Asset Management Plan

Township of North Stormont

July 2025

psdcitywide

This Asset Management Program was prepared by:

psdcitywide

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

Key Statistics

$291.4m	2023 Replacement Cost of Asset Portfolio
$98.8k	Replacement Cost of Infrastructure Per Household
78%	Percentage of Assets in Fair or Better Condition
76%	Percentage of Assets with Assessed Condition Data
$2.6m	Annual Capital Infrastructure Deficit
15 Years	Recommended Timeframe to reach Proposed Levels of Service
1.2%	Target Investment Rate to meet Proposed Levels of Service
0.7%	Actual Investment Rate

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1. Executive Summary

Municipal infrastructure delivers critical services that are foundational to the economic, social, and environmental health and growth of a community. The goal of asset management is to enable infrastructure to deliver an adequate level of service in the most cost-effective manner. This involves the ongoing review and update of infrastructure information and data alongside the development and implementation of asset management strategies and long-term financial planning.

1.1. Scope

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

This AMP's asset categories are summarized in Table 1.

Core Assets

- Road Network
- Bridges & Culverts
- Water Network
- Sanitary Sewer Network
- Storm Water Network

Non-Core Assets

- Buildings
- Land Improvements
- Vehicles
- Machinery & Equipment

Table 1: Core and Non-core Asset Categories

1.2. Compliance

With the development of this AMP the Township of North Stormont 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.

1.3. Findings

The overall replacement cost of the asset categories included in this AMP totals $291.4 million. 78% of all assets analyzed in this AMP are in fair or better condition and assessed condition data was available for 76% of assets. For the remaining 24% of assets, assessed condition data was unavailable, and asset age was used to approximate condition – a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.

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

To meet the capital replacement and rehabilitation needs of existing infrastructure, prevent backlog accumulation, and ensure long-term asset sustainability, the Township's average annual capital requirement is approximately $4.6 million. Historical analysis of sustainable funding sources shows the Township currently commits about $1.9 million annually towards capital projects or reserves, resulting in a funding gap of roughly $2.6 million per year to fully support current lifecycle obligations.

To address this gap and enhance financial sustainability, the Township has adopted a phased reinvestment strategy targeting 75% of full funding over 15 years. Under this plan, the annual capital requirement is estimated at $3.4 million, with a reduced funding deficit of $1.5 million. This gradual increase in reinvestment will enable the Township to prioritize critical infrastructure needs while working toward closing the funding shortfall.

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

1.4. Limitations and Constraints

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

- The analysis is highly sensitive to several critical data fields, including an asset's estimated useful life, replacement cost, quantity, and in-service date. Inaccuracies or imprecisions in any of these fields can have substantial and cascading impacts on all reporting and analytics.

- User-defined and unit cost estimates, based typically on staff judgment, recent projects, or established through completion of technical studies, offer the most precise approximations of current replacement costs. When this isn't possible, historical costs incurred at the time of asset acquisition or construction can be inflated to present day. This approach, while sometimes necessary, can produce inaccurate estimates.
- In the absence of condition assessment data, age was used to estimate asset condition ratings. This approach can result in an over- or understatement of asset needs. As a result, financial requirements generated through this approach can differ from those produced by in-field assessments.
- The risk models are designed to support objective project prioritization and selection. However, in addition to the inherent limitations that all models face, they also require availability of important asset attribute data to ensure that asset risk ratings are valid, and assets are properly stratified within the risk 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 Township's primary asset management system.

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

2. Introduction and Context

2.1. Community Profile

Census Characteristic	Township of North Stormont	Ontario
Population 2021	7,400	14,223,942
Population Change 2016-2021	7.7%	5.8%
Total Private Dwellings	2,949	5,929,250
Population Density	14.4/km2	15.9/km^2
Land Area	515.46 km2	892,411.76 km^2

Table 2: Township of North Stormont Community Profile

The Township of North Stormont is a Township in the United Counties of Stormont, Dundas, and Glengarry within Eastern Ontario.

The Township is located to the South-East of Ottawa, just above the St. Lawrence River. The Township is comprised of the communities of Avonmore, Crysler, Finch, Monkland, Moose Creek, and Berwick where the Township is administratively based.

The Township's industrial makeup is comprised primarily of construction, agriculture, fishing, forestry, retail, and hunting. The Township has an ideal industrial location, being placed between the major cities of Montreal and Ottawa, which is a key portion of planning the long-term growth of the Township. The Township has made a strong and deliberate commitment to fostering job and industrial growth in the agri-food industry.

The Township of North Stormont has experienced low shifts in population over that last 20 years, with a sharp uptick in 2021. The Township boasts several advantages, such as its strategic positioning between Ottawa and Montreal. Additionally, the Township has made investments in modernizing its broadband infrastructure. However, projected growth remains modest, aligning with trends observed in other municipalities in Eastern Ontario. The Township has a population density just under the Ontario average over its 515 square kilometre area. The Township has a slightly younger than average population by proportion when compared to the rest of Ontario.

The Township's infrastructure priorities include municipal service delivery, facility upkeep, and fire/emergency services.

2.2. Climate Change

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

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

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

2.2.1. North Stormont Climate Profile

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

Higher Average Annual Temperature:

- Between the years 1971 and 2000 the annual average temperature was 5.9 ºC,
- Under a high emissions scenario, the annual average temperatures are projected to be 8.9 ºC by the year 2050 and 12.8 ºC by the end of the century.

Increase in Total Annual Precipitation:

- Under a high emissions scenario, North Stormont is projected to experience a 12% increase in precipitation by the year 2050 and a 16% increase by the end of the century.

Increase in Frequency of Extreme Weather Events:

- It is expected that the frequency and severity of extreme weather events will increase.

2.2.2. 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 as a result of climate change impacts such as flooding, high heat, drought, and more frequent and intense storms.

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

2.3 Asset Management Overview

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

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

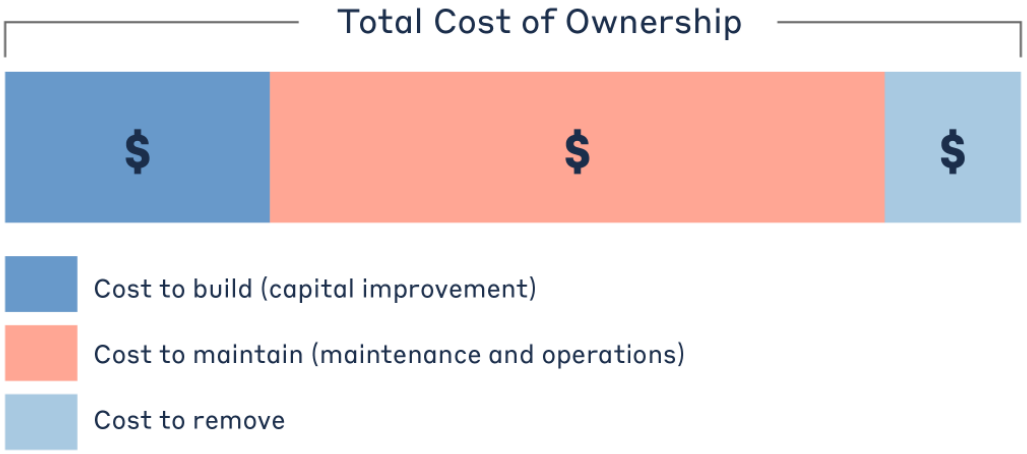


Figure 1: Total Cost of Asset Ownership

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

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

2.2.3. Foundational Documents

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.

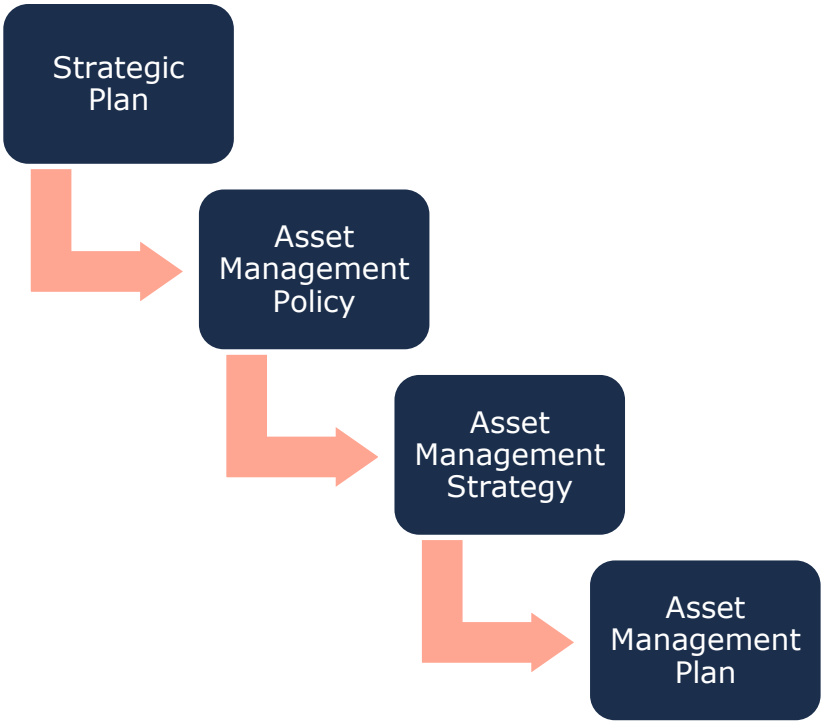


Figure 2: Foundational Asset Management Documents

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, 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 Township's approach to asset management activities. It aligns with the organizational strategic plan and provides clear direction to municipal staff on their roles and responsibilities as part of the asset management program.

The Township of North Stormont adopted a Strategic Asset Management Policy in January 2024, in accordance with Ontario Regulation 588/17. The Township's Asset Management Policy provides a framework for managing these assets to deliver value to the community, ensuring sustainability and reducing risks. Key elements of the Policy include:

- Strategic Integration
  - Asset management will be integrated across all departments, encouraging collaboration and data-sharing to optimize service delivery and decision-making.
- Public and Stakeholder Engagement
  - The Township will involve residents and neighboring municipalities in planning, ensuring decisions reflect community needs and priorities. Communication channels will include public consultations, surveys, and project updates on the Township's website.
- Environmental Responsibility
  - The Township will invest in environmentally sustainable projects, reducing its carbon footprint and aligning with its broader climate change goals.
- Continuous Improvement
  - The Township is committed to continual improvement of its asset management practices, including regular reviews and the adoption of innovative solutions to meet evolving needs.

This Policy ensures that asset management activities are carried out in a consistent, transparent, and coordinated manner, supporting North Stormont's strategic priorities and ensuring infrastructure continues to meet current and future service expectations.

Asset Management Strategy

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

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

Asset Management Plan

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

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

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

2.3. Key Concepts in Asset Management

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

2.3.1. Lifecycle Management Strategies

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

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

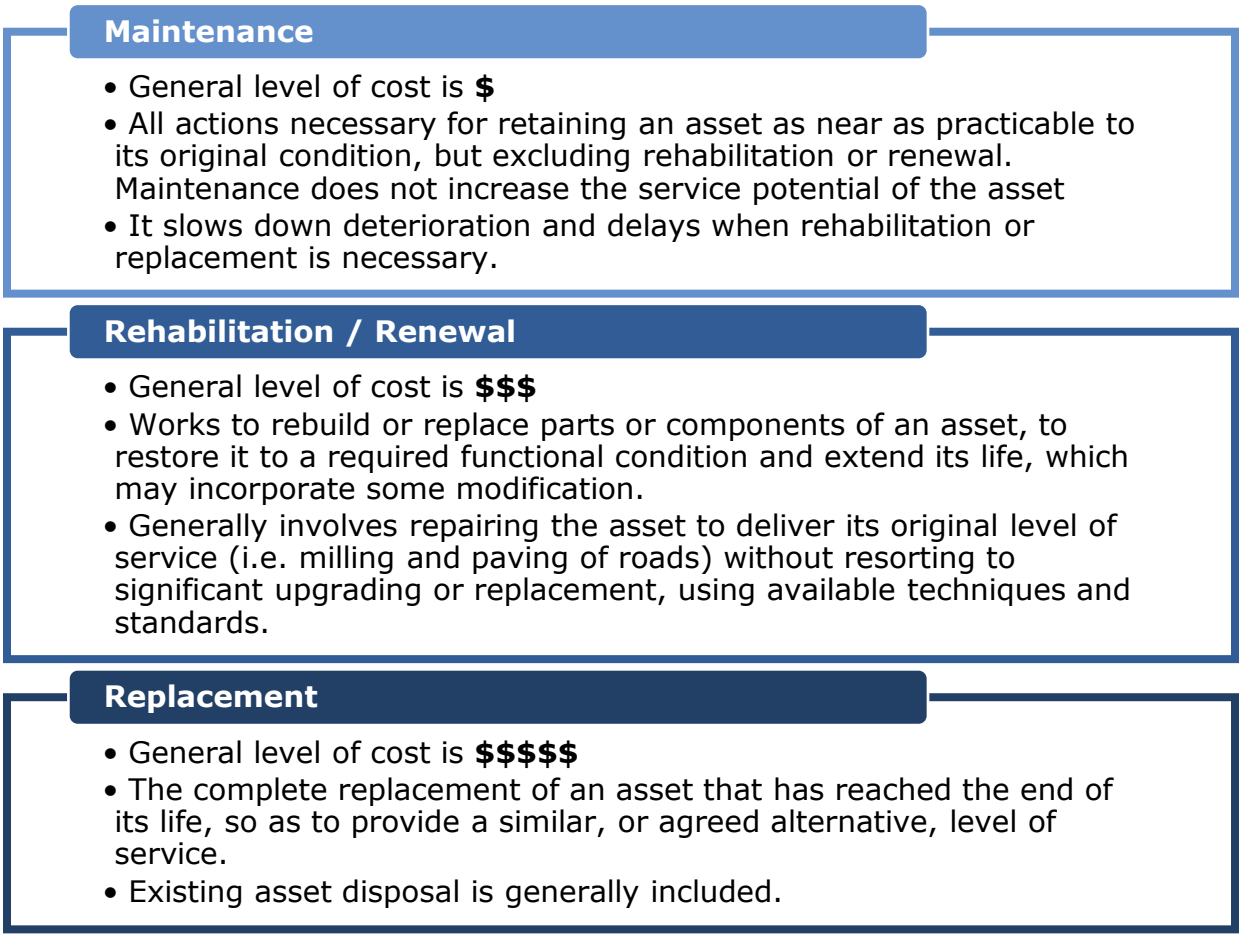


Figure 3: Lifecycle Management Typical Lifecycle Interventions

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

2.3.2. Risk and Criticality

Asset risk and criticality are essential building blocks of asset management, integral in prioritizing projects and distributing funds where they are needed most based on a variety of factors. Assets in disrepair may fail to perform their intended function, pose substantial risk to the community, lead to unplanned expenditures, and create liability for the municipality. In addition, some assets are simply more important to the community than others, based on their financial significance, their role in delivering essential services, the impact of their failure on public health and safety, and the extent to which they support a high quality of life for community stakeholders.

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, (i.e. low, medium, high) or quantitative measurement (i.e. 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.

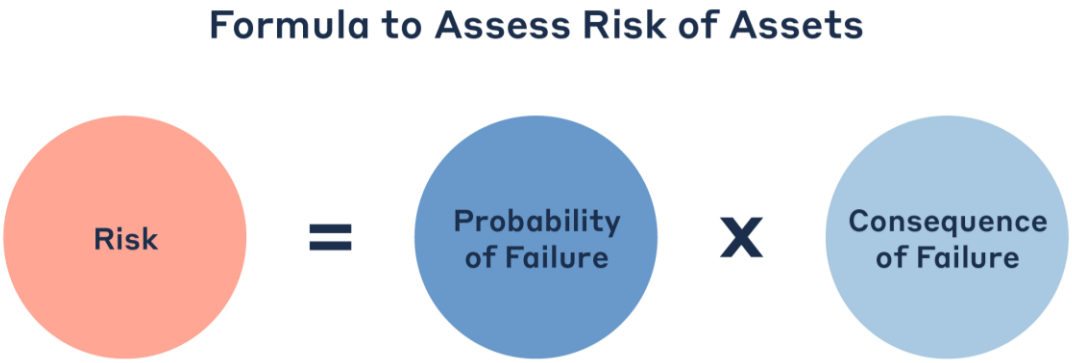


Figure 4: Risk Equations

The approach used in this AMP relies on a quantitative measurement of risk associated with each asset. The probability and consequence of failure are each scored from 1 to 5, producing a minimum risk index of 1 for the lowest risk assets, and a maximum risk index of 25 for the highest risk assets.

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 D: Risk Rating Criteria for definitions and the developed risk models.

The table below illustrates the various types of consequences that can be integrated in developing risk and criticality models for each asset category and segments within. We note that these consequences are common, but not exhaustive.

Type of Consequence	Description
Direct Financial	Direct financial consequences are typically measured as the replacement costs of the asset(s) affected by the failure event, including interdependent infrastructure.
Economic	Economic impacts of asset failure may include disruption to local economic activity and commerce, business closures, service disruptions, etc. Whereas direct financial impacts can be seen immediately or estimated within hours or days, economic impacts can take weeks, months and years to emerge, and may persist for even longer.
Socio-political	Socio-political impacts are more difficult to quantify and may include inconvenience to the public and key community stakeholders, adverse media coverage, and reputational damage to the community and the Municipality.
Environmental	Environmental consequences can include pollution, erosion, sedimentation, habitat damage, etc.
Public Health and Safety	Adverse health and safety impacts may include injury or death, or impeded access to critical services.
Strategic	These include the effects of an asset's failure on the community's long-term strategic objectives, including economic development, business attraction, etc.

Table 3: Risk Analysis - Types of Consequences of Failure

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

These models have been built in Citywide for continued review, updates, and refinements.

2.3.3. Levels of Service

A level of service (LOS) is a measure of the services that North Stormont 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 Township 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 Township'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 Township 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.

2.4. Scope and Methodology

2.4.1. Asset Categories for this AMP

This asset management plan for the Township of North Stormont is produced in compliance with O. Reg. 588/17. The AMP summarizes the state of the infrastructure for North Stormont's asset portfolio, establishes current levels of service and the associated technical and customer-oriented key metrics, outlines lifecycle strategies for optimal asset management and performance, and provides financial strategies to reach sustainability for the asset categories listed below.

Tax-Funded Assets

- Road Network
- Bridges & Culverts
- Buildings
- Storm Water Network
- Land Improvements
- Vehicles
- Machinery & Equipment

Rate-Funded Assets

- Water Network
- Sanitary Sewer Network

Table 4: Tax- and Rate-Funded Assets

2.4.2. Data Effective Date

It is important to note that this plan is based on data as of December 31, 2023; therefore, it represents a snapshot in time using the best available processes, data, and information at the Township. Strategic asset management planning is an ongoing and dynamic process that requires continuous data updates and dedicated data management resources.

2.4.3. Replacement Costs

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

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

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

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

2.4.4. Estimated Useful Life and Service Life Remaining

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

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

Figure 5: Service Life Remaining Calculation

2.4.5. Reinvestment Rate

As assets age and deteriorate, they require additional investment to maintain a state of good repair. The reinvestment of capital funds, through asset renewal or replacement, is necessary to sustain an adequate level of service. The reinvestment rate is a measurement of available or required funding relative to the total replacement cost. By comparing the actual vs. target reinvestment rate the Township can determine the extent of any existing funding gap.

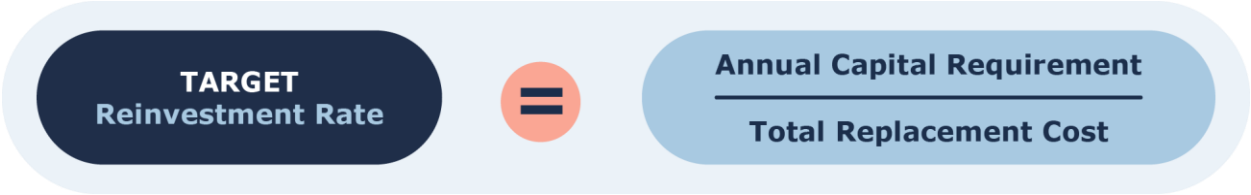


Figure 6: Target Reinvestment Rate Calculation

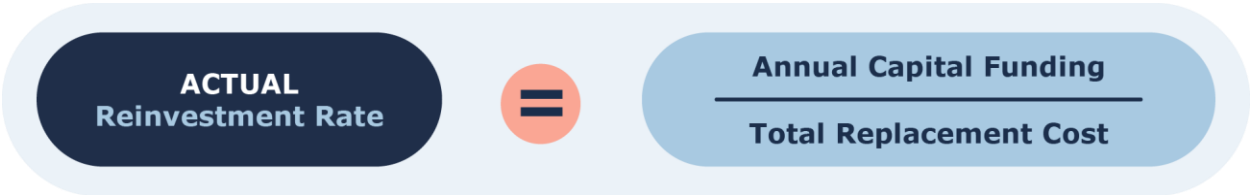


Figure 7: Actual Reinvestment Rate Calculation

2.4.6. Asset Condition

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

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

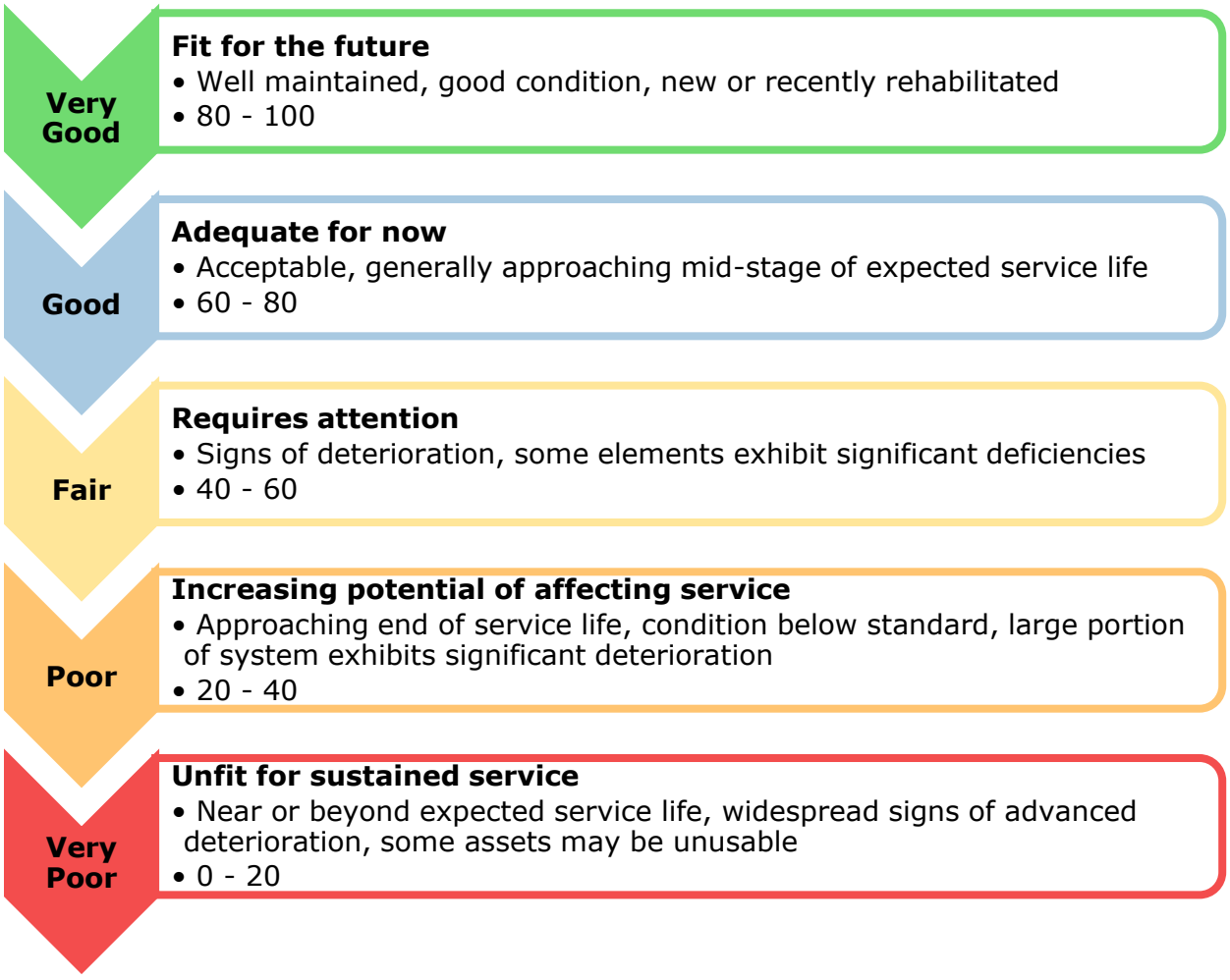


Figure 8: Standard Condition Rating Scale

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 C: 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.

2.5. Ontario Regulation 588/17

As part of the Infrastructure for Jobs and Prosperity Act, 2015, the Ontario government introduced Regulation 588/17 - Asset Management Planning for Municipal Infrastructure (O. Reg 588/17)[1]. Along with creating better performing organizations, more liveable and sustainable communities, the regulation is a key, mandated driver of asset management planning and reporting. It places substantial emphasis on current and proposed levels of service and the lifecycle costs incurred in delivering them.

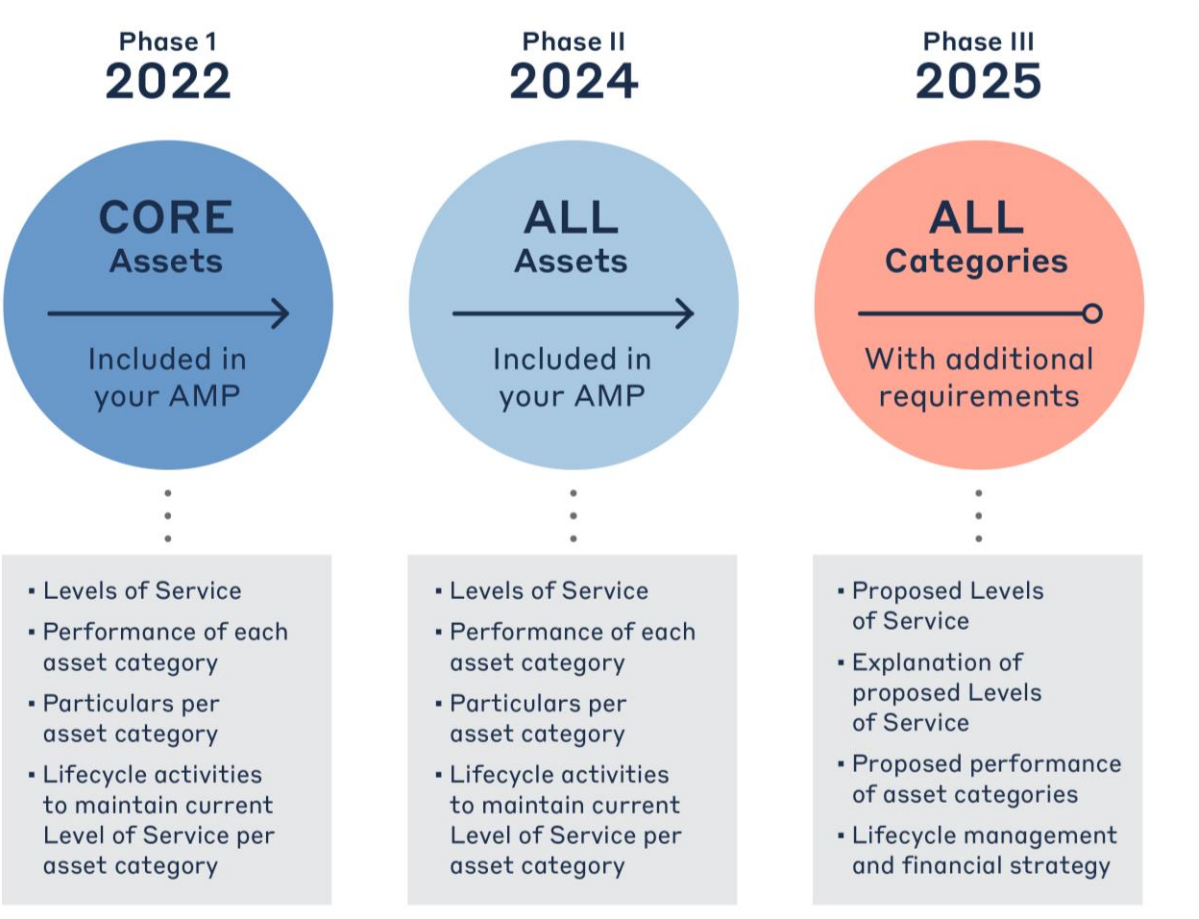


Figure 9: O. Reg. 588/17 Requirements and Reporting Deadlines

[1] O. Reg. 588/17: Asset Management Planning for Municipal Infrastructure https://www.ontario.ca/laws/regulation/170588

2.5.1. O. Reg. 588/17 Compliance Review

Requirement	O. Reg. 588/17 Section	AMP Section Reference	Status
Summary of assets in each category	S.5(2), 3(i)	5.1 – 13.1	Complete
Replacement cost of assets in each category	S.5(2), 3(ii)	5.1 – 13.1	Complete
Average age of assets in each category	S.5(2), 3(iii)	5.3 – 13.3	Complete
Condition of core assets in each category	S.5(2), 3(iv)	5.3 – 13.3	Complete
Description of municipality's approach to assessing the condition of assets in each category	S.5(2), 3(v)	5.3.1 - 13.3.1	Complete
Current levels of service in each category	S.5(2), 1(i-ii)	5.7 – 13.7	Complete
Current performance measures in each category	S.5(2), 2	5.7 – 13.7	Complete
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	5.4 – 13.4	Complete
Costs of providing lifecycle activities for 10 years	S.5(2), 4	5.5 – 13.5	Complete
Growth considerations	S.6(1), 5	15.1 – 15.5	Complete
Proposed levels of service for each category for next 10 years	S.6(1), 1(i-ii)	5.8 – 13.8	Complete
Explanation of appropriateness of proposed levels of service	S.6(1), 2(i-iv)	4.7	Complete
Lifecycle management activities for proposed levels of service	S.6(1), 4(i)	4.4.1 - 4.6.1	Complete
10-year capital costs for proposed levels of service	S.6(1), 4(ii)	Appendix A	Complete
Annual funding availability projections	S.6(1), 4(iii)	4.4.2 - 4.6.2	Complete

Table 5: O. Reg. 588/17 Compliance Review

Portfolio Overview

3. State of the Infrastructure

The state of the infrastructure (SOTI) summarizes the inventory, condition, age profiles, and other key performance indicators for the Township's infrastructure portfolio. These details are presented for all core and non-core asset categories.

3.1. Asset Hierarchy/Data Classification

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

Figure 10: Asset Hierarchy and Data Classification - Core Assets

Figure 11: Asset Hierarchy and Data Classification - Non-core Assets

3.2. Portfolio Overview

3.2.1. Replacement Cost

All North Stormont's asset categories have a total replacement cost of $291.4 million based on available inventory data. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects the replacement of historical assets with similar, not necessarily identical, assets available for procurement today.

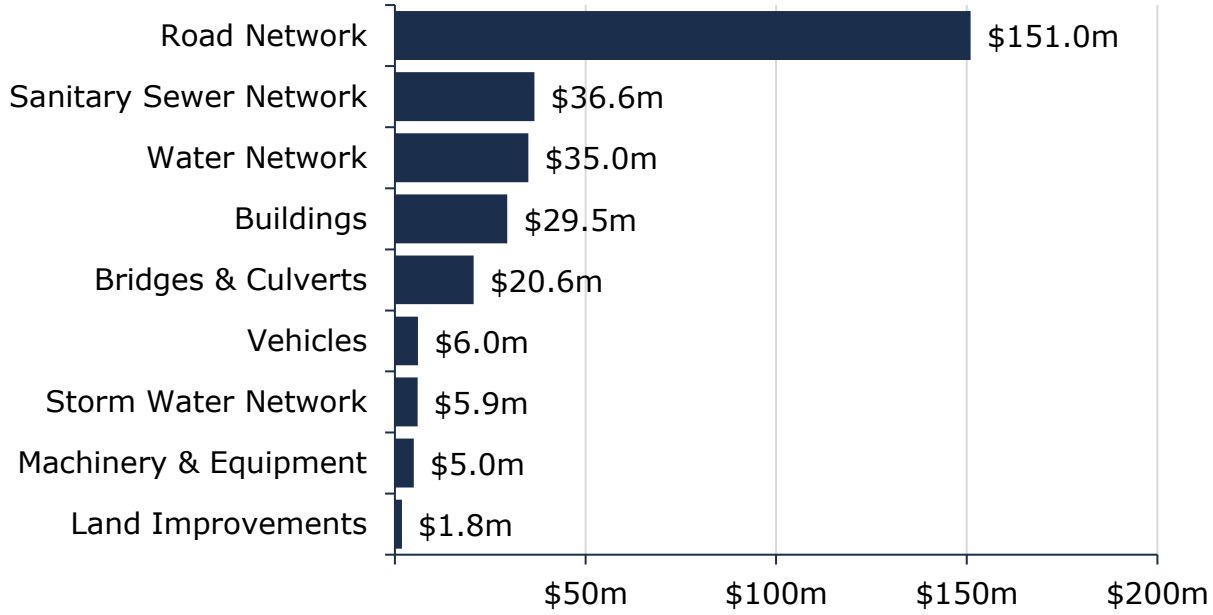


Figure 12: Current Replacement Cost by Asset Category

3.2.2. Target vs. Actual Reinvestment Rate

The graph below illustrates the gap between the Township's target and actual reinvestment rates for maintaining current levels of service across all asset categories.

To sustainably maintain existing infrastructure and avoid service deterioration or backlog, the Township should be allocating approximately $4.6 million annually, representing a target reinvestment rate of 1.6%. This target is based on lifecycle costing for the continued delivery of current services at existing standards.

In contrast, actual annual spending on capital projects and contributions to capital reserves currently averages $1.9 million, resulting in an actual reinvestment rate of 0.7%. This indicates an annual funding shortfall of approximately $2.6 million, suggesting underinvestment that may lead to higher costs or service disruptions in the future.

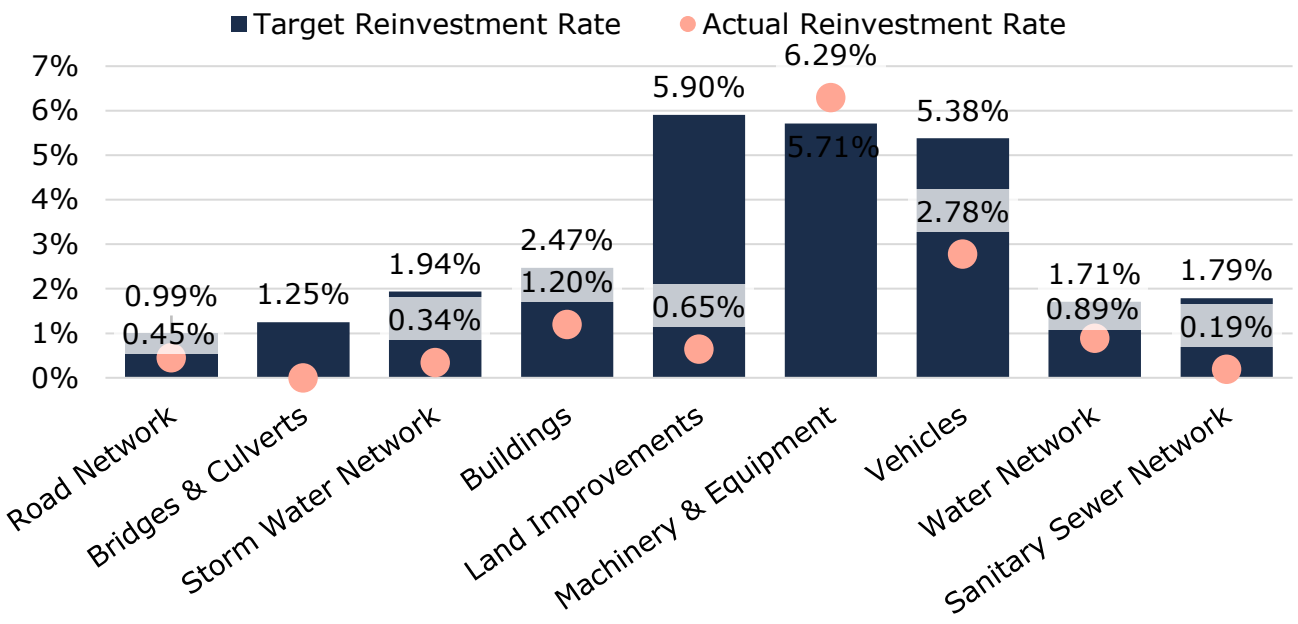


Figure 13: Target vs Actual Reinvestment Rates

3.2.3. Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 78% of assets in North Stormont are in fair or better condition. This estimate relies on both age-based and field condition data.

Assessed condition data is available for the road network, bridges and culverts, the water network, the sanitary sewer network and a minority of stormwater network and buildings; 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.

