature was 5.1ºC
- Under a high emissions scenario, the annual average temperatures are projected to increase to 7ºC by the year 2050 and to 10.5ºC by the end of the century.

2. Increase in Total Annual Precipitation

- Under a high emissions scenario, Highlands East is projected to experience a 7% increase in precipitation by the year 2050 and a 14% increase by the end of the century.

Integration Climate Change and Asset Management

Asset management practices aim to deliver sustainable service delivery - the delivery of services to residents today without compromising the services and well-being of future residents. Climate change threatens sustainable service delivery by reducing the useful life of an asset and increasing the risk of asset failure. Desired levels of service can be more difficult to achieve because of climate change impacts such as flooding, high heat, drought, and more frequent and intense storms.

To achieve the sustainable delivery of services, climate change considerations should be incorporated into asset management practices. The integration of asset management and climate change adaptation observes industry best practices and enables the development of a holistic approach to risk management.

3. Portfolio Overview

Community Profile

Highlands East is situated on the Eastern side of Haliburton County. The Municipality covers 758 square kilometres; approximately half of this is Crown land. Highlands East was formed in 2001 with the amalgamation of the Townships of Bicroft, Cardiff, Glamorgan, and Monmouth. The year-round population in private households is 3,830, with roughly 4,430 households.

Cardiff is a mining town built in the 1950's. The hamlet entrance, located off Hwy 118, features a large dragon fly sculpture, probably the largest in Canada. It has a Municipal Office, Public Library, Post Office, Fire Hall, Community Centre, Legion, General Store/Liquor Outlet/Restaurant, Public School and two Churches. Cardiff has a public in-ground pool and offers swimming lessons during the summer. With over 200 homes, it is our only hamlet with full municipal water and sewer.

Highland Grove is home to an active community centre and library. Local activities and projects are sponsored by the Recreation Committee and The Schoolhouse Historical Society.

Gooderham is naturally stunning and picturesque with thirteen lakes and the Irondale River nearby. A hamlet home to a Community Centre and a large park, a playground, tennis and basketball court, and Municipal Office. Gooderham is home to more than 700 full-time residents, hundreds of seasonal residents and more than 30 locally owned and operated businesses.

Tory Hill is a hamlet on the shore of McCue Lake and the intersection of Hwy 118 and Municipality Road 503. Its location makes for the best fall colours in area, with views for miles. Once a booming village, it has some rare finds. The Tory Hill United Church is now a private residence, home to Artech Glass Studio. At the Tory Hill Park you can access the multi use IB&O Rail Trail.

Wilberforce, a scenic hamlet nestled along the shores of Pusey Lake (commonly referred to as Dark Lake), has a rich history and strong community identity. It is home to the first Red Cross Outpost in Ontario which is now a National Heritage Site, and it is also considered the geocaching capital of Canada.

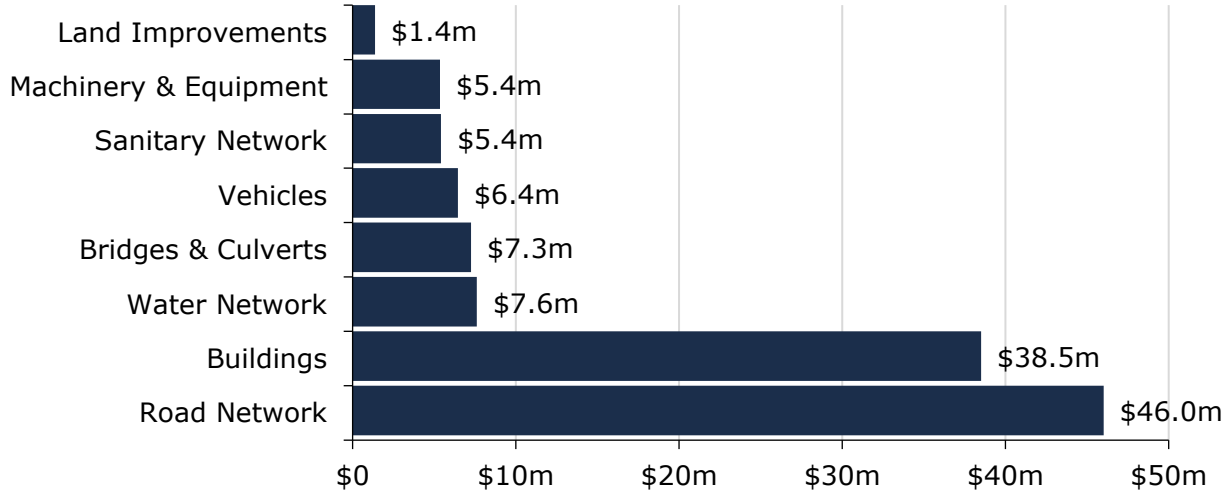
Table 3 Highlands East & Ontario Census Information

Census Characteristic	Highlands East	Ontario
Population 2021	3830	14,223,942
Population Change 2016-2021	14.6%	5.8%
Total Private Dwellings	4,430	5,929,250
Population Density	5.6/km^2	15.9/km^2
Land Area	758 km^2	892,411.76 km^2

Replacement Cost

The asset categories have a total replacement cost of $118 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 replacement of historical assets with similar, not necessarily identical, assets available for procurement today.

Figure 6: Portfolio Replacement Value

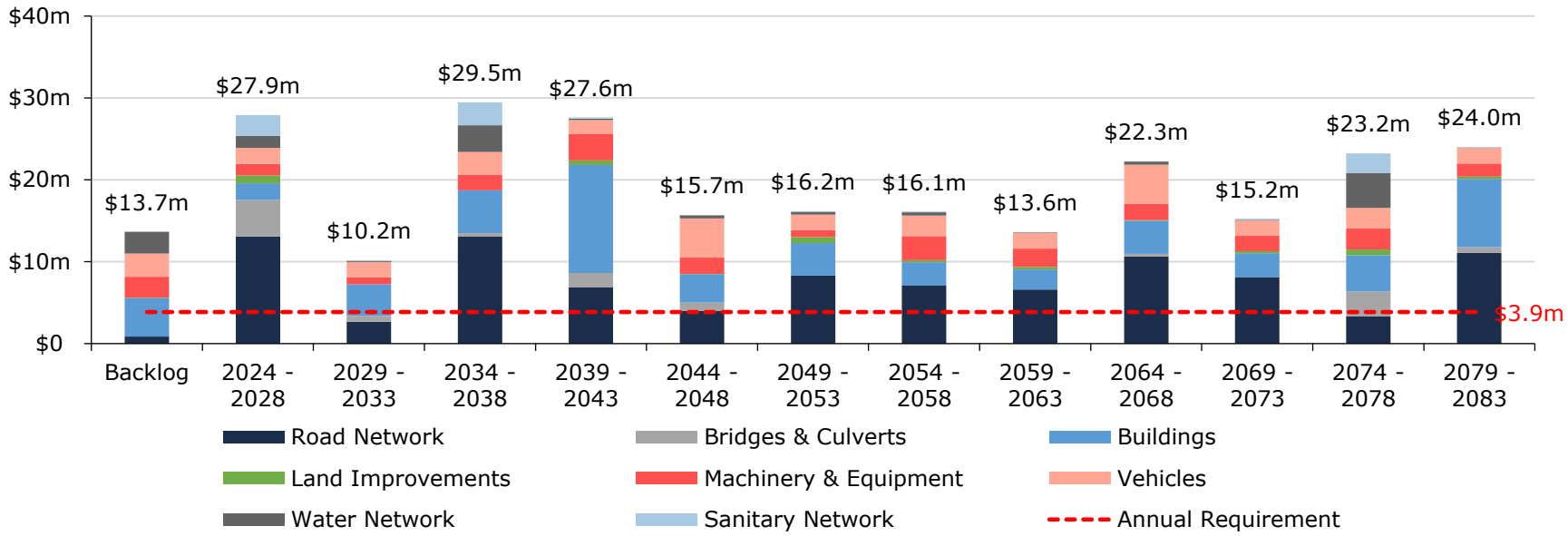


Forecasted Capital Requirements

Aging assets require maintenance, rehabilitation, and replacement. Figure 7 below illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for all asset categories analyzed. On average, $3.9 million is required each year to remain current with capital replacement needs for Highlands East's asset portfolio (red dotted line).

Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise. This figure relies on age and available condition data.

Figure 7 Forecasted Capital Requirements



The chart also illustrates a backlog of $13.7 million, comprising assets that remain in service beyond their estimated useful life. It is unlikely that all such assets are in a state of disrepair, requiring immediate replacements or major renewals. This makes targeted and consistent condition assessments integral.

Risk frameworks, proactive lifecycle strategies, and levels of service targets can then be used to prioritize projects, continuously refine estimates for both backlogs and ongoing capital needs and help select the right treatment for each asset.

Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 52% of assets in Highlands East are in fair or better condition. This estimate relies on both age-based and field condition data.

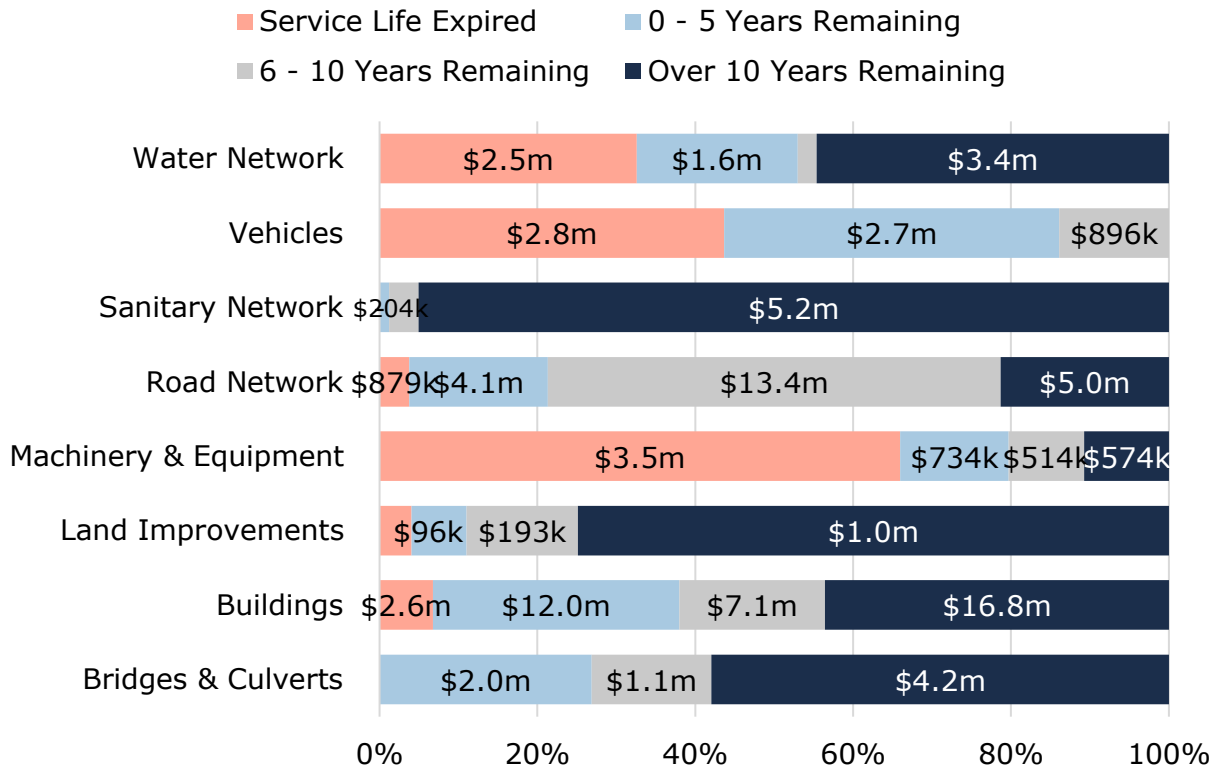
Assessed condition data is available for 92% of assets; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data.

Table 4 Assessed Condition Data Sources

Asset Category	Assets with Assessed Condition	Source of Condition Data
Road Network	90%	2019 D.M Wills Associates Limited
Bridges & Culverts	80%	2024 Tulloch Engineering
Buildings	99%	2019 Walterfedy
Land Improvements	67%	2018 AMP Staff Assessment
Machinery & Equipment	83%	2018 AMP Staff Assessment
Vehicles	71%	2018 AMP Staff Assessment
Water Network	98%	2018 AMP Staff Assessment & 2019 Walterfedy
Sanitary Network	99%	2018 AMP Staff Assessment & 2019 Walterfedy

Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 35% of the Municipality's assets will require rehabilitation / replacement within the next 10 years. Details of the capital requirements identified in each asset section.



Risk & Criticality

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

Growth

Highlands East is experiencing higher than projected growth and it is expected to continue. Population and employment growth will increase the demand on municipal services and potentially decrease the lifecycle of certain assets. As the population continues to grow, the Municipality must prioritize expanding its capacity to serve a larger population.

Funding

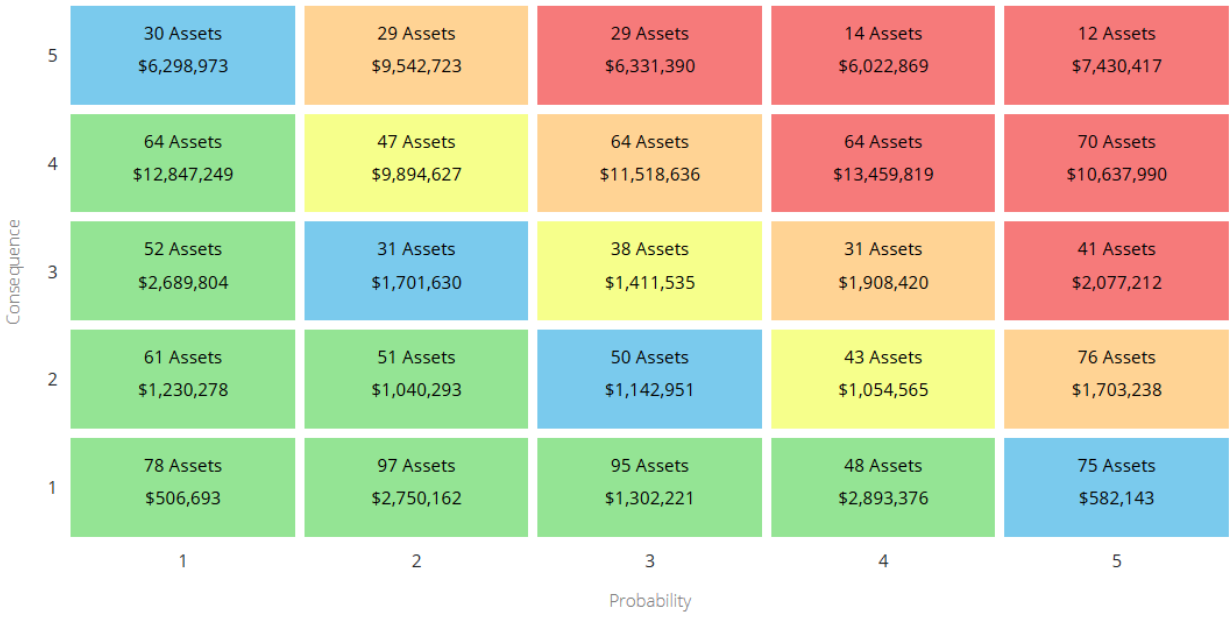
Major capital rehabilitation projects (bridges and culverts in particular) are entirely dependant on the availability of grant funding opportunities. When grants are not available, projects may be deferred.

Aging Infrastructure

Historically, lifecycle management strategies have been reactive (water & sanitary networks in particular). Focusing on replacing poor condition assets at the end of their life expectancy but playing catch up on deferred lifecycle activities is an ongoing issue.

The over all risk breakdown for Highlands East's asset inventory is portrayed in the figure below.

Figure 8 Overall Asset Risk Breakdown

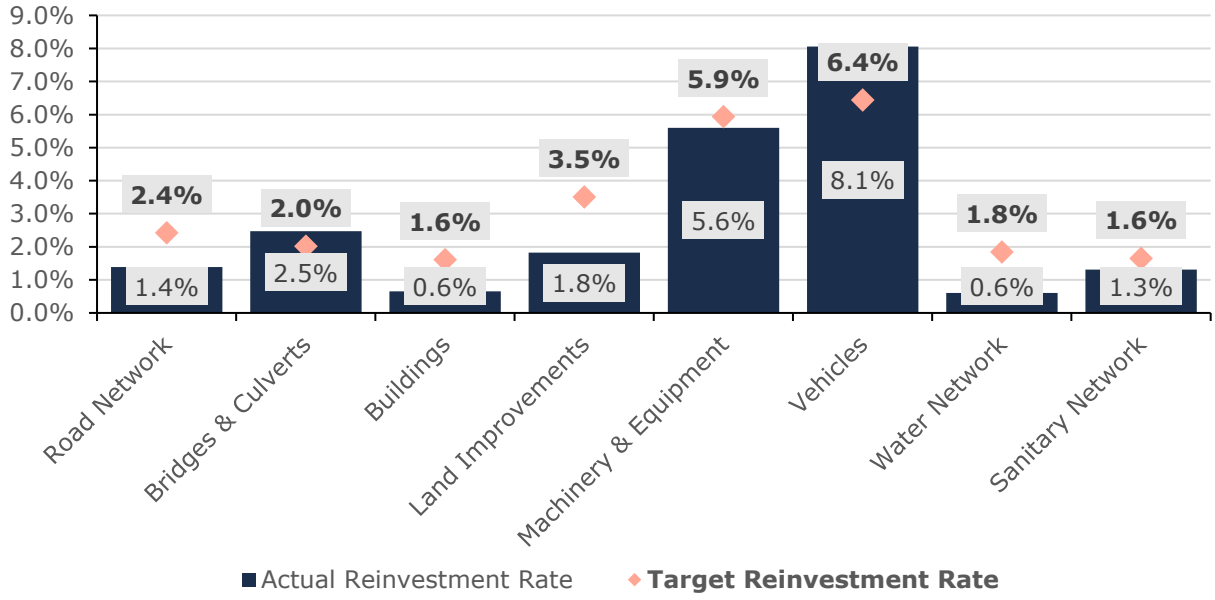


Reviewing the list of very high-risk assets to evaluate how best to mitigate the level of risk the Municipality is experiencing will help advance Highlands East's asset management program.

Reinvestment Rate

The graph below depicts funding gaps or surpluses by comparing target vs actual reinvestment rate. To meet the proposed levels of service, the Municipality should be allocating approximately $2.9 million annually, for a target reinvestment rate of 2.5%. Actual annual spending on infrastructure totals approximately $2.0, for an actual reinvestment rate of 1.7%.

Figure 9 Target vs Actual Reinvestment Rates



4. Proposed Levels of Service

Scope

Ontario Regulation 588/17 Proposed Levels of Service

The 2025 deadline requires that proposed Levels of Service (LOS) are demonstrated to be appropriate based on an assessment of:

1. Proposed LOS options and the risks associated with these options (i.e., asset reliability, safety, affordability) when considering the long-term sustainability of the municipality.
2. How proposed LOS may differ from current LOS.
3. Whether proposed LOS are achievable.
4. The municipality's ability to afford proposed LOS.

Additionally, a lifecycle management and financial strategy to support these LOS must be identified, covering a 10-year period and including:

1. Identification of lifecycle activities needed to provide the proposed LOS with consideration for:
    - Full lifecycle of assets.
    - Lifecycle activities options available to meet proposed LOS.
    - Risks associated with the options identified in sub-paragraph B, above.
    - Identification of which lifecycle activities identified in sub-paragraph B carry the lowest cost.
2. An estimate of the annual cost of meeting proposed LOS for a period of 10 years, separated by capital and operating expense.

Methodology

The LOS framework is a valuable tool for assessing and managing the performance of a system or service. Target levels of service for the Municipality have been developed through comprehensive engagement with municipal staff and referencing resident satisfaction surveys. To achieve a target level of service goal, careful consideration of the following should be considered.

Financial Impact Assessment

- Assess historical expenditures/budget patterns to gauge feasibility of increasing budgets to achieve LOS targets
- Consider implications of LOS adjustments on other services, and other infrastructure programs (tradeoffs)

Infrastructure Condition Assessment

- Regularly assess the condition of critical infrastructure components.
- Use standardized condition indices or metrics to quantify the state of infrastructure.
- Identify non-critical components where maintenance can be deferred without causing severe degradation.
- Adjust condition indices or metrics to reflect the reduced maintenance budget.

Service Metrics

- Measure user satisfaction, response times, and other relevant indicators for the specific service.

Service Impact Assessment

- Evaluate potential impacts on user satisfaction and service delivery due to decreased infrastructure condition.

Risk Management

- Identify potential risks to infrastructure and service quality.
- Develop contingency plans to address unforeseen challenges without compromising service quality.
- Monitor performance closely to ensure that the target investment translates into achieving the desired infrastructure condition.

Service Improvement Metrics

- Analyze the performance of target levels of service regularly and incorporate more ambitious targets based on user satisfaction if required.

Timelines

- Although Ontario Regulation 588/17 requires identification of expenditures for a 10-year period in pursuit of LOS targets, it does not require municipalities to identify the timeframe to achieve them.
- Careful consideration should be given to setting realistic targets for when LOS targets are to be achieved.

General Considerations for All Scenarios

Stakeholder Engagement:

- Regularly engage with stakeholders to gather feedback and communicate changes transparently.

Data-Driven Decision Making:

- Use data analytics to inform decision-making processes and identify areas for improvement.

Flexibility and Adaptability:

- Design the methodology to be flexible, allowing for adjustments based on evolving conditions and priorities.

Continuous Improvement:

- Establish a process for continuous review and improvement of the LOS methodology itself.

Proposed Levels of Service Overview

Community Engagement Survey

As part of the development of the Asset Management Plan, the Municipality of Highlands East made efforts to gather input on community priorities and service levels. Although a public engagement survey was distributed, the response rate was very low, with only 4 residents participating.

To supplement this, the municipality conducted stakeholder workshops with municipal staff, who are both residents of the community and closely involved in service delivery. Through their day-to-day interactions, such as responding to service requests, work orders, and resident feedback, staff provided valuable insights into community expectations, areas of concern, and priorities for future investment.

This internal knowledge, grounded in direct experience with public needs and operational realities, has played a central role in shaping the proposed Levels of Service and identifying opportunities for improvement. The municipality remains committed to incorporating broader community feedback in future updates, while recognizing the value of informed internal perspectives in guiding responsible asset management decisions.

Proposed Levels of Service Scenarios

The following three scenarios have been considered for establishing target levels of service for all asset categories included in this Asset Management Plan.

While all three scenarios were reviewed, the Municipality of Highlands East selected Scenario 2 as their preferred path forward regarding proposed levels of service, which is reflected in the financial strategy and 10-year capital replacement forecasts.

Scenario 1: Achieving Full Funding in 15 Years

Approach: This scenario assumes a phased 1.5% annual tax increase, 3.6% annual water rate increase, and 2.1% wastewater rate increase, targeting full funding for tax-supported assets in 15 years and water/wastewater assets in 20 years.

Scenario 2: Achieving 75% Funding in 15 Years

Approach: This scenario assumes a phased 0.7% annual tax increase, 2.6% annual water rate increase, and 0.9% wastewater rate increase, targeting 75% funding for tax-supported assets in 15 years and water/wastewater assets in 20 years.

Scenario 3: Maintain Current Capital Investment

Approach: This scenario maintains the current level of capital investment, projecting asset conditions and risk based on existing funding levels.

This methodology provides a structured approach for managing infrastructure conditions and levels of service under different budget scenarios, emphasizing adaptability and stakeholder communication.

Through a comprehensive assessment, the following levels of service for 8 asset categories have been developed, aligning with the long-term interests of the municipality. Achievability is the key consideration, with measures in place to ensure realistic targets. The municipality's financial capacity was thoroughly reviewed, confirming its ability to sustain the proposed service levels. Complementing this, a detailed lifecycle management and financial strategy was developed, delineating necessary activities for each asset category. This strategy outlines the full lifecycle of assets, presents viable options for lifecycle activities, evaluates associated risks, and prioritizes cost-effective measures to maintain the proposed service standards.

These funding strategies reflect the municipality's consideration of long-term service levels, financial capacity, and the risks of underinvestment, as outlined in Section 6.2 of Ontario Regulation 588/17.

Preferred Approach and Rationale

Scenario 2 was selected by the municipality as it offers a practical, phased approach to improving asset management while respecting the community's financial capacity. Although it does not fully close the infrastructure funding gap, this scenario allows the municipality to gradually increase reinvestment levels in a way that balances affordability with long-term sustainability. This approach supports strategic decision-making, addresses high-priority needs, and helps minimize financial strain on residents.

This strategy prioritizes informed decision-making and targets high-need areas, helping to manage risks without placing undue pressure on taxpayers. Key components of this approach include ongoing contributions to reserve accounts, which will serve as a critical tool in bridging funding shortfalls and supporting long-term infrastructure planning. In addition, the municipality will make strategic use of one-time or non-sustainable revenue sources such as grants, surpluses, and reserves, to supplement capital funding and address priority projects.

While this measured strategy may result in some delays to infrastructure improvements and a continued backlog in the near term, it reflects a commitment to maintaining service levels and ensuring the reliability of essential assets. By focusing on targeted reinvestment, proactive maintenance, and financial responsibility, the municipality is laying the foundation for more resilient infrastructure and sustainable growth.

Scenario Analysis

Scenario 1: Achieving Full Funding

This scenario outlines a phased funding approach, with an annual tax increase of approximately 1.5%, along with 3.6% increases in water rates and 2.1% increases in wastewater rates, aiming to achieve full funding within 15 years. The approach focuses on ensuring the municipality can fully fund its infrastructure needs over a set period.

The following analysis considers the affordability, achievability, and associated risks of this scenario, evaluating how the proposed funding strategy aligns with both community expectations and long-term infrastructure sustainability.

Lifecycle Changes

Increasing capital investment to achieve full funding over 15 years would significantly improve the municipality's ability to manage its infrastructure assets. This phased approach would allow for incremental funding increases, enabling proactive maintenance, timely upgrades, and early replacements, which would reduce the need for emergency repairs and extend asset lifecycles. The following lifecycle activities would be undertaken:

- Paved Roads
  - Increased capacity to resurface surface-treated roads more frequently (targeting a 5–7 year cycle), avoiding costly full reconstruction due to deferred maintenance.
- Bridges and Culverts
  - Timely implementation of all OSIM report recommendations to maintain functionality and extend lifespan, helping to avoid loading restrictions and safety concerns.
- Water and Wastewater Systems
  - Investment in dry hydrants and water shuttle certification
  - Major rehabilitation and replacement projects could proceed on a proactive basis rather than relying on emergency repairs.
  - Address inflow and infiltration issues and invest in system upgrades to improve reliability
- Buildings
  - Establish a formal BCA program with a regular update cycle (5–10 years) and implement the recommendations identified in those assessments to ensure long-term asset sustainability.
  - Support additional contract services to enhance capacity for maintenance and inspections.
  - Establish a formal PM program and shift from a reactive to a proactive building maintenance strategy.
- Machinery & Equipment and Vehicles
  - Enable timely replacement of machinery, equipment, and vehicles, avoiding extended operation past their expected lifecycle.

Sustainability and Feasibility of Proposed Service Levels

Of the three scenarios analyzed, Scenario 1 requires the highest tax increase. Reaching full funding immediately would require an increase of 23.6% in tax revenue, 69.8% in water rates, and 35.1% in wastewater rates. This is not reasonable or realistic to achieve in a short period of time. With the recommended implementation timeframe of 15 years, tax revenue would be increased gradually from $6.9 million to $8.7 million, water revenue from $202 thousand to $344 thousand, and wastewater revenue from $137 thousand to $187 thousand.

Based on maintaining current funding levels and existing sustainable grant funding, the available capital funding over the next 10 years for Scenario 1 is indicated in the table below:

Table 5: Scenario 1 Available Capital Funding Over Next 10 Years

Source	Available Capital Funding									
	2026	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
Tax Revenue	$2.0m	$2.1m	$2.2m	$2.3m	$2.4m	$2.6m	$2.7m	$2.8m	$2.9m	$3.0m
Water Rates	$53k	$61k	$69k	$77k	$85k	$94k	$103k	$112k	$122k	$132k
Sanitary Rates	$74k	$77k	$80k	$83k	$86k	$89k	$92k	$96k	$99k	$103k

The above table accounts for both current and future expenditures in order to achieve and maintain the service level option. This requires a combination of capital spending and saving (i.e. reserves) to ensure future large expenditures can be financed.

Risk Analysis

Evaluating the risks associated with each service level option is essential for balancing infrastructure needs, financial sustainability, and community expectations. By identifying and assessing these risks, the municipality can make informed decisions that support long-term service reliability.

Scenario 1 Risks

- Delayed Improvement: The municipality will not see significant improvements in asset conditions or service levels until full funding is reached after 15 years. However, gradual improvements will be made over time as funding increases.
- Infrastructure Backlog: Without immediate funding, there is a risk that the existing infrastructure backlog could continue to grow during the phase-in period, potentially leading to higher long-term costs and service disruptions.
- Resource Constraints: Implementing and maintaining this service level option may stretch the municipality's operational capacity, particularly if there are limited resources or capacity to handle the expanded scope of work over the long term.
- Taxation Increase: While these increases are technically achievable, there’s a possibility that residents may not fully support sustained increases over the long term, especially given the preference for moderate tax rates and the general satisfaction with current services.

Scenario 2: Achieving 75% Funding

This scenario outlines a phased funding approach, with an annual tax increase of approximately 0.7%, along with 2.6% increases in water rates, and 0.9% increases in wastewater rates, aiming to achieve 75% funding within 15 years.

The following analysis considers the affordability, achievability, and associated risks of this scenario, evaluating how the proposed funding strategy aligns with both community expectations and long-term infrastructure sustainability.

Lifecycle Changes

Increasing capital investment to achieve 75% funding would significantly improve the municipality's ability to manage its infrastructure assets. This phased approach would allow for incremental funding increases, enabling proactive maintenance, timely upgrades, and early replacements, which would reduce the need for emergency repairs and extend asset lifecycles. The following lifecycle activities would be undertaken:

- Paved Roads
  - Improve repaving frequency where most needed, but continue to defer some lifecycle work due to partial funding constraints.
- Bridges and Culverts
  - Prioritize high-risk OSIM recommendations, completing critical repairs while deferring lower-priority upgrades as needed.
- Water and Wastewater Systems
  - Implement the most urgent capital recommendations from OCWA, with phased replacement and rehabilitation.
  - Begin a limited CCTV inspection program focused on high-risk areas.
  - Address key infiltration and capacity concerns through targeted projects.
- Stormwater Systems
  - Upgrade priority stormwater systems toward 100-year storm standards, focusing on areas with the highest flood risk.
- Buildings
  - Address the most critical BCA recommendations, such as roof replacements, while deferring lower-priority items.
    Begin transitioning to a proactive maintenance approach through partial implementation.
- Land Improvements
  - Maintain a 20-year replacement cycle for essential assets, while staging accessibility and enhancement upgrades over time.
- Machinery & Equipment and Vehicles
  - Replace high-use or high-priority assets at end-of-life; continue operating some lower-priority assets beyond optimal lifecycle.
  - Reduce reliance on contracting where cost-effective but continue outsourcing select services.

Sustainability and Feasibility of Proposed Service Levels

Of the three scenarios analyzed, Scenario 2 requires a moderate tax increase. Reaching 75% of full funding immediately would require an increase of 10.8% in tax revenue, 46.7% increase in water rates, and 13.4% increase in wastewater rates. This is not reasonable or realistic to achieve in a short period of time. With the recommended implementation timeframe of 15 years, tax revenue would be increased gradually from $6.9 million to $7.7 million, water revenue from $202 thousand to $297 thousand, and wastewater revenue from $137 thousand to $157 thousand.

Based on these gradual proposed increases, while maintaining existing sustainable grant funding, the available capital funding over the next 10 years for Scenario 2 is indicated in the table below:

Table 6: Scenario 2 Available Capital Funding Over Next 10 Years

Source	Available Capital Funding									
	2026	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
Tax Revenue	$2.0m	$2.0m	$2.1m	$2.1m	$2.2m	$2.2m	$2.3m	$2.3m	$2.4m	$2.4m
Water Rates	$51k	$57k	$62k	$68k	$74k	$80k	$86k	$92k	$99k	$105k
Sanitary Rates	$72k	$73k	$75k	$76k	$77k	$79k	$80k	$81k	$83k	$84k

The above table accounts for both current and future expenditures in order to achieve and maintain the service level option. This requires a combination of capital spending and saving (i.e. reserves) to ensure future large expenditures can be financed.

Risk Analysis

Evaluating the risks associated with each service level option is essential for balancing infrastructure needs, financial sustainability, and community expectations. By identifying and assessing these risks, the municipality can make informed decisions that support long-term service reliability.

Scenario 2 Risks

- Delayed Improvement: The municipality will not see significant improvements in asset conditions or service levels until full funding is reached after 15 years. However, gradual improvements will be made over time as funding increases.
- Infrastructure Backlog: Without immediate funding, there is a risk that the existing infrastructure backlog could continue to grow during the phase-in period, potentially leading to higher long-term costs and service disruptions.
- Resource Constraints: Implementing and maintaining this service level option may stretch the municipality's operational capacity, particularly if there are limited resources or capacity to handle the expanded scope of work over the long term.
- Taxation Increase: While these increases are technically achievable, there’s a possibility that residents may not fully support sustained increases over the long term, especially given the preference for moderate tax rates and the general satisfaction with current services.

Scenario 3: Maintain Current Capital Investment

This scenario involves maintaining the current funding levels for infrastructure over the next 15 years. The approach focuses on sustaining the existing investment, which may not fully address the growing infrastructure needs but will help manage them at the current rate.

The following analysis considers the affordability, achievability, and associated risks of this scenario, evaluating how the proposed funding strategy aligns with both community expectations and long-term infrastructure sustainability.

Lifecycle Changes

Maintaining capital investment at current levels involves no lifecycle changes. The municipality would continue to implement current lifecycle management activities and rely on current maintenance strategies. Sustaining the current investment level may not be sufficient to meet long-term infrastructure needs or allow for improvements in service delivery.

Sustainability and Feasibility of Proposed Service Levels

Of the three scenarios analyzed, Scenario 3 requires no tax increase. This approach is realistic as it allows the municipality to continue with its current asset management practices without increasing taxes. Tax revenue would remain constant at $6.9 million, with water rates at $202 thousand, and wastewater rates at $137 thousand. While this option may be feasible in the short term, it may not be sustainable in the long run due to increasing infrastructure demands, especially with aging assets and rising maintenance costs.

Based on these gradual proposed increases, while maintaining existing sustainable grant funding, the available capital funding over the next 10 years for Scenario 3 is indicated in the table below:

Table 7: Scenario 3 Available Capital Funding Over Next 10 Years

Source	Available Capital Funding									
	2026	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
Tax Revenue	$1.9m	$1.9m	$1.9m	$1.9m	$1.9m	$1.9m	$1.9m	$1.9m	$1.9m	$1.9m
Water Rates	$46k	$46k	$46k	$46k	$46k	$46k	$46k	$46k	$46k	$46k
Sanitary Rates	$71k	$71k	$71k	$71k	$71k	$71k	$71k	$71k	$71k	$71k

The above table accounts for both current and future expenditures in order to achieve and maintain the proposed levels of service. This requires a combination of capital spending and saving (i.e. reserves) to ensure future large expenditures can be financed.

Risk Analysis

Evaluating the risks associated with each service level option is essential for balancing infrastructure needs, financial sustainability, and community expectations. By identifying and assessing these risks, the municipality can make informed decisions that support long-term service reliability.

Scenario 3 Risks

- Deferred Maintenance and Backlog Growth: With no increase in funding, asset replacements and upgrades may be delayed, contributing to a growing infrastructure backlog. This can lead to higher long-term costs, unplanned repairs, and reduced asset performance.
- Regulatory and Compliance: Insufficient investment may hinder the Municipality's ability to meet future regulatory requirements, posing risks to compliance and public safety.
- Financial Instability: Continued reliance on external grants and limited tax increases could create financial instability, delaying critical projects and impacting the ability to maintain service levels.
- Taxation Increase: While the annual increases are the most manageable, it may not provide enough funding to meet future service demands. This scenario may be more acceptable in the short term, but could become unsustainable in the long run if infrastructure needs continue to rise.
- Reserve Funding: Drawing on asset management reserves to address funding gaps may reduce the municipality’s capacity to respond to future infrastructure needs and achieve long-term goals.

5. Road Network

State of the Infrastructure

Highland East's Road Network comprises the largest share of its infrastructure portfolio, with a current replacement cost of $46 million, distributed primarily between gravel and surface treated roads.

The Municipality also owns and manages other supporting infrastructure and capital assets, including guiderails and streetlights.

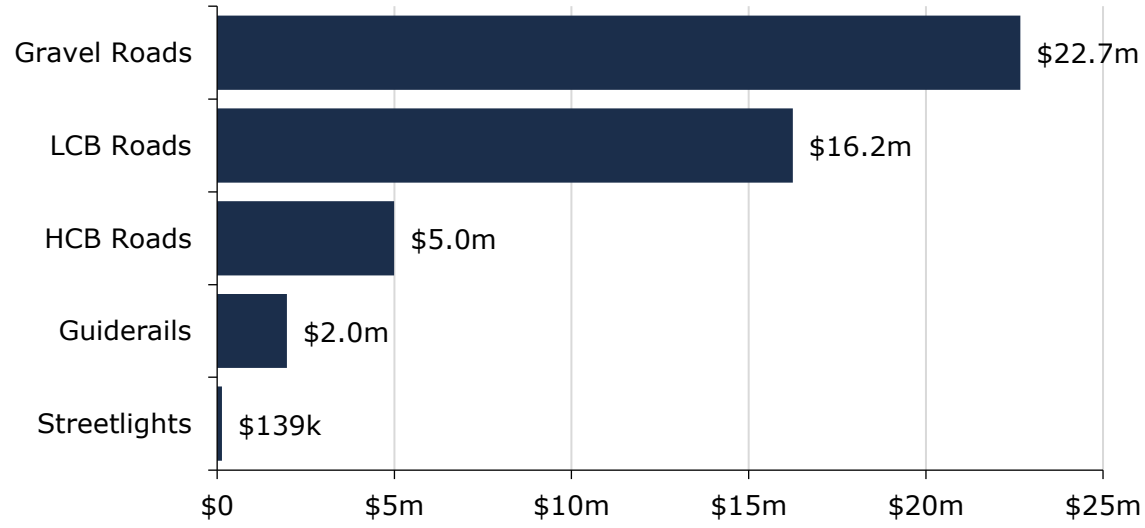
The following summarizes the state of the infrastructure for the road network, and the Municipality's ability to fund the proposed levels of service.

Replacement Cost	Condition	Financial Capacity	
		Annual Requirement:	$1,114,217
$46,018,174	Fair (51%)	Funding Available:	$639,292
		Annual Deficit:	$474,925

Inventory & Valuation

The figure below displays the replacement cost of each asset segment in the Municipality's Road Network inventory.

Figure 10 Road Network Replacement Value

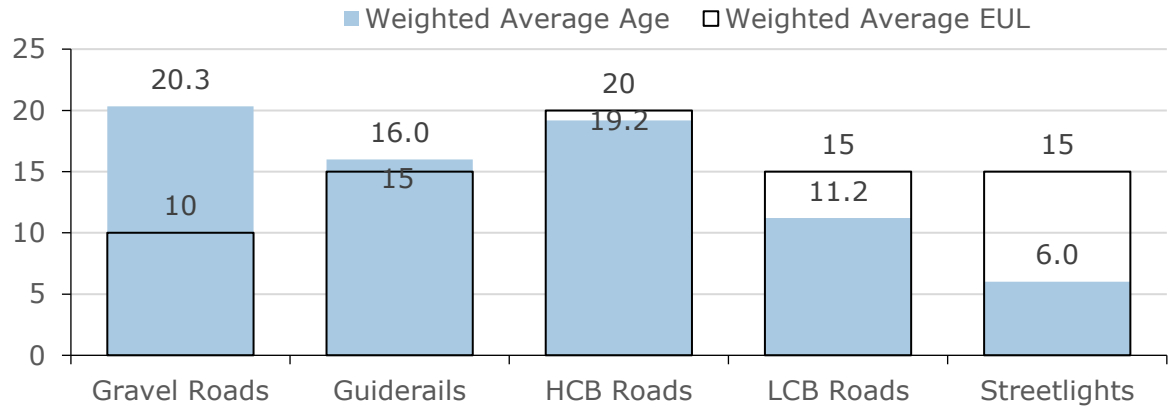


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent realistic capital requirements.

Asset Condition & Age

The graph below identifies the average age, and the estimated useful life for each asset segment[1]. It is all weighted by replacement cost.

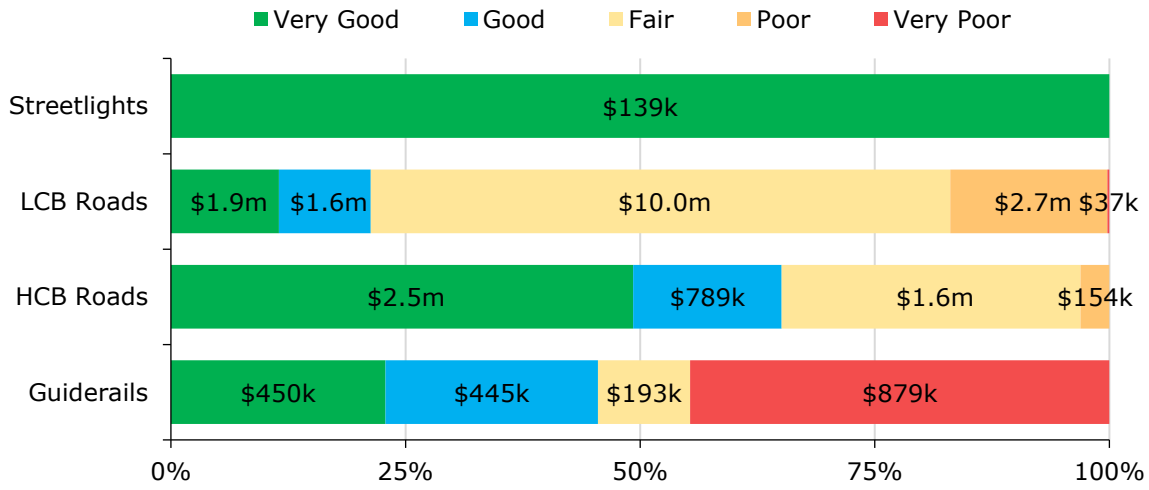
Figure 11 Road Network Average Age vs Average EUL



The analysis shows that, based on in-service dates, gravel roads continue to remain in operation beyond their expected useful life, with an average age of 20 against an average expected serviceable life of 10 years. This is due to the life cycle management strategies currently being utilized which will be outlined 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 Highlands East's roads continue to provide an acceptable level of service, the Municipality should monitor the average condition of all assets. If the average condition declines, staff should re-evaluate their lifecycle management

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

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 Municipality's current approach is described below:

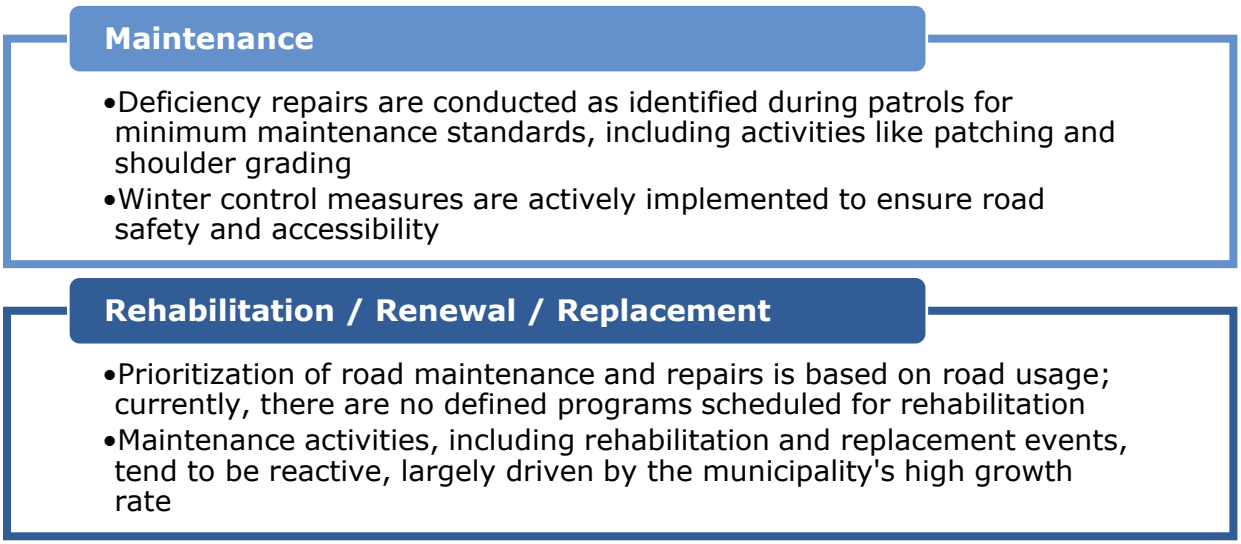
- All roadways are examined and monitored in compliance with the Minimum Maintenance Standards as stipulated by O. Reg. 239/02. The most recent Roads Needs Study was completed in 2019.
- The condition scale for roads utilized is from 0 to 100 from Very Poor to Very Good.

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



PCI scores, staff judgment, traffic loads, and opportunity to bundle projects with utility work 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 in Figure 14, Figure 14 and Figure 15.

Figure 14: Gravel Road Lifecycle Model

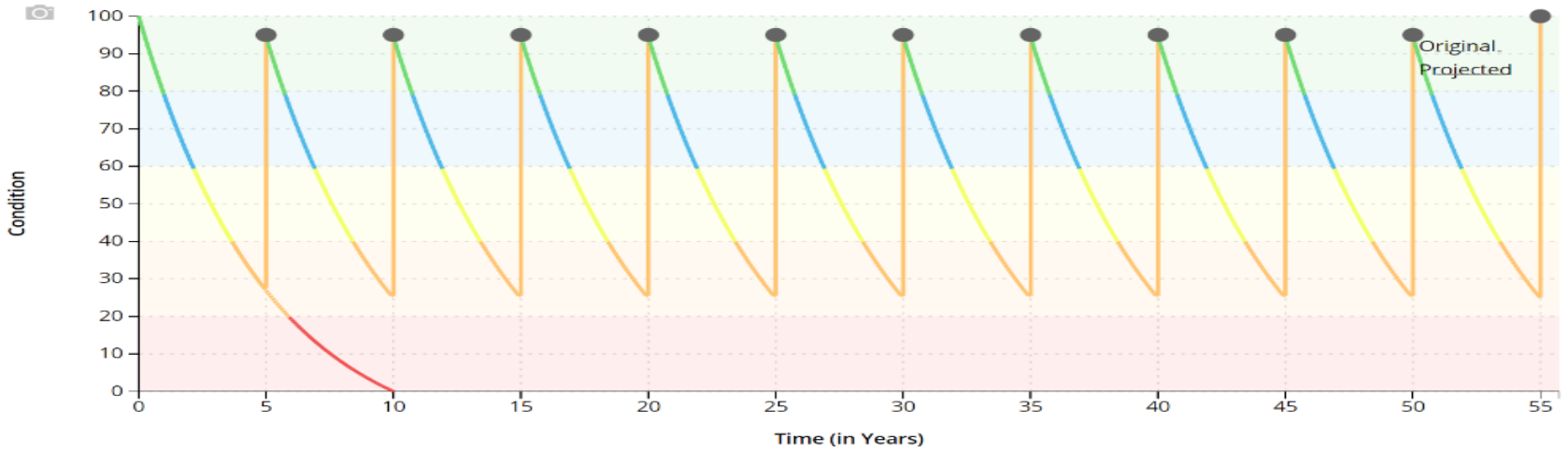


Figure 15 Surface Treated (LCB) Road Lifecycle Model

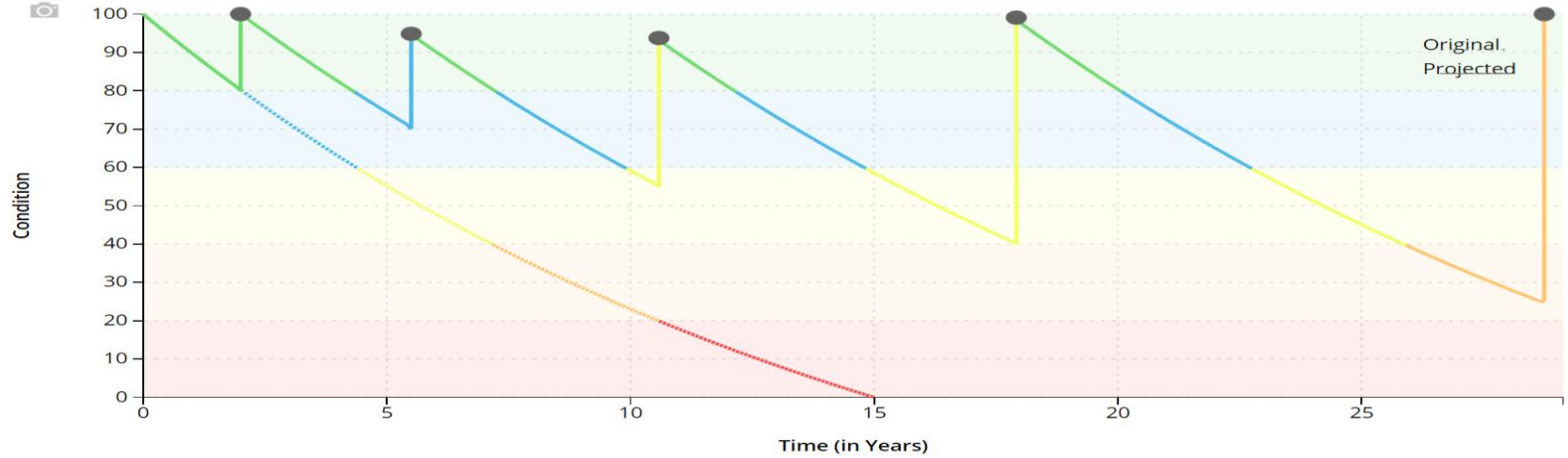
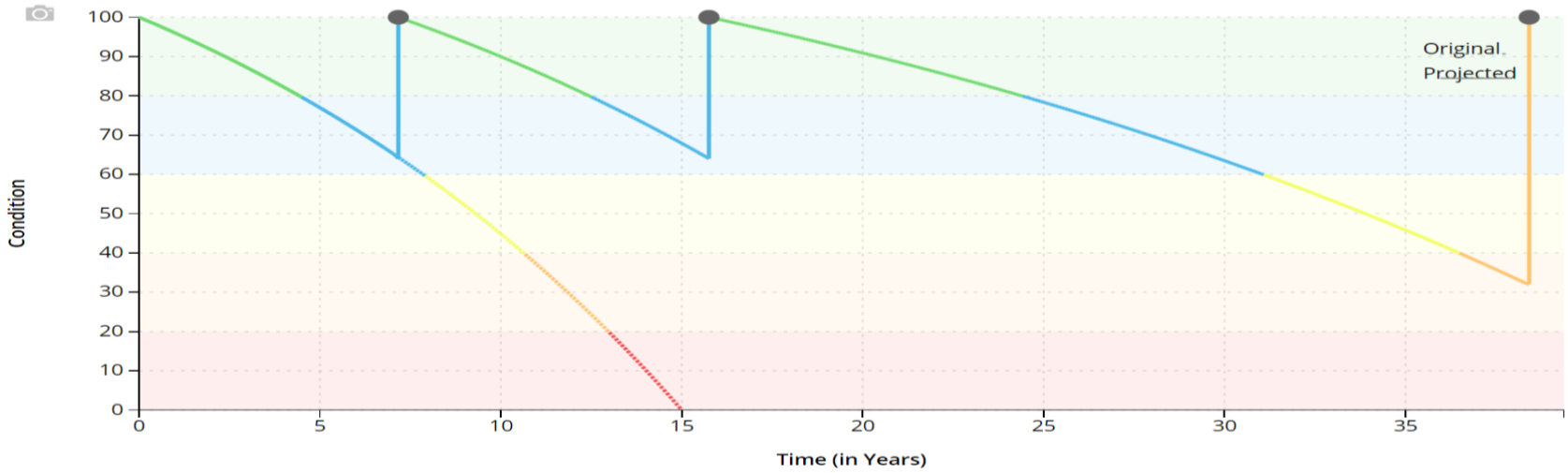


Figure 16 Asphalt (HCB) Road Lifecycle Model



Forecasted Capital Requirements

The figure below illustrates the cyclical short-, medium-, and long-term rehabilitation and replacement requirements for the Municipality's road network, with projections running through to 2078. This analysis is based on asset replacement costs, age analysis, condition data (where available), and lifecycle modeling specific to roads.

To sustain the current level of service, Highlands East requires an average annual capital reinvestment of approximately $1.5 million, represented by the red dotted line. While actual expenditures may vary from year to year, this figure serves as a useful benchmark for annual capital planning or reserve contributions to prevent infrastructure deficits over time.

The analysis also identifies a current backlog of approximately $879,000, representing assets within the road network that have exceeded their useful life. These projections offer a long-term, portfolio-level view of capital needs and are intended to guide sound financial planning decisions over multiple decades. The $1.5 million annual requirement reflects the cost to maintain current levels of service across the road network.

Figure 17 Road Network Forecasted Capital Replacement Requirements

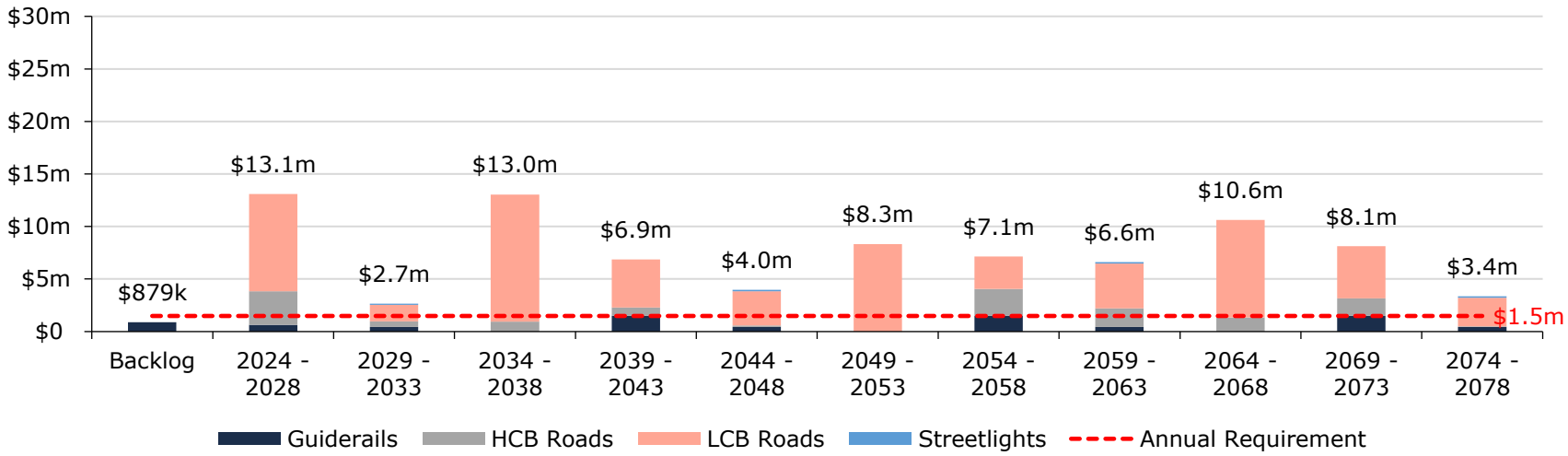


Table 8 below summarizes the projected cost of lifecycle activities (rehabilitation and replacement) that may need to be undertaken over the next 10 years to support current levels of service. These projections are generated in Citywide and rely on the data available in the asset register.

These projections can be different from actual capital forecasts. Consistent data updates, especially condition, will improve the alignment between the system-generated expenditure requirements, and the Municipality's capital expenditure forecasts.

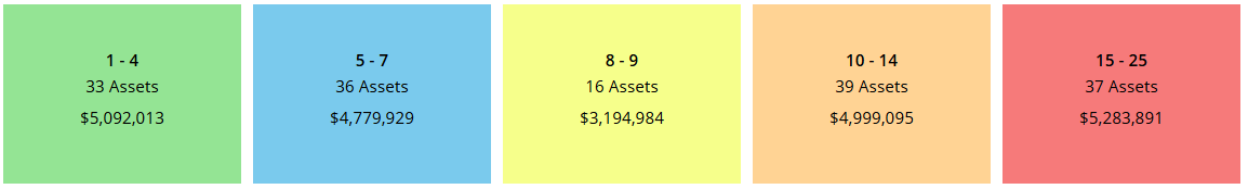
Table 8 Road Network System-generated 10-Year Capital Costs

Segment	Total	2025	2026	2027	2028	2029	2030	2031	2032	2034	2034
Guiderails	$1.1m	$0	$193k	$0	$445k	$0	$0	$111k	$302k	$37k	$0
HCB Roads	$3.7m	$242k	$1.7m	$765k	$48k	$435k	$0	$0	$49k	$476k	$0
LCB Roads	$10.8m	$3.0m	$4.4m	$1.2m	$227k	$451k	$237k	$208k	$353k	$230k	$528k
Streetlights	$139k	$0	$0	$0	$0	$0	$0	$0	$0	$139k	$0

Risk & Criticality

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

Figure 18 Road Network Risk Matrix



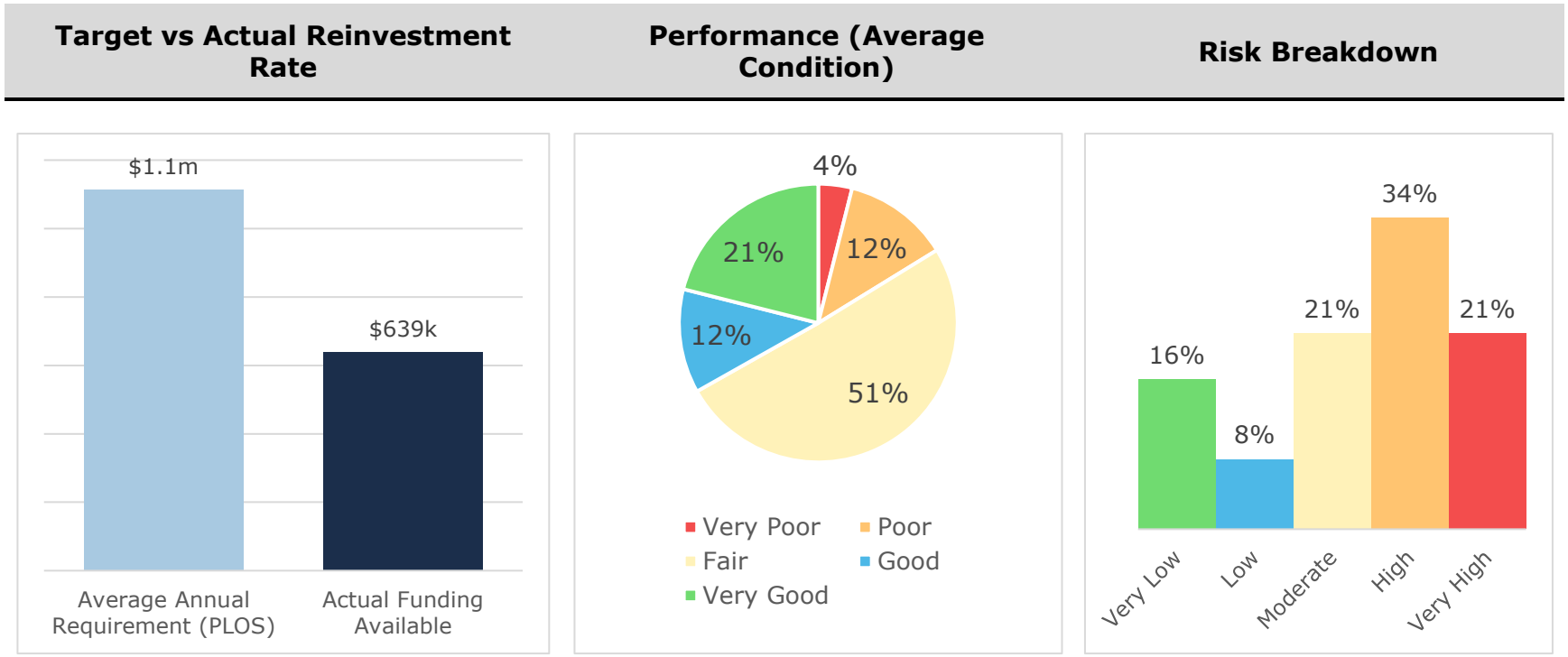
This is a high-level model developed by municipal staff and it should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure.

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

Levels of Service

The following tables identify the Municipality's metrics to identify their current level of service for the roads. By comparing the cost, performance (average condition) and risk year-over-year, Highlands East will be able to evaluate how their services/assets are trending.

Figure 19: Road Network Strategic Levels of Service



The tables that follow summarize Highlands East's current levels of service with respect to prescribed KPIs under Ontario Regulation 588/17.

Community Levels of Service

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

Table 9 Ontario Regulation 588/17 Road Network Community Levels of Service

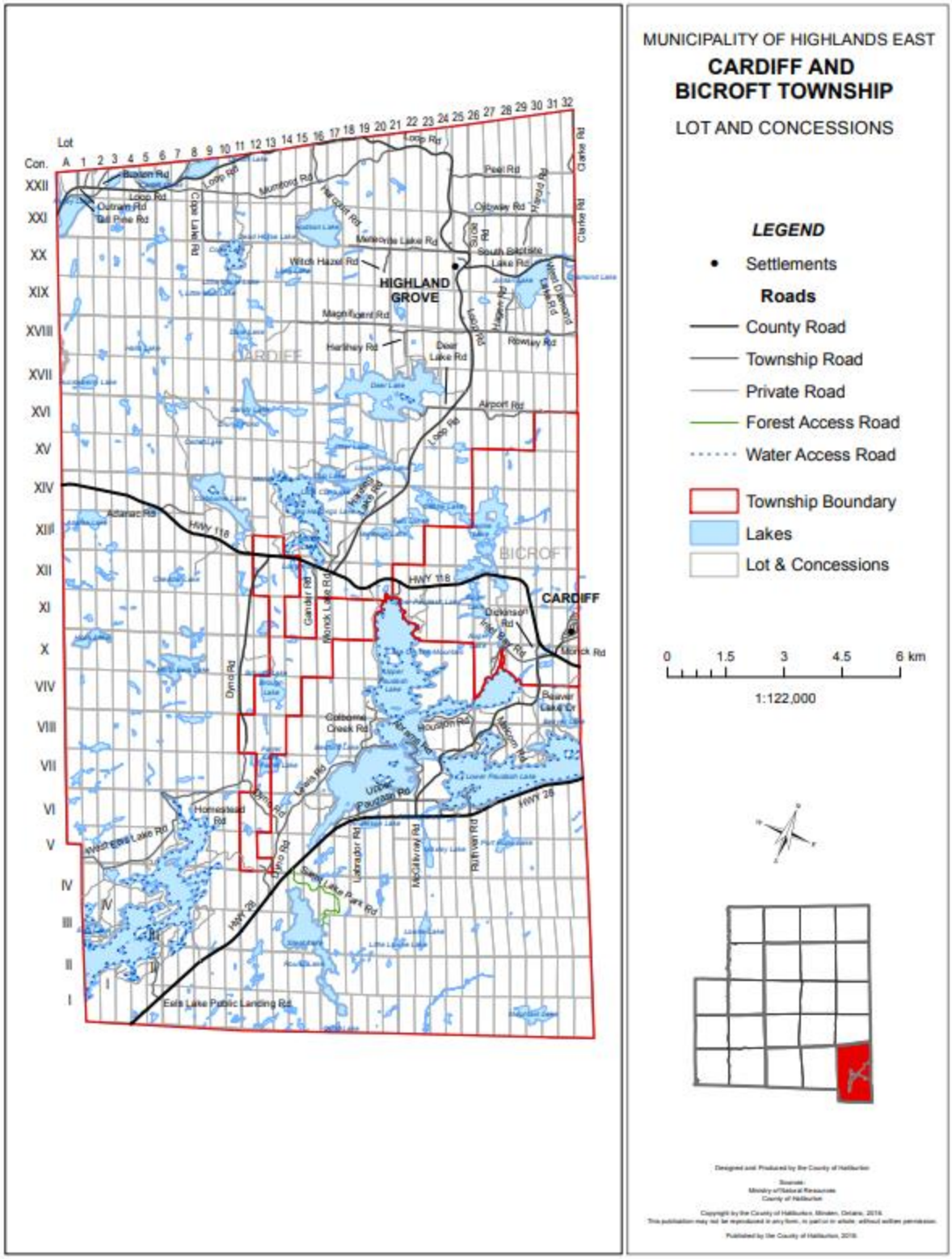
Service Attribute	Qualitative Description	Current LOS
Accessible & Reliable	Description, which may include maps, of the road network in the municipality and its level of connectivity	The Municipality is largely rural with some scattered semi-urban developments. The communities of Cardiff, Tory Hill, Wilberforce, Highland Grove, and Gooderham serve as the Municipality's main population centres.
Safe & Regulatory	Description or images that illustrate the different levels of road class pavement condition	From the 2019 Roads Needs Study "The average surface condition rating of all roads is 7.7 / 10 while the average structural adequacy rating is 15.2 / 20. This suggests that the typical road has a good riding quality, and in fair to good condition."