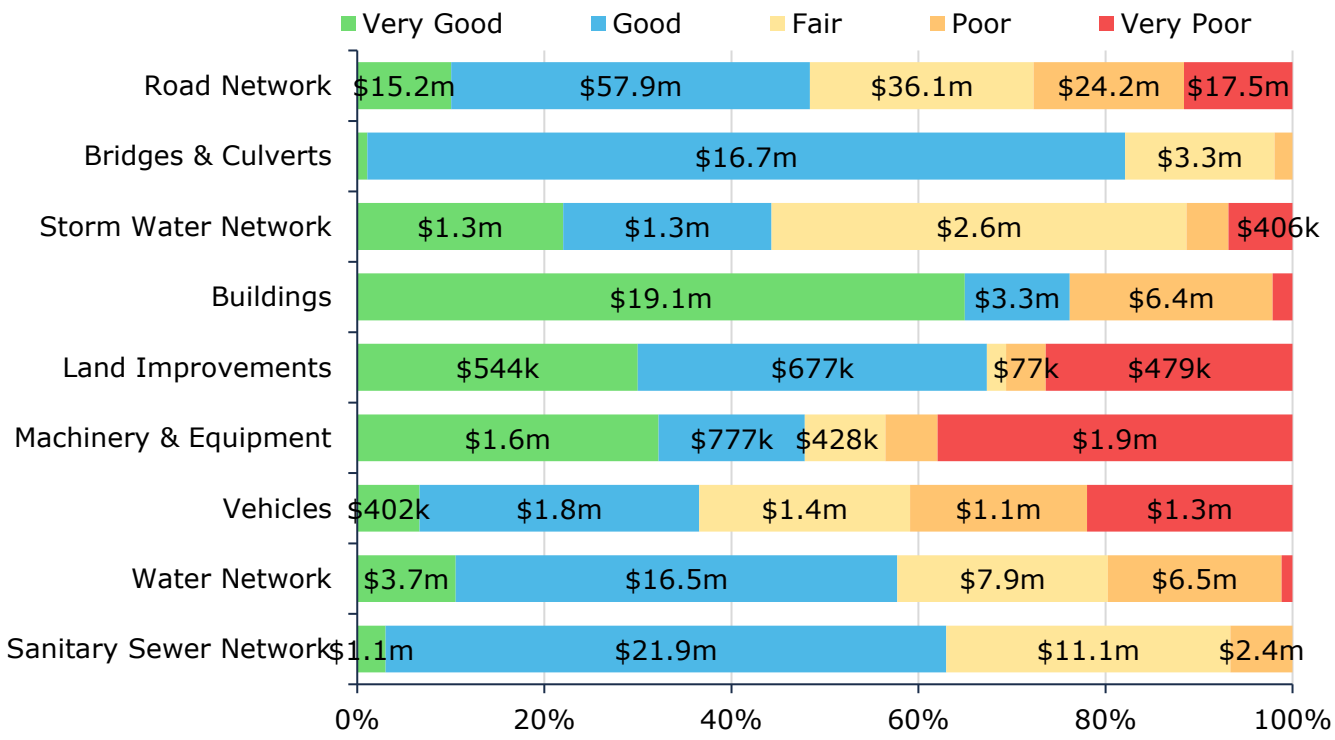


Figure 14: Asset Condition by Asset Category

Source of Condition Data

This AMP relies on assessed condition for 76% of assets, based on and weighted by replacement cost. For the remaining assets, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data used throughout this AMP.

Asset Category	Asset Segment(s)	% of Assets with Assessed Conditions	Source of Condition Data
Road Network	Asphalt Roads	94%	Roads Needs Study (2021)
	Gravel Roads	94%	
	Surface Treated Roads	94%	
Bridges & Culverts	All	100%	HP Engineering Inc. (2023)
Buildings	Recreation	14%	Township Staff
Storm Network	Culverts	63%	Township Staff
Water Network	Water Lines	96%	OCWA
Sanitary Network	Sewage Treatment	97%	OCWA
	Sewer Lines	97%	

Figure 15: Source of Condition Data

3.2.4. Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 37% of the Township's assets will require replacement within the next 10 years.

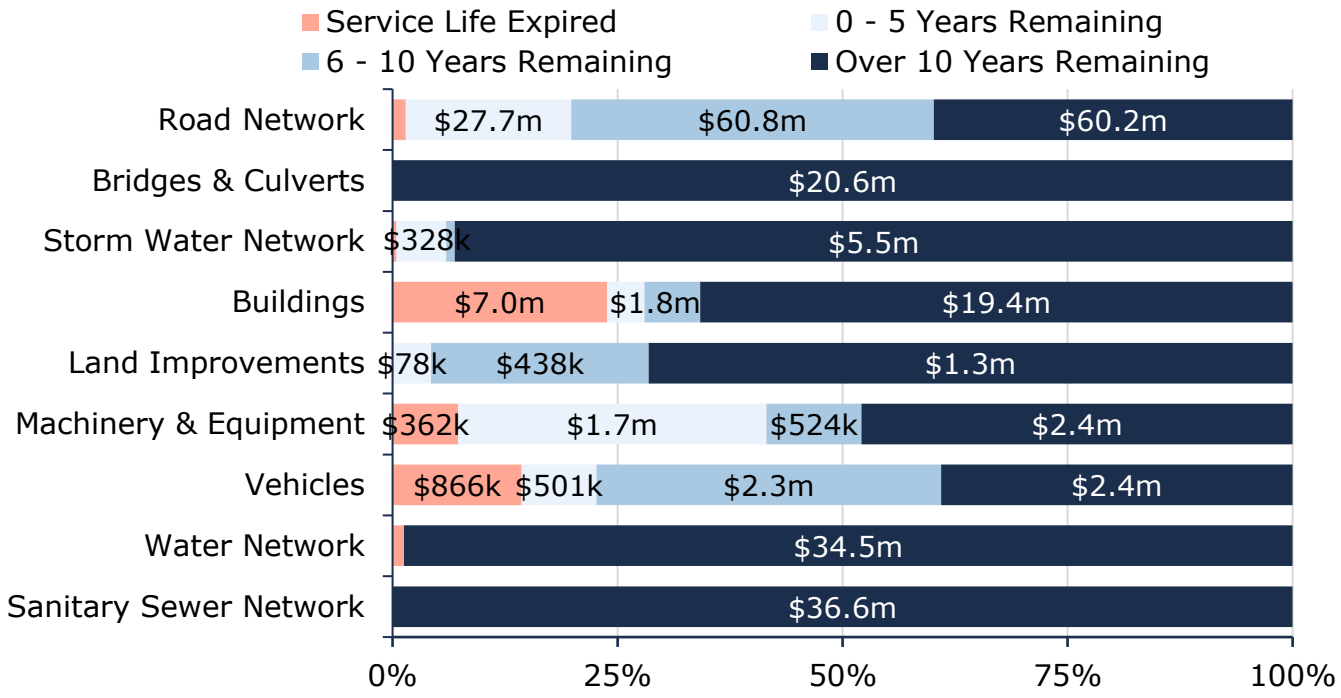


Figure 16: Service Life Remaining by Asset Category

3.2.5. Risk Matrix

Using the risk equation and preliminary risk models, the overall asset risk breakdown for North Stormont's asset inventory is portrayed in the figure below.

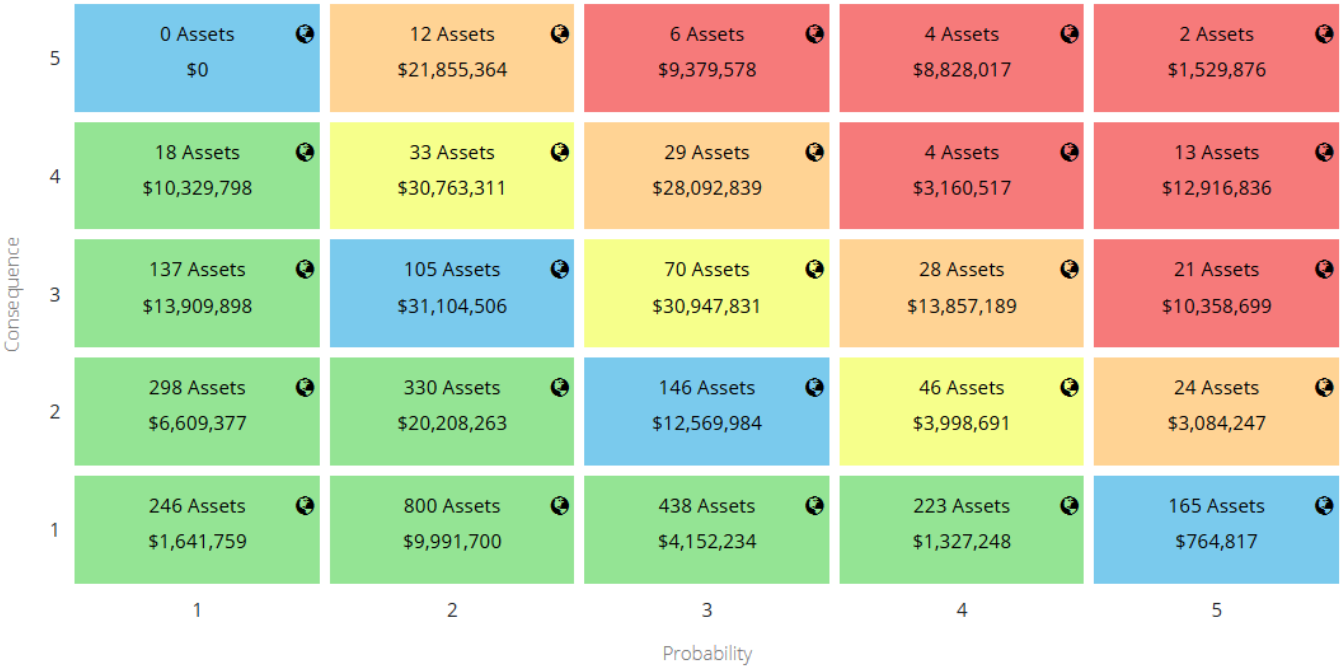


Figure 17: Risk Matrix - All Assets

The risk analysis indicates that approximately $46.2 million worth of assets, or 16% of the total asset portfolio, are currently classified as Very High Risk. These assets are likely at or near the end of their useful life and may pose an elevated likelihood of service failure or safety concerns without timely intervention.

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

3.2.6. Forecasted Capital Requirements

Aging assets require maintenance, rehabilitation, and replacement. The table below illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for all asset categories analyzed in this AMP over a 80-year time horizon. On average, $4.6 million is required each year to remain current with capital replacement needs for the Township'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.

The chart also illustrates a backlog of $2.1 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. This makes continued and expanded 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.

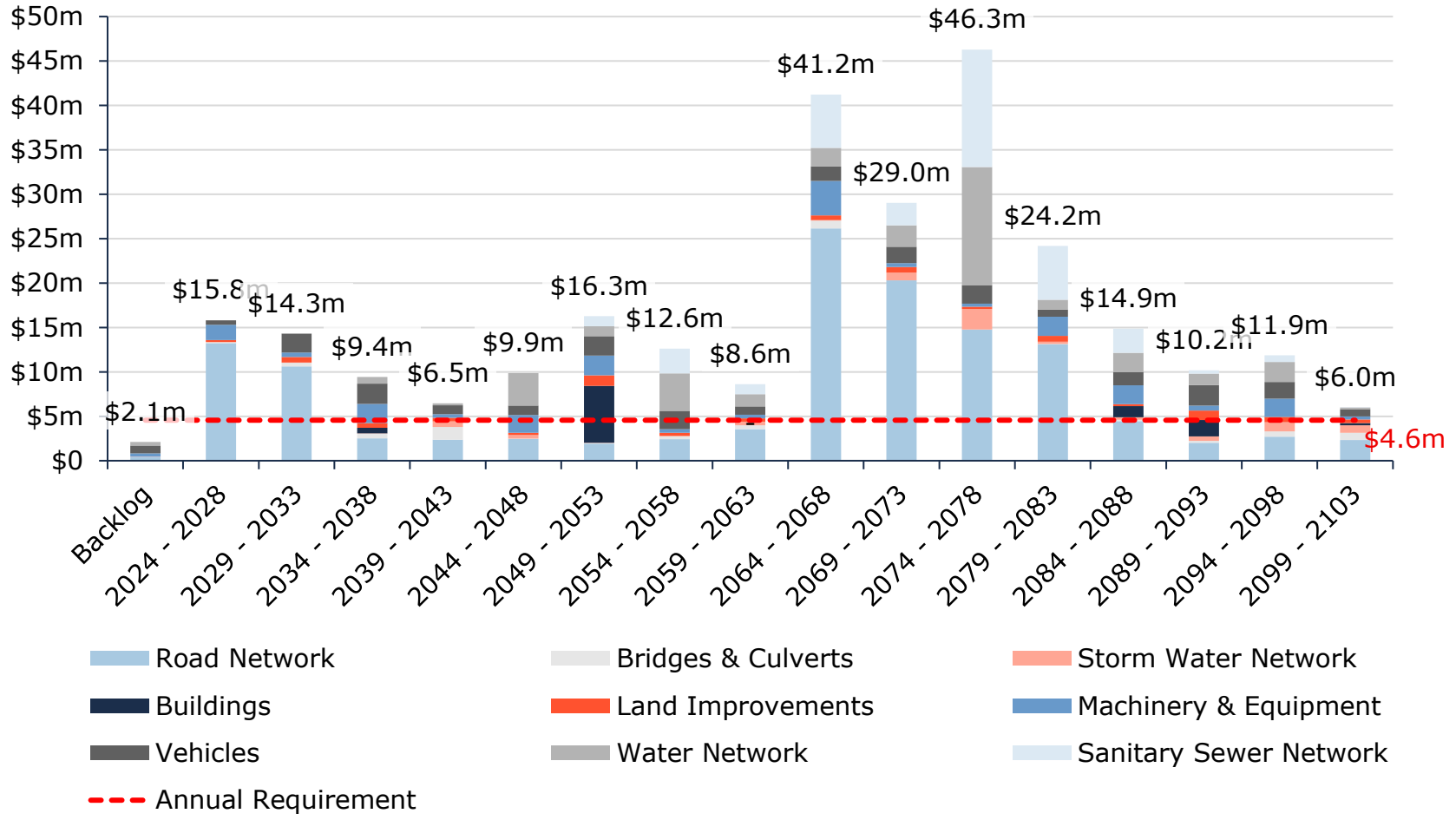


Figure 18: Forecasted Capital Requirements by Asset Category

Proposed Levels of Service

4. Proposed Levels of Service

4.1. Scope

4.1.1. 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.

4.1.2. Methodology

Target levels of service for the Township have been developed through comprehensive engagement with Township 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 (trade-offs)

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 O. Reg 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.

4.1.3. 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.

4.2. 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 Township of North Stormont selected Scenario 2 for all assets 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: Status Quo Funding with 15 Year 50% Sanitary Target

Approach: This scenario assumes a stable taxation funding level maintained at 46.7%, a stable water rate funding level maintained at 52.1% and a phased annual rate increase of 2.7% for sanitary rates to achieve 50% funding in 15 years.

Scenario 2: Achieving 75% Funding in 15 Years

Approach: This scenario assumes a phased annual tax increase of approximately 0.8%, 1.3% for water rates, and 4.0% for sanitary rates, reaching 75% funding within 15 years.

Scenario 3: Achieving Full Funding in 15 Years

Approach: This scenario assumes a phased annual tax increase of approximately 2.1%, 2.5% for water rates, and 5.1% to sanitary rates, reaching full funding within 15 years.

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 9 asset categories have been developed, aligning with the long-term interests of the Township. Achievability is the key consideration, with measures in place to ensure realistic targets. The Township'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 Township'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.

4.3. Scenario 1: Status Quo Funding with 15-Year, 50% Sanitary Target

This scenario involves maintaining the current funding levels for tax-supported infrastructure and water rate-supported infrastructure over the next 15 years, along with a 2.7% increase in sanitary rates to reach 50% funding in 15 years. This approach maintains existing investment levels for most services while gradually improving the Township's ability to reinvest in the sanitary system. However, it may still limit the ability to fully meet growing infrastructure demands across all asset categories.

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.

4.3.1. Lifecycle Changes Required

Maintaining current capital investment levels for tax-supported and water rate-supported infrastructure means there would be no significant changes to lifecycle strategies for these assets. The Township would continue relying on existing maintenance practices and capital planning approaches. This approach sustains existing service levels but may not be sufficient to address long-term infrastructure needs or improve service delivery. For the sanitary system, a gradual increase in investment would allow for modest improvements in lifecycle management over time.

- Sanitary Sewer Network:
  - Expanding inflow and infiltration investigations and increasing enforcement of by-laws prohibiting illegal sump pump connections.
  - Beginning to address aging wet wells through scheduled rehabilitation, and planning for more timely replacement of pumps and chains before they fail

4.3.2. Sustainability and Feasibility of Proposed Service Levels

Of the three scenarios analyzed, Scenario 1 requires no tax increase, no water rate increase, and a conservative increase for sanitary rates. This approach is realistic as it allows the Township to continue with its current asset management practices without major tax or rate increases. Tax revenue would remain constant at $3.6 million, with water rates at $644 thousand, while sanitary rates would increase gradually from $527 thousand to $785 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 1 is indicated in the table below:

Source	Available Capital Funding									
	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Tax Revenue	$1.5m	$1.5m	$1.5m	$1.5m	$1.5m	$1.5m	$1.5m	$1.5m	$1.5m	$1.5m
Water Rates	$311k	$311k	$311k	$311k	$311k	$311k	$311k	$311k	$311k	$311k
Sanitary Rates	$85k	$100k	$115k	$130k	$146k	$162k	$179k	$196k	$214k	$232k

Table 6: Scenario 1 Available Capital Funding Over Next 10 Years

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.

4.3.3. 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 Township can make informed decisions that support long-term service reliability.

Scenario 1 Risks

- Deferred Infrastructure Investment: Without increased funding, the Township risks delayed asset replacements and growing infrastructure backlogs, leading to more frequent failures, higher maintenance costs, and service disruptions.
- Regulatory Requirements: The Township could face challenges in meeting regulatory requirements due to insufficient funding for necessary future upgrades, posing risks for compliance.
- Financial Instability: Continued reliance on unpredictable funding sources such as grants or reserves introduces long-term uncertainty and may delay critical infrastructure projects.
- Future Demand: 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.
- Volunteer Reliance: Relying on volunteers for building maintenance and program delivery poses a risk of inconsistent service levels, delays in essential upkeep, and challenges in sustaining long-term operations due to turnover or limited availability.

4.4. Scenario 2: Achieving 75% Funding in 15 Years

This scenario outlines a phased funding approach, with an annual tax increase of approximately 0.8%, along with 1.3% increases in water rates and 4.0% increases in sanitary rates, aiming to achieve 75% funding within 15 years. The approach represents a more moderate level of funding while still addressing infrastructure needs.

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.

4.4.1. Lifecycle Changes Required

Increasing capital investment to achieve 75% funding would improve the Township's ability to manage infrastructure, extending asset lifecycles and reducing the need for major repairs. For all asset categories, more funding would enable proactive maintenance, timely upgrades, and early replacements. This scenario would contribute to gradual improvements in infrastructure conditions and help reduce the existing backlog. Increased funding could help ensure that all bridges remain free of loading restrictions over the long term, minimizing the risk of future limitations caused by aging infrastructure or deferred rehabilitation. These improvements would support the Township's goal of enhancing infrastructure reliability and service delivery over the long term.

- Road Network
  - Begin to close the gap between current demand and the gravel-to-paved road program.
  - Maintain surface treatment cycles closer to 10-year targets.
- Bridges and Culverts
  - Better alignment with OSIM recommendations over time.
- Water Network
  - Expand the cathodic protection program to additional sections of the network.
- Sanitary Sewer Network
  - Plan for timely rehabilitation of critical wet wells and gradual replacement of vulnerable pumps and chains.
- Stormwater System
  - Begin replacing older infrastructure with updated designs in priority areas.
- Buildings
  - Reduce dependence on volunteer maintenance.
  - Begin extending service contracts to additional municipal buildings.
- Land Improvements
  - Begin more regular replacement of play structures and improve accessibility in select locations.

- Vehicles, Machinery & Equipment
  - Establish a more reliable replacement schedule for key Public Works vehicles.
  - Improve fire equipment replacement timelines, addressing PPE and airbag gaps more consistently.
- Addressing the Backlog
  - The Township would be able to begin addressing the infrastructure backlog steadily, though not as aggressively as under full funding. Some deferred needs may persist beyond the 15-year window

4.4.2. 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 25.7% in tax revenue. 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 $3.6 million to $4.2 million, water revenue from $644 thousand to $781 thousand, and sanitary revenue from $527 thousand to $948 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:

Source	Available Capital Funding									
	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Tax Revenue	$1.6m	$1.6m	$1.7m	$1.8m	$1.9m	$1.9m	$1.9m	$2.0m	$2.0m	$2.1m
Water Rates	$319k	$328k	$336k	$345k	$354k	$363k	$372k	$381k	$390k	$400k
Sanitary Rates	$92k	$114k	$137k	$161k	$185k	$211k	$237k	$265k	$294k	$324k

Table 7: Scenario 2 Available Capital Funding Over Next 10 Years

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.

4.4.3. 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 Township 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 75% of 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 Township's operational capacity, particularly if there are limited resources or capacity to handle the expanded scope of work over the long term.
- Public Acceptance: 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 formoderate tax rates and the general satisfaction with current services.

4.5. Scenario 3: Achieving Full Funding in 15 Years

This scenario outlines a phased funding approach, with an annual tax increase of approximately 2.1%, along with 2.5% increases in water rates and 5.1% increases in sanitary rates, aiming to achieve full funding within 15 years. The approach focuses on ensuring the Township 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.

4.5.1. Lifecycle Changes Required

Increasing capital investment to achieve full funding over 15 years would significantly improve the township'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:

- Road Network
  - Extend surface treatment cycles from 7 to 10 years.
  - Expand the gravel-to-paved road program, which currently falls short of demand
  - Improve lifecycle strategies for asphalt roads by implementing timely overlay schedules and reducing reliance on unpredictable grant funding.
- Bridges and Culverts
  - Conduct timely replacements rather than relying solely on minor and major rehabs.
- Water Network
  - Support key Master Plan objectives, including the expansion of storage capacity to accommodate growth.
  - Expansion of the cathodic protection program to more areas
- Sanitary Sewer Network
  - Expand inflow/infiltration investigations and enforce by-laws that prevent illegal sump pump connections.
  - Ensure timely rehabilitation of aging wet wells and replacement of pumps and chains before failure.
- Stormwater System
  - Replacement of aging stormwater infrastructure with systems designed to modern standards.
  - Expand the network in areas currently lacking proper discharge points, particularly in village centres.
- Buildings
  - Reduce dependence on overburdened volunteers for building maintenance.

    - Extend service contracts to all municipal buildings and mitigate safety and liability risks.
- Land Improvements
    - Transition away from relying on volunteers for playground maintenance, field upkeep.
    - Regular play structure replacements and upgrades to meet accessibility standards.
- Vehicles, Machinery & Equipment
    - Implement a reliable replacement schedule for Public Works vehicles like snowplows, which are essential for service delivery.
    - Fire equipment could be replaced on a consistent cycle, addressing current gaps in PPE and airbag renewal.
- Addressing the backlog
    - The phased funding strategy would allow the Township to start addressing the infrastructure backlog immediately, gradually reducing it over the 15-year period.

4.5.2. Sustainability and Feasibility of Proposed Service Levels

Of the three scenarios analyzed, Scenario 3 requires the highest tax increase. Reaching full funding immediately would require an increase of 48.7% in tax revenue, 44.4% increase in water rates, and 110.7% increase in sanitary 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 $3.6 million to $5.0 million, water revenue from $644 thousand to $932 thousand, and sanitary revenue from $527 thousand to $1.1 million.

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:

Source	Available Capital Funding									
	2026	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
Tax Revenue	$1.6m	$1.7m	$1.8m	$2.0m	$2.1m	$2.2m	$2.3m	$2.4m	$2.5m	$2.6m
Water Rates	$327k	$344k	$360k	$378k	$396k	$414k	$432k	$452k	$471k	$491k
Sanitary Rates	$98k	$126k	$156k	$187k	$220k	$254k	$290k	$328k	$368k	$410k

Table 8: Scenario 3 Available Capital Funding Over Next 10 Years

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.

4.5.3. 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 Township can make informed decisions that support long-term service reliability.

Scenario 3 Risks

- Delayed Improvement: The Township 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 Township's operational capacity, particularly if there are limited resources or capacity to handle the expanded scope of work over the long term.
- Public Acceptance: 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.

4.6. Proposed Levels of Service Analysis

4.6.1. Preferred Approach and Rationale

Scenario 2 was selected by the Township as the preferred approach across all asset categories, as it offers a practical, phased path to improved asset management while respecting the community's financial capacity. Although it does not fully eliminate the infrastructure funding gap, this strategy enables the Township to gradually scale up resources and reinvestment in a way that balances affordability with long-term sustainability. It supports informed decision-making, focuses resources on high-priority needs, and helps manage risk without placing undue strain on taxpayers.

To support this approach, the Township plans to supplement its annual reinvestment with non-sustainable revenue sources such as grants, reserves, and operating surpluses, particularly for larger capital projects. This provides additional flexibility during the 15-year phase-in period and helps address immediate infrastructure needs without requiring full cost recovery through tax and rate increases.

While formal public consultation was not undertaken as part of this plan, the selected scenario reflects the intent of Ontario Regulation 588/17 by considering the broader public interest, prioritizing reliable service delivery, risk management, and affordability. This funding strategy positions North Stormont to maintain essential service levels and work toward long-term financial resilience.

Categorical Analysis

5. Road Network

5.1. State of the Infrastructure

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

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

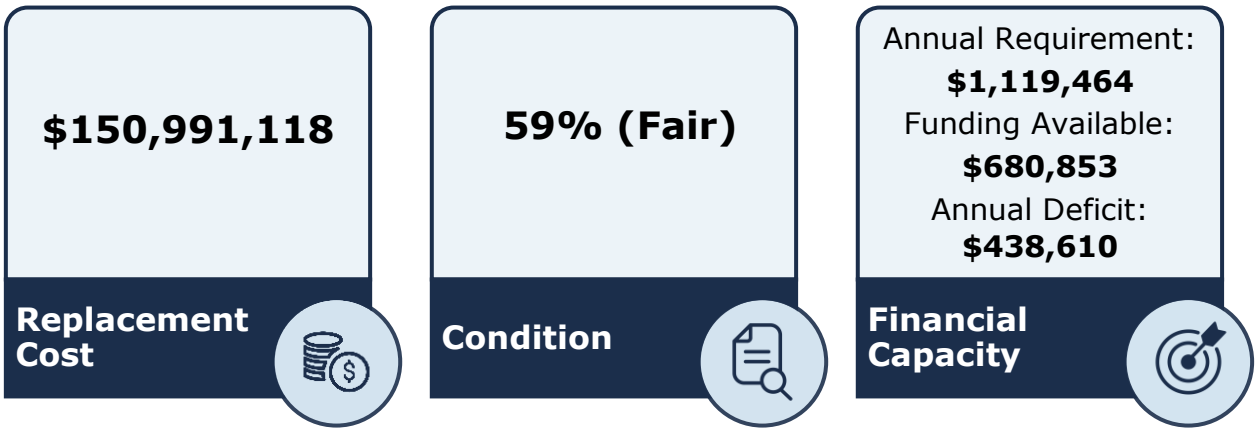


Figure 19: Road Network State of the Infrastructure

5.2. Inventory & Valuation

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

Segment	Quantity	Primary Replacement Cost Method	Replacement Cost
Asphalt Roads	37 km	CPI	$25,434,956
Gravel Roads	211 km	CPI	$74,545,319
Sidewalks	18 assets	CPI	$1,430,540
Streetlights	5 assets	CPI	$442,242
Surface Treated Roads	99 km	CPI	$49,138,062
Total			**$150,991,118**

Table 9: Road Network Inventory

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

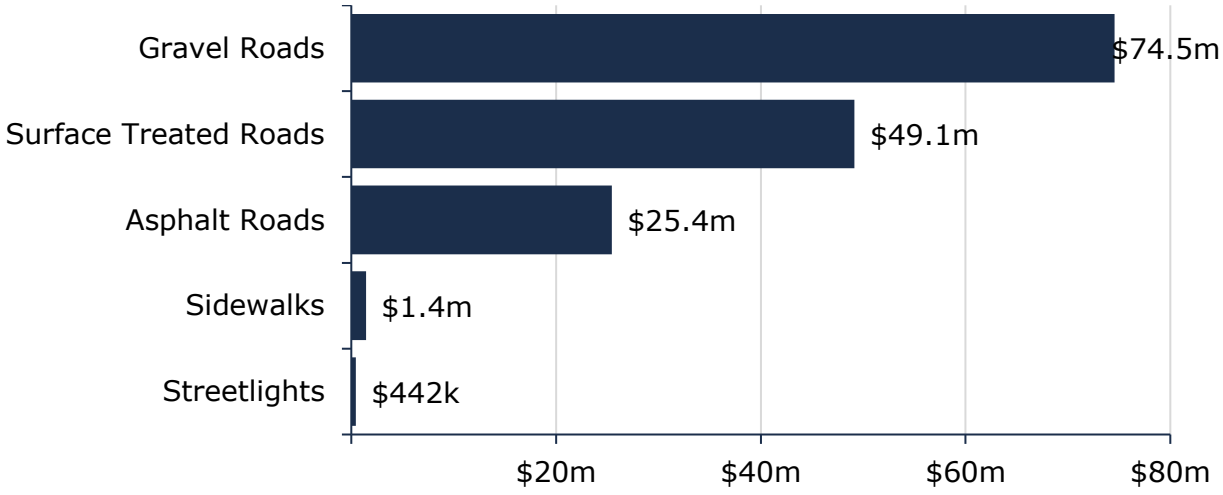


Figure 20: Road Network Replacement Value

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

5.3. Asset Condition & Age

The graph below identifies the average age, and the estimated useful life for each asset segment[2]. It is all weighted by replacement cost.

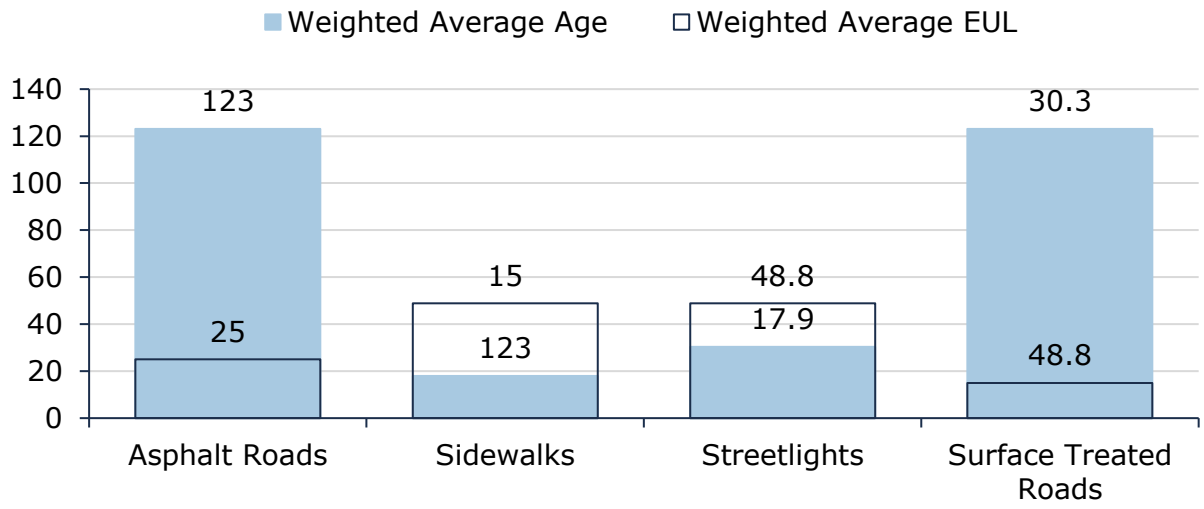


Figure 21: Road Network Average Age vs Average EUL

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

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

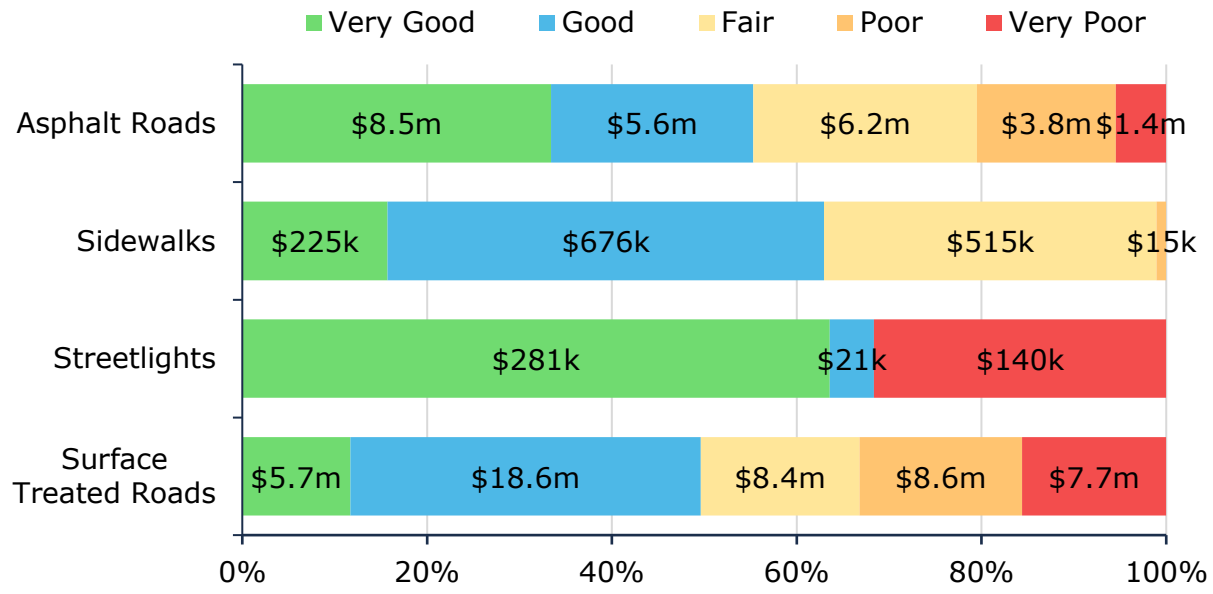


Figure 22: Road Network Condition Breakdown

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

5.3.1. Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The Township conducts comprehensive road needs assessments that serve to evaluate the current condition of road infrastructure, identify areas requiring maintenance or rehabilitation, and inform future investment decisions. Roads needs assessments aid the Township in efficiently allocating resources, optimizing maintenance schedules, and ensuring the continued safety and functionality of the transportation network.

5.4. Lifecycle Management Strategy

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

The following lifecycle strategies shown in the Figures below 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.

Maintenance

- Deficiency repairs as required from patrols for minimum maintenance standards such as patching, shoulder grading, etc.
- Winter control activities

Rehabilitation / Renewal / Replacement

- Road rehabilitation and replacement projects are planned and executed in alignment with underground utility rehabilitation or replacement initiatives, thereby reducing the overall expenditure
- Activities are conducted in response to immediate needs rather than as part of a proactive strategy, and are dependent on available funding

Pavement Condition Index scores, staff judgment, traffic loads, and opportunity to bundle projects help inform the optimal lifecycle intervention, ranging from pothole repairs to overlays and potential replacements. Lifecycle models used to estimate the savings to annual capital requirement are shown below in Figure 13 for Paved (LCB) roads, and Figure 14 for Asphalt (HCB) Roads.

HCB Roads		
Event Name	**Event Class**	**Event Trigger**
Routine Maintenance	Maintenance	Annual event
Overlay	Rehabilitation	Condition at 40%
Full Reconstruction	Replacement	Condition at 0%

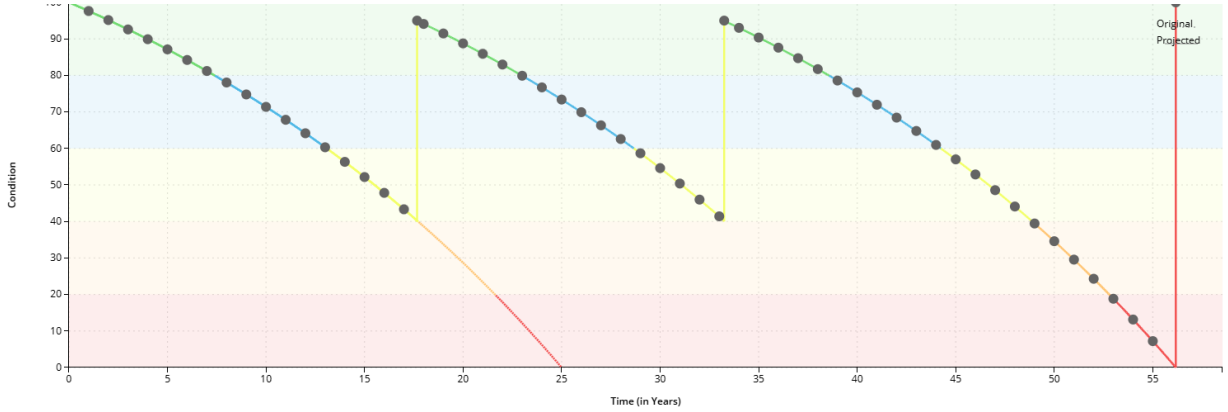


Figure 23: HCB Road Strategy

LCB Roads		
Event Description	**Event Class**	**Event Trigger**
Routine Maintenance	Maintenance	Annual event
Surface Treatment	Rehabilitation	Condition at 31 – 40%
Full Reconstruction	Replacement	Condition at 0 - 30%

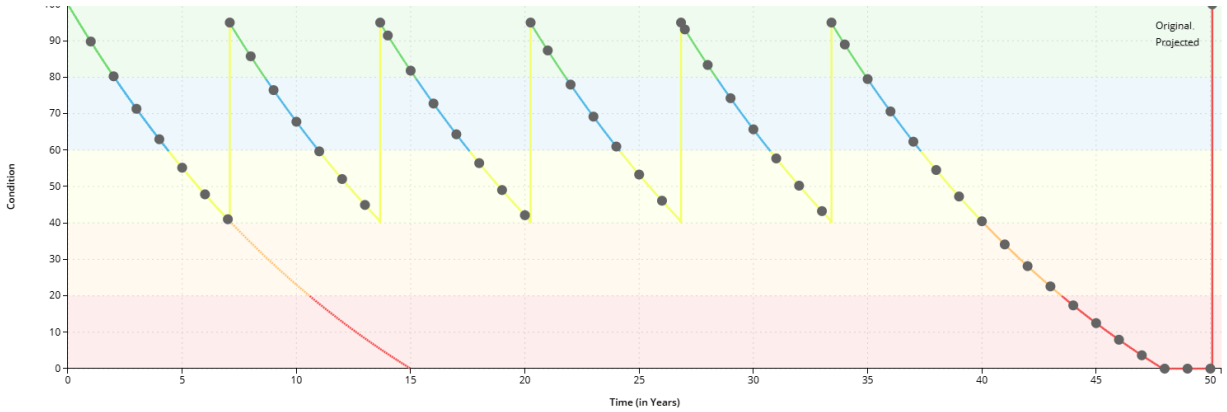


Figure 24: LCB Roads Strategy

5.5. Forecasted Capital Requirements

The Figure below illustrates the cyclical short-, medium- and long-term infrastructure rehabilitation and replacement requirements for the Township's Road Network. This analysis was run until 2058 to capture at least one iteration of replacement for the longest-lived asset in Citywide Assets, the Township's primary asset management system and asset register. The Township's average annual requirements (red dotted line) total $1.5 million for all assets in the road network. 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) for the annual capital investment needed to maintain current levels of service.

The chart illustrates substantial capital needs through the forecast period. It also shows a backlog $437 thousand. These projections are based on asset replacement costs, age analysis, and condition data when available, as well as lifecycle modeling (roads 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.