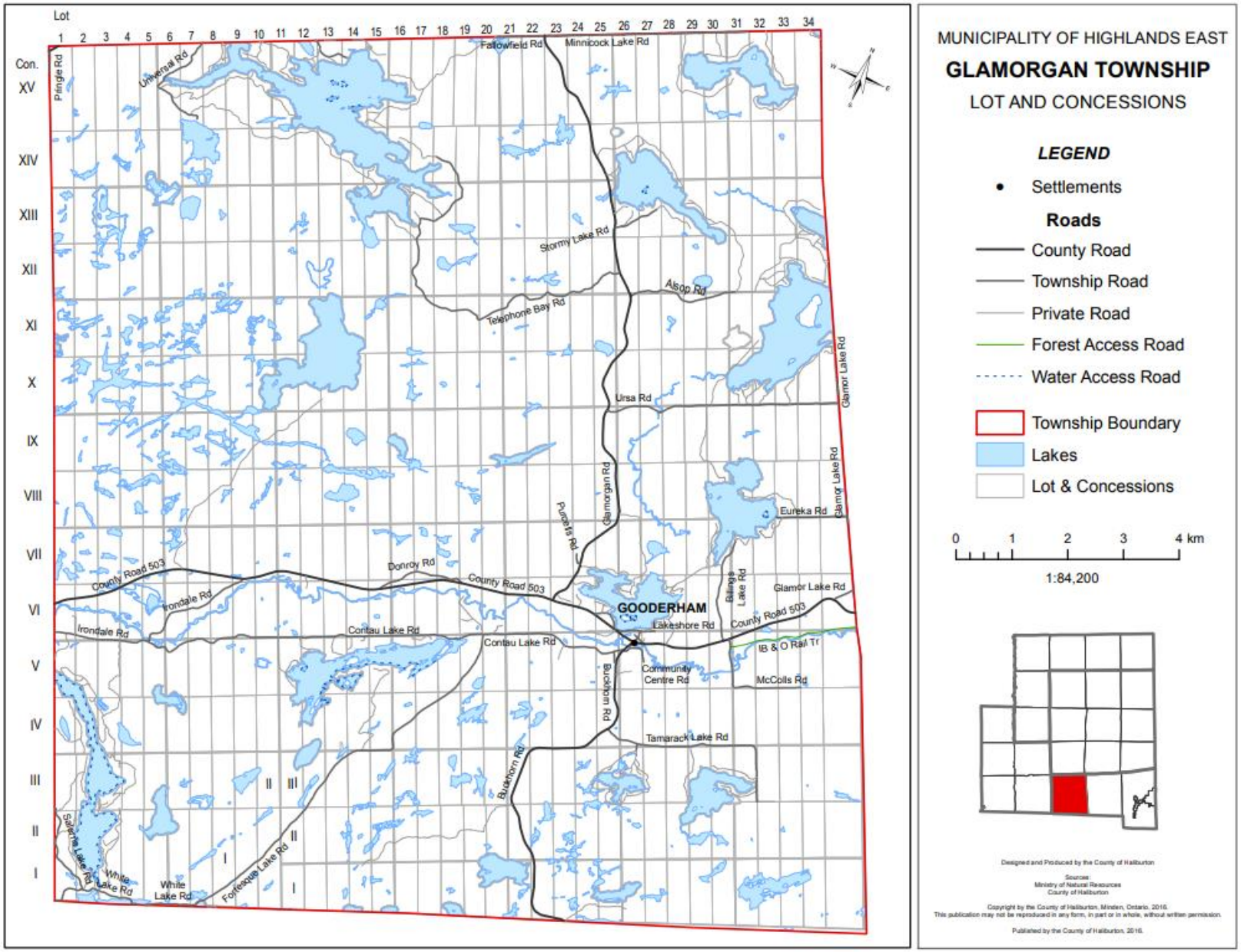
Technical Levels of Service

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

Table 10 Ontario Regulation 588/17 Road Network Technical Levels of Service

Service Attribute	Technical Metric	Current LOS
Safe & Regulatory	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	0 km/km^2
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	0 km/km^2
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	0.32 km/km^2
Sustainable	Average pavement condition index for paved roads	68 (Good)
	Average surface condition for unpaved roads (e.g. excellent, good, fair, poor)	Fair


MUNICIPALITY OF HIGHLANDS EAST
CARDIFF AND
BICROFT TOWNSHIP
LOT AND CONCESSIONS
LEGEND
Settlements
Roads
County Road
Township Road
Private Road
Forest Access Road
Water Access Road
Township Boundary
Lakes
Lot & Concessions
0 1.5 3 4.5 6 km
1:122,000
HIGHLAND GROVE
CARDIFF
BICROFT
HWY 118
HWY 28
Loop Rd
Airport Rd
Deer Lake Rd
Monck Rd
Eagle Lake Public Landing Rd


Lot
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34
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XV
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IV
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II
I
Pingle Rd
Universal Rd
Fallowfield Rd
Minnicook Lake Rd
Stormy Lake Rd
Alsop Rd
Telephone Bay Rd
Ursa Rd
Glamor Lake Rd
Glamorgan Rd
Purcells Rd
Eureka Rd
Balings Lake Rd
County Road 503
Donroy Rd
Irondale Rd
Contau Lake Rd
GOODERHAM
Lakeshore Rd
IB & O Rail Tr
Community Centre Rd
McColls Rd
Buckhorn Rd
Tamarack Lake Rd
Salerno Lake Rd
White Lake Rd
Forfesque Lake Rd
MUNICIPALITY OF HIGHLANDS EAST
GLAMORGAN TOWNSHIP
LOT AND CONCESSIONS
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Private Road
Forest Access Road
Water Access Road
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Lakes
Lot & Concessions
0 1 2 3 4 km
1:84,200
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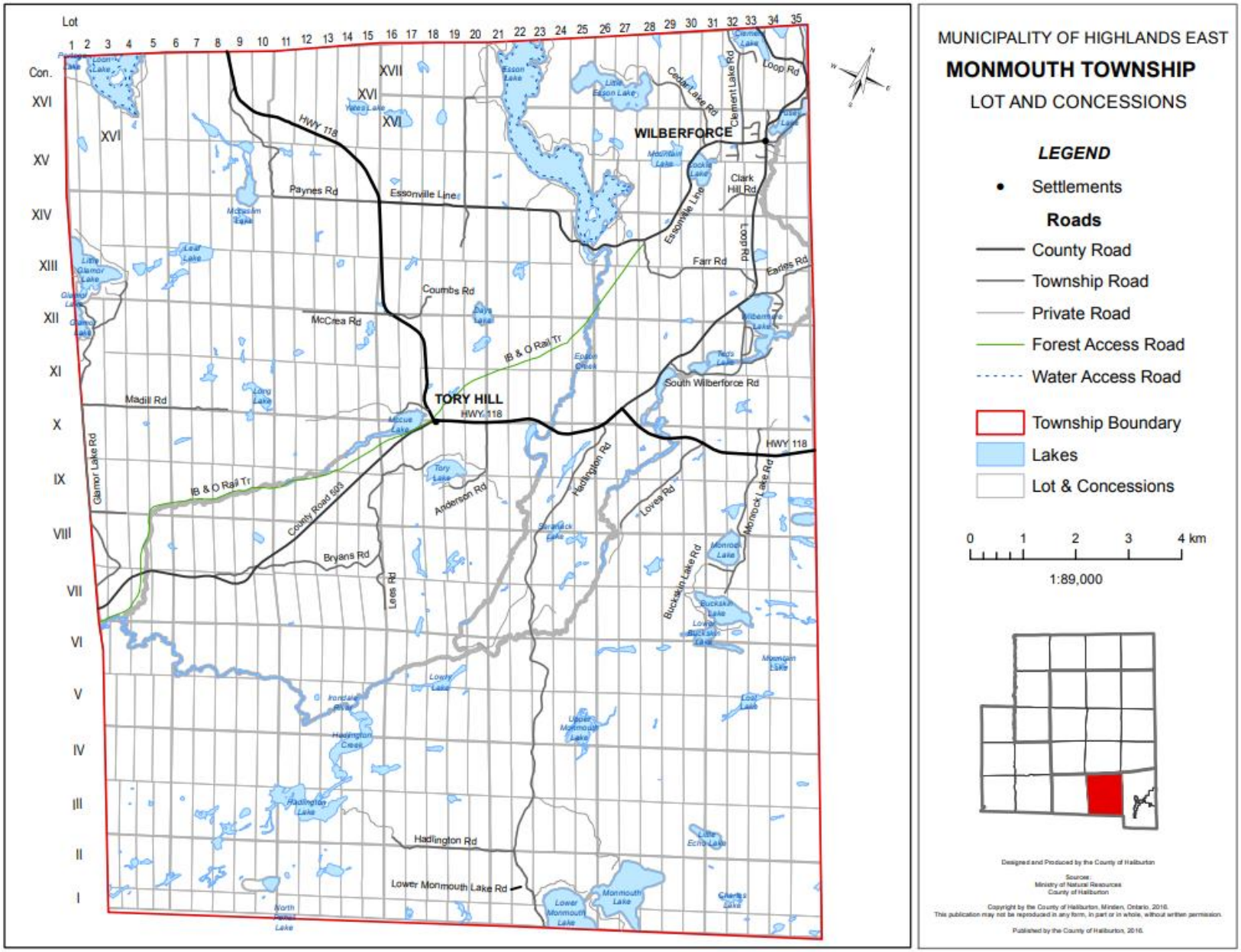
Lot
Con.
WILBERFORCE
TORY HILL
HWY. 118
Paynes Rd
Essonville Line
Coumbs Rd
McCrea Rd
Madill Rd
Farr Rd
Clark Hill Rd
South Wilberforce Rd
Glamor Lake Rd
County Road 503
Bryans Rd
Anderson Rd
Hadlington Rd
Lower Monmouth Lake Rd
Lovers Rd
Monmouth Lake Rd
Buckskin Lake Rd
Cedar Lake Rd
Clement Lake Rd
Loop Rd
Eagles Rd
IB & O Rail Tr
MUNICIPALITY OF HIGHLANDS EAST
MONMOUTH TOWNSHIP
LOT AND CONCESSIONS
LEGEND
Settlements
Roads
County Road
Township Road
Private Road
Forest Access Road
Water Access Road
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Lakes
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Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service (PLOS), discuss the associated risks and long-term sustainability of these service levels, and explain the Municipality's ability to afford the PLOS.

The tables and graphs below explain the proposed levels of service scenarios that were analyzed for the Road Network. Further PLOS analysis at the portfolio level can be found in Proposed Levels of Service Scenario Analysis.

Scenario	Description
Scenario 1: Achieving Full Funding	This scenario assumes a phased tax increase of approximately 1.5% annually, reaching full funding within 15 years
Scenario 2: Achieving 75% Funding	This scenario assumes a phased tax increase of approximately 0.7% annually, reaching 75% funding within 15 years
Scenario 3: Maintaining Current Capital Investment	This scenario maintains the current level of capital investment, projecting asset conditions and risk based on existing funding levels.

PLOS Analysis

The following table presents the outcomes for three funding scenarios, illustrating how varying levels of capital investment impact asset condition, risk, and overall performance over time.

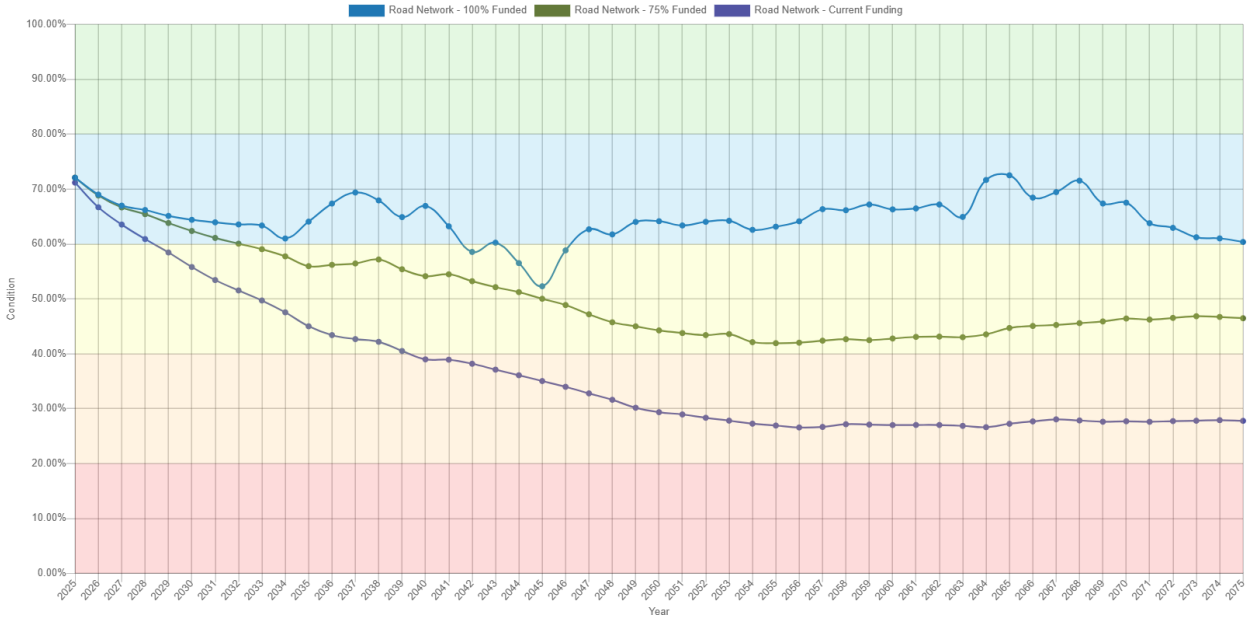
Table 11: Road Network pLOS Scenario Analysis

Scenario	Technical LOS Outcomes	Initial Value (2025)	10 Year Projection (2035)	25 Year Projection (2050)	Scenario Average
Scenario 1	Average Condition	72.07%	64.07%	64.14%	64.75%
	Average Asset Risk	8.52	10.32	9.76	9.82
	Average Annual Investment		$1,485,623		
	Capital re-investment rate		3.2%		
Scenario 2	Average Condition	72.07%	55.96%	44.25%	50.39%
	Average Asset Risk	8.52	11.77	13.78	12.61
	Average Annual Investment		$1,114,217		
	Capital re-investment rate		2.4%		
	Average Condition	72.07%	45.00%	29.35%	36.49%

Scenario 3	Average Asset Risk	8.52	13.72	16.66	15.1
	Average Annual Investment		$639,292		
	Capital re-investment rate		1.4%		

The following figure illustrates the projected condition of the asset category under each of the three investment level scenarios, demonstrating how varying reinvestment strategies impact overall asset condition over time.

Figure 20: Road Network Scenario Comparison



6. Bridges & Culverts

State of the Infrastructure

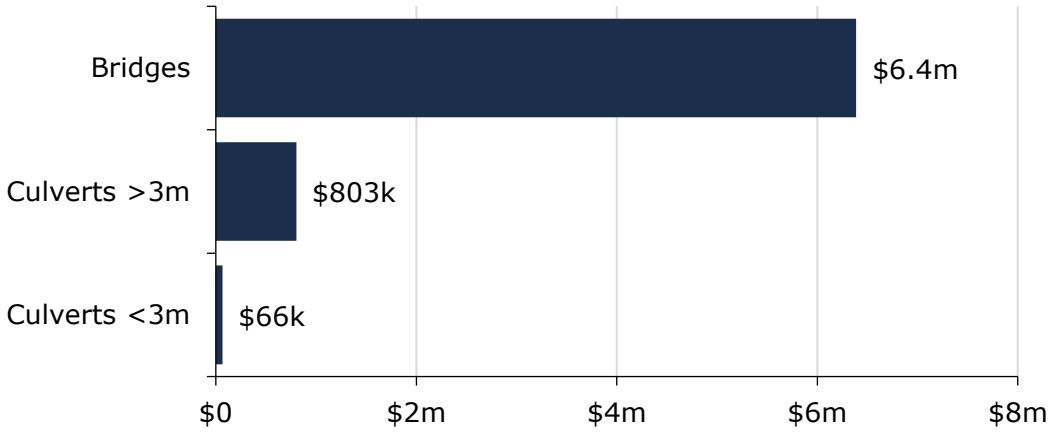
Bridges and culverts (B&C) represent a critical portion of the transportation services provided to the community. The following summarizes the state of the infrastructure for bridges & culverts, and the Municipality's ability to fund the proposed levels of service

Replacement Cost	Condition	Financial Capacity	
$7,257,000	Good (62%)	Annual Requirement:	$146,715
		Funding Available:	$179,584
		Annual Deficit:	$(32,869)

Inventory & Valuation

Figure 21 below displays the replacement cost of each asset segment in the Municipality's bridges and culverts inventory.

Figure 21 Bridges & Culverts Replacement Cost

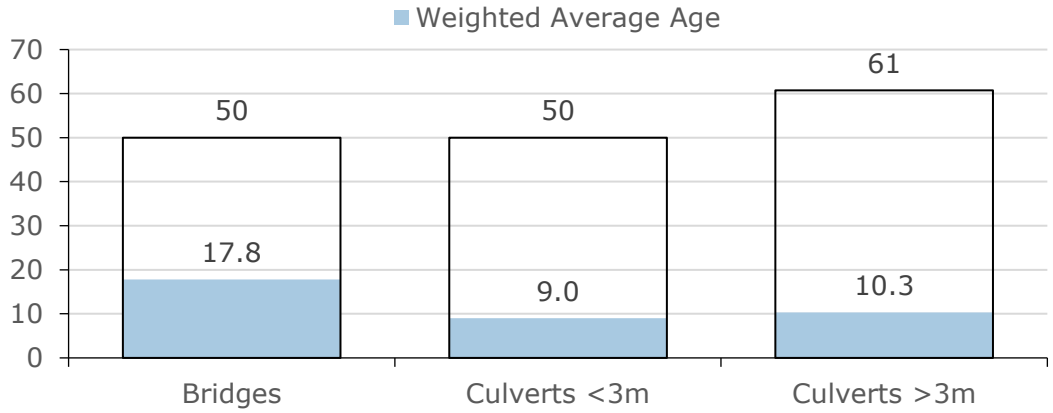


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed. This can be included in the Ontario Structures Inspection Manual (OSIM) inspections as the replacement cost is part of the calculation for the bridge condition index (BCI).

Asset Condition & Age

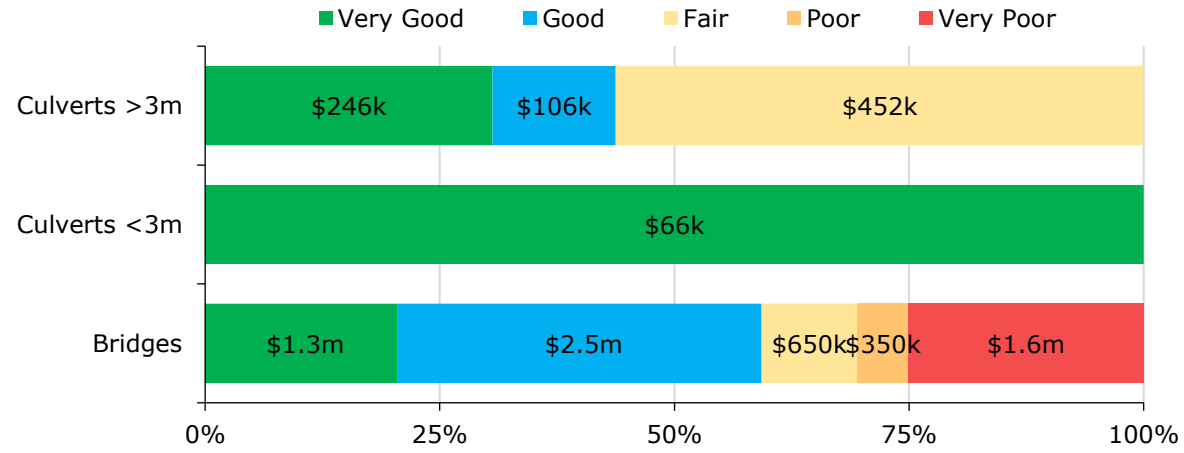
The graph below identifies the average age and the estimated useful life for each asset segment. The values are weighted based on replacement cost.

Figure 22 B&C 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 23 B&C Condition Breakdown



To ensure that the Municipality's bridges and culverts continue to provide an acceptable level of service, 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. Highlands East currently evaluates its 17 bridges and culverts every two years, in accordance with the Ontario Structure Inspection Manual (OSIM). The latest assessment was conducted by Tulloch in 2024. The condition scale for roads 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 24 South Wilberforce Bridge (BCI=99 Very Good)

Figure 25 Tall Pines Bridge (BCI=50 Fair)

Figure 26 Universal Road Twin Culvert (BCI=80 Very Good)

Figure 27 Eel's Lake Road Culvert (BCI=58 Fair)

Lifecycle Management Strategy

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

Figure 28 B&C Current Lifecycle Strategy

Maintenance / Rehabilitation / Replacement

- All lifecycle management activities within the municipality are guided by the outcomes of inspections conducted in accordance with the Ontario Structure Inspection Manual (OSIM)

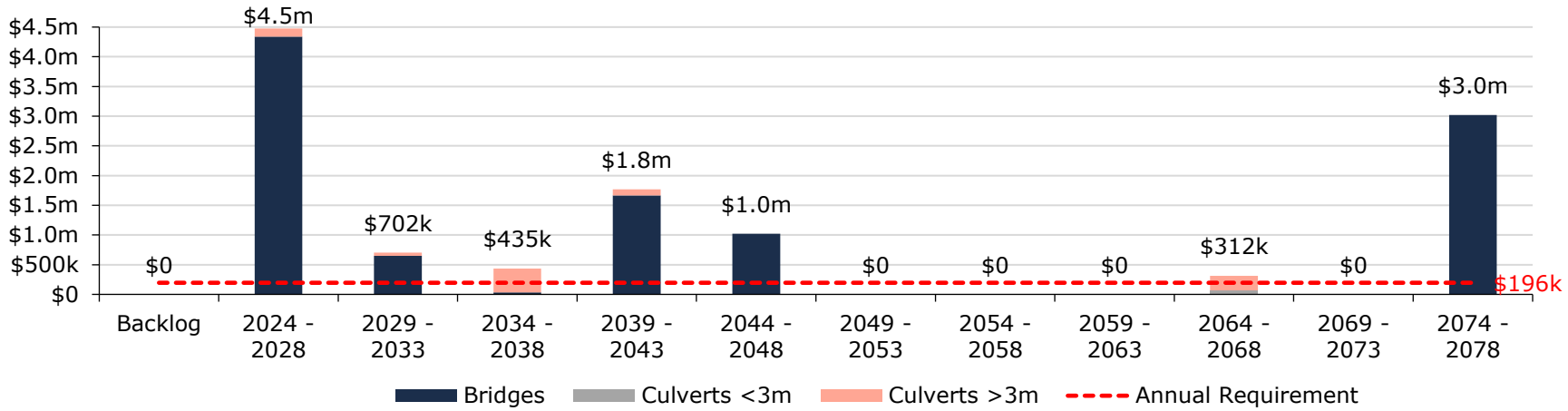
Forecasted Capital Requirements

The figure below illustrates the cyclical short-, medium- and long-term infrastructure rehabilitation and replacement requirements for the Municipality's bridges and culverts. These projections are based on asset replacement costs, age analysis, and condition data. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

To maintain the current level of service, Highlands East requires an average annual capital investment of approximately $196 thousand, as shown by the red dotted line. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

OSIM condition assessments and a robust risk framework will ensure that high-criticality assets receive proper and timely lifecycle intervention, including replacement

Figure 29 B&C Forecasted Capital Replacement Requirements



These are represented at the major asset level, i.e., full cost of bridge or culvert, rather than partial repair, rehabilitation, or replacement.

Table 12 below summarizes the projected cost of lifecycle activities (capital replacement only) that may need to be undertaken over the next 10 years to support current levels of service. These are represented at the major asset level, i.e., full cost of bridge or culvert, rather than partial repair, rehabilitation, or replacement.

Table 12 B&C System-generated 10-Year Capital Costs

Segment	Total	2025	2026	2027	2028	2029	2030	2031	2032	2034	2034
Bridges	$5.0m	$1.7m	$738k	$2.0m	$0	$0	$0	$0	$650k	$0	$0
Culverts <3m	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Culverts >3m	$187k	$34k	$101k	$0	$0	$0	$0	$0	$0	$0	$52k

These projections are generated in Citywide and rely on the data available in the asset register. Assessed condition data and replacement costs were used to assist in forecasting replacement needs for bridges and structural culverts.

These projections may be different from actual capital forecasts as outlined in OSIM inspections and recommended workplans. Consistent data updates, especially condition, will improve the alignment between the system-generated expenditure requirements, and the Municipality's capital expenditure forecasts, including long-term capital plans.

Risk & Criticality

The risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on available inventory data. See Appendix C: 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 30 B&C Risk Matrix

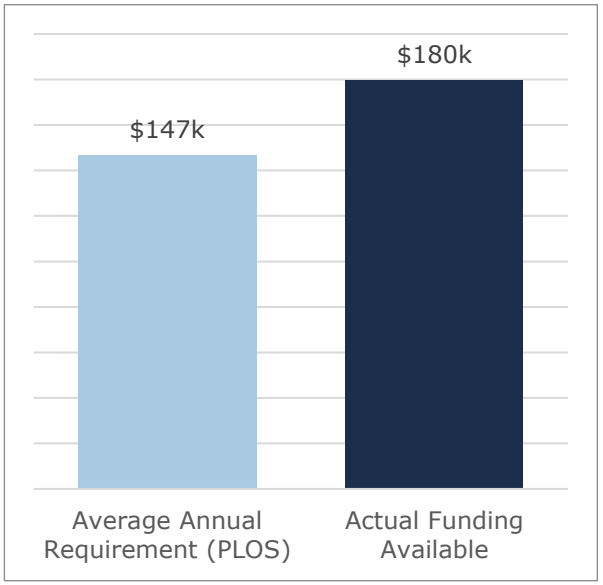
Levels of Service

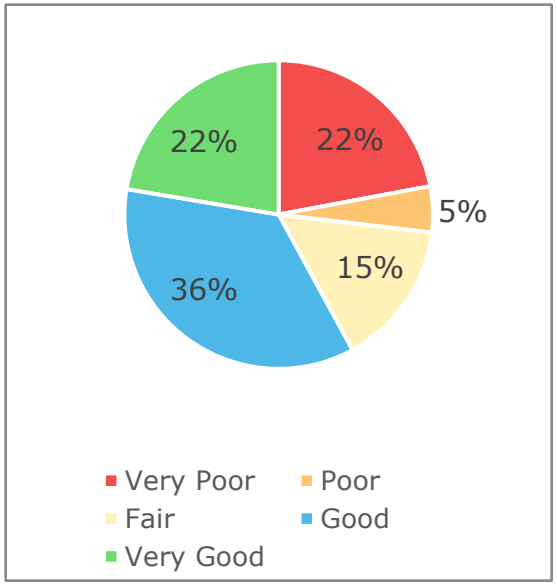
The following graphs identify the Municipality's metrics to identify their current level of service for the bridges and culverts. By comparing the cost, performance (average condition) and risk year-over-year Highlands East will be able to evaluate how their services/assets are trending.

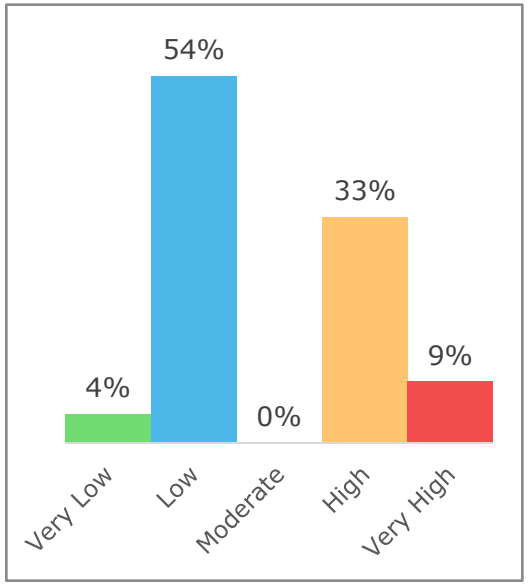
Figure 31: Bridge & Culvert Locations Map

Figure 32: B&C Strategic Levels of Service

Target vs Actual Reinvestment Rate	Performance (Average Condition)	Risk Breakdown







The metrics included below are the technical and community level of service metrics that are required as part of O. Reg. 588/17.

Community Levels of Service

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

Table 13 Ontario Regulation 588/17 B&C Community Levels of Service

Service Attribute	Qualitative Description	Current LOS
Accessible & Reliable	Description of the traffic that is supported by municipal bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Bridges and culverts are a key component of the municipal transportation network for all types of traffic. See Figure 31 locations
Safe & Regulatory	Description or images of the condition of bridges and culverts and how this would affect use of the bridges and culverts	See Figure 24 South Wilberforce Bridge (BCI=99 Very Good), Figure 25 Tall Pines Bridge (BCI=50 Fair), Figure 26 Universal Road Twin Culvert (BCI=80 Very Good) and Figure 27 Eel's Lake Road Culvert (BCI=58 Fair)

Technical Levels of Service

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

Table 14 Ontario Regulation 588/17 B&C Technical Levels of Service

Service Attribute	Technical Metric	Current LOS
Accessible & Reliable	% of bridges in the municipality with loading or dimensional restrictions	6% (1 out of 17)[2]
Safe & Regulatory	Average bridge condition index value for bridges	66
	Average bridge condition index value for structural culverts	21

[2] The 2024 OSIM inspection report indicates that McColl's Bridge has a current load limit of 9 tonnes.

Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service (PLOS), discuss the associated risks and long-term sustainability of these service levels, and explain the Municipality's ability to afford the PLOS.

The tables and graphs below explain the proposed levels of service scenarios that were analyzed for Bridges & Culverts. Further PLOS analysis at the portfolio level can be found in Proposed Levels of Service Scenario Analysis.

Scenario	Description
Scenario 1: Achieving Full Funding	This scenario assumes a phased tax increase of approximately 1.5% annually, reaching full funding within 15 years
Scenario 2: Achieving 75% Funding	This scenario assumes a phased tax increase of approximately 0.7% annually, reaching 75% funding within 15 years
Scenario 3: Maintaining Current Capital Investment	This scenario maintains the current level of capital investment, projecting asset conditions and risk based on existing funding levels.

PLOS Analysis

The following table presents the outcomes for three funding scenarios, illustrating how varying levels of capital investment impact asset condition, risk, and overall performance over time.

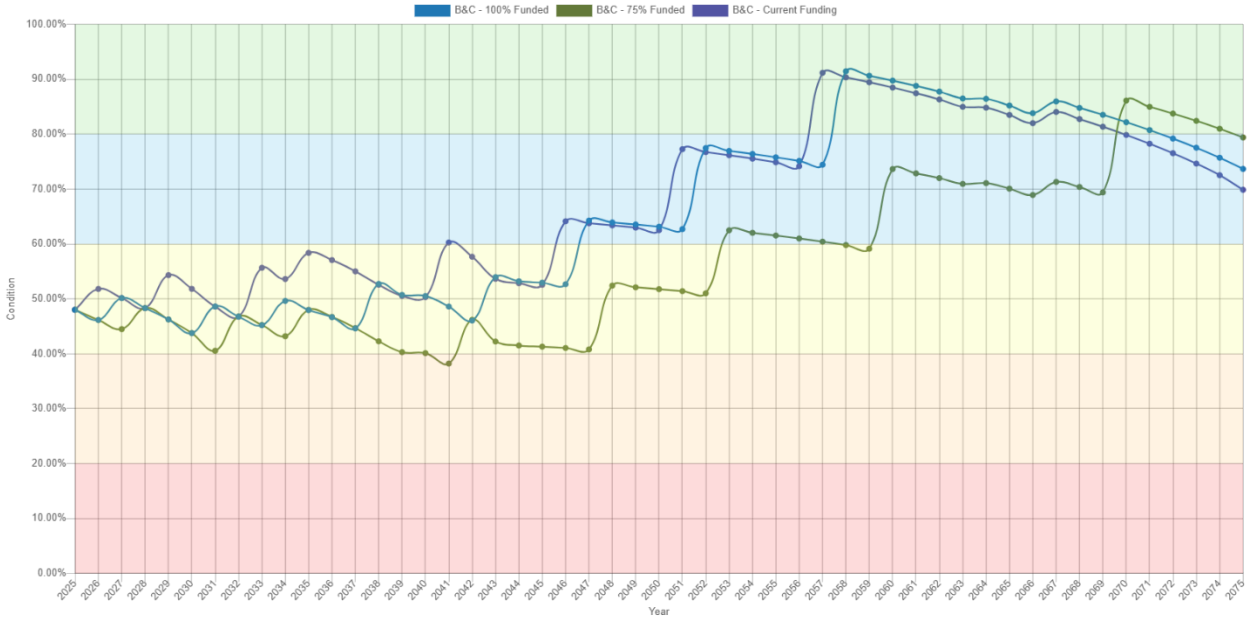
Table 15: Bridges & Culverts pLOS Scenario Analysis

Scenario	Technical LOS Outcomes	Initial Value (2025)	10 Year Projection (2035)	25 Year Projection (2050)	Scenario Average
Scenario 1	Average Condition	48.01%	47.95%	63.14%	65.90%
	Average Asset Risk	13.05	13.2	10.13	9.57
	Average Annual Investment		$195,619		
	Capital re-investment rate		2.7%		
Scenario 2	Average Condition	48.01%	47.99%	51.77%	56.85%
	Average Asset Risk	13.05	13.2	12.22	11.24
	Average Annual Investment		$146,715		
	Capital re-investment rate		2.0%		
Scenario 3	Average Condition	48.01%	58.38%	62.52%	67.64%
	Average Asset Risk	13.05	11.23	10.13	9.25

Average Annual Investment	$179,584
Capital re-investment rate	2.5%

The following figure illustrates the projected condition of the asset category under each of the three investment level scenarios, demonstrating how varying reinvestment strategies impact overall asset condition over time.

Figure 33: Bridges & Culverts Scenario Comparison



7. Water Network

State of the Infrastructure

Highlands East's water network includes mains, hydrants, valves and service connections, treatment facilities, and pumphouses with a total current replacement cost of $7.6 million.

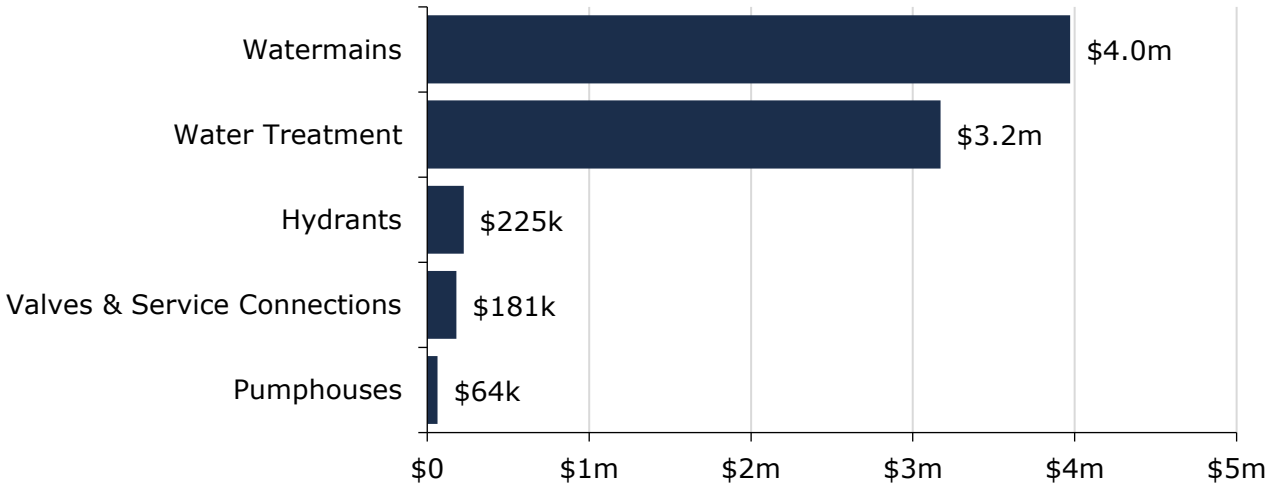
The following summarizes the state of the infrastructure for the water network, and the Municipality's ability to fund the proposed levels of service.

Replacement Cost	Condition	Financial Capacity	
$7,611,524	Poor (38%)	Annual Requirement:	$140,460
		Funding Available:	$46,000
		Annual Deficit:	$94,460

Inventory & Valuation

The graph below displays the replacement cost of each asset segment in the Municipality's water network inventory.

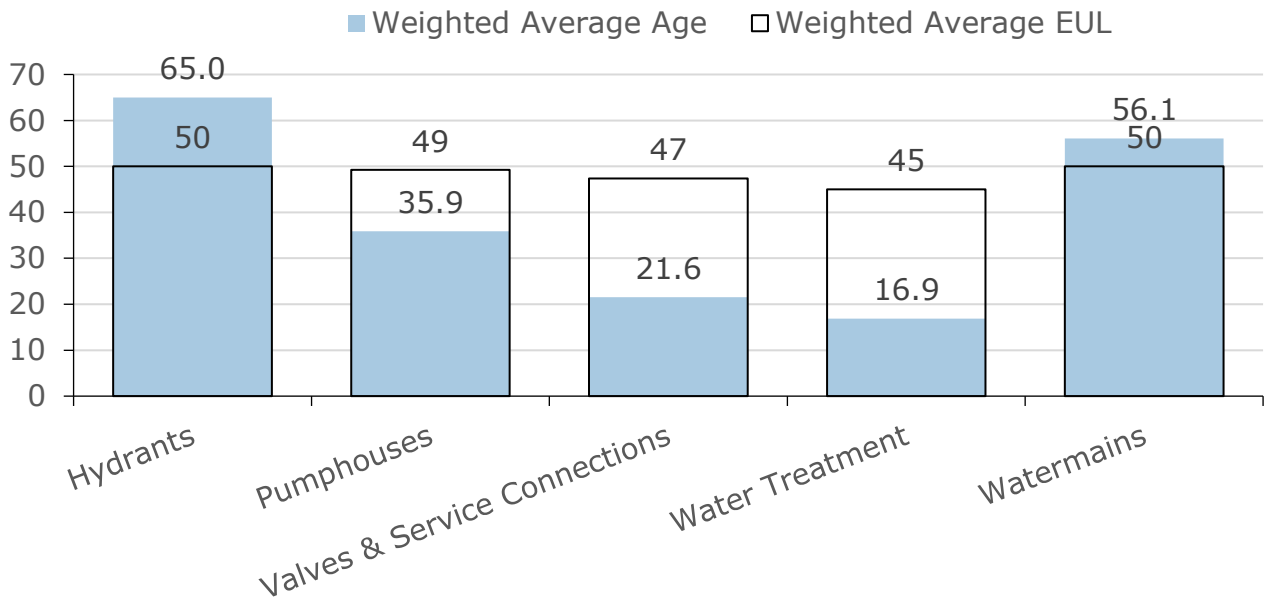
Figure 34 Water Network Replacement Cost



Asset Condition & Age

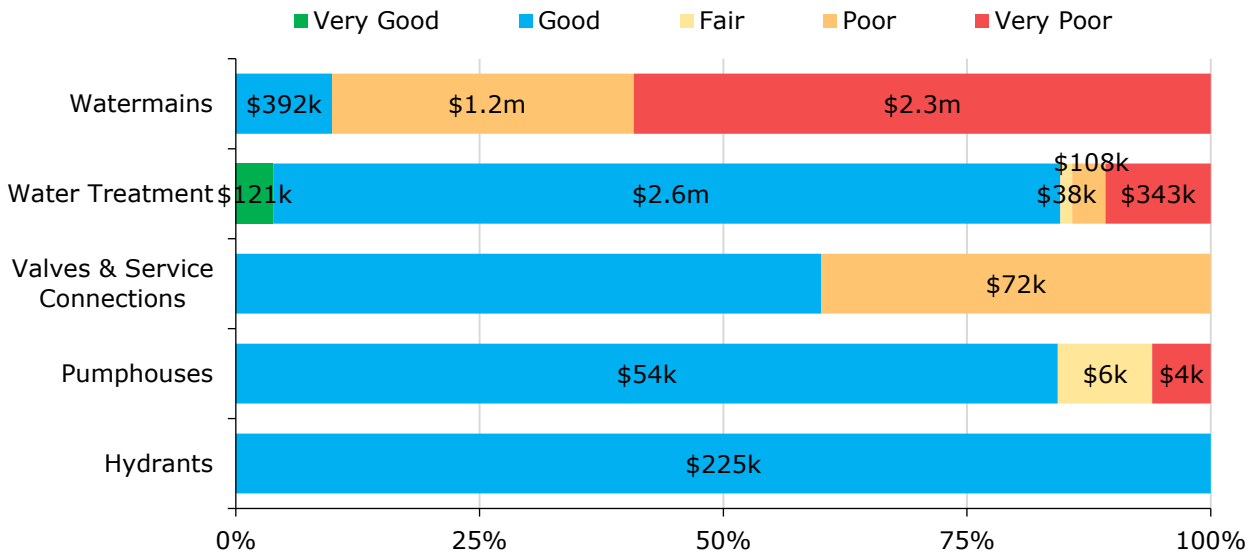
The graph below identifies the average age, and the estimated useful life for each asset segment. The values are weighted based on replacement cost.

Figure 35 Water Network 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 36 Water Network Condition Breakdown



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

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

Current Approach to Condition Assessment

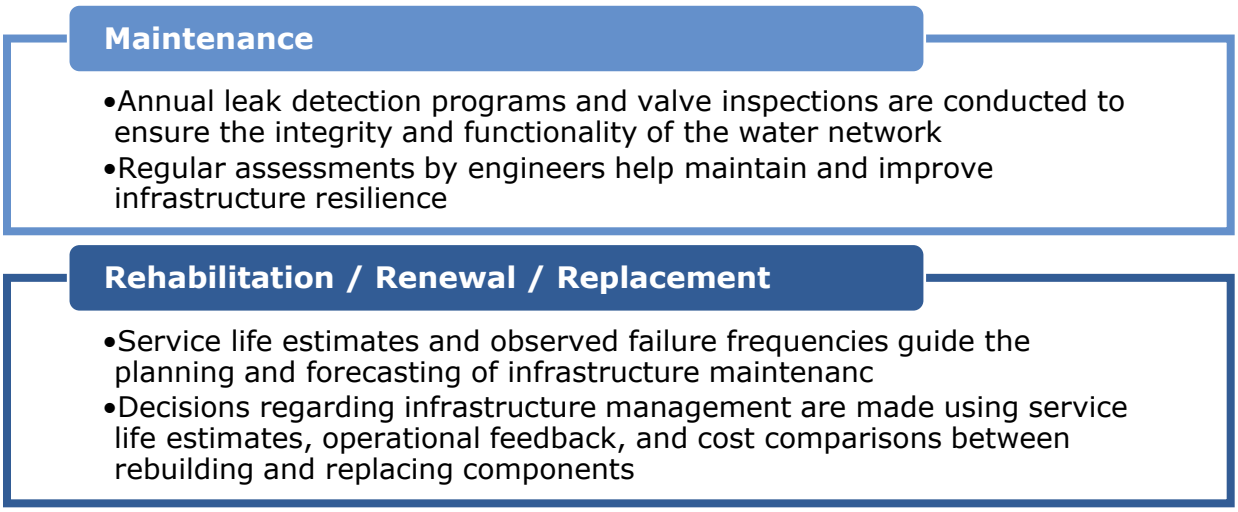
Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the Municipality's current approach.

- Hydrants are inspected semi-annually to ensure proper functioning
- The Cardiff Water Treatment Plant undergoes engineering assessments to maintain operational standards
- Wells are inspected monthly by internal staff and annually by external experts to ensure compliance and safety

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 Highlands East's current lifecycle management strategy.

Figure 37 Water Network Current Lifecycle Strategy

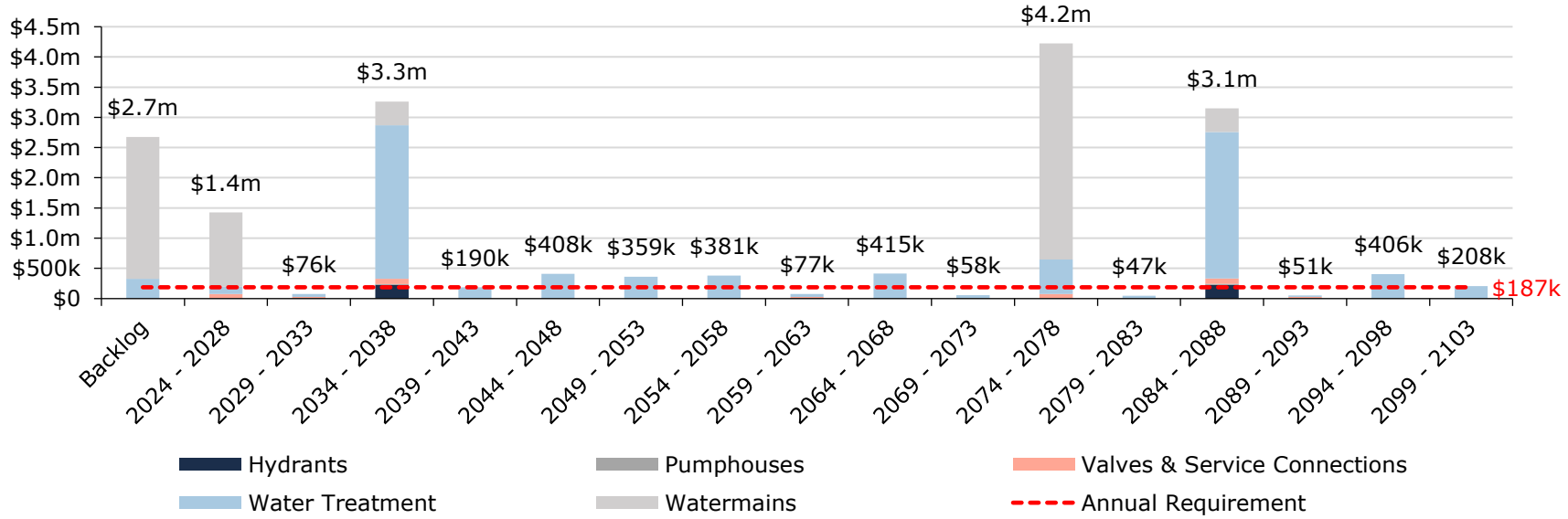


Forecasted Capital Requirements

The figure below presents the cyclical short-, medium-, and long-term replacement needs for the Municipality's water system assets, with projections extending to 2103. To maintain the current level of service, Highlands East requires an average annual capital investment of approximately $187 thousand across the entire water network, represented by the red dotted line. While annual expenditures may vary, this figure serves as a reliable benchmark for setting capital spending targets or reserve allocations to prevent project deferrals and ensure timely asset renewal.

The chart also illustrates a backlog of $2.7 million, dominated by watermains. These projections and estimates are based on current asset records, their replacement costs, and age analysis only. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

Figure 38 Water Network Forecasted Capital Replacement Requirements



The table below summarizes the projected cost of lifecycle activities (capital replacement only) that will need to be undertaken over the next 10 years to support current levels of service. These projections are generated in Citywide

and rely on the data available in the asset register, which was limited to staff assessment from 2018 asset management plan, asset age, replacement cost, and useful life.

Table 16 Water Network System-Generated 10-Year Capital Costs

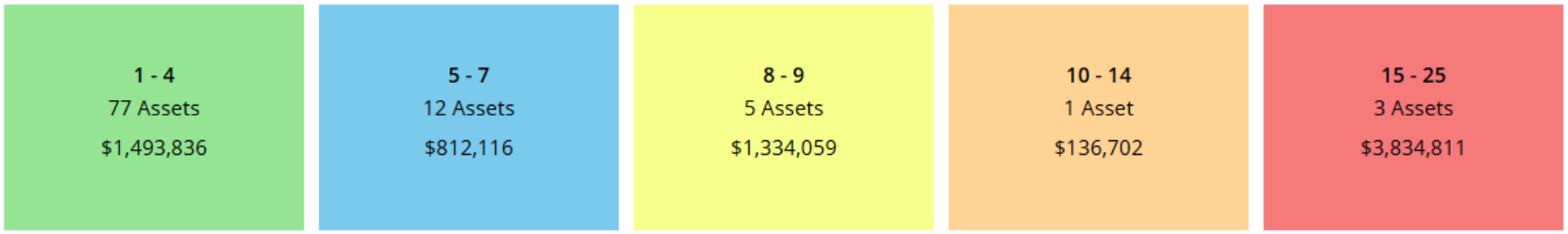
Segment	Total	2025	2026	2027	2028	2029	2030	2031	2032	2034	2034
Hydrants	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Pumphouses	$11k	$0	$500	$500	$4k	$0	$0	$0	$2k	$3k	$2k
Valves & Service Connections	$96k	$0	$72k	$0	$0	$0	$0	$0	$24k	$0	$0
Water Treatment	$166k	$2k	$65k	$500	$0	$53k	$20k	$1k	$3k	$22k	$0
Watermains	$1.2m	$0	$1.2m	$0	$0	$0	$0	$0	$0	$0	$0

Consistent data updates, especially condition, will improve the alignment between the system-generated expenditure requirements, and the Municipality's capital expenditure forecasts.

Risk & Criticality

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

Figure 39 Water Network Risk Matrix

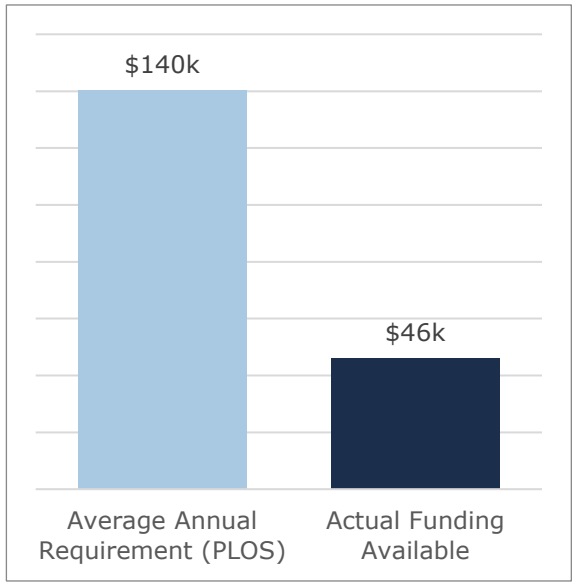
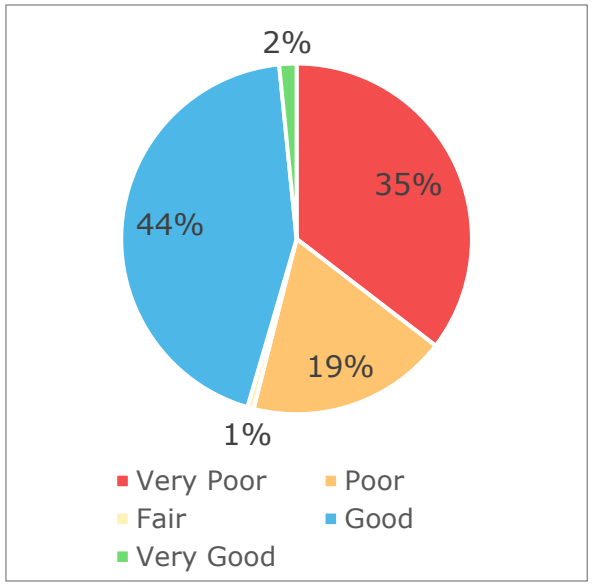
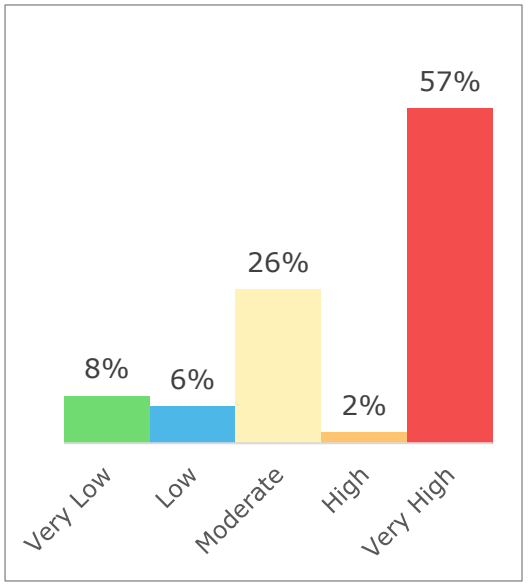


This is a high-level model developed by municipal staff and should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure.

Levels of Service

The following tables identify the Municipality's metrics to identify their current level of service for the water network. By comparing the cost, performance (average condition) and risk year-over-year the Municipality will be able to evaluate how their services/assets are trending.

Figure 40: Water Network Strategic Levels of Service

Target vs Actual Reinvestment Rate	Performance (Average Condition)	Risk Breakdown
		

Community Levels of Service

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

Table 17 Ontario Regulation 588/17 Water Network Community Levels of Service

Service Attribute	Qualitative Description	Current LOS
Reliable	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	Figure 41 Dyno Distribution and Figure 42: Bicroft Heights Map and Figure 43 Cardiff System
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	Both systems have fire flow
Safe & Regulatory	Description of boil water advisories and service interruptions	Very rare occurrence, issue advisory through directive from MOH

Figure 41: Dyno Distribution System Map

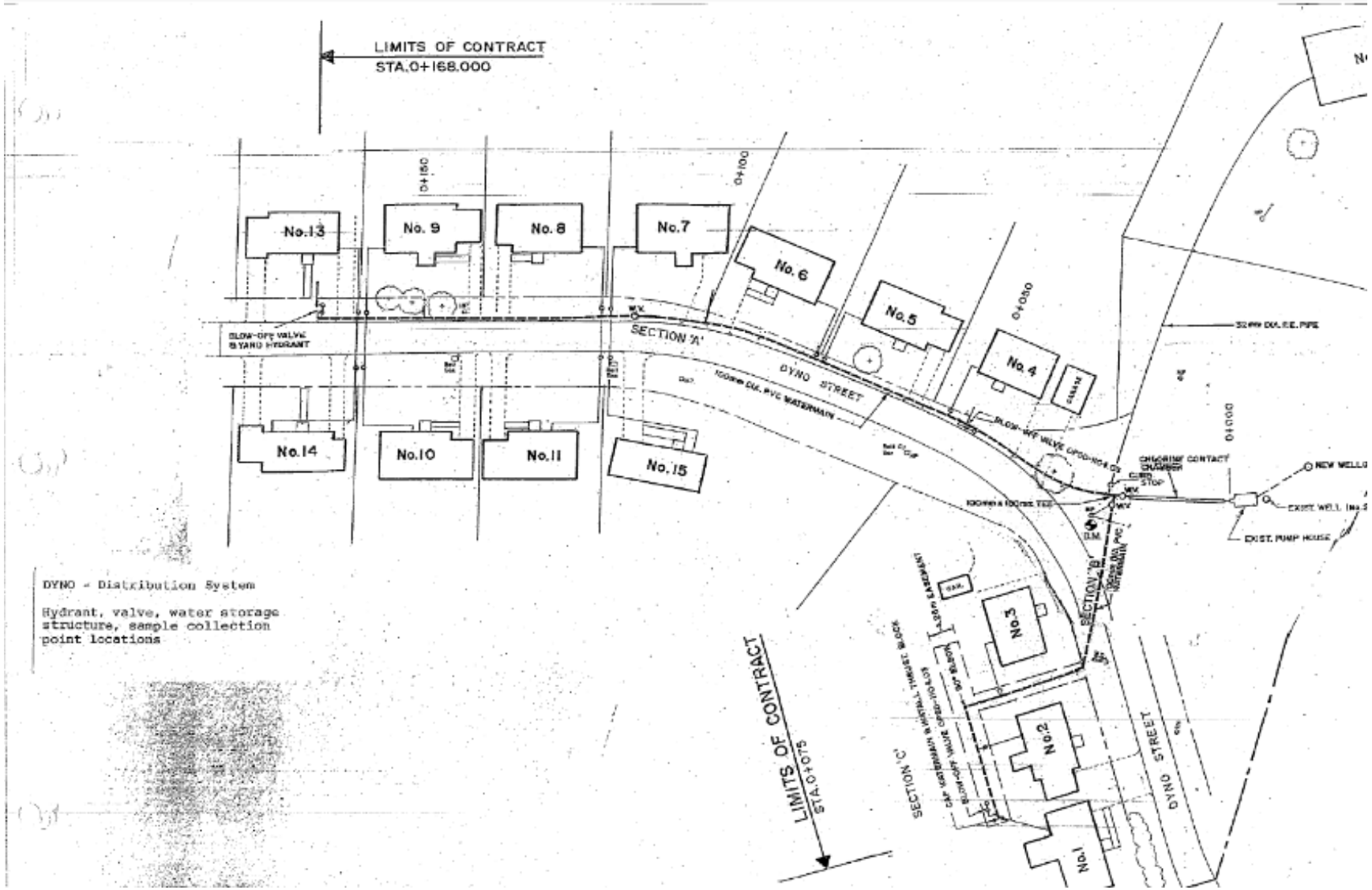
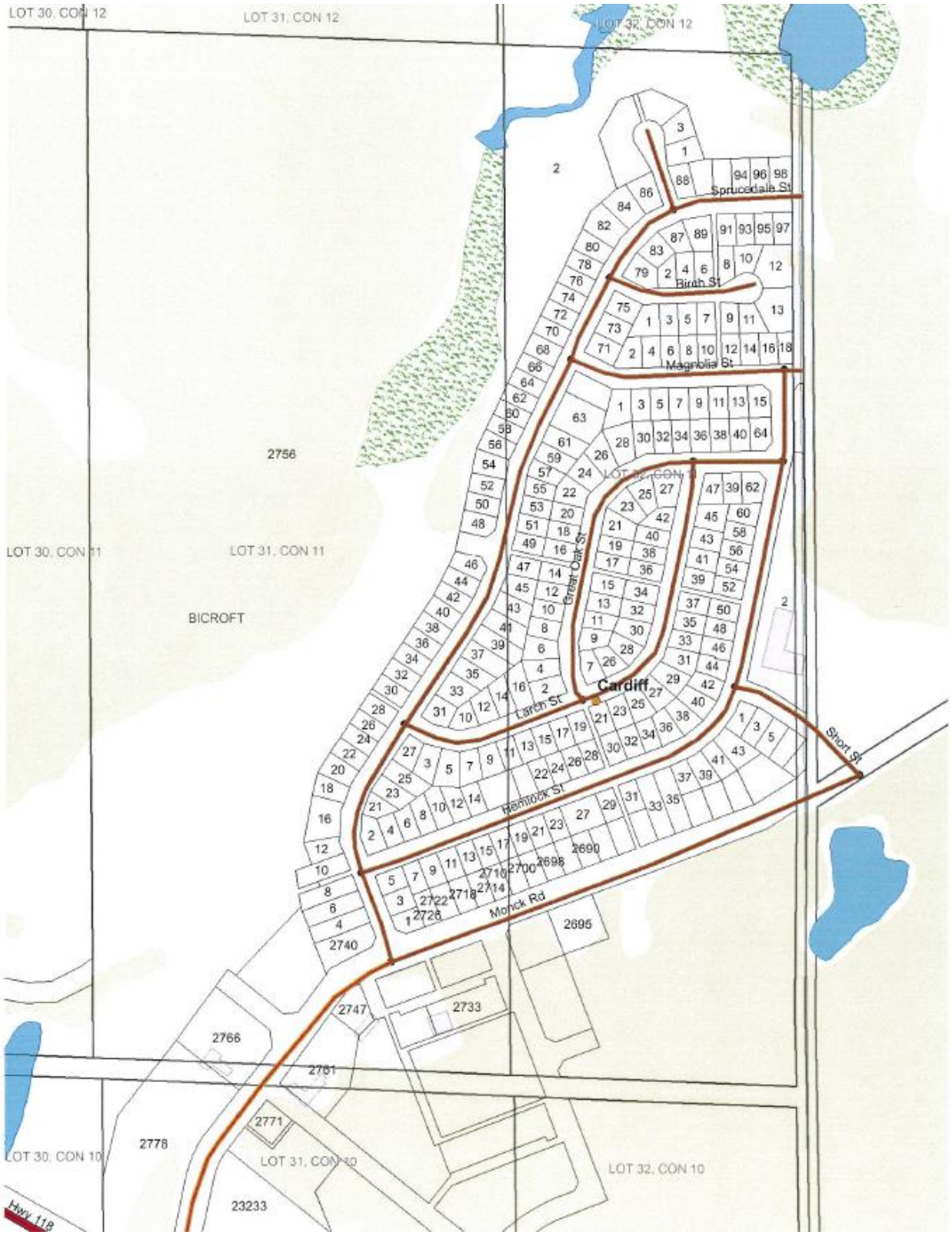


Figure 42: Bicroft Heights Map

Figure 43 Cardiff System



Technical Levels of Service

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

Table 18 Ontario Regulation 588/17 Water Network Technical Levels of Service

Service Attribute	Technical Metric	Current LOS
Scope	% of properties connected to the municipal water system	4%
	% of properties where fire flow is available	3%
Reliability	# of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	0.004
	# of connection-days per year where water is not available to water main breaks compared to the total number of properties connected to the municipal water system	0

Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service (PLOS), discuss the associated risks and long-term sustainability of these service levels, and explain the Municipality's ability to afford the PLOS.

The tables and graphs below explain the proposed levels of service scenarios that were analyzed for the Water Network. Further PLOS analysis at the portfolio level can be found in Proposed Levels of Service Scenario Analysis.

Scenario	Description
Scenario 1: Achieving Full Funding	This scenario assumes a phased rate increase of approximately 3.6% annually, reaching full funding within 20 years
Scenario 2: Achieving 75% Funding	This scenario assumes a phased rate increase of approximately 2.6% annually, reaching 75% funding within 20 years
Scenario 3: Maintaining Current Capital Investment	This scenario maintains the current level of capital investment, projecting asset conditions and risk based on existing funding levels.

PLOS Analysis

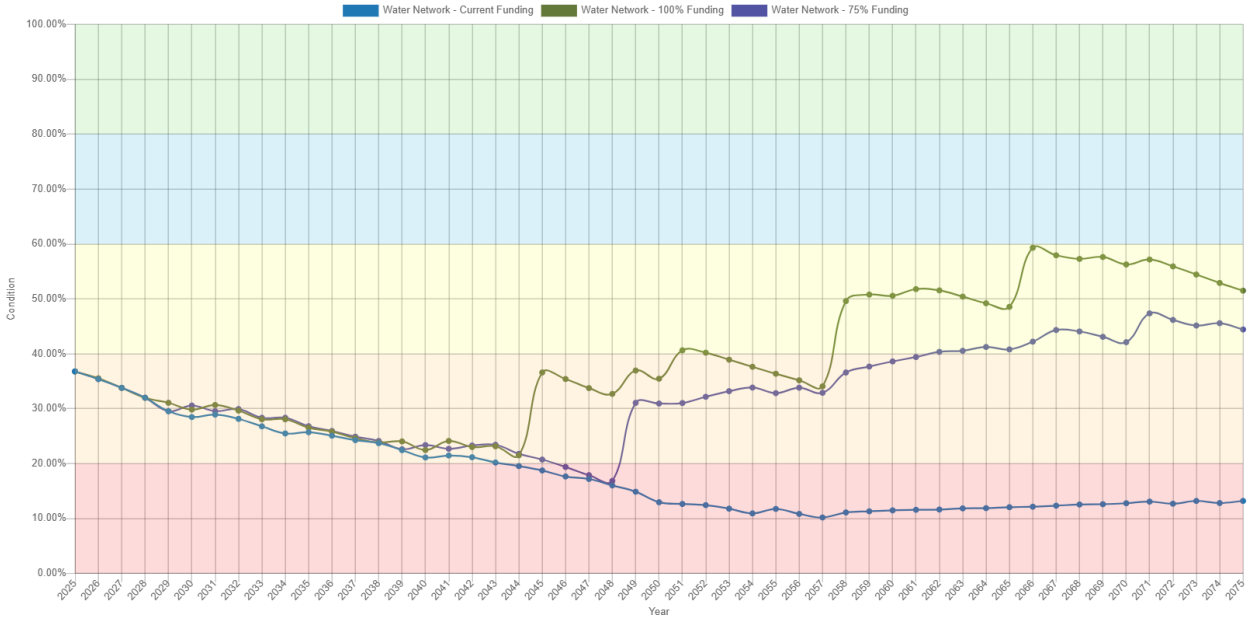
The following table presents the outcomes for three funding scenarios, illustrating how varying levels of capital investment impact asset condition, risk, and overall performance over time.

Table 19: Water Network pLOS Scenario Analysis

Scenario	Technical LOS Outcomes	Initial Value (2025)	10 Year Projection (2035)	25 Year Projection (2050)	Scenario Average
Scenario 1	Average Condition	36.77%	26.52%	35.44%	39.04%
	Average Asset Risk	15.36	16.24	15.29	14.6
	Average Annual Investment		$187,281		
	Capital re-investment rate		2.5%		
Scenario 2	Average Condition	36.77%	26.80%	30.93%	32.92%
	Average Asset Risk	15.36	16.21	15.87	15.48
	Average Annual Investment		$140,460		
	Capital re-investment rate		1.8%		
Scenario 3	Average Condition	36.78%	25.70%	12.95%	18.19%
	Average Asset Risk	15.36	16.27	18.55	17.48
	Average Annual Investment		$46,000		
	Capital re-investment rate		0.6%		

The following figure illustrates the projected condition of the asset category under each of the three investment level scenarios, demonstrating how varying reinvestment strategies impact overall asset condition over time.

Figure 44: Water Network Scenario Comparison



8. Sanitary Network

State of the Infrastructure

Highlands East's Sanitary Network infrastructure includes sewer mains, a treatment plant, lagoons, and sanitary equipment. The total current replacement of the Municipality's sanitary collection and treatment infrastructure is estimated at approximately $5.4 million.

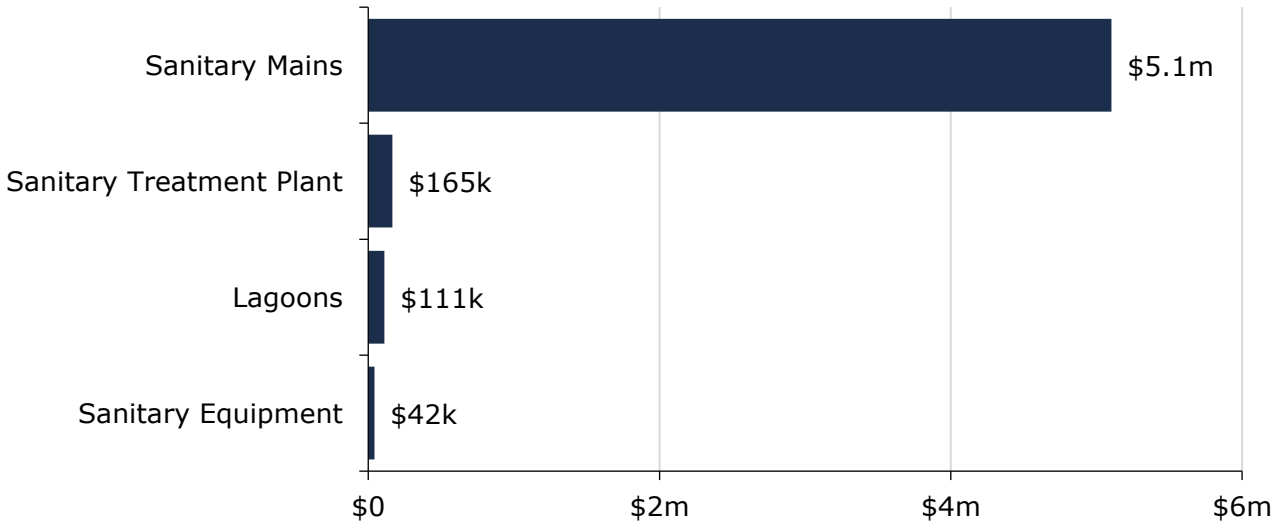
The following summarizes the state of the infrastructure for the sanitary network, and the Municipality's ability to fund the proposed levels of service.

Replacement Cost	Condition	Financial Capacity	
$5,420,326	Fair (49%)	Annual Requirement:	$89,339
		Funding Available:	$71,000
		Annual Deficit:	$18,339

Asset Inventory & Valuation

The graph below displays the replacement cost of each asset segment in the Municipality's sanitary network inventory.

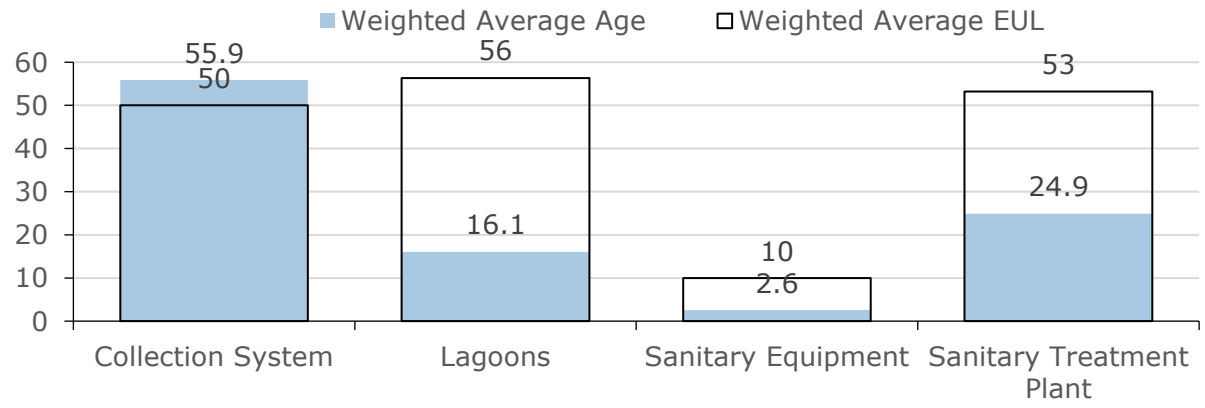
Figure 45 Sanitary Network Replacement Cost



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.