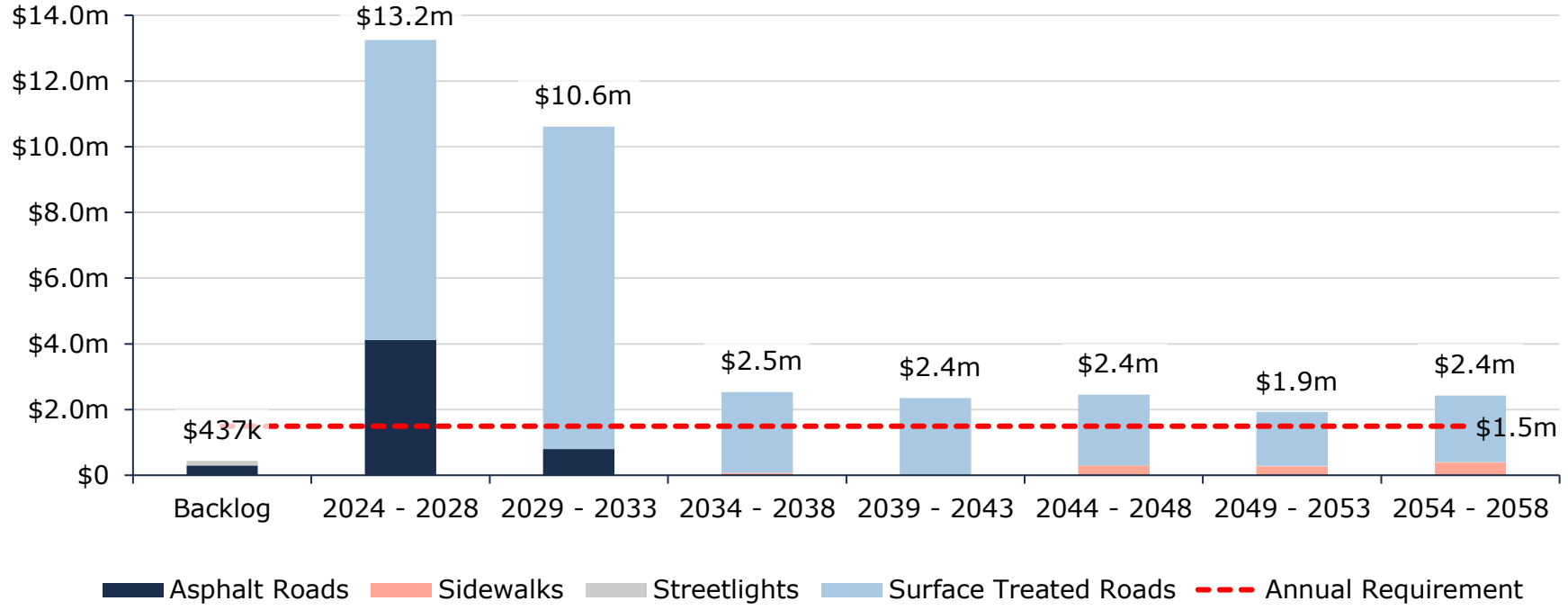


Figure 25: Road Network Forecasted Capital Replacement Requirements

The Table 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 Township's capital expenditure forecasts.

Segment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Asphalt Roads	$0	$0	$1.1m	$1.5m	$1.5m	$87k	$711k	$0	$0	$0
Sidewalks	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Streetlights	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Surface Treated Roads	$435k	$0	$105k	$482k	$8.1m	$316k	$8.1m	$968k	$99k	$316k
Total	**$435k**	**$0**	**$1.2m**	**$2.0m**	**$9.6m**	**$403k**	**$8.8m**	**$968k**	**$99k**	**$316k**

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

5.6. 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 D: Risk Rating Criteria. for the criteria used to determine the risk rating of each asset.

1 - 4 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$3,857,301 (3%)	$13,513,186 (9%)	$26,335,612 (17%)	$69,055,973 (46%)	$38,229,046 (25%)

Figure 26: Road Network Risk Matrix

This is a high-level model developed by Township staff and it should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure. The identification of critical assets allows the Township to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

5.6.1. Risks to Current Asset Management Strategies

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

Climate Change & Extreme Weather Events

Flooding and extreme weather events like increased freeze and thaw cycles can cause damage the Township's roads. Freezing rain followed by rapid freezing can cause ice to expand within cracks and potholes in the pavement, leading to further deterioration of road surfaces. This exacerbates existing pavement issues and accelerates the need for repairs or resurfacing.

5.7. Current Levels of Service

The following tables identify the Township's metrics to identify their current level of service for the Road Network.

5.7.1. Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS
Scope	Description, which may include maps, of the road network in the Township and its level of connectivity	See Appendix B.
Quality	Description or images that illustrate the different levels of road class pavement condition	See Figure 2 for the description of road condition

Table 11: Road Network Community Levels of Service

5.7.2. Technical Levels of Service

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

Service Attribute	Technical Metric	Curent LOS
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area in the municipality (km/km^2)	0 lane km/km^2
	Lane-km of collector roads (MMS classes 3 and 4) per land area in the municipality (km/km^2)	1.13 lane km/km^2
	Lane-km of local roads (MMS classes 5 and 6) per land area in the municipality (km/km^2)	0.21 lane km/km^2
Quality	Average pavement condition index for paved roads in the municipality	Good (67%)
	Average surface condition for unpaved roads in the municipality	Good (60%)
Performance	Current Capital Reinvestment Rate	0.45%

Table 12: Road Network Technical Levels of Service

5.8. 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 Scenarios Section.

5.8.1. PLOS Scenarios Analyzed

Scenario	Description
Scenario 1: Maintaining Current Funding Level	This scenario assumes a stable funding level maintained at approximately 46.7%, with no phased tax increases over the projection period.
Scenario 2: Achieving 75% Funding in 15 Years	This scenario assumes a phased tax increase of approximately 0.8% annually, reaching 75% funding within 15 years
Scenario 3: Achieving Full Funding in 15 Years	This scenario assumes a phased tax increase of approximately 2.1% annually, reaching full funding within 15 years

Table 13: PLOS Scenarios Analyzed

5.8.2. PLOS Analysis Results

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

Scenario	Technical LOS Outcomes	Initial Value (2025)	10 Year Projection (2035)	25 Year Projection (2050)	Scenario Average
Scenario 1	Average Condition	56.98%	60.44%	61.18%	58.17%
	Average Asset Risk	9.26	8.81	8.97	9.1
	Average Annual Investment		$680,853		
	Capital re-investment rate		0.45%		
Scenario 2	Average Condition	56.98%	59.17%	62.13%	59.13%
	Average Asset Risk	9.26	9.09	8.83	8.98
	Average Annual Investment		$1,119,464		
	Capital re-investment rate		0.74%		
Scenario 3	Average Condition	56.98%	68.22%	65.34%	62.15%
	Average Asset Risk	9.26	7.54	8.33	8.45
	Average Annual Investment		$1,492,618		
	Capital re-investment rate		0.99%		

Table 14: Road Network pLOS Scenario Analysis

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.

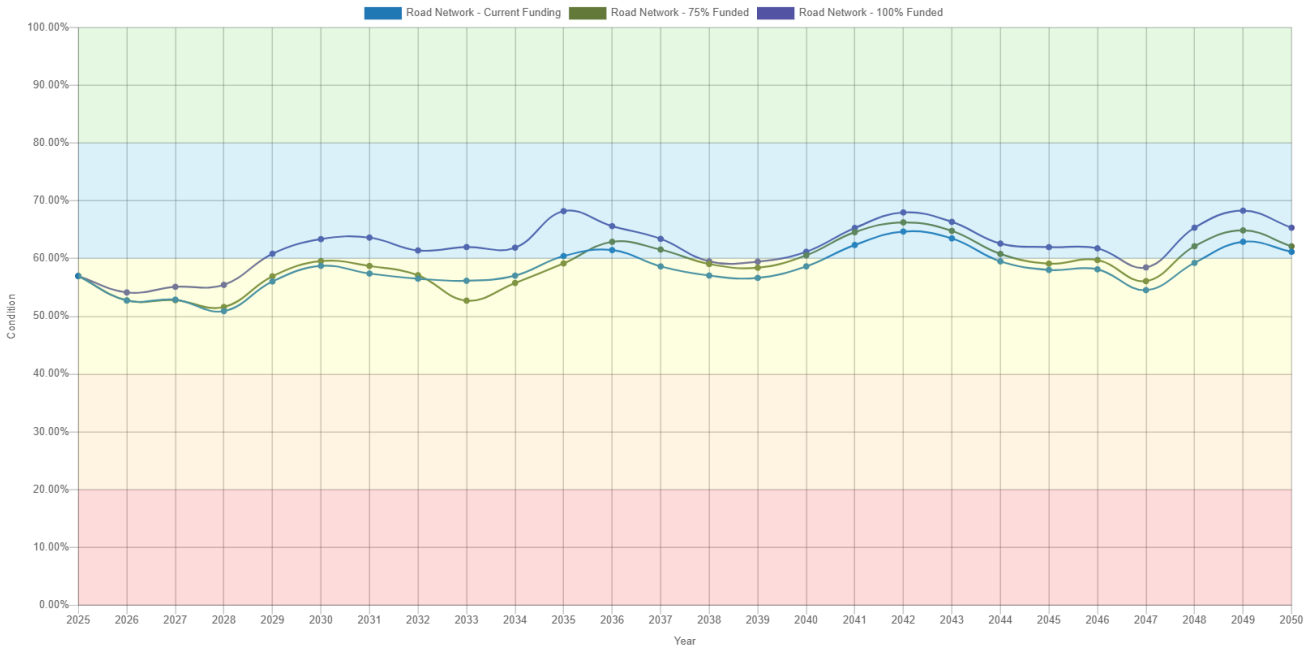


Figure 27: Road Network Scenario Comparison

6. Bridges & Culverts

6.1. 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 Township's ability to fund the proposed levels of service:

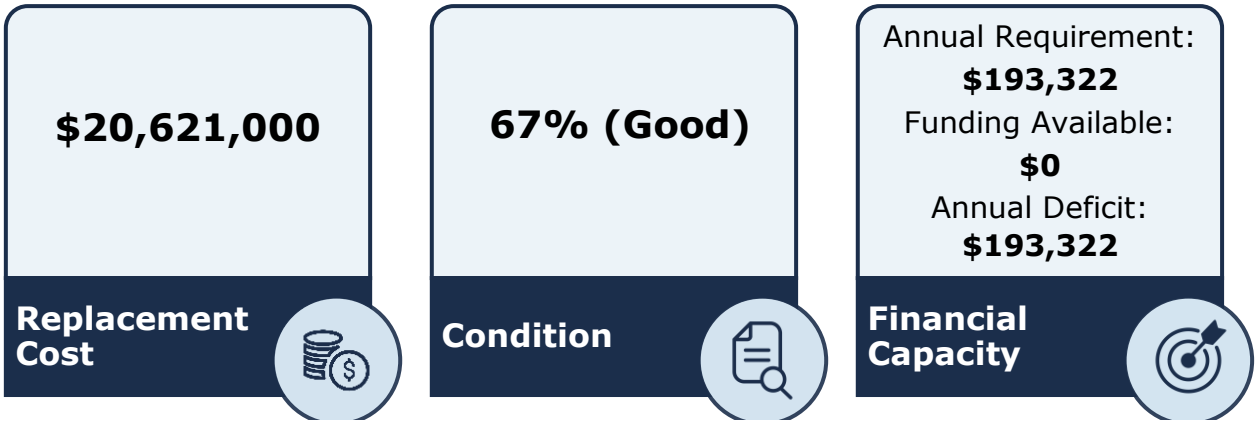


Figure 28: B&C State of the Infrastructure

6.2. Inventory & Valuation

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Bridges & Culverts inventory.

Segment	Quantity	Unit of Measure	Primary Replacement Cost Method	Replacement Cost
Bridges	20	Assets	User-Defined	$12,321,000
Culverts	20	Assets	User-Defined	$8,300,000
Total		**Assets**	**User-Defined**	**$20,621,000**

Table 15: B&C Inventory

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

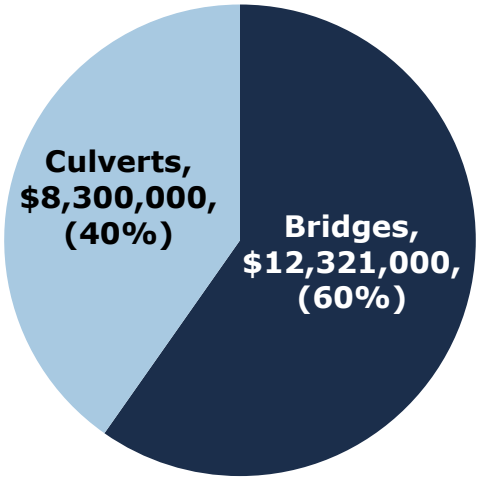


Figure 29: Bridges & Culverts Replacement Cost

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).

6.3. Asset Condition & Age

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

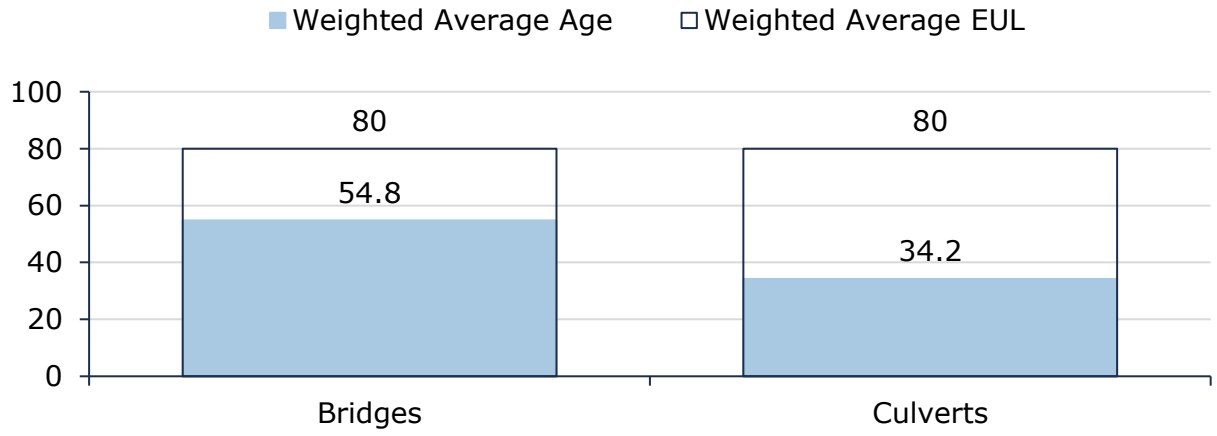


Figure 30: B&C Average Age vs Average EUL

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

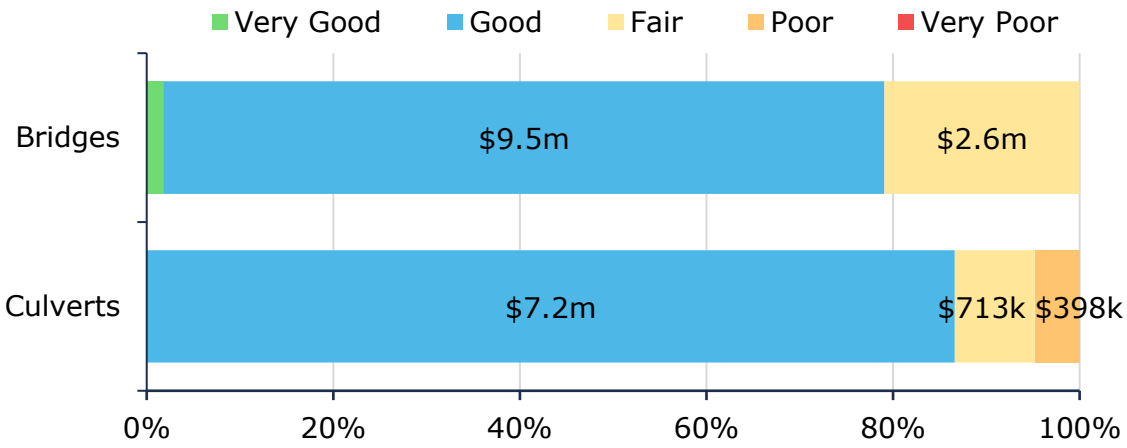


Figure 31: B&C Condition Breakdown

To ensure that the Township's bridges and culverts continue to provide an acceptable level of service, the staff should monitor the average condition of all assets. Each asset's estimated useful life should also be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

6.3.1. 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. North Stormont's current approach is to assess the 20 bridges and 20 culverts every 2 years in accordance with the Ontario Structure Inspection Manual (OSIM). The most recent assessment was completed in 2023 by HP Engineering Inc.

6.4. Lifecycle Management Strategy

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

Maintenance

- All lifecycle activities are driven by the results of mandated structural inspections competed according to the Ontario Structure Inspection Manual (OSIM)

Rehabilitation / Renewal / Replacement

- Rehabilitation activities are contingent upon the condition rating determined through the bi-annual condition survey
- Replacement occurs upon OSIM inspection recommendation and is subject to the availability of funding

Figure 32: B&C Current Lifecycle Strategy

6.5. Forecasted Capital Requirements

The Figure below illustrates the cyclical short-, medium- and long-term infrastructure rehabilitation and replacement requirements for the Township'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.

The following analysis was run until 2108, and the resulting graph identifies capital requirements over the next 85 years. North Stormont's average annual requirements (red dotted line) for bridges and culverts total $258 thousand. 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) for the annual capital investment needed to maintain current levels of service.

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

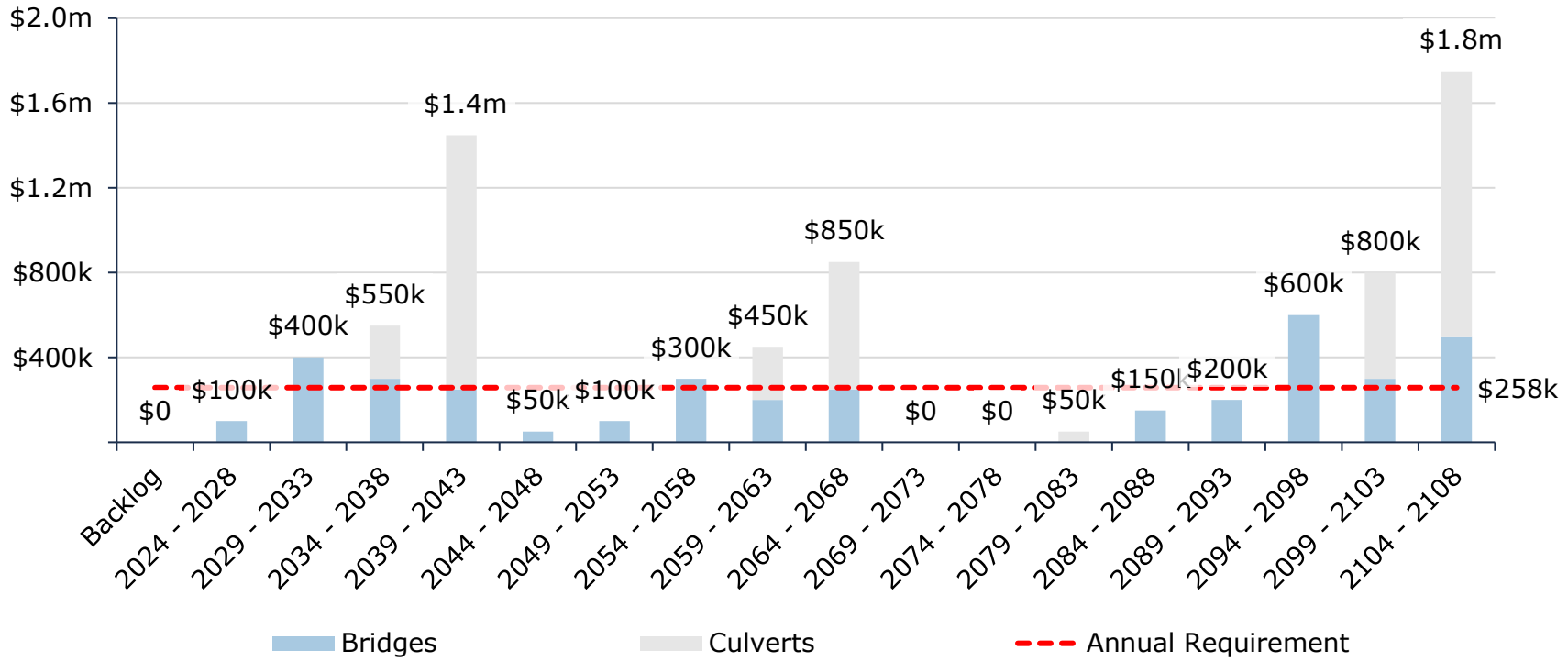


Figure 33: B&C Forecasted Capital Replacement Requirements

The Table below summarizes the projected cost of lifecycle activities (as previously described) 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.

Segment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Bridges	$50k	$50k	$0	$0	$0	$50k	$0	$50k	$0	$300k
Culverts	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$50k**	**$50k**	**$0**	**$0**	**$0**	**$50k**	**$0**	**$50k**	**$0**	**$300k**

Table 16: B&C System-generated 10-Year Capital Costs

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.

6.6. 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 D: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

1 - 4 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$4,826,000 (23%)	$8,447,000 (41%)	$4,647,000 (23%)	$1,672,000 (8%)	$1,029,000 (5%)

Figure 34: B&C 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 Township to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

6.6.1. Risks to Current Asset Management Strategies

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

Climate Change & Extreme Weather Events

The Township of North Stormont is located within a derecho-prone region. High winds from derechos can exert immense forces on bridge structures, potentially causing structural damage. This damage may include bending or twisting of bridge beams, fracture or failure of support columns, or displacement of bridge decks.

6.7. Current Levels of Service

The following tables identify the Township's metrics to identify their current level of service for the bridges and culverts.

6.7.1. Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS
Scope	Description of the traffic that is supported by municipal bridges (e.g. heavy transport, motor, emergency vehicles, pedestrians, cyclists)	The municipal bridges support a diverse range of traffic, serving as crucial conduits not only within the Township but also for travel between other cities. They accommodate a wide array of vehicles, from large agricultural equipment and heavy transport vehicles to motor and emergency vehicles, as well as cyclists and pedestrians.
Quality	Description or images of the condition of bridges and culverts and how this would affect use of the bridges and culverts	See Appendix B.

Table 17: B&C Community Levels of Service

6.7.2. Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS
Scope	% of bridges in the Township with loading or dimensional restrictions	0%
Quality	Average bridge condition index value for bridges in the municipality	Good (66%)
	Average BCI value for culverts in the municipality	Good (68%)
Performance	Capital re-investment rate	0.0%

Table 18: B&C Technical Levels of Service

6.8. 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 Scenarios Section.

6.8.1. PLOS Scenarios Analyzed

Scenario	Description
Scenario 1: Maintaining Current Funding Level	This scenario assumes a stable funding level maintained at approximately 46.7%, with no phased tax increases over the projection period.
Scenario 2: Achieving 75% Funding in 15 Years	This scenario assumes a phased tax increase of approximately 0.8% annually, reaching 75% funding within 15 years
Scenario 3: Achieving Full Funding in 15 Years	This scenario assumes a phased tax increase of approximately 2.1% annually, reaching full funding within 15 years

Table 19: PLOS Scenarios Analyzed

6.8.2. PLOS Analysis Results

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

Scenario	Technical LOS Outcomes	Initial Value (2025)	10 Year Projection (2035)	25 Year Projection (2050)	Scenario Average
Scenario 1	Average Condition	64.56%	53.24%	36.43%	25.52%
	Average Asset Risk	6.49	8.58	10.3	11.84
	Average Annual Investment		$0		
	Capital re-investment rate		0.00%		
Scenario 2	Average Condition	64.56%	55.68%	49.82%	46.52%
	Average Asset Risk	6.49	8.31	8.19	8.65
	Average Annual Investment		$193,322		
	Capital re-investment rate		0.94%		
Scenario 3	Average Condition	64.56%	59.28%	70.44%	62.28%
	Average Asset Risk	6.49	8.03	5.64	7.04
	Average Annual Investment		$257,763		
	Capital re-investment rate		1.25%		

Table 20: Bridges & Culverts pLOS Scenario Analysis

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.

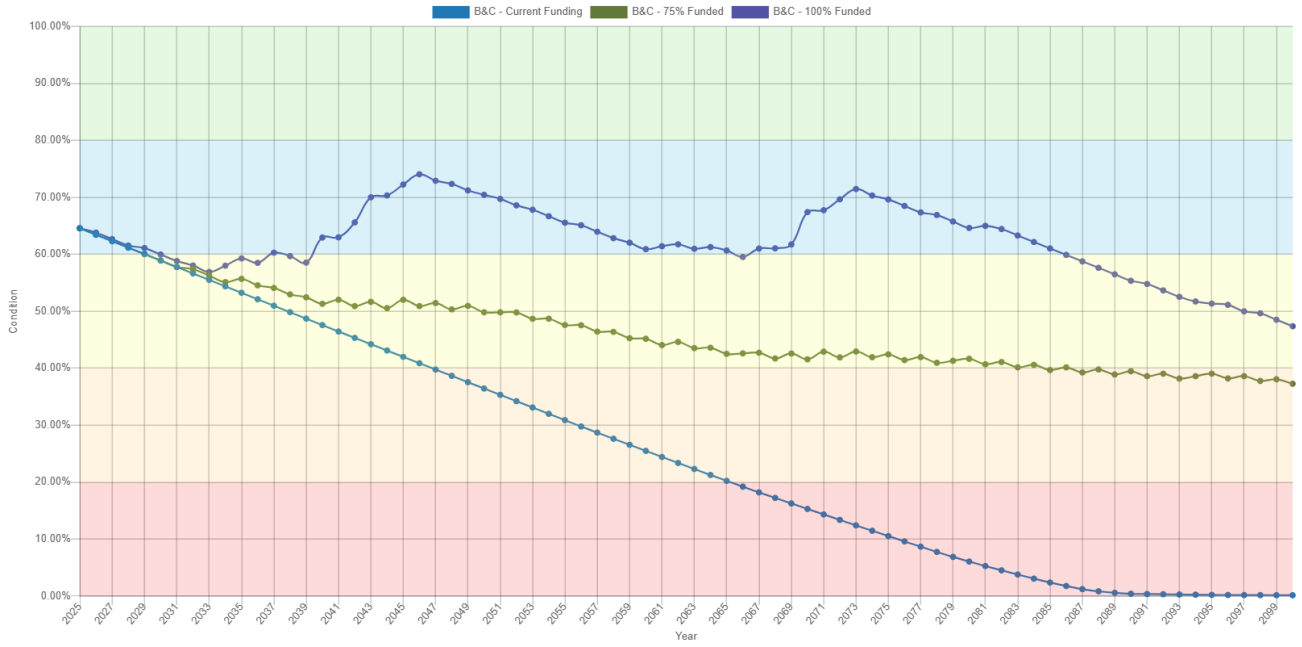


Figure 35: Bridges & Culverts Scenario Comparison

7. Water Network

7.1. State of the Infrastructure

The Urban Settlement Areas of Crysler, Finch, and Moose Creek in the Township of North Stormont receive water services, which are managed and maintained through a partnership with the Ontario Clean Water Agency (OCWA).

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

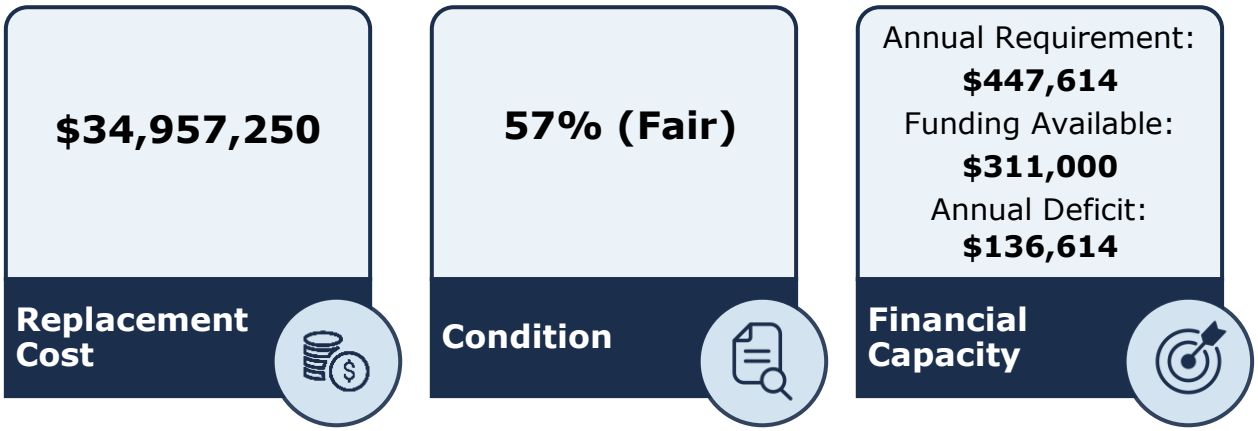


Figure 36: Water Network State of the Infrastructure

7.2. Inventory & Valuation

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

Segment	Quantity	Unit of Measure	Primary Replacement Cost Method	Replacement Cost
Fire Hydrants	190	Quantity	CPI	$1,581,462
Machinery & Equipment	6	Quantity	User-Defined	$141,828
Water Lines	29	Length (km)	CPI	$21,280,255
Water Towers	3	Quantity	CPI	$10,366,632
Water Valves	415	Quantity	User-Defined	$1,587,072
Total				**$34,957,250**

Table 21: Water Network Inventory

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

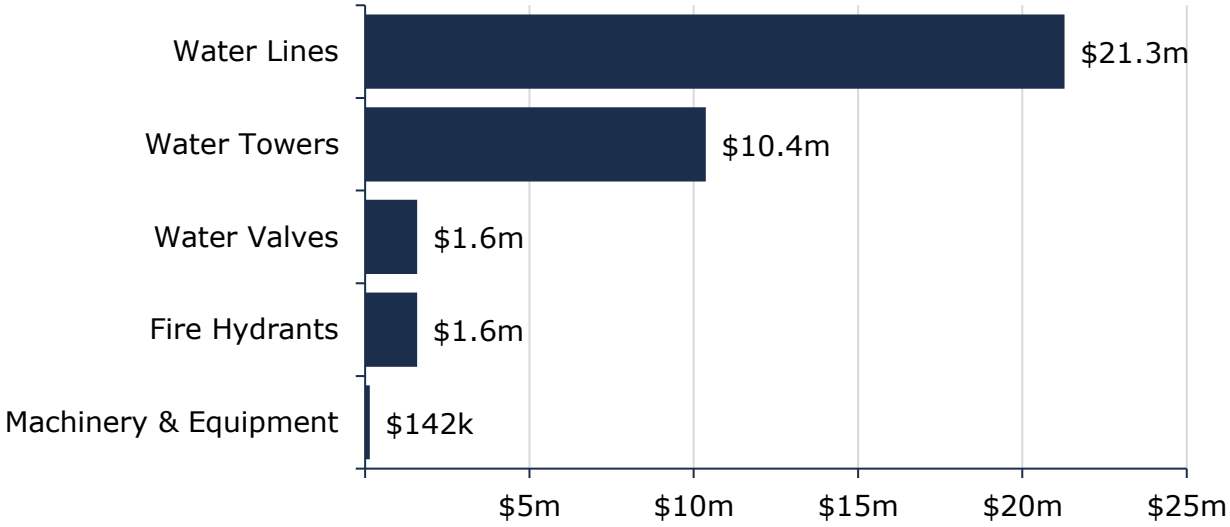


Figure 37: Water Network Replacement costs

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

7.3. Asset Condition & Age

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

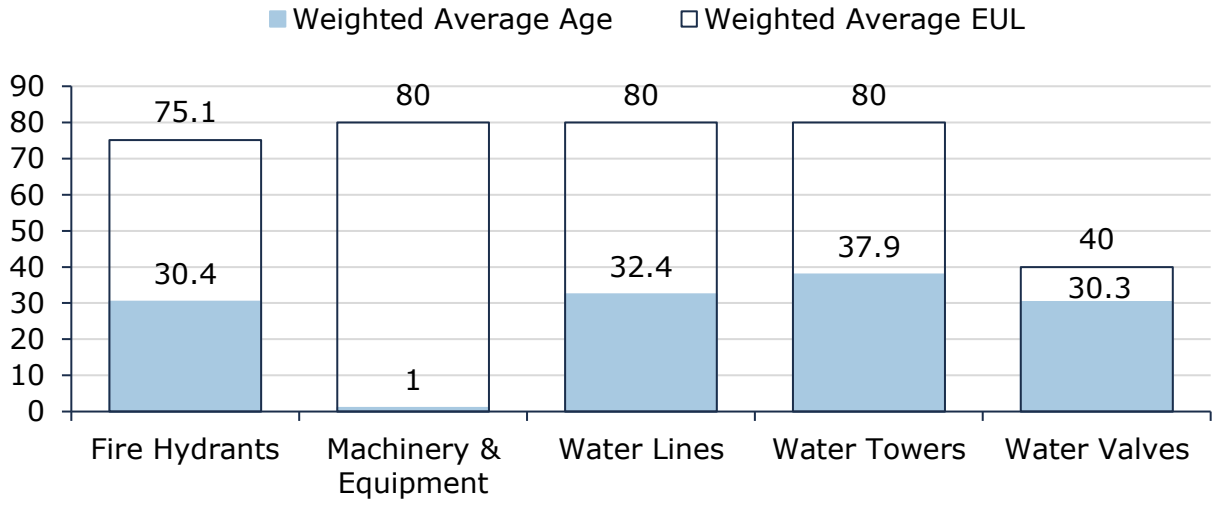


Figure 38: Water Network Average Age vs Average EUL

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

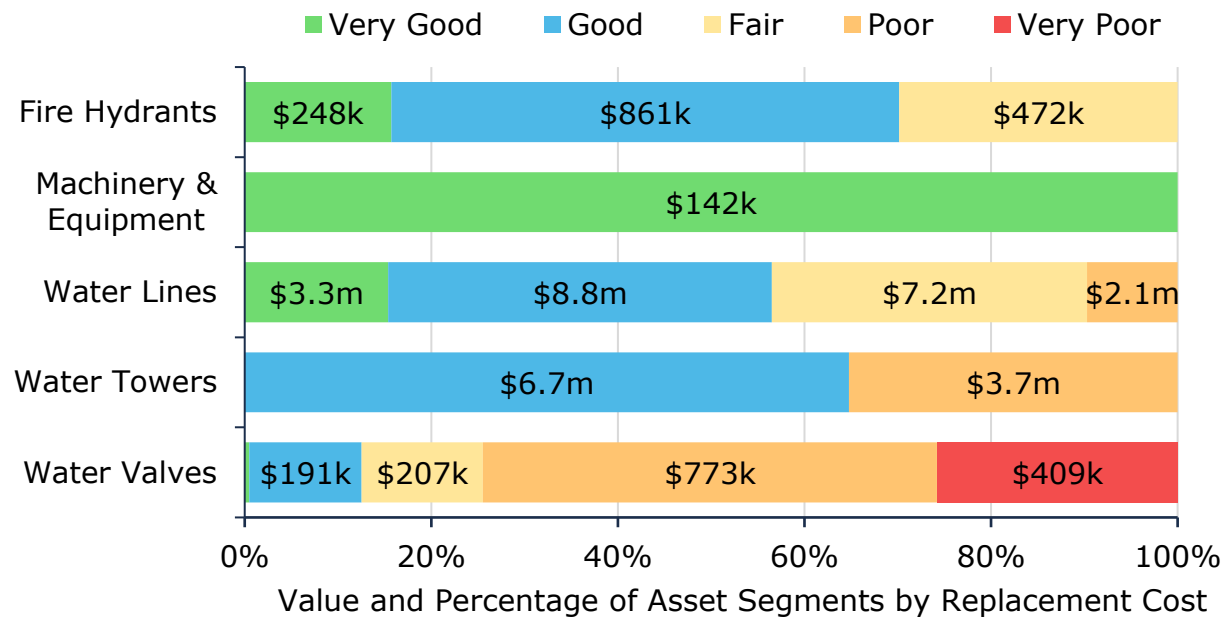


Figure 39: Water Network Condition Breakdown

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

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.

7.3.1. Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The Township employs an annual CCTV inspection strategy for its underground infrastructure, rotating inspection locations throughout the township each year. Depending on findings and priorities, the extent of inspection coverage may vary from year to year, with more focus on critical areas or those with known issues. Data collected from CCTV inspections are analyzed to assess pipe condition, identify defects, and prioritize maintenance actions, ultimately optimizing asset performance and maximizing infrastructure lifespan.

7.4. Lifecycle Management Strategy

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

Maintenance / Rehabilitation / Replacement

- Annual inspections of fire hydrants are conducted collaboratively by OCWA and the township, with flow testing occurring twice a year in spring and fall to ensure functionality and identify any potential issues for proactive maintenance.
- Regular inspections of water mains are carried out jointly by OCWA and the Township, with preventative maintenance performed based on manufacturer recommendations.
- Replacement activities are determined through analysis of breakdown rates and issues identified during maintenance, ensuring timely and cost-effective replacements.
- Renewal and replacement activities are guided by lifecycle analysis and align with the asset management plan's recommendations.
- Repairs are promptly addressed reactively in response to complaints, prioritizing service reliability and addressing community concerns.

Figure 40: Water Network Current Lifecycle Strategy

7.5. Forecasted Capital Requirements

The annual capital requirement represents the average amount per year that North Stormont should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 65 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average capital requirement of $597 thousand. 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) for the annual capital investment needed to maintain current levels of service.

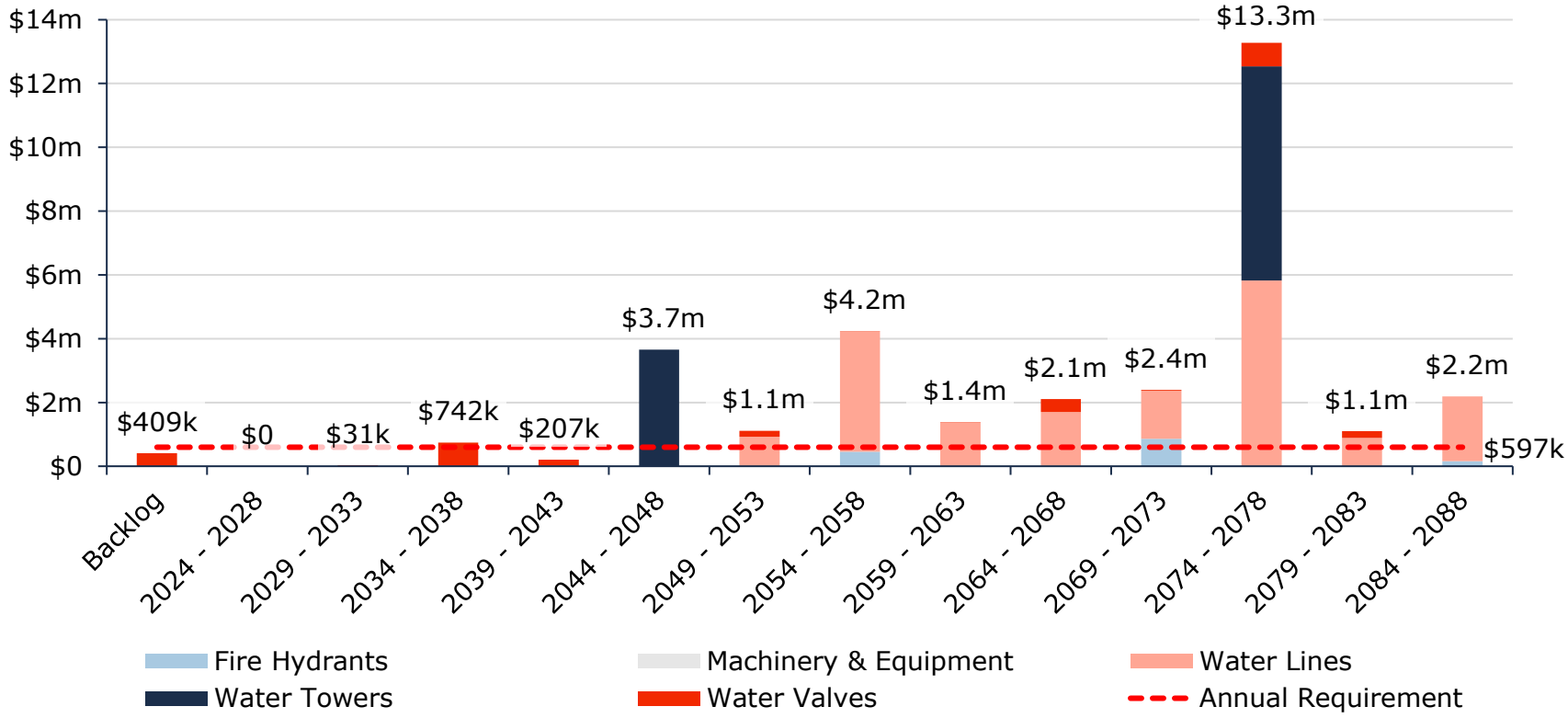


Figure 41: Water Network Forecasted Capital Replacement Requirements

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.

Segment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Fire Hydrants	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Machinery & Equipment	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Lines	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Towers	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Valves	$0	$0	$0	$0	$0	$0	$0	$0	$0	$31k
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$31k**

Table 22: Water Network System-Generated 10-Year Capital Costs

These projections are generated in Citywide and rely on the data available in the asset register. Assessed condition data, age-based condition data and replacement costs were used to assist in forecasting replacement needs for water network assets.

7.6. 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 D: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

1 - 4 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$10,175,766 (29%)	$10,084,411 (29%)	$3,865,967 (11%)	$7,177,634 (21%)	$3,653,472 (10%)

Figure 42: Water Network 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 Township to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

7.7. Current Levels of Service

The following tables identify the Township's metrics to identify their current level of service for the Water Network.

7.7.1. Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	In the Township of North Stormont, the Urban Settlement Areas of Crysler, Finch, and Moose Creek are integrated into the municipal water system, encompassing approximately 18% of the population. See Appendix B.
Reliability	Description of boil water advisories and service interruptions	No boil water advisories were issued during the reporting period.

Table 23: Water Network Community Levels of Service

7.7.2. Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS
Scope	% of properties connected to the municipal water system	18%
	% of properties where fire flow is available	18%
Reliability	# of connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system	0 : 525
	# 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 : 525
	Average Condition Rating	Fair (57%)
Performance	Capital re-investment rate	0.89%

Table 24: Water Network Technical Levels of Service

7.8. 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 Scenarios Section.

7.8.1. PLOS Scenarios Analyzed

Scenario	Description
Scenario 1: Maintaining Current Funding Level	This scenario assumes a stable funding level maintained at approximately 52.1%, with no phased rate increases over the projection period.
Scenario 2: Achieving 75% Funding in 15 Years	This scenario assumes a phased rate increase of approximately 1.3% annually, reaching 75% funding within 15 years
Scenario 3: Achieving Full Funding in 15 Years	This scenario assumes a phased rate increase of approximately 2.5% annually, reaching full funding within 15 years

Table 25: PLOS Scenarios Analyzed

7.8.2. PLOS Analysis Results

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.

Scenario	Technical LOS Outcomes	Initial Value (2025)	10 Year Projection (2035)	25 Year Projection (2050)	Scenario Average
Scenario 1	Average Condition	55.71%	47.82%	42.13%	39.02%
	Average Asset Risk	7.92	10.00	11.00	11.28
	Average Annual Investment		$311,000		
	Capital re-investment rate		0.89%		
Scenario 2	Average Condition	55.71%	47.82%	45.64%	46.08%
	Average Asset Risk	7.92	10.00	10.65	10.55
	Average Annual Investment		$447,614		
	Capital re-investment rate		1.28%		
Scenario 3	Average Condition	55.71%	47.82%	53.96%	54.21%
	Average Asset Risk	7.92	10.00	8.64	8.86
	Average Annual Investment		$594,818		
	Capital re-investment rate		1.71%		

Table 26: Water Network pLOS Scenario Analysis

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.

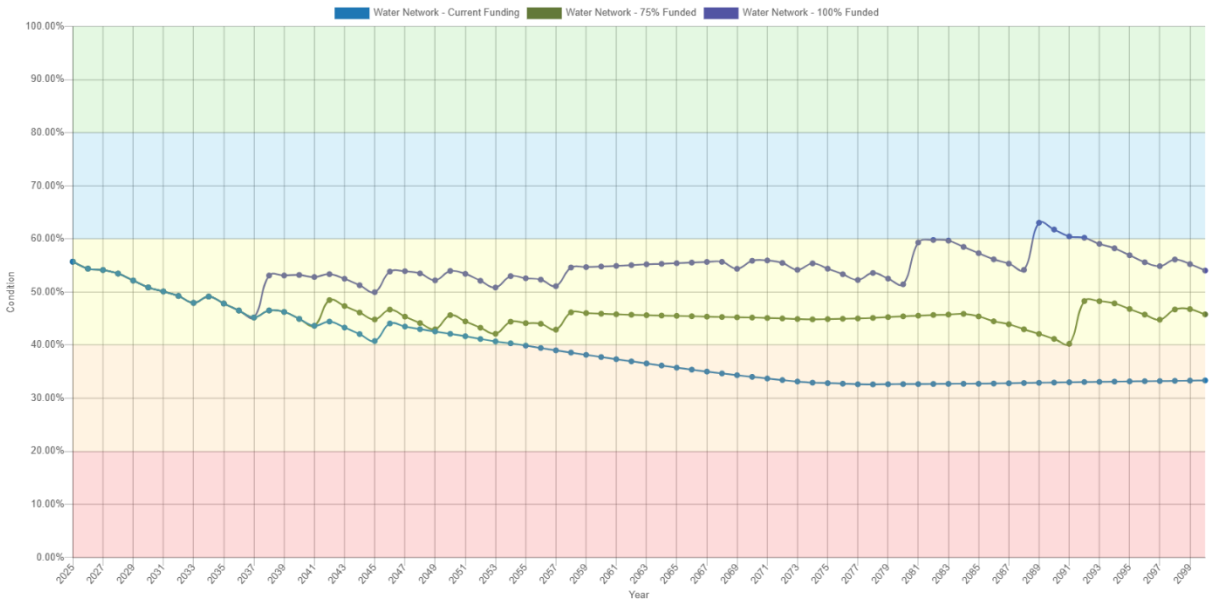


Figure 43: Water Network Scenario Comparison

8. Sanitary Sewer Network

8.1. State of the Infrastructure

The Urban Settlement Areas of Crysler, Finch, and Moose Creek in the Township of North Stormont receive sanitary services, which are managed and maintained through a partnership with the Ontario Clean Water Agency (OCWA). The Township operates two treatment facilities located in Moose Creek and Crysler, both of which are lagoon systems. Wastewater from Finch is transported to the Crysler facility through a forced main pipeline.

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

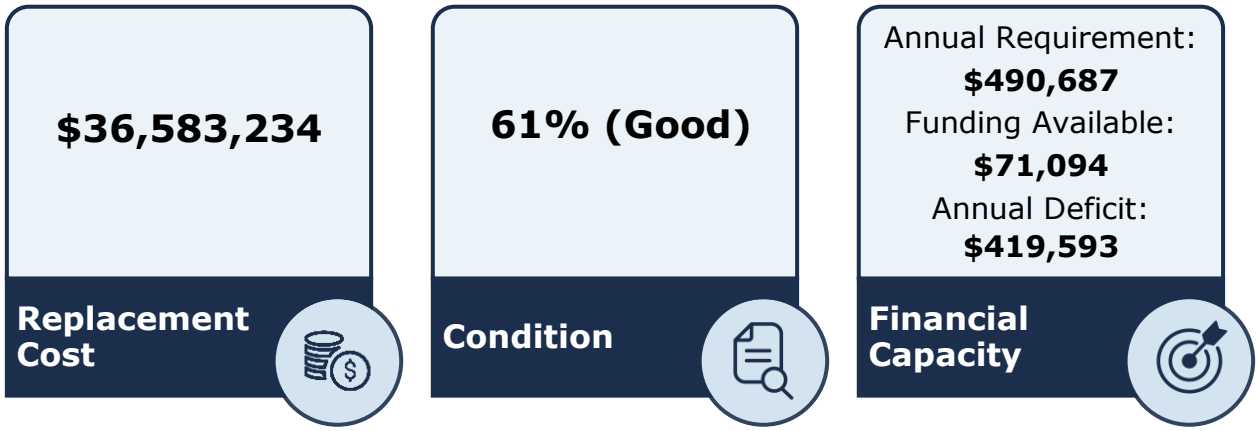


Figure 44: Sanitary Sewer Network State of the Infrastructure

8.2. Inventory & Valuation

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

Segment	Quantity	Unit of Measure	Primary Replacement Cost Method	Replacement Cost
Sewage Treatment	5	Quantity	CPI	$7,159,097
Sewer Lines	32	Length (km)	CPI	$29,424,137
Total				**$36,583,234**

Table 27: Sanitary Sewer Network Inventory

The graph below displays the total replacement cost of each asset segment in North Stormont's Sanitary Network inventory.

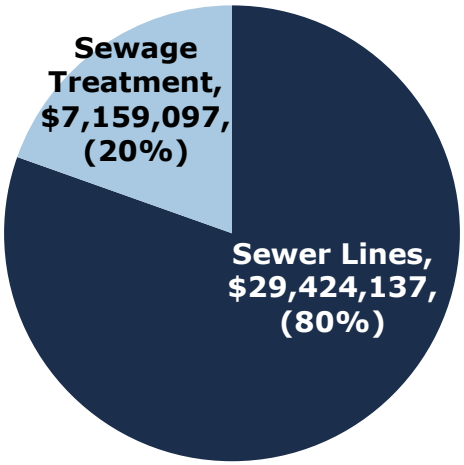


Figure 45: Sanitary Network Replacement Cost

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

8.3. Asset Condition & Age

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

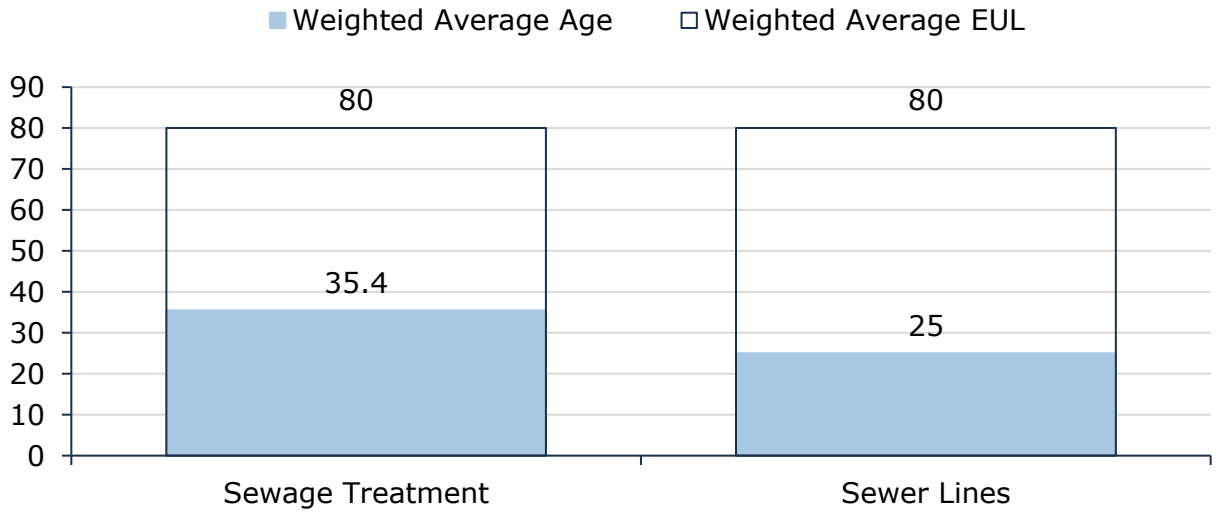


Figure 46: Sanitary Network Average Age vs Average EUL

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

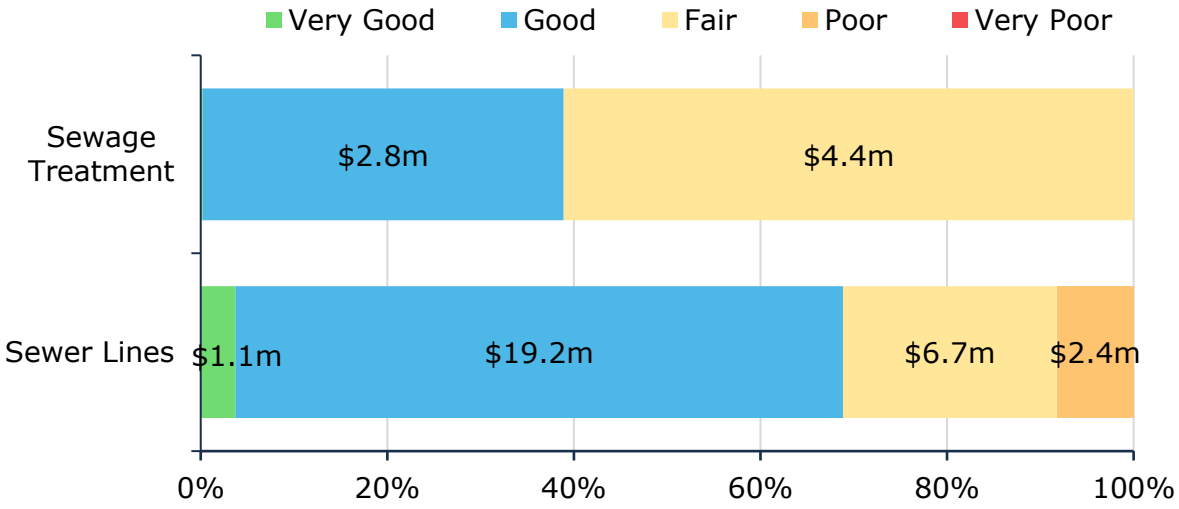


Figure 47: Sanitary Network Condition Breakdown

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

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.

8.3.1. Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The Township employs an annual CCTV inspection strategy for its underground infrastructure, rotating inspection locations throughout the township each year. Depending on findings and priorities, the extent of inspection coverage may vary from year to year, with more focus on critical areas or those with known issues. Data collected from CCTV inspections are analyzed to assess pipe condition, identify defects, and prioritize maintenance actions, ultimately optimizing asset performance and maximizing infrastructure lifespan.

8.4. Lifecycle Management Strategy

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

Maintenance / Rehabilitation / Replacement

- Cleaning and flushing of collection systems is performed annually to remove debris, sediment, and other accumulations that can impair flow and lead to blockages or backups. This maintenance activity minimizes the risk of service disruptions.
- Regular inspections of sanitary mains are conducted, involving visual assessments of the condition of the mains, including the detection of structural defects, leaks, or other issues that may compromise system integrity.
- Inspections and cleaning and flushing activities are typically carried out through a partnership between the Township and OCWA, leveraging the expertise and resources of both entities.
- Replacement activities are identified based on an analysis of breakdown rates as well as any issues identified during regular maintenance activities

Figure 48: Sanitary Network Current Lifecycle Strategy

8.5. Forecasted Capital Requirements

The annual capital requirement represents the average amount per year that North Stormont should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 55 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average capital requirements at $654 thousand. 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) for the annual capital investment needed to maintain current levels of service.

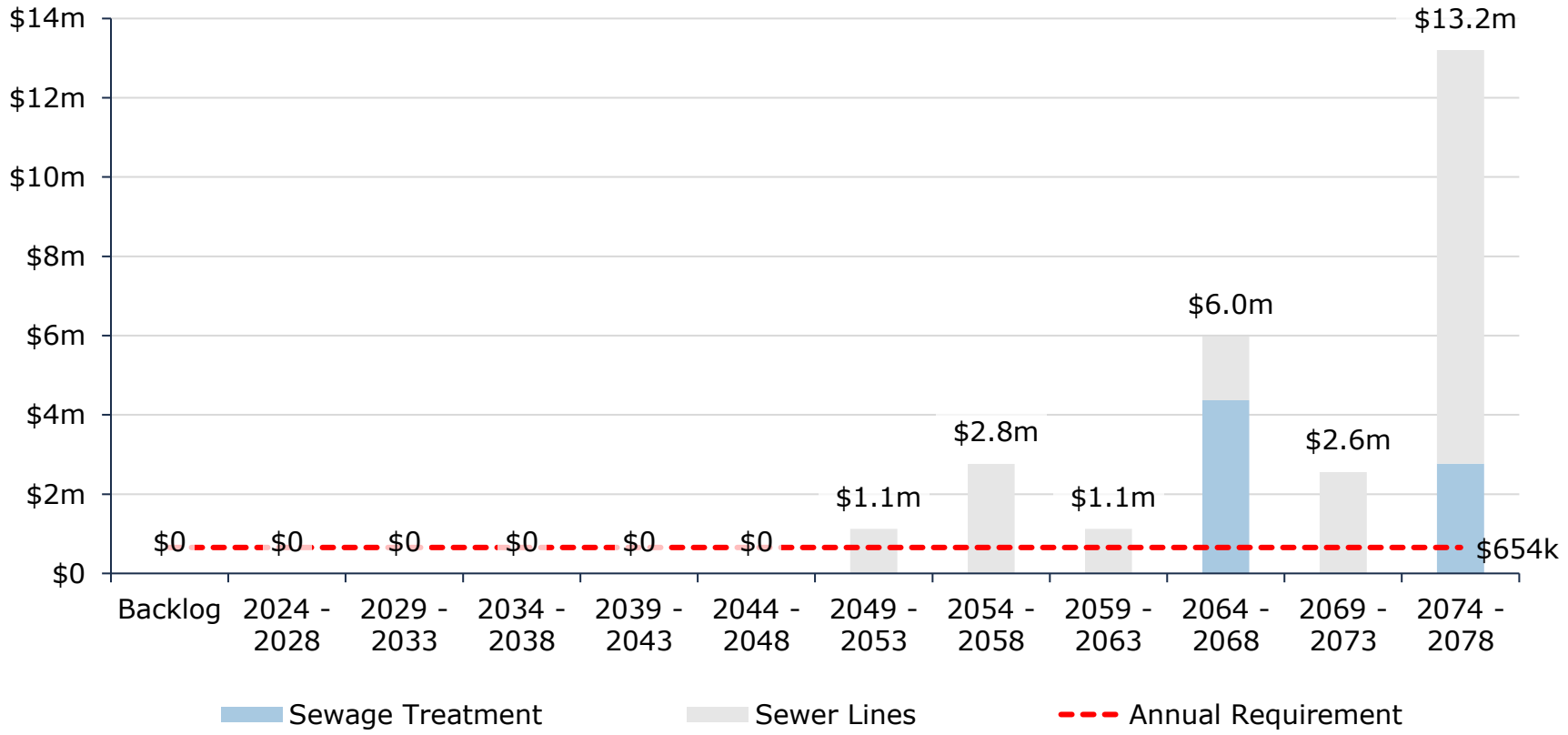


Figure 49 Sanitary Network Forecasted Capital Replacement Requirements

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.

Segment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Sewage Treatment	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sewer Lines	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Table 28: Sanitary Network System-Generated 10-Year Capital Costs

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 sanitary network assets.

8.6. 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 D: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

1 - 4 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$14,733,303 (40%)	$10,186,594 (28%)	$5,905,855 (16%)	$5,757,482 (16%)	- (0%)

Figure 50: Sanitary Network 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 Township to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

8.6.1. Risks to Current Asset Management Strategies

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

Aging Infrastructure

The aging of the Moose Creek Lagoon has led to a notable rise in operating and maintenance costs for the Township. Given the critical role of these lagoons in wastewater treatment, the Township recognizes the urgency of addressing this issue. Efforts are underway to secure funding for the replacement of the aging lagoon infrastructure, aiming to improve operational efficiency, ensure regulatory compliance, and mitigate financial risks associated with ongoing maintenance and potential environmental impact.

Growth

The Township is expected to experience low-moderate growth. Expected population growth will increase the demand on sanitary services, specifically the Moose Creek lagoon. As the population continues to grow, the Township must prioritize expanding its capacity to serve a larger population. Staff are working towards developing a comprehensive long-term capital plan with considerations for growth.

8.7. Current Levels of Service

The following tables identify the Township's metrics to identify their current level of service for the Sanitary Network.

8.7.1. Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS
Scope	Description, which may include maps, areas of the municipality that are connected to the municipal wastewater system	The Urban Settlement Areas of Crysler, Finch, and Moose Creek in the Township of North Stormont receive sanitary services. See Appendix B.
Reliability	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.	The Township does not own any combined sewers.
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches.	
	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 into sanitary sewers due to cracks in sanitary mains or through indirect connections (e.g. weeping tiles). In the case of heavy rainfall events, sanitary sewers may experience a volume of water and sewage that exceeds its designed capacity. In some cases, this can cause water and/or sewage to overflow backup into homes. The disconnection of weeping tiles from sanitary mains and the use of sump pumps and pits directing storm water to the storm drain system can help to reduce the chance of overflow.
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to avoid stormwater infiltration	The municipality adheres to specific design standards that incorporate appropriate overflows when constructing or replacing sanitary sewers. These standards have been determined with consideration of the minimization of sewage overflows and backups.
	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system.	Effluent refers to water pollution that is discharged from a wastewater treatment plant, and may include suspended solids, total phosphorous and biological oxygen demand. The Environmental Compliance Approval (ECA) identifies the effluent criteria for municipal wastewater treatment plants.

Table 29: Sanitary Network Community Levels of Service

8.7.2. Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2023)
Scope	% of properties connected to the municipal wastewater systems	18%
Reliability	# 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	NA
	# of connection-days per year with sanitary main backups compared to the total number of properties connected to the municipal wastewater system	0 : 525
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0 : 525
	Average Condition Rating	Good (61%)
Performance	Capital re-investment rate	0.19%

Table 30: Sanitary Network Technical Levels of Service

8.8. 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 Sanitary Network. Further PLOS analysis at the portfolio level can be found in Proposed Levels of Service Scenarios Section.

8.8.1. PLOS Scenarios Analyzed

Scenario	Description
Scenario 1: Achieving 50% Funding in 15 Years	This scenario assumes a phased rate increase of approximately 2.7% annually, reaching 50% funding within 15 years
Scenario 2: Achieving 75% Funding in 15 Years	This scenario assumes a phased rate increase of approximately 4.0% annually, reaching 75% funding within 15 years
Scenario 3: Achieving Full Funding in 15 Years	This scenario assumes a phased rate increase of approximately 5.1% annually, reaching full funding within 15 years

Table 31: PLOS Scenarios Analyzed

8.8.2. PLOS Analysis Results

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.

Scenario	Technical LOS Outcomes	Initial Value (2025)	10 Year Projection (2035)	25 Year Projection (2050)	Scenario Average
Scenario 1	Average Condition	60.22%	49.73%	33.99%	29.10%
	Average Asset Risk	7.27	9.18	11.72	11.76
	Average Annual Investment		$327,125		
	Capital re-investment rate		0.89%		
Scenario 2	Average Condition	60.22%	49.73%	40.87%	46.90%
	Average Asset Risk	7.27	9.18	10.01	9.11
	Average Annual Investment		$490,687		
	Capital re-investment rate		1.34%		
Scenario 3	Average Condition	60.22%	49.73%	40.87%	50.83%
	Average Asset Risk	7.27	9.18	10.01	8.61
	Average Annual Investment		$654,249		
	Capital re-investment rate		1.79%		

Table 32: Sanitary Network pLOS Scenario Analysis

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.

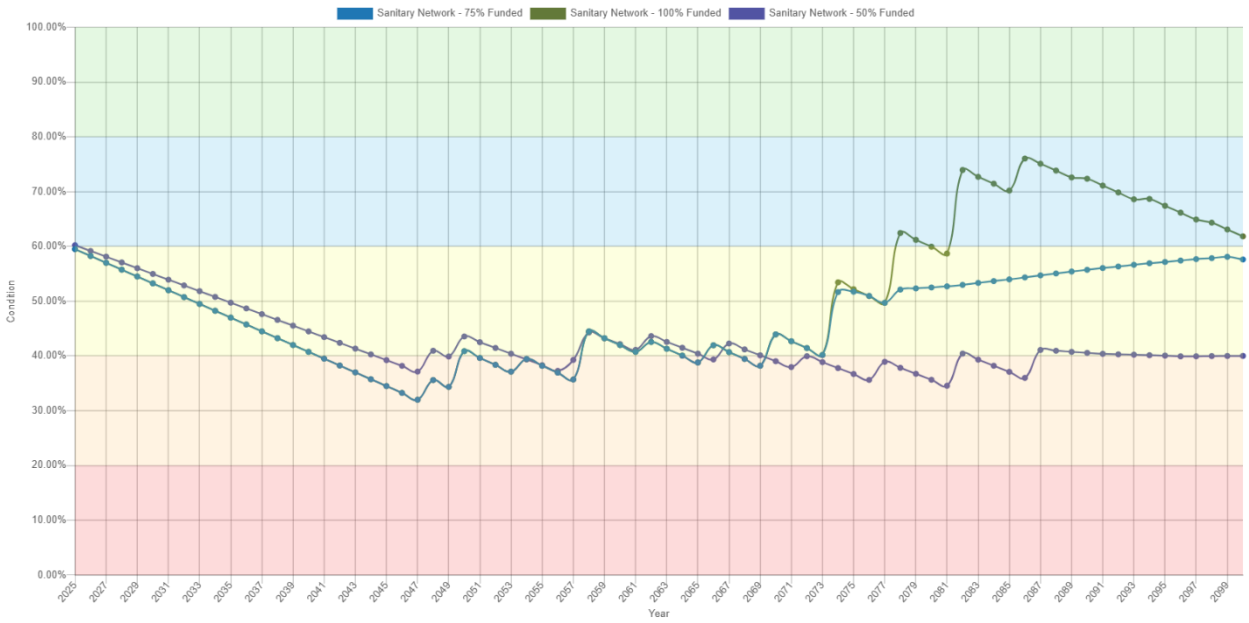


Figure 51: Sanitary Network Scenario Comparison

9. Storm Network

9.1. State of the Infrastructure

The Township is responsible for owning and maintaining a storm water network of 13km of storm sewer lines, storm culverts, catch basins, manholes and ditch inlets. This infrastructure is typically located within the Urban Settlement Areas of Crysler, Finch, Berwick, Avonmore, Monkland and Moose Creek.

The following summarizes the state of the infrastructure for the storm network, and the Township's ability to fund the proposed levels of service:

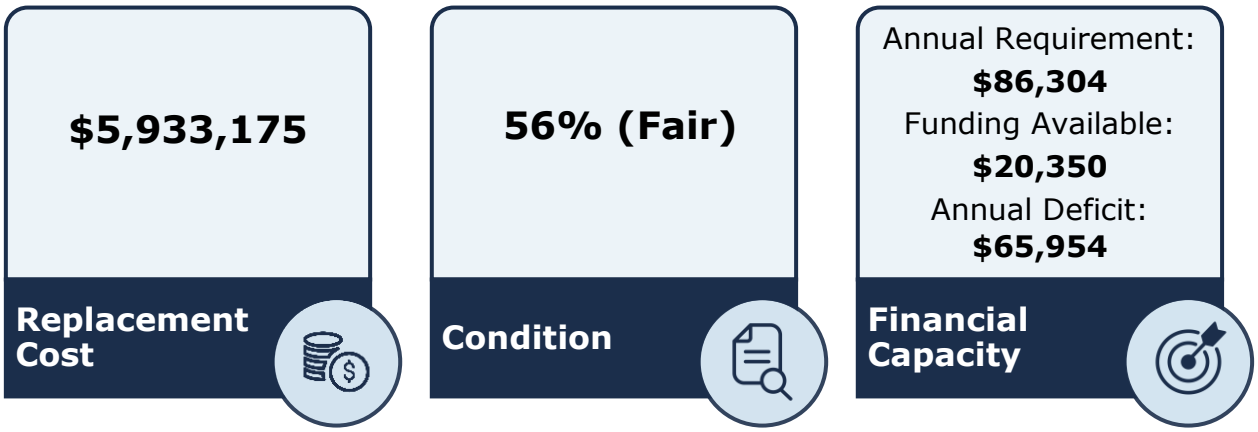


Figure 52: Storm Network State of the Infrastructure

9.2. Inventory & Valuation

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

Segment	Quantity	Unit of Measure	Primary Replacement Cost Method	Replacement Cost
Catchbasins	355	Quantity	CPI	$341,155
Culverts	6.3	Length	User-Defined	$1,189,463
Ditch Inlets	26	Quantity	CPI	$37,466
Manholes	55	Quantity	CPI	$48,590
Sewer Lines	13.1	Length	CPI	$4,316,501
Total				**$5,933,175**

Table 33: Storm Network Inventory

The graph below displays the total replacement cost of each asset segment in North Stormont's Storm Network inventory.

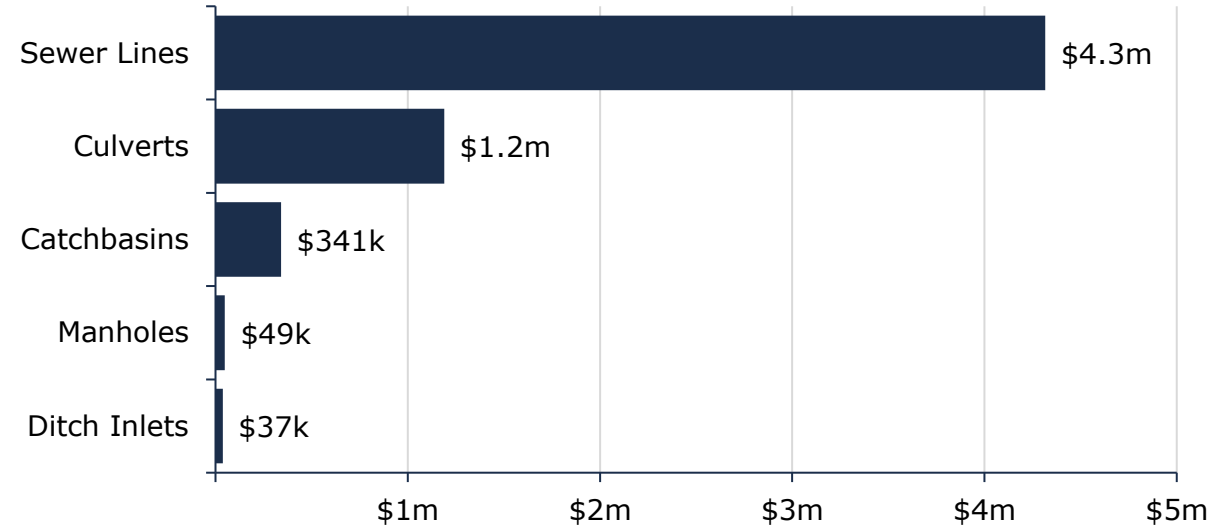


Figure 53: Storm Network Replacement Cost

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

9.3. Asset Condition & Age

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

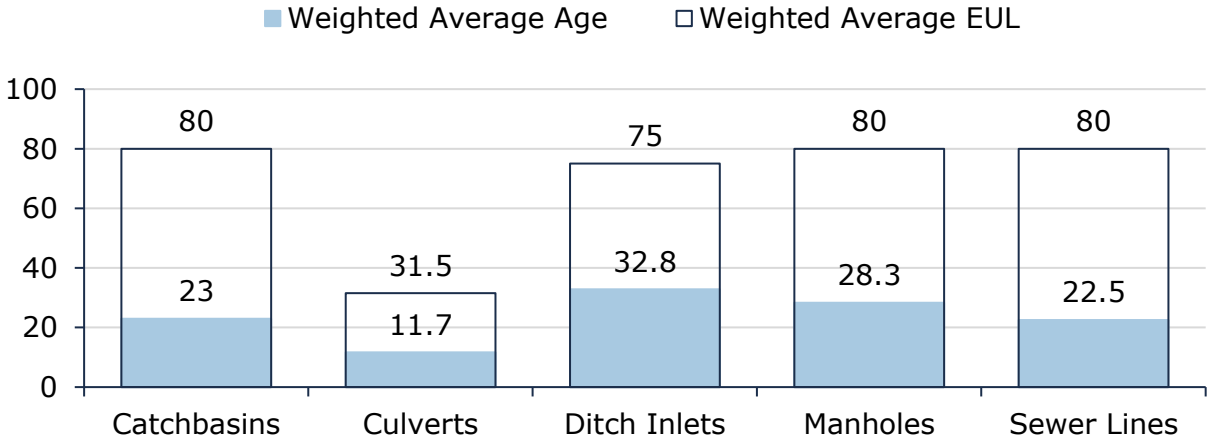


Figure 54: Storm Network Average Age vs Average EUL

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

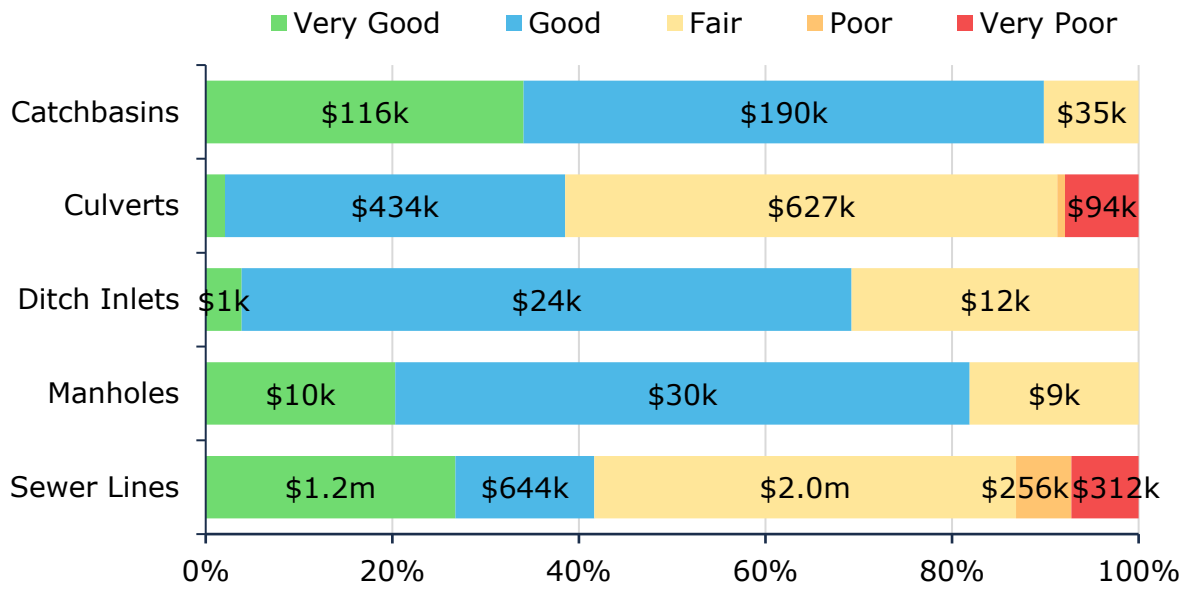


Figure 55: Storm Network Condition Breakdown

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

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.

9.3.1. 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. Storm sewer lines are inspected on an as-needed basis, in coordination with other water and sanitary assets. Regular inspections of storm ponds are conducted consistently at regular intervals.

9.4. Lifecycle Management Strategy

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

Maintenance / Rehabilitation / Replacement

- Routine maintenance within the storm network involves clearing catch basins and ditch inlets, particularly after significant storm events.
- The activities involved in managing buried storm sewer lines are initiated either through asset inspections or upon the identification of failures.
- Rehabilitation or replacement decisions are made in accordance with the asset's condition, particularly when it falls below a fair rating, or as part of carefully planned reconstruction initiatives.

Figure 56: Storm Network Current Lifecycle Strategy

9.5. Forecasted Capital Requirements

The annual capital requirement represents the average amount per year that North Stormont should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 80 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average capital requirements at $115k. 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) for the annual capital investment needed to maintain current levels of service.