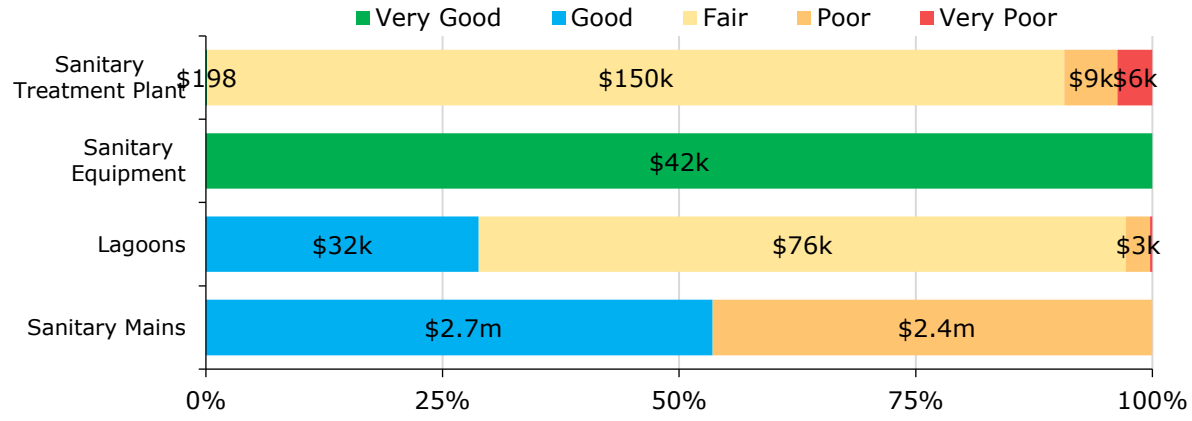
Figure 46 Sanitary Network Average Age vs Average EUL



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 47 Sanitary Network Condition Breakdown



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

Current Approach to Condition Assessment

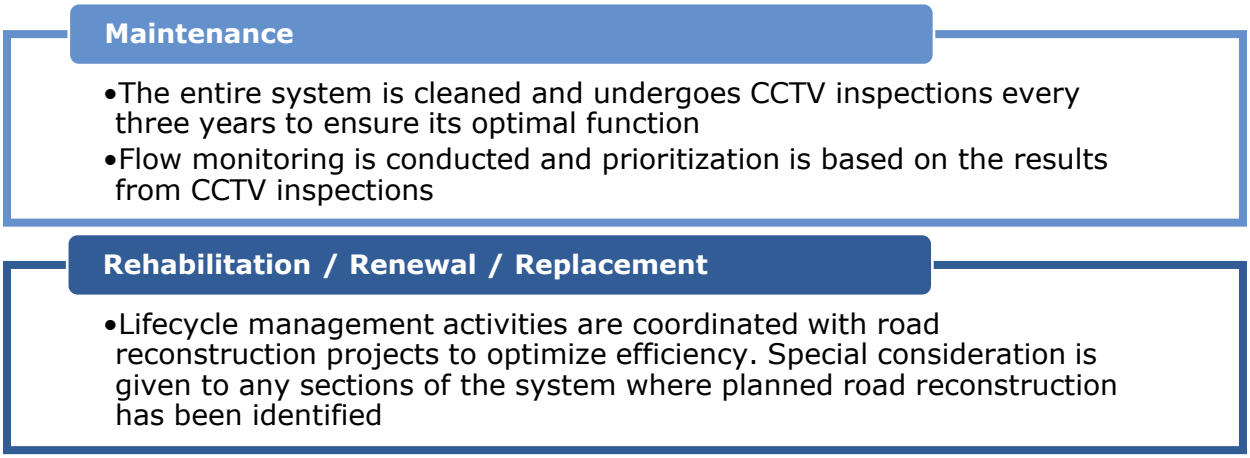
Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the Municipality's current approach:

- The entire water network undergoes CCTV inspections every three years to assess its condition thoroughly
- Staff members conduct inspections of the equipment every three days to identify any deficiencies
- Generators and pumps are tested monthly to ensure they are operating effectively

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 Highlands East's current lifecycle management strategy.

Figure 48 Sanitary Network Current Lifecycle Strategy

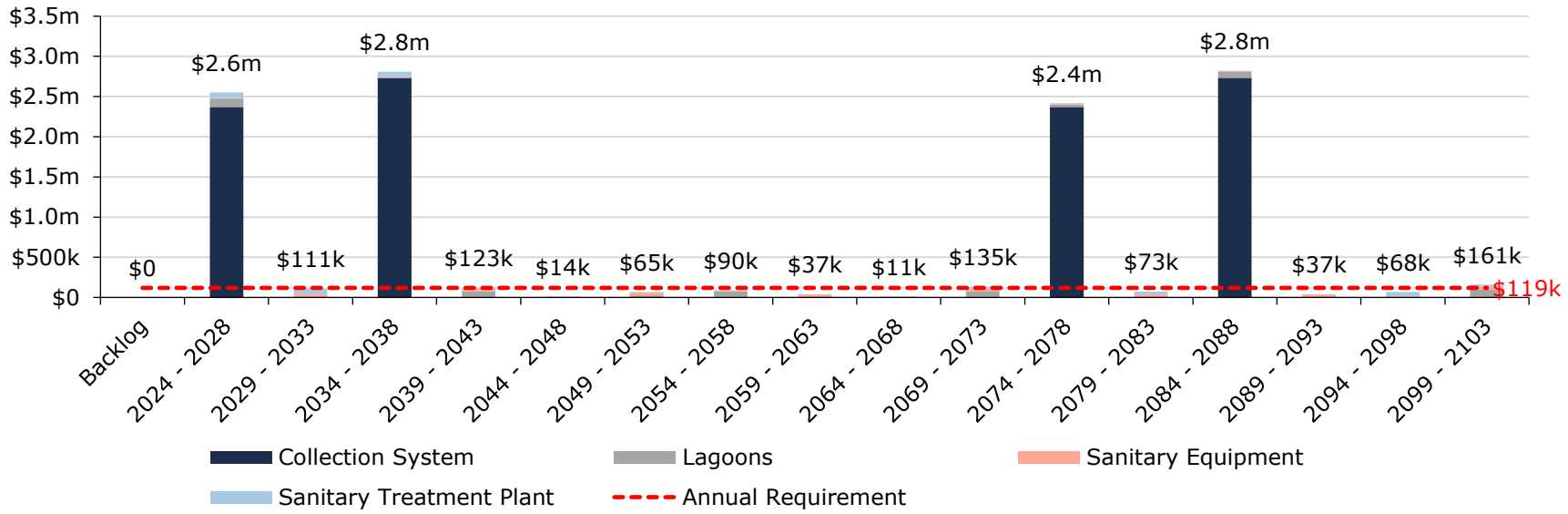


Forecasted Capital Requirements

The figure below presents the cyclical short-, medium-, and long-term replacement needs for the Municipality's sanitary infrastructure, with projections extending to 2103. To maintain the current level of service, Highlands East requires an average annual capital investment of approximately $119 thousand across all sanitary network assets, as indicated by the red dotted line. Although actual spending may fluctuate substantially from year to year, this figure is a useful benchmark value for annual capital expenditure targets (or allocations to reserves) to ensure projects are not deferred and replacement needs are met as they arise.

These projections and estimates are based on asset replacement costs and age analysis. They are designed to provide a long-term, portfolio-level overview of capital needs and should be used to support improved financial planning over several decades.

Figure 49 Sanitary Network Forecasted Capital Replacement Requirements



Treatment facilities and other assets are not componentized, limiting the accuracy of these projections. In addition, like water assets, it is unlikely that all sanitary mains will need to be replaced as forecasted. Coordinated projects, along with CCTV inspection data, may drive replacements and rehabilitations.

Table 20 below summarizes the projected cost of lifecycle activities (capital replacement only) that will need to be undertaken over the next 10 years to support current levels of service. These projections are generated in Citywide and rely on the data available in the asset register, which was limited to asset age, replacement cost, and useful life.

Table 20 Sanitary Network System-Generated 10-Year Capital Costs

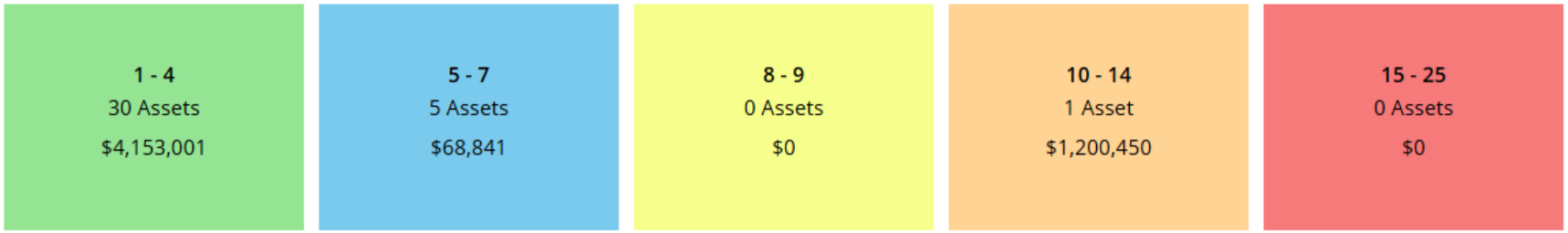
Segment	Total	2025	2026	2027	2028	2029	2030	2031	2032	2034	2034
Sanitary Mains	$2.4m	$0	$2.4m	$0	$0	$0	$0	$0	$0	$0	$0
Lagoons	$105k	$74k	$1k	$0	$4k	$25k	$0	$0	$0	$0	$0
Sanitary Equipment	$44k	$0	$0	$0	$0	$8k	$0	$0	$35k	$0	$0
Sanitary Treatment Plant	$145k	$0	$0	$0	$69k	$0	$7k	$18k	$0	$51k	$0

Consistent data updates, especially condition, will improve the alignment between the system-generated expenditure requirements, and the Municipality's capital expenditure forecasts.

Risk & Criticality

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

Figure 50 Sanitary Network Risk Matrix



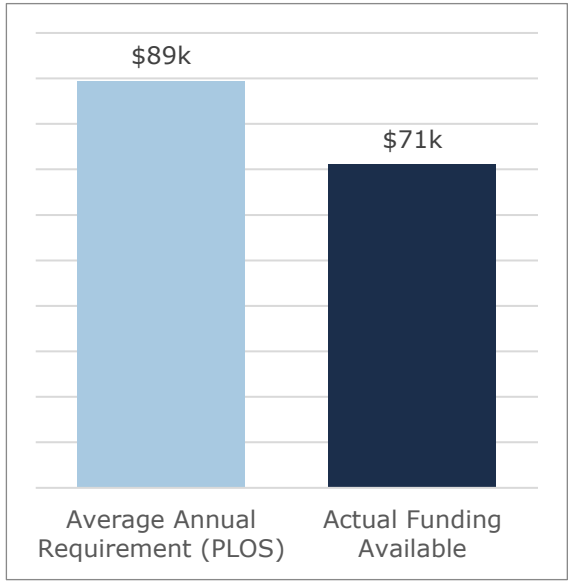
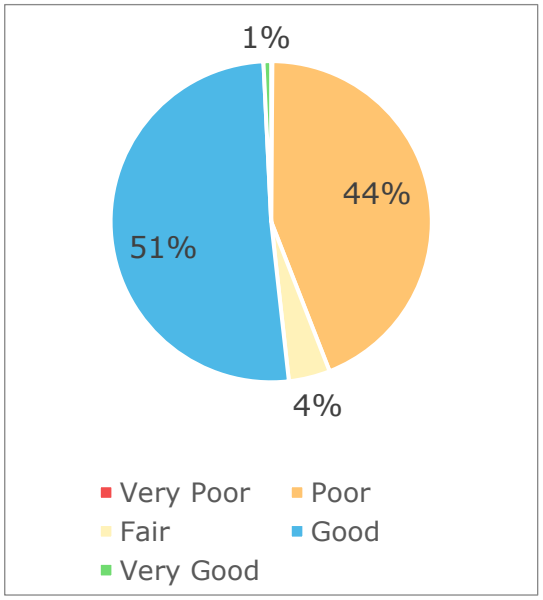
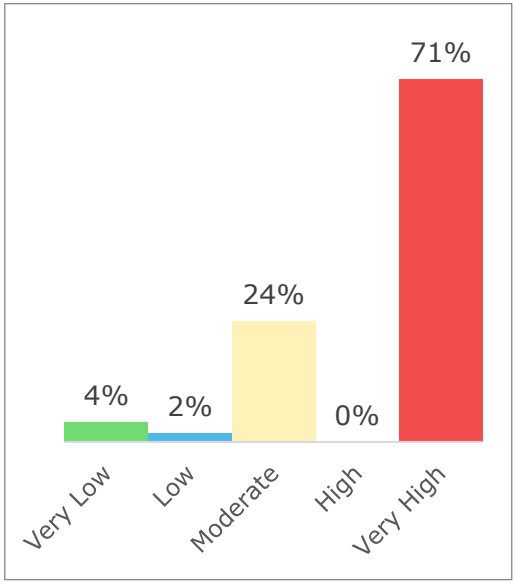
This is a high-level model developed by municipal staff and should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure. The identification of critical assets allows the Municipality to determine appropriate risk mitigation strategies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

Levels of Service

The following tables identify Highlands East's metrics to identify the current level of service for the sanitary network.

By comparing the cost, performance (average condition) and risk year-over-year the Municipality will be able to evaluate how their services/assets are trending.

Table 21: Sanitary Network Strategic Levels of Service

Target vs Actual Reinvestment Rate	Performance (Average Condition)	Risk Breakdown
		

Community Levels of Service

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

Table 22 Ontario Regulation 588/17 Sanitary Network Community Levels of Service

Service Attribute	Qualitative Description	Current LOS
Accessible & Reliable	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	See Figure 52
Safe & Regulatory	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes	No overflow structure exists, other then large Wetwell and overflow alarm indicator at sewage plant
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches	None
	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	Stormwater can enter the sanitary network through the weeping tiles under residents' homes, but sewage does not generally back up
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	Not resilient, we have some stormwater runoff through ditches and basins, see attached drainage diagram Figure 51
	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	Discharged into natural water body, mink creek. Dosed with alum, main treatment is settling in the lagoons.

Figure 51: Drainage Plan

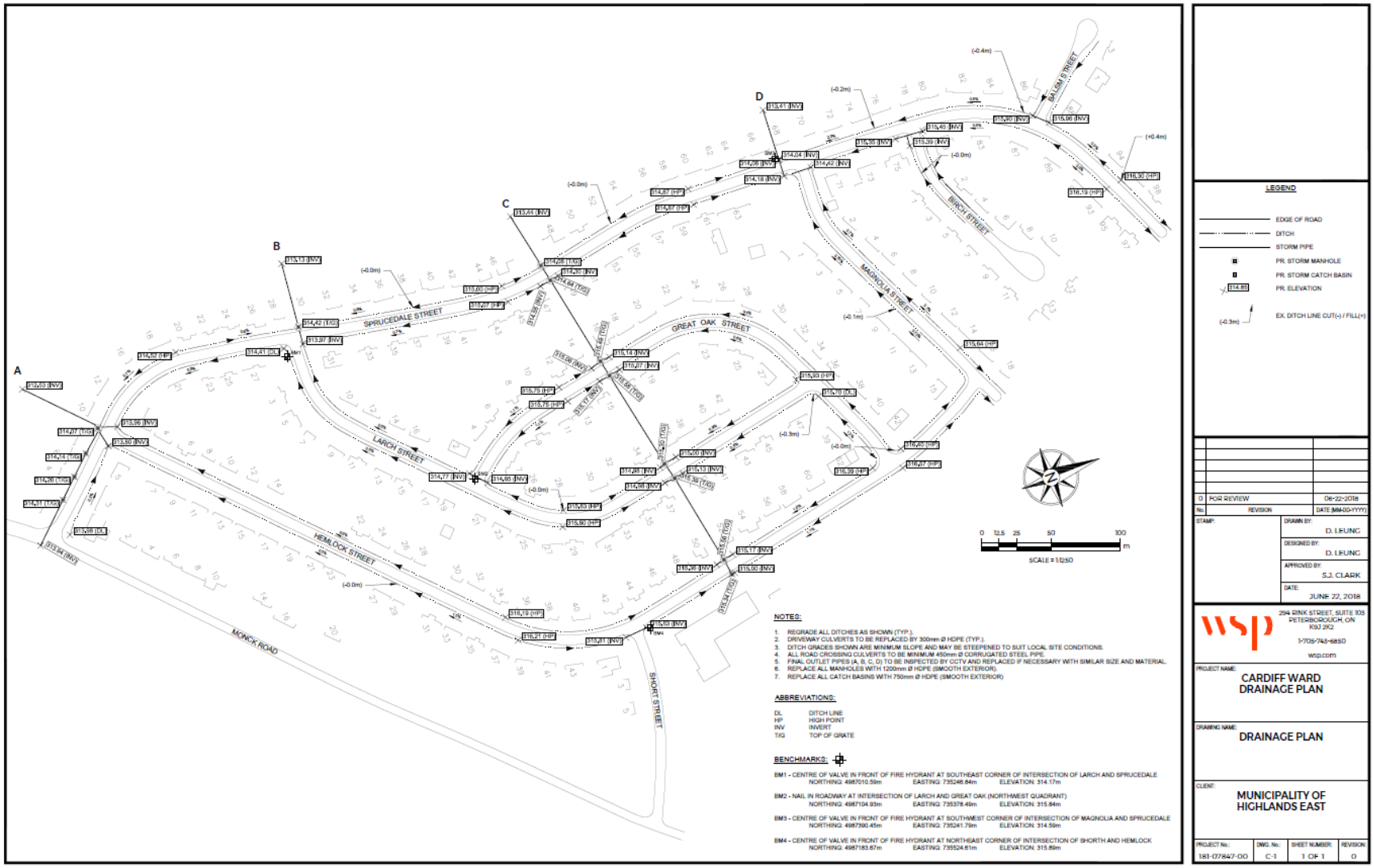
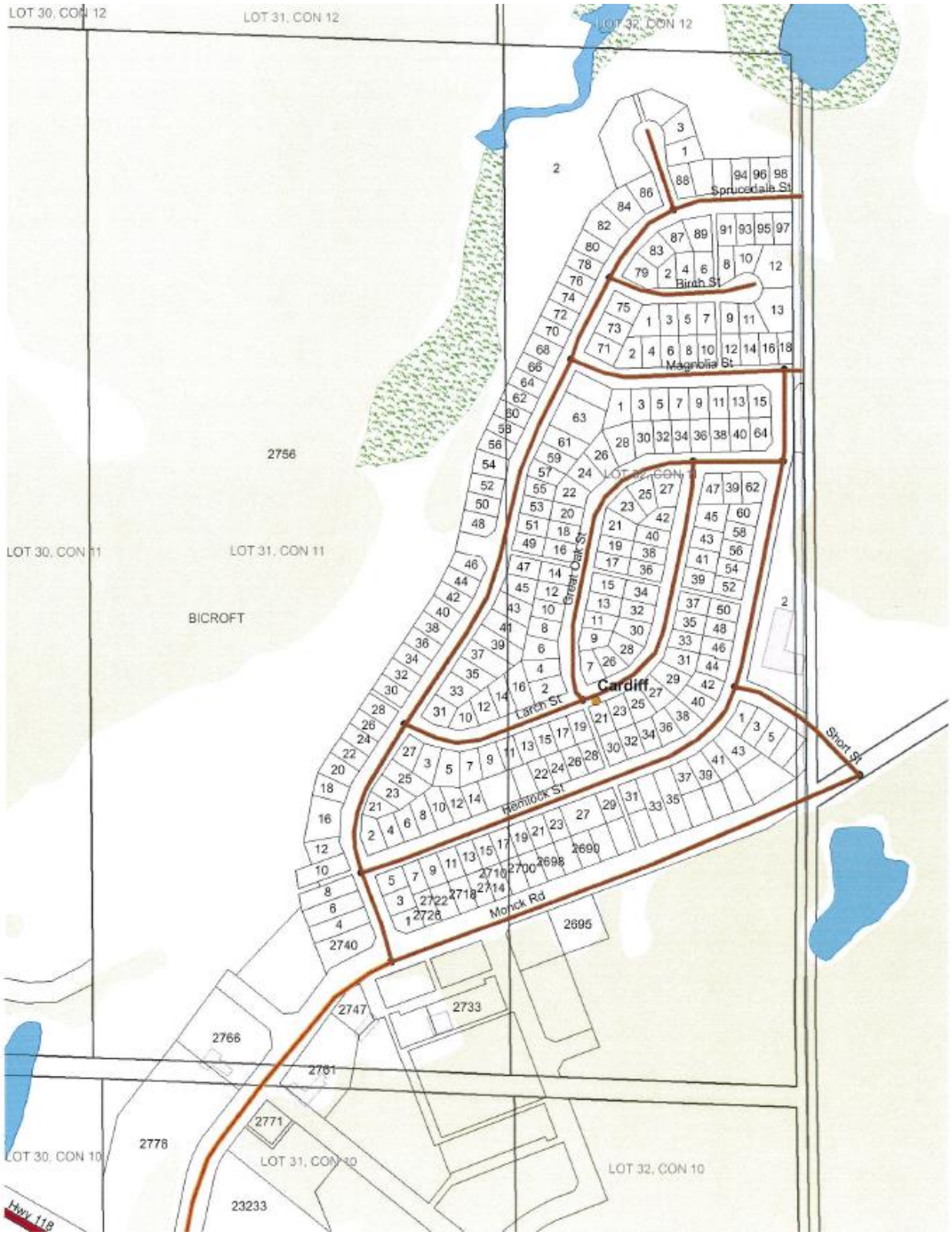


Figure 52: Cardiff Map



Technical Levels of Service

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

Table 23 Ontario Regulation 588/17 Sanitary Network Technical Levels of Service

Service Attribute	Technical Metric	Current LOS
Accessible & Reliable	% of properties connected to the municipal wastewater system	4%
Safe & Regulatory	# of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system	0.017
	# of connection-days per year due to sanitary main backups compared to the total number of properties connected to the municipal wastewater system	0
	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	0.004
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0

Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service (PLOS), discuss the associated risks and long-term sustainability of these service levels, and explain the Municipality's ability to afford the PLOS.

The tables and graphs below explain the proposed levels of service scenarios that were analyzed for the Wastewater Network. Further PLOS analysis at the portfolio level can be found in Proposed Levels of Service Scenario Analysis.

Scenario	Description
Scenario 1: Achieving Full Funding	This scenario assumes a phased rate increase of approximately 2.1% annually, reaching full funding within 20 years
Scenario 2: Achieving 75% Funding	This scenario assumes a phased rate increase of approximately 0.9% annually, reaching 75% funding within 20 years

Scenario 3: Maintaining Current Capital Investment	This scenario maintains the current level of capital investment, projecting asset conditions and risk based on existing funding levels.

PLOS Analysis

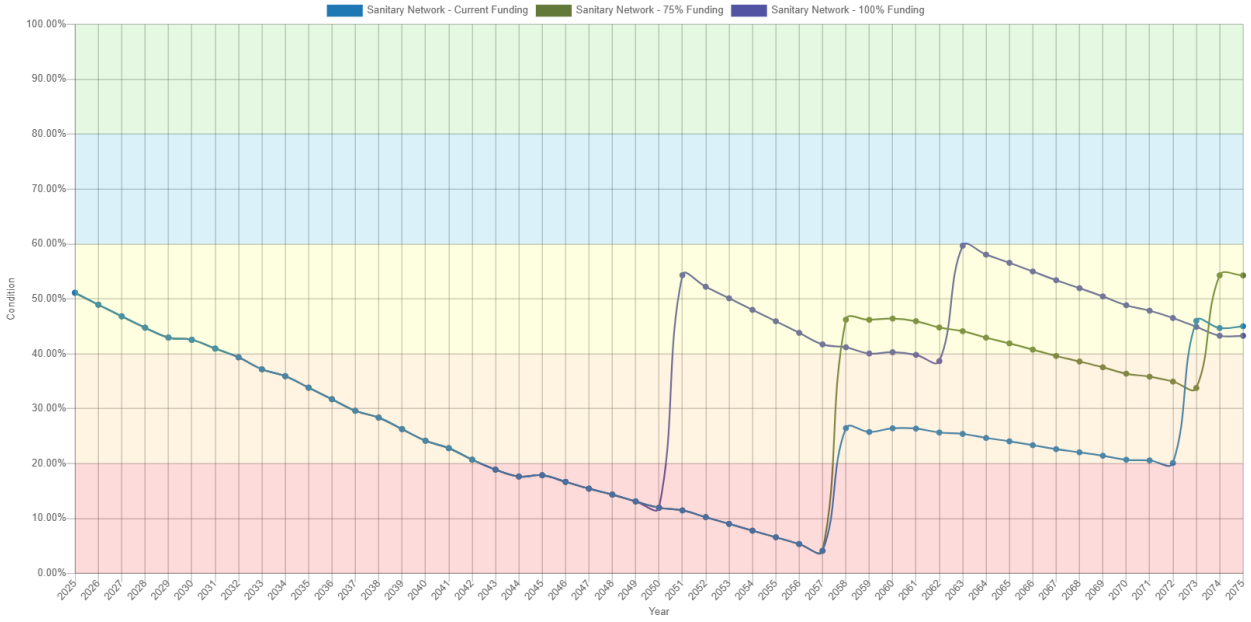
The following table presents the outcomes for three funding scenarios, illustrating how varying levels of capital investment impact asset condition, risk, and overall performance over time.

Table 24: Sanitary Network pLOS Scenario Analysis

Scenario	Technical LOS Outcomes	Initial Value (2025)	10 Year Projection (2035)	25 Year Projection (2050)	Scenario Average
Scenario 1	Average Condition	51.10%	33.82%	11.95%	38.62%
	Average Asset Risk	4.82	6.51	9.28	6.44
	Average Annual Investment		$119,119		
	Capital re-investment rate		2.2%		
Scenario 2	Average Condition	51.10%	33.82%	11.95%	31.23%
	Average Asset Risk	4.82	6.51	9.28	7.46
	Average Annual Investment		$89,339		
	Capital re-investment rate		1.6%		
Scenario 3	Average Condition	51.10%	33.82%	11.95%	25.87%
	Average Asset Risk	4.82	6.51	9.28	6.73
	Average Annual Investment		$71,000		
	Capital re-investment rate		1.3%		

The following figure illustrates the projected condition of the asset category under each of the three investment level scenarios, demonstrating how varying reinvestment strategies impact overall asset condition over time.

Figure 53: Sanitary Network Scenario Comparison



9. Buildings

State of the Infrastructure

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

- administrative offices
- fire stations
- public works garages and storage sheds
- community centres

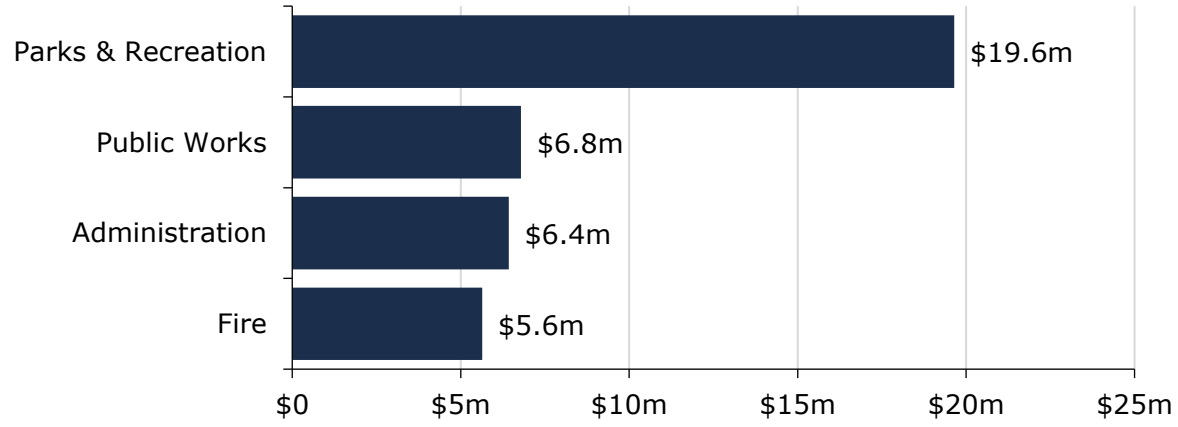
The following summarizes the state of the infrastructure for municipal buildings, and the Municipality's ability to fund the proposed levels of service.

Replacement Cost	Condition	Financial Capacity	
		Annual Requirement:	$620,223
$38,499,452	Fair (41%)	Funding Available:	$250,000
		Annual Deficit:	$370,223

Inventory & Valuation

The graph below displays the total replacement cost of each asset segment in Highlands East's buildings inventory. As the Municipality has had a complete componentization of their buildings their inventory Highlands East is able to track the replacement/lifecycle needs more accurately.

Figure 54 Buildings Replacement Cost

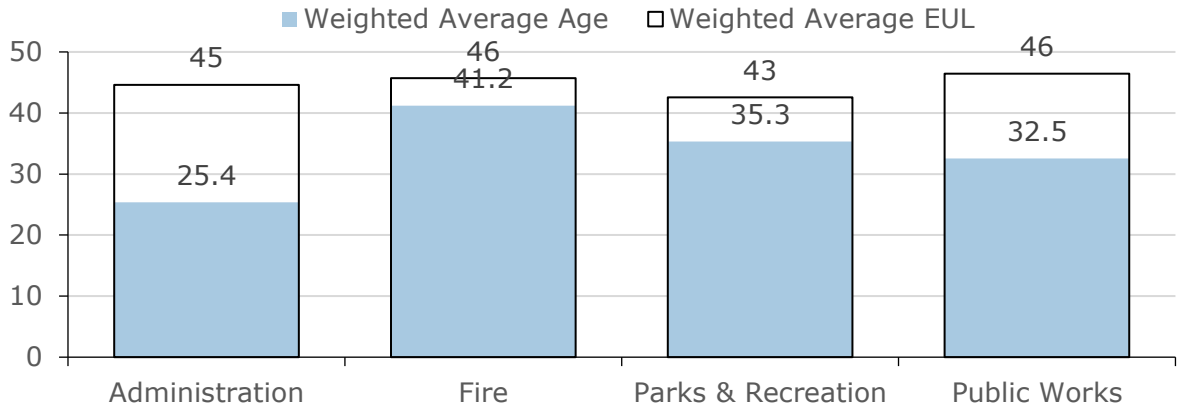


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to represent capital requirements more accurately.

Asset Condition & Age

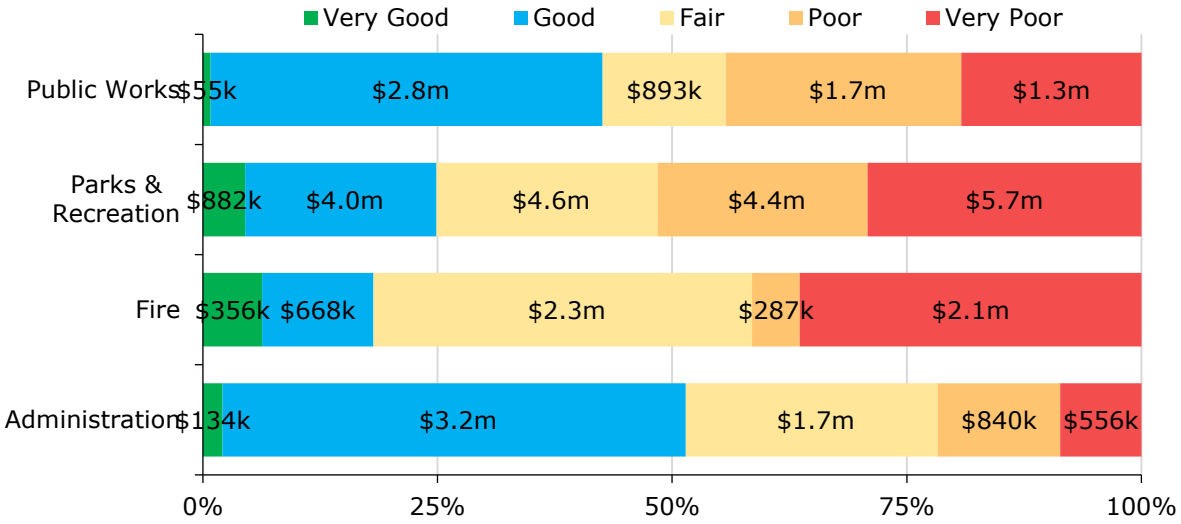
The graph below identifies the average age, and the estimated useful life for each asset segment. The values are weighted based on replacement cost.

Figure 55 Buildings Average Age vs Average EUL



These assets are componentized which helps to add accuracy to the projections. The graph below visually illustrates the average condition for each asset segment on a very good to very poor.

Figure 56 Buildings Condition Breakdown



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

- Buildings undergo repairs as necessary, with deficiencies identified by outside experts, staff, or residents, dictating the required actions
- Staff Health and Safety inspections are conducted monthly to ensure compliance and safety
- Inspections recommended by Original Equipment Manufacturers (OEM) for furnaces, HVAC systems, and other equipment are carried out regularly
- Last Building Condition Assessment completed by Walter Fedy in 2019

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 Municipality's current lifecycle management strategy.

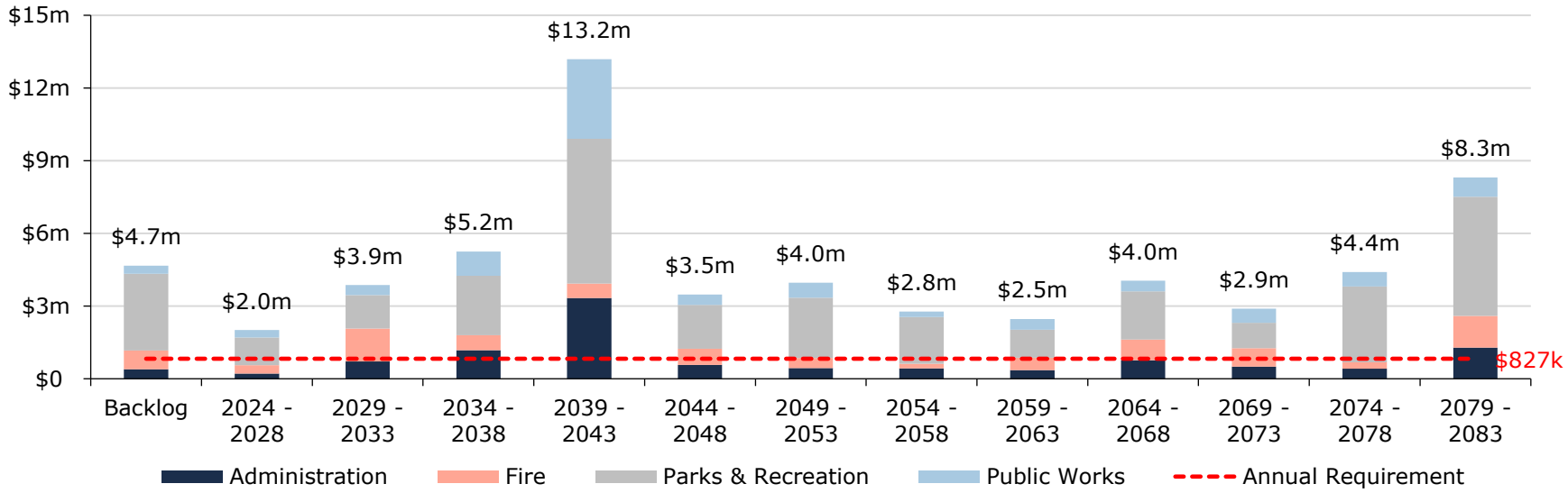
Figure 57 Buildings Current Lifecycle Strategy

Maintenance / Rehabilitation / Replacement
•Maintenance activities for buildings are defined based on the Building Condition Index (BCI) assessment and are systematically assigned to each asset in the inventory.

Forecasted Capital Requirements

The annual capital requirement reflects the average amount Highlands East should allocate each year to fund the rehabilitation and replacement of its infrastructure assets. The graph below illustrates projected capital needs over the next 60 years—an extended horizon that ensures each asset is captured through at least one full replacement cycle. Forecasted requirements are grouped into 5-year intervals, with the trend line indicating an average annual capital need of approximately $827 thousand. This figure serves as a long-term planning benchmark to support sustainable infrastructure investment and maintain the current level of service.

Figure 58 Buildings Forecasted Capital Replacement Requirements



The table below summarizes the projected cost of lifecycle activities (capital activities only) that may need to be undertaken over the next 10 years to support current levels of service.

Table 25 Buildings System-Generated 10-Year Capital Costs

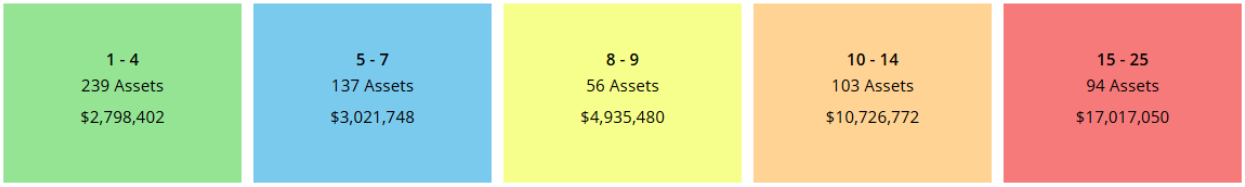
Segment	Total	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Administration	$932k	$64k	$32k	$39k	$80k	$0	$152k	$292k	$8k	$233k	$34k
Fire	$1.7m	$97k	$66k	$59k	$116k	$2k	$828k	$23k	$0	$483k	$15k
Parks & Recreation	$2.5m	$667k	$125k	$41k	$126k	$187k	$660k	$105k	$131k	$422k	$71k
Public Works	$719k	$40k	$142k	$56k	$68k	$2k	$52k	$269k	$0	$90k	$0

These projections are generated in Citywide and rely on the data available in the asset register, which was limited to asset age, replacement cost, and useful life.

Risk & Criticality

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

Figure 59 Buildings Risk Matrix



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.

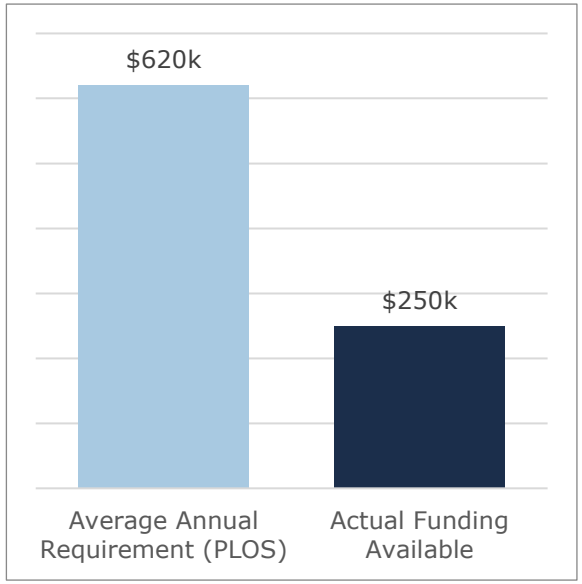
The identification of critical assets allows the Municipality to determine risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

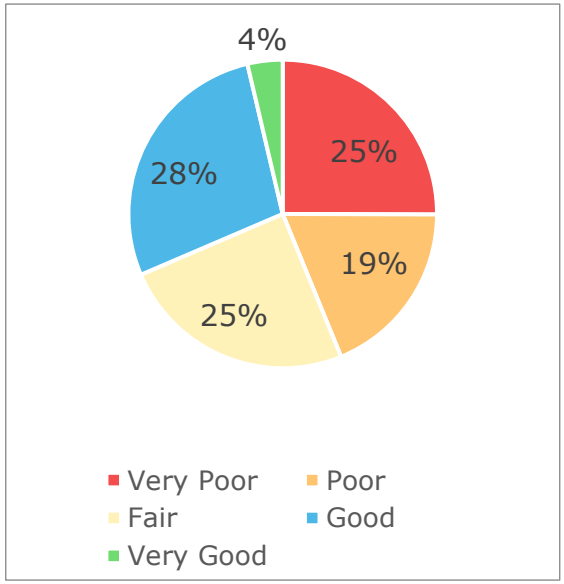
Levels of Service

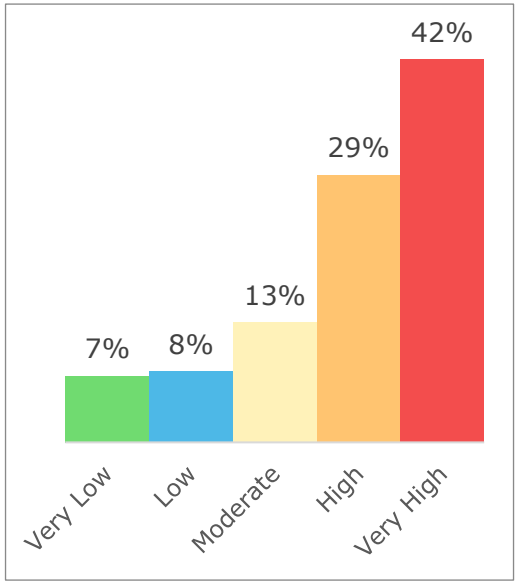
By comparing the cost, performance (average condition) and risk year-over-year, the Municipality will be able to evaluate how their services/assets are trending.

Figure 60: Buildings Strategic Levels of Service

Target vs Actual Reinvestment Rate	Performance (Average Condition)	Risk Breakdown







Community Levels of Service

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

Table 26: Buildings Community Levels of Service

Service Attribute	Qualitative Description	Current LOS
Accessible & Reliable	Description of municipal buildings and their proximity to the surrounding community	Public buildings in Cardiff, Highland Grove, Wilberforce, Tory Hill, and Gooderham serve as key community hubs. These include the Municipal Office, Library, Fire Hall, and Community Centres, strategically located for easy access. For example, Cardiff's Library is at the heart of the community, while Wilberforce's Community Centre and Library are central to local events. These buildings support daily operations and foster community engagement. Maps of their locations are included in the attached document.
Safe & Regulatory	Description of the process for inspecting municipal buildings, including how deficiencies are identified and addressed	Public buildings are inspected regularly by staff, outside experts, and residents to identify deficiencies. Monthly Health and Safety inspections ensure compliance with safety standards. Additionally, equipment inspections for systems like furnaces and HVAC are conducted as per OEM recommendations. Any identified issues lead to necessary repairs or maintenance, with the most recent Building Condition Assessment completed by Walter Fedy in 2019, guiding further actions.

Technical Levels of Service

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

Table 27: Buildings Technical Levels of Service

Service Attribute	Qualitative Description	Current LOS
Accessible & Reliable	Average Condition Rating	41% (Fair)
Safe & Regulatory	Average Risk Rating	13.97 - High
	Current vs. Target Reinvestment Rate	0.6% – 1.6%

Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service (PLOS), discuss the associated risks and long-term sustainability of these service levels, and explain the Municipality's ability to afford the PLOS.

The tables and graphs below explain the proposed levels of service scenarios that were analyzed for municipal Buildings. Further PLOS analysis at the portfolio level can be found in Proposed Levels of Service Scenario Analysis.

Scenario	Description
Scenario 1: Achieving Full Funding	This scenario assumes a phased tax increase of approximately 1.5% annually, reaching full funding within 15 years
Scenario 2: Achieving 75% Funding	This scenario assumes a phased tax increase of approximately 0.7% annually, reaching 75% funding within 15 years
Scenario 3: Maintaining Current Capital Investment	This scenario maintains the current level of capital investment, projecting asset conditions and risk based on existing funding levels.

PLOS Analysis

The following table presents the outcomes for three funding scenarios, illustrating how varying levels of capital investment impact asset condition, risk, and overall performance over time.

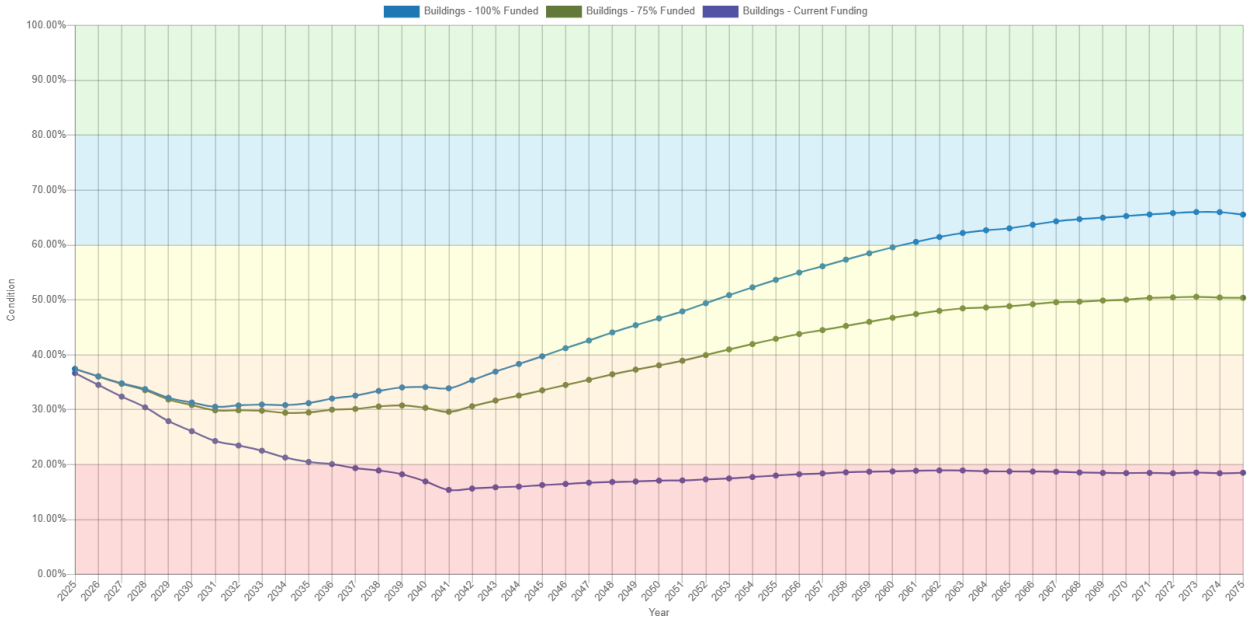
Table 28: Buildings pLOS Scenario Analysis

Scenario	Technical LOS Outcomes	Initial Value (2025)	10 Year Projection (2035)	25 Year Projection (2050)	Scenario Average
Scenario 1	Average Condition	37.41%	31.19%	46.62%	47.69%
	Average Asset Risk	15.7	17.1	14.11	14.01
	Average Annual Investment		$826,964		
	Capital re-investment rate		2.1%		
Scenario 2	Average Condition	37.41%	29.49%	38.07%	39.55%
	Average Asset Risk	15.7	17.39	15.79	15.55
	Average Annual Investment		$620,223		
	Capital re-investment rate		1.6%		
Scenario 3	Average Condition	37.41%	20.46%	17.07%	19.92%
	Average Asset Risk	15.7	18.99	19.32	18.89
	Average Annual Investment		$250,000		

Capital re-investment rate	0.6%

The following figure illustrates the projected condition of the asset category under each of the three investment level scenarios, demonstrating how varying reinvestment strategies impact overall asset condition over time.

Figure 61: Buildings Scenario Comparison



10. Vehicles

State of the Infrastructure

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

- tandem axle trucks for winter control activities
- fire vehicles to provide protection services
- pickup trucks for park maintenance services

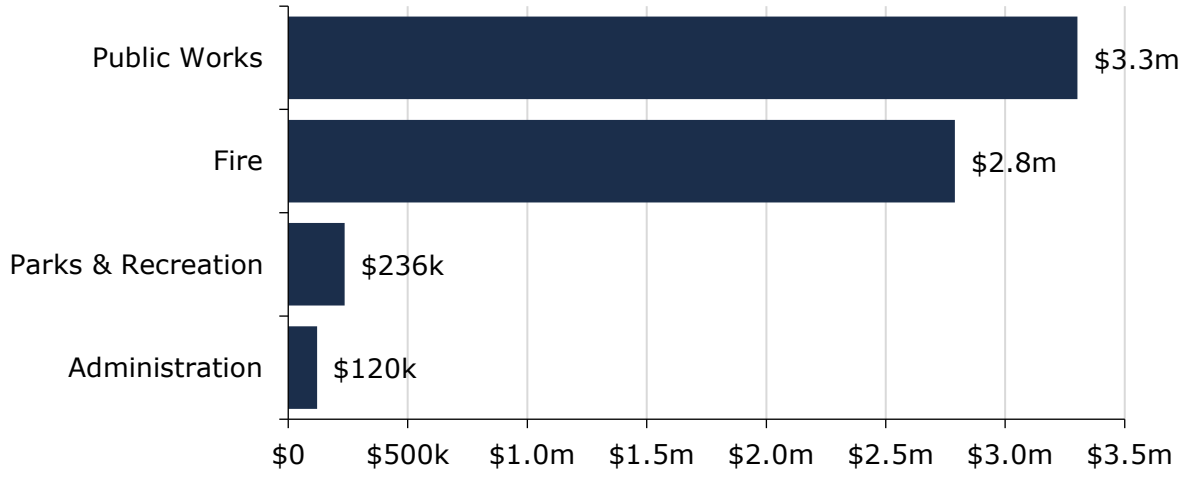
The following summarizes the state of the infrastructure for municipal vehicles, and the Municipality's ability to fund the proposed levels of service.

Replacement Cost	Condition	Financial Capacity	
		Annual Requirement:	$415,172
$6,449,000	Poor (39%)	Funding Available:	$519,350
		Annual Deficit:	($104,178)

Inventory & Valuation

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

Figure 62 Vehicle Replacement Costs

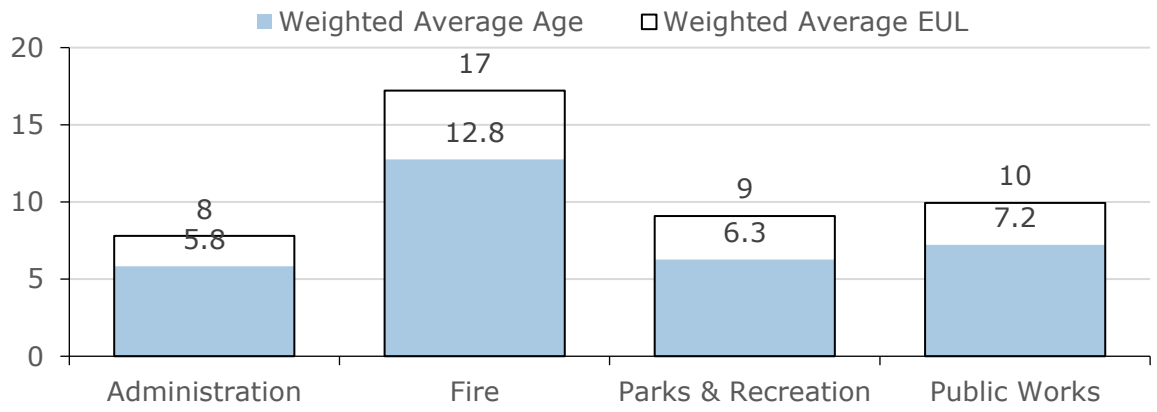


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to represent capital requirements more accurately.

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.

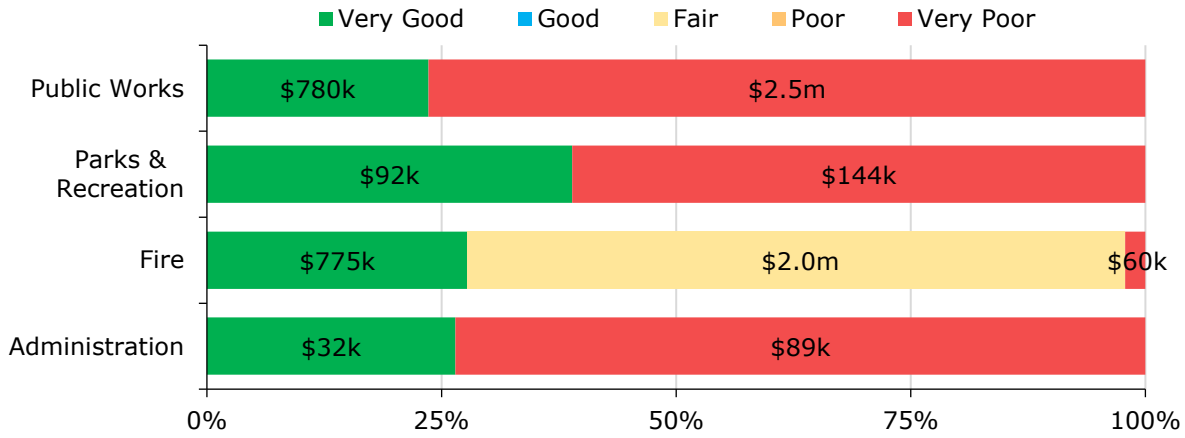
Figure 63 Vehicles Average Age vs Average EUL



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 64 Vehicles Condition Breakdown



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

regular visual inspections of vehicles to verify that they are in a state of adequate repair before 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 65 Vehicles Current Lifecycle Strategy

Maintenance

- Operations and maintenance tasks, including oil changes, repairs, and annual safety inspections, are performed by internal Public Works staff
- Due to their weight and towing capacities, all fire trucks and pickup trucks, with the exception of the chief's pickup, are subjected to an annual safety inspection and are marked with a yellow commercial sticker
- Warranty services and diagnostic checks are performed by external mechanics to ensure compliance and efficiency

Rehabilitation / Renewal / Replacement

- Fire pumpers and tankers are subject to mandatory retirement at 20 years, as stipulated by the NFPA and the Fire Underwriters Survey
- Pickup trucks, ATVs, snowmobiles, and boats are replaced on the same schedule as the fire equipment
- The chief’s truck is replaced every ten years due to its higher mileage
- Recommendations for vehicle replacements are provided by mechanics based on their assessments

Forecasted Capital Requirements

The annual capital requirement represents the average amount the Municipality should allocate each year to fund the rehabilitation and replacement of its infrastructure assets. The graph below outlines projected capital needs over the next 20 years, a timeframe that allows for a complete replacement cycle of all assets. Forecasted requirements are grouped into 5-year intervals, with the trend line indicating an average annual capital need of approximately $554 thousand. This figure provides a valuable benchmark for long-term financial planning to maintain current levels of service.

Figure 66 Vehicle Forecasted Capital Replacement Requirements

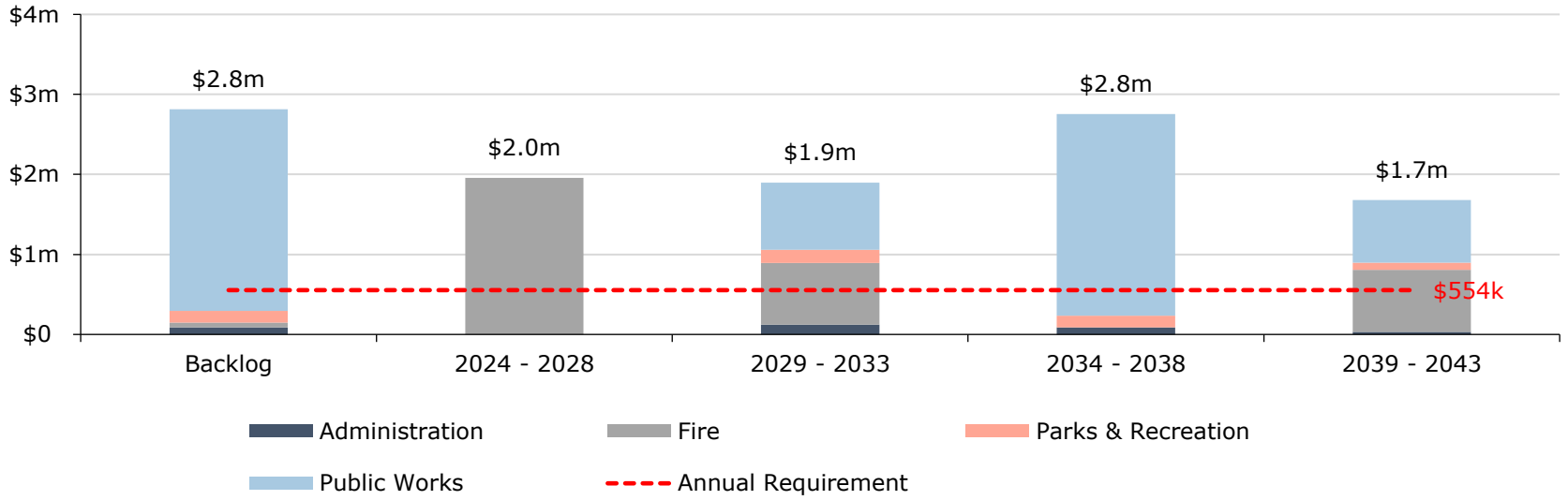


Table 29 below summarizes the projected cost of lifecycle activities (capital replacement only) that may need to be undertaken over the next 10 years to support current levels of service. These projections are generated in Citywide and rely on the data available in the asset register.

Table 29 Vehicles System-Generated 10-Year Capital Costs

Segment	Total	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Administration	$120k	$0	$0	$0	$0	$0	$32k	$0	$89k	$0	$0
Fire	$2.7m	$0	$0	$2.0m	$0	$0	$180k	$67k	$527k	$0	$0
Parks & Recreation	$164k	$0	$0	$0	$0	$0	$0	$39k	$72k	$0	$53k
Public Works	$839k	$0	$0	$0	$0	$0	$44k	$420k	$329k	$0	$46k

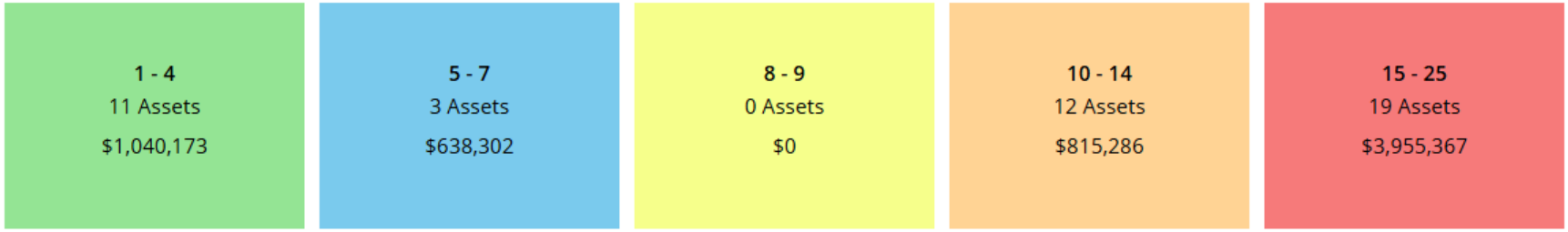
As no assessed condition data was available for the vehicles, only age was used to determine forthcoming replacement needs. These projections can be different from actual capital forecasts. Consistent data updates,

especially condition, will improve the alignment between the system-generated expenditure requirements, and the Municipality's capital expenditure forecasts

Risk & Criticality

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

Figure 67 Vehicles Risk Matrix



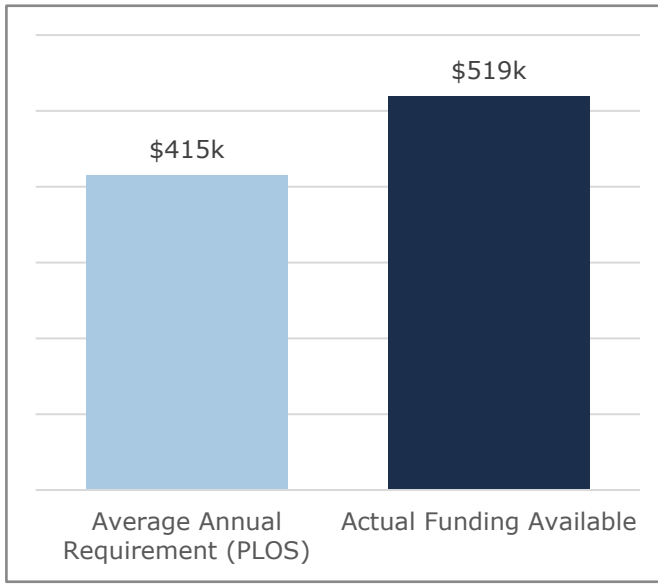
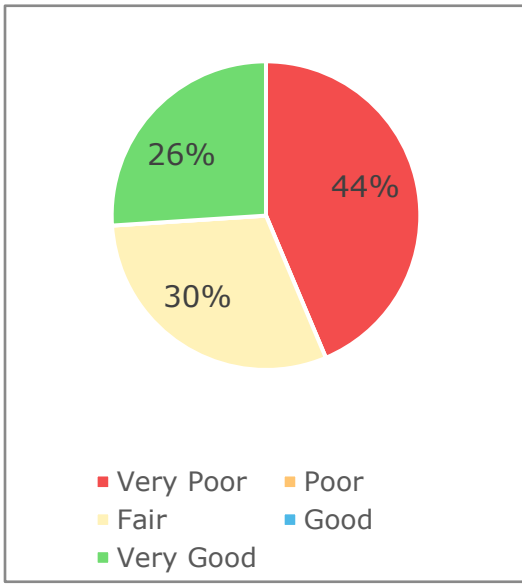
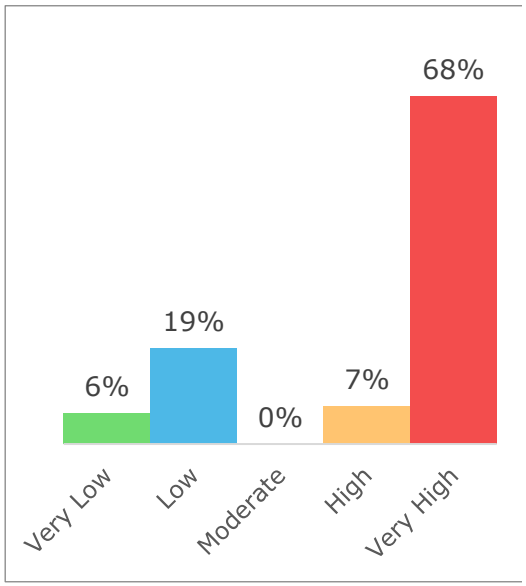
This is a high-level model that has been developed based on information currently available and should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure.

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

Levels of Service

By comparing the cost, performance (average condition) and risk year-over-year, the Municipality will be able to evaluate how their services/assets are trending.

Table 30: Vehicles Strategic Levels of Service

Target vs Actual Reinvestment Rate	Performance (Average Condition)	Risk Breakdown
		

Community Levels of Service

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

Table 31: Vehicles Community Levels of Service

Service Attribute	Qualitative Description	Current LOS
Safe & Regulatory	Description of the Vehicle inspection process including internal and external inspections, repairs, and warranty services.	Internal inspections and maintenance, including oil changes, repairs, and annual safety checks, are performed by Public Works staff. Fire trucks and pickup trucks (excluding the chief's pickup) undergo annual safety inspections and are marked with a yellow commercial sticker. External mechanics handle warranty services and diagnostic checks to ensure compliance and maintain vehicle efficiency.

Technical Levels of Service

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

Table 32: Vehicles Technical Levels of Service

Service Attribute	Qualitative Description	Current LOS
Accessible & Reliable	Average Condition Rating	39% (Poor)
Safe & Regulatory	Average Risk Rating	14.89 - High
	Current vs. Target Reinvestment Rate	8.1% – 6.4%

Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service (PLOS), discuss the associated risks and long-term sustainability of these service levels, and explain the Municipality's ability to afford the PLOS.

The tables and graphs below explain the proposed levels of service scenarios that were analyzed for municipal Vehicles. Further PLOS analysis at the portfolio level can be found in Proposed Levels of Service Scenario Analysis.

Scenario	Description
Scenario 1: Achieving Full Funding	This scenario assumes a phased tax increase of approximately 1.5% annually, reaching full funding within 15 years

Scenario 2: Achieving 75% Funding	This scenario assumes a phased tax increase of approximately 0.7% annually, reaching 75% funding within 15 years
Scenario 3: Maintaining Current Capital Investment	This scenario maintains the current level of capital investment, projecting asset conditions and risk based on existing funding levels.

PLOS Analysis

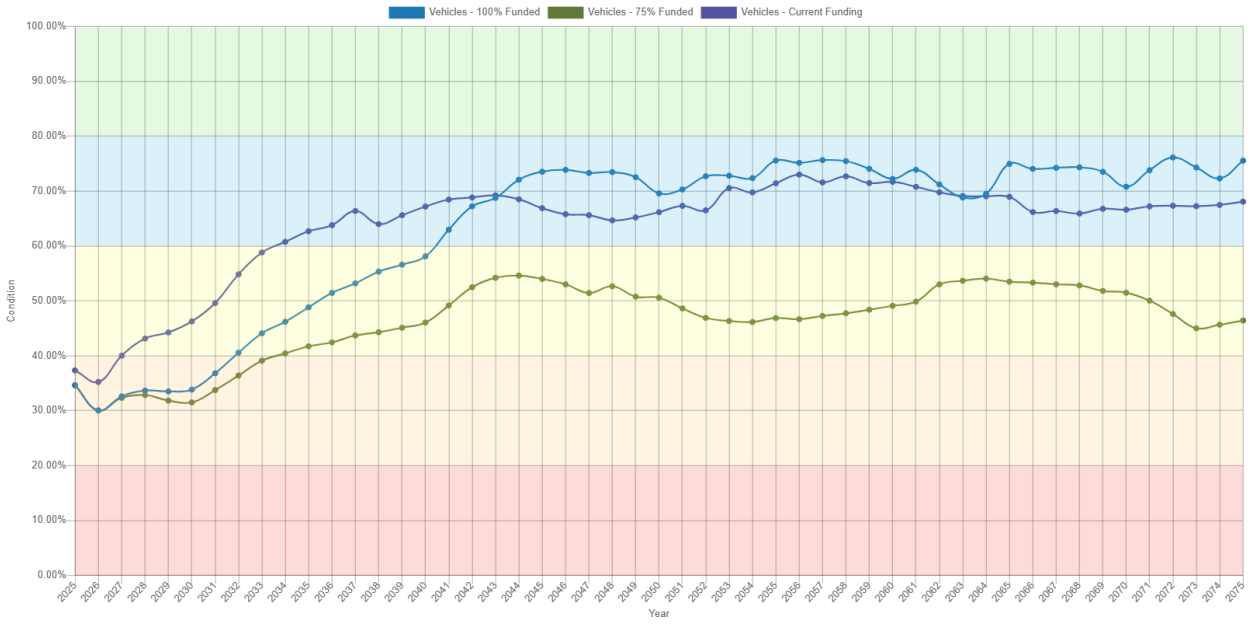
The following table presents the outcomes for three funding scenarios, illustrating how varying levels of capital investment impact asset condition, risk, and overall performance over time

Table 33: Vehicles pLOS Scenario Analysis

Scenario	Technical LOS Outcomes	Initial Value (2025)	10 Year Projection (2035)	25 Year Projection (2050)	Scenario Average
Scenario 1	Average Condition	30.50%	69.72%	74.93%	68.55%
	Average Asset Risk	14.28	7.81	6.77	7.88
	Average Annual Investment		$423,492		
	Capital re-investment rate		7.9%		
Scenario 2	Average Condition	30.50%	66.32%	60.71%	59.63%
	Average Asset Risk	14.28	8.35	9.37	9.5
	Average Annual Investment		$317,619		
	Capital re-investment rate		5.9%		
Scenario 3	Average Condition	29.83%	56.82%	52.56%	50.23%
	Average Asset Risk	14.34	10.17	10.84	11.24
	Average Annual Investment		$299,500		
	Capital re-investment rate		5.6%		

The following figure illustrates the projected condition of the asset category under each of the three investment level scenarios, demonstrating how varying reinvestment strategies impact overall asset condition over time.