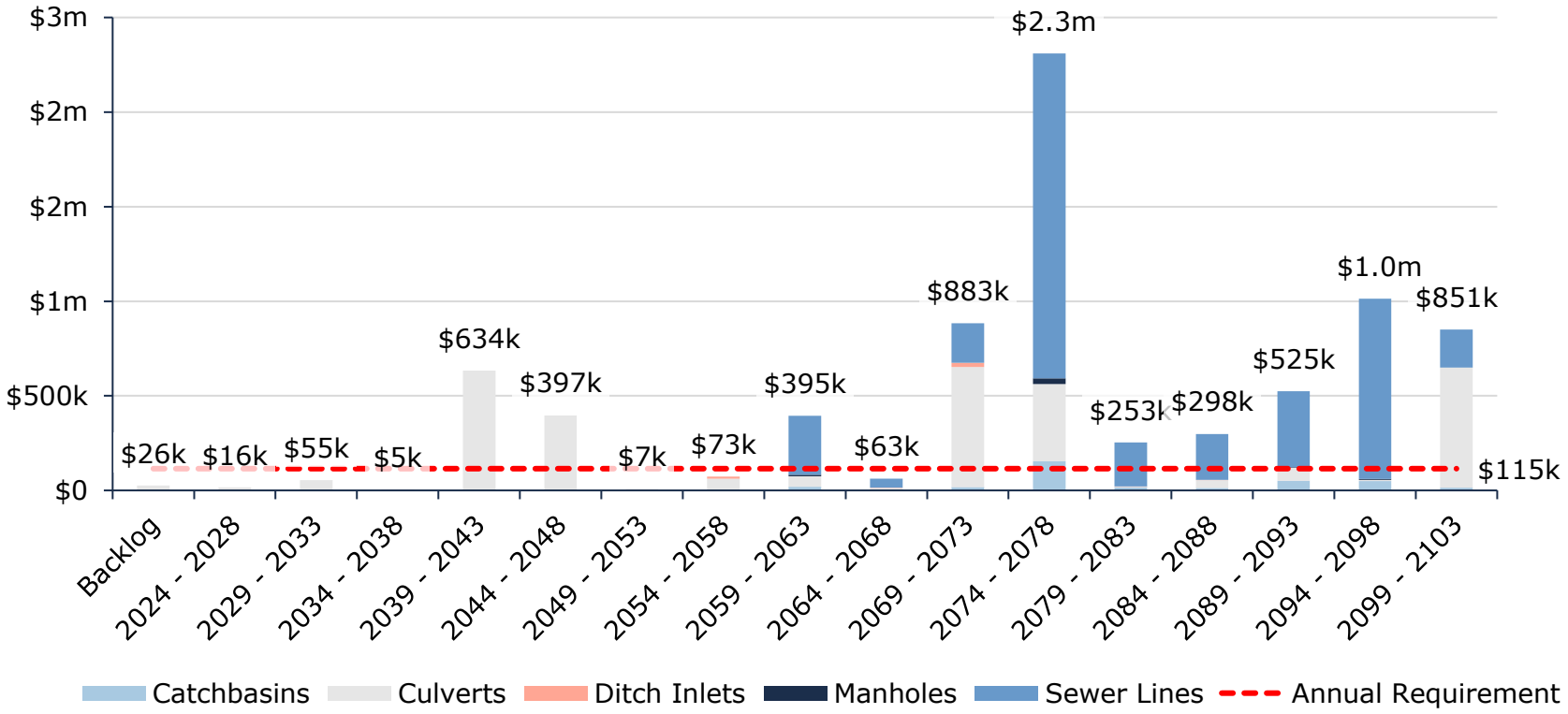


Figure 57: Storm Network Forecasted Capital Replacement Requirements

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.

Segment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Catchbasins	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Culverts	$0	$13k	$0	$3k	$0	$0	$52k	$3k	$0	$0
Ditch Inlets	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Manholes	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sewer Lines	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	$0	**$13k**	**$0**	**$3k**	**$0**	**$0**	**$52k**	**$3k**	**$0**	**$0**

Table 34: Storm Network System-Generated 10-Year Capital Costs

These projections are generated in Citywide and rely on the data available in the asset register. Aged-based condition and limited assessed condition data and replacement costs were used to assist in forecasting replacement needs for storm sewer lines assets.

9.6. 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 D: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

1 - 4 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$3,876,552 (65%)	$1,283,755 (22%)	$354,667 (6%)	$360,232 (6%)	$57,969 (<1%)

Figure 58: Storm Network Risk Matrix

This is a high-level model developed by Township staff and it should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure. The identification of critical assets allows the Township to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

9.7. Current Levels of Service

The following tables identify the Township's metrics to identify their current level of service for the Storm Network.

9.7.1. Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS
Scope	Description, which may include map, of the user groups or areas of the municipality that are protected from flooding, including the extent of protection provided by the municipal stormwater system	The Township's protection against flooding extends to various user groups residing in settlement areas, facilitated by the placement of underground linear stormwater assets and associated structures along roadways. Additionally, the inclusion of minor culverts across the township's road network aids in effectively managing stormwater runoff from properties and roadways.

Table 35: Storm Network Community Levels of Service

9.7.2. Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS
Scope	% of properties in municipality resilient to a 100-year storm	66%
	% of the municipal stormwater management system resilient to a 5-year storm	100%
Quality	Average condition of stormwater assets	Fair (56%)
Performance	Capital reinvestment rate	0.34%

Table 36: Storm Network Technical Levels of Service

9.8. 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 Storm Network. Further PLOS analysis at the portfolio level can be found in Proposed Levels of Service Scenario Analysis.

9.8.1. PLOS Scenarios Analyzed

Scenario	Description
Scenario 1: Maintaining Current Funding Level	This scenario assumes a stable funding level maintained at approximately 46.7%, with no phased tax increases over the projection period.
Scenario 2: Achieving 75% Funding in 15 Years	This scenario assumes a phased tax increase of approximately 0.8% annually, reaching 75% funding within 15 years
Scenario 3: Achieving Full Funding in 15 Years	This scenario assumes a phased tax increase of approximately 2.1% annually, reaching full funding within 15 years

Table 37: PLOS Scenarios Analyzed

9.8.2. PLOS Analysis Results

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.

Scenario	Technical LOS Outcomes	Initial Value (2025)	10 Year Projection (2035)	25 Year Projection (2050)	Scenario Average
Scenario 1	Average Condition	65.65%	52.06%	35.47%	27.59%
	Average Asset Risk	3.9	4.19	4.27	4.32
	Average Annual Investment		$20,350		
	Capital re-investment rate		0.34%		
Scenario 2	Average Condition	65.65%	53.72%	41.64%	34.54%
	Average Asset Risk	3.9	4.11	3.99	4.17
	Average Annual Investment		$86,304		
	Capital re-investment rate		1.45%		
Scenario 3	Average Condition	65.65%	55.16%	42.18%	43.16%
	Average Asset Risk	3.9	4.04	3.97	4.02
	Average Annual Investment		$115,072		
	Capital re-investment rate		1.94%		

Table 38: Storm Network pLOS Scenario Analysis

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.

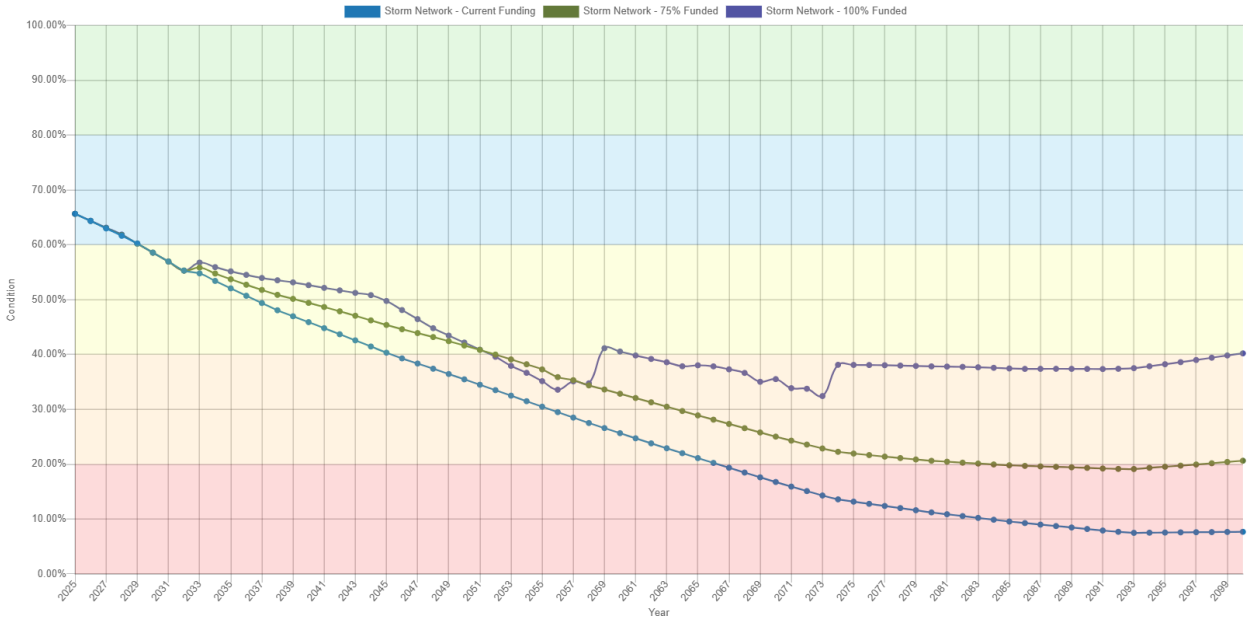


Figure 59: Stormwater Network Scenario Comparison

10. Buildings

10.1. State of the Infrastructure

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

- General Government buildings such as administration offices
- Protection buildings such as fire stations in Avonmore, Crysler, Finch and Moose Creek
- Transportation buildings such as public works garages and storage sheds
- Recreation facilities such as North Stormont Place, the Crysler arena and other community centres

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

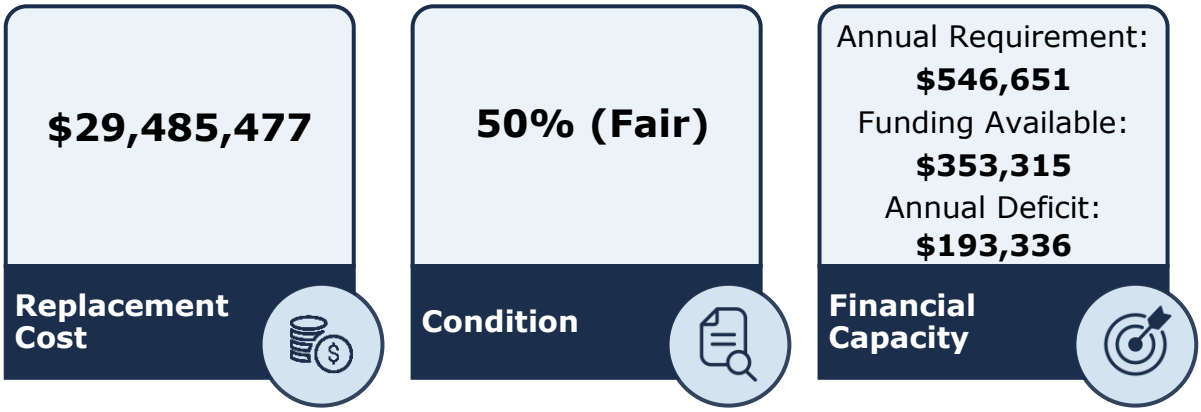


Figure 60: Buildings State of the Infrastructure

10.2. Inventory & Valuation

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

Segment	Quantity	Unit of Measure	Primary Replacement Cost Method	Replacement Cost
General Government	2	Quantity	User-Defined	$1,714,929
Protection	5	Quantity	User-Defined	$3,373,308
Recreation	12	Quantity	User-Defined	$20,870,051
Transportation	7	Quantity	User-Defined	$3,527,188
Total				**$29,485,477**

Table 39: Buildings Inventory

The graph below displays the total replacement cost of each asset segment in North Stormont's buildings inventory.

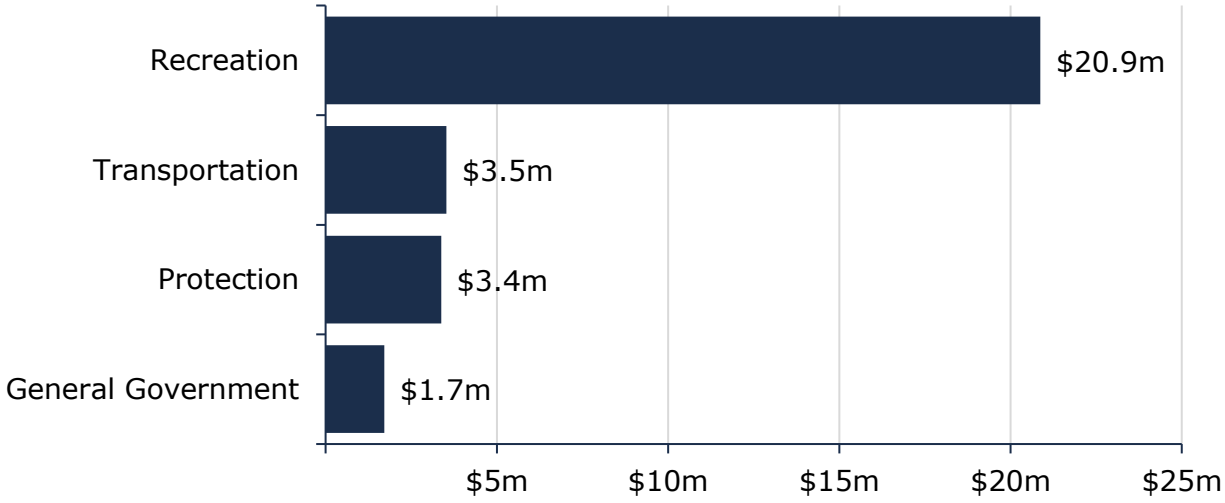


Figure 61: Buildings Replacement Cost

10.3. 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.

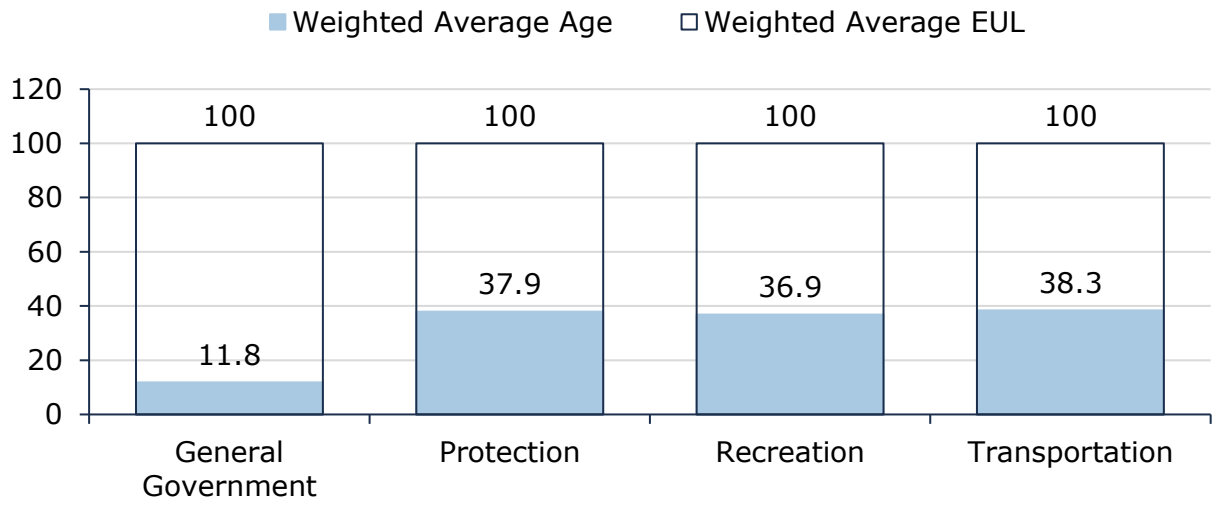


Figure 62: Buildings Average Age vs Average EUL

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

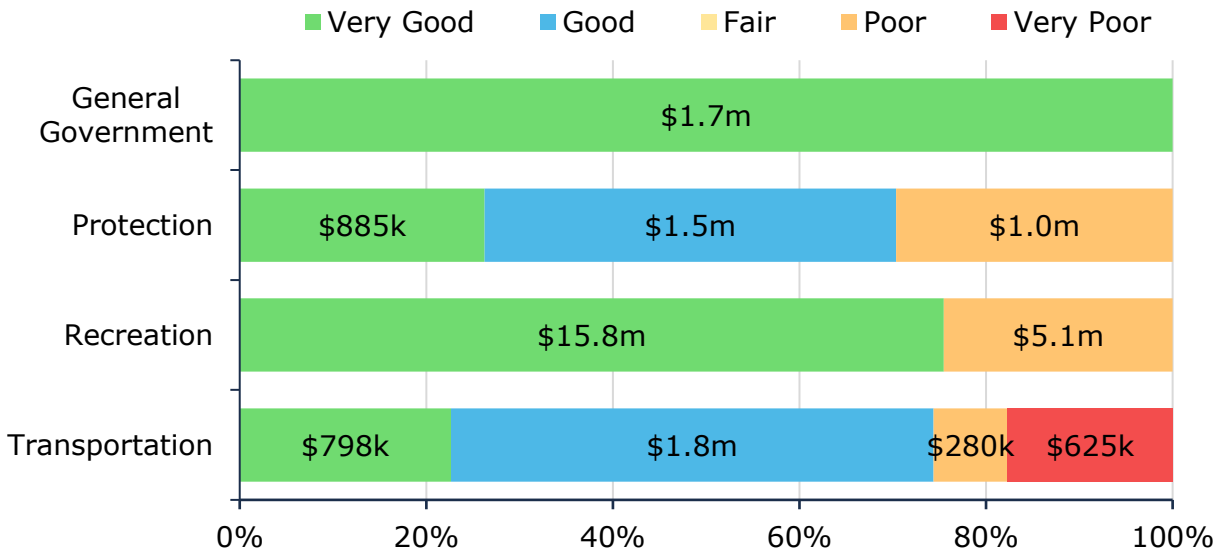


Figure 63: Buildings Condition Breakdown

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

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

10.3.1. 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. Regular inspections of Health & Safety building conditions are conducted, with a focus on ensuring compliance with safety regulations and standards, particularly in Fire Halls. These mandated inspections ensure that facilities are adequately equipped to respond to emergencies effectively and maintain a safe environment for occupants.

10.4. Lifecycle Management Strategy

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

Maintenance / Rehabilitation / Replacement

- Heating systems and other component systems undergo annual inspections to maintain efficiency and safety standards, promoting occupant comfort and energy efficiency.
- Buildings are repaired as needed, addressing deficiencies identified by experts, staff, or residents, contingent on available funding. Immediate attention is given to urgent issues, ensuring quick resolution based on the level of urgency.
- Upgrades to buildings are facilitated through funding, allowing the Township to enhance infrastructure while optimizing resource allocation.

Figure 64: Buildings Current Lifecycle Strategy

10.5. Forecasted Capital Requirements

The annual capital requirement represents the average amount per year that North Stormont should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 80 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average capital requirements at $729 thousand. 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) for the annual capital investment needed to maintain current levels of service.

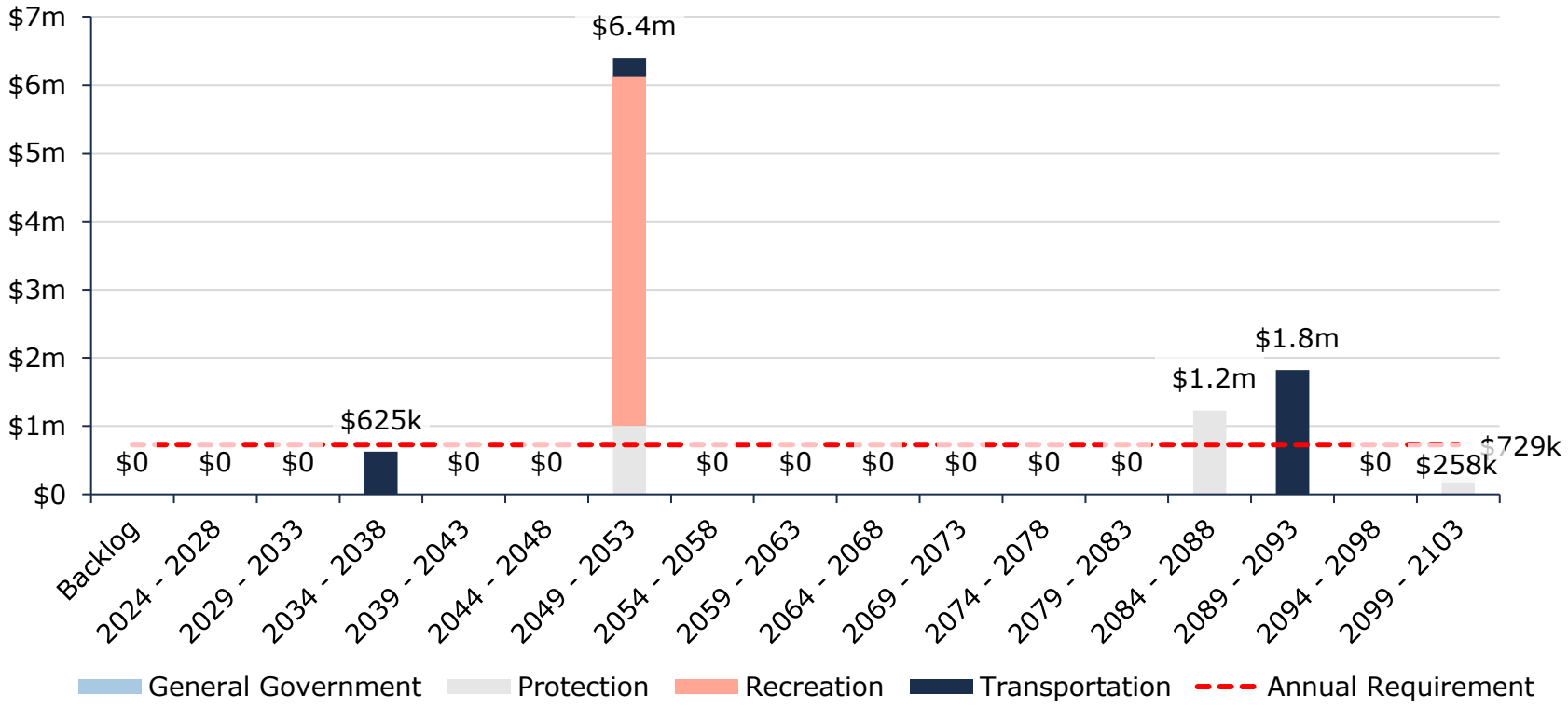


Figure 65: Buildings Forecasted Capital Replacement Requirements

Table 40 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.

Segment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
General Government	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Protection	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Recreation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Transportation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Table 40 Buildings System-Generated 10-Year Capital Costs

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.

10.6. 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 D: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

1 - 4	5 - 7	8 - 9	10 - 14	15 - 25
Very Low	**Low**	**Moderate**	**High**	**Very High**
$5,121,252 (17%)	$1,452,241 (5%)	$1,779,925 (6%)	$8,989,809 (30%)	$12,142,250 (41%)

Figure 66: Buildings Risk Matrix

This is a high-level model developed by Township staff and it should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure. The identification of critical assets allows the Township to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

1.1.1. Risks to Current Asset Management Strategies

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

Climate Change & Extreme Events

The Township of North Stormont is located within a derecho-prone region. Strong winds associated with derechos can cause significant damage to buildings and other structures. Roofs may be torn off, windows shattered, and walls damaged, posing risks to occupants and leading to costly repairs.

10.7. Current Levels of Service

The following tables identify the Township's metrics to identify their current level of service for municipal Buildings.

10.7.1. Community Levels of Service

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

Service Attribute	Technical Metric	Current LOS
Scope	Description of the current condition of municipal buildings and the plans that are in place to maintain or improve the provided level of service	The overall condition of the buildings in the Township are fair. Township staff are currently in the planning stages of implementing formal building condition assessments to identify required maintenance and rehabilitation activities to ensure the state of the buildings remains in adequate condition

Table 41 Buildings Community Levels of Service

10.7.2. Technical Levels of Service

The quantitative metrics that determine the technical level of service provided by the buildings in North Stormont are going to be the analysis of reinvestment rates, asset performance (condition breakdown) and asset risk levels.

Service Attribute	Technical Metric	Current LOS
Scope	Average Condition Rating	Fair (50%)
Quality	Average Risk Rating	Moderate (12.12)
Performance	Capital re-investment rate	1.2%

Table 42 Buildings Technical Levels of Service

10.8. 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.

10.8.1. PLOS Scenarios Analyzed

Scenario	Description
Scenario 1: Maintaining Current Funding Level	This scenario assumes a stable funding level maintained at approximately 46.7%, with no phased tax increases over the projection period.
Scenario 2: Achieving 75% Funding in 15 Years	This scenario assumes a phased tax increase of approximately 0.8% annually, reaching 75% funding within 15 years
Scenario 3: Achieving Full Funding in 15 Years	This scenario assumes a phased tax increase of approximately 2.1% annually, reaching full funding within 15 years

Table 43: PLOS Scenarios Analyzed

10.8.2. PLOS Analysis Results

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.

Scenario	Technical LOS Outcomes	Initial Value (2025)	10 Year Projection (2035)	25 Year Projection (2050)	Scenario Average
Scenario 1	Average Condition	46.77%	31.86%	11.06%	11.86%
	Average Asset Risk	12.41	15.69	19.68	19.1
	Average Annual Investment		$353,315		
	Capital re-investment rate		1.20%		
Scenario 2	Average Condition	46.77%	41.03%	36.79%	43.36%
	Average Asset Risk	12.41	14.37	15.3	13.57
	Average Annual Investment		$546,651		
	Capital re-investment rate		1.85%		
Scenario 3	Average Condition	64.56%	59.28%	70.44%	62.28%
	Average Asset Risk	6.49	8.03	5.64	7.04
	Average Annual Investment		$728,868		
	Capital re-investment rate		2.47%		

Table 44: Buildings pLOS Scenario Analysis

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.

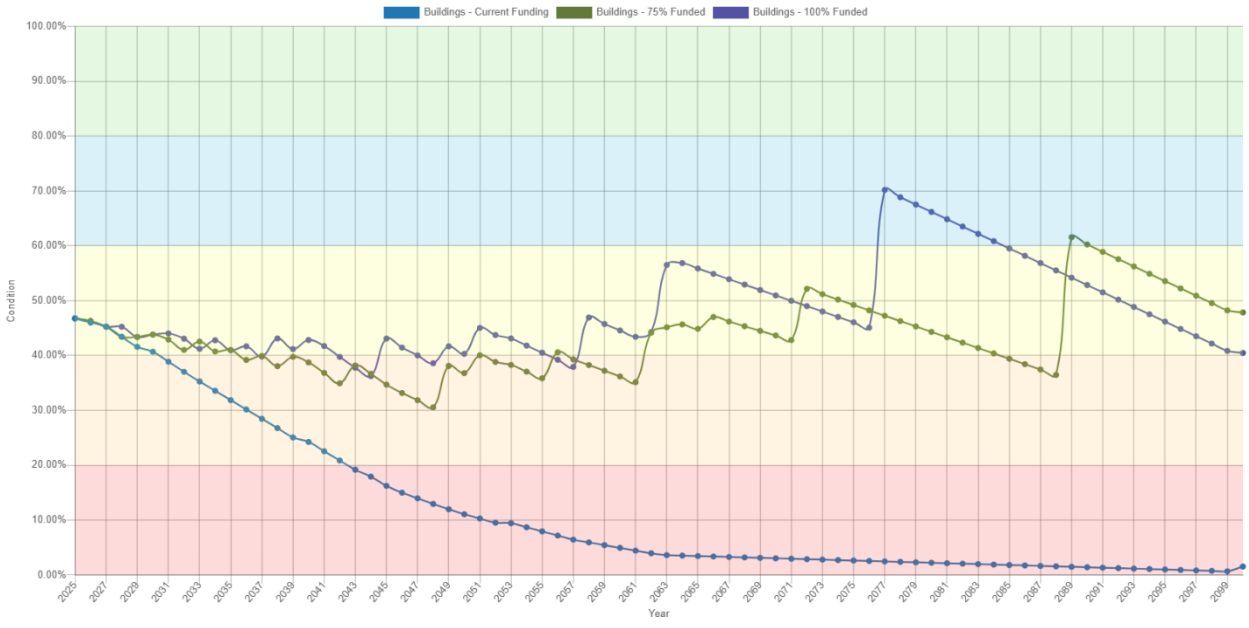


Figure 67: Buildings Scenario Comparison

11. Land Improvements

11.1. State of the Infrastructure

North Stormont's land improvement infrastructure is made up of playground equipment, skating rinks, docks and boat launches, as well as general improvements such as fencing and parking lots.

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

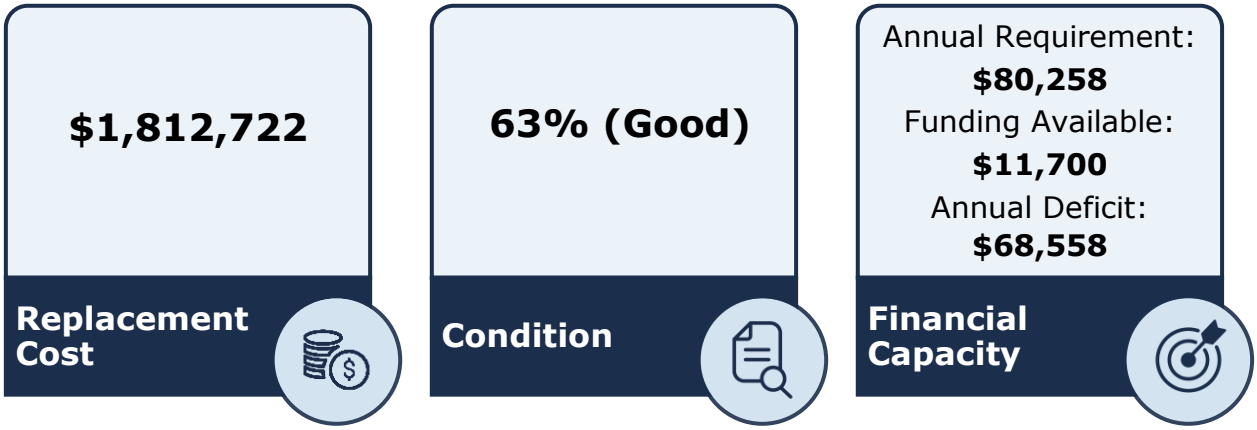


Figure 68: Land Improvements State of the Infrastructure

11.2. Asset Inventory & Valuation

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

Segment	Quantity	Unit of Measure	Primary Replacement Cost Method	Replacement Cost
Outdoor Structures	12	Quantity	User-Defined	$1,287,277
Parks	4	Quantity	User-Defined	$106,657
Play Structures	4	Quantity	User-Defined	$352,940
Sports Fields & Courts	3	Quantity	User-Defined	$65,849
Total				**$1,812,722$**

Table 45: Land Improvements Inventory

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

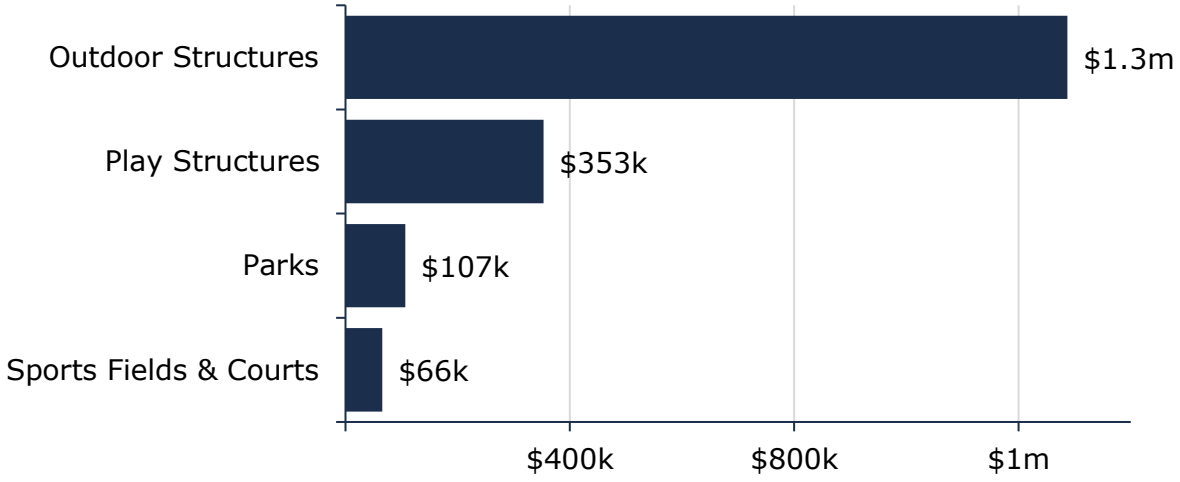


Figure 69: Land Improvements Replacement Cost

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

11.3. 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.

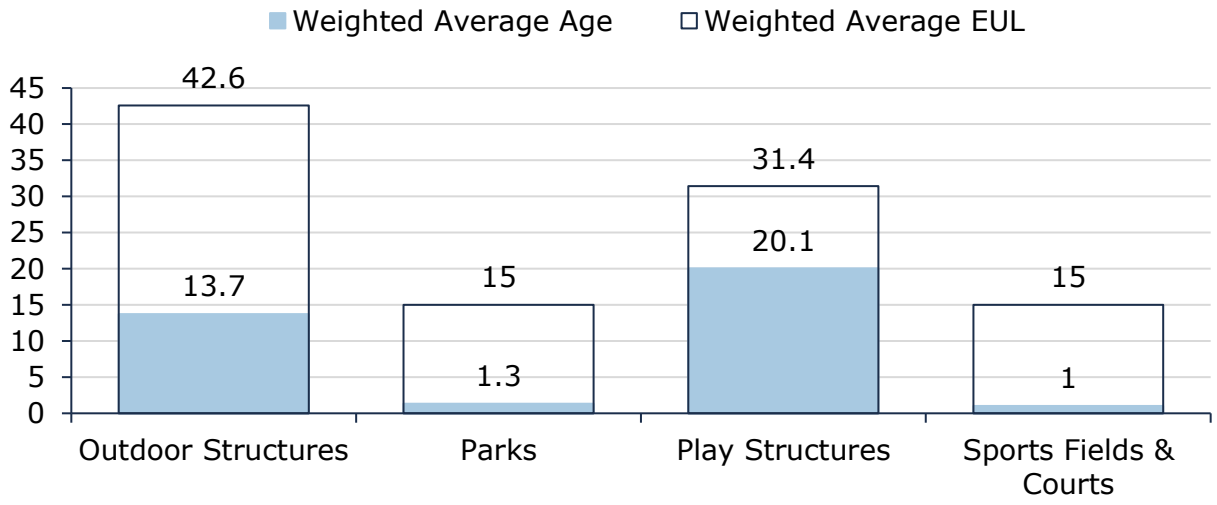


Figure 70: Land Improvements Average Age vs Average EUL

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.

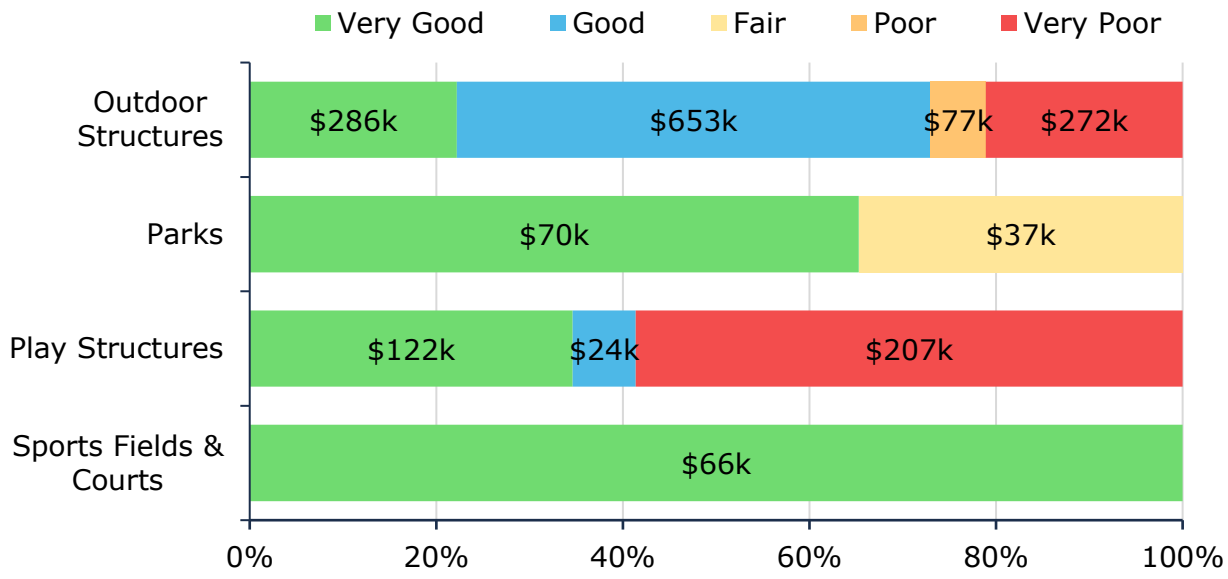


Figure 71: Land Improvement Condition Breakdown

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

11.3.1. Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets. Due to the varied nature of the asset category the assets are managed individually. The Township implements a thorough condition assessment strategy for its playgrounds and parks, including daily, weekly, and monthly inspections, along with an annual comprehensive inspection conducted in accordance with CAN/CSA Z614 standards. Internal staff, accredited by CPRA and trained in accessibility standards, perform regular inspections, except for the annual comprehensive assessment which is completed by an external third-party. To ensure accessibility, all surfacing is compliant with AODA standards, with a target of 90% compliance across all facilities. This proactive approach ensures the safety, functionality, and accessibility of township playgrounds and parks, promoting enjoyable recreational experiences for residents and visitors alike.

11.4. 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 North Stormont's current lifecycle management strategy.

Maintenance / Rehabilitation / Replacement

- This asset category's lifecycle requirements are dealt with on a case-by-case basis.

Figure 72: Land Improvements Current Lifecycle Strategy

11.5. Forecasted Capital Requirements

The Figure below illustrates the cyclical short-, medium- and long-term infrastructure replacement requirements for the Township's land improvement infrastructure. This analysis was run until 2043 to capture at least one iteration of replacement for the longest-lived asset in the asset register. North Stormont's average annual requirements (red dotted line) total $107 thousand for all land improvement assets. 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) for the annual capital investment needed to maintain current levels of service.

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

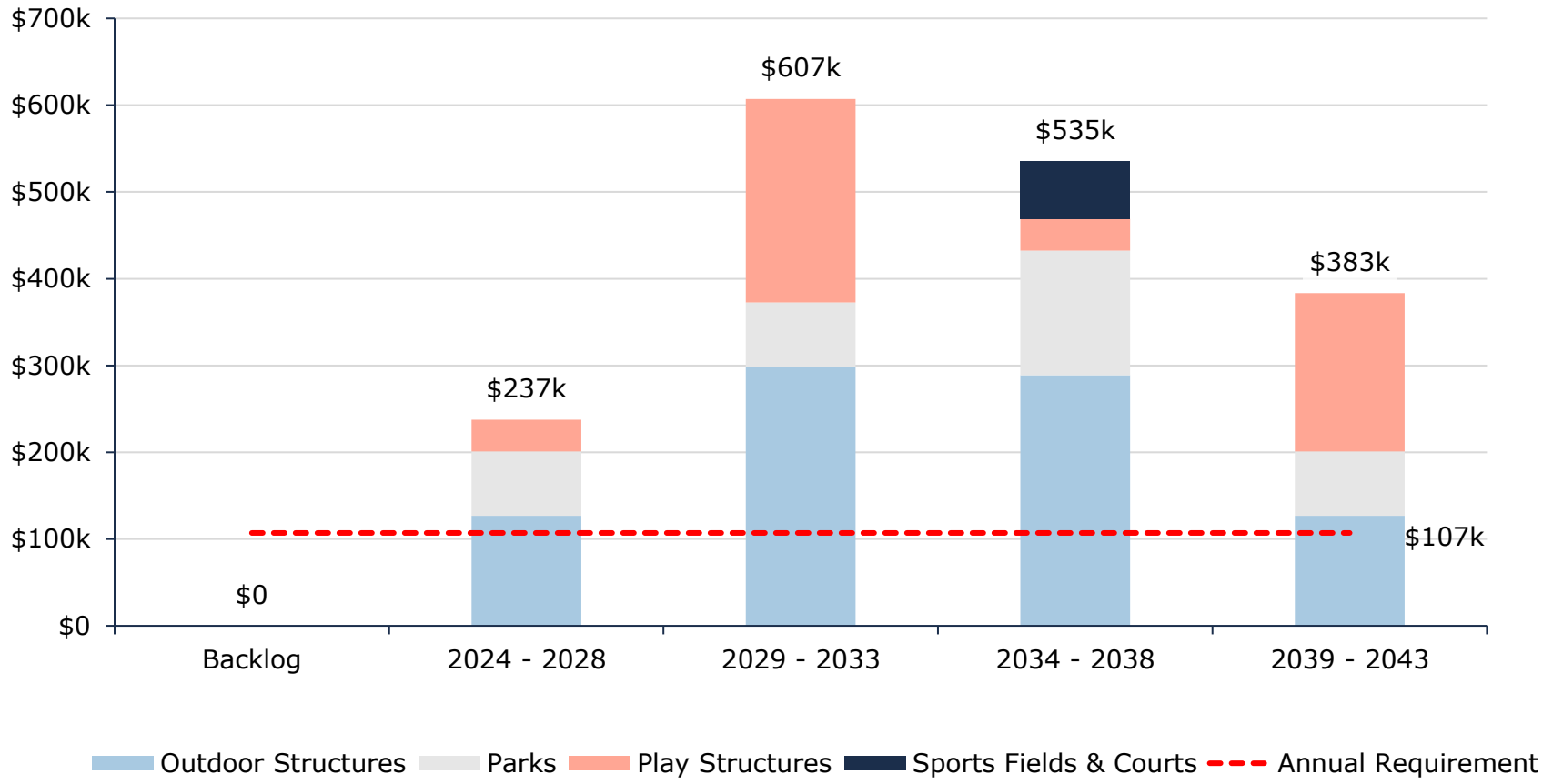


Figure 73: Land Improvements Forecasted Capital Replacement Requirements

It is unlikely that all land improvements will need to be replaced as forecasted. Coordinated projects may help drive replacements and rehabilitations.

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 asset age, replacement cost, and useful life.

Segment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Outdoor Structures	$32k	$32k	$32k	$32k	$0	$32k	$32k	$204k	$32k	$0
Parks	$0	$37k	$0	$37k	$0	$0	$37k	$0	$37k	$0
Play Structures	$9k	$9k	$9k	$9k	$0	$9k	$9k	$207k	$9k	$0
Sports Fields & Courts	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	**$41k**	**$78k**	**$41k**	**$78k**	**$0**	**$41k**	**$78k**	**$410k**	**$78k**	**$0**

Table 46 Land Improvements System-Generated 10-Year Capital Costs

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

11.6. 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 D: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

1 - 4 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$567,485 (31%)	$77,860 (4%)	- (0%)	$797,726 (44%)	$369,651 (20%)

Figure 74: Land Improvement Risk Matrix

This is a high-level model developed by Township staff and it should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure. The identification of critical assets allows the Township to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

11.7.Current Levels of Service

The following tables identify the Township's metrics to identify their current level of service for Land Improvement assets.

11.7.1. Community Levels of Service

The following table outlines the quantitative metrics that determine the community level of service provided by the municipal Land Improvements.

Service Attribute	Technical Metric	Current LOS
Scope	Description of the current condition of land improvement assets and the plans that are in place to maintain or improve the provided level of service	The overall condition of land improvements in the Township are moderate. Consistent inspections performed by the Township ensure that Land Improvement assets remain in an adequate state of repair.

Table 47 Land Improvements Community Levels of Service

11.7.2. Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS
Scope	Average Condition Rating	Good (63%)
Quality	Average Risk Rating	Moderate (8.54)
Performance	Capital re-investment rate	0.65%

Table 48 Land Improvements Technical Levels of Service

11.8. 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 Land Improvement assets. Further PLOS analysis at the portfolio level can be found in Proposed Levels of Service Scenario Analysis.

11.8.1. PLOS Scenarios Analyzed

Scenario	Description
Scenario 1: Maintaining Current Funding Level	This scenario assumes a stable funding level maintained at approximately 46.7%, with no phased tax increases over the projection period.
Scenario 2: Achieving 75% Funding in 15 Years	This scenario assumes a phased tax increase of approximately 0.8% annually, reaching 75% funding within 15 years
Scenario 3: Achieving Full Funding in 15 Years	This scenario assumes a phased tax increase of approximately 2.1% annually, reaching full funding within 15 years

Table 49: PLOS Scenarios Analyzed

11.8.2. PLOS Analysis Results

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.

Scenario	Technical LOS Outcomes	Initial Value (2025)	10 Year Projection (2035)	25 Year Projection (2050)	Scenario Average
Scenario 1	Average Condition	61.00%	28.52%	10.93%	30.35%
	Average Asset Risk	8.23	12.53	16.51	13.24
	Average Annual Investment		$11,700		
	Capital re-investment rate		0.65%		
Scenario 2	Average Condition	61.00%	37.29%	31.89%	38.96%
	Average Asset Risk	8.23	11.39	13.88	12.13
	Average Annual Investment		$80,258		
	Capital re-investment rate		4.43%		
Scenario 3	Average Condition	61.00%	44.88%	38.62%	45.34%
	Average Asset Risk	8.23	10.84	13.5	11.39
	Average Annual Investment		$107,010		
	Capital re-investment rate		5.90%		

Table 50: Land Improvements pLOS Scenario Analysis

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.

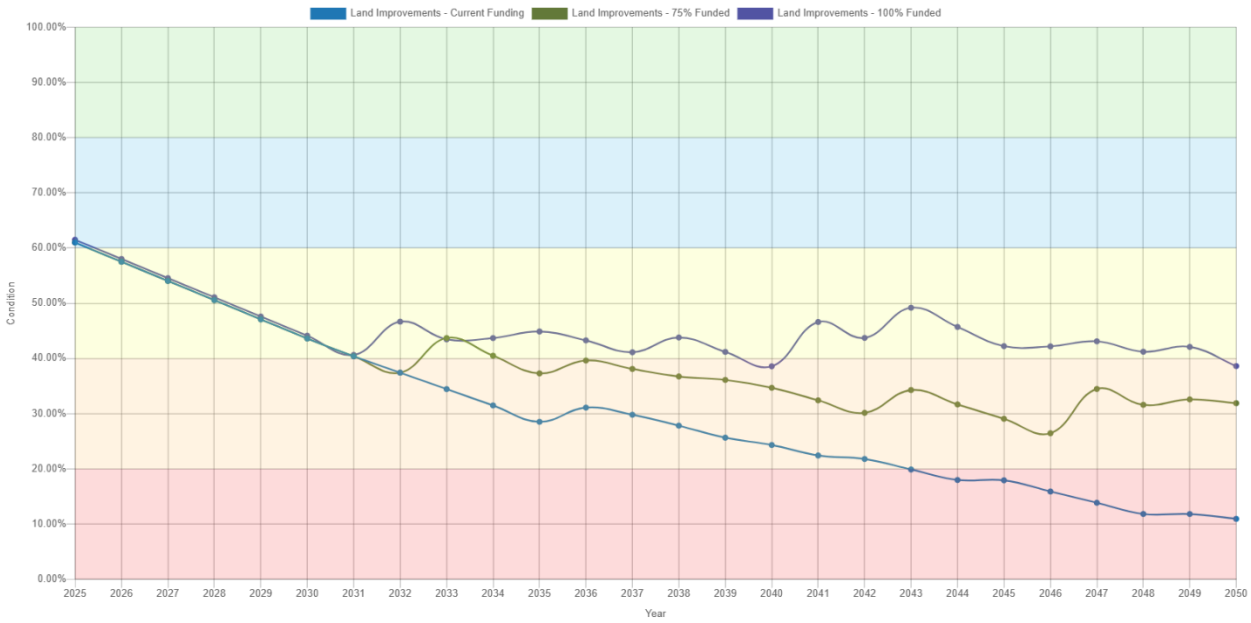


Figure 75: Land Improvements Scenario Comparison

12. Machinery & Equipment

12.1. State of the Infrastructure

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

- Computers, furniture and phone systems to support municipal services
- Snowplows and landscaping equipment to support roadway maintenance
- Equipment for the fire department to effectively respond to emergencies
- Landfill equipment to support solid waste disposal management
- Zamboni and pool pumps for recreational services

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

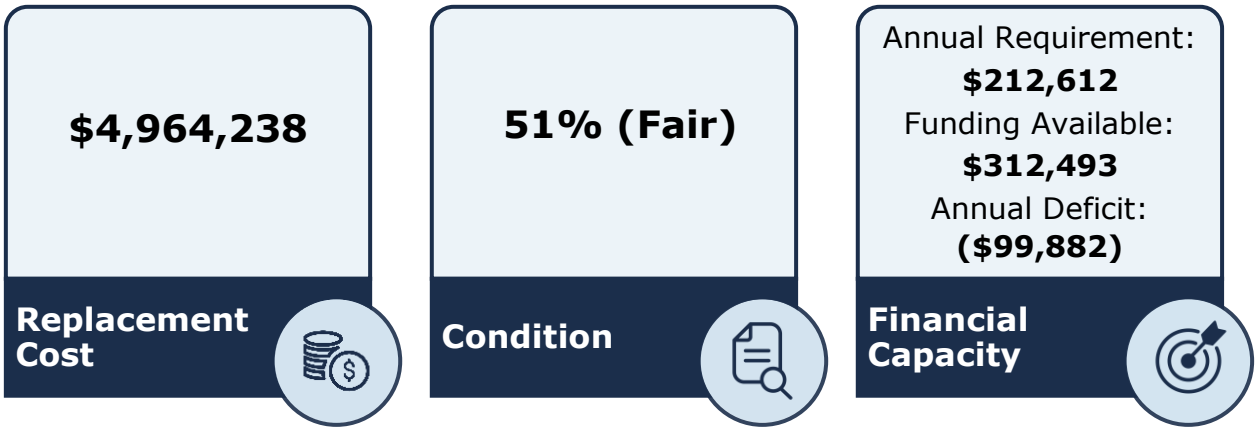


Figure 76: Machinery & Equipment State of the Infrastructure

12.2. Inventory & Valuation

The table below includes the quantity, replacement cost method and total replacement cost of each asset segment in the Township's Machinery & Equipment:

Segment	Quantity	Unit of Measure	Primary Replacement Cost Method	Replacement Cost
General Government	18	Quantity	CPI	$157,071
Protection	33	Quantity	CPI	$1,503,444
Recreation	24	Quantity	User-Defined	$1,011,687
Transportation	37	Quantity	CPI	$2,292,036
Total				**$4,964,238$**

Table 51: Machinery & Equipment Inventory

The graph below displays the total replacement cost of each asset segment in the North Stormont's Machinery & Equipment inventory.

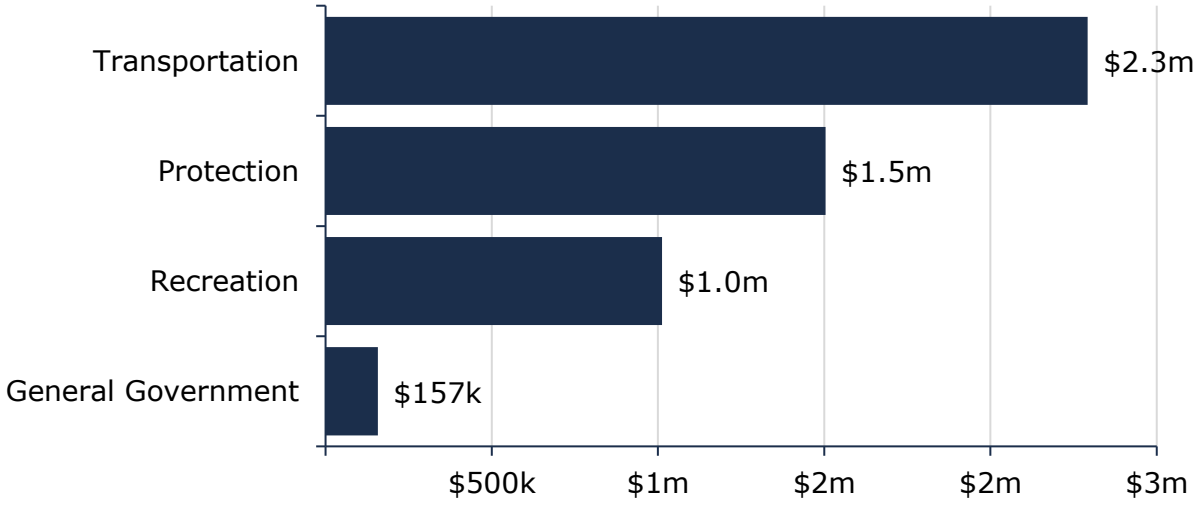


Figure 77: Machinery & Equipment Replacement Costs

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

12.3. 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.

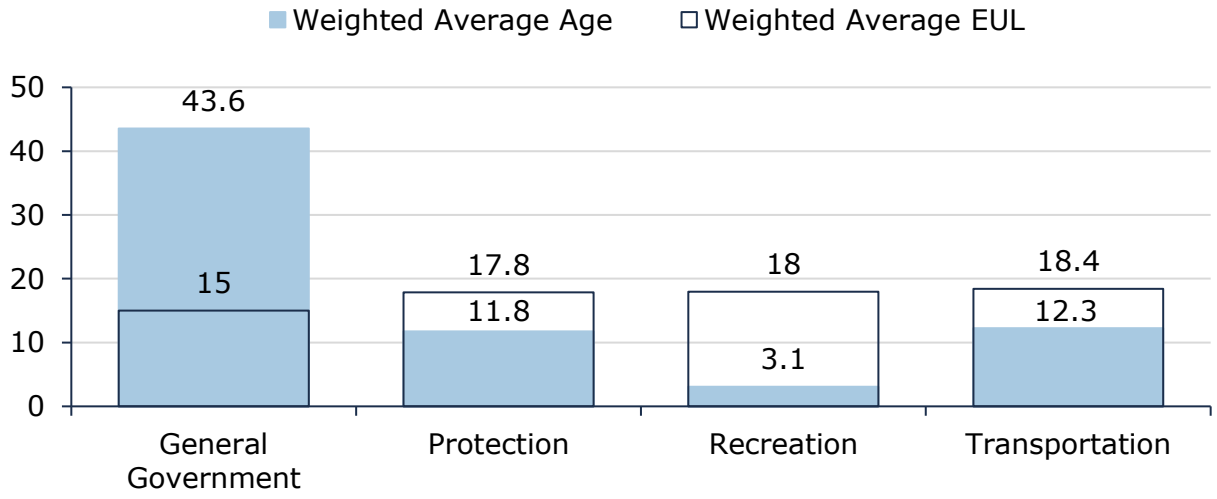


Figure 78: Machinery & Equipment Average Age vs Average EUL

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.

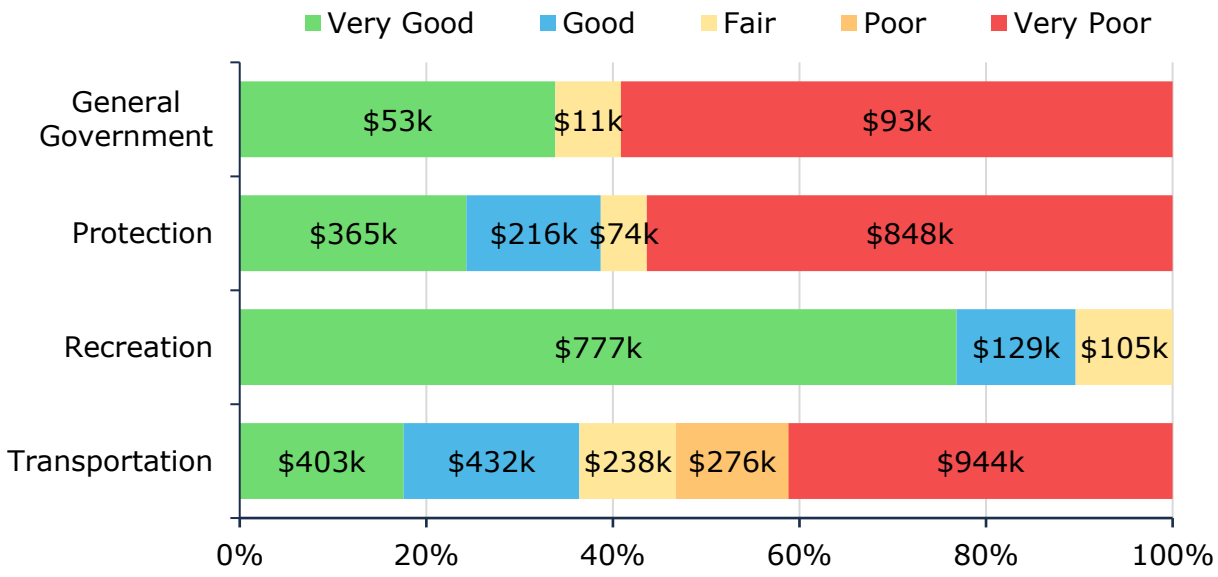


Figure 79: Machinery & Equipment Condition Breakdown

To ensure that the Township's equipment continues to provide an acceptable level of service, North Stormont 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.

12.3.1. Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The current approach is varied because of the broad range of types of equipment included in this category. Machinery and equipment undergo monthly maintenance and inspections, conducted by third-party technicians, with any necessary repairs promptly addressed. Additionally, pumps undergo regular testing to ensure operational reliability and efficiency.

12.4. Lifecycle Management Strategy

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

Maintenance / Rehabilitation / Replacement

- Equipment maintenance adheres to manufacturer recommendations to ensure optimal performance and longevity, and is supplemented by staff expertise when necessary.
- Fire station equipment undergoes regular maintenance as per manufacturer guidelines.
- Self-Contained Breathing Apparatus (SCBA) equipment undergoes monthly testing and replacement based on staff recommendations.

Figure 80: Machinery & Equipment Current Lifecycle Strategy

12.5. Forecasted Capital Requirements

The following graph forecasts long-term capital requirements. The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 20 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements at $283 thousand. 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) for the annual capital investment needed to maintain current levels of service.

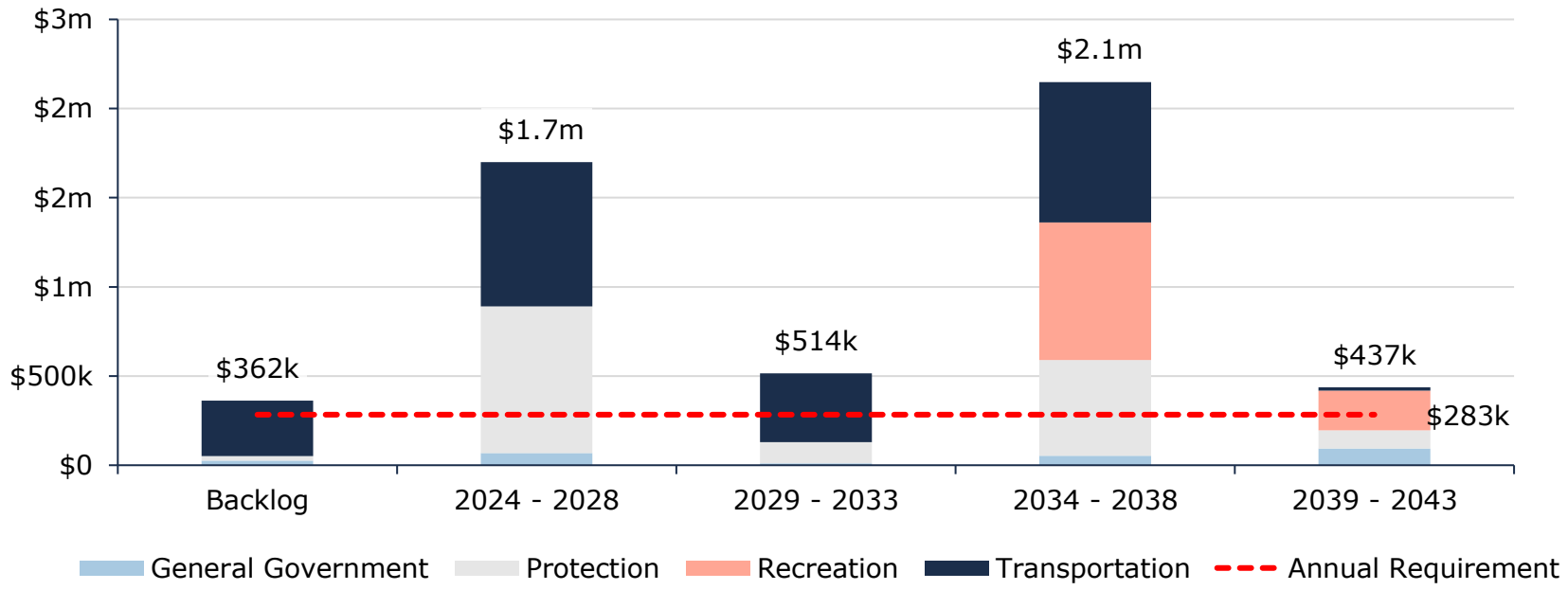


Figure 81: Machinery & Equipment Forecasted Capital Replacement Requirements

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.

Segment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
General Government	$45k	$0	$0	$23k	$0	$0	$0	$11k	$0	$0
Protection	$0	$65k	$757k	$0	$0	$12k	$0	$0	$62k	$45k
Recreation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Transportation	$0	$266k	$0	$0	$544k	$21k	$13k	$78k	$225k	$48k
Total	**$45k**	**$331k**	**$757k**	**$23k**	**$544k**	**$33k**	**$13k**	**$89k**	**$287k**	**$93k**

Table 52: Machinery & Equipment System-Generated 10-Year Capital Costs

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 Township's capital expenditure forecasts.

12.6. 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 D: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

1 - 4 Very Low	5 - 7 Low	8 - 9 Moderate	10 - 14 High	15 - 25 Very High
$2,040,533 (41%)	$495,745 (10%)	$431,091 (9%)	$357,806 (7%)	$1,639,063 (33%)

Figure 82: Machinery & Equipment Risk Matrix

This is a high-level model developed by Township staff and it should be reviewed and adjusted to reflect an evolving understanding of both the probability and consequences of asset failure. The identification of critical assets allows the Township to determine appropriate risk mitigation strategies and treatment options. Risk mitigation may include asset-specific lifecycle strategies, condition assessment strategies, or simply the need to collect better asset data.

12.7. Current Levels of Service

The following tables identify the Township's metrics to identify their current level of service for Machinery & Equipment.

12.7.1. Community Levels of Service

The following table outlines the qualitative metrics that determine the community level of service provided by equipment.

Service Attribute	Technical Metric	Current LOS
Scope	Description of the current condition of municipal machinery & equipment and the plans that are in place to maintain or improve the provided level of service	The overall condition of machinery & equipment in the Township is fair. Township staff work to ensure all machinery & equipment assets remain in an adequate state of repair, with particular emphasis on fire safety equipment, which is dictated by safety standards.

Table 53 Machinery & Equipment Community Levels of Service

12.7.2. Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS
Scope	Average Condition Rating	Fair (51%)
Quality	Average Risk Rating	Moderate (9.4)
Performance	Capital re-investment rate	6.29%

Table 54 Machinery & Equipment Technical Levels of Service

12.8. 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.

12.8.1. PLOS Scenarios Analyzed

Scenario	Description
Scenario 1: Maintaining Current Funding Level	This scenario assumes a stable funding level maintained at approximately 46.7%, with no phased tax increases over the projection period.
Scenario 2: Achieving 75% Funding in 15 Years	This scenario assumes a phased tax increase of approximately 0.8% annually, reaching 75% funding within 15 years

Table 55: PLOS Scenarios Analyzed

Machinery & Equipment is currently fully funded, with existing contributions meeting projected lifecycle needs. As a result, only two scenarios were analyzed to confirm sustainability, and further analysis was not needed since additional funding would exceed requirements and divert resources from higher-need areas.

12.8.2. PLOS Analysis Results

The following table compares two funding scenarios, showing how different levels of annual capital spending impact asset condition, risk, and overall performance over time.

Scenario	Technical LOS Outcomes	Initial Value (2025)	10 Year Projection (2035)	25 Year Projection (2050)	Scenario Average
Scenario 1	Average Condition	78.49%	63.16%	59.30%	61.64%
	Average Asset Risk	4.44	6.66	7.55	6.72
	Average Annual Investment		$283,482		
	Capital re-investment rate		6.29%		
Scenario 2	Average Condition	45.86%	37.35%	33.44%	37.96%
	Average Asset Risk	9.89	10.31	10.74	10.32
	Average Annual Investment		$212,612		
	Capital re-investment rate		4.28%		

Table 56: Machinery & Equipment pLOS Scenario Analysis

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

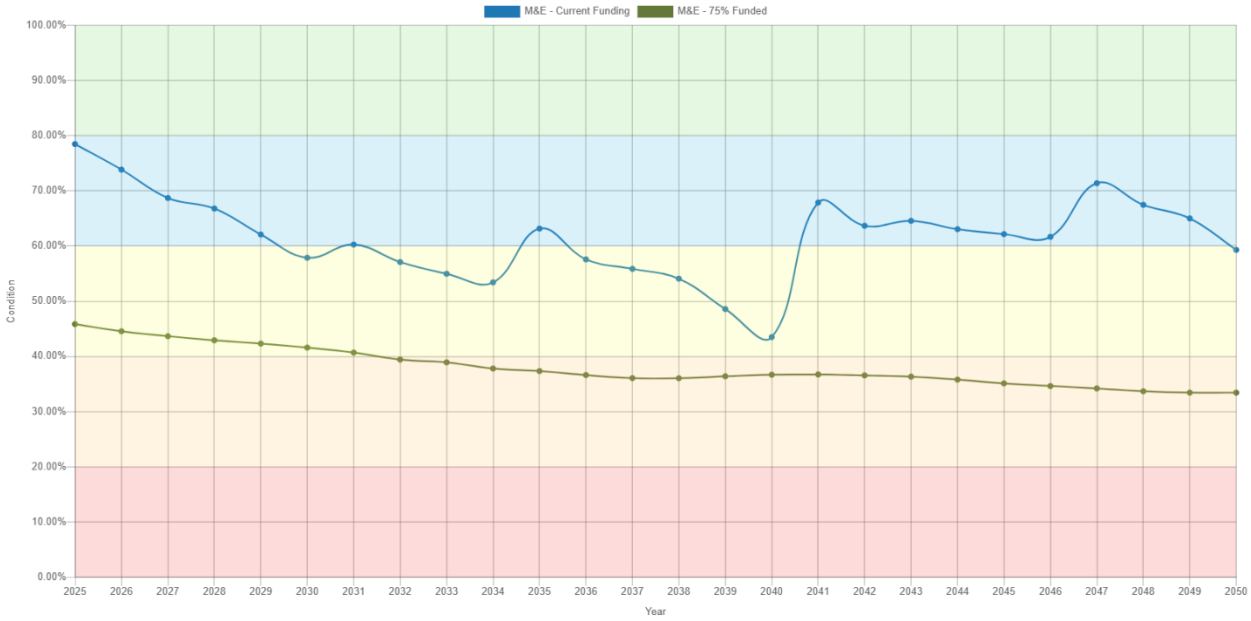


Figure 83: Machinery & Equipment Scenario Comparison

13. Vehicles

13.1. State of the Infrastructure

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

- Roads vehicles for road maintenance and winter control activities
- Protection vehicles for emergency fire services
- Environmental services vehicles for waste management

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

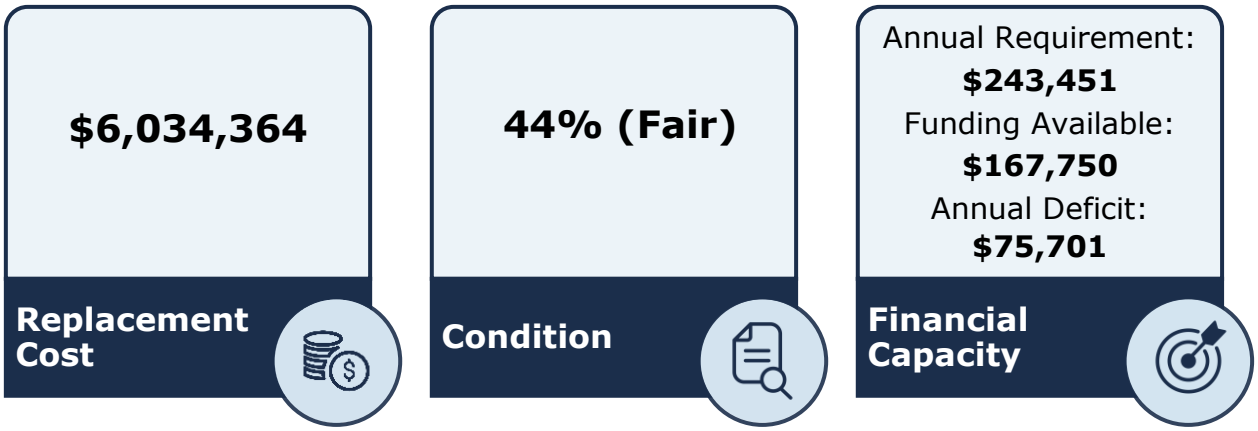


Figure 84: Vehicles State of the Infrastructure

13.2. Inventory & Valuation

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

Segment	Quantity	Unit of Measure	Primary Replacement Cost Method	Replacement Cost
Environmental	1	Quantity	CPI	$341,963
Protection	13	Quantity	User-Defined	$2,104,699
Transportation	23	Quantity	CPI	$3,587,702
Total				**$6,034,364$**

Table 57: Vehicles Inventory

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

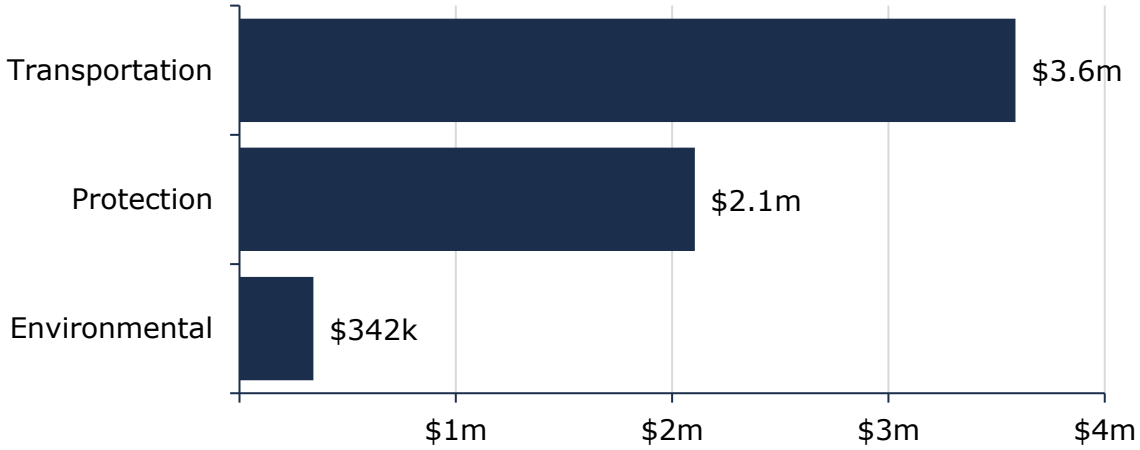


Figure 85: Vehicle Replacement Costs

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

13.3. 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.

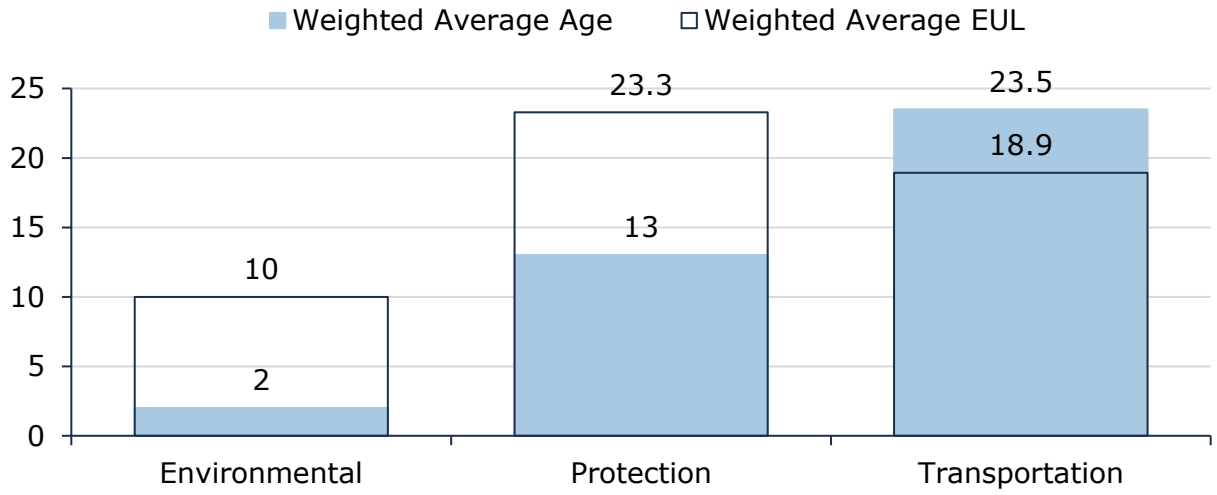


Figure 86: Vehicles Average Age vs Average EUL

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.

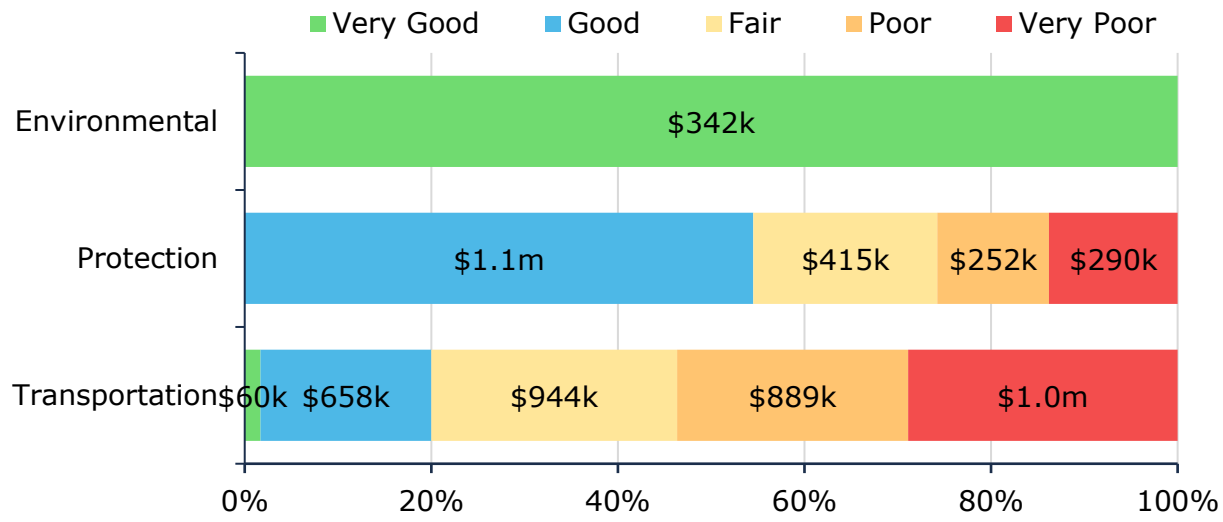


Figure 87: Vehicles Condition Breakdown

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

13.3.1. Current Approach to Condition Assessment

Accurate and reliable condition data allows staff to determine the remaining service life of assets and identify the most cost-effective approach to managing assets. An example of the Township's current approach is to conduct daily circle checks and monthly inspections to assess vehicle conditions. The fire department performs monthly inspections of vehicles to ensure they are in state of adequate repair prior to operation. As part of the township's approach to municipal roads vehicles, annual safety inspections are conducted. Mechanics review vehicle conditions and assess maintenance expenses during these inspections.

13.4. 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.

Maintenance / Rehabilitation / Replacement

- Licensed mechanics conduct servicing in-house and repairs are undertaken by an in-house PT310 diesel mechanic or a third-party emergency vehicle technician.
- Essential vehicles like Fire Station pumpers and tankers are maintained in accordance with regulatory requirements and best practices to ensure operational integrity.
- Vehicles are replaced according to staff recommendations and Asset Management Plan lifecycles to uphold reliability and safety standards.

Figure 61: Vehicles Current Lifecycle Strategy

13.5. Forecasted Capital Requirements

The annual capital requirement represents the average amount per year that the Township should allocate towards funding rehabilitation and replacement needs. The following graph identifies capital requirements over the next 25 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and the trend line represents the average annual capital requirements at $325 thousand. 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) for the annual capital investment needed to maintain current levels of service.