Figure 68: Vehicles Scenario Comparison



11. Machinery & Equipment

State of the Infrastructure

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

- Computer hardware, software, and phone systems to support all municipal services
- Safety equipment to support the delivery of protection services
- Mowers to support parks maintenance
- Public Works equipment to support roadway maintenance

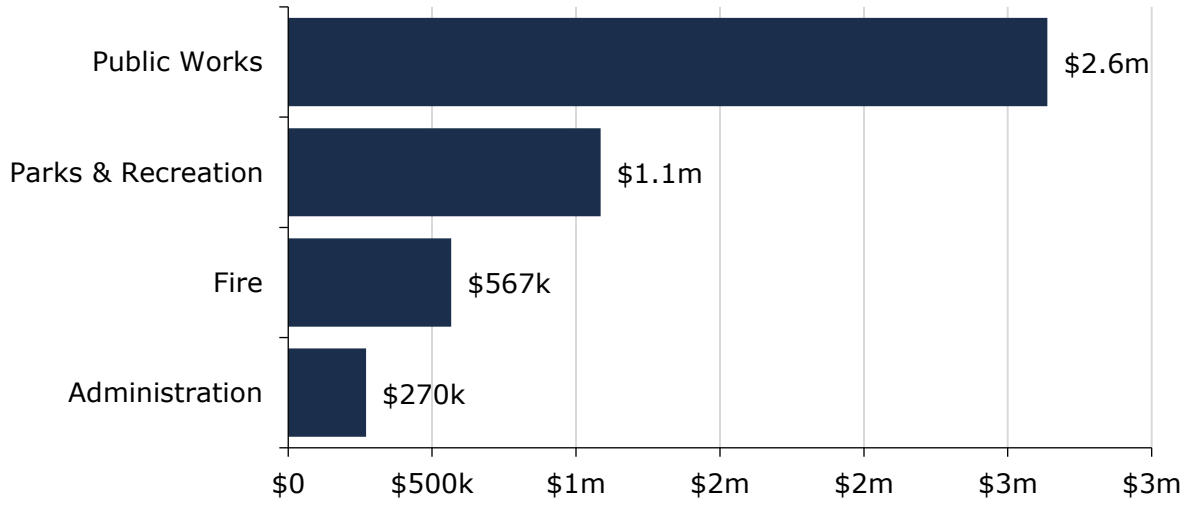
The following summarizes the state of the infrastructure for machinery & equipment, and the Municipality's ability to fund the proposed levels of service.

Replacement Cost	Condition	Financial Capacity	
		Annual Requirement:	$317,619
$5,353,000	Poor (27%)	Funding Available:	$299,500
		Annual Deficit:	$18,119

Inventory & Valuation

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

Figure 69 Machinery & Equipment Replacement Costs

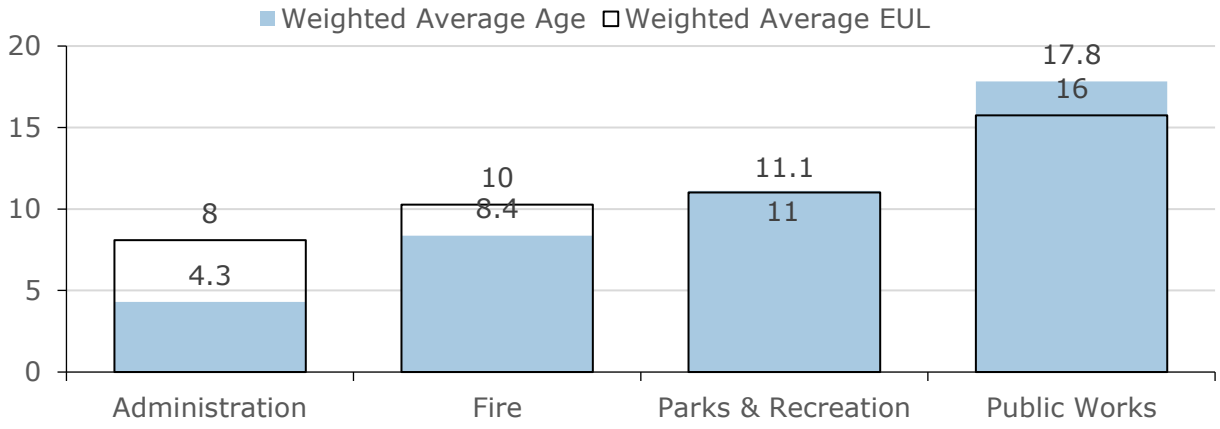


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to more accurate represent capital requirements.

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.

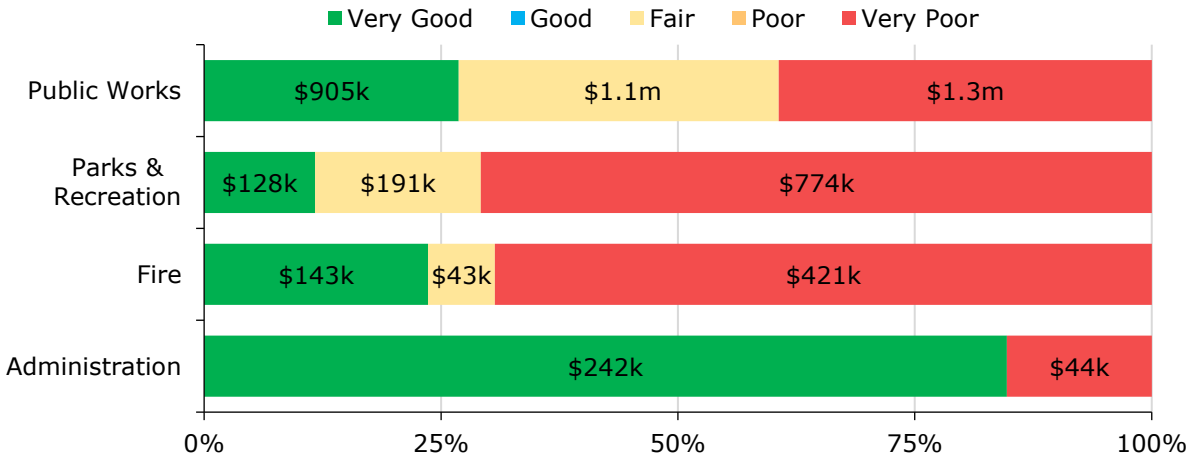
Figure 70 Machinery & Equipment Average Age vs Average EUL



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 71 Machinery & Equipment Condition Breakdown



To ensure that the municipality's equipment continues to provide an acceptable level of service, Highlands East 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 strategy for assessing the condition of machinery and equipment is inconsistent, reflecting the wide variety of equipment types included in this category. Certain types, such as fire equipment, benefit from established assessment protocols, whereas many other types do not have any standardized assessment procedures in place.

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 72 Machinery & Equipment Current Lifecycle Strategy

Maintenance

- Ladders and pumps undergo annual inspections in accordance with NFPA regulations to ensure safety and functionality
- Pre-trip vehicle inspections are conducted on trucks as mandated by the Ministry of Transportation (MTO)
- Any repairs identified during pre-trip or annual safety inspections are addressed immediately upon discovery

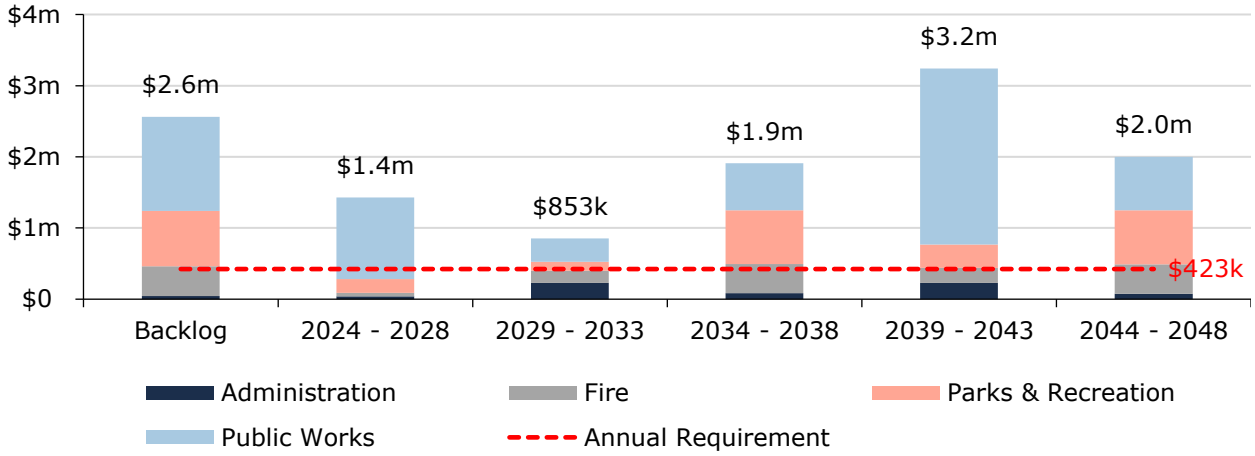
Rehabilitation / Renewal / Replacement

- Lifecycle management strategies within the municipality are tailored according to the type of equipment and the specific department responsible for its use and maintenance

Forecasted Capital Requirements

The graph below presents projected capital requirements over the next 20 years, a timeframe that allows for a full replacement cycle of all infrastructure assets. To maintain the current level of service, forecasted capital needs are aggregated into 5-year intervals, with the trend line indicating an average annual requirement of approximately $423 thousand. This figure serves as a key benchmark for guiding long-term capital planning and investment.

Figure 73 Machinery & Equipment Forecasted Capital Replacement Requirements



The table below summarizes the projected cost of lifecycle activities (capital replacement only) that may need to be undertaken over the next 10 years to support current levels of service. These projections are generated in Citywide and rely on the data available in the asset register.

Table 34 Machinery & Equipment System-Generated 10-Year Capital Costs

Segment	Total	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Administration	$270k	$0	$0	$0	$27k	$14k	$147k	$0	$26k	$35k	$21k
Fire	$217k	$43k	$0	$0	$5k	$0	$49k	$0	$15k	$65k	$40k
Parks & Recreation	$319k	$191k	$0	$0	$0	$0	$57k	$29k	$24k	$0	$18k
Public Works	$1.5m	$734k	$327k	$77k	$0	$12k	$0	$0	$10k	$13k	$303k

As no assessed condition data was available for the equipment, only age was used to determine forthcoming replacement needs. These projections can be different from actual capital forecasts. Consistent data updates, especially condition, will improve the alignment between the system-generated expenditure requirements, and the Municipality's capital expenditure forecasts.

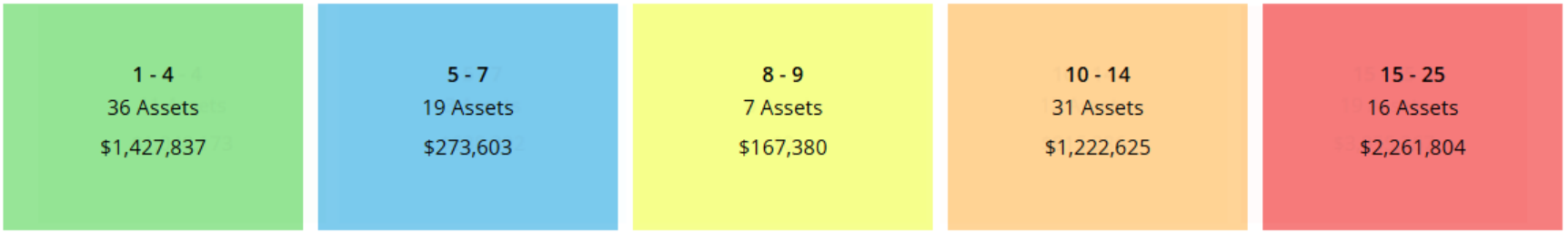
Risk & Criticality

The risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within this asset category based on available inventory data. See Appendix C: 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.

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

Figure 74 Machinery & Equipment Risk Matrix

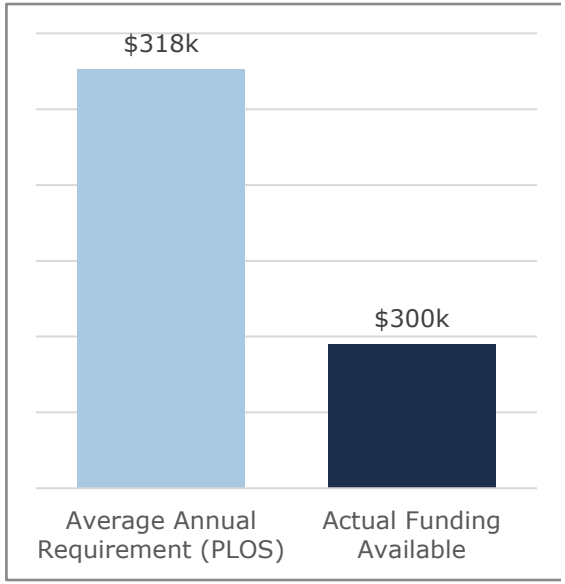


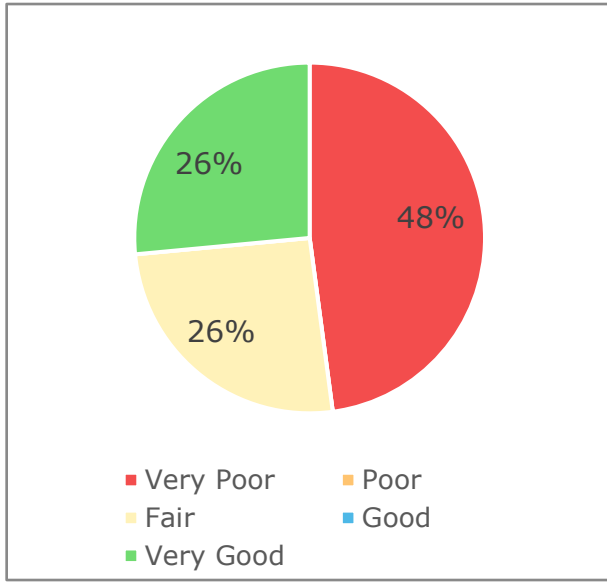
Levels of Service

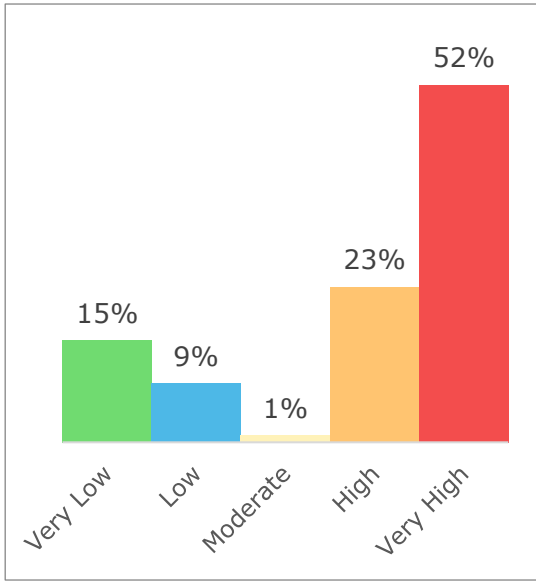
By comparing the cost, performance (average condition) and risk year-over-year, Highlands East will be able to evaluate how their services/assets are trending.

Figure 75: Machinery & Equipment Strategic Levels of Service

Target vs Actual Reinvestment Rate	Performance (Average Condition)	Risk Breakdown







Community Levels of Service

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

Table 35: Machinery & Equipment Community Levels of Service

Service Attribute	Qualitative Description	Current LOS
Safe & Regulatory	Description of the internal and external inspections, repairs, and warranty services for Machinery & Equipment	Ladders and pumps are inspected annually per NFPA regulations to ensure safety and functionality. Pre-trip inspections of trucks are conducted as required by the Ministry of Transportation (MTO). Any repairs identified during inspections are addressed immediately to maintain equipment safety and performance.

Technical Levels of Service

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

Table 36: Machinery & Equipment Technical Levels of Service

Service Attribute	Qualitative Description	Current LOS
Accessible & Reliable	Average Condition Rating	34% (Poor)
Safe & Regulatory	Average Risk Rating	14.66 - High
	Current vs. Target Reinvestment Rate	5.6% - 5.9%

Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service (PLOS), discuss the associated risks and long-term sustainability of these service levels, and explain the Municipality's ability to afford the PLOS.

The tables and graphs below explain the proposed levels of service scenarios that were analyzed for Machinery & Equipment. Further PLOS analysis at the portfolio level can be found in Proposed Levels of Service Scenario Analysis.

Scenario	Description
Scenario 1: Achieving Full Funding	This scenario assumes a phased tax increase of approximately 1.5% annually, reaching full funding within 15 years
Scenario 2: Achieving 75% Funding	This scenario assumes a phased tax increase of approximately 0.7% annually, reaching 75% funding within 15 years

Scenario 3: Maintaining Current Capital Investment	This scenario maintains the current level of capital investment, projecting asset conditions and risk based on existing funding levels.

PLOS Analysis

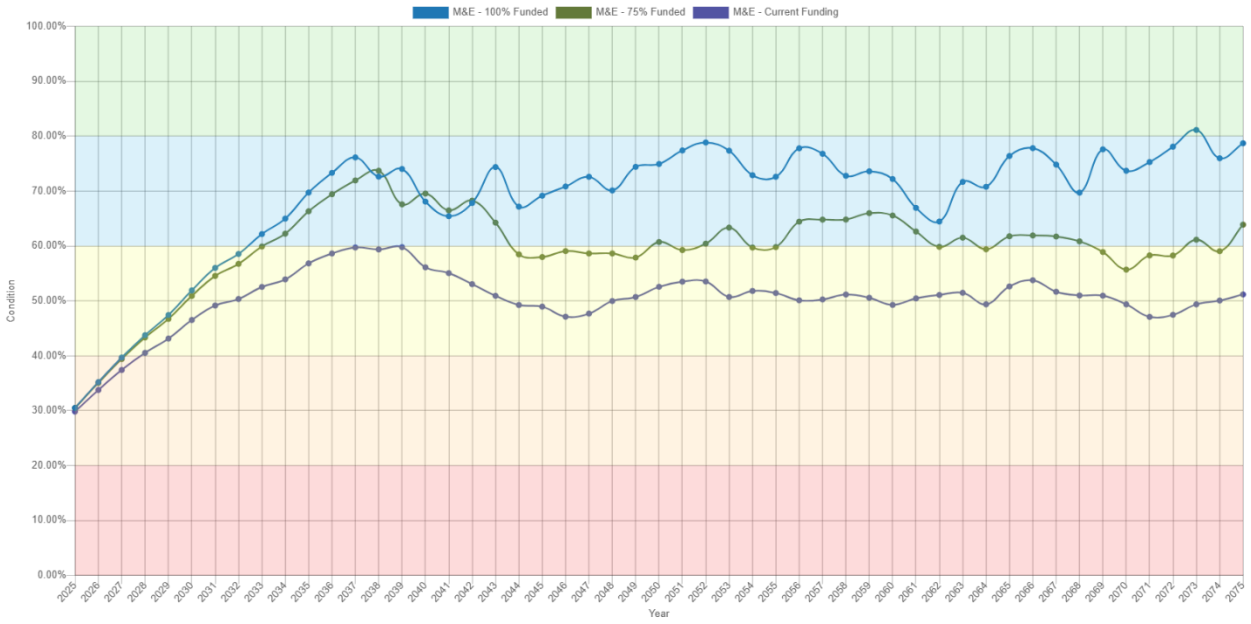
The following table presents the outcomes for three funding scenarios, illustrating how varying levels of capital investment impact asset condition, risk, and overall performance over time

Table 37: Machinery & Equipment pLOS Scenario Analysis

Scenario	Technical LOS Outcomes	Initial Value (2025)	10 Year Projection (2035)	25 Year Projection (2050)	Scenario Average
Scenario 1	Average Condition	30.50%	69.72%	74.93%	68.55%
	Average Asset Risk	14.28	7.81	6.77	7.88
	Average Annual Investment		$423,492		
	Capital re-investment rate		7.9%		
Scenario 2	Average Condition	30.50%	66.32%	60.71%	59.63%
	Average Asset Risk	14.28	8.35	9.37	9.5
	Average Annual Investment		$317,619		
	Capital re-investment rate		5.9%		
Scenario 3	Average Condition	29.83%	56.82%	52.56%	50.23%
	Average Asset Risk	14.34	10.17	10.84	11.24
	Average Annual Investment		$299,500		
	Capital re-investment rate		5.6%		

The following figure illustrates the projected condition of the asset category under each of the three investment level scenarios, demonstrating how varying reinvestment strategies impact overall asset condition over time.

Figure 76: Machinery & Equipment Scenario Comparison



12. Land Improvements

State of the Infrastructure

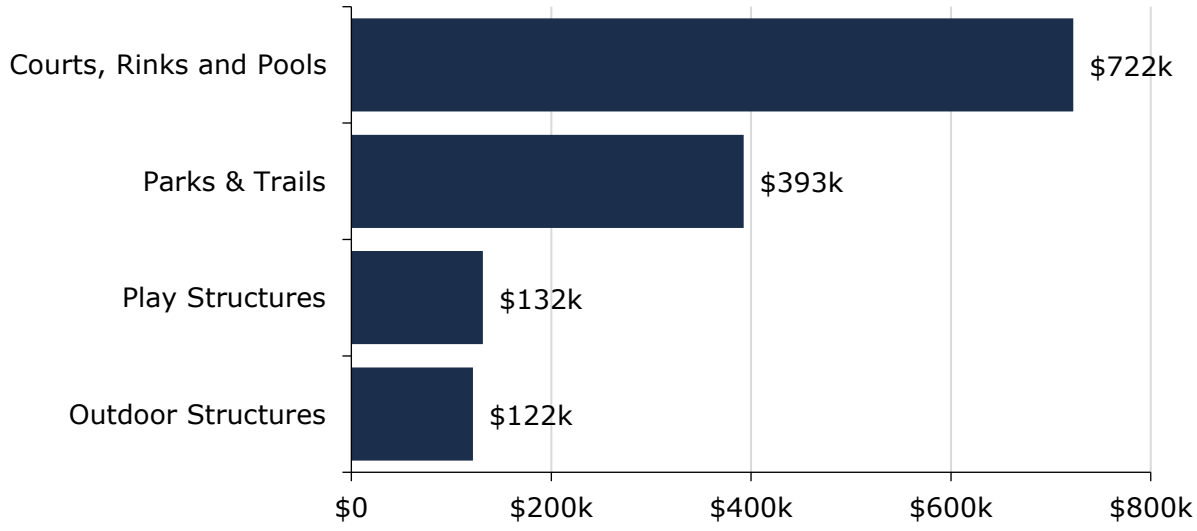
Highlands East owns several assets that are considered Land Improvements. This category includes park and sports field assets like ball diamonds, soccer fields, outdoor rinks, trails and pathways.

The following summarizes the state of the infrastructure for land improvement assets, and the Municipality's ability to fund the proposed levels of service.

Replacement Cost	Condition	Financial Capacity	
		Annual Requirement:	$47,977
$1,368,419	Good (61%)	Funding Available:	$25,000
		Annual Deficit:	$22,977

Inventory & Valuation

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

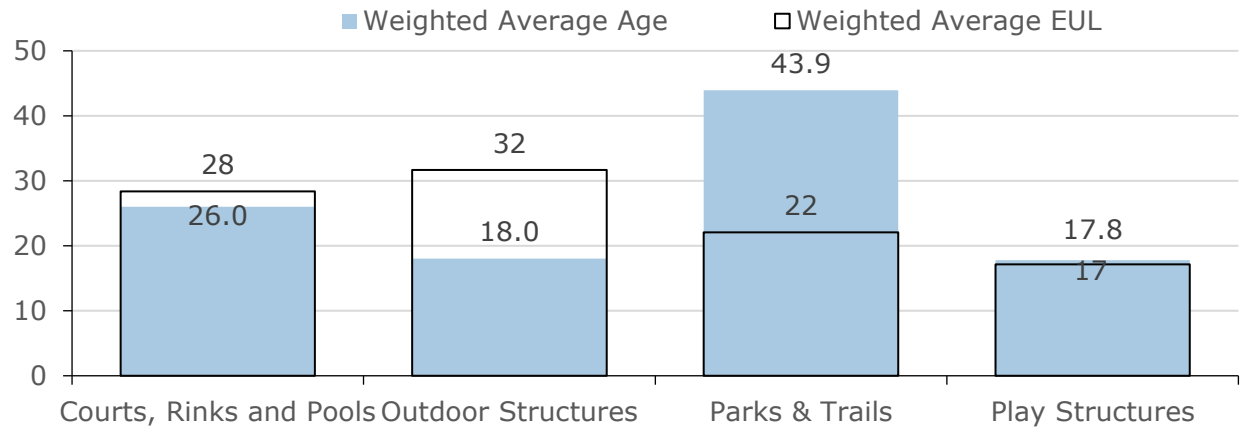


Each asset's replacement cost should be reviewed periodically to determine whether adjustments are needed to represent capital requirements more accurately.

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.

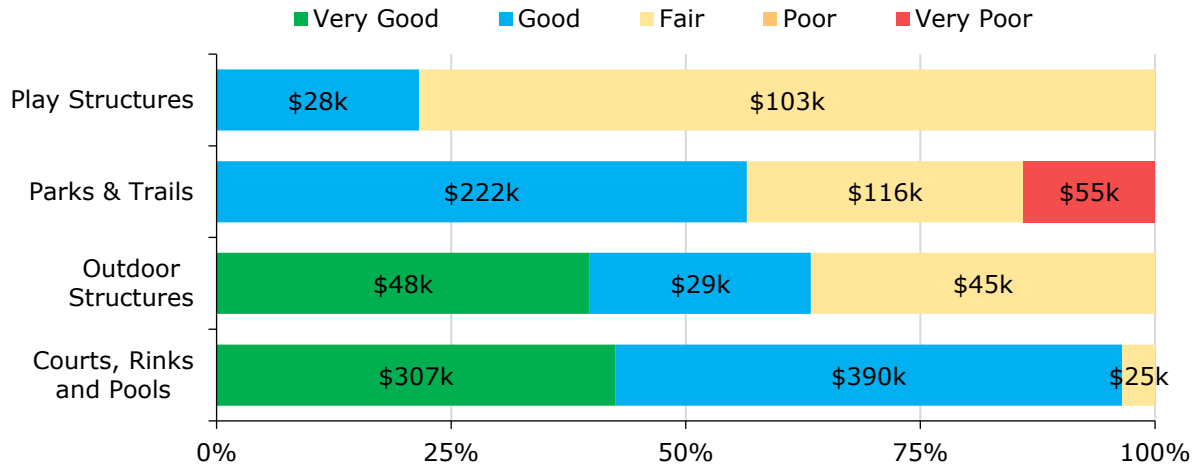
Figure 77 Land Improvements Average Age vs Average EUL



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 78 Land Improvements Condition Breakdown



To ensure that the Municipality's land improvements continue to provide an acceptable level of service, Highlands East should monitor the average condition of all assets. There are no condition assessments on these assets, the average condition is very poor, 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 varies significantly due to the varied assets included in this category

Lifecycle Management Strategy

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

Figure 79 Land Improvement Current Lifecycle Strategy

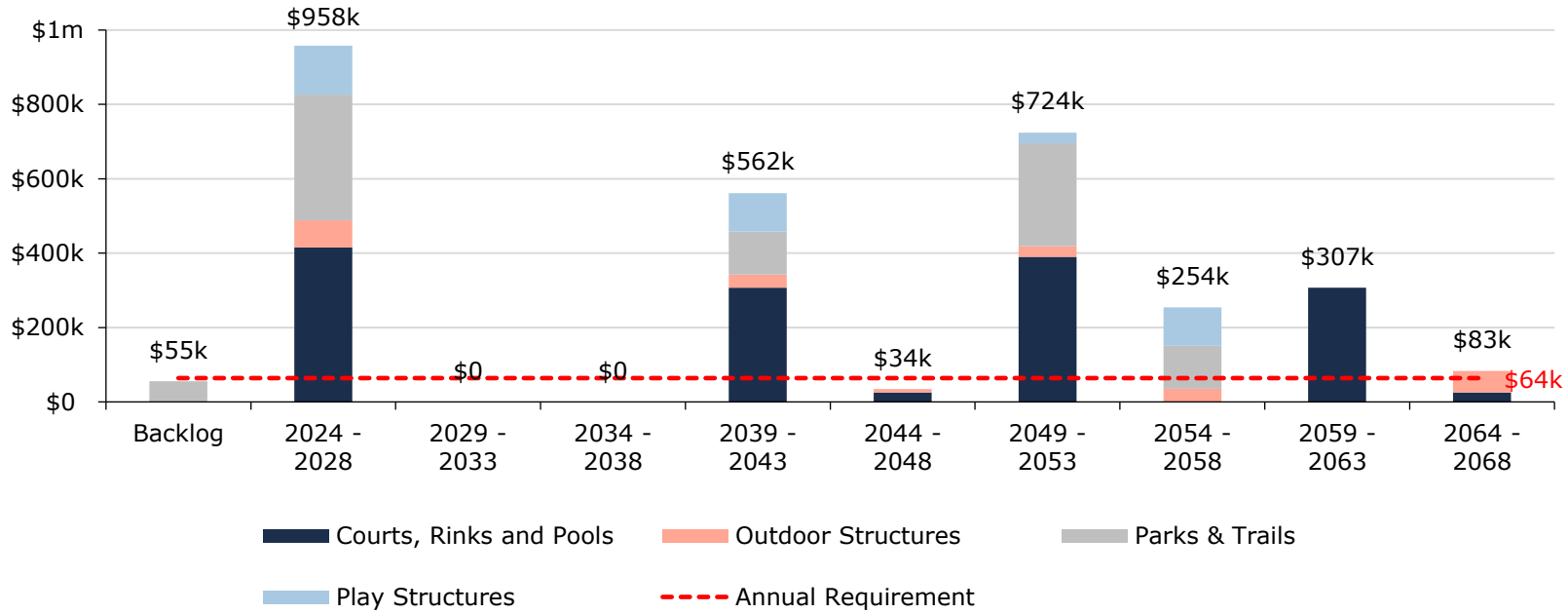
Maintenance / Rehabilitation / Replacement

- The Municipality currently does not have a formalized strategy for maintenance, rehabilitation, and replacement of assets. However, efforts are underway to develop a comprehensive strategy that will address these areas and ensure the long-term sustainability and functionality of municipal assets. This strategy will consider factors such as asset condition, lifecycle management, and budget availability, with the goal of aligning with best practices and community needs.

Forecasted Capital Requirements

The annual capital requirement reflects the average amount that should be allocated each year to support the rehabilitation and replacement of infrastructure assets. The graph below illustrates projected capital needs over the next 45 years, an outlook that captures a full replacement cycle for all assets. Forecasted requirements are grouped into 5-year intervals, with the trend line indicating an average annual capital need of approximately $109 thousand. This figure serves as a useful benchmark for sustaining current levels of service through long-term financial planning.

Figure 80 Land Improvements Forecasted Capital Replacement Requirements



The table below summarizes the projected cost of lifecycle activities (capital replacement only) that may need to be undertaken over the next 10 years to support current levels of service. These projections are generated in Citywide and rely on the data available in the asset register.

Table 38 Land Improvements System-Generated 10-Year Capital Costs

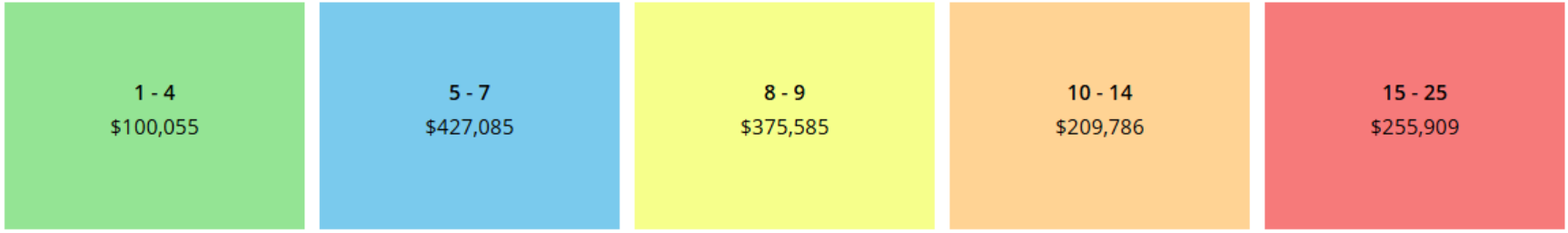
Segment	Total	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Courts, Rinks and Pools	$415k	$0	$0	$25k	$0	$390k	$0	$0	$0	$0	$0
Outdoor Structures	$73k	$36k	$0	$9k	$0	$29k	$0	$0	$0	$0	$0
Parks & Trails	$337k	$20k	$96k	$0	$0	$222k	$0	$0	$0	$0	$0
Play Structures	$132k	$103k	$0	$0	$0	$28k	$0	$0	$0	$0	$0

For this category, a staff assessment from 2018 was used to determine forthcoming replacement needs. These projections can be different from actual capital forecasts. Consistent data updates, especially condition, will improve the alignment between the system-generated expenditure requirements, and the Municipality's capital expenditure forecasts.