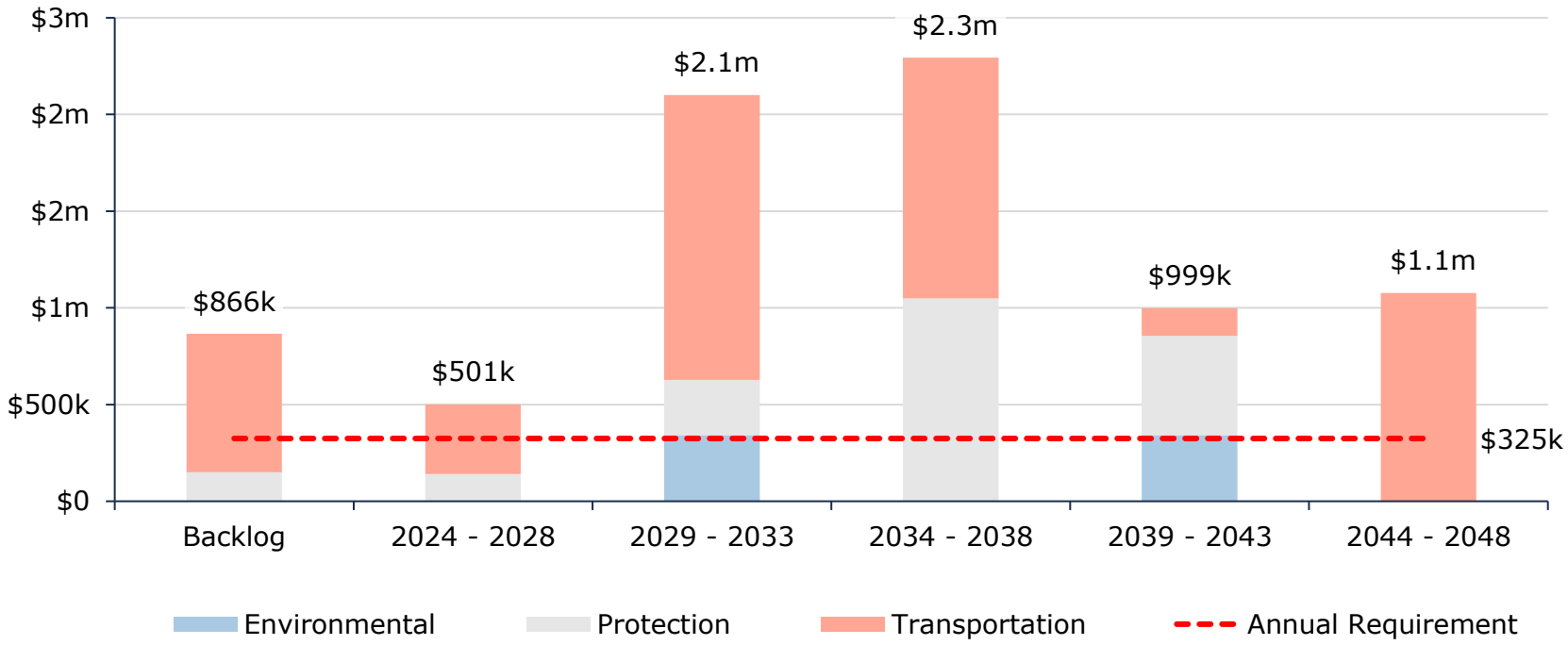


Figure 88: Vehicle Forecasted Capital Replacement Requirements

Table 58 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.

Segment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Environmental	$0	$0	$0	$0	$0	$0	$0	$0	$342k	$0
Protection	$0	$0	$0	$0	$140k	$0	$33k	$0	$0	$252k
Transportation	$121k	$0	$0	$0	$240k	$512k	$0	$521k	$220k	$220k
Total	**$121k**	**$0**	**$0**	**$0**	**$380k**	**$512k**	**$33k**	**$521k**	**$562k**	**$472k**

Table 58 Vehicles System-Generated 10-Year Capital Costs

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 Township's capital expenditure forecasts.

13.6. 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 D: Risk Rating Criteria for the criteria used to determine the risk rating of each asset.

1 - 4 Very Low $586,438 (10%)	5 - 7 Low $1,155,190 (19%)	8 - 9 Moderate $1,825,386 (30%)	10 - 14 High $1,500,356 (25%)	15 - 25 Very High $966,994 (16%)

Figure 89: Vehicles Risk Matrix

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

13.7.Current Levels of Service

The following tables identify the Township's metrics to identify their current level of service for municipal Vehicles.

13.7.1. Community Levels of Service

The qualitative descriptions that determine the community levels of service provided by municipal vehicles are based on the service usage outlined below:

Service Attribute	Technical Metric	Current LOS
Scope	Description of the current condition of municipal vehicles and the plans that are in place to maintain or improve the provided level of service	The overall condition of the vehicles in the Township is fair. The regular inspections conducted by Township staff have been effective in identifying required maintenance and rehabilitation activities to ensure the state of the vehicles remain in adequate condition

Table 59 Vehicles Community Levels of Service

13.7.2. Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS
Scope	Average Condition Rating	Fair (44%)
Quality	Average Risk Rating	High (10.1)
Performance	Capital re-investment rate	2.78%

Table 60 Vehicles Technical Levels of Service

13.8. 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.

13.8.1. PLOS Scenarios Analyzed

Scenario	Description
Scenario 1: Maintaining Current Funding Level	This scenario assumes a stable funding level maintained at approximately 46.7%, with no phased tax increases over the projection period.
Scenario 2: Achieving 75% Funding in 15 Years	This scenario assumes a phased tax increase of approximately 0.8% annually, reaching 75% funding within 15 years
Scenario 3: Achieving Full Funding in 15 Years	This scenario assumes a phased tax increase of approximately 2.1% annually, reaching full funding within 15 years

Table 61: PLOS Scenarios Analyzed

13.8.2. PLOS Analysis Results

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.

Scenario	Technical LOS Outcomes	Initial Value (2025)	10 Year Projection (2035)	25 Year Projection (2050)	Scenario Average
Scenario 1	Average Condition	38.17%	23.13%	25.42%	26.07%
	Average Asset Risk	11.04	13.17	12.59	12.64
	Average Annual Investment		$167,750		
	Capital re-investment rate		2.78%		
Scenario 2	Average Condition	38.17%	25.50%	30.64%	29.35%
	Average Asset Risk	11.04	12.86	12.07	12.22
	Average Annual Investment		$243,451		
	Capital re-investment rate		4.03%		
Scenario 3	Average Condition	38.17%	31.04%	40.16%	35.16%
	Average Asset Risk	11.04	12.11	10.55	11.45
	Average Annual Investment		$324,601		
	Capital re-investment rate		5.38%		

Table 62: Vehicles pLOS Scenario Analysis

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.

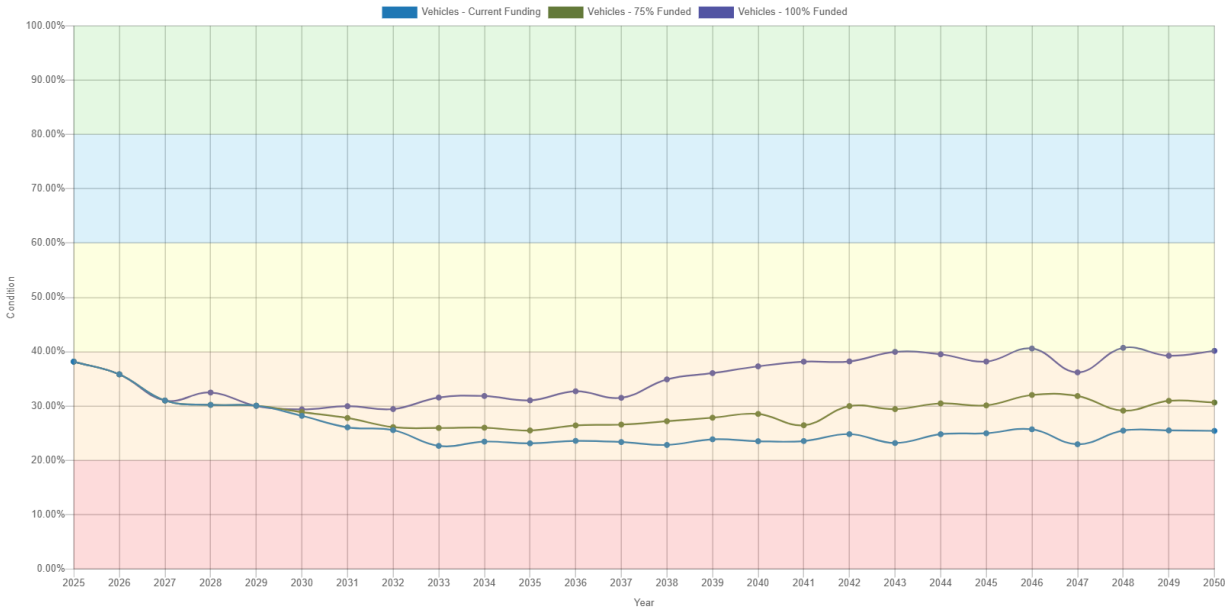


Figure 90: Vehicles Scenario Comparison

Strategies

14. Financial Strategy

14.1. Financial Strategy Overview

Each year, the Township of North Stormont 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 expenditures, including contributions to capital reserves. For North Stormont, 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 used directly for capital expenditures
- Revenue transferred from reserves to fund tax-supported capital projects
- Revenue from water and wastewater rates used directly for capital expenditures
- The Canada Community Benefits Fund (CCBF), formerly the Federal Gas Tax Fund
- The Ontario Community Infrastructure Fund (OCIF)

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

14.2. Annual Capital Requirements

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

Asset Category	Annual Requirements (Replacement Only)	Annual Requirements (Lifecycle Strategy)	Difference
Paved Roads	$2,275,871	$1,094,309	$1,671,470

Table 63: Annual Requirement Comparison

The implementation of a proactive lifecycle strategy for paved roads leads to a potential annual cost avoidance of approximately $1.7 million for the road network. This represents an overall reduction of the annual requirements by 53%.

As the lifecycle strategy scenario represents the lowest cost option available to the Township, 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 $291.4 million, the estimated annual capital requirement across all asset categories is approximately $3.4 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%.

Asset Category	Replacement Cost	Annual Capital Requirements	Target Reinvestment Rate
Road Network	$150,991,118	$1,119,464	0.7%
Bridges & Culverts	$20,621,000	$193,322	0.9%
Storm Network	$5,933,175	$86,304	1.5%
Buildings	$29,485,477	$546,651	1.9%
Land Improvements	$1,812,722	$80,258	4.4%
Machinery & Equipment	$4,964,238	$212,612	4.3%
Vehicles	$6,034,364	$243,451	4.0%
Water Network	$34,957,250	$447,614	1.3%
Sanitary Sewer Network	$36,583,234	$490,687	1.3%
Total	**$291,382,579**	**$3,420,361**	**1.2%**

Table 64: Average Annual Capital Requirements

14.3. Financial Profile: Tax Funded Assets

14.3.1. 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 Township is funding 56.4% of its annual capital requirements for all infrastructure analyzed. This creates a total annual funding deficit of $1.5 million.

Asset Category	Annual Capital Requirements	Annual Funding Available	Annual Infrastructure Deficit	Funding Level
Road Network	$1,119,464	$680,853	$438,610	60.8%
Bridges & Culverts	$193,322	$0	$193,322	0.0%
Storm Network	$86,304	$20,350	$65,954	23.6%
Buildings	$546,651	$353,315	$193,336	64.6%
Land Improvements	$80,258	$11,700	68,558	14.6%
Machinery & Equipment	$212,612	$312,493	($99,882)	147.0%
Vehicles	$243,451	$167,750	$75,701	68.9%
Water Network	$447,614	$311,000	$136,614	69.5%
Sanitary Sewer Network	$490,687	$71,094	$419,593	14.5%
Total	**$3,420,361**	**$1,928,555**	**$1,491,806**	**56.4%**

Table 65: Current Funding Levels

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Taxes	CCBF	OCIF	Total Available	
Road Network	$1,119,464	$104,657	$252,764	$323,432	$680,853	$438,610
Stormwater Network	$86,304	$20,350			$20,350	$65,954
Bridges & Culverts	$193,322	$0			$0	$193,322
Buildings	$546,651	$353,315			$353,315	$193,336
Machinery & Equipment	$212,612	$312,493			$312,493	($99,882)
Land Improvements	$80,258	$11,700			$11,700	$68,558
Vehicles	$243,451	$167,750			$167,750	$75,701
Total	**$2,482,061**	**$970,265**	**$252,764**	**$323,432**	**$1,546,461**	**$935,599**

Table 66: Required Funding vs Current Funding Position

The average annual investment requirement for the proposed levels of service for the above categories is $2,482,061. Annual revenue currently allocated to these assets for capital purposes is $1,546,461, leaving an annual deficit of $935,599. Put differently, these infrastructure categories are currently funded at 62.3% of their long-term requirements.

14.3.2. 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 North Stormont 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 Township's goal of sustainably increasing investment to maintain and improve service delivery. By phasing in additional funding as financial capacity allows, the Township 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 25.7% 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.

Asset Category	Tax Change Required for 75% of full Funding
Road Network	12.1%
Stormwater Network	1.8%
Bridges & Culverts	5.3%
Buildings	5.3%
Machinery & Equipment	No change required
Land Improvements	1.9%
Vehicles	2.1%

Table 67: Phasing in Annual Tax Increases – Full Funding

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 Township 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.

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

- North Stormont's debt payments for these asset categories will be decreasing by $485,815 over the next 5 to 10 years.

Our recommendations include capturing the above changes and allocating them to the infrastructure deficit outlined above.

	Phase-in Period for 75% of full funding			
	5 Years	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	$935,599	$935,599	$935,599	$935,599
Change in Debt Costs	($227,012)	($449,784)	($449,784)	($449,784)
Resulting Infrastructure Deficit:	**$708,587**	**$449,784**	**$449,784**	**$449,784**
Tax Increase Required	19.6%	12.4%	12.4%	12.4%
Annually:	**3.7%**	**1.2%**	**0.8%**	**0.6%**

Table 68: Phase-in Period for 75% of full funding

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:

Annual Impact on Taxation				
Change in Levels of Service	**5 Year**	**10 Year**	**15 Year**	**20 Year**
Status Quo Funding	0%	0%	0%	0%
Achieving 75% Funding	3.7%	1.2%	0.8%	0.6%
Achieving Full Funding	7.4%	3.1%	2.1%	1.6%
Recommended	3.7%	1.2%	0.8%	0.6%

Table 69: Scenarios Annual Impact on Taxation

14.3.3. 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 0.8% 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) and OCIF revenue as outlined previously.
c) Reallocating appropriate revenue from categories in a surplus position to those in a deficit position.
d) Increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.
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 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 $437k for the Road Network, $362k for the Machinery & Equipment, $866k for Vehicles, and $26k for the Storm Water Network.

14.4. Financial Profile: Rate Funded Assets

14.4.1. Current Funding Levels

The table below summarizes how current funding levels compare with funding required for each asset category. At existing levels, the Township is funding 40.7% of its annual capital requirements for the proposed levels of service for rate-supported infrastructure.

Asset Category	Avg. Annual Requirement	Annual Funding Available			Annual Deficit
		Rates	To Operations	Total Available	
Water Network	$447,614	$643,650	($332,650)	$311,000	$136,614
Sanitary Network	$490,687	$526,622	($455,529)	$71,094	$419,593
Total	**$938,300**	**$1,170,272**	**($788,178)**	**$382,094**	**$556,207**

Table 70: Required Funding vs Current Funding Position

The average annual investment requirement for the above categories is $938,300. Annual revenue currently allocated to these assets for capital purposes is $382,094, leaving an annual deficit of $556,207. Put differently, these infrastructure categories are currently funded at 40.7% of their long-term requirements for proposed levels of service.

[3] The Township 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.

14.4.2. Closing the Gap

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

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

Full Funding Requirements Rate Revenues

In 2024, North Stormont had annual water revenues of $643,650 and annual sanitary revenues of $526,622. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, achieving 75% funding would require a 47.5% rate change over time.

Asset Category	Rate Change Required for 75% of full funding
Water Network	21.2%
Sanitary Network	79.7%

Table 71: Phasing in Annual Rate Increases

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 Township 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.

	Water Network				Sanitary Sewer Network			
	5 Years	**10 Years**	**15 Years**	**20 Years**	**5 Years**	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	$136,614	$136,614	$136,614	$136,614	$419,593	$419,593	$419,593	$419,593
Rate Increase Required	21.2%	21.2%	21.2%	21.2%	79.7%	79.7%	79.7%	79.7%
Annually:	**4.0%**	**2.0%**	**1.3%**	**1.0%**	**12.5%**	**6.1%**	**4.0%**	**3.0%**

Table 72: Phase-in Period for full funding - Water and Wastewater

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:

Annual Impact on Rates					
	Changes in Levels of Service	**5 year**	**10 Year**	**15 Year**	**20 Year**
Water	Status Quo Funding	0%	0%	0%	0%
	Achieving 75% Funding	4.0%	2.0%	1.3%	1.0%
	Achieving Full Funding	7.7%	3.8%	2.5%	1.9%
	Recommended	4.0%	2.0%	1.3%	1.0%
	Changes in Levels of Service	**5 year**	**10 Year**	**15 Year**	**20 Year**
Sanitary	Achieving 50% Funding	8.3%	4.1%	2.7%	2.1%
	Achieving 75% Funding	12.5%	6.1%	4.0%	3.0%
	Achieving Full Funding	16.1%	7.8%	5.1%	3.8%
	Recommended	12.5%	6.1%	4.0%	3.0%

Table 73: Scenarios Annual Impact on User Rates

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 1.3% for water services each year and 4.0% 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.

The Township should utilize revenues from the GFL contract and the Wind Company Agreement to support key infrastructure initiatives that benefit local communities. These funding sources present an opportunity to advance priority projects such as the development of a new community centre in Moose Creek and the acquisition of essential fire equipment for the Crysler and Finch fire stations. Additionally, the agreement related to the 100 MW wind turbine project contributes valuable financial support toward infrastructure improvements, aligning with the Township's goals for sustainable and community-focused development. By allocating these revenues to tangible capital investments, the Township can enhance services and quality of life for residents across multiple areas.

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.

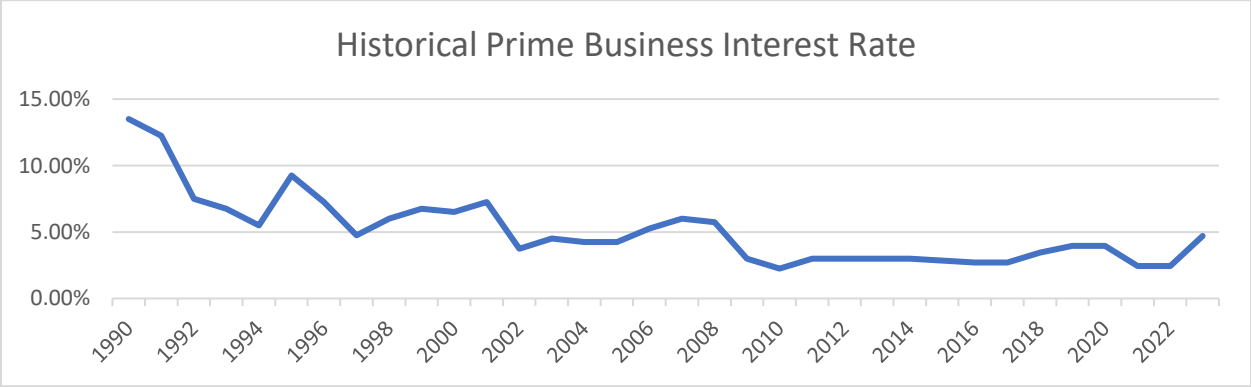
Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

14.5. Use of Debt

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

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

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



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

The following tables outline how North Stormont has historically used debt for investing in the asset categories as listed. There is currently $2,348,738 of debt outstanding for the assets covered by this AMP with corresponding principal and

interest payments of $406,934. This amount is well within the Township's provincially prescribed maximum of $1,235,713, which is a limit set by the province to ensure that municipalities maintain a responsible level of debt in relation to their financial capacity.

Asset Category	Current Debt Outstanding	Use of Debt in the Last Five Years				
		2019	2020	2021	2022	2023
Road Network						
Bridges & Culverts						
Storm Network						
Buildings	$1,682,000					
Land Improvements						
Machinery & Equipment						
Vehicles	$666,738	$455,000				$325,000
Total Tax Funded:	**$2,348,738**	**$455,000**	**$**	**$**	**$**	**$325,000**
Water Network						
Sanitary Network						
Total Rate Funded:	**$**	**$**	**$**	**$**	**$**	**$**

Table 74: Use of Debt in the last Five Years

Asset Category	Principal & Interest Payments in the Next Ten Years						
	2025	2026	2027	2028	2029	2030	2035
Road Network							
Bridges & Culverts							
Storm Network							
Buildings	$264k	$260k	$256k	$252k	$248k	$228k	
Machinery & Equipment							
Land Improvements							
Vehicles	$222k	150k	$103k	$31k	$31k	$31k	
Total Tax Funded:	**$486k**	**$410k**	**$359k**	**$283k**	**$279k**	**$259k**	**$**
Water Network							
Sanitary Network							
Total Rate Funded:	**$**	**$**	**$**	**$**	**$**	**$**	**$**

Table 75: Principal & Interest Payments in the Next Ten Years

14.6. Use of Reserves

14.6.1. Available Reserves

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

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

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

Asset Category	Balance at December 31, 2024
Road Network	$263,797
Stormwater Network	$3,412
Bridges & Culverts	$11,857
Buildings	$435,302
Machinery & Equipment	$102,152
Land Improvements	$11,816
Vehicles	$124,172
Total Tax Funded:	**$952,509**
Water Network	$1,086,957
Sanitary Network	$1,121,189
Total Rate Funded:	**$2,208,147**

Table 76: Reserve Balances

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

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

These reserves are available to support reinvestment needs in applicable asset categories during the transition to the Township's chosen funding approach. 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.

15. Growth

15.1. Description of Growth Assumptions

The demand for infrastructure and services will change over time based on a combination of internal and external factors. Understanding the key drivers of growth and demand will allow the Township to 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.

United Counties of Stormont, Dundas, and Glengarry Population and Growth Projections Report (Hemson 2013)

Reasons for Growth

In 2013 the United Counties worked with Hemson to develop a report to understand the growth projections and expected population dynamics for their area. North Stormont was covered in the scope of this report.

The report highlights that the primary catalyst for the County's sustained expansion is the network of relationships and connections it maintains with neighboring areas. This is attributed to the growth stimuli generated by the economic and social activities within the County and its townships, particularly its adjacency to Ottawa.

Table 1

Commuting Behaviour of the UCSDG Resident Employed Labour Force 2006 Census Information

	Portion of County (see note 1)			Total County
	Western	Central	Eastern	
Resident Employed Labour Force with a Usual Place of Work (See Note 2)	9,655	26,385	10,675	46,715
Working within the UCSDG	6,005	23,390	8,935	38,330
Share of Employed Residents	62.2%	88.6%	83.7%	**82.1%**
Share to City of Cornwall	3.1%	**66.0%**	25.2%	43.9%
Working Outside the UCSDG	3,665	3,000	1,745	8,410
Share to Ottawa	**70.5%**	48.5%	28.1%	53.9%
Share to Elsewhere (mainly other parts of Ontario)	29.5%	51.5%	71.9%	46.1%

Source: Hemson Consulting Ltd. based on Statistics Canada 2006 Census data.

Growth Projections

The Hemson Population and Growth Projections Report provided estimates for the County and its townships, projecting growth from 2011 census data to 2031.

According to the report, the Township of North Stormont was anticipated to undergo low to moderate population growth, with projections indicating an increase from 7,100 residents in 2011 to 7,300 by 2031. Likewise, the number of households was expected to rise from 2,500 to 2,700 over the same period. Notably, the increase in household numbers aligns closely with the population growth, reflecting an aging demographic that reduces the average population per household over time. It's important to note that the actual population has already surpassed these projections.

Land Supply

As part of predicting the population dynamics, the report also detailed the land supply for the Townships. North Stormont has 185 gross hectares of vacant residential land. This is land that is undeveloped or currently not utilized within residential zoning. The Township does not have any additional land supply in the employment district, or in the Mixed Use/Non-residential zones. This led to the Township of North Stormont having the lowest amount of vacant land supply out of all the townships in the United Counties.

Density

Hemson utilized density to determine the ability of currently utilized land for supporting and encouraging growth. This is done by observing density in "units (housing units) per gross hectare" referred to as upgh. The report indicates that for urban and rural development, a 5-9 upgh is used. Seen below, the capacity for the County's growth well exceeds its current forecasts. For North Stormont in particular, this shows that despite having a low amount of unutilized land in comparison to other Townships, there is still ample capacity and opportunity for growth.

Table 9

Municipal Unit Demand Vs. Capacity
United Counties of Stormont, Dundas and Glengarry

Township	Housing Unit Growth 2011-2031	Unit Capacity at Density Range		
		9 upgh	7 upgh	5 upgh
North Dundas	975	2,500	2,000	1,400
South Dundas	455	1,700	1,300	900
North Stormont	195	1,700	1,300	900
South Stormont	365	4,100	3,200	2,300
North Glengarry	125	1,700	1,300	900
South Glengarry	385	2,900	2,200	1,600
County Total	**2,500**	**14,600**	**11,300**	**8,100**

Source: Hemson Consulting Ltd. 2012 based on information provided by County Planning Staff.

Development Charges Background Study (TBD)

In 2025, the Township initiated the process of updating its Development Charges Background Study by issuing a Request for Quotation. This step indicates the Township's intent to assess and plan for future growth-related infrastructure needs in alignment with anticipated development. The updated study will help ensure that growth pays for growth by identifying capital costs required to support new development and determining appropriate charges to recover those costs.

Housing-Enabling Water Systems Fund

The Ontario government is investing $4.8 million in North Stormont through the Housing-Enabling Water Systems Fund to support the expansion of the Moose Creek Sewage Lagoon. This project will unlock capacity for 261 new homes in the community, addressing a key barrier to residential growth. Mayor François Landry emphasized that limited wastewater infrastructure and financial constraints had previously hampered development plans, but this funding removes a major obstacle. The expansion aligns with the Township's efforts to support diverse housing options in partnership with local developers and reflects the province's broader commitment to enabling housing through critical infrastructure investment.

Water and Wastewater Master Plan (2024)

The Township of North Stormont, with support from R.V. Anderson Associates Limited, has developed a Water and Wastewater Master Servicing Plan for Finch, Crysler, and Moose Creek to support population and employment growth through 2051. The plan outlines necessary infrastructure upgrades to meet future demand while ensuring regulatory compliance. Guided by population forecasts and existing capacity, the plan addresses servicing for approximately 1,800 new residents and incorporates both committed developments and long-term growth.

Water servicing strategies focus on conservation through universal metering to delay major upgrades and monitor demand. Where capacity limits are expected, hydrogeological studies will assess wellfield expansions and treatment upgrades. Finch and Crysler may require new wells and increased treatment capacity, while Moose Creek prioritizes replacing Well No. 3 and investigating water quality.

Wastewater strategies include upgrading sewage pumping stations with variable frequency drives to improve efficiency and reduce costs. Expansion of the Moose Creek lagoon with advanced treatment technologies is planned, phased to align with growth and budget considerations.

The Master Plan outlines a phased capital investment approach totaling approximately $16.3 million over 2025 to 2051. This phased, community-specific approach ensures capital spending corresponds with development milestones and funding capacity, balancing technical feasibility, regulatory compliance, and financial responsibility. These investments will enable water and wastewater services to sustainably support North Stormont's future growth.

Impact of Growth on Lifecycle Activities

Growth in North Stormont, particularly in the villages of Finch, Crysler, and Moose Creek, is expected to increase demand on the Township's water, wastewater, and other core infrastructure systems. As outlined in the 2024 Water and Wastewater Master Plan, new residential development and population growth will require both the construction of new assets and the expansion or enhancement of existing systems.

These changes will have a significant impact on lifecycle activities. New infrastructure adds to the Township's asset base and introduces long-term costs for operation, maintenance, rehabilitation, and eventual replacement. Meanwhile, growth-related upgrades, such as expanded sewage pumping stations, wellfield improvements, and advanced treatment facilities, will require proactive capital planning and increase overall lifecycle complexity.

In addition, intensification and infill development may accelerate wear on existing assets, leading to shorter asset lifespans and the need for more frequent rehabilitation. To address these challenges, the Township has outlined strategies in its Water and Wastewater Master Plan that include implementing universal water metering to support conservation and delay the need for major capital upgrades. The Plan also recommends phased implementation of servicing infrastructure, such as well expansions and wastewater treatment upgrades, based on growth projections and system demand. These actions are intended to balance service reliability with long-term financial sustainability, although further planning will be required to fully integrate asset performance monitoring into lifecycle management.

As growth-related assets are constructed, retired, or acquired, they should be integrated into the AMP. Furthermore, the Township will need to review the lifecycle costs of growth-related infrastructure. These costs should be considered in long-term funding strategies that are designed to, at a minimum, to maintain the current level of service. By integrating growth considerations into its asset management approach, North Stormont can ensure its infrastructure continues to meet evolving service needs while maintaining financial sustainability over the long term.

16. Recommendations & Key Considerations

16.1. Financial Strategies

1. Review the feasibility of adopting the funding required to meet the proposed levels of service for the asset categories analyzed. This includes:
    a. Increasing taxes by 0.8% per year over a period of 15 years;
    b. Increasing water rates by 1.3% per year over a period of 15 years; and
    c. Increasing sanitary rates by 4.0% per year over a period of 15 years.
2. Continued allocation of OCIF and CCBF funding as previously outlined.
3. Increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.
4. Continue to apply for project specific grant funding to supplement sustainable funding sources.

16.2. Asset Data

1. Continuously review, refine, and calibrate lifecycle and risk profiles to better reflect actual practices and improve capital projections. In particular:
    a. the timing of various lifecycle events, the triggers for treatment, anticipated impacts of each treatment, and costs
    b. 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.

16.3. Risk & 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.

Appendices

Appendix A: Proposed Levels of Service 10-Year Capital Requirements

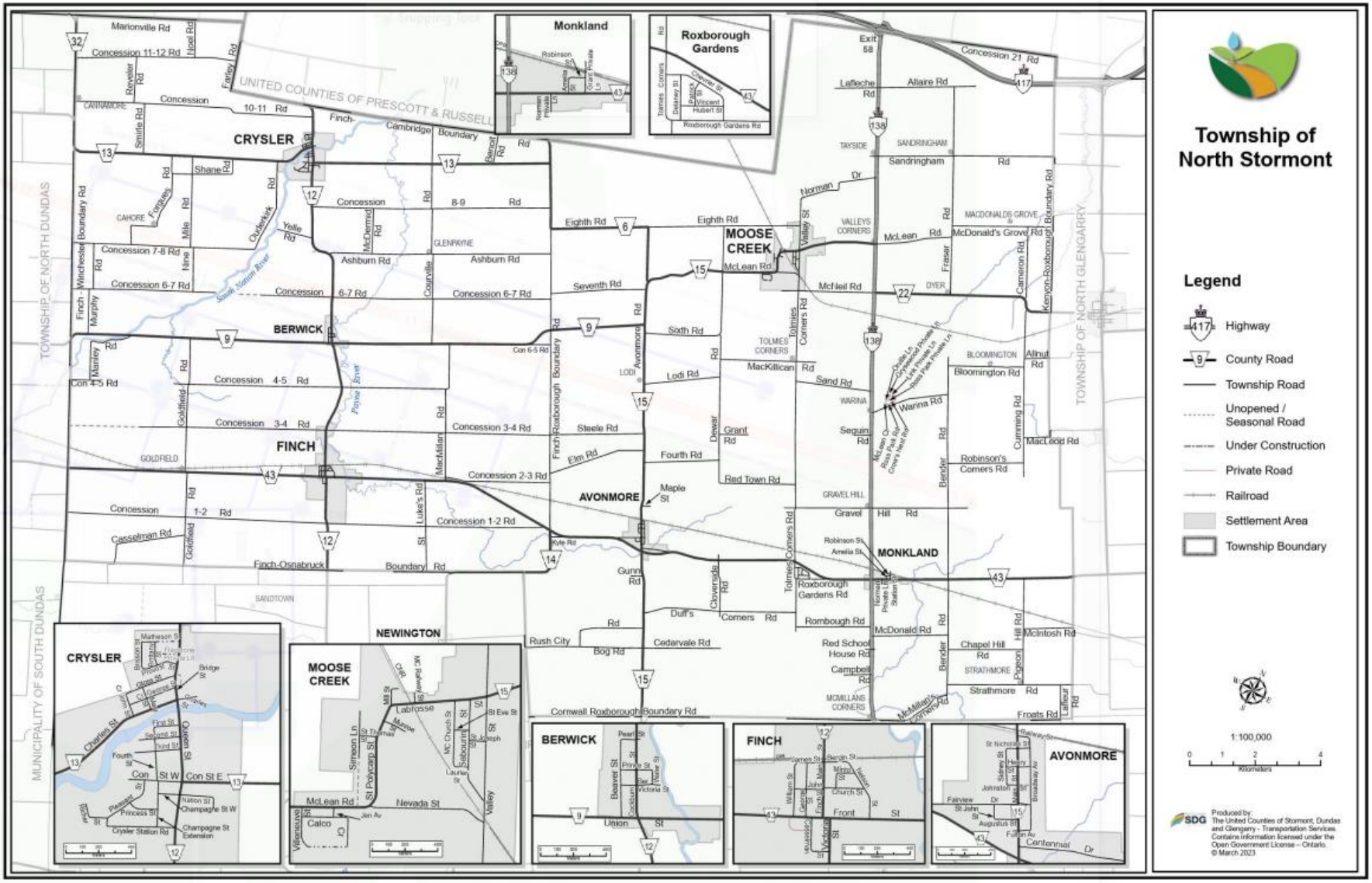
The table below outlines the capital cost requirements for recommended lifecycle activities, as generated through the Township's asset management software. These projections are based on annual budgets that start at current funding levels and gradually increase over a 15-year period to reach recommended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

Asset Category	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Road Network	$297k	$138k	$716k	$728k	$731k	$806k	$805k	$714k	$849k	$887k
Bridges & Culverts	-	-	-	-	-	-	-	$150k	-	-
Buildings	$280k	$416k	$241k	-	$547k	$684k	$283k	-	$1.0m	-
Machinery & Equipment	$207k	$217k	$212k	$214k	$212k	$210k	$216k	$209k	$214k	$202k
Vehicles	$166k	$150k	-	$240k	$275k	$211k	$200k	$144k	$220k	$220k
Land Improvements	-	-	-	-	-	-	-	-	$172k	-
Storm Network	$20k	$22k	$23k	$24k	$7k	-	$3k	-	$164k	$40k
Water Network	-	-	$459k	$283k	-	-	$241k	$207k	-	$1.1m
Sanitary Network	-	-	-	-	-	-	-	-	-	-
TOTAL	**$673k**	**$805k**	**$935k**	**$762k**	**$1.0m**	**$1.1m**	**$943k**	**$710k**	**$1.8m**	**$1.6m**

Table 77: Proposed Levels of Service 10-Year Capital Requirements

Appendix B: Levels of Service Maps

Road Network Map



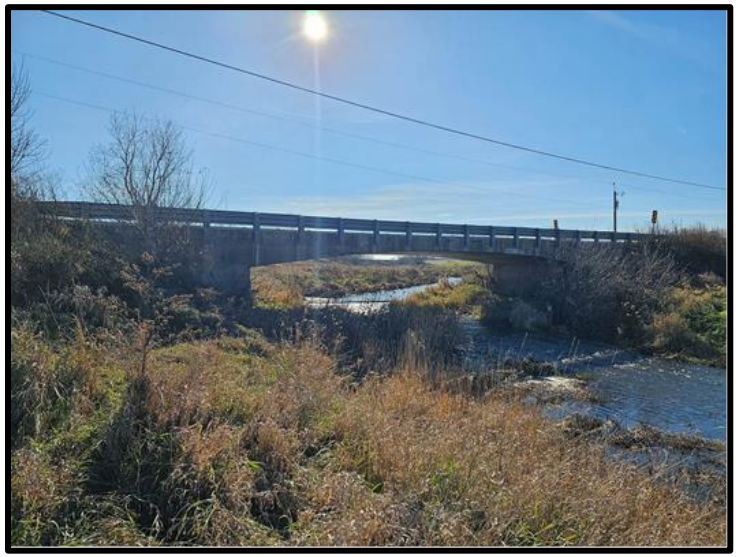
Bridges & Culverts Images

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

Concession 8-9 Bridge (BCI = 73 Good)

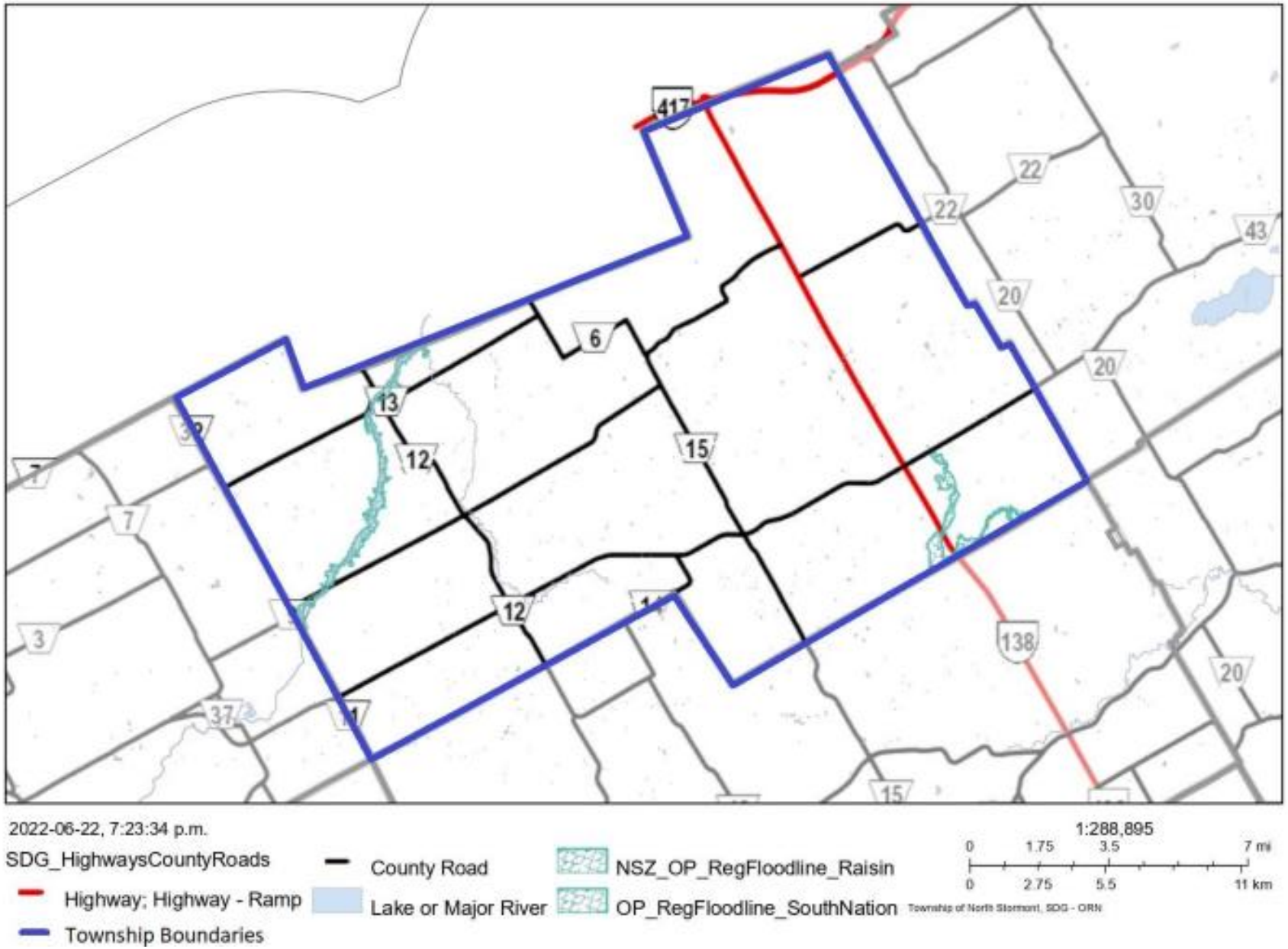
Bender Road Culvert (BCI = 75 Good)