Risk & Criticality

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

Figure 81 Land Improvements Risk Matrix



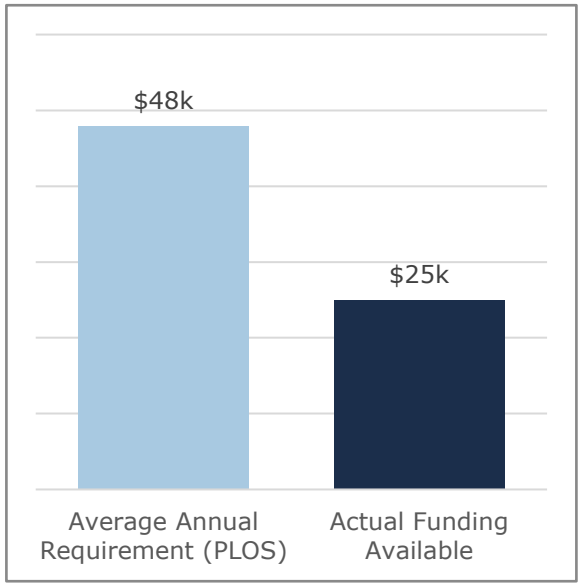
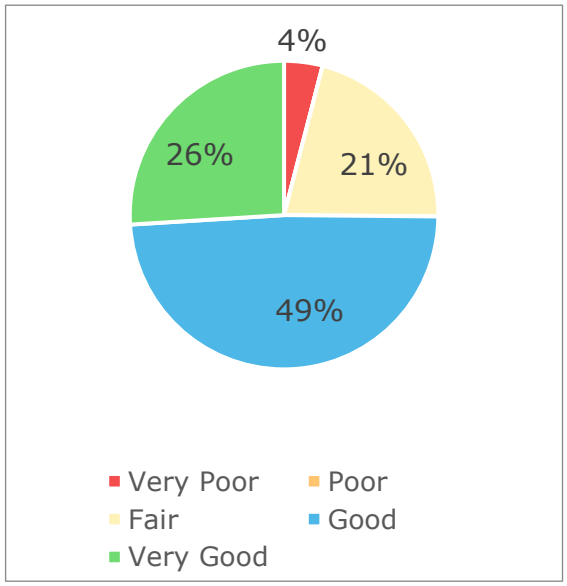
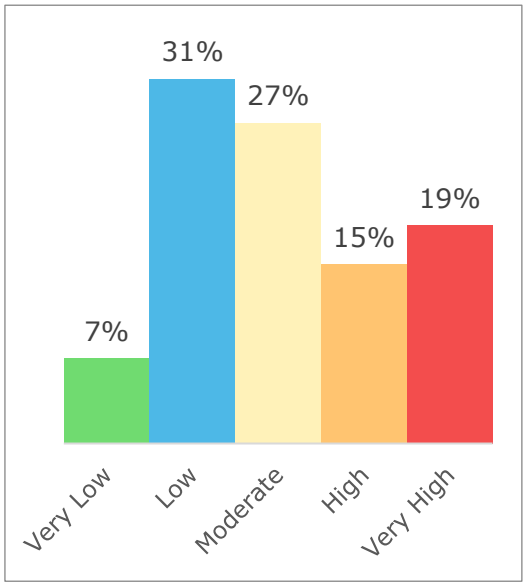
This is a high-level model that has been developed based on information currently available and should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure.

The identification of critical assets allows the Municipality 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

By comparing the cost, performance (average condition) and risk year-over-year the Municipality will be able to evaluate how their services/assets are trending.

Figure 82: Land Improvements Strategic Levels of Service

Target vs Actual Reinvestment Rate	Performance (Average Condition)	Risk Breakdown
		

Community Levels of Service

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

Table 39: Land Improvements Community Levels of Service

Service Attribute	Qualitative Description	Current LOS
Safe & Regulatory	Description, which may include maps, of municipal parks and their proximity to the surrounding community	See Figure 85: Multi-Use Trail Locations. The Municipality offers several parks and trails located near surrounding communities. Cardiff Park features an outdoor swimming pool, playground, picnic pavilion, and winter skating rink. Glamorgan Park in Gooderham offers walking paths, courts, a baseball diamond, and an off-leash dog park. Highland Grove Park includes a soccer field, horseshoe pits, and swings. Tory Hill Park, along the IB&O Rail Trail, provides playground equipment and picnic tables. Wilberforce Park features sports courts, a baseball diamond, and picnic areas. The 5.5 km IB&O Rail Trail offers a multi-use path, and Silent Lake Provincial Park provides camping and hiking at the eastern border of Highlands East.

Figure 83: Multi-Use Trail Locations

Technical Levels of Service

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

Table 40: Land Improvements Technical Levels of Service

Service Attribute	Qualitative Description	Current LOS
Accessible & Reliable	Average Condition Rating	61% (Good)
Safe & Regulatory	Average Risk Rating	9.4 - Moderate
	Current vs. Target Reinvestment Rate	1.8% - 3.5%

Proposed Levels of Service

As per O. Reg. 588/17, by July 1, 2025, municipalities are required to consider proposed levels of service (PLOS), discuss the associated risks and long-term sustainability of these service levels, and explain the Municipality's ability to afford the PLOS.

The tables and graphs below explain the proposed levels of service scenarios that were analyzed for municipal Vehicles. Further PLOS analysis at the portfolio level can be found in Proposed Levels of Service Scenario Analysis.

Scenario	Description
Scenario 1: Achieving Full Funding	This scenario assumes a phased tax increase of approximately 1.5% annually, reaching full funding within 15 years
Scenario 2: Achieving 75% Funding	This scenario assumes a phased tax increase of approximately 0.7% annually, reaching 75% funding within 15 years
Scenario 3: Maintaining Current Capital Investment	This scenario maintains the current level of capital investment, projecting asset conditions and risk based on existing funding levels.

PLOS Analysis

The following table presents the outcomes for three funding scenarios, illustrating how varying levels of capital investment impact asset condition, risk, and overall performance over time

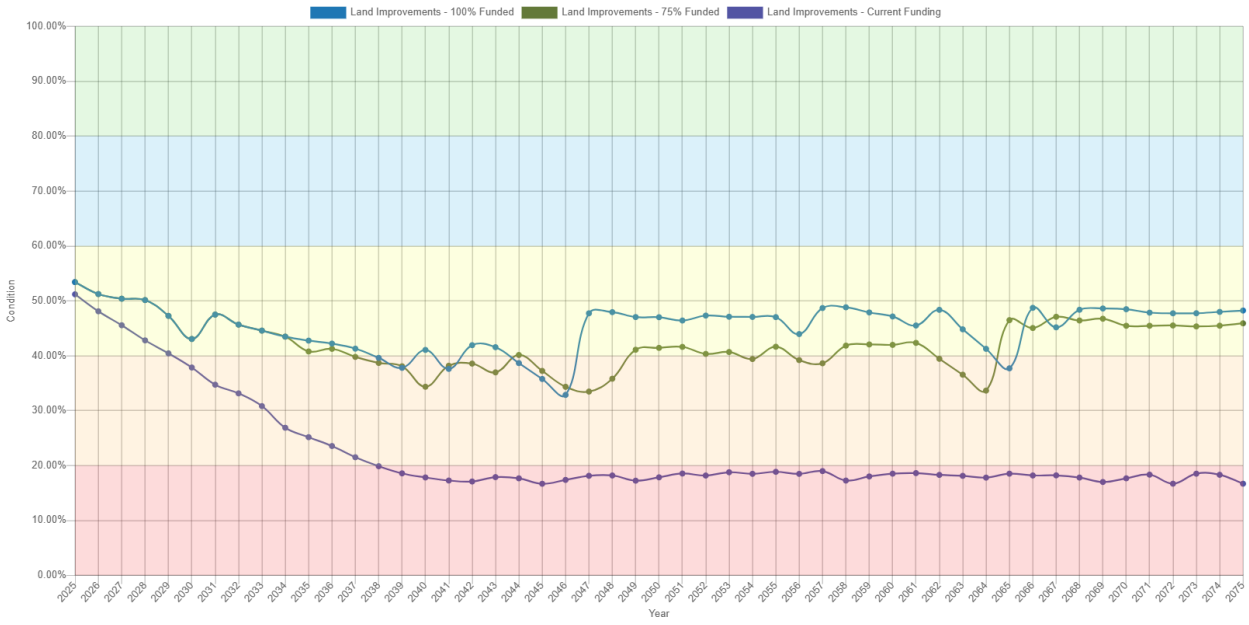
Table 41: Land Improvements pLOS Scenario Analysis

Scenario	Technical LOS Outcomes	Initial Value (2025)	10 Year Projection (2035)	25 Year Projection (2050)	Scenario Average
	Average Condition	53.41%	42.75%	47.02%	45.25%

Scenario 1	Average Asset Risk	3.81	5.11	5.18	5.13
	Average Annual Investment		$63,969		
	Capital re-investment rate		4.7%		
Scenario 2	Average Condition	53.41%	40.78%	41.43%	42.18%
	Average Asset Risk	3.81	5.2	5.45	5.27
	Average Annual Investment		$47,977		
	Capital re-investment rate		3.5%		
Scenario 3	Average Condition	51.19%	25.16%	17.85%	22.48%
	Average Asset Risk	3.91	5.99	6.5	6.14
	Average Annual Investment		$25,000		
	Capital re-investment rate		1.8%		

The following figure illustrates the projected condition of the asset category under each of the three investment level scenarios, demonstrating how varying reinvestment strategies impact overall asset condition over time.

Figure 84: Land Improvements Scenario Comparison



Financial Strategy

Financial Strategy Overview

Each year, the Municipality of Highlands East 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 plan identifies the financial requirements necessary to meet the identified proposed levels of service. These requirements are based on the financial requirements for existing assets as of December 31, 2023. However, the required funding is based on meeting the proposed levels of service, with consideration for any additional financial impacts from economic and population growth. The financial plan considers and accounts for traditional and non-traditional sources of municipal funding.

This financial strategy is designed around two key elements: the average annual capital requirement, and the average annual capital funding currently available. The annual requirement is calculated based on the replacement cost and service life of each asset, and, where possible, includes lifecycle modeling. These values are then aggregated to determine category-level funding needs.

Available capital funding is based on an average of historical capital expenditure, including contributions to capital reserves. For Highlands East, average spending from 2022-2024 was used to establish a baseline projection of available capital funding.

Only reliable and predictable sources of capital 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
- Revenue from water and wastewater rates allocated to capital reserves
- The Canada Community Benefits Fund (CCBF), formerly the Federal Gas Tax Fund

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 Municipality should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs, and achieve long-term sustainability. For most asset categories the annual requirement has been calculated based on a "replacement only" scenario, in which capital costs are only incurred at the construction and replacement of each asset.

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

The following table compares two scenarios for the road network:

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 42: Annual Requirement Comparison

Asset Category	Annual Requirements (Replacement Only)	Annual Requirements (Lifecycle Strategy)	Difference
Paved Roads	$1,556,661	$1,485,623	$71,038

The implementation of a proactive lifecycle strategy for paved roads leads to a potential annual cost avoidance of approximately $71 thousand for the road network. This represents an overall reduction of the annual requirements by 5%.

As the lifecycle strategy scenario represents the lowest cost option available to the Municipality, we have used this annual requirement in the development of the financial strategy.

The table below outlines the total average annual capital requirements for existing assets in each category, based on the proposed levels of service. With a total replacement cost of $118 million, the estimated annual capital requirement across all asset categories is approximately $3.9 million.

The table also illustrates the system-generated, equivalent target reinvestment rate for the proposed levels of service, calculated by dividing the annual capital requirements by the total replacement cost of each category. The cumulative target reinvestment for these categories is estimated at 1.2%.

Table 43: Average Annual Capital Requirements

Asset Category	Replacement Cost	Annual Capital Requirements	Target Reinvestment Rate
Road Network	$46,018,174	$1,114,217	2.4%
Bridges & Culverts	$7,256,975	$146,715	2.0%
Buildings	$38,499,452	$620,223	1.6%
Land Improvements	$1,368,419	$47,977	3.5%
Machinery & Equipment	$5,353,249	$317,619	5.9%
Vehicles	$6,449,128	$415,172	6.4%
Water Network	$7,611,524	$140,460	1.8%
Sanitary Network	$5,422,292	$89,339	1.6%
Total	**$117,979,213**	**$2,891,722**	**2.5%**

Financial Profile: Tax Funded Assets

Current Funding Levels

The table below summarizes how current funding levels compare with funding required for the proposed levels of service. At existing levels, the Municipality is funding 70.2% of its annual capital requirements for all infrastructure analyzed. This creates a total annual funding deficit of $861,996.

Table 44: Current Funding Levels

Asset Category	Annual Capital Requirements	Annual Funding Available	Annual Infrastructure Deficit	Funding Level
Road Network	$1,114,217	$639,292	$474,925	57.4%
Bridges & Culverts	$146,715	$179,584	($32,869)	122.4%
Buildings	$620,223	$250,000	$370,223	40.3%
Land Improvements	$47,977	$25,000	$22,977	52.1%
Machinery & Equipment	$317,619	$299,500	$18,119	94.3%
Vehicles	$415,172	$519,350	($104,178)	125.1%
Water Network	$140,460	$46,000	$94,460	32.7%
Sanitary Network	$89,339	$71,000	$18,339	79.5%
Total	**$2,891,722**	**$2,029,726**	**$861,996**	**70.2%**

Table 45: Taxes - Required Funding vs Current Funding Position

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Taxes	CCBF	Reserve Contribution	Total Available	
Road Network	$1,114,217	$517,225	$122,067		$639,292	$474,925
Bridges & Culverts	$146,715	$179,584			$179,584	($32,869)
Buildings	$620,223	$166,000		$84,000	$250,000	$370,223
Machinery & Equipment	$317,619	$125,000		$174,500	$299,500	$18,119
Land Improvements	$47,977	$25,000			$25,000	$22,977
Vehicles	$415,172	$50,000		$469,350	$519,350	($104,178)
Total	**$2,661,922**	**$1,062,809**	**$122,067**	**$727,850**	**$1,912,726**	**$749,196**

The average annual investment requirement for the above categories is $2,661,922. Annual revenue currently allocated to these assets for capital purposes is $1,912,726, leaving an annual deficit of $749,196. Put differently, these infrastructure categories are currently funded at 71.9% of their long-term requirements.

Closing the Gap

Eliminating annual infrastructure funding shortfalls is a difficult and long-term endeavor for municipalities. Achieving the funding required to support the proposed levels of service, while maintaining affordability for residents, will require time and deliberate financial planning.

This section outlines how Highlands East can gradually work toward closing the annual capital funding shortfall using its own-source revenues, such as property taxes and utility rates. This approach avoids the use of additional debt for existing assets and supports the Municipality's goal of sustainably increasing investment to maintain and improve service delivery. By phasing in additional funding as financial capacity allows, the Municipality can begin to align infrastructure spending with service level expectations and the priorities identified through community and stakeholder engagement.

75% Funding Requirements Tax Revenues

As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, achieving 75% of full funding would require a 10.8% 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 46: Phasing in Annual Tax Increases – 75% of full Funding

Asset Category	Tax Change Required for 75% of full Funding
Road Network	6.9%
Bridges & Culverts	No change Required
Buildings	5.3%
Land Improvements	0.3%
Machinery & Equipment	0.3%
Vehicles	No change required

Funding 75% of the annual capital requirements ensures that major capital events, such as replacements, are completed as needed. While the remaining funding gap will need to be supplemented with other revenue sources, the Municipality will also draw from reserves as necessary to support high-priority projects. Project prioritization will help guide the allocation of these funds, ensuring that the most critical infrastructure needs are addressed first. With this approach, most projects are unlikely to be deferred to future years, helping to maintain high asset performance and community service levels.

We recommend allocating available resources toward reducing the identified infrastructure deficit.

Table 47: Phase-in Period for 75% of full funding

	Phase-in Period for 75% of full funding			
	5 Years	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	$749,196	$749,196	$749,196	$749,196
Tax Increase Required	10.8%	10.8%	10.8%	10.8%
Annually:	**2.1%**	**1.1%**	**0.7%**	**0.6%**

Proposed levels of service play a role in the development of the Annual Average Requirement discussed above. For comparison, the tax impact for each level of service option is provided below:

Table 48: Scenarios Annual Impact on Taxation

Annual Impact on Taxation				
Change in Levels of Service	**5 Year**	**10 Year**	**15 Year**	**20 Year**
Full Funding	4.4%	2.2%	1.5%	1.1%
75% Funding	2.1%	1.1%	0.7%	0.6%
Current Funding	0%	0%	0%	0%
Recommended	2.1%	1.1%	0.7%	0.6%

Financial Strategy Recommendations

Considering all the above information, we recommend the 15-year option to achieve the proposed levels of service. This involves 75% funding being achieved over 15 years by:

a) Increasing tax revenues by 0.7% each year for the next 15 years solely for the purpose of phasing in 75% funding to the asset categories covered in this section of the AMP.

b) Allocating the current Canada Community-Building Fund (Formerly known as Gas Tax Fund) as outlined previously.

c) Increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

d) Reallocating appropriate revenue from categories in a surplus position to those in a deficit position.

e) Leveraging additional, non-sustainable revenue sources such as one-time grants, surpluses, and reserves, as supplementary funding to advance asset management goals.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included OCIF formula-based funding, if applicable, since this funding is a multi-year commitment[3].
2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However, considering a

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

longer phase-in window may have even greater consequences in terms of infrastructure failure.

Although this option achieves 75% funding on an annual basis in 15 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of $879k for the Road Network, $4.7m for Buildings, $2.6m for Machinery & Equipment, $2.8m for Vehicles, and $26k for Land Improvement assets.

Financial Profile: Rate Funded Assets

Current Funding Levels

The table below summarizes how current funding levels compare with funding required for each asset category. At existing levels, the Municipality is funding 50.9% of its annual capital requirements for the proposed levels of service for rate-supported infrastructure.

Table 49: Rates - Required Funding vs Current Funding Position

Asset Category	Avg. Annual Requirement	Annual Funding Available	Annual Deficit
		Rates	
Water Network	$140,460	$46,000	$94,460
Sanitary Network	$89,339	$71,000	$18,339
Total	**$229,800**	**$117,000**	**$112,800**

The average annual investment requirement for the above categories is $229,800. Annual revenue currently allocated to these assets for capital purposes is $117,000, leaving an annual deficit of $112,800. Put differently, these infrastructure categories are currently funded at 50.9% of their long-term requirements for proposed levels of service.

Closing the Gap

Eliminating annual infrastructure funding shortfalls is a difficult and long-term endeavor for municipalities. Considering the Municipality's current funding position, it will require many years to reach the funding level required for the proposed levels of service.

This section outlines how the Municipality of Highlands East can close the annual funding deficits using own-source revenue streams, i.e., utility rates, and without the use of debt for existing assets.

Funding Requirements Rate Revenues

In 2024, Highlands East had annual water revenues of $202,286 and annual sanitary revenues of $137,154. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, achieving 75% funding would require a 33.2% rate change over time.

Table 50: Phasing in Annual Rate Increases

Asset Category	Rate Change Required for 75% of full funding
Water Network	46.7%
Sanitary Network	13.4%

Funding 75% of the annual capital requirements ensures that major capital events, such as replacements, are completed as needed. While the remaining funding gap will need to be supplemented with other revenue sources, the Municipality will also draw from reserves as necessary to support high-priority projects. Project prioritization will help guide the allocation of these funds, ensuring that the most critical infrastructure needs are addressed first. With this approach, most projects are unlikely to be deferred to future years, helping to maintain high asset performance and community service levels.

Table 51: Phase-in Period for full funding - Water and Wastewater

	Water Network				Sanitary Sewer Network			
	5 Years	**10 Years**	**15 Years**	**20 Years**	**5 Years**	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	$94,460	$94,460	$94,460	$94,460	$18,339	$18,339	$18,339	$18,339
Rate Increase Required	46.7%	46.7%	46.7%	46.7%	13.4%	13.4%	13.4%	13.4%
Annually:	**8.0%**	**4.0%**	**2.6%**	**2.0%**	**2.6%**	**1.3%**	**0.9%**	**0.7%**

Similarly to the Tax Funded asset, the proposed levels of service play a role in the development of the Annual Average Requirement. For comparison, the rate impact for each level of service option is provided below:

Table 52: Scenarios Annual Impact on User Rates

Annual Impact on Rates					
Water	**Changes in Levels of Service**	**5 year**	**10 Year**	**15 Year**	**20 Year**
	Full Funding	11.2%	5.5%	3.6%	2.7%
	75% Funding	8.0%	4.0%	2.6%	2.0%
	Current Funding	0%	0%	0%	0%
	Recommended	8.0%	4.0%	2.6%	2.0%
Sanitary	**Changes in Levels of Service**	**5 year**	**10 Year**	**15 Year**	**20 Year**
	Full Funding	6.2%	3.1%	2.1%	1.6%
	75% Funding	2.6%	1.3%	0.9%	0.7%
	Current Funding	0%	0%	0%	0%
	Recommended	2.6%	1.3%	0.9%	0.7%

Financial Strategy Recommendations

Considering all the above information, we recommend the 15-year option for the water network and the sanitary network. This involves 75% of full funding being achieved over 15 years by:

a) increasing rate revenues by 2.6% for water services and 0.9% for sanitary services each year for the next 15 years solely for the purpose of phasing in 75% funding to the asset categories covered in this section of the AMP.

b) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. This periodic funding should not be incorporated into an AMP unless there are firm commitments in place.
2. We realize that raising rate revenues for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.
3. Any increase in rates required for operations would be in addition to the above recommendations.

Although this option achieves 75% funding on an annual basis in 15 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of $409k for the Water Network.

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

Use of Reserves

Available Reserves

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

a) the ability to stabilize tax rates when dealing with variable and sometimes uncontrollable factors

b) financing one-time or short-term investments

c) accumulating the funding for significant future infrastructure investments

d) managing the use of debt

e) normalizing infrastructure funding requirement

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

Table 53: Reserve Balances

Asset Category	Balance at December 31, 2023
Road Network	
Bridges & Culverts	
Buildings	$611,404
Machinery & Equipment	$19,987
Land Improvements	$14,117
Vehicles	$9,071,221
Total Tax Funded:	**$9,716,730**
Water Network	
Sanitary Network	
Total Rate Funded:	**$0**

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

a) breadth of services provided

b) age and condition of infrastructure

c) use and level of debt

d) economic conditions and outlook

e) internal reserve and debt policies.

These reserves are available for use by applicable asset categories during the phase-in period toward achieving 75% of full funding. This allows the scenarios to assume that, if required, available reserves and debt capacity can be used for high priority and emergency infrastructure investments in the short- to medium-term.

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 Municipality 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.

Highlands East Official Plan (December 2004)

Highlands East in the County of Haliburton was created because of a Minister's Order under Section 25.2 (6) (b) of the Municipal Act, which was passed on October 6, 2000. The Order amalgamated the former Townships of Glamorgan, Monmouth, Cardiff and Bicroft into the new Municipality of Highlands East. The Highlands East's Official Plan was originally approved in 2004 and subsequently updated in 2011 with approval being received April 24, 2013.

The Official Plan is intended to provide guidance for land use in the Municipality and set out the polices for the protection and management of the natural environment, implement, and facilitate the vision of the Municipality with consideration of the policies of the Provincial Policy Statement, as well as the County of Haliburton's Official Plan.

The Official plan for Highlands East has indicated the vision statement as Highlands East is a clean, friendly rural Municipality comprised of several settlements and many shoreline communities. The citizens of Highlands East are proud of the culture and heritage and enjoy a good quality of life because of the clean air as well as the lakes, rivers, forests, and hills that define the natural character and identity of Highlands East.

Highlands East will maintain or improve the environment and water quality in the Municipality and will welcome new residents and recreational visitors to share and appreciate the natural setting and character of the community. Highlands East will encourage entrepreneurial spirit and partnerships and will work to provide more employment opportunities to existing and future generations. Highlands East will support the health and well-being of all residents by promoting and encouraging an accessible, healthy and active community. In Highlands East it is a priority to plan and manage change in a manner that will provide the greatest protection and benefit to the natural features that are so fundamental to the quality of life in this community

The following table outlines population and private dwelling changes to the Municipality between 2011-2021 from Statistics Canada, for which the Municipality will be required to provide services.

Year	Population	Private Dwellings
2021	3,830	4,430
2016	3,343	4,485

2011	3,249	4,374

The Municipality's residential population was expected to increase by up to 500 persons by 2033 and has already reached 581 new population by 2021 and the growth is expected to continue.

Corporate Strategic Plan (2024 – 2028)

The Municipality of Highlands East is focused on fostering sustainable growth that improves the well-being of residents while preserving the community's unique rural character. As outlined in the 2024–2028 Strategic Plan, growth efforts are centered around building a thriving, connected, and supported community. This includes enhancing communication with residents, consulting regularly with upper-tier governments, and ensuring transparency and accountability in decision-making. Community outreach and public engagement are seen as vital components in shaping future development and maintaining a high quality of life.

To support sustainable living, Highlands East is promoting recreation, tourism, and local economic development initiatives such as trail systems, geocaching, and mineral collecting. The municipality is also exploring new housing solutions and advocating for increased support from upper levels of government to address gaps in affordable housing and transportation.

On the operational side, Highlands East is working to improve municipal service delivery through technological upgrades, more accessible service options, and internal service reviews. Efforts to strengthen the municipal workforce include cross-departmental training, succession planning, and modern work policies that aim to increase staff satisfaction and retention.

Finally, environmental stewardship plays a central role in guiding growth. The municipality is committed to protecting its natural resources through shoreline education, septic reinspection programs, and sustainable land use policies. Initiatives to reduce greenhouse gas emissions, support waste diversion, and promote green technologies further reflect Highlands East's dedication to long-term environmental and community health.

Haliburton County Growth Analysis Report (2025)

According to the County of Haliburton's Growth Analysis Report, Highlands East is projected to experience modest population and employment growth over the next 30 years. Under the Low Growth Scenario, the Municipality's permanent population is expected to grow to approximately 5,200 by 2051, representing an annual growth rate of 0.9%, which is slower than the previous decade's 1.7% annual growth. This anticipated slowdown is linked to reduced conversions of seasonal homes to permanent residences and servicing limitations in the Cardiff urban area.

To support this growth, Highlands East will need to construct an average of 25 new permanent dwellings per year, nearly all of which are expected to be low-density housing. Only about 3% of these new homes are anticipated to be built in the serviced Cardiff settlement area.

Highlands East also has a substantial seasonal population of approximately 8,900, projected to grow moderately to 9,700 by 2051. While this demographic does not require the same infrastructure year-round, it does influence service and infrastructure demand seasonally.

While macroeconomic conditions (post-COVID shifts, inflation, interest rates, remote work trends) will shape regional and local growth, Highlands East's development will also depend heavily on infrastructure investment, housing affordability, and the availability of serviced land. Maintaining and expanding infrastructure capacity, especially in Cardiff, will be essential to supporting the Municipality's long-term growth and achieving its proposed levels of service.

Impact of Growth on Lifecycle Activities

As Highlands East experiences ongoing population growth and increased demand for services, the impacts on municipal infrastructure and lifecycle activities are becoming more pronounced. Between 2011 and 2021, the Municipality saw an increase of over 580 residents, surpassing the growth forecast previously projected for 2033. According to the County of Haliburton's Growth Analysis Report, Highlands East's permanent population is forecast to grow at an average annual rate of 0.9% through 2051. With this population increase comes expanded use of infrastructure such as roads, recreation amenities, and waste management facilities, accelerating wear and placing pressure on existing service levels.

These shifting demands require the Municipality to regularly reassess the condition, capacity, and criticality of its infrastructure assets. Lifecycle activities such as rehabilitation, maintenance, and eventual replacement must now consider both the pace of growth and the emerging service expectations of a larger, more engaged population. At the same time, assets in areas with stagnant or declining use may be repurposed or phased out to ensure cost-efficiency.

In response to this, Highlands East selected a funding scenario which aims to reduce the existing infrastructure funding gap while remaining financially realistic given current constraints. This scenario means Highlands East will target funding levels that can address most of the long-term capital needs identified. While this represents a substantial step toward improving infrastructure sustainability, it also implies that some deferrals in renewal or replacement activities may still occur, particularly for lower-risk or non-critical assets.

This funding approach reinforces the importance of prioritizing high-risk and essential infrastructure based on condition assessments and service importance. It also necessitates greater emphasis on maintenance strategies that extend asset life and delay costly replacements. Integrated decision-making, supported by condition data, risk profiles, and community growth forecasts, will be vital to achieving the best value from limited resources.

The Municipality's commitment to sustainable, environmentally conscious growth, as outlined in both the Official Plan and the 2024–2028 Strategic Plan, also influences lifecycle planning. Investments must balance growth with preservation, ensuring that infrastructure supports recreational tourism, housing development, and environmental protection initiatives without compromising long-term financial and ecological resilience.

Recommendations and Key Considerations

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 0.7% annual tax increase over a 15-year phase-in period and allocating the full increase in revenue towards capital funding
- implementing a 2.6% rate increase for water over a 15-year phase-in period, and a 0.9% increase for sanitary, over a 15-year phase-in period
- 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 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. Material and labour costs can fluctuate due to local, regional, and broader market trends, and substantially so during major world events. Accurately estimating the replacement cost of like-for-like assets can be challenging. Ideally, several recent projects over multiple years should be used. 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 condition, long-range forecasting, and financial recommendations. Periodically reviewing and updating these values to better reflect infield 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 condition assessments. As a result, project selection and the development of multi-year capital plans can become more strategic and objective. Initial models have been built into Citywide for all asset groups. These models reflect current data, which was limited. As the data evolves and new attribute information is obtained, these models should also be refined and updated.
2. Available data on current performance should be centralized and tracked to support any calibration of service levels for long-term tracking of O. Reg. 588's requirements on proposed levels of service.
3. Staff should monitor evolving local, regional, and environmental trends to identify factors that may shape the demand and delivery of infrastructure programs. These can include population growth, and the nature of population growth; climate change and extreme weather events; and economic conditions and the local tax base. This data can also be used to review service level targets.

Appendix A: Proposed LOS 10-Year Capital Requirements

The table below outlines the capital cost requirements for recommended lifecycle activities, as generated through the Municipality's asset management software. These projections are based on annual budgets that start at current funding levels and gradually increase over a 15-year period to reach a 75% funding level, using Scenario 2 for all assets, as outlined in Section 4: Proposed Levels of Service. For more information, please refer to the Financial Strategy.

Table 54: Scenario 2 System-Generated 10-Year Capital Requirements

Asset Category	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Road Network	$836k	$846k	$865k	$882k	$888k	$907k	$922k	$922k	$954k	$960k
Bridges & Culverts	-	-	-	$350k	-	-	-	$500k	$52k	-
Buildings	$544k	$550k	$556k	$562k	$568k	$574k	$580k	$586k	$598k	$604k
Land Improvements	$55k	$40k	$61k	$67k	$25k	-	$137k	$53k	$63k	$60k
Machinery & Equipment	$334k	$334k	$340k	$342k	$342k	$344k	$347k	$353k	$350k	$352k
Vehicles	$337k	$340k	$339k	$356k	$348k	$357k	$377k	$355k	$401k	$378k
Water Network	$45k	$42k	$27k	$53k	$6k	$177k	$24k	$147k	$2k	$140k
Sanitary Network	$14k	$1k	$6k	$8k	$26k	$97k	$35k	$31k	-	$53k
TOTAL	**$2.2m**	**$2.2m**	**$2.2m**	**$2.6m**	**$2.2m**	**$2.4m**	**$2.4m**	**$2.9m**	**$2.4m**	**$2.5m**

Appendix B: 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 Municipality'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 Municipality'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 Municipality 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 Municipality 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 Municipality 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 Municipality 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 C: 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 - Economic	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 Town's day-to-day operations
COF - Health & safety	The consequence of asset failure on the health and well-being of the community
COF - Strategic	The consequence of asset failure on strategic planning
COF - Range	1 - Insignificant 2 - Minor 3 - Moderate 4 - Major 5 - Severe

Risk Frameworks

Asset Category	Asset Segment	Risk Criteria	Criteria	Weighting (%)	Sub-Criteria	Weighting (%)	Value/Range	Score
General / Corporate		COF	Economic	100%	Replacement Cost	100%	0 - 10,000 10,000 - 25,000 25,000 - 50,000 50,000 – 100,000 >100,000	1 - Insignificant 2 - Minor 3 - Moderate 4 - Major 5 - Severe
		POF	Structural	60%	Age Based Condition	100%	80 - 100 60 - 79 40 - 59 20 - 39 0 - 19	1 - Rare 2 - Unlikely 3 - Possible 4 - Likely 5 - Almost Certain
			Functional	40%	Service Life Remaining	100%	> 40 30 - 40 20 - 30 10 - 20 < 10	1 - Rare 2 - Unlikely 3 - Possible 4 - Likely 5 - Almost Certain

Asset Category	Asset Segment	Risk Criteria	Criteria	Weighting (%)	Sub-Criteria	Weighting (%)	Value/Range	Score
Bridges & Culverts and Roads		COF	Economic	70%	Replacement Cost	100%	0 - 10,000 10,000 - 25,000 25,000 - 50,000 50,000 – 100,000 >100,000	1 - Insignificant 2 - Minor 3 - Moderate 4 - Major 5 - Severe
			Operational	30%	Surface Type (Material)	100%	Gravel Road LCB Road HCB Road	2 - Minor 3 - Moderate 4 - Major
		POF	Structural	60%	Age Based Condition	100%	80 - 100 60 - 79 40 - 59 20 - 39 0 - 19	1 - Rare 2 - Unlikely 3 - Possible 4 - Likely 5 - Almost Certain
			Functional	40%	Service Life Remaining	100%	> 40 30 - 40 20 - 30 10 - 20 < 10	1 - Rare 2 - Unlikely 3 - Possible 4 - Likely 5 - Almost Certain