Concession 6-7 Bridge (BCI = 49 Fair)

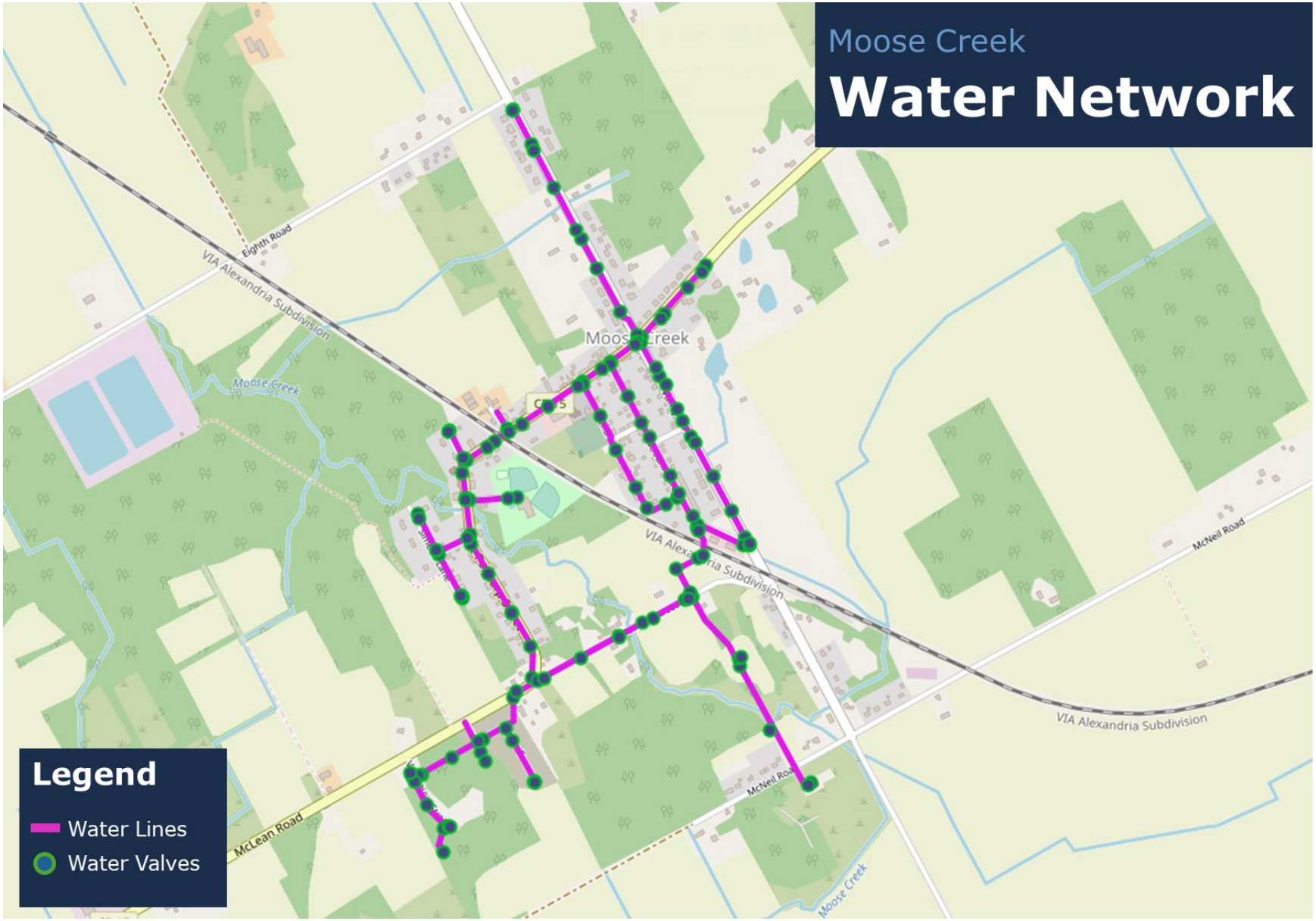


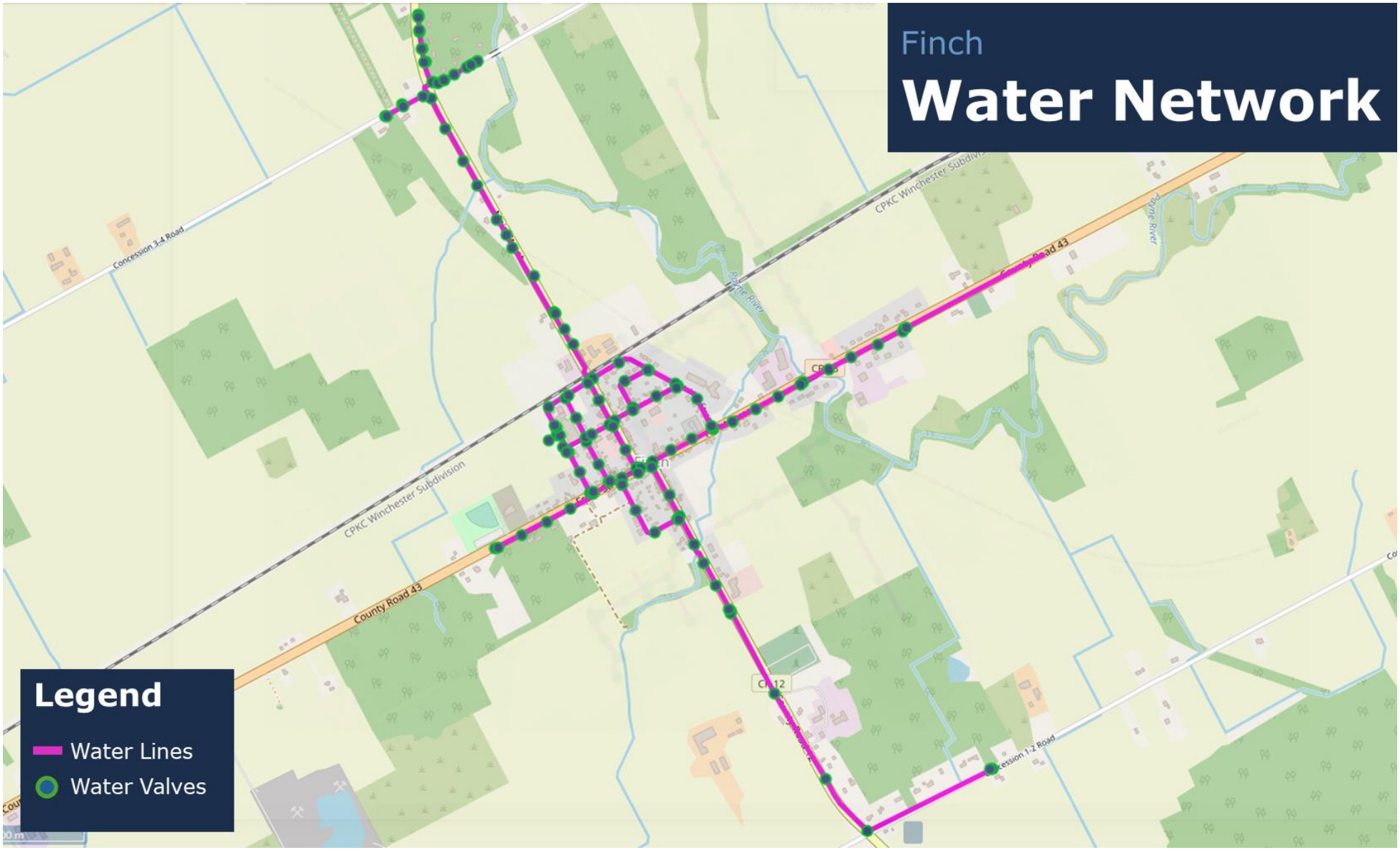
Roxborough - Finch Boundary Culvert (BCI = 50 Fair)

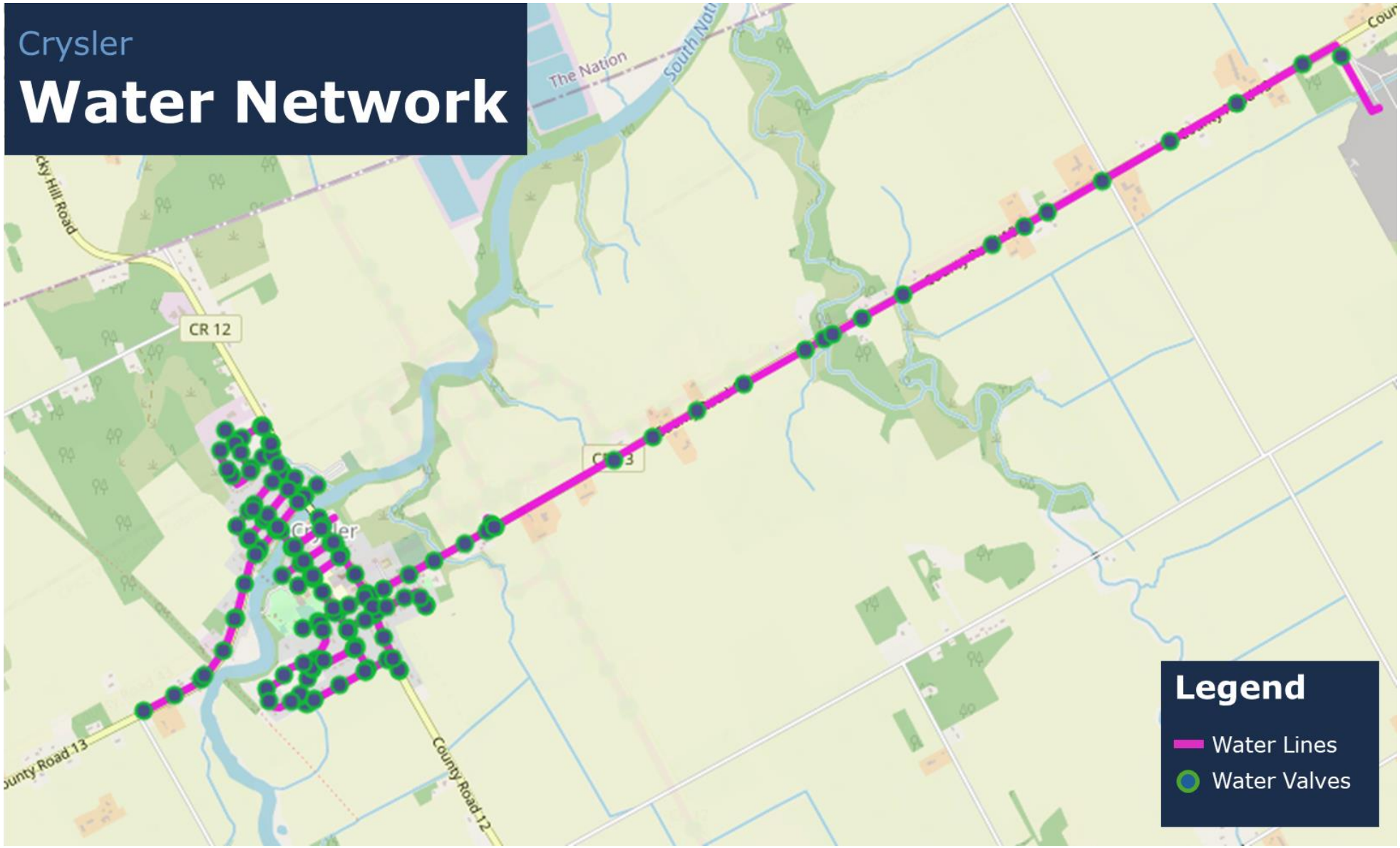
Stormwater Floodplain Map



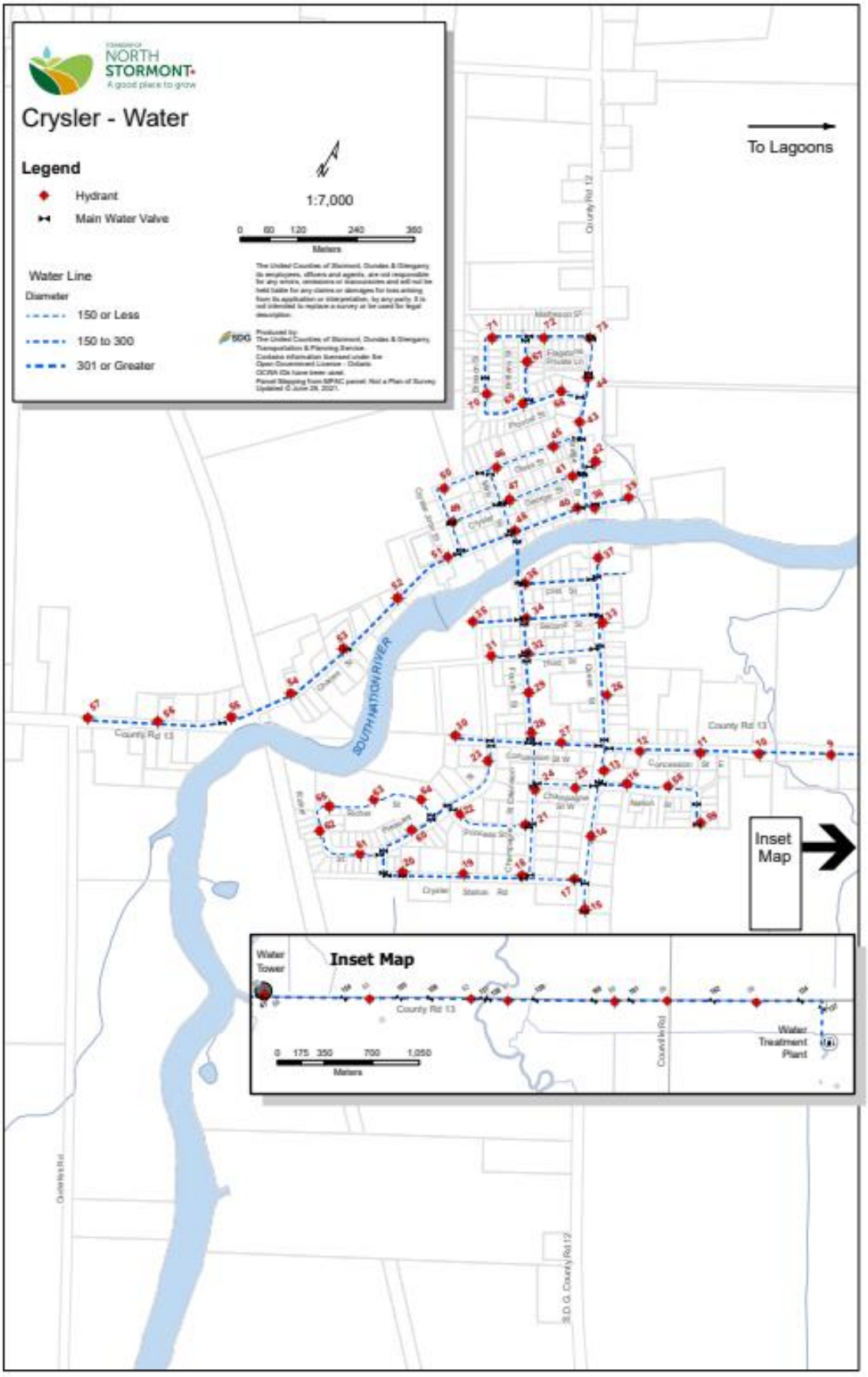
Water Network Maps

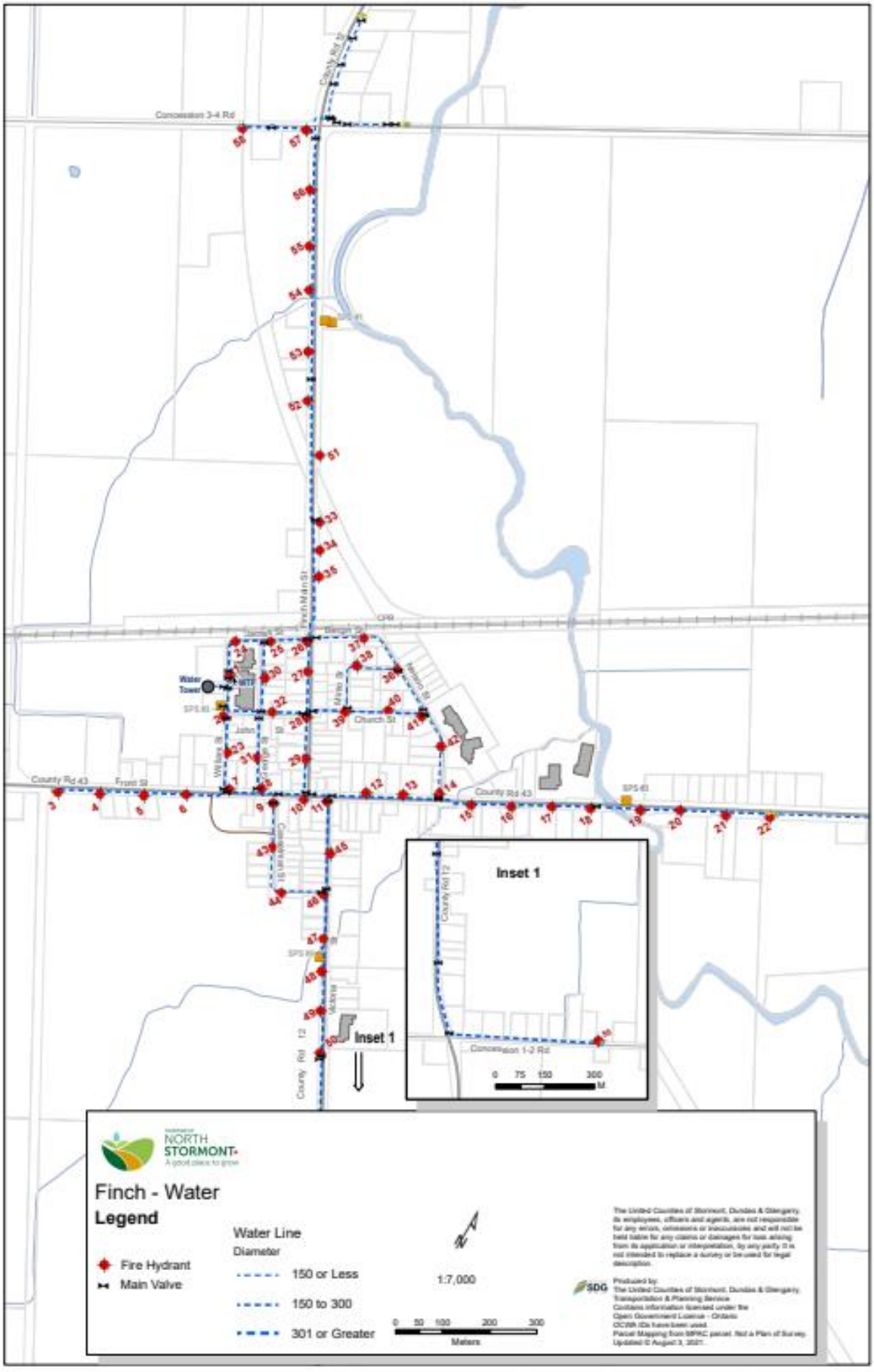


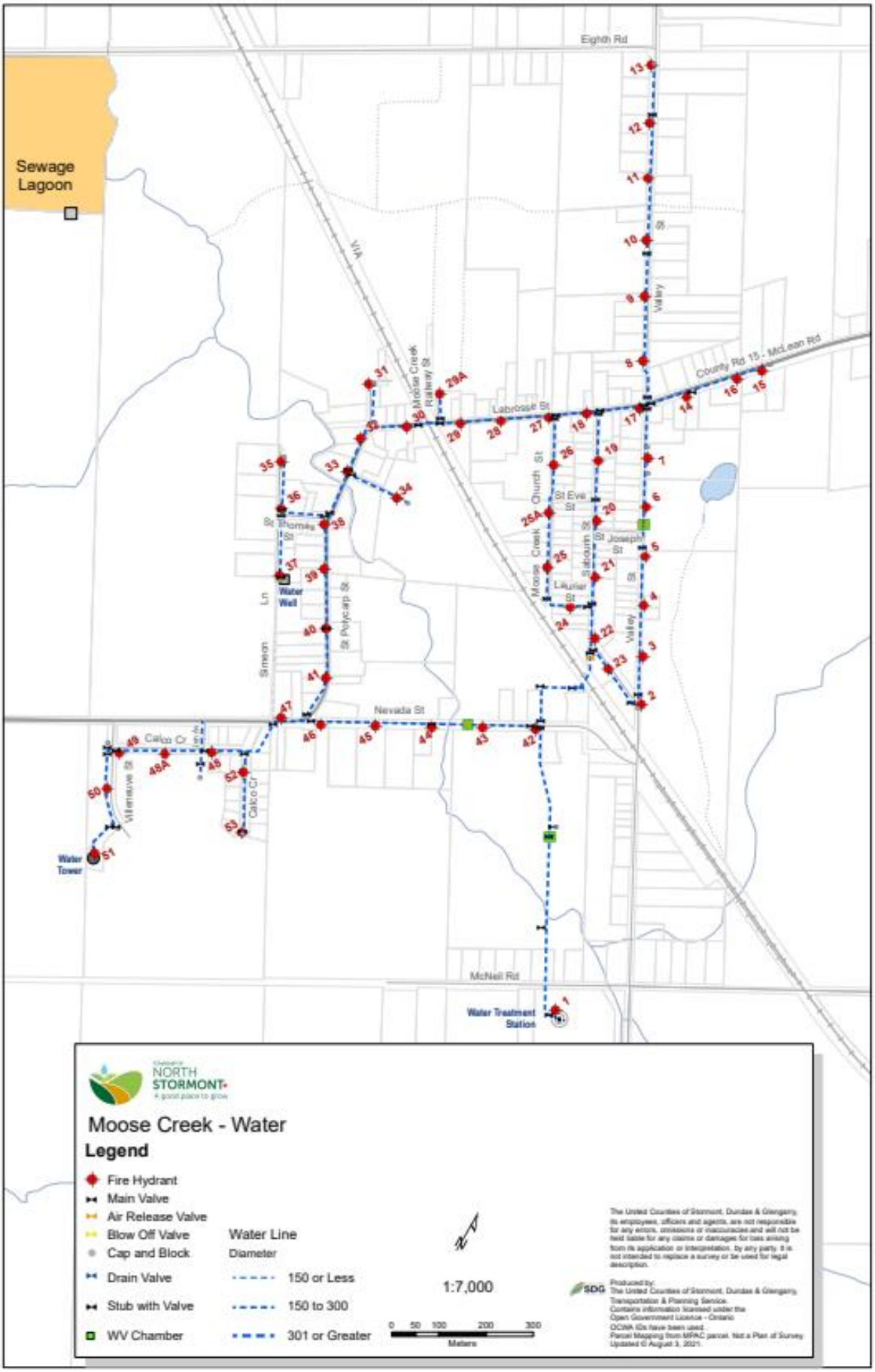

Finch
Water Network
Legend
Water Lines
Water Valves
Concession 3-4 Road
CPKC Winchester Subdivision
County Road 43
Concession 1-2 Road


Crysler
Water Network
The Nation
CR 12
County Road 13
County Road 12
Legend
Water Lines
Water Valves

Fire Hydrant Maps




Concession 3-4 Rd
County Rd 43
Front St
John St
Church St
Victoria St
Water Tower
WTP
SPS #1
SPS #2
SPS #3
CPR
Inset 1
Concession 1-2 Rd
0 75 150 300
M
NORTH STORMONT
A great place to grow
Finch - Water
Legend
Fire Hydrant
Main Valve
Water Line
Diameter
150 or Less
150 to 300
301 or Greater
1:7,000
0 50 100 200 300
Meters
SDG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Sewage Lagoon
VIA
Moose Creek Railway St
County Rd 15 - McLean Rd
Labrosse St
Church St
St Eve St
St Joseph St
Moose Creek
Lalonde St
Valley
Water Well
Simon Ln
St Polycarp St
Nevada St
Calco Cr
Calco Cr
Villeneuve St
Water Tower
McNeil Rd
Water Treatment Station
NORTH STORMONT
A good place to grow
Moose Creek - Water
Legend
Fire Hydrant
Main Valve
Air Release Valve
Blow Off Valve
Cap and Block
Drain Valve
Stub with Valve
WV Chamber
Water Line
Diameter
150 or Less
150 to 300
301 or Greater
1:7,000
0 50 100 200 300
Meters
Produced by:
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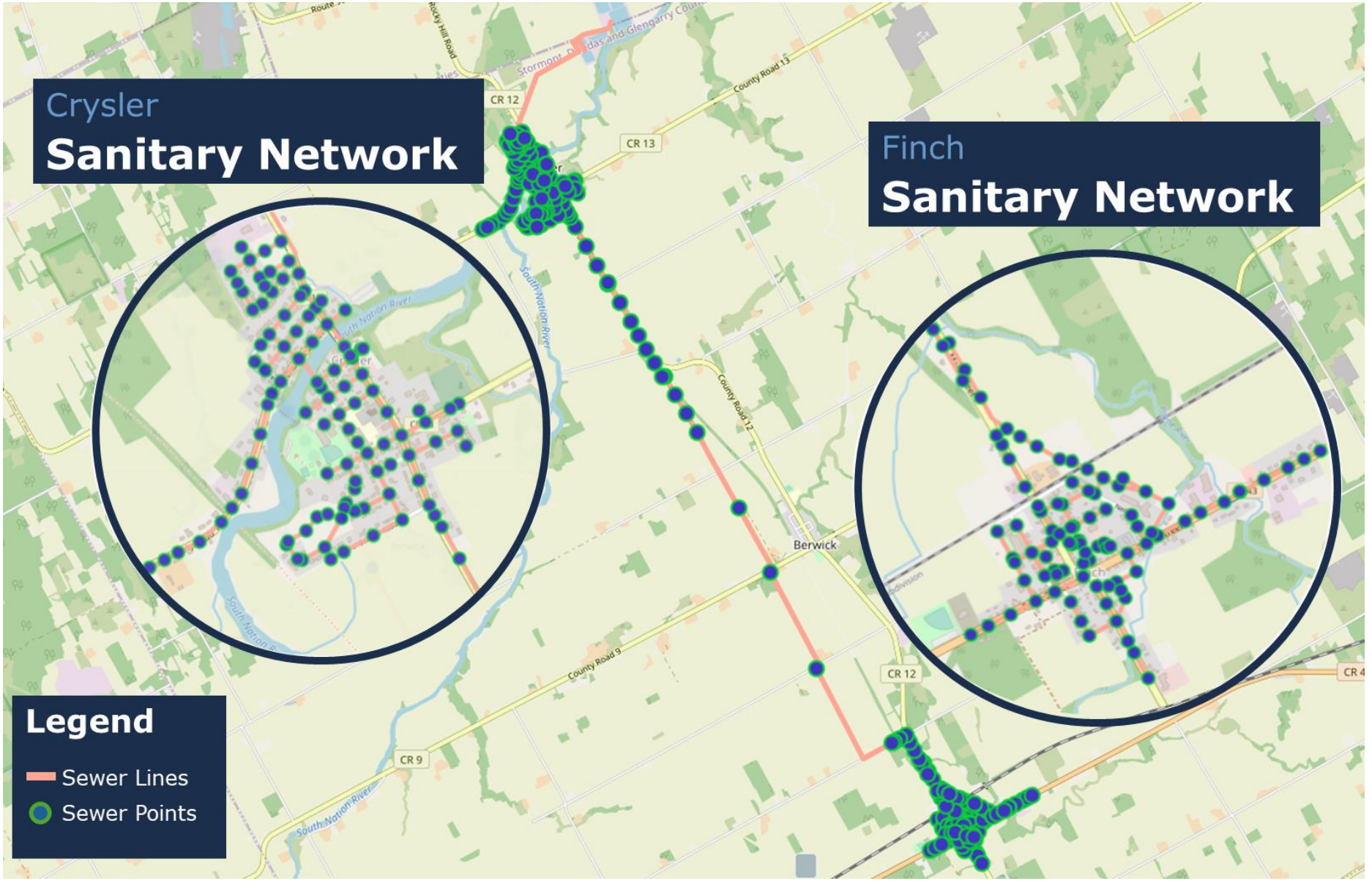
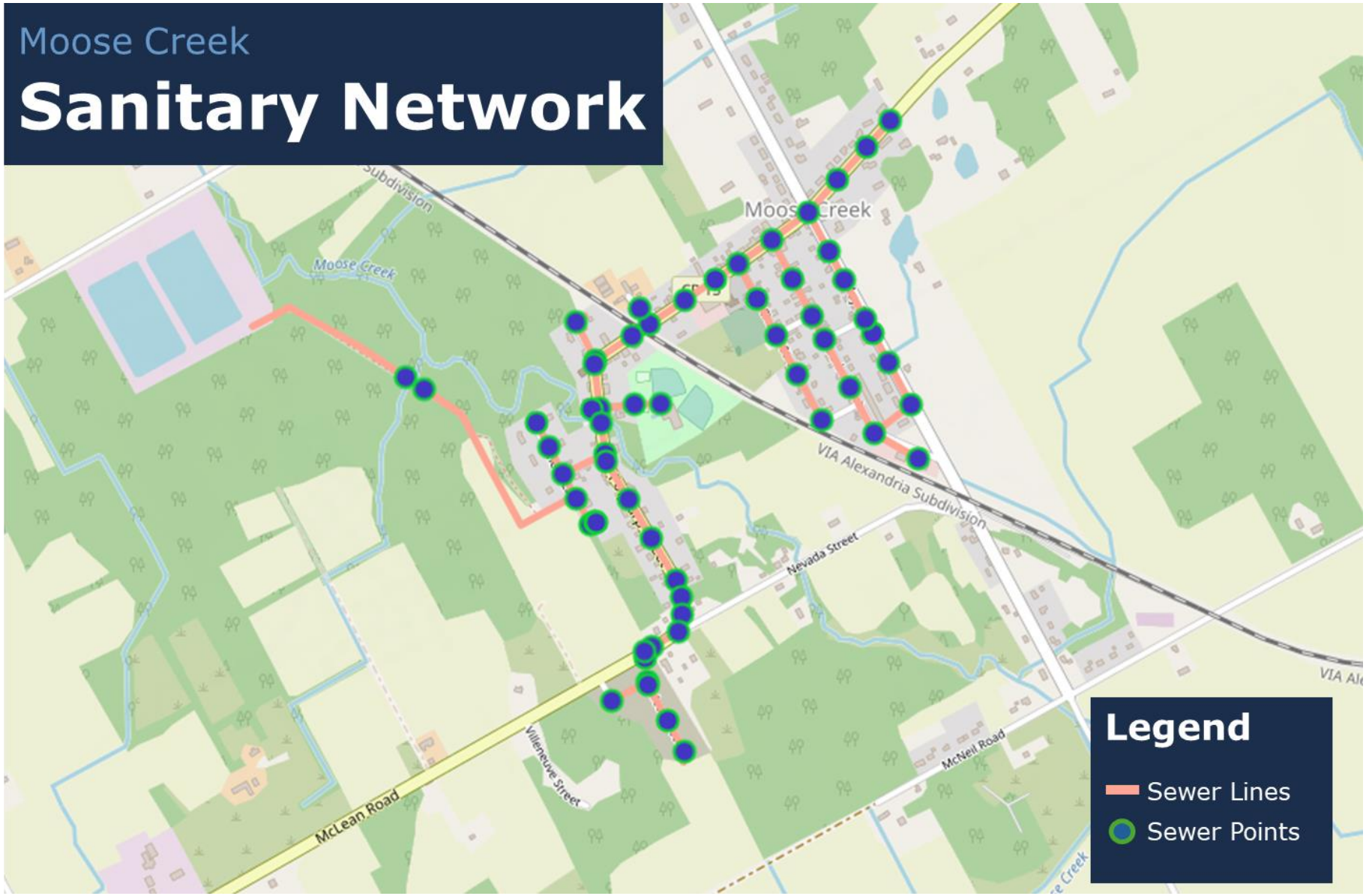
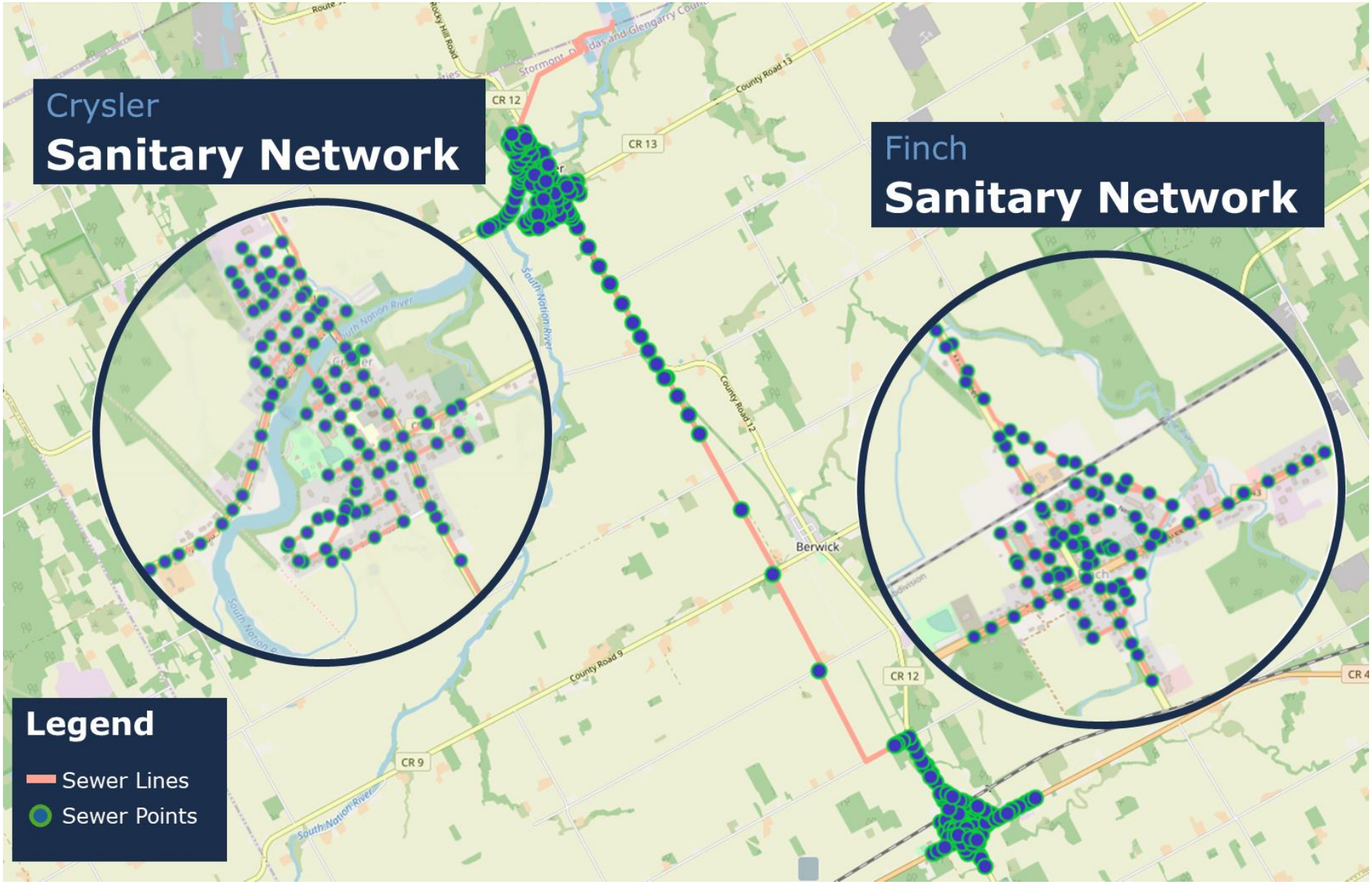
Parcel Mapping from MPAC parcel. Not a Plan of Survey
Updated © August 3, 2021.

Sanitary Network Maps




Moose Creek
Sanitary Network
Moose Creek
VIA Alexandria Subdivision
Nevada Street
McLean Road
Villeneuve Street
McNeil Road
Legend
Sewer Lines
Sewer Points


Crysler
Sanitary Network
Finch
Sanitary Network
Legend
Sewer Lines
Sewer Points
CR 12
CR 13
CR 9
County Road 13
County Road 12
County Road 9
Berwick
South Nation River
Rocky Hill Road

Appendix C: Condition Assessment Guidelines

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

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

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

Role of Asset Condition Data

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

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

Guidelines for Condition Assessment

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

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

engaging with external consultants to complete condition assessments, it is critical that these details are communicated as part of the contractual terms of the project.

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

Developing a Condition Assessment Schedule

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

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

Appendix D: Risk Rating Criteria

Risk Definitions

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

Risk Frameworks

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

Consequence of Failure			
Criteria	**Sub-Criteria**	**Value/Range**	**Score**
Financial 100%	Replacement Cost ($)	>$500,000	5 - Severe
		$250,000 - $500,000	4 - Major
		$75,000 - $250,000	3 - Moderate
		$25,000 - $75,000	2 - Minor
		< $25,000	1 - Insignificant